

**RELICTA MONOGRAFIEËN 19**

ARCHEOLOGIE, MONUMENTEN- & LANDSCHAPSONDERZOEK IN VLAANDEREN

# *Change and continuity at the Roman coastal fort at Oudenburg from the late 2nd until the early 5th century AD*

*Volume I: The site and its significance within the wider context of the Roman North Sea and Channel frontier zone*

S. VANHOUTTE







**Change and continuity at the Roman coastal fort at  
Oudenburg from the late 2nd until the early 5th century AD**

Volume I: The site and its significance within the wider context of  
the Roman North Sea and Channel frontier zone

## **Relicta Monografieën 19**

Archeologie, Monumenten- en Landschapsonderzoek in Vlaanderen  
*Heritage Research in Flanders*



**Change and continuity at the Roman coastal fort at  
Oudenburg from the late 2nd until the early 5th century AD**

Volume I: The site and its significance within the wider context of  
the Roman North Sea and Channel frontier zone

—  
S. VANHOUTTE

## COLOFON

Relicta Monografieën 19

Archeologie, Monumenten- en Landschapsonderzoek in Vlaanderen – Heritage Research in Flanders

Een uitgave van het agentschap **Onroerend Erfgoed** – A publication of the Flanders Heritage Agency  
Wetenschappelijke instelling van de Vlaamse Overheid – Scientific institution of the Flemish Government  
Beleidsdomein Omgeving

Herman Teirlinckgebouw, Havenlaan 88 bus 5, 1000 Brussel

Tel.: 02/553 16 50

info@onroenderfgoed.be

www.onroenderfgoed.be

© 2023 Onroerend Erfgoed

Manuscript submitted March 2021

Published by Sidestone Press, Leiden

www.sidestone.com

General lay-out: Sidestone Press

Lay-out illustrations: Sylvia Mazereel (Onroerend Erfgoed)

Cover design: Sidestone Press and Sofie Vanhoutte

Photograph cover:

top: Volume I, Fig. 12

below: Volume I, Fig. 83

ISBN 978-94-6426-083-0 (softcover)

ISBN 978-94-6426-084-7 (hardcover)

ISBN 978-94-6426-085-4 (PDF e-book)

This research project was supported by:

**Flanders  
Heritage  
Agency**



**Flanders**  
State of the Art

University of  
**Kent**



VRIJE  
UNIVERSITEIT  
BRUSSEL





# Contents Volume I

<b>Preface</b>	<b>11</b>
<b>General guidelines for the reader</b>	<b>15</b>
<b>Abbreviations in Volumes I and II</b>	<b>17</b>
<b>I. Introduction</b>	<b>19</b>
I.1. The Roman military along the North Sea and Channel: research questions and how the Oudenburg research can contribute to our understanding	19
I.1.1. Introduction to the North Sea and Channel region: research questions	19
I.1.2. How the Oudenburg research can contribute	21
I.1.3. Structure of the present study	22
I.2. Research methodology and selection of data	23
I.3. State of the art of the Roman military in the North Sea and Channel region: an overview of the wider military context of the Oudenburg fort	24
I.3.1. Introduction	24
I.3.2. The <i>Notitia Dignitatum</i> and the 'Saxon Shore'	24
I.3.3. <i>Gallia Belgica</i> , later <i>Belgica Secunda</i>	26
I.3.4. <i>Germania Inferior</i> , later <i>Germania Secunda</i>	28
I.3.5. <i>Britannia</i>	28
I.4. Historiography of the fort site of Oudenburg	31
I.4.1. The historic-geographic context of Roman Oudenburg	31
I.4.1.1. On the interface between the sandy region and the coastal plain	31
I.4.1.2. The Oudenburg settlement and fort: their relation to the occupation in the coastal plain	34
I.4.1.3. Oudenburg in relation to its hinterland: the road network	37
I.4.1.4. The end of civil settlement in the coastal region and of significant, large-scale civil occupation in the wider region	37
I.4.2. Excavation history: a <i>status quaestionis</i> of Roman Oudenburg, the fort site and its surroundings	39
I.5. The general chronological framework of the fort site as outlined by the former research	48
<b>II. New insights into the stratigraphy, morphology and site formation processes at the Oudenburg fort</b>	<b>51</b>
II.1. Introduction to the stratigraphy and morphology research of the site	51
II.2. The stratigraphy of the site: the study of the trench profiles	51
II.2.1. The stratigraphy of the Roman level	51
II.2.2. Five main levels, many building phases	51
II.2.3. 'Dark earth' and post-Roman occupation at the site	52

II.3. The evolution of the defence system	55
II.3.1. The defence system of fort level 1	55
II.3.2. The defence system of fort level 2	56
II.3.3. The defence system of fort level 3	57
II.3.4. The defence system of fort level 4	58
II.3.5. The defence system of fort level 5	64
II.3.6. Three earth-and-timber castella, two stone forts	65
II.4. The inner building: occupation levels and their relation to the defence system	66
II.4.1. The inner building area	66
II.4.2. Pre-fort structures with possible military connection?	66
II.4.3. Fort level 1: remains of soldiers' barracks at the southwestern corner	68
II.4.3.1. Defence system	68
II.4.3.2. Inner building	68
II.4.4. Fort level 2: a military hospital at the southwestern corner	71
II.4.4.1. Defence system	71
II.4.4.2. Inner building	72
II.4.4.2.a. First building phase (2A) of uncertain character	72
II.4.4.2.b. Second building phase (2B): a large building complex	73
II.4.4.2.c. Mural paintings	81
II.4.5. Fort level 3: 'one level', several building phases	84
II.4.5.1. Defence system	84
II.4.5.2. Inner building	84
II.4.5.2.a. Phase 3A	84
II.4.5.2.b. Phase 3B	87
II.4.5.2.c. Phase 3C	89
II.4.5.2.d. Level 3 features not assignable to a specific phase within fort level 3	91
II.4.5.2.e. The successive building phases of fort level 3	91
II.4.6. Fort level 4: a workshop area at the southwestern corner	92
II.4.6.1. A stone defence	92
II.4.6.2. Inner building	93
II.4.6.2.a. Structures and features	93
II.4.6.2.b. Building techniques	102
II.4.6.2.c. Craft activities in the workshop area	102
II.4.6.2.d. Barracks in the northern sector of the fort	108
II.4.6.2.e. The end of fort period 4	108
II.4.7. Fort level 5: baths, and eventually animal compounds, at the southwestern corner	111
II.4.7.1. The renewed stone fort defence	111
II.4.7.2. A bath house at the south-west corner of the fort (fort level 5A)	111
II.4.7.3. The bath house in late Roman forts	118
II.4.7.4. The 'double' well (OS 2562): insights into the further chronology of fort level 5	120
II.4.7.5. The end of the Oudenburg bath house: animals on compounds take over the south-west corner (fort level 5B)	121
II.5. Site formation processes: the evidence from the spatial distribution of material, residuality and rubbish disposal, and the value of the find assemblages	125
II.5.1. Spatial distribution of material: the result of different site formation processes	125
II.5.2. Residuality and the value of the find assemblages	125

<b>III. The successive forts at Oudenburg in a changing landscape</b>	<b>131</b>
III.1. Decisive factors for the fort's history: the marine influence and the poverty in hard natural rock	131
III.2. The landscape at the time of the installation of the first fort	132
III.3. The landscape in the 3rd century AD	132
III.4. The landscape in the 4th century and later	134
III.5. Conclusion: a changing landscape around the Oudenburg fort	135
<b>IV. The successive forts at Oudenburg and their related graveyards</b>	<b>137</b>
IV.1. Introduction	137
IV.2. The mid-Roman graveyards	137
IV.2.1. The southern mid-Roman graveyard	137
IV.2.2. The eastern mid-Roman graveyard	139
IV.2.3. Cremations versus inhumations	139
IV.3. The late Roman graveyards	141
IV.3.1. Introduction	141
IV.3.2. Graveyard A	142
IV.3.2.1. General data	142
IV.3.2.2. The chronology of Graveyard A	145
IV.3.2.3. Weapon graves or not?	150
IV.3.2.4. Graves of women with rich dress accessories	151
IV.3.2.5. Male graves with dress accessories	154
IV.3.3. Graveyard B	157
IV.3.4. Graveyard C	159
IV.4. Conclusion: relationship between the successive forts and their graveyards	160
<b>V. Confronting stratigraphy and material culture to come to new insights into the fort's occupation and the wider context</b>	<b>163</b>
V.1. A refined fort chronology for the Oudenburg <i>castellum</i> , its significance for the historic setting of the fort and within the wider historic context of the North Sea and Channel region	163
V.1.1. Coming to a refined fort chronology	163
V.1.2. Oudenburg fort period 1: <i>c.</i> AD 180 – 200(+)	163
V.1.3. Oudenburg fort period 2: <i>c.</i> AD 220 – 245/250	167
V.1.4. Oudenburg fort period 3: <i>c.</i> AD 245/250 – 260	171
V.1.5. Oudenburg fort period 4: <i>c.</i> AD 260 – 290/300	172
V.1.5.1. Installation and occupation during the Gallic Empire	172
V.1.5.2. Continuing occupation after the Gallic Empire	174
V.1.5.3. The final phase of fort period 4	175
V.1.6. Oudenburg fort period 5: <i>c.</i> AD 325/330 – ( <i>c.</i> AD 380) – ?430(+)	177
V.1.6.1. Fort period 5A: <i>c.</i> AD 325/330 – <i>c.</i> AD 360	177
V.1.6.2. Fort period 5B: <i>c.</i> AD 380 – ?430(+)	178
V.1.6.3. The 'end' of the last 'Roman' fort occupation at Oudenburg	181
V.1.7. In conclusion: significance for the wider historic context of the North Sea and Channel region	184
V.2. Continuity and change in supply, trade and exchange networks towards the Oudenburg fort and in the North Sea and Channel region	185
V.2.1. Introduction: pottery, source for insights into economic relationships	185
V.2.2. Trade and supply networks in the North-West: some general thoughts	186
V.2.3. Basics to come to valuable insights into trade and supply: quantification, classification and factors to consider at the Oudenburg fort	187

V.2.4. The Oudenburg fort and its locally/regionally based supply	191
V.2.4.1. The importance of the local-regional ceramic products versus long-trade imports in the late 2nd and 3rd century	191
V.2.4.2. Significant changes in the late Roman period: the Oudenburg fort as a remote economic community in the region	193
V.2.5. Evolutions in long-distance supply to the Oudenburg fort: the factual evidence of the successive fort periods	194
Fort period 1: c. AD 180 – 200(+)	194
Fort period 2: c. AD 220 – 245/250	194
Fort period 3: c. AD 245/250 – 260	198
Fort period 4: c. AD 260 – 290/300	198
Fort period 5: c. AD 325/330 – (c. AD 380) – ?430(+)	202
V.2.6. A closer look to the samian and amphorae supplies to the Oudenburg fort	205
V.2.6.1. Samian ware supplies	205
V.2.6.1.1. The mid-Roman samian ware supplies	205
V.2.6.1.2. The 'samian' supply in the 4th – early 5th centuries	205
V.2.6.2. Amphora supplies and their evolution from the mid- to late Roman period	206
V.2.7. The impact of the military evolution in the North Sea and Channel region on economics, increasing orientation towards <i>Britannia</i> and a trend towards regionalization	206
V.2.7.1. Centralization and increasing impact of the army on trade networks in the North-West	206
V.2.7.2. Increasing orientation towards <i>Britannia</i>	207
V.2.7.3. Trend towards increasing regionalization	209
V.3. Material culture and 'military' identities	209
V.3.1. Material culture and (military) identities. An introduction	209
V.3.2. 'Military' identities and changing army units in the successive Oudenburg forts	211
V.3.2.1. Army units in the North Sea and Channel region	211
V.3.2.2. The successive troops at Oudenburg	212
V.3.2.2.1. The units of the late 2nd-century and 3rd-century forts at Oudenburg	212
V.3.2.2.2. Units at the late Roman fort of the 4th – early 5th century	214
V.3.3. Changing communities at the Oudenburg fort and their gender aspect	215
V.3.3.1. Female presence at forts: the current state of knowledge and thinking	215
V.3.3.2. Female presence at the other Shore forts in the North Sea and Channel region and in the North-West in general: mainly a late Roman phenomenon?	216
V.3.3.3. Contextual evidence for female presence at the Oudenburg fort	216
V.3.3.4. Conclusion: changing fort communities or rather 'fortified' communities?	221
V.3.4. Changing fort communities, changing socio-cultural identities	224
V.3.4.1. Glimpses of socio-cultural identities in the late 2nd- and 3rd-century Oudenburg forts	224
V.3.4.2. The Oudenburg fort in the 4th century and first decades of the 5th century: insights into culturally complex societies	228
V.3.4.2.1. Late Roman cultural identities in the North-West: the current state of knowledge and thinking 'away from the so-called barbarization' of the late Roman army	228
V.3.4.2.2. The evolution of the Oudenburg fort and its units in the 4th – early 5th century	230
V.3.4.2.3. Interpretation of the evolution of the late Roman community at Oudenburg in relation to the North Sea and Channel region	233
<b>VI. Conclusions. Change and continuity: the Oudenburg fort reflecting later Roman military development along the North Sea and Channel frontier zone</b>	<b>237</b>
VI.1. The Roman fort at Oudenburg as a key site for the Roman North Sea and Channel frontier zone	237
VI.2. A contribution on a historic-military level	237
VI.3. A contribution to the reconstruction of socio-cultural identities	238
VI.4. A contribution on a socio-economic level	238
VI.5. A contribution on a methodological level	239



<b>Appendix 1.</b> Overview of the archaeological observations at Oudenburg yielding information on the Roman character of the sand ridge	241
<b>Appendix 2.</b> Trenches of J. Mertens in the 1950s, 1960 and 1970s on the defence area of the Oudenburg fort. Interpretations	253
<b>Appendix 3.</b> Features identified in the 1957 trenches VI-VIa-VIb. Interpretation of the descriptions by J. Mertens	255
<b>Appendix 4.</b> Analysis of trench profiles at the south-west corner site of the Oudenburg fort	257
<b>Appendix 5.</b> The hearths of fort level 4 at the south-west corner site of the Oudenburg fort	270
<b>Appendix 6.</b> Absolute chronological data available for the south-west corner site of the Oudenburg fort	275
<b>Appendix 7.</b> Oudenburg Graveyard A. Overview of the burials, their characteristics and content	277
<b>Appendix 8.</b> Oudenburg Graveyard C. Overview of the burials, their characteristics and content	290
<b>Bibliography</b>	<b>295</b>

Grateful to Yves, Zahra & Thor

In memory of Yann Hollevoet

# Preface

*"In hac Flandria antiquorum industria civitatem statuit munitam et fortem, ut res poscebat, quum juxta litus maris sita a barbaris insularum crebro impetebatur."*

*"Verum tempore illo urbs ista Aldenborgh caput totius Flandriae et, sicut predixi, initiis exstitit celeberrima, muris ac propugnaculis munitissima. Nam a partibus orientis et a meridian climate, et ab occusa, et ab auilone nigris et durissimis lapidibus fuerat constructa."*

"In this Flandres, with the fervour of the old a protected and strong fort was erected, that, located along the shores of the sea, almost inevitably was repeatedly attacked by the barbarians of the isles."

"Truly, at that time, that fort Aldenborgh was the capital of entire Flandres, and as I said before, it was from the beginning very famous and highly reinforced with walls and bastions. Because in the east and at the south side, as well as in the west as in the north, it was erected with black, extremely strong stones."<sup>1</sup>

Joseph Mertens, who put Oudenburg on the international map as Roman military base, started in 1987 his last overview publication of his excavations on the Oudenburg fort and the late Roman military graveyards with the second of these quotes. Both citations come from the late 11th-century *Tractatus de Ecclesia Sancti Petri Aldenburgensis* written by a clergyman of the Oudenburg abbey of Saint-Pierre. Mertens rightfully called it 'the earliest excavation report regarding a Belgian archaeological site' (Mertens and Crabbé 1987, 5).

I am so bold to start the introduction to this publication in the same manner, as these citations are so powerful. In fact, the tract is the only written source in which the Oudenburg fort undoubtedly occurs, although it is from a much later time. These lines, and many others in the tract, are intriguing and exciting, and the detail in which the author writes stimulates to dig deeper into the history of the fort's occupation. While, in contrast to several of the British forts, nothing of the Oudenburg fort is left above ground, the tract

gives us a glimpse of the authority it once embodied. The author also sees the bigger picture and describes the evolution (and demolition) the fort underwent during the Middle Ages after its downfall.

Insight into the evolution of the fort during its successive occupations is the main objective of the present study. To use a wider perspective: how can a thorough study of the features and finds at the fort precinct contribute to a better understanding of the military history in the North Sea and Channel region. This research is not the result of grand theories, but starts from a bottom-up interpretation of the material culture, within its context, in all its aspects and theoretically-based.

The excavations in 2001-2005 by the Institute for Archaeological Heritage (former predecessor of the current Flanders Heritage Agency) at the south-west corner of the Oudenburg fort, after which other excavation sites followed, formed the starting point of the present study. They were the first archaeological research carried out on the fort area since the Mertens campaigns in 1976-1977. With a predecessor such as prof. dr. Joseph Mertens, the 'discoverer' of the Oudenburg fort, and being on such a well-known site, the pressure was high<sup>2</sup>. It was a unique opportunity to methodically retrieve as much information as possible on the occupation history of the fort before this archive was irrevocably destroyed by the building of a supermarket. In very different operating conditions as is the case today – complete digging by hand<sup>3</sup>, manuel registration<sup>4</sup>, and with a team of one archaeologist, one illustrator and a changing number of four (or less) to eight technical assistants, at times (mainly in the summers) complemented by students and volunteers – we managed to search our way through the complex stratigraphy and the enormous find assemblages this south-west corner site offered.

1 Loosely translated from the Dutch translation by Meijns (1994).

2 Unfortunately, I never had the chance to meet prof. dr. Mertens and discuss the findings of the new research. Not long before the start of the 'new' excavations at Oudenburg in 2001, Mertens (1921-2007) had started to live a withdrawn life.

3 All digging, of all levels and features, was conducted by hand. The mechanical digger was only used to remove the top soil or, in some trench pits, the post-Roman dark earth level. Only the large trench profiles P3.1, P3.5, P5.1, P6.1 and P6.2 were realized by means of the mechanical digger.

4 All excavation maps and profiles registered on site, were drawn by hand. Evidently, the further processing of all these drawings was carried out digitally.

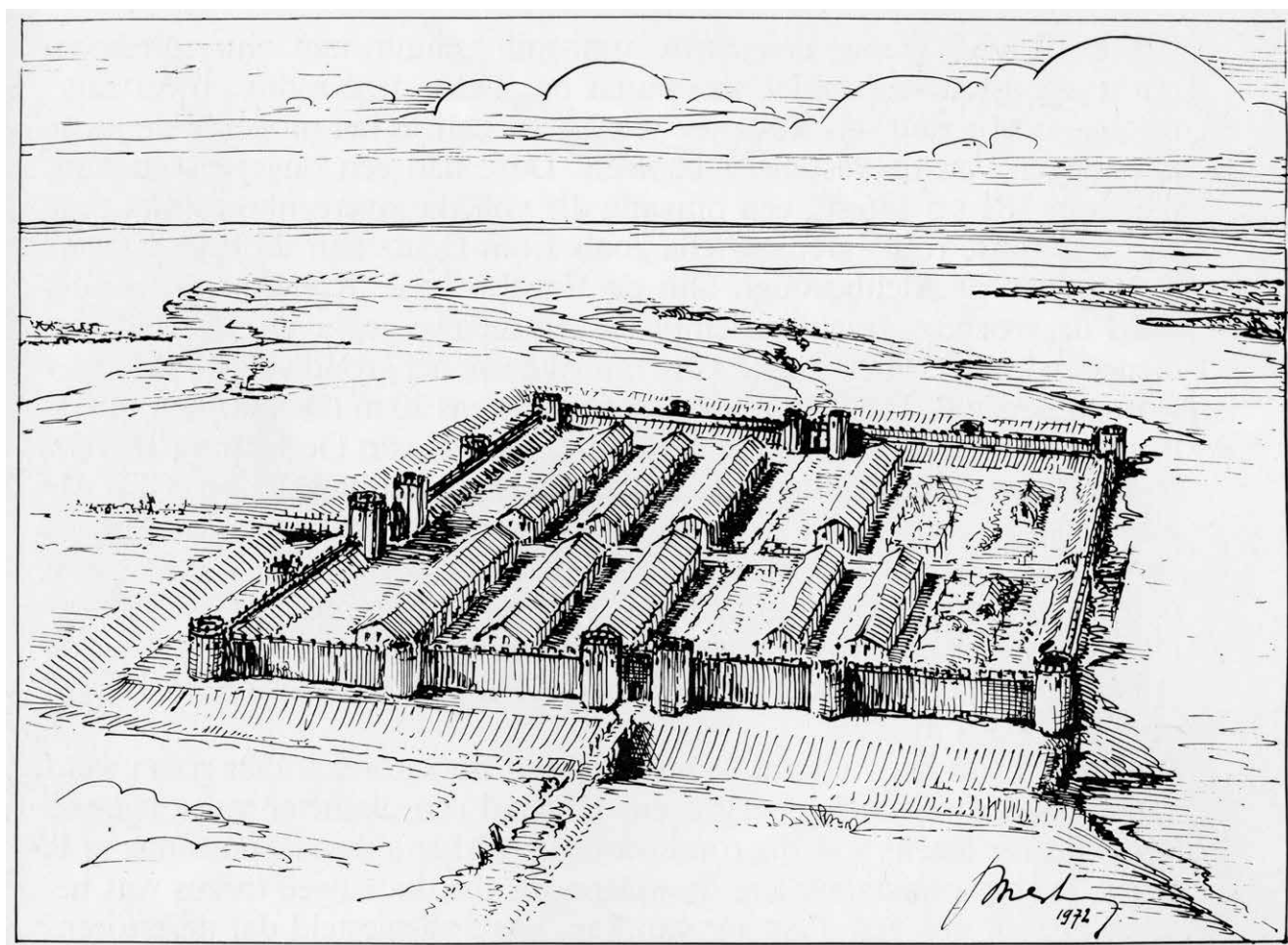


Figure 1. Reconstruction drawing of the stone fort by J. Mertens in 1972, looking westwards (from Mertens and Crabbé 1987, 17: Afb. 10). At that time Mertens only had excavated some trenches at the defence area (in the 1950s, 1960 and 1970); his excavations on the fort precinct were yet to come (1976-1977). For this sketch he looked at forts in Britain and along the Rhine limes. This sketch shows his talent to revive the past. Although the intermediate towers are obsolete and the inner building will have looked differently, the overall picture and the setting of the fort are still very relevant.

The post-excavation-processing of the huge quantity of data and finds subsequently confirmed the high scientific potential of the site, which I strived to explore to the maximum. Working on other excavations – under my own direction or in collaboration – inside and outside the *castellum* area and in the adjacent coastal plain, and exploring the archives of the excavations of the fort and the military graveyards by Mertens in the 1950s, 60s and 70s, enabled me to see the broader picture. Participations in international meetings of experts and contacts with specialists made me conscious of the huge research possibilities: the chronological evolution of space and function within the fort walls had been preserved to a degree rarely observed on late Roman military sites. A holistic approach, with detailed studies of the different find categories with their proper type of information, explored through time combined by interpretative analyses in close relation to the find contexts, revealed data and insights that allowed to start tackling fundamental issues in late Roman archaeology and history. Besides, these find studies offer reference collections for sites in Belgium and abroad, for the mid- to late Roman period.

The basis of the present publication is the PhD thesis I defended in September 2018<sup>5</sup>. This doctoral research, which I carried out in order to take the project onto a higher level to study the significance of Oudenburg in a broader perspective, started in 2008 as a joint PhD between the Free University of Brussels (VUB) and the University of Kent (Canterbury, UK), under supervision of prof. dr. Marc De Bie and prof. dr. Steve Willis. Prof. dr. Wim De Clercq from Ghent University joined later on as co-supervisor. For the present publication, more in-depth analyses in certain find studies are enclosed and some new material studies are integrated (in Volume II).

I have been privileged to work with many experts. Several of these specialists have yielded a contribution to this work and I am most grateful for our successful collaboration. Following the order of the contributions in Volume II, I thank:

5 The jury consisted of prof. em. dr. S. Esmonde-Cleary (University of Birmingham), dr. R. Collins (Newcastle University) and prof. em. dr. R. Brulet (UCLouvain).



prof. dr. Wim De Clercq (Ghent University)  
 Johan Deschietter (Archeocentrum Velzeke)  
 prof. dr. Lothar Bakker (Universität Augsburg)  
 Wim Dijkman (City of Maastricht, NL)  
 prof. dr. Georges Raepsaet and prof. dr. M.-Th. Raepsaet-Charlier  
 (ULB Université Libre de Bruxelles)  
 dr. Robin P. Symonds  
 dr. Sonja Willems (UCL Université Catholique de Louvain / Royal  
 Museums of Art and History, Brussels)  
 dr. Patrick Monsieur (Ghent University)  
 dr. Malcolm Lyne  
 dr. Vince Van Thienen (Ghent University)  
 prof. dr. Johan van Heesch (KU Leuven / UCL Université  
 Catholique de Louvain)  
 dr. Peter Cosyns  
 dr. Jan De Beenhouwer  
 prof. dr. Carol van Driel-Murray (Leiden University, NL)  
 drs. Tim Clerbaut (Ghent University)  
 dr. Sibrecht Reniere (Ghent University)

Other specialists have given valuable insights, identifications and/or substantive advice. In alphabetical order, these are: dr. Mathieu Boudin (KIK / Royal Institute for Artistic Heritage, Brussels), prof. dr. Raymond Brulet (UCL Université Catholique de Louvain), Raphaël Clotuche (Inrap Nord-Pas-de-Calais, F), dr. Catherine Coquelet (Agence wallonne du Patrimoine), Luc De Vos (professional caster of copper alloys), prof. dr. Patrick Degryse (KU Leuven), dr. Thomas Delbey (University Paris-Nanterre, F), Marc Dewilde, dr. Wouter Dhaze (City of Oudenburg), dr. Manuel Dierick (Centre for X-ray Tomography at the Institute for Nuclear Sciences, Ghent University), prof. dr. Roland Dreesen (Ghent University / KU Leuven), Paulus Florizoone (freelance potter of archaeologically correct replica pottery), Bieke Hillewaert, Yann Hollevoet (†), dra. Lara Laken (freelance, NL), prof. dr. Roger Langohr (pedology, Ghent University), Leentje Linders (Flanders Heritage Agency), Erwin Meylemans (Flanders Heritage Agency), dr. Kathy Sas (AVRA, Antwerp), prof. dr. Ellen Swift (University of Kent, UK), Jan Thyssen (†) (City of Nijmegen, NL), Nicolas Tisserand (Inrap Dijon, F), Johan Van Cauter (Erfpunt Onroerend Erfgoed Waasland), dr. Peter van den Broeke (City of Nijmegen, NL), Robert van Dierendonck (SCEZ, NL), dr. Harry van Enkevort (City of Nijmegen, NL), prof. dr. Paul Van Ossel (University Paris-Nanterre, F), Alain Vanderhoeven.

The colleagues at the natural sciences department within the Agency could take up the research of the most important contexts in their area of study and their contributions are much appreciated; in alphabetical order: Jan Bastiaens, Brigitte Cooremans, dr. Koen Deforce, dr. Anton Ervynck, dr. Kristof Haneca, dr. An Lentacker. A lot of conservation work was

carried out by the Archaeological Conservation Team of the Agency with special thanks to former conservator Natalie Cleeren (now freelance) and Frans De Buyser. I am also grateful to Agency librarian Alexis Wielemans for his constant readiness to help finding books and to our Agency photographers Hans Denis and Kris Vandevorst. My gratitude goes to Franky Wyffels (†) for his technical support over the years and to the technical assistants at Zarren, former outpost of the Flanders Heritage Agency in West-Flanders, with a special thanks to Norbert Clarysse for all his patient puzzling.

The present publication could not have been possible, and certainly would not have been so good-looking, without the assistance and technical support of illustrator Sylvia Mazereel to whom I am enormously grateful.

With most of the available puzzle pieces in place and being able to connect all building blocks, the present publication sheds light onto the organization and everyday life at the Oudenburg fort and tries to contribute to the understanding of the chronology, the spatial and functional organization, the economic, social and cultural identities at the forts in the North Sea frontier zone.

This research is definitely not final. Much more can be studied and several aspects can be explored further, for example the end date of the Oudenburg fort occupation, using historic evidence and comparing it to findings at the British side of the Channel. The very late end date proposed here was mainly instigated by the late Argonne sigillata with roller-stamped decoration, a chronological indicator established near the end of the writing period of this study, during new research following very recent developments in the field. The final end of 'Roman' occupation in this region certainly deserves more study, with an interdisciplinary approach in collaboration with historians.

Another aspect that needs attention is the chronological evolution of the North Menapian pottery, certainly a topic for further research within a broader chronological and contextual framework. As will be clear, several pottery categories indicate that more information on the latest fort level can be retrieved from the material recovered from the post-Roman dark earth covering the Roman level. For some pottery categories, such as the coarse oxidized wares (incl. *Eifelware*), the coarse reduced pottery and the handmade wares, the fragments found in the dark earth were not integrated in the detailed study, mainly because of the high amount of material. Although residual in the dark earth, the present study demonstrates that mainly the late Roman ceramics of the dark earth pottery assemblages would still add valuable information, since they most certainly were dug-up from the latest fort level. I hope the present study can instigate more research on several of these aspects.



# General guidelines for the reader

To enhance the reading of this publication, it is important to draw attention to some choices that were made concerning the method of presentation, and this in several areas.

The present study opted to use the Latin names to nominate emperors and coin types. Dates of reign periods are based on Kienast (1996).

Levels 2 to 5 are named 'fort level' as they certainly represent the military occupation of the site, but this decision was merely established to avoid misunderstandings: a fort level is seen as occupation level (in which (building) phases occur), a level can be a component of a fort level (an 'excavated' level can even have cut two or more fort levels). For level 1, an exception is made: only 'level' is used here, as for several features at this level it is not possible to determine whether they represent pre-fort features or the earliest military features, as is also the case for their respective material culture.

This publication contains a large number of overview tables for the respective find categories. After careful consideration, it was decided to group the finds from levels or features that cannot be attributed to a specific level, into the group of the respective latest level in question (*e.g.* level 1/2: the finds are attributed to the general fort level 2), this in order to enhance the investigation of chronological evolutions through the successive fort levels. For the Roman level, the finds in question (of 'mixed' levels) only represent a small share of the assemblages. The finds from the post-Roman levels are listed in the tables as 'post'. A significant number of finds was collected from the level '5+post'. The transition between the Roman level and the post-Roman level was difficult to distinguish on site during excavation. Where contamination with the post-Roman level was assumed, the finds were collected as '5+post'. It is therefore very likely that several finds stratigraphically still belonging to fort level 5

are classified here in the general level '5+post/post'. As much as possible, attention is drawn to the material of this transition level in the respective material studies.

It was chosen not to overload the body of this publication with large illustrations and tables. Only a selection of maps is included in the text volume where necessary to directly support the content of the text. Detailed maps and larger illustrations are included as plates in a separate volume (Volume III), to improve the combined consulting of text and visual content.

All finds are illustrated according to the current guidelines at the Flanders Heritage Agency. It was chosen to integrate as many photos as possible in the drawings. Most of the find photos were taken by Flanders Heritage Agency photographer Hans Denis. When the photo was taken by someone else, this is specified in the caption. All site photos were taken by the author herself.

All find drawings, find compositions and graphical illustrations were produced by Sylvia Mazereel, illustrator at the Flanders Heritage Agency. When others were involved, this is specified.

All ceramics are presented 1:3, except for details such as stamps, roller stamps, graffiti, ... which are added 1:1. Light grey areas indicate burnishing; dark grey areas represent black coating. The reddish slip of the Pompeian red wares is marked greyish. Copper alloy and lead/pewter finds are generally illustrated 2:3, except for very large items which are presented 1:3. Iron finds are generally illustrated 1:2, except again for very large objects (then 1:3). Items in glass, worked bone/antler/horn/ivory, jet and jet-like material and the figurines are all presented 2:3, as also the wooden finds (except for large items, then 1:3). Whetstones and other stone implements are illustrated 1:3; querns and mills are presented 1:6. Polished areas on the stone implements are indicated in reddish. Scale indications are added as reference for the e-publication.





# Abbreviations in Volumes I and II

(Other than pottery fabric codes: cf. Table 6 in this volume)

AE	Année Épigraphique	Künzl	Künzl 1997
Alzey	Unverzagt 1916 typology	Massenfund	form defined by Huld-Zetsche (1971) for the Massenfund site at Trier, excavated in 1933-36, yielding samian moulds and vessels probably from one single workshop active c. AD 240-260
BB	Black Burnished ware		
Bet	Bet <i>et al.</i> 1989; Bet and Delor 2000		
Brulet	Brulet 1990b		
Cam	form in the Camulodunum series (Hawkes and Hull 1947; Hull 1958; Hull 1963)	Lud.	Ludowici 1904/1905/1908/1912/1927
CAG	Carte archéologique de la Gaule	Marcuil	Bet and Delage 2008
CBM	ceramic building material	NB	Niederbieber (Oelmann 1914)
CIL	Corpus Inscriptionum Latinarum	NOTS	Names on Terra Sigillata vol. 1-9 (Hartley and Dickinson 2008-2012)
Chenet	Chenet 1941		
Curle	Curle 1911	Oberaden	Albrecht 1942
Déch.	Déchelette 1904	O&P / Oswald	Oswald 1936/1937
Drag.	Dragendorff 1895-1896	Pirling	Pirling 1966/ <i>et al.</i> 1979/1997; Pirling and Siepen 2000/2006
Dressel	Dressel 1899		Raepsaet-Charlier and Clausse 1978
EDCS	Epigraphik-Datenbank Clauss-Slaby	Raepsaet-Charlier and Clausse	
Ettlinger	Ettlinger 1973	RIC	Roman Imperial Coinage
Fölzer	Fölzer 1913	Ricken	Ricken 1934
Fulford	Fulford 1975	Ri-Fi	Ricken-Fisher 1963
Gard	Gard 1937	Ricken-Thomas	Ricken and Thomas 2005
Gose	Gose 1950/1976	Riha	Riha 1979/1994
Haltern	Loeschcke 1909	Rogers	Rogers 1974/1999
Haupt	Haupt 1984	Rütti	Rütti 1991
Hees	Hees near Nijmegen (typology Brunsting 1937, Pl. 3)	Stuart	Stuart 1977
Hayes	Hayes 1972	SW TF	Symonds and Wade 1999, Chapter 4, Other British mortaria (not Colchester or Verulamium), 188-195 (TF = Nene Valley mortaria)
Hofmann	Hofmann 1968		
Höpken	Höpken 1999/2005	SW TZ	Symonds and Wade 1999, Chapter 4, Colchester mortaria and mortaria imported from the Continent, 165-188
HP	Hartley and Perrin 1999		
HPM	Howe, Perrin and MacKreth 1980	Symonds	Symonds 1992
Hübener	Hübener 1968	Thomas	Thomas 2001
Huld-Zetsche	Huld-Zetsche 1993	Trier	Hussong and Cüppers 1972
Hull	Hull 1963, fig. 65	Tuffreau-Libre	Tuffreau-Libre 1980b
Isings	Isings 1957	undet.	undetermined
Jobst	Jobst 1975	Ve	Vertet 1972
Knorr	Knorr 1919	VV	Vanvinckenroye 1991
KPS	Keller/Pröttel/Swift crossbow brooch typology: Keller 1971; Pröttel 1988; Swift 2000a		

Walters	Walters 1908
Wilson	Wilson 1984
Young	Young 1977
IVA	first half 4th century
IVB	second half 4th century
IVa	first quarter 4th century
IVb	second quarter 4th century
IVc	third quarter 4th century
IVd	fourth quarter 4th century
R	rim (fragment)
W	wall (body) (fragment)
B	base (fragment)
CP	complete profile
MNI	minimum number of individuals
EVE	estimated vessel equivalent
est. diam.	estimated diameter
nm	not measurable

# I. Introduction

## I.1. The Roman military along the North Sea and Channel: research questions and how the Oudenburg research can contribute to our understanding

### I.1.1. Introduction to the North Sea and Channel region: research questions

The Oudenburg fort was situated along the coast of the province *Gallia Belgica* (which later became *Belgica Secunda*), in the *civitas Menapiorum*, a central position in the North Sea region (Figure 2). This region in the later Roman period was subject to many historic events and changes. From the later 2nd century onwards, the north-west of Gaul suffered from seaborne attacks and repeated political crises reaching a climax from the middle of the 3rd century onwards resulting in several waves of Germanic invasions. The Channel region was an important scene for the segregation regimes of the Gallic Empire (AD 260-274) of Postumus and his successors, and of the following British Empire (AD 286-296) of Carausius and his successor Allectus. The reforms of the army by Diocletianus, the consolidation policy of Constantinus I, the severe Germanic invasions in the 4th century and the military activities by Valentinianus and his successors all had their impact on this region. Literary evidence for the events in this region and the related forts is scarce however, only represented by the *Notitia Dignitatum* (written somewhere in between 390 and 428; see Section I.3.2 in this chapter) and the mentions by Aurelius Victor, Eutropius and Orosius of the duty addressed by emperor Diocletianus to Carausius in 286 to control the *bagaudae* (see Chapter V, Section V.1.5.2).

Although this history was embodied by several military installations, little is known archaeologically of the later Roman period. Mainly due to the interest and focus on old excavations, the knowledge of the forts in the north-west of the Empire primarily concerns the architecture: the defence system with the gates and towers and the main buildings (Reddé *et al.* (dir.) 2006, 15, 18). This is definitely the case for the British late Roman forts along the Channel (see White 1961; Johnson 1976; Johnston 1977; Maxfield 1989; Pearson 2002b; 2003). In 2011, Dhaeze explored in his doctoral thesis the role of the Roman military installations in the coastal defence system along the North Sea and the Channel. Dhaeze (2011; 2019)

also gives a *status quaestionis* of these Roman military installations. The military presence was investigated from an archaeological-historic point of view to achieve a reconstruction of the working of these installations and their role in the coastal defence (Dhaeze 2011, 3-4). The author rightly states that publications until then were focused on the late Roman period and on the situation in *Britannia*, rather than on the Continent. However, it is important to look at both sides together, since they faced a common enemy and they probably functioned under one command at some point (Dhaeze 2011, 4-5).

In the last synthesising publication on the British coastal forts, that dealt not only with the architectural aspects and the chronological developments but also with aspects like building materials and their transport, landscape setting and occupation character in a more general way, Pearson (2002b; 2003) stresses that the knowledge on the fort interior, which shows radical changes compared with the forts of the Principate, is extremely limited (cf. also *e.g.* Esmonde Cleary 1989, 61).

The knowledge on internal arrangements is also scarce for late Roman Gaul, as is stated by Brulet (2006d), with a very restricted number of sites yielding information concerning their occupation (Alzey, Altrip, Bonn, Deutz, Kaiseraugst, Maastricht, Yverdon, Liberchies II), showing different models of occupation, but also different levels of representativity – it concerns mainly old research, not all of them methodically excavated, and many fort sites were built over since medieval times resulting in the destruction of the Roman soil archive. These data stand in contrast to the knowledge of the late Roman forts along Hadrian's Wall. The research by Collins (2012) combining all known excavation results, has brought forth a fresh perspective on the transformation which Hadrian's Wall, its forts and their internal layout underwent in the 4th and 5th centuries.

Excavations and subsequent post-excavation studies at forts along the Channel and the North Sea yielding insights into the named historic events and their impact on the fort communities and the region, and into the wider debate of interpretation and identity, are limited. Many of the forts have been excavated only very limitedly and/or many decades ago, when other (often less sophisticated) field methods and other research questions were in place. Knowledge

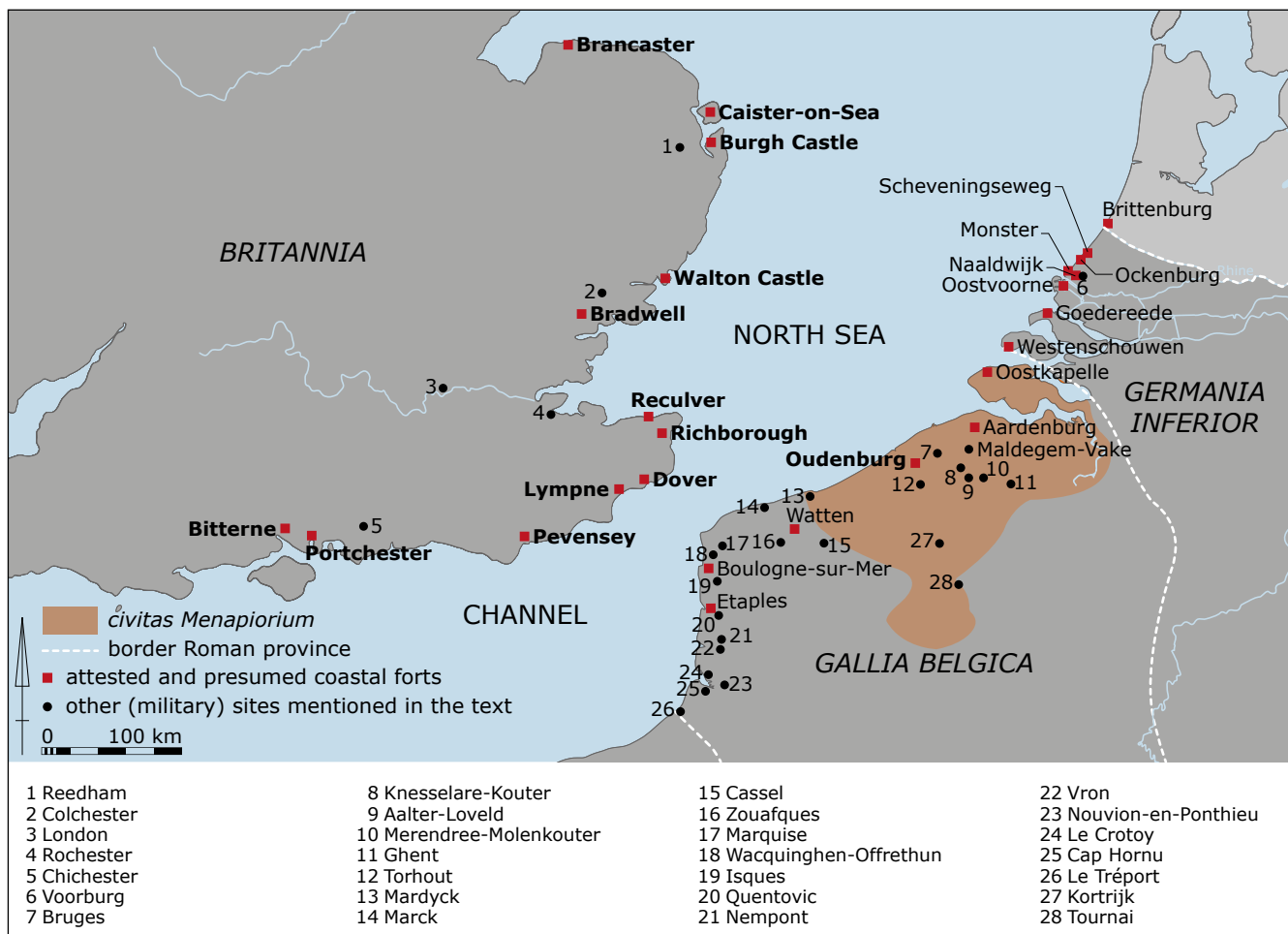


Figure 2. Map with location of Oudenburg within the *civitas Menapiorum* and of the main sites mentioned in the text. The forts in bold are the generally accepted Saxon Shore forts (basic map © Frontiers of the Roman Empire Culture 2000 project (2005-2008)).

on the fort interior and its evolution at the 'Saxon Shore' forts in Britain is restricted (cf. Pearson 2002b) and thorough contextual analyses on the find assemblages of these forts were performed only in a limited way<sup>6</sup>, evidently resulting in limited structural, economic and social interpretations of the internal occupation of the forts (cf. Cunliffe 1977, 3-4). Only at the fort of Reculver significant excavations yielded insights into the fort's interior (Philp 2005). Recent research has only been conducted in the The Hague region at the site of Ockenburg where a so-called *mini-castrum* has been brought to light (Waasdorp 2012). A large research project involving the study of the old excavations at the Aardenburg fort has yielded new insights into the fort chronology. Insights into the spatial and functional organization of the fort's interior around the preserved *principia* remain fragmentary, due to the restrictions of the old excavation data (cf. van Dierendonck and Vos 2013). Overall, a systematic, contextual approach in the find studies of the Shore forts to come to diachronic conclusions, is hardly extant.

6 An exception is formed by the find reports in depth of the Caister-on-Sea excavations (Darling and Gurney 1993) where the contextual approach was applied to some extent.

Nonetheless, Gardner (2007b, 657) considers these forts as '*essential contexts for the broader changes in the Roman world*', when he states that '*Roman forts in the northwestern part of the empire were vibrant, dynamic environments through which different groups of people moved, and in which they interacted*'. Especially in Late Antiquity, the forts of Britain and northern Gaul show a balance between tradition and transformation, between continuity and change, resulting in specific natures of Roman military identity, rather than radical discontinuity (Gardner 2007b, 678), which was also the conclusion of the international round table meeting at Tongeren '*Decline and Fall? Social dynamics in the Late Roman Northwest*' (January 15th-16th 2015) (cf. the different contributions of the publication of this round table: Roymans *et al.* (eds) 2017). Gardner believes that we only can try to grasp the balance between tradition and transformation and thus the broader-scale processes of social change, by understanding 'the everyday' in late Roman military communities (Gardner 2007b, 657), through a 'bottom-up' interpretation of the 'everyday life', investigated in a diachronic perspective. To come to biographies of people, he believes that we need to understand the biographies of places, based on the contextual relationships of their material world (Gardner 2007b, 675). In this respect, he emphasizes the importance of the association of military

burial sites for identifying 'military' identities and the relationship between military and other identities. For later Roman forts in Britain these military burial sites are however virtually unknown (Gardner 2007a, 88; Gardner 2007b, 670-671).

### 1.1.2. How the Oudenburg research can contribute

The starting-point to eventually come to answers lies in well-excavated contextual data, which are, as already stated, extremely scarce for later Antiquity in the North Sea region. The large-scale excavations at Oudenburg at the start of the 21st century provided new data with clear links to the historic events in the region. Although the perimeters of the excavations were limited<sup>7</sup>, the transformations from the mid- to late Roman period are clear and new insights can be drawn from the large amount of excavated structures and related finds recovered in huge quantities. In combination with the late Roman military graveyards excavated in the 1960s outside the fort, the recent excavations yield major opportunities for research into military identity and socio-cultural changes in the North Sea region in the later Roman period through a bottom-up interpretation. Being located along the coast, on a passageway between the Continent and *Britannia*, and as presumed part of the *Litus Saxonicum* or Saxon Shore in the late Roman period, the fort at Oudenburg with its extraordinary landscape setting, held an important position, standing in close relation with its British counterparts, as will be demonstrated by a range of finds.

The installation of the successive forts at Oudenburg corresponds with historic events in the region: the installation of forts along the coast and in the hinterland from the later 2nd century onwards, several stages in the political crises of the 3rd century, the Gallic Empire of AD 260 to 274, the subsequent threats in the Channel region, the defence policy of Constantinus I and the measures under Valentinian and Gratian in the second half of the 4th century. Fort occupation after fort occupation, the spatial and functional organization of the inner fort area changed. The excavations of the first decade of the 21st century have provided rich evidence on the character of the site, yielding a detailed fort chronology with successive occupation horizons, related to defined structures and connected material culture. In conclusion, the Roman fort at Oudenburg plays also a major role in our understanding of the material culture of the region, being the only 4th-century military installation known so far in Flanders besides Tongeren.

Through the archaeological data and finds from the continental coastal fort of Oudenburg studied in relation to contemporary forts along the Channel, the present research engages fundamental questions of later Antiquity in the north-west of the Roman Empire: what was changing and when, and what do these transformations mean? Using the evidence of thousands of stratified finds, a diachronic overview in material culture and landscape is envisaged, based on in-depth studies focusing on patterns in the material

culture and what they can tell us about the day-to-day life of the fort inhabitants. The Oudenburg fort site yields the opportunity to look at the historic events by way of a bottom-up interpretation. No other fort along the Channel coast or along the northern frontier operated during such a long time-span with a quasi-continuous occupation and was recently excavated as such. It is also a reference site on a local and regional level being one of the few sites where the important historic events are tangible and where the military, economic and social interaction between international, regional and local level can be investigated: which consequences did the historic events have on a local level and which consequences did the local and regional elements have on the historic events. Will (1973, 71) already stated after the in 1971 published excavations on the late Roman graveyard: *'L'importance d'Oudenburg pour notre connaissance du Bas-Empire dans le Nord de la Gaule est considérable: ce castellum reste – les fouilles ont commencé en 1956 – le seul du Litus Saxonicum, côté Gaule, à avoir été identifié comme tel et à être exploré méthodiquement; c'est le seul point sur lequel on dépasse une documentation littéraire confuse et lacunaire'*.

The late Roman fort of Oudenburg has associated military graveyards enabling the exploration of trends in the expression of military identity in the rites of burial, and the comparison of artefacts from the graves with the finds from the fort, resulting also in insights into disposal practices and formation processes within the fort walls. Gardner (2007b, 670-671) emphasized the importance of this combined research: *'The location of such burials outside a fort would provide some support for their association with specifically 'military' identities.'* He stated that *'Burial contexts associated with later Roman forts in Britain are, unfortunately, virtually unknown, with most 4th c. cemeteries which have been excavated being either rural or urban'*, continuing with: *'One site where this occurs – although, ironically, without the interior of the fort being much explored – is Oudenburg in Belgium.'* The present research encounters the latter.

Gaining insight into 'Transformation versus Continuity' and into 'Identity' (social, military and cultural) is the main objective throughout the present study. Both themes are explored through the study of structures and finds with contextual data as the primary element. Definitely for the late Roman world, the study of identity is especially complex (the mixing of military-civilian categories both spatially and even in some cases in the individual, the gender-aspect in terms of a diminution of the erstwhile formal spatial segregation in military installations), making us aware of the pitfalls of the designation of assemblages as of 'military' identity and making us look for 'material signatures' (e.g. Allason-Jones 2001; Gardner 2007a, 263). The structure-related part of the research is dealing with the fort design, the fort layout, and the location of the interior buildings, structures and features in this fort and in comparison with the later Roman forts in the North Sea region (such as the likely hospital, the barracks, the workshops and the baths). The finds-related part of the research explores spatial and functional evolutions of find assemblages, disposal practices and site formation processes. This study assesses the finds from the site using various analytical methods to examine their nature and how the assemblages relate to the site levels, the spatial organization, the identity and cultural expression of the fort inhabitants. In relation to comparative find assemblages in the North Sea region, we aim to gain insight into the

7 The excavation area of the south-west corner site covered a surface of c. 17.20 are, of which 14.3 are located within the fort's wall. This represents only 5.25% of the fort precinct *intra muros*.

diachronic development of economic, social and political practices on later Roman military sites in the northwestern provinces and to assess degrees of difference between the finds assemblages. Scrutiny of patterns observed should shed light on supply systems, the origin of garrison units and soldier-civilian dynamics.

This research looks at a micro level to structures and finds in a close contextual approach to come to an understanding of larger processes through a bottom-up interpretation of integrated assemblages. Evans (1995) already called up to an integrated approach of find assemblages as basis for the systematic examination of trends. Allison (e.g. 2013) clearly demonstrated the necessity to investigate the full material record to get insights into the life at military communities and how these communities operated. The present research aims to provide new insights into a subject which was for a long time based on old data and on a one-dimensional explanatory paradigm which privileged historical sources over tangible material remains, when in fact artefacts and contexts, through analysis, offer key perspectives. That was also the conclusion from the conference held at Durham in 2002 on 'Roman Finds: Context and Theory': *'Yet the role of finds work should be as much centre-stage as other categories of evidence (such as structural and environmental remains) given the potential of the information finds may yield (...): the ostensible mundane fragments recovered from countless soils are culturally loaded and encode information upon the societies that produced and consumed them'* (Willis and Hingley 2007, 2).

To summarize, this work aims to contribute to the understanding of the Roman military development of the North Sea and Channel region through a bottom-up research of the Oudenburg fort in comparison to the other known military installations. To come to new insights, study in depth of (new) data is needed. This study not only focuses on a chronological level: how was the Oudenburg fort chronologically positioned within this military framework and can a refined fort chronology for Oudenburg contribute to our understanding of the coastal defence system in the North Sea and Channel region in general? It also affects the military level: how did its army unit interact with the units at other forts?, and searches for insights into the economic level: how was Oudenburg imbedded in economic trade networks and how did the fort interact with the other forts in this respect? Finally: how can the new insights into the functioning and the everyday life at the Oudenburg fort contribute to a better understanding of the activities at the forts of the North Sea and Channel region in general and of the functioning of the coastal defence?

In conclusion, the central question is: 'How and what can the contextual research in depth approach of the Oudenburg fort site contribute to the understanding of the military development in the North Sea and Channel region between the late 2nd and early 5th century AD and to the reconstruction of the life at these forts?'

### 1.1.3. Structure of the present study

In this volume I, after an overview of the current knowledge on the Roman military in the North Sea and Channel region (Section I.3

in this chapter), the Oudenburg fort and its wider context with its surroundings are mapped out (Section I.4).

In Chapter II an analysis of all the excavated data at the fort precinct brings insight into the successive defensive systems, the related inner building and the character and evolution of the structures of the successive fort levels. An important additional contribution of the Oudenburg research resulting from a detailed contextual approach is situated at the level of site formation processes on which Section II.5 further expands.

Chapter III studies how the successive forts were imbedded in the surrounding landscape; Chapter IV goes deeper into the connection with the known graveyards around the fort site.

In Chapter V the stratified data and material culture are confronted to come to new insights into the fort's occupation and the wider historic context. In Section V.1 the confrontation of these data from the fort precinct in relation to those of the surrounding graveyards and settlement results in a refined fort chronology for the Oudenburg *castellum* yielding insights into the wider historical, mainly military, development of the North Sea and Channel region.

Establishing a firm fort chronology opens perspectives for diachronic studies of material culture. As a result, it yields opportunities for the study of continuity and change at the fort, not only architecturally and regarding the spatial and functional organization of the defensive system and the inner building, but also in terms of trade, supply and exchange (Section V.2). Section V.3 explores how identities evolved, not only on a 'military' level but also socio-culturally, and how these insights are important contributions to the 'Germanization' and 'gender' debates at (late) Roman military sites.

Further descriptions are enclosed as appendices: details on the archaeological observations at Oudenburg yielding information on the Roman character of the sand ridge (Appendix 1), interpretative descriptions of the Mertens' trenches in the 1950s, 1960 and 1970s (Appendix 2), detailed description of a 1957 trench profile (Appendix 3), descriptive analysis of the trench profiles of the south-west corner site (Appendix 4), description of the hearth structures of fort level 4 at the south-west corner site (Appendix 5), the absolute chronological data available for the south-west corner site (Appendix 6), and overviews of Graveyard A (Appendix 7) and Graveyard C (Appendix 8) with descriptions of the burials, their characteristics and content. Accompanying trench profile and section drawings and excavation maps are included in Volume III (Plates).

The study of the material culture of the south-west corner site is the subject of Volume II. These find studies, by several authors, not only form the basis for further discussions in Volume I; on their own they also represent reference collections for mid- to late Roman find assemblages in the wider region. Successively, the study of the pottery (Chapter 1), the coins (Chapter 2), the metal finds (Chapter 3), the items in worked animal products (Chapter 4), the jet and jet-like finds (Chapter 5), the glass finds (Chapter 6), the figurines (Chapter 7), the leather finds (Chapter 8), the ceramic building material (Chapter 9) and the stone implements

(Chapter 10) are discussed in detail. The pottery is classified and discussed following the classification used in large parts of Flanders, in order to enable comparative study for other pottery assemblages in the region. The find drawings (and photos) that accompany the successive material studies and their catalogues are included in Volume III (Plates). The Appendix of Volume II describes and analyzes the key context assemblages of the successive fort levels of the south-west corner site, which form the basis of the contextual study of the Oudenburg fort.

## 1.2. Research methodology and selection of data

The starting point of the present research is the fort site of Oudenburg. In examining the evidence from this fort, the intention is to develop a broader perspective to study evolutions on a larger scale on military sites along the North Sea and Channel in the mid- to late Roman period. Given the scale of the data available from Oudenburg and with a focus in this research on thorough contextual analysis, there is inevitably selection, attending to the best samples and strongest evidence.

The main body of the Oudenburg research is formed by the south-west corner site, of which the excavations were conducted by the present author. The other *castellum* sites (both recent and earlier research) are integrated to a maximum. The only other excavations extending over a larger area within the fort walls – all other archaeological observations are mainly situated at the defence of the fort – date from 1976-1977 when Mertens and his team investigated the area to the north of the church, but these were never fully published<sup>8</sup>. This research took place in rather narrow trenches and some larger windows in which most of the features and structures were not excavated as separate contexts and finds were mostly collected in levels. This inevitably results in these records having limited value and accordingly there is a selective approach to these data.

Correlations with the (military) graveyards are made as much as possible, as this is an opportunity to link ‘the dead with the living’. The late Roman Graveyard A to the west of the fort, excavated in the 1960s, was fully published in 1971 by Mertens and Van Impe. The southern graveyard, excavated in the 1990s by Hollevoet, has

only been preliminary published (Hollevoet 1993c; 1994), but the archive was at hand.

The *vicus* sites are only considered in general. Prior to the excavations of 2007-2009 and 2014 on the eastern periphery of the civil settlement, the sites with remains of the settlement were either very limited<sup>9</sup>, very disturbed by later structures<sup>10</sup> or yielded mainly so-called ‘off-site’ features<sup>11</sup>. The results of the excavations at the eastern periphery of the civil settlement, at the site Riethove (2007-2009) (Dhaeze 2018) and at the site Belleroyche (2014) (Dyselinck *et al.* 2020) are integrated where necessary in light of the research questions of the present study.

The main focus lies on the contextual study of material culture. The research in depth of the material culture concentrates on the find assemblages of the south-west corner site, where possible compared with finds of the other *castellum* sites of Oudenburg. A dataset of a specific area within the fort precinct is obviously largely dependent on the function this area had during the successive fort occupations. This spatial selection has restrictions for interpretation, with the degree of representativeness borne in mind.

A very important element of selection to consider, is the residual factor. The successive fort occupations and their subphases resulted in a complex digging history. The first fort was installed on land previously occupied by the civil settlement; the following forts were each time constructed on top of the remains of the former fort. As the stratified evidence clearly demonstrates, a new construction phase implied, in a less or higher degree, clearing, levelling and/or raising of the area. Features and structures of each fort were dug into the remains of one or more earlier fort levels. This all resulted in a considerable moving of earth and of the accessory finds its various levels contained. The finds demonstrate that the residual factor is high. This is clearly illustrated by the ceramics (cross joins across the fort levels, earlier ceramics in later fort levels) and the coins (coins out of use in later fort levels). Residuality is of course a common challenge on urban sites (including Roman urban sites) and is always important to bear in mind as there can be implications for dating and phase characterization. However, in the case of Oudenburg the typological development seen in Roman finds through the centuries of occupation of the northern provinces and the high degree of ‘artefact-turn-over’ at a fort such as Oudenburg likely to have been in receipt of regular fresh supplies, have assisted in the identification of residual items.

8 This research was only published on a general level or mentioned summarily in several articles: Mertens 1976b, 1977, 1978, 1980, Mertens and Crabbé 1987. Mertens could never carry out a study-in-depth of his fort excavations, due to other assignments that were given to him at the NDO and archaeological research abroad (NDO: Nationale Dienst voor Opgravingen / National Service for Excavations, the Belgian predecessor of the Institute for Archaeological Heritage (IAP, until 2004) and the Flemish Heritage Institute (VIOE, Vlaams Instituut voor het Onroerend Erfgoed, until 2011), in 2011 transformed into the current Flanders Heritage Agency (OE)). Mertens conducted many excavations in Belgium, mainly on Gallo-Roman and early medieval sites, like Tongeren, Tienen, Eprave, Florenville, Muizen, Buzenol and Tournai. He also performed research at many churches, such as Nijvel, Fosses, Gerpinnes, Leuven, Landen, Grobbendonk, Bruges, Leefdaal and St.-Hubert. From 1950 onwards, Mertens led the excavations at Alba Fucens and Ordona in Italy. He also became director at the Academia Belgica in Rome. Simultaneously he was professor at the Universities of Leuven (KUL) and Louvain-la-Neuve (UCL) to which he was connected since 1955.

9 See for example the Hoogstraat site: Vanhoutte 2004.

10 See the settlement remains underneath Graveyard A to the west of the fort: Mertens and Van Impe 1971; Creus 1975.

11 See for example the sites to the south and south-east of the fort where a road and the mid-Roman cemetery were uncovered: Hollevoet 1993c; 1994.

### I.3. State of the art of the Roman military in the North Sea and Channel region: an overview of the wider military context of the Oudenburg fort

#### I.3.1. Introduction

What position did the Oudenburg fort occupy in the North Sea and Channel frontier region? To come to answer this question, a general overview is needed of the military context, while considering the other military sites in the region. Assessment of the position of the Oudenburg fort within this wider context follows further in this publication after considering the archaeological evidence which leads to the specific time framework of the successive Oudenburg forts. This refined chronological setting will result in insights into the importance of this fort within this wider military context.

A study of the coastal defence and its development in the North Sea and Channel region integrating all known military sites and based on historic sources, numismatic and archaeological data has been presented by Dhaeze (2011; 2019). For a more detailed overview of the military development of the North Sea and Channel region and further description of the respective sites, we refer to his work.

Here, the focus lies on the forts in the coastal regions of southern and southeastern *Britannia* and of *Gallia Belgica* and *Germania Inferior* (cf. Figure 2), with which the Oudenburg fort will have been in direct contact on a military (and economic) level. The defence of these coastlines mainly comprised a series of *castella* and fleet bases, implanted at river mouths and on important cross joins of waterways and roads (Dhaeze 2011, 124; 2019). Most of these military installations were not constantly in use; some only knew a brief occupation, others were reactivated after time. In *Britannia*, in the course of the 3rd century these fortifications could be complemented by fortified cities as Colchester, Rochester, Chichester and London. It is possible that Voorburg (*Forum Hadriani*) in *Germania Inferior* and Cassel in *Gallia Belgica* also fulfilled this role (Dhaeze 2011, 126-127). Cools believed that in *Gallia Belgica* on the old dunes at the estuaries of the tidal channels a series of fortifications was erected, in line with the location of the military sites up north in *Germania Inferior*, down to north of Boulogne (Cools 1985; 1987, 94-96). However, although this cannot be verified due to the erosion of these old dunes by the sea, this theory seems hardly realistic (see for a discussion: Dhaeze 2011, 173; Dhaeze 2019; cf. Brulet 1991, 165). The militarisation of the coastal regions of Normandy and Brittany more to the south consisted of a series of fortified cities, but this militarisation only took place in the late Roman period, certainly from the second half of the 4th century, perhaps already earlier (Dhaeze 2011, 6, 127 ff.; see for an overview of the sites and discussion of the names in the *Notitia*: Johnson 1976, 72-83; Brulet 1989, 45-58; 1990b, 241-243; Brulet 1991).

The effective militarisation of the British and Gaulish coasts started in the late 2nd century. Obviously, the North Sea and Channel region already knew some earlier fortified installations, such as Boulogne-sur-Mer, Richborough and later Dover and possibly also Lympne, but their function was related to the *Classis Britannica*. Only at Boulogne-sur-Mer was there a continuing military occupation into

the 4th century as it was also an important transshipment centre; the other locations were only after time revisited for the construction of a Shore fort.

#### I.3.2. The *Notitia Dignitatum* and the 'Saxon Shore'

The *Notitia Dignitatum* (Register of Offices), preserved in several extant 15th- and 16th-century copies of a lavishly illustrated 9th-century copy of a late Roman original (Alexander 1976), is an official almanac listing in a very detailed manner all administrative and military functions of the Western and the Eastern Empire under the reign of Honorius (AD 395-423), and where they were stationed. As it is the only known historic source which can be directly related to the late Roman forts along the Gaulish and British coasts, a great deal has been written about this document and its relation to the military sites along the North Sea and Channel. However, the *Notitia* is ambiguous<sup>12</sup> leading to much debate about its date (for a discussion: e.g. Hodgson 1991; Cotterill 1993, 231-232; Scharf 2005), whether it was written in different stages (see e.g. Mann 1976; 1991; Welsby 1982, 133-145; Kulikowski 2000, 361; Brulet 2017<sup>13</sup>) or not (Scharf 2005), whether and to what extent it contained out of date information<sup>14</sup>, how to interpret '*Litus Saxonicum*'<sup>15</sup> and when this *limes* came into existence (see e.g. White 1961; Johnson 1976; Dhaeze 2011, 152-154; Dhaeze 2019) and how far it extended in a westerly direction (see Johnson 1976, 89). Scharf has suggested the date AD 422/423 for the compilation of the *Notitia Dignitatum*, and as motive the presentation as a gift on account for the accession of the throne by Iohannes the 20th of November AD 423 (Scharf 2005, 316). Other scholars however have convincingly demonstrated that it was a composite document which cannot be related to a single moment but which assembled situations from different times. Maybe it was in origin a working administrative list, probably written between AD 386 and 394, but certainly as regards of the western part it was continually revised and by the 5th century of limited practical relevance (Kulikowski 2000). Kulikowski (2000, 360) has argued that it was a piece of imperial propaganda, an ideological document possibly used first by

12 The *Notitia* has revealed to contain omissions and presumed duplication mistakes. Archaeological research has shown that several forts listed by the *Notitia* were abandoned by the end of the 4th century, others which were not listed in the *Notitia* proved to be active (Gerrard 2013, 27). E.g. the missing page on *Germania Secunda* (cf. Brulet 2017, 43) and the absence of Boulogne (Seillier 1996, 243) have also been considered as evidence for this.

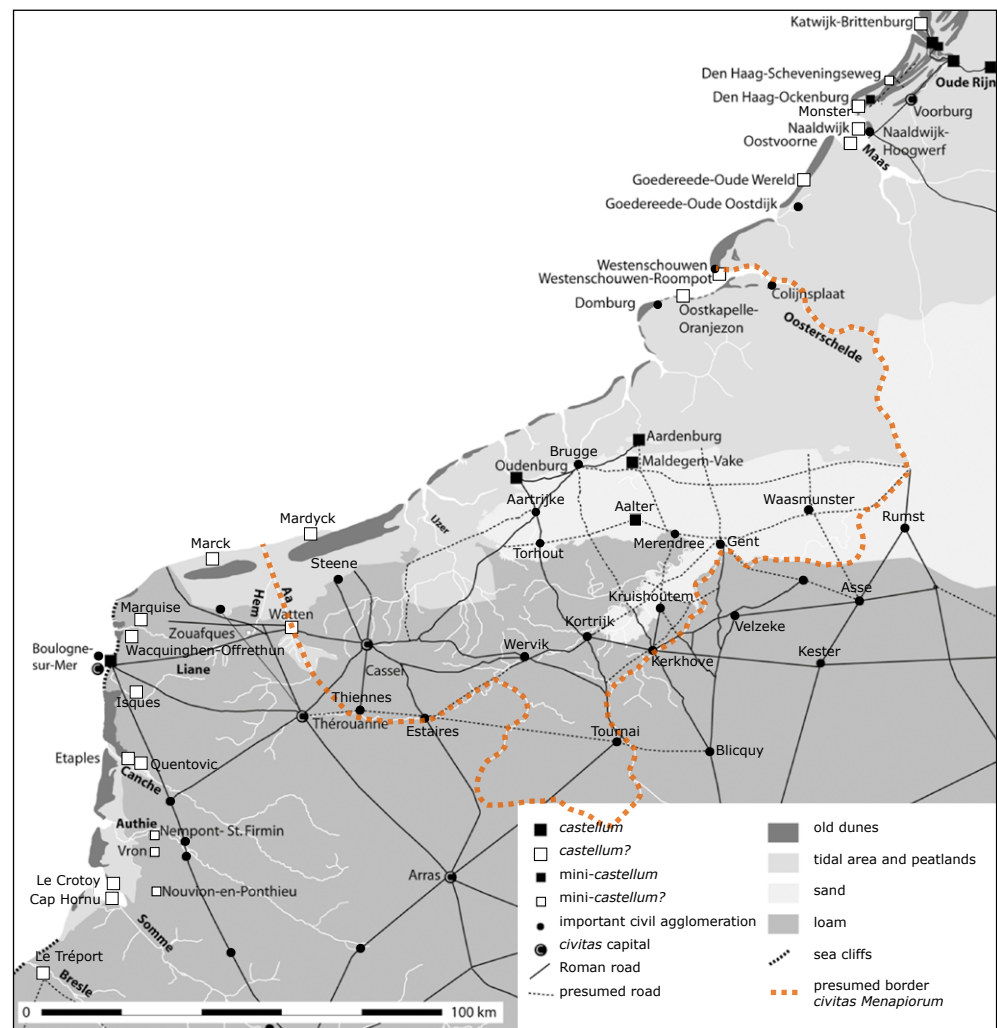
13 Brulet (2017, 43) concludes that the *Notitia* 'telescopes together information reflecting different situations, which was obtained at various times in Late Antiquity, particularly the Valentinianic period and the very early 5th century', in this following Demougeot (1975).

14 For Hadrian's Wall Collins has demonstrated a significant difference between the *Notitia* and the archaeological evidence: see Collins 2012, 48-50.

15 Whether '*Litus Saxonicum*' or 'Saxon Shore' should be interpreted as a shore 'under attack from the Saxons', 'settled by the Saxons' or 'alongside the Saxon sea' has been much debated (see e.g. White 1961; Johnson 1976; 1977; Hind 1980; Pearson 2002b, 130-138). Dhaeze has analyzed the arguments and has concluded that 'shore under attack from the Saxons' is the only plausible interpretation (Dhaeze 2011, 149-151).



Figure 3. The north of *Gallia Belgica* and the western part of *Germania Inferior* with localization of military installations, *civitas* capitals, civil agglomerations and indication of the main soil types and the water and road network. Taken over from Dhacze (2011, 105: Fig. 7.1) with additions and with localization of the *civitas Menapiorum*.



Theodosius (AD 395–423), later by the court of Valentinianus III and Gallia Placidia (425–455) and as such perhaps made up of different *notitiae* at various times (see also O'Hara 2013). From the archaeological evidence at the British Shore forts, of which several were already abandoned around the middle of the 4th century or some decades later, it is believed that the information in the *Notitia* certainly does not post-date c. AD 390 and represents a retrospective picture in which the forts are grouped into one system (Gerrard 2013, 27; Esmonde Cleary 2013, 52). In all, the *Notitia Dignitatum* remains an important document but its incomplete and misleading data make its interpretation difficult and question the useability of it.

The designation '*Litus Saxonicum*' occurs not only in the title '*comes Litoris Saxonici*' who was in charge of the British Shore forts (cf. *Notitia Dignitatum Occ.* XXVIII), but also on the page of the *Dux Tractus Armorici et Nervicani* (cf. *Notitia Dignitatum Occ.* XXXVII), in charge of the Normandy and Brittany shores, and on the page of the *Dux Belgicae Secundae* (cf. *Notitia Dignitatum Occ.* XXXVIII). According to Wightmann the title of the Count of the Saxon Shore suggests that the *Litus Saxonicum* was created under Constantinus I or his sons and possibly covered at that time both the continental and British shores (Wightmann 1985, 208). Also

Mann (1977, 11) believes that the command of the Saxon Shore must have been installed in the early 4th century, first under a *dux* and later under a *comes*.

The interpretation of names and places listed in the *Notitia Dignitatum* has been another aspect subject to much critical enquiry (see e.g. Hassall 1977; Fuentes 1991 for the British shore and Brulet 1989 for the continental shore). The *Notitia* mentions nine British forts under the command of the *comes Litoris Saxonici*; however, the current research considers at least twelve forts as 'Saxon Shore' forts: Bradwell, Dover, Lympne, Brancaster, Burgh Castle, Caister-on-Sea, Reculver, Richborough, Pevensey, Portchester, Walton Castle and Bitterne. From these, Bitterne, Caister-on-Sea and Walton Castle seem to be the ones missing in the *Notitia* (Gerrard 2013, 32). Recently, another Shore fort has been suggested at Reedham, based on Roman ceramic building material reused in the Reedham church and possibly originating from a very large Roman building (Allen *et al.* 2003). However, so far there is no firm evidence for the localization of a fort. Philp (2005) has argued for another Shore fort at Carisbrooke on the Isle of Wight, however clear archaeological evidence for a Roman date of the fortification is still lacking (cf. Johnson 1976, 141). Worth drawing attention to is the fort at

Brough-on-Humber, more up north, which most certainly played a naval role through the early and mid-4th century (Wacher 1969).

Under the command of the *Dux Belgicae Secundae* on the Gaulish coast three places are listed: '*Marcis in litore Saxonico*', '*in loco Quartensi sive Hornensi*' and '*Portu Aepatiaci*'<sup>16</sup> (*Notitia Dignitatum* Occ. XXXVIII). For '*Marcis*' the sites Mardyck, Marck and Marquise have been suggested on etymological grounds (Brulet 1989, 60; Brulet 1991, 165) (cf. Figure 3). For '*in loco Quartensi sive Hornensi*' Cap Hornu, Le Crottoy, Etaples and Quentovic (Brulet 1989; 1991) and Watten (Dhaeze 2011; 2019) are candidates. '*Portu Aepatiaci*', obviously a port location, has been suggested for Oudenburg, Boulogne-sur-Mer, Audisque near Boulogne (Hoffmann 1969/1970, 350), Isques, Etaples and Le Tréport (Brulet 1989, 60-61; Brulet 1991; Dhaeze 2011, 148 with references; Dhaeze 2019). An identification of '*Portu Aepatiaci*' with the Oudenburg fort was proposed by Mertens (Mertens and Van Impe 1971, 36; Mertens and Crabbé 1987, 7), yet this possibility has been contradicted by Will (1973) and Leman (2004).

It is important to notice that apart from fort sites, the *Notitia Dignitatum* also lists two army troops with a link to the former *civitas Menapiorum*: the *milites Cortoriacenses* and the *milites Menapiorum*<sup>17</sup>. It is still uncertain whether the *milites Cortoriacenses* was a unit stationed at Kortrijk (situated c. 45 to the south/south-east of Oudenburg) (Figures 2 and 3) or recruited from that region (cf. Mertens 1980, 443; Maddens *et al.* 1990; Despriet 2019). Based on the finds of large amounts of pottery dated to the 4th until the middle of the 5th century, ceramic building material and small finds, and the attestation of the presence of a large ditch, an important occupation is situated on the right river bank of the Lys. It is generally assumed that it was a stone fort, built at the beginning of the 4th century, but factual evidence on the character of the occupation lacks so far (cf. Despriet 1991; Rogge 1988; Rogge 1996c, 105; Despriet 2019). Rogge believes it must have been the most important stronghold of the northern front line between Cassel and Tongeren, as was Liberchies between Bavay and Tongeren (Rogge 1996c, 103).

The *milites Menapiorum* were stationed at the Rhine limes, at Rheinzabern in a so far unknown late Roman fort, from the period of Valentinianus I onwards, and tile stamps of this unit, made at Rheinzabern, are known from several late Roman military sites in *Germania Prima* (Dolata 2012; Scharf 2015, 193, 195, 199-202). The *milites Menapiorum* most likely survived the catastrophic invasions by the Vandals, Alans and Suebi in AD 406/407 and continued to take part of an irregular border defence until around the middle of the 5th century. Hoffmann (1969/1970, 149, 160, 180 ff, 335 ff.) and Scharf (2005, 43) outlined that the

*milites Menapiorum (limitanei)* originated from a so-called *legio comitatensis (pseudocomitatenses)* named *Menapii seniores* from the late 3rd or early 4th century, originally with recruits from the *civitas Menapiorum* (and therefore probably dating prior to the territorial reorganization of AD 297) and stationed at Cassel before being upgraded to the *comitatenses* (cf. also Deschietter 2012, 92-93).

### 1.3.3. *Gallia Belgica*, later *Belgica Secunda*

The militarisation of the coastal region of *Gallia Belgica* started in the late 2nd century AD and seems to have been initiated by the erection of the *castellum* of Maldegem-Vake. This fort, located c. 10 km east of Bruges and c. 6 km south of Aardenburg (Figure 3), dates from the period AD 170-175 and was probably occupied during a few seasons or a few years. Its construction can be linked with the sea-borne invasions of the Germanic Chauci in AD 172-174 (Thoen 1991a; 1991b; 1993; Dhaeze 2011; 2012; 2019). According to Dhaeze, the Chauci probably sailed so far south because the coast of *Germania Inferior* already had a military presence at that time and so was bypassed (Dhaeze 2011, 64).

The major problems the Empire was facing, starting under Marcus Aurelius (161-180), probably encouraged these invasions. His reign, and also that of his successors Commodus and Septimius Severus, can be considered as a crisis era (cf. De Clercq 2009, 488-495 for an overview of the archaeological evidence). It was marked by economic and financial problems (referred to in the *Historia Augusta* of Marcus Aurelius<sup>18</sup>), a devastating plague which severely affected population, army troops and agriculture all over the Empire, also in Gaul (Duncan-Jones 1996), and significant revolts, e.g. of Maternus and of the *bagaudae* (revolting Gallo-Roman peasants), increasing tax pressure from AD 170 onwards and political troubles (e.g. with Albinus in AD 196) (Drinkwater 1983, 80-85). Several of these problems were probably interrelated. Archaeological and numismatic evidence points to the cessation of several rural complexes in the period AD 175-200/210 (De Clercq 2009). Thoen and Vermeulen, and subsequently Rogge, have related the fire layers at several *civitates* capitals to the south (Thérouanne, Bavai, Arras, Amiens) and at multiple sites (several *vici*, a *mansio*, a *villa*, a rural site) in the Scheldt and Lys Valley with the Chauci invasions (Thoen and Vermeulen 1998; Rogge 1996b, 60-62). However, these fire layers can only be generally dated to AD 160-180. A direct chronological link is difficult to assess, and hard evidence is therefore lacking for a certain connection with the Chauci. Moreover, the Chauci were most likely raiders operating in small groups, with the intention to loot, and Erdrich concludes that they can hardly have been responsible for the devastation of cities. The fire layers in question may rather have been the result of the many internal troubles the region was facing (Erdrich 2004, 159-160). Nevertheless, there can be little doubt that the Maldegem fort was built in reaction of the Chauci invasions, a reaction which makes sense against the background of the severe Marcomannic Wars at the Danube and the heavy invasions by the Chatti at the Middle Rhine. No risks were taken (Erdrich 2004, 159).

16 The complete text in question (cf. Seeck (ed.) 1876, Not. Dig. Pars Occ. XXXVIII) reads: '*equites Dalmatae, Marcis in litore Saxonico; praefectus classis Sambricae, loco Quartensi sive Hornensi; tribunus militum Nerviorum, portu Aepatiaci*', mentioning the units, respectively cavalry, fleet and infantry units, the latter at a port site.

17 The *milites Menapiorum* were not the first Menapian contingent to which the unit name made reference too. Two military diplomas mention that the *cohortes I Menapiorum* helped to build and strengthen Hadrian's Wall (De Clercq (red.) 2012, 25).

18 *Scriptores Historia Augusta*, Marcus Aurelius, XVII and XXI, 8 (Magie 1921).

The *Vita Didii Iuliani*<sup>19</sup> mentions that Marcus Didius Iulianus, *praefectus* of *Gallia Belgica* at the time of the Chauvi invasions (and who later became emperor for a very short time in AD 193), had to form hastily new troops by recruiting from the local populations. From this has been concluded that *Gallia Belgica* did not house (regular) troops until the Chauvi invaded (Thoen 1991a, 194; Dhaeze 2011, 39). However, recent archaeological research has evidenced a fort at Aalter-Loveld, located c. 16 km to the south of Maldegem (cf. Figure 3), with a polyphase defensive ditch system consisting of a double ditch, earthen rampart and corner tower. It was already in use from the early Roman period onwards (pre-Claudian) and between AD 60-140 while a last phase dates from the Antonine period, perhaps even somewhat later (Moens *et al.* 2009; De Clercq 2009, 383-384; Laloo *et al.* 2014). How this military occupation should be interpreted and connected with the aforementioned historical perception, is so far unclear. Did Iulianus mean that until then there was not yet a defence oriented towards the coast?

A large research project studying the data from the excavations conducted between 1949 and 1996 at the Aardenburg fort and its surroundings, has concluded to a new fort sequence of three main phases (van Dierendonck and Vos 2013). Several indications point to a first earth-and-timber fort already in the late 2nd century AD, according to the authors dated to AD 170-185/190 (*idem*, 323: 'period 2'<sup>20</sup>). A relation to the Chauvi invasions which were the motive for the construction of the Maldegem fort, is not ruled out by the authors (van Dierendonck and Vos 2013, 338). However, we believe that the geographic position of Aardenburg on the most northern sand ridge of the ridge complex on which also Oudenburg is positioned, and the close distance between the forts of Maldegem and Aardenburg, only c. 6 km apart (Figures 3 and 6), make a co-occurrence less likely and favour a later date than the Maldegem fort. It is possible that Aardenburg immediately succeeded Maldegem and took over its military role. A second fort phase at Aardenburg has been dated to AD 185/190 – 240/245 with renovations around AD 222 ('period 3'). To this phase a *principia*, barracks, and baths at 200 m to the south-east of the fort, can be assigned (van Dierendonck and Vos 2013, 325). The third phase is represented by the stone fort, dated to c. AD 260-285/290 (*idem*, 330). Some 4th-century coins and presumed Saxon and Germanic pottery suggest a small 4th-century occupation, but there are so far no indications for a military character for that period (*idem*, 331; De Clercq 2009, 382).

It has been argued that during the High Empire the region behind the coastal defence system in *Gallia Belgica* was hardly defended (Dhaeze 2011, 127). However, the neighbouring hinterland of the *civitas Menapiorum* seems to have been more militarised in the mid- and late Roman period than is generally assumed. Besides the aforementioned fort at Aalter-Loveld, De Clercq (2009, 389 ff.) already pointed to indications for the location of a fort or a fortified site at Ghent-Oude Beestenmarkt (3rd-4th century (see also Rogge 1996c, 104)) and Torhout (3rd-century watch tower, according

to Cools 1986, however without clear chronological evidence). At Knesselare-Kouter a native, fortified site, palisaded, with two gate towers at one side and a clavicula-like opening at the opposing side, could be largely uncovered in 2005-2006. Due to a scarcity of material culture and charcoal, the site can only be generally dated to the late 2nd – early 4th century, with a preference for the 3rd century (De Clercq 2009, 113; De Clercq *et al.* 2008, 64-66). Finds at Merendree-Molenkouter suggest a military presence in the 4th century and at Kortrijk, the presence of a late Roman fort can be supposed from the early 4th century onwards (see before). A late Roman military site has even been suggested for Harelbeke, at c. 5 km distance from Kortrijk to the north-east, based on reused ceramic building material and two 4th-century coin hoards (Ooghe, Debrabandere and Despriert 1979). For a military presence at Bruges, as has been suggested in the past mainly on topographic grounds (cf. *e.g.* Thoen 1978, 145 ff.; Thoen and Ryckaert 1988), so far no (archaeological) indications are present (cf. Declercq 1991, 39-40; Hollevoet 2019a; cf. also Hollevoet *et al.* 2019).

In *Gallia Belgica*, the first military site south-west of Oudenburg should be located at Watten. Based on records in historic sources and stray finds, a military installation can be supposed during the third quarter of the 3rd and in the 4th century (Despriert 1985; 2008). To the west of Watten, at Zouafques, a Gallo-Roman *villa* which was erected in the 2nd century, was re-occupied by the end of the 3rd or beginning of the 4th century by a small unit, probably of Germanic soldiers (Dhaeze 2011, 311-312). At Mardyc, Marck or Marquise the location of the '*Marci in litore Saxonico*' of the *Notitia Dignitatum* has been supposed (cf. above). Direct archaeological evidence, however, is lacking. While Brulet (1989; 1991) points to some archaeological indications at Marck and Marquise, Dhaeze argues that neither one of these locations is plausible (Dhaeze 2011, 312-313). At Wacquinghen-Offrethun, north of Boulogne, a military presence has been assumed until c. AD 268/270, but again this is not archaeologically evidenced (Dhaeze 2011, 313).

Roman Boulogne was the official port to *Britannia* and the most important fleet base of the *Classis Britannica* from Claudius onwards, until the middle of the 3rd century. As such Boulogne and its surroundings fell under the administration of the *praefectus* of the British fleet. Following likely earlier military installations, a *castrum* of c. 400 by 300 m was built under Trajanus or Hadrianus (c. 12 ha, for 2000 to 2500 men) next to a monumental port infrastructure, together covering a surface of c. 25 ha. At the beginning of the 3rd century, an interruption in the occupation can be attested. Part of the barracks were subsequently rebuilt, probably in preparation of the Scottish campaigns by Septimius Severus. After AD 268/269, a fire layer destroyed the fleet base, probably linked to invasions after Postumus. The rebuilding possibly took place under Carausius. Under Diocletianus or Constantinus I flotillas, of which the *Classis Sambrica* was one, were installed to protect the Gaulish coast. One of these was most likely active at Boulogne during the 4th century. Very little is known on the interior of the fortress, apart from some barracks of the *retentura* and road segments. Military graveyards in the vicinity point to important military activity during the 4th century and the presence of regular units of the land army (Brulet 1989, 62-72; Seillier 1996; Reddé 2014; Blamangin and Demon 2020, 34-38).

19 *Scriptores Historia Augusta*, *Vita Didii Iuliani* I, 6-8 (Magie 1921).

20 *Period 1* has been identified as a pre-castellum phase (van Dierendonck and Vos 2013, 321-322).

The end of Roman Boulogne has been generally dated to c. AD 410; however, Seillier does not exclude a later date, prior to AD 425/430, for the final fire layer (Seillier 1996, 243).

To the south of Boulogne, a 4th-century *castellum* can be assumed at Etaples. Tile stamps CLSAM point to the presence of the *Classis Sambrica* and the recovered part of a graveyard, clearly with military character, dates to the end of the 4th – early 5th century (Brulet 1989, 61-62; Dhaeze 2011, 325-327). More to the south, a *castellum* or *burgus* can also be supposed at Vron, Novion-en-Ponthieu and Nempont-Saint-Firmin; all three sites yielded late Roman graveyards with lavish graves with clear military signature (crossbow brooches, military dress elements and exceptional items) and represent strategic positions. At Vron, the part of the cemetery that was in use from AD 370/375 to 435/445 (cf. Seillier 1986b; 2006) yielded lavish graves very similar to the ones of Oudenburg Graveyard A (cf. Chapter IV.3.2 in this volume). The graveyard of Novion-en-Ponthieu yielded a similar chronology and comparable finds (see Piton and Schuler 1981). Excavations in 2009-2010 at Nempont-Saint-Firmin uncovered the border of a late Roman necropolis of which a large part was already discovered in the 19th century. The graveyard yielded burials of five phases from c. AD 330 until c. AD 410/420. An adjacent late Roman road must have bordered a late Roman occupation (Pouriel 2015). At the mouth of the Somme, Cap Hornu and Le Crotoy have been considered as possibly candidates for the location ‘*in loco Quartensi sive Hornensi*’. This place name obviously refers to two related bases where the fleet *Classis Sambrica* was stationed. Their location has also been suggested for Etaples and Cap Hornu at the mouth of the Canche more to the north (cf. Brulet 1989, 61). However, so far archaeological evidence is lacking.

In conclusion, the known militarisation of the coast of *Belgica Secunda* in the 4th century comprised the *castrum* at Boulogne-sur-Mer, the Oudenburg fort, and two presumed forts, one at Watten and one at Etaples. Only in the late Roman period can a clear ‘defence in depth’ – or ‘defence of the interior’ as Brulet demonstrates to be a more appropriate designation (Brulet 2017, 53) – be located behind the line of the coastal forts. In the north of Gaul this consisted of a series of fortified cities (Cassel, Tournai), *castella* (Kortrijk, Liberchies II, Maastricht) and watch towers along the road Boulogne-Cologne, not installed at once, but at different times, probably as pragmatic responses to threats (cf. Brulet 2006c, 59-61; Brulet 2017, 46). A first series of installations dates to the period AD 260-275, a second one to the Constantine period with e.g. Liberchies II and Maastricht (Brulet 1990a; 1990b, 297, 300-305; 1993, 138-139; 1995; 2006f; 2017). Related to this defence of the interior is the fortification and militarisation of Arras into a *castrum*, where archaeological research in the 1980s has demonstrated two phases in the barracks. The first phase can be dated to c. AD 380-390, the second at the end of the 4th – beginning 5th century (Brulet 1991, 167).

### 1.3.4. *Germania Inferior*, later *Germania Secunda*

In *Germania Inferior* the defence of the coastline already started in the course of the 2nd century, probably related to the strategic

position of the Dutch delta region as transit for cargo transports for the Roman army to and from *Britannia*. A so-called mini-*castellum* has been brought to light in The Hague-Ockenburg, with a surface of c. 0.15 ha and datable to AD 150-180 (Waasdorp 2012) (Figure 3). Many other military sites have been washed away by the sea; some of them can be related to places on the *Tabula Peutingeriana*. Based on tile stamps of the *Classis Germanica*, military finds, inscriptions and/or old descriptions, military presence (military support and/or fleet bases) can be assumed (and only generally dated) at Katwijk-Brittenburg (late Roman), The Hague-Scheveningseweg (c. AD 190-240), Monster-Poeldijk (second half 2nd century?), Naaldwijk (erected under Marcus Aurelius?), Oostvoorne, Goedereede-Oude Wereld (Antonine period?), Westenschouwen-Roompot and Oostkapelle-Oranjezon (end 1st – beginning 3rd century?) (Dhaeze 2011 and 2019, with references). It is very likely that a fort or a military grain storage should be located at Katwijk-Brittenburg, situated at the mouth of the Old Rhine on the old dunes, mainly based on an etching by Ortelius from 1568 and other records from the 16th-18th centuries (Bechert and Willems 1995). Although there is little doubt for the presence of a late Roman installation, hard evidence is lacking for a military function and the site may well have been a fortified civil establishment (cf. Brulet 1989, 76-77; see for a discussion: Dhaeze 2011, 208, 267-273). Coin evidence at Den Haag-Ockenburg and Den Haag-Scheveningseweg witness of occupation during the Gallic Empire (Dhaeze 2011, 191). For the 4th century, the archaeological evidence, although very limited, points out that the Rhine delta remained the northwestern border of the Empire. One of the main reasons for its importance probably was the protection of the supply of cereals from *Britannia*. Tangible proof for the presence of a fort in the 4th century is only available for Utrecht (Haalebos 1997); further upstream late Roman forts can be located at Meinerswijk, *Castra Herulis*, Maurik and Driel (Brulet 1993, 136-137)<sup>21</sup>.

### 1.3.5. *Britannia*

The militarisation of the east coast of *Britannia* probably started at the end of the 2nd century with the erection of the forts of Brancaster, Caister-on-Sea and Reculver (Philp 2005; 2012, 155). While their construction has long been assumed to be early 3rd century in date (cf. Pearson 2002b), the latest research at Reculver has concluded to a start date in the period AD 185-195 under Commodus (Philp 2005). Comparative research by Philp has emphasized the

21 De Hingh and Vos (2005, 112) identified a 4th-century military occupation at Valkenburg but its character has been much debated. Nevertheless, ongoing research with a revision of the chronological arguments has shown that there is no ground for a late Roman occupation (pers. comm. dr. H. van Enckevort and J. Chorus at the symposium ‘Romeinse kust’ at Middelburg, NL, on the 23rd of April 2018).

contemporaneous building style of Reculver, Brancaster<sup>22</sup> and Caister-on-Sea and similar dates for their pottery and coin spectra. These three forts are generally considered as the first generation of the Shore forts and are characterized by almost square plans with rounded corners, internal towers and earthen ramparts. Two motives for their construction have been put forward: as support of the campaign by Commodus to face the problems in Scotland (Reece 2005) or as a first defence against pirates (Philp 2005). According to Johnson (1977, 68) the defence at the end 2nd – first half 3rd century may have been supplemented by fortified ports at Caister-by-Yarmouth and Brough-on-Humber, by Colchester and Rochester, and certainly by the fleet bases at Dover, Lympne and later the fortified signal-station at Richborough.

At Brancaster small-scale excavations were performed mainly on the defensive structures, in the mid-19th century, in 1935 and in 1985, the latter however yielded hardly any insights (Wessex Archaeology 2014). Until recently, information on the inner building was only known from aerial photography (crop marks), which revealed the existence of a *principia* and another large building, possibly the commandant's house (Pearson 2002b, 14). In 2012, Channel 4's 'Time Team' undertook an archaeological evaluation of four days consisting of magnetometer survey, Ground Penetrating Radar (GPR) and evaluation trenches of which three were situated within the fort<sup>23</sup>. The geophysical survey revealed many identifiable buildings<sup>24</sup>. This square fort continued to be occupied until the end of the 4th century (Philp 2005, 220; Pearson 2002b, 14).

Also the square fort at Caister-on-Sea, now almost completely buried over by a modern housing estate, was probably in use until the late 4th century (AD 370-390). Of the inner building only parts of metallised roads and a fragmentary large stone building with inner court are known (Philp 2005, 221; Pearson 2002b, 15-16; cf. Darling and Gurney 1993).

More or less half of the fort of Reculver and its *vicus* have been eroded by the sea. Nevertheless, it is one of the best investigated Shore forts, with several excavation campaigns on the fort precinct. Underneath the Shore fort, remains of a small fort were found related to the campaigns by Claudius. By the end of the 2nd century, probably AD 185-195, a square stone fort was built, but the inner building was seemingly not totally completed, and occupation ended, possibly with Albinus in AD 197 when he transferred most of the garrison of Roman Britain to the Continent to seize power over Septimius Severus. Excavations uncovered a *principia*, a presumed double *horreum* and a *praetorium* though construction did not advance further than foundation works. In the second fort phase, dated to c. AD 212/215 until the end of the 3rd century, barracks were built on top of this location, with also a bath house on the fort precinct. A significant coin peak points to important military activity in the period AD 222-238. The fort was reactivated c. AD 300 and continued to be occupied until around AD 375; the fort precinct, however, hardly yielded information of this period. Afterwards there may have been limited continuing occupation (Philp 2005).

The second generation of Shore forts was erected after AD 260. These forts comprise Burgh Castle, Walton Castle, Bradwell, Richborough, Dover, Lympne, Pevensey, Portchester and Bitterne. Most of them have not yielded a firm start date though Pevensey and Portchester were built during the usurpation by Carausius: Portchester probably in the first part of his reign (286-290) (Cunliffe 1975, 421), Pevensey in c. AD 293 or shortly after Carausius lost Boulogne (Fulford and Tyers 1995; Lyne 2009, 36). The building style of the second generation of British Shore forts differs largely from that of the first generation demonstrating now thick walls, no earthen ramparts, external, projecting towers in a variety of shapes and sizes, and irregular contours in contrast to the square or rectangular 'playing card' shapes of the late 2nd – early 3rd-century forts (Johnson 1991, 95). Johnson pointed to the continental link of the second generation Shore forts, as these elements were not common for city walls in *Britannia* but coincided with developments on the Continent at fortified cities.

Pevensey, of which the southern side is eroded by the sea, is the largest of the British Shore forts and is characterized by its irregular oval shape, due to the local topography, and wide projecting gate towers. The fort continued to be occupied until at least the end of the 4th century and was afterwards a stronghold until the Norman conquest. According to Lyne, the first phase of the Shore fort ran until the beginning of the 4th century, followed by a phase of c. AD 300 until 370. Around AD 370 the fort was renovated and again occupied until around AD 400, with a sub-Roman occupation until c. AD 470 (Lyne 2009, 38-40). Only a few small trenches yielded some features and structures of the inner building.

Portchester, with square shape, is the best preserved of the Shore forts. According to Cunliffe, Portchester may have been built as the home base of a naval detachment patrolling the Channel serving as a defensive axis with a Gaulish counterpart, possibly *Grannona*, probably located near Bayeux. After Carausius had struck back the piracy, Portchester may have lost part of its significance and became isolated, certainly when Carausius lost hold on Gaul. This

22 The National Mapping Programme project covering Norfolk's Coastal Zone carried out between 2001 and 2006 which recorded all archaeological features such as earthworks, cropmarks and structures visible on aerial photographs, has provided additional arguments, based on the alignments of the *vicus* and the roads, for the erection of the earlier fort at Brancaster around the start of the 3rd century AD (Albone *et al.* 2007, 76). Excavations in 1974 and 1977 had assumed the erection of this earlier fort in the late 2nd century after which the adjacent settlement was soon established. Hinchliffe and Sparey-Green (1985) concluded that this earlier fort was replaced by the known military base in the second quarter of the 3rd century. The Time Team geophysical survey located a presumed earlier fort to the north of the known fort, but the evaluation trench could not be conclusive about its character (a temporary camp?) or date (just prior to the fort or simultaneously with its first phase?). At the *vicus* features presumably even point to another earlier fort with similar alignment, pre-dating the settlement (Wessex Archaeology 2014, 34).

23 The results were analyzed by Wessex Archaeology (2014) for a preliminary report.

24 In varying degrees of clarity gateways, internal roads, barrack blocks, the *principia* with a possible monumental feature in the centre of the courtyard, a three-cell building with cross-flue hypocaust system, a large granary and many small buildings, including probable workshops, could be discerned (Wessex Archaeology 2014).

may have been the reason for its temporary abandonment at the end of the 3rd century (Cunliffe 1975). Afterwards, the fort was not continuously occupied (see Cunliffe 1975, 422-425), with renovations around AD 340-350. These can possibly be related to the visit by Constans in AD 342 who wanted to improve the British defences which might be related to the installation of the title *Comes Litoris Saxonici*. From AD 364 onwards, Cunliffe (1975) identifies the occupation as disordered; until AD 378 densely, afterwards only limitedly. Between 1961 and 1972 c. 11% of the inner building area was excavated, yielding some road levels, wells, waste-pits, ovens, hearths and remains of wooden constructions but these did not result in much insight into the spatial and functional organization of the inner building patterns (Philp 2005, 218).

The site of Richborough was a former beach-head fort built for the landing of the invasion army of Claudius (AD 43), after which it was adapted as an army depot. Around AD 80-90 a monumental arch was erected on the precinct as a symbolic gateway to Britain, probably to visualize the completion of the conquest over *Britannia*. Civic structures date to the 2nd century (Blagg 1989; Wilmott 2005; 2012). By the middle of the 3rd century, an important military re-occupation of the site took place related to the construction of a fortified signal-station. It enclosed the former *quadrifons* tower, with a triple defensive ditch system and earth ramparts. In the later 3rd century, these ditches were backfilled and a stone fort was built (Blagg 1989; Philp 2012, 156-157). A detailed study of the stratigraphy in combination with the coin evidence led Johnson (1970) to conclude a construction of the Shore fort by Probus in AD 277, with a completion of the works in AD 285, after which Richborough was one of the tactical bases of Carausius. A recent revision of the coin and stratified evidence by Philp now sets the construction date of the Shore fort in the period AD 267-275 (Philp 2012, 157-158). Small-scale excavations took place from the middle of the 19th century onwards, but the scarce information on the inner building – mainly the remains of a bath house and two unattributed rectangular structures – derives primarily from the excavations between 1922 and 1938. While c. 60% of the fort's interior has been excavated, apparently little stratigraphy of the late 3rd and 4th century survived (Busche-Fox 1926; 1928; 1932; 1949; Blagg 1989; Wilmott 2012). Recent research on the eastern side of the fort site has resulted in a revised plan of the Saxon Shore fort (Wilmott and Smither 2020).

Burgh Castle had a trapezium-shaped plan. Little is known of its interior building, partly due to Saxon and Norman reuse and quarrying into the 19th century; only in the corner areas were traces of buildings uncovered during limited excavations. Based on architectural grounds, the construction of this fort has been dated after AD 260. It was in use until a large fire around the middle of the 4th century (Johnson 1983a; 1989c; Gurney 2002).

Walton Castle, which has been erased by erosion by the sea, only survived in old records, but showed a similar plan as Burgh Castle. Based on the presence of round bastions it has been dated after AD 260 (Johnson 1979, 41-43; Pearson 2002b, 19-21). The same goes for Bradwell fort, which has been totally dismantled during the 17th and 18th centuries and which has been partly

eroded by the sea. There is no information about the inner building arrangements (Johnson 1989a).

Dover took over the function as official port from Richborough by the end of the 1st or beginning of the 2nd century. Excavations from 1970 onwards (until 2002) have revealed three successive forts: the unfinished *Classis Britannica* fort (I) of which the construction started around AD 120, the *Classis Britannica* fort II constructed in AD 130/140 and occupied during three phases eventually ending around AD 208, and a much larger late Roman Shore fort with trapezoidal layout and shifted location, installed around AD 250-260 (Philp 1981; 2012). In the western part of the Shore fort the *mansio* and the bath house of the earlier *Classis Britannica* fort were partly reused, but altered and renovated. In the south-west corner a level terraced area was created, occupied by circular wattle walled constructions, similar to structures recovered at Burgh Castle where they have been identified as Anglo-Saxon (Philp 2012, 151-152).

Tile stamps, together with the mention of *Portus Lemanis* in the Antonine Itinerary of the early 3rd century, indicate that Lympne was first the location of a fleet base of the *Classis Britannica* (Cunliffe 1980, 227). The Shore fort can be dated from the end of the 3rd until the middle of the 4th century. Due to landslides, the preserved wall parts are no longer standing at their original position. The original shape of the fort was most likely an irregular pentagon covering c. 3.4 ha (Hutchinson *et al.* 1985). Only limited excavations have taken place in 1850 and in the 1970s, mainly on the defensive wall, eastern gate and part of the fort precinct, including the presumed *principia* with *sacellum* and the baths (Johnson 1979, 53-56; Cunliffe 1980; Pearson 2002b, 31-32).

After AD 270 also Bitterne (*Clausentum*) was fortified with a defensive stone wall and bastions. Occupation continued until the 4th century. Information on the inner building is lacking and there is not yet absolute certainty whether this was a fortified site or a Shore fort (King 1991).

Cunliffe (1980, 287) believed that the construction of Lympne, Dover, Richborough, Bradwell, Walton and Burgh, the continuing use of Reculver and the renovation of Brancaster were part of a new overall defence strategy. However, only for Portchester and Pevensey is a construction date under Carausius apparent. Richborough definitely dates at least a decade earlier; the construction of the other forts can only be generally dated to the late or end of the 3rd century. Most of the British Shore forts functioned until the end of the 4th century (Brancaster, Caister-on-Sea, Pevensey) or the beginning of the 5th century (Dover, Portchester, Richborough). Only Lympne stopped earlier, around AD 348, presumably due to silting (Pearson 2002b, 167-170), Burgh Castle probably also around that period (Johnson 1989c, 132) while Reculver was occupied until around 375 (Philp 2005, 203-218).

The British Shore system probably was more complex than generally outlined. Several coastal and more inland signal stations or lookout

posts may have been related<sup>25</sup> (Davies 2006, 117; Albone *et al.* 2007, 78). Several small square enclosures located on higher land by aerial photography may have complemented the shore system as communication lines across land (Davies 2006, 119).

There has been much debate on the function of the (British) Shore forts (cf. Pearson 2002b, 132-138). Johnson (1976; 1977; 1979; 1983b) and others focused on a military, defensive role against pirates. Fulford and Tyers (1995) argued that it were Carausius and Allectus who enlarged the initial coastal defence of Brancaster, Caister and Reculver with the forts of the second generation to form a vast defensive system against seaborne invasions. However, as indicated above, a construction date under these usurpers can no longer be retained for all these forts; nevertheless, it can be presumed that they functioned as important bases in their defensive strategy (Pearson 2002b, 136-137). Others have contended, based on a seemingly limited number of forts, for an initial function in logistics related to the movement of troops and goods such as corn (Wood 1990, 95), a more economic role as fortified ports (Milne 1990) or a combination of both (Cotterill 1993). Davies (2006) also concludes to a role as transshipment centres or fortified ports to which the coastal and inland signal stations and several small square enclosures more inland may have been related as communication lines. While these forts probably did also have a logistic and economic function, Dhaeze has countered the aforementioned arguments as if this would have been their sole *raison d'être* (Dhaeze 2011, 142). References in the *Codex Theodosianus* and by *Claudius (Claudianus)* are clear indications for the existence of a coastal defence system (cf. Dhaeze 2011, 102-103).

The overview above of the wider military context of the North Sea and Channel frontier region makes clear that the knowledge of these military sites is limited or vague. Therefore, the investigation of the stratified and artefact rich levels of the Oudenburg fort evidently presents a tremendous prospect for advancing understanding of these sites.

## 1.4. Historiography of the fort site of Oudenburg

### 1.4.1. The historic-geographic context of Roman Oudenburg

#### 1.4.1.1. On the interface between the sandy region and the coastal plain

In the Roman period, the site of Oudenburg was situated at the edge of the coastal plain, on an elevated sand ridge, formed during the Weichselian glaciation at the end of the last Ice Age. Since Roman times, the nature of the coastal plain has changed dramatically through large-scale land reclamation and embankment schemes, situating Oudenburg nowadays over 8 km away from the current Belgian coastline (cf. Figure 5). A determining element in the transformation of the coastal plain was the creation of The Polders,

a region gained by human interventions from the Middle Ages onwards, 10 to 15 kilometers wide (in the Valley of the IJzer up to more than 30 km wide) and bordered by an almost continuous dune belt (Mostaert 2000, 2).

More specifically, the site of Oudenburg is located at the end of an east-west oriented peninsula<sup>26</sup> formed by a side-branch of the geest ridge Gistel-Brugge-Maldegem-Stekene (Mostaert 2000, 4-5) (Figures 4 and 5). This tall sand ridge, situated at approximately five meters above sea level<sup>27</sup>, constituted a very strategic position, protruding into and overlooking the coastal plain. Oudenburg was therefore situated in a transitional area between two landscapes, which defined the area from the Iron Age onwards: the coastal plain, a vast tidal region of mudflats with a coastline moving inland, and the higher sand region, separated from the coastal plain by the geest ridge Gistel-Stekene (Hillewaert *et al.* 2019), clearly visible on the geomorphological map (Figure 5).

The formation of the coastal plain during the Holocene was a complex succession of continuous sedimentary processes in which the tidal channels played an important role. In contrast to what has long been assumed, transgressions or sea level fluctuations did not form the basis of the late Holocene sedimentations and their lithological variation (Baeteman 2007a, 15). The sedimentary processes were influenced by palaeotopography, the decelerating relative sea-level rise, the supply of sediment and accommodation space, in turn affected by sediment and peat compaction (Baeteman 2013, 24). Over 7500 years ago, the exponential rise of the sea level resulted in a tidal landscape progressively proceeding inland combined with the deposition of a level of sand and clay, of almost 10 m thickness. Vegetation existed on the marshes, but since everything was covered by clay of the proceeding mudflats, these layers did not evolve into peat (Baeteman 2007a; 2007b; 2008, 9). The following decline in the sea level rise caused parts of the tidal landscape to silt up, as it was no longer flooded as regularly as before, resulting in fresh water marshes. However, the sea level rise still dominated the infill of the coastal plain and sedimentation continued in the numerous tidal channels, which shifted constantly through time, in search for accommodation for their water and sediments. This process caused the change of peat areas into mudflats and of areas deserted by the tidal channels into marshes, mudflats and fresh water swamps (Baeteman 2008, 10). Because of the continuous decline of the sea level rise, peat was able to take form and to eventually expand over vast areas. By c. 4800 years ago, almost the entire coastal plain was transformed into peat swamps (Baeteman 2008, 10-12). When and how this peat growth ended, is still uncertain. Research during the last decades has shown that the traditional theory of transgression and regression phases or sea-level fluctuations between the Iron Age and the Carolingian period does not support the final formation of the coastal plain (Baeteman 2013, 24).

26 The alignment of the sand ridge on Figures 10-12 is located in accordance to the geomorphological map (De Moor 1990) in combination with the Digital Elevation Model.

27 The sand ridge has a raising topography up to more than 7.5 m in the current city centre around the church. This is mainly caused by a medieval accumulation of a so-called 'dark earth' (see further; Vanhoutte 2004, 221-223, 226; Vanhoutte 2007b, 228; Vanhoutte *et al.* 2014, 167-170).

25 For example covering the gap between Brancaster and Caister-on-Sea (Albone *et al.* 2007, 78).



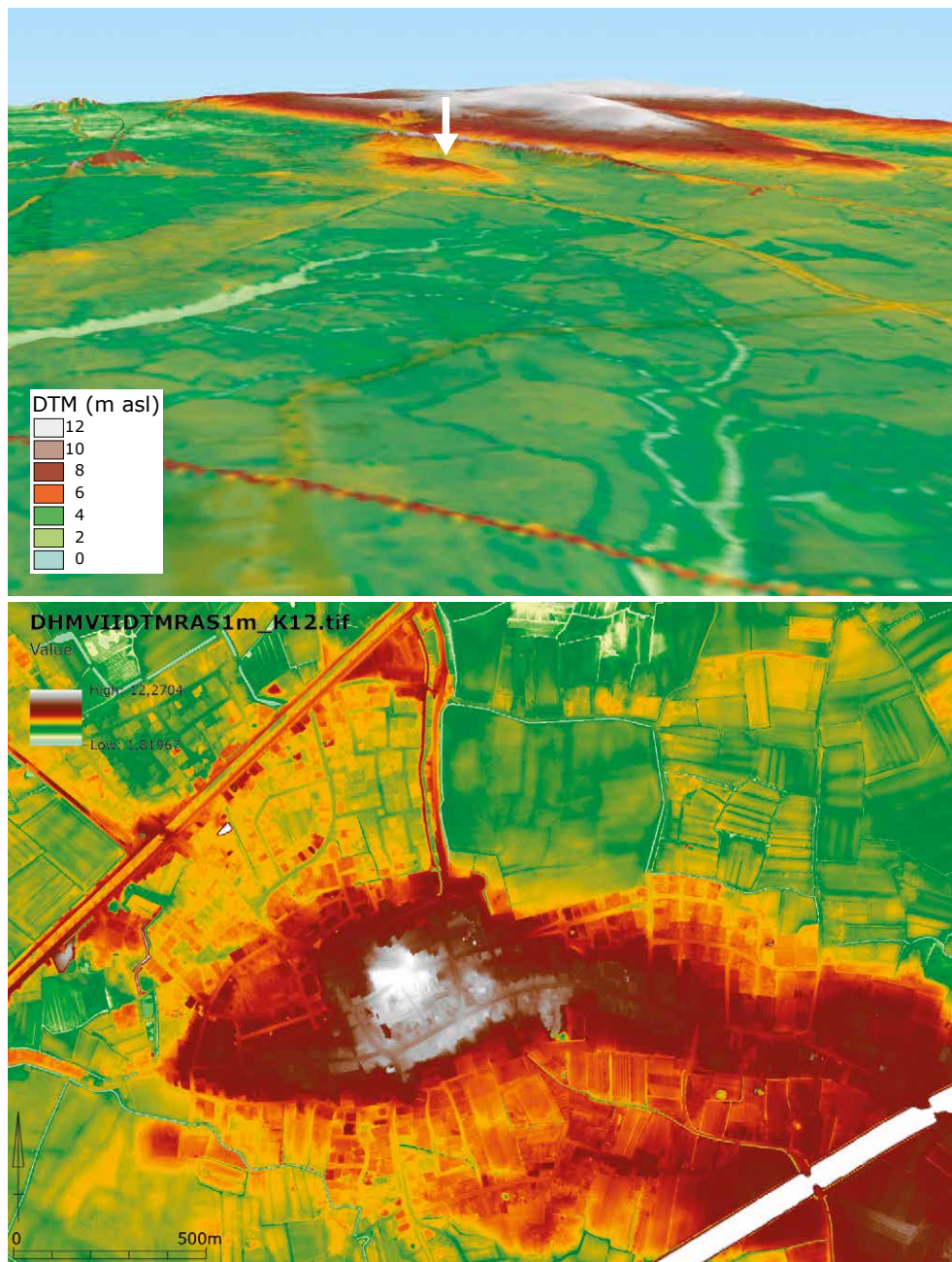


Figure 4. Digital Elevation Model of Oudenburg (© AGIV). Top: view from the NW/W (the seaside) towards the SE/E (inland) (with thanks to E. Meylemans (Flanders Heritage Agency)). The arrow points to the location of the fort. On the foreground the location of former tidal channels is still visible. Below: detail onto the sand ridge on which the site of Oudenburg was implanted. The city centre covers the highest area (in white) (with thanks to F. Wyffels (Flanders Heritage Agency)).

According to Baeteman, several factors influenced the further development of the coastal plain, such as increasing erosion due to a run-out of sediment supplies, human intervention, an increased water supply from the sandy region due to increased rains 2800 years ago and deforestation during the Iron Age causing the erosion of tidal channels (Baeteman 2008, 12). Especially human activities affected the coastal region in a negative way. Peat extraction and artificial drainage caused the peat surface to decline, resulting in an increased tidal influence. The subsequent erosion, drainage, compaction and sedimentation processes during the Roman period enabled the development of an expansive network of tidal channels eventually influencing the whole of the coastal peat and marsh area in combination with intertidal flats proceeding progressively further inland (Ervynck *et al.* 1999, 105).

At the start of the Roman period, the main part of the coastal plain was formed. It consisted of a tidal landscape characterized by intertidal flats, salt marshes, salt meadows, freshwater marshes with peat growth, tidal channels and natural gullies (Figure 6). Further away from the tidal channels, peat was still present but these areas became largely covered during the Roman period (Hillewaert *et al.* 2019, 46). Baeteman emphasizes that ‘*at any time the coastal landscape consisted of all the different sedimentary environments next to another, even over short distances*’ (Baeteman 2013, 24). This was demonstrated at Raversijde (near Ostend) where research has shown that extrapolations cannot be made for larger areas (Baeteman and Pieters 2015). Sedimentological research has illustrated the complexity of the late Holocene sedimentation history and of the landscape changes. During the Roman period,



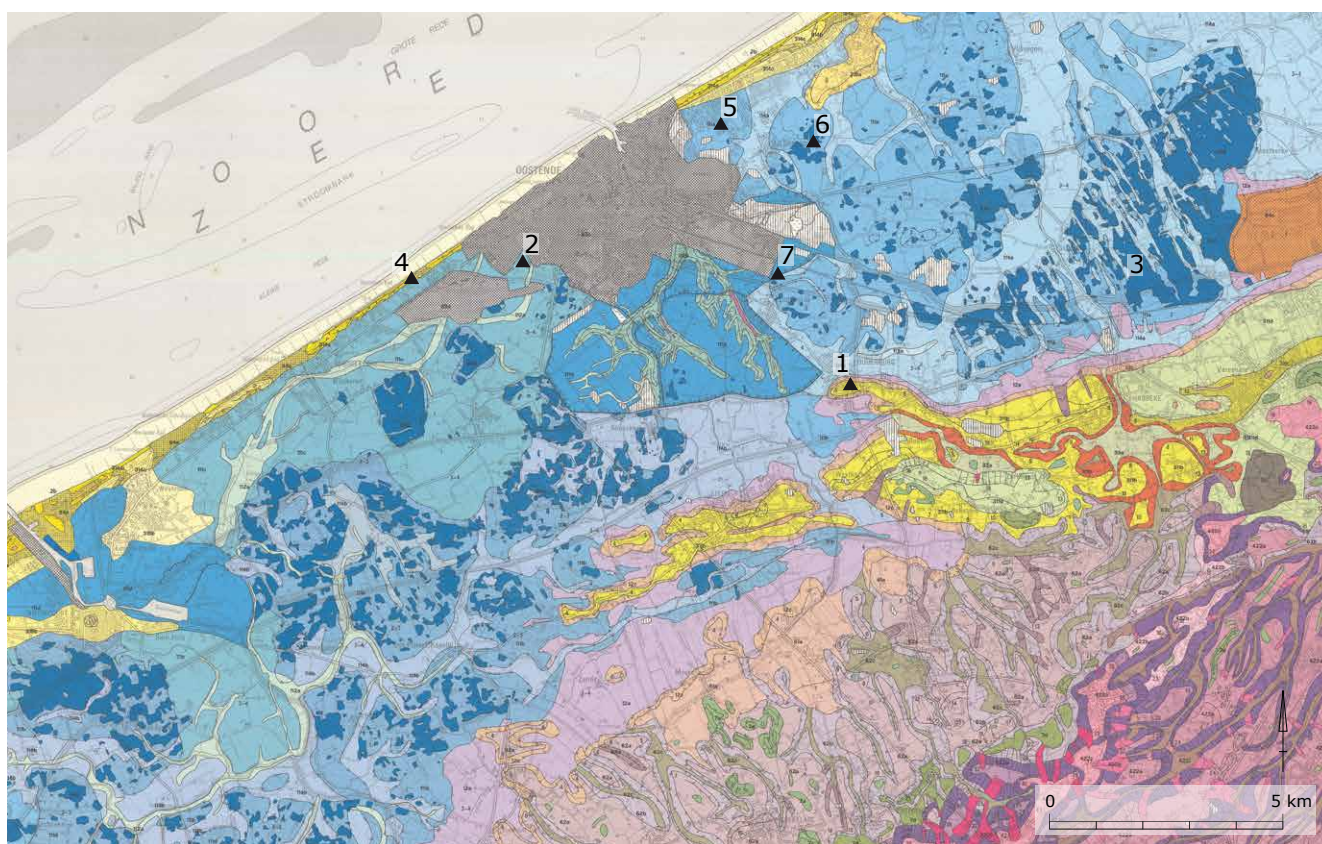


Figure 5. Geomorphological map of the central part of the Belgian coastal plain (extract from De Moor 1990, with additions; cf. Demey *et al.* 2013, 59; Fig. 36). Clearly visible are (moving landwards from the sea) the dune belt (yellow), the zone of tidal sediments (shades of blue) and the inland sandy soils (yellow and purple). The light blue areas indicate presumed former tidal channels and gulleys. The hatch locates the area of the Historic Polders of Ostend. Localization of sites mentioned in the text: 1: the Oudenburg site, situated on a high sand ridge protruding into the coastal plain; 2: the Stene site; 3: the linear gully system in-between Houtave and Stalhille; 4: the Roman dike at Raversijde; 5: the Bredene II site; 6: the Bredene I site; 7: the Plassendale site.

this area was subject to periods of rapid sedimentation alternated with long periods without any sedimentation. This resulted in a very diverse tidal landscape, with immense variations in time and space (Baeteman and Pieters 2015).

Eventually the tide could re-enter the peaty swamps and by the late Roman period the tidal movements of the sea influenced the coastal plain as a whole. Around AD 300 the region was mainly a tidal landscape with a dynamic alternation of mudflats, marshes and active tidal channels, with continuing erosion of the wad and a coastline still proceeding inland turning sand ridges into islands (Figure 8). Mite and diatom assemblages found south-east of the Oudenburg fort (site ET13<sup>28</sup>) illustrate that tidal influence reached the landward border of the coastal plain in the 3rd century AD (Schelvis and Ervynck 1993; Demiddele and Ervynck 1994; Ervynck *et al.* 1999, 117). A clay level locally found on top of the 4th-century cart tracks at this site (Hollevoet 1994) witness of the late Roman inland progression of the coastline. In the region

Oudenburg – Bruges only the large geest ridge Gistel-Stekene protected the sand zone from the sea (Figures 5 and 8).

The coastal plain between Cadzand in the Netherlands (near the border with Belgium) and Raversijde (near Ostend) was transversed by no less than seven tidal channels (Hillewaert *et al.* 2019, 46). The vicinity of one of these, the ‘Bredenegeul’, enabled direct access of the Oudenburg fort to the sea and enhanced its strategic position (Figures 6 and 8). This waterway ran from near Bredene and De Haan towards Bredene-village and bent widely via Zandvoorde towards near the base of the peninsula of Oudenburg at the north side running further eastwards (Thoen and Vanhoutte 2004, 183). This ‘natural’ channel, or at least an end-branch, reached the northern wall of the Oudenburg fort in the 4th century AD as is clear from archaeological observations and literary evidence (see Chapter II, Section II.3.5). Since this fort maintained exactly the same position as its predecessors, this may suggest that human intervention was involved to influence the course of the side-arm of this waterway.

28 Project code of this archaeological observation, as plotted on the map of Figure 9; cf. Section I.4.2.

Other elements were of importance too regarding the choice of first the settlement and later the fort location at Oudenburg: the

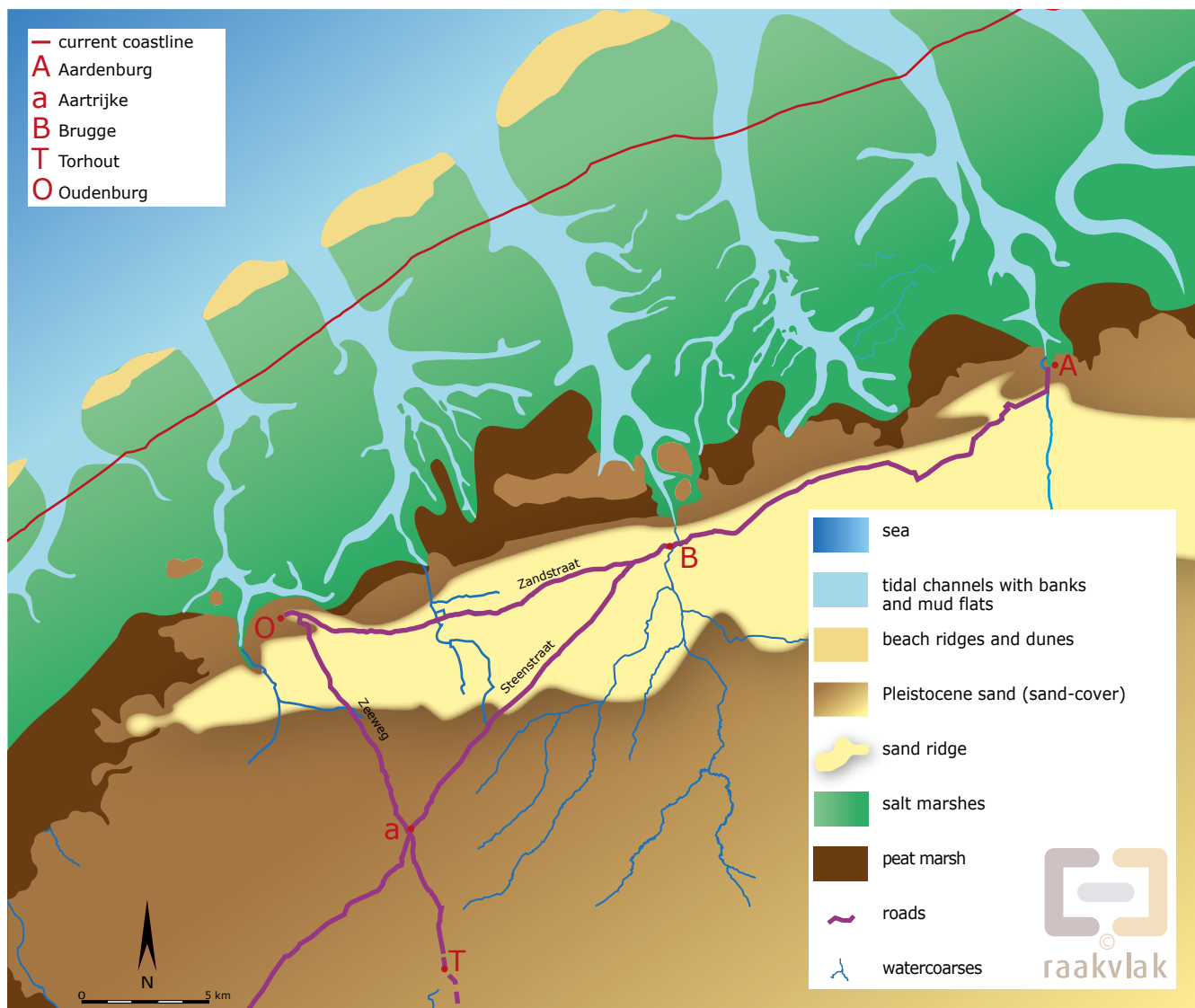


Figure 6. Reconstruction map of the coastal region during the mid-Roman period (based on soil maps, geomorphological maps, lithostratigraphic maps, sea soil maps and the Digital Elevation Model). From Hillewaert *et al.* 2019, 46, with additions with permission from Raakvlak (B. Hillewaert).

ground was ideal to build on and fresh water was amply available (cf. Mostaert 2000). Also, the connection to the road network was important. The Zeeweg ('Searoad') leading to the hinterland, and the Zandstraat leading to Aardenburg via Bruges, joined here (see Section I.4.1.3; cf. Thoen and Vanhoutte 2004, 180-182).

#### I.4.1.2. The Oudenburg settlement and fort: their relation to the occupation in the coastal plain

In the second half of the 1st century AD a newly established civil settlement was erected at the western end of the sand ridge of Oudenburg (cf. Creus 1975). The strategically ideal position at the end of the sand ridge along the coastal plain, accessible by a tidal channel and connected inland with a road network (Figure 6), together with the evidence of a large amount of import material establish the importance of trade for the civil settlement pre-dating the fort. How this settlement and later also the fort of Oudenburg

interacted with the coastal plain, however, remains mainly unclear. Some answers may be found in an extensive study of local excavations revealing parts, mainly the borders, of the civil settlement of Oudenburg (site Bekestraat (ET13) and site Groeningestraat/Hovenierstraat (ET14), only preliminary published by Y. Hollevoet (Hollevoet 1993c; 1994; site Riethove (ET26) (2007-2009) (Dhaeze, Decorte and Vanhoutte 2008; Dhaeze and Vanhoutte 2009; Dhaeze *et al.* 2018) and site Belleroye (ET28) (2014) (Dyselinck *et al.* 2020)). Systematic surveys by Hollevoet (1985) and by De Decker and Himpe (2002) revealed several concentrations (with three large ones) of mid-Roman finds (mainly pottery sherds and building material) in the neighbouring polder area to the north of the Oudenburg sand ridge. All sites were adjacent to ancient natural waterways (De Decker and Himpe 2002, 28). Hollevoet believed that the find concentrations were part of the settlement of Oudenburg extending further north (Hollevoet 1987b, 49). A similar situation has been encountered at Aardenburg where

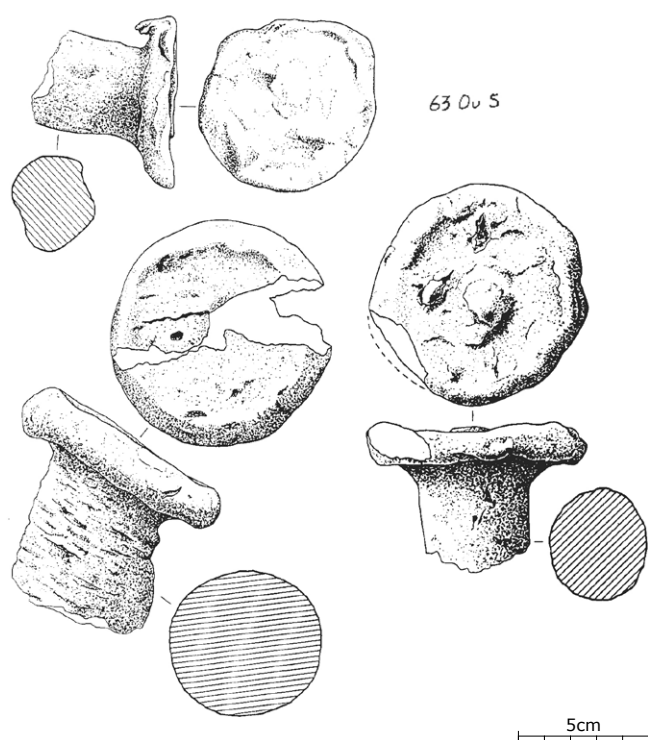


Figure 7. Salt pillars found at the civil settlement of Oudenburg of which the remains were uncovered underneath the late Roman Graveyard A at c. 400 m to the west of the Roman fort. Excavations by J. Mertens 1963-64/68. Material recognized by Y. Hollevoet who informed P. van den Broeke in 1995 (Archive Y. Hollevoet, information given by P. van den Broeke).

evidence was found for several activities north of the settlement in the wetland area (van Dierendonck and Vos 2013, 54-57).

The well-known 1st-century inscriptions found at Rimini (I) of the *'salinatores civitatis Menapiorum'* (CIL XI 390) and the salt production sites attested at Zeebrugge, Dudzele, Leffinge, Raversijde, Middelburg and Koudekerke, evidence the importance of salt exploitation in the coastal plain in the Roman period (see e.g. Thoen 1978; van den Broeke 2007). It can also be deduced from the inscriptions referring to the trade of salt and its derivatives on the altars found at Colijnsplaat and at Domburg where a sanctuary can be supposed where shipmen and traders could make a sacrifice for a safe journey between the Continent and *Britannia* (see De Clercq 2009, 473-474). De Clercq examined into detail the significance of the exploitation of salt as an imperial prerogative, as salt was one of the key mineral resources in the empire. He points to the importance of looking at the coastal wetlands not just as a 'landscape or seascape' but rather as a 'specific taskscape', controlled – directly or indirectly – by the Roman Empire, and thus by the army. De Clercq states that *'the installation of the army itself in the region on the border with the Pleistocene sand during the later 2nd and the 3rd century not only met strategic goals and the need for security, but also gave the army an opportunity for direct control of economic activities in the coastal wetlands'* (De Clercq 2011, 250-251).

It seems therefore obvious that also the Bredenegeul and the civil settlement of Oudenburg were important within this trade and that the army at Oudenburg somehow took part in controlling these activities. On the fort precinct no salt containers or *briquetage* material were found within the Roman level though. From the Oudenburg settlement, found underneath the late Roman military Graveyard A c. 400 m to the west of the fort (site ET06), a concentration of three salt pillars (pedestals of salt extraction structures) is known<sup>29 30</sup> (Figure 7). These pedestals with circular flat head have close parallels at the coastal settlement site De Panne where they were found together with La Tène pottery (Site I: Nenquin 1961, 93, Plates VII-VIII) and at the South Menapian salt production site at Steene in the North of France that was active from the 1st to the middle of the 3rd century (Donnadieu and Willems 2015, 5: Fig. 10, 1)<sup>31</sup>. Similar salt pillars were found in the post-Roman dark earth level at the south-west corner site and may have been settlement waste that was brought into the fort walls together with the earth during the Middle Ages (see Chapter II, Section II.2.3). The Oudenburg settlement finds can be indicative for a salt production site. However, to our knowledge no salt container material is known from the Oudenburg sites. A possible explanation can be that the salt was distributed together with the containers in which it was made and that these were only broken up at the consumption sites<sup>32</sup>.

Not only salt, though, was produced at the coastal plain; also the production and consumption of fish, shells, chalk (mainly retrieved from mussels and cockles) and peat must have been very important (cf. De Clercq and van Dierendonck 2008, 22-24 for archaeological evidence in the coastal plain of the *civitas Menapiorum*). At Serooskerke for example, in the north of the *civitas Menapiorum* in current Zeeland (the Netherlands), on one of the artificial platforms (Site 4, 'Wattelsweg') brought to light, around 5500 kg of shells were found, assumed to have been the waste of the production

29 Unpublished finds, no further contextual information known; information given by Y. Hollevoet in 1995 to dr. P. van den Broeke (Nijmegen), specialist in *briquetage* material. With thanks to P. van den Broeke for attending me to these finds.

30 At the east side of the extramural settlement, at site Riethove, some salt pillar fragments, next to fragments of Iron Age pottery were found in a level full of burnt red clay fragments. This level has been interpreted by Dhaze as the possible remains of a nearby Iron Age 'red hill' site where saltwork activities took place (Dhaze *et al.* 2018, 55). However, the taphonomic interpretation is uncertain due to some high medieval pottery recovered from this level; a date in the Roman period for the salt pillars can neither be excluded. However, with a Roman date it would be striking that there is no further *briquetage* material found at the site.

31 The salt pillars in question differ strongly from the fragile *briquetage* material in soft fabric known from other late Iron Age and Roman indigenous sites in the coastal plain (see e.g. at De Panne-Romeins Kamp, Brugge-Fort Lapin, Veurne-Stabelinckseleed (cf. Huys 2005) and De Panne-Oosthoekduinen (cf. Bot 2005)) mainly in having a hard fabric. The Oudenburg pillars are very robust and display a large diameter; however a few examples at the sites De Panne-Romeins Kamp and Veurne-Stabelinckseleed do as well (see Huys 2005, 69, 73 and 92). The circular support platform of the Oudenburg pillars is remarkably large. Usually the pillars display only a widened top. Only one example from Veurne-Stabelinckseleed comes close (see Huys 2005, 91: 4; see also De Ceunynck and Termote 1987, 80: Fig. 5: 7).

32 Pers. comm. dr. P. van den Broeke.



of a local fish sauce (*allec*) or pickled mussels (Dijkstra and Zuidhoff 2011, 115, 249; De Clercq and van Dierendonck 2009, 54-55).

It has long been assumed that the coastal plain was hardly exploited during the Roman period. Using an overview of Roman archaeological observations within the coastal plain by Thoen (1978; 1987, 58-67), supplemented by survey data by Hollevoet (1987b), Termote (1987) and Hillewaert (1987), Ervynck *et al.* (1999) argued that settlements were rare, and that permanent habitation only developed along the dune belt and on the coast. The idea rose that only seasonal activities took place, in connection with salt production (proven by salt pans found at Zeebrugge and at Raversijde-Mariakerke, and by salt ovens at Leffinge (see *e.g.* Thoen 1987, 70-74)) and including sheep and goat herding (Ervynck *et al.* 1999, 109). Until the 1990s, indeed only the sites of Wenduine and Bredene yielded *in situ* occupational remains (Figure 5). Archaeological observations at Wenduine – chance finds during peat cuttings, clay extractions, constructions of new housing estates and tidal exposure at the shore (see Vanhoutte 2013) –, point to the presence of a large agglomeration with one or more related graveyards dated to the 2nd-3rd century AD (see also Verduyn 1960; Thoen 1978; Gheysen *et al.* 2013). During his officer duty, prof. Unverzagt, known for his research on the fort of Alzey (G), found the remains of a Roman timber construction at Wenduine. Only a newspaper article with a general description of the site could be traced (Unverzagt 1917). At Bredene, limited research at the end of the 1970s and beginning of the 1980s located an extensive settlement starting in Flavian times and continuing until the 3rd century AD (Thoen and De Cock 1980; Thoen 1988: Bredene II) (Figure 5: 5). The site, located at a side branch of the tidal channel 'Bredenegeul', was surrounded by a Roman cultural landscape. Two km to the east, peat cutting yielded the remains of a Roman graveyard dated to the end of the 1st or beginning of the 2nd until the middle of the 3rd century AD (Thoen 1988: Bredene I) (Figure 5: 6). Until the 1990s, all other Roman finds in the coastal plain were without context, although many presumed gravegood finds point to nearby settlements. Also, in the polder area in the vicinity of Oudenburg, two find reportings of presumed grave goods point to the presence of (small) graveyards (see Van Doorselaer 1964, 622-623; De Loë 1939, 632; Thoen 1978).

However, since 2000 an increasing number of Roman sites with *in situ* occupational remains have come to light, testimony to significant landscape management during the Roman period enabling more permanent activities. At Plassendale (near Ostend), an *in situ* level, sloping deposits full of consumption waste, and two presumed water management ditches, all dated to the Roman period (second half 2nd – early 3rd century AD), were discovered in 2000 (Vanhoutte and Pieters 2003, 99; Vanhoutte and De Clercq 2007) (Figure 5: 7). In 2008, the remains of a native Roman occupation connected to a dike were revealed at Stene, also near Ostend (Figure 5: 2). Scientific research demonstrated that the dike was erected within an intertidal area under clear marine influence, and that this installation is most likely dated to the first half of the 1st century AD. Later on, a dwelling platform was erected against the dike of which the occupation dates to the late 1st – early 2nd century AD (certainly ending before AD 150). The functioning of the site seems to have been focused on cattle breeding and agriculture, with the latter in service of the

former. The site is identified as a 'platform site', a type of dwelling place known in The Netherlands and in Great-Britain (cf. Demey, Vanhoutte *et al.* 2013; Vanhoutte *et al.* 2011). Two recent sites in the Zeebrugge area, at Dudzele (site Zonnebloemweg, 2013) and at Ramskapelle (site Heistlaan, 2014), yielded occupational remains (at Zonnebloemweg with a well dated to the second half of the 2nd – first half of the 3rd century), respectively on an old sand ridge and on a raised platform (both excavations by Raakvlak, post-excavation research in progress). De Clercq has pointed to the diversity of site locations: artificial dwelling platforms (like Serooskerke-Wattelsweg (NL), Stene and probably also Plassendale), semi-artificial dwelling platforms ('donken') like Zeebrugge-Achterhaven, and plain sites on peat (like Arnemuiden-Oud Brakeburg and Colijnsplaat-Noordhoeksenol, Borsele-Ellewoutsdijk, all in the Netherlands) (De Clercq 2009, 202-217).

Only dikes and water management ditches can explain how occupation and economic activity were possible in the intertidal coastal plain. Some kind of landscape management was already assumed based on the linear geomorphological patterns attested between Stalhille and Houthave which could well represent Roman ditches draining an extensive area (Thoen 1988, 66; Thoen and Hollevoet 2001) (Figure 5: 3). Similar patterns are observed at Walcheren and Zuid-Beveland in the north of the *civitas Menapiorum*, in current Zeeland, and may point to significant human interaction (De Clercq and van Dierendonck 2008, 9). Narrow irrigation ditches were attested at Plassendale (see before). The Stene dike was not the first to be discovered in the Flemish coastal plain. In 2005, the remains of a Roman dike were identified at Raversijde, near Ostend; the dike could be traced over a distance of more than 107 m (Figure 5: 4). The dike with a width of 12 m was, according to the few uncovered ceramics, not earlier than the second half of the 2nd century AD (Pieters *et al.* 2013, 79-95).

These finds provide most likely only a few insights into the complex cultural landscape this coastal plain once was, as has been proven in coastal regions abroad, such as in the Netherlands (Midden-Delfland) (Brinkemper *et al.* 1995; Van Londen and van Rijn 1999, 136-137) and in the United Kingdom (the Severn estuary and Fenland) (Therkorn 1987; Rippon 2000a, 56 and 73; Rippon 2000b, 92-95). There, several dwelling platforms have been found in clusters and related to vast irrigation systems. Comparisons between the site of Stene and the site of Serooskerke in Zeeland have also shown that Roman exploitation of the coastal plain certainly did not happen in a uniform manner, but that there were many regional differences and economic diversification.

One can wonder whether the Roman army was not involved in all these labour-intensive earthworks in the coastal plain of the *civitas Menapiorum*. This has been suggested for the land reclamation works in the Delfland where the hypothesis has been put forward that they were part of larger planning programmes at the beginning of the 2nd century, organized by the military (van Londen 2001, 180-181).

From the late 3rd century onwards, occupation and cultivation of the coastal plain were no longer possible due to the continuing sea level rise. Even seasonal activities no longer occurred, as 4th-century

finds completely lack (cf. Thoen 1978, 252-253). The coastal plain apparently became mainly a region to pass through by boat and a source for sea food (fish, shells) (Ervynck *et al.* 2017).

#### I.4.1.3. Oudenburg in relation to its hinterland: the road network

Two roads defined access to the site of Oudenburg. The 'Zandstraat' connected Oudenburg to Bruges and Aardenburg, via Ettelgem, Jabbeke, Bruges and Sint-Kruis, and is situated on the Pleistocene sand ridge on the transition between the sand region and the coastal plain (Figures 6 and 8). The many Roman settlement sites excavated along the Zandstraat (see *e.g.* Hollevoet *et al.* 2019) testify to the major geographic importance of this road and made Hollevoet believe in a 'continuous soil archive with local concentrations of archaeological features, the actual sites' along this road (Hollevoet 2009b, 15). This road connected Oudenburg with other centres at the edge of the coastal plain along the sand ridge, like Bruges and Aardenburg. The mid-Roman west-east road tracks brought to light to the south of the current Ettelgemsestraat at the sites Riethove (ET26) and Belleroye (ET28) to the east of the fort are probably to be identified as the earliest Zandstraat course. It appeared to be mainly a sand road. At the site Riethove, a late Roman west-east road was revealed more to the north, in-between the mid-Roman one and the medieval successor (the current street). The stamp of a fragment of an Argonne roller-stamped sigillata retrieved from the late Roman cart tracks at site Riethove can be identified as a UC 165. This is a rather rare stamp but has been recognized several times in the assemblage of the south-west corner site of the fort. This stamp can be dated to the last quarter of the 4th – first quarter of the 5th century<sup>33</sup> and yields a *terminus post quem* for the (latest) use of the road. The medieval successor apparently was shifted further to the north (the current Ettelgemsestraat on the Oudenburg territory). The shift may have been related to the increasing rewetting of the land from the south and aimed for a higher point on the sand ridge to locate the road. The junction of the Zandstraat with the (current, see further) 'Zeeweg' is situated to the east of the Oudenburg fort, the junction of the Zandstraat with the Steenstraat can be located to the west of Bruges (Figures 6 and 8).

The Zeeweg guaranteed the connection with the hinterland. It ran from Oudenburg via Aartrijke where the Zeeweg connected with the Steenstraat, a *diverticulum* or branch of the connection between Boulogne-sur-Mer and Cologne (Figures 6 and 8). At Aartrijke, the Zeeweg was investigated by Thoen in 1972; this research yielded proof that this road did not stop at Aartrijke but crossed the Steenstraat and ran further south (Thoen 1978, 76-77). Via this road Oudenburg seems to have been directly connected to Bavay, the capital of the *civitas Nerviorum* and one of the most important road junctions in the north of Gaul. From Aartrijke the road led to Kortrijk, and via Tournai to Bavay (Thoen and Vanhoutte 2004). In 1986-1987 the same Zeeweg road was cut *c.* 600 m north of the former village of Roksem, a part-municipality of Oudenburg. Only cart tracks were found, the last remains of the road, of approximately 8.5 to 14.5 m wide, limited by a ditch at the east

side. According to the pottery sherds, the road was in use during the 3rd and 4th centuries (De Meulemeester and Dewilde 1989). The direction of the cart tracks matches the direction of 4th-century cart tracks uncovered south-east of the *castellum* and extending over a total area of 50 m wide (Bekestraat site (ET13); cf. Hollevoet 1994; 2001) (Figure 12). This level was characterized by fragments of Argonne roller-stamped sigillata dated after the middle of the 4th century and of Mayen pottery. To this level also 28 4th-century coins, collected as unstratified finds, can be attributed<sup>34</sup> (Hollevoet 1993c, 202). Was the Zeeweg originally aligned directly to the fort and was its course later on adjusted to the east (the current Zeeweg) due to increasing tidal influence (Thoen and Vanhoutte 2004)? Or should we rather think of a side-branch in the late Roman period providing a more convenient and direct connection to the fort with a continued use of the current Zeeweg course throughout the Roman period? The latter seems very likely in light of the in 2014 discovered late Roman Graveyard C situated near the junction of the late Roman 'Zandstraat' and the current Zeeweg (see Chapter IV, Section IV.3.4). Anyhow, the branch towards the fort must have been abandoned by the end of the Roman period as indicated by the findings at the Bekestraat site to the south/south-east of the fort where a clay level here and there cuts the course of the cart tracks and a depression which was naturally filled in with clayish sediments covered part of the area (cf. Hollevoet 1993c, 202; 1994, 212).

#### I.4.1.4. The end of civil settlement in the coastal region and of significant, large-scale civil occupation in the wider region

All chronological data found outside the fort in relation to the civil settlement indicate that its occupation ended in the course of the third quarter of the 3rd century, probably before AD 270. The two latest coins of the High Empire at the site Riethove (ET26) at the eastern border of the civil settlement are a radiate copy and an issue attributed to Postumus (AD 260-269), both loose finds (cf. Dhaeze *et al.* 2018). They were most likely lost while passing this area by the road. Late Roman features outside the Oudenburg fort precinct can be recognized as connected to the road network and as horse burials (and presumed other off-site phenomena) related to the 4th-century (and later) fort occupation. Late Roman coins, found as loose finds at several locations, can be identified as originating from the late Roman graveyards, as waste connected to the late Roman roads and possibly also as coming from rubbish deposits dumped outside the fort.

34 This coin assemblage consists of the following identified issues: Constantinus I (2 *nummi*), Constantius II Caesar (2 *nummi*), Constans Caesar (1 *nummus*), Constans (1 *nummus*), *Gloria Exercitus*, two standards (1 *nummus*), *Gloria Exercitus*, one standard (2 *nummi*), *Constantinopolis* (1 *nummus*, 1 copy), *Urbs Roma* (2 *nummi*, 2 copies), Magnentius (1 copy), Valentinianus I (3 AES-3), Valens (2 AES-3), *Gloria Romanorum* (3 AES-3), *Securitas reipublicae* (1 AES-3), Gratianus (1 AES-3), Magnus Maximus (1 AES-2), *Reparatio reipub* (1 AES-2) (van Heesch 1998, 278).

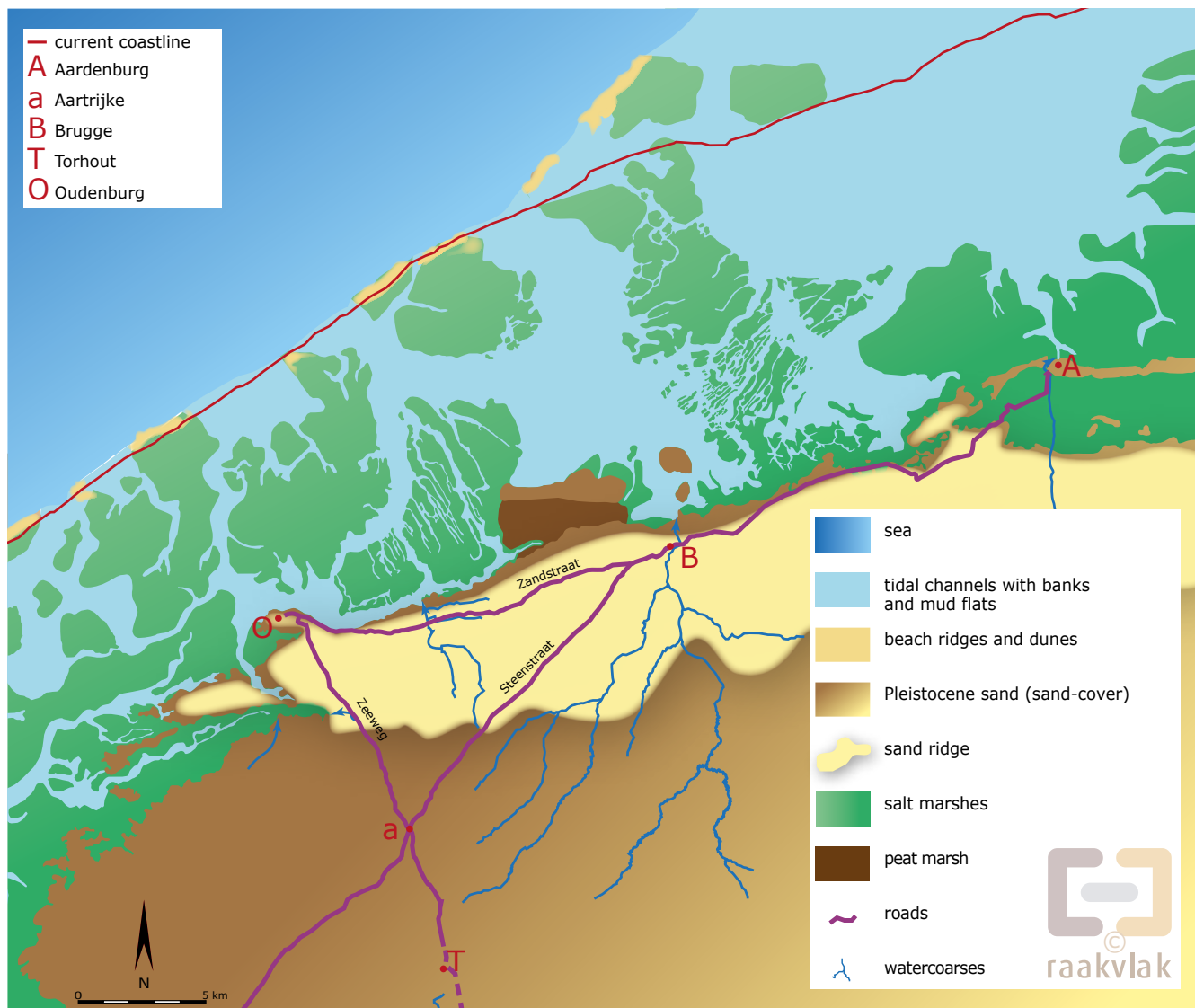


Figure 8. Reconstruction map of the coastal region during the late Roman period (based on soil maps, geomorphological maps, lithostratigraphic maps, sea soil maps and the Digital Elevation Model). From Hillewaert 2019, with additions with permission from Raakvlak (B. Hillewaert).

In the late Roman period, the coastal region must have been almost completely deserted (Thoen 1978; 1981, 248-249)<sup>35</sup>, probably primarily due to the sea level rise, secondly due to a larger phenomenon. Occupation in most of the known rural sites in the North Menapian region ceased by the beginning of the late Roman period, or even earlier from the middle of the 3rd century onwards (see De Clercq 2009, 197-198; Fig. 8.9 and 8.10; De Clercq 2011, 239-240; Hollevoet and De Clercq 2019, 84; Van Thienen 2016; 2017b). Only a very limited occupation continuity can be supposed in the region, but must have been certainly there based on the survival of toponyms like *e.g.* Aatrijke (to the south of Oudenburg and to which the Zeeweg road led) (Figures 6 and 8); the name clearly has its origin as the Roman location 'Arturiacum'

(Gyseling 1983; Hollevoet 1995). Vermeulen calculated a downfall in rural settlements in Belgium between the High Empire and the late Roman period to around 15% (Vermeulen 2001, 50)<sup>36</sup>. Vermeulen (2001) and before him already Rogge (1996d, 82-84) interpreted this downfall as a long term process; recently this has been supported by Van Thienen (2016; 2017b) and Heeren (2017). Inland, the depopulation already started at the beginning of the 3rd century. Several reasons can be defined: the deterioration of the economic situation, the overexploitation of the land by the increased population resulting in soil deprivation, plagues, the instable political circumstances, eventually accelerated by attacks

35 Thoen concluded that Gallo-Roman habitation in the Belgian coastal plain and the adjacent Pleistocene border area ceased around the end of Postumus' reign (Thoen 1981, 248).

36 See also Brulet 1990b, 297, 319: Fig. 96 (distribution of late Roman sites in Belgium), in comparison with Fig. 95 on p. 318 (distribution of mid-Roman sites in Belgium). Although the maps are dated, the striking difference in numbers is still valid. See for a current map of the distribution of late Roman sites in Flandres (after AD 250): Van Thienen 2017b, 120: Fig. 1.

between AD 240 and 275. The phenomenon of depopulation only in a later stage reached the richer regions of the coastal plain, the centre of Belgium and the Meuse Valley (cf. Van Thienen 2017b).

The depopulation has been a general phenomenon in the wider region, also demonstrated for *Germania Secunda* where the countryside north of the road Bavay-Tongeren-Cologne was almost deserted and empty of civilian habitation from around AD 300 onwards until the late 4th – early 5th century (Heeren 2015; 2017)<sup>37</sup>. The analysis by Heeren of the habitation history of settlements in the Meuse-Demer-Scheldt area demonstrates a decline and abandonment for this region between AD 250 and 280, according to Heeren (2015) the result of political-military reallocation of people, ordered by Postumus or Aurelianus. New settlers in this area are likely to have arrived not before AD 400. The updated research of Van Thienen resulted in c. 40 late Roman sites in the archaeological record of Flandres<sup>38</sup>, confirming that mainly at the Scheldt Basin and the region around Tongeren active late Roman civil settlements can be evidenced to have persisted in the late Roman period (Van Thienen 2016; 2017b). An important contribution by Van Thienen (2017b) is that the settlement evidence does not correspond to a flood of immigrants, but rather to a spread-out movement of communities, families and individuals entering Northern Gaul from the 3rd century onwards.

The nearest undoubted late Roman rural site is located at Zerkegem, part of the neighbouring municipality of Jabbeke and c. 4.5 km to the south-east of Oudenburg, where parts of a rural site were uncovered dated to the late 4th and 5th century, on top of a mid-Roman occupation and later covered by a Merovingian and Carolingian site (late 5th – 8th century) (De Cock *et al.* 1987). To the same location a complete Anglo-Saxon pot, found during the *Interbellum* (Gysseling 1979), can be related. Worth drawing attention to is the late Roman crossbow brooch recovered at Jabbeke, however unstratified (Hollevoet and De Clercq 2019, 84). Some early medieval sites in the region of Oudenburg have yielded late Roman items, but these are very scarce and difficult to interpret (Hollevoet 1995). On the site of the early medieval settlement at nearby Roksem, a part-municipality of Oudenburg, a few late Roman pottery sherds were found, among which a fragment of an Argonne Chenet 320 bowl with roller-stamped decoration, dated to the second half of the 4th century (Hollevoet 1991, 183). Late Roman features were not recognized. These finds do not necessarily reflect a late Roman occupation; they can have been picked up at the Oudenburg fort site during the middle ages as curio, a well-known phenomenon (cf. Hollevoet and De Clercq 2019, 84-85).

At Bruges, only a small share of late Roman items are known, however all unstratified, old finds. Very intriguing is an intact 4th-century

black-slipped beaker originating at *Britannia*, unfortunately an old find without any information on its find context (Hollevoet and De Clercq 2019, 84). The most important late Roman occupation in the Menapian *civitas* seems to have been concentrated in the military centres of Oudenburg and Kortrijk.

#### 1.4.2. Excavation history: a *status quaestionis* of Roman Oudenburg, the fort site and its surroundings

To gain insights into the character and the development of the Roman occupation of the sand ridge, and as such to study the relationship between fort, settlement, graveyards and surroundings, all archaeological observations on the sand ridge up to and including the Zeeweg in the east were investigated and mapped according to their information on the Roman period<sup>39 40</sup>. Plotting the locations of all excavations and trial trenches, site observations, Roman finds from fieldwalking and Roman find reporting and metal detecting, shows the impact of the Roman occupation on the soil archive at Oudenburg and the spatial distribution of the sites (Figure 9; see Appendix 1 for all related information). The translation of the information from this *status quaestionis* results in Figure 10 with the synthesis of the Roman sites. Hence, this *status quaestionis* also forms the foundation for the maps representing the mid-Roman (Figure 11) and late Roman situation (Figure 12) at Oudenburg.

From 1956 onwards several excavations took place in search of the Roman military site of Oudenburg. Based on toponymic, topographic and historic sources, researchers had assumed already for a long time, that the remains of a Roman fort were to be found in this area (see *e.g.* Vannerus 1944; Gysseling 1944; 1950, 53-58).

From the beginning of the 17th century onwards, the finding of Roman coins and ceramics at Oudenburg had been regularly reported (Bauwens-Lesenne 1963, 91-94). The first to mention the finds was Gramaye in 1611 in his *Brugae Flandrorum sive primitiae antiquitatum Brugensium*. The name *Aldenborgh* was first documented for this location in 866 and the name itself points to an old stronghold already existing long before the Viking raids (Gysseling 1950, 53, 61-68; van Loon 2000, 122-125<sup>41</sup>). Further, the current street pattern of Oudenburg suggests the ground plan and the main streets of the fort (Figures 10-13). This square of more or less 300 by 300 m exists on the 16th-century map of Jakob van Deventer. It goes back much longer since the course of the surrounding ditch – the Stedebeek, Poortgracht or Oudenburgse Watergang – created in 1128, runs parallel with this street pattern

37 See for the decline in population in the different regions of the south of the Netherlands and the comparison with the regions north of the Rhine: van Enkevort *et al.* 2017, 34-36 and references.

38 He however argues that civil occupation may not have been as scarce as generally believed, as he points to the diminished visibility of late Roman sites with reduced habitation and exploitation of the landscape from the 3rd century onwards in comparison to the rich exploitations of the mid-Roman period.

39 All archaeological observations have been given a project code of which the related location can be found on the map of Figure 9 and to which is referred when a specific site is mentioned in the text.

40 Evidently, archaeological observations only yielding finds from medieval or later periods but with important implications for the Roman period are also mapped, cf. *e.g.* SO27, MD01, FF1. The lack of Roman finds at these, and other, locations (and the geological information at location SO27) confirms that these spots are situated outside the sand ridge.

41 Van Loon (2000, 123) confirmed the attestation by Vannerus (1943, 67 and 270) of some ten *Alteburg* toponyms in the German region where also Roman forts were found.

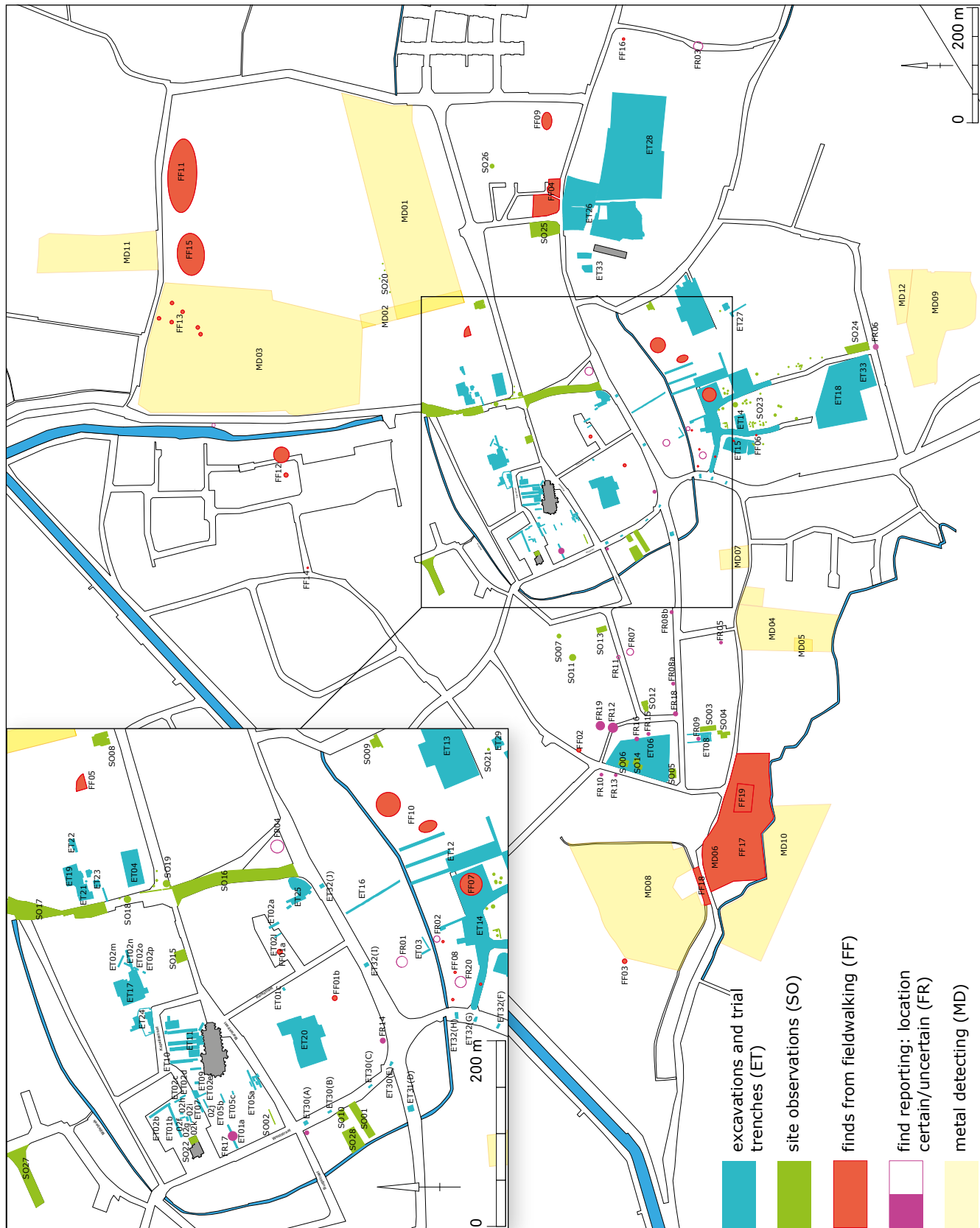


Figure 9. Map showing the localization of all known archaeological observations in the city centre of Oudenburg (situation July 2020; for the metal detecting finds: situation end 2016) which are of significance for the interpretation of the Roman site and its location. According to type of observation: excavations and trial trenches (ET) / site observations (SO) / finds from fieldwalking (FF) / find reporting (FR). Reported non-Roman finds are not included. For a descriptive overview of these archaeological observations: see Appendix 1.





Figure 10. Aerial photo of Oudenburg (basic map: © AGIV) showing the synthesis of the Roman sites with the localization of the stone fort of the 4th century AD and its surrounding ditch(es), the mid-Roman baths at c. 400 m to the west of the fort (purple), the excavated parts of the mid-Roman (red) and late Roman (yellow) graveyards and the observed mid-Roman (grey) and late Roman (white) roads.

(Gysseling 1950, 56; Mertens and Van Impe 1971, 12). The tract of a clergyman of the abbey of Saint-Pierre at Oudenburg, written between the late 70s and 80s of the 11th century, is a very valuable source of information thanks to the description of the Roman ruins at that time. This *Chronicon Monasterii Aldenburgensis minus Tractatus de Ecclesia Sancti Petri Aldenburgensis*<sup>42</sup> mentions how the stones of the fort ruins were reused for the building of the church of Saint-Pierre (1056-1070). Also the Counts of Flanders in the 10th century had transported stones from Oudenburg to Bruges for the erection of several buildings on the Burg (Gysseling 1950, 57; Meijns 1994, 45; Meijns 2008). A Carolingian stone well at nearby Roksem made of reused Tournai limestone, mortar blocks and fieldstone fragments from the fort (Hollevoet 1992, 56)<sup>43</sup> provides the evidence that the recuperation of stones from the fort already started in the early medieval period.

It was Mertens who proved the actual existence of a Roman fort in the city centre through archaeological research (Figure 13). In 1956

and 1957, during two short campaigns, the contours of the stone fort and the northwestern corner tower were located by means of small trenches (ET01-02). The northern tower of the western gate was traced during a one-month campaign in the summer of 1960 (ET05) (Mertens 1962; 1977) (Figures 9 and 13; cf. Appendix 2).

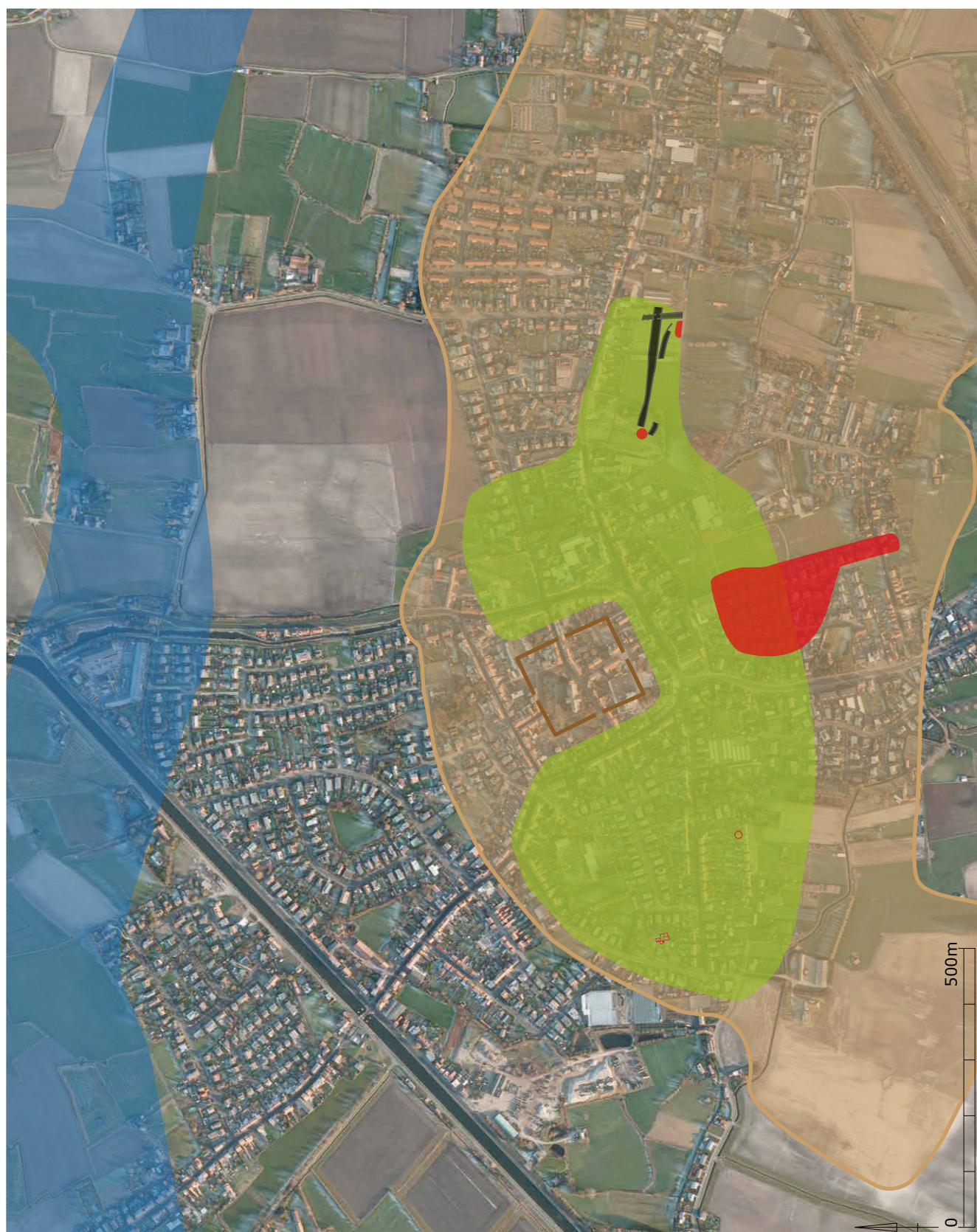
The 1960s excavations on two late Roman 'military' cemeteries more than 400 m to the west of the *castellum* revealed burials of 4th-century fort inhabitants with rich grave goods (SO03 and ET06) (Mertens 1977; Mertens and Van Impe 1971; Mertens 1967). Mertens mentions that both sites were separated by a strip some 40 m wide devoid of archaeological material leading to his conclusion that these were two separate graveyards. Hollevoet however believed this conclusion was not based on detailed research<sup>44</sup> (see also Chapter IV, Section IV.3.3). From the southern cemetery (Graveyard B) (SO03), only three graves were detected and excavated in 1962, discovered during the construction of a cellar for a new housing estate. The graves contained ceramic

<sup>42</sup> See Meijns 1994 for a study of this document.

<sup>43</sup> The analysis of the mortar fragments confirms this (Mestdagh 1990; 1991).

<sup>44</sup> Pers. comm. late Y. Hollevoet.







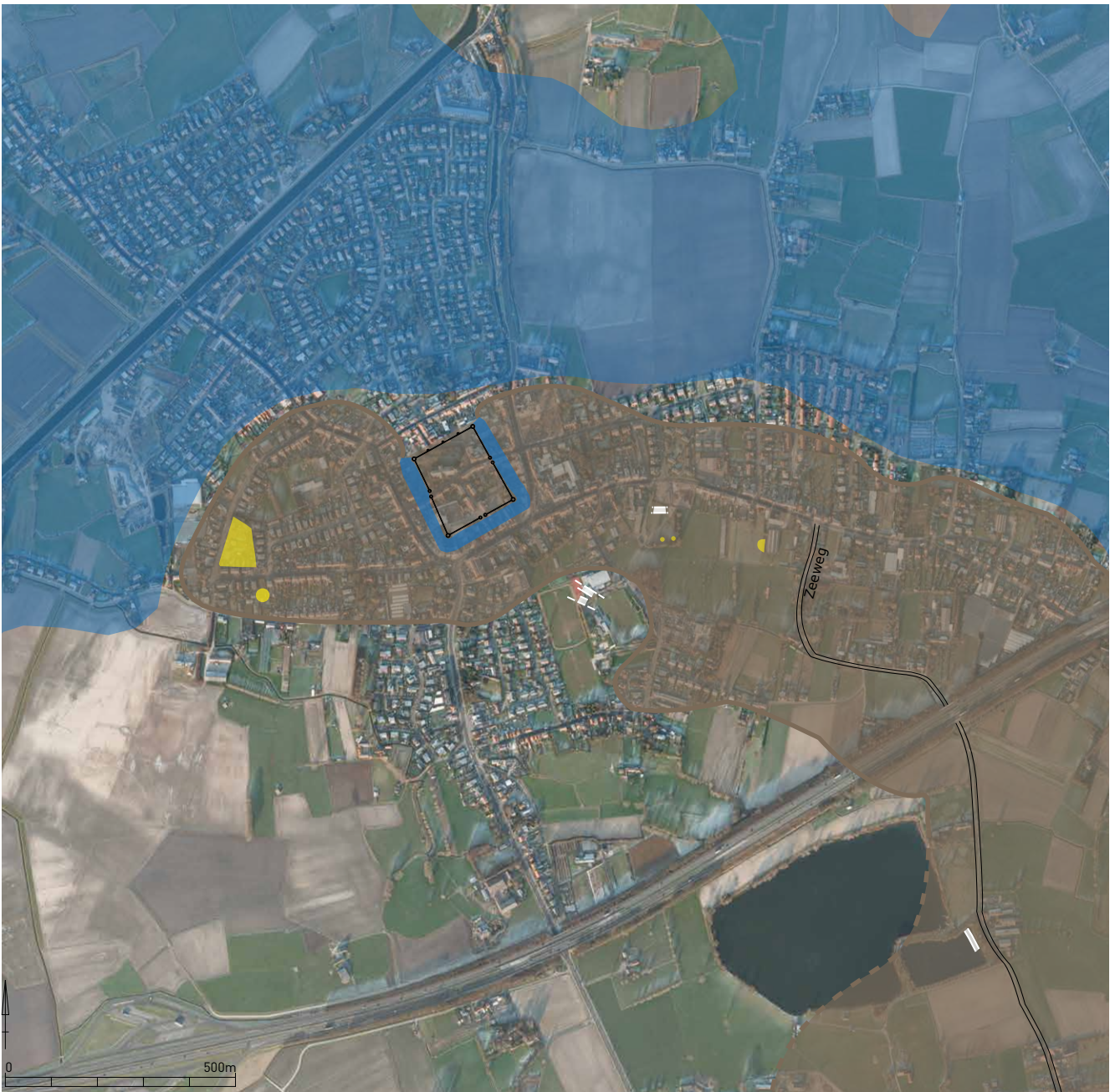


Figure 11 (previous page). Aerial view of Oudenburg showing the situation in the 3rd century AD as understood from the archaeological observations so far, with indication of the presumed position of the sand ridge during the High Empire (based on De Moor 1990, with adjustment according to the Digital Elevation Model and soil observations) and the super-imposition of the extramural settlement (including peripheral structures; minimal alignment of the *vicus*' maximal extent) (green), the Roman earth-and-timber fort of the mid-3rd century, the cremation graveyards (red), the bath house in the west (purple) and the roads of the High Empire (grey) (aerial photo: © AGIV). The course of the waterways (blue) has been based on the combined data of the geomorphological map, the Digital Elevation Model and the map of the reconstruction of the coastal region from Hillewaert *et al.* 2019, 46 (the latter in itself largely based amongst others on the previous data).

Figure 12. Aerial view of Oudenburg showing the situation in the 4th century AD as understood from the archaeological observations so far, with indication of the presumed position of the sand ridge during the late Roman period (based on De Moor (1990), modified according to the Digital Elevation Model and soil observations), and the superimposition of the Roman stone fort with surrounding defensive ditch in the city centre, the late Roman inhumation graveyards (yellow) and the late Roman roads (white) (aerial photo: © AGIV). The course of the waterways (blue) has been based on the combined data of the geomorphological map, the Digital Elevation Model and the map of the reconstruction of the coastal region in the late Roman period, from Hillewaert 2019 *et al.* (the latter in itself largely based amongst others on the previous data).



Figure 13. Localization of the excavation campaigns on the fort precinct and the immediate surroundings.

vessels pointing to a slightly earlier date which may go back to the end of the 3rd – beginning of the 4th century AD (Mertens 1962, 222-223; Mertens 1977, 60). One of the graves yielded a face-pot of Much Hadham ware (UK) (Hollevoet 2004), demonstrating amongst many other finds in Graveyard A an interaction of the unit with *Britannia*.

The northern Graveyard A (ET06) was excavated systematically and almost entirely in 1963-1964 and 1968 and yielded 216 graves. Dress accessories such as belt fittings and crossbow brooches point to a 'military' character of the graveyard. Not

only soldiers were buried here though, but also a number of women and children. According to the study of the finds by Mertens, the majority of the graves dated to the second half of the 4th century and the first decade of the 5th century with a large number situating in the last quarter of the 4th (Mertens 1964a; 1977, 59-62; Mertens and Van Impe 1971).

The 216 graves of the northern cemetery appeared to be arranged around the ruins of a presumed bath house, that has been believed to be the remains of the earlier civil settlement, next to two or three wells, postholes, ditches and pits (see Creus 1975) (Figure 14).

Long before the Roman army had chosen this location, a civil settlement seems to have developed here from the second half of the 1st century AD onwards (Mertens and Van Impe 1971; Mertens 1987; Mertens and Crabbé 1987), apparently as a new foundation. The location of the settlement suggests existing sea access and some kind of port facilities. The study of the samian sherds points to c. AD 70 as starting point (Creus 1975)<sup>45</sup>, which is in line with the coin spectrum starting with Trajanus (van Heesch 1998, 278).

The stone building, 21.60 by 10 m wide with a square space at the west side resulting in a total width of 15.50 m (Figure 14), was completely robbed out, but the abundant finds of *tubuli* and hypocaust tiles indicated that at least part of the seven rooms was hypocausted (cf. Vanhoutte 2018). The robber trenches yielded Tournai limestone, local or regional fieldstone, volcanic tuff from the Eifel region and pink and white mortar. Several loose fragments of flooring were found consisting of 20 cm thick pink mortar, possibly remains of the hypocaust floor. Remains of wall paintings showed red and black stripes on a blanc background. Two phases could be recognized in the alignments. Especially the drain<sup>46</sup>, which starts at the north-east of the building and which could be followed over a distance of 27.50 m, points in the direction of a building (partly) used as bath house. The square annex at the west side outlined a circular inner space which may have been a *caldarium* (cf. Creus 1975, 8-9). Underneath the building, postholes of an earlier wooden phase could be discerned. This results in at least three phases for the occupation at this location (Creus 1975, 34). Apart from building debris, no finds are stratigraphically related to this bath house. The building had been naturally buried by drift-sand and had apparently been abandoned for some time before the graveyard was installed in the first half of the 4th century (Creus 1975, 8).

Later finds to the west of the fort of stone wall remains (SO12), ceramic building material and red wall painting fragments (FR08b) point to other substantial buildings to the west of the fort.

The finds of the settlement witness of a high-standard material culture, especially for the 2nd century and first half of the 3rd century. Mertens believed it was not a large economic centre but neither an unimportant settlement which might have thanked its further development to the presence of the fort (Mertens 1987, 83). As mentioned before, the settlement occupation seems to have ceased in the third quarter of the 3rd century, possibly not later than the reign of Postumus.

In all Oudenburg publications and in literature in general (see e.g. the study of *vici* by Magerman 2005; 2006), the Oudenburg settlement pre-dating the fort is referred to as a *vicus*, being a 'rural settlement with centre functions for the surroundings on a

religious, economic and/or administrative level' (definition by Martens and Magerman 2008). This is however only based on the high-standard material culture the settlement witnesses of and on the presence of the bath building and the aforementioned few other indications for substantial buildings. The structural remains of the settlement are very limited and other indications to pinpoint this location as a *vicus* are lacking. Nevertheless, this settlement was obviously of significance. The use of the timber-framing technique observed at a few features of the settlement – an unusual building technique at civil sites (cf. Chapter II, Section II.4.2) – makes us wonder whether this settlement is not related to an earlier military presence. It is neither certain that the presumed bath house is related to the civil settlement. Proof is lacking, but it is more likely that the installation or at least the renovation of the bath house can be related to the installation of the fort and that it was at least from the late 2nd century onwards part of the military *vicus* and also served the fort's unit. One would expect the bath house closer to the fort. Sommer (1988) has evidenced that the preferred location for the military bath house in the mid-Roman period as demonstrated for *Germania Superior* and *Raetia* was in the vicinity of the gates. However, it is possible that the location for the military bath house of Oudenburg in the mid-Roman period, and in a broader view also the centre of the military *vicus*, was determined by topographic circumstances, this area being one of the highest on the sand ridge (Vanhoutte 2018, 162).

Complementary research on the fort area was conducted in 1970 providing some cross-sections on the western margin of the fort (ET07) (Figure 13; cf. Appendix 2). Together with the 1956-57 and 1960 trenches, they yielded insight into the chronology of the consecutive defensive ditches (Mertens 1978; 1979, 460-463; cf. also Mertens 1987; Mertens and Crabbé 1987).

When in 1976-1977 the municipal cemetery around the church in the city centre was decommissioned, Mertens and his team seized the opportunity to search in this area for the remains of the internal buildings, after the graves were removed (ET09/10/11). Mertens' research, by means of rather small trenches, revealed a site with a complex stratified sequence showing a long-term military occupation from the end of the 2nd century until the beginning of the 5th century AD (Mertens 1977; 1978; 1987; Mertens and Crabbé 1987).

Based on the results of the campaigns of 1960 and 1976-77, Mertens established a chronology of three successive *castella*, built on top of each other: two earth-and-timber forts and one stone *castellum* (Mertens 1977; 1978; 1979, 460-463; 1987; Mertens and Crabbé 1987). According to Mertens, various elements such as the layout and design of the stone fort and its topographical position, indicate that the site itself may probably be identified with the *Portus Aepatiacus* mentioned in the *Notitia Dignitatum* (Mertens and Van Impe 1971, 36; Mertens 1987; Mertens and Crabbé 1987; Brulet 2006e, 58-59), which was already assumed by Gysseling (1950). However, several scholars rejected this hypothesis (e.g. Will 1973; Leman 2004; Seillier 2010). Several finds in the graves do point to a close relationship between the Oudenburg troops and those along the British side of the *Litus Saxonicum* (see Sas 2004; Hollevoet 2004). These topics will be discussed further in this publication.

<sup>45</sup> The stamp OFCELSI listed by Creus (1975, 16: 23) as belonging to the period Claudius-Vespasianus is to be dated in the period c. AD 70-100 (Polak 2000, 204).

<sup>46</sup> The drain was still preserved *in situ* close to the building. With a width of c. 40 cm and a height of 36 cm, it consisted of two *imbrices* placed on top of each other covered by a limestone plate, all in a stone packing covered by yellowish and pink mortar. At the bottom, remains of wood were preserved (Creus 1975, 9).



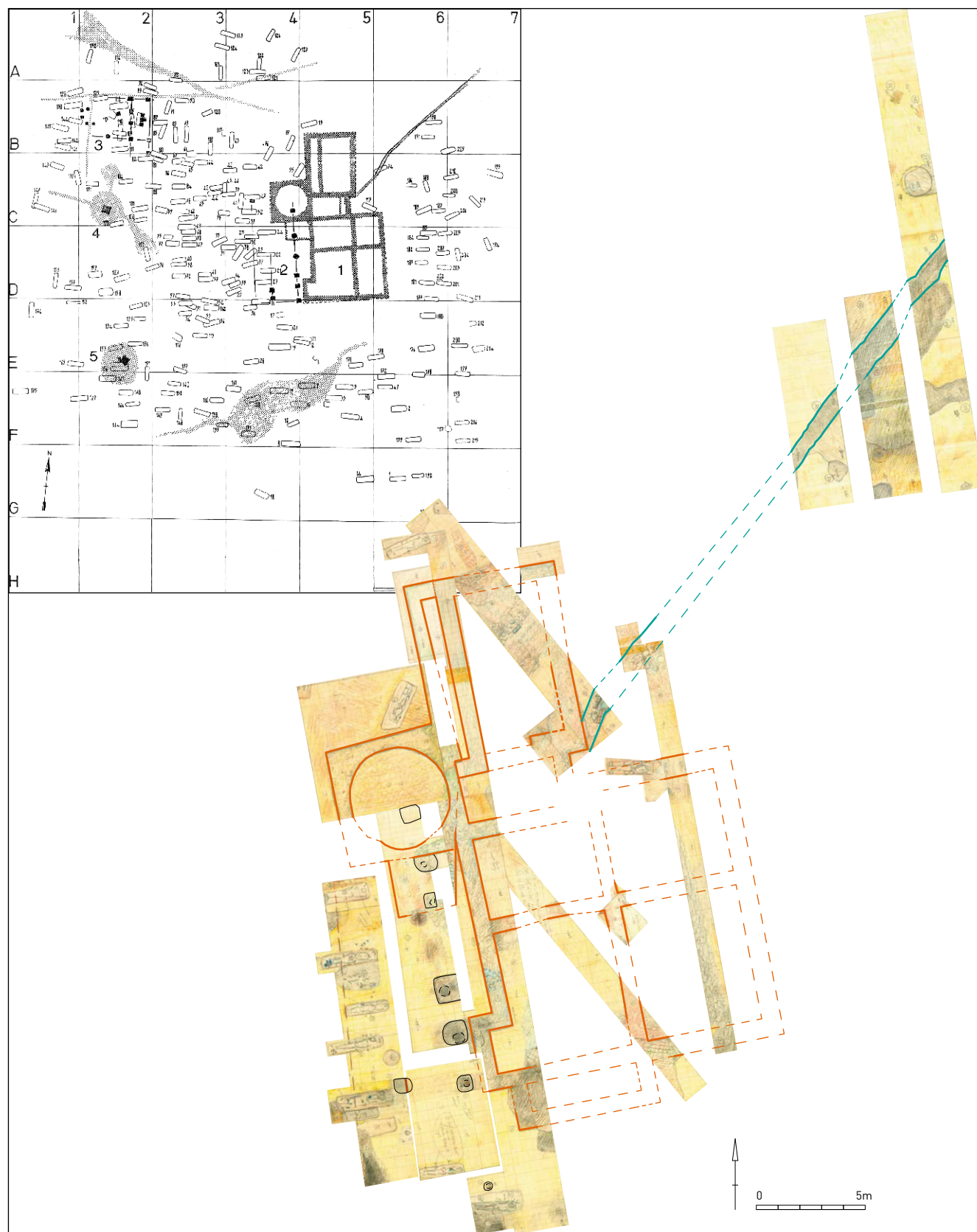


Figure 14. Reconstruction of the presumed baths uncovered by Mertens underneath the late Roman Graveyard A, based on the replotting of the trench maps of Mertens (Archive Mertens NDO). Inset: overview map of the excavated area with localization of the settlement features and the baths underneath Graveyard A (inset map taken from Mertens and Van Impe 1971, 20: Afb. 8).

In the 1980s a large survey project was undertaken by Y. Hollevoet on the Oudenburg territory in light of his master thesis at Ghent University (Hollevoet 1985). Based on ploughed-up finds, observations on building-sites and the reporting of finds in private collections, he located several new archaeological sites, most of them related to the mid-Roman civil settlement but also some late Roman indications were found.

In 1990-1992 and 1994, prior to the implantation of a new estate and sport facilities, a third, but earlier graveyard came to light to the south and south-east of the fort (ET12, ET14/15) (Hollevoet 1993c; 1994). This exceptionally large cemetery, mainly consisting of cremation graves, was related to the civil settlement. Salvage excavations revealed almost 600<sup>47</sup> cremation graves among which some twenty inhumation burials occurred, dispersed over the graveyard. The graves predominantly date to the 2nd century and first half of the 3rd century AD. How the inhumations relate to the cremations, is unclear (see Chapter IV, Section IV.2.3). Hollevoet assumed that he only could reveal a third of the totality of cremation burials. Predominantly to the east and at the north side of the graveyard many peripheral features of the civil settlement from the High Empire were excavated during this rescue project, such as ditches and gully systems dividing up the land, pits, some wooden wells, several ponds for cattle. The complex ditch-system and the well were installed over the northern area, cutting several graves, indicating that the cemetery location was reused for agricultural purposes at some point around the middle of the 3rd century. No settlement features yielded later ceramics than from the third quarter of the 3rd century (Hollevoet 1994, 215)<sup>48</sup>. Late Roman cart tracks, mainly in the eastern part of the site and to which several late Roman *Eifelware* fragments can be related, and a few horse skeleton graves, were clearly later than the cemetery and date to the late Roman period. As mentioned before, the cart tracks indicate that this area functioned as a passage route to the south-east in that period (Hollevoet 1993c, 202; 1994, 211-212).

The excavations and survey finds in the past decades pointing to the Roman civil settlement of the 2nd and 3rd century are reported all over the sand ridge. They also evidence to an extension in the adjacent polder area at some point (see Hollevoet 1987b, 49). While the early settlement of the second half of the 1st century AD seems to be situated only at the west end of the sand ridge<sup>49</sup> (see Mertens and Van Impe 1971; Creus 1975), the civil presence covered most of this sand ridge during its flourishing

period in the 2nd and 3rd century (Hollevoet 1987a; 1987b)<sup>50</sup> (Figures 10 and 11). During the 2nd century, its core of origin in the west developed to the east, resulting in features on the fort precinct pre-dating the fort. After the installation of the fort in the late 2nd century, the civil settlement developed into an extramural village around the fort. Apparently the settlement expanded further eastwards<sup>51</sup>. Peripheral structures were found to the south and south-east and to the east of the fort, along the mid-Roman road. The settlement ceased to exist somewhere in the late third quarter of the 3rd century, based on the finds to the south of the fort (see Hollevoet 1993c; 1994; Gilté 1993) and confirmed by the recent excavations at the sites Riethove and Belleroche to the east (see resp. Dhaze et al. 2018; Dyselinck et al. 2020).

No further excavations were carried out on the fort area since the Mertens campaigns of 1976-77 until the beginning of the 21st century. It was only in 2001 (until 2005) that new archaeological research took place, in the south-west corner of the fort precinct in advance of the construction of a new supermarket (ET20) (cf. Vanhoutte 2007b). The large-scale rescue excavations were conducted by the Institute for Archaeological Heritage / Flemish Heritage Institute (the predecessors of the current Flanders Heritage Agency) from August 2001 until April 2005<sup>52</sup>. Although this site covers only 5.25% of the total area within the fort walls, it provided a unique opportunity to carry out systematic research over an area of almost 17.20 are. This research formed the starting-point of the present study.

In 2003, another rescue excavation was conducted at the northeastern corner (ET17), which appeared to be largely disturbed by medieval structures (Patrouille 2004), but nonetheless this site yielded essential data on the extent and the defence system of the fort (see Vanhoutte et al. 2014). The plot just to the west of this site was investigated during some weeks at the end of 2008 and 2009, prior to the building of a flat complex (ET24). The broad results showed a stratified sequence and features corresponding to the findings of the excavations of the south-west corner. The site yielded new data concerning the nature of the defensive features of the stone fort; most important is the evidence of a stone bastion (Vanhoutte et al. 2014).

47 Hollevoet (1994) reported c. 400 graves; in later lectures he mentioned c. 450 to 500 graves. An inventory of the find assemblages by the present author based on the archive by Y. Hollevoet concludes to almost 600 graves.

48 The ceramics of a selected area were investigated within the context of a master thesis by Gilté (1993). The decorated sigillata sherds are mainly dated to the first half of the 3rd century. Attested potters are Lucanus, Reginus I/II, Iulius I, Reginus II, Attilus (or Primitivus I/II/III), Regulinus, Iulius (VILVI), Verecundus II, Respectinus I, Ianu(arius) II, Primitivus I (II). Only Iulius II – Iulianus I and the ware related to Iulius II – Iulianus I and Victorinus II are dated until the third quarter of the 3rd century (see Gilté 1993, 193-198).

49 First-century features are only known from underneath the late Roman military Graveyard A.

50 Worth mentioning here is the geophysical survey carried out by the University of Kent (Canterbury, UK) in collaboration with the City of Oudenburg and the Flanders Heritage Agency in November 2012 on vacant areas in the Oudenburg centre. The investigated areas are the grass field around the Arnoldus primary school, to the north-east of Graveyard A (ET06) (between the locations of FR19 and SO07), and the soccer field south of ET13 and in-between ET13 and ET12. Only some ditches and pits came to light, Roman or medieval in date (Charlwood 2013). The rather disappointing results may be due to the measuring techniques, possibly not optimally suited for the sandy soils, and to the wet conditions in which the survey took place (Dhaze et al. 2016, 46).

51 Clear 3rd-century features were mainly found to the south-east and to the east of the fort (see sites Ter Beke (ET 12 and 13), site Riethove (ET26) and site Belleroche (ET28)).

52 The excavations at the south-west corner site started in August 2001, led by W. Dhaze. From September 2001 until Spring 2002 the present author was in charge in collaboration with E. Patrouille. From the Summer of 2002 onwards, the present author was entirely responsible for the excavations, and the subsequent post-excavation research.

From 2007 until 2009 a large site *c.* 300 m to the east of the fort was excavated (ET26) (site Riethove) prior to the expansion of the 'Old Peoples Home' and the building of service flats, in a close collaboration between the City of Oudenburg and the Flemish Heritage Institute (predecessor of the Flanders Heritage Agency)<sup>53</sup>. The site confirmed the character of the margin of the civil settlement of the High Empire, consisting of numerous pits of all kinds, wells, and sand roads of the mid-Roman period, next to a late Roman road more to the north (Dhaeze, Decorte and Vanhoutte 2008; Dhaeze and Vanhoutte 2009; Dhaeze *et al.* 2018). Four successive, more or less east-west running, sand road alignments, partly overlapping each other and dated until around the end of the 2nd century, evidence that this area had been a passage route for a long time (Dhaeze *et al.* 2018, 61). By the end of the 2nd or early 3rd century this area was organized for livestock farming, agrarian and industrial activities. The eleven Roman wells at the site can be dated to this period. Although with these wells the vicinity of dwellings would be expected, building remains were hardly found (Dhaeze *et al.* 2018). Four of these wells yielded a dendrochronological date, all four with a felling date in the 2nd century which should be set respectively after AD 129 (but with one clearly reused board of which the felling date due to still preserved sapwood should be set between AD 97 and 127), after AD 139-154, after AD 156 and after AD 169 (Haneca 2015). However, besides the use of possibly old wood, of most boards the sapwood was not preserved and the proposed felling date can only be considered as the earliest possible date after which the wood is cut. It can therefore be assumed that these wells were all constructed rather by the end of the 2nd century or the early 3rd century, as can be deduced from the pottery. The well dated dendrochronologically 'after AD 156', for example, was used until around the middle of the 3rd century (see Dhaeze *et al.* 2018, 110-114). A most interesting find in one of the 3rd-century wells is a perforated plate of a kiln, indicative of the presence of a small-scale pottery (Dhaeze *et al.* 2018, 129-130). During the 3rd century the east-west route possibly ran more to the north, outside the excavation area. By the 4th century this area was again used as passage route, with a sand road running right to the north of the earlier sand roads.

The most recent large-scale excavation on the sand ridge took place in the summer of 2014, when the adjacent site to the east of site Riethove was investigated by BAAC prior to a new building allocation (ET28) (site Belleroyche) (Dyselinck *et al.* 2020). This area yielded the continuation of the mid-Roman road uncovered at site Riethove and a cross-point to the south, many pits with evidence for industrial activities, land division ditches and gullies and indications for farming activities, a cremation graveyard to the south (dated until at least the late 2nd century AD) and a late Roman inhumation graveyard to the east. No less than another 26 Roman water supply pits were uncovered, all dated to the mid-Roman period, of which eleven wells, one with a stone casing, eight with a

wooden framework and two with wickerwork<sup>54</sup>. Building features were neither found at this site and it is a likely possibility that the wells served industrial activities.

At both sites Riethove and Belleroyche gullies were laid out by the end of the 2nd or early 3rd century as part of a land division system. Later the gullies circumscribed parcels which can be reconstructed as having sizes of more or less 27/30 to 35 m, sometimes split up in two, in one case at site Belleroyche split up in even more parcels. In the eastern half of the Belleroyche site an area of at least 70 by 50 m was enclosed. Also at the south/south-east of the fort (ET13-14) square parcels sided 32 m were observed, already recognized by Hollevoet as used in a system of livestock farming (Hollevoet 1993c, 204). Also the cattle ponds at the three sites and the scientific results at site Bekestraat B (ET13) point to cattle breeding. Fixed measurements seem to be in play and it is likely that the Roman *pes monetalis* (29.6 cm) was used as basis. For many gullies and ditches a date in the 3rd century AD is clear. The findings at the three sites on the southern, southeastern and eastern margins of the civil settlement demonstrate that the areas newly brought into use were split up into small and larger parcels by means of gullies and ditches all displaying a N/NW-S/SE orientation, and although representing several phases, clearly suggestive of a systematic layout planning of the settlement and moreover at some point oriented on the fort's layout (NW-SE) (see also Chapter V, Section V.3.4.1).

### 1.5. The general chronological framework of the fort site as outlined by the former research

Before we go deeper into the stratigraphy and morphology of the Oudenburg fort site, a general chronological framework needs to be set. In what follows, the chronological conclusions are represented as they were outlined by Mertens based on his research.

Unfortunately, the excavation campaigns on the fort precinct in the 1950s to 1970s under the leadership of Mertens never resulted in a study-in-depth; the published data can be found in notes and short articles (Mertens 1963a, 1963b, 1970, 1974, 1976a, 1976b, 1978, 1987) or (a section within) more general, though very important, overview publications (Mertens 1958a; 1958b; 1962; 1972; 1977; 1980; Mertens and Crabbé 1987)<sup>55 56</sup>. Whereas the late Roman military Graveyard A to the west of the fort has been studied and

53 For the Flemish Heritage Institute the present author was responsible. Due to a changing policy at the Flanders Heritage Agency, the Agency and the present author could not be involved in the post-excavation research of this site.

54 The 15 water supply pits without casing which can undoubtedly be dated in the mid-Roman period, vary considerably in depth. Some may have been cattle ponds, many others were rather wells without casing.

55 The last scientific study on Oudenburg by J. Mertens (1921-2007) dates from 1988 when he published his excavations of 1956 on the early (to high) medieval church (with earliest written mention in AD 745) at Roksem, a sub-municipality of Oudenburg (Mertens 1988a and 1988b).

56 For the present study, as much as possible the plans of Mertens and his team have been processed, and finds adding information to the envisaged research questions have been integrated. The descriptions by Mertens bear witness of his brilliant insight into stratigraphy and features. Since many assemblages from the excavations of the 1950s to 1970s at the Oudenburg fort have not been collected contextually, it turned out to be very difficult to connect them with a specific level. Therefore, the archaeological value of many assemblages appeared to be limited within a chronological study.



published in detail (Mertens and Van Impe 1971), Mertens could never complete a study-in-depth of the plans and finds of the fort precinct (see Preface).

After his last excavation campaign in 1977 on the fort precinct – and at Oudenburg altogether – Mertens presented his first conclusions on the fort chronology in 1979 at the International Congress of Roman Frontier Studies, within a large overview paper on ‘Recherches récentes sur le limes en Gaule Belgique’ with all the known military sites of *Gallia Belgica* / *Belgica Secunda* (Mertens 1980). He described his conclusions ‘*d’une planimétrie et d’une stratigraphie extrêmement complexes*’ in four main fort levels – although not specified as such – an adjustment to the threefold fort chronology he maintained before. The general framework was set by him between the late 2nd and the early 5th century. He added that his latest excavations had revealed that the Oudenburg fort was not only very important in the 4th century but also in the 3rd century (Mertens 1980, 463).

In his two publications of 1987 (Mertens 1987; Mertens and Crabbé 1987), Mertens concluded again to a threefold fort chronology; however, he believed that ‘*it was not entirely excluded that some of these phases knew renovations and adjustments on the fort precinct; the research in the Oudenburg centre clearly points in that direction*’ (Mertens 1987, 84; translated from Dutch).

For the earliest phase, called ‘Oudenburg I’, Mertens in 1987 dated the finds at the end of the 2nd and 3rd centuries (Mertens 1987; Mertens and Crabbé 1987, 14). However, Mertens suggested also that the Oudenburg site may have had already some military significance from the 2nd century onwards, due to its strategic position and at the same time protecting the civil settlement. Nevertheless he mentioned a possible relation between the erection of Oudenburg I and the ‘threatening situation around the middle of the 3rd century’ (Mertens 1987, 83).

In the only later Oudenburg publication of his hand, published not until 2006<sup>57</sup> and this in the large overview publication by Reddé *et al.* (2006; with a catalogue of the military sites in Gaul), he adjusted his opinion. By then he assumed a possible link between the installation of the first Oudenburg fort and the invasions by the Chauci during the 2nd century, specifically the 170s (Mertens 2006, 362). Mertens may have come to this idea after the discovery of the *castellum* at Maldegem-Vake in the 1980s which could firmly be related with the Chauci invasions.

The installation of ‘Oudenburg II’ was situated by Mertens in 1987 in the period ‘after the invasions in the late 3rd century’, hence in the last quarter of the 3rd century, ‘extending until the beginning of

the 4th century’ (Mertens and Crabbé 1987, 15-16). In his text of 2006, he pointed to the coin peak under Tetricus at this level and confirmed the occupation in the second half of the 3rd until the first decades of the 4th century (Mertens 2006, 362).

Subsequently, he believed in 1987 that the construction of ‘Oudenburg III’ was the consequence of the army reorganization after the middle of the 4th century (Mertens and Crabbé 1987, 18). He related this last fort occupation with Graveyard A he had discovered in the 1960s c. 400 m to the west of the fort (see *e.g.* Mertens and Crabbé 1987). Based on the homogeneous character of Graveyard A, he connected the last fort to the radical changes and the adjustment of the coastal defence after the invasions of 352 and 355, under Julianus (360-363) or under Valentinianus (364-375) around 369 (Mertens 1987, 89).

Mertens however dated the start of this graveyard slightly earlier, c. AD 340, with a continuation of its use until c. AD 405 (Mertens 1987, 87). Moreover, he wondered whether the latest fort was also related to Graveyard B, the slightly earlier graveyard which he dated in the first half of the 4th century, and which would point to an installation date of the latest fort under Constantinus I (306-337). In his text published in 2006, an installation under Constantinus I is again favoured (Mertens 2006, 364). As for the end of the fort occupation, Mertens assumed it was related to the gradual, overall removal of troops from the border regions around 410 (Mertens and Crabbé 1987, 30).

<sup>57</sup> According to dr. R. Brulet (pers. comm.), Mertens submitted his text around 2000. His section on Oudenburg can be seen as a summary of his previous publications of his research at the Oudenburg site. His latest scientific publication, on Roman sculpture at Tongeren, dates from 2001 (Lodewijckx 2001, 11).



## II. New insights into the stratigraphy, morphology and site formation processes at the Oudenburg fort

### II.1. Introduction to the stratigraphy and morphology research of the site

It is chosen here to deepen out the structural outlines of the site of the Oudenburg fort before setting a new chronological framework which could be considered as more logically. However, the contextual approach that we envisage in this research and that we also want to pursue to come to a refined chronology of the fort site forces us first to outline the fort structure and to go into detail into the morphology of the site. Insight into the stratified evidence is obviously required for the contextual approach of the studies of the material culture to eventually come to conclusions about the evolution the respective find categories did or did not undergo. Insight into the condition and character of the contexts is also necessary to enable us to define contexts which are reliable to yield chronological information and that are representative for the given phase to which they belong.

The study of large sections through the excavation area, mainly formed by the trench profiles of which a selection is presented and analyzed in Appendix 4, was the starting point to come to insights into the stratigraphy of the site. The connection between the sectioned features and their levels with those in plan has eventually concluded to a succession of five main levels of military occupation on top of an occupation level pre-dating the fort. These levels with their respective features, structures and characteristics are subsequently discussed in detail. When necessary for the understanding of the functionality of features and structures and the functional implementation of the area, in what follows references are already made to specific finds or find assemblages.

### II.2. The stratigraphy of the site: the study of the trench profiles

#### II.2.1. The stratigraphy of the Roman level

The Roman level presents itself as a thick set of layers and features with an average total thickness of 1 m, locally *c.* 1.5 m on top of the old soil and covered by a so-called 'dark earth' of 1.00 to 1.30 m thick (locally stretching deeper due to contemporary digging).

The top of the cultivated soil stretches around an average depth of 4.40/4.50 m T.A.W.<sup>58</sup> (4.60 m T.A.W. at the southern profile 5.1, to 4.30 m T.A.W. at the north side of the excavation area, but the cultivated soil appears to be lowered here); this is *c.* 2.10 to 2.20 m below current walking surface<sup>59</sup>.

The Roman level consists of a complex succession of occupation levels, debris, fire and levelling layers. The dense succession of activities of the respective occupations caused significant disturbances at each level. As the Roman layers became very compacted through time and subsided above pits and other deeper structures, several levels do not present themselves in their original horizontal dimension and/or depth, and vertical stratigraphic relations are often disturbed.

Understanding of the stratified sequence of the site and of the different fort levels is primarily based on the detailed study of the trench profiles (Figure 15), in close and constant verification with the features revealed in level surfaces. By registering all sides of the different trenches, the successive occupation levels could be unriddled by linking the excavation levels with the connected layers and features. In surface related layers and features could thus be interpreted within their stratigraphic relationships.

The analysis of the selected trench profiles (Plates I-XI) is discussed in Appendix 4. To improve the understanding of the correlation between the different profiles, identical features or layers are given the same feature number on the presented profiles. Profile drawings are represented with their interpreted layers and features, based on the field descriptions of the single layers.

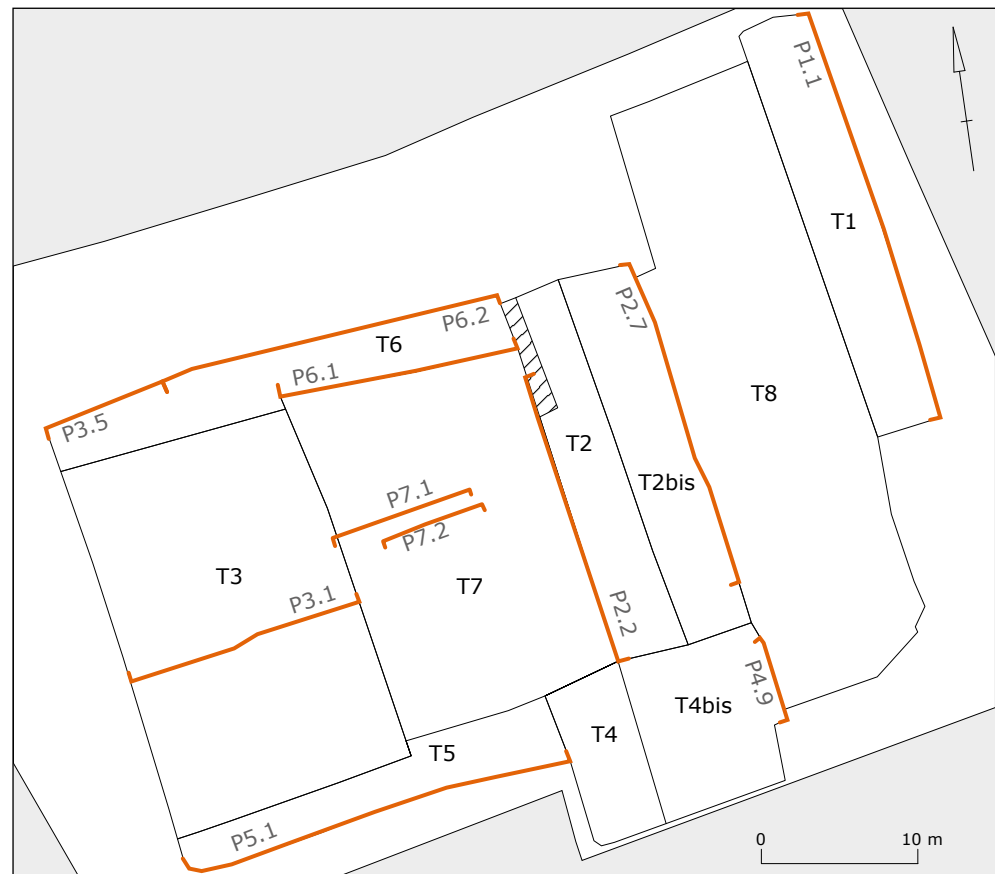
#### II.2.2. Five main levels, many building phases

The analysis of the trench profiles, in combination with the phasing concluded from the study of the defence system, reveals five main levels of occupation within the Roman stratigraphy.

58 'Tweede Algemene Waterpassing' or Second General Levelling. This is the national reference level corresponding with the average low water level at spring-tide.

59 This is of course at the time of the excavations.

Figure 15. Localization of the excavation trenches of the south-west corner site with indication of the in Appendix 4 in detail discussed trench profiles.



However, these levels, as will be noticed even more clearly in the study of the plans of the successive levels, each represent more than one building phase. The main occupation levels are separated from each other by a making-up of the area. The different building phases within an occupation level are related to the same defence system. A newly installed fort was preceded by a planing and making up of the inner building area and was equipped with a new defence system, but during the life-time of a fort several building phases could occur, whether or not these are related to unit changes.

The earliest level, installed directly onto the cultivated soil, appears to comprise one (or more) non-military building phase(s) ('pre-fort') prior to the installation of the first fort ('fort level 1'). At (fort) levels 2, 3, 4 and 5 several building phases can be distinguished, representing not only reparations but even total renovations of the area.

### II.2.3. 'Dark earth' and post-Roman occupation at the site

The upper level of the soil profile consists of a so-called 'dark earth' covering the whole Roman site in the city centre of Oudenburg. This phenomenon has already been briefly discussed in some publications of the Oudenburg excavations (see Vanhoutte 2004; 2007b; Vanhoutte *et al.* 2014) – part of which will be mentioned

here –, but the origin of this layer still remains rather enigmatic<sup>60</sup>. Different 'dark earths' are identified at Oudenburg indicating that the fort precinct has undergone another taphonomy than the area outside the fort itself.

At the fort precinct, this homogeneous level of very dark grey brown, humic, slightly clayish sand is characterized by the presence of fragments of building material (Tournai limestone, mortar, ceramic building material) and an abundance of Roman finds compared to the medieval material. Since the Roman level up until the latest layers of the fort occupation appears to be preserved, this accumulation is obviously post-Roman. According to dr. R. Langohr<sup>61</sup> the earth, which must have been already rather homogeneous on its original location, was clearly dumped on the site and this must have happened rather rapidly. Bioturbation by worms reworked the soil into a dark level, likely with a rate of 8 to 10 cm per century, concluding to a stabilisation of eight to ten centuries. Hardly any stratification can be distinguished in this dark earth according to the trench profiles and manual lowering in the dark earth. This is likely due to the post-depositional pedological formations and bioturbation processes. Only a vague level marked by some stone and ceramic building material fragments positioned

<sup>60</sup> A thorough study of the dark earth was not part of the scope of the current research which focuses on the Roman level. However, more research on this topic should be on the agenda, ideally in combination with micromorphological analyses.

<sup>61</sup> Pers. comm. dr. R. Langohr during his visit at the site on 15/04/2003.



Figure 16. Section through hearth OS 4919 (Plate XII: feature 4) which gives a good insight into the stratigraphy of the lower part of the dark earth level. This early medieval hearth was dug in a first accumulation of dark earth which is positioned on top of the demolition layer of the bath house of fort level 5.

horizontally could be noticed on most of the trench profiles at an average height of *c.* 5.80 to 6.00 m T.A.W. At the east end of trench profile 5.1 this level, here at *c.* 5.50 m T.A.W., is marked by a hearth (feature 19) (Plate II); this is also the case at trench profile 2.7, where at *c.* 6.00 m a hearth was revealed (feature 96) (Plate VIII). At trench profile 6.2, this level reaches a height of 6.10 m T.A.W (Plate V). At all locations, the earth underneath this level appeared to be more humid, due to a higher compaction, compared to less compact and more humid above this level. Although the homogenisation process crossed this level, it can be identified as a stabilisation surface which can be related to late Carolingian features uncovered in plan (Plate XII).

It can be concluded that in the early medieval period a first accumulation of so-called 'dark earth' took place, limited to the fort precinct and closed off by a late Carolingian level (9th-early 10th century) (cf. Figure 16) (see Vanhoutte 2007b for a description of this level<sup>62</sup> and a general overview of the finds). This stop in the accumulation and the use as running surface may explain the compactness of the earth. In contrast to the fort sites which yielded Merovingian and (late) Carolingian sherds, mainly in the lower levels of the dark earth, little early medieval material

occurs *extra muros* in the surroundings of the fort<sup>63</sup>, indicating that the early medieval occupation was mainly concentrated within the fortification. Likely due to the nature of the habitation, this occupation is difficult to grasp. The early medieval occupation at the fort site is to be seen in the larger context of early medieval sites on the sand ridge. The area Roksem-Ettelgem-Zerkegem<sup>64</sup> testifies to a dense concentration of early medieval rural communities with *in situ* Merovingian and Carolingian occupation traces at different locations<sup>65</sup>. Oudenburg should even be considered as the possible location of the *municipium Flandrense*, the capital of the *pagus Flandrensis*, based on several arguments amongst which the archaeological indications for occupation at the south-west corner site (Hollevoet 2016, 69; Hollevoet and Hillewaert 2019a, 126-127)<sup>66</sup>. The Anglo-Saxon affinities attested at the early medieval sites in the region (in building techniques, house plans as well as in the pottery) (Hamerow, Hollevoet and Vince 1994) evidenced for Hollevoet that their inhabitants should be considered as the descendants of the Germanic immigrants of the late Roman fort of Oudenburg (Hollevoet 2016) (further discussion on the 'Germanization' debate: Chapter V, Section V.3.4).

At the fort precinct, a second accumulation of 'dark earth' followed in which also high medieval pottery fragments from the 11th-12th centuries appear. The robber trenches of the late Roman bath house at the south-west corner site cut this dark earth phase and contained no later pottery than of this period (see also Vanhoutte 2015). Besides, this area is known as an orchard since 1273 (Gysseling 1950, 56). This second accumulation of dark earth covered the robber trench of the Roman defensive wall completely<sup>67</sup>, implying that the late Roman defensive wall was robbed out completely prior to the (late) 12th century. Also the defensive ditch was now completely filled in; this ditch appears to have been still in use or at least for the most part open during the early medieval period.

62 See Plate XII. At the south side of the excavation area an early medieval unit (A) is defined by a pit (1), a gully (2), a construction slot (3) and a large hearth (4; see also Figure 16). A deep pit of earlier date underneath the gully cuts through a first accumulation of dark earth which fills in the depression of the basin of fort level 5B. To the same level two other hearths can be related (5 and 6). A second unit to the north-west (B), with central hearth and only shallow remains of construction slots, can also be assigned to the late Carolingian occupation level. Another hearth more to the north (C) (Figure 76: a), a presumed grain shed on six posts (D) and some wall remains (E) are also attributed to this level. More to the east, a third unit is marked by two construction slots and a central hearth (F) constructed with reused tiles probably originating from the bath house of fort level 5A (see Figure 76: c, d).

63 To the south-east of the fort (sites ET12 and ET13) some Merovingian pottery sherds were collected as residual material in features of later date (Hollevoet 1993c, 203). At the site of the late Roman military Graveyard A, out of context, a small, handmade, slightly biconical pot with four studs on the shoulder and a so-called 'equal armed' brooch were found, both of early medieval date (Hollevoet 1985, 38-40; dossier 1; Hollevoet and Hillewaert 2019a, 127).

64 Both Roksem and Ettelgem are part of the municipality of Oudenburg; Zerkegem belongs to the neighbouring municipality of Jabbeke.

65 See for Roksem: De Meulemeester and Dewilde 1987, 227-228; Hollevoet 1991; 1992; 1993b. At Roksem also the remains of an early medieval church were brought to light (earliest literary mention: AD 745) (Mertens 1988a and 1988b). See for early medieval traces at Ettelgem: Hollevoet 2000; Patrouille and Vanhoutte 2002, and for those at Zerkegem: De Cock *et al.* 1987; Hollevoet *et al.* 1994.

66 In this contradicting others who plead in favour of an identification with Bruges (e.g. Declercq 1995).

67 Many, mainly large, pits cut through this second dark earth accumulation; some probably date to the end phase of the accumulation and can be identified as tree or tree extraction pits. It is also in this period that the large robber trenches were dug to extract the building material of the Roman baths. In the 15th century a row with heavy posts was constructed along the robber trench of the Roman defensive wall; however, since the latter was no longer visible at the time, there is no connection between the two structures.

Gysseling mentions a medieval toponym at the south-west corner of the fort evolving from *die Hoghe Wall* in 1273, *den Hoghen Wal* in 1287 to *den Burgh* or *den Hoghen Wal* around 1470, according to Gysseling (1950, 56) assuming the presence of a mound with wooden reinforcement before 883 in the period of the Northmen's attacks. De Meulemeester, who referred to the debate by other scholars, concluded this must have been the location of a motte-and-bailey castle by count Cono I (second half 11th century) (De Meulemeester 2004, 429). While Gysseling already suggested this may have referred to only a palisade, the excavations at the south-west corner did not yield any indications for such a presence.

'Dark earths' uncovered outside the fort precinct, in excavation trenches east (SO16), south-east (ET25), south (ET16; ET32) and west (ET30) to the fort, are dated in the 12th-13th centuries. In this period, possibly from the time of the digging of the city moat in 1128 onwards, the area between the fort walls and the city moat was gradually raised (cf. Vanhoutte and Dhaeze 2011; Dhaeze and Vanhoutte 2011; Dhaeze *et al.* 2013, 72). Obviously, these earth accumulations had no agricultural reasons since the city centre developed here, but only aimed for a raised occupation level.

The fort sites on the north-east (ET24) and on the south-west side (ET20) of the fort, and also the trench to the south of the fort in the Hoogstraat (ET16), show on top of the 11th-12th-century accumulation a 15th-century dark earth level. At the fort sites this level only starts from the debris of the Roman wall outwards and it probably covers most of the area outside the fort within the alignment of the Stedebeek, the creek dating back to the city moat dug in 1128 (Gysseling 1950, 55-56). A small excavation at the Hoogwegel to the south-west of the fort (ET31(D)) proved that the dark earth did not reach the Stedebeek here but ended *c.* 40 m before (Vanhoutte and Dhaeze 2011).

To summarize, at the fort precinct first an early medieval accumulation took place, closed off by a late Carolingian occupation level, on top of which a (final) accumulation of earth followed at last in the 12th century. A 12th-13th-century earth accumulation covers the entire city centre outside the fort walls and within the 12th-century city moat. In the 15th century another earth accumulation followed, from on top of the robber trenches of the defensive wall outwards, covering the same area within the city moat, leaving out the fort precinct (or certainly at least not covering the south-west corner).

Although this phenomenon of 'dark earths' is known from and investigated at many British and French sites (see *e.g.* Verslype and Brulet (réd.) 2004; Macphail and Linderholm 2004; Cammas 2004), indicating the variety of possible formation processes, it is still hard to understand how, why and by whom this thick level of earth accumulated on top of the Roman level of the fort precinct. However, as is clear from the studies in depth of the material culture found within this post-Roman level, insights into the post-depositional processes on the site through a spatial analysis of the finds result in some conclusions (cf. Chapter II.5 in this volume).

The dark earth at the south-west corner site yielded only seven medieval coins, representing several periods<sup>68</sup>. No less than 90.25% (or over 30,000 sherds) of the pottery assemblage from the dark earth uncovered at the south-west corner site, is Roman. The Roman ceramics cover the 1st to early 5th century, therefore clearly consisting of material from the civil settlement and from the successive fort periods. It is thereby striking that the dark earth at the south-west corner site contains significantly more 1st- and 2nd-century material than the fort occupation levels, an indication that this material in the dark earth has another initial source of deposition. The same can be assumed for several brooches found in the dark earth level (cf. Volume II, Chapter 3, Section 3.4.1).

The relative small amount of medieval sherds from the dark earth (3801 sherds or 9.75%) comprises mainly Carolingian, but also some Merovingian and high medieval material. Later ceramics derived from later features cut into this dark earth level<sup>69</sup>. An analysis of the distribution of the medieval ceramics within the dark earth reveals that they were well-spread throughout the level, occurring at all depths<sup>70</sup>. The Merovingian sherds were mainly found in the lowest levels.

The mixed Roman assemblage in combination with the large size of many of the finds – not only of the pottery, but also with the animal bones the presence of so many large bones and so little small bones is striking – makes us wonder whether no earth from a large Roman dump area outside the fort has been brought into the fort. Such large military middens are known from a few fort sites, with the most known at the legionary camp of Vindonissa (CH) dating to the 1st century AD. The so-called *Schutthügel* there was 200 m long, 80 m wide and max. 18 m height, and had an estimated volume of *c.* 50.000 m<sup>3</sup> (Trumm 2018). Other dumping grounds are known from Krefeld-Gellep and Gomadingen (both Germany). At Caister-on-Sea and Portchester accumulation of rubbish took place on the ramparts. The lack of (large) rubbish pits inside the legionary camp of Dangstetten and at the forts of Nersingen and Burlafingen (all Germany) does assume that most of the rubbish was brought outside the fort walls (Schubert 2018).

Worth drawing attention to here, is the find within the dark earth at the south-west corner site of four salt pillars and one small

68 The medieval coins of the site consist of a silver coin of Louis the Pious (814-840), a silver 13th-century sterling of Eduard of London, a presumably 14th-century coin, two small coins of Philip the Bold (1384-1404) (a 1 myt and a 2 myt), a possible coin of Philip II (2nd half 16th century AD), a jeton from the 16th or 17th century and a coin of Louis de Berlaumont (17th century) (identified by prof. dr. J. van Heesch).

69 The dark earth also contained three human skeletons dumped here during the accumulation of the earth. A fourth skeleton could be identified as an intentional burial in post-medieval times (see Vanhoutte 2007b, 227). Why these persons were buried here and not on the cemetery around the church, is not clear.

70 Due to time limitations and therefore the decision to give priority to the Roman level, the dark earth could only be excavated systematically in two large trenches (trench T2/2bis and T4/4bis).





Figure 17. Fragments of salt pillars and one presumed support of a salt production installation (bottom left) recovered from the dark earth level at the south-west corner site (Photo: author).

support of a salt production installation (Figure 17)<sup>71</sup>. These five items were collected in trench T4bis, at different depths in the post-Roman level. No such material, neither salt containers, are known from the fort occupation levels. As already mentioned, similar pedestals were collected as settlement remains underneath the late Roman Graveyard A c. 400 m to the west of the fort (Figure 7). The find of such pedestals in the dark earth at the fort precinct may be an 'argument pro' to state that the dark earth was indeed an accumulation of earth brought in from outside the fort. This earth may have been retrieved from waste dumps in which this *briquetage* material was already present.

Another important element are the many cross joins which could be established between pottery fragments from the Roman level and from the 5+post and post-Roman levels (see further, Chapter II.5). Moreover, several joins could be made between Roman pottery sherds found within the post-Roman level itself, even over large distances. These cross joins indicate that these earth accumulations on top of the Roman level involved a lot of vertical and horizontal earth moving activities, or with other words the digging up and transportation of earth. It supports our idea that the earth was brought on the site to fertilize the ground to cultivate the land for agriculture or horticulture activities<sup>72</sup>. Whether this explanation is valid for only the earlier or for both earth accumulations or whether they represent different motives, needs to be further investigated. Micromorphological analyses are needed and more sites at Oudenburg need to be investigated with a focus on this topic.

### II.3. The evolution of the defence system

At the western side of the excavated area in the south-west corner of the Oudenburg fort, part of the defensive system was discovered, making an investigation of profiles and surfaces in plan possible. Combining this with the observations by Mertens and the data of the north-east fort sites (site Jacali (ET17) and site Kapellestraat (ET24)), the defence system of the successive fort levels can be (partly) reconstructed.

#### II.3.1. The defence system of fort level 1

Below the robber trench of the stone wall remains of the defences of the earlier forts were found (Figure 18). One of the V-shaped ditches (*fossa fastigata*) belongs to the earliest defensive system. This ditch, recorded with a max. width of c. 2 m, was originally possibly over 3 m wide and c. 1.25 m deep<sup>73</sup> when compared to the level of the cultivated soil<sup>74</sup>. Mertens could define this ditch to a width of 4.50 m and a depth around 1.40 m (Mertens 2006, 362). It was a dry ditch<sup>75</sup>, with locally a U-shaped extraction slot at the bottom, a so-called *ankle-breaker* (see Johnson 1987, 62), indicating that the ditch was well maintained and cleared out regularly. This ditch can be traced in the trenches of Mertens over a total distance of c. 108 m northwards<sup>76</sup> (Figure 28). The absence of this ditch further north, assumes that this ditch bends over to the east at this point and that

71 It concerns two robust roundish-sectioned salt pillars with part of or transition to a circular support platform on top (one with diameter of pillar c. 2.7 cm and diameter of platform c. 7.9 cm, the other with diameter of pillar c. 3.5 cm, and a third with diameter of platform c. 3.7 cm), one small, robust, roundish support, roughly made, complete profile with only part of edge broken off (diameter of base: 3.7 to 4.3 cm), about half of a circular support platform on top of a salt pillar (broken off) (diameter of platform c. 6.7 cm).

72 With thanks to dr. A. Eryvnyck for the feedback on this topic.

73 The width of defensive ditches from forts in *Britannia* and *Germania* varies between 2.5 and 6 m, their depth between 1.2 and 3 m (Johnson 1987, 63).

74 The disturbances caused by the subsequent defensive ditches and by the later robbing of the stone wall have dug away the original upper borders of the ditches. Therefore the original maximal width of the ditches can only be estimated.

75 According to the supposed groundwater level. The depth of this level can be deduced based on the preservation of the wood of the frameworks of the wells OS 22926 and OS 2562 (inner well), respectively dated to the late 3rd and late 4th century. The ground water level of the late 4th century is c. 20 cm higher than that of the late 3rd century. Through extrapolation, the groundwater level one century earlier can be supposed c. 20 cm lower.

76 Mertens mentions this ditch as being not so deep (1.40 m) and reaching a width of c. 4.5 m (Mertens 1962, 58).



Figure 18. Remains of the defence system at the south side of the south-west corner site. Left: trench profile 5.1 (view to the west) sectioning the robber trench of the defensive stone wall, the respective defensive ditches of fort levels 1 and 2, and at the end of the profile the start of the defensive ditch of fort level 4/5. Right: detail: the defensive V-shaped ditch of fort level 1 (left) cut by the defensive V-shaped ditch of fort level 2 (right).

the north side of the fort did not reach as far north as its successors. Since there are no hard indications for the southern position of the earthen rampart, it is as yet not possible to know whether the earliest fort was smaller or whether it just shifted location.

To the west of this ditch, an irregular alignment of shallow pits was revealed, with an inner spacing of at least 1 m with the suggested original western edge of the ditch (except for posthole OS 3489 which was located closer to the ditch) (Plate XXI). These shallow pits are likely to be the preserved bases of postholes, some of them preserved to a depth of 28 cm<sup>77</sup>. Their location in front of the defence ditch assumes a function as *lilia* (see Johnson 1987, 68), an extra defence obstacle possibly equipped here with sharpened stakes<sup>78</sup>. Since the late Roman defence ditch has cut away all earlier structures, it cannot be established whether a second defence ditch was in front of the former<sup>79 80</sup>.

To the east side of the V-shaped ditch, situated east of the later robber trench of the stone wall, the bottom part of the earthen rampart is preserved up to a height of c. 1 m above the cultivated soil (Plate III: A and B). Different phases can be recognized: every time the original rampart body was integrated in the succeeding rampart. Since the robber trench of the stone wall has disturbed the complete outer side of the rampart body, the western edge of

the earthen rampart cannot be reconstructed for fort levels 1, 2 and 3. The remaining rampart body of fort level 1 is 3.30 m wide at the centre of trench T3 (3.60 m at the north side of the excavation area; 2.75 m at the south side) (Plate III). Taken that there was a bank of c. 2 m between the rampart and the defensive ditch<sup>81</sup>, the earthen rampart had a (maximum) width of c. 4.50 m (to c. 5.50 m at the south of the western rampart). There are no indications for a foundation of any kind; the rampart body was placed directly onto the cultivated soil. The sand of the earliest rampart is humic and the lowest level of sand most likely originates from the extraction of soil for the construction of the defensive ditch<sup>82</sup>. Local humus layers derive from grass turfs; the latter were also distinguished by Mertens as being the basis for the first level earthen rampart. A clay layer covered the earliest rampart and held firm the large body of sand. A fragment of a north-south construction slot along the eastern edge of the rampart, constitutes the only remains of a possible wooden framework (Plate XXI: e).

The defensive ditch of fort level 1 eventually silted up after its last use, indicating an interruption in occupation before the subsequent fort was built.

### II.3.2. The defence system of fort level 2

During the following phase the earliest ditch, eventually silting up after its last use, was filled in and a broader, also dry, ditch of originally up to c. 4.50 m wide and at least 1.35 m deep was dug<sup>83 84</sup> (Figures

77 It is possible that posthole OS 3489, with a preserved depth of 45 cm (see Plate CDLIV, feature section 3/6: left side), does not belong to the same structure and is to be dated in the pre-fort period.

78 In earlier publications (e.g. Vanhoutte 2007a; 2007b), alongside these postholes a second ditch was presented as belonging to level 1. However, further study has demonstrated that this gully should be seen as a first phase of the palisade trench of fort level 3. Arguments for this are the closeness to the other level 1 structures and the identical course of the later palisade trench of fort level 3.

79 However, the edge of a second defensive ditch would probably have been visible already, since the distance between two defence ditches is normally up to a maximum of 3 m (Johnson 1987, 64).

80 The double construction slot at c. 1.20 m distance apart from the postholes bends to the west at its northern side and is likely to pre-date the fort (see further: Section II.4.2).

81 The width of the bank between defence ditch and earthen rampart could vary between 0.3 and 6 m. Johnson concludes to an average bank width of 0.9 to 2 m (Johnson 1987, 69).

82 Pers. comm. dr. R. Langohr.

83 When compared to the level of the original cultivated soil. It is possible that after the filling in of the first ditch, the area was raised.

84 Mertens mentions that the ditch of 'Oudenburg II' had a width of c. 3 m and a depth that was slightly less than the earliest ditch of 'Oudenburg I', which was 4.50 m wide and 1.40 m deep (Mertens and Crabbé 1987, 14). Since these dimensions cover very well the ditches of respectively fort level 1 and fort level 2, we think that these ditches were altered.





Figure 19. Remains of the defence system at the north side of the south-west corner site. Trench profile 3.5, view to the north-west. The respective defensive ditches of fort levels 1 (right) and 2 (left), covered by the demolition layers of the defensive stone wall.

18, 19 and 31). While the two earliest ditches overlap each other in the southern profile of the excavated area (trench profile 5.1: Plate II), they form two parallel V-shaped ditches in the northern profile (trench profile 3.5: Plate IV), indicating the slightly changed orientation of the second fort. This defensive ditch equally shows a local *ankle-breaker*; at the west side of the ditch (at trench profile 5.1) there are indications for redigging. The ditch at the northeastern side of the fort (site Kapellestraat (ET24)), most likely related to this fort level, also represented a well-maintained ditch, in which vegetation developed after its last use (Vanhoutte *et al.* 2014, 169: Fig. 8, structure E, and 170), perhaps pointing to an interruption in occupation after fort period 2 (like it was the case after fort period 1).

As was evidenced at the south-west corner excavation, the rampart was broadened. Part of the rampart body was still preserved over a width of *c.* 6.00 to 7.00 m. Taken that there was a berm of *c.* 2 m between the rampart and the defensive ditch – as suggested already for fort level 1 –, the earthen rampart extended over a width of max. *c.* 8.00 (to 9.00 m in the south)<sup>85</sup>. The widening to the south may be related to the nearby fort corner. The rampart body of this level is characterized by humic dark brown-grey sand with white sandy fillings, probably derived from the digging out of the new ditch, combined with clay levels. At the north-east site, this second fort level ditch could be related to a layer of sandy turves, probably the base of the earthen rampart (Vanhoutte *et al.* 2014, 169: Fig. 8, layer 52, and 170).

### II.3.3. The defence system of fort level 3

Within the context of a consecutive, new defence, the ditch of the second phase was filled in and a new, dry V-shaped ditch of

originally up to *c.* 2.25 m wide and *c.* 1 m was dug out<sup>86</sup> (Figure 45; cf. Plate CDLIV). At the north-east side of the fort, this ditch may also be identified in the trench profile<sup>87</sup>, showing an *ankle-breaker*, indicating this ditch was well-maintained. At both the north-east (site Kapellestraat 2009, ET24)<sup>88</sup> and the south-west site<sup>89</sup>, postholes sectioned at the inner edge of the ditch point to a palisade<sup>90</sup>.

As exposed in surface plan at the south-west corner excavations (Plate XXIV), at a distance of over 1 m to the west from the presumed original western edge of the ditch, a trench of 0.8 m to 1 m wide runs parallel, in which a line of heavy posts seems to have been founded. A large posthole revealed in trench profile 5.1 (Plate II: 9) is situated in the extension of this trench, and nearly borders the ditch (inner distance 0.65 m). Sections on that foundation trench indicate renovations to the palisade (Plate CDLIV<sup>91</sup>). This apparent succession of palisade – ditch – palisade was most likely part of a larger defensive system of two or more ditches, of which the exterior ditch(es) were cut by the large defence ditch of the stone fort. The preserved part of the defensive ditch system of fort level 3 could not be recognized in the trench maps of the excavations by Mertens. However, when looking at the courses of the successive ditches, it is very likely that more to the north these fort level 3 ditches were cut away by the late Roman defence ditch (Figure 24).

<sup>85</sup> This width is not exceptional: the width of earthen ramparts made of sods or of wood and earth in *Britannia* and *Germania* varies between 4.5 and 9 m (Johnson 1987, 72).

<sup>86</sup> At trench profile 5.1 (Plate II) the ditch reached a width of *c.* 2 m; at profile 3.1 (Plate III) the ditch was only preserved as a trace of *c.* 1.5 m wide. Based on the preserved height of the related western post at trench profile 5.1, an original width up to *c.* 3 m can be assumed for the ditch.

<sup>87</sup> Vanhoutte *et al.* 2014, 169: Fig. 8, marked as structure D.

<sup>88</sup> Two postholes: Vanhoutte *et al.* 2014, 169: Fig. 8, feature 48 and related posthole in front of the trench profile.

<sup>89</sup> One posthole: see Plate III, trench profile 3.1, posthole 14.

<sup>90</sup> Other postholes along the ditch at the south-west corner site may well have been present, but this could not be investigated.

<sup>91</sup> See feature sections 3/4 (west side), 3/5, 3/22, 3/21, 3/24, 3/23.

The earthen rampart was again raised for this fort level 3. It is preserved to a width of c. 7.00 to 8.00 m (see trench profiles 6.2; 6.1; 7.1; 7.2: resp. Plates V, VI, XI; cf. Appendix 4), and was originally presumably less than 10 m wide (taken a berm of c. 2 m between the ditch and the rampart). Although sand was also used to build up this earthen rampart, clay seems to be the primary construction material. The north-south slot along the eastern border of the earthen rampart, combined with a perpendicular slot to the west, may be the remains of a wooden framework construction encasing the rampart body (Plate XXVI: v).

Trench 1960 XXVI revealed two large postholes which might be related to this level (Plate XIII). They may be linked to the western earth-and-timber gate tower or to a bridge over the defence ditch(es)<sup>92</sup>.

#### II.3.4. The defence system of fort level 4

The fourth fort level was identified by Mertens as earth-and-timber fort 'Oudenburg II' (cf. e.g. Mertens and Crabbé 1987, 14-16). However, several arguments point towards the identification of this *castellum* as the first stone fort (Figure 53). At the south-west fort area excavations, a piece of wall ashlar was found in the level of fort period 4. Moreover, in 1977 at the central northern sector the remains of a stone building of 18.5 by 13.5 m came to light along the assumed *via principalis* or *via praetoria* (Figures 20, 25 and 53). A gravel road directed towards the building and surrounded it (Mertens 1978, 73). The walls of the building which showed two phases<sup>93</sup>, were made exclusively of Tournai limestone (Mertens 1978, 73) and revealed the same masonry format as the defensive wall<sup>94</sup>. According to Mertens this building can be dated in the last but one fort phase (Mertens 1978, 76; 1980, 463). The demolition level of this building was characterized by a large amount of *Tetrici* imitations (Mertens 1980, 463), which was also characteristic for the closing layers of fort level 4 uncovered at the south-west corner site. Although the building in stone of the main buildings *an sich* should not ascertain a defence erected in stone, as e.g. evidenced at Valkenburg and Aardenburg<sup>95</sup>, the use of the exact same masonry format of the northern building and the defensive wall is a conclusive argument. The thickness of fort level 4 with several successive occupation levels, together with the dating of the finds (e.g. the dendrochronological data, the coins, ...), moreover indicates that this fort had definitely no temporary character. Finally, the erection at Oudenburg of a stone fort during



Figure 20. Excavation Trench X in 1977, revealing the remains of a stone building, along the assumed *via principalis* or *via praetoria*. View to the north. Here also the Roman level is covered by a very substantial dark earth level. Photo: Archive Mertens NDO.

the later 3rd century fits in perfectly with the construction of most of the Saxon Shore forts in *Britannia* from AD 260 onwards (cf. e.g. Pearson 2002b; see Chapter V, Section V.1.5).

The remodelling to a stone fort took place in the (late?) AD 260s. At most locations investigated at Oudenburg, a robber trench is the only remnant of the defence wall of the stone *castellum*. At the south-west corner site, this alignment was investigated in detail. A broad strip of Tournai limestone fragments and mortar debris – demolition waste of the broken and robbed out wall – stretches over 3 m wide (Figure 21). Within this debris concentration a sharply aligned trench of 1.4 to 1.8 m at the east side most likely locates the actual construction trench of the stone wall (see trench profiles 5.1 (2) (Plate II) and 3.1 (2) (Plate III); cf. Appendix 4). The extraction of the stones was executed from the outside, as is clear from the extant original vertical cut of the construction trench at the east, i.e. inner, side. The fillings at the bottom betray trampling during the removal of stone while robbing; afterwards the trench was filled in with sand and debris.

The large-scale use of the Roman ruins as a stone quarry is known from the *Tractatus de Ecclesia Sancti Petri Aldenburgensis*. This document was written by a clergyman of the Saint-Pieters Abbey

92 Mertens associated these postholes with the stone fort (Mertens 1962, 58). The field drawings of the 1960 Trench XXVI (Plate XIII) show that they were later than the ditches of fort levels 1 and 2 but that they must pre-date the wall.

93 In a later phase the rectangular building was divided into two oblong quarters by a transverse wall (Mertens and Crabbé 1987, 85).

94 Mertens (1980, 463) stated: '*la maçonnerie, en pierre de Tournai, rappelle celle du mur d'enceinte*'.

95 The earth-and-timber forts of Valkenburg and Aardenburg already had a stone *principia* (for Valkenburg: Van Giffen 1948, 106, Pl. 16; Bogaers 1990, 55-56; for Aardenburg: van Dierendonck and Vos 2013, 297-300). Dhazeze assumes that the central buildings of the earth-and-timber fort of Maldegem-Vake were also partly erected in stone (Dhazeze 2011).





Figure 21. The robber trench of the stone defensive wall as uncovered at the south-west corner site (trench T3). Left: view to the south-east. Right: view to the north.



Figure 22. Fragments of the defensive stone wall of fort level 4/5. Left: wall fragment found in secondary position at fort level 4 at the south-west corner site. Right: *in situ* fragment of the wall, recovered in 1970 in Trench II (Photo: Archive Mertens NDO).

between 1084 and 1087 in order to recount the history of the abbey<sup>96</sup>. The last paragraph of this document describes how stones of the Roman ruins were used for the construction of the Saint-Pieters Church (1056-1070) belonging to this abbey and situated to the east of the fort. This reuse of stone could be confirmed by archaeological research on the church site in 1956 (Devliegher 1958, 148-154; 1984, 86). The clergyman also mentions that the Dukes of Flanders already organized stone transports to Bruges to erect several buildings at the Burg: Baldwin V of Lille (1035-1067) and a duke probably to be identified as Arnulf I (918-965) (Meijns 1994, 45). Archaeological excavations at the Burg in 1955 and the 1980s confirmed this (cf. Devliegher 1991, 54-59). The early medieval small-scale reuse of stones from the Oudenburg fort is proven by a Carolingian well (second half 8th – 9th century) at Roksem (submunicipality of Oudenburg), which consisted of a casing of Tournai limestone, mortar and ‘fieldstone’ fragments (Hollevoet 1992, 56). Analysis of the mortar (see Mestdagh 1990a; 1990b) indicated that this building material was identical to that from the Oudenburg fort. Hollevoet believed that the fort walls

were largely kept intact until the 8th century, since Oudenburg most likely functioned as a centre of power for the local Merovingian elite (5th-8th century). According to Hollevoet, during the course of the 9th century Oudenburg lost its role as *caput civitas* of the *pagus Flandrensis* to Bruges (Hollevoet 1995, 23-24). A Carolingian occupation within the fort walls can be dated to the 9th – early 10th century (Vanhoutte 2007b, 226-227). It is likely that the start of large-scale stone quarrying is to be situated after this occupation and that until then the protective character of the fort walls made it very attractive to settle *intra muros*.

The stone wall was profoundly robbed, at the north-east side even more profound than at the west side. Nevertheless it is clear that the wall was built immediately onto the Pleistocene sand without post foundation. More information about the wall construction is gained from the archive<sup>97</sup> of the research conducted by Mertens on the northern half of the western defence.

<sup>96</sup> See Meijns 1994 and 2008 for an analysis of this document.

<sup>97</sup> Archive of the Nationale Dienst voor Opgavingen / National Service for Excavations, stored at the Flanders Heritage Agency (OE).

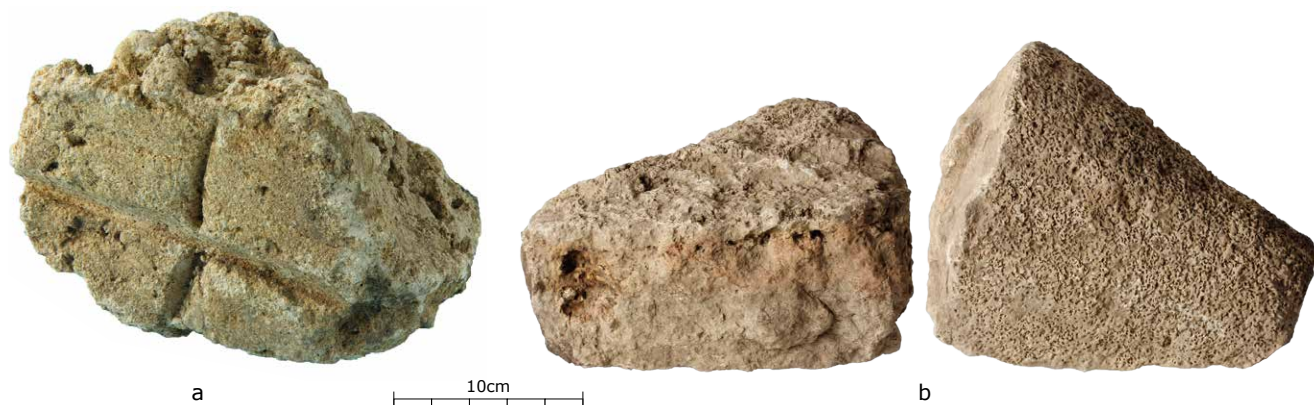


Figure 23. a: mortar fragment with grooves representing masonry, probably originating from the defensive stone wall; fragment recovered at the north-east site Kapellestraat (2009; ET24) (Vanhoutte *et al.* 2014, 230: Fig. 77). b: two views on the Tournai limestone block recovered from the top of the Roman level at the south-west corner site, left: view on the side with remains of an iron cramp, right: view on the side covered with *cliona*.

In 1970 a piece of wall was found *in situ* at the western side of the fort, preserved over a width of 0.90 m (1970 Trench II)<sup>98</sup> (Plate XVII; Figure 22: right). The western facings were still intact and show small blockwork consisting of regular rectangular blocks of Tournai limestone; the eastern (inner) facing was not completely preserved. The rectangular facing blocks were 6 to 12 cm wide, and up to 23 cm long; a few square blocks measured 8 to 10, 9 to 10 and 10 to 10 cm. The core of the wall consisted of gravel of Tournai limestone, sandstone fragments and shell mortar. One block at the inner side may have been the last piece of facing here, resulting in a wall of *c.* 1.05 m wide. The elevation rested upon a slightly wider foundation, of large plates of Tournai limestone, with a height of 10 to 11 cm and lengths of 30, 38 and 55 cm, placed directly onto the Pleistocene sand. The small blockwork of the defensive wall, also called *petit appareil*, was also the style of building of most of the British Shore forts (Johnson 1977, 68).

In 1960, a robbed out wall of the western gate tower with *in situ* foundation (1960 Trench XXVIII) (Plate XV), showed a different foundation technique. Large flat blocks of Tournai limestone and 'fieldstone'<sup>99</sup> of *c.* 20 to 30 cm were set on their sides in the sand over a width of 1.35 m, perhaps a more flexible construction technique in consideration of the curves of the tower. The same technique was already encountered in 1957 at the northwestern corner in Trench IX, where the robber trench of the wall, 1.20 m wide, yielded at the bottom large, irregular stone blocks of which some were placed on their sides, here equally directly on the sand (Plate XVIII). The elevation of the wall was at both places completely robbed. The straight vertical cut of the robber trench in the 1960 Trench XXVIII testifies of an inner facing set 40 cm inwards, resulting here for the western gate tower in a stone wall with a maximal width of 1.10 m (Plate XV).

The wall at the north-east side (sites Kapellestraat (ET24) and Jacali (ET17)) was thoroughly robbed out, but at the southeastern edge of the 2003-2004 excavation area the foundation trench of the wall yielded some large *in situ* blocks of Tournai limestone, equally directly set onto the Pleistocene sand (Figure 25). At this location the foundation trench measured 1.20 m wide (see Vanhoutte *et al.* 2014, 238: Fig. 82).

To conclude, the foundation remnants located in 1960 and 1970 can set the thickness of the wall at 1.05 to 1.10 m<sup>100</sup>. The wall was formed by a front and back facing of regular blocks of mainly Tournai limestone, probably now and then mixed with 'fieldstone' fragments; the core of the wall consisted of mortar and stone gravel. A mortar joint fragment found in the late 3rd-century level at the site Kapellestraat (ET24) at the northeastern side of the fort, indicates that the exterior side of the stone wall was plastered (Vanhoutte *et al.* 2014, 231, 230: Fig. 77) (Figure 23: a). The front side of the piece shows two crossing grooves which may have been painted red originally. That way masonry was imitated, a phenomenon already identified at 1st- and 2nd-century forts in *Britannia* and *Germania* (Johnson 1987, 86).

The replotting of the stone wall course and the review of the trench locations throughout all excavated site locations (see also Vanhoutte *et al.* 2014, 248 and 252), resulted in a different fort layout to the ones published by Mertens (Figure 53). The trench locations suggest a course change of the western wall at the western gate. The 'new' plan has a north side of *c.* 147 m, a south side of *c.* 162.5 m and a west and east side of *c.* 183 and 182.5 m respectively. Thereby, the northern half of the *castellum* was somewhat smaller than its southern counterpart. This yields a fort plan with a surface of *c.* 2.8 ha (outside measurement) or *c.* 2.72 ha (inside measurement). Apparently the *pes monetalis* (Roman foot) was used as unit of measure. For the north side, 500 *pes monetalis* (148 m) was likely aimed at in the design; the south side equates with 550 *pes monetalis*

98 The notes of Mertens and the several plan drawings indicate a width of 0.90 m while the profile drawing shows a wider stone wall, however not so accurately registered.

99 This un-descriptive name is used locally for specific glauconite-rich sandstones.

100 And not at 1.30 m as Mertens presented in several publications.

(162.8 m), while the western and eastern sides probably aimed to be 620 *pes monetalis* (183.5 m).

This wall is remarkably thin in comparison to the average 3 m fort walls from the late Roman period (cf. Brulet 2006d, 169) and is in strong contrast with that of the preserved British Shore fort walls of that period (see Chapter V.1.6: Table 5). It is rather following the trend of the 1st- and 2nd-century forts in *Britannia* and *Germania* in being between 1 and 2 m thick (see Johnson 1987, 84). At the Aardenburg stone fort, dated to the same period, a similar width for the defensive wall has been attested. Although at Aardenburg only robber trenches were found, the wall width can be defined between c. 1.20 and 1.65 (van Dierendonck and Vos 2013, 145). Very significant are the close similarities of the building technique with that at the Oudenburg fort. For the construction of the defensive wall at Aardenburg also a trench was dug; the wall was equally built with small blockwork consisting of Tournai limestone blocks of c. 10 cm by 20 cm, and the foundation was also placed directly onto the Pleistocene sand. There are several indications to assume that also at Aardenburg the wall was flanked by an earthen rampart (van Dierendonck and Vos 2013, 145-146).

The earthen rampart of the Oudenburg fort appears to have been slightly smaller in extent at fort level 4 than in the previous periods but was still very wide: c. 8.20 m in the north of the south-west excavation area versus 9.50 m at the south, probably due to the curve around the corner tower. This is in line with what Mertens concluded: a width of almost 8.00 m for the rampart of 'Oudenburg II' which is probably to be identified as fort level 4 (cf. Mertens 2006, 362). The earthen rampart incorporated of course the turf bases of the earlier earth-and-timber forts; the reinforcement at fort level 4 consisted mainly of sand, mixed with gravel of Tournai limestone (cf. trench profile 5.1 (13): Plate II) also noticed by Mertens more to the north (1960 Trench XXV (Plate XIV); 1970 Trench II (Plate XVII); cf. Mertens 2006, 362). The very wide defence ditch system will also have formed a counterpart for the rather narrow wall.

The author of the 11th-century tractate mentions a specific construction technique for the northern wall, with large stone blocks from Boulogne fixed with lead and iron hooks ('*In partibus vero aquilonis fundamentum quadric ac magnis lapidibus ferro et plumbo firmiter infixis, antiqua fundaverat manus. Quod genus lapidum in Bononiensi provintia tantummodo inveniri dicitur*') (Meijns 1994). Mertens interpreted this as the north side being exposed to sea water, through a natural waterway (Mertens 1977, 57; Mertens 1987, 86). The trenches at the north side of the fort (in 1957, 2003-2004 and 2009) showed a completely robbed out wall of which the debris could not confirm the construction technique (Figure 25). The '*lapidum in Bononiensi provintia*' may well refer to Baincthun stone<sup>101</sup>. At the south-west corner area, at the top of the Roman level (mixed level fort level 5 – post-Roman level), a fragment of a block of Tournai limestone came to light, covered with *cliona*, assuming this block lay in marine water for a long time, and with the remains of a large iron cramp (Figure 23: b). This block

of 4.690 kg may well have been recovered from an original location at the north side of the fort.

The stone fort was equipped with corner towers and gate bastions. They both were hollow and the defence wall was positioned on the axis of the towers. The northwestern corner tower was excavated by Mertens in 1957 (Mertens 1958a, 19-22; Mertens 1962). The last remains of a totally robbed out northeastern corner tower were found in 2003-2004 (Patrouille 2004; Vanhoutte *et al.* 2014) (Figure 25). The corner towers were circular<sup>102</sup> and their diameter was established by Mertens at c. 9 m<sup>103</sup> (e.g. Mertens 1962, 57; Mertens 1987, 86); the wall had a thickness of no more than 1.1 to 1.2 m<sup>104</sup>. Mertens concluded from the robber trenches of the western gate tower, investigated in 1960, that they were octagonal or polygonal (Mertens 1987, 87; Mertens and Crabbé 1987, 18). However, a review of the plans leads us to believe that also the gate towers were circular. Their diameter can be set at c. 7 m (see also Mertens 1962, 58; 1977; 1987, 87; Mertens and Crabbé 1987). The contemporary fort at Aardenburg (fort phase III: AD 260-285/290) was provided with circular towers as well (van Dierendonck and Vos 2013, 330), a common phenomenon in civil and military architecture in *Gallia Belgica* during the High Empire (Johnson 1989d, 39) but still surviving in late Roman times<sup>105</sup> (Johnson 1983b; Brulet 2006d, 171). From the later 2nd century onwards, towns and cities in *Gallia Belgica* were dotted with wall-circuits and, except for a few exceptions due to local circumstances, all with circular towers, clearly a building tradition in *Gallia Belgica* (Mertens 1983, 56).

The stone defence was combined with a broad, defensive ditch. Between the wall and the ditch a bank of over 3 m at the north-east side (site Jacali) and of 6.5 to 8.5 m at the northern part of the west side of the fort (based on the plans of Mertens) occurred (Figure 53). However, the ditch approached the western gate very near, leaving there only a bank of c. 2 m between the base of the tower wall and the start of the ditch (see 1960 Trench XXV (Plate XIV); cf. Mertens 2006, 362<sup>106</sup>) (Figure 25).

As the 4th-century defence ditch follows the course of the late 3rd century one, it is not possible to determine whether the late 3rd-century ditch was as large as its successor along the western, southern

102 In his publication of 1987 Mertens apparently was not so sure anymore whether the corner tower was circular or not, since it was difficult to read from the robber trenches (Mertens 1987, 86). After revision of the field drawings the present author believes that the corner tower was indeed circular.

103 Based on the dimensions of the robber trenches. The actual elevation may have represented a slightly smaller diameter.

104 Mertens 1962, 57 mentioned a wall thickness of 1.8 to 2.0 m. However, only trench IX (1957) cut the whole width of the robber trench of the wall and the drawings testify of a width of maximum c. 1.2 m. As discussed before, the wall of the northern tower of the western gate was no more than 1.1 m thick. The same thickness can be assumed for the corner towers.

105 See for example the round corner towers at the fort Liberchies II (Belgium), dated to the period Constantinus I – early 5th century AD (Brulet 2006f, 365-367).

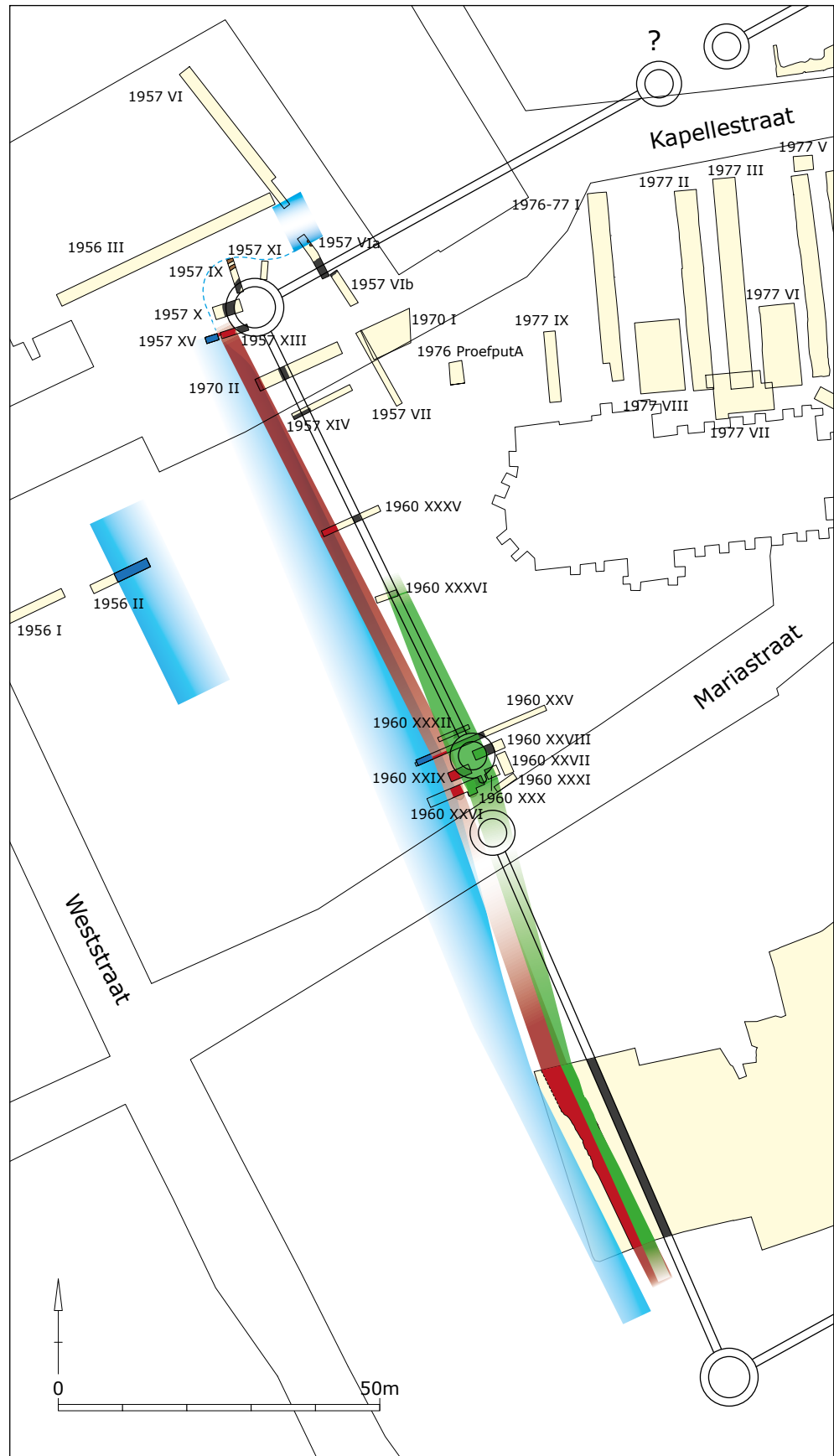
106 Mertens mentions this bank width as a general element for his 'Oudenburg III'; however this narrow space in-between the stone wall and the ditch can only be observed in the trenches at the western gate.

101 Identification and pers. comm. dr. R. Dreesen.



The map illustrates the Kanaal van de Oude Maas in Rotterdam, highlighting the locations of various shipwrecks and archaeological sites. Key features include:

- Streets:** Kapellestraat, Mariastraat, and Weststraat are labeled.
- Shipwrecks and Sites:** Numerous locations are marked with labels such as 1956 I, 1956 II, 1956 III, 1957 VI, 1957 XI, 1957 X, 1957 XV, 1957 XIII, 1957 XIV, 1957 VII, 1957 VIa, 1957 VIb, 1970 I, 1976 Proefput A, 1976-77 I, 1977 II, 1977 III, 1977 VI, 1977 IX, 1977 VIII, 1977 VII, 1960 XXXV, 1960 XXXVI, 1960 XXV, 1960 XXXII, 1960 XXVIII, 1960 XXVII, 1960 XXIX, 1960 XXXI, 1960 XXX, and 1960 XXVI.
- Geographical Features:** A large blue area represents the canal, and a red area indicates a specific zone of interest. A green area is also visible near the bottom right.
- Scale and Orientation:** A scale bar at the bottom left indicates a distance of 50 meters. A north arrow is located in the bottom left corner.



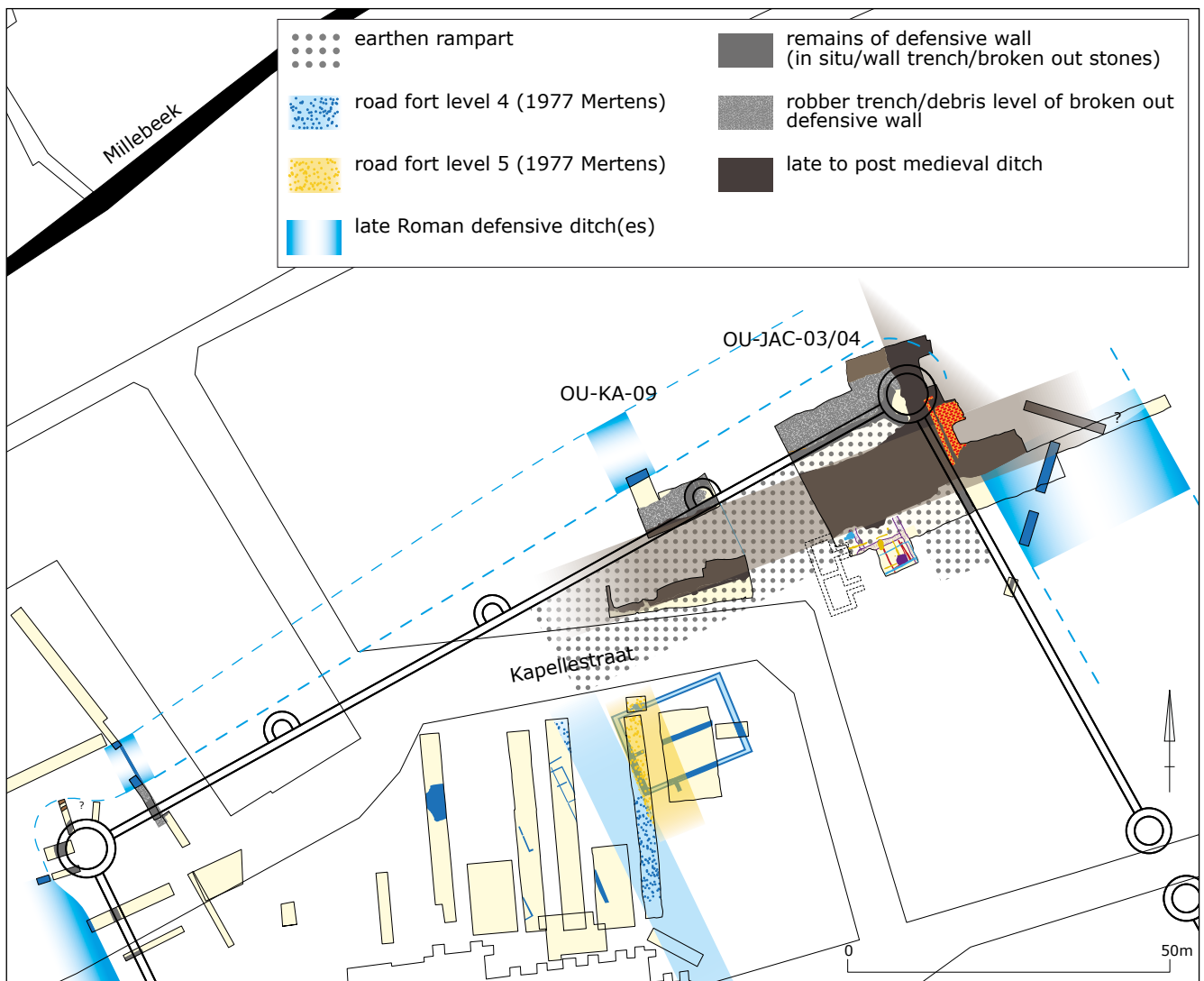


Figure 25. The north side of the fort with localization of the uncovered and identifiable features in the trenches of Mertens and at the sites at the north-east side (site Kapellestraat (2008-2009) (ET24) and site Jacali (2003-2005) (ET17)) (taken from Vanhoutte *et al.* 2014, 237: Fig. 81, with additions and adjustments).

and eastern side of the fort. The width of the latest Roman defensive ditch can be set on *c.* 30 m (Vanhoutte *et al.* 2014). At the west side, the combination of the presumed western edge of a ditch in Trench II (1956) (Plate XVI) and the corresponding western edge along the fort wall indicates a system of one or more ditches with a total width of over 30 m and a maximal depth of *c.* 5 m. In 2003, at the east side, at *c.* 3 m distance from the wall trench, the edge of a ditch of *c.* 15 m wide was documented. It seems to be doubled later on, perhaps only in the last fort period. With an inner space of 5.5 m a third ditch was registered at the east side with a width of over 6.5 m. This results in a total width of 27 m for the ditch complex, approaching the width of 30 m at the

west side. Since only the edges of these ditches could be registered, their shape remains undefined<sup>107</sup> (cf. Vanhoutte *et al.* 2014).

As for the north side of the fort, trenches (in 1957 and 2009) and augerings (in 2009) revealed a wet ditch, starting at *c.* 7.5 m from the wall course. In Mertens' Trench 1957 VI-VIa (Plate XIX) this ditch had a width of only *c.* 8 m; augerings in 2009 at the north-east side (site Kapellestraat; ET24) set the width at approximately 10 m (Vanhoutte *et al.* 2014, 172-173) (Figure 25). Although only the edges of the ditch could be defined, a V-shaped ditch can be supposed. To the north of this ditch, no more ditches were registered, presumably due to landscape changes. The remaining 25 m

107 V-shaped ditches appear to be a 3rd-century tradition at the British Shore forts, represented by Portchester, Reculver, Richborough and also Pevensey. Cunliffe (1975, 419) remarked that in the 4th century, mainly in its third quarter, wide flat bottomed ditches seem to have become the norm.



Figure 26. The remains of an intermediate tower uncovered at the northeastern side of the fort at site Kapellestraat (ET24).

investigated in profile by Mertens in 1957 yielded an undulating land surface with basin-shaped depressions, and according to the notes of Mertens 'dark clay levels, peat development and flood layers' (Archive Mertens 1957). This is likely to be the edge of the intertidal landscape. A similar situation was observed in Trench 1956-57 III<sup>108</sup>.

### II.3.5. The defence system of fort level 5

The stone wall of the late 3rd century, with its round corners and gate towers, also served the 4th- and early 5th-century fort. The north side underwent a major change, though. In 2009, the remains of an intermediate tower were uncovered at the north side of the Oudenburg fort (Figure 26). Until then, the presence of intermediate towers was an unknown aspect of our knowledge of the architecture of the defensive wall of this *castellum*. The dimensions of this bastion can be set at c. 5.60 m wide, projecting 3.60 m beyond the stone wall, but it could not be evidenced whether the tower passed through the wall since it is only the robber trench and debris layer of the intermediate tower that remained preserved. However, the presence of an earthen rampart behind the defensive wall makes this unlikely and assumes that the intermediate tower was probably projecting only at the outside of the defence wall.

Through extrapolation, a total of three intermediate towers can be presumed along the north side. At the other sides of the fort, there are no indications (so far) for the presence of intermediate towers. The reconstruction of three intermediate towers at the north side leaves no space for an elaborate northern entrance gate. However, the *porta praetoria* should be expected at this side, as this gate in principal faced the enemy (cf. Hyginus, *De Munitionibus Castrorum* 56; Vegetius I, 23).

As already discussed in Vanhoutte 2014 *et al.* 244-246, it is likely that the northern U-shaped projecting intermediate towers do not belong to the initial phase of the stone wall, having round towers at the corners and entrance gates. Although the late 3rd century is the period in which the very popular projecting type makes its appearance in late Roman forts, the tradition of round towers still continues in late Roman times (see Johnson 1983b, 38; Brulet 2006d, 171). However, the intermediate tower at the Oudenburg site differs from the round corner and gate towers in form, dimensions and concept since the latter are partly in front and partly behind the defence wall (see Mertens 1962; 1977) while the intermediate tower seems to be only projecting outwards.

The dimensions of this intermediate tower are similar to these at the Saxon Shore forts in south-east England. There, intermediate towers belonging to the initial building phase of the fort as well as towers added at a later stage (e.g. Burgh Castle, Richborough, Dover) have been evidenced (Pearson 2002b, 74). The intermediate towers at Oudenburg emphasize the close resemblance of this fort to the second generation of the Saxon Shore forts, built after AD 260. These are systematically equipped with similar intermediate towers (see Burgh Castle (Johnson 1983a; 1989c), Bradwell (Johnson 1989a), Dover (Philp 1981), Lympne (Cunliffe 1980, 251), Pevensey (Lyne 2009, 16), Portchester (Cunliffe 1975), Richborough (Cunliffe 1968, 246)). The dimensions at Oudenburg are comparable to those of Dover (6.25 x 3.75 m), Portchester (6.20 x 5.80 m) and Lympne (6.20 x 6.50 m). Nevertheless, with a length/depth of 3.6 m, the Oudenburg tower differs from most of its English counterparts by being much smaller. Only the intermediate tower of Dover has a comparable length/depth (3.75 m). Moreover, the foundation of the Oudenburg tower contrasts with those of the Saxon Shore forts through its hollow interior.

The combination of round towers for corners and gate structures, and U-shaped projecting intermediate towers, is unique. Only the fortified site of Yverdon-Les-Bains (CH), dating to AD 325-326 (Fellmann 2006) has parallels through the combination of round corner towers and U-shaped intermediate towers, although of

<sup>108</sup> The edge of the late Roman ditch was not cut here.



another type and with gate towers which were also U-shaped. The absence of parallels supports the hypothesis of a later addition of the intermediate towers to the wall. It may be assumed that they were added during a later phase of the fourth fort period, *e.g.* during the reign of Probus (276-282) when many Gallic cities were equipped with walls with intermediate towers after their devastation by the Alamanni. At this time, the second generation of Saxon Shore forts was extended (Johnson 1979, 114-115). Another possibility, even more likely, for the addition of the intermediate towers could be a renovation in the fifth fort period of the 4th century. In any case, the 4th-century fort was equipped with intermediate towers at the north side. These presumably had a dual function, enlarging the monumental character of the fort on the one side, and increasing its tactical advantages through higher lookouts and artillery benefits on the other (cf. Johnson 1987, 88). The direct contact with a tidal channel, and therefore to the sea, probably explains why this side was chosen for extra protection and assumes the absence of an elaborate entrance gate at this side. The north side was the side immediately visible by invaders when they arrived by sea and tidal channels. The bastions will have symbolized more power, more authority and it is probably as such that their addition must primarily be seen. Therefore a link with a more 'international' fortification programme, as that of Constantinus I, is easily laid (see Chapter V, Section V.1.6).

Fragments of *tegulae* and *lateres* found in the robber trench at the north side of the fort (site Kapellestraat (ET24)) were enveloped by pink mortar and most likely are the remains of bonding courses in the defensive wall (Vanhoutte *et al.* 2014, 231). Such tile courses at frequent intervals were designed both to level the work and to form a deeper bond with the wall core. They were an architectural introduction in late Roman forts, introduced at the British Shore forts built after AD 260 (Pearson 2002b, 71). Whether the defensive wall of fort period 4 already had coursing cannot be deduced from the stratified evidence. However, with no tile fragments indicating such coursing in the robber trench of the defensive wall at the south-west corner site it is likely that the bonding courses were an innovation related to the refacing of the north side at the start of fort period 5. Moreover, this is an extra argument to believe that the addition of intermediate towers, which may well have coincided with a refacing of the north wall, should be dated in the (first half of the) 4th century.

The earthen rampart kept its function as the backing of the stone wall. During the final phase the earthen rampart, mainly built of sand, has a width of *c.* 7.6 m in the northern half of the south-west corner excavations, enlarging to a max. width of *c.* 11.20 m in the southern half, probably due to the location of the south-west corner tower. Mertens mentions a rampart width of 9 m at this phase and estimated a height of 3 or 4 m (Mertens 2006, 364).

As already stated, a ditch system up to 30 m wide consisting of two to three ditches, surrounded the late Roman fort. Possibly, the doubling of the inner defensive ditch as noticed at the north-east side is dated to fort period 5.

Very wide and deep defensive ditches were a general phenomenon in the 4th century as shown by the overview of Brulet (2006d, 173).

The width of the ditch complex of Oudenburg can *e.g.* be compared to that of the double ditch system around the *castellum* of Divitia (Cologne/Deutz) using two parallel ditches of respectively 12 m and 14 m (see Brulet 2006d, 173; Reddé *et al.* 2006, 254).

A defence ditch linked to fort period 5 is missing at the northern side of the fort. An augering campaign in 2009 revealed tidal sediments which could be linked to levels documented by Mertens at the north-west side (1956 Trench III; 1957 Trench VI (Plate XIX)). According to the 2009 findings, these tidal sediments filled up the late 3rd-century ditch. It is very likely that, during the 4th century, this area was too wet to dig a wide and deep ditch, as the tidal influence increased from the late 3rd century onwards or shortly after. Besides, in this kind of landscape, digging a broad ditch seems unnecessary. Mindful of the statement of the 11th-century author recording the special building technique at the north side of the fort, it seems likely that tidal influence neared the northern stone wall of the fort. Mertens already assumed the edge of a natural waterway reached the stone walls. It seems plausible that a branch of a tidal gully was channeled to near the north side of the *castellum*. Human intervention is most likely since the location of the 4th-century fort was exactly the same as its predecessors. A double construction slot and a related feature to the inside<sup>109</sup> found at the north-east side of the fort, both to the north of the stone wall (Vanhoutte *et al.* 2014, 171), may be the remains of a quay construction.

### II.3.6. Three earth-and-timber castella, two stone forts

Five forts succeeded each other at Oudenburg. From fort period 2 onwards, it is likely that the forts had an identical location and orientation, although we do not have hard evidence yet for the eastern edge of fort 2 and 3 except for the remains of the earthen rampart presumably related to these levels. Only fort 1 was clearly either smaller or either positioned in a different way. For this fort there are no indications yet for its southern and eastern edges. At the south-west corner site the presumed start of the southern earthen rampart has been located, but hard evidence is lacking.

Since petrification for the defence works becomes standard from the 2nd century onwards<sup>110</sup>, it is presumed that the first three earth-and-timber *castella* at Oudenburg were temporary military installations. However, as will be argued in Chapter V.1 it is more likely that this was not the case. The height of their earthen ramparts can be estimated at *c.* 3 to 3.5 m, on top of which a wooden parapet of *c.* 1.8 to 2 m can be expected (Johnson 1987, 73; Baatz 2006c, 79). The partly preserved north-south construction slots along the eastern edge of the earthen rampart at fort level 1 and fort level 3, may be the last relicts of a wooden framework encasing the rampart<sup>111</sup>. A related construction slot or postholes at the exterior

109 Inner spacing: 0.30 cm. They represent respectively structure G and structure F on the western trench profile: Vanhoutte *et al.* 2014, 169; Fig. 8.

110 Johnson 1987, 59.

111 See Johnson 1987, 75: Abb. 36: *Rasensodenmauer mit senkrechten Fronten und Holzverstärkung / Holz-Erdemauer mit senkrechter Vorder- und Rückfront.*

were not found but are possibly cut away by the robber trench of the stone wall at this location. If posthole 14 of trench profile 3.1 (Plate III) is the relict of the front side of the wooden framework, then a bank of only 0.5 m is left between the defence ditch and the rampart. Although the latter is definitely possible according to the findings of Johnson (1987, 69), this would result in a total rampart framework width of 11.5 m, which seems rather too wide. Another possibility, even more likely, is that the wooden framework only existed at the interior and that the earliest ramparts mainly consisted of an earthen core with turf shells<sup>112</sup> equipped with a wooden framework at the inner side.

The petrification in the later 3rd century at first sight points to the need of a permanent army base. However, at Oudenburg it should probably rather be interpreted within the context of a cross-Channel building programme as a symbol of power and authority, and an expression of unity with the other Shore forts (see Chapter V.1). A rather thin stone wall of 1.05 to 1.10 m thick was backed with a renewed earthen rampart. The rampart bases of fort levels 1, 2 and 3 remained incorporated.

## II.4. The inner building: occupation levels and their relation to the defence system

### II.4.1. The inner building area

The identification of several successive occupation levels in the trench profiles in combination with the analysis of the stratigraphic relations between all features and structures in plan, has enabled phase-plans to be generated for each level (Plates XXI-XXIX)<sup>113</sup>.

The trench sections demonstrate major planning, levelling and make-up/elevation works prior to the installation of a new fort, a phenomenon already noticed at many forts in *Britannia* and *Germania* (Johnson 1987, 52).

Most of the inner building was erected using timber-framing technique. The three earliest, earth-and-timber forts had interior buildings exclusively of wood. In the stone forts 4 and 5, most of the inner building was still built in timber-framing technique. Only the main buildings were erected in stone.

The stands of the timber-framing technique were founded in postholes, in construction slots or onto sleeper beams. As will be clear on the maps, all three techniques occur at fort level 1, next to the building technique with postholes. However, it cannot be excluded that the latter is related to the pre-fort period. From fort

level 2 onwards, both timber-framing techniques using construction slots and sleeper beams occur, without any clear trend.

Tile fragments were found well-represented at the site throughout the Roman level. They indicate that from fort level 1 onwards the sustainable constructions carried tiled roofs<sup>114</sup>. Several constructions likely also had windowpanes; however, the large amount of small windowpane fragments throughout the Roman level is difficult to interpret (see Volume II, Chapter 6, Section 4: study by P. Cosyns).

### II.4.2. Pre-fort structures with possible military connection?

The cultivated soil uncovered on the fort precinct shows here and there a very sharp bottom line, an indication for agriculture<sup>115</sup> prior to the (2nd-century) civil occupation at this location. The local levelling down of this soil revealed plough traces and earlier traces like tree-falls and a cart track of c. 1.30 m wide (measured between the middle of the tracks) running northeast – south-west.

Features and structures pre-dating the fort are situated physically at the same level as those of the first military occupation, namely directly on top of the cultivated soil, and are therefore stratigraphically not distinguishable (Plate XXI<sup>116</sup>). The mapping of all archaeological observations has already made clear that the settlement of Oudenburg must have covered the whole of the sand ridge at Oudenburg during its flourishing period in the 2nd (and first half of the 3rd) century AD, including the area on which the later fort was built (see Chapter I, Section I.4.2; Figure 11).

In the south-west corner precinct of the fort, the large number of postholes at this level is striking in comparison with the later levels in which the timber-framing technique by means of sleeper beams and the building by means of posts founded in construction slots dominate. However, several postholes may be the last remains of ridge stands in combination with sleeper beams, of which the shallow construction slots were not preserved. Besides, the mix with earlier features and the often shallow preservation of the postholes make it impossible to derive further any distinct configurations out of the several clusters of postholes. The density of features along the northern edge of the excavated area, of which some postholes were

112 See Johnson 1987, 75: Abb. 36: *Einseitige Rasensodenschale / Zweiseitige Rasensodenschale*.

113 To enhance the visibility and the comprehension of the layout and spatial organization of each level, on the excavation maps presented here all shallow insignificant features are excluded. The presented maps show slight changes in comparison to the maps published in earlier publications. The present maps are based on further research in depth and should be considered as the most accurate and definite maps.

114 All building materials at the Oudenburg site were inventorized in detail (with thanks to V. Van Thienen for assisting during one month with the processing of the assemblage and for the productive discussions to come to an optimal method of classification). The building material at the Oudenburg site represents c. 3,950 kg (incl. stones, loam, mortar; excl. the c. 53,500 plaster fragments). Obviously, the Tournai limestones and mortar fragments from the robber trench of the defensive wall were not collected. As for the post-Roman levels, only diagnostic fragments were recovered. The ceramic building material (CBM) accounts for over 3,000 kg, or 13,146 fragments. The CBM assemblage is further discussed in Volume II, Chapter 9. Significant information regarding the construction of structures is integrated in the following analysis of the successive fort levels.

115 Conclusion in the field by prof. dr. R. Langohr.

116 All letters in the following section indicating features or structures, refer to this plate.

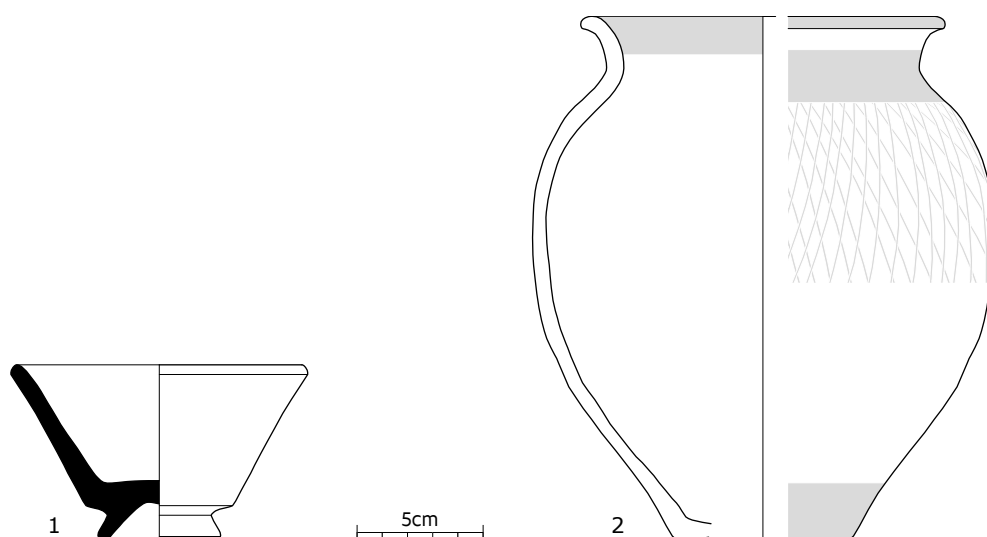


Figure 27. The vessels of the foundation deposit in the ridge posthole of the structure pre-dating the earthen rampart of fort level 1.

full of roof tile fragments, suggests the presence of a substantive structure, probably partly outside the excavated area.

Several remains of construction slots (b) show a different orientation than the axes of the fort according to the trace of the defensive ditch of fort level 1; at least some of them may be dated prior to the fort implantation. That the construction technique with sleeper beams already existed prior to the first fort period, is proven by construction (d) which can be attributed to the pre-fort level, seen its stratified position underneath the earthen rampart of fort level 1<sup>117</sup> (Plate CDLVI). The central eastern posthole (OS 72619) yielded a remarkable deposition, important as *terminus post quem* for fort level 1, with one complete samian cup Drag. 33 from Trier and an almost complete handmade pot of North Menapian production with burnished lattice decoration on the body (type NOM HA cooking pot III.2<sup>118</sup>)<sup>119</sup> (Figure 27), together with an interesting animal bone assemblage<sup>120</sup>: two lower jaws of one adult horse together with six horse vertebrae of the neck, one incomplete upper skull of a pig, possibly longitudinally cleaved, and two upper skull fragments and two pelvis fragments of cattle. This animal bone deposition reminds one of the ritual *suovetaurilia*, although these consisted of pig, bull, and ram instead of horse. This known triple sacrifice to Mars in order to bless and purify land, may have been adjusted here to a local context as a construction votive, a foundation deposit. The Trier Drag. 33 cup can generally be dated in the second half of the 2nd – first half of the 3rd century (Webster 1996, 45; Brulet *et al.* (réd.) 2010, 193), but given the dating of the find assemblages of the first fort level (see further) this example

cannot be dated later than the late 2nd century<sup>121</sup>. It can be assumed that this construction dates right before the installation of the Roman *castellum*.

The double construction slot (a) at c. 1.20 m distance west of the postholes that were identified as part of the defensive system, bends to the west at its northern side. A relation to the defence system seems therefore unlikely and a date prior to the fort is assumed.

The building technique with construction slots is not unknown for the pre-fort occupation at Oudenburg. Among the settlement traces underneath the late Roman Graveyard A c. 400 m to the west of the fort, at least two construction slots can be distinguished, belonging to a building with heavy posts (preserved depth of posts: 1.20 m) (Creus 1975, 7)<sup>122</sup> (Figure 14, inset map: 3). It attracts attention that the orientation of this structure is the same as the line of heavy posts preceding the central stone building, even further emphasized by the two wells to the west positioned on an exact parallel north-east axis. Since it is plausible that the assumed stone bath house is related to one or more of the late 2nd- and 3rd-century fort periods (see before), these structures with construction slots are likely to pre-date the installation of the fort. The timber-framing technique outside the fort was also observed in 2003 in a trial trench to the south of the fort (ET16). The uncovered corner of a building with construction slots could be dated to the end of the 2nd – beginning of the 3rd century and can be attributed to the military *vicus* (Vanhoutte 2004).

117 The structure is c. 6.50 by 3.40 m (outside measurement) and erected via timber-framing. The construction slots, preserved to a maximum depth of 0.10 m, were obviously intended to hold sleeper beams. They were combined with deep grounded ridge stands, with the central eastern ridge pole preserved to a depth of 0.80 m.

118 Cf. the North Menapian handmade typology in Volume II, Chapter 1.C.1.

119 Apart from the two vessels, a flagon body sherd, a wall fragment of a Soller mortarium and a base fragment of a grey wheel-turned open form complete the ceramic assemblage.

120 Identification by dr. A. Lentacker.

121 The related construction slots do not offer more specific chronological indicators. They only contained seven flagon sherds of which six belonged to a Cologne flagon, one fine reduced body sherd and five handmade flagons of which two came from an open form with spout.

122 The overview maps of the settlement underneath the graveyard shown by Mertens and Van Impe (1971, p. 20: Afb. 8) and by Creus (1975, Pl. II) are conflicting. Comparison with the general excavation map of Mertens and Van Impe (1975, Plan II) indicates that the map of Creus is more adequate. The excavation by means of small trenches makes it difficult to interpret the maps well though.

Timber-framing is rare on civil sites; this technique appears to be mainly used on military sites. *Castella* where the use of sleeper beams was the standard and where they were still preserved, are Valkenburg (Glasbergen 1972) and Alphen aan den Rijn (Haalebos *et al.* 2000; Polak *et al.* 2004). In the region, house plans with sleeper beams dated to the mid-Roman period with certainty<sup>123</sup> are known at cities like Tongeren and Amiens (cf. Dhaze *et al.* 2015, 94), at the *vicus* of Grobbendonk (De Boe 1984, 72-73; De Boe 1988) and from the rural site of Zemst-Eppegem (Smeets *et al.* 2012). A well at the rural settlement of Menen-Kortewaagstraat yielded reused construction beams, but no other indications for this construction technique were found (Dhaze and Verbrugge 2007, 55-60; Dhaze *et al.* 2015, 27, 32, 94). The civil examples represent exceptions and we can wonder whether a possible military connection for the use of timber-framing should be considered.

The presence of a timber-framed pre-fort structure at the south-west corner site and at the military *vicus* to the south of the fort (ET16), together with indications for the timber-framing technique at the settlement c. 400 m west of the fort and the high-standard material culture of the settlement, makes us wonder whether no earlier military presence is to be considered at Oudenburg. No more indications are available, but this possibility should be kept open in future research.

#### II.4.3. Fort level 1: remains of soldiers' barracks at the southwestern corner

##### II.4.3.1. Defence system

The earliest fort was an earth-and-timber construction, provided with a rampart with a width in between 4.5 and 6 m<sup>124</sup> (Figure 28; Plate XXI<sup>125</sup>). Since the front side of the rampart is cut away by the construction trench of the stone wall and the defence wall itself, no conclusions can be made about the type of rampart structure and palisade the rampart was equipped with. The width of the rampart and the absence of traces of a wooden framework assume that it was a rampart with a palisade on top (cf. Johnson 1987, 71, 75: Abb. 36; Baatz 2006c, 78 (Fig. 29: b, c), 79). The defence ditch of more than 3 m wide can be traced in the maps of Mertens over a total distance of c. 108 m to the north, to the point where the ditch probably bends to the east (cf. Chapter II, Section II.3.1) (Figure 28). The north side of this earliest fort was situated more to the south than is the case for its successors<sup>126</sup>.

123 The house plan with construction slots at Eke-Molen (Vermeulen 1992, 194, 198), published as a Gallo-Roman construction, is however Germanic (pers. comm. dr. W. De Clercq).

124 Depending on the assumed width of the berm in between the defence ditch and the earthen wall (of which the front is cut away by the construction trench of the stone defence wall).

125 All letters and Roman numbers in the following section indicating features or structures, refer to this plate.

126 In the northern end of trench 1977/1 in the northern precinct of the fort, the 'vague start of a ditch' was cut, interpreted by Mertens as the possible defensive ditch of the earliest military phase (Mertens 1978, 76; Mertens and Crabbé 1987, 14). However, no concrete indications are found to presume this. According to the new data this seems unlikely.

Since there was no hard evidence that the cut southern rampart at the south-west corner site goes back to the earliest fort level<sup>127</sup> and the eastern limits of this *castellum* are neither known, it remains an open question how large this first fort was. During the research of Mertens, this level was recognized as 'Oudenburg I', but no insight whatsoever could be retrieved into the spatial organization within the fort walls (Mertens and Crabbé 1987, 14).

The features of the first military phase at Oudenburg are cut into the cultivated soil, as is also the case for earlier features and structures pre-dating the fort. This mix of features of different periods, together with the large disturbances at this level due to the intrusions made from later fort levels, makes it difficult to deduce 'military' configurations. The main criteria is therefore the position of the structures according to the axes of the fort defined by the alignment of the defence ditch and the rampart. It is therefore impossible to draw further conclusions from the clusters of postholes to the west of Construction IV and to the south of feature (m).

At the base of the earthen rampart, traces were found of a wooden alignment (e), probably a facing or part of a rampart construction. Parallel to the rampart a drainage gully of c. 0.75 m wide (preserved to a max. depth of 0.24 m and clearly redug) (f) must have edged the no longer preserved *via sagularis* of c. 4 m wide (g). On the fort precinct, several constructions laid out parallel with the defence ditch can be attributed to the military phase.

##### II.4.3.2. Inner building

###### Construction I and II(?)

Construction I measures c. 5.50 by 3.75 m (outside measurements) and was erected in timber-framing technique by means of sleeper beams and ridge stands (Figure 29; cf. Plate CDLVII). Part of the western wall was only visible as shallow prints, while the eastern construction slot was preserved to a depth of a max. of 12 cm. This construction with inner partition for a front and a rear room (usually referred to as *arma* and *papilio*<sup>128</sup>; a storage room for gear, personal belongings and supplies and the actual living quarters), can be identified as a *contubernium* where usually eight soldiers were quartered. The layout fits in with Barrack Building Type A of Davison (1989, 4-5, 267: Fig. A)<sup>129</sup>. Its size, c. 20.6 sq m, conforms to the measurements of known *contubernia* and fits in with the common sizes between c. 14 and 29 sq m with a peak at c. 21 to 25 sq m (Davison 1989, 13).

127 At least the *via sagularis* still separates the most southern structure (Construction III) with the earthen rampart, but both the *intervallum* road and the earthen rampart can have been situated much more to the south.

128 However, these terms are taken from the *Liber de munitionibus castrorum* written by Hyginus and are applied to a marching camp. It is not sure if these terms are also applicable for solid accommodations (Johnson 1987, 194). Nevertheless, they are commonly used to refer to the front and rear room of a *contubernium*.

129 This Type A was usually equipped with a veranda, but not necessarily. At *contubernium* I at Oudenburg, there are no indications for the presence of a veranda.



Figure 28. Overview map with the localization of the south-west corner site and the features of fort level 1 in comparison to the contours of the later stone fort.

The southwestern corner clearly needed a heavier foundation; at some point the post was replaced, now to a (preserved) depth of 0.43 m (h). Pit (i) with straight dug edges and flat bottom at the southeastern corner must have been situated against the outside of the *contubernium*. The features at the back (the north side), a slightly curved gully – in section clearly a shallow construction slot<sup>130</sup> – and an overlapping shallow central pit (k), may be identified as robbed out construction features. The east wall of *contubernium* I runs

further to the north, likely to be the last remains of the connected *contubernium* to the back. Clear traces of the originally adjacent *contubernia* are lacking, probably due to the many later disturbances and the limited depth of the features<sup>131</sup>. However, the parallel gully to the west (j), may well be a drainage gully running alongside the west wall of the adjacent *contubernium*. In between *contubernium* I and this gully exactly the width of *contubernium* I can be

<sup>130</sup> In Vanhoutte 2007b wrongly identified as drainage gully.

<sup>131</sup> For construction beams no deep or broad gullies were needed; 10 cm could be sufficient. Moreover, beams were often laid directly on the soil as a result of which no trace would remain (cf. Davison 1989, 218).



Figure 29. Fort level 1, Construction I. View to the south.



Figure 30. Fort level 1. Remains of construction IV and of road level to the left. View to the south.



extrapolated. This would explain the linear feature in the south-west corner of the front room of *contubernium* I also present at the other side of the common wall. It is therefore likely that a second *contubernium* can be assumed here (Construction II). The deep-founded ridge pole at the south side fits this configuration. At some point the original post of 0.66 m deep (preserved depth) needed to be replaced with a deeper post (preserved depth of 0.80 m) (see Plate CDLVII: section 7/49).

### Construction III

Construction III of c. 7.3 by 4.0 m, lying parallel to the presumed southern rampart, may equally have been a *contubernium* as an inner partition forming a front and a rear room can be recognized. Here, the building is founded on posts, with a centrally located series of ridge poles (cf. Plate CDLVIII). It is uncertain whether the construction slots for the sleeper beams were just not preserved or whether this *contubernium* was erected by means of another construction technique. No traces of connecting *contubernia* could be distinguished. How this *contubernium*, which must have been part of



a barrack block to the north, relates to *contubernium* I, is unclear. One can wonder if they actually represent two different building phases. Another building technique would fit in this hypothesis.

Small postholes in the southwestern corner of this presumed *contubernium* III locate a structure of 2.10 by 0.80 m. A series of small postholes in a *papilio* at the fort of Heidenheim (Germany) defining areas of c. 2 by 0.8 m, were read as the remains of bunkbeds, an identification first proposed by Cichy (1971, 28) and taken over by Johnson (1987, 194 and Fig. 131) and Junkelmann (1991) although one can make the comment why beds would be fixed into the soil. Nevertheless, a similar identification as at Heidenheim is likely, whether it is a bed or another piece of infrastructure.

### Road

At the north-east side of the excavation area, the western side of a road was uncovered made of 'fieldstones' embedded in sand (c). For the construction of the road, the cultivated soil was dug away. No stratigraphic relation in surface could be made with fort level features. The road level has been only partly preserved, on its turn cut away by Construction IV of fort level 1. Therefore, it cannot be defined with certainty whether it belongs to an early phase of fort level 1 or whether it pre-dates the fort (c). However, the alignment according to the axes of the fort is in favour of an attribution to the military occupation.

### Construction IV

In the northeastern corner of the excavated area, next to the road level, part of a long alignment of more than 12.5 m long was uncovered, constructed by means of posts founded in deep construction slots, with posts up to 0.48 m deep (preserved depth) (Figure 30; cf. Plate CDLIX). Overlapping construction slots indicate that this alignment has been replaced: the two eastern alignments were dismantled in favour of the two new construction slots to the west, differing slightly in orientation at their south side. It can be assumed that the leveling of the cultivated soil to construct the adjacent road – resulting in a lowering of this area – made it a rather 'squelchy' place causing stability problems, resulting in the reparations. The thick leveling prior to the construction of the second fort seems to confirm this. How the alignments and the shorter construction slot to the east must be interpreted, is not clear. In Vanhoutte 2007b, a large building was suggested, stretching further to the east (as marked on Plate XXI). However, one can assume that for the construction of this building the rest of the road would also have been dug away. Extrapolations of the width of *contubernium* I to the east indicates that exactly six *contubernia* can occur in between. This would bring the total number of *contubernia* of the supposed barrack at eight, which is a common number according to the study by Davison (1989, 12)<sup>132</sup>. Moreover, the southern limits of Construction IV are more or less the extension of the northern limits of Constructions I and II. However, the construction slots of Construction IV stretch too far north to be identified as the eastern wall of a barrack block. The, usually larger, officer's quarter, would

be expected at the side of the earthen rampart. It is nonetheless possible that more than one building phase is preserved here.

At fort level 1 different building techniques are in play. For the construction of the soldiers' quarters in the earliest fort, the timber-framing technique with sleeper beams was definitely in use (as can be seen for Construction I). The construction slots of Construction IV show the post-trench building technique. Besides, also the post-pit construction technique seems to be still applied, as can be deduced from Construction III. From fort level 1, a small assemblage of ceramic building material (CBM) was recovered. Only tile fragments were found, but these *tegulae* (42 pieces) and *imbrices* (22 items) evidence that the constructions of fort level 1 were solid structures with tiled roofs.

### Industrial activities

A large heap of melted oven material – consisting of iron, with some iron bars still attached and a possible ironstone nodule underneath, melted all together with sand and clay – represents the discarded remains of a failed oven<sup>133</sup> (Plate CDLX). The nearby burnt spread of 4 cm thick is probably the last remains of the corresponding hearth. The surrounding postholes indicate that this was a covered oven workshop (m). On this spot, the making up of the area prior to the construction of fort level 2 was very thick, burying the iron heap completely. A fragment of a melting pot and several iron slag pieces from level 1 are indicative of metal working activities, but may also predate the fort occupation.

## II.4.4. Fort level 2: a military hospital at the southwestern corner

### II.4.4.1. Defence system

After the earliest ditch (of fort level 1) was filled in, a new ditch of c. 4.50 m wide was dug out for the defence of a new earth-and-timber fort (cf. Chapter II, Section II.3.2) (Plate XXII). This defence ditch can be traced in the documented sections of Mertens further north up as far north as the later stone wall (Figure 31). At the northeastern site Kapellestraat (ET24), the presumed defence ditch of the second fort was located. With the second fort the known maximum fort dimensions seem to have been reached. However, since data are lacking for the eastern side, there is no certainty about the extent to the east.

The earlier rampart of the first fort was partly removed, maybe to renew the palisade, and subsequently raised and broadened to at least 10 m wide, extending slightly to the south towards the fort corner area.

<sup>132</sup> In auxiliary barracks a range of ten *contubernia* is the total most often found, while there are many known examples with eight or nine.

<sup>133</sup> Examined and identified by dr. P. Degryse.



Figure 31. Overview map with the localization of the south-west corner site and the features of fort level 2 in comparison to the contours of the later stone fort.

#### II.4.4.2. Inner building

II.4.4.2.a. First building phase (2A) of uncertain character  
Before the construction of interior buildings started, a leveling of the whole fort area took place. The thickness of the homogeneous make-up layers, sand or clay, varies from 10, 15 to 20 cm, and in parts over 30 cm.

The occupation layer marked by a burnt daub level situated on top of the basic sand make-up layer in trench profile 2.7 (see layer 75) and covered by a clay make-up layer also of level 2 (Plate VIII), points to an intermediate occupation identified as fort level 2A. At trench profile 4.9 the sectioned postholes and/or construction slots also clearly indicate two building phases (Plate X). Some construction slots cut by or with a slightly

different orientation than the later building (Plate XXII<sup>134</sup>: a and b), a facing or fence to the north (c)<sup>135</sup>, a few pits (d, e and f) and a floor of chalkstone fragments and some small boulders in a bed of clay and showing two levels (g) seem to be remains related to this first subphase. Also the pit east of construction slot (a) (Plate CDLXVI: section 8/558) must have belonged to the initial phase of fort level 2. It was completely filled in with large lumps of shell mortar and shell fragments and one can wonder whether it concerns waste of mortar preparation. Construction slot (a) reveals a post-trench technique for this early phase. It also indicates that the first building at this location, whether or not with the same function as the later building, stretched further south. The renovation of the floor after a clay levelling (g) and the succession of features at the south of the excavation area also suggest that these features are the result of more than one building phase. From the remains of *in situ* plaster fragments at the base of construction slot (b) one can assume that the later large building complex of fort level 2B had a predecessor of the same status, perhaps with the same function. The large pits along the western earthen rampart (h) which may have served as sand quarry holes, also seem to date from this period.

#### II.4.4.2.b. Second building phase (2B): a large building complex

Subsequently, this first level was raised and the pits at the west side were filled. It is probably now that the differentiation in the composition of the make-up layers took place, which seems to be related to the design of the planned building (Plate XXIII<sup>136</sup>). The area outside the later building complex shows a making-up with homogeneous, fairly sterile sand layers<sup>137</sup>. The east and north side of the complex have a levelling of greenish clay, generally on top of a sand make-up layer, locally laid directly on top of the cultivated soil (and thus directly on top of the first fort level). The clay level, deprived of many finds, could be 10 to 15 cm thick, here and there up to 20 cm. Where the clay came directly on top of the cultivated soil, it was noticed that the cultivated soil in these areas was often levelled down. The courtyard was constructed upon a make-up of sand mixed with clay, as seems to have been also the case for the west side of the complex. At the large pits along the western earthen rampart, which were also filled in with clayish material, the area was levelled with clay, probably for the solidification of the area.

#### Draining

After the making up of the ground and before further construction took place, this area was drained: the evidence consists of a linear ditch system (Plate XXIII: i) along the inside of the western earthen



Figure 32. Section through gully (j) along the north side of the later courtyard (cf. Plate XXIII: j), view to the east. 1: bottom of the gully filled in with sand and silt layers; 2: digging out after which the gully was filled in and levelled with sand; 3: remains of the northern construction slot of the later courtyard.

rampart cutting the filled large pits. These ditches had layered fillings, mainly of sand, alternated with silt layers.

A curvy gully (j) marks the centre of this area. The bottom was filled in with sand, layered with silt levels. The gully cut the make-up layers for the installation of fort level 2B, and is therefore definitely related to this level. However, it was itself cut at its north side by the northern construction slot of the later courtyard that was built on top of the filled-in ditch (see Figure 32: 3). Sections of the gully show a digging out – perhaps of a drainage pipe? – after which the gully was filled in with sand (see Figure 32: 1-2). As the course of this gully follows the contours of the courtyard of the new building, it was obviously dug in view of the specific building design. The parallel course of the southern ditch segment to the inner wall of the south part of the building complex of 2B assumes this gully was installed as a sewer for rain water coming down from the roof of the building complex. That the gully was built over by the north wall of the courtyard can only indicate that the northern part of the building complex underwent serious renovations and that the previous phase at this side, which was related to the gully, was dug away. Several construction slots in the northern part of the building complex can confirm that renovations took place in this part of the building complex.

#### Installation of a large building complex

After these ditches were filled in, the installation of the main phase (2B) of the second earth-and-timber fort period took place (Plate XXIII). The south-west corner area was at that time dominated by a large timber-framed<sup>138</sup> building complex measuring c. 32 by 23 m. The architectural complex consisted of corridors or galleries and rooms, all set around a courtyard (Figure 33). At the north side, the building shows a sequence of, from east to west, one larger room with the remains of an inner partition (R3), followed by several small rooms (R4 to R12) along a corridor. The first in

<sup>134</sup> All letters and numbers in the following section indicating features or structures, refer to this plate.

<sup>135</sup> Cf. Plate CDLXII.

<sup>136</sup> All letters and numbers in the following section indicating features or structures, refer to this plate.

<sup>137</sup> The lower sand make-up layer was generally a homogeneous light brown sand level, slightly paler than the cultivated top soil. The sand make-up layer covering this lower level was usually more heterogeneous, but equally fairly sterile.

<sup>138</sup> See feature sections on Plates CDLXIII-CDLXIX.





Figure 33. Remains of the courtyard building of fort level 2B. Top: features of fort level 2 uncovered in trench T1, view to the north-west. Bottom left: part of trench T1, view to the north-west, with mortar floor of room R2 with clusters of fallen plaster and adjacent construction slots with *in situ* plaster along the sides. Bottom right: the northern corridor, view to the west, with stone bed of mortar floor.





Figure 34. Only shallow features were preserved of the central courtyard construction (Plate XXIII: m).

Figure 35. Imprints of timber framing in the clay/loam lifted *en bloc* with painted plaster fragments of the south wall of the southern corridor.



row (R4) has a width of *c.* 2.5 m; the following small rooms measure *c.* 1.5 to 2 m, all by *c.* 4 m length. The west side constitutes of four larger rooms (R13 to R16), for which the remaining construction slots indicate identical sizes of *c.* 5.2 to 5.5 m by *c.* 6 m. The east side probably also consisted of a series of rooms but the later disturbances make the situation here unclear. A corridor or gallery, most likely identical to its northern counterpart with an inner width of *c.* 1.8 m, constitutes the south side. The courtyard measures *c.* 22.5 by 14 m. The section of a construction slot or posthole (feature 60) in trench profile 1.1 (Plate VII) situated in the prolongation of the northern slot of the double construction slot at the north side of the complex (Plate XXIII: k), with an inner spacing of *c.* 2 m, may point to a possible portico at the east side of the building of which the posts to the south stood outside the excavation area. This may explain the presence at the east side of mural paintings on the façade found *in situ* as fallen down fragments (l), while there is no indication for this at the north, south and west side of the complex.

The courtyard must have been an open space, but some clusters of deep postholes indicate that there were some isolated structures. On the central west-east axis of the courtyard, the last remains of a small structure were preserved (m) (Figure 34). The shallow alignments and *in situ* plaster and mortar remains indicate a rectangular plan with apsis at the west side and an open east side. Based on these scarce *in situ* remains, the construction itself probably had outside measurements of *c.* 3.10 by 2.10 m. At the north side, two parallel mortar alignments indicate the thickness of the wall itself. To the east, plaster fragments were situated in the same orientation. The northeastern corner was marked by a large 'fieldstone' block.

Starting near the northeastern outer corner of the complex, a facing or fence stretches to the north (n). The inner spacing of *c.* 3 m between the first posthole (o) and the building, with a central shallow pit (p), may locate a gate. In front to the east, a layer of Tournai limestone cobbles indicates a metalled road (q). The fence probably closed off an open space or garden,



Figure 36. *Tubuli* finds of fort level 2, 2/3 and 3 localized on the overview map of fort level 2B.

since only a low number of features occur north of the complex. The large pit (r) may have been the location of a tree. Further to the north a shallow ditch (s) (preserved depth: max. 0.18 m) is covered to the west by a debris layer full of ceramic building material. More to the west, a configuration of six small postholes locates a small construction (t) which possibly stretches further outside the excavated area.

To the south of the complex, a small preserved part of a floor of shell mortar gravel on a bed of clay (u) indicates that in this period the 4 m wide strip between the south side of the building and the base of the earthen rampart was hardened. This way the passage to the assumed wooden corner tower was secured. Along the west side, the inner spacing of c. 3 m between the earthen rampart and the complex did not yield any indications for a passage route. Only some pits occurred here.

#### Timber-framing technique

This complex was built in the timber-framing technique. Most of the construction slots contained sleeper beams; some however held deep posts (post-trench technique). Many of the construction slots with sleeper beams show traces of later recuperation of the beams. In the remains of the fallen down plastered wall at the south side of the building complex (see further), imprints of the wooden timber-framing were still preserved (Figure 35).

The CBM assemblage of this fort level comprises 422 tile fragments (282 *tegulae*, 140 *imbrices*), the remains of the tiled roofs that covered the building complex. The upperside of a *tegula* fragment was still covered by the remains of a joint of pink, hydraulic mortar. Next to tiles, the occurrence of 28 *tubuli* fragments at this level attracts attention. One of the fragments was covered with mortar. Their presence is remarkable, since no traces of a hypocausted room were found and only timber-framing structures were uncovered. Besides,



of the *tubuli* fragments from fort level 3, can be assumed after consideration of the function of the area at that time (see further), that they were dug-up material from fort level 2. When the *tubuli* from both levels are mapped together (Figure 36), their presence is even more striking. Two clusters can be distinguished, and it is the northeastern cluster that possibly explains this phenomenon. The north wall of the complex was at the east side (from the northeastern corner of room R8 until the east corner of the building) formed by a hollow wall, indicated by a double construction slot (v). A hollow wall is a known arrangement to provide insulation and to keep spaces dry. This side of the building, the most subject to the northwestern wind, probably needed extra protection. *Tubuli* were ideal elements to create such a hollow wall and this may well be the explanation for their clear presence at this fort level<sup>139</sup>.

At some point, a renovation took place, as evidenced by the replacement of the double construction slot by a single construction trench (w)<sup>140</sup> and the successive construction slots of the north side of the inner court (see already before) and of the north side of the northern corridor<sup>141</sup>. Evidences for renovations at the building were also present at the west wall at the western construction slot of room R15 where some posts point to repair works (Plate CDLXIX: sections 7/264, 7/265).

Two large Tournai limestone blocks at the south side of the northern corridor with an inner spacing of 1.10 m (x) may have located an entrance from the courtyard to the corridor. A large Tournai limestone block (y) at the east side of the courtyard may also point to a passage way. Right next to the construction slot to the north, the sunken lower half of a pot may be related to the entrance.

### Mortar and stone floors

The courtyard and the corridors had stone floors, made of Tournai limestone fragments and some small boulders imbedded in sand. Most, if not all, of the small rooms had compact mortar gravel flooring. Remains of a mortar floor were found in rooms R2, R3, R4, R5 and R6. These floors consisted of compacted tamped mortar gravel on a bed of clay. Only in room R5 the mortar floor rested on a stone floor similar to the one in the northern corridor. Underneath this floor of room R5, a local fire layer refers to subphase 2A. Only for the four larger rooms at the west side were there no indications that they were equipped with a hard flooring.

### Infrastructure

Rooms R3, R13, R14, R15 and R16 yielded some postholes and/or alignments pointing to inner partitions or infrastructure. Room R13 contained, more or less in the centre of the room, a large hearth of c. 1.30 by 0.75 m (hearth OS 70971) (Figure 37). This hearth consisted of a bed of Tournai limestone fragments on top of which a horizontal level of tile fragments was laid, surrounded by stone blocks. Two small postholes sectioned at both the north and south



Figure 37. The central hearth (hearth OS 70971) of room R13. View to the west.

edge of the hearth point to some kind of cover. In room R16 a small hearth pit (c. 0.45 by 0.40 m) (preserved depth: 0.17 m) was situated along the northern wall. Room R7 yielded a flat stone level along the western wall consisting of Tournai limestone blocks and boulders. The burnt ground underneath and in-between limited to the stone level suggests that these are the remains of a hearth.

### Mural paintings

The complex was decorated with mural paintings (Figures 33 and 38). The wall of the courtyard, the corridors or galleries and the rooms at the north and the east of the building all yielded painted plaster remains. Only the four large rooms at the west side seem to have been undecorated. At the outside of the building, the eastern façade was plastered (I); this is the most visible side, which was probably covered by a portico (see before). The north, south and west façades were not plastered. The painted walls of the courtyard, evidenced by the fallen down fragments and *in situ* bottom remains of the walls at the east side (z), are likely to have been low walls, supporting an open upper zone with pillars.

In places, the plaster was still preserved *in situ* at the base of the disappeared timber-framed walls or as fallen-off wall fragments. An enormous amount of fragments was found in the demolition layers of the building. Locally, a thick level of very compact greenish clay, measuring up to c. 15 cm, characterizes this level, most of the time covering the plaster levels, sometimes covered by them. This clay level, distinct from the make-up clay level by the presence of plaster fragments and by organic imprints, is presumably what is left of the fallen walls; its position on top or underneath the plaster depends on how the wall fell down. This is confirmed by the imprints of the wooden timber-framing preserved centrally in the clay underneath one of the plaster zones of the fallen south wall of the southern corridor (Figure 35).

A large part of this south wall was preserved to the south of the building, spread over an area c. 11 m by 3.5 m wide (Figure 39). The wall fell (or was torn) backwards, as a result of which

<sup>139</sup> An additional argument in favour of this hypothesis is that the *tubuli* in question do not bear any remains of mortar.

<sup>140</sup> See Plate CDLXIII: feature sections 8/433–440.

<sup>141</sup> See Plate CDLXV.



Figure 38. Traces of the courtyard building with *in situ* plaster remains. a: northern corner of room R2, view to the south; b: top view on construction slot marked by *in situ* plaster border, with vague trace of beam within the slot; c: plaster fragments preserved *in situ* along the base of the missing timber-framed wall of the east side of room R3; d: the north side of the level 2B complex, view to the south, with more or less centrally the construction slot in between rooms R4 and R5.

most of the painted fragments were facing upwards, and could be connected to the south wall of the southern corridor. The corresponding construction slot (aa) yielded the last remains of the *in situ* plaster bases. Based on the reconstruction of the decoration by L. Laken (see further), the mural painting was preserved for c. 35%, accounting for, in total, 10,117 plaster pieces. No indications were found for a second painted wall, the northern side of the corridor, confirming the idea that the corridor was open towards the courtyard with a low border as is supposed based on the plaster fragments found *in situ* at the south side of the northern corridor (see before).

The absence of postholes and construction slots related to this phase to the south side of the southern corridor, together with the

fact that the spreading of the collapsed plaster was not restricted in space, indicates that the building had no symmetrical design. At this side of the complex, a series of rooms, like the ones at the north side, lack. The fact that the mural paintings display no interruption in the decoration scheme also confirms that the north-south construction slot must pre-date the corridor and was part of fort level 2A.

The wall paintings of the small apsis construction on the courtyard are also known. There are several indications that the 1115 plaster fragments reused as foundation of a workshop (Unit IV) in the fourth fort period originally came from the small construction on the courtyard, situated nearly on the very same spot (Laken and Vanhoutte 2016; see also Section II.4.6.2.a).





Figure 39. Fallen plaster from the collapsed wall of the southern corridor. Left: as seen from the south-west; top right: detailed view to the north; bottom right: detailed view on the central area.

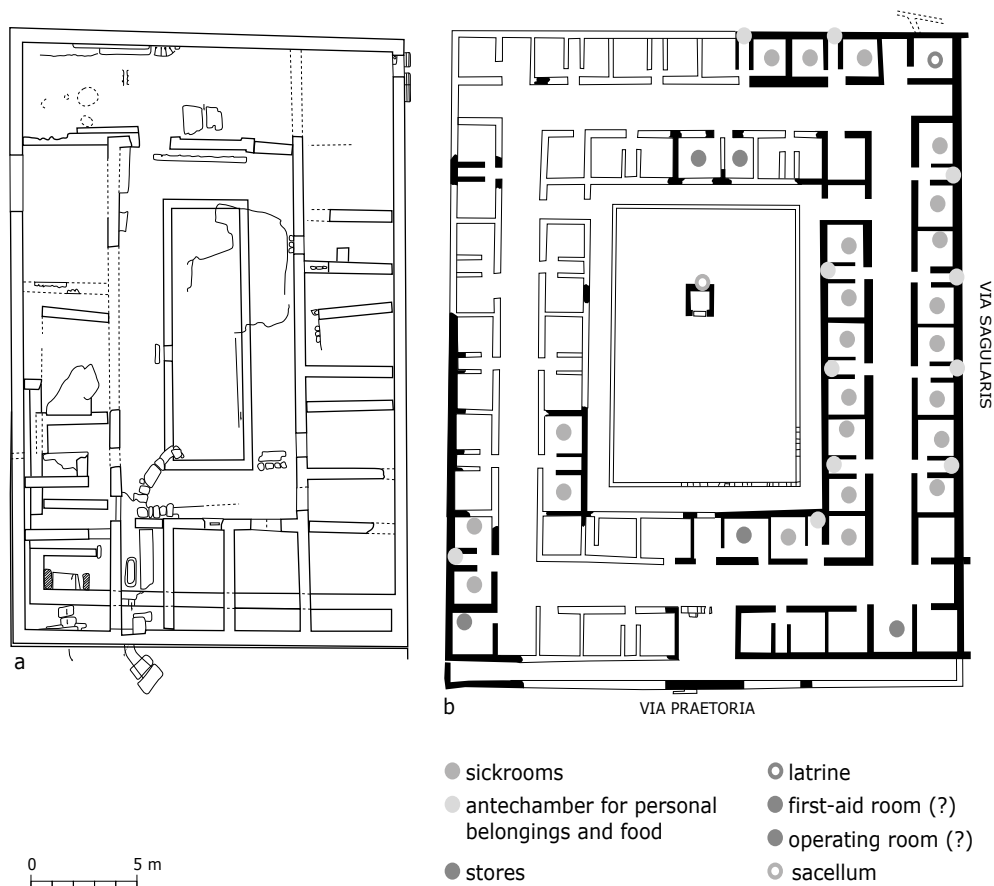


Figure 40. Two ground plans of known *valetudinaria*. a: the as *valetudinarium* identified building of the fort of Housesteads (from: Charlesworth 1976, 18: Fig. 1); b: the military hospital in the fortress at Novae, scale c. 1:1000 (from: Dyczek 1997, 201: Fig. 3.7).

### Identification as military hospital

The dimensions and the design of the complex show resemblances<sup>142</sup> with those of a stone building of 30 by 22 m at the fort of Housesteads (UK) along Hadrian's Wall, of which however a clear structural chronology could not be established (Charlesworth 1976; Johnson 1987, 184, 186 and Abb. 121; Rushworth *et al.* 2009, 5, 7, 13; Fig. 1.9) (Figure 40: a). It was interpreted by Charlesworth as a *valetudinarium* or military hospital, the plan viewed as a scaled down and simplified version of that found in the hospitals of 1st- and early 2nd-century legionary fortresses. She recognized one of the larger spaces as a surgery room and the small rooms as cells for the patients (Charlesworth 1976). Although smaller (23.70 by 17.40 m), the stone Building VIII identified as hospital at Wallsend (UK), also on Hadrian's Wall, equally shows similarities, with nine rooms ranged around a central open small courtyard (Hodgson 2003, 129). This building originates from the second half of the 2nd century AD and was demolished during the first half of the 3rd century AD (Hodgson 2003, 134 and 139). This hospital had a timber predecessor from the Hadrianic period which might have been a hospital too, with rooms ranged around an open space (Hodgson 2003, 124-127).

It is however the small construction on the courtyard of the Oudenburg complex which convinces us that this was a hospital. This apsis construction resembles well the central construction of the *valetudinarium* (81.90 x 72.90 m) in the legionary fortress at Novae (Bulgaria) (period of Trajanus c. AD 100 – Caracalla (198-217)), both in dimensions as in the location on the axis of the courtyard (cf. Dyczek 1997, 202) (Figure 40: b). The military hospital at Novae is one of the largest and best preserved hospitals known. Approximately 70% of the total hospital precinct, which covers almost 6000 sq m, has been uncovered so far. One of the rooms of this hospital presumably was a storage room for medical instruments; many fragments of broken implements and remains of medical chests were found here. Several rooms were provided with modest wall paintings. With four to six patients per room it has been calculated that the hospital at Novae could care for 300 sick or wounded soldiers (Press 1988; Dyczek 1997; 2005; Dyczek *et al.* 2001). The construction on the courtyard at Novae measures 2.46 by 2.60 m. It could be identified as a *sacellum* or shrine to the healing deities Hygieia and Aesculapius, based on the inscriptions on the stands of the statues found *in situ*, some small altars and a large one dedicated to Aesculapius (Dyczek 1997, 203; 1999). It is our belief that to the central construction at Oudenburg the same function can be attributed. A stone fragment may indirectly contribute to this identification. A sculpted glauconite-rich sandstone fragment can be identified as a corner fragment of an altar (Figure 41). Paint remains indicate that it was painted white, probably to imitate white marble<sup>143</sup>. It was found in the fill of one of the construction slots in the north-east corner of the building (cf. location on Plate XXIII).

Together with the large numbers of medical instruments found at this type of building at the legionary camp of Neuss (Koenen



Figure 41. The presumed corner fragment of an altar, found in the infill of a construction slot of fort level 2B (for the location of the find context: Plate XXIII, arrow).

1904, 399) and the supposed medical-instrument storage room in the complex of Novae (Dyczek 1997, 202), the to Hygieia and Aesculapius dedicated shrine forms conclusive evidence that at legionary sites buildings of this type can be identified as hospitals. Although the identification for auxiliary courtyard buildings is debated (hard proof of medical instruments or epigraphy is lacking) – Baker even arises the question for all legionary and auxiliary buildings assigned as ‘hospitals’ (see Baker 2002; 2004, 83-114) –, Künzl (2005) and Hodgson argue on several grounds for the identification with certainty of these auxiliary buildings as hospitals (Hodgson 2003, 139-140). That auxiliary forts in the north-west of the Empire possessed a *valetudinarium*, is certain based on the Vindolanda tablet 155.6 (and may also be implied from tablet 154.21-25) (cf. Vindolanda Tablets Online II). The presence of an absidial shrine in the courtyard at Oudenburg is therefore considered here as a decisive element in the identification of the complex as a military hospital.

The quiet location in the corner of the fort supports the interpretation of the Oudenburg complex as a *valetudinarium*. *Hyginus Gromaticus* or pseudo-*Hyginus* advises a preferred situation for such a building in chapter IV of his *Liber de munitionibus castrorum* – although a work of the late 1st century AD on marching camps but likely stating general principles – that is a quiet place in the fort with silence for the recovering patients (Richardson 2004, 70). The small rooms at the north side of the building at Oudenburg can be identified as cells for the sick soldiers; room R13 with central hearth may have been the kitchen. The fill of a pit in room R14 contained pottery that may indicate this room was a storage facility (cf. Volume II, Appendix, Section 3.5: OS 72767). At one of the other large spaces at the west side a surgery room may be supposed. For Housesteads a capacity was calculated of 20 to 30 beds (2 to 3 beds for each of

<sup>142</sup> Comparison can also be made with the *praetoria*, the commander's house, but the location in the south-west corner of the fort excludes this option.

<sup>143</sup> Pers. comm. dr. C. Coquelet.



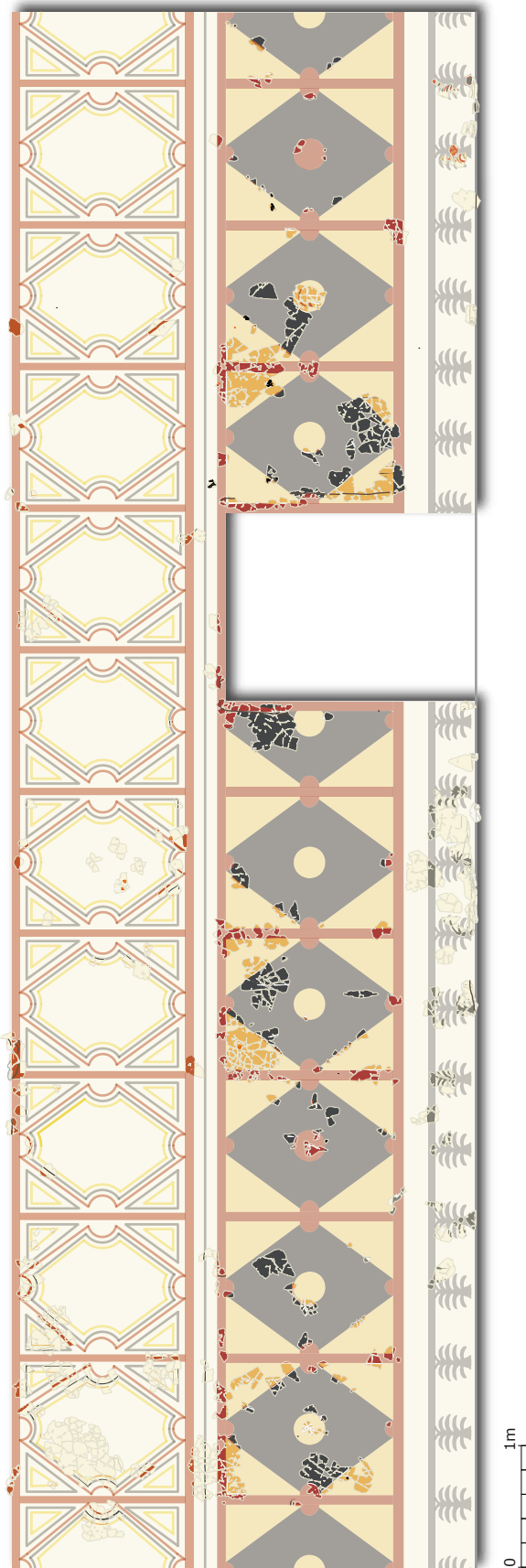


Figure 42. Reconstruction of the painted decoration from the south wall of the southern corridor in the military hospital of fort level 2B, with the location of plaster fragments based on their find spot and decorative patterns (taken from Laken and Vanhoutte 2016, Pl. I).

the 10 rooms). A similar capacity can be supposed at Oudenburg, as at the north side originally also 10 rooms can be assumed.

*Valetudinaria* at *castella* are only known in *Britannia*, on the Rhine and at the *Germania Superior - Raetia* border. The Oudenburg hospital is the first to be recognized in an auxiliary fort in Gaul (cf. Reddé 2006c, 121). Moreover, it is one of the earliest *valetudinaria* excavated to date.

#### II.4.4.2.c. Mural paintings

The south-west corner excavations yielded some 53,500 plaster fragments, most belonging to the military hospital. Although the colours are poorly preserved, the study by L. Laken and the present author<sup>144</sup> of about 25,000 fragments related to this second fort period have revealed diverse decorative schemes (Laken 2016; Laken and Vanhoutte 2016; Vanhoutte and Laken 2009; 2011). The mural paintings of the southern corridor and of the central *sacellum* are published in detail in Laken and Vanhoutte 2016.

The southern and northern corridors or galleries showed a series of schematic plants in the dado ('decoration 3'), *opus sectile* imitations with lozenges in the main zone ('decoration 1') and geometric schemes in the upper zone in red, yellow and black that repeat outlines of the *opus sectile* shapes ('decoration 2') (Laken and Vanhoutte 2016). In the southern corridor the colours red, yellow and grey/black were used (Figure 42). Fragments from the northern corridor point to possibly other colour combinations with e.g. yellow and grey plants and/or a combination (Laken 2016).

Decoration 1 and 2 did not only occur in the corridors, but were also found in several rooms in considerable quantities. At least four other decorations are distinguished on fragments although more study is necessary to gain insight into the precise number of decorations and their design. It is nonetheless clear that more white-grounded panel decorations occurred, sometimes with stylized floral motives, next to more marble imitations. A small number of fragments seems to show realistic plant imitations, possibly part of a garden imitation as is known e.g. from the legionary camp at Nijmegen<sup>145</sup> (Laken 2016). One of the decorations shows garlands, closely resembling the ones found on the mural paintings of the officers' quarters of one of the barracks of the fleet base at Boulogne and dated to the Severan period (Belot 1989).

Apart from the base fragments alongside the construction slots (cf. Figures 33 and 38), so far the decorations of the rooms could not be related to a particular room. It appears that different decorations were spread over several rooms during the demolition of the building complex. It is striking that the surface treatment of these decorations varies from very coarse to relatively smooth,

<sup>144</sup> In close collaboration with illustrator S. Mazereel.

<sup>145</sup> See Peters 1965-66, 131-136, pl. 15A, 15.4-11; Peters 1979, 374-376.

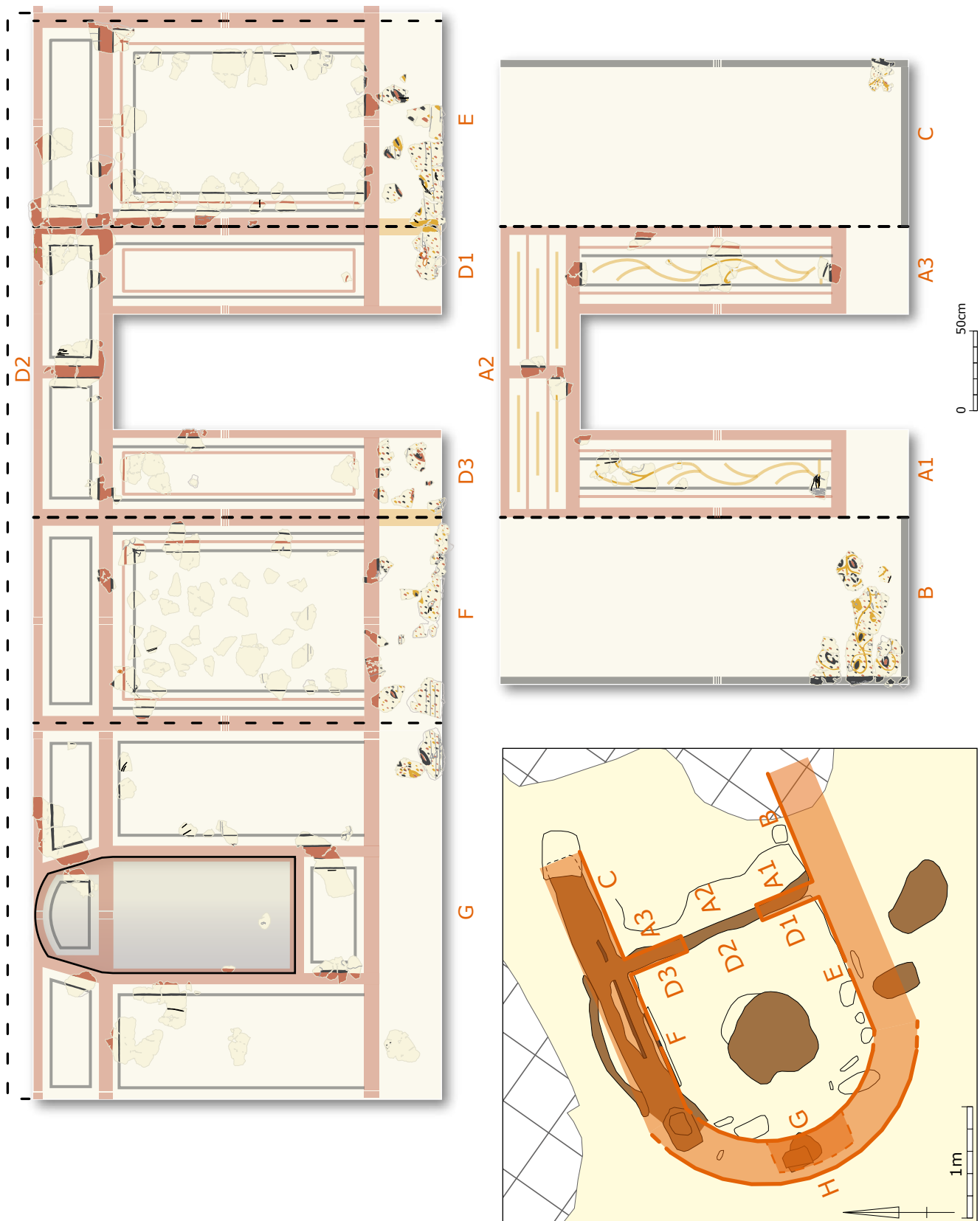


Figure 43. Hypothetical reconstruction of the painted decoration from the presumed *sacellum*, with the location of plaster fragments based upon their preserved corners and edges, their decorative patterns, and the building plan. Inset: reconstructed plan of the *sacellum* (orange) of fort level 2B, with letters indicating painted wall segments (taken from Laken and Vanhoutte 2016, Pl. II, with adjustments).



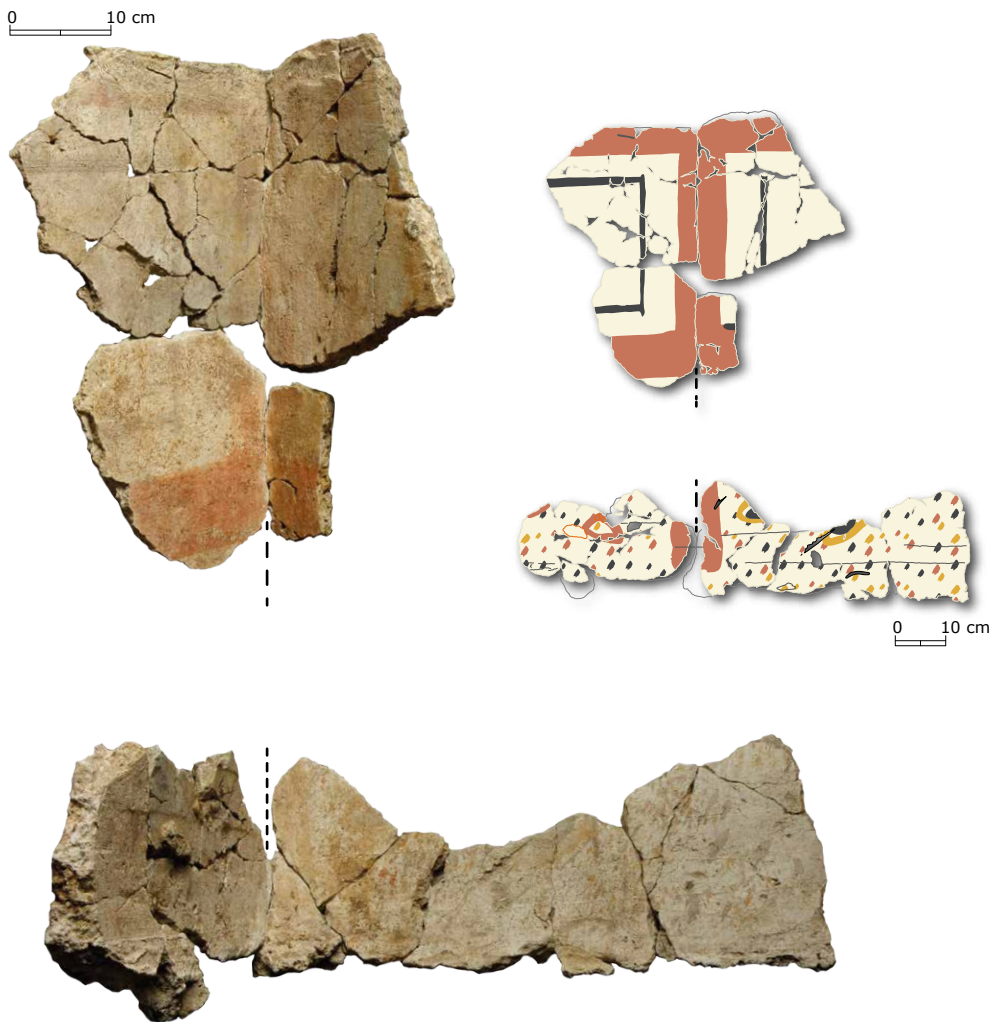


Figure 44. Plaster fragments identified as belonging to the central shrine of the courtyard building of fort level 2B. Top: portion of the upper zone at the corner of the room, with connection to the ceiling; below: portion of the lower zone at the corner of the room, with connection to the floor.

a phenomenon also noticed at the fort of Aardenburg (see van Dierendonck and Swinkels 1983). Although this distinction at Aardenburg may possibly be explained as a chronological difference, this is out of the question for Oudenburg since these fragments even occur in the same room. The idea that part of the plaster work and paintings were executed by professionals and part by the soldiers themselves (see van Dierendonck and Swinkels 1983, 189-191) can be an explanation for the Oudenburg situation.

The lower zone of at least one of the courtyard walls featured plants combined with an *opus sectile* imitation, a decoration not often occurring on wall paintings. The central building in the courtyard, probably the *sacellum* or shrine, had a panel decoration in the middle and upper zones with a combination of floral motifs and spatters in the lower zones (Figures 43 and 44). The decoration which probably belonged to the entryway showed a similar decoration with tendrils (see Laken and Vanhoutte 2016 for further descriptions).

The study of the wall paintings of the southern corridor also provided data on the architecture of the building. The south entrance to the building was located here and the height of the wall can be determined, which is the rear wall of the corridor. When all parts of the wall decoration are logically counted together, a height

of 3.80 m has to be assumed, offering the building a monumental character (Laken 2016; Laken and Vanhoutte 2016).

Most of the mortar was applied to timber-framed wattle-and-daub walls, as confirmed by uneven surfaces on the back of the plaster fragments. The mortar contains a high percentage of shell fragments and occasionally complete small shells, and was normally applied in two almost identical layers, but sometimes only one (De Wilde 2012). Herringbone patterns and other protrusions suggest that, in some cases, incisions were made in the clay to increase adhesion of the plaster; their absence in other cases – the vast majority – indicates that the builders rarely used this ‘keying’ method at Oudenburg, in contrast to nearly every other site in the North of Gaul where the remains of plaster walls were found. The surface treatment and paint at Oudenburg attest to a mixed technique, like *semi-fresco*. Pigment analysis confirms use of a standard Roman palette, *i.e.* earth pigments (red and yellow ochre, green earth), carbon black, and lime (De Wilde 2012; Laken and Vanhoutte 2016).

Mural paintings in forts in the North Sea and Channel region are not an exceptional phenomenon. The officers’ quarters of one of the barracks of the fleet base at Boulogne-sur-Mer was decorated by mural paintings, dated to the Severan period (Belot 1989).

In contrast with what could be assumed from their location at Boulogne, mural paintings *an sich* cannot be considered as a symbol for richness or luxury. Although the mural paintings of Boulogne comprise panels, garlands and figurative motifs, they testify of series work. From the wide distribution of plaster fragments all over the *retentura* at Boulogne can even be deduced that probably most of the walls of the barracks had mural paintings (Belot 1989, 109). At Reculver, evidence was found that East barrack no. 1 was decorated by wall paintings; the fragments show plain coloured zones and marble imitation on low-level dados (Philp 2005, 186). The Oudenburg paintings closely resemble the decorations found in the nearby *castellum* of Aardenburg, especially when comparing their styles, surface treatment and mortar compositions (cf. van Dierendonck and Swinkels 1983).

As for other comparisons, painted marble imitations with comparable lozenges were found in public buildings and private dwellings (e.g. in northern Gaul), but not in military contexts, while more stylized plants are found in a number of contexts, sometimes military (e.g. in *Germania* and *Britannia*). Panel decorations of bands and lines, and lower zones covered in paint splatters, are found throughout the empire, particularly in the northwestern provinces (Laken and Vanhoutte 2016). As of yet, direct parallels are lacking for the corridor wall scheme that combines a lower zone of stylized vegetation with a middle zone of *opus sectile* imitation and lozenges, along with an upper zone of the same pattern as the middle one, but in coloured lines on a white background. Parallels for the lower zones of the shrine walls that have leaves (and tendrils) with paint splatters, are neither known by us.

#### II.4.5. Fort level 3: 'one level', several building phases

##### II.4.5.1. Defence system

For the erection of the third fort, the inner area of the fort was again levelled. The defence ditch of fort level 2 was filled in, but the trace was reused as part of the new defensive system (cf. Chapter II, Section II.3.3). The (inner) ditch originally reached a width of c. 2.25 m (Plate XXIV). At the exterior, this ditch was bordered by a palisade, renovated after time, and also at the interior edge of the ditch a few excavated postholes witness of some kind of defensive woodwork. The presence of a palisade in front of (outside) this ditch assumes this ditch was combined with a second, exterior ditch, not preserved since it was completely dug away by the large defence ditch of fort level 4. The earthen rampart of the second level was partly lowered, possibly to pull out the old palisade, and was afterwards raised again. The western rampart now extends over a width of a maximum of 12 m. A parallel alignment (v) at its base probably belongs to a reinforcement of the rampart.

##### II.4.5.2. Inner building

The new fort design represents a totally different spatial organization when compared to the previous internal layout. The density of features within the fort is immediately striking (Figure 45; Plates

XXIV/XXV/XXVI<sup>146</sup>). They show a dense occupation of timber-framed constructions, (large) pits, hearths and industrial (hearth) pits<sup>147</sup>. The large number of hearths, clearly connected to timber-framed buildings, suggests that more than one subphase should be considered. This is stressed by the overlapping of construction slots, changing in orientation, clearly not indicating just a renovation but rather a rebuilding of the area. Although the relation between the construction slots and the hearths points to the presence of barracks, the large number of pits is not logical in this respect. The many pits, some of them being very large, suggest instead the industrial significance of this area, clearly during another subphase than the one(s) showing living units in this area. A concentration of industrial hearth pits underlines this idea. The lack of several continuations of features and the absence of expected parts of e.g. parallel aligned constructions indicate that here and there the area was cleared and levelled during renovation and construction works.

Several (parts of) buildings with central fireplace can be recognized, all aligned according to the axis of the fort. The succession of building phases is complex; only a limited number of configurations can be aligned and many postholes, pits and gullies remain unconnected or are not assignable to a specific phase within this fort level 3. Nonetheless, based on overlap and orientation, (at least) three building subphases can be distinguished.

#### II.4.5.2.a. Phase 3A

##### Unit I

Based on stratigraphic relations, Unit I, together with Unit II, appears to be the earliest recognizable set of configurations of this fort level (Plate XXIV). Unit I is defined by construction slots and displays a west-east orientation; the east side of the structure was, however, not preserved (see for sections: Plate CDLXX). The southern construction slot is only preserved as a shallow trace in the west and must have contained a sill beam; the irregular section of the west side indicates that the beam was recuperated. The northern construction slot clearly represents a post foundation trench. The width of the structure is 3.5 m (constructions slots measured from mid to mid); according to the southern construction slot, this unit had a length of 9.0 m (the northern construction slot was only preserved over a length of 4.0 m). The central pit (a) may have founded a ridge post. The structure is furthermore defined by a central hearth, situated on the central axis in the west part of the building. The hearth was destroyed by a later pit; only an upstanding Tournai limestone fragment within burnt soil remained from the original hearth level.

<sup>146</sup> All letters and Roman numbers in the following section indicating features or structures, refer to these plates.

<sup>147</sup> The hearths consist of a horizontal level of mostly pottery sherds, ceramic building fragments or sometimes stones or a combination of these, laid in a clay or clayish bed. Underneath this horizontal level, the heated soil manifests itself in a bowl-shaped section. The hearth pits are pit-like features with a bowl-shaped or more often a rectangular section. They display a burnt edge: an edge of soil burnt to black at the exterior, an edge of orange yellow burnt soil at the interior. In most cases, these features were filled in in one single filling activity after their final use, leaving no trace of the original function.



Figure 45. Overview map with the localization of the south-west corner site and the features of fort level 3 in comparison to the contours of the later stone fort.

### Unit II

Situated perfectly parallel to the north of Unit I, Unit II can be defined by its southwestern corner formed by construction slots, only preserved to a very shallow depth (cf. Plate CDLXXI). The front side (towards the rampart) was recessed over 0.7 m in comparison to Unit I. The interior of Unit II was characterized by a clayish floor level. This unit is primarily marked by a central hearth (see further). As is the case at Unit I, this central hearth is situated on the central axis of the structure, at the west side. The same width and length as for Unit I can be assumed for Unit II, but it is also possible that the northern unit was somewhat wider, thus corresponding with the construction slot more to the north-east which displays the same orientation (b).

In between Unit I and Unit II, a passage-way with a width of 1.3 m is apparent, clearly free of features (c).

A succession of three hearths was uncovered in Unit II (Figure 46). Of the earliest feature (OS 72450), only the burnt soil alignment with central burnt crusty clay level remained. After this hearth became out of use, the centre of the unit was raised with clay on top of which a new hearth was constructed, with slightly shifting location. A hearth with a level of ceramic building fragments laid in clay was constructed (OS 70951). Twelve centimetres above this hearth plate, a concentration of pottery sherds represents a new hearth (OS 70950), evidently a renovation of the central hearth.





Figure 46. A succession of three hearths in Unit II: example of renovation, reuse and recycling of material. Top: hearth OS 70950: underneath the top clay crust the level of crushed pottery consists of several vessels. Beneath: underlying hearth OS 70951 reveals a CBM level underneath the top clay crust. Bottom right: stratified association between hearth OS 70951 and the earlier hearth OS 72450.



The presence of a central hearth within Unit I and Unit II suggests that they were dwelling units. These barracks however contrast with the normal 2nd-century layout of adjacent small *contubernia* as to which the units of fort level I appear to have belonged. Units I and II of fort level 3 show some resemblances with 3rd- and 4th-century detached *contubernia* uncovered at the forts of Housesteads, Wallsend, Vindolanda, Chesters, Great Chesters, Birdoswald, High Rochester, and perhaps Risingham, Ebchester, Malton, Watercreek and Segontium in Britain (Daniels 1980; Bidwell 1991; Rushworth 2009, 304), although these were built in stone and they were only separated by an eavesdrip gap, presumably indicating separate roofing. These freestanding units are known in literature as ‘chalets’, but the term ‘freestanding *contubernia* barracks’ is preferred by Bidwell (1991), avoiding any connotation to the family quarters they once were believed to be. These detached *contubernia* had already appeared at Hadrian’s Wall in the 230s (Bidwell 1991, 9-10). The freestanding structures at Housesteads display similar dimensions (Rushworth 2009, 120-126)<sup>148</sup> as the Oudenburg units of fort level 3, however the inner (eavesdrip) spacing in between the *contubernia* at Housesteads e.g. was much smaller, i.e. c. 0.5 m (see e.g. Rushworth 2009, Fig. 5.19). While these detached *contubernia* at Hadrian’s Wall clearly developed from the classic 2nd-century barracks, the Oudenburg units represent a new style of unit, organized in the other direction, which can also be recognized at Reculver (cf. Philp 2005). The recessing of the front side (towards the rampart) of Unit II compared to that of Unit I seems to have been a common phenomenon at British forts, though (see e.g. at the *Classis Britannica* forts at Dover: Philp 1981).

### Unit III

To the south of Unit I, more units can be supposed although no configurations can be discerned. Unit III, marked by construction slots, is likely to be situated in the same subphase based on the orientation of the construction slots. These slots come together with a small curving trench (d), likely forming a gutter<sup>149</sup> to the south, west and north of the construction slots (cf. Plate CDLXXII). This gutter at the same time indicates that the structure, 2.6 m in width, was not part of a larger building. The trace of the western gutter trench to the south points to a flowing off of water in that direction.

To the north-east, within the contours of the later Unit IVa, a construction slot with the same orientation as Units I and II probably also belongs to this phase (b). The hearth (e) to the east of this construction slot, which was cut by the later drainage gully, is equally datable to this first phase. The hearth level is built with ceramic building fragments and some Tournai limestone fragments.

The distance in between Unit I and the start of the western earthen rampart is 5.75 m. The presence of a *via sagularis* along the southern rampart is probable. Several concentrations of Tournai



Figure 47. The central hearth of Unit IVb: combination of horizontal hearth level and hearth pit at the left side. View to the east (scanned diapositive).

limestone blocks and fragments to the west of Units I and II may be the remains of this. It could also explain the lack of construction features following the orientation of phase 3A. The pits and other features which do occur in this space in-between seem to be related to an earlier undefinable phase and to later phases.

### II.4.5.2.b. Phase 3B

At some point a renovation of the inner building took place, resulting in a slight orientation shift although the main orientation remained (south)west-(north)east (Plate XXV). The construction slots point to longer, connected units as part of a larger building block.

### Unit IVa

A construction slot with a shifted orientation (f) overlaps Unit II but is only preserved as a shallow feature, indicating this part has been thoroughly dug up and scrapped. If the construction slot overlapping Unit II is indeed connected with the southern construction slot of Unit IVa (as visualized on Plate XXV), then a length of 28 m at minimum can be noted for Unit IVa. Rows of postholes and short construction slots (g) are indicative of an inner partition. The northern construction slot of this Unit IVa enclosed sill beams; while the southern construction slot 4.0 m to the south was clearly founded with posts (cf. Plate CDLXXIII). The two hearths at the eastern end (h), of which one is cut by the trench edge, may well have belonged to Unit IVa. Both were constructed from ceramic building fragments.

### Unit IVb

At a 5.0 and 5.75 m distance to the south, two parallel construction slots were equally part of the same building block. Unit IVb seems not to have extended as far west as Unit IVa. Since the inner space in-between the two southern construction slots of Unit IVb is only 0.5 m, it seems impossible that they had a contemporary function. It is plausible that the northern, short construction slot (i) did not serve at all (cf. Plate CDLXXIV).

<sup>148</sup> The larger ‘Chalet 1’ is not considered here. Being a larger *contubernium* with a more complex inner structure, this unit is interpreted as the centurion’s quarters (Rushworth 2009, 119). ‘Chalet 2’: 10.25 x 4.25 m; ‘Chalet 3’: originally c. 10 x 3.6 m; ‘Chalet 4’: originally c. 10 x 4.5 m; ‘Chalet 5’: 9.05 x 5.15 m; ‘Chalet 6’: 10.5 x 4.5 m; ‘Chalet 7’: 10.4 x 4.65 m.

<sup>149</sup> In the article Vanhoutte 2007a this trench was wrongly interpreted as a construction slot.

Figure 48. Remains of the burnt down Unit IVb as uncovered in trench T1, with drainage gully departing from the north side. View to the north/north-west.



While cutting the trench into the mortar floor of the military hospital underneath (cf. Section II.4.4.2.b), this construction slot may have been left unfinished to avoid more hard labour on this evidence. A central hearth, a combination of a horizontal hearth level consisting of ceramic building fragments and a hearth pit, characterizes this unit (Figure 47).

At the northern wall an underground sewage channel (j) departed, running underneath Unit IVa and stretching over a distance of at least 13.5 m to the north (cf. Volume II, Appendix, Section 4.2: OS 1169). At c. 1.2 m from its start, a small side branch started; it is not clear whether it functioned simultaneously or whether it belongs to an earlier phase (cf. Plate CDLXXIII). Two tiles on the bottom of the drainage gully at the side of the wall where the gully began, had been placed to intercept the pressure of the water to prevent erosion of the soil. The eastern part of Unit IVb had been destroyed in a severe fire, as shown by a fire layer limited to the walls of the unit (Figure 48).

This room was closed off from a room to the west, where an oblong pit (k) borders the northern wall. This pit, 3.9 m long, 1.2 m wide, and with a bowl-shaped section of 0.36 m (max.) deep (cf. Plate CDLXXIV: section 8/123), resembles urine drainage pits, features well-known from stable-barracks of which examples have been found at forts in *Germania Inferior*, *Germania Superior*, *Raetia*, *Pannonia* and *Britannia* (cf. Hodgson 2003, 71 ff.). Although these were preferably situated in the centre of the stable, examples are known of urine pits bordering the wall<sup>150</sup>.

150 Cf. e.g. at Dormagen (*Germania Inferior*), Moos-Burgstall (*Raetia*), Carnuntum (*Pannonia*): Hodgson 2003, 74: Fig. 55, 1, 4 and 7.

#### Unit IVc

A similar pit (l) to the south, 3.0 m long, 0.65 to 0.85 m wide and with a bowl-shaped section 0.12 m deep, probably marks the adjacent Unit IVc. The north-south division wall is here situated more to the east. The southern wall was not preserved due to later disturbances, but the same width as with Unit IVb can be assumed.

#### Unit V

In the south, alongside the southern earthen rampart, Unit V follows the same orientation. This unit with a width of c. 4.7 m was well-defined by construction slots and several central hearths (Figure 49). The features of this unit cut into the plaster demolition layers of fort level 2. Only a length of 4.6 m could be investigated; the rest of the unit stretches outside the excavation area (cf. Plate CDLXXVIII). The southern construction slot was a much broader feature than the trenches at the west and the south, maybe due to later recuperation of the sill beam. The curving western construction slot may indicate that another building technique was used to construct this unit, possibly a construction with wattle and daub walls instead of timber-framing. In this southern area of the excavation, a remarkable series of small stake holes were uncovered, being extant as voids. They appear in a systematic way as a double line in the western construction slot of Unit V and form a line parallel alongside the southern construction slot (m). These stakes can be explained as part of, or as a renovation to, the wattle and daub walls. Stake holes to the west of this unit (n) may be related to construction slots of the same subphase. From other stake holes the related features are missing, or rather not preserved, emphasizing the degree of levelling, digging and recuperation at each level.

The uncovered western part of the unit encloses no less than seven (remains of) hearths, of which some must have





Figure 49. Unit V with its succession of hearths. Localization and several views.

functioned simultaneously. Hearth OS 80966 (Figure 49: 1) and hearth OS 80965 (Figure 49: 2) functioned probably at the same time, and both display two hearth levels. Hearth OS 80966 first had a pottery sherd plate (Figure 49: 1b) and was later on rebuilt as a hearth with central sherd plate more or less bordered by ceramic building fragments (Figure 49: 1a). The hearth OS 80965 had two successive pottery sherd plate levels. With the hearth levels of the first phase, probably hearth OS 83470 coincides (Figure 49: 3). It displays a central pottery sherd level more or less on top of and bordered by ceramic building fragments. To the west an oblong burnt level with at the south a zone of ceramic building fragments represents the remains of a sixth hearth (Figure 49: 4). Directly to the north, a concentration of burnt soil, some sherds and ceramic building fragments, is indicative for another former hearth (Figure 49: 5). Together with the presence of some pits inside the unit, this cluster of hearths points to the likelihood that

this unit served craft activities. A wattle and daub construction technique would have served non-domestic facilities.

Along the western earthen rampart, a compact level of Tournai limestone gravel (o) may represent the last preserved part of the western *via sagularis* of phase 3B, since it overlaps earlier pits. This gravel level is likely the remains of the eastern border of this *via sagularis*; to the west, the level was cut away with the construction of Unit VI of phase 3C. The Tournai limestones to the west covering the hearth pit OS 70912 of Unit VI (p) were laid down later, maybe as some kind of flooring of the second phase of this unit.

#### II.4.5.2.c. Phase 3C

The orientation of stratigraphically later features indicates that a drastic renovation took place, consisting of a total reorientation of (this part of) the inner building (Plate XXVI). Since the inner



Figure 50. The successive hearth levels of hearth OS 70911 of Unit VI, from top (a) to bottom (c).

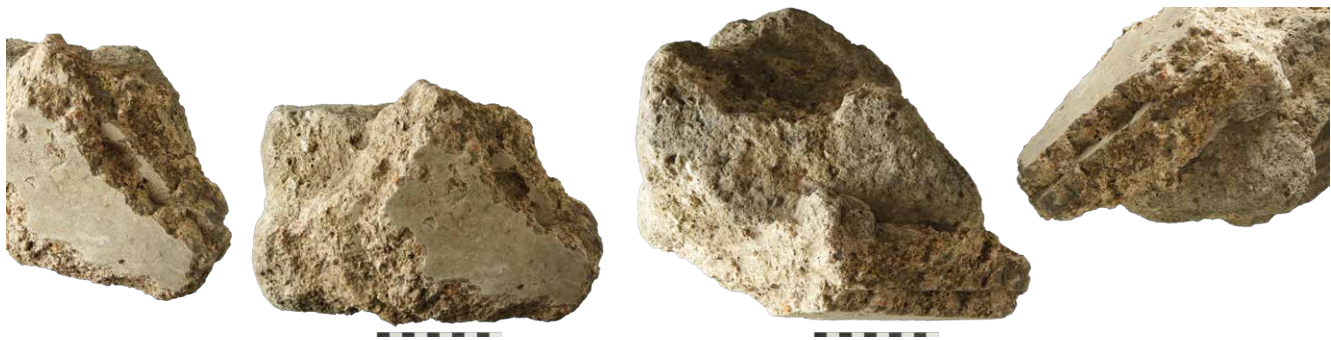


Figure 51. Four views on the plastered volcanic tuff block, one of the four blocks recovered at Unit VI of fort level 3. Several views on the double mortar layer, showing that each layer has a plaster finishing.

building area was not raised (apart from some local making-up layers) and no indications point to a renewed defence system, this phase should be considered as a late phase of fort level 3.

Two north-south units can be readily distinguished.

### Unit VI

The western Unit VI is defined by (part of) the northern, western and southern construction slots which point to a timber-framing technique on sleeper beams, reinforced with some posts, or perhaps rather a construction made of turves (cf. Plates CDLXXVI-CDLXXVII). The eastern construction slot was not preserved, but its position can be deduced based on the cut away stone level to the east (see Plate XXVI: o) and the central location of the hearth although the southern construction slot extends somewhat further east. That level of Tournai limestone gravel (o) is likely to be a small preserved part of the *via sagularis*, related to the previous subphase. This puts the width of this unit at c. 4.3 m, while the length can be set on 12.6 m. In the southern part of the unit, a hearth was positioned on the axis of the building. This hearth consists of three successive hearth levels (Figure 50). The hearth was originally built as a level of one large flat Tournai limestone block and several ceramic building fragments, positioned within a more or less rectangular alignment of upstanding ceramic building fragments. Later on, the hearth plate was renovated and covered with a level of pottery sherds. With a second renovation, the hearth was levelled with clay and *tegulae* now formed the hearth plate, of which only one complete *tegula* and the edge of a second was preserved. At some point, in a later

building phase of this unit, this structure was replaced by a smaller hearth displaying two phases: a first hearth was made of ceramic building material; a second hearth consisted of pottery sherds. The adjacent hearth pit to the south (w) probably also belongs to this unit. A pottery sherd level on top indicates that at some point the filled-in hearth pit also served as horizontal hearth. To the north an oblong pit (q) c. 3.2 m long<sup>151</sup> and 0.9 to 1.4 m wide (cf. Plates CDLXXVI-CDLXXVII: section 7/320), positioned according to the same north-south orientation, may well have been a urine drainage pit (cf. Unit IVb).

The long curving trench (r) directly west of Unit VI must be interpreted as a drainage gully or gutter and can only be related to this unit<sup>152</sup>. The curving at the north probably indicates that the entrance was located here. As is also the case for Unit III, the water flowed off to the south, where a water-management structure may be assumed, later cut away by the large structures of fort level 4 (the large waste-pit OS 4980) and 5 (the large water basin OS 4923).

At Unit VI four volcanic tuff blocks<sup>153</sup> were found, not in original position but spread over the unit. However, with separate weights

151 The northern edge could not be aligned; a west-east test pit cut away this northern end of the pit.

152 Although the curving trench does not border the whole length of the western construction slot.

153 A second block was cubic-shaped with flat front: c. 14.0 x 17.0 x 17.0 cm (3.29 kg). Another block was irregular shaped (1.69 kg). A last block was rectangular-shaped with one flat front: c. 26.0 x 15.0 x 23.0 cm (7.70 kg).





Figure 52. One of the hearth pits of the small workshop area to the left of Unit IVb. View to the east.

between 1.69 kg and 7.70 kg (together *c.* 21 kg) one can assume that they did not move over a large distance and that they originally belonged to this building. One of the four blocks attracts special attention (Figure 51). Flattened at all sides with one oblique side (*c.* 24.0 x 16.0 x 17.0 cm; 7.60 kg), a double layer of pink mortar was applied on the front. The first mortar layer of *c.* 4.0 cm thick was covered with a white-grounded plaster layer; the second layer on top of *c.* 2.0 cm thick – clearly a mortar with coarser inclusions – was equally finished with a white-grounded plaster layer. The volcanic tuff blocks appear to have been integrated in the timber-framing building technique with sleeper beams. As can be deduced from the plaster layers, the (exterior?) side of the building was painted white and at some point a renovation took place.

#### Unit VII

To the east, at almost 5 m distance parallel to Unit VI, construction slots define Unit VII. With a length of *c.* 12.3 m and a width of *c.* 4.0 m this unit is approaching the width of Unit VI. An interruption in the eastern construction slot points to an entrance. Construction slot (s) may represent an inner division of the building. The western construction slot is characterized by deep sections and points to the timber-framing construction technique with sill beams – which were recuperated – in combination with posts (cf. Plate CDLXXIX). In the north side of the unit, *i.e.* opposite to the situation at Unit VI, the remains of a hearth were situated more or less in the axis of the building.

At a distance of almost 10 m to the east of the north-east corner of Unit VII, a north-south construction slot (t), running parallel to Unit VII and cutting Units IVa and IVb of phase 3B, probably represents the last distinguishable feature of another unit of phase 3C. In between, a cluster (u) of four hearth pits and one hearth – which functioned not all simultaneously – points to craft activities (cf. Plate CDLXXIV). The bottom of two of these hearth

pits<sup>154</sup> (cf. Figure 52), the hearth and the surrounding fire layer yielded clusters of identical, medium-sized, unused nails, corroded onto each other, indicative for nail production on the spot.

#### II.4.5.2.d. Level 3 features not assignable to a specific phase within fort level 3

Some hearths and many postholes and pits are not assignable to a specific building phase of fort level 3. Several pits display in section very straight edges (cf. *e.g.* Plate CDLXXV: section 1/1900, section 8/238). One can expect they contained some kind of wooden framework – to hold the edges – and which was later extracted for reuse –, in the assumption they were used more than once. In some cases, their location, for example where the western *via sagularis* must be positioned, assumes the phasing within fort level 3 is even more complex than proposed here. The covering of the hearth pit of Unit VI by regularly laid Tournai limestones (w) and a construction slot (x) overlapping the curving gully (r) are indicative for an even later building phase within this fort level 3.

#### II.4.5.2.e. The successive building phases of fort level 3

In conclusion, the features of level 3 clearly show that this is a fort level in which a lot of activities and renovations took place. The units are mostly long, narrow and freestanding, with a hearth positioned in the axis of the building. At some point, a drastic change occurred with the total reorientation of the structures. The units were all built with the timber-framing technique. The 1284 tile fragments (880 *tegulae*, 404 *imbrices*) recovered from this level, evidence the presence of tiled roofs. Nail holes in three of the well-preserved *tegula* fragments and several examples with mortar remains indicate that the tiles were firmly attached and protected.

The freestanding independent units can be identified as residential units or freestanding *contubernia* based on their central hearth. In *Britannia* a type of soldiers' barrack with freestanding units came into existence during the first half of the 3rd century, deviating from the classical type from the 2nd and 3rd century and separated from each other by an eavesdrip gap (see Hodgson and Bidwell 2004, 148). The inner spacing in between the units at Oudenburg, however, refers more to the barracks revealed at Reculver and dated around the middle of the 3rd century (cf. Philp 2005). The different west-east and south-north oriented elongated buildings at Oudenburg were probably originally units of such barracks, of which the general overview is lost through the many renovations and disturbances.

The presence of possible urine drainage pits may indicate that at some point the *contubernia* may have been replaced by stable-barracks. The presence of a sewage channel in Unit IVb, most likely originally in wood, departing from the main room, may point to the remains of an officer's barrack. The accommodation of the *centurio* consisted usually of six to seven rooms, and a sewage channel was a common feature (see Johnson 1987, 191). The highly decorated Rheinzabern dish (Plate LXVI) found in the southern construction of Unit IVa and obviously not a common vessel belonging to

154 Plate CDLXXIV: hearth pit OS 82111: see section 8/310; hearth pit OS 82106: see section 8/312.

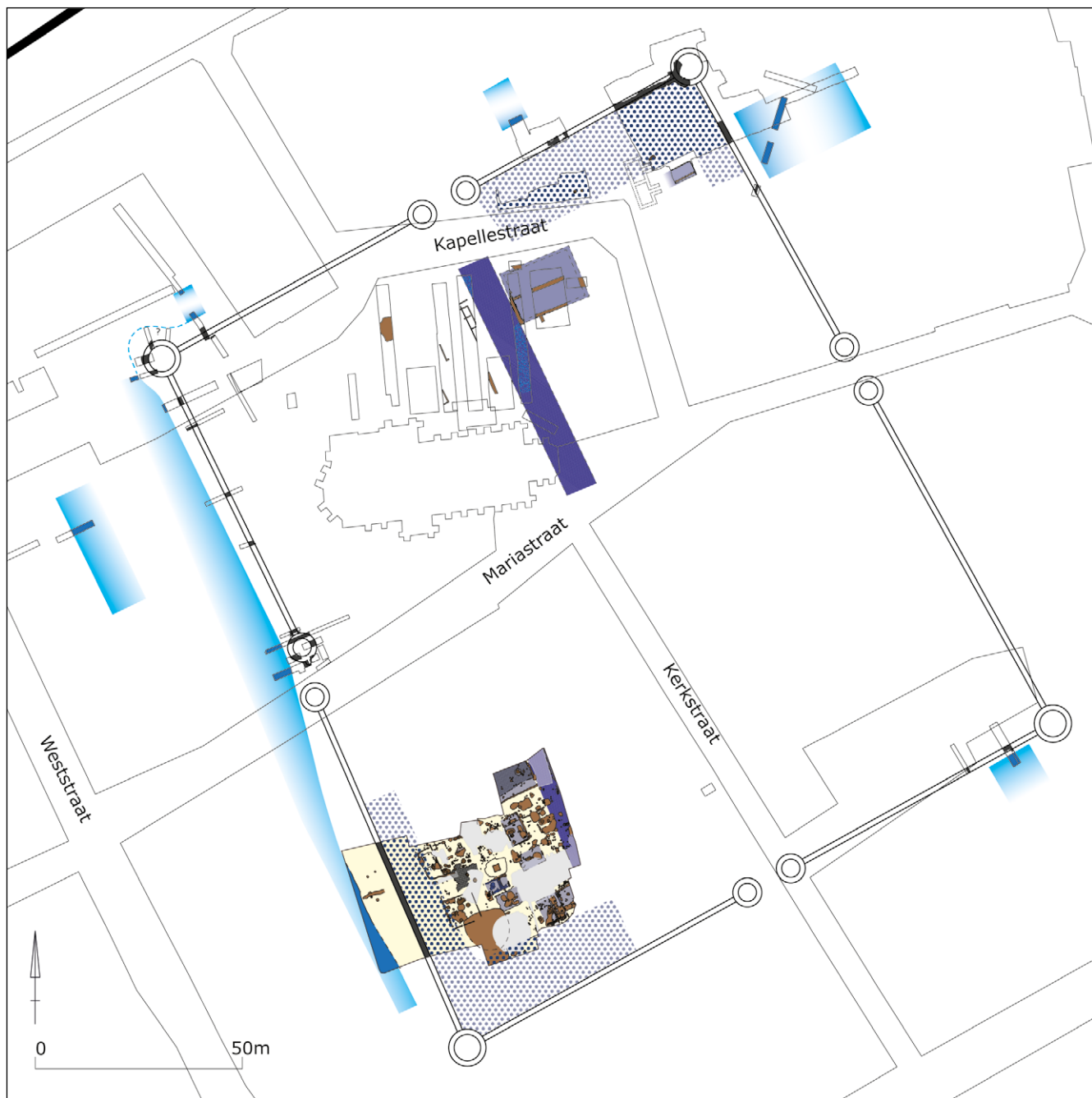


Figure 53. Overview map with the localization of the south-west corner site, the contours of the stone fort and the features of fort level 4.

the gear of a regular soldier, may be an indication that the found structures belonged to an officer's dwelling.

A cautious hypothesis includes a succession of freestanding *contubernia* (phase 3A), an officer's (stable?) barrack (phase 3B) and again independent *contubernia* and/or stable-barracks next to units with craft activities (phase 3C). Locally detected fire layers indicate that several structures burnt down at the end of this period.

#### II.4.6. Fort level 4: a workshop area at the southwestern corner

##### II.4.6.1. A stone defence

The stone *castellum* was erected on the same spot and likely with the same dimensions as its earth-and-timber predecessors of fort level 2 and 3 (Figure 53). The stone fort is however the first fort of which the extent is known for sure. Due to the use of the ruins of this fort as a medieval quarry, only a rubble concentration of approximately 3 m in width was left at the south-west corner

site of what was once the defensive stone wall of 1.05/1.10 m thick (cf. Section II.3.4). The limited thickness of the wall may be explained by the lack of local/regional stone building material, the need to import limestone over a long distance (from Tournai), the ample availability of wood in the region (cf. Chapter III), next to the pre-existence of an earthen rampart. The reinforced earthen rampart leaned against the stone wall at the inside and reached at the south-west corner site a width of over 8 m in this period, widening slightly towards the south approaching the area of the corner tower (to c. 9.5 m wide). The late Roman ditch system reached up to 30 m wide.

Combining the locations of the robber trenches of the wall attested during the different archaeological interventions over the years, a ground plan of c. 147 m (north), c. 162.5 m (south) and c. 183 m west and east can be reconstructed. This coincides with 500, 550 and 620 *pes monetalis*. The fort precinct covers an area of c. 2.8 ha (outside measurement) or c. 2.7 ha (inside measurement).

#### II.4.6.2. Inner building

##### II.4.6.2.a. Structures and features

At fort level 4, the inner building at the south-west corner is characterized by a large number of hearths and small structures (Plate XXVII<sup>155</sup>). No less than 38 hearths representing in total 53 hearth levels (cf. Appendix 5; Plates XXX-XXXIX), two furnaces (Plate XL) and three hearth pits were uncovered. All structures and finds point to the identification that this was a workshop area with several separate working units.

Almost all of the hearths were constructed with a layer of pottery and/or roof tile fragments, sometimes stones, based on a bed of clay; in general the construction of these hearths does not differ from the, mostly domestic, ones of the previous fort levels. On a covering layer of clay, which has sporadically survived as a burnt crust, the fire was stoked. Several hearths were refurbished, showing multiple hearth levels, which point to a long period of use and reuse (cf. Appendix 5). In five cases, two levels were found; in two hearths three, and in another no less than seven superimposed levels were brought to light (see for the latter: Plate XXX). The clay surrounding the hearth plate was in several cases not burnt, assuming there might have been an upstanding clay rim. This may be evidenced by the fragmentary, oxidized edge surrounding the hearth level attested at two hearths (Appendix 5: hearths 16c (Plate XXXV) and 32b (Plate XXXIX)). In one case the hearth was surrounded by stones (Appendix 5: hearth 9b; Plate XXXIII). These hearths were clearly temporary structures, in contrast to the furnaces which probably had a longer life. It is even likely that not all hearths were preserved and that some were already removed at the time.

Several units, representing several workshops, can be distinguished. The stratified evidence shows multiple local raisings of the area during this period. Next to minor refurbishments, some parts of the

precinct clearly testify to at least two major subphases. This can be deduced from the overlapping features at Unit I, Unit II, Unit V, Unit VIII and the area in between Unit VII and VIII and the north-south road. The hearths alongside the western rampart were grouped into two clusters.

##### Unit I

The southern cluster (Unit I), defined by beam slots holding sleeper beams<sup>156</sup>, was partly occupied by a large, but shallow (0.25 m deep) pit (OS 7949) or more likely a lowered level, measuring c. 3.5 by 3.0 m (cf. Plate CDLXXXI). On the bottom of this level, some Tournai limestone block fragments were found spread-out. Based on the stratification, this level lay open for a while. From the irregular alignment of the 'pit', one can wonder whether not a former structure – perhaps a work floor (in wood or stone?) – was pulled out after which waste from the workshop was dumped here. The pit yielded much industrial waste from a metalworker's workshop, where items in copper alloy were manufactured. The hearths 1 and 2 probably functioned during that phase with hearth 1 possibly much longer as it revealed seven successive hearth levels (Plate XXX). The pit north of hearth 2, containing a considerable amount of charred grains, also belonged to this first subphase. The lowered level OS 7949 was later filled in with sand and clay, on top of which two new hearths (3 and 4) were installed. They were part of a roofed-over workshop. The northern construction slot cuts the pit north of hearth 2. Initially, this area may have been either an open-air workshop or a roofed-over workshop extending further north (as the western construction slot reaches further north than the northern one cutting it).

The more or less centrally positioned, very deep post, just north of pit OS 7949, supported the roofed-over workshop (cf. Plate CDLXXXI: section 7/202+225). The remains of another hearth (or oven<sup>157</sup>) (hearth 5) also belonged to this latter phase. To the west of this structure, the lower half of a handmade pot was found sunken into the ground and may have served as a means of collecting ash (cf. location on Plate XXVII). The edge of the large waste-pit (OS 4980) cutting away the south-east angle of Unit I, indicates that this unit, after a while, may have been turned into an open-air workshop again.

##### Unit II

To the north, a curving construction slot demarcates a second cluster of hearths. This workshop area Unit II was an open-air space. The curving of the construction slot indicates that this was a wattle and daub, or perhaps – based on the shallow depth of the feature – rather a turf, construction (cf. Plate CDLXXXII). The lack of central posts assumes only a kind of wattle or turf screen closed off this area. Protection against the wind seems not necessary here, behind the stone defence wall. The fencing probably closed

156 Sections show that the sleeper beams were recycled (see Plate CDLXXXI). The eastern construction slot was only preserved to a depth of 10 cm.

157 The spread-out, large amount of ceramic building and stone fragments can also represent the remains of a broken out oven, although more burnt clay would be expected in that case.

155 All indications in the following section to features or structures, refer to this plate.





Figure 54. The cluster of successive hearths at the south side of Unit II: hearths 8, 9c, 11 and 12. View to the west.

Figure 55. Fort level 4, Unit II, furnace A. View to the south.



off the workspace of a specific activity. The alignment around the hearths may have reached along the north of hearths 15, 16 and 17, but was not preserved here. A large fire layer along the north-west exterior side of this northern limit, included a considerable amount of red-burnt daub, possibly the remains of an adjacent construction outside the excavation area. The alignment of Unit II was only temporary. At some point, the western part of the construction slot was cut by the edge of a more or less rectangular aligned floor level of clay, interpreted as a work-floor.

Various hearths belong to this open-air workshop area representing different phases as is for example clear at the south side of Unit II

(Figure 54). Hearths 6 to 9 superimpose each other, with hearth 6 being the earliest and hearth 9 the latest. Hearth 9 itself yielded three successive hearth levels.

The north-east corner of this unit II was raised in different stages, evidenced by the section at the east end of trench profile 6.1<sup>158</sup> (Plate VI). It is on top of this elevation of sand and clay that the largest of the two furnaces, Furnace A (OS 7905), was situated. The furnace's base was horseshoe-shaped and contained a large stokehole

<sup>158</sup> Feature 54 at trench profile 6.1 is hearth 15; features 53, 52 and 51 are the superimposing levels of hearth 16 (Plate VI).





Figure 56. Large waste-pit OS 4980, located in the south-west corner of the workshop area. Left: view to the north-west. Right: closer view showing the depth of the pit.

up to 42 cm wide (Figure 55; Plate XL). Its superstructure, built mainly out of clay-covered roof-tile fragments and some large pottery sherds, lay to the south of the furnace as demolition debris and partly filled in a pit, but should be reconstructed as an open dome<sup>159</sup>. In front of the furnace, a level of ceramic building fragments in a bed of clay served as work-floor. The burnt exterior east side indicates that this furnace may have been part of a battery<sup>160</sup>. The size of the stokehole suggests industrial activity; remains of copper alloy and iron stuck in the furnace floor point to iron and bronze working. The latter is also demonstrated by the large number of copper alloy pieces, often surviving in a powdery form, in the surrounding fire scorched layers.

In the vicinity, 4.20 m to the south, a similar, but smaller, furnace (Furnace B; OS 7955) was situated of which not much more than the clay base and some remains of the dome made of ceramic building material were preserved (Plate XL). Furnace B was more rounded and had a stokehole with a maximum width of 26 cm.

At the south-east side of Unit II it could be noticed that a first level of hearths was clearly installed on top of a homogeneous sand layer. After a period of time, this first phase burnt down – probably only a local, though severe fire –, indicated by a fire layer full of burnt daub and charred grains in this area (see Plate VI: layer 38; cf. Appendix 4, trench profile 6.1). The area was then raised with a turf level – the separate sandy turves were still clearly visible during excavation –, on which a new series of hearths was constructed witnessing of continuing workshop activities. This level covers the curving construction slot of Unit II and stretches further to the south. This indicates that at some point the limits of Unit II were given up to make room for new open-air workshops. The levelling with turves was also attested in the area between the north-south

road in the east of the excavation area and Units VII and VIII. This turf layer was for example preserved as subsidence on top of the filled-in pit OS 80925 of fort level 3; the top of this turf layer was marked by hearth activity (of fort level 4) (cf. Plate CDLXXV: section 8/238). The large oblong pit to the south of hearth 35 was completely filled in with such turves.

#### Large waste-pit OS 4980

To the south of the excavation area, a very large pit (OS 4980), partly cut by the circular construction pit of the large wooden basin of the following fort level, dominates the corner in-between the western and southern earthen rampart. This bowl-shaped pit of c. 10 by 10 m was dug to a depth of c. 1.7 m compared to the occupation surface at the time, and had a rather flat bottom (Figure 56). The sections<sup>161</sup> show that the primary filling had an average thickness of c. 0.75 m, increasing locally up to 1 m (Plate XLI). These primary fillings consisted of mainly dark organic clay layers, some sandy levels, and several shell concentrations of mussels and cockles. The pit clearly cuts the construction slots of Unit I, indicating that the waste-pit, at least in its largest extent, post-dates the second subphase of Unit I. It is not excluded that the large waste-pit was in its initial phase smaller and co-existed with the first phase of Unit I.

The primary fillings of OS 4980 yielded several items of bronze production waste. Or this waste-pit functioned while bronze production was active at the site, or the pit was dug when bronze production waste was already deposited in this area; the latter seems the case given the content of pit OS 7949 (see before and further). The primary pit fillings were sealed by secondary levels in the very last phase of this fort period or the start of the next fort occupation and were further covered during the final occupation in the 4th century.

The large number of finds<sup>162</sup>, their variety, the several cross joins in the pottery, together with an important presence of more fragmented material derived from clearing the area, and the

<sup>159</sup> A bronze-caster's furnace is reconstructed in this way at the archaeological park Archéosite at Aubechies (B), based on a similar, excavated furnace at Blicquy (pers. comm. E. Gillet, Inrap). This furnace is still used there successfully for experimental bronze-casting following the Roman methods.

<sup>160</sup> With thanks to Ph. Despriet (Kortrijk) for pointing me on this aspect during a visit on the site.

<sup>161</sup> The sections through the structure could not be set centrally due to the constraints of the excavation in this corner.

<sup>162</sup> The 5640 sherds, representing a minimum number of 729 vessels, were the subject of a detailed pottery study (Vanhoutte *et al.* 2009c).





Figure 57. Rows of plaster, recycled from the shrine of the courtyard building of fort level 2B, used as foundation for workshop Unit IV of fort level 4. a: view from the south-west; b: detail of the southern row of plaster, view from the west; c: excavated rows of plaster, view from the west; d: detail of the central row of plaster. The interior gap probably indicates the location of the initial construction beam.

location in the corner of the fort, are indications that this pit has to be interpreted in the first instance as a dump for consumption waste (Vanhouette *et al.* 2009c, 98; cf. Volume II, Appendix, Section 5.2: OS 4980). Most of the objects appear to have been thrown away into the pit deliberately, immediately or shortly after breakage or after they became unfit for use. Although the layered structure of the filling suggests that the dump was not the result of a single discard event, the several cross joining pottery sherds indicate that the pit was filled in within a short time-span.

### Unit III

To the north-east of the waste-pit, a clean sand level defined a rectangular area of c. 5.5 by 4.2 m (Unit III). In the centre, some large pits occupied most of the space. The pits, some of them re-dug, succeeded each other and it is possible that there was only one pit active at a time (cf. Plate CDLXXXIII). The pits are characterized by a dense stratification of which the primary, very sandy fillings point to a fast fill.

The clearly defined sand alignment was intentionally installed, probably as a work-floor, and assumes this area was closed off and





Figure 58. The central well OS 22926 of the workshop area of fort level 4 during excavation. a: the preserved framework, view to the south-west; b: partly opened framework with view on the preserved floor boards after removal of three quarter of the infill, view to the south-west; c: detailed view on the internal framework structure with connection to the floor boards, view to the west; d: the uncovered floor boards, view to the south-west (the eastern ends were already removed for wood sampling at this stage).

covered, although this did not leave any trace. One can envisage turf walls for the structure. The activity taken place in this construction obviously needed a large pit in which sand could be deposited. The location assumes the activity was related to the craft activities of the workshops. Within the chain of the metalworking process, one can think of bog iron ore to be cleaned and deprived of the surrounding sand or the making of moulds out of moulding sand, but no further indications can confirm these ideas.

#### Unit IV

To the north of Unit III, with a spacing of 0.6 to 0.7 m, just enough to pass through, a rectangular structure of *c.* 5.5 by 3.0 m was situated parallel to Unit III. The foundations of this unit consisted of strips of recycled plaster fragments, scraped together and positioned in shallow construction slots (Figure 57) (cf. Plate CDLXXXIII). In the central, empty gully of the transverse strip, a construction beam could fit (Figure 57: d). A leveling with sand had raised the areas in between the plaster strips. The study of the painted plaster

fragments indicated that these originated from the small structure on the courtyard of the military hospital of the second fort level, the assumed *sacellum* (see Section II.4.4.2.b, and also Laken and Vanhoutte 2016, 143-147). It appears that during the installation of the fourth fort level the area was levelled as a result of which the plaster fragments of fort level 2 were uncovered again and were found suitable as foundation material.

On top of the sand make-up layers, a partly preserved thin mortar layer represents the occupation surface. On the same level, two thin wall painting fragments (see Laken and Vanhoutte 2016, 147-149), were found, laid horizontally, clearly reused as floor covering, with their paintings faced down. Because of the specific foundation technique and the raising with sand, the occupation surface in the structure was clearly higher than its surroundings; this was confirmed by the covering layers sloping down at the outside of the edges of the structure. Nearly in the centre of the western side of the structure, a large sandstone block, completely burnt red, can be identified as a worktop (Figure 57: a, in the top left of the photo). This structure,



most likely a workshop, was completely burnt down, resulting in a fire layer on top of the mortar surface covered by a compacted burnt daub level completely burnt to red, the remains of the construction. The clusters of complete, unused, equal-sized nails recovered from the fire layer may point to nail production on the spot.

#### Central well OS 22926

A central well provided the water needed for the various crafts. The felling date of the wood is to be situated between AD 260 and 275 and Haneca (2009) has suggested little time had have passed between the felling and the construction of the well.

The square well (exterior measurement: 1.9 x 1.8 m) consists of an oak (Haneca 2009) framework made of very broad boards fastened to the four corner posts by means of large iron nails and wooden plugs (Figure 58; Plate XLII). The bottom of the framework reaches a depth of 2.22 m TAW, which is *c.* 4.44 m underneath the current surface level (at the time of excavation) or 2.51 m underneath the excavation level in which the alignment of the construction pit was first visible. The wooden boards of the framework were preserved to a maximum height of 1.11 m. The leached contours can be followed 0.67 m higher. The fanning out of the layers on top indicates that the upper part of the framework was recycled after the abandonment of the well.

The oval-shaped construction pit had a maximum length of 5.1 m and a maximum width of 4.5 m. The southern edge is only just overlapped by the northern border of Unit IV, assuming the well was installed at the beginning of this fort period. To a depth of a maximum of 2.0 m, the construction pit shows a bowl-shaped section; centrally, around the framework, it deepens further to a depth of 2.6 m. The construction pit was filled with little polluted natural sand and podzol soil; the upper layers included clay, charcoal, some shell and quite a few mortar and plaster fragments. In the fillings of the construction pit, the different loads of sand can be recognized. After the filling-in of the construction pit, a pit was dug on the west side, which was directly filled in (later causing a small depression because of later subsidences). Since the abandonment layers of the well also filled in this depression, the pit seems to be related with the functioning of the well. One can think of the foundation for a pump installation or winding mechanism.

The framework was constructed around four posts, preserved to a height of 1.18 m, which were related by a frame (Plate XLIII). The construction of the well assumes they were the remains of long posts reaching to the top of the well. The internal frame of 1.53 by 1.53 m indicates that the well was created as a square tank. The frame timbers, either rounded (north and south) or square in section (west and east), are set oblique: north and south at the same level and west and east at a lower level. These frame timbers were attached to the corner posts by means of a mortise and tenon joint and simultaneously held them together. A wooden peg going all the way through the post locked the timber terminal from the inside. The boards of the framework were attached to the corner posts by means of large nails. Only the boards of the two lower levels were completely preserved, displaying measures for the lowest boards of 1.57 to 1.61 m by 0.53 to 0.57 m wide, with the boards of the

second level a few cm shorter and 0.40 to 0.46 m wide. At the lowest level, this results in a well of 1.82 by 1.91 (exterior measurement); at the top of the preserved framework, the inside measurements were 1.46 by 1.41 m<sup>163</sup>. The lowest four boards were attached with two large nails at the corner posts, one at each short side.

This construction (corner posts, framework and at least the lowest level of boards) must have been lowered in the construction pit as a prefabricated structure. At one side of the western as well as at the northern lower board, the area of the nail is slightly deepened. The installation of this part of the framework must have required quite some time. Besides, the bowl-shaped section of the construction pit only reached the base of the second level of boards and deepens further down as a narrow strip around the framework, leaving no space to hammer this construction *in situ*. Also the seepage would not allow the necessary time and space. While this lower, fixed part of the framework was constructed above ground, the boards on top were set *in situ*. These do not show any trace of nails or pegs, except for a hole in the northern board which was not functional, and they were likely just set on top of the series of boards below, without further fixation. The support against the corner posts and on top of the lower boards together with the weight of the sand of the construction pit apparently yielded enough fixation for the further elevation of the framework.

Half of the bottom of the well was covered by two boards next to each other. They were not fixated to the framework, but were squeezed underneath the western and the eastern timber of the inner frame at the base of the well, probably simultaneously with the installation of the well. Both boards were *c.* 1.45 m long. The southern board had a width of *c.* 0.29 m, while the northern was slightly broader (0.35 to 0.38 m). Both boards showed a central series of holes with equal diameter (*c.* 0.03 m). In only one hole, traces of iron (remains of a nail?) were preserved, and in the northern board one hole was not in line with the others. A similar board with perforations has been found in a well of the Roman civil settlement at Wijnegem-Steenakker (B). This square well with a *terminus post quem* of AD 214-219 (Cuyt 2001) also had sides of *c.* 1.50 m. From the base which consisted of three boards, only one board of 1.07 m could be recovered, showing two lines of perforations<sup>164</sup>. The holes were interpreted as a measure to enable the seepage of water to pass into the well during construction but in a managed fashion avoiding undue water pressure to build up (Cuyt 1999, 62-64). The boards of Oudenburg and Wijnegem therefore presumably served as a working floor during the construction of the framework. They gave the necessary stability while installing the well and the perforations made sure the water seeping into the construction area did not push up the boards. Therefore covering only half of the floor was enough. Such a floor was probably also useful during the functioning of the well for clearing out the structure. The northern board shows cavities along its north and south side over the whole length of the board (small semi-round cavities along the north side, V-shaped cavities along the south side). The southern board displays a cavity at the southwestern angle which cannot have had a function within

163 The sections show how the well is slightly bending towards the centre.

164 Pers. comm. G. Cuyt (AVRA).



Figure 59. Two views on Unit V. Left: view to the west, with at the top right of the photo the remains of the covering road level of fort level 5. Right: view to the north-west, with the visible remains of the charred beams aligning the unit.



Figure 60. Fort level 4, Unit VI, view to the north.

the structure of the well. These elements indicate that the timbers were recycled wood.

A road or path probably reached the well from the north. Although the area north of the well is largely cut by later disturbances, indications for structures occupying this space are lacking and the abundance of Tournai limestones and 'fieldstones' may be the remains of road metalling.

#### Unit V

Along the base of the southern rampart, the burnt remains of a roofed-over workshop were excavated; the fire layer covering this workshop stretched over an area of c. 5.0 by 3.6 m (Figure 59). This fire layer and the burnt level underneath, with remains of several hearths, were characterized by a large number of finds: a considerable amount of copper alloy and iron items, of which many were corroded onto each other,

concentrations of charred grains, many quern fragments, some whetstones, a large piece of thick folded lead sheet and many pottery sherds. In total some 450 copper alloy items and about 100 iron objects were recovered from the debris and fire layers of the burnt-down workshop.

Only the southern west-east and the central north-south shallow construction slots were (partly) preserved (cf. Plate CDLXXXIV). In the trace of the southern slot, parts of charred beams were saved. The remains of charred beams delimit the east side of the structure. The southern beam slot is furthermore characterized by a range of Tournai limestones and volcanic tuff blocks; these must have served as foundations for the construction of the wall. The spread-out stones to the south and west and the stones more to the north of the unit may have been removed from these slots, although they may have belonged (or originally) to a road level, an *intervallum* road, in the beginning of fort period 4 as trench profile 4.9 seems to indicate (Plate X: level 142/143).





Figure 61. Remains of the burnt-down Unit VIII. Left: top of burnt loam, charcoal and charred wood remains, heaped up against the inner southeastern corner of the unit. Right: at a lower level, view to the west, starting from the southeastern corner, with the remains of the turf wall in the front and with the top of the oblong cellar pit filled in with burnt material.



Figure 62. The oblong cellar pit of Unit VIII, two views to the north/north-east during excavation. Left: cellar pit filled in with burnt and charred material and central subsidence. Right: cellar pit after removal of the infill, view on the charred boards.



Figure 63. Fort level 4, Unit IX. Left: view to the east. Right: detail of the central hearth, same orientation.

The western, eastern and northern limits of Unit V are not conclusively defined. Based on the southern and the central beam slot, the charred beams at the east side, the location of the hearths and the extent of the fire layer rich in metal finds, a structure can be supposed of at least *c.* 10.0 by 3.8 m wide<sup>165</sup>. Within the supposed perimeter of this workshop, five hearths can be defined (hearths 22 to 26). In between hearths 24 and 25, a concentration of copper alloy flakes was recovered, presumably the remains of a hammering. Here, also fragments of a gold necklace were found (Figure 119). Unit V belongs to the last phase of fort level 4 as this level covers a previous subphase with some large pits (the oblong western pit is bipartite), presumably related to industrial activities, possibly of the same level as Unit VI (and probably following the aforementioned presumed road level).

### Unit VI

Unit V was preceded by Unit VI, which reused the location of Unit V of fort level 3. Unit VI, most likely a workshop, may have been contemporaneous with the pits underneath Unit V of fort level 4. The inner flooring of the structure consisted of a pale clay-sand level, sharply aligned (Figure 60). The alignment of the floor and the covering fire layer which had accumulated against a non-preserved western wall, and possibly also the striking very broad construction (?) slot at the south side, indicate that the structure was probably (partly) turf built (cf. Plate CDLXXXV). A hearth with a pottery sherd level, refurbished at one point, lays in the axis of the structure. The concentration of stones (irregular blocks) to the north of the construction slot may have belonged to the construction and may point to the integration of stones in the timber-framing walls, as seems to have been the case for Unit V. Another possibility is that these stones belonged to the metalling of a road, with the north-south road making an angle and passing Unit VI<sup>166</sup>, or of the aforementioned earlier road pre-dating Unit V.

### Unit VII

To the north, partly cut by the robber trenches of the baths of fort level 5, another unit can be defined, although its limits are unclear. Two fragments of presumed construction slots, part of two crossing charred beams (indicating an inner partition?), a series of three successive hearths<sup>167</sup> and the location of a hearth pit, which may have belonged to another subphase, point to the presence of a workshop, Unit VII, positioned parallel to the surrounding constructions.

### Unit VIII

Unit VIII was a roofed-over workshop, *c.* 7.3 by 4.5 m wide. At the south side, a linear series of sandy turves appears to be the last remains of a turf wall, apparently a renovation at this side of the construction (Figure 61). The last remains of an earlier construction slot underneath and the slots at the other sides reveal a mixture of building techniques, possibly also the result of renovations: a sleeper beam in the northern slot, post-trench technique at the east side.

The entrance of this workshop was located in the north-west corner. A sharp alignment in the northern part, only visible as a difference in layers, points to an inner division. The interior, along the eastern wall, revealed a succession of hearths (hearths 32b, 32a, 31 and 33<sup>168</sup>) and an oblong pit with a two-partite division (Figure 62; cf. Plate CDLXXXVI). The bottom and the walls of the pit were covered with the remains of charred boards. More to the north, onto the walking surface of the room, a piece of charred board, subsided into the top filling of an earlier pit (and because of that preserved), displayed the same west-east orientation as with the boards of the large pit. It yields a solid argument to state that the oblong pit was most likely a cellar, consisting of two spaces, closed off by a hatch in the wooden floor. The workshop burnt down – the burnt layer, full of loam burnt to red, was limited to the alignment of the structure on a higher level (see Figure 61: left) – and floor boards fell into the pit. At the level of the charred boards, concentrations of charred cereals may indicate that grain was stored here. On top of the burnt boards, a very thick level of burnt daub is what is left from the fallen down walls of the workshop (Figure 62: left). Also hearth pit b was filled in with a compact level of burnt clay and daub and therefore seems to have been active at the time of the fire which burnt down the workshop.

### North-south road

Along the eastern side of the excavation area, a strip, for the most part deprived of features and characterized by concentrations of mainly Tournai limestone fragments here and there, represents the trace of a metalled north-south road.

In between this north-south road and Units VII and VIII, four (remains of) hearths, a hearth pit and some (parts of) construction slots indicate that there were even more workshop structures, belonging to different subphases, but clear configurations cannot be defined. In this area many pits were uncovered, some very large ones, some oblong, several with box-shaped base (cf. Plate CDLXXXVII). The latter were originally probably fortified by boards which were later on extracted for reuse. Within the context of fort level 4, these pits may be related to industrial activities. Some of these pits clearly belonged to the earlier phase of fort level 4 as in the subsidence of their infill a hearth could be identified which can also be attributed to fort period 4<sup>169</sup>.

<sup>165</sup> Further analysis of the trench profile 4.9 separating the trenches T8 (in which the main part of Unit V is situated) and T4bis revealed a burnt level with copper alloy fragments at fort level 4 (Plate X: 144), which can be connected to a distinct demarcation of layers at the same level in excavation trench T4bis, now believed to be the western limit of Unit V (in contrast to earlier publications *e.g.* Vanhoutte 2007a; 2009a).

<sup>166</sup> This can of course not be verified due to the later bath house at this location.

<sup>167</sup> This hearth activity was covered by the western wall of the *praefurnium* of the bath house of fort level 5A.

<sup>168</sup> It could not be deduced whether hearth 33 functioned at the same time of one of the other hearths (32b, 32a or 31).

<sup>169</sup> Cf. Plate CDLXXXVII: feature section 8/105; Plate CDLXXXVI: feature section 8/128.



### Unit IX

In the north of the excavation area, part of a large unit stretches along the road. This building was at least 10.0 m by 7.2 m wide (reaching further outside the excavation area), and had its entrance situated in the south-west corner, at the road side. The interior of Unit IX had a floor made of clayish sand turves (Figure 63). The alignment of this floor at the south points to a closing off with an inner wall, maybe made of turves or constructed onto a sleeper beam which was not set in the ground, leaving a portico at the south side. A large hearth made of pottery sherds and ceramic building material on top of a clay bed lay in the axis of the building, and was refurbished at some point to a level of only pottery sherds (Figure 63: right). On the bottom of a small pit (preserved depth: 14 cm) (OS 80209: Plate CDLXXXIX, section 8/45) to the south-west of the hearth, five mounts – most likely horse trappings – and one round link were recovered<sup>170</sup> (cf. Volume II, Chapter 3, Section 3.3). This cluster presumably represents some kind of ritual deposit.

#### II.4.6.2.b. Building techniques

Different building techniques are uncovered at this fort level. Both timber-framing techniques with sleeper beams and with post-trenches were in use; at Unit VIII, even a turf wall could be detected and it is possible that also Unit III was enclosed by such a light structure. While Tournai limestone was supplied to the fort for the erection of the stone defensive wall and for the construction of buildings in the northern sector (cf. the stone building uncovered in 1977, see Section II.3.4), domestic and non-domestic facilities were still constructed in the timber-framing technique. The, possibly domestic, Unit IX, was a timber-framed construction with sleeper beams. At the workshops, sleeper beams, post-trenches as well as turf walls were used. Significant is the presence of thirteen large volcanic tuff blocks at this level, amongst other smaller fragments (with a total weight of 62.36 kg). The blocks were all found in features at Unit V (with one in the southern construction slot), at Unit VIII (with one in the cellar pit) and in pits to the east of Unit VIII. The filling of the southern construction slot of Unit V contained a range of seven such tuff blocks, each with a flattened front side, next to blocks of Tournai limestone. They seem to have served the construction of the wall. On one of the tuff blocks the remains of mortar are preserved; another had a burnt front side, an indication that there was a fire while the stone was still in position. Most likely the workshop burnt down together with the other constructions in this area, marked by the several fire layers at the end of this fort level. The intact, rectangular tuff block (c. 31 x 12 x 20 cm) recovered from the central posthole of Unit I (Plate CDLXXXI: section 7/202+225) may have been a dug-up piece from the earlier Unit VI at this location belonging to fort level 3 and where several similar blocks were found (see before). As is evidenced at fort level 3, also at fort level 4 the timber-framing technique was combined with the use of tuff blocks in the wall construction.

Tile fragments are found in large quantities at this level: 1928 fragments are counted as *tegulae* fragments, 918 as part of *imbrices*. Several examples show remains of mortar joints, indicative for their fixation in the roof construction. The earliest *lateres* of the site belong to this level (143 fragments), next to a surprising number of 682 *tubuli* fragments. A closer look to the distribution of the latter, more specifically considering find contexts in which at least five fragments were recovered, no less than 63.5% of the *tubuli* appear to be incorporated in hearth levels, and thus as recycled material. The other 26.5% mainly belonged to debris and fire layers. Hence, the *tubuli* at this level represents mostly reused material, if not totally, which illustrates well the culture of recycling at the fort precinct. It also emphasizes the phenomenon of residuality at the site, to which most visibly the pottery testifies (see Chapter II.5).

#### II.4.6.2.c. Craft activities in the workshop area

The number of hearths and furnaces and their spatial organization clearly point to craft activities within a large workshop complex<sup>171</sup>. It is generally accepted that during the Principate, the craft activities at forts were usually carried out in large buildings, called *fabricae*, which could occupy whole building plots in the fort interior. In these *fabricae* repairs were made to gear and weaponry (see e.g. Reddé 2006a, 116). At quite a few forts along the German and Raetian Limes and in *Britannia*, no true *fabrica*-building was uncovered within the walls, but instead, as at Oudenburg, small workshops for metalworking activities<sup>172</sup>. This was, for example, also the case at Housesteads, where workshops of the early 3rd century AD were located in simple open-fronted sheds set into the ramparts at the north-east corner (Rushworth 2009, 65). Allason-Jones and Dungworth (1997) concluded from the evidence for bronzeworking at the forts of Hadrian's Wall that, although it concerned the manufacture of military items on military sites, the bronzeworking occurred mostly on a small scale, by single persons. The overall picture there shows that the bronzeworking activities were performed with the most basic equipment and by using recycled scrap. In contrast, the number of workshops uncovered at the south-west corner of the Oudenburg fort and the several units that can be distinguished points to a rather large workshop area in which different bronze smiths were at work.

At the fort of Oudenburg, the open-air workshops and small roofed-over units appear to have served the same purpose as the aforementioned *fabricae*. Due to the noise and the fire hazard, the installation of a workshop area at this corner location, in the periphery of the fort, was a logical option. Wall-surround construction using turves was hence a logical non-flammable choice. The layout of the structures indicates that there was no *intervallum* road in this part of the fort<sup>173</sup>; along the west side as well as along the south side the structures bordered the base of the earthen rampart. At the east of the excavation area, a north-south metalled road of which only local concentrations of Tournai limestone fragments were preserved,

170 CA.A/H68 (disc-and-foliated mount); CA.A/H54 (large shell mount); CA.A/H47 (large round mount); CA.A/H43 (medium round mount); CA.A/H29 (small round mount); CA.J07 ring (link) (cf. Volume II, Chapter 3, Section 3.3).

171 A first overview of the workshops and bronze working at the Oudenburg site was published in Vanhoutte 2009.

172 For a list of these *castella*, see Gralfs 1994, 42 and endnote 330.

173 Only in the earliest phase a road level may have occurred along the southern earthen rampart (see before).



Figure 64. Small mould in earthenware, found in the post-Roman level but most likely related to bronze working activities at the fort, possibly of the fort level 4 workshops (Photo: K. Vandevorst, Flanders Heritage Agency).

gave access to this workshop area; a parallel, additional north-south road or path presumably gave access to the central well.

Excavations in 2009 at the site Kapellestraat revealed that in the same period along the north-east side of the fort craft activities were located, with some hearths along the base of the earthen rampart (Vanhoutte *et al.* 2014, 184-189). At both sites, the north-east site and the south-west site, the hearths were surrounded by fire scorched layers and debris rich in metal finds. The large number of bronze and iron finds most probably represent end products, items meant for reparation and scrap metal intended for reworking.

That these workshop areas served for metalworking, is evidenced by the finds at the south-west site: the glazed fragments of burnt furnace walls with slag material and the pieces of planoconvex furnace bases found at this level and even more in the covering debris layers, the metal remains in the furnaces, the large block type anvil found in the central well OS 22926 (cat. no. IR.C01: Plate CCLX), the many finds of production waste. The finds at Oudenburg yield indications for metalworking with copper alloy and iron. The large number of whetstones found at this level (35 of the in total 116 recovered whetstones from the site<sup>174</sup>; cf. Volume II, Chapter 10) may well have served in the metalworking activities for polishing the end products and for sharpening the tools.

The furnaces will have served the blacksmith(s) who worked with a solid metal, as the metal had to be kept at red heat as it was worked. The hearths will have served the smiths working with other metals and which used the hearth not only to melt the metal prior to casting but also to anneal it during working since sheet metals usually were cold-worked (Manning 2011, 71; cf. Manning 2014).

### Bronze working

It seems that several bronze<sup>175</sup> smiths were active in the workshops at the south-west fort corner. Furnace A was surrounded by fire layers full of copper alloy fragments and bronze remains in powdery form, and some copper alloy pieces were attached to the bottom of the stoke area of the furnace.

The large amount of items made out of copper alloy and iron that were found amidst the burnt remains of the southern workshop Unit V can (partly) be interpreted as scrap metal. The copper alloy drips and trails, visible on the X-ray photos of the metal finds from Unit V<sup>176</sup>, are clear indications that metal objects were cast in this workshop. Next to hearth 25, the presence of metal fillings demonstrates that the products were also finished in this workshop.

At the workshops along the western rampart, no droplets of copper alloy were observed. However, the furnaces will have played a central role in the melting of the copper alloy. The rest of the area may have been largely reserved for finishing the products, for welding and soldering; the different hearths probably served for annealing the semimanufactured items in between hammerings. This may be confirmed by the concentrations of shells (mainly cockles, some mussels) found here and there on the surface level of the workshops along the western rampart. Some layers consisting almost entirely of cockles also filled in the large waste-pit in the corner (OS 4980) and the central well OS 22926 (see Plate XLII). These shells may have been used as antioxidant in the metalworking activities, to prevent the oxidation of the exterior during hammering<sup>177</sup>. At Unit I, the content of pit/depression OS 7949, comprising a lot of brooch production waste, definitely bears witness of the production of these simple one-piece sprung brooches on the spot (Figure 65). The different stages in the process represented by the items of the pit demonstrate that at least during the initial phase of this Unit I these items were welded and soldered here (see also Volume II, Chapter 3, Section 3.6.1).

A small mould, although a disturbed find recovered from a post-Roman level, presumably adds extra information to the bronze working activities at the Oudenburg workshops (Figure 64). This type of mould, shaped as a small semi-hemispherical recipient, was found in large numbers in a pit at Vertault in Burgundy (F), a Gallo-Roman site of the 1st and 2nd centuries where bronze founders and smiths gathered in shops and workshops (Chardon-Picault 2005). The mould of Oudenburg is especially similar to the ones discovered at Augst (Chardon-Picault 2005, 140: Fig. 8). Chardon-Picault demonstrates that these '*enveloppes de bronzage*' were used in a specialized technique for 'bronzing' iron objects. Since the specimen from Oudenburg was clearly not yet used, no traces were left of the bronze working.

175 The designation 'bronze' is used here as a general term for copper alloy, and not in the sense of the exact copper alloy composition.

176 As a result of their poor state of preservation, most finds of the burnt layer of Unit V were lifted in blocks of soil. The radiographic research of the metal finds was prepared by the team Archaeological Conservation at the Flanders Heritage Agency and was executed at Vinçotte (Vilvoorde).

177 Pers. comm. dr. P. Degryse.

174 A large proportion of the 75 whetstones found in later levels may well have been finds disturbed from this workshop area.

Figure 65. Brooch production waste recovered from pit OS 7949 of Unit I.



The end of this fort level 4 is characterized by many fire layers, mostly rich in metal finds. Especially the fire layers on top of and surrounding Unit II were full of small copper alloy fragments, charred grains and coins. The main concentration of the latter extended over a surface of about 32 sq m south of Furnace A and yielded up to 657 coins, mainly radiate copies (cf. Volume II, Chapter 2, identification by J. van Heesch), in combination with dense concentrations of charred grains. Since the copies represent varying sizes and since no evidence for mintage at the site could be found, it is likely that at least a large proportion of them represents a dispersed coin hoard or served as scrap for reworking. The high price of metal in Roman times prompted systematic collection and reuse of metals. Research into workshops at various *castella* in the provinces of *Germania Superior*, *Germania Inferior* and *Britannia* has proven that these were strongly dependent on the reuse of scrap metal (see Gralfs 1994, 44).

#### Brooch production

As for the bronze working, the production of brooches<sup>178</sup> and bracelets is well-attested and evidenced by finds illustrating the different stages in the production process (cf. Volume II, Chapter 3, Section 3.6). Most of the brooch production waste was found along the western rampart, with a concentration in pit OS 7949 of Unit I (Figure 65). The copper alloy assemblage of pit OS 7949 comprises 92 items: six almost complete one-piece sprung brooches with wire bow, thirteen fragments of this type of brooch, eight semimanufactured products in the form of straight, untwisted brooches, three start (of production) forms of the semimanufactured brooch, 54 waste products of the production of such brooches such as bows, stretched springs, warped and distorted fragments, fastening devices and rods, next to one fragment of a flat bracelet

with stylized snakehead end (CA.B242), one simple annular buckle (CA.B001), three bell-shaped decorative nails, so-called lock-pins (CA.D006, D007, D012), two netting needles (CA.C07 and C11), one fragment of a weaving comb (CA.C24) and one base fragment of a vessel (CA.D046)<sup>179</sup>. The other objects beside the brooch products may indicate that occasionally other items were produced here – this is evidenced for the snakehead bracelets subtype Oudenburg 1 and 2 and likely for the netting needles (see further) –, although it cannot be ruled out that they served as scrap metal for reworking.

The start forms of the brooch semimanufactures show very rudimentary rods on which the fastening device of the brooch has been slightly roughed out, with little to differentiate the future bow and pin. Further stages in the production process yielded fully beaten-out but still unwound brooches, next to fragmentary waste products. Only one type of brooch was made at Oudenburg: a simple type in one piece, made of a simple piece of wire, characterized by a bilateral four-coil spring, an internal chord and a rod bow, the so-called 'simple one-piece sprung brooch' (see Volume II, Chapter 3, Sections 3.4.1 and 3.6.1). The production of this simple one-piece sprung brooch type – often considered as an early type in literature – at the Oudenburg fort *intra muros* confirms that this type continued to be made at least until fort period 4.

The excavations at the south-west corner site of the fort recovered a curiously small number of crucibles; some small, distinct crucible fragments have been found in later contexts at the site and might be interpreted as residual finds. It is possible, as Söderberg (2002, 257) suggests, that broken crucibles were reused as grog for making pottery or new crucibles, thus leaving few traces. No remains of

<sup>178</sup> The attested brooch production at the Oudenburg fort has been discussed in Vanhoutte 2009.

<sup>179</sup> The numbers given in Vanhoutte 2009 should be considered as preliminary; the present numbers are the result of a further, thorough analysis of the items.



Figure 66. Two bracelet production waste products. Top: unbent bracelet, simple version; bottom: off cut of bracelet, refined version.

moulds were encountered in or around the Oudenburg workshops. It seems unlikely that the metalworkers employed the lost-wax technique, in which the moulds were shattered; the start form for making these simple brooches, a rough rod, is too simple for this. Archaeometric analysis<sup>180</sup> on a small sample of 'bronze' slag material has given additional evidence not only of the treatment of bronze at the workshops of fort level 4 but also of bronze casting. The high concentration of tin in several samples makes the metal very suitable for forging and hammering. Some samples contained lead which confirms that bronze was not only forged but also cast since the addition of lead results in a significant reduction of the melting temperature (Plas 2016). These bronze casting activities may also (partly) explain the presence of several lead off cuts.

The absence of moulds and the simple basic form from which the brooch production process started, may indicate that the starting rod was clipped from an ingot and hammered further, or – and even more likely as no ingots were found – that it was cast into sand<sup>181</sup>. Rough sand, mixed with a binding agent like clay or oil, would be pressed around a rod-shaped object. After careful removal of the latter, the molten copper alloy could be poured into the cavity. This technique can be used only for casting very simple forms (Furger 1989, 55). The burr on the side of one of the bases of a semi-finished brooch product of pit OS 7949 might prove that this technique with moulding sand was used<sup>182</sup>. This casting yielded only a very rudimentary semi-product, a small rod corresponding in volume to the end product. To manufacture the brooches for Oudenburg the start product was beaten. By hammering, the wire of the pin and spring would be formed, and at the other end the bow and the foot. Then the spring was coiled and the pin sharpened. Every episode of cold beating was alternated with reheating, annealing the piece. Recrystallisation thus returned to the metal the elasticity that had been partially lost by the hammering (Guillaumet 1993, 5, 10; for a more detailed explanation: see Chardon-Picault and Pernot 1999, 156-157). The various stages are clearly recognizable among the Oudenburg finds.

Metallographic analysis on a semi-manufactured brooch product<sup>183</sup> has made apparent the remarkable high quality of the bronze working. Thin-sections showing an extremely small grain size demonstrate that the bronze smith(s) had an impressive expertise; the copper alloy with very high copper content and a very low tin proportion (4 to 5%)<sup>184</sup> was forged and annealed many times and very precisely, resulting in a very small grain size<sup>185</sup>. This indicates that the bronze working was not executed by 'ordinary' *immunes*, but that specialized persons (travelling blacksmiths?) with much expertise were (also) responsible.

#### Bracelet production

Not only brooches were made here. The south-west corner workshops also yielded proof of the production of bronze bracelets, with unbent individual examples and production waste as evidence (see Volume II, Chapter 3, Section 3.6.2). The bracelets are all of the type with stylized snakeshead terminals. The simple version (see e.g. CA.B237 and B238) as well as a refined version (CA.B/C251) were manufactured (Figure 66). The aforementioned analysis with a mobile XRF device revealed that these local bracelet products distinguish themselves from the other bracelets by being in brass (copper with zinc), and in this case clearly employed for its golden colour. Although only a very limited selection of copper alloy items could be examined, so far only the netting needles also yield a brass composition, indicating that they too were probably made locally in the forts' workshops.

#### Iron working

The metalworking at the south-west corner of the Oudenburg fort apparently was a mixed one; copper alloy as well as iron were processed. This can be concluded from the characteristics of the furnace base fragments, plus the amount of iron slag

180 With thanks to L. Linders, archaeological conservator Flanders Heritage Agency.

181 With thanks to L. De Vos for discussing these ideas.

182 Pers. comm. J. Van Cauter.

183 These metallographic analyses were executed by L. Linders (Flanders Heritage Agency) under the guidance of dr. D. Scott (UCLA, USA), expert in metallography of historic and archaeological materials.

184 This contradicts with the aforementioned results of the archaeometric analysis on a small sample of 'bronze' slag material. Clearly several bronze working techniques were in play. Further research is needed to clarify these differences.

185 Pers. comm. L. Linders.



Figure 67. Lead working scrap found at fort level 4:

1. amorphous shattered molten lead; 2 and 3. lead tendrils; 4. partly molten off cut; 5. lead sheet fragment, partly folded, cut off; 6, 7 and 8. distorted lead sheet fragments, partly molten; 9. small but thick lead block with cuts.

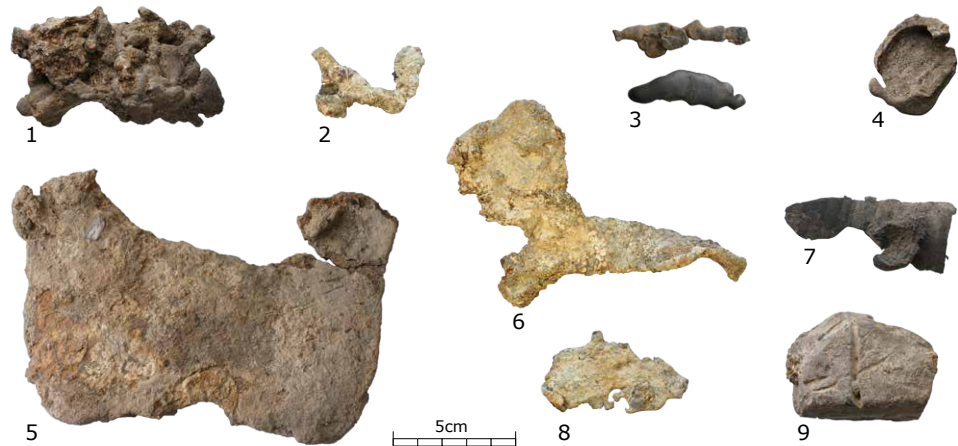


Figure 68. Large, folded, thick sheet of lead, c. 46.0 by 23.0 cm wide, recovered amidst the burnt debris of Unit V, showing several cuts.



material found at this level<sup>186</sup> and the composition of the assemblage of iron finds uncovered in large numbers within and around the workshops. A selection of iron slag lumps has been archaeometrically analyzed (Plas 2016)<sup>187</sup>. All iron slags represent forge slags, most of them being plano-convex bottom slags (PCB's), the most common type of waste material resulting from forging activities. Further analysis of their geochemical composition and morphology revealed that the slag material from fort level 4 covers the three types of forge slags, the so-called SGD (*Scorie Grise Dense*), SAS (*Scorie Argilo-Sableuse*) as well as the iron-rich SFR (*Scories Ferreuse Rouillés*). SGD slags result

from forging activities in which an iron object was produced out of cast iron or in which an iron object was forged into another. The SAS is a type of slag formed during welding. Most of the slags are the iron-rich so-called SFR's, slags typically formed while welding together iron items or while repairing iron objects (Plas 2016). The presence of the three types of forge slags points to the varied metallurgical activities at the workshops: iron objects were not only repaired here, but also newly produced.

Among the iron objects of fort level 4, several tools can be related to the metalworking at the workshops. Other tools are testimony to a diversity of crafts, like woodworking, carpentry, textile and leather working, and agricultural and agro-pastoral activities (cf. Volume II, Chapter 3, Sections 5.7 and 5.8). Their multiple presence in the workshops together with the aforementioned analysis of the slag material suggests items were repaired here; at least some will have been made at these workshops. Other items may have been gathered as scrap metal for reworking<sup>188</sup>. A combination of these options – repair, manufacture and scrap metal – will be the explanation for the greater part of the vast amount of copper alloy and iron finds at this zone of the site.

186 168 slag fragments are stratigraphically related to the workshops; 98.1% of the remaining slag material of the site belongs to later levels of which a large proportion may have been dug up from fort level 4; this is certainly likely for the 393 specimens found in the covering layers of the workshop area and in mixed levels 4+5.

187 I would like to thank dr. P. Degryse for the opportunity to make the analysis of a small selection of slag material from the Oudenburg site the subject of a bachelor thesis (Plas 2016). As such, a general idea of the character of the metallurgical activities could be retrieved. Obviously, a study in depth of a much larger sample of slag material in combination with an archaeometrical analysis of the semimanufactures and end products would enable further conclusions.

188 At the time, iron could not yet be melted. The metal could only be made flexible for hammering and refashioning.

### Lead working

Several finds indicate that lead was also worked in the south-west workshops: molten lead in the form of droplets, tendrils (amorphous and serpent-shaped ones), shattered molten lead, off cuts and clips, distorted and folded sheet fragments<sup>189</sup> (Figure 67). From the Roman level, 84 such items were collected, all belonging to fort level 4 or later levels. At fort level 4, lead working scrap was found in the primary filling of the large waste-pit OS 4980, in the fillings of the well OS 22926, at Unit I in pit OS 7949 together with the brooch production waste, at Unit II stuck to hearth 9 – an amorphous, thick melt of lead of *c.* 7.0 cm by max. 3.5 cm –, and in the fire layer of Unit V.

Amidst the burnt debris of Unit V a large, folded, thick sheet of lead was recovered (Figure 68), showing several cuts and likely to be a sheet from which smaller cuttings were clipped to process further. Isotope analysis on this item has revealed the origin for the lead in the Ardenne-Eifel, a vast region covering the Central Meuse area and the Belgian and German Eifel Highlands, from which apparently the whole north of Gaul was supplied (Raepsaet *et al.* 2015, 82). All this production waste points to lead working, but there are no indications as to what end products were being fashioned. The lead may also have had its function as additive in alloys. Important additional information is the lead ingot with a weight of *c.* 20 kg found in the 1970 Trench I in the north-west corner of the fort (Mertens 1970).

### Cereal processing (nearby?)

This south-west corner of the fort must also have served a role in the final phase of the processing of cereals. Several fire layers in the area along the western rampart were extremely rich in charred cereals; they were mainly prominent around Furnace A, in the large fire layer to the south of Furnace A and around Furnace B (an area which was also characterized by many coin finds), and along the north side of Unit II. Concentrations of charred grains were equally situated amongst the bronze finds of workshop Unit V and along the charred beam at the west side of this construction, in the cellar pit of Unit VIII and in the covering fire layer of Unit IX. To gain insight into the spatial distribution and the differences in the composition of the botanical material, the different areas were sampled extensively. A selection of these samples was analyzed by B. Cooremans<sup>190</sup>.

The botanical macro finds were characterized by an exceptional conservation; the grains were only charred, not misshapen or burnt. They were probably not directly exposed to the fire, but rather covered by debris as a result of which they were able to char in less oxygen rich conditions by the heat of the surrounding fire. In general, the samples mainly consisted of charred cereals; chaff remains were rare. Spelt was abundantly present, with some barley and oats. The latter may well have been the oats occurring as 'weeds' on spelt and barley acres. In some samples, *e.g.* around Furnace A, legumes and flax were present; weeds were only found in minor

quantities<sup>191</sup>. Amongst the legumes, remains of lentil, horsebean, pea and tare were found. Flax was in most cases a limited admixture.

At the north-west edge of the excavation area, in a fire layer to the north of Unit II, the situation differed remarkably. In these samples barley was almost as important as spelt and the remains of lentil and horsebean were limited. In contrast to the other areas, flax was present here in large quantities.

The species found here were mainly intended for daily human consumption, *i.e.* use by the soldiers: cereals, legumes, flax. The latter was of major importance in the region in the Roman period (*cf.* Cooremans *et al.* 2002) and was employed in many applications: in nutrition, for its medicinal properties, and as plant fibre<sup>192</sup>. Deprived of its chaff, the flax was ready for use. With the absence of chaff and the very low quantities of weeds, there are no indications for the processing of cereals. The cereals found here were clean and ready for consumption<sup>193</sup>. The various samples seem to represent the remains of portions of cultivated plants ready for consumption.

The archaeobotanical finds of the central well (OS 22926) give a complementary view. Here, cultivated as well as wild plants were found: cereals, legumes, fruit, nuts, vegetables, herbs and oil- and fibre plants. The cereals are represented as charred and non-charred material, and in this context grains as well as chaff occurred, mainly from spelt and barley. Although they are only represented in low quantities, there are indications of the consumption of legumes, nuts, fruit and herbs. Walnut, coriander and maybe also sweet cherry are Roman introductions and are often found in military contexts. Some could be cultivated, others could be collected in the neighbourhood. Flax is also well present in this context. The presence of the chaff remains and the field weeds in the well – waste products of the processing of the harvest (*cf.* Kooistra 1996) –, indicates that cereals were prepared for consumption in the vicinity of the well.

The spatial differentiation of cereals deprived of chaff at and in the vicinity of the workshops and the chaff remains in the well fillings may indicate that cereals were processed nearby, maybe just outside the excavation area, and that portions ready for consumption were stored in the workshop area. Also, the many quern fragments in closed contexts at this level point to the processing of cereals (*cf.* Volume II, Chapter 10, study by S. Reniere). This zone, with its various structures, may have served a purpose additional to metal-processing, namely as a general multi-purpose storage area, as perhaps also indicated by the presence of some of the tools, much like sheds, garages and workshops do today. At least twenty

189 Terminology based on Dubuis 2013, 41.

190 What follows is based on a selection of the unpublished archaeobotanical analyses by B. Cooremans, used here with her approval.

191 The presence of the weeds can be explained by their occurrence on the fields and the difficulty to separate them from the cereals.

192 There is no hard evidence that flax was processed for its oil. The fragmentation of the flax grains is sometimes used as indication, but this can occur as a result of many causes (*pers. comm.* B. Cooremans).

193 It is generally accepted that cereals such as spelt and barley were stored in their chaff to limit the decay as much as possible. Systematically, small portions were cleaned for consumption (Reynolds 1974).



Figure 69. More or less the entire top level of fort level 4 was marked by a fire layer and in many features a fire layer was preserved as subsidence layer, but four burnt areas were more prominent and were entirely preserved (without later disturbances). Their visualization on this map helps to understand the text. 1: burnt sand level; 2: the fire layer of Unit V; 3: the fire layer of Unit IV; 4: burnt sand level.

coprolites were found in and around the workshops, indicating the presence of dogs<sup>194</sup> running around.

#### II.4.6.2.d. Barracks in the northern sector of the fort

Besides the rectangular stone building already discussed (Section II.3.4), Mertens and his team also discovered several construction slots of soldiers' barracks in the northern sector in 1977 (cf. Mertens 1978, 73) (Figures 25 and 53). Mertens mentioned that 'a slight shift in the arrangement of the buildings and also a steady raising of the running surface point to changes

in the plan of the successive *castella*', indicating already that the different structures can be attributed to different fort levels. A revision of the field drawings now reveals that at least part of them can be assigned undoubtedly to fort level 4. They were more or less north-south oriented and according to Mertens there were some vague indications that they were equipped with covered galleries along the fronts (Mertens 1978, 73).

#### II.4.6.2.e. The end of fort period 4

At the south-west corner site, the top of fort level 4 was marked by a fire layer over more or less the whole area and in many features a fire layer was preserved as subsidence layer. Also in the northern area of the fort significant fire layers were noticed during the excavation campaign of 1977. They could be dated at the end of the

<sup>194</sup> It is the high proportion of chalc, typical for dogs, that makes these coprolites preserve in these conditions, in contrast with the excrements of cats (pers. comm. dr. A. Ervynck).



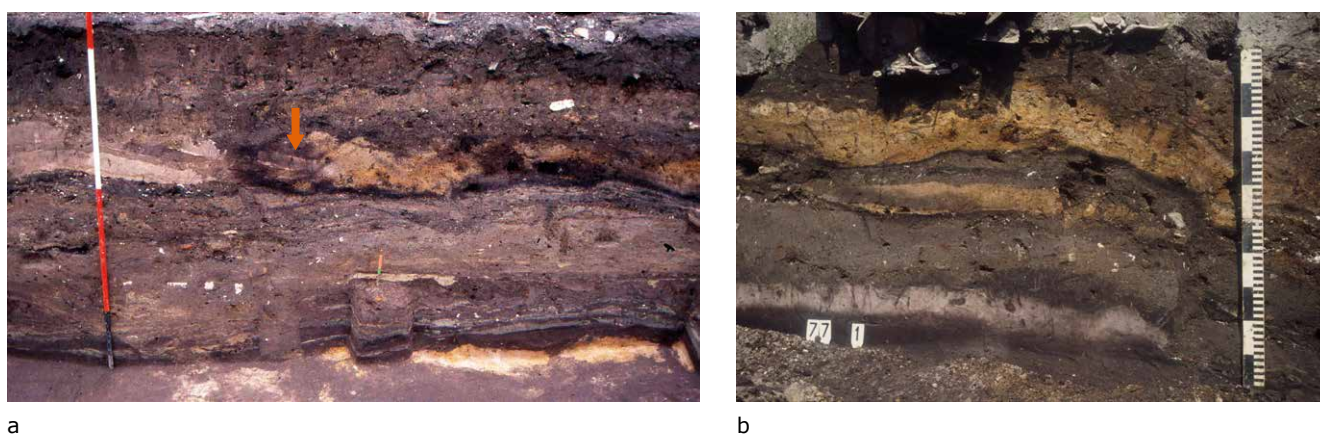


Figure 70. Left: part of the northern section of trench profile 2.2 with view on the fire layer (see Plate IX: layer 111) which cut the sand turf level. The arrow points to the dug-up sand turf. Right: part of the east profile in the northern part of the 1977 Trench I (see Figure 13 for its location) which shows a very similar stratigraphy with a thick burnt sand level (equally with reversed profile resulting from heavy heating from underneath) (Photo from Archive Mertens NDO).

3rd century (Mertens 1978, 76)<sup>195</sup>. The south-west workshop area was of course a zone with a high fire risk where an accident may have caused fire. The presence of fire layers at the end of this fort level in the northern part of the fort call into question whether this fire was not rather a large-scale phenomenon representing the end of this fort occupation. A close study of the stratified evidence at the south-west corner site yields more insight.

Units IV, V, VII and VIII were clearly sealed through fire; Units I and II were covered by fire and demolition layers. At Unit VIII the fire layer (cf. Figure 61) does not represent the final layer of fort level 4, since this area was partly covered by a later burnt level (Figure 69: 1). The latter consisted of a thick level of clear sand, burnt and extending over a large area of the northern half of the excavation area<sup>196</sup>. This sand level, up to c. 30 cm thick<sup>197</sup> and clearly the result of a lot of manpower<sup>198</sup>, covered the occupation surface which was heavily burnt. The sand level itself shows a reversed profile<sup>199</sup>: the bottom of this layer was burnt to black, on top the sand was (dark)yellow with whitish and dark brown spots, clearly the result of heavy heating from underneath<sup>200</sup>. This burning pattern

seems to indicate that the sand was heated as it was employed in dowsing endeavours by throwing it on a burning or still smouldering surface. The central well (OS 22926) was already abandoned for its water supply function, since the burnt sand level covers a thick level of waste fillings (cf. Plate XLII). The stratified evidence from trench profile 2.2 (see layer 111; Plate IX) shows that in this area part of the occupation surface of fort level 4 was dug away before the sand level was thrown on the precinct. The sand turf clearly visible within the burnt level on trench profile 2.2 comes from the adjacent turf level (Figure 70: left) and demonstrates that soil was moved and shoveled together with the sand level. It also evidences that parts of the original occupation sequence were no longer preserved. On top of the burnt sand level no features could be traced. It is striking that a similar burnt sand level with reversed profile and in the same stratigraphic position can be distinguished in the north of the 1977 Trench I (Figure 70: right), indicating a large-scale operation on the fort precinct.

To the west, along the western rampart, a similar burnt layer covers a burnt occupation surface yielding *in situ* concentrations of pottery sherds, coins and charred grains (Figure 69: 4). The sealing off of the burnt surface with sand extinguished the fire and at the same time enabled a good preservation of charred remains. The eastern alignment of the burnt layer – layer 111 at trench profile 7.1 and 7.2 (Plate XI) – shows that here as well part of the occupation surface was first dug away. At the east side it is clearly readable that this burnt sand level was immediately covered by a demolition level (Plate XI: layer 114). The latter contained a lot of small debris and was characterized by a large amount of radiate copies, copper alloy fragments and charred cereals. It is this layer that marks the end of fort level 4. As can be seen on trench profiles 7.1 and 7.2, more to the west, which is at the base of the earthen rampart, a separate demolition layer does not occur, but the burnt sand level is here more compacted and mixed with demolition debris<sup>201</sup>.

<sup>195</sup> According to Mertens numerous fire and debris layers were attested all over the northern sector at the end of this fort level 'representing turbulent times reaching into the beginning of the 4th century' (Mertens 1987, 85; Mertens and Crabbé 1987, 16).

<sup>196</sup> This burnt sand level surrounded the well OS 22926 at its north side over an area of c. 17 by 10.5 m (identified as layer 111 on trench profile 2.2; Plate IX); after its abandonment the well was filled in with this burnt level. More to the west, an area of c. 10.0 by 5.0 m was equally covered by such a layer (trench profiles 7.1 and 7.2: layer 111; Plate XI). This level has also been recognized at the north side of trench profile 1.1 as layer 71 (Plate VII).

<sup>197</sup> See trench profile 2.2 layer 111 (Plate IX) and trench profile 1.1 layer 71 (Plate VII).

<sup>198</sup> With an average thickness of c. 20 to 30 cm, a volume of almost 200 to more than 280 m<sup>3</sup> can be calculated for its preserved state.

<sup>199</sup> Confirmed by dr. R. Langohr.

<sup>200</sup> Resembling the heated soil underneath a hearth.

<sup>201</sup> Cf. Volume II, Appendix, Section 5.5: key context OS 7957/7971.





Figure 71. Overview map with the localization of the south-west corner site, the contours of the stone fort and the features of fort level 5.

Two elements support the idea that the fire at the end of fort level 4 was very heavy and very significant for the evolution of the fort: the character of the burnt finds and the amount of metal finds at this level. Several pottery sherds recovered from the fire layers (not only near the hearths) show traces of a long exposure to the fire. The degree and duration of the fire was that high that the texture of the fabric and the form of several ceramic sherds changed, resembling the pottery remains found as cremation grave goods. Moreover, the presence of several secondary molten glass items at this level is signifying evidence for a fierce enduring fire (see Volume II, Chapter 6, Section 6, study by P. Cosyns). A fire in a fire-risk area

such as the workshops would normally be quickly extinguished by the army unit as such events would be anticipated and prepared for. In this case the fire seems to have been raging on. It is mainly the second argument, namely the presence of the huge amount of metal finds found scattered over this level and left behind, that is very significant. In a region where the resources for iron and bronze are not at hand, metal was a precious material, commonly reworked. The huge amount of iron and bronze finds abandoned and not recovered later on may indicate that the army unit was caught by surprise by invaders who were responsible for the fire. Moreover, within the well OS 22926, the transition between the waste fillings

and the burnt sand level comprised an enormous iron anvil (cat. no. IR.C01: Plate CCLX). This anvil of the block type, weighing 63.0 kg, represented a major investment of iron, not only in terms of the amount of material and its value but also in terms of work by the smith<sup>202</sup>. Its find location in the well at the top of the waste fillings implies that this object was not discarded in a 'concealing' activity or as a votive or 'termination rite' deposit. It is more likely that the anvil was thrown into the abandoned well since it was too heavy to transport quickly and to avoid the wrong hands getting hold of such a large block of iron which represented a very high value.

The already mentioned presence of fire layers in the northern part of the fort uncovered during the 1977 campaign and, based on the data of Mertens, also related to the end of this fort level 4, seem to indicate that the fire was a large-scale, general phenomenon at least over a large part of the Oudenburg fort. The fact that the fire layers were covered at the south-west corner site – as could also be evidenced in the northern sector – by a large level of, specifically for this purpose foreseen, clean sand in which the burning process still went on, implies that the army unit could throw the sand on the burnt surface during the fire or at least shortly after the fire ended. Should this be interpreted as an attempt by the army unit to 'save' the fort? Anyhow, this level was immediately followed by a demolition level. In combination with the evidence that the fire affected large parts of the fort and with the conclusions from the iron finds – especially from the thrown away anvil – it seems most likely that an invasion, which caused the fire, eventually, despite the presumed 'rescue attempt', led to the abandonment of the fort.

#### II.4.7. Fort level 5: baths, and eventually animal compounds, at the southwestern corner

##### II.4.7.1. The renewed stone fort defence

With the reactivation of the fort, the structure of the defensive wall with round gate towers and round corner towers was maintained, but at the north side the stone wall was refaced and reinforced with projecting intermediate bastions (Figure 71) (cf. Section II.3.5). The defensive ditch system may have been partly re-dug as the research at the north-east corner site (site Jacali (ET17)) confirmed that there was a doubling of the inner defensive ditch at some point (Figure 25). An intertidal landscape seems to have closed in on the north side of the fort as a consequence of the increasing marine influence in the 4th century. The army presumably took advantage of the situation; it is very likely that the course of the nearby natural waterway was channelled to reach the fort. At the south-west corner site a transverse gully to the west of the defensive wall most likely belonged to this level (cf. Plate CDLIV). It was flanked by two posts presumably of the same period (maybe to hold a wooden gutter?) and probably served the draining of the stone wall to the ditch.

The earthen rampart at the inside of the defensive wall was narrowed (max 7.6 m), extending to c. 11.2 m to the south due to the vicinity of the south-west corner tower. Some postholes mark the base of the rampart (a), possibly the last remains of a wooden rampart structure.

##### II.4.7.2. A bath house at the south-west corner of the fort (fort level 5A)

The fort interior was levelled and raised before it was rebuilt (Plate XXVIII<sup>203</sup>). At the south-west corner site the making-up of the area was partly done by the accumulation of a yellow almost sterile sand level: a large area along the base of the western earthen rampart<sup>204</sup> and the burnt debris of workshop Unit IV<sup>205</sup> were clearly covered by it.

In the renewed *castellum* of fort period 5 the south-west corner was dominated by a stone building, situated along a metallised *intervallum* road (f), which was eventually cut by a large basin (q). Long fences (g, h, l, m, n), a simple timber building (perpendicular to the earthen rampart) and a 'double well' (OS 2562) are also attributed to this fort level 5 (Plate XXVIII).

Two main elements point to the identification of the building as a bath house: the hypocaust floor (b) occurring in at least two adjacent spaces and the presence of a large *praefurnium* (c) (Figure 72). Due to the use of the site as a stone quarry during the Middle Ages, these were the only two *in situ* structures preserved: the remains of the hypocaust floor and at the north side two parallel walls with floor level in between and identified as a large part of the *praefurnium*. The main preserved part of the hypocaust floor extended over an area of at a maximum c. 7.8 m by 3.5 m wide, but a preserved strip at the north-east side and one at the south-west corner indicate that the building was at a minimum 6.8 m wide. All walls and outer parts of the building, the original floor level as well as the hypocaust structure on top of the base floor were hacked out in later times. The preserved walls of the *praefurnium*, just outside the medieval excavation, were still standing over a maximum length of 1.65 with a preserved height up to 46 cm, and were built mainly out of *tegulae* and parts of *lateres*, some *imbrex* fragments and some Tournai limestone blocks with clay as fixation element. These walls, with the eastern one sunken in 20 cm deeper due to subsidence, form a channel 1.95 m wide (outside measurement) with a passage width of 0.9 m; the channel was originally probably not much longer (cf. Plate CDXC). While the north ends of the walls come to a clear terminal point, the floor level continued to the south towards the hypocaust floor. The exterior of the walls showed a clean facing, the interior was not so well-cared for and was clearly burnt. The thick compact loamy sand floor level in-between the walls, on top of a level of mortar and building material fragments here and there, was severely burnt and hardened by the use of the fire channel.

202 Dr. P. Degryse examined the piece and concluded that this anvil, containing such a huge amount of iron, has been the product of a labour-intensive process of compaction.

203 All letters and numbers in the following section indicating features or structures, refer to this plate.

204 See trench profile 7.1 and 7.2: layer 126 (Plate XI).

205 See trench profile 2.2: layer 41 (Plate IX, south side of the trench profile). On top of Unit IV this layer was significantly thicker.





a



b



c



d



e



f



Figure 72 (previous page). The preserved remains of the fort level 5 bath house. a: the remains of the hypocaust floor of level 5 with, in the background at the right side, the still partly buried *praefurnium*: view to the north-west; b: the preserved hypocaust floor, with the draught-board pattern of the square bases of the *pilae* and the remains of a transverse wall: view to the east; c: detail of the hypocaust floor with the remains of the transverse wall: view to the north; d: the remains of the *praefurnium*: view to the north/north-west. e: view on the hypocaust floor with the foundation of mortar and stones underneath, after removing the medieval robber trench at the north side; f: detail onto the hypocaust floor (in section) shown to be completely based on a mortar-stone platform: view to the east.

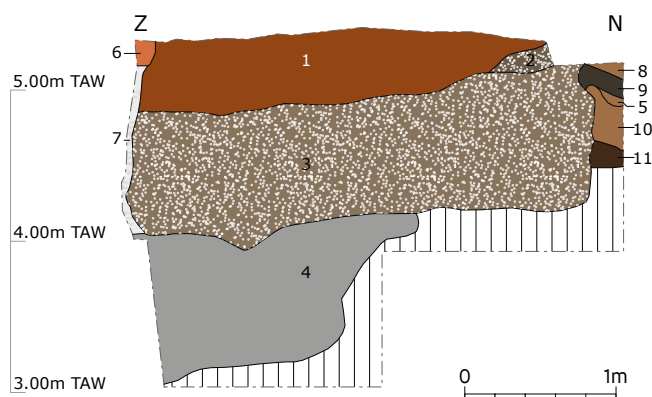


Figure 73. South-north section on the robber trench bordering the hypocaust level of the bath house. 1: homogeneous dark brown to grey clayish sand, so-called 'dark earth'; 2 and 3: debris layer full of crushed mortar (white and hydraulic) and shattered ceramic building material, clearly demolition debris of the bath house; 4: greyish sand, infill of a structure extending further down underneath the foundation of the hypocaust floor; 5, 8, 9, 10: infills of pit OS 80925 of fort level 3; 6: hypocaust floor; 7: foundation consisting of mortar and stones; 11: cultivated soil pre-dating the first fort level.

The hypocaust floor in *opus signinum* technique with an average thickness of 10 cm (in places up to 18 cm) still shows the draught-board pattern of the square bases of the *pilae* (18-19 x 18-21 cm) (Figure 72). The bottom remains of a transverse wall were preserved as well. The wall had openings, so the hot air could circulate to the next space. Based on the contours of the medieval extraction trenches, the layout of the bath house can be hypothetically reconstructed; a linear design (the so-called 'row'-type) can be suggested with a maximum width of c. 6.5 to 8.5 m and a minimal length of c. 16 m, presumably still extending to the east outside the excavation area. According to the study by Nielsen, this bath house can be classified as a rather small military bath (see Nielsen 1993, 77). The small, simplified version of the bath house, however without fixed layout, seems to be the norm for late Roman fort baths in the Channel region<sup>206</sup>, often displaying only a *caldarium* and a *frigidarium*. At Oudenburg, the presence of a *tepidarium* seems certain. Although it is unknown how the bath house

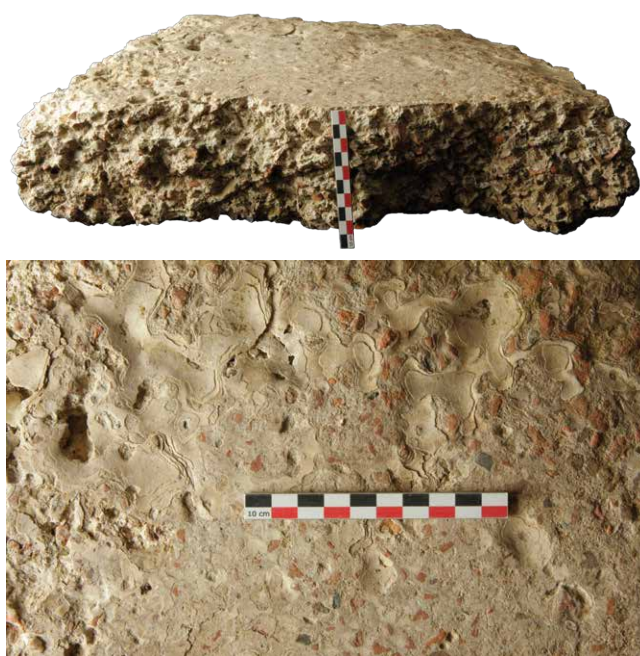


Figure 74. Large floor block in *opus signinum* collected from the demolition layers of the bath house. Below: detail of the surface. The calcareous sediment covering the floor indicates that this floor was in direct contact with water; this fragment may have originated from the bottom of the bath itself.

extended further outside the excavation area, it is possible to situate the *caldarium*, *tepidarium* and *frigidarium* based on the location of the fire channel and the central partition of the preserved part of the floor, with the *caldarium* connected to the fire channel.

The fact that the bath house did not have a lowered hypocaust system seems to be related to the heavy foundation on which the building was standing. Exploring the surrounding robber trenches in depth brought to light the fact that the bath house was built on top of a very solid, enormous foundation platform more than 1 m thick, consisting of Tournai limestone fragments and mortar<sup>207</sup> (Figure 72: e, f). While the defensive wall was built immediately on top of the sandy soil, without extra foundations, the bath building apparently needed major stability measures. One of the sections on the robber trench at the north side showed the start of a deep structure extending further down underneath the foundation (Figure 73: 4). It is likely that the area was too 'damaged' by earlier substantial digging activity, which made it necessary to take such

<sup>206</sup> Cf. Reculver: 12 x 7 m; Richborough: 11 x 7 m; Lympne: 15 x 9 m (Philp 2005, 222).

<sup>207</sup> Since all sides of the hypocaust floor were investigated and this foundation was uncovered along the whole perimeter, it can be concluded that the entire hypocaust floor was based on this level.



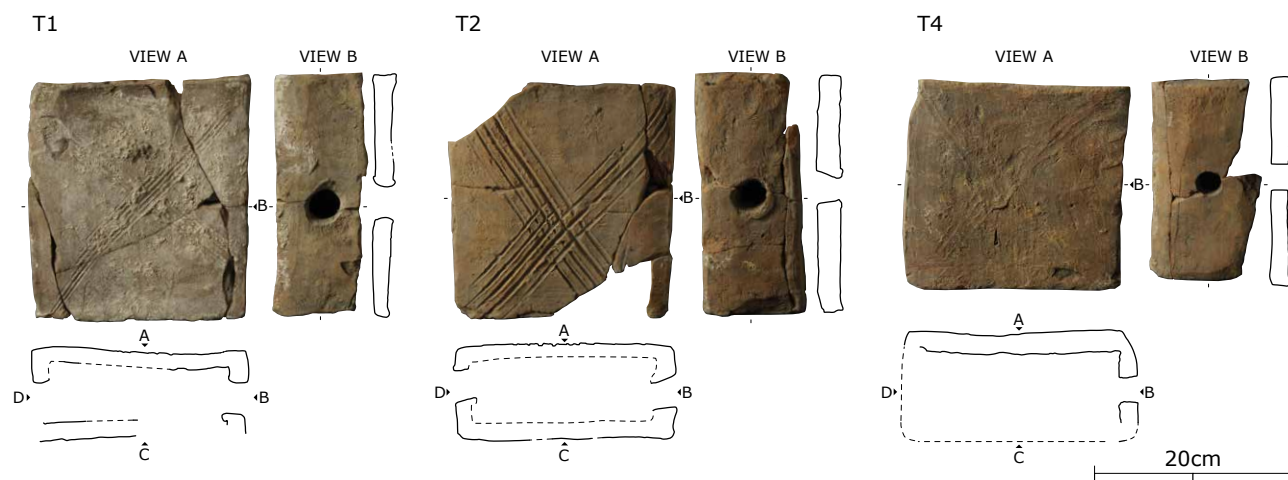


Figure 75. Three of the *tubuli* recovered from the post-Roman level in connection to the robber trenches of the bath house and most likely originating from this building. They demonstrate different sizes and scoring or combing patterns to give the superimposed plaster a better grip.



Figure 76. a: square *lateres*, presumably originating from the hypocaust of the bath house and reused in a medieval hearth uncovered in the dark earth level at the south-west corner site (see Plate XII: C). b: round later left in the demolition layers of the bath house and imprint of a round later on the backside of a *tegula*. c and d: 4th-century *tegulae* reused in a presumed late Carolingian hearth (c) uncovered in the dark earth level at the south-west corner site, near the location of the earlier bath house (see Plate XII: F).



Figure 77. Sculpted corner block in volcanic tuff, probably the base of a pillar and most likely originating from the bath house.



Figure 78 (below). Calc-sinter fragments collected from the demolition layers of the bath house. Top left: presumed plinth, with to the right: side view on the presumed plinth on top of hydraulic mortar; top right: two flat calc-sinter plate fragments on top of hydraulic mortar; bottom: several calc-sinter fragments retrieved from the demolition layers of the bath house (with one inner corner fragment to the left).

labour-intensive measures by establishing a very solid support to build the bath building on top to prevent risks to the stability<sup>208</sup>.

The bath house had been thoroughly demolished: all the walls and floors have been removed during the Middle Ages. Investigation of the robber trenches, containing high medieval ceramics, sets the last demolition phase in the 11th-12th centuries. Since the medieval robber trenches reached the bottom of the foundation and never went deeper, it seems obvious that this digging aimed for the recovery of building material.

Not much is left of the bath house, but building material collected from the demolition trenches and from demolition and debris layers, do give a fragmentary idea of the bath house architecture: *tubuli* from the wall heating system, *lateres* from the hypocaust structure, *tegulae*, plaster fragments with hydraulic mortar and with the remains of painting, calcareous sediments of the baths themselves with attached hydraulic mortar, fragments of *opus signinum* (Figure 74).

A contextual analysis of the *tubuli* (or box-tiles) recovered from fort level 5 demonstrates that they all belong to find contexts of fort level 5B, dated later than the bath house. Hence, it is likely that they represent the demolition of that building; at the same time it confirms our assumption that the baths were no longer in use during fort period 5B (see further). Also of the large amount of *tubuli* found in the post-Roman levels, especially at the transition at the top of the Roman level, it can be assumed they have belonged to the baths, in particular since many of them are large fragments to complete examples (Figure 75). The different sizes shown by the measurable

<sup>208</sup> Unfortunately, there was no possibility to investigate the situation underneath the hypocaust floor. At the end of the excavation campaign, plans were made by the City of Oudenburg to integrate the *in situ* substantial remains of the bath house floor into the newly built supermarket in a subterranean construction; therefore the hypocaust floor was left intact. These plans however never came to execution.





Figure 79. Left: three 'marble' fragments of panels or decorative plates which can be attributed to the inner decoration of the bath house: 1. Greek green porphyry; 2. Greek *cipollino verde*; 3. so-called 'Belgian red marble'. Right: the marble *Venus pudica* statuette.

*tubuli* probably point to their use in different walls of the bath house, and most likely different spaces. Or they may indicate that profound renovations took place at some point during the life of the baths; renovations can also be deduced from the succession of plaster layers (see further). Many *tubuli* fragments show mortar remains, evidence that they belonged to the walls of the hypocausted rooms.

*Lateres* from demolition layers and later levels – some of them were reused in medieval hearths (cf. Figure 76: a) – possibly all originate from the hypocaust construction. Different sizes were recognized, but mainly the small size of 20 by 20 cm was present at the site; these *lateres* were likely the main elements of the hypocaust *pilae* (see also Volume II, Chapter 9). The presence of one round *later* in the CBM assemblage testifies of a renovation of the hypocaust structure or of a mixed use of square and round tiles (Figure 76: b) (see Degbomont 1984, 99-101 for the several known types of combinations). A *tegula* from a later level showing the burnt negative mark of a round *later* confirms this (Figure 76: b); this specimen apparently served as the basis for one of the hypocaust *pilae*.

*Tegulae* from the bath house roof, typically smaller 4th-century roof tiles (see e.g. Ward 1999, 14), were probably the ones found recuperated in a presumed late Carolingian fireplace (Figure 76: c, d).

Several large, rectangular shaped volcanic tuff blocks, often with mortar remains, were recovered from the later fillings of the robber trenches of the bath house. One can assume that the walls of the bath house were constructed with such blocks. Still, as it is evidenced that such volcanic tuff blocks were already in use as building material in fort levels 3 and 4, an interpretation as it concerns dug-up material from these earlier levels, would not be unlogic. However, the find of a sculpted, corner piece of an architectural element in volcanic tuff,

right on top of the preserved hypocaust floor is an 'argument pro' for a construction of the bath house, whether or not completely, with volcanic tuff (Figure 77). The corner fragment possibly represents the base of a pillar. A decisive argument is offered to us by the 11th-century *Tractatus de Ecclesia Sancti Petri Aldenburgensis* in which a clergyman describes the ruins from the Oudenburg fort. He mentions that '*the inner buildings were constructed in a light stone, not too hard, from the region of Cologne*'<sup>209</sup> (Meijns 1994). This description can easily be connected with the volcanic tuff from the Eifel. One can assume from the text that much of the inner building of fort period 5A was constructed with this volcanic tuff.

The laminated calcareous sediments – so-called calcareous sinter or calc-sinter<sup>210</sup> (cf. Grewe 1991) – recovered from demolition layers, are assigned to the baths based on the attachment of hydraulic mortar and on their shape. One fragment shows a corner piece, another represents a kind of a plinth (Figure 78). Calc-sinter originates from the sedimentation of calcareous water. Since this sedimentation took place in the baths themselves, which furthermore points to a long use, and since calcareous water is not at hand naturally on the site, it can be assumed that water was supplied from calcareous tertiary soils. The presence of glauconite in the calc-sinter of Oudenburg and a study of the soil maps of the region by R. Dreesen seem to point to a supply from Torhout, to the south of Oudenburg, where iron, chalk and glauconite are present in the

209 Translated into English from the Dutch translation by Meijns (1994).

210 The high proportion of chalk is confirmed by dr. R. Dreesen and through testing with HCL.



Figure 80. The remains of the road level of fort level 5 at the south side of trench T8, partly broken out and partly covering the remains of a burnt workshop of fort level 4 in the background. The photo to the right (in different weather conditions) shows the alignment of the road level as shown on the field. Views to the south-east.

Lede Formation and the Paniselien<sup>211</sup>. This would imply that water was supplied to the 4th-century fort by an aqueduct<sup>212</sup>.

The bath house interior was furnished with wall paintings. The plaster fragments that can be related to the bath house reveal two layers, demonstrating two different mortars, and with varying painting patterns (however impossible to identify), pointing to a renovation of the interior of the bath house. There is also evidence for marble decoration in the interior. Three fragments of panels or decorative plates were recovered on top of the Roman level, close to the bath house, amongst other demolition debris from the baths. The fragments show three different ‘marbles’: green porphyry originating from Greece (Figure 79: 1), *cipollino verde* from Euboia (Central Greece) (Figure 79: 2) and so-called ‘Belgian red marble’ known between Samber and Meuse (East of Belgium) (Figure 79: 3)<sup>213</sup>. The marble *Venus pudica* statuette, found to the north of the bath house in a later pit of fort level 5B, most likely adorned a niche in the baths (Figure 79: right). All these elements point to the richly decorated interior the baths must have had.

Moreover, to the activities in the baths some ointment palettes can be related (cf. Volume II, Chapter 10, Section 5.2). Two remarkable pieces were found in and on top of the demolition layers of the bath house. They are both made in porphyry, one in *porfido nero antico*, one in *porfido rosso antico*. This material originates from the *Montes porphyrites* in Egypt (cf. Corsi Collection 2016). Blocks of these stones were shipped to Rome, where it was used in e.g. *opus sectile*. Leftovers were processed into small items, such as ointment palettes, and further distributed<sup>214</sup>. Two fragments of other ointment

palettes, both made in Tournai limestone, found at the same level elsewhere at the south-west corner site, may possibly be related as well to the activities in the baths (cf. Volume II, Chapter 10, Section 5.2).

The stratified evidence shows that the demolition or final demolition of the bath house took place after the so-called dark earth had covered the Roman site (cf. trench profile 2.7: Plate VIII; cf. Appendix 4). Obviously, the ruins were still visible at that time, sticking out above the dark earth accumulation. As already mentioned, at least the final phase of demolition took place in the 11th – 12th centuries. Since the ruins of the bath complex were presumably still visible until the High Middle Ages allowing medieval diggers to recover building material, this bath building was obviously still (partly?) standing until the end of the fort occupation at Oudenburg.

Since the hypocaust floor is situated on the same level as the floor of the *praeurnium* and of the surrounding soil features, the actual baths were positioned on a raised level<sup>215</sup> accessible by stairs. The difference in altitude was limited to the building itself, considering the preserved construction slots to the west of the hypocaust floor. The curving feature (d), preserved to a maximum depth of 13 cm, most likely represents the last remains of a drainage gully. The narrow trench extends to the south of the bath house where similar shallow features (e) occurred. Since they were covered by the remains of the metallised *intervallum* road (f), they must have been underground gullies, possibly for draining, related to the construction phase of the bath house.

A north-south construction slot and a west-eastern one to the west of the hypocaust floor are related to the bath house, based on their position and orientation. The north-south slot (g) was only preserved to a very shallow extent to a maximum depth of 14 cm; the sections of the west-east construction (h), preserved

211 Pers. comm. dr. R. Dreesen.

212 With thanks to dr. R. Dreesen and dr. W. De Clercq for their input on this subject. Thin section analysis, organized by dr. R. Dreesen, on samples of the calc-sinter is on-going and will enable to retrieve answers concerning the origin of the supplied water.

213 Identification by dr. R. Dreesen.

214 Identification and pers. comm. dr. P. Degryse.

215 This can be deduced since the hypocaust floor is the floor of an underground heated room.



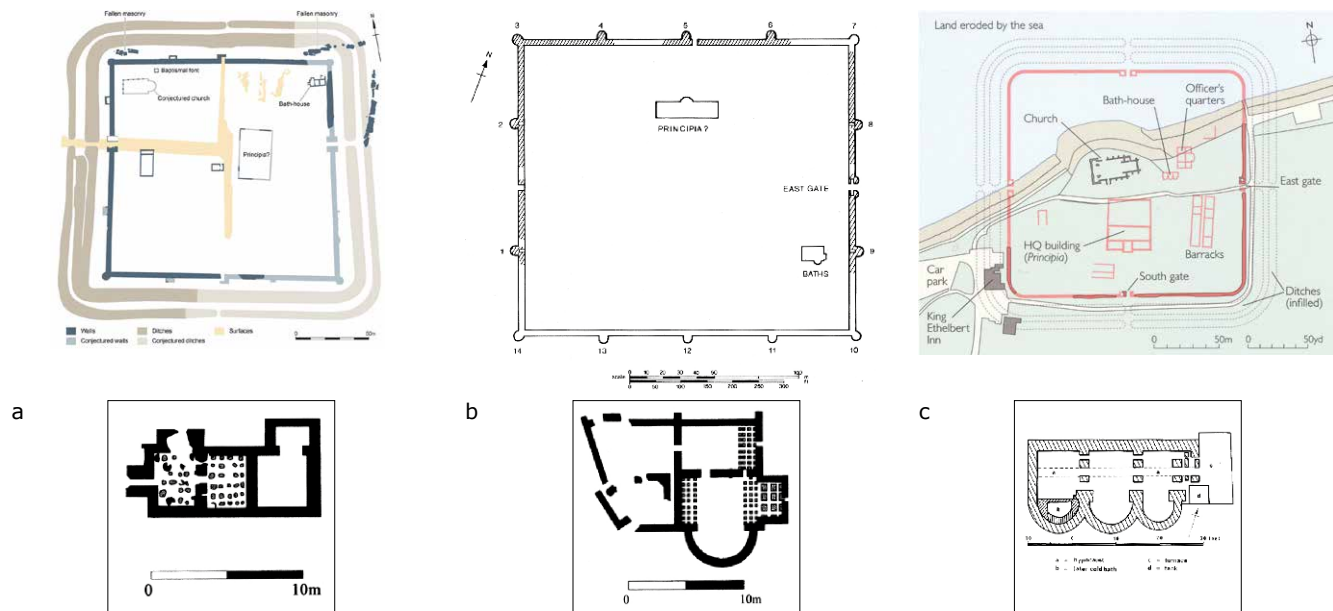


Figure 81. Bath houses at the British Shore forts: their location on the fort precinct and their ground plan (below). a: Richborough (general plan: taken from Wilmott and Smither 2020, 172: Fig. 19; below: detail taken from Pearson 2002b, 143: Fig. 67); b: Lympne (general plan taken from Cunliffe 1980 (however, another circuit configuration has been proposed since, as an irregular pentagon, based on geotechnical research (Hutchinson *et al.* 1985; cf. already Johnson (1976, 54: Fig. 33); cf. Pearson 2002b, 32, 33: Fig. 19)); detail taken from Pearson 2002b, 143: Fig. 67); c: Reculver (general plan taken from Wilmott 2012; detail taken from Philp 1966).

up to a maximum of 48 cm deep, indicate original beams were dug away for reuse (Plate CDXCI). The absence of clear postholes to arch over the space and the location away from the *frigidarium* make an identification as the walls of a wooden *apoditerium* not plausible. It is more likely that these fences closed off a garden or small exercise court. The construction slots uncovered in the north-west of the excavation area (i) display the exact same orientation as these presumed fences to the west of the bath house. The remains of the north-west structure, extending further north of the excavation area, are however too limited to identify the structure (cf. Plate CDXCII).

Covering the presumed drainage gullies, a well-defined hardened level, a strip *c.* 6 m wide, here and there dug away, was uncovered, consisting mainly of building and other debris (resulting in a lot of residual material), such as Tournai limestone fragments, boulders, fieldstone pieces, ceramic building fragments, quern pieces and animal bones (f) (Figure 80). This road level was sectioned by trench profile 4.9; there, a layer of small fieldstone fragments *in situ* (Plate X: layer 145a; at the south side of the profile, and see detail to the right) indicates that the strip uncovered in trench T8 is the last remains of a partly broken out *intervallum* road with metalling. This *via sagularis* bordered the bath house and was situated in-between the latter and the earthen rampart. Such a poor road pavement quality seems to have been a trend in late Roman forts, as this has been recognized by Collins as a typical characteristic for the 4th- and 5th-century forts at Hadrian's Wall (cf. Collins 2012, 76).

A mortar and loam gravel level (j), locally preserved to the west and north-west of the bath building and bordering the construction slot

of the north-south fence (g), is probably the remnant of the original running surface contemporary with the bath complex.

#### II.4.7.3. The bath house in late Roman forts

From the Flavian period onwards, bathing appears to have become an essential part of the military daily life (Haynes 2013, 171-174). While at mid-Roman forts the bath house is in most cases situated *extra muros*, the presence of an intramural bath house is not an exceptional phenomenon for the late(r) Roman period. Baths were a standard feature at fortresses, from the time that military bases were built in stone, this is after mid-1st century AD. At auxiliary forts or *castella* however, baths appear only from the later 1st century AD onwards but remain rare *intra muros* (Bidwell 1997, 78; 2009; Reddé 2006b, 123). According to Bidwell this difference between fortresses and forts was related to the changing cultural background of the auxiliaries. In the earlier 1st century these men were recruited or pressed into service from newly conquered people. Only later generations were totally accustomed to a Roman style of living with bathing as essential part of daily routine. By the time that bath houses were introduced for auxiliaries, the plans of these forts were already standardized, with no space left for the bath building, resulting according to Bidwell in an allotment outside the fort walls (Bidwell 1997, 79). Although not much can be said about the chronology of the presumed bath house found underneath the graves of the late Roman Graveyard A *c.* 400 m to the west of the Oudenburg fort (Figure 14), it supposedly served as military baths for the units of the late 2nd- and/or 3rd-century fort (see Chapter I, Section I.4.2).



a



b



c



d



e



f

Figure 82. The 'double well' OS 2562 of fort level 5 during excavation: a. the top of the preserved wooden frameworks, view to the north-east/east; b. the outer framework partly exposed, view to the north/north-east; c. the outer framework partly dismantled, view to the north/north-east on the upper part of the inner framework, spread with clay; d. the lower part of the outer framework and the top of the inner framework, view to the north-east/east; e. the wooden frame on the bottom of the double well after dismantling the west side of the outer framework, view to the north-east/east; f. the exposed inner framework after dismantling the west side of the wooden frame, view to the north-east/east.





Figure 83. North-south section of the 'double well', view to the north-east.

Unlike in the High Empire, the bath accommodations of the late Roman period were often erected inside the fort walls. Welsby related this to the generating of more space within the fort's walls as a result of the reduction of garrison size (Welsby 1982, 25). The late Roman Saxon Shore forts in southern Britain, the counterparts of the 4th-century fort at Oudenburg, witness, when evidence is at hand, of a bath house *intra muros* (Figure 81). The forts of Richborough, Lympne and Reculver equally yielded small bath suites within the fort perimeter (see e.g. Bushe-Fox 1933, 26; Cunliffe 1968; 1980, 257; Maxfield 1989, 139, 144, 154; Pearson 2002b, 141, 143, 145; Wilmott 2012, 15, 20-23). At Portchester little is known of the interior building but *tegulae*, *imbrices*, as well as hypocaust and box flue tiles were present in significant quantities, suggesting not only structures with tiled roofs, but at least one which had a heating system (Cunliffe 1975, 71-72). At Dover, the

2nd-century bath house, built outside the *Classis Britannica* fort, was reused within the Saxon Shore fort (Pearson 2002b, 146). Also in Gaul, examples are known of late Roman forts with a bath house within the fort walls, like at Haus Bürgel (G), Zurzach (CH), Liberchies II (B) and Furfooz (B) (Brulet 2006d, 179)<sup>216</sup>.

#### II.4.7.4. The 'double' well (OS 2562): insights into the further chronology of fort level 5

The so-called 'double', two-phased wooden well of fort level 5 (k), excavated in the north of the excavation area of the south-west corner site, is the key context for this period and provides insight into the

<sup>216</sup> These military baths all show a reduced version in design.

chronology of the features<sup>217</sup> (Figures 82-83; Plates XLIV-XLV). A construction shaft with an average diameter of *c.* 5.5 m contained a well with a double framework, perfectly preserved up to a height of 1.7 m. The outer well structure consisted of a framework of *c.* 3 by 3 m, surrounding an inner well measuring *c.* 1.4 m on each of its four sides. Dendrochronological dating of the beams from the outer framework yielded a felling date of *c.* AD 266<sup>218</sup>; however, these timbers with intentionally made holes, with a regular inner spacing, were clearly reused construction beams and must have belonged originally to earlier structures. At the internal base of the outer framework, a wooden frame was laid as a construction element in the building process or for clearing out the pit during its use (Plates XLIV-XLV; Figure 82: e). The felling date of the boards of this frame could be dendrochronologically dated between AD 319 and 329. The felling date of AD 379-380 for boards of the inner framework sets a *terminus post quem* for the construction of the inner well and testifies to the renewed use of this water structure. It also establishes the commencement of the very last occupation phase of the Oudenburg fort. The dendrochronological analyses prove that this is a reactivated well. The dimensions of the original outer structure suggest that it was not only a well but also a tank for rain water. It functioned in the second quarter of the 4th century and possibly later. At some point the structure was renewed with the construction of an inner well in/ after AD 379-380 (cf. Vanhoutte *et al.* 2009a; 2009b).

The lowest part of the space between both wooden frameworks revealed a sequence of pure clay, sand and moss layers, with the well-preserved layers of moss fastened in between the joints of the boards of the inner well (Plate XLIV). Clearly this sequence was intentionally laid. Underneath this sequence an organic layer may have been the original filling of the outer well. At the bottom of the inner well, only a silty layer approximately 5 cm thick can be associated with its actual use, indicating that the well was carefully maintained. A skull of a brown bear was found at the bottom of the well (see also Vanhoutte and Ervynck 2011). Together with other peculiar finds such as a human femur and skeletons or parts of two non-consumed pigs, two dogs, a juvenile roe, a sheep and a cat, besides isolated skull material, this find quite possibly represents a ritual deposition associated with the abandonment of the well (cf. Clarke 1997; 2000). The well was then filled with a refuse layer characterized by a large number of animal bones, leather shoes, wood fragments and shells, illustrating its employment as a rubbish pit after the abandonment of the well. Immediately after this, a large amount of bone was dumped in the well and the well was later covered by debris layers full of stone and mortar fragments (cf. Vanhoutte *et al.* 2009b).

The thick clay level on the bottom of the shaft between both frameworks and the clay on the outside of the inner well indicate that water coming from the sides had to be stopped, although the well itself was open at the bottom. The use of moss must have had a specific function in the construction that seems to be linked with a filtering system. The mineralogical analysis of yellow crusts on the clay from the shaft in between both frameworks suggests this

as well<sup>219</sup>. The attested yarosite mineral deposit on the clay could only come into existence by an abundance of iron and sulphur, known indicators for mining or metalworking activities. Since the preceding fort level testified of a very active metalworking at the workshops in that period, it is likely that this has had a significant influence on the ground water quality. It appears that this negative effect was acknowledged by the army unit in the 4th century. The specific sequence of alternating sand, clay and moss layers must have served as a filter to improve the quality of the water – rain water that was influenced by the occupation layers – that infiltrated the pit from the sides. The water coming from underneath was accepted as being clear and drinkable or suitable for the activities in this part of the fort (cf. Vanhoutte *et al.* 2009b).

From the study of the seeds<sup>220</sup>, the pollen<sup>221</sup> and the animal bones<sup>222</sup>, it is clear that the sediments which filled up the well after its abandonment came from heavily polluted areas, ranging from organic material enriched surfaces to fresh heaps of rubbish, dung and garbage on which nitrophilous pioneer and ruderal plant species grew. Within the rubbish deposits, black rat, house mouse, black vulture and raven remains were present: animals living on offal and carrion. The results of the scientific research suggest that after AD 379/380 this area was occupied by animals grazing outside the fort or fed with hay from outside the fort, and stabled in this fort area.

#### II.4.7.5. The end of the Oudenburg bath house: animals on compounds take over the south-west corner (fort level 5B)

The conclusions drawn from the scientific research from the double well are not compatible with the vicinity of a bath house<sup>223</sup>. Apparently, the bath house went out of use before this very last fort occupation. Some structures near the bath house like the long construction slots (l, m) and the almost adjacent simple timber building (o) seem to confirm that they cannot have been contemporaneous with an active bath house. Since the ruins of the baths were still visible until the High Middle Ages allowing medieval stone quarries to recover building material, this bath building apparently was not cleared and was just left in disuse. Theoretically, it cannot of course be ruled out that in the latest fort phase the bath house was relocated to another place in the fort. However, it is very likely that the functionality offered by the baths was no longer valid in the late 4th century. Other examples are known of military bath houses in Gaul which went out of use after the middle of the 4th century (see Brulet 2006d, 179)<sup>224</sup>.

219 Analysis by dr. P. Degryse.

220 Study by J. Bastiaens.

221 Study by dr. K. Deforce.

222 Study by dr. A. Ervynck and dr. A. Lentacker.

223 The following ideas have been presented to a limited extent in Vanhoutte 2015.

224 See for example the late Roman *castellum* of Haus Bürgel (G), ending around AD 400. The bath house, situated against the inner side of the defensive wall, was reused as a residential unit in the last occupation phase (see Fischer 2006, 336). The bath house at the exterior of the small hill-fort at Furfooz (B), dated to the end of the 3rd century – AD 350, was abandoned and reused from AD 380 onwards as graveyard precinct by the new unit, a small community with Germanic characteristics (Brulet 1995, 117; Brulet 2006c; 2006d).

217 This double well has been published in detail (Vanhoutte *et al.* 2009b). For further details we refer to this publication.

218 Dendrochronological research by dr. K. Haneca.





Figure 84. Top: the large basin OS 4923 with the preserved wooden framework; view to the south-east. Bottom left: beams found scattered in the infill of the large basin; view on the northern half within the framework. Bottom right: the basin after clearing out the filling of the framework; view to the south/south-west.

Long construction slots north of the bath house, displaying a beam-trench technique although here and there disturbed by later digging, are believed to represent fences. The south-north construction slot (l) starting at only 0.5 m from the north-west end of the *prae-furnium*, leaving just enough space for a man to pass through (cf. Plate CDXCIV), could be followed 11.7 m to the north but ran further outside the excavation area. Its trace makes a perfect right angle with the west-east construction in the north (m), which could be followed over 10.1 m, 12.3 m when the distance to the supposed angle with the north-south construction slot is added

(cf. Plate CDXCV). The south-west construction slot runs further east, but cannot be recognized in trench profile 1.1, assuming the fence had stopped or had made an angle, most probably to the north. These long fences seem to have been constructed to divide the area into yards. The curved construction slot (n) to the north of the northern west-east fence and which was connected to the latter may have served to corral animals (cf. Plate CDXCV).

A timber-framed construction with simple plan (o) came to light transversally positioned to the base of the earthen rampart. The

structure was *c.* 11.8 by 5.5 m wide (outside measurements) with a presumed entrance at the east side. Although the sections show irregular, deep trenches (up to 50 cm deep), these held construction beams, possibly reinforced by some posts, but here and there the sections seem to have been disturbed probably for the reuse of the beams (cf. Plate CDXCIII). The structure cut the mortar and loam gravel layer recognized as the occupation surface contemporary with the bath house level. The western construction slot which was sectioned by trench profile 7.1 (feature 129; Plate XI) demonstrates that here and there the area was raised for the new arrangement of the precinct. In that way we could speak of a fort level 6 rather than 5B. However, since the initial bath building apparently still had some kind of other function within this fort area and the defence system did not change, it is chosen to assign this level as fort level 5B.

As for the rectangular timber-framed structure, the long rectangular plan can be recognized as a stable, although it is only right to mention that many buildings at a fort could display such simple plan, like storerooms, sheds, workshops and even as a part of a barrack building. The entrance on the short side and obviously the conclusions drawn from the scientific analyses from the fillings of the inner structure of the double well, rather point to an identification here as a stable. The dimensions of the Oudenburg stable can be compared with those of the five separate stables found at the *castellum* at Halton Chesters along Hadrian's Wall, dated to the early 3rd century, where a central drainage gully proves that the animals stood in two rows (see Johnson 1987, 200: Abb. 134). Two similar but much longer and broader buildings with such basic plan were for example found at the *castellum* of Niederbieber where they were interpreted as stables for horses (Johnson 1987, 200 and Abb. 134). No clear indications identify which animals were held in this area of the Oudenburg fort; they were most likely horses or pack animals (see further).

Due to the thorough medieval clearing of the floor level of the bath house, there are no indications left to know for what purpose the bath house was reused or what its new function was; the dark earth covered the hypocaust floor almost directly. The shallow gully (p) (max. preserved depth: 24 cm) starting at the northern end of the *praeefurnium* and running to the east was probably related to the later function of the bath building during the very last fort occupation and may have served as drainage gully (cf. Plate CDXCIV). It is possible that the original bath building was used as a stable or shed for the animals held in this area. The drainage gully may point in this direction (cf. Johnson 1987, 199).

A large basin (q) (OS 4923) bordered the southern earthen rampart. A construction pit with a diameter of *c.* 8.5 to 9.0 m revealed a wooden framework 4.8 by 4.6 m wide (Plate XLVI; Figure 84). The round construction pit was largely filled in with sand and sand turves; only the top filling of the construction pit was mixed with small-sized debris. The framework was made of large beams in one piece overlapping the total length of a side. They were more or less rectangularly shaped, with no signs of reuse, and with a simple cut-out L-shaped end to click into the connected beam with which it made an angle. Only the bottom 1 m (or five rows of beams, here and there with the remains of a

sixth one) was preserved of the wooden structure, originally 3 m deep based on the cut of the construction pit. The sections clearly show that at least the upper half of the beams were extracted after the structure was abandoned. Only a dark grey to black clayish bottom layer of at maximum 10 cm thick within the framework could be connected with the use of this water structure. The filling of 0.5 m on top of this bottom layer consisted of clayish debris layers alternating with a jumble of beams fallen in after the abandonment, or rather thrown in when part of the framework was extracted. These fillings were covered by debris layers full of crushed building material, on top of which the dark earth level levelled the depression. The building debris was clearly dumped into the pit, heaping up at the edges of the structure, covering the top of the construction pit. These layers rich in mortar (both white and hydraulic mortar), crushed ceramic building material, and containing fragments of calc-sinter, were identical to the layers found within the robber trenches of the bath house.

Dendrochronological research on the wood of the basin was unsuccessful leaving us in doubt about its precise installation date<sup>225</sup>. However, three late Argonne roller stamps – two examples of UC 64 and one UC 94 – recovered from the construction pit indicate that this structure was definitely not installed before the last quarter of the 4th century (cf. Volume II, Chapter 1.A.1, Section 11.6.2). A later date remains possible. Moreover, since the construction pit of the basin cuts away the *intervallum* road which apparently was no longer of use at some point and since also the north-south fence delimiting the area of the bath house was cut by the construction pit of the basin, it is also clear from the stratified evidence that its installation cannot be dated in the first phase of fort level 5. Assuming that the bath house was broken off after the fort was abandoned and not yet during the very last fort occupation phase (see before), the fact that the basin was filled in with the demolition debris of the bath house demonstrates that the pit was still open at the very end of the fort occupation. The basin therefore clearly served in the last fort phase within the new function – accommodating animals – of this area.

Similar reservoirs as the large basin uncovered at the south-west corner site were excavated in the earlier forts of Oberstimm (G) (Schönberger 1978, 35), Valkenburg (NL) and Wiesbaden (G) (see Schönberger 1979) and were all interpreted within the context of *fabricae*. Johnson, however, also mentions reservoirs in *castella* of the 1st and 2nd century intended for the collection of rainwater (Johnson 1987, 230). In the 3rd century AD such reservoirs occur as well, like for example at the *castellum* of Echzell on the inner court of the *principia*, dating to the beginning of the 3rd century AD (Baatz 2006b). It is very likely that the basin of Oudenburg had a function as water collector.

The use of this large water basin within the new function of accommodating animals seems to be confirmed by the pollen<sup>226</sup> found in the bottom layer of the basin. The arboreal pollen in the

225 After careful consideration, keeping in mind the costs involved, and a simulation by dr. K. Haneca, it was concluded that a radiocarbon dating would not help here because of the many wiggles in the graphs for this period.

226 Study by dr. K. Deforce.

three samples ranges between 19.9% and 29.0% with alder, common hazel and oak as dominant tree species, indicating that the landscape at and close to the fort was rather treeless. Within the non-arboreal pollen with percentages between 71.0% and 80.1%, the Poaceae (grasses) count for a quarter to more than a third of the total pollen. Also *Trifolium* type, Asteraceae liguliflorae, *Filipendula*, *Lotus* type and *Ranunculus* type are important in the pollen spectrum, all pointing to a grassland vegetation at and/or near the site. The rather high percentages of Chenopodiaceae (the so-called goosefoot family) can be explained by the nearby presence of the coastal plain or by human influence. One of the pollen samples shows a remarkable high presence of clover (*Trifolium* type) (21.1%), not only indicating that clover occurred on the fort precinct itself in the vicinity of the basin (Deforce 2004, 3-5) but presumably also that dung or hay was thrown in the basin during its final use<sup>227</sup>.

In the bottom fill of the basin a set of fine twigs of common hazel was found. The twigs were all very straight, revealed no distortions which would point to a use for wickerwork, and were more or less of the same length and diameter (Deforce 2004, 3-4). The significance or function of this set of twigs is not clear but may be related to the accommodation of the animals. Maybe it was part of a thatched roof of the stable or another shed?

The results of the scientific research of the bottom of the inner well of the double well structure OS 2562 suggest that this area was a 'filthy' area, rich in dung, maybe partly abandoned and that it was reserved for animal husbandry, with animals grazing/eating hay from outside the fort and stabled in this fort area (Vanhoutte *et al.* 2009a; 2009b). These data offer an explanation for several structures found on site. The fences formed an enclosure, probably making use of the ruins of the bath house to close off an area and which itself may have been used as a rather grand shed for the animals<sup>228</sup>; the construction along the western wall can be identified as a stable. The large water basin provided the animals with drinking water. The solidity of the fences suggests paddocks, for horses or packing animals, dividing the area into yards<sup>229</sup>.

Apparently, in the late 4th century, there was enough space within the fort walls to reserve a part of the fort precinct for the accommodation of animals. In late Roman forts in Gaul this phenomenon occurs regularly: a full occupation of the internal space was no longer common (see Brulet 2006d, 174). Also, at fortresses more to the east, like the fortress of Bonn in *Germania Secunda* (Müssemeier 2011, 237) and the fortress at Regensburg in *Raetia* (Konrad 2011, 380-381), the precinct *intra muros* appears to have been no longer completely built in the 4th century. A less intensive use of space with a reduced inner building within the defences seems to be also a characteristic aspect for the late Roman Saxon Shore forts (Pearson 2002b, 140, 144). The explanation is most likely to be found in the

late Roman reorganization of the army, with the widely accepted reduction in the size of units (see Chapter V, Section V.3.2.2) which lead to smaller provision of accommodation at the fort precinct. The late Roman forts were mostly reoccupied and renovated earlier forts which resulted in fort precincts which were not adapted to the new unit sizes, thus resulting in empty spaces, or at least more space besides the habitation areas.

Although it cannot be directly deduced from the scientific data which animals were stabled here, one can assume it concerns horses or (other) pack animals. According to the pollen spectra of the analyzed dung species found in the inner well of the double well structure OS 2562 and dated to fort period 5B, the animals were not fed with foliage nor cereals, chaff or straw. The animals most likely grazed on humid grasslands or were fed with hay from such environment. In combination with the presence of little digested plant materials in the dung, it can be concluded that the analyzed dung came from horses<sup>230</sup> (Deforce, in Vanhoutte *et al.* 2009b, 73). In the north-south palisade slot (I) a horse skull was found, deposited in the length of the construction slot. Although this likely concerns a deposition with a ritual significance, it is a remarkable coincidence (or not?) that it concerns a horse.

Although there are neither strong indications for the identification of the type of army unit at the end of the 4th century-early 5th century, it is most likely that there was at least a cavalry contingent. Although for *alae* or mixed units barracks are known in which also the horses were housed in a separate room apart from the soldiers, it cannot be excluded that horses were also been kept in a separate area on the fort precinct. This may be specifically a late Roman phenomenon, perhaps culturally related. The presence of three shoes with spur slits in the contemporaneous inner well of OS 2562 may confirm that mounted horses were kept here (see Volume II, Chapter 8, study by C. van Driel-Murray). It is however not excluded that this area was reserved for pack animals. They may have been very important since the fort of Oudenburg was rather isolated by land from major centres and long-distance movement from collection points for the supply of sources may have been routine, especially in winter when putting to sea was riskier. Housing the animals in the fort must have been important in that period to protect them at night and from raids.

The crossing construction slots (o) in the north-east of the excavation area belonged, based on the stratified evidence, to the very last phase of fort period 5B. Their relation to other structures is unclear and they point to an even later phase than the palisade slots of fort level 5B. They also indicate that much of the top level of fort level 5 has been dug away in later times, an assumption that can also be drawn from the pottery evidence. A lot of pottery, clearly assignable to fort level 5(B), has been recovered from the bottom layers of the post-Roman level.

227 Pers. comm. dr. K. Deforce.

228 Perhaps the shallow gully departing from the end of the former *praefurnium* to the east served as draining gully to get rid of water and dung.

229 Several features of fort level 5 were filled in with a compact green brownish/ rather rust-coloured granular layer, rich in charcoal and iron finds, and seemingly phosphate-rich although this could not (yet) been examined scientifically for budgetary reasons.

230 This can however not be concluded with absolute certainty from the pollen analyses since at that time, in contrast to nowadays, also cattle were fed with 'hard' fodder and as such could have fibred material in their dung (Deforce, in Vanhoutte *et al.* 2009b, 73).

## II.5. Site formation processes: the evidence from the spatial distribution of material, residuality and rubbish disposal, and the value of the find assemblages

### II.5.1. Spatial distribution of material: the result of different site formation processes

Establishing the character of archaeological site deposits is fundamental in order to comprehend the formation processes involved. Residuality is an endemic aspect of long lived sites such as Oudenburg and a number of implications are associated with this phenomenon (cf. Evans and Millett 1992). Not surprisingly study in depth of selected pottery categories amongst the assemblage from the south-west corner site indicates a high degree of residuality at the site. In the first place, this is embodied by the many cross joins encountered with the pottery throughout the Roman level and the post-Roman levels.

For the samian wares, the mortaria and the amphorae, the cross joining pottery fragments were established and these data have been visualized. The resulting map (Figure 85) shows the cross joins in a lateral sense representing sherds separated by a distance of at least two metres<sup>231</sup>.

The spatial distribution of cross joining pottery sherds shows more than only a high degree of on-site residuality. When looked at within the respective levels, the cross joins enable us to see the movement of pottery sherds after their primary deposition. Cross joining sherds from different contexts of the same level indicate the relocation of material after the primary disposal of rubbish and emphasize the fact that much of the material on site was recovered from contexts that were its secondary or third (or more) position.

The cross joins within the Roman level can be explained as the redeposition of material by building activities. Cross joins between fragments from the Roman level and fragments in a post-Roman level (Figure 86) give evidence of a lot of digging up at the time of the accumulation of the dark earth (cf. Chapter II, Section II.2.3).

Cross joins within the post-Roman level indicate that there has been a lot of moving of earth which involved on-site digging while the newly brought-in earth was accumulating (Figure 86). The large distances covered by the cross joins in the post-Roman level may be partly due to the fact that this earth (containing pottery) was brought in from another location and was dispersed over the area.

Another important process to consider comprises ploughing activities. As one can assume that the dark earth was brought in to fertilize the earth for agriculture or horticulture, plough activities will have been responsible for further distribution of pottery that was brought in with the earth or that was dug up on site. This also strengthens our idea that the top of the latest fort level has been

largely integrated in the lowest level of the dark earth deposits, as so many late Roman pottery was found at that level.

Furthermore, the many cross joins between pottery from the final fill of the double well OS 2562 of fort level 5 and fragments recovered from the dark earth level, are striking (Figure 86). This adds weight to our assumption that the remaining pit of this structure was eventually filled in by the very last fort inhabitants, or by later inhabitants after the final abandonment of the fort, with earth and debris surrounding the structure.

The cross joins over different levels (different colours on the map connected) which in the first instance represent residuality (cf. Figure 85), appear to be dominated by pottery found at fort level 4 (Figure 87). Also the cross joins within levels which represent contemporary movement, are dominated by finds of fort level 4 (Figure 88). This emphasizes not only the impact of building activities (digging, levelling) at fort level 4 but at the same time points to a succession of intense earth moving activities at this level.

Is the spatial distribution of finds within one level only the reflection of one or more earth moving activities (the moving of earth in which the pottery was situated randomly) or does it reflect patterns of rubbish disposal (the moving of pottery itself as a deliberate act)? Certainly some hearths give proof of the reuse of pottery from earlier levels to construct the hearth level (cf. *e.g.* hearth OS 70950 of fort level 3).

A presentation of all cross joins of all suitable find categories from the site using GIS would certainly enhance insights into issues of rubbish disposal, earth moving activities, and the system – or different systems? –, of waste processing.

### II.5.2. Residuality and the value of the find assemblages

While residuality is very visual through the cross joining pottery fragments, also the study of fabrics, forms and types demonstrates a share of residual items at every level (cf. Volume II, Chapter 1). A degree of residuality is also evidenced by the coin assemblage of the site (cf. Volume II, Chapter 2). The study in depth of find contexts (cf. the key contexts of the successive fort levels: Volume II, Appendix) can define more or less the residual portion in the pottery assemblage based on fabrics, types and stamps. While this exercise is largely possible for samian wares and other fine wares (although narrow timespans are difficult to assess), and to a large extent for other imported pottery, the residual component in the local/regional handmade and reduced wares is difficult to define and for narrow timespans even impossible.

At fort level 5 the residuality factor can be readily seen based on the proportions of late Roman versus mid-Roman samian vessels. The high degree of residuality is represented by a ratio of *c.* 1 to 3.6 of late Roman versus mid-Roman samian individuals; that is to say there was a greater number of residual than 'contemporary' items. This may have been even higher when taking into account that some early 4th-century vessels

231 There are also cross joins of pottery sherds that mainly moved in a vertical sense; obviously these cannot be visualized in two-dimensional maps.



may also have been residual in late 4th-century contexts, although it is difficult to grasp the normal life-span of these vessels in question. In the double well structure OS 2562, the late Roman samian only accounts for 41% of the total samian assemblage, but also from this share of late samian a part was residual in the inner well dated after AD 379/380. Within the construction pit of this structure the residual component within the samian assemblage accounts for a striking 81% (Vanhoutte *et al.* 2009b, 97-98). This situation has also been encountered at the north-east fort site (site Kapellestraat (ET24)) where at site level 6, which can be identified as fort level 5, on a total of 1282 fragments, accounting for 182 MNI, only ten individuals could be undoubtedly dated to the end of the 3rd – 4th century. The presence of a roller-stamped Chenet 320 bowl fragment with stamp UC 196 (AD 325-375) definitely dates this level after AD 325 though (Vanhoutte *et al.* 2014, 216).

However, the picture is not always straightforward, as the long life-span of some vessels demonstrates – in the case of this site mainly clear for several samian vessels, exemplified *e.g.* by the complete Drag. 38 bowl from Lezoux discarded in the late 3rd century in waste-pit OS 4980 of fort level 4 – or as some old stock supplies can

be assumed – as is for example possibly the case for several Lezoux samian wares in later 3rd-century contexts (on this aspect of samian ware see Willis 2005, 5.7 and 5.8, and Wallace 2006).

An important portion of residuality, unconsciously (by earth-moving activities) or consciously (by reuse or recycling of dug-up items), makes it tricky to come to conclusions when reuse or recycling cannot be demonstrated, as for example the conclusion from Gardner (2007b, 665) of the maintenance of objects in the late Roman period as they were rooted in tradition.

Nevertheless, as at other Roman sites with long occupation sequences where residuality has been shown to be marked, the value of the finds assemblages at the Oudenburg site for diachronic study still stands. The changing overall trends in the variety of fabrics, forms and types do demonstrate the validity of the pottery assemblages as generally representative for their respective fort levels when taking into account the residual component. The residuality factor emphasizes, though, the importance of the study of closed contexts for diachronic study. In-depth examination of contexts defined in space and time based on stratified evidence, can also reveal specific depositional processes (cf. Volume II, Appendix).



Figure 85. All cross joins of samian, mortaria and amphorae fragments (over at least 2 m), plotted on the excavated area of the south-west corner site.

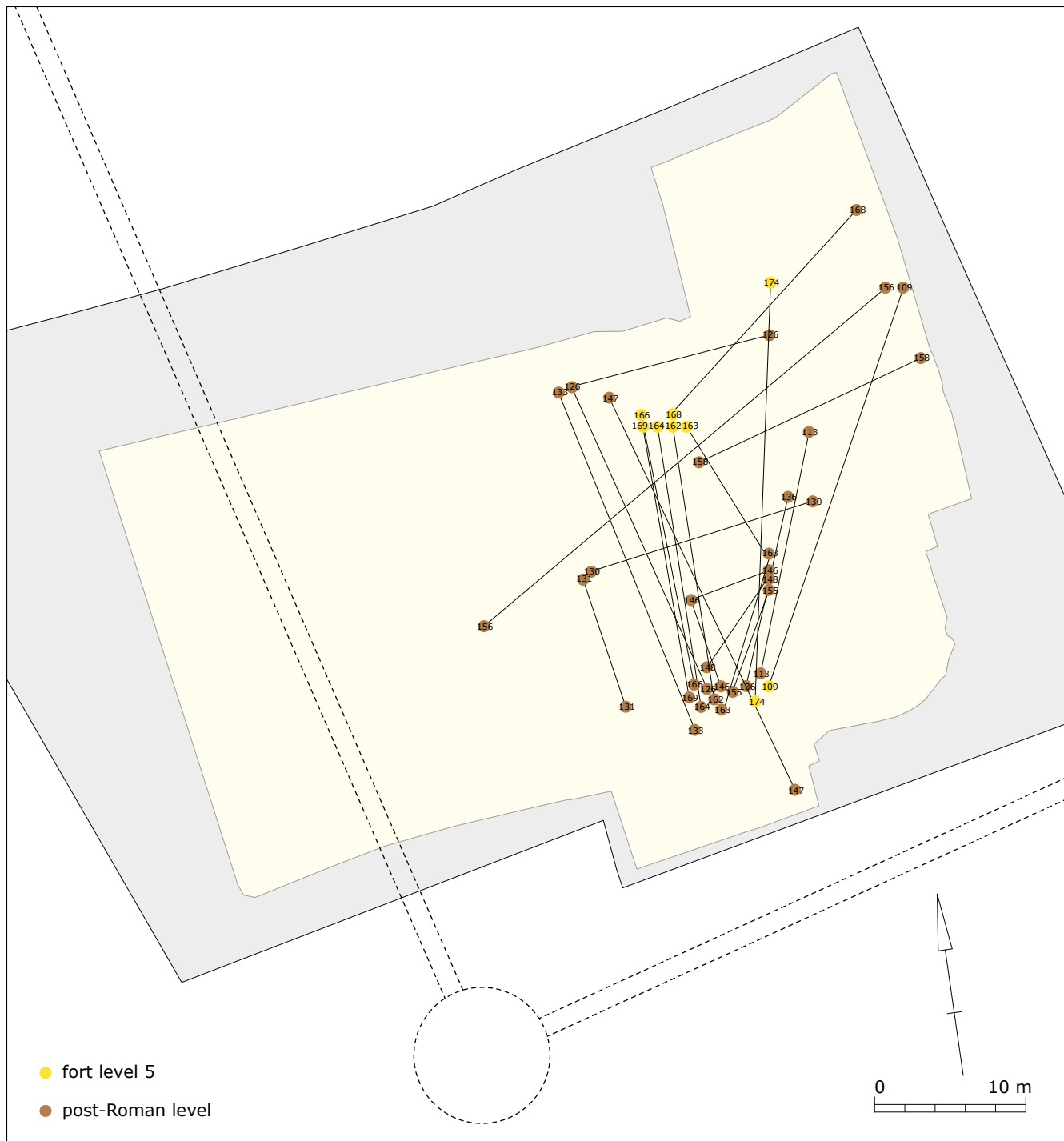


Figure 86. All cross joins of samian fragments with the post-Roman level, plotted on the excavated area of the south-west corner site.

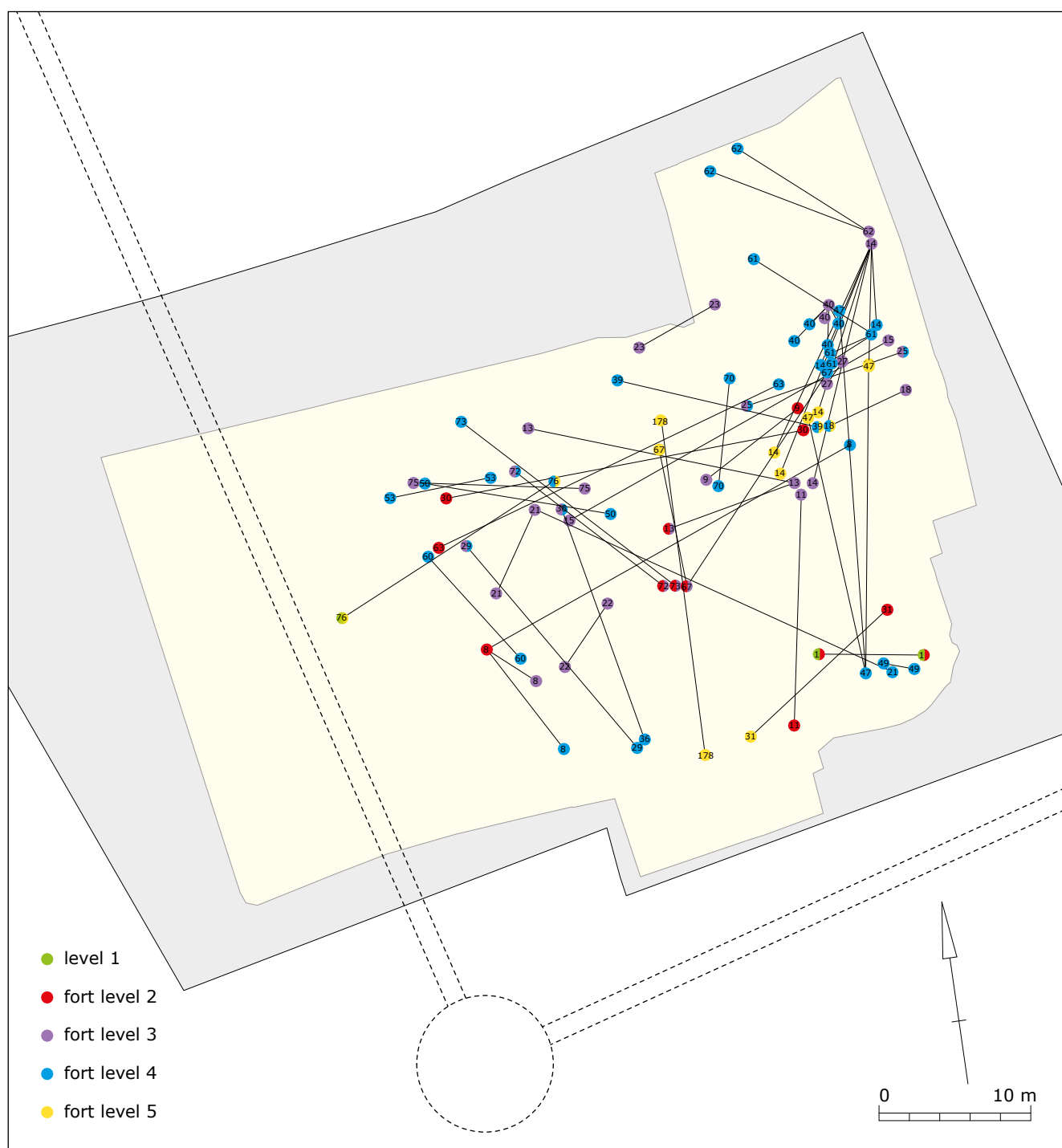


Figure 87. All samian cross joins leaving out those with the post-Roman level, plotted on the excavated area of the south-west corner site.



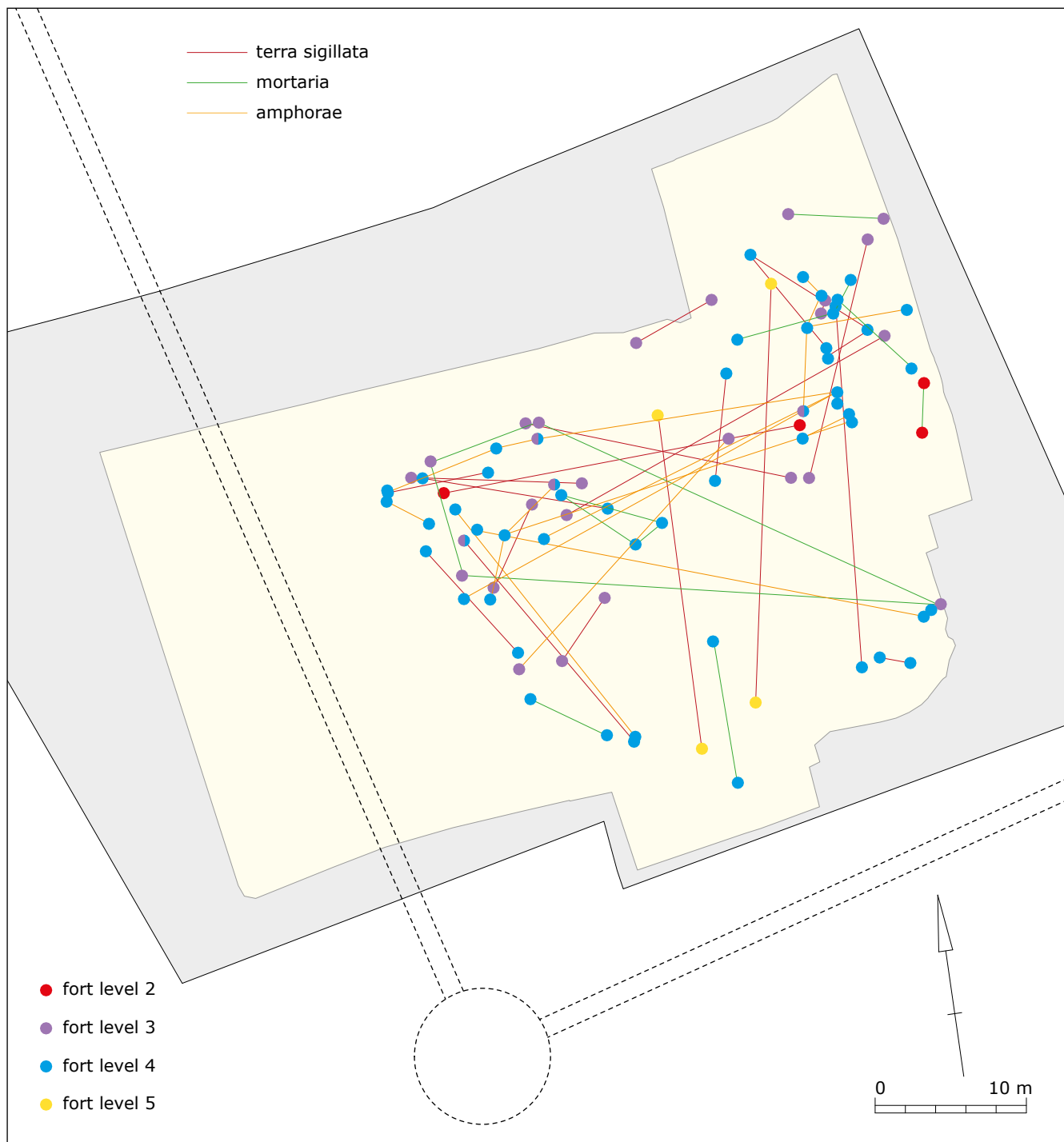


Figure 88. All samian, mortaria and amphorae cross joins within the same level, plotted on the excavated area of the south-west corner site.

# III. The successive forts at Oudenburg in a changing landscape

## III.1. Decisive factors for the fort's history: the marine influence and the poverty in hard natural rock

Situated at the end of a sand ridge protruding into the coastal plain, the landscape surrounding the Oudenburg fort evidently underwent changes in the period from the 2nd to the 5th century. Highly significant amongst these changes was the increasing marine influence the coastal region was subject to. Besides, the civil settlement and later the Roman military – obviously the latter with even much more impact – left their mark on the landscape.

An important aspect of the North Menapian landscape which had an important impact on the building history of the fort is that hard natural rock, suitable as stone building material, hardly existed and stone building material had to be mainly imported. From local/regional origin, a variety of fieldstones are present at the site, in limited quantities, not strictly used as building material, but mainly seen in the construction of paths and roads. Locally, fieldstone was the only available natural rock, but it was not easy to work with. Superficial banks of fieldstones are located in the region Aalter-Tielt-Torhout. It has been used as building material in the fort of Maldegem (Fobe and De Geyter 1986) and that of Aalter-Loveld. From the large-scale use of fieldstone at this latter fort and at several sites in the surroundings, De Clercq concluded to a large intentional exploitation of this stone (De Clercq 2009, 168). At the Oudenburg fort, it seems to have not been used as construction material for buildings.

Tournai limestone originates from the current province of Hainaut, the region around Tournai. It was supplied via the Scheldt river, probably through the estuary and the coastal waters, to eventually reach the fort via the tidal channels. It is one of the main stones at Roman sites in the north-west of Gaul, although its use remained limited within the settlements. At some sites, it is known as building material for stone constructions (with stone base courses in mixed timber-stone constructions as assumed *e.g.* at Kruishoutem (Rogge and Van Durme 1987)). Tournai limestone could also be used for making mortar, as temper in pottery and as flux in iron production (Thoen 1977; 1978). De Paepe and Vermeulen (1988) discovered that for material found in East-Flanders, these stones not only came from the

region of Tournai, but also from other regions in Hainaut and in the Ardennes in Southern Belgium. At the south-west corner site, Tournai limestone occurs from fort level 2 onwards in very limited quantities. At fort levels 2 and 3, as far as can be deduced from this small window on the fort precinct, this material was only used for paths, floors and presumably also as support for entrances (*cf.* fort level 2), but not for upstanding building construction. The Tournai limestone becomes omni-present from fort level 4 onwards. It was the main building material for the construction of the defensive wall which implies that large cargoes of Tournai limestone were transported to Oudenburg. At the south-west corner site it was also used to metal the north-south road along the east side of the workshops area. At fort level 4, the inner building was still mainly constructed using the timber-framing technique. Stone foundations of a rectangular building, mainly of Tournai limestone, were uncovered in the northern sector during 1977 (*cf.* Chapter II, Section II.3.4). Whether it relates to a construction completely in stone or only with a stone base course in a mixed timber-stone construction, cannot be deduced. One can assume that the central buildings from fort level 4 onwards were all stone-built.

At the south-west corner site, 41 large volcanic tuff blocks were uncovered<sup>232</sup>. This stone is the so-called 'Römer Tuff', originating from the Eifel region (*cf.* Dreesen and Duser 2017), a porous finegrained stone displaying a colour range from pale beige to dark brown; the Oudenburg stones are all beige. The Römer Tuff is characterized by mm- to cm-sized angular inclusions of dark rock fragments (lava stone, sandstones), pale porous pumice stone fragments (the so-called bims) or reformed crystals (Duser *et al.* 2009, 515; Nijland 2017). The volcanic tuff originates from the volcano eruptions of the Laacher See of *c.* 12,000 years ago (Duser *et al.* 2009, 517-518; Nijland 2017)<sup>233</sup>. At the Oudenburg fort, volcanic tuff blocks occur from fort level 3 onwards. The flattened front sides (often burnt while still in position), the mortar remains on several pieces, and a block with plaster layers still attached,

232 Counting the 41 volcanic tuff blocks together with the several small and medium-sized block fragments, this material accounts for 212.6 kg at the south-west corner site.

233 The Laacher See, in the northern Eifel region, is located near Andernach, which was already considered as origin by Mertens and Van Impe (1971).

demonstrate that these tuffs were used in wall constructions at fort levels 3, 4 and 5. How they were integrated with the timber-framing technique, often found connected to these, is unclear. In the 11th-century description of the ruins of the Roman fort by the clergyman in his *Tractatus de Ecclesia Sancti Petri Aldenburgensis* (see Chapter I, Section I.4.2), indirect evidence shows that most of the inner building at fort level 5 was built with this stone: '*Habitacula quoque nonnulla infra murorum munimenta levibus ac non valde duris lapidibus constructa errant. Naturaliter autem hii lapides in oriente apud Coloniensem provinciam repperiuntur*'<sup>234</sup>. These stone characteristics can easily be attributed to volcanic tuff.

The 1957 excavations at the St. Pieters church located to the east of the fort and built between 1056 and 1070 reusing stones from the fort ruins, yielded, besides blocks of Tournai limestone with remains of Roman mortar, also hard, grey-yellow limestone fragments. The excavator L. Devlieghe believed it was Marquise stone (Devlieghe 1958, 161), a yellowish oolitic limestone from the Boulonnais region. So far, this could not yet be related to stratified evidence on the fort precinct. Further research is needed to confirm whether this indeed is the stone referred to in the previously mentioned 11th-century tract where the clergyman describes the remains of the northern wall: '*in partibus vero aquilonis fundamentum quadric ac magnis lapidibus ferro et plombo firmiter infixis antiqua fundaverat manus. Quod genus lapidum in Bononiensi provincia tantummodo inveniri dicitur*'<sup>235</sup>.

### III.2. The landscape at the time of the installation of the first fort

According to the interpretation in 1958 of pollen sample data obtained from the cultivated soil on which the first fort was erected (see Mertens 1958a, 6 and footnote 6<sup>236</sup>; Mertens 1962, 54, 58<sup>237</sup>)<sup>238</sup>, the sand ridge in the 1st or 2nd century AD, before the installation

of the Roman fort, was dominated by large woods and bushes alternating with open spaces of grasslands, swamps and heather. This dominance of woods in the region was definitely the case in the 1st century BC according to the words of Caesar in his *De Bello Gallico*, IV, 38, 3: '*quod Menapii se omnes in densissimas silvas abdiderant*'. The presence of woods can also be assumed indirectly from the known speciality of the Menapians, namely the Menapian ham. Both Martialis in the 1st century, in his *Epigrammata* (XIII, 54) and the 'Edict on Maximum Prices' of Diocletianus, dated to AD 301, mention this salted specialty of the region. Since they were the main habitat for the breeding of pigs, forests must have been covered the *civitas Menapiorum* well (De Clercq and van Dierendonck 2008, 12). At the site Riethove (ET26) at the eastern periphery of the settlement, the four wells which could be dendrochronologically dated to the mid-Roman period, with felling dates respectively after AD 129, after AD 139-154, after AD 169 and after AD 156, were all made of oak most likely locally cut (Haneca 2015).

The pollen analysis of a sample taken in 2004 from the bottom of the defensive ditch of fort level 1 at the west side of the *castellum* at the south-west corner site yielded a pollen spectrum with 70.5% non-arboreal pollen (NAP) versus 29.5 arboreal pollen (AP)<sup>239</sup> (Deforce 2004). This analysis sheds light on the fort's surrounding landscape at the end of the 2nd century when the first fort was installed. The low AP percentage is indicative for an open landscape; the dominance of pollen of the sunflower family (Asteraceae-Liguliflorae) and of the grass family (Poaceae) points to a predominantly grassland vegetation in the immediate vicinity of the fort (Deforce 2004, 4). The development of the civil settlement and to a larger degree the preparation for the installation of the fort at this location will have resulted in a deforestation of the area. Surely, the need of the huge amount of wood for the construction of the defence of the earth-and-timber fort with most likely a wooden palisade on top of the earthen rampart and of the totality of the inner building will have meant a massive impact on the tree population in the region.

### III.3. The landscape in the 3rd century AD

A pollen sample was also taken from the western defensive ditch related to fort level 2 which can be dated to the first half of the 3rd century. The analysis yielded a similar pollen spectrum as with the first defensive ditch with a small increase of the AP percentage (37.6%) against 62.4% NAP, still indicating a predominantly grassland vegetation, again with some bushes of hazel, alder and oak, here as equally present tree species. A small increase of Chenopodiaceae could be noticed (here 4.9%) which can be explained by an approaching coastal plain or as the result of increased anthropogenic influence on the vegetation (Deforce 2004).

The analysis of organic material retrieved from the bottom of one of the ponds at the rural edge of the civil settlement to the south-east of the fort (ET13) gives more insight into the landscape along the

234 Dutch translation by Meijns (1994, 53) loosely translated: 'The houses and several constructions within the fort walls were erected in light stones that were not too hard. These rocks can only be found in a natural way in the east of the diocese of Cologne'.

235 'However, at the north side an antique hand had made the foundation with square and large rectangular stones, which were connected with iron and lead. They say that this stone can only be found in the county of Boulogne': translated into English from the Dutch translation by Meijns (1994).

236 The pollen analysis of the sample of 'a Roman occupation layer at Oudenburg' yielded the following proportions: alder 52%, birch 11.5%, hazel 28.7%, linden 2.8% and traces of willow 0.3%, oak 1.4%, elm 1.4%, pine-tree 0.6%, hornbeam 0.6%. Beside the trees, heather took up the highest proportion with 42.3% in comparison to the total amount of tree pollen. Also grasses (2.4%), sphagnum (2.3%) and fern (1.4%) were important to notice.

237 Mertens referred to this pollen analysis in his publication of 1962; the samples were taken at the section on the western defensive system from the cultivated soil pre-dating the fort.

238 The same pollen spectrum was reinterpreted by Verbruggen and listed by Thoen (1978, 67 and 69) as evidence for the influence of the bog and peat moor landscape, with the *alnus* referring to the bog and the *calluna*, *betula* and *sphagnum* to the peat moor. However, this seems rather unlikely since the sample was taken on top of the sand ridge on the location where the civil settlement developed and where the later fort was erected. Pollen in wells, ditches and also in soils come from the nearby landscape; the presence of pollen from the coastal plain further away seems unlikely.

239 The tree-pollen mainly represented hazel (11.0%), alder (7.1%) and oak (7.9%).

southern edge of the sand ridge in the first half of the 3rd century. One of the analyses was the study of the mites (*Acari*) by Schelvis and Ervynck (1993). Although these appeared to be rather low-numbered in the sample, their diversity and the richness in terms of the variety of types present was very high indicating a mosaic of biotopes, most likely due to the specific environments immediately around the feature, not only on the slope of the sand ridge but also in terms of soil conditions. Apart from the large number of mites typical for a strongly polluted anthropogenic habitat rich in decaying organic matter, the mite spectrum primarily points to open, humid, brackish grasslands (Schelvis and Ervynck 1993, 181-182). The assemblage was dominated by the mite species 'living in moist as well as soaking wet, either fresh or salty grassland' and by the organisms 'exclusively living on salty grasslands and salt marshes' (Ervynck *et al.* 1999, 114). Other mite species, although much lower in number, are indicative for dryer soils without brackish character, sandy soils, *Calluna* heather, bog and peat moor and possibly even marshes. The study concluded that the site where the sample was taken from must have been a rural, wet and open grassland with strong brackish marine influence. This implies that the marine influence at that time reached the landward side of the ridge and that a tidal channel was located very close to the south of the sand ridge of Oudenburg. It is therefore possible that the gullies which divided these lands into parcels (see Chapter I, Section I.4.2) were intended for drainage and that they stood in direct contact with this natural waterway. The brackish influence implies on its turn that these grounds were probably used for livestock farming instead of crop production. More to the north and the east on the sand ridge, the soil must have been much dryer with heather vegetation; more to the south the lower wet-lands were probably partly covered by bogs and marshes (Schelvis and Ervynck 1993, 182 and 185).

On the same sample of the first half of the 3rd century an analysis of the diatoms was undertaken by Demiddele and Ervynck (1994). Diatoms are the preferred organisms to detect changing marine influences on a site. The results of the diatom study were in accordance with those of the mite analysis. In general, the diatoms pointed to mud-flats – this however is in contradiction to the pollen results (see further) – or, more likely, a swampy, brackish grass landscape with marine influence at least during spring-tide or storm surge but with periods of relative dryness. As with the mites, the diatoms indicated a 'dirty' environment, which must have been caused by animal excrements (Demiddele and Ervynck 1994, 225). An additional palynological analysis on the same sample by Cooremans (1994) confirmed the presence of a deforested, humid grassland, with the dominance of grasses and clover species (*Trifolium*) with in the vicinity some small bushes of alder and hazel. However, in contrast to the mites and the diatoms, the pollen gave no indication for a clear brackish character. Since pollen mainly reflect the immediate surroundings of the feature (Cooremans 1994, 230), the combined results of the three scientific studies indicate – for the close vicinity where the sample was taken at the southern edge of the sand ridge – a salt pasture or grassland where cattle were kept and which was sporadically reached by sea water coming from a nearby tidal channel or creeks (Demiddele and Ervynck 1994, 227).

This image for the first half of the 3rd century can be complemented by the results of the study of a well from the civil settlement found by chance during pollution management ground works in 2010 c. 90 m to the west of the western defensive wall (SO28) (see Vanhoutte *et al.* 2016). The pollen from the fill of the well, which reflects the vegetation of the immediate surroundings, points to open grassland with disturbed areas. The boards of the wooden framework were tucked in with moss. The mosses appeared to be collected in forests with predominantly (moderate) nutrient-poor dry soils and nutrient-richer wet areas which must have been located further inland (Stieperaere, in Vanhoutte *et al.* 2016). The pollen found in these mosses indicated that these woodlands consisted predominantly of oak, ash tree, hornbeam, alder and birch, next to some hazel, common ash, common elder, linden, elm, alder buckthorn and common dogwood, but it cannot be excluded that the mosses were collected in woods from different locations and with different tree species (Deforce, in Vanhoutte *et al.* 2016, 179). A peat slab from the fill of the well was also subject to palynological analysis. According to the high percentages of heather and sphagnum this slab was collected from ombrotrophic (rain-fed) raised bog. Whether such an environment still occurred at the surface in the coastal plain in the 3rd century is uncertain; the slab can also have been dug up from a subfossil level. Although raised bog environments are mostly treeless, the peat slab contained a high percentage of arboreal pollen (67.0%). Deforce reasoned that these pollen came from trees on the nearby sand ridge. The dominant tree species in the peat slab were hazel, alder and oak, not surprisingly the same species identified as the trees in the grasslands surrounding the fort in the late 2nd and first half of the 3rd century. The presence of the peat slab in the fill of the well probably indicates that peat was exploited from a raised bog environment for its use as fuel, a practice already demonstrated for the Roman period at Raversijde (Deforce, in Vanhoutte *et al.* 2016, 197).

In 1960 one block of heather or turf from the earthen rampart at the west side of the fort was sampled by Mertens for pollen analysis. Mertens assigned it to his *Oudenburg II* level which was built up with sand and blocks of heather or turf, laid in horizontal layers (see Mertens 1977, 57). Most of the structures on the fort precinct identified by him as belonging to the *Oudenburg II* level, can now be assigned to fort level 4 of the later 3rd century. However, it is uncertain whether this reasoning can be as such extended to the earthen rampart for which it is more difficult to distinguish the separate construction levels since they largely applied the same building technique. In any case, it is most likely that the sample represents material from the 3rd century, from the end of it or earlier. The pollen analysis gives insight into the landscape where the turf block was skimmed and points to an important presence of heather in a wooded landscape which was dominated by alder, birch and hazel (Mertens 1977, 57).

Scientific research of the central well (OS 22926) in the workshop area at the south-west corner area (fort level 4) of which the filling in can be dated to the late or at the end of the 3rd century<sup>240</sup>, not only yielded ecological information for the immediate vicinity

240 The installation of the well could be dendrochronologically dated with a *terminus post quem* date of AD 260-275 for the framework (Haneca 2009).



of the well but also for the surrounding landscape outside the fort. Dendrochronological study of the boards of the wooden framework indicated that the oaks of which the boards were made, were more than 100 years old at the time they were cut down; one of the oaks even had reached an age of *c.* 150 years. The pattern of the growth rings shows that these oaks most likely grew locally in a closed, natural forest (Haneca 2009) which can probably be located more inland, further away on the sand ridge. With this availability it is not surprising that oak at the Oudenburg fort appears to be the most favourable wood for constructional elements<sup>241</sup>.

The paleoethnobotanical study of the well fillings by Cooremans (unpublished results) sheds light on the fort surroundings. The spectrum of the seeds and fruits represents plants for use as well as wild species. The plants for use consisted of cereals, legumes, fruit, nuts, vegetables, herbs, oil and fiber plants of which some were cultivated and others can also have been collected in the wild. As for the cereals, spelt (*Triticum spelta*) and barley (*Hordeum vulgare*) were dominant, and since both grains and chaff remains were found, they were most likely cultivated in the wider surroundings and processed within the fort. Some chaff remains of oats indicate that at least a part of the oats being consumed at the site was also of the cultivated species (*Avena sativa*). Furthermore, the samples contained some lentil and horsebean. The hazelnuts, blackberries, raspberries, blackthorns and maybe also the strawberries and apples, all rather low-numbered in the samples, were probably collected in the surroundings of the fort, with the latter two being possibly cultivated species. The walnuts, cherries and plums were cultivated only from the Roman period onwards; they may well have been imported. Flax (*Linum usitatissimum*) was very well-present in the fillings of the well and was most likely a very important cultivated plant in the region. Many of the weeds in the well fillings may have been brought in together with the cultivated plants; some can be associated with the borders of fallow land or grew on the cultivated arable land, others are related to grasslands and pastures or the borders of ditches and gullies within these lands. The weed species indicate that the arable cultivation existed on both moderate and more nutrient-rich soils which must have occurred a bit more inland.

### III.4. The landscape in the 4th century and later

Several findings testify of the increasing marine influence in the late Roman period and the related narrowing of the sand ridge. The cart tracks found at the site to the south-east of the fort (ET13) and dated by Hollevoet to the second half of the 4th century – although their period of use must have been wider –, together with at least one of the 4th-century horse burials, were here and there covered by a clayish level most likely related to land inundation by the inland expansion of the tidal channel at the south border of the sand ridge

(Hollevoet 1994, 212). Apart from the sample of the 3rd-century pond (see before), a late (to post-) Roman sample from this site was also palynologically analyzed. The pollen spectrum showed a significant increase in the marine and brackish component of the flora while the freshwater species, which were very important in the 3rd-century sample, had now nearly disappeared (Ervynck *et al.* 1999, 114-115 and 114: Fig. 9).

The scientific study of the evidence from within the 4th-century double well examined at the south-west corner site (see Chapter II, Section II.4.7.4) has also provided ecological information about the fort surroundings. The mosses found between the two wooden frameworks and part of the installation dated after AD 379/380 (felling date of the boards of the inner framework), appeared to be mainly scraped from the lower part of trees. The different species were collected from a well-developed forested landscape with large, older trees and a lot of undergrowth in a wet environment with high air humidity, but also with several open places, probably due to an intense use of this part of the landscape (Stieperaere, in Vanhoutte *et al.* 2009b, 62-63). According to the analysis of the pollen within the mosses, which are natural pollen traps, the dominant trees were alder, birch, hazel and oak (Deforce, in Vanhoutte *et al.* 2009b, 63-64). Alder and oak were also the main fuel-suppliers according to the anthracological analysis of the charcoal remains of the well (idem, 70). Apart from these dominant species, the pollen also revealed, but in minor quantities, the presence of hornbeam, beech, alder buckthorn, common ash, ivy, holly, pine, willow, elder type, linden, guelder-rose and elm. The presence of cereal pollen suggests that the mosses were collected not far away from arable fields (idem, 63-64). These pollen spectra from the mosses differ strongly from those from the fill of the well which pointed to a very open, grassland dominated vegetation (idem, 78). The preserved dung fragments from the fill of the well belonged to animals which grazed on wet pastures and/or were fed with hay from such grasslands (idem, 73). These must have surrounded the fort as military animals – horses and pack animals – will have grazed close by. This indicates that the woods from where the mosses were collected did not occur in the immediate vicinity of the settlement site but further inland. The animal remains add more information on the (se?) woodlands. The well-represented pig remains in the well fillings could suggest that there was a considerable amount of woodland in the region. Several of the hunted animal species are related to wet woods; whether these were the same woods as where the mosses were collected, is of course uncertain. The skull of a brown bear on the bottom of the well with indications of removal from a 'fresh' cadaver and which was clearly a ritual deposition, may have originated from an animal killed locally; this assumes the presence of even rather undisturbed terrestrial biotopes in the region (Ervynck and Lentacker, in Vanhoutte *et al.* 2009b).

As for the woods where the oaks for the boards were felled, the dendrochronological study revealed that parts of the forest were managed. Mainly young oak trees were felled for the construction of the framework of the inner well of OS 2562 and the wood was characterized by a fast juvenile growth slowing down after 10 to 20 years, both indications for coppicing (Haneca, in Vanhoutte *et al.* 2009b, 109-111). These woodlands occurred in the region, but not close by the fort.

<sup>241</sup> Anthracological analysis of selected charred remains of constructional elements from fort level 2 and fort level 4 structures identified them, when determinable, as being of oak. Also a sample of charred wood from fort level 3 was identified as oak. Only one sample of the floor boards covering the cellar pit of Unit VIII of fort level 4 appeared to be of silver fir while the rest of the boards were of oak (Deforce, unpublished results).

### III.5. Conclusion: a changing landscape around the Oudenburg fort

Because of the need for huge amounts of wood for the construction of the successive forts, the arrival of the Roman army at Oudenburg will certainly have resulted in a partial deforestation of the area or in the vicinity. Moreover, the clearance of trees will also have been important in terms of visibility so the fort was not vulnerable to surprise attack. Besides, surrounding the extramural settlement there will also have been military *territorium* or *prata* including arable fields and grasslands. The wider surroundings however, more inland, clearly continued to be a forested landscape.

From the late 2nd century onwards, grasslands dominated the landscape surrounding the fort. There are several indications they were used as pasture for livestock farming, and likely also for the mowing of hay. The meadows were doubtless also important for military animals – horses and pack animals – which would sensibly be grazing close by the fort.

Marine influence already determined the soil conditions from the first half of the 3rd century onwards making arable cultivation in the immediate surroundings of the fort difficult or even impossible. Arable fields were located a bit more inland but were clearly not far away. The crop production will, logically, also have served the army since it meant less dependence upon external supply.

The extramural settlement seems to have been abandoned already in the AD 260s. Nevertheless, the central well (OS 22926) in

the south-west corner of the fort of fort period 4 which was filled in at the earliest in the 270s (but most likely a decade or more later) provides evidence that cereals and flax, amongst other crops, were still supplied from the wider surroundings of the fort. By that time the fort community could apparently still rely on local supply. How this was organized without significant civil population in the region or at least no organized large-scale occupation, is unclear. This context seems to suggest that the agricultural activities were organized by the fort community.

In the 4th – early 5th century the fort became more and more isolated due to the increasing marine influence resulting in a narrow sand ridge. The fort was surrounded by wet grasslands on which the horses and pack animals grazed or from which they at least got their hay. Several findings testify of large woods in the wider surroundings, more inland. The mosses gathered in these woods give evidence of adjacent arable lands where cereals were grown. Whether these served the army, is uncertain. The presence of the weed White Lace Flower with the cereals of the infill of the double well OS 2562 indicates that cereals were (also?) imported from arable fields located in more eastern or more southern loamy soils (Bastiaens, in Vanhoutte *et al.* 2009b, 112). The large woods located more inland were clearly managed. Surviving timbers testify to coppicing. Mosses were gathered in large amounts; it has been estimated that over 60 m<sup>2</sup> of moss was used for the presumed filtering installation in the double well. These findings testify of a large-scale organization and a well-organized fort community.



## IV. The successive forts at Oudenburg and their related graveyards

### IV.1. Introduction

Studying the everyday life at the fort cannot be isolated from looking at the available cemetery evidence which is exceptionally informative at Oudenburg. Not least this is because of the dating of the finds in the burials and the implications of that information. In addition to matters of chronology the cemetery evidence reveals much about the identity of the deceased. Many details of the cemeteries are relevant in this matter and a long section on this topic is therefore justified, not least because of the importance of the finds from the late Roman 'military' graveyards for international research. Gardner (2007b, 670-671) already pointed to the 'virtually unknown' 4th-century cemeteries associated with later Roman forts in Britain and emphasized the importance of the combined research of forts and their graveyards to understand 'military' identities.

### IV.2. The mid-Roman graveyards

#### IV.2.1. The southern mid-Roman graveyard

To the south of the *castellum* a vast mid-Roman graveyard was brought to light in the early 1990s by Hollevoet (Institute for Archaeological Heritage, former predecessor of the current Flanders Heritage Agency) on the occasion of the plans for a new housing-estate and adjacent sport complex (ET12, 14, 15; SO23) (Hollevoet 1993c; 1994)<sup>242</sup> (Figures 9-11). This cemetery was situated at the southern edge of the sand ridge and extended over an area of several hectares (Figure 89); as such it is still one of the largest mid-Roman graveyards known in Gaul<sup>243</sup>. In total

c. 600<sup>244</sup> graves were investigated (Hollevoet 1993c, 198; 1994, 208; 2001, 70). Hollevoet believed that only one third of the graveyard was revealed; large parts of the cemetery remained unexcavated and were built over before any archaeological observation could be done<sup>245</sup>.

The graveyard mainly consisted of cremation graves, most of them were so-called '*Brandgrubengräber*'<sup>246</sup> (c. 90% of the total number of burials), the main grave type found in Flanders with the highest concentration in the *civitas Menapiorum* (cf. Hollevoet 2009a; 2011). These cremation graves were small, mostly rectangular pits with varying sizes, containing the burnt remains of the funeral pyre: the deposition of (part of) the burnt human bones, mixed with charcoal, iron nails and sometimes remains of burnt pottery, mostly accompanied by a separate niche in which some grave goods were placed (always one or more pottery vessels, often a glass vessel, sometimes a coin, often a small or larger amount of burnt bone). Some graves were very lavish. Most graves at the Oudenburg graveyard were less than 1 m long (Hollevoet 1994, 209), which is remarkably small in comparison to other graves known in the sandy part of the *civitas Menapiorum* of which the lengths were mainly situated between 1.11 and 1.90 m (Deconynck 2009, 32). Next to *Brandgrubengräber* the Oudenburg graveyard yielded a comparatively small number of urned cremations, of so-called '*Brandschüttungsgräber*' and of so-called '*Knochenlager*'.

The twenty or so inhumation graves were not clustered together but were found spread across the cemetery displaying a varying orientation. Remains of a wooden coffin were rarely preserved. In some graves, the skeleton was placed on its back, the hands often brought together on the pelvis; in other graves the deceased seemed

<sup>242</sup> This site was the subject of two preliminary reports published by Hollevoet (1993c and 1994). Important steps were made by Hollevoet for a detailed study of the site but a full publication could not be achieved.

<sup>243</sup> This large graveyard with burials often with lavish grave goods, still is a reference site for the North-west of Gaul, unfortunately not published in detail. Preparations for full study and publication are started by the present author. As this graveyard is one of the cases to be studied within the EOS project '*Cremations, Urns and Mobility – Ancient population dynamics in Belgium*' at the VUB Brussels, it will be possible to consider the material culture in comparison to characteristics of the deceased to come to profound conclusions about their identity/identities.

<sup>244</sup> As mentioned before, Hollevoet (1994) reported c. 400 graves based on a preliminary inventory; in later lectures he mentioned c. 450 to 500 graves. An inventory of the find assemblages by the present author based on the archive by Y. Hollevoet concludes to almost 600 graves.

<sup>245</sup> Only c. a fifth of the area under threat could be investigated systematically: the strips of the future roads and some large parcels (Figure 89). The owners of the other parcels did not give permission for excavations on their land; there, the knowledge was limited to the systematic observations made by Hollevoet during the earth moving activities of the mechanical digger (Hollevoet 1994, 208). The burials found this way resulted in the dots on the map of Figure 9 (SO23).

<sup>246</sup> Grave terminology based on Bechert 1980.





Figure 89. Overview of the unpublished and only partly processed (see Hollevoet 1994) surface plans (field drawings by Y. Hollevoet), now digitized, of the site of the mid-Roman southern graveyard (ET14). With indication of cremation graves (green) and inhumation burials (orange). Inset: map of part of the southern mid-Roman graveyard with the features of the double grave monument (arrow on the excavation map shows the location) (inset map taken from Hollevoet 1994, 212: Fig. 10).

to be buried rather carelessly. Apart from the presence of some iron bracelets<sup>247</sup>, grave goods were lacking in these inhumation graves (Hollevoet 1993c, 198; 1994, 208-209).

Most of the cremation graves were dated to the 2nd or beginning of the 3rd century; some burials belonged to the first half of the 3rd century and these were mainly situated in the north-east corner, a very few graves may have been slightly later (middle or third quarter 3rd century). First-century graves seem to be absent (Hollevoet 1993c, 198; 1994, 213-214). The stratified evidence indicated that the inhumation graves belonged to the later phases of the cemetery (Hollevoet 2008) and that both grave rituals, cremation and inhumation, were at some point employed simultaneously. Towards the middle of the 3rd century, the cemetery diminished in size and parts were reused for agricultural purposes, as could be deduced from a well and a complex ditch system that were installed in the northern area. This southern graveyard also revealed four horse skeleton graves which were probably linked to the 4th-century *castellum* based on the stratified evidence and the presence of a coarse Mayen cooking pot in one of these burials (Hollevoet 1994, 211). One of these horse graves had cut an inhumation burial which can be an additional argument that the inhumations of the southern graveyard belong to the 3rd century. As for the horse skeleton graves, Hollevoet established parallels with the ones at early medieval row cemeteries and their presumed association to the Germanic world (Hollevoet 2008).

The cemetery seemed to lack any form of organization or clear stratification. Since the burials were rarely cut by new graves, the graves must have been visible on the surface by grave markers over some considerable time (a small monument, a small tree?). In a few cases there was evidence for a square, rectangular or even circular enclosure ditch (Hollevoet 1994, 214-215)<sup>248</sup>.

The north (at site ET14) and north-east (at site ET12) limits of the cemetery could be established (Hollevoet 1993c, 198) but at the west side the cemetery clearly still extended beyond the examined area (ET15). The find *c.* 300 m to the west (FR05) of a complete Cologne colour-coated beaker with rouletting type NB32c dated to the end of the 2nd – beginning of the 3rd century and likely to have been a grave good, may possibly be an indication for the extent of the graveyard at least that far to the west, or for a separate graveyard. To the south, the eight cremation graves discovered in 1992 (SO24) and the three complete vessels collected by a private person in the 1950s (FR06) are the most southern known finds of the cemetery. Since the adjacent parcels to the west (ET18 and ET33) did not yield any Roman features, one can assume that the graveyard narrowed to a strip, possibly bordering a road to the south, of which however no trace has yet been revealed.

247 It is not clear whether only one or two skeletons wore bracelets. Hollevoet (1993c, 198) mentioned one deceased with one bracelet; elsewhere (1994, 208-209; 2011, 120) he listed one with one bracelet on both upper arms.

248 Only two graves were clearly related. Within a nearly square gully system with an entrance to the south a central cremation grave was installed. In a later phase, this monument was adjusted and extended to the west as a rectangular monument; a second cremation burial was placed a few metres to the west of the first grave, on top of the former western gully. Based on this spatial connection and on the grave goods, Hollevoet concluded that a prosperous married couple was buried here (Hollevoet 1994, 210-211) (see also further).

#### IV.2.2. The eastern mid-Roman graveyard

At the south side of the site Belleroyche (ET28) a cremation cemetery bordered the west-east mid-Roman road (Figures 10-11). The north, north-west and north-east limits of the graveyard were revealed but it clearly extended further south outside the excavation area. No less than 59 cremation graves of different sizes were counted. Most of the burials were *Brandgrubengräber*; one possible urned cremation and one possible *Knochenlager* could be distinguished. Two rectangular enclosure ditches each surrounded one, possibly two graves. The cremation graves can be dated to mainly the 3rd century; some may have been of earlier date (cf. Dyselinck *et al.* 2020). An isolated cluster of four SW-NE oriented cremation graves (with lengths of *c.* 0.9 to 1.2 m) *c.* 165 m to the west of the Belleroyche graveyard bordered one course of the same west-east road (site Riethove (ET26): Dhaeze and Vanhoutte 2009, 85; Dhaeze *et al.* 2018). Since the site along the Bekestraat (ET13) did not yield any graves and the north-east edge (ET12) of the southern graveyard could be aligned, the cemetery in the east clearly represented a separate graveyard and not an extension of the vast southern cemetery (Figures 10-11).

South of the four cremation graves of site Riethove (ET26), four isolated inhumation graves were found at the south side of this site. These inhumations can be compared with those uncovered at the Oudenburg southern mid-Roman graveyard. Two of the skeleton graves at the site Riethove were situated next to each other with opposite orientation; the two others were spread further away. Anthropological research by M. Vandenbruaene (at the time Flemish Heritage Institute) revealed that they were four adult men. As was the case in some of the skeleton graves at the cemetery south of the fort, the four skeletons were placed on their back with their hands brought together at the pelvis. Grave goods equally were lacking here. Based on the stratified evidence they belong to the latest Roman features at this site (see Dhaeze *et al.* 2008, 36; Dhaeze *et al.* 2018), as was also the case at the southern graveyard.

#### IV.2.3. Cremations versus inhumations

Although the inhumation burial (with the interment of the dressed body) was not absent in the first two centuries AD<sup>249</sup> and started to be popular in the Roman West already by the end of the 2nd century, mainly in urban context<sup>250</sup>, the inhumation rite only became generalized in our region in the late Roman period (Young 1977, 43-45; Van Ossel 1991; Jones 1981). In the 3rd century inhumation was already practiced in the North-West, co-existing with cremation, but it is only from the end of the 3rd century onwards that inhumation became the dominant burial ritual in both town and countryside (van Doorselaer 1964; 1967; Jones

249 See e.g. at the cemetery of the small town of Tienen (Belgium, prov. of Flemish Brabant) in the *civitas Tungrorum* where already in the first phase of the cemetery (pre-Flavian) some inhumations occurred (Martens 2012, 157), as was also the case in the following phases (Martens 2012, 182, 205, 241).

250 The inhumation rite was first introduced in the late 2nd and early 3rd century in the cemeteries of towns such as Cologne and Tongeren: see Theuvs 2009, 285.

1981, 18; cf. also in the *civitas Tungrorum*: Martens 2012, 27)<sup>251</sup>. The intersecting of some inhumations by cremations at the southern graveyard of Oudenburg proves that at some point, probably around the middle or in the third quarter of the 3rd century, the two burial rites existed simultaneously<sup>252</sup>.

Thanks to the research by Hollevoet (2009a; 2011) on Roman burials, we are well-aware of the occurrence of cremations versus inhumations in our region. He concluded from a number of finds that cremations continued during the late Roman period, which was already assumed by Van Doorselaer (1967), and even in the early Middle Ages. Theuws pointed to some cemeteries like Vireux-Molhain and Vron (F) where the cremation ritual (in small percentage) was still in practice even until the first half of the 5th century (Theuws 2009, 285 and note 19, with references)<sup>253</sup>.

Hollevoet concluded to a mainly civil character of the mid-Roman cremation cemetery. However, since inhumations only appeared in our region in the later 3rd century, it is most likely that the fort inhabitants of the successive late 2nd- and 3rd-century forts of Oudenburg were also buried at these cremation graveyards, together with the civilians. Besides, the amount of excavated graves and on top of that the estimation by Hollevoet that the southern graveyard presumably counted around 1500 graves, based on spatial extrapolation, is an indication that it did not only contain the deceased from the extramural settlement. No clear separate clusters were detected in these cemeteries, from which it can be assumed,

very cautiously<sup>254</sup>, that the soldiers were buried amongst the *vicani* and not separately.

Worth drawing attention to in this respect are the grave goods from a double cremation grave found at the southern graveyard and according to Hollevoet possibly belonging to a married couple (Figure 89). The earliest cremation grave was located in a more or less square area limited by ditches and with a passage to the south. At a later time, possibly years later, a second deceased was buried in this enclosure, a few meters to the west of the first grave. This burial came together with an adjustment of the enclosure with an enlargement to the west, resulting in a rectangular structure with a possible second passage to the west. The character of the grave goods of the first burial, with among other things a necklace, indicates that a woman was buried here. Very important for the present discussion are the two identical green glazed beakers, one deposited in each grave (in the niche) (Figure 90). Glazed ware is extremely rare in the North of Gaul and such beakers are completely lacking in the rest of the Oudenburg graveyard (Hollevoet 1994, 210-211)<sup>255</sup>. The small beakers are characterized by one ear and barbotine scale decoration, a form found in several contexts in South Gaul (cf. Gohier *et al.* 2016, 587, 588: Fig. 5, 1; see also Desbat 1986, 35: Fig. 2) where they can be dated between the second half of the 2nd century and the early 3rd century AD. In Poland such a beaker belonged to a burial closely dated to the end of the 2nd century AD (Gohier *et al.* 2016, 587). In combination with the other pottery in the Oudenburg burials in question a date at the end of the 2nd century, corresponding with the first fort period, can be concluded. Based on archaeometric analyses and typological correspondances it has been evidenced that such glazed pottery was produced in Latium, central Italy, in the region of Rome (Gohier *et al.* 2016, 593). The presence of such unique beakers in these connected graves at Oudenburg testify of access to a trade network of which can be supposed that it was only accessible by the elite or the military<sup>256</sup>. The high-status character of these burials is moreover emphasized by the large field flask in soapy ware from Famars – a very rare find – in the latest (male) grave<sup>257</sup>.

Another rarity in this southern graveyard is formed by the two complete Lower Nene Valley colour-coated beakers recovered from two graves at the eastern side of the southern graveyard (Archive Y.

251 At the graveyards of Krefeld-Gellep the transition to the inhumation rite, with burials with grave goods, can already be detected after the middle of the 3rd century (Pirling 1993, 109).

252 For the same period this could also be verified at for example the Tongeren cemeteries (cf. Vanvinckenroye 1984, 126-129) and at Nijmegen where at the cemetery of *Ulpia Noviomagus* the first inhumation graves of Nijmegen occur in the second half of the 3rd century in combination with cremation graves (pers. comm. dr. H. van Enckevort). The Marktveld cemetery at Valkenburg, that was related to the auxiliary fort and its *vicus*, yielded very early inhumations. A remarkably high number of inhumations was discovered there amongst the c. 400 cremations. Of the c. 145 inhumations, c. 90 could be assigned to infants or neonatals and another thirteen or fourteen to children and adolescents. The adults all appeared to have been buried in a very careless way. While the infant and neonatal burials date already from the beginning of the cemetery onwards, i.e. the second half of the 1st century, the adult inhumations belong to the 2nd century (Waugh, in van Dierendonck *et al.* (eds) 1993; cf. Lonnée and Maat 1998).

253 For the wider region the following sites can be referred to. Vanvinckenroye (1984, 228) points to late Roman cremations in and around Tongeren. Also at the two 4th-century cemeteries of Nijmegen cremation graves still occurred, although very limited. The five or six cremation burials (graves B 5, B 106, B 140, B 182?, OO 131 and OO 308) were dated mainly to the first half of the 4th century (see Steures 2013). The long-lasting Roman cemetery with predominantly inhumation burials at the Jacobstrasse in Cologne yielded eleven cremation graves. While six of them were attributed to the second occupation phase, dated to the mid-2nd to mid-3rd century AD, four burials belonged to the fifth or sixth occupation level, respectively dated to the end of the 3rd century until c. AD 330 and to the middle of the 4th century (Friedhof 1991, 64-66). At Gennep-Touwslagersgoes (NL) the late Roman cemetery of the early 5th to 8th century consisted of cremation and inhumation graves, but their chronological interrelationship has not been fully examined (see Hiddink and Seijnen 1998).

254 It has to be taken into account that not the whole graveyard could be uncovered.

255 This type of beaker was not found on the fort precinct excavations.

256 Worth mentioning in this respect are the three cups of such glazed ware and identically decorated with a barbotine scale pattern, known from Richborough (Busche-Fox 1926, 170-171, Plate XXXIV: 229-231). Especially no. 231, made of 'light yellow-green clay with brown to olive-green glaze', resembles well the Oudenburg individuals. Although according to the excavation report found in 1st-century assemblages – however, Gohier *et al.* (2016) date all barbotine decorated beakers in the 2nd and 3rd century –, the Richborough cups add to the evidence that the military had access to these exclusive wares, which could also be observed e.g. at Usk, Wales (UK), where such glazed ware beakers were recovered (cf. Greene 1978a). In an overview of such wares Vilvorder has related them to a Central Gaulish production (Vilvorder, in Brulet *et al.* (éd.) 2010, 287 ff.), however, with the results by Gohier *et al.* (2016) this idea may have to be revised.

257 Identification by dr. S. Willems. It dates at the earliest to the second half of the 2nd century AD.



Figure 90. The two glazed beakers of Mediterranean origin, one deposited in each cremation grave of the double burial. Left: beaker from the female grave (burial L32/051); right: beaker from the male grave (burial L32/014) (Photo to the left by W. Dhaeze; photo to the right by F. Lagae).



Figure 91. Two Lower Nene Valley colour-coated beakers from cremation graves at the eastern side of the southern graveyard (Photo: F. Lagae).

Hollevoet; Flanders Heritage Agency) (Figure 91). The Lower Nene Valley colour-coated ware production only started widely distribution around AD 250 (Howe *et al.* 1980). Many imports at Oudenburg most probably came in by ships through the tidal channels; the tidal channel to the north of the Oudenburg ridge seems to be the best option to bring goods as close as possible to the Oudenburg fort. Direct evidence in the region for navigation, whether it was military or not, – apart from of course the many indications from the import products – are scarce<sup>258</sup>.

The presence of these beakers, the glazed ones and the Lower Nene Valley examples, can be an indication that soldiers were buried here. However, other possibilities should be considered. Perhaps the deceased belonged to the civil elite and obtained these goods through gift giving or exchange, from other elite or from the military. In this respect, the connection with distant regions will

<sup>258</sup> A newspaper in the 1890s mentioned the find of a Roman ship to the south of the Oudenburg fort (Gyseling 1939, 23; Gyseling 1950, 55; Hollevoet 1985, 237-238 (Oudenburg 178)). However, this find could never be verified and the location makes the identification as a ship, at least one of Roman date, very unlikely. Ship remains might be related to the nearby medieval city moat. At the end of the 19th century, the remains of two Roman boats were found to the north of Bruges. Radiocarbon analysis yielded dates of AD 70-430 and AD 120-330. Vlierman, who studied the preserved wood in 2010, concluded that it is not possible to determine whether it concerns trading boats or military ships (Vlierman 2011).

have had an important significance. Another possibility is that these deceased were veterans who stayed at Oudenburg where they perhaps received land and where they eventually died as civilian, however with a strong military-linked identity.

Regarding the inhumations, the same comments can be made. The inhumation rite was applied – at least at the southern graveyard – at a time when cremations were still in place. Do these inhumations represent a different social group? Were the deceased of the inhumation graves distinct civilians? Or were they the fort occupants of the later 3rd century or veterans? Being military and being regularly on the move soldiers came in contact sooner with new ideas and were probably more progressive towards the use of this new burial rite. Apart from iron bracelets in one (or two?) cases (see before), these inhumations lack grave goods or dress accessories. It is important to keep in mind that at the late Roman graveyards a large proportion of the burials neither yielded grave goods (at Graveyard A: 83 out of 216 graves or 38.4%; at Graveyard C: 10 out of 20 graves or 50%). It is therefore not possible to draw any conclusions from the absence of grave goods in these presumed 3rd-century inhumation graves. Neither is it possible to think of a distinction related to a civil-military dichotomy – since the Graveyards A, B and C were clearly ‘military’ (see further) – or to wonder whether different cultural backgrounds are at stake here<sup>259</sup>.

### IV.3. The late Roman graveyards

#### IV.3.1. Introduction

So far, three late Roman graveyards are known in the surroundings of the *castellum*. That the late Roman Graveyard A is of military signature is widely acknowledged based on the presence in several graves of a crossbow brooch and/or elements of a broad waist-belt (cf. *e.g.* Swift 2000b, 231-232)<sup>260</sup>. The belt and the crossbow brooch served as expressions par excellence of being in service of the late Roman state *i.e.* the army or the bureaucracy (Esmonde Cleary 2013, 58). While belt fittings are now primarily associated with late Roman ‘officialdom’ (Gardner 2007a, 235), the few elaborate chip-carved belt garnitures definitely have a strong military association (see Böhme 1974, 90 and confirmed by Swift 2000b, 201). The presence of a crossbow brooch and several belt buckles at the recently discovered eastern Graveyard C assigns it equally as military. Graveyard B, of which only three graves were uncovered, all three deprived of dress accessories but with ceramic grave goods, has been considered by Mertens and Van Impe (1971) as military as well, and this designation has been accepted by all scholars referring to this cemetery. However, it would be better to refer to these cemeteries as ‘graveyards of the fort inhabitants’ rather than as ‘military graveyards’. As will be demonstrated further, the

<sup>259</sup> The careless position of some of the skeletons had led Hollevoet to think of possibilities like convicts to which a normal burial was denied, specific offerings or crisis burials, in this following the theories of Aldhouse-Green (2001) and Vanvinckenroye (1984) (Hollevoet 2011, 121).

<sup>260</sup> See *e.g.* James 1999, 21: ‘Military status was primarily represented by the cingulum, the sword on a baldric, and the cloak-brooch’.



findings at the fort precinct indicate a mixed community, no longer only consisting of soldiers. As already discussed, civil occupation at Oudenburg ceased in the later 3rd century; there are no indications of a late Roman occupation outside the fort.

Much has been written about the 'identity' of the deceased from Graveyard A and from contemporaneous cemeteries in the wider region with similar grave goods. The relation between the Oudenburg late Roman graveyards and the last phases of the fort is obvious. It is therefore of primary interest to understand who these deceased were. However, it is important to acknowledge that the burial is a ritualized expression of the identity of a social group. Theuws emphasized the 'ritual patterning' of the material culture originating from graves and pointed to the misconception that the dress and weaponry of the deceased were a copy of these in his or her lifetime. The lavish grave good assemblages should rather be considered as a rhetorical expression of a high-status social group which created a funerary identity (Theuws 2009, 294-295).

We want to focus on what material culture of the 'everyday life' from the fort precinct can tell us about the identity, in all its forms, of the fort inhabitants. In what follows, the different subjects of recent debate about the identity of the deceased of the late Roman cemeteries at Oudenburg are brought together and are commented<sup>261</sup>. A further discussion on the 'military identities' follows in Chapter V.3.

#### IV.3.2. Graveyard A

##### IV.3.2.1. General data

Over 400 m to the west of the defensive wall of the stone fort, a large late Roman inhumation graveyard with inhabitants of the 4th century – early 5th century fort was uncovered in the years 1963-1964 and 1968 by Mertens and his team<sup>262</sup>. The investigation covered an area of c. 70 by 70 m (Mertens and Van Impe 1971, 18; Mertens 1964a/b; 1967; 1968a/b; 1996). Mertens stated that the whole graveyard could be brought to light; however, more recently reported finds indicate a wider extent with probably more

isolated graves not suspected at the time<sup>263</sup>. The 1960s research at Graveyard A brought to light in total 216 graves, on top of the remains of an earlier civil settlement of which a stone building, two wooden wells, many pits and postholes were investigated (see Chapter I, Section I.4.2). Many graves were dug in and around the debris of an earlier presumed bath house (see Creus 1975) (Figures 14 and 93); within the actual building itself no graves were found, according to Mertens because of the large amount of coarse building debris which would have inhibited grave cutting. Mertens established that the remains of the baths were already covered by sand before the burials began (Mertens and Van Impe 1971, 18-19; Creus 1975, 8), indicating that the building itself was not reused at the time of the graveyard<sup>264</sup>.

The largest concentration of graves was noticed in the north-west of the cemetery where at some places a certain arrangement in rows can be detected (Figure 93). Only in fifteen cases did two graves intersect each other<sup>265</sup>; hence it may be deduced that most of the graves were well-marked at the surface. At the same time these intersections testify to two distinct phases at the graveyard. Only grave 45-46 which intersected grave 48 yielded a closely datable find, a *Securitas Reipublicae* of Valentinianus I minted at Arles (364-375) (see Lallemand 1966, 161) pointing to a start date for the last phase in the late 4th century.

The orientation of the graves was mainly east-west (66.5%); west-east counted for 7%, south-north for 11.6% and north-south for 2.8% with the latter two orientations mainly situated in the north-west of the graveyard<sup>266</sup>. Other orientations were rather rare and were probably the result of local conditions (Mertens and Van Impe 1971, 21 and 23; Afb. 10; Mertens 1977, 61). From the synthesis of all datable elements it can be concluded that the orientation of the graves includes no clear chronological significance, although of the graves which can be assigned to the last phase of the graveyard (see Figure 97) all but one<sup>267</sup> display an east-west orientation. What significance can be attributed to this, is unclear. At the graveyards of Krefeld-Gellep for example, the inhumation burials dated before

261 I want to thank dr. V. Van Thienen for the discussions on several aspects in the following sections which enabled me to come to new ideas on the matter.

262 This graveyard has been fully published by Mertens and Van Impe 1971. It is not our intention to give a detailed overview of all the finds nor to make a revision of all aspects. In what follows, we tend to give an overview of the results which are important to consider in view of the last fort occupation (fort period 5) and to integrate as much as possible new insights into the graves and their finds based on more recently published studies on these matters in light of a better understanding of the chronology and the identity of the deceased. Evidently, a closer study of the glass vessels, the integration of the information on the glass beads (see the study of Swift 2000a, 89 ff.) and a revision of all ceramic vessels according to the latest insights would extract even more information out of the graveyard.

263 Sewerage works around 1969 clearly disturbed an (isolated?) grave when human skeleton fragments and a complete colour-coated beaker came to light, a find reported to Hollevoet in the 1980s (FR12) and concluding to a further extent to the north-east of Graveyard A. A complete Roman vessel found in 1964-1965 to the north-west of Graveyard A may also have been a grave good, maybe from an isolated grave (FR10). The fragment of an Argonne roller-stamped sigillata bowl of the 4th century found in 1982 through fieldwalking to the north of Graveyard A can also have been one of the remains of a disturbed late Roman grave (FF02). A coin of Constantius II dated to 330-335 found in the 1960s midway in-between Graveyard A and the fort (FR07) may originate from a late Roman grave, but can also be related to the late Roman passage route which can be assumed leading from the fort to Graveyard A.

264 One can think of the reuse as an early Christian church or chapel, as was the case at a Roman villa near Regensburg (Osterhaus 1984), but this is clearly not a valid option for the situation at Oudenburg.

265 Grave 51 was intersected by grave 55, grave 56 by 53, 60 by 58, 68 by 69, 81 by 82, 85 by 89, 87 by 65, 110 by 109, 113 by 112, 122 by 123, 147 by 146, 154 by 156, 202 by 201 and grave 48 by 45-46 which itself is intersected by grave 33.

266 In the remaining cases the orientation could not be determined accurately (Mertens 1977, 61).

267 Grave 33 has a west-east orientation.



Figure 92. Three inhumation graves of the late Roman Graveyard A: graves 138, 93 and 130 (Archive Mertens NDO; scanned diapositives).

the second half of the 4th century mainly display a south-north orientation, while those of later date are mainly west-east oriented (Pirling 1993, 111). Halsall (1992, 199-200) concluded from his study of late Roman graves in Gaul and the Rhineland that the east-west prevailed, but that the orientation apparently was not governed by a distinct rule.

From the 216 graves, only 138 contained recognizable skeleton remains (54% of the total). Most of them belonged to adult persons, twelve to children of less than 16 years: seven with an age between 3 and 5 years, one between 6 and 10 years, four between 11 and 15 years old, six between 16 and 18 years, 36 between 19 and 25 years, 24 between 26 and 35, and 28 of 36 years or older (Delsaux 1973; Mertens 1977, 61) (cf. Appendix 7: Table 17). The adults had an average height of 170.6 cm<sup>268</sup>. The anthropological examination revealed no pathological evidence which might have been the cause of death of any of the individuals. For most of the (male) skeletons it could be deduced that they were strongly built and well-muscled (Delsaux 1973, 1-3, 47; Mertens 1977, 61).

Apart from the few skeletons which could be undoubtedly identified as being female, the gender was mainly attributed based on the grave goods. Grave goods however were only found in 133 of the 216 graves (61.6%). Besides, some sixteen of these 133 graves only contained one item (a coin, a silex, a vessel, a bracelet, a knife), 44 graves only contained pottery or glassware (cf. Appendix 7: Table 17). The distribution of graves with and graves without grave goods shows no separate locations in the graveyard (Figure 97). Mertens and Van Impe attributed twenty-one graves to women, next to nine cases of doubt<sup>269</sup> (Mertens and Van Impe 1971, 21 and 24:

Afb. 11 with the location of the male and female graves (30 graves)). A revision of the evidence establishes that only nineteen graves can be undoubtedly assigned to (young) women (graves 4, 7, 50<sup>270</sup>, 79, 88, 100, 112, 123, 159, 177, 178, 179, 191, 194, 196, 199, 203<sup>271</sup>, 205, 216<sup>272</sup>)<sup>273</sup>, two probably to female adolescents (graves 78 and 200) and two to female children (graves 10<sup>274</sup> and 67<sup>275</sup>). Graves 16, 116, 150 and 158 may have belonged to women, but the skeleton evidence or the finds are not conclusive. The female graves were mainly situated in the north-west part of the cemetery and at the east side (Mertens and Van Impe 1971, 21) but their distribution is not explicit enough to say that there was a clear distinct area

270 This grave was not listed by Mertens and Van Impe (1971) but the presence of a spindle whorl is taken here as a basis to assign the deceased as female.

271 In this grave the remains of two female skeletons were uncovered.

272 Graves 4, 7, 78: with bronze bracelets; graves 79 and 123: with beads; grave 88: with *tutulus* brooches (see further); grave 100: with two jet bracelets, both diameter 6.4 cm; grave 159: with hair pin; grave 196: with torques and bead; graves 177, 178, 179, 191, 194 with hair pin and beads; graves 199, 203, 216 yielded female skeletons. The skeletons of graves 150, 158 and 200 were possibly female. All information from Mertens and Van Impe 1971.

273 The other female graves as such assigned by Mertens and Van Impe (1971) were apparently interpreted based on the presence of glass vessel(s) (graves 24, 29, 33, 44, 93, 144, 185), a comb (grave 84), glass vessels and comb (grave 58), a glass vessel and/or tweezer and/or finger-ring (grave 64), a tweezer and/or comb and/or glass vessel (grave 71), an undecorated bronze finger-ring (graves 30 and 133), a *stylus* (listed by Mertens and Van Impe as an 'iron rod') and a counter (grave 143). These finds cannot be regarded as exclusively women-related items.

274 With bronze and bone bracelets. That it concerns a female child is a likelihood in this case. However, also young boys are known to have been buried with bracelets.

275 With hair pins and *Tutulus* brooch (see further).

268 An average on both male and female skeletons.

269 They did not state precisely which graves they considered as definitely female and which as possibly female.



Figure 93. Graveyard A as published by Mertens and Van Impe (1971) ('Plan I') supplemented with the indication of the distribution of graves with crossbow brooch, 'weapon' graves, female graves with *Tutulus* brooches, other 'undoubted' female graves and child graves (based on the anthropological data in Mertens and Van Impe 1971).

preserved for them. The child graves were found distributed all over the cemetery<sup>276</sup> (Figure 93).

At this cemetery the burials followed a firm pattern of interment (Figure 92). The deceased were all buried within large, rectangular, heavy wooden coffins, preserved or not in different degrees<sup>277</sup> (Mertens and Van Impe 1971, 24). The individuals were all stretched-out on their back, with the arms mostly brought together on the pelvis or stretched along the body, in a few cases with one or both arms crossed over the chest. The deceased seem to have been fully clothed and were often decked with ornaments or with the objects of dress presumable belonging to the deceased placed at the feet. The dress of the deceased male clearly demonstrates the military status of the cemetery which is most obvious mainly from the crossbow brooches and the waist belts. When present, the vessels with drinks and food (see Gautier 1972 for the animal remains) were also mostly placed near the feet, either within or outside the coffin, in some cases in a separate niche in the wall of the grave pit; in other cases the position of the grave goods seems to indicate that they had been placed on top of the coffin lid (Mertens and Van Impe 1971, 25).

#### IV.3.2.2. The chronology of Graveyard A

Since many new insights emerged on several find categories since the publication of this graveyard in 1971, new conclusions can be put forward on the chronology of Graveyard A. This revised chronology of the graves is mainly based on the presence of coins, roller-stamped samian, double-lobed beakers Brulet B4.2 and specific types of crossbow brooches and of buckles and belt fittings (see Appendix 7: Table 18). Of the ceramic grave goods, the Argonne roller-stamped sigillata are of special interest as chronological indicators. At Graveyard A twelve graves, well-spread over the cemetery, yielded a roller-stamped Chenet 320 bowl<sup>278</sup> (see Mertens and Van Impe 1971, Pl. LXVI). The roller stamps mainly refer to the second half of the 4th century AD<sup>279</sup> 280 (see Table 1). The double-lobed beakers with wider upper lobe type Brulet B4.2 generally appear in the North Gaulish repertoire from the last quarter of the 4th century AD (cf. Tuffreau-Libre 'vase bilobé' IIa; Tuffreau-Libre and Jacques 1992, 108; Seillier 1994, 55; Brulet *et al.* 2012, 152). At Arras, this type only occurred from the end of the 4th century onwards (c. AD 390 – first quarter 5th century) (Tuffreau-Libre and Jacques 1992, 108). It was a very popular type

Table 1. Overview of the Argonne samian with roller-stamped decoration at Graveyard A.

GRAVEYARD A	roller stamp	date
grave 15	UC 117	AD 340-380/390
grave 58	UC 108	AD 350-400
grave 70	UC 304	AD 325-375
grave 99	unclass. (only diagonal lines)	AD 320+
grave 115	UC 335	AD 350-400
grave 135	UC 308	AD 350-400
grave 144	UC 157	AD 325-375
grave 151	unclass. (only diagonal lines)	AD 320+
grave 170	UC 117	AD 340-380/390
grave 185	unclass. (only diagonal lines)	AD 320+
grave 201	UC 117 (two times)	AD 340-380/390

in the Atrebatian repertoire and has been attested frequently at late Roman graveyards between the Somme and the Scheldt (Seillier 1994, 55)<sup>281</sup>. At the graveyard of Vron, this type occurs regularly in phase I (c. AD 370-388) and in phase 2b (c. AD 405/410-415/420) (Seillier 1994, 56). Hence, this type B4.2 can be considered as an index fossil for the classification of the graves of the latest phase (see Appendix 7: Table 18). Coins, crossbow brooches, buckles and belt fittings deserve a closer look.

#### Coin data

Several graves of Graveyard A contained coins, not as Charon's obols but clearly given with the deceased as grave good; in total 114 were collected. Apart from seven, residual, coins from the High Empire, the coin spectrum runs from Constantinus I until after 388 (Lallemand 1966; Mertens and Van Impe 1971, 33)<sup>282</sup> (Figure 94). Lallemand pointed in her study of these coins to the monetary instability of the 4th century implying that coins ceased to circulate commonly only a few years after their issue, in contrast to the High Empire (Lallemand 1966, 119: note 6). This seems to be confirmed by a recent study of the late 3rd- and 4th-century coin finds of the rue Perdue cemetery at Tournai where the graves tend to have only recent coin issues in them (van Heesch and Weinkauf 2016, 109). Van Heesch and Weinkauf (2016, 113) also demonstrate that billon and bronze coinage of the 4th century apparently had a very short life in circulation. One has to take into account, though, that these conclusions result from the study of a civilian graveyard. Military grave contexts make this issue more complicated, as the expression of an identity must have played a (more significant?) role here. Coins may have been used as a symbol of *Romanitas* or loyalty to the emperor or part of the expression of a military identity, and in

<sup>276</sup> The distribution of the child graves is based on the anthropological data in Mertens and Van Impe (1971). This information differs slightly from that given in Mertens (1977) (see also before) which is said to be revised data but lacks details and grave identifications.

<sup>277</sup> When not preserved, large nails indicated the original presence of a coffin.

<sup>278</sup> This is the only roller-stamped type found at the graveyard.

<sup>279</sup> With thanks to W. Dijkman for the identifications of the roller stamps. Revised dates by Bakker, Dijkman and Van Ossel (*forthcoming*).

<sup>280</sup> Roller stamps with Christian motifs are lacking. Based on the finds in France and Germany, P. Van Ossel and L. Bakker believe their distribution started around AD 430; at Maastricht in the Netherlands W. Dijkman sees them appear around AD 400. According to Dijkman this group of stamps did not reach the Belgian and Dutch coastline, this in contrast to Friesland. The absence of Christian motifs can therefore not be used as a chronological indicator (pers. comm. W. Dijkman; cf. Dijkman 1992).

<sup>281</sup> At the graveyard rue Perdue at Tournai, this type has been attested definitely after AD 341 (Brulet 1990b, 48).

<sup>282</sup> In eleven graves, only one coin was found: four of them belong to the period 330-340, one to 340-348, two to 348-378 and one to the period 388-402. Grave 104 yielded three coins, with Valentinianus II (388-392) as youngest piece (van Heesch 1998, 278). In both graves 76 and 141 the soldier was buried with his purse (see further).



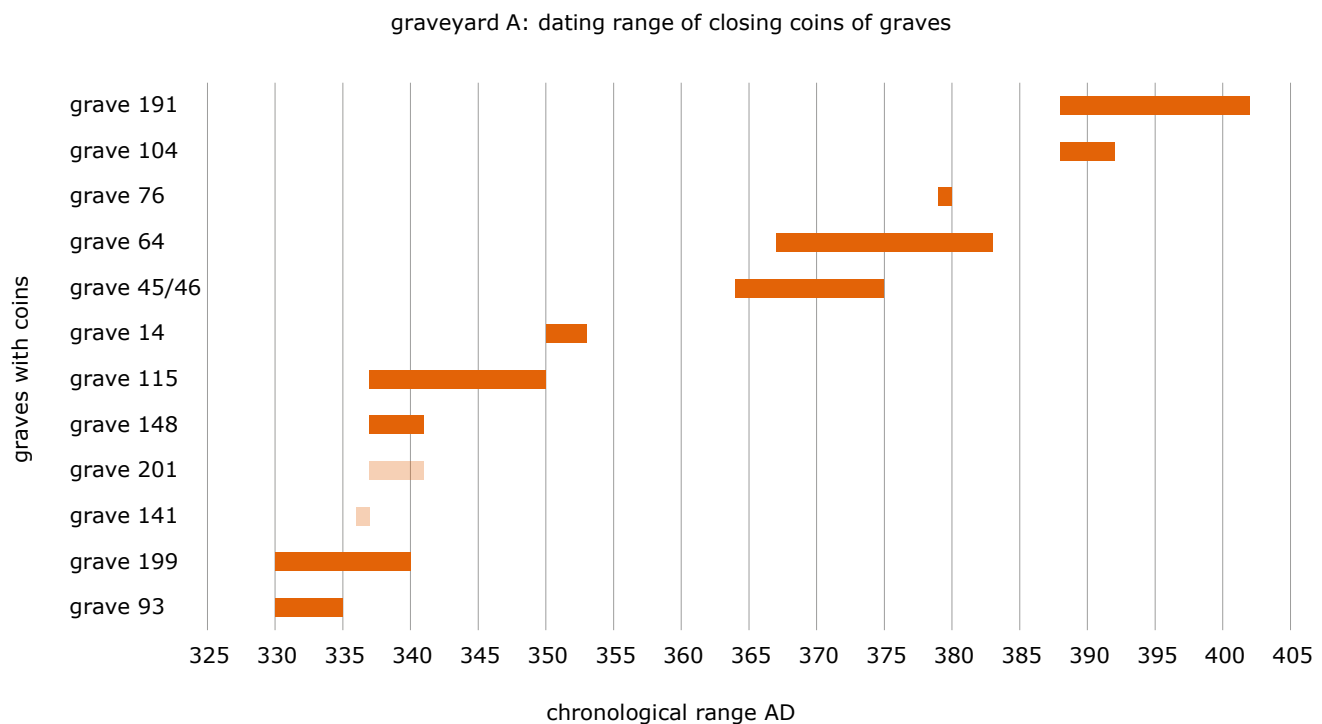


Figure 94. Chronological range of the (closing) coins found in the burials of Graveyard A. The coins in paler orange are earlier issues in graves of much later date (late 4th century AD onwards).

this respect it may have been important to be buried with earlier coins. This seems to be confirmed by the presence of a Constantine coin in grave 201 and a purse with Constantine coins in grave 141. Both can be dated to the late phase of the graveyard, from the late 4th century onwards, based on accompanying grave goods<sup>283</sup>.

In grave 76 the soldier was buried with his purse containing 88 coins. Of the 79 datable coins, 72 were minted under the reigns of Valentinianus I (364-375), Valens (364-378) and Gratianus (364-383); a coin of Theodosius I minted at Arles c. AD 379 was the closing-off coin of the purse (van Heesch 1998, 278). At least seven issues were minted at *Siscia* (Sisak in current Croatia (*Pannonia*)). Lallemand calculated that they represent 11.1% within the group of coins posterior to 364 of which the workshop could be identified. At Richborough 10% of the Valentinian coins were attributed to the same workshop at *Siscia*. The Oudenburg issues were identified as 'Série F'; two third of the Richborough coins from *Siscia* were also of that series (Lallemand 1966, 122-124). This increase of coins minted at *Siscia* has been related to the troop movements

Figure 95 (opposite page, top). The chronological range of the grave assemblages of Graveyard A based on the frequency of the attested chronological segments. Although most burials only yield wide dating ranges and keeping in mind the uncertainties shown by some conflicting dates between Böhme (1974/1987) and Sommer (1984), this representation demonstrates that the graveyard had its most active use between AD 330 and 410.

Figure 96 (opposite page, bottom). Overview of the dating ranges of the Graveyard A grave assemblages which can be taken as *terminus post quem* dating ranges for the burials.

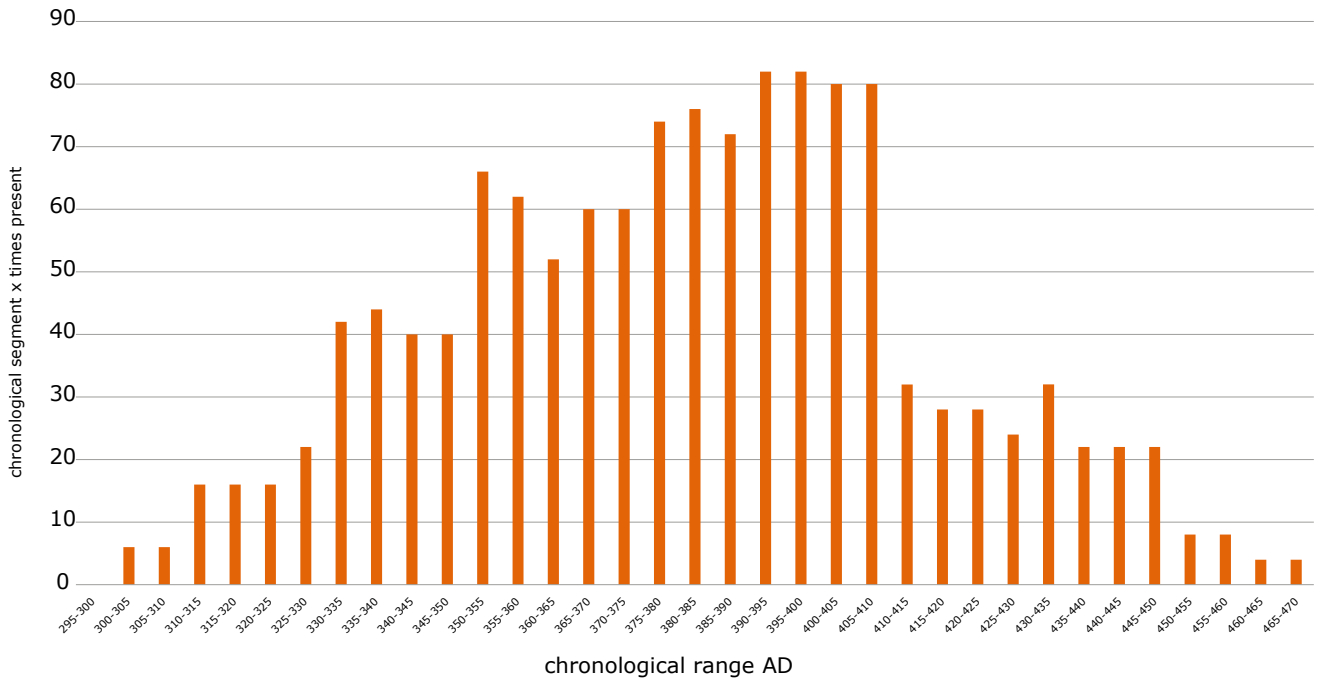
under Valentinianus I<sup>284</sup> (van Heesch 1998, 160). The given that the purse of the soldier of grave 76 at Graveyard A contained at least seven coins from *Siscia* may suggest that this man obtained these issues there himself rather than that he collected them while he was stationed at Oudenburg.

Although the number of graves with coins is low, and taken into account the aforementioned discussion on earlier deposits, the

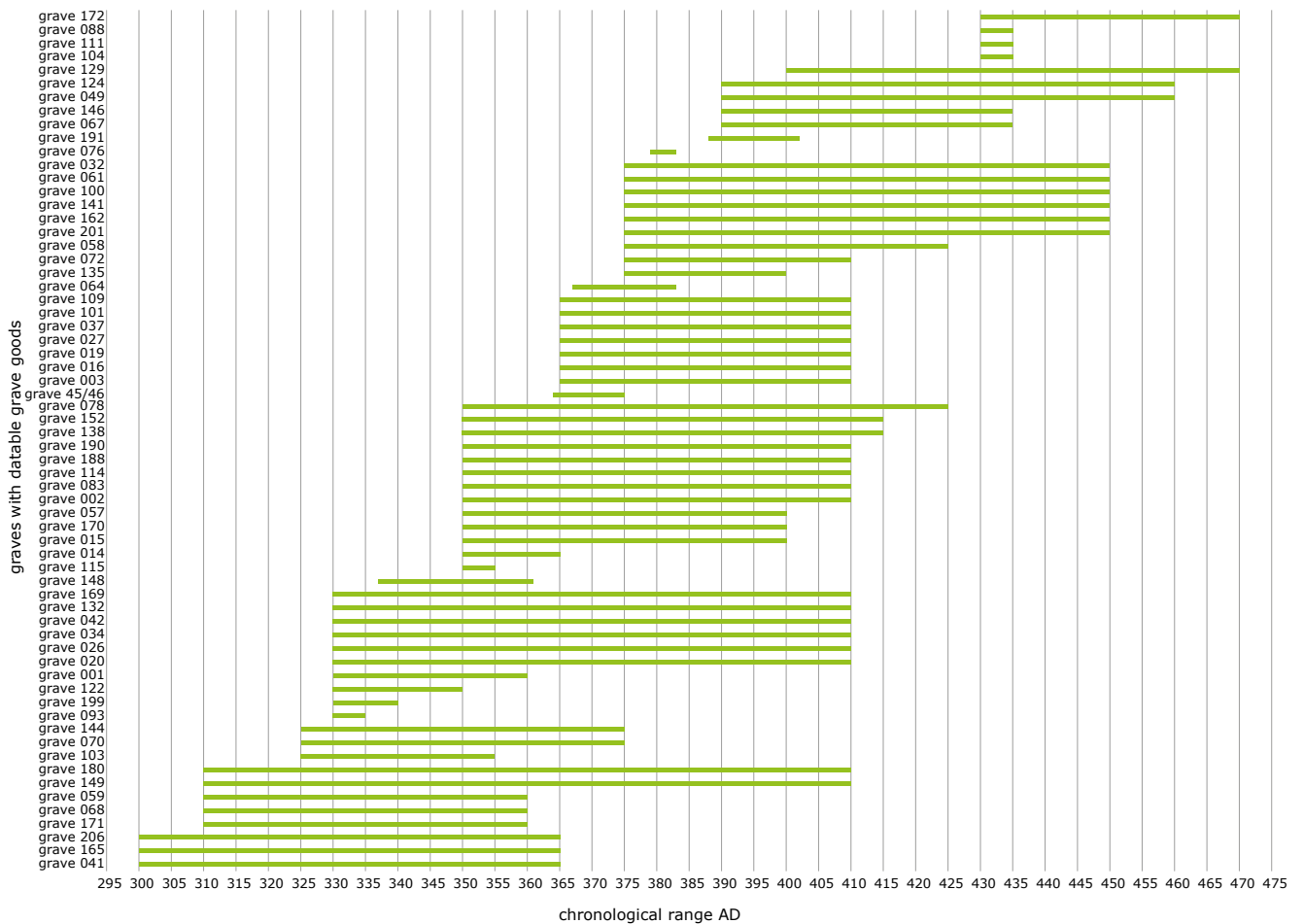
283 In grave 141 five coins were found at the right hipbone, clearly the content of a purse: three *Gloria Exercitus*, two standards (one minted at Lyon, issue of Constantinus II, two minted at Trier, one by Constantius II and one by Constantinus II), one *Gloria Exercitus*, one standard, minted at Arles by Constans (I), and one *Urbs Roma* from Trier. The youngest coin of this assemblage was the issue of Constans dated AD 336 (Lallemand 1966, 120; Mertens and Van Impe 1971, 173; van Heesch 1998, 278). Although this is a very homogeneous assemblage of the later first half of the 4th century, the accompanying double-lobed beaker Brulet B4.2 dates the grave to the later 4th century or later.

284 According to Alföldi (1963) who studied the *Siscia* coins found at Trier, these troops belonged to *comitatenses* stationed in Trier. Based on the chronological data of the coins, Alföldi believed these units had retrieved these coins at *Pannonia* from contacts with the local population and not as army payments. Alföldi further concluded that the presence of *Siscia* coins in *Britannia* must be indicative of direct relations between the army at Trier and the *Litus Saxonicum*. Lallemand suggested that the troops at Trier brought the *Siscia* coins into circulation resulting in a wide-spread distribution (Lallemand 1966, 124-125). Both conclusions seem to be focusing too much solely on the Trier coins.

graveyard A: chronological range of grave assemblages



graveyard A: dating range of grave assemblages



coin spectrum of Graveyard A shows a weak concentration in the period between Constantius II and Constans (333-361) (Mertens and Van Impe 1971, 33). The periods 340-348 and 348-364 were characterized by a general coin loss dip due to monetary reasons (van Heesch 1998, 169) (see Volume II, Chapter 2). A slightly higher coin loss in these periods at Graveyard A seems to evidence a definite occupation in that period, and hence also continuity in the fort occupation around the middle of the 4th century. The latest coins of Graveyard A are an issue of Valentinianus II dated to AD 388-392 (Lallemand 1966, 120) and a copy *Urbs Roma* dated after AD 388 (Mertens and Van Impe 1971, 33).

### Crossbow brooches

Thirty-two burials, or almost one quarter of the graves with grave goods, yielded a crossbow brooch (Table 2; Figure 93; Appendix 7: Table 18), found *in situ* keeping the *chlamys* costume (not preserved) in position. A 33rd crossbow brooch can be added but was found unstratified<sup>285</sup>. All these crossbow brooches are of the 'developed type'<sup>286</sup> (cf. Volume II, Chapter 3, Section 4, study by V. Van Thienen). This late Roman brooch type is a well-known official insignia for higher-ranked soldiers and civilian dignitaries (see Van Thienen 2011; 2016; 2017a for a discussion on this topic). They were symbols of an abstract state but worn by real people. Strikingly, the crossbow brooch occurred in combination with belt fittings (in some cases only the buckle) only in twenty graves, in combination with belt fittings and (iron) knife (or the 'official' suite) only in ten burials. The defined uniform consisting of crossbow brooch and belt set (cf. Swift 2000b, 43-44) was clearly not strictly applied and one can wonder whether the military uniform was indeed as strictly defined at all. At Oudenburg it was at least not rigidly practiced that the deceased was buried in this sense. The variation in their occurrence may, however, also be related to differences in the cultural biography of the individual items in relation to the specific deceased (cf. Gardner 2007a, 215).

The remarkable high number of crossbow brooches distinguishes the Oudenburg graveyard from contemporaneous cemeteries in the north-west of the Empire and points to the importance of the military base at Oudenburg with the presence of many military officers. Van Thienen investigated the social and cultural biography of crossbow brooches and concluded for the Oudenburg Graveyard A to a dominance of military indicators (type 3/4<sup>287</sup>), apart from some items incorporating the ambiguity military-civil (elite) through a process of imitation/adoption (type 2) and a few very late brooches representing high elite or state (type 5 and 6) (Van Thienen 2016, 387; Van Thienen 2017a). The distribution of the graves with crossbow brooches does not show any focus for their

Table 2. Overview of the crossbow brooches of Graveyard A sorted according to their chronology.

GRAVE-YARD A	type of cross-bow brooch	date of brooch type
grave 14	Keller-Pröttel 2b; Swift 2i	AD 300-365
grave 41	Keller-Pröttel 2b; Swift 2i	AD 300-365
grave 206	Keller-Pröttel 3c-4c; Swift 2i	AD 300-365
grave 59	Keller-Pröttel 2b; Swift 2ii	AD 300-365
grave 165	Keller-Pröttel 2b; Swift 2ii	AD 300-365
grave 37	Keller-Pröttel 4; Swift 2iii	AD 300-365
grave 103	Keller-Pröttel 3a; Swift 3/4a	AD 325-355
grave 20	Keller-Pröttel 3a; Swift 3/4d	AD 330-410
grave 1	Keller-Pröttel 3a-4c; Swift 3/4d	AD 330-410
grave 19	Keller-Pröttel 4c; Swift 3/4d	AD 330-410
grave 26	Keller-Pröttel 4c; Swift 3/4c	AD 330-410
grave 34	Keller-Pröttel 4c; Swift 3/4d	AD 330-410
grave 42	Keller-Pröttel 4c; Swift 3/4d	AD 330-410
grave 132	Keller-Pröttel 3c-4c; Swift 3/4d	AD 330-410
grave 169	Keller-Pröttel 4c-6; Swift 3/4c	AD 330-410
grave 188	Keller-Pröttel 2b; Swift 3/4b	AD 350-410
grave 57	Keller-Pröttel 2b-3b; Swift 3/4b	AD 350-410
grave 190	Keller-Pröttel 2b-3b; Swift 3/4b	AD 350-410
grave 27	Keller-Pröttel 4a; Swift 3/4b	AD 350-410
grave 129	Keller-Pröttel 4a; Swift 3/4b	AD 350-410
grave 2	Keller-Pröttel 3b-4a; Swift 3/4b	AD 350-410
grave 104	Keller-Pröttel 3b-4a; Swift 3/4b	AD 350-410
grave 72	Keller-Pröttel 3b; Swift 3/4b	AD 350-410
grave 114	Keller-Pröttel 3b; Swift 3/4b	AD 350-410
grave 115	Keller-Pröttel 3b; Swift 3/4b	AD 350-410
grave 172	Keller-Pröttel 3b-4; Swift 3/4b	AD 350-410
grave 83	Keller-Pröttel 4b; Swift 3/4c	AD 350-410
unstratified (SO14)	Keller-Pröttel 4a; Swift 3/4b	AD 350-410
grave 138	Keller-Pröttel 5; Swift 5ii	AD 350-415
grave 152	Keller-Pröttel 5; Swift 5ii	AD 350-415
grave 49	Keller-Pröttel 6; Swift 6i	AD 390-460
grave 111	Keller-Pröttel 6; Swift 6ii	AD 390-460
grave 124	Keller-Pröttel 6; Swift 6ii	AD 390-460

<sup>285</sup> This crossbow brooch was found unstratified by Hollevoet during the observation of the works for a new housing estate on the precinct of the former late Roman Graveyard A (SO14). The brooch was found together with some human bone fragments (Hollevoet 1985, 30-32), indicating that likely a burial was disturbed here which was not excavated in the 1960s.

<sup>286</sup> British terminology, following Hull and Hawkes 1987; cf. Volume II, Chapter 3, Section 4.

<sup>287</sup> The crossbow brooch typology applied here is based on the models of Keller-Pröttel-Swift after Swift (2000a).

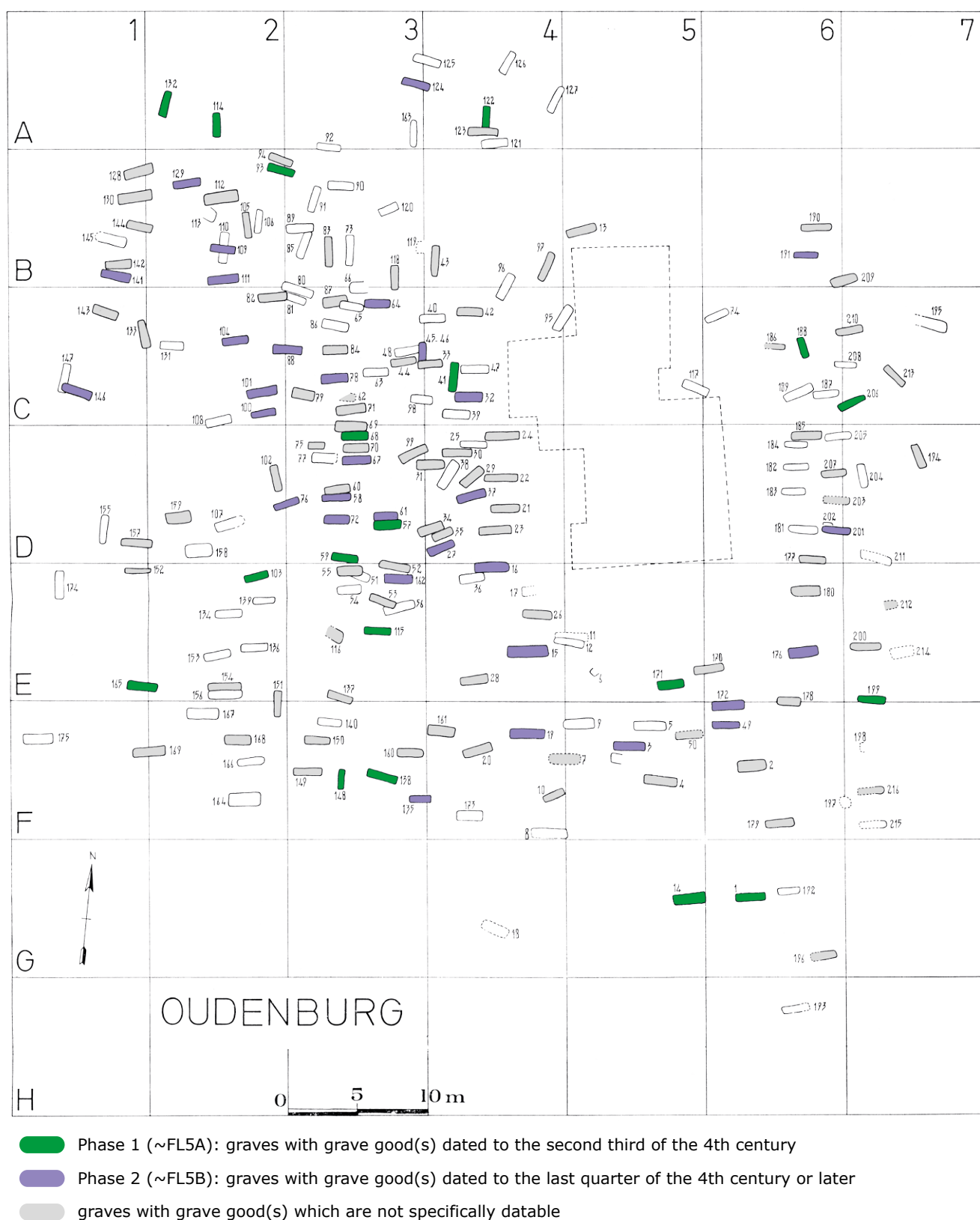


Figure 97. Graveyard A as published by Mertens and Van Impe (1971) ('Plan I') supplemented with the in this study proposed phasing. The graves left blank do not contain grave goods.



burials in particular areas in the graveyard; these military officers were buried well-spread throughout the cemetery (Figure 93). The brooches found in graves 14, 37, 41, 59, 103, 165 and 206 possibly date to the first half of the 4th century (Table 2). Three type 6 crossbow brooches date their graves (49, 111 and 124) from AD 390 onwards; graves 111 and 124 were situated in the north-west of the cemetery, grave 49 in the south-east.

Combining all chronological indicators discussed above with the revised dates of the military dress accessories (see Appendix 7: Table 18; see also further), has enabled to refine the chronology of Graveyard A. This graveyard was installed in the second quarter of the 4th century and was in use until the first decades of the 5th century. Two phases can be discerned and, as will be demonstrated further in this study, they can be related to fort levels 5A and 5B (Figure 97).

#### IV.3.2.3. Weapon graves or not?

Mertens and Van Impe (1971, 26) emphasized that the military graveyards at Oudenburg were characterized by the absence of weapons<sup>288</sup> – concluding to a regular army unit – while weapon graves were seemingly so typical for the second half of the 4th century and first half of the 5th century AD in the wider region. These weapon graves occur between Elbe and Loire with a dense concentration at *Belgica* I and II and at *Germania* II (Böhme 1974; Böhme 1996, 95). Böhme however countered the assumption for Oudenburg in his study. Grave 122 yielded an axe, and this burial was listed by Böhme (1974, 105) as a weapon grave. Around 80% of the weapon graves in the cemeteries of the 4th and 5th centuries listed by Böhme only contained one axe (Böhme 1996, 95). Grave 142 containing six arrowheads, although not listed by Böhme, can be compared with the twenty ‘warrior graves’ containing arrowheads in that same region (Böhme 1974, 110-111). For the spear with broken-off shaft and totally wrapped in cotton from grave 129, probably originally laid upon the coffin, Mertens and Van Impe (1971, 26) suggested a function as standard; Böhme however recognized in it a variant on the hunting spear<sup>289</sup>. In contrast to Mertens and Van Impe, Böhme did consider the axe- and the spear-burial as weapon graves – and the arrow-grave can perhaps be added – but acknowledged the exceptional low percentage of them in the Oudenburg graveyard<sup>290</sup> while their presence was normally more than 8% reaching up to 70% or more at contemporaneous cemeteries such as Rhenen, Haillot, Furfooz, Cortrat, Vert-la-Gravelle, Abbeville and Vermand III (Böhme

1974, 168-169). Based on the grave goods and the intersection of grave 122 containing the axe by another grave, this burial can be dated in the first half of the 4th century or somewhat later. Grave 129 with the spear can definitely be dated to the very end of the fort’s occupation in the early decades of the 5th century and should therefore be considered within a totally different context than grave 122. For grave 142, with the arrowheads, there are no chronological indicators to date this burial more closely.

However, it is important to take into account the remote, isolated position of Oudenburg within the Roman North-West. The aforementioned contemporaneous cemeteries lie in more ‘romanized’ regions and will have had a higher degree of connectivity to larger centres than Oudenburg which will have had its influence in burial expressions.

Böhme considered all inhumation graves in the North-West, and certainly the ‘weapon graves’, as Germanic. However, Halsall demonstrated that inhumation graves in the Frankish homelands only appeared after they emerged in Northern Gaul and that their introduction should be seen within the same social context as within the Empire. Besides, Halsall argued that the weapon burial was not at all an inherently Germanic rite and that the presence of weapons should not exclude that the deceased was a Roman civilian. Moreover, the weaponry appears to be of Roman manufacture (Halsall 1992, 200; 2007, 156-157). Theuws (2009) looked deeper into the data of these ‘weapon burials’ which revealed to be rather a rare phenomenon. The sword graves mainly dated to the very late 4th and 5th centuries; most of the 4th-century weapon burials only contained an axe, a spear or both. Theuws noticed that of the 4th-century graves over half of them contained only a single axe, a quarter an axe and a spear, and a small number only a spear. Rather than as weapon and/or ethnical expression, Theuws sees the universal, dual meaning of the axe as ‘a symbol encompassing both military and agricultural meanings’ as the reason for its deposition in the grave (Theuws 2009, 297-298, 301-302). He argued that the axe was an ‘ethnically neutral object eminently suited to the rhetoric of a new burial rite in late Roman Gaul, which resulted from an interpretative process involving the appropriation of elements from different cultural sources’ (Theuws 2009, 303). He even sees parallels with the lance, which was not only a weapon but also a symbol of authority, both in Roman and Germanic contexts, and besides also related to the hunt (Theuws 2009, 303-304). The arrowheads were already considered by Böhme as primarily referring to the hunt (Böhme 1974, 110; Theuws 2009, 305). Theuws concluded that it was in fact the hunt that was the primary element in the rhetoric of the late Roman burial rite, with the axe, the lance, the bow and arrows as symbols in a rhetoric related to ‘the representation of new types of claims on the land and positions of authority’, thus being the ‘key elements in the sophisticated symbolism of embedment in the landscape, both cultural and physical’ (Theuws 2009, 307). In this reasoning, these objects can no longer be associated with a Germanic origin, nor with a status as warrior (Theuws 2009, 307-308), but should be seen as a ritual expression, mainly visible in resettled areas (Theuws 2009, 309-310). A connection to a (civil) elite cannot be confirmed by the Oudenburg situation, though. In the 4th and first half of the 5th century, this site only knew a military

288 Many graves contained a knife but this multi-purpose tool cannot be regarded as a weapon.

289 He recognized the Oudenburg find as a hunting spear with holder based on the four long staples preserved in the wooden shaft. In the case of this variant two fine iron straps were stapled onto the wooden stem and connected with the shaft of the blade through multiple wrap-around (Böhme 1971, 101).

290 Böhme listed 4% for the Oudenburg graveyard representing two graves. When considering the grave with the arrowheads as an additional weapon grave, this results in a percentage of 5.5%, still much lower than at the other graveyards; however, it must be taken into account that at both Cortrat and Vert-la-Gravelle the respective 10% and 9% represent in both cases only one weapon grave versus respectively 10 and 11 male graves (see Böhme 1974, 167) which sets the percentages in a different perspective.

presence, or better said a fort community; it was a remote post with no surrounding land to claim over a nearby elite. Moreover, interaction and competition with neighbouring groups will have been limited. These elements can of course also be the reason why this type of burial is hardly represented at the Oudenburg graveyard. Moreover, one can call into question whether these finds at the Oudenburg graveyard should be regarded as weapons after all. The axe can have belonged to the deceased being a woodworker; with the arrowheads – a possibility Böhme already mentioned (1974, 110) – and the spear it is possible that they had been actually used by the deceased for hunting.

A mix of cultures and changing identities marked the region in that period. It will have resulted in the search for new expressions to ‘identify’ themselves and to distinguish themselves from others. Certainly, the deposition of specific grave goods will have symbolized certain values, claims and representations. However, whether they were exactly the ones discussed by Theuvs, can hardly be evidenced archaeologically. Whatever the exact meaning of the ‘weapon’ graves were, the grave goods of Graveyard A definitely indicate that this cemetery represented a military-based, and complex, society. The brooches, buckles and belt fittings and also the jewellery deserve close attention here as they are witness of a high mobility.

#### IV.3.2.4. Graves of women with rich dress accessories

Two graves of women were distinctive because of their prominent brooches (Figures 93 and 98). The girls’ grave 67 yielded a so-called *Tutulusfibel* (or trumpet brooch) named Typ Oudenburg by Böhme (1974, 22), in silver, gilt and with niello inlay, apart from many other jewellery (see further). Grave 88 belonged to a woman of about 25 years old, apparently of high status based on her brooches, silver finger-ring, double-sided bone comb and bronze needle. The burial contained in total five brooches (see Mertens and Van Impe 1971, 113-116): a silver gilt set of *Tutulusfibel* of the same type as in grave 67 (Figure 98, grave 88: nos 1-2), together with a loose closing disc with cross-motif of such a brooch (no. 6) (see Böhme 1974, 22), next to a bronze so-called *Armbrustfibel mit Trapezfuss* Böhme Variante C (1974, 9) (no. 9), a silver so-called *Stützarmfibel mit Trapezfuss* Böhme ‘Gallischer Typ A Untertyp Vermand’ (1974, 12) (no. 10), and a, now identified as such, ‘composed disc brooch’ (*Komponierte Schalenfibel*) Böhme’s Typ Lippspringe, with spiral decoration surrounded by a ribbed rim (see Böhme 1974, 26) (nos 4 and 7)<sup>291</sup>. The latter can be dated from the last third of the 4th century onwards; datable grave contexts with such type of disc brooch mainly point to the first half of the 5th century (Böhme 1974, 28).

A large concentration of *Armbrustfibeln mit Trapezfuss* (or supporting-arm brooches with trapezoid foot) was found around

the estuary of Elbe and Weser (G) (Böhme 1974, 10 and Karte 2; Böhme 2009, 136: Fig. 5), according to Böhme indicating their region of origin from where they reached northern Gaul with their owners and where they developed into more elaborate forms (Böhme 2009, 136). He pointed to a distribution of the Gallic type of the *Stützarmfibel* which was limited to the Gallic coast, according to him pointing to a production in a North French workshop (Böhme 1974, 12). The distribution of the *Tutulus* brooches (Figure 99) illustrated for Böhme that this dress code originated from the region between the Rhine and the Lower Elbe based on the restricted distribution of the early Germanic *Tutulus* brooches of the type Ortbroek-Nijmegen dating c. AD 300 – early 4th century (cf. Böhme 1996, 94; 2009, 135). The *Tutulus*, *Armbrust* and *Stützarm* brooches, usually worn as pairs, were mainly common in the provinces of *Belgica Secunda* and *Lugdunensis* II in contrast to their absence to the east of these provinces. Böhme concluded from this distribution pattern that in these regions a different Germanic population was attracted to join the Roman army (Böhme 1996, 94-95). Halsall, however, interprets the distribution maps very differently. He concludes that it is far more likely that the *Tutulus* brooches, but also the other brooch types, were made in Gaul and exported northwards (Halsall 1992, 201; 2000, 172; 2007, 157). However, this may be an underestimation of the frontier dynamics. The distribution may well indicate that the brooches were produced in the Rhine frontier zone and were exported to both sides. The distribution in Northern Gaul also reflects the idiosyncrasy of a frontier zone population, representing a mixed descent<sup>292</sup>.

Several women and girls were buried with their bracelets still *in situ* or placed next to them. Integrated in Swift’s research on the dress accessories in the late Roman West (Swift 2000a) and studied in depth as an assemblage by Sas (2004), many of them are revealed to be items ‘on the move’ (obtained during troop movements) with relations with *Britannia*, *Germania*, *Raetia*, *Pannonia* and the Danube region (Sas 2004<sup>293</sup>) (Table 3).

The type of bracelet with simplified animal-head or snakehead terminals worn by the woman buried in grave 194 has, according to Swift (2000a; 2000b) its largest concentration in *Pannonia* with just a few examples outside the area. One of the bracelets of grave 191, of the type with double snakehead, has only be attested in Raetian cemeteries with a few exceptions in the West (Swift 2000b). The second bracelet of a simple circular wire type with a probably double-hook fastening is known from Britain and *Pannonia*, and has only one parallel in Belgium, at Furfooz. At grave 199, the female of around 20 years old, had a silver hair pin in her hair and a bronze bracelet with animal-head terminals on the right forearm of the same type as the one in grave 191. The gilded pine-cone forming the head of the silver hair pin points to the higher social status of this young woman (Sas 2004, 357). These two graves (191 and 199)

291 The face of the bronze disc brooch was not preserved. Two very similar and more complete fragments of the upper plates of two disc brooches found in grave 1 at Bad Lippspringe (see Böhme 1974, Taf. 4: 5-6) evidence that the margin piece of a flat, round, silver plate in Oudenburg grave 88 most probably is the last remains of the face of such a disc brooch. As such it can now be classified as a ‘composed disc brooch’.

292 As will also be clear further, the conclusion by Sas (2004, 362-363) that she was probably the wife of a Germanic soldier recruited by the army or that a regular Roman army soldier had taken a free Germanic lady for his wife, may be too simplistic.

293 The distribution patterns of the bracelets were based on the study by Swift (2000a). For references to specific types: see the references by Sas (2004) to Swift (2000a).

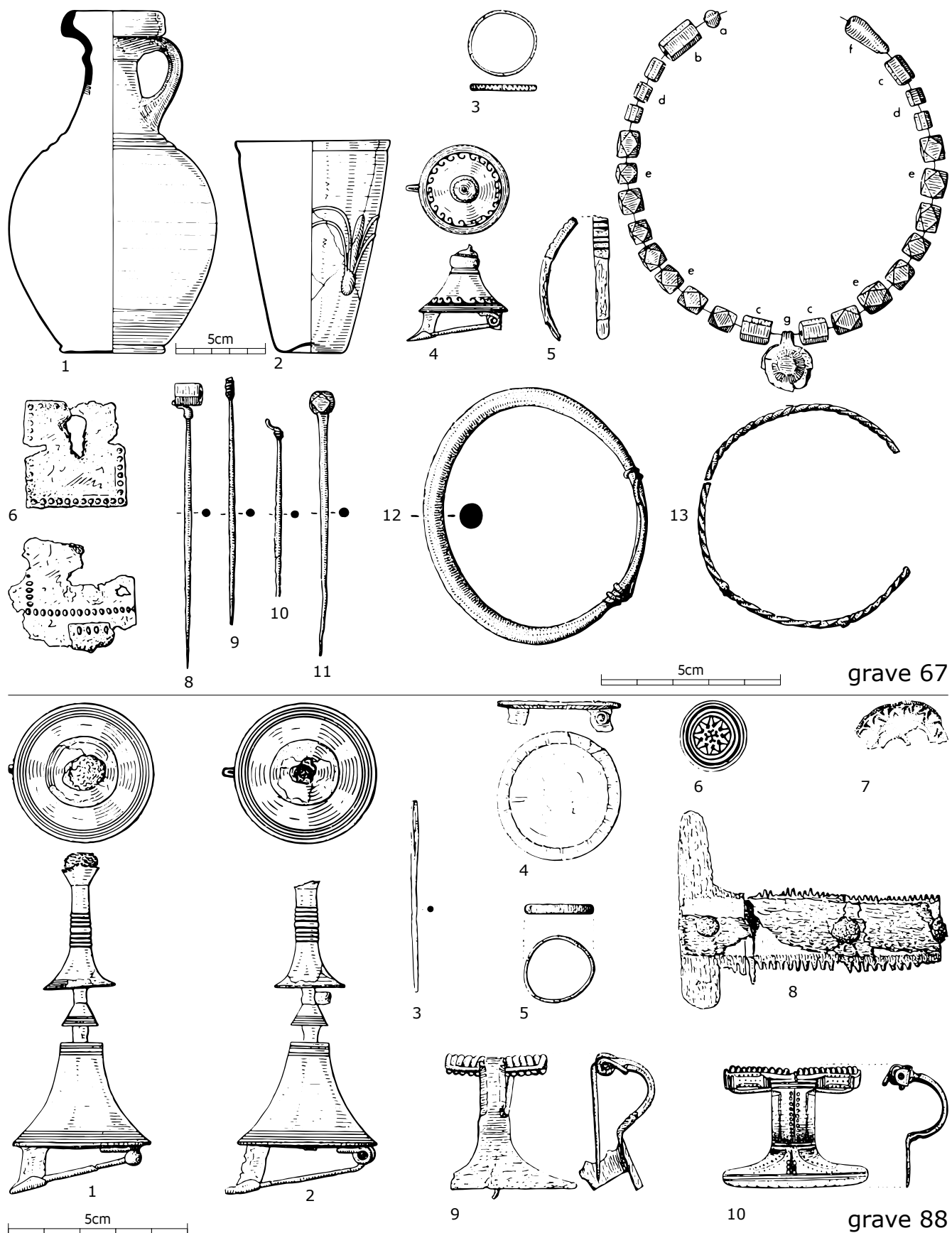


Figure 98. Graveyard A. The grave good assemblages of female graves 67 and 88 (taken from: Mertens and Van Impe 1971).

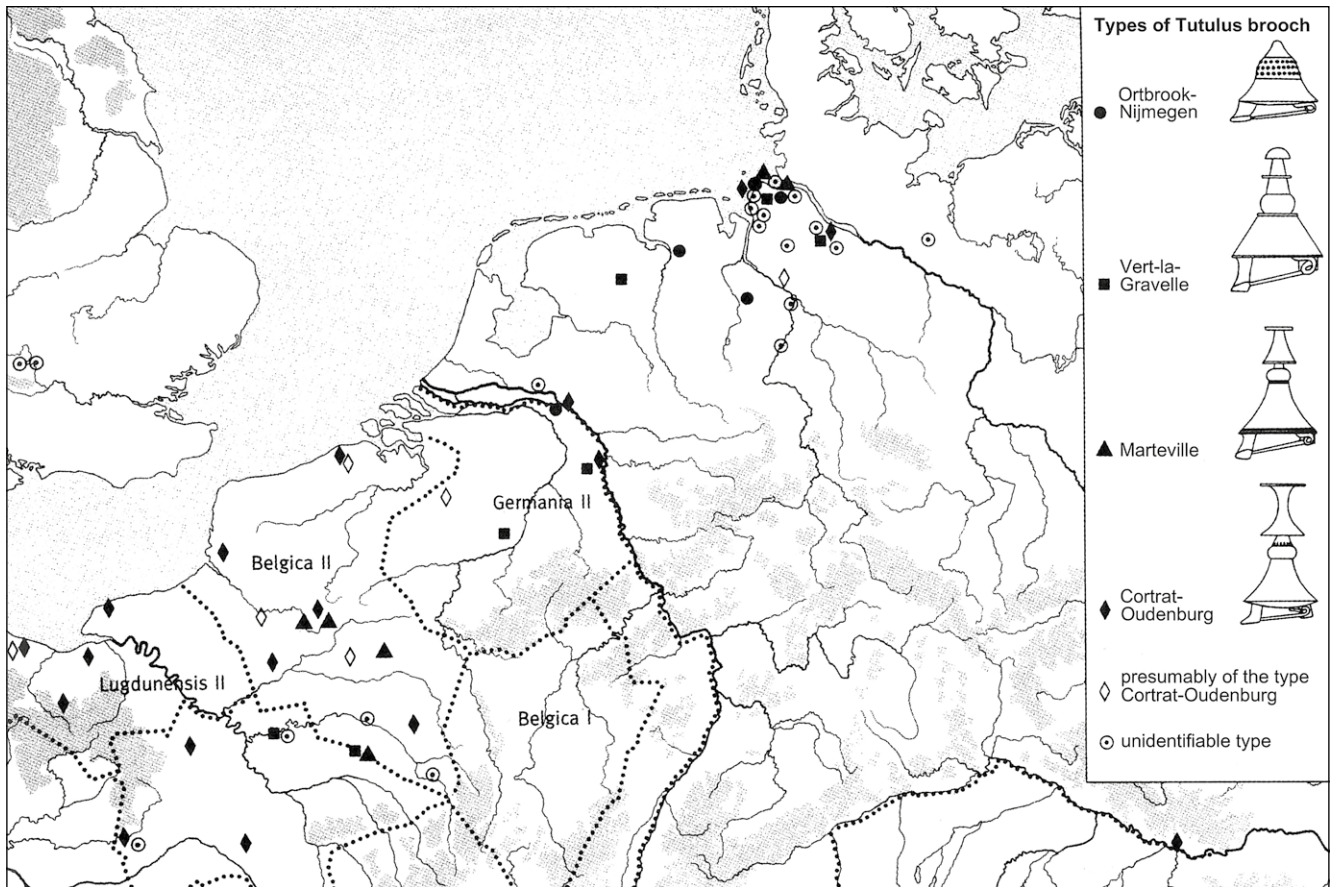


Figure 99. Distribution map of *Tutulus* brooches of the early 4th to the early 5th century AD by Böhme (2009). The types in the legenda are chronologically ordered from top to bottom (taken from Böhme 2009, 135: Fig. 4).

had the same orientation, east-west, and both were located at the east border of the cemetery.

Several graves also displayed a strong connection with *Britannia* (Table 3). The female grave 4 yielded two bracelets of which one with a decoration of chip-carved facets and transversal lines, according to Swift (2000b) a typical British type travelling from *Britannia* to *Raetia*. An identical bracelet was found at the Portchester fort (Cunliffe 1975, 204-205, Fig. 111: 31). All three bracelets of grave 78 of a young woman of 18-20 years old point to *Britannia* as origin. A snakehead bracelet with ring-and-dot terminal was likely produced in a workshop in southern Britain; this type hardly occurs on the Continent. The only near exact parallel for the second bracelet with alternating single and double ring-and-dot-motifs was found again in Portchester (see Cunliffe 1975, 206 and 208, Fig. 112: 34). Sas noticed that such multiple motif bracelets appear predominantly in very late contexts of the 4th century on the Continent and are sometimes found together with other Romano-British bracelets, usually from sites having military associations (Sas 2004, 365). The third bracelet is of the cogwheel type which must have been produced in southern *Britannia*. This type knew a wide distribution in *Britannia* but on the Continent only three sites have yielded such a bracelet: Oudenburg (1 ex.), Tongeren (4 ex. but out of context) and Krefeld-Gellep (2 ex.) (Swift 2000b, 160; Swift 2010; see also Sas 2004, 366-367). This distribution pattern has been

related by Swift to movements of women travelling with the army and/or to trading of goods to military sites.

The young female of c. 20 years old of grave 216 was buried with two British bracelets, one with imitative bead decoration and one with zig-zag/ring-and-dot decoration, besides a fragmented bone bracelet (Swift 2000a: Fig. 159 and 186; Swift 2010, 273). In the child grave 67 a girl was buried of 13 years or later, together with her jewellery box near her feet and several pieces of jewellery around her skull: four bronze hair pins, a beaded necklace with gold *bulla*, a silver ring, next to a silver bell-shaped brooch (*Tutulus* type, see before), a bone bracelet and two bronze bracelets (Mertens and Van Impe 1971, 95-97; Sas 2004, 368-369). As for the bracelets almost identical comparisons were found in Portchester. The finger-ring shows resemblances with a type of bracelet mainly available in *Britannia*. The *bulla* can be regarded as a good-luck charm which was usually worn by children; an almost identical gold *bulla* was found in a child grave at Archar/*Ratiaria* in *Moesia Superior* (the territory of modern-day Central Serbia, Kosovo and the northern parts of the modern Republic of Macedonia) (Sas 2004, 369)<sup>294</sup>.

<sup>294</sup> Based on these connections to *Britannia*, *Germania Libera* and *Moesia*, Sas (2004, 369) has suggested that this girl was perhaps the daughter of a soldier who had been stationed in *Moesia* and *Britannia* and who later married a Germanic lady and finally got transferred to Oudenburg.



Table 3. Overview of the jewellery from Graveyard A that is connected to other regions.

CONNECTION TO (based on distribution restricted to the region in question and/or exact parallel(s), cf. Swift 2000a,b and Sas 2004)	AT GRAVEYARD A
<i>Pannonia</i>	grave 114: bracelet grave 191: bracelet grave 194: bracelet
<i>Raetia</i>	grave 191: bracelets and finger-ring grave 199: bracelet
Danube limes region or the region beyond in <i>Germania Libera</i>	grave 7: bracelet grave 10: bracelet grave 67: bulla (parallel in <i>Moesia Superior</i> ) grave 196: torque
<i>Britannia</i>	grave 4: bracelets grave 67: bracelets and finger-ring grave 78: bracelets grave 191: bracelet grave 216: bracelets

The many connections between Oudenburg and Portchester through exact parallels of bracelets and comparable decorative patterns made Sas believe in a rotational occupation at the *Litus Saxonicum* with a moving of army units and their families from Portchester to Oudenburg and maybe also the other way around (Sas 2004). Also Swift believes that they were brought in at the Oudenburg fort by their wearer (Swift 2010, 251). The analysis of the distribution of specific types of British bracelets has revealed that they knew a bias to military, mostly coastal, sites and large towns, from which Swift has concluded that they came along with women travelling with the army (Swift 2010, 271). The finds of Romano-British bracelets in 4th-century Tournai and Tongeren indicate even further troop movements in these capitals of respectively the *civitas Turnacensium* and the *civitas Tungrorum* (Sas 2004, 369). Furthermore there are indications that the paired army units serving in Portchester and Pevensey possibly were Pannonian in origin, some of them may have already served on Hadrian's Wall (Johnston 1977, 9-10; see also Allason-Jones 1989, 61, 196). Therefore, Sas (2004) suggested that contingents from the Danube limes, possibly from *Pannonia*, were moved to forts along the *Litus Saxonicum* on both sides of the North Sea, such as Portchester and Oudenburg, passing through *Raetia* and the provinces of the Rhine Limes.

#### IV.3.2.5. Male graves with dress accessories

Special attention goes to the soldier of grave 114, 22-25 years old, who was seemingly an adherent of the mystery-cult of the Thracio-Phrygian god Sabazios since he wore a silver armlet still *in situ* on his right upper arm with the inscription VOTVS SAVAIVS (*vow/gift to Sabazius*<sup>295</sup>). Indications for this cult, with strong connections to

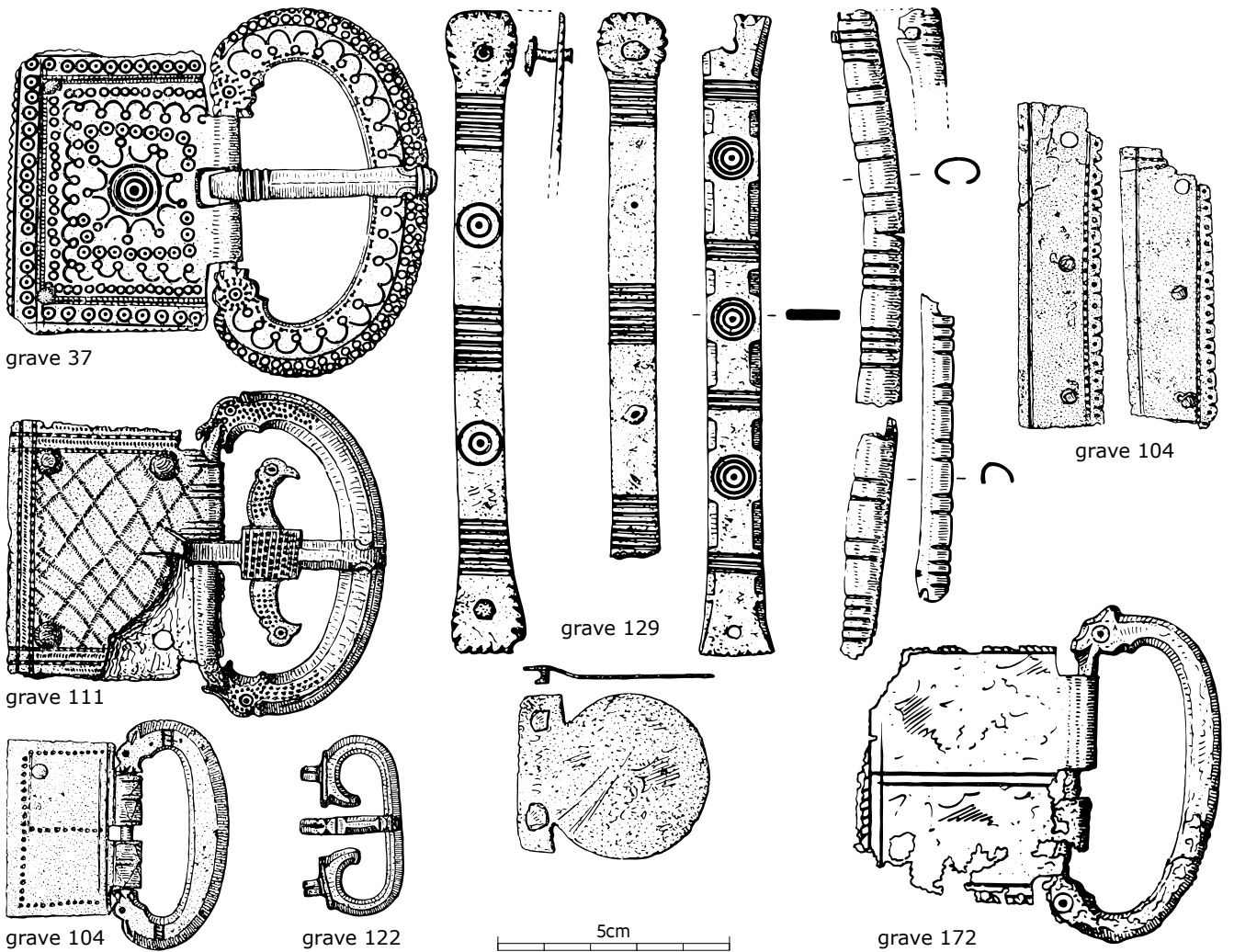
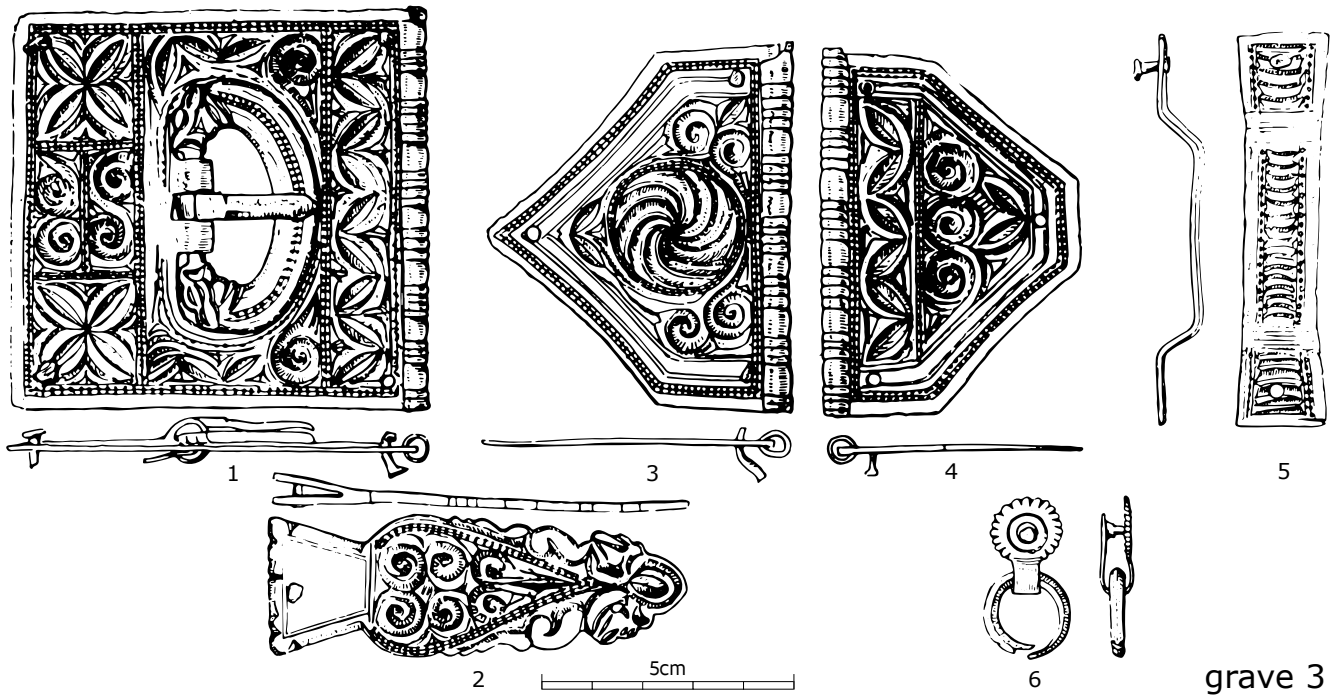
Figure 100 (next page). Graveyard A, selection of grave goods. The bronze belt fittings from grave 3. Buckles, with or without buckle plate, and belt fittings from several graves (taken from Mertens and Van Impe 1971).

Bacchus and Jupiter, have been frequently encountered in military contexts and were often referring to *Pannonia* (Sas 2004, 354).

A belt buckle and belt fittings were found in several male graves (cf. Appendix 7: Table 18). While the chip-carved belt sets are clearly items of military dress (Böhme 1974, 97; Swift 2000b, 201), most of the buckles were likely to have had military associations as well (see Swift 2000b, 201, 230-232). The belt (buckle and/or fittings) was either found *in situ* or deposited near the feet of the deceased. This deposition near the feet was apparently a wide-spread burial practice; it is believed that it meant to give with the deceased his, taken off, function and his dignity (Mertens 1964b, 232; Mertens and Van Impe 1971, 25). The belt trappings from the Oudenburg Graveyard A have been integrated in the studies of several scholars (for example Bullinger 1969; Keller 1971; Böhme 1974; Sommer 1984; Swift 2000a). Mertens and Van Impe already pointed to the presence of according to Chadwick Hawkes and Dunning (1961; 1964) continental types of animal-ornamented buckles as well as types produced in *Britannia*<sup>296</sup>. The belt buckles, plates and strap-ends from the Oudenburg graveyard were integrated by Böhme in his study on the 'Germanic' grave finds of the 4th and 5th century in the region between the Lower Elbe and the Loire. He made a classification of the belt fittings in *Stufen* and a combined chronology of male and female graves (mainly based on the brooches) in three *Zeitstufen* based on related coins, (crossbow)

<sup>295</sup> For an explanation of the remarkable grammatical form of the inscription: see Tassignon 1997, 100.

<sup>296</sup> Mertens and Van Impe (1971) considered as 'British' types of buckles according to Chadwick Hawkes and Dunning (1962; 1964) the ones found in graves 16, 171, 188 (type IA) and grave 122 (type IIA). To type IA can be added the buckles from graves 59 and 149.



brooches, stylistic comparisons and find-combination statistics (Böhme 1974, 79, 155-157).

Belt elements from graves 3, 37, 104, 122, 129 and 172 were classified by Böhme (1974) in *Zeitstufe I* and first dated to AD c. 330-400 (1974, 80: Texttafel A, 82, 155-157). One of these is the threefold belt garniture Böhme Typ B (1974, 57-58) from grave 3 (Figure 100). This belt set was completed with a lancet-shaped strap-end with chip-carved decoration Böhme Typ 1 (1974, 74). Böhme compared the chip-carved belt buckle piece of grave 146 with the belt garniture of grave 3<sup>297</sup>. Böhme also included into *Zeitstufe I* the belt buckle from grave 122 (Böhme 1974, 157) which was dated by Keller previously to the first half of the 4th century (Keller 1971, 63-64) and was assigned by Böhme as '*Schnalle mit Rechteckbeschläg und Steckachse*' (1974, 65). The other indicators for Böhme's *Zeitstufe I* were the animal-ornamented buckles Form Hermes-Loxstedt (with rectangular buckle plate with simple punched design) (Böhme 1974, 70) from graves 37, 104, 172, and the punched-decorated belt garniture Böhme Form Trier-Basel (1974, 63-64) with the disc-shaped strap-end (Böhme 1974, 77) from grave 129 (Figure 100). To *Zeitstufe II* were classified the animal-ornamented buckle Böhme Form Cuijk-Tongeren (with punched-decorated rectangular buckle plate) (1974, 69-70: group k) from grave 111 and the simple bipartite belt garniture ('*Einfache Gürtelgarnituren*': Böhme 1974, 64-65) from grave 104 (Böhme 1974, 81: Texttafel B, 83, 155-157). This period was dated by Böhme (1974) to AD 380-420.

However, this classification by Böhme (1974) has been criticized since, first by Mildenerger (1975) who not only pointed to problems according to differences between the regions Böhme covered; more importantly he countered the dates of the *Zeitstufen*. In 1987 Böhme revised his own classification in a short but very important notice and classified the Germanic grave finds in the West-Roman provinces now into two *Fundgruppe*, without making clear connections with his *Zeitstufen* though. Lanting and van der Plicht (2010) investigated the correlation between Böhme's *Zeitstufen* with their according types (cf. Böhme 1974, 156: Abb. 51/52) and his *Fundgruppen* (cf. Böhme 1987, 771-772: Abb. 38 and 40). Important in relation to the Oudenburg graveyard is the attribution of type 1, type 10, type 17 and type 21<sup>298</sup> to *Fundgruppe A*, which Böhme 1987 dated to c. AD 390-430/435. The types which are present at the Oudenburg Graveyard A and attributed to *Fundgruppe B*, dated by Böhme to AD 430/435-465/470, are types

2, 3, 7, 11, 22<sup>299</sup>. Based on the revised ideas on the chronology of these late Roman finds, the Oudenburg Graveyard A should have been still in use until at least AD 430/435. However, the chronology by Sommer (1984) does not support this; the dates given by Böhme (1987) and by Sommer (1984) for the buckle types in graves 37, 104 and 172 are even not compatible (see Appendix 7: Table 18). While these data of Graveyard A are inconclusive about its end date, finds at the fort precinct confirm that an end date well after AD 410 has to be considered (see Chapter V, Section V.1.6.2).

Other grave goods at the Oudenburg graveyard, like the razor knife in three graves (83, 111, 122)<sup>300</sup>, the fire striker as a component of a purse in two graves (76, 104)<sup>301</sup>, and the triangular bone combs (see Böhme 1974, 167), have been regarded as typical 'Germanic' elements by Böhme (1974; 1996; 2009). However, like the brooches, they probably should rather be considered as typical elements of frontier societies which consisted of mixed lifestyles, identities and ethnicities. This will be further discussed in Chapter V, Section V.3.4.

It is important to keep in mind that not all burials contained grave goods. Of the 216 graves no less than 83 burials had no grave good; of the 133 which did, some sixteen graves only contained one simple item (a coin, a silex, a knife, ...). Besides, the grave good assemblages of the remaining 117 graves were not all lavish (see Appendix 7: Tables 17-18). Böhme wondered whether the graves without grave goods were to be considered as representatives of the Gallo-Roman population (Böhme 1974, 166). Böhme furthermore postulated that, since the weapons belonged to the army, also Germanic soldiers would have returned their weapons when they were part of a regular unit. He suggested that maybe only soldiers with a very strong connection to pagan-Germanic beliefs maintained the weapon grave goods (see Böhme 1974, 182 and footnote 854)<sup>302</sup>. With an absence of material culture, it is obviously difficult to interpret the graves without grave goods, or with only a silex for example, versus the graves with grave goods. It has already been stressed that this fort community was part of a frontier society in which one cannot (or at least no longer) speak of 'Roman versus Germanic'. This society was developed from a mixture of identities and ethnicities and burial expressions are more likely to be explained within a social context than as related to ethnicity. Graves without grave goods

297 According to Ypey (1969, 91) such a trapping as of grave 146 attached a pocket or purse onto the belt; according to Bullinger (1969, 60 and Abb. 47: 3) this kind of buckle mount rather served as fastener of the shoulder belt.

298 Type 1 represents the chip-carved belt garnitures A and B with the B-type being present in grave 3 (Figure 100). As for type 10 the *Stützarmfibel mit Trapezfuss* of the *Gallische Typ A* is of importance here, one of the brooches of the female grave 88. Type 17 is the *Armbrustfibel mit Trapezfuss Variant C*, also one of the brooches of grave 88. Type 21 represents the *Tutulusfibel Typ Oudenburg*, found in graves 88 and 67 (Figure 98).

299 Type 2 is the animal-ornamented buckle of form Hermes-Loxstedt, which has been found in graves 37, 104 and 172 (Figure 100). Type 3 is the punched-decorated belt garniture, like the one in grave 129 (Figure 100). Type 7 represents the early composed disc-brooches, like the one at grave 88 (Figure 98). Type 22 includes the '*Einfache Gürtelgarnituren*' which is represented in grave 104 (see also Böhme 1996, 100: Abb. 75). Type 11 stands for the animal-ornamented buckles of type Misery and type Cuijk-Tongeren; the latter was found in grave 111 together with a crossbow brooch Keller-Pröttel 6. The date range 390-460 for this brooch results in a combined date for this grave between AD 430/435 and 460.

300 Nine parallels could be listed by Böhme for the region between Elbe and Loire (Böhme 1974, 114-115).

301 Eleven parallels were known by Böhme in that region (1974, 115).

302 As such Böhme met the conclusion Mertens and Van Impe (1971) made through the presumed absence of weapons that the troops stationed at the 4th-century *castellum* must have been regular units (cf. Mertens 1977a, 62; Mertens 1987; Mertens and Crabbé 1987).

may have belonged to another social group, maybe lower-ranked soldiers. A chronological dimension can neither be excluded. Only radiocarbon analyses would be (partly) able to yield some answers.

Böhme (1974; 1996; 2009) – and this was already put forward by Werner (1950) – maintained the general acceptance that male graves with weapons and women graves with brooches were testimonials of Germanic newcomers in Northern Gaul. Besides, he identified the waist belts with bronze fittings, the iron buckles, the large hair pins, the neck rings, the spindle whorls, the iron razor knives, the fire strikers, the wooden buckets and the triangular triple layer combs, all typical grave goods between Rhine and Loire, as Germanic (Böhme 1996, 92-93). Werner (1950) identified the deceased with Germanic *laeti*; however, their status assumes that they were probably typically rather poor. Böhme (1974; 1996), following Böhner (1963), believed that these graves were attributed to *foederati*. Breuer and Roosens (1957) however have argued that the distinction between *laeti* and *foederati* had become blurred by the middle of the 4th century.

The assumption of a clear and direct relationship between these graves and a Germanic population has met with much criticism in the last decades, as is already clear from the above. Above all, Whittaker (2004), Halsall (1992; 2000; 2007) and Theuvs (2009) convincingly argued that this thesis is based on the wrong ideas. The ‘Germanic’ explanation in fact presumes the existence of a ‘mixed’ culture in late Roman Northern Gaul with two distinct groups which co-existed. However, it is clear that in that period there was no (longer) a ‘Roman-Germanic’ dichotomy and that the frontier region knew a merging of cultures (Theuvs 2009, 288, 299). Already in 1952, De Laet, Dhondt and Nenquin suggested that the characteristics of these graves were a military ‘fashion’ common alike to Germanic and Gallo-Roman soldiers, and the result of the exchange of ideas between people in the North of Gaul. Halsall – and further elaborated on by Esmonde Cleary (2013, 81-86) – rejected one by one all arguments which were used to assign these graves as Germanic: the choice of inhumation, the choice of grave goods, the presence of belt fittings and buckles, the presence of weapons and the type of jewellery, including the brooches, can all be explained without migration theories (Halsall 1992, 199-202; 2000). Bishop and Coulston demonstrated that the chip-carved belt fittings which have for long been considered as ‘Germanic’ can no longer be associated with the recruitment of Germanic soldiers into the Roman army, as their use should be seen as a development by regular Roman troops (Bishop and Coulston 2006, 223-224). Swift (2000b, 229) emphasized that one should look to the Germanic-linked items as expressions in terms of regionality rather than of ethnicity. Also Heeren believes that many items such as buckles and women’s brooches may have had a Germanic origin and were originally brought in as ‘Germanic’, but evolved into items which expressed another identity or culture for the new group which was or was not Germanic (Heeren 2017, 173).

The frontier zone had become a hybrid society of cultural interchange, as the result of interactions over several generations. Anthropological research in combination with multi-isotopic analysis on skeletal remains has shown how heterogeneous and diverse the population in Roman Britain could be but also how cautiously

one has to be with the interpretation of material culture – some individuals buried with ‘local’ items revealed to have been incomers while in some cases ‘non-local’ material culture appeared to be associated with ‘local’ individuals (Leach *et al.* 2009; 2010; Eckardt *et al.* 2009; Eckardt 2014; Eckardt *et al.* 2015; see also Cool 2010). The Germanic regions beyond the Rhine frontier were already for a long time politically secured buffer areas against larger threats from the North-East and the East. The dynamics and the coexistence in the frontier region not only resulted in communities of mixed descent, but also in mixed cultures and this of course also influenced material culture. New forms of material culture developed, in consumption as well as in production, in searching for new ways of expressing social practices and traditions and determined by factors as kinship, marriage, gender, age, status, cultural tradition, ...

In conclusion, based on the grave goods alone one cannot know whether the deceased was Germanic or not. As has been demonstrated for late Roman Britain only a multidisciplinary approach making use of multi-isotopic analysis on skeletal remains in combination with the contextual study of the grave goods can lead to more transparent conclusions<sup>303</sup> about the origin and cultural identity of the deceased. Applying this method at *e.g.* the 4th-century graveyard at Scorton, just north of Catterick (Eckardt *et al.* 2015) and at the late Roman cemeteries of Lankhills, Winchester (Eckardt *et al.* 2009; Eckardt 2014, 56-57, with references)<sup>304</sup> and of Roman York (Leach *et al.* 2009) has led to the possible identifications of first- and possibly second-generation migrants from different regions (see for other studied sites: Eckardt *et al.* 2014, 535 with references). Pinpointing possible areas of origin of the deceased still remains challenging and will only be reached with the further development and combination of multi-isotope analysis in comparison to a more developed craniometric multivariate analysis and anthroposcopic evaluation (Leach *et al.* 2009, 14). In Chapter V.3 we aim to further explore the cultural identity/identities of the fort community at Oudenburg starting from the evidence at the fort precinct.

### IV.3.3. Graveyard B

To the south/south-east of Graveyard A the northern edge of a second inhumation graveyard had been discovered already in 1962, by accident, when a cellar was dug for a new house (SO03). Also underneath these graves remains of the earlier civil settlement were uncovered consisting of mortar floor debris and pottery sherds.

303 Although not always unambiguous, as is demonstrated *e.g.* by the study of the ‘Lady of York’ by Leach *et al.* 2009; 2010.

304 *E.g.* at the late Roman cemetery of Lankhills near Winchester strontium and oxygen isotope analysis has been used to test the assumption of the presence of incomers based on the grave goods and this has revealed that there does not have to be a direct link between particular grave goods and origin. *E.g.* a girl (burial 323), wearing typically British bracelets, was identified as an incomer based on the other grave goods but appeared to be isotopically local. The study revealed the importance to look at the combination of the grave goods, the burial rite and the isotopic evidence to come to conclusions. It resulted in a more complex picture of a second-generation immigrant which was born and raised in Britain and buried according to the rites of one or both of her parents (Eckardt 2014, 57).



According to Mertens, the area in-between Graveyard A and B was deprived of burials nor yielded any archaeological material<sup>305</sup>, in that way confirming that these were two separate graveyards<sup>306</sup> (Mertens and Van Impe 1971, 6). An excavation through trial trenches in 1975 to the west of this parcel (ET08) only uncovered Roman land division or draining ditches and according to Mertens indications that the edge of the sand ridge was nearby. A site observation in the same year by Mertens more to the south did not yield any Roman feature at all (SO04). It can therefore be assumed that the uncovered edge of Graveyard B was the northwestern end and that this graveyard must have extended to the east.

Three east-west/west-east(?) oriented inhumation graves with grave goods were uncovered<sup>307</sup>; these only comprised ceramic vessels, no coins nor other (metal) finds such as dress accessories were found. Since many graves at Graveyard A were not gifted with such items either, their absence in these three graves should not be seen as an indication of a non-military status; as previously stated it can be assumed that also this Graveyard B was of military signature. The lack of dress accessories may also be a chronological indication. Grave A contained a face pot from Hadham (UK) and an undecorated burnished beaker of regional production. Grave B yielded three vessels: a black-slipped motto-beaker with VIVITE FELICES and two coarse small bowls, both *Eifelkeramik* (one ear pot Pirling 106 and one bowl NB 104 / Alzey 28). Grave C also contained a black-slipped motto-beaker, with AVETE, and a 'pot in red fabric' (Mertens 1964b, 220-221; 1977, 60; Hollevoet 2004, 337-338)<sup>308</sup>. Mertens dated these graves slightly earlier than Graveyard A, at the end of the 3rd – beginning of the 4th century (Mertens 1971, 18; 1977, 60), a date later confirmed by Hollevoet (2004, 337). According to Going (1999, 297) who studied the oxidized Hadham wares found at Colchester<sup>309</sup>, the Hadham potteries only started a more widespread distribution in the latter part of the 3rd century and mainly in the 4th century, especially the second half of that century. For Tyers (1996b, 168) the expanded distribution only started from the beginning of the 4th century. However, such a face jar is rather an exceptional item and should not be considered within such distribution patterns. An inventory of the face pots found in *Gallia Belgica* made Braithwaite (2001) conclude that their distribution was closely connected to the military society, being the Roman army or fleet, or retired veterans and their families, as can also be assumed for the rest of the face pots and face beakers in continental Europe. The Oudenburg face pot, of the type of the larger face jar with the face on the upper

half of the shoulder, and made at the late Roman Much Hadham kilns, moreover emphasizes the close connection of the Oudenburg fort with *Britannia*. Being an exceptional item, it may have been the personal belonging of a British recruit or a soldier formerly stationed in Britain.

One of the motto-beakers<sup>310</sup> shows with AVETE a rather common motto; the dated finds all belong to Künzl's Gruppe IV (AD 280-310/315) and V (AD 300/310-355) (Künzl 1997). Although all of the known closely datable finds from Bonn, Cologne and Trier (G) can be assigned to Gruppe IV (Künzl 1997, 65), two grave finds from Gerlachsheim-Königshofen (AD c. 350) and two from Krefeld belong to Gruppe V (Künzl 1997, 69, 72). The Oudenburg VIVITE FELICES was the only one known by Künzl (Künzl 1997, 259) and can only be dated based on its type to Gruppe IV or V. The NB 104 bowl was made in Urmitz technique which is generally dated earlier than the typical Alzey 28 in coarse Mayen ware which has been found in several graves of Graveyard A. The Urmitz pottery is commonly dated until AD 260; however, Brulet points to the presumed survival of certain forms, amongst which the NB 104 bowl, into the 4th century AD (Brulet 2010c, 404 and references). The rim rounded to the interior and underscored by a groove rather points to the 3rd century, though (cf. Brulet 2010c, 418). Thoen drew attention to the (Mayen?) ear pot Pirling 106 with lid groove which distinguishes itself from what he called its 'typical 4th-century successor Alzey 30 with straight rim occurring in Graveyard A' (Thoen 1978, 141). The absence of Pirling 106 at Graveyard A may have a chronological significance, but cannot be taken as an absolute given; besides, the Alzey 30 jug is represented by only two examples at Graveyard A.

Taken together, the previous elements seem to confirm the date for Graveyard B initially suggested by Mertens 'end 3rd – early 4th century'; also Thoen concluded to a slightly earlier date than Graveyard A based on the *Eifelkeramik*. It is tempting to relate this Graveyard B to the very last phase of fort period 4, at the end of the 3rd century (see Chapter V, Section V.1.5). However, keeping in mind the long life-span vessels could have, certainly 'special' ones, the possibility of an attribution to the beginning of fort period 5A, in the second quarter of the 4th century, should not be totally excluded.

Hollevoet already emphasized the unique character of the face pot in oxidized Hadham ware (Hollevoet 2004, 338). He mentioned an almost identical narrow-necked jar with small opposed 'squashed' handles and applied face at the fort precinct of Burgh Castle (cf. Johnson 1983a, 92-93; 54), one of the British Saxon Shore forts, where the Much Hadham kiln vessels formed a distinctive group within the colour-coated products. Since oxidized Hadham wares are rare finds on the Continent, and then only in the coastal region of *Belgica Secunda* (Going 1999, 297), and since especially these face pots were not well-spread, the presence of such a beaker in a grave at Oudenburg is very meaningful and must point to a level of contact between the unit and *Britannia*. Hollevoet suggested that

305 Mertens only had the opportunity to make a long trench along the north side and one along the west side of the parcel both of which did not yield any graves/grave evidence (Mertens and Van Impe 1971, 6).

306 Mertens and Van Impe 1971 state at p. 9 that the area in-between was 60 m wide; at p. 18 they mention 40 m. The plotting of the locations on the map verifies a distance of c. 60 m.

307 These finds were reported to J. Mertens by J. Trimpe-Burger who excavated at the time at Aardenburg and to who the find was reported by Mr. Kegel, amateur-archaeologist from Aardenburg. The latter discovered the graves and retrieved the finds. Data on the skeletons, like the direction of the head, were not mentioned to Mertens (Mertens 1964, 220).

308 These finds could not be traced to have a closer look at them.

309 For the face-pots found at Colchester, classified as form Cam 288/290: Going 1999, 303: 152-153 and 304.

310 Both motto-beakers Pirling Group 58-62 were catalogued by Künzl (1997, 205) as type 1.6.2. The rim of one of the beakers was broken off, but the beaker was likely of the same type as the one completely preserved.



Figure 101. Part of the excavation map of the site Belleroche, eastern side, with the twenty inhumation graves of Graveyard C discovered in 2014 (processed from basic map of Dyselinck *et al.* 2020, 80: Fig. 68). Left: the twenty inhumation graves marked in dark brown; Right: chronology by the present author of the twenty inhumation graves based on material culture and intersection; yellow: early phase which can be connected to fort period 5A; orange: late phase which can be related to fort period 5B, white: no phasing possible based on the material culture.

this vessel may have been the personal possession of the deceased or his family once stationed at the other side of the Channel (Hollevoet 2004, 340).

#### IV.3.4. Graveyard C

In the summer of 2014 the western edge of a new late Roman graveyard came to light *c.* 550 m east of the southeastern corner of the fort and clearly extending further east (Figures 10, 12 and 101). In analogy with the late Roman graveyards to the west of the fort, this eastern graveyard will now be further referred to as Graveyard C. At the east border of the site Belleroche (ET28) twenty inhumation burials were uncovered, of which two graves appeared to have contained a subsequent burial (Dyselinck *et al.* 2020). This graveyard intersected the mid-Roman west-east road (the assumed Zandstraat of the mid-Roman period) and bordered its successor of the late Roman period north of it and of which the course was situated just outside the excavation trench of the Belleroche site according to the attested cart tracks at the neighbouring site Riethove (ET26) to the west.

The pottery clearly dates this graveyard in the 4th to early 5th century and shows many identical pottery types to those from Graveyard A. The inhumations at Graveyard C represent different orientations; north-south, south-north, west-east and east-west were all clearly attested. The orientation of the graves seems to have no chronological significance. The N-S grave 4 and the S-N grave 8

both intersected grave 18 which is in its turn N-S or S-N oriented. Grave 19 intersected grave 20; both were W-E or E-W oriented. The intersections do indicate that the graveyard knew a very long use. They most likely also point to an interruption in the graveyard; during the second use of the cemetery the location of the earlier graves was forgotten (or ignored?) assuming possible grave marks may have been lost.

Most of the graves revealed the remains of a wooden coffin and grave goods, such as pottery, glass beads, bracelets and/or brooches (Figure 102; see Appendix 8). One grave (grave 8) contained a set of eight coins, very badly preserved, probably the content of a purse. They were identified as eight *folles*, datable to the 4th century<sup>311</sup>. Two of them, both *nummi*, are likely to have been *Urbs Roma* imitations and are possibly dated around AD 350 (+/- 10 years). This grave 8, belonging to the latest group of burials, also yielded a roller-stamped Argonne bowl Chenet 320 with stamp UC-125 dated after AD 350<sup>312</sup>.

The crossbow brooch in grave 10 and the belt buckles found in three burials (one together with the crossbow brooch in grave 10 and two others in graves 8 and 12) are clear testimonies that a third military graveyard has been discovered here. The crossbow brooch is of the type Swift-Pröttel-Keller 3/4B, dated to the second half of

311 Identification by dr. F. Stroobants and dr. J. van Heesch (Coin Cabinet of the Royal Library of Belgium, Brussels).

312 Identification by W. Dijkman.

Figure 102. Grave goods from Graveyard C (Photos by N. Cleeren, with permission by BAAC). a: bronze buckle with amphora-shaped strap end, grave 8; b: bronze D-shaped buckle, grave 10; c and d: bronze crossbow brooch, grave 10, view from below and detail top; e: bronze buckle with belt plate, grave 12; f: gilt chip carved strap-end found unstratified at site Belleroche, based on Böhme 1974 dated to c. AD 400-450.



the 4th century, possibly still in use in the early 5th century AD<sup>313</sup> (cf. Van Thienen 2016) (Figure 102: c, d). This type was a common crossbow brooch type at Graveyard A. Based on the buckle, belt plate and/or strap-end they contain (cf. Appendix 8) graves 8, 10 and 12 are clearly pointing to the second half of the 4th century; for graves 1, 10 and 12 a somewhat later date into the early 5th century is even possible. An unstratified find which seems to be connected with the burials is a small elongated, gilt, chip carved strap-end that can be dated according to the typology of Böhme (1974, 90) to the period c. AD 400-450 (Figure 102: f). With grave 8 intersecting graves 17 and 18 a date in the second quarter of the 4th century, or somewhat later, can be assumed for the burials of the early phase.

Only a few graves contained well-preserved skeleton remains; of several graves the skeleton was only very fragmentary preserved, in six burials there were even no human remains left. The osteological report states that only three adults can be distinguished, and no less than eight children younger than 10 years old and one presumed late juvenile (Cuijpers 2017). With only the edge of the graveyard uncovered, it is not possible to draw further conclusions from this concentration. Based on the grave goods certainly one adult was a woman.

#### IV.4. Conclusion: relationship between the successive forts and their graveyards

The cremation rite has its limitations for the identification of the deceased. Grave goods such as Charon's obol, vessels with liquids and food, and an occasional dress accessory or jewellery item can hardly reveal whether the deceased was a civilian or a soldier. However,

when the Oudenburg territory is envisaged in its totality it becomes clear that it is most likely that the deceased fort inhabitants of forts 1 to 4 were buried at the cremation graveyards together with the civilians. The inhumation rite seems to have appeared in the late(r) 3rd century and at this time it seems to have resulted in a burial without or hardly any grave goods.

Although the results for Graveyard C are fragmentary, they seem to indicate that Graveyard A and C covered (more or less) the same period from the second quarter of the 4th century until the early 5th century AD. Why two different cemeteries, one c. 400 m to the west of the fort and one c. 550 m to the east, would have served the same unit(s) (and their families) is not clear. However, since this cemetery was contemporaneous with Graveyard A, one can wonder whether it concerns another military group. This Graveyard C, clearly extending further east, was situated at the junction of the late Roman course of the continuation of the Zandstraat with the Zeeweg. It is a possibility that the deceased did not belong to the known fort but to a military installation not yet discovered. One can think of an outpost or *burgus* located near the junction of the two roads. However, this *an sich* should not have been a reason for another graveyard. Likely, the reason should be considered rather within a sociocultural context.

One can expect that the supposed continuation of Graveyard C underneath the adjacent parcel may probably bear some answers on this issue. The lands surrounding this junction and located in an expanding residential area should therefore be closely monitored – and preferably pro-actively investigated through geophysical research – so that every threat from soil intervention can be foreseen and be prevented or anticipated by a thorough methodological excavation of the cemetery where all recent excavation technology can be applied and with opportunities for multi-isotope analysis on the matter of the geographic origin of the deceased.

313 Identification by dr. V. Van Thienen.

The chronology of both Graveyard A and C can be linked with the fort occupation in the 4th – early 5th century. As will be clear further, the installation of the 4th-century fort can be defined through dendrochronological evidence after AD 319-329 (fort period 5A); a second phase is dendrochronologically dated after AD 379-380 (fort period 5B). The coin spectrum at Graveyard A already indicated that this cemetery was probably initiated in the second quarter of the 4th century (Figure 94), which seems to be confirmed by other grave goods such as the late Argonne sigillata with roller stamps (Table 1) and the crossbow brooches (Table 2). The first phase of Graveyard A is obviously related to fort period 5A. Later graves can be dated to the last quarter of the 4th century – first decade(s) of the 5th century (cf. Appendix 7: Table 18) and are to be related to fort period 5B (see also Chapter V, Section V.1.6). This chronology can also be applied to Graveyard C. The established intersections at Graveyard A and C testify to an interruption in the use of both graveyards – a continuation in use would assume that the location of earlier graves was respected – and therefore a change of army unit at Oudenburg. This fits in well with the findings at the south-west corner fort precinct, where the transformation of the built interior is clear (Chapter II, Section II.4.7). While an interruption in the fort occupation could be assumed but not

concluded as archaeologically evidenced based on the stratified data on the fort precinct, this now can be reasoned based on the clear phasing at graveyards A and C.

It has been demonstrated that Graveyard B was slightly earlier than Graveyard A. Dating to the end of the 3rd or early 4th century, it is possible that this cemetery is related to the last phase of fort level 4, although the first phase of fort level 5 cannot be excluded. The latter date is in fact favored by the lavish grave goods. These are believed only to have appeared later in the 4th century. Besides, with the graves from Graveyard A kept in mind it becomes clear that one should be cautious with drawing conclusions from only a few graves.

The clear relation of Graveyard A and Graveyard C with the last occupation period of the fort (fort period 5) enables us to link the material culture of the graveyard with that of the fort site to come to more insight into the identities of the fort inhabitants of the 4th – early 5th century. It is however important to keep in mind that the burials represent a ritualized expression of the identity of the deceased and/or of the social group responsible for his or her burial. The grave goods can be a reflection of how the deceased was dressed and what vessels and other objects he used in the everyday life, but it cannot be ascertained that this was definitely the case<sup>314</sup>.

---

314 See *e.g.* the pewter plates at Graveyard A in graves 57, 58, 69, 70, 100 and 115. Poulton and Scott (1993) have demonstrated for Roman Britain that pewter was seemingly buried as a result of ritual activity and may even have been manufactured specifically for ritual purposes.





## V. Confronting stratigraphy and material culture to come to new insights into the fort's occupation and the wider context

### V.1. A refined fort chronology for the Oudenburg *castellum*, its significance for the historic setting of the fort and within the wider historic context of the North Sea and Channel region

#### V.1.1. Coming to a refined fort chronology

What position did the Oudenburg fort hold in the coastal defence system? And how can the refined fort chronology of the Oudenburg fort contribute to a better understanding of the military development in the North Sea and Channel region? With all chronology-loaded find categories studied in depth within a contextual approach in relation to the stratified evidence, a refined fort chronology for the Oudenburg fort can be presented (Table 4). As such, the Oudenburg fort sets several historic developments in the (wider) region in a different perspective (cf. Figure 104)<sup>315</sup>.

The general chronological framework set by Mertens between the late 2nd century and the early 5th century AD already revealed an important military presence in the 3rd and in the 4th century at Oudenburg (cf. Chapter I.5). The general timespan still stands more or less but a far more complex succession of occupation phases than formerly assumed is evidenced (Chapter II) and results in more insights into the position of the Oudenburg fort within the military developments in the wider North Sea and Channel region. The stratified evidence in relation to all available chronological indicators testifies to a succession of five main fort levels, each comprising two or more subphases. The collected information from the radiocarbon dates and the dendrochronological analyses (Appendix 6), the numismatic study (Volume II, Chapter 2), the pottery evidence (Volume II, Chapter 1) and some specific, datable small finds (e.g. the crossbow brooches, cf. Volume II, Chapter 3, Sections 3.4.1 and 4) retrieved from the south-west corner site, and studied contextually (cf. also Volume II, Appendix), in combination with reliable data from the other Oudenburg fort sites, has resulted in a more specific dating for these respective fort periods.

The presented fort chronology is mainly based on the collected data retrieved from rather small windows on the fort precinct. The basis is formed by the data at the south-west corner site, as the successive fort levels revealed at the site yielded substantial assemblages of finds which were studied in depth in their totality and within a contextual approach. The area of this site inside the contours of the defensive wall only represents 5.25% of the total fort area *intra muros*. However, the stratified evidence and the chronological data of the sites at the north-east side correlate with the data retrieved at the south-west corner site, both of which could be excavated and studied while applying the same method and standards (with these investigations undertaken within a few years of each other). Although there is obviously no absolute certainty that the presented fort chronology can be accepted for the total fort precinct, the correlations between the south-west and north-east fort sites provide strong grounds for assuming their general acceptance.

In what follows, we investigate with which events the successive Oudenburg fort levels can be linked. Direct evidence for military events can only be found in records of ancient writers. This immediately points to the limitations of such research, as evidently not all military events are known to us: several events are undoubtedly not recorded by ancient writers. Besides, the archaeological evidence has its limits in dating a precise level and to relate it with a specific event<sup>316</sup>.

#### V.1.2. Oudenburg fort period 1: c. AD 180 – 200(+)

Fort period 1 can be dated c. AD 180-200. The start of the military presence at Oudenburg can be set around or later than AD 180, mainly based on the assemblages of the samian wares and the colour-coated and black-slipped wares. The end date of fort period 1 is difficult to establish with precision. While certain pottery types and characteristics point to the 2nd century, several others continue into the (early) 3rd century. The absence of clear 3rd-century indicators in combination with an interruption in the early 3rd century as shown by coins and samian name stamps and decorations, implies an end date before or around AD 200;

315 Only the sites with archaeological evidence to presume a fort at this location in the period in question, are represented on the maps.

316 See for a discussion on this matter: e.g. Drinkwater 1987, 215-218.

Table 4. Overview table with the closest chronological indicators for each fort level.

closest chronological indicators	FORT LEVEL 1	FORT LEVEL 2	FORT LEVEL 3	FORT LEVEL 4	FORT LEVEL 5
RADIOCARBON DATING		130-215 cal AD (68.2%) - 120-250 cal AD (93.7%) (charred construction beam of military hospital fort level 2B)		250-350 cal AD (68.4%) - 240-390 cal AD (95.4%) (animal bone)	230-390 cal AD (95.4%) (textile fort level 5A)
DENDROCHRONOLOGY				felling date AD 260-275 (well OS 22926)	felling date AD 319-329 (outer well OS 2562)
				felling date c. AD 266 (re-used wood in well OS 2562)	felling date AD 379/380 (inner well OS 2562)
COIN EVIDENCE	undetermined <i>as</i> or <i>dupondius</i> (1st-3rd century AD)	(dip in coin loss in first half 3rd century AD)	<i>antoninianus</i> of Gordianus III (AD 238-244)	Postumus coins (AD 260-269)	<i>nummus</i> of Licinius, AD 310-315; <i>nummus</i> of Constantin I, c. AD 320; <i>nummus Victoriae Laetae Princ Per</i> , AD 320-325; AES-3 <i>Securitas Reipublicae</i> , AD 364-375
			absence of Gallienus coins (AD 253-268) and Postumus coins (AD 260-269)	coin hoard 2, consisting of coins dated after c. AD 266 (context infill well OS 22926)	as residual finds in post-Ro- man/5+post levels: Constantinus I, Constantinus I/II, Constantinus II, Crispus, <i>Gloria Exercitus</i> one stand- ard, <i>Gloria Exercitus</i> two standards, Helena, <i>Victoriae DDAUG Q</i> NN type, <i>Fel temp Reparatio</i> type, Valens with one <i>Gloria Romanorum</i> , Gratianus <i>Gloria Romanorum</i> , <i>Securitas Reipublicae</i> type, Gratianus <i>Reparatio Reipub</i> , Theodosius <i>Reparatio Reipub</i> , two AES-4 AD 388-402
				coin hoard 1, with closing coin Gallienus, late type, dated to AD 267-268 (context large waste-pit OS 4980)	
				coin of Probus AD 277, found as closing coin of dispersed coin hoard with Postumus coins at the north-east fort site in 2009	
				<i>antoninianus</i> of Probus (AD 276-282), found in level 5+post	
				large number of radiate copies, mainly of Tetricus I and II (c. AD 275-294+) in final level of fort level 4	
				one possible <i>minimus</i> radiate copy, dated to AD 296+, in final fire layer of fort level 4	
BROOCHES				five crossbow brooches type 0 <i>'Ambrustscharnierfibel'</i> , dated prior to AD 280	crossbow brooch Keller-Pröttel- Swift 1A, dated to AD 280-320, in construction pit of well OS 2562 (fort level 5A)
					as residual finds in later levels: two crossbow brooches Keller-Pröttel- Swift 2i (AD 300-340), one KPS 2iii (AD 335-365) and one presumed unfinished/failed KPS 2iii (dated here AD 350-415)
SAMIAN WARES	(chronological range of samian stamps shows sig- nificant increase from AD 185-195 onwards; with the samian decorations this increase starts around AD 175; both show a dip in period AD 205-215)	two Drag. 37 bowls by Iulius II-Iulianus I (AD 220/233-255), confirmed by introdecorative stamps (one by Iulius viii, one by Iulianus iii) (one in key context OS 82843-845, construction slot of military hospital fort level 2B)	<i>Strich</i> stamps	represented samian fabrics and types conclude to a date for the samian assemblage c. AD 250-260	Chenet 320 in construction pit of well OS 2562 (fort level 5A) (no stamp preserved), dated to AD 320+
	Drag. 37 by Comitalis of Trier (AD 170-240) (in key context OS 11267-286)	Drag. 33 cups with large diameters	cut-glass decorated Rheinzaubern beakers, also present in key context assemblages (gully OS 1169 and pit OS 80925)	decorated samian with latest chronological range: Drag. 37 by Perpetuus, dated to AD 230-275	roller stamps of last quarter 4th - first quarter 5th century in construction pit of basin OS 4923 of fort level 5B

closest chronological indicators	FORT LEVEL 1	FORT LEVEL 2	FORT LEVEL 3	FORT LEVEL 4	FORT LEVEL 5
SAMIAN WARES	several samian mortarium fragments Drag. 43/45, dated to AD 170/175+	absence of <i>Strich</i> stamps or cut-glass decorated beakers		North Gaulish samian (already in key context OS 7949, pointing to an earlier date (from c. AD 260 onwards) than the so far end 3rd-century date considered for this pottery)	roller-stamped samian covering date ranges from c. AD 320 until c. AD 450, with a well-spread chronological distribution between AD 325 and 425
				absence of late Trier fabric and of typical forms dominating the 'post-Niederbieber-horizon'	
COLOUR-COATED AND BLACK-SLIPPED WARES	co-occurrence of Cologne colour-coated ware and <i>Moselkeramik</i> concludes to a date after AD 180	three fragments of resp. Nene Valley, Hadham and Oxfordshire wares widely distributing from c. AD 250 onwards: intrusive sherds or not?	small amount of Romano-British fragments (Colchester colour-coated ware, Oxfordshire black-slipped ware, Hadham red ware) of productions distributing from c. AD 250 onwards	<i>Moselkeramik</i> motto beaker Künzl Gruppe II in large waste-pit OS 4980, dated to AD 260-270; motto beaker Künzl Gruppe III in final layers of fort level 4, dated to AD 270-280; two beakers Künzl Gruppe IV, dated to AD 280-310/315, both recovered from the final layers of fort level 4	large amount of late Trier beakers and Romano-British fine wares, mainly Oxfordshire, Lower Nene Valley, New Forest productions, most of which are dated to AD 300-400
		one possible fragment of Oxfordshire Parchment ware, dated to AD 240+			African Red Slip ware dish Hayes form 67-72, dated to c. AD 360-470
AMPHORAE	complete Gauloise 4 amphora with characteristic features for the last quarter of the 2nd century AD	Dressel 20 stamp L F C CV FC, dated to AD 220-240, residual find at fort level 5	appearance of G13 amphorae, dated from the middle of the 3rd century onwards		Keay 19C amphora, dated to AD 350-410, residual find in post-Roman level
		Dressel 20 stamp II IVNI MELISSI / ET MELISS(a)E, dated to AD 210-230, residual find in the post-Roman level			
		Dressel 20 stamp FIG E[D] / PP AE [F], dated to AD 210-230, most likely AD 220-225, found <i>in situ</i> at fort level 2 in 1977 in the northern sector			
MORTARIA	2nd-century mortarium repertoire	presence of mortaria with hooked curly flange with higher inner bead, a typical 3rd-century element	Lower Nene Valley mortarium type HP M42, dated to AD 250+, in key context OS 1169	Verulamium white ware mortarium, dated c. AD 280-360	
COARSE OXIDIZED WARES			small amount of Urmitzer Ware, generally dated to AD 190-260	Urmitzer Ware well-represented at fort level 4; presence of a few Mayen and Speicher ware vessels (both productions are dated from last quarter/end 3rd century onwards)	many Mayen ware vessels, mainly 4th-century types of pot Alzei 27, bowl Alzei 28 and dish Alzei 34; the Mayen assemblage of the construction pit of well OS 2562 (fort level 5A) can be dated to after AD 325
					one fragment <i>Rotbraun Gestrichene Keramik</i> , dated to c. AD 430+, recovered from post-Roman level
ROMANO-BRITISH COARSE POTTERY			BB1 dish Bestwall type 8/5, dated to c. AD 220-290/300	two MNI BB1 beaded-and-flanged bowl Bestwall type 6/8, dated to c. AD 270/300-370	one MNI BB1 everted rim jar with heavily-beaded rim, dated to c. AD 330/340-420
				one MNI BB1 beaded-and-flanged bowl Bestwall type 6/5, dated to c. AD 280-300	twelve MNI of Alice Holt/Farnham greywares, most of the types dated to AD 270-420
				two MNI BB1 beaded-and-flanged bowl Bestwall type 6/6, dated to c. AD 290/300-370	a late Thameside greyware hook-rim jar, variant type of Pollard 197, dated to c. AD 300-370
				three MNI BB1 Bestwall type 8/12, dated to c. AD 290/300-370	a Hampshire Grog-tempered Ware straight-sided dish type Lyne 6A.22, dated to c. AD 270-370/400+



closest chronological indicators	FORT LEVEL 1	FORT LEVEL 2	FORT LEVEL 3	FORT LEVEL 4	FORT LEVEL 5
NORTH-GAULISH REDUCED WARES	container type Holwerda 141a, dated to the second half of the 2nd century AD (in key context OS 30916)			presence of Bruay-Labuissière beaker with bulging neck and double-lobed beaker, dated from late 3rd century onwards, in key contexts (OS 7949, OS 22926 construction pit and infill)	Chenet 342 foot-bowls, dated to c. AD 370+, in fort level 5B key contexts
					a pot with internal gully from the Champagne region corresponds to a type at Reims dated to AD 370/380-420 (from construction pit large basin OS 4923)
					North-Gaulish double-lobed beakers of type Brulet B4.2 with wider upper lobe are well-represented in fort level 5B contexts and are dated from the last quarter of the 4th century AD onwards
GLASS			fragments of three glass vessels dated from middle of the 3rd century onwards, amongst which fragment of bowl Isings 96 in decolourized glass (in key context OS 1169)		fragment of engraved glass bowl of Wint-Hill group in primary infill of basin OS 4923 (fort level 5B), dated to the second third of the 4th century AD or later
					glass armlet of type Cosyns (2011) D1, dated IVB-VA
DATING CONCLUSION based on the available data	c. AD 180 - 200	c. AD 220 - 245/250	c. AD 250 - 260	c. AD 260 - 290/300	c. AD 325/330 - 430(+)

however, it cannot be excluded that occupation passed into the first years of the 3rd century.

Since generally from the late 2nd century AD onwards auxiliary forts were erected in stone (Batz 2006c, 78), one can assume that the first earth-and-timber fort at Oudenburg was intended as a temporary installation (although this can be questioned, see further in Section V.1.3). Some renovations and new arrangements in the interior fort building at this level however suggest that this fort occupation lasted at least several years.

The first earth-and-timber fort at nearby Aardenburg has been dated in the period AD 170-185/190 (*castellum* I/Ia) (van Dierendonck and Vos 2013, 323), however based on very scarce chronological indicators yielding wide dating ranges<sup>317</sup>. From a well in the centre of the fort precinct situated right next to the *principia* a fragment of a very significant, monumental inscription, most likely a building inscription, was recovered. The preserved capitals ] MO[ and ]RMA[ most probably refer to the emperor Commodus (AD 177-192), with his title – *Germanico* and *Sarmatico* have been put forward by Bogaers and De Clercq, although a reference to *armamentarium* cannot be excluded according to Bogaers –, resulting most likely in a date between AD 180 and 192 (Bogaers

1990; De Clercq 2009, 381<sup>318</sup>; cf. van Dierendonck and Vos 2013, 299)<sup>319</sup>. As van Dierendonck and Vos (2013, 300) mention, Commodus has been responsible for the renovation in stone of most of the *principia* in the *limes* forts in *Germania Inferior* (see Kunow 1987, 75). It is therefore much likely that this inscription plate adorned the first *principia* (in stone or partly in stone) of the fort of which the construction date should likely be narrowed to the period AD 180-192. Van Dierendonck and Vos (2013, 323-325) believe that an earlier *castellum* phase (*castellum* I/Ia) preceded the *castellum* phase to which the first *principia* has been assigned (*castellum* II); as such the building inscription serves as a *terminus ante quem* date for the first military installation at Aardenburg. The close distance between the Aardenburg and Maldegem fort, only c. 6 km apart, and the geographic position of Aardenburg, closer to the sea, favour according to us the hypothesis that Aardenburg must (almost) immediately have succeeded the Maldegem *castellum* and as such took over its military role. Soon after, under Commodus, the Aardenburg fort appears to have been rebuilt or renovated, likely in the same period as the first installation of the Oudenburg fort.

The Oudenburg and Aardenburg fort evidence indicates that under the reign of Commodus (AD 177-192) the coastal region of *Gallia Belgica* became militarised. This appears to have formed part of a larger military building programme: the number of military installations along the Rhine and Danube increased and several of them were fortified during that period (Erdrich 2001, 150). The militarisation of the coastal region with the erection of two temporary forts, at Oudenburg and at Aardenburg, can

317 No pottery assemblages of Aardenburg fort period I were studied. Two find contexts (a pit and cart tracks) of the level prior to the *castellum* were analyzed by W. Dhaeze and yielded a date between AD 160/170 and 180/190 (Dhaeze 2013, 230-240) offering a *terminus post quem* date for the construction of the first fort. From the coin evidence, a precise start date in the 170s cannot be defined according to Chameroir, only a general date in the period Marcus Aurelius (AD 161-180) – first half of the 3rd century can be deduced (Chameroir 2013, 83).

318 Reading by dr. M.-T. Raepsaet-Charlier.

319 The assignment to Commodus has been preferred over the one to Marcus Aurelius (cf. Besuijen 2008, 52-53: reading in favour of Marcus Aurelius based on his title *Maximo* and *Germanico*).

be considered in the aftermath of the invasions of the Chauci and the subsequent erection of the *castellum* at Maldegem (see Chapter I, Section I.3.3). The Chauci invasions demonstrated the need of a coastal defensive system in this region against sea-borne invasions. Both the Oudenburg and Aardenburg fort were built at a similar geographic position, on a sand ridge protruding into the coastal plain and as part of the same ridge complex. The forts were separated from each other by what will have been a long day march; the Roman road, the 'Zandstraat', connected both forts over a distance of c. 33 km. In the past, Oudenburg has been considered as less important than Aardenburg in its earlier phases (e.g. Brulet 1990b, 300). The current results now evidence an equal importance and (largely equal) development, as will be clear from the below.

The construction of the Oudenburg fort implied a shift of the core of the civil settlement towards the fort and a change of its layout, since pre-fort features at the fort precinct demonstrate that the margins of the settlement of the 2nd century already extended this far. The military presence obviously resulted in the further development, growth and expansion of the surrounding settlement. Settlement structures to the south, south-east and east of the fort all show pottery assemblages dated to the second half of the 2nd and the 3rd centuries (see Chapter I, Section I.4.2). The military presence also stimulated the further development of the North Menapian pottery industry, with now also wheel-turned wares next to handmade pottery (see Volume II, Chapter I.C.1).

At the British coast, the first generation of Shore forts dates from the same period: Reculver, Brancaster and Caister-on-Sea. Only at Reculver is there a precise construction date of AD 185-195 (Philp 2005). It is an attractive hypothesis to consider the installation of the Oudenburg and Aardenburg forts in a general defensive coastal programme under Commodus covering both sides of the Channel. Based on the low number of forts one can wonder whether they were actually installed as military, defensive bases against sea-borne attacks and not rather as fortified ports.

### V.1.3. Oudenburg fort period 2: c. AD 220 – 245/250

The chronological ranges of the samian stamps and decorations at the Oudenburg south-west corner site both show a dip in the period AD 205-215 (cf. Volume II, Chapter I.A.1, Section 11.7). This coincides with a dip in the coin loss at the site, in this case not only characterizing the beginning but the total first half of the 3rd century. While van Heesch recognizes this as a typical phenomenon at settlements in *Gallia Belgica* (cf. Volume II, Chapter 2), in the case of the Oudenburg fort the corresponding chronological lines for the samian wares and the coin spectrum seem to suggest an interruption in the fort's occupation in the first two decades of the 3rd century, or at least a very restricted occupation. Also the silting up of the first defensive ditch points to an interruption in the military occupation. This interruption can be confirmed by the chronological indicators from key contexts of fort level 2, yielding a *terminus post quem* date for the erection of the second fort definitely later than AD 220. This *tpq* date can perhaps be fixed to after AD 233 for the occupation of the military hospital

of fort level 2B. However, the stratified evidence demonstrates clearly that this building was preceded by an earlier one for which the function cannot be determined.

Again, a similar picture can be recognized at Aardenburg, although van Dierendonck and Vos (2013) have concluded a date range for Aardenburg fort II in the period c. AD 190 to AD 240/245 with a renovation around AD 222. However, a close look to the chronological indications on which this chronology has been based, reveals that these dates and the presumed phasing can be questioned and circular arguments are in play. Since this has its implications for the understanding of the military development of the wider region, a discussion is essential here.

Chameroy (2013, 81) points to a weak coin supply to the Aardenburg fort in the first half of the 3rd century AD (which one can compare with the one at Oudenburg) and even concludes, while acknowledging the insights for *Gallia Belgica* by van Heesch (1998), that this cannot correspond to a continuing fort occupation between the Severi and the middle of the 3rd century. Even in the chronological range of the samian stamps at Aardenburg, a similar dip as at Oudenburg occurs in the period AD 205-210 (van der Linden and Huijben 2013, 70: Fig. 4.8); this is not reflected by the decorated samian though (idem, 73: Fig. 4.10)<sup>320</sup>.

The dating of the pottery assemblages of two contexts appear to have formed the basis for determining the start date of Aardenburg *castellum* II, however, without stratified evidence to ensure the assignment to this level. A large, bipartite waste-pit, located underneath the *fanum*, has been dated to the very end of the 2nd or early 3rd century, based on the absence of Central Gaulish samian amongst the eighteen samian MNI, the presence of *Urmitzer Ware* (AD 190+) and one fragment of *Moselkeramik* (Dhaeze 2013, 241 ff.). While Dhaeze sees the latter as pointing to a date definitely after the end of the 2nd century, and therefore only assignable to *castellum* II, a date from AD 180 onwards can be accepted for the occurrence of *Moselkeramik* (cf. Volume II, Chapter 1.A.2, study by R.P. Symonds). As such, a date at the end of the 2nd century for the infill of this pit, is as plausible. The other pottery assemblage forming the basis for the start date of *castellum* II is that of the aforementioned well W-3, yielding besides the fragment of the presumed building inscription, seventeen pottery sherds or thirteen MNI<sup>321</sup>. Dhaeze dated this assemblage in the period AD 200-275 (Dhaeze 2013, 273 ff.). However, only the six samian fragments are 'closely' datable, and they can readily be dated from AD 175 onwards<sup>322</sup>. While van Dierendonck and Vos (2013, 186) did not exclude the well belonging to the first *castellum*, they eventually

320 However, it is important to keep in mind here that the samian wares from Aardenburg, recovered from several sites, were not studied in their totality and neither within a contextual approach. Samian wares from inside and outside the fort precinct were analyzed without differentiation (see Volume II, Chapter 1.A.1, Section 13.1). Such an approach can easily flatten certain dips or peaks in graphs.

321 There is no mention whether these were found in the construction pit, the primary fill or the secondary infill of the well.

322 Comprising a Rheinzabern Drag. 43, a Rheinzabern Drag. 43/45, a Trier Drag. 33, a Trier Drag. 36R, a Trier Drag. 43 and an undetermined East Gaulish fragment (Dhaeze 2013, 271: Tabel 7.10).

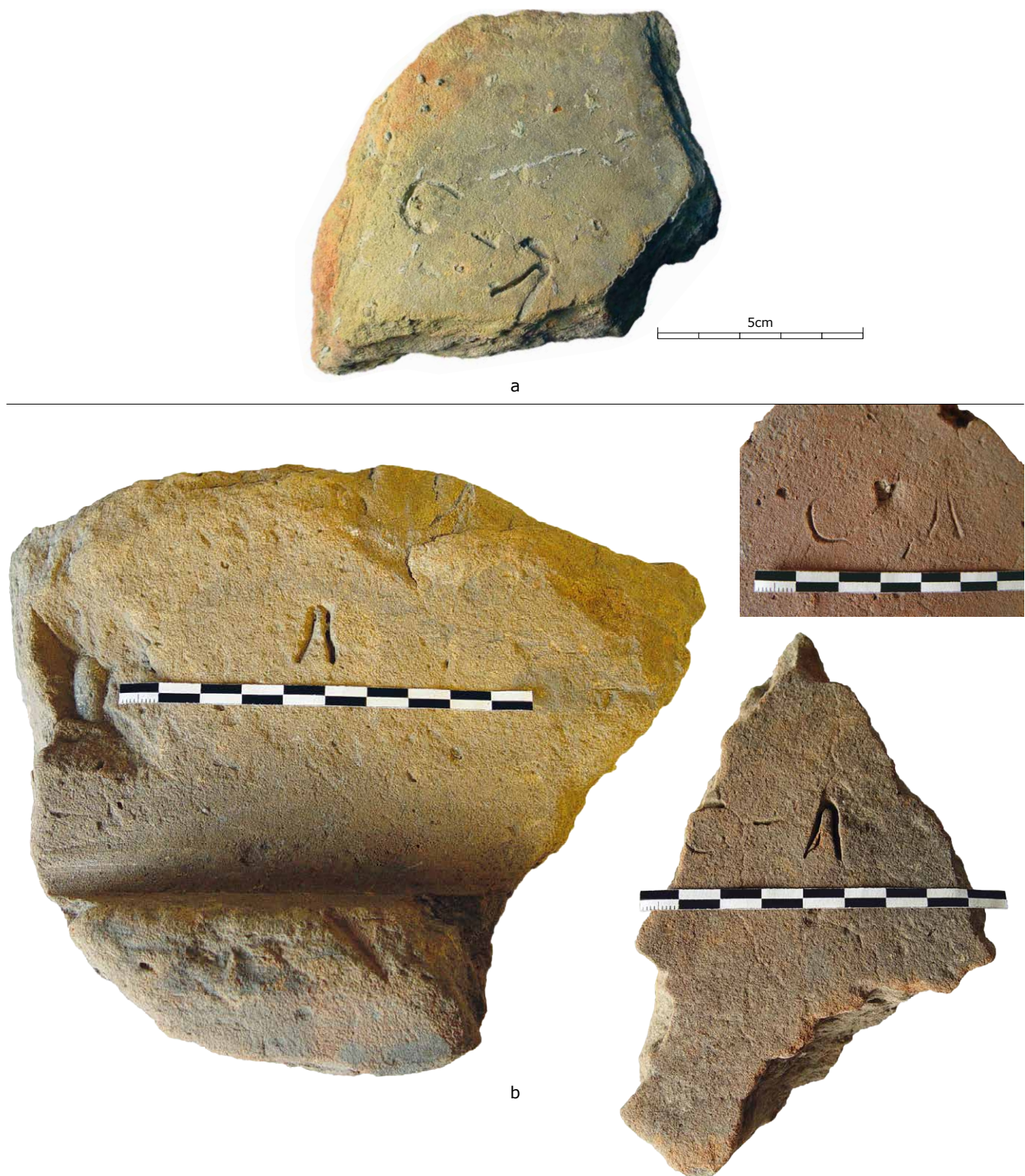


Figure 103. a: the Oudenburg tile stamp C-A recovered from the south-west corner site; b: three of the tile stamps found at the Aardenburg fort, in storage at the SCEZ depot at Middelburg. Left: stamp A. Photo by the author. Top right: stamp C A, bottom right: C-A. Both photos by T. Clerbaut.

attributed it to *castellum* II, based on the dating of the pottery; however, the pottery assemblages in question yield no firm ground.

While the two 'key' contexts to date the start of Aardenburg *castellum* II can easily have belonged to *castellum* I, as evidenced above, and assuming that there was no continuing fort occupation in the first decades of the 3rd century, this should be tested against the key context assemblages on which the 'second phase' of *castellum* II has been defined. They comprise the fills of the defensive ditch and of two wells. The pottery assemblage of well W-1 of 69 fragments or 44 MNI could be dated to AD 200-275, with a preference for the period AD 225-275 (Dhaeze 2013, 265). The pottery of well W-2 of 48 pottery sherds or twenty MNI yielded a similar wide date range according to Dhaeze (2013, 271). However, this assemblage contained the rim with handle of a Gauloise 13 amphora, which can only be dated from *c.* the middle of the 3rd century onwards, a chronology confirmed by the occurrence of these amphorae at the Oudenburg fort from fort level 3 onwards (*c.* AD 250-260) (see Volume II, Chapter 1.B.1, study by P. Monsieur). Nor does the pottery assemblage of the defensive ditch bring us closer to the suggested chronology for this period at Aardenburg; the date of this pottery assemblage has been set at AD 200-250 (Dhaeze 2013, 260); the occurrence of a Rheinzabern Lud. SM bowl points to the final part of this period though. One can conclude that all three pottery assemblages may well have belonged to the second quarter of the 3rd century. The renovation date of the *principia*, marking the start of phase IIb, has been based on the assignment of the C II S stamps to this phase. These stamps, presumably readable as *Cohors Secunda Severiana*, probably designate the same unit as the C II A (*Cohors Secunda Antoniana*) stamps which originally covered the roof of the *fanum* of *castellum* IIA (cf. van Dierendonck and Vos 2013, 305, 307). The unit received a new epithet when Severus Alexander became Emperor in AD 222 (see further).

The discussion above demonstrates that the suggested fort chronology for Aardenburg *castellum* II can at least be questioned. Rather, the evidence favours a similar development as at Oudenburg with an interruption, or at least a serious decline, in the fort's occupation in the first two decades of the 3rd century and the erection of a second fort in the same period as Oudenburg fort 2, namely in the second or perhaps rather in the third decade of the 3rd century.

A stamped roof tile fragment found at the Oudenburg fort (Figure 103: a) also suggests contemporary occupation with the Aardenburg fort in this period. The *tegula* fragment was found at fort level 4<sup>323</sup>; however, it is a very abraded piece and was likely from fort period 2 based on the similarities with stamps found at Aardenburg assigned to this period (Figure 103: b). The Oudenburg stamp reads C-Λ (with Λ representing A) and is placed oblique towards the top/bottom of the *tegula*. Only at Aardenburg can very close parallels be found. Recovered both inside and outside the fort, the attested stamps at Aardenburg represent Λ, C Λ, C II Λ and C II S (cf. Trimpe Burger 1997, 30-31; Besuijen 2008, 51; van Dierendonck and Vos 2013, 304-305).

For a detailed discussion on the Oudenburg stamp, its interpretation and the comparisons to the Aardenburg stamps, we refer to Volume II, Chapter 9 (study by T.R. Clerbaut). The character Λ of the Oudenburg and Aardenburg stamps appear to be identical; the character C however shows differences. This may either point to stamps made by the same manufacturer or stamps made by a different manufacturer but at the same factory. At Aardenburg, nine of the uncovered C II Λ tile stamps must have originally covered the roof of the *fanum*, attributed to the second phase of Aardenburg *castellum* II (cf. van Dierendonck and Vos 2013, 304). It is believed that the Aardenburg stamps C Λ and C II Λ refer to *C(ohors) A(ntoniniana)* (van Dierendonck and Vos 2013, 307), with *Antoniniana* referring to an honorary title. In general, an honorary title designates the emperor responsible for the initial installation of the unit or for a change in its composition. From the early 3rd century AD onwards it was standard that the epithet derived directly from the name of the reigning emperor and altered when the emperor changed (Maxfield 1981, 234). The C II S can therefore indicate that *Antoniniana* was adapted into *Severiana* after Severus Alexander (AD 222-235) became emperor. As such, the title *Antoniniana* refers to the installation of the Aardenburg unit under emperor Caracalla, officially named Marcus Aurelius Antoninus (AD 211-217), or Elagabalus (AD 218-222) who reigned under the same name; the title *Severiana* of the second cohort thus refers to emperor Severus Alexander (AD 222-235) and can therefore only be dated from AD 222 onwards. Hence, it is possible that the *fanum* at Aardenburg was constructed *c.* AD 220. The presence of similar stamps at the Aardenburg and Oudenburg fort does not necessarily mean that a unit was moved from the one fort to the other, although this possibility cannot be excluded. This cohort may for example have been responsible for the production of the ceramic building material which was distributed to both *castella*.

It is striking that a numeration and a reference to the origin or place of recruitment of the troops is lacking in these stamps. Perhaps these troops were recruited locally and it was originally obvious that there was only one such unit, and therefore not necessary to add an additional number nor an origin reference. Maybe this appeared only needed eventually, with the installation of a second cohort, for which a number was added to the new stamps. So far the evidence is not conclusive and another possibility cannot be excluded. Further investigation by Clerbaut indicated that the C Λ stamp can also be read as *C(ohors) A(micorum)*. This would explain the absence of a number and of a reference to the origin. A *Cohors Amicorum* was a group of 'friends', advisors who formed part of the administrative support around an army commander, governor or emperor and who were in most cases responsible for the non-military government, a practice that remained in vogue until the reforms by Diocletianus (see Volume II, Chapter 9 for references). This would imply that the production and/or the control over the supply of building material towards the Oudenburg and Aardenburg forts was organized by the *cohors amicorum* of a regional chief, maybe the governor or the army commander.

In any case, whatever the actual reading is, the presence of similar stamps at the Oudenburg and Aardenburg fort (C Λ / C – Λ and Λ) with an identical Λ character assumes a close connection between them and a concurrence of their fort occupations.

323 In a large pit to the east of Unit VIII (Plate CDLXXXVII: pit section 1/99a and b, southern pit).





Figure 104. The Oudenburg fort during its successive fort periods in relation to the other military sites in the North Sea and Channel region (basic map © Frontiers of the Roman Empire Culture 2000 project (2005-2008)).

But how should we interpret the cessation of the Oudenburg fort or at least a serious decline in its fort occupation, and probably also at the Aardenburg fort, in the first two decades of the 3rd century? It is the period of the Scottish campaigns by emperor Septimius Severus which are dated to AD 208-211 (Hodgson 2014b, 32-33). Herodian (III.14.1) mentions that these campaigns were initiated by barbarian attacks in Britain in AD 208. That the campaigns by Severus had a major impact on the army in the

North-West, is well-known. The supply-bases at South Shields and at Corbridge, or at least their completion or enlargement, can be related to the preparation of Severus' campaign (Hodgson 2014b, 36-38). Based on the size of uncovered marching camps, it has been assumed that Severus had assembled an army of 40,000 men (Hodgson 2014b, 41). The fort at Reculver seems to have been unoccupied in the early 3rd century. According to Philp, its first occupation probably ended by the end of the 2nd century,

and a new fort occupation began c. AD 212-215 (Philp 2005). It seems therefore not unlogical to assume that army units from the continental Shore forts and possibly also from the British Shore forts were summoned to join Septimius' army for campaigning in Scotland.

How should the erection of a renewed fort at Oudenburg, and probably also at Aardenburg, then be explained? In this period a serious threat in the North Sea and Channel region apparently led to the reactivation and continuing activity at several forts. At Reculver, a peak in coin loss can be observed under Alexander Severus (222-238) (Philp 2005, 216). In AD 233 Alamanni attacked and ravaged the Rhine and Danube provinces, taking advantage of the weakened army when troop units were sent by Severus Alexander to Persia (Batz 2006a, 42). Dhaeze (2011, 185) points to altars found at Vechten and Bonn which record marine operations along the coast of *Germania Inferior* and invasions by Germanic tribes, mainly Alamanni, in 234 in *Gallia* and *Illyria*. In the nearby village of Roksem (part of the municipality of Oudenburg) a small coin hoard of 49 coins was recovered in 1970. Its closing coin of Balbinus can be dated to AD 238 and because of the monetary reforms by his successor Gordianus III it is possible that this coin hoard was entrusted to the earth already in AD 238 or shortly after (van Heesch 1991; 1998, 96).<sup>324</sup> However, it is difficult to interpret such a coin hoard: was it an act resulting from an invasion, or from the fear of it and did the owner die before he could collect his coins, or was it buried simply for monetary reasons?

At Oudenburg and Aardenburg renewed earth-and-timber forts were built, apparently intended as temporary installations. However, at Oudenburg this fort occupation lasted until around AD 245-250. Also at Aardenburg the end of *castellum* II has been dated around AD 240-245 (van Dierendonck and Vos 2013, 308). Moreover, at Oudenburg the attested two building phases (2A and 2B) and the renovations performed at the military hospital of phase 2B (as clearly evidenced by the construction slots of the northern part of the complex) hardly correspond with a temporary occupation. The same can be said of the renovations of Aardenburg *castellum* II (cf. van Dierendonck and Vos 2013, 304-307). The elaborate wall paintings which decorated the Oudenburg hospital may be another reason to suggest a more long-term occupation, as can also be deduced from the pottery of this level. Was this fort in the first instance intended as a temporary base, after which eventually a longer occupation turned out to be needed in light of continuing threats in the North Sea? Why was it not then decided to fortify this fort with a stone defence? Was this related to the lack of suitable local stone building material? It is worth drawing attention here to the building materials used for the construction of the British Shore forts of this period: Reculver, Brancaster and Caister-on Sea. Their building materials mainly came from local sources, although Brancaster and Reculver testify of some distant regional sources of stone, however all accessible by sea or river and supplied to the forts by ship transport (Allen and Fulford 1999; Allen *et al.*

2001)<sup>325</sup>. In general, most of the stones used for the building of the British Shore forts came from sources within a 30 km radius of the construction site (Pearson 2003, 110). The most closely available source of building stone for Oudenburg was the Tournai limestone, which has been used to build the later defensive stone wall; the same goes for Aardenburg (see further). The distance between Tournai and Oudenburg as the crow flies is less than 70 km over land. However, the stones were transported most likely over a much larger distance: directly by ship via the Scheldt, the Scheldt estuary and eventually the North Sea coast and the tidal channel up to the fort locations of Oudenburg and Aardenburg. In contrast, as has been demonstrated in Chapter III, wood and more specifically oak – ideal as construction material – was amply available in the region, as were also sand and clay. It is therefore rather a likelihood that the decision to erect an earth-and-timber fort at Oudenburg, and at Aardenburg, was an economic decision rather than determined by the character or intended duration of the occupation. In this region it was just easier, more suitable and cheaper to erect an earth-and-timber fort than a stone *castellum*. As such there is no firm ground to believe that the Oudenburg earth-and-timber forts were temporary installations. Certainly for fort period 2 and 3 this seems not to be the case.

#### V.1.4. Oudenburg fort period 3: c. AD 245/250 – 260

Whether the third Oudenburg fort occupation immediately followed the second one, cannot be deduced from the archaeological evidence. Indications for vegetation growth in the fort period 2 defensive ditch may point to an interruption in occupation. Anyhow, not much time will have passed in between, and it is even likely that the new troops of fort period 3A were responsible for pulling down the plastered and painted south wall of the hospital prior to levelling and raising the fort precinct to build a new earth-and-timber fort.

Again, it is difficult to imagine that this third earth-and-timber fort was a temporary installation. The renovations at the interior building, even with a complete rebuilding of the area, with a totally new organization, with successive changes in orientations and with new arrangements, suggest that this fort period 3 witnessed at least three different garrisons. These renovations also point to the rapidity of the troop changes and to a lot of political developments which will have been related to increasing threats. Written sources do assume that under the joint reign of Valerianus I and Gallienus (AD 253-260) the internal and external threats increased (cf. Alföldi 1959). First major invasions in Gaul are recorded for AD 253 and AD 259-261 and are mainly attributed to Franks (Briault 2006b, 43). Van Heesch (1998) calculated that for the *civitas Menapiorum* and the to the east adjacent *civitas Nerviorum* 58.4% of all coin hoards date to the 3rd century of which 85.0% are situated in the second half of that century. Twenty-seven of these 130

<sup>324</sup> See also Thoen 2019. Thoen however pleads for a burial in the third quarter of the 3rd century AD.

<sup>325</sup> Of the British Shore forts, only at Bradwell transport of stone over extra-regional distances can be evidenced with certainty; the bulk of the stones were obtained locally though (Pearson 2002a; 2003).

coin hoards have a closing coin from the joint reign of Valerianus I-Gallienus (AD 253-260)<sup>326</sup>.

The pottery assemblages of fort level 3 show the first contacts with *Britannia*. Freestanding 'contubernia', a new type of barrack-plan built in the same style as barrack units recovered at Reculver fort (although at Oudenburg not with a stone supporting base), seem to point to a connection between these forts. The British Shore forts active around the middle of the 3rd century were Reculver, Brancaster and Caister-on-Sea. Also at Dover, the construction of the Shore fort can be dated to this period. At Boulogne-sur-Mer, this period represents the last phase of the *Classis Britannica* fleet base, as this fleet stopped functioning around or shortly after the middle of the 3rd century. The latest inscription referring to the *Classis Britannica* dates to the reign of Philippus Arabs (AD 244-249) (Dhaeze 2011, 316 and footnote 300). At the coast of *Germania Inferior*, several forts can be assumed (see Chapter I, Section I.3.4); however, none of the known fort sites can be assigned to this period with certainty. At Aardenburg a fort occupation in the period c. AD 250-260 could not be determined (but can neither be totally ruled out, cf. van Dierendonck and Vos 2013, 307-308)<sup>327</sup>.

#### V.1.5. Oudenburg fort period 4: c. AD 260 – 290/300

##### V.1.5.1. Installation and occupation during the Gallic Empire

Under Postumus (AD 260-269), the first stone fort was erected at Oudenburg. It seems very likely that this new fort immediately succeeded fort period 3 and that it was in fact the petrification of the third earth-and-timber fort, with a total renovation of the inner building. The pottery assemblages of fort levels 3 and 4 hardly differ.

The coins and dendrochronological evidence indicate that this was a fort built by Postumus as part of the Gallic Empire<sup>328</sup>. Postumus, commander of the Rhine army, established in AD 260 the Gallic Empire, as a segregation regime, after the revolt of his troops. That revolt took place in the aftermath of the capture of the emperor Valerianus by the Sassanid Persians (König 1981; Drinkwater 1987). Postumus appropriated the title *Restitutor Galliarum*, implying that he established the restoration of Gaul and the border region of the Rhine after a period of chaos (Brulet 2006b, 43). Not only was the preceding period characterized by regular Germanic attacks, after the death of Severus Alexander in 235 several civil wars, revolts and battles for the throne with a succession of a fifty-

some soldier emperors until 284 took place. Postumus and his successors Laelianus, Marius, Victorinus and father and son Tetricus I and II reigned over an empire which imitated the official Roman Empire (Drinkwater 1987, 28). Their Gallic Empire covered Gaul, Spain, *Britannia* (König 1981; Drinkwater 1987, 27-28) and *Raetia* (Bakker 1993)<sup>329</sup>.

Postumus built the Oudenburg fort to serve as one of his strongholds along the North Sea coast, next to Aardenburg. There, the construction of the first stone fort has also been attributed to Postumus (van Dierendonck and Vos 2013, 330), mainly based on coin evidence<sup>330</sup>. The Oudenburg and Aardenburg strongholds were obviously needed, as the Empire experienced increasing Germanic threat from the joint reign of Valerianus and Gallienus (253-268) onwards. The increase of seaborne attacks can probably be related to the ceasing of organized protection of the North Sea coasts by the *Classis Britannica*. Zosimus mentions threats at the Rhine limes under Gallienus (AD 253-268), which must have been the reason for the latter to move his headquarters from the Danube to the Rhine (Rogge 1996d, 72).

The period of the Gallic Empire and the last quarter of the 3rd century were characterized by several piracy attacks on the coasts of *Germania Inferior* and *Gallia Belgica*, of which various mentions in the *Scriptores Historia Augusta* give proof. References to piracy attacks are attributed to the reigns of Postumus, Tetricus I, Aurelianus and Probus (Detalle 2002, 9). In AD 260 Franks and Alamanni organized massive attacks, respectively from the North and from the East; they invaded into Gaul and penetrated even as far as Spain (Rogge 1996d, 72 with reference to the descriptions by Eutropius and Aurelius Victor). They seem to have attacked the Gallic Empire regularly, by land as well as by sea, up to AD 268: in 263-264 as well as in 268 Postumus had to push them back (Drinkwater 1987). At the fort of Boulogne, a significant fire layer has been attested which can be dated, based on coin evidence, after AD 268/269 (Seillier 1986a, 174).

Most of the attacks were most probably small-scaled, with looting the primary goal. Others, like the invasions of 260 and 268, appear to have been massive. They resulted in a large amount of coin hoards in a well-defined region from the North Sea to the Middle-Loire area (van Heesch 1998, 185)<sup>331</sup>. Van Heesch, who examined the coin hoards of the *civitas Menapiorum* and *civitas Nerviorum*, calculated that the highest peak in the second half of the 3rd century was formed by the coin hoards closed off under the reign of Postumus

326 At Reims, a third of the coin hoards were put in the ground between 244 and 260, but according to Doyen these should all be related to the constant regression of the coin value (Doyen 2007, 375).

327 It is worth drawing attention here to the pottery assemblages of Oudenburg fort level 3 and their restrictions in dating them closely (see Volume II, Appendix, Section 4).

328 It is argued that the large waste-pit OS 4980, one of the key contexts of fort level 4 and belonging to the second phase of this period, can most likely be closely dated between AD 268 and 275 (cf. Volume II, Appendix, Section 5.2).

329 Doyen furthermore includes part of *Germania Inferior* and only considers the north of Spain (cf. Doyen 2007, 240: Fig. 155).

330 Only one pottery assemblage assignable to this level, namely from a waste-pit, has been studied, only generally datable to the 3rd century. One Rheinzabern Drag. 36 dish bears a figurative stamp, which may be related to the phenomenon of the line-stamps, a characteristic feature for the middle and the third quarter of the 3rd century (Dhaeze 2013, 275-277).

331 The large number of coin hoards in the second half of the 3rd century has been interpreted by many scholars as the consequence of raids and invasions. Following this, the course of the Germanic invasions in Gaul has been deduced by many scholars from the dispersion and concentration of these coin hoards (see e.g. Gricourt 1988). Van Heesch (1998, 147) mentions

(van Heesch 1998, 127, 131). The coin hoards of 260 show a dense concentration in the western provinces of *Gallia Belgica* down to the Somme (Rogge 1996d, 81). The coin hoards of 268 were mainly found in the coastal plain of north-west Gaul (Gricourt 1988; Rogge 1996d, 81; van Heesch 1998, 150). The large amount of coin hoards may also be partly related to internal threats, since these were also amply present: the attacks by Gallienus on Postumus (AD 266-267), the revolts of Laelianus and Marius in AD 269, the revolt of Autun in AD 269/270, the recapture of the Gallic Empire by Aurelianus in AD 274 (van Heesch 1998, 148).

The stone wall of the Oudenburg and the Aardenburg fort are strikingly similar, and their construction as part of one building programme seems very likely. Both were constructed with foundations and facings in Tournai limestone, with a similar width<sup>332</sup> and in the same building technique (small blockwork), with no extra foundation, and both banked by an earthen rampart. As already mentioned in the discussion of the morphology of the stone wall (Chapter II, Section II.3.4), the defensive wall of the Oudenburg fort, and equally that of the Aardenburg fort, was remarkably thin, respectively 1.05-1.10 m and 1.20-1.65 m. This is in strong contrast with the building style of the second generation of British Shore forts which is characterized by thick walls, next to exterior towers or bastions, tile bonding courses and a lot of reuse of earlier material (cf. Brulet 2006d, 169; Mertens 1983; Johnson 1970, 240). These elements cannot be recognized in the remains of the defensive wall of fort period 4. The walls of Oudenburg and Aardenburg rather recall the military building trend of the High Empire in *Germania* and *Britannia* (Johnson 1987, 84), also embodied by the British Shore forts of the first generation of the late 2nd century, equally characterized by a wall with flanking earthen rampart (see Table 5). The same is true for the shape of both Oudenburg and Aardenburg forts, still representing the classic 'playing card' shape, however without the rounded corners. The emergence of new fort shapes and altered internal building plans has been assigned to the reign of Diocletianus at the latest, but Southern and Dixon (1996, 133) mention that it is hardly known how the forts under the 'Military Anarchy' were built. The Oudenburg and Aardenburg fort indicate that the building trend under Postumus was still connected to that of the High Empire. An additional argument is that the façade of the north wall was covered by mortar imitating masonry (and presumably with painted red lines), a known phenomenon at forts of the High Empire.

This however does not explain the limited thickness of the walls at both forts, which is in strong contrast to Richborough, of which it

is assumed that it has been built in the same period. Was this choice at Oudenburg and Aardenburg related to the pre-existence of an earthen rampart? Or/And was it determined by the lack of local/regional suitable building material and the necessity to transport the totality of the stones, at Oudenburg as well as at Aardenburg, from Tournai? It can be assumed that the latter led to an economical use of the stones.

On the south-east coast of Britain new forts were built in this period, next to the still active forts of Brancaster, Reculver, Caister-on-Sea and also Dover. According to the current insights, the Shore forts of the second generation were erected at various stages and not all under the same circumstances. Second-generation Shore forts which functioned or were constructed during the Gallic Empire seem to be Burgh Castle, Walton Castle, Bradwell, Bitterne and Richborough. Only the construction of the Richborough fort can be more specifically dated between AD 267 and 275 (see Chapter I, Section I.3.5). As will be clear further, the pottery evidence at the Oudenburg fort shows a considerable orientation towards *Britannia*. It can be assumed that there was an important interaction between the Oudenburg fort and the British Shore forts of that period.

During fort period 4, or already at the start of this period, the extramural settlement at Oudenburg was abandoned. This end has been traditionally dated around AD 270. It seems more likely, though, that its occupation already ceased around AD 260 or in the 260s. The study of the finds of the 2007-2009 excavation at the east side of the settlement, at site Riethove (ET26), has not appeared to be able to date this end more precisely than after the middle of the 3rd century (cf. Dhazez *et al.* 2018). Although a few decorated samian fragments can be dated until AD 270, only one pottery sherd, a rim of a Gose 366-369 flagon from Famars (Dhazez *et al.* 2018, 99), can definitely be set from AD 260 onwards. Nevertheless, with only one Postumus coin and one radiate copy found on the site, both unstratified, the coin spectrum seems to indicate that after AD 260 there was hardly any activity left. As already discussed in Chapter I, Section I.4.1.4, the depopulation of the north-west of Gaul in the 3rd century is a complex phenomenon, not only caused by external threats but the result of a concurrence of circumstances. Nevertheless, the aforementioned invasions of the 260s which can be defined by the coin hoards, will certainly have had a major impact on the population at the coastal region and probably also on the extramural settlement at Oudenburg. In the coastal region of the *civitas Menapiorum* also the increasing marine influence may already in this stage have played a significant role.

Likewise, along Hadrian's Wall, but also in the hinterland, all military *vici* seem to have been completely or largely abandoned in the later 3rd or early 4th century AD (Hodgson 2009, 35; Bidwell and Hodgson 2009, 33-34). At Vindolanda, Housesteads and Wallsend, the abandonment of the military *vici* can be dated more specifically to c. AD 270 (Hodgson 2003, 17). Arbuthnot (2014)<sup>333</sup> has shown that not all extramural settlements along Hadrian's Wall were abandoned at the same time. Bidwell and

the discussion by others who do not deny this military explanation but give more importance to a monetary interpretation as related to coin reformations and the savings behavior of the people. Delmaire totally questions the military approach and argues against the significance of coin hoards as representatives of insecurity (Delmaire 1995). Kropff however has considered the 'unrest' hypothesis and the 'monetary' hypothesis and argues that the latter has to be most likely rejected (Kropff 2007).

332 Although also at Aardenburg the stone wall was completely robbed out in later times, the width of the wall can be defined between c. 1.20 and 1.65 m. Recovered Tournai limestone blocks display measurements of c. 10 by 20 cm (van Dierendonck and Vos 2013, 145).

333 With thanks to prof. dr. I. Haynes (Newcastle University) for drawing my attention to this Master thesis.



Hodgson (2009) have related the downfall of the military *vici* to the decline in activity in late Roman forts due to the decrease of the unit size. This may have resulted in the military *vici* being no longer economically viable. Also Wilmott has argued that ‘*the decline in these settlements must reflect a major change in the economic life and organization of the fort settlement*’ (Wilmott 2010, 10). Arbuthnot (2014) examined the available data from extramural settlements in the Hadrian’s Wall Frontier zone and reviewed the different abandonment explanations as stated by several scholars. He concluded that indeed economic changes most likely were the primary factor for their decline, but that these were probably in first instance related to the runaway inflation which started to have a serious impact in the 260s (cf. Brickstock 2010, 89). This must have had major consequences for the supply system and must have been eventually fatal to the economies of extramural settlements. Nevertheless, also the reduction in the number of troops will have had a negative impact on the economy and security situation of the *vici* (Arbuthnot 2014, 60).

#### V.1.5.2. Continuing occupation after the Gallic Empire

The Oudenburg fort, as well as the Aardenburg fort, clearly continued to be an important military base under the successors of Postumus throughout the entire Gallic Empire. The coin spectra at both forts, confirmed by the pottery evidence, indicate that the fort occupation also continued after the Gallic Empire. After Aurelianus brought under control the Gallic Empire, the Oudenburg fort remained occupied without interruption and underwent no major changes. Apparently the same unit stayed in place.

The North of the Roman Empire was severely plagued by large-scale Germanic invasions over land in AD 275/276 and around 280 (Drinkwater 1983, 88-89). They lead to the destruction of 60 of the most important cities in Gaul and several forts along the Rhine limes. These invasions have been seen by many scholars as the cause of the end of civil population in the north-west of Gaul (however as discussed above this was most likely not the cause and civil occupation had ceased already years before) and of the end of the Oudenburg and Aardenburg fort (see e.g. Thoen 1978, 196-201; Thoen 1987; Rogge 1996d; Brulet 2006b, 43; Dhaeze 2011, 196-197)<sup>334</sup>. However, with the totality of the coin evidence and the evidence of all find categories in place, it is now clear that these invasions did not affect the Oudenburg fort and that its occupation continued for at least another decade and a half. The 275-276 invasions were most likely not significant for our region in contrast to the surrounding provinces where they had a devastating impact (van Heesch 1998). After Postumus, the number of coin hoards in the north-west of Gaul decreased very strongly. In other regions of Gaul and *Germania*, the coin hoards from the period of Tetricus (AD 270-274) are dominating. These are however almost lacking in the North-West, north of the fortified road Boulogne-Bavay-Cologne, whereas the coin hoards of the period 257-268 are dominant in this region (van Heesch 1998, 150). This shows that the major Germanic invasions of 275-276 did not affect as

much our regions, probably since they mainly occurred over land bypassing Oudenburg, and that the main attacks in the north-west of Gaul are to be dated in the period of Postumus.

Oudenburg continued to function under the reign of Probus (AD 276-282)<sup>335</sup>. Under his reign, Germanic invaders were forced back and a powerful repair of the Empire started, with the restoration of the 60-some cities around AD 277 as can be read in the *Vita Probi* (xiii, 5-7). Nonetheless, the northern regions continued to be menaced in the 280s, not only by pirates but also by internal revolts (like Bonosus and Proculus) and by *bagaudae*, raiding gangs wandering around, against which Maximianus (AD 283-288) campaigned. Apparently, seaborne invasions drastically gained importance, since in 286 emperor Maximianus assigned the Menapian officer Carausius the task to push back the piracy in the Channel coastal region (Rogge 1996d, 68-69; De Boone 1954, 47-56). Carausius had distinguished himself in the campaigns against the *bagaudae*. His appointment as naval commander was intended to ‘rid the seas of *Germania* of pirates’ (Aurelius Victor xxxix, 20: ‘*propulsandis Germanis maria infestantibus*’). Eutropius (ix, 21) specified the area as the seas of the *tractus Belgicae et Armorici*, or the continental coastline between the Rhine and the Loire, and the pirates involved as the Franks and Saxons<sup>336</sup> (see also Orosius vii, 25, 3) (Wood 1990, 93). This implies that the raiders had already broken through the Boulogne-Dover defence and had reached the coasts of *Armorica*, current Brittany (Cunliffe 1975). In 286 Carausius seized power himself, after Maximianus turned against him because of his contested methods. Carausius (AD 286-293) established the *Imperium Britanniarum* (AD 286-296) over part of the coastal region of northern Gaul and the whole of *Britannia*. Casey (1977) has demonstrated that the command of Carausius on the Continent covered a larger area than Boulogne and its environs, extending over Rouen, Amiens, the Arras region and Laon (see also Williams 2004). Boulogne functioned as his base and the construction of the forts at Pevensey and Portchester can be attributed to his reign. The construction of the forts at Lympne and at Richborough probably predate the Carausian reign but Williams demonstrates that their coin evidence, especially that from Richborough, points to increased activity in this period (Williams 2004, 13-14, 75).

Constantius Chlorus captured Boulogne in AD 293. The segregation empire of Carausius continued under his successor Allectus (AD 293-296). It is however uncertain whether Allectus ever held domain in Gaul (Casey 1977, 301). Williams (2004, 74) believes that Allectus tried to reconquer Boulogne right after his accession in early AD 293 but that he eventually failed. In any case, at the Oudenburg fort, the coin evidence yields no

<sup>334</sup> Also the present author has assumed this in previous publications (Vanhoutte 2007a; 2007b; Vanhoutte et al. 2009b, 96).

<sup>335</sup> The south-west corner site and the north-east site (site Kapellestraat) both yielded one Probus coin. At the latter site this coin could be closely dated to AD 277. It was possibly the closing coin of a dispersed coin hoard, mainly consisting of Postumus coins (Vanhoutte et al. 2014, 195).

<sup>336</sup> Wood (1990, 94) argues that the involvement of Saxons in invasions of the late 3rd century are in fact a later perception by 4th-century writers on earlier events. It is only with historian Ammianus Marcellinus and his contemporary Ambrose, bishop of Milan, that Saxons, besides Franks, are pointed to as raiders on the coast of Gaul.

indications for Carausius; neither does the Aardenburg fort. So far, the evidence at the Oudenburg fort indicates that during the episode of Carausius and Allectus – if the fort was still active, and this is a likelihood – it was part of the official Roman Empire. This implies that, while the Oudenburg fort formed a close system with the British Shore forts during the Gallic Empire, and most likely also during the successive years, they were counterparts during the period of Carausius and Allectus. Both usurpers must have been expecting an invasion by the Central Empire. In light of the defensive strategy of Carausius, and subsequently Allectus, the British Shore forts now functioned as defensive bases against the Central Empire, and were as such manned by defensive troops supported by ships (Williams 2004, 14).

At this time a continuing fort occupation at Oudenburg, and Aardenburg, was definitely necessary as the North Sea region still suffered from piracy. The *Panegyrici* mention victories by Maximianus and Constantinus Chlorus against 'barbarians'. Maximianus in 288 and Constantius Chlorus in 293 campaigned against Frisians and Frankish tribes, in fighting piracy and simultaneously Carausius (Dhaeze 2011, 67).

#### V.1.5.3. The final phase of fort period 4

The end of the Oudenburg fort 4 is marked by a fire and destruction level. The presence of a lot of metal at this level is a further indication that the fort was rapidly and unmethodically abandoned, rather than decommissioned. Also, the fort Aardenburg III saw an abrupt end with a fire destroying the inner buildings (van Dierendonck and Vos 2016, 342). The precise end is difficult to define since it lies in a chronological range which is hard to capture with the current archaeological data. The samian workshops in the East of Gaul ceased exporting their products in the period *c.* AD 270-275 (cf. Brulet *et al.* (réd.) 2010). The production of the following samian index fossils, the late Roman roller-stamped sigillata from the Argonne region, emerged, according to the current insights, only *c.* AD 320. They are completely lacking at fort level 4. The coins recovered from this level can hardly help to clarify the chronology in this period since they should only be taken into account as *terminus post quem* data; coins for the period 294-318 are generally very rare. Finally, radiocarbon date analyses are unable to capture this time frame specifically as too many wiggles in the graphs occur. For other pottery categories and other objects such as *e.g.* brooches, chrono-typological evolutions have mainly been established based on the samian chronology. The only data which would enable us to clarify this transition period with certainty, could come from dendrochronological analyses from preserved wood from this period, however so far unknown for the region.

The collected data from the pottery and the coins from the Oudenburg fort point to a terminal date for fort period 4 at the very end of the 3rd century. The presence of a Trier motto beaker dated after AD 280, of some Speicher and Mayen coarse oxidized vessels, and especially some Romano-British Black Burnished ware vessels point to an end date even probably after AD 290. Lyne has concluded from the Romano-British coarse ware spectrum of fort level 4 that all vessels could be made to fit within the period *c.* AD 270-300 but that the absence of BB1 incipient-beaded and flanged

bowls of type 6/2, dated *c.* AD 210-280/90, indicates that the BB1 vessels of fort period 4 all arrived on site during the narrower time-slot *c.* AD 280/290-300 (see Volume II, Chapter 1.B.5, Section 5.1.3, study by M. Lyne). Apart from the many radiate copies at this level, the two Probus issues (AD 276-282) are the latest *tpq* date from the coin assemblage of this period. However, two Tetrarchy coins (AD 294-310) found out of context may be related to this level, although this cannot be evidenced; they may as well have been used at fort period 5A, as old coins. Two presumed *minimissimi*, of which one was found at fort level 4 (although this one is rather large and identification uncertain), may push the end date of period 4 further to at least *c.* AD 300. The absence of 4th-century coins at Oudenburg fort level 4 may be an argument, although not conclusive, for dating the end of fort period 4 not later than the start of the 4th century.

While the coin evidence of the Aardenburg fort in general shows many similarities with that of the Oudenburg fort, the coin spectrum of the late 3rd century is strikingly similar. Chameroy has concluded from the Aardenburg coin study that the occupation of the fort probably stopped in the 280s and related this to the campaigns of Maximianus, co-emperor of Diocletianus in the West (AD 285-305) (Chameroy 2013, 76: Fig. 5.1 and 5.2). The Oudenburg evidence, in which the coins are considered in combination with all other chronological indicators such as the pottery, also demonstrates a date after AD 280/290. So far, the end date of Oudenburg cannot be related to a specific event, but it appears that this end was violent, as was also the case at Aardenburg. However, a destruction level can be explained in several ways: as a result of a 'barbarian' invasion or as the result of 'non-barbarian' actions, and precise date, extent and impact are difficult to assess.

It is worth drawing attention to a study by Chameroy (2011) who defined two late 3rd-century coin hoard periods in the North-West: a general AD 281-282 horizon, next to an AD 293 horizon in Gaul and an AD 293-296 horizon in Britain. Voorburg-Arentsburg or *Forum Hadriani* lost its role as supply centre of military bases along the coast around AD 300 which is marked by some intentional deposits pointing to 'military stress' (Van Kerckhove 2014, 472). Both phenomena seem to have been the result of a supra-regional phenomenon, but the exact events which initiated them and/or prevented the retrieval of the hoards are so far unknown. Are the latter two periods related to the incoming of Frankish groups? From one of the *Panegyrics* (*Panegyrici Latini* VIII, 5) it is known that Constantinus Chlorus, then Caesar in the western provinces, purged the area between the Scheldt and the Rhine from Franks in the period AD 293-297 (De Boone 1954, 58). The violent end at the Oudenburg fort may be an indication that the Frankish invasion also affected Oudenburg. It is also the period of the reorganization of the provinces, of the civil centres and of a large building programme in *Germania Secunda* (cf. Heeren 2017, 155) (cf. Figure 105). Was the focus now totally on a more defensive northern border region and was it decided to leave the Oudenburg fort temporarily unoccupied?

The end of the Aardenburg *castellum* III appears to have been the definite end of its military occupation. At least 15 4th-century coins, of which some are dated in the third quarter of the

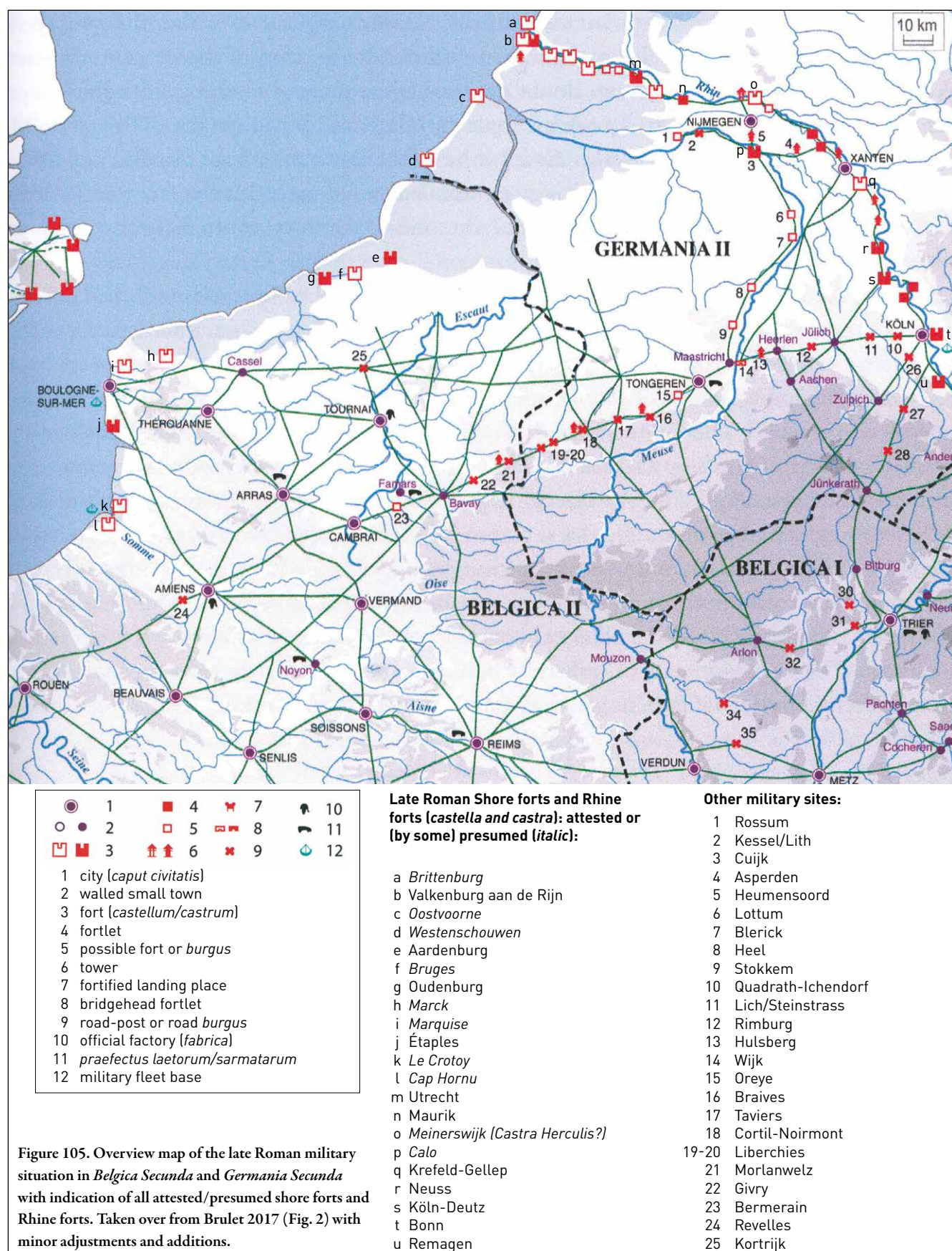


Table 5. Overview of the known British Shore forts versus the forts of Oudenburg and Aardenburg and their respective structural characteristics. Table based on Philp 2012, 156, with omission of Carisbrooke and the Richborough Signal Station, and with additional information, references and with supplementing the Oudenburg and Aardenburg forts. Some dimensions of the British forts have been adapted based on the primary references. > : reduced by internal offsets.

SHORE FORTS	WALL THICKNESS (in m)	TILE COURSING	BASTIONS	CORNERS	RAMPART BANK	HECTARES	DITCHES	references
BRITISH SHORE FORTS GENERATION I								
Reculver	3.05>2.40	no	no	rounded	yes	3.24	2	Philp 2005, 22-24, 194
Brancaster	2.70	no	no	rounded	yes	3.03	1 or 2?	Philp 2005, 218; Johnson 1989b
Caister-on-Sea	2.90 > ?	no	no	rounded	yes	3.53	?	Darling and Gurney 1993; Philp 2005, 220-221
Dover	2.30-2.50	no	yes	angular	yes	1.56	1	Philp 2012
BRITISH SHORE FORTS GENERATION II								
Richborough	3.30	yes	yes	angular	no	2.70	2	Bushe-Fox 1926; 1928; 1932; 1949
Burgh Castle	3.20>1.50	yes	yes	rounded	no	2.58	?	Johnson 1983a; Johnson 1989c
Lympne	3.50-3.90	yes	yes	angular	no	3.23	no	Cunliffe 1980; Johnson 1979, 53-56; Bosworth 2016
Walton Castle	c. 2.70	yes	yes	rounded	?	?	?	Pearson 2002, 20
Pevensey	3.70>3.08	yes	yes	none	no	4.00	?	Lyne 2009
Portchester	3.10	yes	yes	angular	no	3.42	?	Cunliffe 1975, 13
Bradwell	c. 4.20	yes	yes	rounded	?	2+	?	Johnson 1989a; Pearson 2002b, 23-24
SHORE FORTS BELGICA SECUNDA								
Oudenburg	1.05-1.10	only N side	only N side	angular	yes	2.72	?>3	van Dierendonck and Vos 2013
Aardenburg	1.20-1.65	no	only 2?	angular	yes	3.60	1?	

4th century AD, and some Germanic pottery were recovered from the Aardenburg fort; however, no features could be related to them (van Dierendonck and Vos 2013, 86). They point to some kind of occupation, however most likely not a military one. The decision not to reoccupy the Aardenburg fort in the 4th century was most likely related to the increased marine influence which must have made it difficult to have easy access to the fort. The Oudenburg fort, however, seems to have played a major role in North Sea and Channel region in the 4th and early 5th century AD.

#### V.1.6. Oudenburg fort period 5: c. AD 325/330 – (c. AD 380) – ?430(+)

##### V.1.6.1. Fort period 5A: c. AD 325/330 – c. AD 360

In the third decade of the 4th century, the stone *castellum* was renovated and reoccupied<sup>337</sup>. A start date around AD 325/330 is indicated by dendrochronological analysis in combination with the chronological range of the samian roller stamps. The chronological range represented by the datable graves of Graveyard A, of which the earliest ones can be dated in the second quarter of the 4th century, confirms this time span (cf. Figures 95 and 96).

It is most likely that with this renovation the semi-circular bastions were added to the north side of the fort. The evidence that this side of the fort no longer had a defensive ditch in fort period 5 but that a side-branch of the tidal channel reached this far, favours a 4th-century date for the bastions. This renovation of the northern wall with the addition of intermediate towers also involved a refacing of this side; it is most probably at this stage that bonding courses were added.

Not only did the bastions offer extra protection, facing the enemy, their symbolic meaning in embodying power and strength will at least have been as important. The Oudenburg bastions are similar in size and shape to the ones of the British Shore forts of the second generation (Table 5). Clearly a military identity expressing Roman imperial power was installed in the Channel region through a general building programme.

The reoccupation of the stone fort is to be seen in light of the consolidation policy of Constantinus I (306-337), as no serious threats are recorded for that period, although Eutropius (3.10) mentions in general that Constantinus battled against Franks and Alamanni in Gaul (Southern and Dixon 1996, 33). Constantinus I seems to have succeeded in restoring the Roman authority along the northwestern border of the Roman Empire (see Engemann 2007), not only by means of a large building programme with the consolidation of the border (although much was presumably already done by Diocletianus (Southern and Dixon 1996, 33 ff.)) and a defence system 'in depth' (Figure 105), but also by means of offensive actions. New *castella* were built, several earlier military bases were renovated or restored (Brulet 1990b; 1993, 137; 1995, 111-112; Southern and Dixon 1996, 33-34). It is a valid hypothesis to suggest that the construction date of the 4th-century fort of Oudenburg is related to the installation of the post of the *comes litoris saxonici*, known from the *Notitia Dignitatum*.

The first specific indications for external threats in the 4th century date to the 340s. Constans, son of Constantinus I, fought the Franks in Gaul around 341 (Dhaeze 2011, 68, 215). Maternus mentions in his work from AD 346 that crossing the Channel was a 'precarious undertaking because of the presence of barbarians' (*De Errore Profanarum Religionum* XXVIII, 6). Both Portchester (Cunliffe 1975, 425) and Pevensey (Lyne 2009, 39) were renovated in the period AD 340-345. Lyne relates this to the visit to Britain

<sup>337</sup> Mertens already suggested the possibility that the last fort was installed during the reign of Constantinus I (306-337) (Mertens 1987, 89).



by Constans in AD 342/343<sup>338</sup> who may have ordered these renovations in light of increasing threats (Lyne 2009, 40). At Burgh Castle, a first peak in the coin loss of the 4th century can be observed for the 330s and 340s. From AD 352 until 355, severe invasions, mainly by Franks, but also by Saxons and Alamanni, ravaged the Rhine front, mainly in *Germania Inferior* and *Superior* (Hoffmann 1969/1970, 342-344; van Es 1981, 51; Oldenstein 2006, 47). Specific indications for new attacks and invasions in the North-West point to AD 363, following measures by Julianus to withdraw army units from the western front to fight in the East against Constantius II (van Es 1981).

During fort period 5A (and 5B) the Oudenburg fort must have been an important stronghold. According to the available data along the shore of *Belgica Secunda* and *Germania Superior*, Oudenburg is the most northern of the Shore forts. The renovation of the stone fort and its reinforcement with bastions emphasize its importance. Furthermore, several burials which can be attributed to fort period 5A contained a crossbow brooch (Tables 2 and 11), pointing to an important presence of military officers.

#### V.1.6.2. Fort period 5B: c. AD 380 – ?430(+)

The chronological range represented by the roller stamps at the south-west corner site and the one represented by the datable graves of Graveyard A (Figure 106), suggest at first sight a continuing, dense occupation throughout the 4th century, until at least AD 410. However, the inner building of the *castellum* indicates a renovation of the fort in the later 4th century, after the abandonment of the baths and the arrangement of the south-west corner area for corralling horses or pack animals. The dendrochronological dating of AD 379/380 for the latest well of fort period 5 situates its construction, and hence the renovation of the fort, under the reign of the western emperor Gratianus (367-383)<sup>339</sup>. The pottery evidence of the structures assigned to this level confirms a renovation date in the last quarter of the 4th century. Moreover, the samian roller stamps with a date range of AD 375-425 are well-represented (Figure 107).

This change in occupation can even be linked to a new phase in Graveyards A and C. While a considerable interruption in the occupation cannot be archaeologically attested from the available data of the fort precinct, the overlap of existing graves by new grave cuts – implying the earlier ones were no longer visible<sup>340</sup> – and their shift in orientation indicate that there must have been a considerable break. The fact that grave markers must have disappeared, and the graves were no longer visible, suggests some time had passed before the fort was reoccupied by a new unit. The well-balanced

chronological ranges represented by the samian roller stamps and by the datable grave goods of Graveyard A imply that this interruption did not last long. However, it must be taken into account that it is inherent to the chronological indicators in question that they mainly yield wide dating ranges which inevitably result in a flattening of the graphs. Only in the chronological range of the grave goods of Graveyard A a minor dip can be noticed, interestingly exactly in the period AD 360-365; this should be considered with much caution though, as this graph only represents *terminus post quem* dates which result from a range of chronological indicators, variably present in the different graves. It is in this respect important to keep in mind the possible long life-span of certain objects or the possibility that earlier items were buried with the deceased, as part of a specific burial expression<sup>341</sup>.

The chronological evidence points to an interruption in the fort occupation (or a strong decline in unit size) somewhere within the time-span c. AD 360-380. With the current available data it is not possible to narrow this timeframe with certainty. While the end date of this break is fixed through the dendrochronological date, the precise end of fort period 5A is definitely not. It may well have been a date in the 360s. In AD 361 Julianus withdrew about 23,000 elite soldiers from the western front to face his opponent, the eastern emperor Constantius II, in the East (Rogge 1996c, 108). The interruption in the fort occupation at Oudenburg may be an indication that also the Oudenburg unit was withdrawn for this event. This would specify the interruption of the fort occupation to c. AD 361-380. However, lacking clear chronological evidence this is no more than a suggestion and it would be remarkable that the Oudenburg fort would not have played a role in the following episode.

The established (*tpq*) date of AD 379/380 for the reoccupation of the fort (fort period 5B) shows that this did not happen under Valentinianus I (364-375), as has been suggested by Mertens (Mertens and Van Impe 1971, 34). After the withdrawal of troops by Julianus the lower strength at the northern border resulted in a new wave of invasions by Franks and Saxons, first recorded for AD 363, who were able to penetrate far into Gaul. Ammianus Marcellus mentions in his *Res Gestae* piracy raids by Picts, Scots, Attacotti and Saxons in AD 362-364. By the time Valentinianus I arrived in the region in AD 364, after Julianus died, the invasions were still ongoing. According to Tomlin, these were related only to Gaul, not to Britain (Tomlin 1979). A climax was reached with the so-called *barbarica conspiratio* or barbarian conspiracy of AD 367, a coordinated attack on the coastal regions of northern Gaul and on Britain (Hoffmann 1969/1970, 349-350; Esmonde Cleary 1989, 44). However, Gerrard (2013, 22-25) argues that the accounts by Ammianus Marcellinus of these events were most likely exaggerations, instructed by the western imperial court. Bartholomew (1984) believes that the Saxons at that time only threatened the coasts of Gaul. In any case, the Saxon Shore must have been vigilant. According to Ammianus Marcellinus, Valentinianus I sent Theodosius, one of his officers, to *Britannia* to fight back, after

338 Constans embarked for Britain at Boulogne. Gerrard (2013, 19-21) argues that this event must probably be seen as a 'planned piece of imperial bravado', most likely in combination with an inspection of the British garrisons.

339 Until AD 375 together with his father Valentinianus I.

340 Another explanation would be that the new unit had no respect for the earlier graves. However, even from another socio-cultural group one can expect that there was respect within the military community. Based on the geographic position of the graveyard at the end of the sand ridge one could also consider a masking by a silting from a sea incursion event, which washed away the markers. However, archaeologically there was no indication for this.

341 In this respect it is important to notice that both grave 141 and grave 201 contained a Constantinian coin. Nevertheless, both can be dated to phase 2, from the late 4th century onwards, based on the accompanying grave goods.

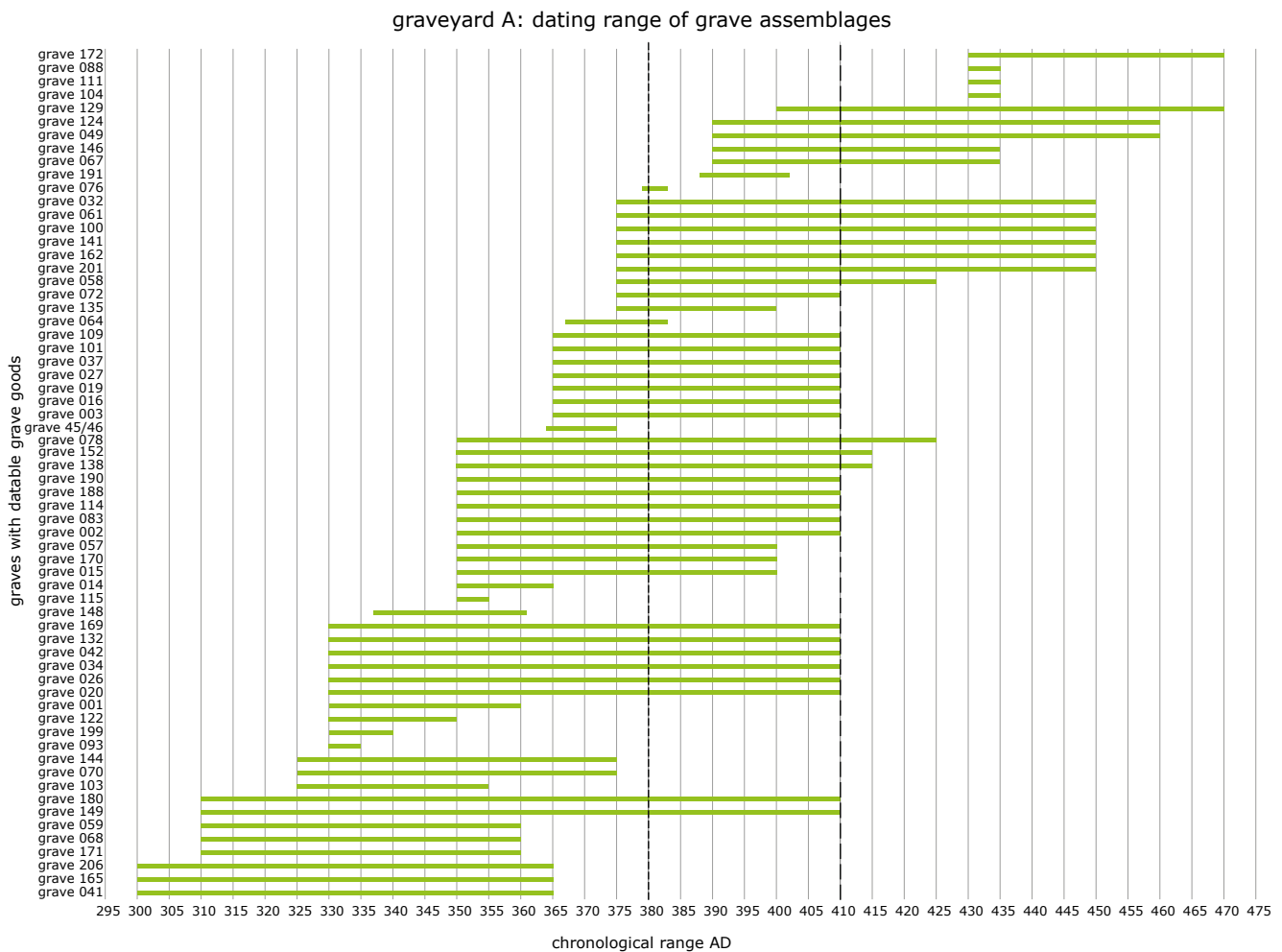


Figure 106. Overview of the dating ranges of the Graveyard A grave assemblages which can be taken as *terminus post quem* dating ranges for the burials, with AD 380 marked, the date of reoccupation of the fort as indicated by the evidence at the fort precinct and with AD 410 marked, the date which has so far been generally accepted as end date of the late Roman occupation of the Oudenburg fort.

which he restored several forts and cities (Hoffmann 1969/1970, 350). As mentioned above, the archaeological evidence at hand for Oudenburg does not exclude that the fort still played a role.

Another valid hypothesis is to relate the end of fort period 5A to the troop changes by Valentinianus I. In AD 369, the succession of invasions and attacks forced Valentinianus I to a complete reorganization of the Rhine *limes* and of *Britannia* together with considerable troop movements (see Hoffmann 1969/1970, 344-345, 349-350). He established a large defensive building programme with the erection and (mainly) renovation of fortifications of the *limes*, along the Rhine<sup>342</sup> – as is referred to by Ammianus Marcellinus (XXX, 7-9) – as well as along the Danube (Gerrard 2013, 30), and the militarisation of the coasts of Normandy and Brittany (Brulet 1990b, 338; 1996b). According to Ammianus Marcellinus, in AD 370 Saxons again attacked the

shores of *Belgica Secunda*, and again in AD 373. Valentinianus I eventually pushed back successfully Franks and Saxon pirates at the Lower Rhine (Oldenstein 2006, 48). Welsby concluded that Valentinianus' building programme most likely also comprised the renovation and strengthening of several of the Shore forts, although firm chronological and archaeological evidence is scarce for that period (Welsby 1982, 104 ff.).

Nevertheless, in the 370s the emperor also transferred troops from Gaul to *Illyricum*; the Oudenburg unit may have been part of this. These Gaulish units kept on being deployed in other campaigns in the East, probably Raetia, certainly until AD 378 (cf. Ammianus Marcellinus XXXI.10, 5-6 (Rolfe 1963)). It is in light of the reorganization of the northwestern border and within the context of the end of these troop movements in the 370s until around AD 380 that the reoccupation of the Oudenburg fort can be situated. Several grave goods of Graveyard A, mainly the jewellery, testify to close links with *Pannonia* and *Raetia*. The study of the bracelets and other accessories (Swift 2000b; Sas 2004) concluded that their presence can be explained as the result of returning troops

342 His efforts at the Lower Rhine will have been mainly intended to safeguard the supply from the vital cereal transports from *Britannia* (Rogge 1996c, 115).

(see Chapter IV, Section IV.3.2). Mertens and Van Impe (1971, 36) connected the reoccupation of Oudenburg with the troop movements of AD 387-388. The presence of the assemblage of *Siscia* coins in grave 76 of Graveyard A was to Mertens the decisive argument to identify the unit of the last fort occupation as the *milites Nerviorum*, one of the troops involved in the military operations in the Balkans which were later moved back to the West, and named as the unit stationed at *portu aepatiaci*. *Portu aepatiaci* is one of three forts listed in the *Notitia Dignitatum* under the *Dux Belgicae Secundae* along the Gallic coast, besides *Marcis in littore Saxonico* and *in loco quartensi sive hornensi* (see *Notitia Dignitatum Occ.* XXXVIII) (cf. Chapter I, Section I.3.2). It is a likelihood that the soldier buried in grave 76 of Graveyard A together with his dog and with his purse with an AD 379 closing coin and at least seven coins minted at *Siscia*, located in *Pannonia*, obtained these latter issues himself in neighbouring *Illyricum* while he was stationed there. Mertens believed Oudenburg should probably be identified with this *portus Aepatiacus* (Mertens and Van Impe 1971, 35-36). However, scholars like Will (1973) and Leman (2004) rejected this idea. Will pointed to the disproportional small list for the *Dux Belgicae Secundae* with only three forts, in contrast to the many fortified sites for the *tractus Armoricanus et Nervicanus* to the south-west along the French coast and the well-equipped British Saxon Shore. Will argued that at the time of the *Notitia* the current Belgian coastline was already abandoned by Roman troops, likely in the years 407-410, due to the Germanic invasions well-attested in historic sources for this period and based on the closing date for Graveyard A suggested at the time by Mertens around 406-410. Therefore, Will concluded that *portus Aepatiacus* should rather be located along the current French coast between the Bresle and the Aa (Will 1973, 72). A shift to a later closing date for the Oudenburg fort, as is now clear, obviously invalidates this reasoning.

Nevertheless, the transferred troops to which Mertens and Van Impe referred were the *Nervii (seniores)* (Hoffmann 1969/1970, 482) and these *comitatenses* had no connection with the *milites Nervii* who formed part of *limitanei*. Moreover, the definition of the (*tpq*) start date of fort period 5B at AD 379/380 rather enables a connection with the troop movements to *Illyricum* in the 370s, and in AD 377-378 back to *Raetia*, after which the Oudenburg fort was most likely manned by returning troops or certainly by units with men in their ranks who served there.

This chronological outline strikingly coincides with observations at the late Roman fortified city of Arras. There a large sanctuary has been uncovered dated to the last third of the 4th century and of which the structure and rites shown by the material culture clearly indicate its Germanic character (Jacques 2007b). It is believed to represent the occupation by Germanic *foederati* (Jacques 2007a, 75-77). This sanctuary however ceased to exist in the 380s, coinciding with a severe fire, destroying the entire *castrum* as it was observed in three quarter of the precinct. Right after, the regular army reoccupied the fort (Jacques 2007a, 77), which fits well in a general renewed militarisation of *Belgica Secunda*.

A similar occupation history in the 4th century as at Oudenburg can be seen at the fort at Cuijk (Figure 105), where equally first an occupation during the reign of Constantinus I could be recognized,

with later, after an interruption in the occupation, a rebuilding in stone. The latter happened somewhat earlier than at Oudenburg, under Valentinianus I (van Enkevort and Thijssen 2002, 81-83). Some of the hill-forts in the Samber-and-Meuse region testify of a similar timeline. They were abandoned during the 4th century and reoccupied from AD 370/380 onwards until the middle of the 5th century, apparently with Germanic units (see Brulet 1990b).

The dendrochronological date available for the installation of Oudenburg fort 5B, AD 379/380, places its reoccupation under the reign of Gratianus. Did he continue the work of his father? This is most doubtful. Already in AD 380 Gratianus moved the western court to Italy and his removal from the North-West probably resulted in an increase of unrest and revolt, eventually leading to the usurpation by Magnus Maximus in AD 383 (Halsall 2007, 186-187). Halsall (2007, 195-196) has argued that Magnus Maximus in preparation of his revolt, and after him the generals Arbogast and Stilicho, withdrew regular troops from Gaul and probably replaced them by 'barbarians' to defend the frontiers. Halsall has furthermore stated that, although '*there was no deliberate abandonment of northern Gaul*', it knew no longer an '*effective re-establishment of imperial authority after 388*' (Halsall 2007, 199-200). Hard evidence for this thesis is however lacking. Ammianus Marcellinus' *Res Gestae* stops in AD 378 and cannot yield further information. Chapter V.3 (Section V.3.4.2.3) will further elaborate on this episode.

As already outlined in Chapter I (Section I.4.1.4), in the late 3rd and 4th centuries civil population in the region fell back drastically to hardly existent. In the *civitas*, now called the *civitas Turnacensium*, besides at the Oudenburg fort, population was concentrated at the *civitas* capital Tournai and at Kortrijk, where another *castellum* should be located<sup>343</sup>. Around AD 358 Julianus granted Salian Franks permission to settle as *foederati* in *Toxandria*, the territory between the Demer and the Dommer, east and north-east of the Scheldt (De Boone 1954, 90-91). The countryside of *Belgica Secunda* increasingly ended up in the hands of Frankish immigrants, with or without approval of the Roman authorities (Brulet 2006a), as was also the case for *Germania Secunda* (Heeren 2017). For *Germania Secunda* Heeren believes that the new settlements inhabited by *foederati* and their families developed around AD 400 (Heeren 2017, 167). The hillforts in the Samber-and-Meuse region and the graveyards at Vron and around Boulogne witness of incomers in the late 4th century; it is noteworthy that this change too is dated around AD 370/380 (cf. Seillier 1986a; 1986b). The rural site of Zerkegem, in the vicinity of Oudenburg (at c. 4.5 km to the east/south-east), was occupied from around AD 370 onwards which can be seen within the same context<sup>344</sup>. Its origin may well be connected to the reoccupation of the Oudenburg fort.

343 The *milites Cortoriacenses* are mentioned in the *Notitia Dignitatum* (cf. Chapter I, Section I.3.3).

344 Other rural sites in current Flanders where a clear Frankish presence has been attested are e.g. Donk and Neerharen-Rekem (see Van Ossel 1992).

### V.1.6.3. The 'end' of the last 'Roman' fort occupation at Oudenburg

By convention the end date of the fort occupation at Oudenburg was set, mainly based on the historical sources, around AD 410 and was related to either the AD 406–407 invasions or the events under Constantinus III between AD 407 and 410. With all chronological indicators in place, this end date should now be shifted to a later date, certainly after AD 410. This can mainly be deduced from the revised dates of several finds from Graveyard A, mainly the buckle and belt fittings, in combination with the revised data from the late Roman roller-stamped sigillata from the fort precinct (cf. Figure 107)<sup>345</sup>.

The revision by Böhme (1987) of buckle and belt fitting dates means that several Oudenburg items classified within his *Fundgruppe B* should be dated to c. AD 430/435–465/470 (cf. Chapter IV.3.2; Appendix 7: Table 18). For some grave assemblages, however, this is in conflict with the proposed dates by Sommer (1984). The traditional end date of c. AD 407 has clearly influenced the work of Sommer though: several type datings seem to witness of circular reasoning. New research is definitely needed to shed light on this topic, but based on the revised Böhme typology, several graves can be dated at the earliest around AD 430. This date may be confirmed by the find at the Oudenburg fort site of a fragment of assumed *Rotgestrichene Keramik* of which the start of production is dated to c. AD 430 (see Volume II, Chapter I.B.4, Section 5). However, with only one single sherd, caution is needed about its identification.

At the south-west corner site, four unique roller stamps (UC 24, UC 25, UC 26 and UC 29<sup>346</sup>), in total accounting for seven vessels<sup>347</sup>, have a dating range situated between AD 410 and 450. From several other roller stamps the chronological range starts earlier but stretches until AD 450. It is therefore not excluded that more individuals may be dated after AD 410.

In any case, the proposed dates and certainly those of the burials indicate that the end of the fort occupation should be set (well) after AD 410. This is in line with the perception at other sites in *Belgica Secunda*. At the presumed *castella* of Kortrijk and Ghent the (military?) occupation also clearly continued beyond AD 410 and is believed to have ceased in the second third of the 5th century (Rogge 1996c, 111). At the military base at Boulogne-sur-Mer, capital of the *civitas Bononensium*, the end has been dated between AD 410 and 425/430 (Seillier 1996). At Arras-*Nemetacum*, capital of the *civitas Atrebatium*, the military occupation of the *castrum* seems to have ceased in the second quarter of the 5th century (Jacques 2007a, 79).

The scarce evidence demonstrates that the Rhine provinces and the Rhine frontier was held until the middle of the 5th century, maybe

even somewhat later<sup>348</sup> (Brulet 1990b, 264). Roymans has related the drying up of the Roman gold influx in the Lower Rhine frontier zone around the middle of the 5th century to the end of effective Roman authority in this region. It probably equally reflects the move of the Frankish warbands to more southern areas in Belgic Gaul that were still under Roman control (Roymans 2017).

While the chronological ranges from both the datable graves of Graveyard A and from the roller stamps found at the fort precinct indicate continuity of occupation until probably at least around AD 430, the dips in both graphs from AD 410 onwards are significant. While one should, again, take into account the extended life-span of specific vessels and dress accessories like belts and crossbow brooches, particularly when they are so symbolically loaded as these categories, this can be interpreted as a decrease of the fort population after AD 410 but also as less availability of these goods. The arrangement of the south-west corner site, with animal compounds, already pointed to less fort inhabitants in fort period 5B. Structures specifically constructed in the end phase cannot be identified with certainty (cf. Chapter II, Section II.4.7.5), and it seems that the structures of fort period 5B remained in function until the final end of the fort's occupation<sup>349</sup>.

It has traditionally been accepted that northern Gaul and Britain fell out of Roman control after the barbarian invasions of AD 407 or the suppression of the usurper Constantinus III in AD 411. These events were initiated by the withdrawal in AD 402 by Stilicho of many troops from the northern border to Italy and the subsequent inevitable weakening of the northern defence. This eventually led to a supposedly massive invasion at New Year's Eve AD 406 – or 405 as Halsall argues (Halsall 2007, 211) – by Vandals, Alans, Suebi and Burgundi over the Rhine, who were pushed forward by the Huns. These large-scale devastations affected the whole of Gaul, as can be concluded from the descriptions by Hieronymus. Large groups of the named tribes crossed the Rhine between Mayence and Worms plundering, northwestwards towards the Channel, eventually reaching the region of Amiens, Arras, Théroutanne and Tournai (Thompson 1977, 304–305). Drinkwater however argues that this invasion must have been far less massive than generally assumed (Drinkwater 1998, 272–274) while Brulet already argued that it did not result in the abandonment of Gaul by the Roman army (Brulet 1990b, 263). The continuity at the Oudenburg fort and at the aforementioned military sites in *Belgica Secunda* may indicate that this region was kept out of harm's way.

From contemporary historic sources it is known that in AD 406–407 three successive usurpers were appointed in *Britannia*, consequent to the invasions in Gaul. The precise cause of the British revolt remains unclear (Drinkwater 1998, 271). The first two

345 See Volume II, Chapter I.A.1, Section 8.2 for the analysis of the roller-stamped sigillata.

346 The UC 26 fragment was found in the transition level 5+post, fragments with UC 25 and UC 29 stamps were recovered from the post-Roman level, the UC 24 fragment was collected as an intrusive find at fort level 4.

347 UC 29 is represented by three individuals, UC 25 by two and UC 24 and UC 26 both by one.

348 The fort at Alzey for example testifies of a military occupation of the Rhine frontier under the *Dux Mogontiacensis* until AD 450/470 (Oldenstein 1993, 125).

349 It also has to be taken into account that some of the latest features may have been disturbed and integrated in the post-Roman dark earth level. Lyne (2009, 40) has concluded for Portchester and Pevensey that the last occupation levels containing structures in non-durable materials had effectively disappeared in the dark earth.



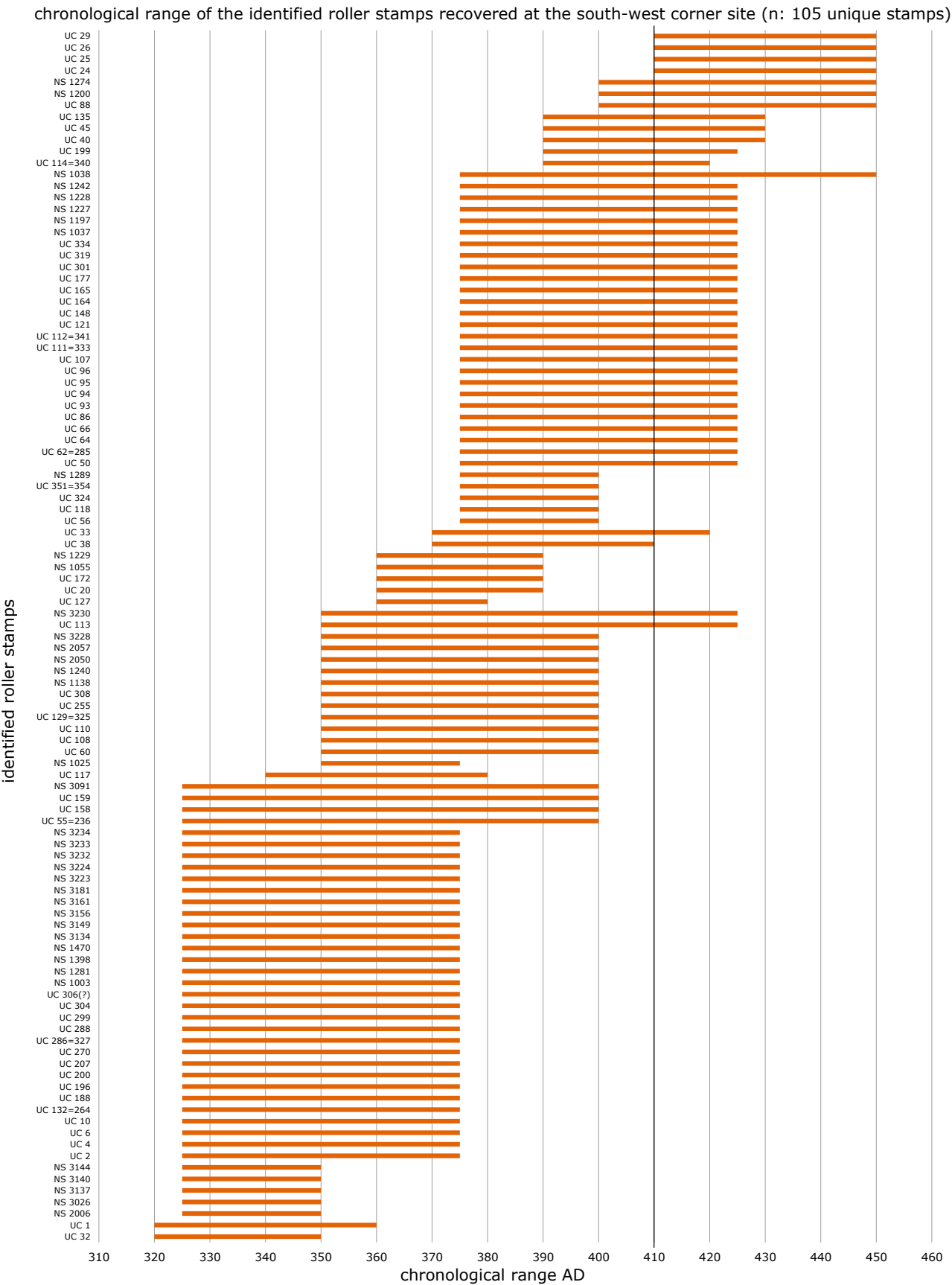


Figure 107 (previous page). The chronological range of the datable sigillata roller stamps recovered at the south-west corner site with indication of the traditional end date of c. AD 410 for the occupation of the Oudenburg fort.

usurpers had short reigns; the third usurper, Constantinus III, did cross the Channel in AD 407 together with the British field army (Esmonde Cleary 1987, 142). Constantinus III usurped Gaul by making treaties with Franks, Alamanni and Burgundi (Demandt 2007, 176) and strengthened the Rhine defences, apparently without much trouble since the invaders had progressed southwards and mainly operated at the interior of the Empire (Thompson 1977, 306; Oldenstein 2006, 49). Drinkwater (1998, 280) believes that Constantinus III already became recognized in 407 throughout Britain, Gaul and Spain. He was defeated by the future emperor Constantius (III) in AD 411, but shortly after his death Jovinus revolted and he maintained power over Gaul until 413 (Drinkwater 1998, 286-292). Brulet (2017) believes that in AD 413 Gaul was again controlled by Rome.

It is difficult to assess what happened with the north-west region of Gaul after AD 411/413, because of a dearth of material for this period, both in literary as in archaeological evidence. The very restricted and fragmentary nature of the literary sources (see e.g. Callander Murray 2000) only yields a very patchy narrative and can hardly be considered as reliable (Wood 1992). How the military and administrative control must be seen in northern Gaul is still a matter of debate. Wightman (1985, 300) describes the state control of the North after AD 406/407 'at best intermittent and precarious'. Based on Zosimus, De Boone concluded that the North of Gaul was forced to continue further on its own already under Constantinus III, most likely in AD 410/411 (De Boone 1954, 125). We are better – although still scarcely – informed of the situation in Gaul from the later 420s onwards when general Aëtius, *comes rei militaris*, was sent to Gaul to restore imperial authority, although the chronology of Aëtius' campaigns remains vague (Halsall 2007, 237). Aëtius forced back the Visigoths who had moved on Arles, but he subsequently also proceeded against the Franks in the North of Gaul. Prosper and Cassiodorus record for the year 428 that the forces of *comes* Aëtius conquered the Franks in that 'part of Gaul near the Rhine' and that he as such pacified the Rhine *limes* (Wijnendaele 2017, 473-474). In the beginning of the 430s Aëtius again campaigned against the Franks in Gaul (Wijnendaele 2017, 479). Between AD 434 and 454 Aëtius even became the most important man in the West. Important for our understanding of the evolution of the region is that his military success was based on a total integration of Franks (Brulet 1990b, 264), apart from the support of Hun mercenaries (Wijnendaele 2017). From the descriptions by Gregorius of Tours, although dated to the 6th century, it can be deduced that from the 430s Gaul had 'become a patchwork of territories ruled by unrecognized local chiefs, leaders whose authority was based upon claimed Roman titles, and barbarian warlords' (Halsall 2007, 243). These earliest Frankish leaders or royal warlords maintained the contacts with the Roman authority and acted as Gallo-Roman officers (cf. Rogge 1996a, 142). Only one of them is known by name, Chlo(d)io/Chlogio (as he is called respectively by Sidonius

Apollinaris and Gregorius of Tours), 'king' of Salian Franks, ancestor of the Merovingian dynasty and possibly the grandfather of Childeric (Lebecq 2006, 328)<sup>350</sup>. Aëtius defeated Chlogio somewhere between AD 428 and 448 east of Arras, indicating the westward advance of the Franks, but Chlogio appears to have remained in charge of the northwestern territory up till the Somme as a client or federate king (cf. Wightmann 1985, 303).

At Oudenburg the fort community probably continued to occupy the fort even after this 'garrison' lost its (Roman) military function. It is important to acknowledge the chronological indicators. The proposed end date should be seen as the latest date of which 'Roman presence' can be detected, whether military or not, more specifically through the latest incoming of Roman imports and metalwork. The end of the 'Roman' occupation in the first half of the 5th century, most likely in the second quarter, represents a period in which the most visible features such as coins, imported wares, stone architecture disappear, as is also clear at the British forts (cf. Gardner 2007a, 253). The ceasing of Roman control will have resulted in a ceasing of trade networks, which will have been a gradual process, not from one day to another. The metalwork of Graveyard A and the pottery imports, such as the latest Argonne sigillata are the last 'visible' chronological indicators yielding a *terminus post quem* for the final end of the 'Roman' fort occupation. It is, however, not excluded that these imports were obtained by a fort community which had no longer a military command. On the other hand, it is neither excluded that the latest fort community could no longer obtain such imports and gradually had to rely on, less datable, pottery such as late Roman handmade wares. Of the post-Roman pottery at Oudenburg the earliest can be dated to the 6th century (cf. Eggermont 2017). However, 5th-century pottery (and 5th-century material in general) is hardly known for the region. With the presence of hardly any imported wares, due to the falling away of economic trade networks, handmade wares are hardly closely datable. One can wonder whether the hiatus in the 5th century is not rather a consequence of the state of art in the knowledge of dating the pottery, and as such: is it not rather a given of archaeological visibility (cf. also Collins 2012, 5-6) certainly given the scarcity of pottery?

For *Britannia* it is generally accepted that the 'Saxon *adventus*' was not the end of Roman Britain (see Gardner 2007a, 253). Lyne has demonstrated, based on archaeological and numismatic evidence that after AD 407 at Richborough, Pevensey and Portchester military occupation did continue to some degree (Lyne 1999b). At Pevensey, continuity in the fort's occupation is embodied by wide-ranging trade (or rather exchange) links during the early 5th century with vessels from Southern Gaul and glass from the Eastern Mediterranean. Lyne believes that the fort occupation at Pevensey lasted until around AD 470, based on the evidence in the 1936 excavation for the Roman/sub-Roman occupation being sealed by widespread burning. This may be associated to a reference

350 He first seated in *castrum Dispargum*, which may have been Duisburg (G), and eventually at Cambrai (F) (De Boone 1954, 140). Also Tournai remained an important place, as can be deduced from the fact that in AD 481/482 king Childeric was buried there. Accompanying child graves can already be dated around AD 450 (Brulet 1996b, 167).

in the Anglo-Saxon Chronicle where the sack of this fort by the South Saxons is mentioned (Lyne 2009). At Portchester, continuity seems to be indicated by the presence of hemispherical bowls with bosses, a Germanic-style type of pottery but apparently locally made and to be dated at the transition of the late Roman and early Saxon period (Lyne 1999b). Finds at Richborough bear witness to a violent end. While this was first related to the Saxon incursions of AD 410 (Lyne 1999b), Lyne now believes the fort was only sacked by the middle of the 5th century. In the early 1950s, 4000 of the mainly unstratified Theodosian coins from Richborough were re-examined and were found to include four later coins: two minted in AD 421-423, one in AD 423-425 and one in AD 425-435 (Lyne 2016, Chapter 1). The use of Roman base coinage until at least well into the second quarter of the 5th century has recently also been evidenced at other sites in Southern Britain (Lyne 2016, Chapter 1; Walton and Moorhead 2016, Section 5.1). Lyne re-evaluated late Roman pottery in southern Britain and believes its date range should be widened to c. AD 370-435/450, rather than c. 370-410 as formerly assumed (Lyne 2016, Chapter 1). Interestingly, Esmonde Cleary (2017) wonders, through an analysis of distribution patterns of coins, belt-fittings and crossbow brooches in south- and southeast-Britain, whether the assumed evolution of fort garrisons into warbands commanded by 'warlords', in analogy to what has been proposed at Hadrian's Wall (Collins 2012), did not already start in the last quarter of the 4th century.

#### V.1.7. In conclusion: significance for the wider historic context of the North Sea and Channel region

Establishing the refined chronology of the occupation of the Oudenburg fort contributes to a better understanding of the evolution of the development of the coastal defence along the North Sea and Channel (cf. Figure 104). This coastal defence clearly was not a static system, but grew organically and was subject to many changes (a phenomenon which is also noticed on other frontiers at various times, as with the northern frontier in Britain). Its development started by the end of the 2nd century and its installation as a defence covering both sides of the Channel seems to be assignable to Commodus. From the data from the Oudenburg fort in relation to the other North Sea and Channel forts it can be deduced that during the first half of the 3rd century it was not a continuously fully manned defence, possibly not until the reign of Postumus.

Under Postumus, or at least under the Gallic Empire, the coastal defence developed into an extended, permanent cross-Channel system, linked and expressed by a unified stone defensive architecture. On the Continent the Oudenburg and Aardenburg forts became stone forts. While a lack of natural stone sources in the region and the ample availability nearby of oak as construction material did not necessitate a stone defence circuit at the Oudenburg and Aardenburg forts before – probably just an economic choice, rather than related to the character and duration of the occupation – now a stone defence was erected at both forts, symbolizing their status and their integration in the larger defence system.

Carausius reinforced and completed the British Shore system with the addition of the two most southern forts at the British side, those of Portchester and Pevensey, the first probably in light of his duty against Saxon and Frankish pirates, the latter possibly within the context of his actions against the Emperor. Within the context of the British Empire, the North Sea and Channel defence system clearly was divided into the British side serving against the Emperor and the continental side (with Oudenburg and Aardenburg) serving the official state.

The combination of the start date of Oudenburg fort period 5 around AD 325-330 and the fort's renovation with the addition of intermediate towers and bonding courses at the north side are highly noteworthy. Visually and strategically the latter mirror the manner in which the British Shore forts were reinforced, and are strong indications to believe that the *Litus Saxonicum*, as it was later called, was indeed already created under Constantinus I as Mann (1977, 11) and Wightman (1985, 208) have suggested before. The reinforcement with bastions of the north side of the fort, the direction of the enemy, not only symbolizes a general building programme along the North Sea and Channel. It is furthermore an indication that these forts indeed played a military role and were in the first instance strategic defensive installations.

Probably in the 360s or early 370s, the army unit of the Oudenburg fort was pulled away. This can be related to troop movements to the East by Julianus in AD 361 or, perhaps more likely, those by Valentinianus I in the 370s. The reoccupation of the fort in AD 380 (fort period 5B) may possibly be directly related to the military actions by Magnus Maximus in preparation of dethroning Gratianus. Magnus Maximus withdrew regular army troops from the North of Gaul for his war against Gratianus and it is believed that he manned the military bases in question with Germanic units. As will become apparent below, it is likely that a non-regular unit occupied the Oudenburg fort from this period onwards. This further implies that the Oudenburg fort no longer formed part of the Saxon Shore system, which was still under official Roman control as can be deduced from the *Notitia Dignitatum*, and as such presumably neither did the whole northern part of *Belgica Secunda*. It also means that the Oudenburg fort cannot be identified as *portus Aepatiacus* and that this concerns a site more to the south in *Belgica Secunda*<sup>351</sup>.

The fort community at Oudenburg of the latest fort phase, starting in AD 380, most likely evolved into a system of warlordship in the first decades of the 5th century, a scenario which has been suggested by Collins (2012; 2017) for the forts at Hadrian's Wall. The unit or part of the unit may have remained in place and eventually transformed losing their military identity, at least their 'Roman' one, as time passed. In this respect it is important to bear in mind that the Oudenburg evolution in the 4th and 5th century was also locally determined and should be seen within its specific context. The remote position of the fort, topographically and at the end of the road network but also without accompanying settlement and in a seemingly rather deserted region, will have had its impact resulting

351 For locations for which the identification as *portus Aepatiacus* has been assumed: see Chapter I, Section I.3.2.

in a very specific evolution of the site. The fort as a boundary space, so visual in the landscape and so loaded as a symbol of authority, most certainly remained occupied.

The final episode of the Oudenburg fort deserves further investigation within a larger framework. The attested new chronological elements which clearly shift the 'end' of the last fort occupation towards a later date, are an important key to consider in the debate on this transition period in the region.

## V.2. Continuity and change in supply, trade and exchange networks towards the Oudenburg fort and in the North Sea and Channel region

### V.2.1. Introduction: pottery, source for insights into economic relationships

Pottery is an ideal indicator of trade, supply and exchange in general. Present in all contexts, at all levels, in large quantities and easily quantifiable, it is obviously the material best assigned to unravel trade and exchange networks and supply systems to the Oudenburg fort. Through a contextual study of its pottery, we want to explore the supply towards the Roman fort and investigate how the gained insights contribute to a wider understanding of trade networks in the Channel and North Sea frontier region.

Within the wider military context of the North Sea and Channel region the pottery assemblage of the Oudenburg fort represents a unique chance for a contextual approach. As can be deduced from the analysis of the key contexts, such a contextual method is necessary to come to valid conclusions about the chronology in pottery supply. From a regional point of view, the Oudenburg material represents in particular a unique sequence of datable samian from the late 2nd until the early 5th century. This is certainly the case for the 3rd century, and specifically from the middle of the 3rd century onwards, when a lot of rural settlements in north-west Gaul ceased to exist. Looking at larger settlements in the hinterland, a problematic provisioning in samian, but also in other long-distance import pottery, during the politically unstable 3rd century can be observed, emphasizing that by that time those supplies were mainly military-oriented. The supply of the armed forces will have had priority over that of reduced settlements situated in a turbulent hinterland. Every regional inter-site comparison, however, is distorted by the sheer lack of published and quantified material, especially for the Flemish wider coastal region.

Fulford highlighted the lack of clear literary or epigraphic evidence for trade between Britain and the Continent in the period between the second half of the 3rd and the early 5th century, and demonstrated that '*only a study of ceramics can illuminate the nature of the trade contact between Britain and the Continent*' (Fulford 1977, 35). The scarcity of (studied) contextually reliable assemblages at the other forts in the North Sea and Channel region makes an exhaustive comparison study difficult (cf. Volume II, Chapter 1.A.1, Section 12) and marks the importance of the available large pottery assemblages from the Oudenburg fort. Darling (1977) emphasized

that every site context is specific though, and that the interpretation of the pottery of an individual military site should be considered against '*the geographical location of the site, the size of the fort [...] and of its garrison, the availability of native pottery of adequate quality and quantity from within the area, [...], the military function of the site and the availability of clay suitable for potting in the area*' (Darling 1977, 58).

Obviously, not only pottery was imported. Many other commodities were purchased abroad or from other regions and reflect supra- and interregional contacts and exchanges on the Continent and crossing the North Sea and Channel. Some of them enhance the importance of the networks revealed by the pottery (see e.g. mills and querns from the Eifel region; whetstones from the Weald in south-east Britain); others yield additional import information and point to other supply centres (see e.g. Tournai limestone in the mid-Roman period) (cf. e.g. Volume II, Chapter 10, study by S. Reniere).

Imports do not only reflect trade, though. They could also arrive at the Oudenburg fort as personal belongings of a soldier from his home country (see e.g. the North African lid at fort level 1 (cf. Volume II, Chapter 1.B.4), through exchange with a civilian resident or providing services in the military *vicus*, as a souvenir from a former expedition (cf. e.g. the jewellery items from the Danube region or presumably the *Siscia* coins at Graveyard A), or as exceptional items (see e.g. ointment palettes in porphyry, cf. Volume II, Chapter 10). Not all systems of purchasing or acquiring items can be recognized, though. The relation to identities will have played a certain role in the purchasing of pottery (and other objects), but the pottery supply and the choices made in this respect will have been in first instance directly related to pottery availability (Gardner 2007a, 91-92).

Not all imported pots reflect trade in pots; some were traded for their content (see e.g. amphorae (cf. Volume II, Chapter 1.B.1) and apparently also several flagons of which the black coating on the neck interior points to sealed wooden caps (Volume II, Chapter 1.B.2)), and several vessels can have been brought in as side products which came along with the actual commodities. Considering content, one has also to take account of the rather invisible trade of food and liquid products in containers which are mostly not preserved, such as barrels and goatskin bottles for example.

When drawing conclusions regarding the evolution of pottery supplies to the Oudenburg fort and the trade networks and mechanisms involved, two elements have to be kept in mind. The pottery studied in depth is mainly that recovered at the south-west corner site, a window covering only 5% of the total fort precinct, although pottery assemblages from the other fort sites are taken into consideration. Moreover, the function of this south-west corner area, changing over time during the successive fort periods, evidently also had its impact on the represented pottery assemblages. Fort interiors had different functional zones generating to some degree their own ceramic identities. Nonetheless the size of the pottery (and other finds) assemblage available for study from the south-west corner site is large by any comparison, a factor which means its study should provide firm patterns that are fairly representative for the fort community as a



whole, and by extension a significant contribution for the North Sea and Channel region and the trade networks in the North-West.

### V.2.2. Trade and supply networks in the North-West: some general thoughts

How Roman economics worked, has been much debated. The discussion mainly opposes the 'command economy' versus the 'independent dynamic of trade' (Erdkamp 2002a, 10) or the role of the state versus the role of the free market, their significance and relation, and their position versus 'socially embedded economic networks' (Gerrard 2013, 74 ff.). Within the 'command economy' view, distribution mainly reflects the capacities of the state/the army to obtain what it needed, rather than that it reflects the scale of market exchange involved. One can conclude that in the later Roman period economic activities can be defined at four levels: the 'command / political / imperial economy' (imposed by the state with the army as the most important actor), the 'prestige economy' (specific goods for the elite), the 'market economy' and the 'peasant economy' onto which the political and the market economies partly relied. These distribution models are each characterized by the predominance of one or other economic mechanism being the (free) market, reciprocity (exchange for mutual benefit, e.g. gift exchange) or redistribution (extraction without reciprocity, e.g. rent, tax, tribute, ...) (Esmonde Cleary 2013, 307-309). These mechanisms were often combined and political and market economies will have partly acted in symbiosis (Esmonde Cleary 2013, 313). A state-induced distribution of bulk transports to armies will also have given other traders 'the opportunity for a parasitic existence on the back of a massive official supply system' (Erdkamp 2002a, 10-11; quote after Middleton 1979). Esmonde Cleary sees this 'tax-spine model' as probably the most important way the political economy from the late 2nd century onwards acted: the system of the organization of bulk transports for the supply of *annona* (such as grain, olive oil) along which other merchandise piggybacked. From the distribution of the African Red-Slipped ware in the Mediterranean world, it is argued that this pottery is an example of such merchandise (Esmonde Cleary 2013, 312-315 ff.). The emergence of the *annona militaris* (regular taxation-in-kind), from the late 2nd century onwards to meet up the needs of the army, will certainly have had a huge impact, not only on society but also on the economic mechanisms (Erdkamp 2002b, 47). Roman state officials were in charge of the transportation of supplies to the army – at least they supervised it –, the transactions themselves were organized by civilian *negotiatores*, middlemen between producers and clients, most likely large-scale traders which were not personally involved with the trade itself (Erdkamp 2002b, 51; Greene 1986, 166 with references). Such a controlled, political redistributive system seems to have been the distribution *formula* for the Spanish olive oil; within this supply system clearly also private enterprise was involved (Carreras Monfort 2002, 80-81; Funari 2002, 262).

Epigraphic evidence for trade mechanisms in the North-West in general and with *Britannia* in particular is scarce, but the altar inscriptions dedicated to Nehalennia, the goddess of seafarers, from Colijnsplaat and Domburg in the Netherlands, both shrine sites near presumed important harbours, are instructive. The Nehalennia

altars, dated to the period around AD 200, record traders and sailors<sup>352</sup> from a wide region in Gaul, *Germania* and *Britannia* (Stuart and Bogaers 2001, 34-38) and indicate that Colijnsplaat and Domburg were passage routes for trade with the wider region around the Scheldt mouth. One of the *negotiatores cretarii Britannici* must have originated from the Rhineland (Stuart and Bogaers 2001, 53: A3). Very significant also is the Nehalennia altar listing a trader with Gaul (Stuart and Bogaers 2001, 124: B34). The inscriptions evidence trade between the Rhineland, via the river Waal, and *Gallia Belgica*, via the river Scheldt, on the one hand, and the coastal regions of Gaul and the east coast ports of Britain on the other (Hassall 1978, 42-43; De Clercq 2009, 475).

Strabo (*Geography* 4.5.2) mentions the four crossings between the Continent and *Britannia* which were commonly used, departing from the mouths of the Rhine, the Seine, the Loire and the Garonne (Milne 1990, 82; Dannell and Mees 2015, 79). Lezoux samian for example was distributed to a large extent towards the Bavay/Paris/Amiens axis and further to *Britannia* most likely via the Seine estuary (Dannell and Mees 2015, 86)<sup>353</sup>. That the Rhine was the transport route for samian from Rheinzabern and Trier to *Britannia* is extremely clear from the distribution of stamped vessels (Dannell and Mees 2015, 86, 92). The known ports and trans-shipment centres in the North-West of Gaul – at Boulogne, at/near Domburg and Colijnsplaat on the Scheldt river in the Netherlands, and at *Forum Hadriani* (Voorburg) (see further) – will have been linked by a coastal route (cf. Milne 1990, 83: Fig. 10.1) which passed Oudenburg. From recent excavations (2007-2008) at the harbour at Voorburg-Arentsburg (NL), it has been evidenced that *Forum Hadriani* must have been a trade and supply centre for the coastal forts from its installation in the later 2nd century onwards. The pottery assemblages show a military character, the resemblance of the import spectrum and of the intentional depositions of *Forum Hadriani* with those of London indicate that they belonged to the same *military oriented economy* (Van Kerckhove 2014). The military harbours used by the *Classis Britannica* and later those of the Saxon Shore forts probably also served the civilian market (Milne 1990, 84; see Chapter I, Section I.3.5). London was certainly a major port until the late 3rd century AD, and possibly later if the extensive late Roman remains at the extramural focus at Shadwell are associated with a late Roman port facility (Lakin *et al.* 2002; Douglas *et al.* 2011).

Milne (1990) argued that from the late 3rd century onwards the Rhine axis became less important since the harbours at Domburg and Colijnsplaat were no longer used and the London harbour was not being maintained; however, the Shadwell evidence raises questions for such a deduction. For the late 3rd century and 4th century, Milne concluded that the principal cross-Channel supply lines were shifted westwards, based on the development

352 Mentioned seafarers are *negotiatores allecarii* (dealers in fish sauce), *negotiatores Britannici* (traders of goods and commodities to and from Britain), *negotiatores cretarii Britannici* (traders in fine pottery), *negotiatores salarii* (traders in salt) and *negotiatores vinarii* (wine merchants) (Hassall 1978).

353 See for transport routes in Gaul: Dannell and Mees 2015, 78: Fig. 1.

of Boulogne<sup>354</sup>, Portchester and *Clausentum* (Bitterne) (Milne 1990, 84).

The archaeological evidence has demonstrated the importance of the Oudenburg fort under the Gallic Empire continuing up until the final end of the 3rd century as part of a unified cross-Channel defensive system. The pottery assemblages of fort period 4 offer the opportunity to investigate what impact this had on an economic level, as Drinkwater (1987, 231) stated that '*it remains to judge whether the era of the Gallic Empire was itself one of economic strength, [since] it is very difficult to connect any particular archaeological feature to the period 260-274*'. This impact study is equally important for the 4th century when the cross-Channel shore system became even more intensified. General studies have concluded that in the late Roman period in the North-West distribution of supplies became less empire-wide and more and more regionalized (Esmonde Cleary 1989, 86; Erdkamp 2002a, 10). Halsall argued that northern Gaul '*was no longer keyed into the Mediterranean trade patterns and formed a distinct economic zone*' (Halsall 2007, 85-86). The pottery assemblages at the Oudenburg fort form a unique opportunity to test and validate these statements.

### V.2.3. Basics to come to valuable insights into trade and supply: quantification, classification and factors to consider at the Oudenburg fort

In total, 125,256 fragments of Roman pottery were recovered at the south-west corner site, both from the Roman and the post-Roman level<sup>355</sup>. They were classified and counted according to the following pottery categories<sup>356</sup>: samian (SA), colour-coated and black-slipped fine wares (CC/BS), marbled wares (MA), fine oxidized (FO) and mica-dusted wares (MD), *terra rubra* (TR), *terra nigra* (TN), Pompeian red wares (PR), flagons and jar-amphorae (FL), amphorae (AM), dolia (DOL), (coarse ware) mortaria (CO MOR), coarse oxidized wares (CO OX), (wheel-turned) reduced wares (RE) (with fine reduced<sup>357</sup> and coarse reduced products) and handmade wares (HA)<sup>358</sup> following a classification in use in large parts of Flanders<sup>359</sup>. Through fabric analysis, an overview of

all pottery fabrics present at the Oudenburg fort could be achieved (Table 6).

The pottery groups are represented in the overview tables in sherd counts and in minimum number of individuals (Tables 7 and 8). When considering the MNI of the different pottery categories, it is important to keep in mind that they could not all be studied with the same degree of detail. All (long(er)-distance) imported wares were subjected to detailed study<sup>360</sup>. The handmade wares, the wheel-turned reduced wares and the flagon wares could not be studied in depth in their totality (except for the flagons from *civitates* to the south and the Romano-British imports, besides the groups represented in the key context assemblages), and here the MNI is based on the unique rim fragments counted per context<sup>361</sup>. Also important to take into account is that for the study of several imported categories different specialists were involved. This inevitably brings along differences in quantification approach and definitions which the present author has tried to get as much as possible on the same line.

For the Roman pottery a total MNI count of 17,267 is recorded, of which 10,845 MNI were found within the Roman level. A comparison of the sherd counts and the MNI counts of the respective pottery groups reveals some important differences, pointing to the caution one has to maintain when considering these percentages, and which at the same time emphasizes the importance of comparing both quantification methods (Tables 7 and 8; Figure 108). One important factor is that several pottery groups have a different fragmentation rate due to the thickness and hardness of their fabric<sup>362</sup>. Looking at the Roman level, the samian wares represent c. 5.4% in total sherd count and c. 13.8% in MNI of the total pottery assemblage of the Roman level. This

354 Milne (1990) points to '*Garriannonum* on the French coast'. As this is Burgh Castle in *Britannia*, we assume he intended Boulogne or *Gesoriacum*.

355 The post-Roman level also yielded 3801 medieval pottery sherds.

356 I wish to thank A. Verbrugge (now SOLVA) who was contracted during a period of six months from July to December 2008 at the Flemish Institute for Immovable Heritage (VIOE, now Flanders Heritage Agency) to assist the author with classifying and counting the pottery sherds, which resulted in an important progress in the processing of the total collection.

357 The fine reduced wares (mainly beakers) can also be considered as 'fine' wares (next to the CC/BS wares). However, since the distinction between fine reduced and coarse reduced is often not straightforward for a lot of body fragments, it is chosen to count them as one group. Therefore the fine reduced wares are positioned here as first group of the reduced wares.

358 A small assemblage could not be specified and was left undetermined (undet.).

359 The author is well-aware of the unbalanced division in use: this historically developed classification mixes to some degree fabric and functional criteria. However, it is opted to maintain this classification enabling the possibility to compare the assemblages and the counts with other assemblages in the region.

360 For the study of several pottery categories, the present author could collaborate with specialists. The samian was studied in close collaboration with J. Deschietter and W. De Clercq; W. Dijkman, L. Bakker and P. Van Ossel studied the late Argonne sigillata roller stamps, and G. Raepsaet and M.-Th. Raepsaet-Charlier the graffiti (Volume II, Chapter 1.A.1). The colour-coated and black-slipped wares were investigated in detail by R. P. Symonds in collaboration with the present author (see Volume II, Chapter 1.A.2). R. P. Symonds also studied the marbled wares (see Volume II, Chapter 1.A.3). The fine oxidized wares, mica-dusted wares, Pompeian red wares, the flagons from southern territories and the greywares from the North of France were further investigated by S. Willems (see Volume II, Chapters 1.A.4, 1.A.5, 1.A.6 and 1.B.2 resp.). The amphorae were studied by P. Monsieur in close collaboration with the present author (see Volume II, Chapter 1.B.1). The coarse ware mortaria were analyzed by S. Willems, R. P. Symonds and the present author (see Volume II, Chapter 1.B.3). M. Lyne carried out the study of the Romano-British coarse pottery in close collaboration with the present author (see Volume II, Chapter 1.B.5.1).

361 Only evident cross joins could be detected for these pottery groups but the joining together of fragments over the different contexts and levels could not be pursued to an exhaustive level.

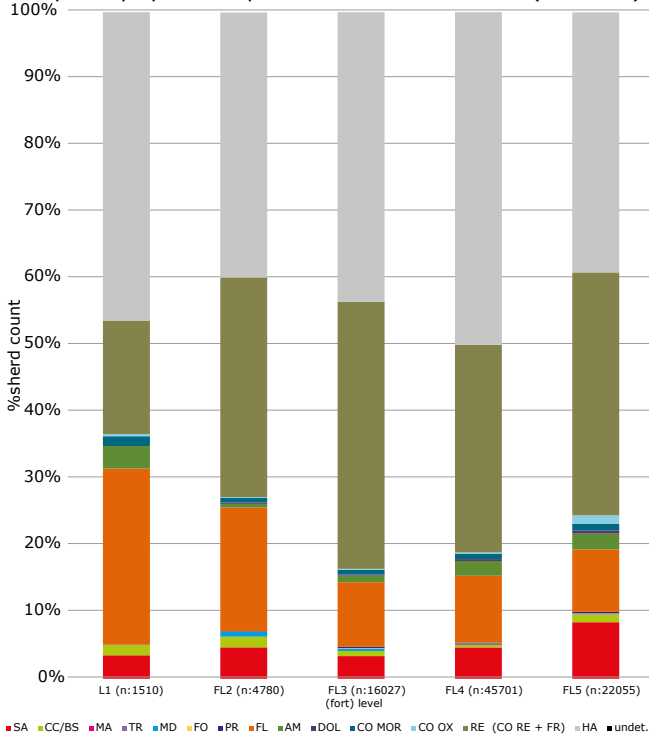
362 The flagon group in the Roman level shows c. 10.5% in sherd count and only c. 2.9% in MNI, exposing the over-representation in sherd count: fine-walled flagons, characterized by a large globular body and mostly a very small rim diameter, break into a lot more body fragments than for example a samian cup or a handmade dish. The wall thickness of the amphorae for example results in less small fragments, but at the same time the large size of these vessels yields more sherds for one individual.

Table 6. The attested pottery fabrics at the Oudenburg fort and their fabric codes. Where possible the Tomber and Dore (1998) codes were used; for other fabric groups new codes were created using the same or a similar coding system as Tomber and Dore with the first characters indicating the source area.

FABRIC CODE	Description	FABRIC CODE	Description
ARG SA	Argonne samian	BAFA FL	flagon ware from Bavay-Famars (not soapy)
BLW SA	Blickweiler samian	KOL FL	Cologne flagon ware
CG SA	Central Gaulish samian	LLW FL	Low Lands Ware 1 flagon ware
EG SA	East Gaulish samian	NOG FL	North Gaulish flagon ware
LEZ SA	Lezoux samian	NOY FL	flagon ware from Noyon
LG SA	La Graufesenque samian	OXF? FL	flagon ware from Oxfordshire (?)
LMV SA	Les Martres-de-Veyre samian	SAV FL	soapy flagon ware from Bavay-Famars
MAD SA	La Madeleine samian	SG/NAR FL	South Gaulish flagon ware (most likely Narbonne region)
NOG SA	North Gaulish samian	AEG AM	Aegean amphorae
RHZ SA	Rheinzabern samian	BAT AM	Baetican amphorae
SG SA	South Gaulish samian	GAL AM	Gauloise 13 amphorae from the North of France
TRI SA	Trier samian	NAF AM	North African amphorae
SA und	unattributed samian	NAR AM	Narbonne amphorae
AFRRS	African red-slipped ware	NOG AM	North Gaulish (orange and red) amphorae
ARG BS	Argonne black-slipped ware	GAL DOL	dolia from the North of France (fabric cf. G13 amphorae)
ARG CC	Argonne colour-coated ware	LLW DOL	Low Lands Ware 1 dolia
ARG RS	Argonne red-slipped ware	NOG DOL	North Gaulish (orange and red) dolia
CG BL	Central-Gaulish black metallic ware	RHI DOL	dolia from the Rhineland
COL CC I	Colchester colour-coated ware I	BAFA MOR	Bavay-Famars mortaria
COL CC II	Colchester colour-coated ware II	EIF MOR	mortaria from the Eifel region
COL MR	Colchester colour-coated Fulford fabric 1a (metallic) ware	MEV WH MOR	Meuse Valley White Ware mortaria
GLAZ	unattributed glazed ware	NOY MOR	Noyon mortaria
HAD BW	Hadham black ware	OXF WH MOR	Oxfordshire White Ware mortaria
HAD RS/RW	Hadham red-slipped ware / Hadham red ware	RHI MOR	Rhine mortaria
KOL CC	Cologne colour-coated ware	RHO MOR	Rhône mortaria
LM BS	La Madeleine black-slipped ware (metallic ware)	R-M MOR	Rhine-Meuse Valley mortaria
LVN CC	Lower Nene Valley colour-coated ware	RME MOR	Rhine-Meuse Valley - Eifel mortaria
MOS BS	Mosel black-slipped ware ( <i>Moselkeramik</i> )	SOL WH MOR	Soller White Ware mortaria
NFO CC	New Forest colour-coated ware	BAFA OX	oxidized ware from the Bavay-Famars region
OX PA	Oxfordshire parchment ware	EIF OX	oxidized ware from the Eifel region
OXF BS	Oxfordshire black-slipped ware	LLW1? OX	Low Lands Ware 1 (?) oxidized ware
OXF CC	Oxfordshire red/brown colour-coated ware	MAY OX	Mayen oxidized ware
OXF RS	Oxfordshire red-slipped ware	MEV OX	Meuse Valley oxidized ware
OXF WS	Oxfordshire white-slipped ware	NOG EIF IM	North Gaulish Eifel imitations
PEV RS	Pevensey red-slipped ware	SPE OX	Speicher oxidized ware
TRI BC (late Trier)	late Trier black-coated ware	URM OX	Urmitz/Weissenthurm oxidized ware
RS und	unattributed red-slipped ware	AHFA RE	Alice Holt/Farnham Greyware
WCC und	unattributed white colour-coated ware	AHFA2 RE	coarse Alice Holt/Farnham Greyware variant from the Farnham SixBells kiln site (Lowther 1954)
BS und	unattributed black-slipped ware	ARR RE	coarse reduced ware from the Arras region
CC und	unattributed colour-coated ware	BB2 (COL BB2)	wheel-turned Black Burnished Ware from Colchester
EPO MA	<i>Céramique à l'éponge</i> - marbled ware Poitou fabric	BRU RE	coarse reduced ware from Bruay-La-Buissière
LOR MA	Lower Rhineland marbled ware	CAL RE	coarse reduced ware from La Calotterie
VR MA	Verulamium region marbled ware	CAM RE	coarse reduced ware from the Cambrai region
NOG TR	North Gaulish <i>terra rubra</i>	EAG	miscellaneous East Anglian greywares
NOM TN	North Menapian <i>terra nigra</i>	HAD RE	Hadham Greyware
LLW? MD	Low Lands Ware 1? mica-dusted ware	KAOL RE	reduced ware with kaolinite rich clays, probably region of La Calotterie
NOG MD	North Gaulish mica-dusted ware	KENT BB2	wheel-turned Black Burnished Ware from Kent
OXF WW? MD	white mica-dusted ware from Oxfordshire?	LLF RE	coarse reduced ware from Lyons-la-Forêt (Normandie)
SAV MD	soapy mica-dusted ware from Bavay-Famars	LLW RE	Low Lands Ware 1 reduced
		NOG FR	North Gaulish fine reduced ware
		NOG RE	North Gaulish coarse reduced ware
		NOM FR	North Menapian fine reduced ware
		NOM RE	North Menapian coarse reduced ware
		THE RE	coarse reduced from the Théroutanne region
		TSK RE	Kent Thameside Greyware

FABRIC CODE	Description	FABRIC CODE	Description
BAFA FO	fine oxidized ware from Bavay-Famars (not soapy)	BB1 (DOR BB1)	Dorset Black Burnished Ware (handmade)
CAM FO	fine oxidized ware from the Cambrai region	GERM CHT	Germanic-style chaff-tempered handmade ware
CHAM FO	fine oxidized ware from the Champagne region	GERM GTW	Germanic-style grog-tempered handmade ware
DESV FO	fine oxidized ware from Desvres	GERM STW	Germanic-style handmade with stone inclusions
LVN? FO	Lower Nene Valley (?) fine oxidized ware	HA SHELL	handmade shell-tempered ware
NOG FO	North Gaulish fine oxidized ware	HGTW	Hampshire Grog-Tempered ware
OXF WW? FO	white fine oxidized ware from Oxfordshire (?)	NOM HA	North Menapian handmade ware
RDVA FO	fine oxidized ware from Les Rues-des-Vignes, 'mode A'		
RHI? FO	fine oxidized ware from the Rhineland (?)		
SAV FO	soapy fine oxidized ware from Bavay-Famars		
CAM PR	Pompeian red ware from the Cambrai region		
HAD PR	Hadham Pompeian red ware		
NOG PR	North Gaulish Pompeian red ware		
OXF WW? PR	Pompeian red ware from Oxfordshire (?)		
RDVA PR	Les Rues-des-Vignes Pompeian red ware 'mode A'		
RDVB PR	Les Rues-des-Vignes Pompeian red ware 'mode B'		

the pottery spectrum per level in %sherd count (n:90073)



the pottery spectrum per level in %MNI (n:10845)

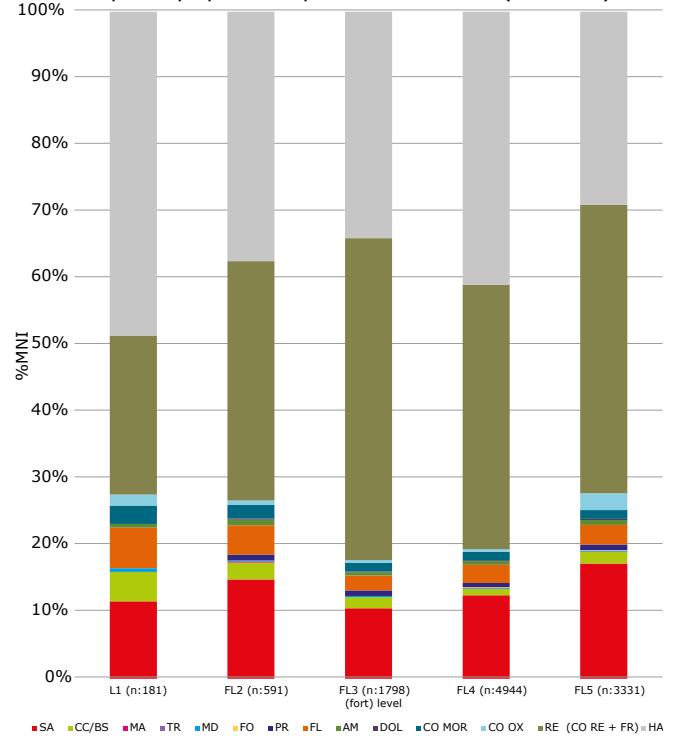


Figure 108. Comparison of the sherd counts and the MNI counts of the respective pottery groups at the south-west corner site: sherd count percentages (left) versus MNI percentages (right). Mainly for the samian wares (red) and the flagon wares (orange) the differences are noteworthy.

difference results from the very diagnostic character of the samian fragments and the easy recognition of the different samian types as a result of which more different individuals can be discerned. In some of the ceramic studies (the colour-coated and black-slipped wares, the marbled wares, the Romano-British coarse pottery and in a limited degree the samian study) also EVEs (Estimated Vessel Equivalent) have been involved as quantification method. None of

the quantification methods is ideal; only their consideration and comparison can lead to realistic percentages. Of course the purpose of quantification is not to establish absolute numbers present as an end in itself but more importantly to use methods of measurement in order to establish proportions of types present and thus to be able to compare between different phases and with like data from other



Table 7. Classification and distribution of the Roman pottery at the south-west corner site (for a complete view, also the medieval pottery is listed (ME)), based on sherd count and sherd count percentage (RL = Roman level).

number of sherds	SA	CC/ BS	MA	MD	FO	PR	FL	AM	DOL	CO MOR	CO OX	RE (incl. FR)	HA	undet.	TOTAL ROMAN	ME	OVERALL TOTAL
L1 (n:1510)	53	23	0	1	0	0	399	51	0	22	5	257	698	1	1510	0	1510
FL2 (n:4780)	225	76	1	33	1	4	888	25	10	33	6	1574	1899	5	4780	0	4780
FL3 (n:16027)	545	119	0	63	8	30	1554	157	28	112	25	6419	6956	11	16027	0	16027
FL4 (n:45701)	2150	216	10	16	26	54	4587	1012	124	377	80	14222	22799	28	45701	0	45701
FL5 (n:22055)	1868	248	12	9	23	52	2064	524	103	215	287	8032	8597	21	22055	0	22055
TOTAL RL	4841	682	23	122	58	140	9492	1769	265	759	403	30504	40949	66	90073	0	90073
5+POST / POST	4131	495	171	7	25	76	2718	629	133	309	1508	15658	9269	54	35183	3801	38984
TOTAL	8972	1177	194	129	83	216	12210	2398	398	1068	1911	46162	50218	120	125256	3801	129057

% number of sherds	SA	CC/ BS	MA	MD	FO	PR	FL	AM	DOL	CO MOR	CO OX	RE (incl. FR)	HA	undet.	TOTAL ROMAN	ME	TOTAL RE+HA
L1	3.51	1.52	0.00	0.07	0.00	0.00	26.42	3.38	0.00	1.46	0.33	17.02	46.23	0.07	100.00	/	63.25
FL2	4.71	1.59	0.02	0.69	0.02	0.08	18.58	0.52	0.21	0.69	0.13	32.93	39.73	0.10	100.00	/	72.66
FL3	3.40	0.74	0.00	0.39	0.05	0.19	9.70	0.98	0.17	0.70	0.16	40.05	43.40	0.07	100.00	/	83.45
FL4	4.70	0.47	0.02	0.04	0.06	0.12	10.04	2.21	0.27	0.82	0.18	31.12	49.89	0.06	100.00	/	81.01
FL5	8.47	1.12	0.05	0.04	0.10	0.24	9.36	2.38	0.47	0.97	1.30	36.42	38.98	0.10	100.00	/	75.40
TOTAL RL	5.37	0.76	0.03	0.14	0.06	0.16	10.54	1.96	0.29	0.84	0.45	33.87	45.46	0.07	100.00	0	79.33
5+POST / POST	11.74	1.41	0.49	0.02	0.07	0.22	7.73	1.79	0.38	0.88	4.29	44.50	26.35	0.15	100.00	9.75	70.85
TOTAL	7.16	0.94	0.15	0.10	0.07	0.17	9.75	1.91	0.32	0.85	1.53	36.85	40.09	0.10	100.00	2.95	76.95

Table 8. Classification and distribution of the Roman pottery at the south-west corner site, based on minimum number of individuals and MNI percentage (RL = Roman level).

MNI	SA	CC/ BS	MA	MD	FO	PR	FL	AM	DOL	CO MOR	CO OX	RE (incl. FR)	HA	undet.	TOTAL ROMAN
L1 (n:181)	21	8	0	1	0	0	11	1	0	5	3	43	88	0	181
FL2 (n:591)	88	15	1	1	0	5	26	5	1	12	4	212	221	0	591
FL3 (n:1798)	190	30	0	3	0	15	40	9	2	23	8	867	610	1	1798
FL4 (n:4944)	619	46	3	5	6	31	135	27	7	62	20	1959	2024	0	4944
FL5 (n:3331)	575	57	2	5	3	28	98	24	6	44	84	1439	964	2	3331
TOTAL RL	1493	156	6	15	9	79	310	66	16	146	119	4520	3907	3	10845
5+POST / POST	1079	140	26	2	7	54	137	38	11	102	450	3182	1193	1	6422
TOTAL	2572	296	32	17	16	133	447	104	27	248	569	7702	5100	4	17267

% MNI	SA	CC/ BS	MA	MD	FO	PR	FL	AM	DOL	CO MOR	CO OX	RE (incl. FR)	HA	undet.	TOTAL ROMAN
L1	11.60	4.42	0.00	0.55	0.00	0.00	6.08	0.55	0.00	2.76	1.66	23.76	48.62	0.00	100.00
FL2	14.89	2.54	0.17	0.17	0.00	0.85	4.40	0.85	0.17	2.03	0.68	35.87	37.39	0.00	100.00
FL3	10.57	1.67	0.00	0.17	0.00	0.83	2.22	0.50	0.11	1.28	0.44	48.22	33.93	0.06	100.00
FL4	12.52	0.93	0.06	0.10	0.12	0.63	2.73	0.55	0.14	1.25	0.40	39.62	40.94	0.00	100.00
FL5	17.26	1.71	0.06	0.15	0.09	0.84	2.94	0.72	0.18	1.32	2.52	43.20	28.94	0.06	100.00
TOTAL RL	13.77	1.44	0.06	0.14	0.08	0.73	2.86	0.61	0.15	1.35	1.10	41.68	36.03	0.03	100.00
5+POST / POST	16.80	2.18	0.40	0.03	0.11	0.84	2.13	0.59	0.17	1.59	7.01	49.55	18.58	0.02	100.00
TOTAL	14.90	1.71	0.19	0.10	0.09	0.77	2.59	0.60	0.16	1.44	3.30	44.61	29.54	0.02	100.00

sites, in order to see what is normal and what is noteworthy etc. amongst an assemblage.

Last but not least, it is important to take into account the residual aspect at the site when looking at the different numbers and percentages provided for each fort level. The detailed studies of the samian, the colour-coated & black-slipped wares and the amphorae demonstrate that the residual component at the site is undeniable (see also Chapter II.5). Residual examples within the handmade and reduced wheel-turned wares are however difficult to recognize. While all North Menapian handmade and wheel-turned pottery sherds found at fort level 5 can be identified as residual (cf. Volume II, Chapters 1.C.1, 1.D.1 and 1.E), the residual element in these categories at the fort levels of the 3rd century cannot be captured due to the impossibility of narrow dating of these common wares and due to the persistence of most of the North Menapian types.

Taking all the previous points into account, the given counts and percentages nevertheless illustrate clear trends in the fabrics, forms, types and the functions they represent. With all (long-distance) imported wares studied in depth (see Volume II, Chapter 1), diachronic conclusions can be drawn regarding pottery supplies and trade networks (for all references: see Volume II, Chapter 1). For a valuable perception of chronology (also to define to a maximum the residual and/or intrusive component) and supply of the pottery, it has been considered as crucial to validate the general conclusions with contextually, quantitatively and qualitatively reliable assemblages, key contexts representative for the successive fort levels, selected as much as possible in relation to external chronological elements like dendrochronological datings and coin evidence (Volume II, Appendix). Within these key context assemblages a closer look has been given to the functional distribution within the pottery to come to insights into consumption patterns and functional interpretations of the area. Therefore a classification has been maintained into storage vessels (storage jars<sup>363</sup>, amphorae), preparation of food (mortaria), cooking/kitchen vessels (cooking jars, baking plates), drinking vessels (cups, beakers) and tablewares (flagons, bowls, platters, dishes).

#### V.2.4. The Oudenburg fort and its locally/regionally based supply

##### V.2.4.1. The importance of the local-regional ceramic products versus long-trade imports in the late 2nd and 3rd century

In the late 2nd and 3rd century (fort periods 1 to 4) the handmade and reduced wheel-turned ceramics clearly dominate the pottery assemblages of each period. Together, they represent no less than 79.3% of the total pottery assemblage of the Roman level when the sherd counts are considered, or 77.7% when MNI is considered, ranging from 63.3% at level 1 (or 72.4% MNI), 72.7% at fort

level 2 (or 73.3% MNI), 83.5% at fort level 3 (or 82.2% MNI) and 81.0% at fort level 4 (or 80.6% MNI). In these periods, both groups are completely dominated by the local/regional North Menapian production.

With an average percentage of 45.5% of the total pottery of the Roman level (sherd count; 36.0% in MNI) and individual percentages ranging from a minimum of 39.7% (at fort level 2; or 37.4% MNI) to a maximum of 49.9% in sherd count at fort level 4 and 48.6% MNI at level 1, the handmade wares take up a major share of the pottery assemblages at every fort level. Not only do they represent cooking and storage vessels, handmade vessels were also acquired in tableware versions. Apart from a very small portion of Romano-British imports (BB1), the handmade group in the late 2nd and 3rd century is completely taken by North Menapian products (cf. Volume II, Chapter 1.E).

With an overall percentage of 33.9% of the pottery of the Roman level (sherd count; 41.7% in MNI) and individual percentages ranging between 16.9% (at level 1) and 40.1% (at fort level 3), the reduced wheel-turned wares also represent a very important portion of the ceramic assemblages at every level. In the late 2nd and 3rd century this group is equally dominated by the North Menapian products, comprising coarse reduced and fine reduced vessels. The reduced common wares of levels 1 to 4 only include a very small assemblage of Romano-British products, represented by BB2 and different East Anglian greywares, a few Low Lands Ware I vessels from the Bergen-op-Zoom area in the south of the Netherlands and a small quantity of North French products (cf. Volume II, Chapter 1.B.5). Although the latter appear to have been an inspiration for several North Menapian products (or were they both imitating classic Roman products?), during the late 2nd- and 3rd-century occupations of the fort the authentic North French products were only imported in small numbers, rather as occasional purchases<sup>364</sup>. Besides a small increase at fort period 2, only at the end of fort level 4 and in fort level 5, does this picture change (see also further). Mainly from the Bruay-La-Buissière kilns similar products as those of the North Menapian wheel-turned pottery industry were purchased (cf. Volume II, Chapter 1.B.5, Section 5.2.9, study by S. Willems). Their limited numbers assume that these vessels were brought along with soldiers, as by this time recruitment will have been largely regional. The increase in imports from the North of France reflects more intensive contacts with those regions, on the regional market or on a military level, and this may also have been influenced by the increasing trend to recruit soldiers from near to their stations.

The North Menapian industry, a reduced group of local/regional manufacture, differs from more inland productions through the combination of fabrics, forms and decorations (cf. Volume II, Chapters 1.C.1, 1.D.1 and 1.E). Both handmade and wheel-turned productions occurred alongside each other in the same region and

<sup>363</sup> These are most likely underrepresented in the tables and graphs as several handmade and wheel-turned reduced pottery that has been identified as cooking/kitchen vessels may have been smaller storage jars.

<sup>364</sup> Most of these originate from the region encompassing an area from Normandy to the Champagne-Ardenne region. A very small group of reduced pottery is likely to originate from the Ardres region more to the north of France; they appear in contexts from fort level 3 onwards.

in the same contexts, as is also clear in the Oudenburg pottery assemblages (cf. Volume II, Appendix).

During the 1st and 2nd centuries in the region, handmade fabrics were gradually replaced mainly by common wheel-thrown pottery. The latter was at that time imported from Northern France or came from regional workshops like Low Lands Ware and other unidentified potteries. During the late 2nd and 3rd century this changed with a revival of the handmade wares – which by that time can clearly be defined as a homogeneous North Menapian group – up until 40% at several sites in the region (De Clercq and Vanhoutte 2011), at rural<sup>365</sup> as well as military sites. Not only at the Oudenburg fort, but also at the Aardenburg fort (cf. Dhaze 2011; 2013; 2019) this trend can be observed. Beside this, a well-defined North Menapian wheel-thrown group emerged, replacing largely the former imported reduced products. A survey in collaboration with S. Willems of the burial assemblages of the southern cremation graveyard at Oudenburg (ET12/14/15) reveals this shift in the imports from Northern France. While Arras vessels for example are well-present in the 2nd-century graves, they hardly occur in the fort assemblages from the late 2nd century onwards. The North Menapian industry clearly developed as a uniform style group to become firmly established around AD 200 and to continue to grow until the later 3rd century. New forms and new decorative patterns show that the North Menapian industry not only attributed to the native repertoire (see Volume II, Chapter 1.E). Around 75% of the ceramic assemblages in the 3rd-century contexts studied from different sites in the North Menapian region, appear to have originated regionally within the North Menapian area. Moreover, the same pottery forms and styles within this group were found on both military and civilian sites and testify to a growing regionalization of the supply of the common pottery in the region from the late 2nd century onwards (De Clercq and Vanhoutte 2011; cf. Volume II, Chapter 1.E).

The closely datable Oudenburg assemblages of the fort site demonstrate that the local/regional pottery continued to be made and that it developed extensively, with a peak around the middle of the 3rd century. The increase of forms, decorations and new and refined decoration techniques suggest that this evolution was the result of a military-native interaction (study by W. De Clercq and the present author; cf. De Clercq and Vanhoutte 2011; see also Volume II, Chapter 1.E). An important aspect in this respect is the cross-Channel connectivity, visible in the North Menapian pottery of the mid- and later 3rd century with mutual influences with the Black Burnished pottery<sup>366</sup>. The North Menapian potters of the 3rd century became familiar with the BB-products, as the BB-wares at the Oudenburg fort (see Volume II, Chapter 1.B.5, Section 5.1, study by M. Lyne) and Aardenburg forts show (De Visser 2001, 137-138, 155, Fig. 9.87-88). From these observations emerges the

hypothesis that this pottery evolution was incited and stimulated by the military which arrived in the region in the later 2nd century. Instead of direct control by the military, this pottery evolution could also be the result of a growing integration of the Romano-British and the Gallo-Roman communities through trade and personal contacts, possibly induced by the military presence, resulting in an exchange of material culture and ideas (De Clercq and Vanhoutte 2011; Vanhoutte *et al.* 2009c, 134). Such a military influence on the local pottery production and distribution is not surprising; the same phenomenon can also be observed elsewhere, for example at early Roman military sites in western Britain (Darling 1977).

Surprisingly the evolution concerned both the reduced wheel-turned and the handmade pottery. With the latter also pottery of lesser quality kept on being used by the fort community. Some North Menapian vessels found at the Oudenburg fort site show flaws, indicating that even inferior products could be sold to the army. Lesser quality apparently did not prevent the army from obtaining and using it. This readiness to use whatever quality emphasizes the importance the army attached to this local pottery; this pottery was found adequate enough for the everyday use at the fort. This conclusion could equally be made for early Roman military sites in western Britain, amongst which is the example of the legionary fortress at Exeter (Darling 1977, 67). The presence of such second-class vessels at the Oudenburg fort precinct also suggests that North Menapian pottery was purchased by the army in large batches for which a complete quality control was not possible. Together with its distribution to all types of sites in the North Menapian region, this indicates that the North Menapian pottery production remained a civilian one, though very much influenced by the army with which a close collaboration can be assumed. That the North Menapian pottery supplied enough to answer the needs of the army (beside those of the whole region), implies that there was a high degree of interaction with the settlement or surrounding settlements where the pottery production took place. That civilians and soldiers could work closely together, could already be deduced from the Vindolanda Tablets (Whittaker 2002, 215). The presence of inferior products at the fort precinct might also be an indication that the kiln sites were not far away. No kiln sites have been found yet in the North Menapian region and there are no indications for pottery production at the Oudenburg fort site itself. However, during fieldwalking in 1982-1985, Hollevoet found a ceramic waste product on the transition to the polder area to the west of the fort, pointing to the possible presence of pottery kilns at or near the civil settlement (Hollevoet 1987b, 49) and in one of the 3rd-century wells at the eastern border of the extramural settlement (site Riethove (ET26)) a large fragment of a perforated pottery kiln plate was found, however, without further indications for local pottery production (cf. Dhaze *et al.* 2018, 129-130).

As already mentioned, the large quantities and proportions of North Menapian pottery in fort periods 1, 2, 3 and 4 indicate that the supply by this pottery could answer the needs of the army units. Pottery from southern territories like the region of the *Atrebatii* and neighbouring regions only representing very low numbers in the fort assemblages suggests occasional purchases (cf. Volume II, Chapter 1.B.5, Section 5.2.9). The local/regional potters could clearly supply quantitatively and qualitatively enough so that

365 *E.g. the large rural site of Kluizendok (Evergem, East-Flanders) to the east of Oudenburg, to the north of Ghent, yielded 30% of handmade wares in the 2nd century, increasing to 55% in the 3rd century (Laloo *et al.* 2009).*

366 *In contrast to earlier North Menapian handmade assemblages which were more in line with inland traditions, e.g. at Zeebrugge (E. Patrouille, unpublished material), Varsenare (Hollevoet 2002, 168-173), Damme (In 't Ven *et al.* 2005).*

imports of common wares from other regions were no longer acquired, in contrast to the pre-military period before the late 2nd century AD. It is also significant that the reduced forms of Low Lands Ware I pottery are hardly prominent in the assemblages of the successive fort levels. On the other hand, the Low Lands Ware I flagons represent the most important portion in the flagon supply (Volume II, Chapter 1.B.2). Functionally seen, by the 3rd century, the North Menapian pottery – both the handmade as well as the wheel-turned group – represented the entire process of food processing: storage, cooking and consumption. Fabric comparisons indicate that also a share of the (oxidized) flagons were possibly produced in the North Menapian region. Nevertheless, for flagons an extra source of supply was clearly needed.

Noteworthy is that some North Menapian handmade vessels even arrived at *Forum Hadriani* (Voorburg) in the period c. AD 230-310 and were found in the silt fills of the harbour, which has been identified as a trade or trans-shipment centre (Van Kerckhove 2014, 328). This will not imply trade but most likely does point to military contacts.

While the Oudenburg army units of the late 2nd and 3rd centuries received long-distance traded wares, they continued to rely on the local/regional production for most of their vessels of everyday use. This points to the army unit being strongly imbedded in the local and regional society. It also assumes a close interaction between the army and the local/regional pottery sites. Likewise at British sites, locally produced pottery generally appears to have dominated the pottery supply through time. Gardner (2007a, 160) believes this cannot be explained economically, in terms of being cheaper, but should be related to the social/cultural significance of the sites on a local/regional level.

#### V.2.4.2. Significant changes in the late Roman period: the Oudenburg fort as a remote economic community in the region

In the late 3rd century, (larger) rural communities in the region ceased to exist (see Chapter I, Section I.4.1.4). Structural remains of late Roman civil occupation in the North Menapian region are lacking; whatever form civil settlements in the late Roman period took, they will have been small-scale. With this downfall of civil occupation in the late 3rd century, North Menapian kiln sites shut down, as pottery production required more than small-scale organization and structures, and some level of consumer demand.

It is also clear from the analysis of the key context assemblages (cf. Volume II, Appendix) that all North Menapian handmade and reduced wares found at fort level 5 (and later) are made in the fabrics and reflect the typology attested for the 3rd century (and earlier). A life-span of several decades for such kitchen vessels does not seem probable; moreover, a continuity of use cannot be related to an interruption between fort level 4 and 5. Hence, the North Menapian fragments found at fort level 5, although representing

up to 75.4% of the pottery assemblage of that level, should all be considered as residual re-deposited items<sup>367</sup>.

The late Roman downfall of civil occupation will also have resulted in a downfall of the civil market economy in the region (Van Thienen 2017b, 120). The supply to the rather remote Oudenburg fort, not only geographically but also demographically seen, will have been purely military-oriented from the late 3rd century onwards.

Within the handmade group of fort level 5, only a limited quantity of Romano-British handmade pottery and some 'Germanic-style' pottery can be chronologically associated. Functionally, the North Gaulish reduced wares took over the role of the North Menapian pottery, certainly for cooking and consumption. For storage and cooking, they were complemented by the Mayen wares. Handmade products were clearly no longer an acquired product. Late Roman BB1 products seem to represent only casual imports. Only limited quantities of late Roman handmade wares of 'continental' provenance can be attributed to fort period 5, mainly to the latest fort phase (fort level 5B). Some are clearly imported, others were most likely local imitations (see Volume II, Chapter 1.C.2, study by V. Van Thienen). Functionally, they can all be identified as cooking or storage vessels. As for the imports, it is possible that soldiers brought this pottery with them; it is also possible that these pots represent packaging for an imported content, a specific commodity or foodstuff from *Germania Magna* (cf. the suggestion by Carroll (2001, 320) for the presence of native Roman-period pottery at the fleet base of Cologne). Whatever scenario, their purchase and their imitation-production should be seen within the context of the expression of a certain identity, as a reference to the tradition of their owners, rather than being obtained for their form (cf. Volume II, Chapter 1.C.2 for further discussion by V. Van Thienen).

Within the reduced wheel-turned group of fort level 5, next to an increased, but still limited, number of products from different kiln sites from northern France and a small portion of East Anglian greywares, a variety of North Gaulish greyish fabrics can be attributed to the 4th – early 5th century. Within the 4th- early 5th-century common wheel-turned reduced wares at the Oudenburg fort a classification into well-defined fabric groups hardly seems possibly<sup>368</sup>. These sandy fabrics, belonging to the North Gaulish late Roman forms and types, cannot be recognized as originating from the region of the *Atrebates*, although a lot of the pottery connects with the late Roman repertoire of that region (cf. e.g. Tuffreau-Libre and Jacques 1992; 1994). Typologically, the reduced assemblages at Tournai for example show many similarities (cf. Brulet 1994; 1996a; Brulet and Verslype (dir.) 1999; Brulet *et al.* 2012). An origin in the South Menapian territories around Tournai (the late Roman capital of the *civitas Turnacensium*), around Cassel (the former capital), or in the region of the *Morini* around Boulogne, is possible; however, the potteries in these regions have not yet been described

367 In the case of material from post-Roman levels, a portion could have been brought in from mid-Roman contexts from outside the fort (see Chapter II, Section II.2.3).

368 This situation was already acknowledged when studying the pottery of the double well of fort level 5 (Vanhoutte *et al.* 2009b). A similar situation was encountered during the study of late Roman pottery at some sites between Arras and Famars (Corsiez 2006, 343).



or characterized in detail<sup>369</sup> (cf. Brulet *et al.* 2012, 150-151 for the fabrics attested at Tournai). Nevertheless, these North Gaulish wares, next to the variety of products from the North of France, can clearly be identified as wider-regional productions.

Since these fabrics appear at the Oudenburg fort from the end of fort level 4 towards the end of the 3rd century onwards, a direct relation with the ceasing of the North Menapian pottery industry is strongly implied. For the common reduced wares, the army had to rely on new supply centres and will have found a market southwards. Around AD 296 (cf. Esmonde Cleary 1989, 47), the administrative reforms of the Tetrarchy resulted in a new capital for the *civitas* (now called the *civitas Turnacensium*) at *Turnacum* (Tournai), which will have had a huge impact on the markets in that region and on trade and supply networks with that region.

### V.2.5. Evolutions in long-distance supply to the Oudenburg fort: the factual evidence of the successive fort periods

With all pottery imports identified and quantified (Tables 8 and 9; Figure 108), a diachronic picture can be mapped out which forms the basis for insight into the long-distance trade networks involved. The following conclusions are based on the represented MNI<sup>370</sup> (Table 8).

#### Fort period 1: c. AD 180 – 200(+)

Although the pottery counts for fort level 1 are much lower than those of later levels (and with the MNI counts representing only very low numbers), some conclusions can be drawn from the pottery assemblages assigned to fort period 1 (Figure 109). On a functional level<sup>371</sup>, the large proportions of cooking/kitchen vessels and tablewares, next to a considerable number of beakers, reflect the dwelling function of the area where food was made and consumed. The importance of the handmade pottery is clear, not only as cooking/kitchen vessels but also as tablewares. Common reduced ware beakers were even more in use than the imported colour-coated beakers (Figure 110).

Samian wares were mainly supplied by the Lezoux potteries from Central Gaul, but Argonne, Trier and Rheinzabern were already also sources of supply, albeit in small quantities. The Central Gaulish Les Martres-de-Veyre products were only found as residual items in fort levels 3, 4 and 5, and should most likely be attributed to (fort) level 1. The same can be assumed for samian from La Madeleine, of which a few individuals were found in later levels. Also beakers in La Madeleine black-slipped ware were known, but overall, imports from La Madeleine are hardly significant.

From kilns at Trier came beakers of their early export phase, albeit in limited quantities. Most of the colour-coated wares were supplied by the Cologne potteries. Tableware flagons were also imported from Cologne, but they were probably casual imports brought along with the fine ware beakers (and dishes) as they could not compete with (mainly) the Low Lands Ware 1 regional flagons.

Amphorae from this period were *Baetican* Dressel 20 olive oil and Gauloise 4 Narbonne region wine containers. Their modest number probably reflects moderate usage by the fort inhabitants.

Mortaria were mainly supplied by the Bavay-Famars potteries and those from the Rhine-Eifel region. Noyon mortaria most likely came only as casual items. A North African lid should not be seen as a trade import, but rather as a personal belonging from a native African soldier (cf. Chapter V.3, Section 3.5.1).

Reduced wares and handmade pottery were almost exclusively supplied by the North Menapian industry. Only one production from the Atrebatas region occurs, more specifically from the Bruay-La-Buissière kiln sites. Since these products could not compete with the local/regional North Menapian industry, they might not represent actual trade (see before).

During fort period 1, the Oudenburg fort was clearly imbedded in the continental trade networks with an important supply axis with the south and the east/south-east.

#### Fort period 2: c. AD 220 – 245/250

The high number of tablewares from fort period 2, together with a significant amount of drinking vessels, in combination with a lower number of cooking/kitchen vessels are indicative for the changed function of the area in comparison to fort period 1 and are in line with what can be expected in a more official complex<sup>372</sup> (Figure 110). Colour-coated/black-slipped wares are hardly present, within the considered context only as dishes. Remarkably, this picture is representative for all key contexts of fort period 2. Drinking vessels are either samian or common reduced beakers.

369 In the southern region of the Morini only the kiln site of La Calotterie is well described (pers. comm. dr. S. Willems).

370 Fabrics listed in the overall fabric table (Table 6) but not mentioned in the successive fort periods, only occur in post-Roman levels and cannot be assigned to a specific fort level. The few finds which can undoubtedly be considered as intrusive finds, are not recorded; the same goes for the identified residual finds. An import only present by body or base fragment(s) at a certain level, has been recorded as 1 MNI as its presence cannot be denied. For some pottery imports, it is uncertain whether they represent at a certain level residual items or not; their dots on the maps (see further) are not filled in. The North Gaulish flagon and (jar-)amphora imports (incl. the Low Lands Ware 1 products) have not been included on the maps as the current research so far could not relate specific numbers to these productions.

371 Based on only one key context OS 30916, the assemblage of a specific level in the earthen rampart of fort period 1 (cf. Volume II, Appendix: Section 2.1). This is the only context assemblage of fort level 1 sufficiently large to look into the functional distribution in relation to the pottery categories.

372 For this functional analysis, the pottery assemblage of gully OS 23966-70920-83780 has been selected as representative for fort period 2. The assemblage of the gully probably largely reflects the pottery of the predecessor of the military hospital of fort level 2B though. Although this cannot be evidenced, a similar function of the building of fort level 2A is likely. Nevertheless, a comparison with the other key contexts – too small to look into the functional distribution – indicates that the selected assemblage seems largely representative for fort period 2.

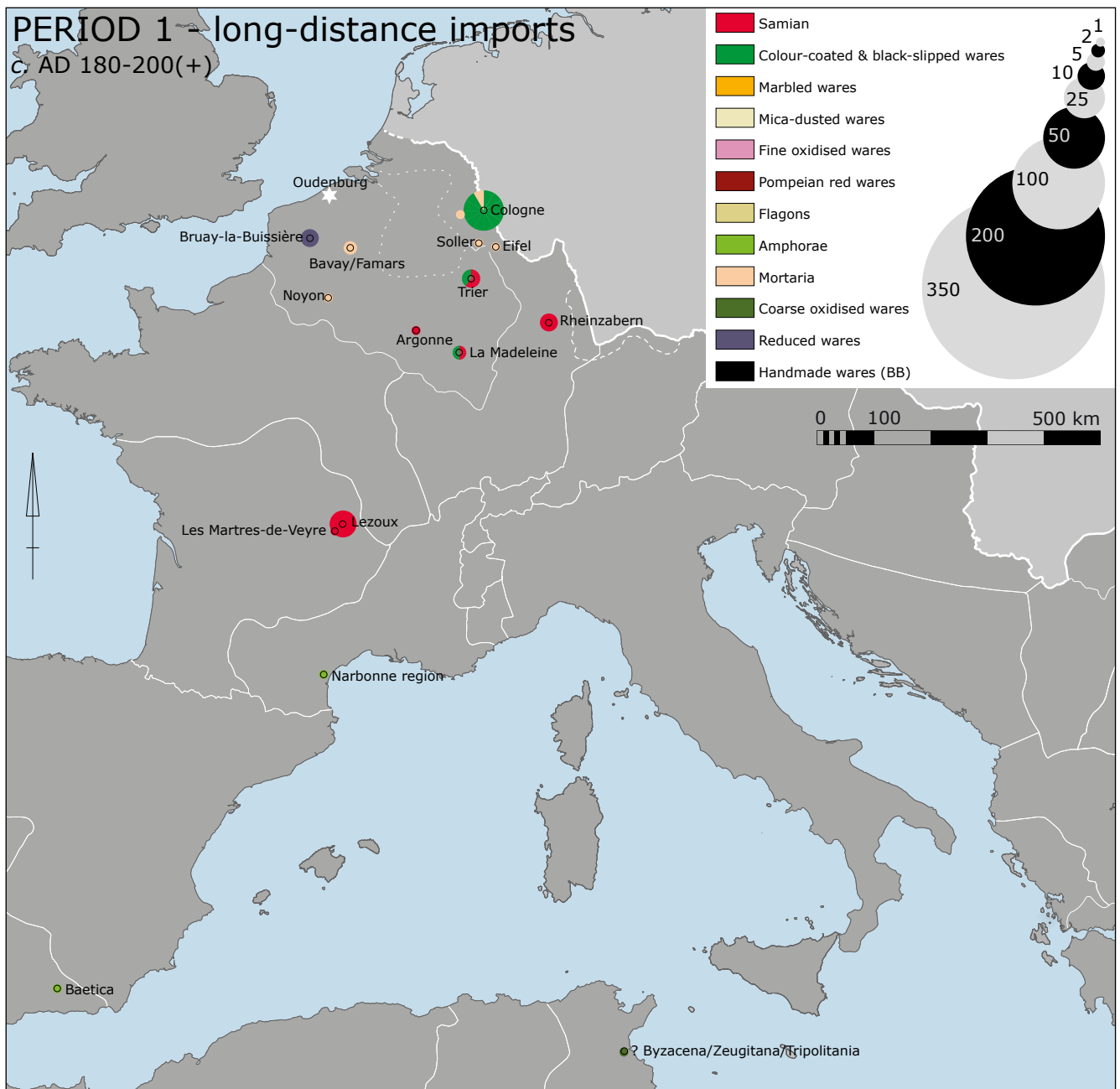


Figure 109. The attested long-distance imported wares to the Oudenburg fort during fort period 1, c. AD 180-200(+), based on MNI (basic map © Frontiers of the Roman Empire Culture 2000 project (2005-2008)).

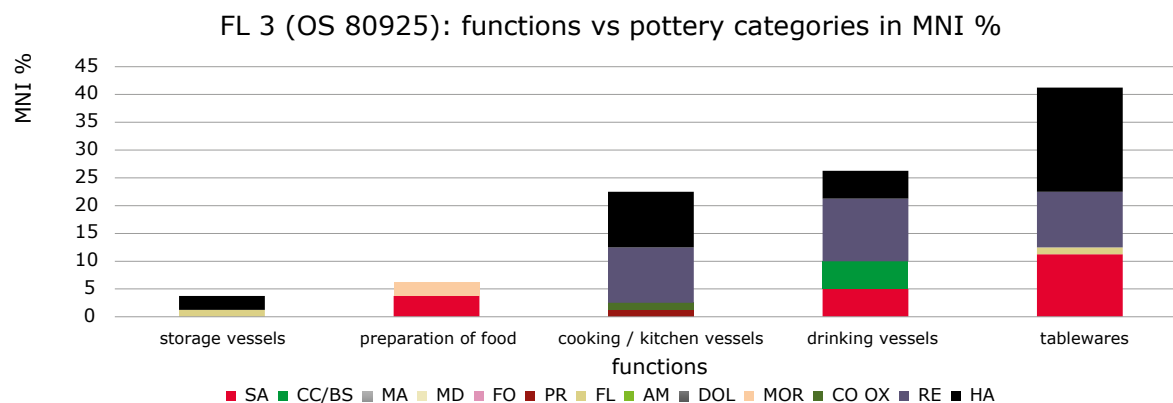
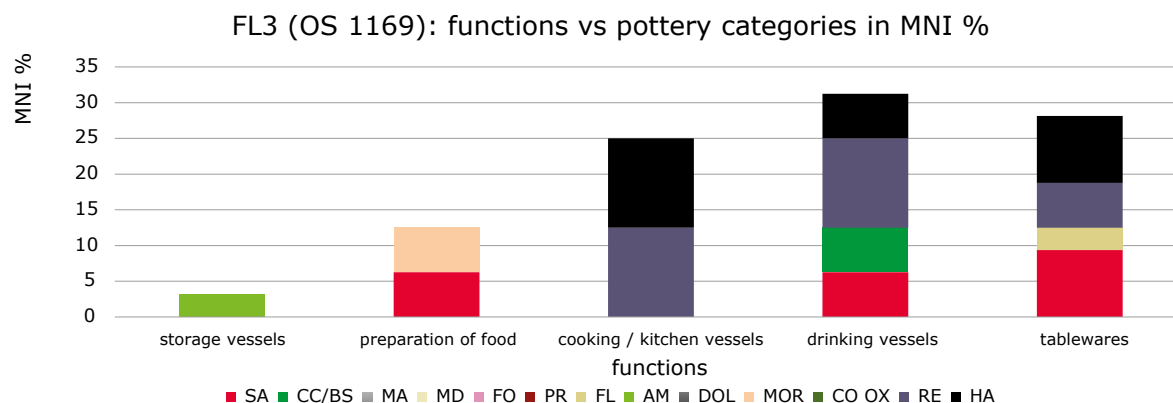
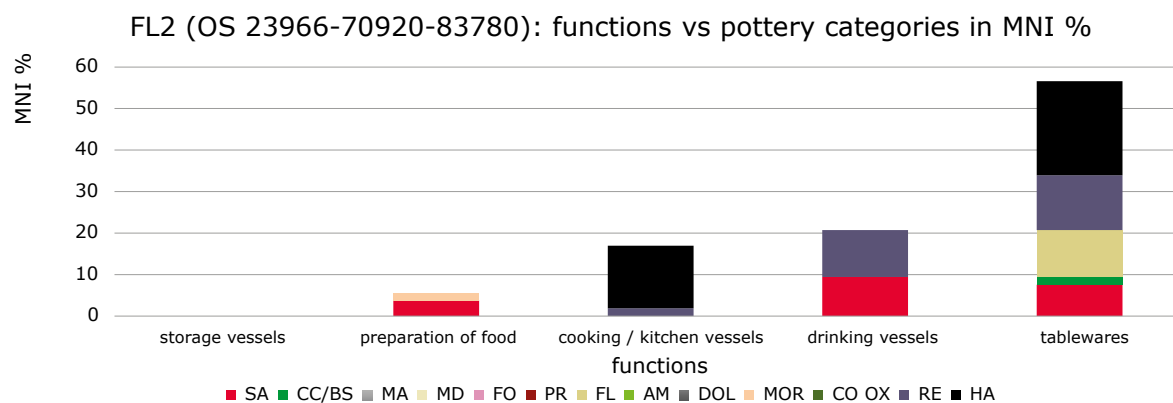
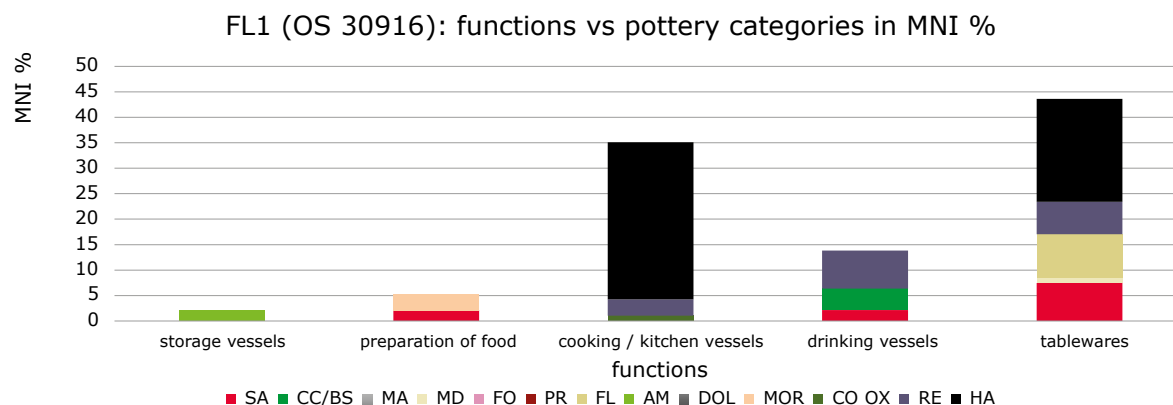


Figure 110. Functions versus pottery categories as represented in selected pottery assemblages of fort period 1, 2 and 3, based on MNI percentages.

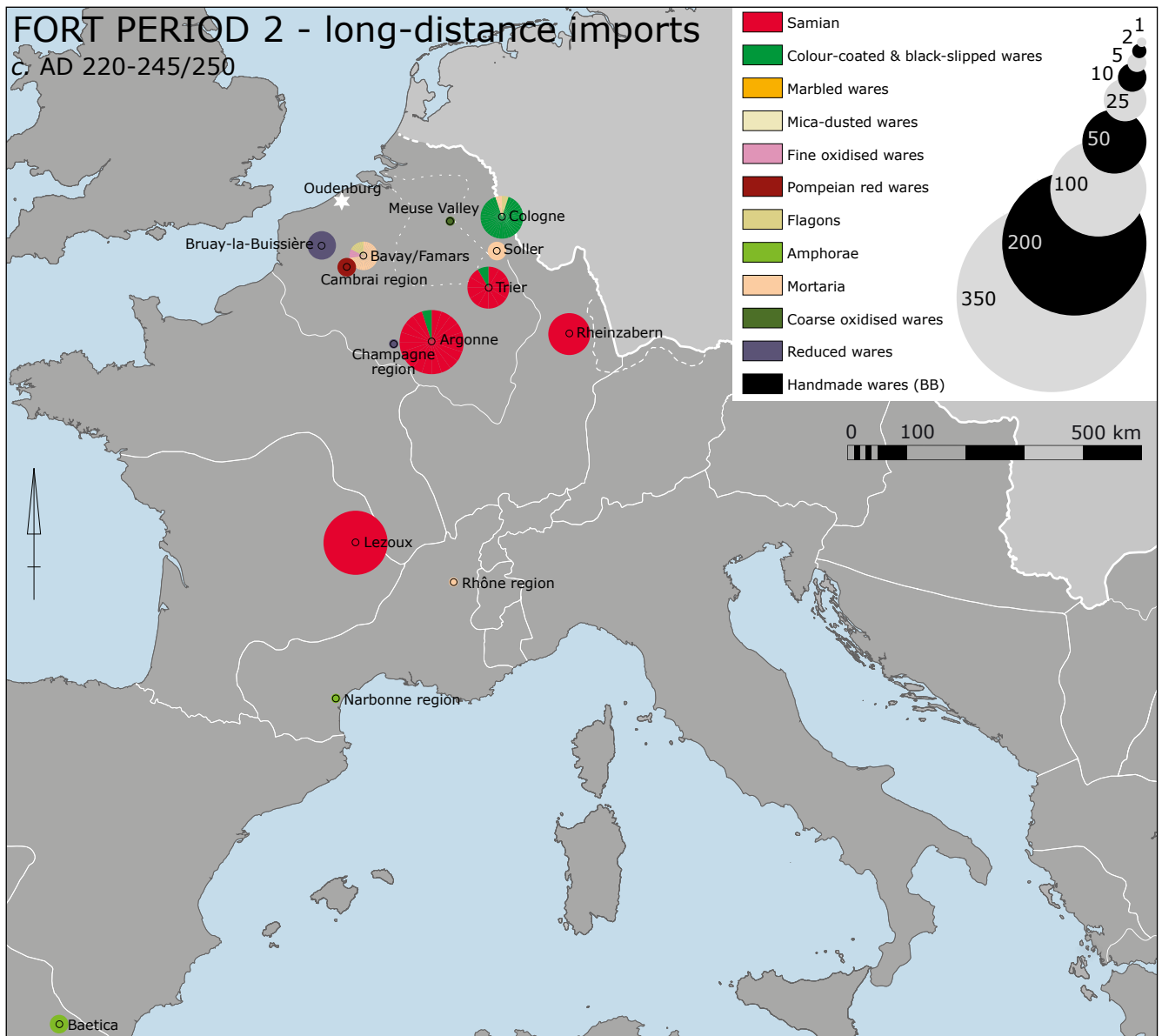


Figure 111. The attested long-distance imported wares to the Oudenburg fort during fort period 2, c. AD 220 – 245/250, based on MNI (basic map © Frontiers of the Roman Empire Culture 2000 project (2005-2008)).

In fort period 2, the Argonne and the Lezoux potteries dominated the samian supply (Figure 111); according to the numbers they were almost equally well-represented. However, when taking into account a residual portion from the earlier level, Argonne clearly led the market. Rheinabern and Trier samian were also imported, but in moderate quantities.

The trade network for the colour-coated and black-slipped wares seems hardly changed in comparison to fort period 1. Cologne still dominated the market, but also beakers in *Moselkeramik* were imported, albeit in low numbers. Also Argonne black-slipped ware beakers came in, but no rim fragments were preserved.

Some flagons were imported from Bavay-Famars and from Cologne, albeit in low quantities; both may have been side-products arriving

along with other pottery from those locations conceivably with Bavay-Famars mortaria for example, as they dominated the mortaria supply. Solter mortaria are also present now. Mortaria from the Rhône valley and from Noyon seem to be casual imports. From Bavay-Famars also fine oxidized wares were imported.

Pompeian red ware plates were supplied by Cambrai potteries. A coarse oxidized vessel from the Meuse Valley represents an isolated import. The same amphora trade network as for fort period 1 is likewise seen in fort period 2.

Although the North Menapian industry continued to dominate the reduced and handmade products and supplied tablewares next to cooking and other kitchen wares, Bruay-La-Buissière tablewares



became somewhat more significant, although the represented numbers are still far below those from the NOM products.

In fort period 2, the Oudenburg fort was still exclusively continental-oriented. Supply axes from the south and from the east/south-east became equally important: some pottery groups were supplied by both, others only by the one or the other.

### Fort period 3: c. AD 245/250 – 260

The functional composition of the selected assemblages<sup>373</sup> reflects the dwelling character of the area during fort period 3 with both the production and consumption of food represented (Figure 110). The high number of tablewares and drinking vessels is significant, even more marked in the assemblage of gully OS 1169. This may be indicative of the waste of the presumed officer's quarters. The CC/BS wares are clearly present as beakers but at fort period 3 the first, large handmade beakers appear.

At fort period 3, the Rheinzabern potteries took the lead in the samian market to the Oudenburg fort, but also Trier and Argonne samian imports became very important (Figure 112). Lezoux samian still accounts for similar numbers as for fort period 2. As studies clearly show that the military obtained the latest supplies of pottery, one can assume that at the latest in fort period 3 the Lezoux samian fragments represent dug-up items. Possibly during fort period 3, the first North Gaulish samian appeared (however, not found in closed context).

Until the early 3rd century the colour-coated and black-slipped wares were almost exclusively from the Rhineland; this changes, however, from the middle of the 3rd century onwards. *Moselkeramik* became almost equally important as Cologne colour-coated wares; the latter were clearly still in mass production. Some fragments from New Forest colour-coated, Oxfordshire black-slipped, Colchester and Hadham red wares may represent the first British imports at the site, although all but the New Forest production, are small body fragments (it can therefore not be totally excluded that they represent intrusive items). The Oxfordshire production was possibly also responsible for an isolated fine oxidized vessel. While the former individuals represent isolated finds, the British link is securely confirmed by the presence of the first products of Dorset BB1, Alice Holt/Farnham and East Anglian greyware, next to Lower Nene Valley and Oxfordshire mortaria, although all representing very small quantities. They point to contacts, rather than trade.

The amphora trade continued to be dominated by the *Baetican* Dressel 20. Although Gauloise 4 only represents one MNI, one can assume that the import of these wine amphorae was still of significance. By this time, however, transport of wine from the

Rhineland and eastern and northern Gaul in barrels is entirely possible. At fort period 3, the first North African amphora appears.

Flagon wares were mainly acquired at the local/(wider-)regional markets; only some tableware flagons from Cologne and Bavay-Famars occurred, possibly products which came along with other pottery imports.

For the supply of mortaria, the Rhineland potteries with mainly Soller took the lead, over Bavay-Famars. The first British mortaria appeared, but their low quantities do not represent trade. The same goes for an isolated Champagne mortarium. Coarse oxidized wares were hardly imported: only one vessel from Urmitz/Weissenturm can be assigned to this period with certainty.

Greywares from *civitates* to the south were very limited: only Bruay-La-Buissière supplied some vessels, next to single products from the Champagne and the Cambrai region. The latter exported mainly Pompeian red ware plates to the fort.

At fort period 3, the supply axis from the east/south-east became very important. Very significant are the first British imports. With these British elements present in a wide range of pottery groups, military contacts with *Britannia* are clear.

### Fort period 4: c. AD 260 – 290/300

The pictures retrieved from the three key contexts for fort period 4 which are large enough to study their functional composition<sup>374</sup>, complement each other well (Figure 113). The pottery assemblages indicate that the area was multi-functional with far more happening than metalworking. Handmade pottery is still very important within the three functional groups of the cooking/kitchen vessels, drinking vessels and tablewares, almost equally important as the reduced wares. While proportionally samian beakers become less significant, samian wares are very well-represented as tablewares. Both the samian and CC/BS beakers have to compete with a significant number of handmade and reduced drinking vessels.

In fort period 4 the Rheinzabern potteries prevailed in the samian supply to the Oudenburg fort; Trier, however, remained an important supplier (Figure 114). The samian assemblage from the waste fillings of well OS 22926, representing the later phase of fort period 4, seems to be representative with only Rheinzabern and Trier samian vessels, present in equal proportions (see Volume II, Appendix, Section 5.3). The significant MNI counts for the Argonne samian may imply that the Argonne potteries still exported in this period. At that time, also the North Gaulish samian clearly emerges with a few vessels from the Les Rues-des-Vignes kilns and several products probably produced at Desvres in the Boulonnais region. The Lezoux samian still accounts for significant numbers at this level, and mainly in contexts of the first phase, and the question arises whether these can all represent residual items. Very significant in this respect is the complete, well-used Drag. 38 bowl of Central Gaulish origin found in the large waste-pit OS 4980 of

373 Pit OS 80925 and gully OS 1169: see Volume II, Appendix, Section 4. Although the assemblage of context OS 1169, the drainage gully of the presumed officer's quarters, is much smaller and proportions therefore less representative, the functional composition picture of this assemblage confirms the picture of context OS 80925.

374 The primary waste fillings of well OS 22926, the fire layer OS 7957/7971 and the large waste-pit OS 4980: see Volume II, Appendix, Section 5.

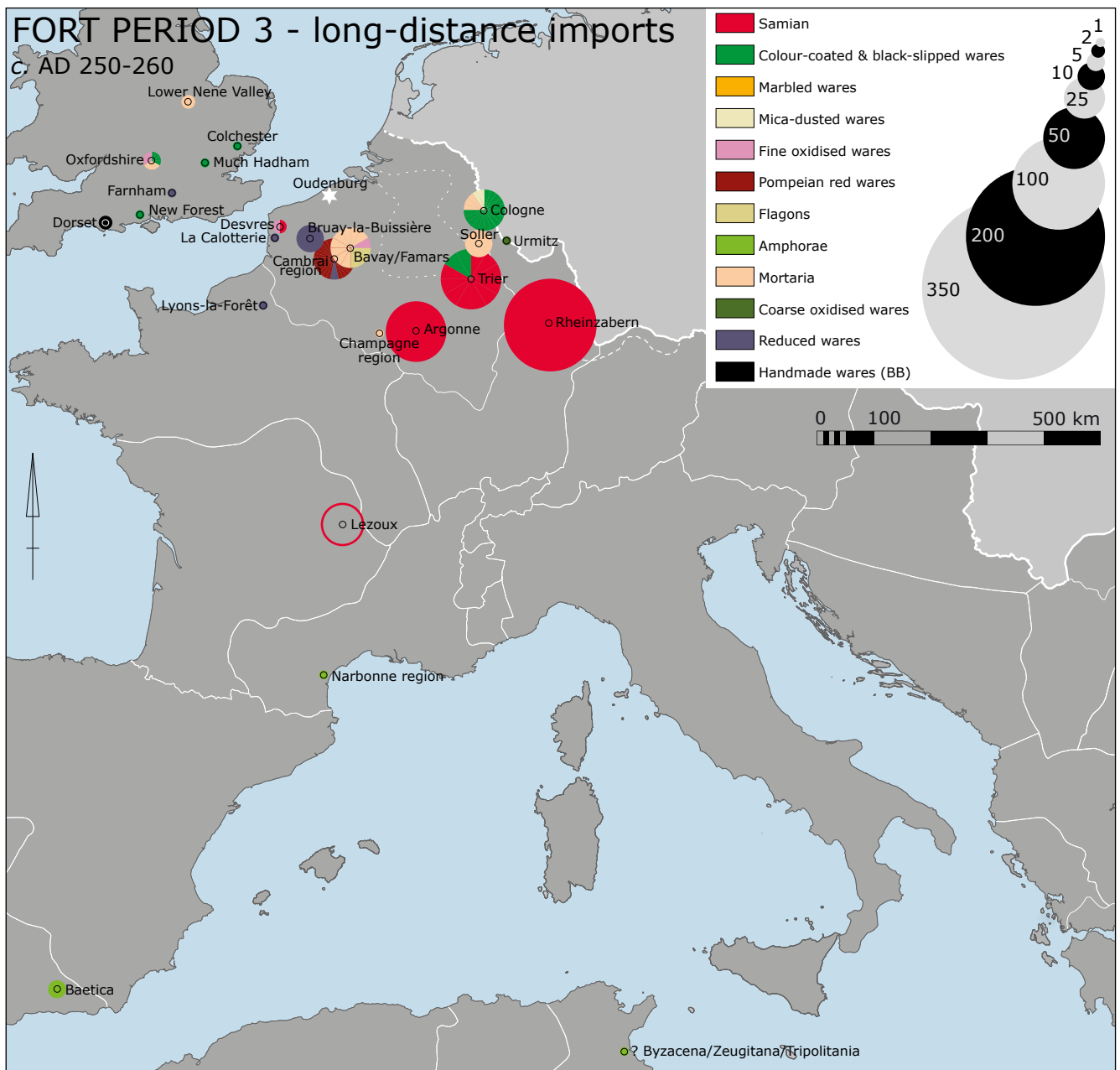


Figure 112. The attested long-distance imported wares to the Oudenburg fort during fort period 3, c. AD 245/250 – 260, based on MNI (basic map: © Frontiers of the Roman Empire Culture 2000 project (2005–2008), <http://creativecommons.org/licenses/by/2.5/scotland/>). As it is uncertain whether all Lezoux samian at this level represents residual items or not, this circle is not filled in.

fort period 4. Since the filling in of this rubbish pit is dated after AD 268 based on coin evidence, this collared bowl was discarded after a very long life, of at least 30 years, considering the date of c. AD 240 for the assumed last productions at the Central Gaulish workshops intended for export to the North of Gaul. However, this is only one clear example, and as mentioned above, one can assume that most Lezoux samian fragments at this level are residual from earlier levels. The long life of samian vessels is well-attested (Willis 2005, Sections 5.7 and 5.8; Wallace 2006) and in this case, is also evidenced by the East Gaulish stamped dishes recovered from the fire layer OS

7957/7971 marking the end of fort period 4 but all made prior to AD 260 or much earlier (see Volume II, Appendix, Section 5.5).

At fort period 4, there is a significant change in the supply of colour-coated and black-slipped wares, with an important increase of *Moselkeramik*. Trier was now the main supplier; besides the import of *Moselkeramik*, the first products in late Trier black-coated ware already came in, pointing to the late end date of fort period 4. There are several imports from Britain, mainly from Lower Nene Valley, but also from Colchester, Hadham, New Forest and Oxfordshire,

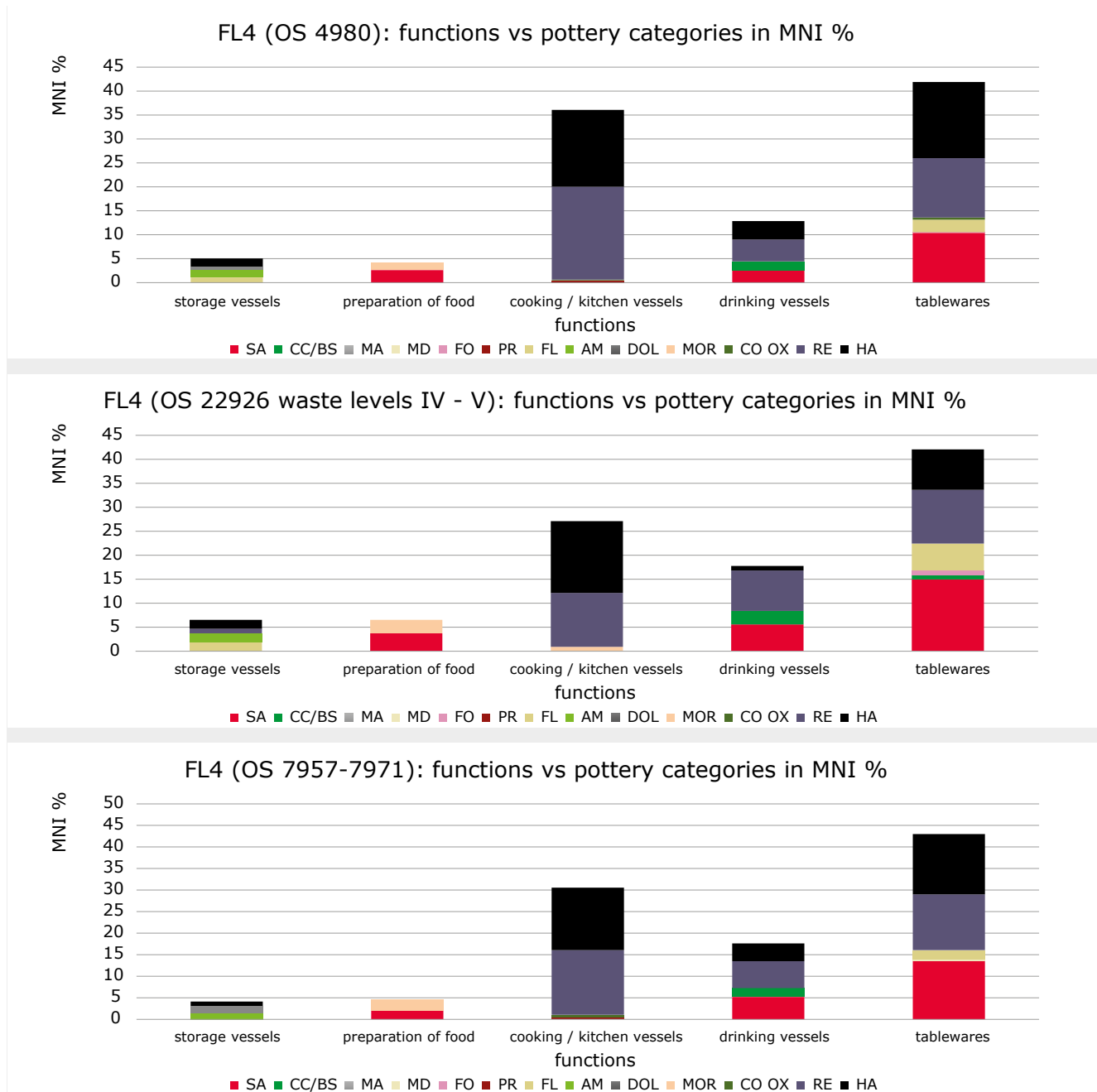


Figure 113. Functions versus pottery categories as represented in selected pottery assemblages for fort period 4, based on MNI percentages.

although the latter fine wares still remained low-numbered. Furthermore, only an isolated Argonne black-slipped ware import can be mentioned. Related to these CC/BS fine wares are the marbled wares. The first marbled products at the Oudenburg site appeared at fort period 4. Two originated from the Poitou region, one from the Lower Rhineland. The latter region may also have been the origin of a fine oxidized vessel.

Flagons were mainly supplied by regional potteries, with the Low Lands Ware 1 seemingly largely dominating (cf. *e.g.* key context OS 22926). Nevertheless, also several flagons came in which were produced at Bavay-Famars, next to a few fine oxidized vessels in

the same fabrics. Flagons from Desvres, Cologne, Noyon and the Narbonne region all represent single individuals and probably came in as casual items with other commodities.

It is at fort period 4 that for the first time a wider range of amphorae were supplied, though Dressel 20 was still the main import. It is uncertain whether the Gauloise 4 amphora still came in. The North African amphorae certainly did, albeit in low quantities. The first (and only) Aegean amphora at the site and the Gauloise 13 amphorae, originating from the North of France, made their appearance. The Cambrai region also supplied most of the Pompeian red ware plates and a fine oxidized vessel.

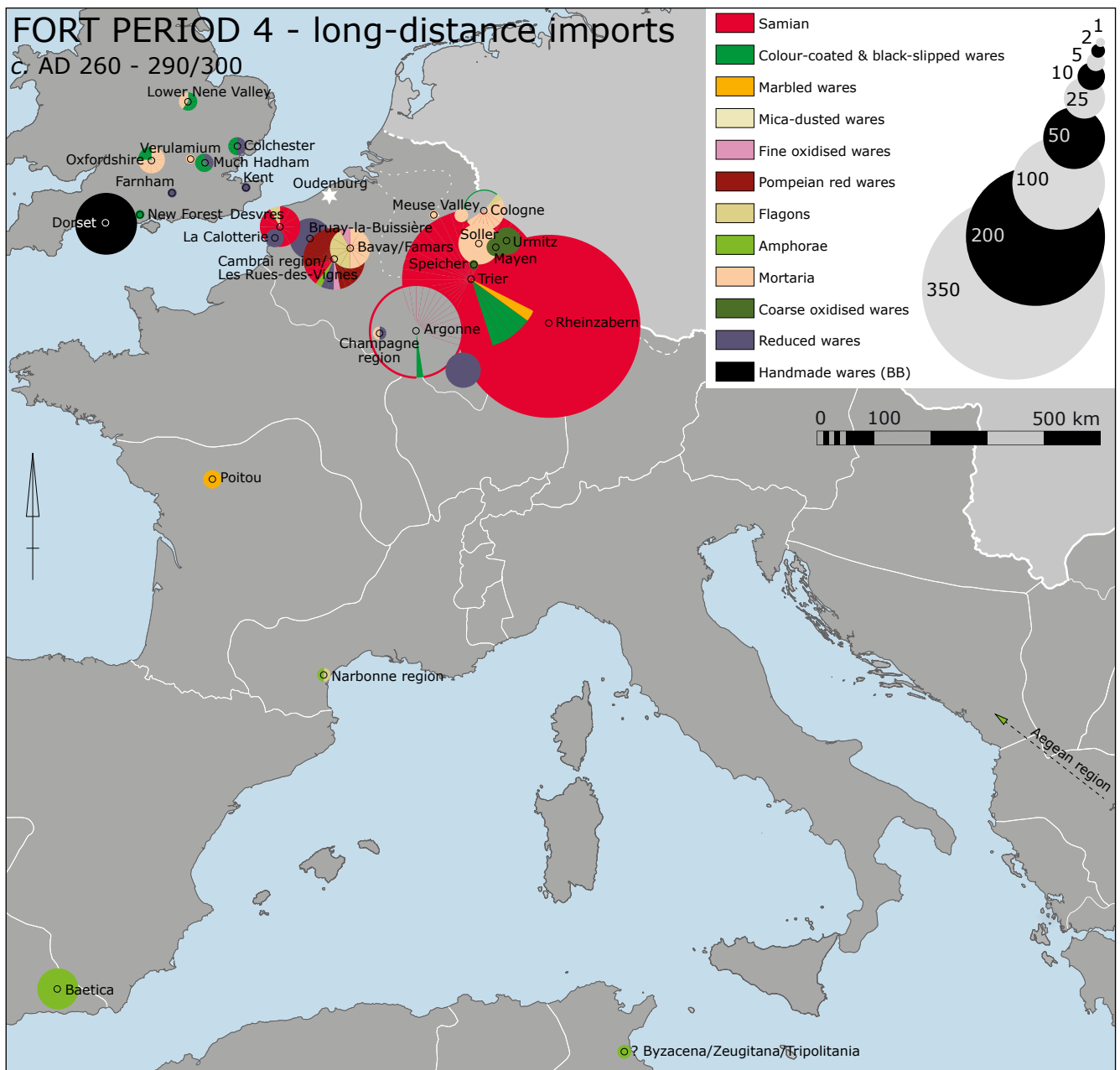


Figure 114. The attested long-distance imported wares to the Oudenburg fort during fort period 4, c. AD 260 – 295/300, based on MNI (basic map © Frontiers of the Roman Empire Culture 2000 project (2005-2008)). As it is uncertain whether all Argonne samian at this level represents residual items or not, this circle is not filled in.

In the supply of mortaria, the potteries from the Rhineland region clearly prevailed from fort period 4 onwards. With more than half of the mortaria produced at Solfer, the latter became a very important export site. Although of lesser significance, mortaria from Bavay-Famars were still supplied. The Champagne and the Meuse Valley mortaria seem to have been casual items. The Lower Nene Valley mortaria are not more important than in fort period 3, but the Oxfordshire mortaria clearly represent more than just some contacts with *Britannia*. This is certainly the case when taken into account the mortarium assemblage which is not counted in since its origin is uncertain, but of which a Romano-British origin can

be assumed based on fabric and form (cf. Volume II, Chapter 1.B.3, Section 9: fabrics 1-4, 6 and 8, study by R.P. Symonds). The single Verulamium mortarium of a type dated to c. AD 280-360, seems to represent a casual import.

Fort period 4 is the first period in which coarse oxidized imports became significant. Vessels from Urmitz/Weissenthurm occur, where the major production has traditionally been assumed to have ended around AD 260 although longer production is not excluded (cf. Volume II, Chapter 1.B.4). A few late Roman products from



Speicher and Mayen appeared, pointing to the late 3rd-century end date of fort period 4.

The import of greywares from regions to the south of the *civitas Menapiorum* became more prominent, although these productions could not at all compete with the North Menapian productions. The Bruay-La-Buissière products continued to be the most popular amongst the greyware imports, but products from La Calotterie are also present, besides a few products from the Cambrai and the Champagne region. Only some greyware vessels were imported from *Britannia*: BB2 from Colchester, BB2 from Kent, East Anglian greywares and Hadham greyware all account for only one or two individuals. This is in contrast with the Dorset BB1 ware represented by a larger assemblage. However, they can hardly be considered as trade products; they could certainly not compete with the dominant North Menapian handmade products.

During fort period 4, the supply axis from the east dominated the trade networks towards the Oudenburg fort, although several vessel forms were still supplied from southern *civitates*. Most of these originated from *civitates* just south of the *civitas Menapiorum* and did not represent trade over very long distances. A wide range of pottery demonstrates that the contacts with *Britannia* grew considerably.

#### **Fort period 5: c. AD 325/330 – (c. AD 380) – ?430(+)**

During fort period 5 the late Argonne potteries and the North Gaulish 'samian' industry both supplied significantly to the Oudenburg fort (Figure 115). When the samian wares recovered from fort level 5 are considered, these regions appear to be equally important. Their supply was functionally related: decorated wares mainly supplied by the Argonne, mortaria mainly by the North Gaulish potteries. These North Gaulish samian wares at the Oudenburg fort originated largely from the Boulonnais region; only two vessels came from Les Rues-des-Vignes.

However, when the late Roman samian vessels recovered from the transition level 5+post and from later levels are also taken into account – their late Roman date can only assign them to fort level 5 – , a different picture arises, with the late Argonne potteries largely dominating the North Gaulish industry (Figure 116). This picture might be influenced by a changed situation at fort level 5B for which this trend might be representative, as the late Argonne roller stamps show a large portion (44.7%) that can be dated to that period. The dominance of the late Argonne wares in these later levels can be ascribed to the dominance of Chenet 320 bowls; only a limited number of individuals in other forms occur. Samian was clearly no longer used as a drinking vessel, but only as tableware or for the preparation of food (mortaria).

Not only the late samian wares recovered from later levels demonstrate that a large proportion of the pottery from fort level 5 had been disturbed in later times. With the colour-coated/black-slipped and marbled wares that are 4th-century in date, large numbers occur in the transition level 5+post and in the post-Roman levels which should be counted in as representative for fort period 5 (Figure 116).

The Oxfordshire potteries prevail in the supply of non-samian fine wares to the 4th-century fort (Figures 115-116). Their products consist mainly of Oxfordshire red-slipped wares; their black-slipped wares account only for a few vessels, while their parchment wares, red/brown colour-coated wares and white-slipped wares only represent single items. Possibly also a mica-dusted and a fine oxidized vessel originated from the Oxfordshire region. The Lower Nene Valley potteries equally exported well to the Oudenburg fort and several vessels came from Much Hadham, the New Forest and Colchester. The single vessel from the Pevensey potteries possibly came along with other British imports.

The Argonne black-slipped and red-slipped ware potteries, only accounting for single items in previous levels, now exported several vessels. The late Trier potteries were a major beaker industry. It is therefore rather surprising to observe that their supply, although definitely significant, did not exceed that of the Lower Nene Valley potteries.

The marbled wares were mainly supplied by the Poitou potteries; only a small number originated from the Lower Rhineland. A single Verulamium marbled ware vessel probably represents a casual import. Pompeian red ware plates were still imported in number from the Cambrai region. Flagons from Bavay-Famars still came in, but only represent minor quantities in comparison to the wider-regional products.

Amphorae were still imported but their spectrum was limited. They mainly comprised North African amphorae, besides some Gauloise 13 amphorae, originating from the North of France. Only one late *Baetican* amphora has been recorded for the site.

The supply of mortaria was completely dominated by the Rhineland, with Soller accounting for more than half of the imports. Mortaria from Bavay-Famars and from the Eifel region only represent a few individuals. The dominance of the Rhineland apparently also affected the supply from Britain, with Lower Nene Valley only accounting for a single mortarium. Some Oxfordshire White Ware mortaria were recovered from later levels, and it is possible that they originally belonged to fort period 5. However, it is important to take into account the mortarium assemblage which is not counted in since its origin is uncertain, but for which a Romano-British origin can be assumed based on fabric and form. A definite Romano-British attribution would completely change the proportions in the mortarium supply. It would imply a more or less equally-shared supply from the Rhineland and from *Britannia*.

Coarse oxidized imports became very important at fort period 5, almost completely due to the Mayen products. Speicher was hardly of any significance. Some Urmitz/Weissenthurm vessels are present, but it is uncertain whether they represent residual items or not, as recent research has suggested a continuity of its production into the 4th century. From fort level 5 also two North African vessels can be identified. They may have arrived with North African amphorae. Mayen completely dominated the supply of coarse oxidized wares

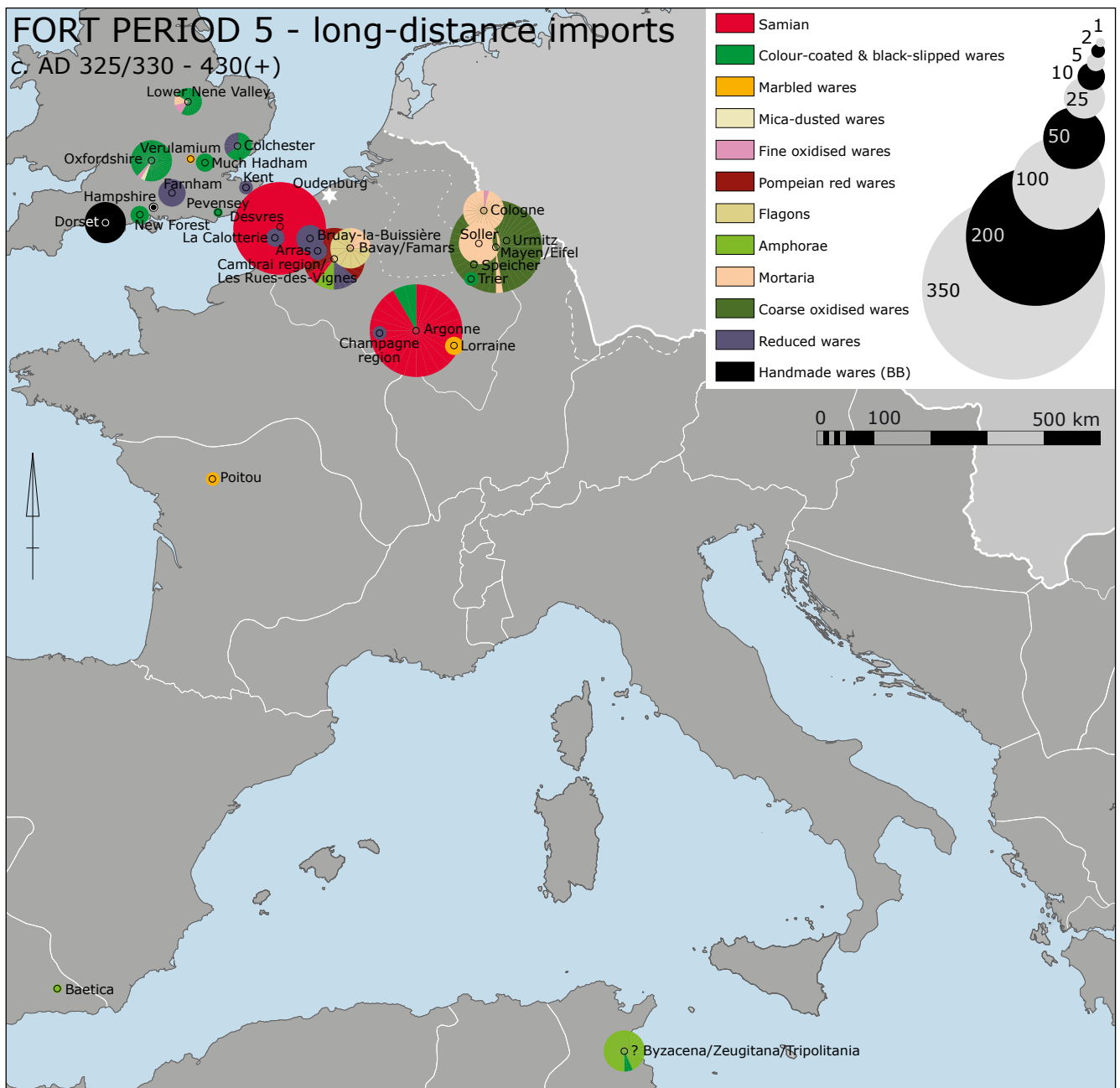


Figure 115. The attested long-distance imported wares to the Oudenburg fort during fort period 5, c. AD 325/330 – ?430(+), based on MNI (basic map © Frontiers of the Roman Empire Culture 2000 project (2005-2008)).

to the Oudenburg fort, certainly when taken into account its large share in later levels<sup>375</sup>.

A variety of greywares were imported from *civitates* to the south of the *civitas Menapiorum*, but they all account for rather small quantities and it is uncertain whether they represent actual trade. Represented productions are La Calotterie, Bruay-La-Buissière,

and the regions of Arras, Cambrai and Champagne. Important to add here are the vessels in kaolinite rich fabrics of which the origin can be assumed in the Boulonnais region. This production clearly became more important in the 4th century. However, the previous greywares could not compete with the North Gaulish greyware products for which a South Menapian origin can be assumed.

A wide range of Romano-British coarse vessels belong to fort period 5. Based on the combined numbers with those from later levels, the greywares imported from Alice Holt/Farnham became important. The same goes for Colchester. Only a few vessels

<sup>375</sup> Over 400 MNI of coarse oxidized wares were recovered from later levels (5+ post and post-Roman levels) of which the largest share can be attributed to the Mayen potteries.

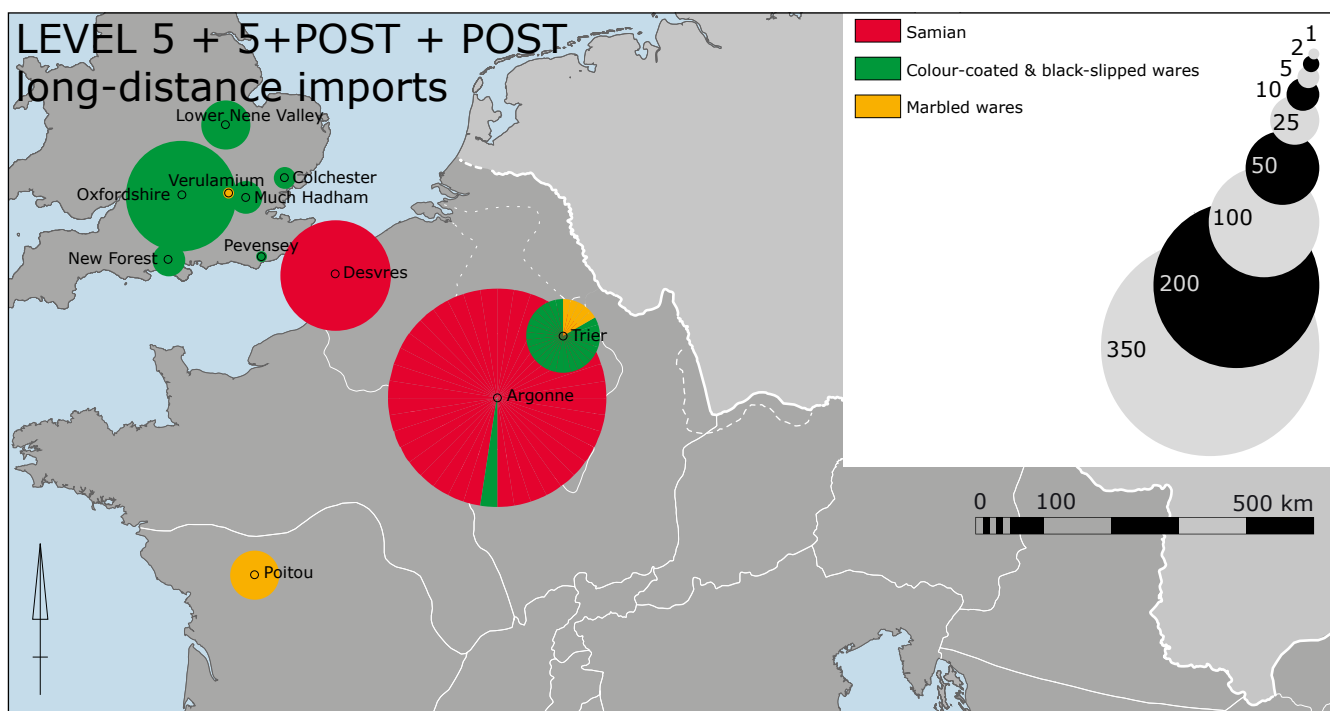


Figure 116. The attested samian, colour-coated & black-slipped and marbled wares imported to the Oudenburg fort in the 4th and early 5th century, based on MNI (basic map © Frontiers of the Roman Empire Culture 2000 project (2005-2008)).

originated from other Romano-British potteries at Kent (BB2 and Kent Thameside Greyware) and East Anglia. At first sight the BB1 imports from Dorset were less important than in fort period 4. When adding a large share of the BB1 vessels from the later levels, though, similar numbers are attained. A Hampshire grog-tempered ware vessel, recovered from the post-Roman level, should be seen as a casual import at fort period 5.

At fort period 5, two major supply axes can be observed, coming from the Rhineland and Eifel region and from *Britannia* next to two supply routes from the Argonne region in the south-east and from the Boulonnais region. Imports from southern regions were almost completely restricted to those from *civitates* directly south of the *civitas Menapiorum*. An exception was formed by the North African amphorae, representing most of the Mediterranean transport amphora supply. Close connections with *Britannia* are readily apparent and one can conclude that in fort period 5, the Oudenburg fort, although a continental site, was very much oriented towards Britain.

The picture above can most likely be considered as generally representative for fort period 5A, *c.* AD 325/330 – 360s. If we want to grasp the economic situation of the very last occupation phase and specify the pottery supply of fort period 5B, AD 380 – first decades 5th century, we can only rely on two large key contexts, the primary infill of basin OS 4923 and the infill of the inner well of the double well structure OS 2562 (see Volume II, Appendix, Section 6.2), next to pottery of the site (mostly dug up in later levels) which, typologically, can only be dated to that period. However, taking into account the high degree of residuality as

observed also in the pottery assemblages in question<sup>376</sup>, also in these key contexts only pottery which can be typologically dated to the late 4th century or later can be considered. As already referred to, the import of late Argonne samian was still very significant in the latest occupation phase. On a total of 264 identified roller stamps, 118 (or 44.7%) can be dated to the last quarter of the 4th – first quarter of the 5th century. The amount of British imports for fort period 5B is difficult to assess. Most fine ware types only have a wide chronological range. Seven Oxfordshire vessels (fine wares, cat. nos 76, 87, 102, 107, 110, 111, 116), all recovered from the transition level 5+post or from the post-Roman dark earth level, can be dated more specifically to the period AD 350-400. They probably belonged to fort period 5B, although the final phase of fort period 5A cannot be excluded. While several Romano-British coarse pottery types have a date range up until the early 5th century, the latest start date is represented by an Alice Holt/Farnham dish of the period AD 350-400+. It is noteworthy that British imports are completely absent at Graveyard A. Whether the late Trier black-slipped beakers, which cannot be dated more precisely than AD 300-400, were still supplied, cannot be known for sure. Very significant is the African red-slipped ware dish rim (fine wares, cat. no. 89) found in the dark earth level and dated to AD 360-470, hence most likely belonging to the latest fort phase. Although the absence of Mayen wares in the primary infill of basin OS 4923 and

<sup>376</sup> For some pottery categories (see *e.g.* the North Menapian handmade pottery) or types (*e.g.* 2nd- or 3rd- century types) the residuality factor is very clear. However, residuality will have evenly affected all pottery categories and even 4th-century pottery can be residual (pottery from fort level 5A dug up at fort level 5B).

the primary infills of the inner well of OS 2562 is striking, their share in the secondary infills of well OS 2562 and in the levels 5+post/post point to their continued supply, most likely primarily for storage (perhaps for their imported content?) and presumably also for cooking. However, based on their typological dating their distribution seems to have tailed off.

## V.2.6. A closer look to the samian and amphorae supplies to the Oudenburg fort

### V.2.6.1. Samian ware supplies

#### V.2.6.1.1. The mid-Roman samian ware supplies

The detailed study of the samian wares from the south-west corner site enables to come to profound conclusions regarding the evolution of the samian ware supplies through the fort's occupation history. In a wider perspective, it sheds some light on their evolution in the North Sea and Channel region. For this closer look to the samian supplies to the Oudenburg fort, in comparison with other forts in the region, we refer to Volume II, Chapter 1.A.1, Section 13. What follows, is a summary of this discussion with some necessary parts repeated. All references are in the aforementioned contribution in Volume II.

During the successive fort periods of the late 2nd to late 3rd centuries, clearly a shift in the samian supply can be observed. In the late 2nd and early 3rd century the supply from the Lezoux and the Argonne potteries dominated. First the Lezoux potteries led the market in the late 2nd century, corresponding well with the general picture for the Menapian region and more to the south in the North of France, and which contrasts clearly with the situation along the Rhine where the East Gaulish products already prevailed. In the first half of the 3rd century, the Argonne products took the lead in the supply to the Oudenburg fort, which – remarkably – differs strongly from the picture in the North of France.

In the 3rd century, the East Gaulish products gained more and more popularity at the Oudenburg fort. By the late 3rd century, Rheinzabern and Trier largely became the only samian suppliers to the Oudenburg fort – a supremacy seen in all north-west provinces –, with Rheinzabern even dominating over Trier at Oudenburg, mainly in the supply of decorated wares. In their final supplies, a functional difference can be observed: the Trier potteries were mainly responsible for dishes and mortaria, while Rheinzabern offered a more diverse spectrum. Rheinzabern eventually prevailed, mainly in the supply of decorated wares.

The supply of samian to the Oudenburg fort seems to have stopped around c. AD 260 or somewhat later. The latest East Gaulish samian products did not reach the Oudenburg fort possibly related to problematic provisioning due to external threats, an economic situation which might be representative for the North Sea and Channel region.

The available data for the samian wares at the Aardenburg fort seem to represent a very similar evolution in their supplies. The many similarities in the samian spectrum, and also in other pottery categories *e.g.* the North Menapian pottery, point to a strong ceramic connection and identical military pottery supply arrangements for both forts. The Rheinzabern-Trier market distribution from the second half of the 3rd century at both forts with a clear dominance of Rheinzabern stands in strong contrast to the picture retrieved at the Lower Rhine *limes* where Trier clearly prevailed over Rheinzabern. The leading role of Rheinzabern in the 3rd century appears to be characteristic for the whole North Menapian region, not only at the military sites but also at the civil sites, and for the hinterland up to the river Lys, and differs also strongly to the picture retrieved at the *civitates* surrounding the *civitas Menapiorum* to the south and to the east. The remarkable differences the samian supply to the Oudenburg fort shows with the supply to the Lower Rhine *limes* and with the region more to the south clearly testifies to a commercial geography in samian supply and is suggestive for a military-oriented economy for the East Gaulish samian in the North Sea and Channel region (see Volume II, Chapter 1.A.1, Section 13 for a detailed discussion).

#### V.2.6.1.2. The 'samian' supply in the 4th – early 5th centuries

Although the Oudenburg fort had become a remote outpost in a poorly populated region, the supply of samian to the late Roman army at Oudenburg remained fairly strong. On the other hand, the supply to Oudenburg will have benefited from the enhanced accessibility via the tidal channel resulting from the increased marine influence, already from the later 3rd century onwards, making direct sea transports possible. The late Roman 'samian' was entirely supplied by the Argonne workshops and the North Gaulish potteries, with most products originating from the Boulonnais region. The datable roller stamp evidence shows a date range from the second quarter of the 4th until the first decades of the 5th century. The samian in use at the fort at this time included decorated bowls mainly from the Argonne region whereas mortaria came largely from the North Gaulish potteries. The Argonne supply mainly focused on the supply of Chenet 320 bowls, next to a small scale of plain forms.

The late Argonne production was widely distributed, mainly in northern and northeastern Gaul, on all types of sites. While this seems to be the result of a market distribution, Esmonde Cleary argues, based on the large numbers of late Argonne ware on military sites, that its distribution may well be an example of the tax-spine model, as aforementioned the model which seems to characterize most of the late Roman economy in general. This integration of economies encloses a market economy which benefited from the infrastructure of a political economy, with late Argonne wares riding piggyback on the supply lines installed by the state or army, perhaps of grain (Esmonde Cleary 2013, 320-321, 327).

It is however remarkable that only a very limited range of functions is represented by the late Argonne and North Gaulish vessels, and one can wonder whether those supplies were sufficient. The increased significance of the distribution of fine ware products from



Britain will have emerged in part as the continental industries were still continuing at some level whilst other industries had ceased.

While the Oudenburg fort was relatively well-supplied with late Argonne wares, this pottery appears to be only scarcely present at the late Roman British Shore forts. There these products do not seem to be the result of a specific oriented economy but rather retrieved as casual items, possibly within the context of the provisioning of other products, or, more likely, within the context of military contacts. These late Argonne wares might have come along with recruits from the Continent or through larger troop movements as cross-Channel rotations in the fort occupations of the 4th century or exchange practices can be expected based on several finds (*e.g.* the two identical bracelets at Portchester and Oudenburg (Graveyard A); the Much Hadham face-pot at Graveyard B). Moreover, it is important to keep in mind that in the late Roman period the forts functioned more as economic communities on their own. While several products of for example the Romano-British coarse pottery came in from *Britannia* through military personnel, the late Argonne wares may represent such exchange in the other direction. An obvious candidate for exchange contact would be Boulogne. However, Fulford mentions the lack of pottery coming from the northern France in contexts in which late Argonne wares have been found (Fulford 1977, 43). Given that the Oudenburg fort and the British late Roman forts were part of a unified defence system, it is a likely possibility that the contacts, leading to the exchange of late Argonne wares, also happened with the Oudenburg units.

#### V.2.6.2. Amphora supplies and their evolution from the mid- to late Roman period

The detailed study of the amphorae from the south-west corner site equally enables to come to conclusions regarding the evolution of the amphora supplies through the fort's occupation history. For a closer look to the amphora supplies to the Oudenburg fort, compared to other forts in the North Sea and Channel region, we refer to Volume II, Chapter I.B.1, Section 6. What follows, is a summary of this discussion with some necessary parts repeated. All references are in the aforementioned contribution in Volume II.

During the 3rd century the Oudenburg fort was clearly supplied by a variety of products: olive oil, olives, wine and fish-based products originating from *Baetica*, *Gallia Narbonensis*, *Africa* and the Aegean. The Dressel 20 and the Gauloise 4 amphorae dominated, which is typical for many sites of that period in the wider region, civilian or military, as also the Aardenburg fort assemblages evidence. Mediterranean products such as olive oil are known for their popularity in the army (who could afford the supply and the expensive products). The military campaigns by Septimius Severus in attempting the conquest of Scotland (208-211) most likely influenced and intensified the amphora traffic. It can be argued that not the Atlantic was the primary trade route for bulk transports of olive oil directly from *Baetica* to *Britannia*; the trade route via the Rhône-Rhine corridor and by crossing the North Sea and Channel will definitely have been the most important. It seems most likely that the latter trade route will have been the one the Oudenburg fort and the surrounding region benefited of. The same Rhône-Rhine-

North Sea-Channel route brought the Gauloise 4 wine amphorae to *Britannia* and as can be supposed also to Oudenburg.

Most of the amphorae representing long-distance trade at Oudenburg pre-date Postumus (prior to AD 260). However, these vessels could have had a long life-span and were most likely still in reuse until late in the 3rd century. The 4th-century amphora trade seems to be to some level secured at Oudenburg, which is in strong contrast to civil sites in the hinterland. It emphasizes the military orientation of these later supplies.

Clearly the movement of commodities in Mediterranean transport amphorae to army units tailed off in the late Roman period. This may be partly due to structural changes such as the reduced level of state organization of long distance supply and a smaller garrison network around the North Sea that might have been less vital to organize such expensive transports. However, it probably rather relates to a change in consumers and their cuisine. With more local and regional recruitment, wine may have been less a part of the military cultural life of officers and men than products of local/regional brewing and oil production (like the presumed nut oil of the Gauloise 13 amphorae). Local solutions to the decline of exotic amphora-borne commodities are suggested with locally produced fish sauces. At Aardenburg a graffito on a dolium mentions fish sauce as content, while at the Oudenburg fort the actual remains of the production of fish sauce – made from small fishes caught in the North Sea close to the coast – were found in the well OS 22926 of fort period 4 (late 3rd century). With fish sauce produced and consumed at the fort site one can expect that amphorae were not needed for transportation and other containers such as wooden barrels, dolia or other vessels may have fulfilled the storage function. From this perspective, the range of later amphora types reaching the Oudenburg fort could be particularly noteworthy.

#### V.2.7. The impact of the military evolution in the North Sea and Channel region on economics, increasing orientation towards *Britannia* and a trend towards regionalization

##### V.2.7.1. Centralization and increasing impact of the army on trade networks in the North-West

The pottery supplies to the Oudenburg fort in the late 2nd and 3rd century clearly witness of a period in the North-West of Gaul in which production of export wares on the Continent became centralized. On a supply level, there was hardly much variety. The imports at Oudenburg convincingly demonstrate a commercial geography; most of the continental supplies came from only a few large players which distributed their pottery towards specific regions. While the Oudenburg fort was mainly supplied by Lezoux and Argonne in the late 2nd – first half 3rd century, apart from an increasing distribution from Rheinzabern and Trier, the latter centres became the only competitors from the middle of the 3rd century onwards. Apart from these four samian centres, it is remarkable to observe that only La Madeleine could supply some

vessels; this supply was however hardly of any significance<sup>377</sup>. The continental colour-coated and black-slipped ware supply to Oudenburg in the late 2nd and 3rd century was dominated by two major centres: Cologne and Trier. Cologne was the major supplier until the middle of the 3rd century, although Trier products already came in from the late 2nd century onwards. After the middle of the 3rd century, Trier almost completely took over the supply and its imports testify to the great productivity and creativity of the pottery production at Trier in that period. Other Gaulish fine ware imports remain exceptions in the mid-Roman period. As for the mortaria, until the late 3rd century, all continental examples were either supplied by the Bavay-Famars kiln sites or by the Rhine-Meuse-Eifel region. From the latter, the Soller workshops were the main producer and they eventually became the main continental supplier, most likely persisting into the 4th century based on the contextual data at Oudenburg. Flagons from Bavay-Famars, supplied in limited quantities to the Oudenburg fort, most likely piggybacked on the supply line of the mortaria from this production region.

The supplies of the aforementioned major continental players appear to have become increasingly adapted to specific demands of the army. This becomes clear when looking at the functional distributions amongst the samian and the colour-coated/black-slipped wares. While the Rheinzabern and Trier potteries became the main samian suppliers by the middle of the 3rd century, Argonne remained the most important producer of the samian mortaria. The Argonne workshops mainly specialized in small mortaria (but they also produced large ones), possibly because they could not compete with the East Gaulish tablewares. It is noteworthy that the Argonne region continued to be most important for the supply of mortaria in the 4th century. By the later 3rd century, as already mentioned, the imports from the main suppliers Rheinzabern and Trier were functionally geared to one another. Trier specialized in the supply of dishes and mortaria, mainly focused on large examples. Rheinzabern supplied a more varied scale of vessels but was clearly favoured for its decorated wares. As for the colour-coated and black-slipped wares, the centres of Cologne and Trier almost exclusively supplied beakers, next to a few other forms such as dishes but the latter were only distributed from Cologne. The large pottery industries each specialized in the distribution of specific forms, while these potteries also produced other forms. It may be assumed that they adapted their export production to the demands of the army, their largest consumer. This may also imply that the army had a direct say in the trade system and that the named large centres were all integrated in a large-scale military-oriented or political economy. An interesting vessel to mention in this respect is the unique, remarkably decorated dish from Rheinzabern (Plate LXVI), from fort period 3, middle of the 3rd century, and likely to have belonged to an officer or other high-ranked member of the military. The army unit clearly not only had easy access to the more common samian tablewares, also exquisite and rare pieces could be obtained, and it can even be questioned whether this vessel was not specifically made on demand.

It is surprising that the Urmitz/Weissenthurm imports, of which the main production dates from c. AD 190 to 260, are only represented by the latest phases of the production. They are only of some significance in the later 3rd century, and may have still come in in the 4th century (see Volume II, Chapter 1.B.4). By contrast, the *Urmitzer ware* largely supplied the forts of the Upper-Germanic and Raetian limes and also at *Forum Hadriani* these imports are well represented, suggesting their distribution was military-oriented (see Van Kerckhove 2014, 469). That these Urmitz products suddenly reached the Oudenburg fort during the Gallic Empire, may well be related to the increased importance of the Oudenburg fort within a unified Shore defensive system.

The distribution of Mayen wares was also clearly military-oriented; Esmonde Cleary (2013) sees it as another example of the tax-spine model with the distribution of the Mayen pottery benefiting from the transport of *annona* merchandise, as the distribution of Mayen wares was mainly limited to the region along the Rhine course. At Oudenburg, Mayen supplies started to come in during fort period 4, late 3rd century, although still scarcely; in the 4th century though, the Oudenburg fort was clearly imbedded in the Mayen supply network. Across the Channel, the Mayen products were the only coarse *Eifelware* imports of some significance. Their distribution was more or less restricted to the south and south-east of *Britannia*, with according to Tyers, c. 90% from Richborough, Canterbury, Colchester and London (Tyers 1996b, 72). A closer look to the published data from the other Shore forts indicates that Mayen vessels only occur occasionally<sup>378</sup>. It suggests a similar scenario as for the late Argonne wares; the army units of these British shore forts may have retrieved these equally through military contacts, as (gift) exchange or they had travelled with recruits.

#### V.2.7.2. Increasing orientation towards *Britannia*

The first British pottery connection at Oudenburg emerges at fort period 3, around AD 250. When looking at the attested fabrics, the variety the British imports represent – both in source as in form –, immediately stands out. While the attribution to fort period 3 of the few fragments in New Forest colour-coated ware, Colchester colour-coated ware, Oxfordshire black-slipped ware, and Hadham red ware may be questionable, the British link is securely confirmed by the presence of the first products of Dorset BB1, Alice Holt/Farnham and East Anglian greyware, next to Lower Nene Valley and Oxfordshire mortaria, although all representing very small quantities. They point to (military) contacts, rather than trade.

The increase of British imports during fort period 4 clearly testifies to intensified cross-Channel connectivity during the Gallic Empire and later. Certainly the mortaria point in that direction (the several

377 The few attested imports from La Graufesenque, Les Martres-de-Veyre and Blickweiler did not belong to the fort's occupation but are residual items from the pre-fort settlement.

378 At Pevensey, Mayen products appear for the first time in phase 4, dated c. AD 370-400+ (Lyne 2009, 112: Fig. 29, 60). At Burgh Castle, three Mayen vessels were recorded (Johnson 1983a, 91: Fig. 38, 4-6), at the Shore forts at Dover (Philp 2012, 137: Fig. 75: 92) and at Lympne (Cunliffe 1980, 277) only one, and according to the published data none at Reculver (Philp 2005) and Portchester (Cunliffe 1975); it should of course not be forgotten that the research at these forts only yielded very limited pottery assemblages from the late levels.

Oxfordshire, few Lower Nene Valley, one Verulamium and some presumed British mortaria together count for 22.2% of the mortaria MNI of this level) and also the Romano-British fine wares reach in average to 18% of the colour-coated and black-slipped assemblage from that period (mainly from Lower Nene Valley, but also from Colchester, Hadham, New Forest and Oxfordshire). Based on the wide variety of sources and forms of these British imports, it seems unlikely that they represent actual pottery trade. Indirectly however, they may be representative for increased cross-Channel trade as they may have piggybacked on supply ships carrying grain and other goods from British ports. Especially in the period AD 260-274, the North Sea and Channel will have been vital and trade will have been intensified, as *Britannia* was – now even more than ever – economically essential and a very important part of the Gallic Empire. Undoubtedly, harbours along the coast of *Gallia Belgica* and *Germania Inferior* will have been protected, such as the sites of Domburg and Westenschouwen at both sides of the estuary of the Eastern Scheldt in *Germania Inferior* which revealed important peaks for the Gallic Empire in their coin spectra (Boersma 1967, 70, 71, 76). Another possibility for the increase of the British imports during that period, which might be favoured based on the variety in forms and sources, and the preference for the mortarium, a kitchen tool, is that this increase of British imports represents intensified contacts on a military level. This British link is also indicated by some of the presumed military brooches from fort period 4 onwards (cf. Volume II, Chapter 3, Section 3.4.1) and most likely also by the occurrence from that period onwards of jet and jet-like items (cf. Volume II, Chapter 5) and whetstones from the Weald (cf. Volume II, Chapter 10, Section 5.3).

Most of the Romano-British coarse pottery vessels, occurring from the middle of the 3rd century onwards but representing only limited numbers in the pottery assemblages, will neither have been the result of trade in pottery. They mainly originated from the Dorset (BB1), Colchester (BB2) and Alice Holt/Farnham kilns (Alice Holt/Farnham Greyware). The only pottery which could be the result of organized trade is BB1, and more specifically in the latest phase of fort period 4 and during fort period 5 when the North Menapian reduced products fell away. The success of the North Menapian pottery market until the late 3rd century – possibly until the 260s/270s, related to the downfall of the civil population – did not necessitate similar products both in function as in appearance. The Romano-British coarse pottery, coming in during the peak period of the North Menapian industry, possibly came along as casual items with other merchandise, and/or perhaps more likely, was brought along as personal belongings by soldiers. Both mechanisms will probably have occurred but the increase of Romano-British coarse vessels by the late 3rd century might favour the latter within the context of the installation of a unified Shore system under the Gallic Empire. The soldiers who brought along these products were most likely recruits from *Britannia* or were members of rotational troops in the Channel region.

In the 4th century, the Oudenburg fort became strongly oriented towards *Britannia*. Fine ware imports from Oxfordshire and the Lower Nene Valley came in in considerable quantities; Much Hadham, New Forest and Colchester equally supplied several vessels. Alice Holt/Farnham, Colchester and Dorset (BB1) supplied

most of the coarse vessels, and when the assumed Romano-British mortaria (for which the origin is uncertain but which show a clear Romano-British repertoire) are counted in, the mortaria supplies from the Rhineland and from *Britannia* were evenly important.

The demand for decorated fine vessels in the 4th century was partly filled in by the supplies from the continental late Argonne samian kilns (with which most likely Argonne CC/BS came along), next to some North Gaulish 'samian' products, and partly by the Romano-British kiln centres, mainly those of Oxfordshire and the Nene Valley. While the mid-Roman continental fine ware centres only supplied beakers, except for a few dishes, the 4th-century Romano-British potteries distributed a wide range of forms, representing different functions, from tablewares to the preparation of food (mortaria). Particularly the Oxfordshire and Hadham wares stand out by their very wide variety of forms, some clearly reminiscent of samian predecessors, others being new forms. The variety in sources and the diversity in supplied forms are in strong contrast with the continental supplies which were clearly centralized and clearly functionally related: the late Argonne workshops mainly distributing decorated bowls and the North Gaulish potteries specialized in mortaria. It indicates that different supply mechanisms were concerned for the continental supplies and the British supplies. However, the significance of this presence of Romano-British wares must be gauged by the fact that these types were themselves widely distributed across Britain and the industries were quite prolific, several into the latest Roman phase, notably Oxfordshire ware and BB1. Accordingly, with a wide circulation some significant presence at sites on the near Continent is to be expected, even more so in a regional economy where supply of commodities was becoming less secure and sources on the Continent declining. Whether orders for pottery were overseen centrally or by local quartermasters or simply arrived through casual shipping arrangements and cabotage at this time is hard to discern on present evidence. It seems likely less pottery was being produced than met demand. A general lessening of availability was probably true in respect of other commodities as well. Regional and local solutions were required if gaps were to be filled and the production of local fish sauces is one response, as are the industrial crafts of the fort. Returning to pottery it must be borne in mind that tastes, foods and consumption preferences were changing as were the identities of the fort inhabitants; different traditions and habits were more in evidence through the latest decades of occupation at the fort.

The orientation of the Oudenburg troops towards *Britannia* is obviously not surprising given the specific position the Oudenburg fort occupied, not only geographically on the transition between the Continent and *Britannia*, but also, and even more important, as part of a unified defensive Shore system, certainly from the later 3rd century onwards. While the connection with *Britannia* in its first stage, from the middle of the 3rd century, most likely emerged through contacts of military personnel, these contacts clearly increased under the Gallic Empire with the unification of the Channel defensive system. In its later stage, in the first half of the 4th century, the cross-Channel connection clearly involved pottery trade. Not only was the 'Saxon Shore' system organized on a military level, it was undeniably also organized on an economic one. The enhanced accessibility by sea via tidal channels near the large

consumption sites will have likely assisted the late Roman trade. It is unclear to what degree the Romano-British imports still came in at fort period 5B from AD 380 onwards; the typological datings of these wares are not narrow enough as a result of which attested vessels at fort level 5B may be residual from fort level 5A. British imports most likely still came in, but in this final stage they may again reflect military contacts, not trade.

### V.2.7.3. Trend towards increasing regionalization

Several direct and indirect forms of archaeological evidence at the Oudenburg fort point to an increasing regionalization of the economy in the North-West, a trend which already started in the 3rd century, became very clear in the 4th century and increased by the late 4th century.

In the course of the 3rd century large beakers, in handmade pottery or reduced wheel-turned wares, became increasingly important and occur in the same contexts as the fine ware beakers. More and more larger beakers, also in the fine wares, were favoured over smaller cups. In the 4th century cups no longer occurred while late samian wares were no longer acquired as drinking vessels. From the middle of the 3rd century onwards, there is also a remarkable decrease in the use of flagons (cf. Volume II, Chapter 1.B.2). Together with a stop in the supply of wine amphorae in the late 3rd century, these elements may very well be indicative for changing drinking habits and that locally produced beer became favoured over imported wine.

The complete absence of Dressel 23 amphorae at the Oudenburg fort points to a complete stop in the supply of olive oil from *Baetica* by the late 3rd century. The Gauloise 13 amphorae, supplied from the Cambrai region from the middle of the 3rd century onwards, probably represents the substitution of the Mediterranean olive oil by nut-oil. As already mentioned, the small fish remains found in the central well OS 22926 of fort period 4 point to the production of local fish products, also evidenced at the Aardenburg fort. This probably explains that the supply of amphorae with fish products fell back; only one late Roman *Baetican* amphora for fish sauce was found at the fort.

The indications '*away from the Mediterranean culture*', to take the words of Halsall (2007, 85-86), suggest that certainly from the middle of the 3rd century onwards recruitment mainly became regionally organized. As will be clear further, also spatial and structural evidence (cf. lay-out of living units, construction of hearth structures) points in that direction.

By the late 4th century, the regular supplies of late samian from the Argonne and the Boulonnais region, of coarse vessels from Mayen, and the distribution of common wares from – most likely – the South Menapian region, evidence that the army unit was still embedded in a (supra-)regional trade network, or as Esmonde Cleary (2013, 426) called it, that the region remained integrated at a (wider) regional level.

## V.3. Material culture and 'military' identities

### V.3.1. Material culture and (military) identities. An introduction

This section will investigate what the material culture can tell us about the fort's inhabitants at Oudenburg, their 'daily life' and the evolution it underwent through time, to come to some insights into the military identities in the North Sea and Channel region. Based on the emphasis on practice and in fact the idea that one can understand who people are from what they do (cf. Gardner 2007a, 19), the material culture is studied to come to glimpses of the military identities. As such identities are seen as a '*major dimension* [in the] *meanings of artefacts*' (cf. Gardner 2007a, 67). It is however important to accept that material culture has its limitations in terms of identification, and this will also become clear for the Oudenburg assemblage. Inevitably, through archaeology identity can be considered mainly at a general level and can yield insights primarily into 'community identity' (cf. Collins 2008, 49; see also Haynes 1999a, 9-10), while it is difficult to assess individual identities (Collins 2008, 47-48). However, sometimes a specific artefact can reveal a glimpse of an individual identity and it is therefore important not only to look at general trends but also to have an eye for specific artefacts in specific contexts, which can only be achieved through a complete view on and a full analysis of the assemblages.

We will focus on three aspects of identity. First, what light can the archaeological evidence shed upon the military character of the units and their evolution? Second, a variety of finds demonstrates the clear presence of women and children at the fort precinct. How and to what level can and should this gender aspect be understood? Third, how can the chronology and the contextualisation of the finds at Oudenburg contribute to the debate of the Germanization of the Roman army?

Identity is a multi-layered and very complex aspect of human cultural life which cannot be simplified. Group identities define themselves as 'belonging to a certain group' and are constructed through interaction. They are therefore not static but influential and part of a continual process (Díaz-Andreu and Lucy 2005, 1-2; cf. Eckardt 2014, 4-7). Gardner sees identity as the connection between agency and structure (Gardner 2002; 2007a, 18, 239 following the social structuration theory of Giddens (1979)). He defines 'agency' as the 'active involvement' comprising 'what people do' and their 'capacity for acting in a particular, self-conscious way' through an 'ongoing relationship with the wider world' (or the 'structure'). As such, agents are shaped by and determined by identities, and changing social and cultural relationships through time lead to evolving identities. Identification can therefore be seen as '*the practice of (self-)description on the basis of similarity and difference*' (Eckardt 2014, 5). Not all identities are freely chosen, some can be determined by others.

Identity can be considered at different levels: at the level of the individual, the group, the unit, the society (cf. also the micro, meso and macro level in the stratified model of identification in later Roman Britain by Gardner 2007a, 240; cf. Gardner 2002, 345-346).



At every level the identity can involve several, co-existing, identities: the identity perceived by oneself or the group, the identity perceived by others and the 'appointed' identity. A 'non-soldier' (partly) working at the fort can be considered by the soldiers as a civilian, by the *vicani* as a member of the army and by the individual himself as an entrepreneur who considers himself as a typical civilian or as a member of the army. It even gets more complicated when a soldier originates from another part of the Empire, when he is Germanic or when he comes from a frontier region and has a shared origin.

Ethnicity is only one dimension and a small aspect of identity. Ethnicity is often overestimated and is not necessarily linked with genetics or geographical origins, as it is '*a self-conscious identification based on the expression of a real or assumed shared culture and common descent*' (Gardner 1999, 405, after Jones 1997, 84; cf. Shennan (ed.) 1989, 14; cf. Gardner 2007a, 198; see for the complicated relationship between social and biological origin: Eckardt 2014, 58-59). Individuals can have multiple ethnicities '*expressing different group identities in different contexts of interaction*' (Gardner 2007a, 199). Ethnicity is as such hard to grasp through archaeological evidence (see also Eckardt 2014, 27-28). A Germanic-rooted soldier can have been integrated into the Roman army in a way that he considered himself primarily as a Roman. Halsall (2006, 284) further explains the notion of ethnicity and the relation with material culture: '*Ethnicity, as an identity, is a state of mind. Material culture may very well be used actively to create such categories, to underline these identities, but if there is a link between artefacts and ethnicity it is with this mental state of affairs, and not with the birthplace of one's ancestors*'. In Chapter IV.3.2 the difficulties were already stressed concerning the ethnic interpretation of certain grave goods of the late Roman Oudenburg Graveyard A of which the Germanic character has long been undisputed.

Analyzing identities in the late Roman period is even more difficult, not least because of the scarcity of literary and epigraphic sources and their ambiguity (cf. Gardner 2001). Gardner (1999) has demonstrated the importance of the use of material culture in the expression and construction of identities and as such the indications this material culture offers to unravel the complex and multi-dimensional nature of identity.

The term 'military identities' is used here as a broad term to focus on the (everyday) life of the fort inhabitants in all its aspects and as such it goes beyond the military identity as defined as a '*construction which simplified a more complex set of relationships between soldiers and other representatives on the one hand, and within the category of soldiers on the other*' (cf. Gardner 2007a, 219). The military identity is rather '*an abstraction of a complex cluster of associated identities and expressed in specific contexts such as in written sources or in contact with other sites*' (Gardner 2007a, 224). The Roman army was permeated by structures. As a state institution it actively sought to bind soldiers to its systems, systems that were about loyalty and belonging, utter commitment and obedience to hierarchy and authority (and ultimately the Emperor), camaraderie, rules and expectations. Soldiers of all ranks were enveloped in these systems. It achieved cohesion and a sense of itself as distinctive via the oath of allegiance, promoting loyalty to one's unit and pride in 'the colours', 'the standard' of the unit, etc. and in shared experience and statuses,

plus an awareness amongst soldiers of dependency upon each other, all these aspects thereby tying individuals together, or at least intending so. This package of structures provided soldiers with the essence of their military-professional-institutional identity. Each soldier also had an 'everyday' life beside 'work', evenly influenced by these matters but also related to other aspects of life, such as tradition and roots (what we might today call 'heritage'), family, etc. Each individual had his specific military identity, the fort community also had its military identity and moreover consisted of multiple identities, not least since the fort inhabitants were not only soldiers<sup>379</sup>, as will become clear further.

Cunliffe (1975, 422-431) suggested from the changing composition of the small find assemblages at Portchester that the occupation of the fort had different degrees of military and civilian occupation at different times. Besuijen (2008, 80) concluded from the high percentage of 'non-military' metal finds at Aardenburg that the fort did not have a purely military function and that the metal assemblages rather pointed to a civilian occupation. However, living in a fort included so much more than 'military' activities. Soldiers obviously ate, drank, had specific tasks, had religious activities, relaxed and played games, and were in contact with 'non-military' people. Hence, items of the everyday life like vessels, furniture, construction elements, gaming items, etc. will not have differed, or at least not significantly, from that of civilian life, at least not from that of civilians of certain status. It is therefore important to recognize that for most of the daily life within the fort walls there is no such thing as 'military'<sup>380</sup> versus 'civilian' and to acknowledge that material culture cannot be used in simple dichotomy interpretations like 'civilian' versus 'military'. On the other hand, assemblages can have a 'military' or 'civilian' character, like the samian evidence which reflects important differences (cf. Willis 2005). Communities were (and are) complex and diverse. These military communities became even more multi-layered in the late Roman period or as Gardner (2001, 43-44) has stated: '*The military community of the Roman world [...] was a complex institution which co-existed and interacted with other social groups in the Roman world, through its members who were part of such groups at the same time as being soldiers*'.

To get insights into the identity (or identities) of the fort's inhabitants it is a *condition sine qua non* to involve the total spectrum of finds to build this picture (cf. also Allason-Jones 2001). '*Through looking at cultural items such as dress, spatial layout and architecture and considering them as the media through which many social relationships and interactions are negotiated, archaeology can detail how the material world both engages, and is engaged in, the articulation of social identity, both of the individual and of the group*' (Díaz-Andreu and Lucy 2005, 9). It is primordial that the material culture is studied contextually since the meaning of objects can differ depending on their context. Or as Díaz-Andreu describes it: '*Objects provide meanings that are inserted into a net of identities linked together by codes. Yet, human actions*

379 More and more the notice prevails that 'the military' represents 'military communities, including non-combatants and dependants' as James (2001, 84) defines it.

380 See for the problems related to the label 'military': Gardner 2007a, 261-264.

entail decisions on how to use the rules and how the messages they carry are understood. In practice, therefore, codes are constantly subjected to negotiation and, thus, exposed to endless redefinition' (Díaz-Andreu 2005, 22). Eckardt (2014, 9, 20) emphasizes that there is no simple link between object and identity and that only through the contextual analysis of artefactual patterns the meaning of objects in terms of identity can be explored, as will also be clear from the Oudenburg assemblage.

The following study is based on the structural evidence from the Oudenburg fort, its graveyards and the extramural settlement as outlined above, and on the related material culture studied in depth in Volume II.

### V.3.2. 'Military' identities and changing army units in the successive Oudenburg forts

No literary evidence mentions the Oudenburg fort – its ancient name remains unknown<sup>381</sup> –, nor is there any epigraphic or other tangible evidence for the names of the units stationed here. Without such sources the picture remains inevitably very fragmentary.

In trying to grasp identities at the Oudenburg fort, material culture in its totality is taken into account. Nevertheless, the search for socio-cultural identities regarding the fort occupations of the late 2nd and 3rd centuries is inevitably largely based on specific prominent objects. It includes the risk that extraordinary items are over-emphasized and that they are taken as the representation in a general manner of the community in question. The later in time, the more finds are preserved and the more can be learned from the respective fort communities. In trying to reconstruct identities, the association with graveyards is most important, as also Gardner emphasized (Gardner 2007a, 88; 2007b, 670-671). Without much insights into the related graves of fort periods 1 to 4, the search of identities for these fort communities largely results in isolated insights. The association at Oudenburg for the 4th- and early 5th-century occupation with the deceased enables us to come to larger conclusions. That said it should be remembered that the burial is also biased by the funerary ritual and that as such from the graves only or at least largely a rhetorical impression of identity can be achieved.

#### V.3.2.1. Army units in the North Sea and Channel region

Precise information on the army units in the North Sea and Channel region is scarce although archaeological evidence yields several indications for the general picture of the coastal defence from the late 2nd to early 5th century AD. Dhaze (2011; 2019) has pointed out that within the context of a coastal defence the units had to be very mobile. Therefore, the effort of lightly armed cavalry units or

of mixed units consisting of infantry and lightly armed cavalry was ideal, not only to intercept small-scale raids but also for patrolling the coastline (Dhaze 2011, 131).

On the coastal (military) sites in *Germania Inferior* tile stamps refer to the Lower Germanic fleet *Classis Germanica* (CGPF) (at Monster-Poeldijk, Naaldwijk, Oostkapelle-Oranjezon, Brittenburg, Goedereede-Oude Wereld), the Lower Germanic army (EXGERINF) (at Brittenburg, Goedereede-Oude Wereld), the 30th legion (LEGIOXXX) (at Brittenburg, Oostvoorne) and the *Legio I Minervia Pia Fidelis* (LIM) (at Brittenburg) (cf. Dhaze 2011 and 2019, with references). The PRIMCORS stamp at Naaldwijk remains unattributed (cf. De Poorter and Claeys 1989, 149-150). Only at the mini-castellum of The Hague-Ockenburg, dated to c. AD 150-180, the evidence for the unit character is more tangible. The many horse gear finds and the presence of horse burials outside the fortlet seem to indicate that a small cavalry unit was stationed here. Based on the find of a graffito on a mortarium referring to a *centuria* of the *cohors VI Brittonum* (Waasdorp 2012) it has been suggested that it was a detachment of this unit. Furthermore, Ivleva has argued that the *cohors* itself may have been stationed at Naaldwijk, where a military installation is suggested but not yet found (Ivleva 2012, 133-134).

As for the other forts at *Gallia Belgica / Belgica Secunda*, Aardenburg has yielded tile stamps. Two tiles bear the PRIMACORT stamp of which the identification has been debated – it can be read as *Prima Cohors Thracum* or *Prima Cohors Tungrorum* (Dhaze 2011, 295 and Casestudie 2, 17-18, with respective references). The several, aforementioned C II A and C II S tile stamps found at the fort and its vicinity and which may possibly be read respectively as *Cohors Secunda Antoniniana* and *Cohors Secunda Severiana*, probably indicate that these units of the regular army were stationed here. Based on the many horse gear trapping finds, in combination with the c. 3.6 ha size of the fort, it has been assumed that it was occupied by a *cohors equitata quingenaria* (Dhaze 2011; 2019; van Dierendonck and Vos 2013). Boulogne was the main base of the *Classis Britannica*, with according to Seillier (2004, 4) up to 2000 to 2500 soldiers stationed at the fort. Whether it remained a fleet base in the 4th century is uncertain, but by that time certainly units of the land army were stationed there (Dhaze 2011, 325).

There is no certainty to which military installations the three names listed in the *Notitia Dignitatum* can be connected. Nevertheless, the presence of fleet (*classis Sambrica*), cavalry (*equites Dalmatae*) and infantry or mixed units (*milites Nerviorum*) under the *dux Belgicae Secundae* makes clear that the coastal defence of the 4th century was a joint effort of fleet, cavalry and infantry.

For two of the British Shore forts of the first generation there is evidence for occupation by a *cohors*: the *cohors I Aquitanorum* at Brancaster (Hinchliffe and Sparey-Green 1985, 13) and the *cohors I Baetasiorum* at Reculver which probably stayed at its post throughout the life of the fort (Philp 2005). The units of the 4th-century Shore forts are known through the *Notitia Dignitatum* although their attribution is not always straightforward. If Brancaster can be identified as *Branodunum* then a unit of Dalmatic

381 As mentioned in Chapter I (Section I.4.2) the name Oudenburg derives from *Aldenborgh*, a medieval toponym first mentioned for this location in 866. The location of Oudenburg does not occur on the *Tabula Peutingeriana* (for *Gallia Belgica*, on the territory of Belgium, only *Viroviacum* (Wervik), *Turnaco* (Doornik), *Atuatuca Tungrorum* (Tongeren) and *Vodgoriacum* (Waudrez) are located) and neither on the Antonine Itinerary.

cavalry was stationed here. The same can be said of Burgh Castle if it can be identified as *Garrianum*. At Bradwell it was possibly the *numerus Fortensium* that was stationed here, at Portchester the *numerus Exploratorum*. Lympne, of which is assumed that it was also a fleet base of the *Classis Britannica* in the 2nd century (and later?), gave home to *numeri Turnacensium*. At Richborough, strategically the most important fort, evidently the best troops were stationed, in this case the second legion (*Legio II Augusta*). Dover, the main fleet base of the *Classis Britannica* at the British side in the 2nd century, was in the 4th century the fort of the *militem Tungricorum* (see Dhaeze 2011; 2019 for references). Pevensey in the period c. AD 300-370 was possibly manned by the *milites Anderetianorum* and the *classis Anderetianorum* together, and in the period c. AD 370-400 by the *numerus Abulcorum* (Lyne 2009).

This short overview makes clear that the troops under the British *comes Litoris Saxonici* were diverse; he had control over a legion, two cavalry units and several types of smaller units like *numeri*, *milites* and a cohort – the composition of the latter units however remains unclear (cf. Jones 1986)<sup>382</sup>. They were *limitanei* (cf. Hassall 2004, 180), static frontier forces who had as their main task policing the frontier and stopping and countering raids (Elton 1996, 204-205). While the army units of the British Shore forts are largely known, at least by name, the evidence for the (late) Roman continental Shore forts is very scarce.

### V.3.2.2. The successive troops at Oudenburg

The size of the Oudenburg fort gives an indication of its unit size. For fort periods 4 and 5 the contours of the stone fort are determined. For fort periods 2 and 3 the same dimensions and surface can be supposed as remains of inner building and earthen rampart at the southwestern and northeastern corners of the fort precinct assume a similar location of the defence system. Only for fort period 1 the size of the fort remains uncertain; the defensive ditch at the north side appears to be situated much more to the south than at the successive forts but due to a lack of hard evidence for the localization of the southern and eastern fort perimeter it cannot be deduced whether this implies a smaller fort or a different positioning. The surface of the Oudenburg fort precinct of fort periods 2 to 5 can be determined, though. Being c. 2.7 ha, the surface points to an auxiliary (for the 3rd century), and later a *numerus* (from the 4th century onwards) army unit of at least c. 500 men. As the 4th- early 5th-century Oudenburg fort was part of a 'Saxon Shore system', we can assume that – certainly for fort period 5A (c. 325/330 – 360s) – the troops at Oudenburg were *limitanei*.

The evolution of the Oudenburg fort is marked by a constant remodelling and rearrangement of the fort precinct. Especially the 3rd-century occupation shows a rapid sequence of structural changes in the internal layout. Fort period 2, dated to c. AD 220-245/250, shows two major phases of which the first one, fort period 2A, was almost completely wiped out by the construction

of the military hospital of fort level 2B. The subsequent fort period 3, dated to c. AD 245/250-260, reveals at least three building phases. In the 260s the fort precinct again completely changed structurally. As these subsequent changes were all profound, consisting of a complete rebuilding of the area and often displaying a changing orientation of the structures, they obviously resulted from a changing need of the military base which can be related to changing army units. As Gardner already stated, radical evolutions in constructions, variation in places and structural changes in layout can be regarded as materialisations of processes in social identities (cf. Gardner 2007a, 113-114).

At the same time, the rapidity in the troop shifts of the 3rd century at Oudenburg reflects the rate of changing political decisions at the time and as such the political turmoil in the second and third quarter of the 3rd century. The first stone fort (fort period 4), erected under Postumus, shows a different picture during its occupation. The internal layout remained at large the same, except for some renovations and constructional additions. It indicates stability and an army unit kept in place.

Apart from the structures related to the defence system, during the subsequent fort periods the structural remains and/or the material culture, in a higher or lesser degree, testify to the military character of the site. The amount of military finds is obviously not only related to the preservation of the respective levels – with fort level 1 evidently less preserved due to the disturbances from the later levels – but also to the functional implementation of the uncovered areas of the fort, as will be clear further.

#### V.3.2.2.1. The units of the late 2nd-century and 3rd-century forts at Oudenburg

In fort period 1, dated to the late 2nd century AD (c. AD 180-200), at least Construction I at the south-west corner site represents without any doubt a 'classical' *contubernium* in which the arrangement in an *arma* and *papilio* can be recognized. As generally accepted, such a unit within a barrack block accommodated eight men. The building technique with sill beams emphasizes its military character. Only one object from this level can be identified as 'military', although such items also occur at civil sites. A large-sized copper alloy round mount with two studs (CA.A/H44) has been recovered from the abandonment level of fort level 1. Its size identifies it undoubtedly as a horse gear trapping of the type common in the late 2nd and 3rd centuries (Volume II, Chapter 3, Section 3.3). Although an isolated find – but one must remember that the earliest level is poorly preserved – its presence is suggestive for cavalry at the earliest fort.

In fort period 2, dated to c. AD 220-245/250, the hospital complex represents a layout only known from military bases. For its construction both the sill beam and post-trench building technique were used. Military items found at this level at the south-west corner site include a scabbard chape, three spear heads, a cuirass hinge and a cuirass phalera (see Table 9). The cuirass hinge can be related to the *lorica segmentata* (laminated strip-armour), the cuirass phalera was one of six or nine worn as a breast plate on a *lorica hamata* (mail armour) or *squamata* (scale armour). Bishop and Coulston (2006, 171-172) have demonstrated that *lorica segmentata* continued to

382 In the *Notitia Dignitatum* it is striking that especially for the Gallic provinces a lot of *milites* are listed. According to Jones (1986, 610) the term *numeri* became, from the 4th century onwards, a general, vague title covering units of all kinds, without specific notion of unit composition.

Table 9. Overview of the military items in copper alloy, iron and worked animal products recovered at the south-west corner site (for details: see Volume II, Chapters 3 and 4).

find domaine / category	item (found complete or as fragment)	TOTAL n	L1	FL2	FL3	FL4	FL5	5+POST/POST
<b>military life</b>								
<i>military equipment</i>								
	scabbard chape (bone / copper alloy / iron)	8		1	2	2	1	2
	scabbard runner (bone / copper alloy)	2			1			1
	sword hilt grip (bone)	3				2		1
	helmet fragment (copper alloy)	3				2		1
	spearhead (iron)	19		3	3	6	6	1
	spear(?) ferrule (iron)	2					1	1
<i>military dress</i>								
	cuirass hinge (copper alloy)	1		1				
	baldric fitting (bone/copper alloy)	2				1		1
	baldric phalera (copper alloy)	9			1	2	5	1
	strap-end (copper alloy)	3					3	
	phalera (military decoration) (copper alloy)	1		1				
	armour (iron)							
	-lorica segmentata	2					2	
	-lorica squamata	1				1		
	-lorica hamata	10				2	3	5
<b>military life / transport</b>								
	spur (?) (copper alloy)	2					1	1
	horse trappings (/ belt mounts) (copper alloy)	76	1		6	35	15	19
<b>TOTAL</b>		<b>144</b>	<b>1</b>	<b>6</b>	<b>13</b>	<b>53</b>	<b>37</b>	<b>34</b>

be in use until the 3rd century, in contrast to what has long been thought, and this is also evidenced by the finds at Oudenburg. Moreover, they emphasize that the laminated strip-armour was not only used by legionaries as has long been assumed (Allason-Jones 2001, 23; see e.g. Maxfield 1986). The tile stamp C-A found at the Oudenburg site and most likely to be attributed to fort period 2 in correspondance to similar stamps at the Aardenburg fort of that period, may refer to a *cohors antoniniana* stationed at the fort around AD 220 but as discussed before (see Chapter V.1.3) this should not necessarily be the case.

Fort period 3, dated to c. AD 250-260, shows a rapid change of troops within a time-span of possibly only a decade, maybe two at the maximum. The constructions of the successive building phases at the south-west corner site again display a mix of building techniques: sill beams and post-trench technique, often within the same structure. In fort period 3B there are indications that the sequence of rooms belonged to a *centurio* or officer unit; other elements may point to stable barracks, although the evidence is scarce. Military items are two scabbard chapes, one scabbard runner, three spear heads and a strap-end (see Table 9). This level also yielded six copper alloy mounts; although all of small size (cf. the discussion in Volume II, Chapter 3, Section 3.3) they are likely to have been horse trappings, indicative of cavalry at this fort period.

Military dress accessories and military equipment are more abundant at fort period 4, dated to c. AD 260-290/300. Their significant presence may reflect the longer duration of the occupation, but is probably also related to the functionality of the studied areas. Both the south-west corner site and the north-east site Kapellestraat where military items were well-represented, were workshop areas where the presence of many of these items can also be explained as scrap metal, items for repair and/or newly made products. At the south-west corner site two scabbard chapes, two sword or dagger hilt grips, two helmet fragments presumably of the late Roman Intercisa / Worms type, six spear heads, one baldric phalera, one armour fragment of *lorica squamata* and two armour fragments of *lorica hamata* are indicative for military presence (see Table 9). The coexistence of both armours probably reflects the mixed character of the unit. Cavalry men required good mobility and will have preferred the more flexible *lorica hamata* or chain mail. At the northeastern site Kapellestraat a miniature *beneficiarius* lance head draws attention as it was a symbol of imperial power reserved for privileged higher-ranked soldiers which were discharged from the daily military duties. Fort period 4 is further characterized by the presence of six crossbow brooches, all of the 'light' or 'early' type dated prior to c. AD 280. As Van Thienen (2016; 2017a) has argued, the crossbow brooch of this type was worn by common soldiers of low-ranking. It was only by the 4th century that the cultural



connotation of the crossbow brooch changed and that it became a dress item exclusively reserved for military officers and dignitaries.

Mainly the large amount of horse trappings that can be attributed to fort period 4, both at the south-west corner site and at the north-east site Kapellestraat, are significant. Such an important portion could also be recognized at the Aardenburg fort of that period. At the Oudenburg south-west corner site, a deposition of five horse gear trappings in a small, shallow pit within building Unit IX of this period, is very meaningful. Buried close to the hearth at the centre of this building, it can be interpreted as a votive offering and as such it emphasizes the importance of horse gear for these soldiers. Within this military context, also the carts of which the significant number of bridle rings derived, testify of units with cavalry. The bridle rings appear in the assemblages of fort period 3 and are well-represented from fort period 4 onwards.

These indications at the successive forts of the late 2nd and 3rd century all seem to point to the presence of successive units of the type *cohors equitata quingenaria*, mixed units of both foot soldiers and horsemen.

One tile stamp, occurring twice at the south-west corner site, can most likely be attributed to fort period 4.<sup>383</sup> However, it does not seem to refer to a unit name. The stamp has a circular character of which the four letters can most likely be read as I V S T. Clerbaut has argued that it should be interpreted as a control stamp with the abbreviation of 'IVSTVM FECIT' ('he has made (it) well/according to the right standards', freely translated as 'made correctly'). This full text can be read on a comparable circular stamp from the fort at Böckingen (G) (see Steime 1898, Taf. IV, 11) (see for the detailed discussion of this stamp and its find context: Volume II, Chapter 9).

#### V.3.2.2.2. Units at the late Roman fort of the 4th – early 5th century

While the size of the late Roman army remains unclear but was likely still expanding (cf. Heather 2005, 63–64) and the total number of units increased significantly, it is widely accepted that between the late 3rd and the end of the 4th century there has been a considerable reduction in unit strength (see Nicasie 1998, 67–74; Coello 1996, 60–62; Southern and Dixon 1996, 28; Esmonde Cleary 1989, 5–6). The later Roman barrack-plans along Hadrian's Wall also indicate a reduction in the strengths of units (Bidwell and Hodgson 2009, 33–34). The extent of the decline in unit sizes, however, is still a matter of debate (cf. e.g. Collins 2012, 159–160).

The installation of a bath house within the newly occupied fort around AD 325/330 suggests a smaller provision of accommodation at the fort precinct resulting from a reduction in unit size. A bath house required space. With a fort precinct which remained of the same size as during the preceding fort periods, this evidently implies that by the 4th century less space was needed for the barrack units.

On the other hand, the large number of burials (at Graveyard A plus the unknown number of Graveyard C), the number of crossbow brooches at Graveyard A and thus the presence of several higher-ranked officers, the wide range of long-distance imports and the quality of decoration in the bath house with Mediterranean stone, still points to a very significant, large fort community at fort period 5A. Also at fort period 5B there was obviously less space needed for accommodation since the south-west corner of the fort could be reserved for corralling and stabling horses.

At first sight, a reduction of unit size may be deduced from the amount of pottery at fort period 5 at the south-west corner site. The counts are significantly lower than at the previous levels, the more since the typological study of the pottery – confirmed by analyses of key context assemblages – demonstrates the high degree of residuality at this level. It can be accepted that all North Menapian pottery, both the handmade and reduced wheel-turned variant, is residual at fort level 5. Although the functionality of the area (first as a bath house, later as animal compounds) will have influenced the rubbish disposal practices for this area, the amount of pottery seen in relation to the much longer time-span of this period in comparison to the previous fort periods, suggests that the pottery assemblages significantly decreased, although, certainly at fort period 5A, pottery supplies were still largely available. On the other hand, it should be noted that it cannot be quantified how much pottery from fort level 5 ended up in the post-Roman level.

Since closed contexts for fort period 5 are limited, late Roman finds from this level which do not have a specific typological dating cannot be more specifically attributed to phase 5A or 5B. Examples are the presumed spur fragment (and another one from the post-Roman level) and a miniature shield-shaped baldric phalera (cf. Volume II, Chapter 3, Section 3.3). Only one crossbow brooch of the developed type (AD 280–320) can be attributed to fort period 5A based on stratified grounds. However, another three crossbow brooches – two from the post-Roman level and one unstratified find – should definitely be attributed to fort period 5 based on typology. These 'developed' and 'heavy' crossbow brooches emphasize the picture retrieved from Graveyard A (and C) in that there is a striking presence of higher-ranked military, symbolized and visualized by these crossbow brooches. Some other finds from the post-Roman level will also have originally belonged to fort period 5B: a cross-shaped scabbard chape dated to the end of the 4th – end 5th/start 6th century and two amphora-shaped strap-ends dated to c. AD 350–390 (although for the latter a date at the end of fort period 5A cannot entirely be excluded). With two *lorica segmentata* fragments retrieved from fort level 5 the possibility they are disturbed from an earlier level cannot be ruled out. This is also possible with the three *lorica hamata* or chain mail fragments from fort level 5 and five such fragments from the post-Roman level; however, from the latter, four examples display copper rivets in the mail iron rings which has been recognized as a late Roman phenomenon. Four spear heads and two spear ferrules can be attributed to fort period 5 based on stratified evidence; three spear heads and one ferrule from the post-Roman level may also have belonged to this period. The many horse gear trappings recovered from fort level 5, of types known from the (later) 2nd and 3rd centuries, may indicate that these types were still common in the 4th century. Reference material for the late Roman period is scarce (cf.

<sup>383</sup> The tile in question was used as recycled building material for the construction of one of the walls of the *praefurnium* of the bath house of fort period 5A. Another tile fragment with the same stamp was found in the post-Roman level, clearly a residual piece.

Bishop and Coulston 2006, 227) and although it cannot be excluded that they are all residual items from earlier levels, it is likely that this type of horse trappings continued to be in use. From his study on horse gear at the Obergermanisch-Raetische *limes*, Gschwind (1998) concluded that the horse gear types which were introduced in the early 3rd century continued to circulate until the early 4th century. The ten bridle rings found at this level, together with thirteen examples from the post-Roman level which may originally have belonged to fort level 5, also point to the presence of horses. Several of these finds may have been worn by the horses which were presumably stabled at the south-west corner area in fort period 5B. The most convincing evidence for mounted horses in this fort period, though, comes from leather shoes from fort period 5B and recovered from the inner well of the double well structure OS 2562. The vertical split on either side of the back seam of three of these shoes has been identified by van Driel-Murray as vents for the attachment of spurs (see Volume II, Chapter 8)<sup>384</sup>. In the late Roman period the Empire will have become more dependent on speedy responses to incursions or threats by well-equipped horse mounted units fast moving and comparatively modest in number.

### V.3.3. Changing communities at the Oudenburg fort and their gender aspect

#### V.3.3.1. Female presence at forts: the current state of knowledge and thinking

The idea that women were present within forts has been accepted now by most scholars; in what conditions their presence should be understood is still difficult to assess and a matter of debate. More and more, however, the notice prevails that not only the surrounding settlements or *vici*, but also the forts and fortresses themselves were socially complex worlds and that the traditionally seen dichotomy 'inside military / outside civilian' is obsolete and no longer tenable (see Allison 2013, 31). Literary references to the presence of women at military bases are scarce and are silent about their accommodation. Several letters of the large corpus of Vindolanda (UK) writing tablets, dated to the late 1st – early 2nd century, do give indications for the presence of women as members of the fort community and with close ties of family and friendship with the soldiers (Greene 2017, 236–256; see also Allason-Jones 1999). Wooden tablets from the 1st-century legionary fortress at Vindonissa (CH) mention women employed within the fort walls (Speidel 1996, 55, 80). Epigraphic evidence for women, children and families of soldiers during active military service is increasing (see Allason-Jones 1999; 2017; Klein 2017) and more and more archaeological data are at hand indicating the sustained presence of women inside the fort. Allison (2013, 240) argues for the presence of women and families within the fort perimeter as a 'normal military practice' from at least the second half of the 1st century onwards. For the German military bases she investigated, she concluded an average of over 5% of the occupation *intra muros* being women and families. As such

she believes that military bases should be seen '*rather as towns than as segregated communities*' (Allison 2006b, 19; 2013, 339–343).

Until the 1990s find studies at military bases concentrated mainly on military equipment and on chronological markers such as fine wares and brooches (see Allison 2013, 33–34 with references). Through the last two decades this has changed, and mainly due to a more holistic approach to find studies of forts and fortresses, the idea that military bases were 'strictly male' has been abandoned (see Allison 2013, 1)<sup>385</sup>. The assumption of the absence of families within the fort (and for a long time also assumed for the settlements around the fort), certainly prior to the end of the 2nd century AD, was based on the legal ban on the marriage of (ordinary *i.e.* below the rank of *centurion*) soldiers during active service, although names of wives of higher-ranked soldiers did survive (see Allason-Jones 2005, 45–50). This ban has been attributed to Augustus and is believed to have been lifted by an edict of Septimius Severus in AD 197 as can be understood from Herodian (Allason-Jones 1999, 45–46; 2005, 50; Phang 2001, 16–17). The phrasing by Herodian can be read either that soldiers were now permitted to marry legally or as that it was now permissible to cohabit (routinely) with their wives outside as well as inside the fort (Allason-Jones 2005, 50; Haynes 2013, 90).

Written sources do assume that already before that time ordinary soldiers did have 'wives' during their military service, although not legal (Phang 2001; see for tombstones: Roxan 1991; see for military *diplomata*: Speidel 1998, 53), probably a normal practice at the latest from Claudius onwards (Speidel 1998, 53). Not only senior officers, *centuriones* and *decuriones* appear to have housed with their households on the fort precinct. More and more material evidence suggests the presence of women and children in the ordinary soldiers' barracks, which inevitably necessitates a rethinking of the composition of the *contubernium*. Nevertheless it should be emphasized that the identity and gender association of material culture is not always straightforward (see *e.g.* Allison 2013, 66). An important instigation was the study by van Driel-Murray (1995; 1998) who concluded from the size ranges of shoes at the fort of Vindolanda at Hadrian's Wall that most likely<sup>386</sup> families lived in the early 2nd-century barracks of ordinary soldiers<sup>387</sup>.

After van Driel-Murray (1994) concluded that a different research question should be in order ('*How are the women we know to be present, reflected in the material record?*'), Allison was the first to have extensively looked at the material evidence and its distribution over the fort area (Allison 2005; 2006a; 2006b; 2008; 2009; 2013; 2015; Allison *et al.* 2005). She evidenced the presence of women and families as an integral part of the Roman military community through the study of the spatial analysis and distribution pattern of activities

<sup>384</sup> From the same context a very roughly made archer's brace was recovered. As this wrist-guard was roughly cut from old leather, it rather seems to be an incidental item, probably made for hunting, and therefore no evidence for an archery unit (cf. Volume II, Chapter 8, study by C. van Driel-Murray).

<sup>385</sup> For an overview of these changing perspectives: see Allison 2013, 19–32 with references. An important contribution to the debate of women inside military bases has been the round table 'Frauen und Römisches Militär' held in Xanten in 2005 (Brandl 2008).

<sup>386</sup> Van Driel-Murray could not completely exclude the possibility that the female- and children-sized shoes belonged to young boys and youths operating in a male brothel (van Driel-Murray 1995, 19).

<sup>387</sup> Her conclusions were however met with much scepticism by some scholars: see Allison 2013, 27–28 for references. Hodgson (2014a, 19) argued that there is no absolute evidence to identify the building in question as a barrack.

and types of people, based on female- and child-related items, in search for socio-spatial behaviour at five early imperial military bases in the German and Raetian provinces (Allison 2006a; 2008; 2013)<sup>388</sup>. These conclusions are remarkable since these fort occupations date prior to the marriage reforms of AD 197 by Septimius Severus.

### V.3.3.2. Female presence at the other Shore forts in the North Sea and Channel region and in the North-West in general: mainly a late Roman phenomenon?

Data and sources related to female presence at forts in the North-West of the Empire are scarce. Suggestions for female presence mostly do not go further than the indication for their presence mainly based on the incidence of female dress accessories.

Mainly based on the recovered metal jewellery (bracelets, presumed female brooches, finger rings and hair pins), a female presence has been assumed at the Aardenburg fort (Besuijen 2008, 77); chronological conclusions, however, could not be drawn. At the fort of Caister-on-Sea this could be done, though: women appear to have been present throughout most of the occupation, probably already from the early to mid-3rd century onwards, and the evidence increases through time. The large amount of hair pins can be attributed to the late 3rd- or early 4th-century occupation if not earlier, with at least one hair pin related to the earliest rampart. Fragments of infant bones suggest disturbed infant burials. Beads, bracelets, finger rings, needles and spindle whorls also point to female presence (Darling and Gurney 1993, 246-247). At Reculver, three infant burials were found on the location of 'East barrack no. 1'. One infant burial was located in its north-west corner and can be dated to its construction phase or during its occupation. The final use of this barrack has been defined around AD 275. Two other infant burials probably date after this building went out of use (Philp 2005, 75). Also the small-scale excavations in 2012 at the Brancaster fort yielded the remains of at least two neonates between 0 and 2 weeks, however not in their original place (Wessex Archaeology 2014, 26-27). In the 1961-1972 excavations at Portchester, no less

than 27 infant individuals<sup>389</sup> were recovered. Most of them appear to have survived the actual birth but died within their first weeks of life. Thirteen of them were interred in pits together with animal, bird and fish bones, probably as part of the funeral ritual (Hooper 1975, 375-376). The infants occurred throughout the 4th century with an increase in period AD 325-345 (Cunliffe 1975, 427; 1977, 5). Cunliffe saw complementary evidence in the presence of women in the spinning and weaving implements, finger rings, bracelets of bronze and shale, toilet equipment, beads and women's shoes found on the fort precinct (Cunliffe 1975, 427). This evidence led Cunliffe to conclude that the fort from c. AD 300 onwards must have been more a civilian community in which temporarily contingents were integrated in times of potential trouble (Cunliffe 1975, 427-428). At Boulogne there is 4th-century evidence for female presence *intra muros* and this has been related to Germanic soldiers with their families (Seillier 1996, 239-242).

The above mentioned material evidence at the Shore forts, although fragmentary, appears to indicate that the presence of families on the fort precinct was mainly a late Roman phenomenon in the region; only at Caister-on-Sea is there clear evidence for an earlier female presence at the fort site. When looking at the forts at Hadrian's Wall the indications appear to be inconclusive. An analysis of the structural evidence and the finds at well-documented barracks of these forts has led Hodgson to the conclusion that, despite of the ideas of van Driel-Murray (see above), there is no strong evidence for the routine presence of women at the barrack *contubernia* there. According to Hodgson an increased presence of women can only be possibly demonstrated for the later 4th century (Hodgson 2014a, 25). Also at Vindolanda the artefact distributions seem to indicate an increased presence of women and children only by the (later) 4th century (Birley 2013). Worth drawing attention to is the late Roman *castrum* at Arras where by the end of the 4th century or beginning of the 5th century changes in the spatial organization with smaller living units for the soldiers coincide with the appearance of female and child related items. This has been related by Jacques to the arrival of newcomers, possibly a unit of Batavian *laeti* as mentioned in the *Notitia Dignitatum* to have resided at Arras-*Nemetacum* until its end in the second quarter of the 5th century (Jacques 1993, 198; Jacques 2007a, 79).

### V.3.3.3. Contextual evidence for female presence at the Oudenburg fort

Late Roman Graveyard A, the Oudenburg 'military' graveyard of the deceased of the last century of fort occupation (fort period 5) consisting of at least 10% women and over 5% children of less

388 Allison could conclude that women and children at the fortress of Vetera I (*Germania Inferior*) and at the fortress (I) and subsequent fort (II) of Rottweil (*Germania Superior*) were 'either members of officers' households or traders from outside the camp frequenting the main street and market areas' (Allison 2008, Sections 5.1 and 5.2). At the auxiliary fort of Oberstimm (*Raetia*) women seem to have been involved in commercial and perhaps industrial activities (Allison 2008, Section 5.3). At Ellingen (*Raetia*), a mainly 2nd-century auxiliary fort, the distribution of female- or child-related items and the evidence for skeletal remains associated with the barracks are strong indications for women and children living with ordinary soldiers (Allison 2013, 325).

389 Based on the mention by Aristoteles in the Graeco-Roman period and the high mortality rate even still in the 18th century in Britain, Hooper concluded that the infant mortality rate in the Roman period was very high. The Roman law forbade the burying or burning of a corpse within a city, but apparently, newly born babies were not subjected to that law (Hooper 1975, 375). See for more recent ideas on infant mortality rate in Roman Britain: Pearce 2001, 128-129. See for the interpretation of infant burial within settlements and villas: Gowland 2001, 156-157. Gowland sees a difference in infant burial before and after the age of six months; before the age of six months the burial might have been confined to the domestic sphere as 'the household represented the social world of that child' (Gowland 2001, 157).

Table 10. Overview and chronological distribution (based on the stratified evidence) of absolute numbers of hair pins, bracelets and beads found at the south-west corner site (all materials included).

LEVEL of find context	HAIR PINS				BRACELETS					BEADS			OVERALL TOTAL
	bone	jet(-like)	copper alloy	TOTAL	bone	jet(-like)	glass	copper alloy	TOTAL	jet(-like)	glass	TOTAL	
L1				0					0			0	0
FL2	6			6					0			0	6
FL3	18	1		19			1	2	3		1	1	23
FL4	33	3	2	38		1	2	15	18	1	6	7	63
FL5	32		6	38		5	5	5	15		2	2	55
5+POST/POST	46		2	48	1	9	8	9	27		8	8	83
<b>TOTAL</b>	<b>135</b>	<b>4</b>	<b>10</b>	<b>149</b>	<b>1</b>	<b>15</b>	<b>16</b>	<b>31</b>	<b>63</b>	<b>1</b>	<b>17</b>	<b>18</b>	<b>230</b>

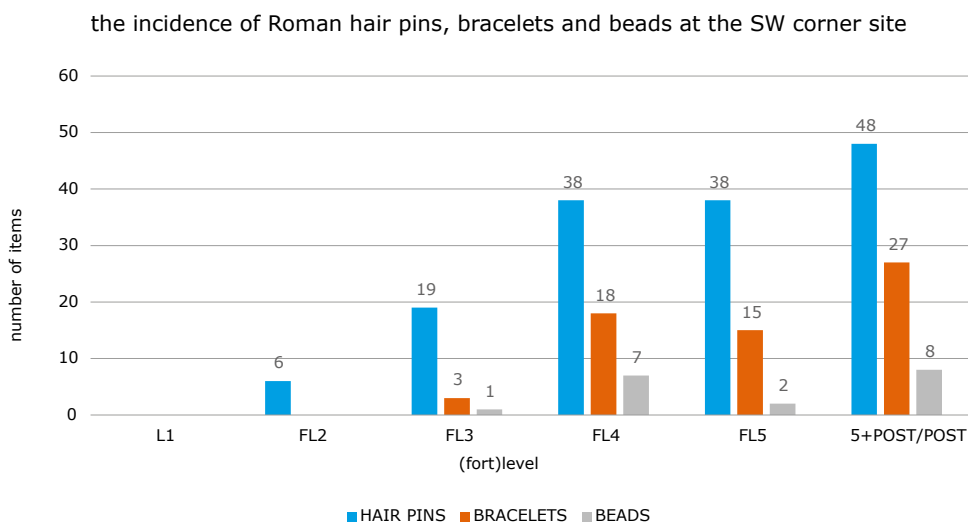


Figure 117. Visualization of the data listed in Table 10 pointing to an increase of hair pins, bracelets and beads through time. At least a large portion of the jewellery recovered from the level 5+post/post should be attributed to fort level 5.

than 16 years old (see Chapter IV, Section IV.3.2), already drew attention to the socially complex army community, at least for the late Roman period. This, however, is in itself inconclusive of where these families lived.

The fort sequence at Oudenburg offers a rather unique chronological time frame for the diachronic study of the presence of gender-related items and for the analysis of changes in the evolution of the demography of the fort community. However, as Allison (2013, 340) points out, an exploration of women's roles in the fort community based on material evidence is, and will probably always be, restricted since only certain types of artefacts can be absolutely associated with women. Allason-Jones (1995) emphasized that 'sexing small finds' or defining gender-specific find categories is not a simple matter. Allison outlines this as follows: *'to ascribe a specific gender to a particular artefact, the artefact must either be a part of dress that is peculiar to the relevant sex, or be associated with an activity carried out only by a specific sex'* (Allison 2006b, 4). Moreover, in terms of gender attribution, age, status and ethnicity also played an important role (see Allison 2006b, 6 with references).

Through an overview of the gender-specific items with a relation to women and children at the south-west corner site at Oudenburg

(Table 10; Figure 117), an attempt can be made to draw conclusions on a chronological level<sup>390</sup>.

#### Hair pins

Hair pins are generally identified as female dress attributes and were used by both women and girls (Allison 2013, 77 with references; Cool 1990, 150). Riha (1990, 95) emphasized that they were not only intended to hold the hair piled up in a knot, but also as jewellery. At the Oudenburg fort the hair pins were mainly made of bone (cf. Volume II, Chapter 4), although some occur in copper alloy (cf. Volume II, Chapter 3, Section 3.4.3) and in jet or a jet-like material (cf. Volume II, Chapter 5). In total, the south-west corner site yielded 149 examples. They all represent the short hair pin type, reflecting the simpler hairstyle fashion which was prevailing from the second half of the 2nd century onwards (Greep 1983, 350 ff.<sup>391</sup>;

<sup>390</sup> Preliminary results of this study were published in 2017 (Vanhoutte and Verbrugge 2017); this contribution was however already submitted shortly after the Limes Congress 2009 in Newcastle upon Tyne. Further research has led to more information and new interpretations as presented here. The data in the present study should replace those of the 2017 article.

<sup>391</sup> Greep (1983, 350) demonstrates that the start date of c. AD 200 proposed by Crummy (1979, 161) for the arrival of the short hair pin type should be moved to c. AD 150.

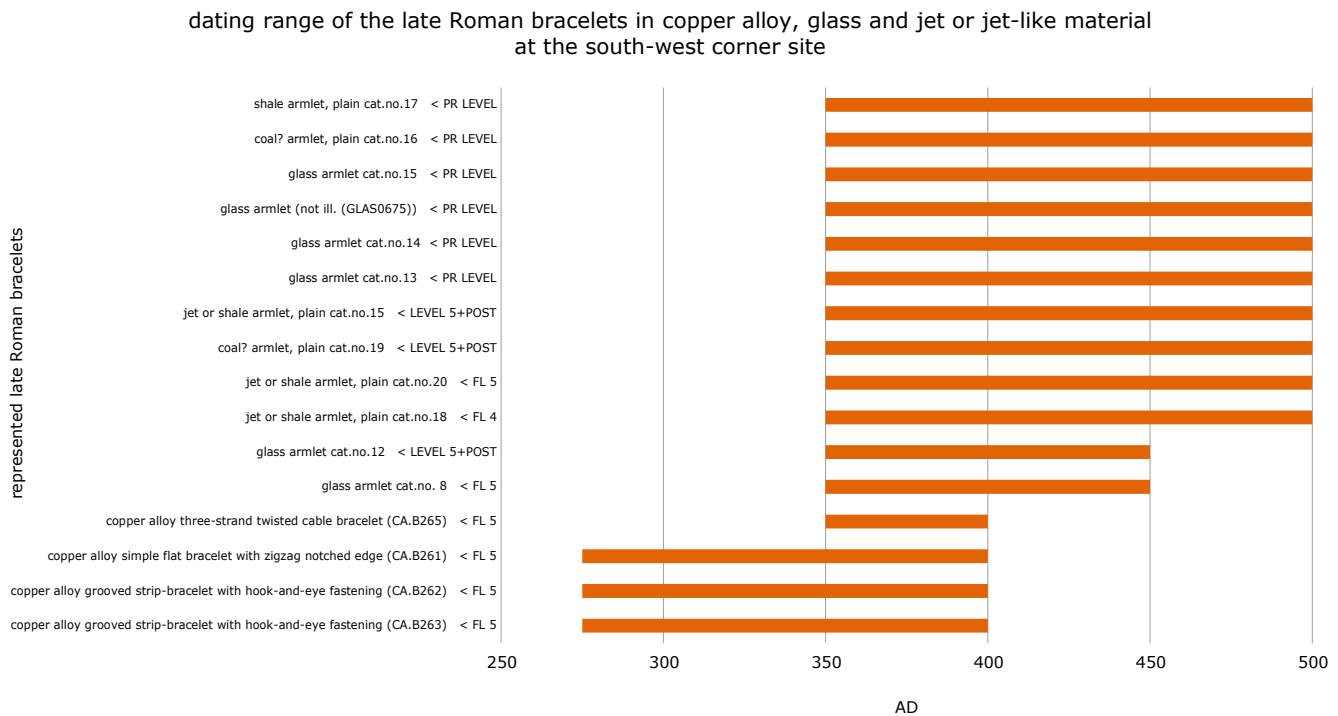


Figure 118. Late Roman bracelets at the south-west corner site: their incidence according to their stratified context and their dating range (PR: post-Roman).

cf. Allason-Jones 2005, 133). They occur from fort period 2 (with six hair pins) onwards, with a significant number of eighteen hair pins for fort period 3 and an increased number in fort periods 4 and 5. Assuming a lot of hair pins of fort level 5 were recovered as belonging to level '5+post' and as residual items from the post-Roman level, their number for fort period 5 must have been even much higher. As the general hairstyle fashion did not change until c. AD 400, the incidence of hair pins throughout the fort occupation can be seen on the same level of representation. However, as fort period 4 and definitely fort period 5 represent much longer time-spans than the earlier periods, the increasing number of hair pins do not simply mean that there were more women. Very significant, though, is the evidence for hair pin production at the fort site, certainly in fort period 5 but possibly already in fort period 4. The fact that hair pins were manufactured at the fort site (cf. Volume II, Chapter 4, Section 3.2) implies that women were integrated in the fort community and not only visitors or 'passers-by'.

### Bracelets

Whether bracelets are an absolute female indicator still seems to be under discussion. While women as well as men wore bracelets throughout the Roman period, they were normally worn by women (Allason-Jones 2005; 2010). Swift (2000b, 37) however has shown, certainly for the late Roman period, that '*when the bones of a skeleton are studied, those wearing jewellery at burial, such as rings, bracelets and necklaces, or with these objects deposited in the grave, can invariably be shown to be female*'. Although Allason-Jones has pointed to a few exceptions (see Allason-Jones 1995, 27) and Bishop and Coulston (1989, 69) mention that at least in the period

of the Tetrarchs soldiers wore armlets, the overall conclusion for the Roman period, especially the late Roman period, that bracelets were normally a feminine ornament item, can be generally accepted<sup>392</sup>.

The south-west corner site yielded in total 63 (finished) bracelets, mainly made of copper alloy, glass, jet or a jet-like material (see Volume II, resp. Chapters 3 (Section 3.4.3), 6 (Section 7.1) and 5 (Section 4.1)). The earliest bracelets occur at fort level 3, however with only three examples, and of which one is a snakeshead bracelet of the local production type which might be an intrusive item from fort level 4. Within fort levels 4 and 5, bracelets were well-represented, although here it is important to emphasize that the number of copper alloy bracelets is biased by the local production of one specific type of snakeshead bracelet. Of the latter, six were recovered from fort level 4 and two from fort level 5 as presumed residual items. These bracelets, made at the workshops of fort period 4, can therefore not be considered at the same level as the other types which should be regarded as lost (or thrown away) personal belongings. Leaving out these locally made snakeshead bracelets, the resulting total of 50 bracelets consists of two bracelets for fort level 3, twelve bracelets for fort level 4, thirteen for fort level 5 and 23 bracelets from the later levels, still a clear presence from fort period 4 onwards. This is the more striking considering that nine of the fort period 4 bracelets were of copper alloy; Cool stated, at least for Britain, that it was not common to wear metal bracelets before the 4th century (Cool 2000, 33). Most of the bracelets at the south-west corner site have a wide dating range; only sixteen bracelets can

<sup>392</sup> Pers. comm. dr. E. Swift.





Figure 119. The gold link chain, probably reused as bracelet, found at the edge of hearth 25 of workshop Unit V of fort level 4. On top: magnified detail of the fasteners.

be specifically dated in the late Roman period (Figure 118). While one was recovered from fort level 4 (but must have been an intrusive item given its typological dating), nine from fort level 5 (with three of them from level '5+post'), six belonged to the post-Roman level. This not only emphasizes the residual factor at the site but also that they should be counted as fort period 5 items.

An important addition in light of the debate on the character of the fort community is the significance of the presence of fifteen jet (and jet-like) bracelets, as it is the assumption that objects in jet – presumably to be extended to jet-like materials – were solely intended for female use through the specifically for women applicable apotropaic function (see Volume II, Chapter 5, Sections 3 and 4.1). Furthermore, the analysis of the diameters of these fifteen bracelets concludes to at least six child armlets of which all but one from fort level 4 belonged to fort level 5 or a later level (as residual items, most likely from fort level 5).

The find of four fragments of a gold link chain at fort level 4 in the burnt-down workshop Unit V on the edge of hearth 25 deserves special attention<sup>393</sup> (Figure 119). Such chains with baculiform links with two loops were probably always provided with beads in semi-precious stone, glass and/or bone. Such beads wear down and disappear after time, which was probably also the case for the

Oudenburg example. This type of chain occurs throughout the Roman period with a peak in the 2nd century AD and a revival in the 4th century<sup>394</sup>. The link chain is only fragmentary preserved, with a total length of 13.9 cm (incl. the fasteners); the normal length of such a chain was c. 30 cm. However, the different design of the two fasteners points to a repair or reworking of the Oudenburg chain and may indicate that it had had a secondary life as bracelet (and as such can be considered as completely preserved). The limited length then points to a child, a girl as its owner. As this piece of jewellery still lay *in situ*, covered by the fire layer of the workshop, this repair/recycling into a bracelet (or a secondary repair) probably explains its presence on the spot. As gold was a very precious material, the owner must be imagined to have been a family member associated with the higher ranks of the military.

The production of bracelets at the workshops of fort period 4, late 3rd century, is clearly evidenced (Volume II, Chapter 3, Section 3.6.2). Only one type of bracelet appears to be locally produced, though: the open snake-like bracelet, with stylized snakeshead ends, of which two subtypes can be defined, a basic (subtype 1) and a refined (subtype 2) version. At first sight the production of jewellery items specifically designed for women at the *fabricae* of the fort in the late 3rd century suggests a strong embedding of women in the fort community. However, after reading the article by Cool (2000) on some specific jewellery hoards in *Britannia* and their significance, one can question the gender association of these (and only these) specific bracelets in this specific context. Another possibility for their incidence imposes itself. The snake was a popular motif in Graeco-Roman jewellery for its symbolized apotropaic powers (Barber and Bowsher 2000, 165-166) through its relation to myths, as for example the snake of Aesclepius, and as such its association with healing, the underworld, rebirth and regeneration and as such eternity (Jones 1996, 11). Cool points to the association with a variety of deities; besides Aesclepius, also Mercurius and saviour gods of mystery cults, such as Sabazius, could be depicted with snakes (Cool 2000, 34-35). However, the study of several jewellery hoards has led Cool to the conclusion that the snake jewellery within these contexts may rather have its *raison d'être* through its association with dedications to Mother Goddesses (Cool 2000, 35). It is therefore very plausible that the production of this, and only this specific, type of bracelet at the Oudenburg workshops can be connected with the cymbal recovered in the corner of the workshop area from the abandonment level of the same period (Plate CCXLIII). This music instrument was used in religious ceremonies and more specifically in those

394 Similar gold chains with baculiform links with two loops are known from Pompeii, Casa del Menandro (I) (1st century AD) (Schenke 2003, Pl. II: 3), the *vicus* of the fort of Aalen (G) (2nd-3rd century AD) (Böhme-Schönberger 1997, 4), the Treasure of Naix (F) (AD 260-270) (Böhme-Schönberger 1997, 70), a child's grave at *Ratiaria* (BG) (2nd century AD) (Ruseva-Slokoska 1991, 45, 141). Such a link chain can also be discerned on a mummy portrait from El Fayum (ET) of the 2nd quarter of the 2nd century AD (Parlasca and Seemann 1999, 32). Similar fasteners with open-work S-shaped elements are known from two chains at the British Museum, London (both 3rd century AD) (Marshall 1911, 314 (Pl. LVII: 2715), 319-320 (Pl. LXI: 2745)), a grave in *Ratiaria* (BG) (3rd century AD) (Ruseva-Slokoska 1991, 50, 141-142) and the Treasure of Nikolaevo (BG) (mid-3rd century AD) (Ruseva-Slokoska 1991, 51, 138). Study by dr. K. Sas.

393 With thanks to dr. K. Sas for identification and references to parallels.

related to mother cults. Moreover, the practice of mother cults is confirmed by two *Dea nutrix* figurines. Although recovered from later levels, the analysis of their series and style suggests that they originated from fort period 4 (see Volume II, Chapter 7, study by J. De Beenhouwer). Also the planetary vase, a cult vessel of which a fragment with applied face, probably of Mercurius, was found in the large waste-pit OS 4980 (Plate CXXXVI: 1), belongs to this fort period, as is also a foot base of such a cult vessel (cf. Volume II, Chapter 1.A.4, study by S. Willems). Furthermore, it is striking that also the very large thick-walled samian beaker or jug from Rheinzaßern showing a hunting or procession scene with different animals, most likely a vessel used in cult practices, can be attributed to this period (Plate LXXXI: 27). As several elements from fort period 4 point to the cult sphere, it is not unlikely that these locally-made bracelets (or armlets) were not (or not only) intended for women; they were of the open type, so they could fit for men. As such these bracelets can be compared with the armlet from grave 114 of Graveyard A found *in situ* on the right upper arm of a higher-ranked soldier, as can be deduced from his crossbow brooch (see Mertens and Van Impe 1971, 143-144, Pl. XC, 3-4), although of much later date<sup>395</sup>. The inscription *votus Savajius* indicates the soldier was an acolyte of the mystery cult of the Thraco-Phrygian god Sabazius (see Tassignon 1997). Interesting details, coincidence or not: Sabazius was, as mentioned above, very often symbolized by a snake and was associated to Cybele (cf. Picard 1962); to the latter deity a dedication was found in France, inscribed on a cymbal (see Volume II, Chapter 3, Section 3.10).

#### Finger rings

Finger rings were worn by women and men. Furger (1990) has performed a statistical research on the size-ranges of different types of rings found at Augst and Kaiseraugst (CH). Based on comparative analysis of modern data for ring sizes and the given that finger rings in the Roman world were worn on all fingers and all joints, he estimated that the inner diameter of women rings ranges between c. 9 and 21 mm, that of men between c. 19 and 24 mm. Although Allason-Jones (1995, 27) does not believe that size can be an adequate criterion for gender attribution, the study by Furger enables us, cautiously, to make an attempt for identification of the Oudenburg finger rings. The south-west corner site has yielded seven certain finger rings, possibly eight (cf. item CA.B277). The fragment of a late Roman finger ring with glass bezel (CA.B272), found unstratified but most likely related to fort period 5, forms an exception in the assemblage with an estimated inner diameter of c. 30 mm. Based on this extremely large diameter it can be presumed that the finger ring was worn by a man possibly on his thumb, and this item should therefore be left out from the jewellery overview table as indicator for female presence. All other recovered finger rings of which the inner diameter can be measured have an inner diameter of 14 mm (CA.B270), 15 mm (B271, B273, B274, B277) or 17/19 mm (B275), and can hence, based on the study by Furger, (most likely) be attributed to women. Three of the recovered finger rings can be dated specifically to the late Roman period. While finger ring CA.B271 was recovered from fort level 5, the 4th-

century finger rings CA.B272 and B273 were respectively found unstratified and in the post-Roman level. The latter can be closely dated to AD 360-370/380 based on Clarke (1979, 319), which enables an attribution to fort period 5B.

#### Beads

Although there was an eastern influence of the wearing of (solid) necklaces by men (Allason-Jones 1995, 27), necklaces made from beads seem to have been a prerogative for women. Individual beads could however also be worn by children of both sexes to support amulets<sup>396</sup> (Allason-Jones 1995, 27). Only glass beads have been found at the Oudenburg south-west corner site, all as loose items: apart from one isolated bead from fort period 3, they clearly occur from fort period 4 onwards. Most important in this respect is the complete bead necklace found at the north-east corner site in the final layers of fort level 4 (cf. Volume II, Chapter 6, Section 7.2).

#### Shoes

A strong asset of the material evidence at the Oudenburg fort are the well-preserved shoes from waterlogged wells and pits. Shoes are one of the best available indicators for gender identification as the foot size reflected by footwear is a '*relatively sensitive exponent of sexual dimorphism*' and as such '*a source of demographic information*' (van Driel-Murray 1994, 344; 1995, 7). The preserved footwear complexes at the Oudenburg fort site are only available for fort periods 4 and 5. This particular evidence is therefore biased towards the late Roman period, and the absence of such assemblages for the previous periods makes it impossible to evaluate fully the diachronic implication for this category on its own.

For the late 3rd century (fort period 4), the preserved footwear from the large waste-pit OS 4980 and the well OS 22926 together comprised at least two shoes to be associated with children, eight with adult females and sixteen with adult males. For the final phase of the Oudenburg fort's occupation, from c. AD 380 onwards, we are informed by the shoe assemblages of the inner well of structure OS 2562 and the large water basin OS 4923, presumed to be simultaneously in use. The shoes belonged to at least two children, four women and twenty men. From the shoe complexes of both periods 4 and 5, showing a proportionally significant presence of shoes of women and children *i.e.* one third in each period, it can be concluded that women and families lived together with the soldiers on the fort precinct (see Volume II, Chapter 8, study by C. van Driel-Murray).

395 The combined dates of the crossbow brooch and of the buckle plate of grave 114 point to AD 350-360 (see Appendix 7: Table 18).

396 The latter seems to occur often together with melon beads to which an amuletic significance has been related. The presumed apotropaic function of the melon-type bead has been the explanation for its occurrence as decoration on a few finds of horse harness and shield sheaths (cf. Hoffmann 2002, 230). In the past, the melon-type bead has been associated with cavalry horses, a perception which was mainly based on their incidence on military sites, while no further direct association between melon beads and horses seems to exist. Allison (2013, 83-85) argues that the association is rather exceptional and that there is much more evidence as part of necklaces for female adornment and as individual beads worn by women and children. So far, no melon beads have been found at the Oudenburg fort.



Figure 120. Left: feeding bottle recovered from the burnt debris of workshop Unit V of fort period 4. Right: fragment of breast-pump found in the construction pit of the large water basin of fort period 5B.

### Infants

Two objects seem to be undeniably linked to the presence of mothers (or nurses) and infants (Figure 120). Amongst the debris of the burnt down workshop Unit V of fort period 4, a feeding bottle of North Menapian manufacture was recovered. Its incidence at the workshops seems rather strange at first sight (although one could think of a function in precisely applying oil). However, the study of the pottery from this fire layer has demonstrated that the pottery did not experience the same depositional process as most of the other metal and small finds (cf. Volume II, Appendix, Section 5.4). While the latter can be related to the workshop's activities, a lot of the pottery seems to have been thrown into the fire, perhaps as part of earth loads in an attempt to extinguish the fire. Nonetheless, the presence of scales and steelyards (see Volume II, Chapter 3, Sections 3.8 and 5.5) and bags of cereals (see Chapter II, Section II.4.6.2.c in this volume) may suggest that the workshop area also functioned as market place not only restricted for the smiths and their employees but also frequented by other fort community members. Otherwise it cannot be ignored that women may have taken part of these industrial activities, which has been suggested by Allison based on the material evidence at Oberstimm, Rottweil and Ellingen (Allison 2013, 329-330).

The other object was found in the construction pit of the large water basin of fort period 5 and therefore dated around AD 380 (or earlier as it might have been a dug-up item). It is a fragment of a breast-pump, in fine oxidized ware, of which the function has been evidenced by Rouquet and Loridan (2003) on similar objects (see Volume II, Chapter 1.A.4).

The presence of young mothers is also confirmed by the recovery of human bone fragments recognized as fetus or neonate remains. The bones, representing at least five individuals, belonged to fort levels 4 and 5. They were not recovered from closed contexts, but from layers where they were found together with waste of all kind. From two of the individuals the age could be determined between 40 weeks (*i.e.* around childbirth) and two months (Massagé 2015, 49-50). These remains point to infant burials on the fort precinct (cf. the parallels at British Shore forts mentioned in Section V.3.3.2).

### Other possible indicators for female presence

For the copper alloy hand mirror (cf. Volume II, Chapter 3, Section 3.4.4) and the bone fan handle (cf. Volume II, Chapter 4, Section 3.4), both recovered from fort level 4, a female use can be assumed. Spinning is also generally accepted to have been a female activity (see Allison *et al.* 2005, Section 8.3; Allison 2006b, 5; Allison 2013, 93-94). The spindle whorls recovered at the south-west corner site may hence be identified as female indicators. Ten spindle whorls can be identified as Roman<sup>397</sup>; nine were made out of recycled pottery sherds, one of jet. Only three of them were found within Roman levels: one at fort level 3, two at fort level 4. A wooden spindle came from the primary infill of the large water basin OS 4923 of fort period 5 (Plate CDXLIX: 58). Other cloth-working activities such as weaving are according to Allison (2013, 93-94) less gender-specific. A study in depth on the gender aspect of Roman textile-associated tools appears to be nonexistent, but the study by Harrington (2008) is worth drawing attention to. Her research on textile making tools of the period AD 475-750 has invariably shown their association to women. Four bone needle cases (one from fort level 5 and three recovered from the post-Roman level as residual items), two weaving pins from fort level 5 (Plates CCCXXIII and CCCXXII resp.; see Volume II, Chapter 4, Section 6) and two copper alloy weaving combs from fort level 4 (Plate CCXVIII; cf. Volume II, Chapter 3, Section 3.7) are clear indications for weaving activities on the fort precinct. They appear from fort period 4 onwards and this may well be another piece of evidence for the increased female presence in the fort from the later 3rd century onwards.

### V.3.3.4. Conclusion: changing fort communities or rather 'fortified' communities?

All jewellery items, except for the locally-made bracelets, are to be considered as lost personal belongings; no specific depositions could be discerned. A more detailed contextual analysis of all aforementioned possible female indicators enables an analysis of the spatial distribution (see Figures 121-122). No woman- or child-related items could be related to fort level 1. While the hair pins of

397 Some other spindle whorls found in the post-Roman levels are of a type still in use in the early Middle Ages.



Figure 121. Top: find location of jewellery items at fort level 2. Below: find location of jewellery items at fort level 3.



## FORT LEVEL 4



## FORT LEVEL 5



Figure 122. Top: find location of jewellery items at fort level 4. Below: find location of jewellery items at fort level 5.



fort period 2 were found only in the large spaces at the west side of the military hospital and along the south and north side of the complex, the jewellery finds from fort period 3 onwards were, by contrast, distributed across the excavated area.

The increasing presence at the Oudenburg fort of female-related items from fort period 4 onwards is striking and seems to confirm a late Roman date for this evolution. It is necessary, though, to be aware of a possible bias towards these late periods. Residuality, the changing functional implementation of the south-west corner through time, the varying time span of the successive occupations and the absence of waterlogged contexts for fort periods 1 to 3 are important factors to consider to have had a potential impact on the numbers. The lack of female-related finds for fort period 1 could as well be due to the fragmentary preservation of features and related material evidence at this level.

The Oudenburg assemblages do demonstrate that female-related items already occurred definitely from fort period 2 onwards; it is however unclear how this female presence should be interpreted. For the incidence of hair pins at fort level 2, at the site of the military hospital (Figure 121: top), several explanations can be suggested. There is literary evidence that women were engaged in medicine; possibly there were female military doctors (Allison 2013, 333 with references). The women may also have worked in the kitchen of the hospital, explaining the occurrence of the hair pins at the larger rooms at the west side of the complex, or they were visitors to wounded husbands, sons or fathers. In contrast, fort period 3, to which freestanding living units and presumed officers' quarters are related, clearly reveals the presence of women in the fort community (see Figure 121: below).

Nevertheless, the increase of female-related items from fort period 4 onwards is clear and significant, the more so considering the function of the area in these late periods: a workshop area in the late 3rd century (Figure 122: top), a bath house with its surroundings in the first half of the 4th century (however with no contexts directly related to the bath house in use), and an area for animals within compounds in the later 4th and early 5th century (Figure 122: below). The shoes of women and children and the presence of infants – not only evidenced by human bone fragments but also implied by a feeding bottle and a breast-pump – are firm indicators that women and children were not just passing by but were actively involved in the fort community. As such the material evidence of the Oudenburg fort yields a strong contribution to the discussion for the North-West of the Empire around the misconception that the Roman fort was a strictly military and male community.

It is tempting to relate a clearer presence of women and children from fort period 4 onwards to the abandonment of the extramural settlement. Occupation at the military *vicus* around the fort stopped in the third quarter of the 3rd century, possibly not much later than the 260s. All large rural settlements in the surroundings ceased to be occupied around that period (see Hollevoet 1995; De Clercq 2009; Van Thienen 2016; 2017b; see also Chapter I, Section I.4.1.4). Without occupation outside the fort (and neither in the surrounding region) in the late 3rd, 4th and early 5th century, and given the remote location of the fort, the fort occupation was most

likely rather that of a fortified settlement consisting of all layers of society than a 'strictly military' base. As such, it can be accepted that the deceased from Graveyard A, consisting of men, women and children, reflect the composition of the fort community of fort period 5A and 5B. Moreover, this leads to the likelihood that not all males from Graveyard A will have been soldiers but rather represent several layers of the fort society and different social groups. This may be an explanation for the burials without grave goods. Also the integration of the bathing facilities within the fort perimeter may – for the Oudenburg fort – possibly be interpreted as an expression of this evolution of the migration of the wider community within the fort walls together with all structures related to the daily life.

### V.3.4. Changing fort communities, changing socio-cultural identities

#### V.3.4.1. Glimpses of socio-cultural identities in the late 2nd- and 3rd-century Oudenburg forts

Fort period 1: c. AD 180-200(+)

Fort level 1 hardly yielded small finds: finds in worked bone or made of another animal product are lacking and apart from a copper alloy horse gear trapping mount and a simple iron key, the metal finds cannot be used for any identity reconstruction. The pottery reflects a large continental trade network with amphora imports from the Mediterranean, samian from Central Gaul and fine wares from the Rhineland but also points to a strong orientation towards the local/regional market. In fact, the pottery does not reflect a very different picture than that of the settlement prior to the fort's installation (cf. e.g. Creus 1975). The fort was erected at the location of a very active civil settlement of certain status, as can be deduced from its pottery and small finds. The high portion of North Menapian pottery and Low Lands wares at the fort precinct of fort period 1 indicates that the fort community was from its start immediately embedded in the regional culture and this to a significant degree. The military presence moreover resulted in an important expansion of the civil settlement to the east with the bringing into use of new pastures and the installation of industrial areas. Regarding the North Menapian handmade pottery it is striking that a large variety in quality was in use at the fort, from fort period 1 onwards up until fort period 4. Both high-quality as well as more roughly made vessels, sometimes with flaws, were common at the fort precinct, suggesting that the army purchased these local products in large batches, and in addition perhaps also indicating that some pots were bought for their content.

Two pottery items may be indicative for the origin of part of the unit. The pottery assemblage of a level of the earthen rampart which can be attributed to the first fort period (see Volume II, Appendix, Section 2.1: context OS 30916) contains a lid identified as a reused cup produced in the *civitas Morinorum*, to the south of the *civitas Menapiorum*. It is most likely that this cup was brought in as personal baggage by a soldier. Haynes has argued that after a unit was established increasingly more recruitment happened from the immediate vicinity, but that it was certainly not the primary source of manpower. He further states

that pragmatism will probably often have favoured recruitment from a province close by (Haynes 2013, 123–134).

Another pottery vessel is even more striking. The isolated find of a North African lid in a pit of level 1 (cross joining a small fragment dug up at fort level 4) is also to be interpreted rather as a casual import brought in by a soldier as part of his personal baggage. Carrying such an ordinary culinary vessel this far most likely indicates that its possessor was a native of North Africa. Swan (1992) demonstrated extensively the presence of soldiers of North African origin in garrisons occupying the forts on Hadrian's Wall and Antonine Wall in Britain in the course of the 2nd and 3rd centuries based on ceramic evidence and other circumstantial features reflecting North African techniques of food preparation (brazier-cuisine)<sup>398</sup>. Swan also found evidence for pottery production with North African affinities indicating that the transfer of soldiers from North Africa was not exceptional and that these units were large enough to include potters. Most of the evidence points to the early 3rd century – Africans were most likely involved in the British expedition of Septimius Severus in AD 208–211 – but the first North African immigration appears to be traced back already to the Hadrianic period (Swan 1992, 6–7). It is therefore not unlikely that also at Oudenburg North African soldiers served in the unit.

The settlement at Oudenburg expanded significantly with the arrival of the army. As can be deduced from the findings at the southeastern site Bekestraat (ET13) and the eastern sites Riethove (ET26) and Belleroche (ET28) new areas were taken into use (see Chapter I; Section I.4.2). Can we gain more precise insights into the chronology of this land division system? Do the earliest parcels date to the second half of the 2nd century prior to the installation of the fort and is the slight change of orientation which corresponds to the fort's orientation related to the installation of the first fort? However, the parcel gullies at the southeastern site Bekestraat (ET13) show a dominance of Trier and Rheinzabern samian (Hollevoet 1993c, 202) suggesting a 3rd-century date. It seems therefore more likely that the expansion of pastures was related to the installation of the fort in the late 2nd century and that the shift in orientation should be seen as a later action, indicative of an increased control by the army.

## Fort period 2: c. AD 220 – 245/250

The layout of the military hospital complex, its infrastructure, its mural paintings and its *sacellum* all reflect contemporary metropolitan Roman cultural expressions. The sculpted copper alloy corner fitting of a vessel or small furniture (cat. no. CA.D063) and the several fragments of wine sieves (cf. Volume II, Chapter 3, Section 3.5) emphasize this picture. A graffito attributed to this fort period fits in well. A Trier mortarium base bears the Roman name SERGII C[, a *gentilicium* in genitive ('of Sergius') followed by the beginning of a cognomen starting with C (Plate CXII: 1). The walls of the military hospital also yielded some graffiti. Four graffiti could be distinguished on the preserved mural paintings, probably all written on the eye level of an adult (Laken and Vanhoutte 2016, 131). One fragmentary graffito possibly reads as part of a Roman name: i(h)ivs.<sup>399</sup>

Several elements of the decoration scheme of the wall paintings separately resemble elements in buildings of public, private and/or military context in northern *Gallia*, *Germania* and *Britannia*; for the precise decorative combinations direct parallels are, however, lacking. The paintings most closely resemble the decorations found at the Aardenburg fort, not only in style, but also in surface treatment and paint – at both sites in a mixed technique like semi-fresco (Laken and Vanhoutte 2016, 157) – and mortar composition. A standard Roman colour palette was used and an important share of the painted fragments demonstrate that the painting was executed and finished with great care and precision. Nevertheless, within several hospital rooms also parts of wall paintings occur which were executed in a rather crude technique (Laken and Vanhoutte 2016, 150). A similar wide range of quality has been observed at Aardenburg, where this has been related to a chronological evolution and a change of character of the site (cf. van Dierendonck and Swinkels 1983). At Oudenburg it can be evidenced, though, that both techniques occurred at the same time, in the same building. Who executed these paintings remains unclear for the moment. Travelling artists may have been responsible for the execution of the paintings of high quality. It remains an open question whether the paintings in crude technique should be attributed to the soldiers themselves.

At the extramural settlement the orientation of the land division system became adapted to the fort's orientation, which is clear from the findings at the eastern sites Riethove (ET26) and Belleroche (ET28). When this exactly happened is difficult to assess; all indications point to the 3rd century but so far no more precise chronology is available. Whether this already occurred at fort period 2 is difficult to ascertain but is very likely. This settlement adaptation testifies to the authority of the army and the control it took over the layout of the settlement at some point in the first half of the 3rd century. A scabbard runner recovered at the eastern settlement site Riethove can possibly be attributed to this period. This copper alloy military item was found in a pit together with

398 Based on ceramic assemblages from York, Swan concluded that in the *Legio VI Victrix* ceramics with North African affinities were made 'by Africans for the use of Africans or for men from adjacent Mediterranean regions' (Swan 1992, 2). This seems to be confirmed by the presence of a number of deceased of likely African descent at the Trentholme Drive Cemetery dated to the mid-2nd – mid-3rd century AD (Swan 1992, 7; see also Leach *et al.* 2009). Eckardt further analyzed the epigraphic evidence which can be related to these findings. There is the attestation of the auxiliary unit *numerus Maurorum Aureliarum* by an inscription dated to AD 253–258 at Aballava (Burgh-by-Sands), apart from several individual North Africans in the military – several of them being officers in command of an ethnic auxiliary unit stationed in Britain – and the Africans attested to have served in all three legions in Britain, based at York, Chester and Caerleon (Eckardt 2014, 67–71).

399 Another graffito probably represents an alphabetic signature consisting of several X's; the other two graffiti are too fragmentary to identify with certainty (Laken and Vanhoutte 2016, 131).

much household waste and a *denarius* of Iulia Mammaea, struck in Rome in AD 222-235 (Dhaeze *et al.* 2018)<sup>400</sup>.

### Fort period 3: c. AD 245/250 – 260

With at least three different building phases, fort period 3 witnesses of a rapid change of troops. The exquisite Rheinzabern plate associated with the building remains of the presumed officer's quarter of fort period 3B – most likely produced to order – demonstrates perhaps the direct say the high-ranked soldiers had on the market and the high status they enjoyed.

Architecturally, the freestanding units, occurring from fort period 3A onwards, distinguish themselves from the traditional *contubernia*. Such freestanding barracks, albeit much longer and constructed (partly) in stone, can be recognized at the Saxon Shore fort of Reculver (cf. Philp 2005).

In these freestanding units at Oudenburg it is striking that the dwelling hearths were positioned centrally, in the axis of the unit, a practice which, according to the findings at Unit IX of fort period 4, continued to be valid. Prior to fort period 3, this can only be compared with one preserved dwelling hearth. Only in one of the rooms of the military hospital of fort period 2B, and thus within a complex with a 'classical' layout, a dwelling hearth was preserved, constructed of stones and positioned against the partition-wall<sup>401</sup> (Plate XXIII: in room R7). In *Britannia* and both *Germaniae* it was common practice in forts of the High Empire to construct the hearth in the barrack room against the rear or side wall or a partition wall (see Johnson 1987, 194; Davison 1989, 232; Fischer 2012, 262)<sup>402</sup>, although Davison (1989, 232) does point to some exceptions<sup>403</sup>. In this respect it is important to notice that the common practice of the installation of the hearth against the wall is not restricted to barracks made (partly) of stone. Several forts witness of wooden barracks with such hearth constructions such as e.g. Valkenburg<sup>404</sup> (de Hingh and Vos 2005, 106) and Hesselbach (Baatz 1973)<sup>405</sup> (see also Davison 1989, 231)). When looking at Gallo-Roman rural sites in the *civitas Menapiorum* hearths have rarely been preserved, but in

the few cases that the hearth did survive, the hearth was located in the centre of the living space (cf. De Clercq 2009, 330).

Another interesting aspect to consider is that, while hearths are generally known to have been made of a pattern of small or larger stones or even more often of ceramic building material, mostly tiles (cf. Johnson 1987, 194; see e.g. Hesselbach: Baatz 1993, 41), at Oudenburg, again for the first time encountered at fort period 3, it is striking to observe that it appears to have been the common practice to construct hearths from stocked pottery sherds and smashed vessels set in a clay level (cf. e.g. Figure 46). For fort period 3 and 4 the examples constructed with pottery sherds are abundant and co-exist with hearths made of tile fragments, sometimes with stones (cf. Plates XXX-XXXIX). It is remarkable that the smashed vessels mostly represent finer-walled pottery instead of thick-walled pottery such as amphorae or dolia for which an available replacement function for tiles could be supposed<sup>406</sup>. Hearths are generally not preserved on (rural) sites, but in the few cases where they are preserved, a construction made of pottery sherds seems to be the common practice in the North Menapian region in the 2nd and 3rd centuries (cf. e.g. De Clercq 2009, 204). One can suggest that the practice of using pottery as construction material may be (solely?) related to its thermal quality (cf. grog-tempering of clay for pottery production) and its availability at the site. However, the same can be said of ceramic building material, and besides, why then did they not use fragments of thick-walled vessels? It is therefore most likely that an extra dimension was in play by using smashed, finer-walled vessels. As this hearth construction method appears to have been common practice in fort periods 3 and 4, appearing in fort period 3 together with the change in the barrack infrastructure with the central setting of the hearth, this practice most likely reflects a common regional identity. This can be considered as an indication that the Oudenburg units of the mid- and late 3rd century and probably in contrast to the preceding units, were largely recruited from the region or, at least, that they were strongly socio-culturally imbedded in this region and largely acting as a unit on their own.

Another indication for a regional recruitment of the unit(s) of fort period 3 may be found in the small amount of graffiti found at the fort site. Considering the importance literacy had in the Roman army and the value of the written records in military context (Haynes 1999b, 171), the little amount of graffiti found at the Oudenburg fort in general is rather surprising. Only one graffiti (Plates CXII: 6) can be attributed to fort period 3: an X as alphabetic signature on the bottom base of a Drag. 33 samian cup (see Volume II, Chapter 1.A.1, Section 10). It might be another indication that the (lower-ranked) soldiers were mostly locally or regionally recruited.

The structural organization described above and the choice of a particular kind of hearths witness of practices which differ from what is known as common use at Roman forts of this period. This seems also reflected in the food supply of animal products. At

400 The other clearly military items found at the extramural settlement are two spearheads, one recovered from a well (Well 30) ceramologically dated to the second half of the 3rd century, another one found as a dug-up item in a 14th-15th century cess cellar (Dhaeze *et al.* 2018).

401 The other preserved hearth/oven of fort level 2 was the one centrally in the presumed kitchen space of the military hospital, probably rather an oven, clearly not to be considered as a dwelling hearth. It was constructed with stones and with a bottom of tile fragments. No hearths were preserved at fort level 1.

402 See e.g. Hesselbach (G) (Baatz 1973, 28, 40), Alteburg (G) (Hanel 2009, 1293: Abb. 2).

403 See Dormagen (G), where less sophisticated hearths were installed in the middle of the *arma* or *papilio* space (Davison 1989, 232).

404 At Valkenburg (NL) the hearths were situated against the partition wall between *arma* and *papilio* (de Hingh and Vos 2005, 106).

405 At period 1 (AD 95/105 – 115/130) at the fort of Hesselbach a hearth was preserved against the outer wall of a post-trench constructed *contubernium*. The hearths of the timber-framed *contubernia* of period 2 (AD 115/130 – c. 145) were always set against the partition wall and consisted of a half round fire-resistant smoke vent built onto the wattle and daub wall (Baatz 1993, 28, 40).

406 Cf. e.g. at the *vicus* of Tienen (B) (site Spikdorenstraat) at a workshop site in use from the second half of the 1st century – 3rd century AD the bottom of a hearth/furnace consisted of large *dolium* fragments (Martens and Hayen 2015, 68-69: feature 265).

most Roman sites in the region a strict dominance of cattle can be observed; this is not the case at the Oudenburg fort though. Also the butchering of young cattle at Oudenburg differs from the common practice at Roman *vici* and at a town like Tongeren where mainly old animals were eaten who were no longer of use in agrarian activities. Neither the butchering of sheep and pigs at Oudenburg shows much selection or regularity. The organization of the food supply rather appears to be that of a survival economy in which the own breeding was complemented with what could be obtained from the surrounding land. Hunting wild mammals and birds, collecting of shellfishes and fishing in nearby waters or not far away from the coastline (although rather a small portion of the food supply) became much more important. It is striking that from fort period 3 onwards, and continuing in fort periods 4 and 5, there is suddenly a strong divergence with the traditional meat consumption known at Roman sites (Ervynck *et al.* 2017). Should this imply a disruption in the normal pattern of food supply as a result of increasing political instability and insecurity from fort period 3 onwards? It may rather be related to another socio-cultural context and to the abandonment of the extramural settlement of which the end of occupation can be dated in the 260s. This end of course may also be caused by increasing political and other instability, but will probably also have been influenced by the increased marine influence of the area. This all may have had its impact on developments on a cultural level. In a community in isolation a cultural identity will have come to expression more significantly. The sudden change in meat consumption and diet may be directly related to this changed social situation of the fort community and/or the changed cultural identity of the unit as reflected by the aforementioned changes in lifestyle (another type of barrack, another type of hearth) and thus with the presumed regional cultural background and preferences of the military contingent. Even when the spatial or chronological variation in the animal consumption waste reflects changing waste deposition practices, this may still be indicative for a cultural difference.

#### Fort period 4: c. AD 260 – 290/300

From fort period 4 onwards, one can say that the internal layout, apparent at the south-west corner area, is somewhat idiosyncratic to what is known when comparing with the standard imperial fort layout. The workshop area from fort period 4 at the south-west corner of the fort precinct is nothing like the *fabrica* building traditionally known as the place where the metalworking activities in a Roman fort took place. The Oudenburg workshop area contained a mix of open-air, shedded, roofed-over and indoor workshops and seems to have developed organically. It is tempting to relate this seemingly atypical spatial organization with a regional cultural identity, however, with no references at the other Shore forts along the North Sea and Channel one cannot know what is 'normal' at this time.

In the early years of fort period 4, in the 260s, the extramural settlement ceased to exist, if it not already had. Since it can be assumed that at every *vicus* metalworking (and pottery production) took place partly or largely in favour of the army (cf. Sommer 1989), metalworking at the fort precinct obviously

became very important when the services from the military *vicus* disappeared together with the settlers by the late 3rd century. Until that time cultivation of the surrounding land by the *vicani* will also have served the needs of the army. This situation changed drastically when the surrounding settlement disappeared; one of the reasons for the latter probably consisted on the one hand of soil exhaustion and erosion caused by over-exploitation of the poorer soils and on the other hand the increasing marine influence resulting in more fertile soils no longer suitable for cultivation.

The absence of an extramural community from the late 3rd century onwards and even in the wider region obviously also implies that the fort community was from that time onwards socially and economically largely self-sufficient. The unit or better said the fort community had to rely totally on itself. The metal assemblages of the workshop area contain tools and objects referring to a large scale of artisanal, agricultural and pastoral activities which will have been carried out by the fort inhabitants. This also implies that the fort community will have contained enough servants, dependants, merchants, etc. (cf. Collins 2008, 49). This, however, does not devalue the military identity of the fort community.

Archaeometric analysis has evidenced that the Oudenburg bronze smith(s) yielded top quality work. They must have been *immunes*, specialized craftsmen. Mann already demonstrated, based on the Vindolanda Tablets, that also in the *auxilia* all sorts of craftsmen worked, with amongst others craftsmen making weapons and equipment, and that they worked in a *fabrica*. This is in contrast to what has for a long time been thought based on the *Digest* (50.6.7) and Vegetius (II.11) (Mann 2014). At Oudenburg, the evidence for craftsmen is not new at fort period 4. Already in fort period 2 the presence of a shoemaker is proven by the find of two shoemaker's anvils, found corroded together (cat. nos IR.C68-69: Plate CCLXXIV). Shoemakers were also definitely present in fort periods 4 and 5 as can be deduced from the preserved footwear (cf. Volume II: Chapter 8, study by C. van Driel-Murray). The many coins at the workshop area amongst which presumed lost purse contents<sup>407</sup>, the scales and steelyards, and the indications for the presence of women and children suggest that the workshop area in the south-west corner of the fort was much more than only the space where items were produced and repaired. It most likely also functioned as kind of a market place. The indications pointing to literacy can also be explained within such atmosphere. A copper alloy *stylus* was found at workshop Unit V of fort period 4. Although according to its typology this *stylus* is dated until the first half of the 3rd century (cf. Schaltenbrand Obrecht 2012, 161), it is striking that within the very same find context, an iron *stylus* was found. Moreover, a handle of a wax *spatula* was recovered from the fire layer covering Unit II in the north-west part of the workshop area. As such, these finds can be indications for some kind of writing activity, which may be related to a market function of the workshop area.

<sup>407</sup> The fire layer covering the workshops in the north-west of the area yielded a presumed dispersed purse content and a lost purse was found in the large waste-pit in the southwestern corner of the workshop area (see Volume II, Chapter 2).

Three graffiti on samian vessels of the south-west corner site can be attributed to fort period 4. While the PRI on a Drag. 36R must be the abbreviation of a 'Roman' name, the VIRNATTA on a Lud. V beaker and the MESSIC/MESSIE on a Drag. 37 bowl are Celtic names (see Volume II, Chapter 1.A.1, Section 10). Although these indications are limited, they may point to a regional recruitment of (part of) the unit.

In fort period 4, the pottery evidence clearly demonstrates an increasing orientation towards Britain (see Section V.2.7.2). This may also concern mobility of soldiers: transfer of individuals or small groups of a unit. A typical British type of brooch with military connection, the 3rd-century arched bow brooch with knobbed plate on the upper bow, was found at the south-west corner site and can definitely be attributed to fort period 4 (CA.B034). A close parallel is known from the north-eastern corner site (site Jacali), as well as at the Aardenburg fort (see Volume II, Chapter 3, Section 3.4.1). Moreover, five shoes recovered from the large waste pit OS 4980 are identified by van Driel-Murray as Amcotts style shoes (see Volume II, Chapter 8). So far, this style is only known in Britain (although it should be noted that comparable late 3rd-century shoe assemblages on the Continent lack). These finds may indicate that the Oudenburg unit of fort period 4, late 3rd century, comprised soldiers from Britain.

#### V.3.4.2. The Oudenburg fort in the 4th century and first decades of the 5th century: insights into culturally complex societies

V.3.4.2.1. Late Roman cultural identities in the North-West: the current state of knowledge and thinking 'away from the so-called barbarization' of the late Roman army Since its discovery in the 1960s the late Roman military Graveyard A of Oudenburg has been considered as one of the most extensive and lavishly furnished 'Germanic' burial sites in the North-West of Gaul. In consequence, the fort inhabitants of the second half of the 4th and early 5th century were considered as Germanic *foederati*. However, as has already been discussed in Chapter IV.3.2, in the last two decades the academic debate has grown on the question whether one can indeed consider the late Roman army troops in the region actually as Germanic. The evidence of the direct relationship between the late Roman graveyards at Oudenburg with the two attested phases of fort period 5 at the fort precinct, yields opportunities to investigate this question more deeply in order to come to more definite conclusions.

Since Caesar non-Roman men have been recruited as soldiers in the Roman army, and this practice had become common by the 2nd and 3rd centuries (Böhme 1996, 91; Richardot 2005, 323). In the first half of the 3rd century, and possibly already in the later 2nd century, irregular units of Germanic origin were transported to Hadrian's Wall, as is known from inscriptions (Hodgson 2003, 148-152; 2009, 33). The political developments of the 3rd century, representing crises at several levels – from heavy losses caused by civil wars to epidemics –, meant that the official state and usurpers needing troops looked to mercenaries and foreign elite troops and

these contingents were increasingly incorporated within the Roman army (Strobel 2011, 278). Already from the time of Gallienus (AD 253-268) literary sources mention arrangements with immigrants which are specified as *foedera* or treaties (Wightmann 1985, 209). The term *foederati* originally designated 'barbarians' from beyond the frontiers, and by the late Roman period also from inside the Empire, which were employed in the Roman army by means of an alliance with a tribal leader or a client king. Southern and Dixon point out that these units were not necessarily composed of men with the same ethnic background. Sometimes these units were even integrated into the regular army (Southern and Dixon 1996, 48-49, 71).

The *Historia Augusta* mentions that Postumus used large numbers of Germanic auxiliary troops, possibly Thuringians, in opposing Gallienus' invasion (Drinkwater 1987, 225). Probus (276-282) was the first emperor to put imprisoned Germanic people, the so-called *laeti*, on deserted domains (Wightman 1985, 209). Also Constantius Chlorus, after defeating Carausius, put Germanic tribes who had been supporting Carausius, to work as farmers-soldiers in Gaul. He also organized large-scale deportations of *laeti* to inject depopulated regions with new forces, as can be read from Eumenius (Rogge 1996c, 115-117). Wightmann records that by the time of Constantinus there were Frankish *foederati* on both sides of the Lower Rhine frontier (Wightmann 1985, 209). It is believed that the first systematic infiltration of Germanic people in the region can be dated around the middle of the 4th century: Salian Franks were pushed to Toxandria (Central Flanders) by the Quadi and Chamavi and spread over the region in the following decades (Thoen and Vermeulen 1998, 7).

In the meantime, more and more Germanic soldiers integrated into the Roman Empire through recruitment, a practice which became generalized from AD 260 onwards (Richardot 2005, 326). The mention of several Germanic officers in the Roman army in 4th- and 5th century texts (e.g. by Ammianus Marcellinus for the period AD 350-370) has been used to demonstrate the high rank Germanic soldiers could rise in (Richardot 2005, 324; Christie 2011, 61). Christie (2011, 61), following Elton (1996, 149), points out that several might only have been Germanic in origin but probably had lived their entire life in the Roman Empire and saw themselves as 'Roman'.

Rogge concluded that certainly from Valentinianus I (AD 364-375) onwards, the Germanization of the army increased (Rogge 1996c, 106). Elton believes that around AD 350 more or less half of the troops consisted of Germanic soldiers and that by a generation later they probably formed the majority (Elton 1996). Also Richardot (2005, 332) speaks of a massive barbarization of the Roman army in the period AD 376-382. Rogge assigned Frankish *foederati* as the units who took up the defence of the Empire in exchange of land, money or other goods and considered them responsible for the occupation of the forts of Kortrijk and Ghent and for the reoccupation of several of the hill-forts in the Samber-and-Meuse region in the south of Belgium (Rogge 1996c, 117-119). From the written sources can be deduced that by the end of the 4th century Germanic immigrants were involved in the defence of Gaul; they were called *gentiles*, *gentes*, *coloni* and *dedictii*. Also *laeti* were involved but as mentioned before, they already entered Gaul in



earlier periods. The exact status of these different groups is however uncertain (Southern and Dixon 1996, 46-50). Rogge argued that from the last quarter of the 4th century onwards the *foederati* and the *gentiles* formed the most important component of the North Gaulish 'defence-in-depth' and that the *laeti* took up the defence of the agrarian hinterland (Rogge 1996c, 117-119).

However, circular arguments seem to be in play here when reading Elton (1996) and Rogge (1996c). Such statements were still mainly based on the ethnic interpretation of material culture to explain the profound changes in the 4th century. The main argument for Rogge was the assumed Germanic character of the military occupations at Oudenburg, Kortrijk and Ghent, based on the material culture interpreted following Böhme (1974).

Halsall (2007, 102-103) has argued that the Germanization of the Roman army before c. AD 400 has been overestimated. Also Wijnendaele (2013, 55) believes that the so-called barbarization of the Roman army is an exaggerated and misunderstood phenomenon. He assumes that presumably never more than a third of the unit originated from outside the Empire and that these immigrants were completely Romanized. Halsall (2007, 102-102) even believes that the army created for itself a particularly 'barbarian' identity with an adaption of barbarian styles but that this was in itself a 'Roman' act.

There has been increasing acceptance that in the late Roman period the dichotomy Roman versus Germanic is no longer tenable. For some decades, Böhme's 1974 publication *Germanische Grabfunde des 4. bis 5. Jahrhunderts zwischen unterer Elbe und Loire* – at least on the Continent – was the undisputed reference to interpret the 4th- and (early) 5th-century graveyards in northern Gaul as the evidence of the Germanization of the army and of the region in that part of the Empire. In the 4th century new types of grave goods were introduced, such as weapons (especially axes), (elements of) mostly broad elaborate belts, brooches in the male graves, jewellery in the graves of women, triangular bone combs, tweezers, iron shears, firesteels and wooden buckets (Böhme 2009, 131). Weapons as a grave good, brooches like the *Armbrustfibel*, *Stützarmfibel*, *Tutulusfibel*, animal-ornamented buckles and chip-carved belt garnitures were regarded by Böhme (1974) as indicators for being Germanic (see Chapter IV.3.2). An illustrative example of the adapted dichotomy Roman versus Germanic is the conclusion at the time from the Boulogne graveyards. Seillier (1994, 224-225 and 229) related the crossbow brooches with regular units and the weapon graves with Germanic units of the irregular army. Such a conclusion can no longer be supported.

Oudenburg Graveyard A was one of the by Böhme listed graveyards representing this 'new form' of burial appearing in northern Gaul and distributed north of the Loire with a concentration in the North-West, in modern Belgium and Picardie. The Oudenburg graveyard stands out as one of the cemeteries with the largest number of lavishly furnished burials (cf. Halsall 2007, 153). Traditionally these burials have been associated with 'Germanic' settlers and this is still the most common interpretation. This interpretation is imbedded in the German tradition which used ethnic groups and the migration of people to explain particular styles and changes based on the assumed direct link between material culture and ethnicity. From

the distribution of maps of 'Germanic' settlements in combination with those of 'Germanic' female jewellery and 'Germanic' weapon graves, Böhme deduced that from the second third of the 4th century onwards, under Constantinus and his sons, Germanic incomers settled in the North of Gaul within a 'continuous process that is marked by a steady flow of immigration' (Böhme 2009, 140-141) and which intensified during the time of Valentinianus I. He also believed that the archaeological evidence points to a still functioning Roman military organization with 'imperial Germanic' soldiers serving as auxiliary troops at military installations in the northern Gaul up until the middle of the 5th century (Böhme 2009, 142-143). Since the custom of depositing weapons was seen as non-Roman (because of the presumed prohibition by Roman law), the Germanic soldiers were identified as *laeti* (e.g. for Portchester: Cunliffe 1977, 5) (Johnson 1977, 65), later mostly as *foederati* (cf. e.g. Rogge 1996c, 117-119; Brulet 2017, 43-44).

Already from the 1960s onwards, the Anglophone world – within the context of the Processual Archaeology movement – criticized the ethnic interpretation of changes in material culture and related them to exchange relations and as such to social change and to newly emerging identities (for overviews cf. Halsall 2000; 2007; Theuvs 2009; Heeren 2017, 151). From the 1990s it is widely acknowledged that migrations did form an important factor in the formation of these new identities though (cf. Roymans and Heeren 2017, 3 with references; see also the different contributions in Roymans *et al.* 2017). However, the 'ethnic' interpretations by Böhme and others were strongly debated by scholars like Halsall (1992) and Whittaker (1994; 2004) (see also Theuvs 2009). A review in first instance by Halsall (e.g. 2000; 2007; 2012) of the graveyards and of the grave finds traditionally considered as being Germanic, stated that the archaeological data cannot be associated directly with trans-Rhenan settlers and that their character was most likely rather determined by a specific symbolism which cannot be interpreted *an sich* as Germanic but was instead entirely Roman (cf. Halsall 2007, 153-159). According to Halsall this symbolism reflected the claim for local power and leadership, a symbolism which has later also been attributed by Theuvs (2009) to the weapon graves in particular. Halsall and Theuvs emphasized that the 'Germanic' point of view is based on a too one-dimensional idea on the late Roman societies.

The character of these societies was the result of a complex history of newcomers, migrations and troop movements. This made them into mixed or rather merged cultures, a 'Mischzivilisation' as Stickler (2011, 500) calls it, in which 'Romans' and 'barbarians' did not stand in a binary opposition (Halsall 2012, 35). New identities were created by interaction and renegotiation between individuals in a search for expression in a changing environment. Assigning people as 'Germanic' or 'Roman' is no longer acceptable; identity is not so one-dimensional or as simple, and is not simply linked to race and language (cf. Section V.3.1 in this chapter)<sup>408</sup>. In contrast to Böhme (2009), who still practiced the ethnic interpretation, Halsall argued that barbarians within the Empire can hardly be identified through material culture as they 'expressed power and status in a

408 The same discussion has made the academic world rethink the debate about 'Roman' versus 'native' (cf. e.g. Hill 2001).

very Roman fashion' with a complete adoption of Roman material culture and a rapid subscription to Roman cultural norms (Halsall 2007, 159-161, 198-199). As such Halsall (2000), and others like Theuvs (2009), explain the weapon graves, and also the jewellery burials and other lavish graves, not ethnically but in social terms, as representing authority and as an expression of Romanized elite within the context of political break-down and local insecurity in Northern Gaul. Moreover, Coulston has demonstrated that chip-carved waist belts and fittings were not at all Germanic but that they were clearly a further development of the 3rd-century Roman dress in combination with the evolution in decoration and metalwork forms (Coulston 2013, 468-469).

With a material culture as an expression of redefined identities in the merged societies in Northern Gaul as a result of a long process of immigration, interaction, exchange and assimilation, it becomes clear that grave goods *an sich* cannot tell or evidence whether the deceased were Germanic settlers or not (cf. Halsall 2000, 178-180; Esmonde Cleary 2013, 79-87; Van Thienen 2017a). Halsall even wonders whether in the circumstances of the late 4th and early 5th century it is justified to assign these people to particular groups with particular legal status, such as *foederati* (Halsall 2000, 178).

Physical-anthropological research at the late Roman graveyards of Zouafques, Nempont-Saint-Firmin, Vron and Novion-en-Ponthieu (departments of Pas-de-Calais and Somme, North of France) did conclude a Germanic origin for (some amongst) the deceased and has assumed the presence of small numbers of Germanic units that were part of the Roman army during the late 4th century (cf. Dhaeze 2011, 144, 211, 328, with references; see also Blondiaux 1993). Blondiaux (1993) concluded that several individuals at the late Roman graveyard at Vron originated from the coastal region of Schleswig-Holstein, the core region of the Angles. At Nempont-Saint-Firmin, ten inhumations of the late Roman graveyard were attributed to Germanic soldiers based on physical anthropology research (see Dhaeze 2011, 131, 328 with reference). However, Halsall argued not to be convinced by the used methodology and that ethnicity/cultural identity cannot be directly approached using physical anthropology (Halsall 2000, 175). Neither can DNA analysis; several methodological problems can be listed which are involved in the study of DNA evidence (Halsall 2012, 33-34). Since the 1990s multi-isotope analyses on human remains of late Roman graveyards give an extra dimension to the study of cultural identities (see Chapter IV, Section IV.3.2.5). However, for the moment they result in limited conclusions regarding specific origin location; multi-isotopic analysis cannot pinpoint the origin and is so far restricted to landscape type and not geographical provenance. A future more developed and combined technique of systematic ancestry assessment can possibly provide perspectives (Eckardt 2014, 77-78).

With the above it is important to keep in mind that the picture retrieved from the burials is not a one-to-one reflection of identities and of the everyday life but a rhetorized expression. Or as Gardner emphasized: '*the everyday lifeworld of these people, insofar as it was fixed in the burial rite, was quite a diverse one in terms of the precise practices that were followed, and the identities that these helped to shape*' (Gardner 2007b, 671). Moreover, the culturally complex

nature of the communities of the late Roman period, certainly from the second half of the 4th century onwards, is reflected in more variety in the daily practices. The increasing local variations on military sites in Britain from the second half of the 4th century, to which Gardner (2007b, 677) points, will certainly have been related to this.

The late Roman societies are characterized by mobility of people. From the research of this mobility topic by Eckardt (2014) and Eckardt *et al.* (2010) the term 'Roman diaspora' (in very loose terms) has emerged to interpret incomers and to describe '*how identities are created and maintained in communities dispersed amongst other peoples*' (Eckardt *et al.* 2010, 124), although the term itself covers a diversity of communities (cf. Eckardt *et al.* 2010, 107-109). The large-scale mobility of people has led to '*the maintenance of traditions but also interactions with the host communities which led to the acceptance (often in modified form) of new material culture and new social practices*' (Eckardt *et al.* 2014, 536). In northern Gaul the assimilation of a mix of cultural and social groups gradually evolved into a frontier community with its own unique identity through a complex process of creolisation and hybridity (cf. Eckardt *et al.* 2014, 536 with references) related to the specific context of the broad frontier region. This also implies that the material culture has its limits in contributing to unravel socio-cultural identities in the late Roman period.

The following section will explore if and how the combined study of the structural and material evidence at the late Roman Oudenburg fort and its graveyards can shed more light on the socio-cultural character of the military communities in the region.

#### V.3.4.2.2. The evolution of the Oudenburg fort and its units in the 4th – early 5th century

##### V.3.4.2.2.a The structural evidence at the fort precinct

The renovation and reoccupation of the Oudenburg stone fort around AD 325/330 by *limitanei* involved the installation of a bath complex richly decorated with amongst other things statuettes and marble from Greece furnishing the decorated walls. This reflects a lifestyle which is imbedded in traditional Roman culture. The many wine sieve fragments which can be attributed to this fort period also reflect this. The army unit of fort period 5A which manned the fort in the second quarter of the 4th century until somewhere in the third quarter, was clearly imbued with an imperial lifestyle attaching importance to Mediterranean elements.

This, however, changed abruptly with the start of the occupation of fort period 5B. With the re-arrangement of the inner building *c.* AD 380, the bath house was given up. Although, theoretically, it cannot be ruled out that in the latest fort phase the bath house was relocated to another place in the fort, it is most likely that the functionality offered by the baths was no longer valid in the late 4th century.

The actual duration of the use of the bath house cannot be determined from the archaeological traces and finds since the medieval robber

trenches disturbed all stratigraphic relationships. The robber trenches indicate that the demolition or final demolition of the bath house walls only took place after the (final) so-called dark earth had covered the Roman site. High medieval ceramics from the robber trenches date the last phase of demolition of the upstanding remains of the bath house in the 11th-12th centuries. From this can only be concluded that the ruins were still visible at that time, sticking out above the dark earth accumulation, allowing medieval diggers to trace and recover the building material. This implies that the bath building was still standing during the final fort phase and was not demolished during the final occupation of the late 4th – early 5th century. However, the surrounding structures indicate that the bath house was certainly no longer active during fort period 5B. Direct indications for a possible use for other purposes are lacking, but the vicinity of the compound-related features suggests that the bath house was reused to shelter animals.

The functionality offered by the bath building was clearly no longer valuable during the last occupation phase of the *castellum*. There are further examples of baths in Gaul that appear to have gone out of use after the middle of the 4th century (Brulet 2006d, 179). The same phenomenon can be seen at some British sites. In the course of the 4th century the baths at Binchester and at Canterbury lost their original function and were used for other activities (see Gardner 2007a, 194). At the fortress of Caerleon the baths fell into disuse in the 4th century and were adapted to new uses, mainly refuse disposal (Zienkiewicz 1986).

Bathing can be considered as an 'imperial lifestyle' as Gardner (2007a, 115) has named it. Not only did it include body maintenance, it also had an important role in social interaction (cf. e.g. Allason-Jones 2011b, 239-240). The unit which reoccupied the Oudenburg fort in AD 380 apparently did not care about this lifestyle. By the end of the 4th century bathing in the bath house, a typical Roman imperial practice, seems to have no longer formed an 'official' part of military life. The picture retrieved from the scientific research of this corner of the fort during the final phase of occupation does seem to substantiate this possibility. This area was filthy, as the dumping of dung heaps and organic waste such as offal indicates, maybe partly abandoned, and was reserved for animal husbandry with presumably horses grazing outside the fort, or fed by hay from outside the fort, and stabled in this fort area. Activities that were formerly excluded from the fort interior for hygiene reasons were no longer excluded. The fort precinct seems to have evolved into a compound housing a diverse community.

The same conclusions can be drawn from what is known from the other side of the Channel where the forts of Portchester (cf. Cunliffe 1975), Richborough (cf. Bushe-Fox 1926; Cunliffe 1968) and Pevensey (Lyne 2009, 40) show levels rich in pits and lacking durable structures. From both Portchester (Cunliffe 1975, 430) and Pevensey (Lyne 2009, 40) more chronological insights are available. At both sites, ordered occupation seems to have come to an end during the third quarter of the 4th century, after which the final occupation was characterized by disorganization and the dumping of rubbish on roads. Cunliffe (1977, 5) mentions that the '*apparent disorder within the fort, the digging of cesspits in profusion, and the tipping of masses of stinking occupation debris against the inside of*

*the fort walls*' at Portchester is matched by similar evidence (but unpublished) from 'several of the other sites' of the Saxon Shore. At Portchester this transition has been dated by Cunliffe in AD 364, at Pevensey by Lyne around AD 370. This phenomenon can be related to what is uncovered for fort period 5B at Oudenburg: heaps of dung and rubbish, and a road level full of waste to the south of the former bath house (Plate XXIX: f).

At the fortresses of Chester and Caerleon and along Hadrian's Wall the general arrangement was not altered in the late Roman period, but patterns of occupation changed: some areas fell out of use, some buildings were demolished to create open areas, other buildings altered internally (Gardner 2007a, 105-107; Collins 2012). Around or after c. AD 370, at the forts of South Shields and Vindolanda, the regular arrangement inside barracks was abandoned. At South Shields the late Roman *praetorium* lost its Mediterranean-inspired character and its official status (Hodgson 2009, 38). In the 4th century, during a period of two or three generations (c. 80 years), the south-east quadrant of the fort at *Segontium* (Caernarfon) in north-west Wales was left open and was given over to a range of successive activities. Previous structures like barracks, a courtyard house and two bath blocks were demolished and were at some point used for the disposal of rubbish (Gardner 2002, 332-334).

The aforementioned military sites displaying in the course of the later 4th century AD similar changes to Oudenburg indicate that these transformations are consistent with socio-cultural reconfigurations in the late Roman military communities.

#### V.3.4.2.2.b Sociocultural evidence from the material culture of the fort precinct

The fort community at Oudenburg, living in an isolated position without extramural settlement nor (much) population in the surroundings, must of necessity have been largely self-sustainable but with some essential regular external supplies. The import of late Argonne wares, Mayen wares from the Rhineland, reduced wares from the south of the Menapian region or perhaps even more southwards, and fine wares from *Britannia* demonstrate enduring connections with trade or exchange networks at some level. Scientific research of the in AD 379/380 reactivated well OS 2562 has evidenced that during fort period 5B at least part of the cereals was imported from more eastern or more southern loam regions. The reactivation of the well comprised the installation of a filtering system which can be described as an engineers' masterpiece. It witnesses of highly skilled personnel. Several indications testify to the management of the forested landscape further inland: evidence of coppicing of woods and the large volumes of moss gathered in a forested landscape, which – as the pollen shows – seems to have been intensively used. These aspects testify to a very well-organized community which had a huge impact on the surrounding region.

Seven shoes of fort period 5B, found in the inner well of the double well structure OS 2562 which was most likely filled in in the first decades of the 5th century, have been recognized by van Driel-Murray as Wijster style footwear. Wijster style shoes show strongly asymmetrical patterns and are characteristic for the northern

Netherlands and northern Germany, outside the Roman Empire. At first sight, these shoes evidence the presence of Germanic people amongst the soldiers (moreover, the presumed slits for spurs indicate that the unit was mounted). Nevertheless, the Oudenburg examples display Roman shoemaking techniques and materials and were clearly locally made (see Volume II, Chapter 8, study by C. van Driel-Murray); besides, these Wyster style shoes occurred together with typical Roman shoes. Such a '*marriage between Roman and Germanic shoemaking traditions*' as Ambrose (in Cunliffe 1975, 260) named it, was also encountered with a shoe recovered at the fort of Portchester. It shows a normal Roman stud arrangement, but an upper with features common on Anglo-Saxon shoes. Another example also displayed such features. The Wijster style shoes of Oudenburg show that the fort inhabitants of the late 4th – early 5th century wanted to have shoes which referred to the Germanic tradition. For the shoemaker and his 'customers' it was presumably what they expected their shoes to look like – on their socially visible side – but with a more enduring practical sole. Hence, this is a good example of Gardner's identification of the use of material culture in the construction, expression and social communication of identity (see Section V.3.1 in this chapter). Whether the shoemaker and his customers were themselves born Germanic or not, it was vital for them that the Germanic identity persisted.

The presence of Germanic-style handmade pottery connects with this idea. This pottery makes its first appearance at the fort precinct by the end of fort period 4. However, before the late 4th century the fragments only represent isolated finds. Van Thienen examined the fabric of a selection of this late Roman handmade pottery and concludes that most vessels were likely made locally or *in situ*. While the technique recalls Gallo-Roman practices, it does not exclude non-locals of making or using the pottery. Samples of three vessels revealed an 'exotic' origin for which the mobility of soldiers provides the best explanation. The mineralogical clues for these handmade vessels point to the Eifel and Rhine areas to the east, rather than to the north (see Volume II, Chapter 1.C.2, study by V. Van Thienen).

#### V.3.4.2.2.c Socio-cultural indications at the late Roman Graveyard A

The grave goods of one burial in particular at Graveyard A are very significant. No further attention has been given to this in the publication by Mertens and Van Impe (1971) of the graveyard though. Grave 206 contained a Germanic-style pot<sup>409</sup>, a coarse handmade vessel characterized by a soft fabric consisting of sedimentary clay tempered by crushed shells; only the rim is missing (Figure 123). The pot was placed next to the right foot of the deceased, a young male adult of c. 20 years old (Mertens and Van Impe 1971, 216). Near his head a crossbow brooch was found, which can be typologically classified as type Keller-Pröttel 3c-4c / Swift 2i with a dating in the period AD 300-365<sup>410</sup>. With no further grave goods and based on this typological dating, this grave can at first sight be related to fort period 5A.



Figure 123: The handmade Germanic-style pot from burial 206 of Graveyard A (Photo by Y. Mans).

The crossbow brooch in question (cf. Volume II, Chapter 3, Sections 3.4.1 and 4) designates the deceased as an officer. Only twenty years of age and already have reached such a high ranking, he may well have been the son of an officer; he might even have inherited the crossbow brooch from his father. While there is no hard evidence to confirm this, a date after AD 380, in fort period 5B, would be very plausible considering the presence of the Germanic-style pot (and since crossbow brooches could have a long life). The mixture with crushed shells in the fabric indicates that this pot was most likely a local imitation with reference to the Germanic tradition<sup>411</sup>. The group responsible for the burial of this soldier clearly wanted to give a Germanic identity to the burial, or better said, wanted to display a distinct cultural or ethnic background referring to the Germanic culture, whether the deceased was actually Germanic or not.

As already discussed in the overview of Graveyard A (Chapter IV, Section IV.3.2), the female graves yielding brooches such as of the type *Tutulus*, *Armbrust* and *Stützarm*, should not be interpreted one-to-one as the burials of the wives of soldiers which were taken along from their homeland in the north of *Germania Magna*. They do symbolize the specific character of the frontier society in the north-west of Gaul and they are the expression of a specific identity which the deceased or better the group burying the deceased, the mourners, wanted to carry out. Therefore it is a possible explanation that this society of mixed descent wanted to express explicitly its reference to the Germanic tradition and culture. Nevertheless it cannot be excluded that these women came from the north of *Germania Magna*.

Identical bracelets found at Graveyard A (see graves 4, 67 and 78) and Portchester (see Chapter IV, Section IV.3.2.4 and Table 3) are testimony to close linkage at this time. While the phasing of

<sup>409</sup> I am grateful to late Y. Hollevoet for pointing me to this find.

<sup>410</sup> Identification by dr. V. Van Thienen (cf. Van Thienen 2011; 2016)

<sup>411</sup> With thanks to dr. V. Van Thienen. A petrographic analysis of this vessel by Van Thienen is planned.

Table 11. Distribution of crossbow brooches at Graveyard A in fort period 5A and 5B burials, based on the intrinsic date of the brooch type (in cases of the late types) and/or the dating of the accompanying grave goods. The crossbow brooch found unstratified (SO14) and dated AD 350–410 is not listed.

GRAVEYARD A	PHASE 1 ~ FP5A	PHASE 2 ~ FP5B	PHASE undetermined
grave 001	X		
grave 002			X
grave 014	X		
grave 019		X	
grave 020			X
grave 026			X
grave 027		X	
grave 034			X
grave 037		X	
grave 041			X
grave 042			X
grave 049		X	
grave 057	X		
grave 059	X		
grave 072			X
grave 083			X
grave 103	X		
grave 104		X	
grave 111		X	
grave 114	X		
grave 115	X?		
grave 124		X	
grave 129		X	
grave 132	X		
grave 138	X		
grave 152			X
grave 165	X		
grave 169			X
grave 172		X	
grave 188	X		
grave 190			X
grave 206	X		
number of cross- bow brooches	12	9	11

grave 4 is uncertain, graves 67 and 78 can respectively definitely and presumably be assigned to phase 2, *i.e.* fort period 5B, and in the case of grave 67 even more precisely to after AD 390 (cf. Appendix 7: Table 18). Special attention needs to be given to the cogwheel bracelet of grave 78. This type, according to Swift made in southern Britain, is dated from the second half of the 4th century until the early 5th century and has a wide distribution on British sites. In contrast, they only occur at three continental sites. According to Swift the presence of other British bracelets at Graveyard A – she mentions graves 78 and 216, but as listed in Table 3 three more graves contained (presumed) British bracelets – supports her idea that they came in with their wearer (Swift 2010, 251). The bracelets

in question as such reflect troop movements, but gift exchange in case of close relationships cannot be excluded. Anyhow, these linked items emphasize that the Shore forts at both sides were still closely related in the period of the end of the 4th to the early 5th century<sup>412</sup>.

In this period, late 4th – early 5th century, the Oudenburg fort clearly still functioned as an important and significant stronghold. Not only the crossbow brooches, but also the elaborate belt sets in the burials of Graveyard A bear witness of its officialdom and seem to point to a large number of higher-ranked military personnel. The large number of graves with crossbow brooches, in total 33 – of which one was found loose – is striking. The allocation of the crossbow brooches to phase 1 (*i.e.* fort level 5A) or phase 2 (*i.e.* fort level 5B), based on the dating of the joining grave goods or the intrinsic date of the brooch in cases of the late types, demonstrates for the assignable portion a well-balanced distribution over the two phases (Table 11). While the figures cannot be taken as absolute, taken into account the long lives crossbow brooches could have (cf. Volume II, Chapter 3, Section 4, study by V. Van Thienen), the chronological distribution indicates a continuing presence of several military officers and emphasizes the importance of the units at Oudenburg from the third decade of the 4th century onwards until the early 5th century. The four crossbow brooches of the early developed type found at the south-west corner site confirm this (see Volume II, Chapter 3, Sections 3.4.1 and 4).

#### V.3.4.2.3. Interpretation of the evolution of the late Roman community at Oudenburg in relation to the North Sea and Channel region

The Oudenburg fort in the late 4th – early 5th century was clearly occupied by a unit which was culturally representative of the frontier society in the North-West of that time being ‘Germanic-influenced’. The complete structural transformation at the fort precinct at AD 380, after an interruption in the fort’s occupation, and representing an abrupt, and not gradual, sociocultural contrast away from the former imperial lifestyle, is very significant. Fort period 5A can be defined as ‘Romanized’ – we are well-aware of the criticisms the term ‘Romanized’, especially in late Roman context, has met<sup>413</sup>; we use it here not to indicate ‘acculturation’ but merely to point to an ‘imperial lifestyle’. The troops of fort period 5A seem to have been *limitanei*. In contrast, fort period 5B represents a rather ‘Germanized’, or rather ‘Germanic-influenced’ community.

412 The coins recovered at the Oudenburg fort cannot contribute to this matter. Only one coin, a *nummus* of Licinius (AD 310–315) found in the primary infill of basin OS 4923 of fort period 5B, can be identified as minted in London. However, one has to remember that the bad preservation of the coins at Oudenburg has only allowed to identify the mint in a very limited number of cases (cf. Volume II, Chapter 2).

413 Pitts and Versluys (2015, 5–6) refer to the most recent debate and present ‘globalization’ as a valuable alternative term to work with in its simple meaning of the ‘processes by which localities and people become increasingly interconnected and interdependent’. See also Gardner (2007a, 27) and Haynes (1999b, 165) with references for a discussion of the term ‘Romanization’. See also De Clercq (2009) for a thorough debate on the term Romanization, mainly within the context of rural communities, its evolution and the discrepancy in its use between the Anglophone and continental world.



Should we see these troops indeed as Böhme (2009, 142-143) suggested, as 'imperial Germanic' units, and as such as substitutes of their predecessors in taking over their role in the *Litus Saxonicum*? Also Southern and Dixon (1996, 48-49, 71) emphasized that units of *foederati* could be integrated into the regular army. However, such a scenario of a regular army unit is not compatible with the given that this unit could stay put until after AD 410. The material evidence points to a continuing fort occupation after AD 410. From AD 380 until after AD 410 no disruptions or transformations can be detected on the fort precinct which would indicate a change of troops. Structures remained in use until the very end of the late Roman fort occupation; the double well OS 2562 and the large water basin OS 4923 were clearly only filled in at or after the very end of the Roman military presence. The continuity seems to evidence that the unit experienced no influence of the major political-military events and reorganizations in the early 5th century which will have resulted in many troop changes, like the withdrawal of *limitanei* from the region by Stilicho in AD 402, the usurpation of the north-west of Gaul by Constantinus III in AD 407 and its suppression in AD 411. The continuity in the fort occupation indicates that the unit at Oudenburg was not closely tied to the official Roman court and that it already acted semi-autonomous.

A similar outcome may be envisaged as outlined for the fort garrisons along Hadrian's Wall by Collins (2012; 2017), although under different political developments. Also along Hadrian's Wall there was a continuing military presence in the forts into the early 5th century with at several forts similar important structural changes on the fort precinct as can be seen at Oudenburg. A number of scenarios have been proposed by Collins (2012; 2013) with a preference for 'the transformation of the fort praepositus and his unit of *limitanei* into a local chieftain and his warband', as a legally recognized or non-legal authority (Collins 2013, 37). In the second half or the last quarter of the 4th century the *limitanei* units became increasingly regionalized or localized – socially, culturally and economically – and eventually evolved, without interruption, into warbands in the 5th century (Collins 2012, 109-110; 2017). Through an analysis of distribution patterns of coins, belt-fittings and crossbow brooches in south- and southeast-Britain, Esmonde Cleary (2017) has argued for a similar evolution at the British Shore forts with an evolution of the fort garrisons into warbands commanded by 'warlords'. He wonders whether in south- and south-eastern Britain it did not start earlier, namely in the last quarter of the 4th century.

Eventually the outcome for the north-west of Gaul was the same; in the course of the 5th century powerful commander-in-chiefs evolved into warlords and finally monarchs (Lieschuetz 2011, 482). The evolution seems to have been modelled along different lines though. At Oudenburg, with its isolated position, on the transition between Continent and *Britannia*, such an evolution will not have been instigated by neighbouring forts. Instead of a gradual evolution of the *limitanei* like at Hadrian's Wall, the archaeological evidence at Oudenburg, and the specific date of AD 380 for the socio-cultural transformation of the fort's population after an interruption in the fort's occupation indicate that the initial step of this change can be related to a single event; a new unit arrived at Oudenburg which was socio-culturally different. Nevertheless, the

unchanged fort occupation at Oudenburg into possibly the second third of the 5th century assumes that the fort garrison in the early 5th century equally had gradually evolved into a warband or self-defending community.

The continuity of the army unit at Oudenburg may suggest that already from AD 380 onwards an 'external' unit was stationed at the Oudenburg fort. This would also explain why the Oudenburg fort is not recorded in the *Notitia Dignitatum* in which only regular army units were listed. To say that the troops at Oudenburg were then certainly Germanic *foederati* is however a bridge too far. The army unit was definitely a multi-cultural, heterogeneous mix of people. The jewellery in particular indicates that the history of these people was characterized by a high degree of mobility. Their 'cosmopolitan' character not only included cross-Channel mobility but also mobility from eastern regions, as far as *Pannonia*. The latter is not only represented by jewellery, but probably also by the *Siscia* coins the soldier of grave 76 had with him and by the Sabazio's armlet the soldier of grave 114 wore. Although they will certainly not all have been Germanic or people with Germanic roots, the general identity or lifestyle of the Oudenburg unit of fort period 5B was Germanized or Germanic-influenced/culturally Germanic. Abandoning the imperial bathing culture testifies to a significant socio-cultural identity change in comparison to the previous period. The soldiers arriving at Oudenburg c. AD 380 may have had no close attachment to bathing processes and it may be that higher ranking Roman officials on official/army business either stopped coming themselves or were also now themselves not from a background where bathing rituals were important or the baths the venue for discussions/planning/business as was previously the case. There was clearly no longer a need to meet their expectation with functioning baths. Nonetheless these troops at Oudenburg could still be under a Roman command system and have their crossbow brooches as official markers. However, the crossbow brooches by this time in the 5th century might no longer represent the same identity as before as symbols of military officers within the Roman army or Roman officials. They may well have been adopted as expressions of power and status in 'imitation' of the tradition within the Roman army.

The occupation in AD 380 by a non-regular unit would explain how the unit could stay in place against the political turmoil in the North-West in the late 4th and early 5th century. It would also explain why the Oudenburg fort does not occur on the *Notitia Dignitatum* since, as aforementioned, it seems hardly plausible that it can still be identified as the *portus Aepatiacus*. Based on closely dated archaeological evidence, Heeren has argued for *Germania Secunda* that the Rhine frontier was indeed entrusted to Frankish *foederati* as has traditionally been considered (see e.g. Drinkwater 1998, 294). According to Heeren, not only the military sites along the Lower Rhine, but also the new settlements, were inhabited by federate families from around AD 400 onwards (Heeren 2017, 167). Heeren has related this to the absence of *Germania Secunda* in the *Notitia Dignitatum* as it lists only regular Roman army units. Following this line, he argued that the absence in the *Notitia Dignitatum* of attested (and also presumed) late Roman forts in *Belgica Secunda*, would imply that the whole north-west of Gaul, including the fortified road Boulogne – Bavay – Tongres – Cologne, and *Germania Secunda* were under the control of allied troops, paid

by Rome to fight for Rome, and no longer by the regular Roman army (Heeren 2017, 167). The situation along the coasts, and that in the hinterland, cannot be simply aligned with the situation along the Lower Rhine though.

The data at hand seems to point out that allied troops occupied the Oudenburg fort from AD 380 onwards. We are not convinced though that they were Germanic (or more specific Frankish) *foederati*. The specific legal status of the fort occupants cannot be deduced from the material evidence. However, in the overall character of its material culture the unit at Oudenburg of fort period 5B shows a high degree of similarity to what is represented by fort period 5A. The unit adapted the Roman symbols of officialdom and imperial power such as the crossbow brooches and exquisite belt sets, whether or not with exactly the same meaning. In the burial rite it is therefore difficult to distinguish these groups and no clear difference can be observed at Graveyard A between the burials related to fort period 5A and those of fort period 5B. Only the abandonment of the typical 'Roman/imperial' bathing lifestyle, the *Tutulus*, *Armbrust* and *Stützarm* brooches at Graveyard A and the presence of Germanic-style shoes and Germanic-style handmade pottery at the fort suggest a Germanic link. But these shoes were locally made, as most of the handmade pottery in question (except

for only a few late Roman handmade vessels of 'exotic', Germanic origin). Hence, they do not (necessarily) represent the Germanic origin of the maker and/or consumer, but at best the Germanic identity they wanted to have, whether they were themselves born Germanic or not.

Many other aspects, which clearly suggest a high degree of mobility of people and the cosmopolitan character of the troops, point to a unit which was raised from this northern frontier world, the 'North Sea cultural zone' with movement of people across and around the North Sea in all directions as Halsall (2014, 531) calls it. This society was multi-cultural and will certainly have comprised Germanic people (as evidenced by the few as Germanic identified handmade pots), but also people with no direct link to *Germania Magna*. Nevertheless, this frontier society was clearly enmeshed in shared forms of Germanic-influenced expression and used its material culture in the construction, expression and social communication of its identity as Gardner already indicated (cf. Section V.3.1). The legacy of this frontier society can be observed in the Anglo-Saxon affinities attested at the early medieval sites in the region, in building techniques, house plans as well as in the pottery (cf. Chapter II, Section II.2.3).



## VI. Conclusions. Change and continuity: the Oudenburg fort reflecting later Roman military development along the North Sea and Channel frontier zone

### VI.1. The Roman fort at Oudenburg as a key site for the Roman North Sea and Channel frontier zone

At the Oudenburg fort, 21st-century excavations on the fort precinct – such recent field research is *an sich* a unique given for the Channel region – not only yielded vast find assemblages, but also for the first time within the context of the Shore forts, securely datable structural evidence representing the evolution of the mid-to late Roman fort. Integrating all valuable data of old and more recent research, Oudenburg has become a key in the development of the coastal defence system in the North Sea and Channel region, not only on a historic-military level, but also on a socio-cultural and socio-economic one. The opportunities of this site for the study of ‘military identities’ are the more emphasized through the combination with known graveyards in the vicinity of the fort of which the direct relationship with the successive fort periods could be firmly established.

Through mapping all archaeological observations on the Oudenburg sand ridge in the past, insights are retrieved into how the Oudenburg fort was imbedded in its surrounding cultural and natural landscape and how the settlement gradually adapted to the military presence. The specific geographical position of the Oudenburg site, bordering the coastal plain and with a forested hinterland, but also its remote location which was certainly emphasized in the late Roman period, clearly determined the development and the evolution of the civil settlement and of the fort. Not only was the coastal plain a region in constant evolution which will have had a considerable impact on the activities at and surrounding the sand ridge. Also the ample availability of oak was clearly a determined factor for the construction of the successive forts and the evolution of its defensive system, not only seen at Oudenburg but also at Aardenburg.

The confrontation of the stratified structural evidence of the defensive system and of the fort precinct together with the associated material culture, and the data from the surrounding graveyards and extramural settlement has resulted in a refined fort chronology running from the late 2nd century until the first decades of the 5th century and representing five main fort periods, each consisting of two or more building phases. Remarkably, every fort period stood for a different spatial and functional implementation of the fort, at

least of its peripheral areas, which can be seen as an expression of the changing identity of the successive army units. The south-west corner site of the fort was successively occupied by soldiers’ barracks in fort period 1, a courtyard building identified as military hospital decorated with mural paintings and with an unknown predecessor in fort period 2, respectively soldiers’ barracks, presumed officers’ quarters and again soldiers’ barracks or possibly stable barracks in fort period 3, a large workshop area in fort period 4, and a bath house in fort period 5, in its final phase abandoned to use the area for animal compounds. The rapidity of these structural changes, especially in the 3rd century, witnesses of the rapid troop changes and ditto military decisions reflecting the political turmoil in the region before the era of the Gallic Empire.

### VI.2. A contribution on a historic-military level

The combined evidence from Oudenburg, Aardenburg and the British Shore forts indicates that the installation of a coastal defence covering both sides of the Channel is most likely assignable to Commodus (AD 177-192). From that time onwards, the coastal defence seems to have developed rather organically, but on the Continent, the Oudenburg and Aardenburg forts appear to have had a parallel evolution from the late 2nd century throughout the 3rd century. For the first half of the 3rd century, this is evidenced by similar tile stamps and throughout the 3rd century by identical, military supply arrangements. It can now be firmly established that a unified cross-Channel coastal defence system was installed under Postumus, visually expressed by the defensive stone architecture showing specific characteristics. This unification clearly instigated the cross-Channel connection as can be seen in an increase of incoming British material (*e.g.* Romano-British pottery, whetstones from the Weald, jet items most likely from the Yorkshire coast). Under the breakaway British Empire, the Channel divided the shores on a political level, with both the Oudenburg and Aardenburg fort as part of the official Empire opposite to the British Empire. Although this resulted in a different military evolution of the shores, this seems to have had no impact on the cross-Channel economic connections, evidenced by the Romano-British coarse pottery of which a portion can be securely dated to this period.

The reoccupation and renovation of the Oudenburg fort under Constantinus in a way which visually and strategically mirrors the manner in which the British Shore forts were reinforced, testifies to a general building programme along the North Sea and Channel. Moreover, the firmly established start date at Oudenburg of *c.* AD 325-330 may well represent the actual start of the 'Saxon Shore' system operating under one command. A clear interruption in the fort's occupation somewhere in-between AD 360/370 and 380 can be related to troop movements to the East by Julianus in AD 361 or by Valentinianus I in the (early) 370s. The subsequent reoccupation of the fort by non-regular troops, can be closely dated to AD 379/380 and can possibly be related to the actions by Magnus Maximus against Gratianus. The army unit stayed put certainly after AD 411/413, likely into the second quarter of the 5th century, and this evidence of prolonged military occupation sheds new light onto the end of 'Roman' military occupation in the north-west of Gaul.

### VI.3. A contribution to the reconstruction of socio-cultural identities

Throughout its occupation, the fort was manned by mixed units of infantry and cavalry, clearly adapted to their role in the coastal defence in intercepting small raids and patrolling the coastline. While the soldiers' barracks of the late 2nd century and the military hospital of the first half of the 3rd century conform to a 'classical' layout – with the hospital courtyard building reflecting contemporary metropolitan Roman cultural expressions –, structural evidence from fort period 3 onwards, to which we can relate a change in meat and other consumption patterns, testifies to changing cultural traditions indicative for regional recruitment. From the later 3rd century AD, at the Shore forts, an evolution into 'fort communities', representing several layers of society and different social groups, has to be envisaged. At Oudenburg, the presence of women and children as an integral part of the fort community, visible in several forms of material culture, can be linked to the abandonment of the extramural settlement in the 260s. This multi-layered community, as evidenced at fort period 4, seems to have continued to be the norm in the 4th century and later. The *limitanei* who reoccupied and renovated the fort in the third decade of the 4th century, and of which the several crossbow brooches testify to the importance of this unit and the significant presence of military officers, were imbued with an imperial lifestyle, visualized in the way the bath house was furnished. Nevertheless, the pottery points to a strong (wider-)regional economy reflecting amongst other things the earlier set trend of changing preferences of foodstuffs and liquids. The imperial identity the army wanted to uphold in that period, stands in strong contrast with the picture of the late 4th and early 5th century, retrieved from the combined study of the structural evidence and material culture of the fort precinct and of the related late Roman inhumation graveyards in the vicinity of the fort. The fort community from *c.* AD 380 onwards was 'Germanized' or 'culturally Germanic', regardless whether they were all ethnically Germanic or not.

This non-regular unit, whether it concerns *foederati* or not, was multi-cultural and of cosmopolitan character. This contributes to

the debate of the last two decades – primarily in the Anglophonic academic world – which steps away from the ethnic-Germanic interpretation of the changes in the late Roman period in the North-West and considers the 'new' military communities as inhibited of a merged frontier society – a '*North Sea cultural zone*' to phrase Halsall (2014, 531) – formed through a history of incomers. The Germanized character of the fort community does not at all imply that they would be less organized or less skilled. The construction of the filter system installation of the double well in this latest fort phase and the resources needed for this construction, do not only witness of insights into ground water management, they also testify to engineer skills and a high level of organization (cf. coppice; large extraction of mosses). While it is difficult to pinpoint the exact end of this last 'Roman' military occupation, the evolution of the region in general indicates that the fort community gradually lost its 'Roman' military character and will have evolved into a 'warband', to eventually integrate in the Merovingian society.

### VI.4. A contribution on a socio-economic level

Establishing a firm fort chronology has enabled diachronic studies of the pottery resulting in insights into supply and trade networks in the North Sea and Channel region and their evolution at a time when pottery distribution became more and more centralized with only a few major players in control. On the other hand, the army unit strongly relied on the local/regional supply of the North Menapian pottery of which the evolution demonstrates a clear military-native interaction in the production and distribution and evidences that the army unit must have been firmly imbedded in the local and regional society. The position of Oudenburg along the coast, in fact on the border between the Continent and *Britannia*, in absence of a significant fine ware pottery production centre nearby, has made this fort into a site where the changing supply connections with Central Gaul, North Gaul, the Rhineland and *Britannia* are most visible. In the fine wares of the late 2nd and 3rd century the competition between the two major production centres at Cologne and Trier has been exposed. The evolution in the supplies of the Central and East Gaulish samian from the late 2nd to late 3rd century and the competition between the late Argonne and North Gaulish potteries in the 4th – early 5th century demonstrate the dominating role of these centres in a political economy and testify to a commercial geography in the distribution of pottery supplies, as is also very clear from the changing supply axes of the coarse ware mortaria and the amphorae.

While the first cross-Channel contacts emerge around the middle of the 3rd century (fort period 3), as is mainly clear from the pottery, it is with the installation of the unified cross-Channel defensive shore system under the Gallic Empire that these contacts became intensified, apparently continuing under the British Empire. It is however only by the 4th century that one can speak for the Oudenburg fort of actual cross-Channel trade in pottery as part of a regional economy. In this period, apart from the late Argonne and North Gaulish supplies, the pottery came largely from the Rhineland and from Britain, testifying to a strong British orientation, likely due to intensified military cross-Channel contacts but also in response to less availability from the continental suppliers. It is argued that the presence of late Argonne sigillata



and Mayen wares at the British Shore forts are the result of these cross-Channel contacts in the other direction. A general lessening of availability of pottery and other commodities resulted in a more regional economy and increasing self-sufficiency, not only expressed through the workshop area of fort period 4 and its multi-purpose character visible in the wide range of activities (crafts, market) taking place there or elsewhere by the soldiers (cf. the different crafts represented by the iron items recovered from this area). Increasingly regional and local solutions for foodstuffs appeared, such as for example local fish sauces and North Gaulish (nut?) oil. On the other hand, this regionalization seems to have been stimulated by changing consumption habits and traditions.

### VI.5. A contribution on a methodological level

We hope to have evidenced the importance of a holistic, integrated and contextual approach in studying such complex sites and the necessity of combining these approaches in the totality of the material culture. The different find categories represent pieces in a large puzzle in which they all give significant information, often on a different level. Only together they enable the reconstruction of 'everyday life'. Without for example the reconstruction of the decoration scheme of the mural paintings of the military hospital of fort period 2, the height of the walls and therefore the monumental character of this building would never have been recognized. The in-depth study of a specific find category is the necessary basis to come to valid, diachronic conclusions. The analysis in depth of the samian wares and other fine wares for example has clearly demonstrated the difficulties of narrow dating for the 3rd and 4th century based on only these find categories. For the 4th century more or less only samian roller stamps are indicative, and this is even more prominent with the low coin loss characteristic for this period. Moreover, this is even more marked considering the long life-span samian vessels could have as is clearly evidenced at fort period 4. Besides, the studies in depth have evidenced and have enabled clear visuals on the high degree of residuality such a long-lived site was subject too, not only – although for the largest part – the result of the successive building activities, but also through deliberate reuse and recycling. It makes an integrated study in depth of all pottery categories and other find categories even more essential to come to insights into site formation processes and

firm chronological and socio-economic conclusions. Besides, only by a thorough analysis of the totality of a find category, it is possible to have an eye for the unusual items which are most often those pointing to socio-cultural aspects (cf. for example the North African lid and *Morini* cup of fort period 1). Such a combined holistic and contextual approach seems evident; however, since it is very time-consuming, this combination is achieved only rarely. More often material culture is studied in its totality, but not all contextually; or it is studied contextually, but only very selectively. Of course, we are all too aware of the time investments and costs involved in accomplishing this with Oudenburg.

We found it very important to 'show all the evidence', accompanying the analysis of the material culture. Thorough studies of 3rd- and 4th-century site contexts are limited in the region; certainly for the 4th century they are hardly existent. Even in the wider region comparable assemblages are scarce; in the case of the Shore forts in Britain, they are not well-understood, and given the near absence of (large-scale) investigation in the past 40 years, lack concerted studies of excavated contexts and assemblages, recovered to current standards. For several pottery categories, such as for example the colour-coated and black-slipped wares, the studies in depth have emphasized the importance of the Oudenburg assemblages also in light of chronological insights into the distribution of major pottery centres and as a key site with reference material on a regional level.

The Oudenburg site, studied in relationship to the other Shore forts, has enabled to explore 'change and continuity' and 'identity' at several levels. First, the study of this site formed the basis to come to new insights into changes on a historic-military level in the North Sea and Channel region. Secondly, the research pointed to continuity and transformations from mid- to late Roman fort occupations, not only on a structural, spatial and functional level, but also regarding the socio-cultural identities of the fort inhabitants and their socio-economic relationships. The significance of the Oudenburg fort is emphasized by how well-preserved the site complex is (relatively). The Oudenburg stratified assemblages studied and presented here can represent a 'touchstone' for both regional military and later Roman site studies in the North-West provinces.



# Appendix 1

## Overview of the archaeological observations at Oudenburg yielding information on the Roman character of the sand ridge

All known archaeological observations in the city centre of Oudenburg which are meaningful for the interpretation of the Roman site and its location, are mapped and listed according to type of observation: excavations and trial trenches (ET) / site observations (SO) / finds from fieldwalking (FF) / find reporting (FR) / metal detecting (MD) (situation July 2020, except for the metal detecting (situation end 2016), of which the activity increased in the past few years). Excavated, reported and metal-detected non-Roman finds are not included, except when the clear absence of Roman finds is indicative for the absence of Roman features at the location in question. Responsible archaeologists referred to are EP: E. Patrouille, IG: I. Creus; JD: J. Decorte; JDG: J. Degryse; JM: J. Mertens; JV: J. Vandeveld; LD: L. Devlieghe; MD: M. Dewilde; MVDK: Monument Vandekerckhove nv; SD: S. Devos; SDC: S. De Cock; SV: S. Vanhoutte; TD: T. Dyselinck; WD: W. Dhaeze; YH: Y. Hollevoet.

The site codes are referred to in the text. For the location of these archaeological observations, see Figure 9.

Table 12. Overview of the archaeological observations in the city centre of Oudenburg, situation July 2020 (for the metal-detecting finds: situation end 2016).

SITE CODE	project name (year/responsible archaeologist/location)	project type	date	location	motive for research	general results for Roman period	principal info concerning Roman occupation	bibliographical references
ET01a	1956 JM <i>castellum</i> <i>Trench I (W) and II (E)</i>	excavation	1956 (13-26/11)	along Weststraat	building new rectory / search for the presumed Roman fort	Investigation of S. trench profile in both trenches I and II; Upper c. 1.5 m: dark earth, underneath: medieval horizon with mainly high medieval so-called Pingsdorf sherds, on top of Pleistocene sand; Roman ceramics and CBM; Trench II: starting in the middle of the trench, feature going down to the east, filled in with humic black 'sand', 'smelling of peat' according to Mertens	Trench II: position of western edge of defence ditch stone fort	Archive Mertens OE 1956; Mertens 1958, 19-22; Mertens 1962
ET01b	1956 JM <i>castellum</i> <i>Trench III</i>	excavation	1956 (13-26/11)	along Weststraat	search for the presumed Roman fort	Investigation of N. trench profile; Underneath dark earth; debris level of Roman and medieval material, with especially in the centre concentration of Tournai limestone and white and pink mortar, below: humic black brown sand, 'possibly edge of ditch or waterway transversally cut'	occupation layers inner building fort	Archive Mertens OE 1956; Mertens 1958, 19-22; Mertens 1962
ET01c	1956 JM <i>castellum</i> <i>Trench II'</i>	excavation	1956 (13-26/11)	along Kerkstraat	search for the presumed Roman fort	Roman occupation layers underneath dark earth of c. 1.5 m and a debris layer full of bone, stone and mortar; according to the recent research Mertens possibly cut the western edge of the defence ditch around the stone fort	occupation layers inner building fort	Archive Mertens OE 1956; Mertens 1958, 19-22; Mertens 1962
ET02a	1957 JM <i>castellum</i> <i>Trench V</i>	excavation	1957 (7/10-30/11)	east of Kerkstraat, north of Hoogstraat	search for the presumed Roman fort	robber trench stone defence wall, latest defence ditch, earlier ditch underneath robber trench of earth-and-timber fort, the same ditch as in trench XVII, and some postholes/construction slots at the same level; chronology unclear; the defence wall was broken out and removed after the related ditch was filled in	position of southern defence system	Archive Mertens OE 1957; Mertens 1958, 19-22; Mertens 1962 (remark: 1957: 'missing' trench nos. = trenches medieval abbey church (St. Pieters) site Devliegher 1957)
ET02b	1957 JM <i>castellum</i> <i>Trench VI</i>	excavation	1957 (7/10-30/11)	east of Weststraat, parking lots behind city hall	implantation parking lots / search for the presumed Roman fort	E. profile at southern end: presumed start of the latest defence ditch to the south (northern edge of ditch), to the north: a layer of black clay of c. 1 m thick, containing Roman building debris. From the centre of the trench onwards, a downwards slope to the north, with a slope with peaty layer, 9 cm thick, with 'vegetal formation', covered by black compact 'mud' with on top a sterile sand level, all cut by a possible large gully	position of northern defence ditch and presumed edge of sand ridge	Archive Mertens OE 1957; Mertens 1958, 19-22; Mertens 1962
ET02c	1957 JM <i>castellum</i> <i>Trench VI a</i>	excavation	1957 (7/10-30/11)	east of Weststraat, parking lots behind city hall	implantation parking lots / search for the presumed Roman fort	E. profile: start of northern defence ditch and robber trench stone defensive wall	position of northern defence wall and defence ditch	Archive Mertens OE 1957; Mertens 1958, 19-22; Mertens 1962
ET02d	1957 JM <i>castellum</i> <i>Trench VI b</i>	excavation	1957 (7/10-30/11)	east of Weststraat, parking lots behind city hall	implantation parking lots / search for the presumed Roman fort	W. profile: earlier ditches south of robber trench of stone defensive wall	position of northern defence wall and defence ditch	Archive Mertens OE 1957; Mertens 1958, 19-22; Mertens 1962
ET02e	1957 JM <i>castellum</i> <i>Trench VII</i>	excavation	1957 (7/10-30/11)	east of Weststraat, parking lots behind city hall	implantation parking lots / search for the presumed Roman fort	E. profile: occupation layers inner building area fort, underneath dark earth full of animal bones, shell and other consumption waste	occupation layers inner building fort	Archive Mertens OE 1957; Mertens 1958, 19-22; Mertens 1962
ET02f	1957 JM <i>castellum</i> <i>Trench IX</i>	excavation	1957 (7/10-30/11)	east of Weststraat, parking lots behind city hall	implantation parking lots / search for the presumed Roman fort	remains of wall of corner tower (lowest 20 cm presumed <i>in situ</i> wall with large, thick irregular blocks of Tournai limestone, some put on their side, immediately onto the Pleistocene sand, width: c. 1.25 m); to the north: two parallel construction slots, presumed remains of wooden corner tower of final earth-and-timber fort (because filled in with limestone debris)	position of northwestern corner tower	Archive Mertens OE 1957; Mertens 1958, 19-22; Mertens 1962

SITE CODE	project name (year/responsible archaeologist/location)	project type	date	location	motive for research	general results for Roman period	principal info concerning Roman occupation	bibliographical references
ET02g	1957 JM <i>castellum</i> Trench X	excavation	1957 (7/10-30/11)	east of Weststraat, parking lots behind city hall	implantation parking lots / search for the presumed Roman fort	robber trench of the northwest corner tower	position of northwestern corner tower	Archive Mertens OE 1957; Mertens 1958, 19-22; Mertens 1962
ET02h	1957 JM <i>castellum</i> Trench XI	excavation	1957 (7/10-30/11)	east of Weststraat, parking lots behind city hall	implantation parking lots / search for the presumed Roman fort	debris layers full of demolition waste up to -2.45 m below current running surface, on top of Pleistocene sand, according to Mertens 'probably (edge of) ditch, disturbed by robber trench defence wall'	position of northern defence ditch	Archive Mertens OE 1957; Mertens 1958, 19-22; Mertens 1962
ET02i	1957 JM <i>castellum</i> Trench XIII	excavation	1957 (7/10-30/11)	east of Weststraat, parking lots behind city hall	implantation parking lots / search for the presumed Roman fort	robber trench wall of corner tower with earlier ditch underneath of c. 3 m width of earth-and-timber phase, according to Mertens cf. ditch in Trench V	position of northwestern corner tower and V-shaped ditch fort level 2	Archive Mertens OE 1957; Mertens 1958, 19-22; Mertens 1962
ET02j	1957 JM <i>castellum</i> Trench XIV	excavation	1957 (7/10-30/11)	east of Weststraat, parking lots behind city hall	implantation parking lots / search for the presumed Roman fort	S. profile: robber trench of western stone defence wall with remains of earthen rampart levels to the east	position of western stone defence wall and earthen rampart	Archive Mertens OE 1957; Mertens 1958, 19-22; Mertens 1962
ET02k	1957 JM <i>castellum</i> Trench XV	excavation	1957 (7/10-30/11)	east of Weststraat, parking lots behind city hall	implantation parking lots / search for the presumed Roman fort	complete trench is situated in late Roman ditch according to overview map (no detailed record)	position of defence ditch stone fort	Archive Mertens OE 1957; Mertens 1958, 19-22; Mertens 1962
ET02l	1957 JM <i>castellum</i> Trench XVII	excavation	1957 (7/10-30/11)	east of Kerkstraat	search for the presumed Roman fort	E. profile, southern end: robber trench stone defence wall with to the north presumed ditch and two construction slots or postholes of earth-and- timber phase (fort level 1?)	position of southern defence system	Archive Mertens OE 1957; Mertens 1958, 19-22; Mertens 1962
ET02m	1957 JM <i>castellum</i> Trench XVIII	excavation	1957 (7/10-30/11)	east of Kapellestraat	search for the presumed Roman fort	unclear situation: humic black 'mud' on top of Pleistocene sand, not documented further; probably ditch fillings	edge of fort ditch or tidal area?	Archive Mertens OE 1957; Mertens 1958, 19-22; Mertens 1962
ET02n	1957 JM <i>castellum</i> Trench XX	excavation	1957 (7/10-30/11)	east of Kapellestraat	search for the presumed Roman fort	unclear situation, cf. Trench XX: humic black 'mud' on top of Pleistocene sand, which is here on a higher level than in Trench XVIII; probably situated in ditch fillings	edge of fort ditch or tidal area?	Archive Mertens OE 1957; Mertens 1958, 19-22; Mertens 1962
ET02o	1957 JM <i>castellum</i> Trench XXI	excavation	1957 (7/10-30/11)	east of Kapellestraat	search for the presumed Roman fort	probably situated in ditch fillings, Pleistocene sand at a depth of more than 3.10 m	eastern ditch of stone fort?	Archive Mertens OE 1957; Mertens 1958, 19-22; Mertens 1962
ET02p	1957 JM <i>castellum</i> Trench XXIII	excavation	1957 (7/10-30/11)	east of Kapellestraat	search for the presumed Roman fort	robber trench, full of shell mortar and tuff stone, debris from another stone construction nearby?	position of eastern defence wall	Archive Mertens OE 1957; Mertens 1958, 19-22; Mertens 1962
ET03	1957 JM Hoogstraat	excavation	1957 (October)	Hoogstraat, behind school	new housing estate	presumed medieval ditch, no Roman finds		Archive Mertens OE 1957, registered on old land registry map
ET04	1957 LD Stationsstraat	excavation	1957 (26/11-30/11)	Stationsstraat (7 trenches)	search for the remains of the church of Saint-Pieters	remains of the Romanesque abbey church (1056-1070) of the abbey of Saint-Pieters and later gothic renovation, underneath: Roman finds and features	remains of the mid-Roman settlement	Devliegher 1958a & b; 1959; 1984; Hollevoet 1985, 185-190 (Oudenburg 147)
ET05a	1960 JM <i>castellum</i> Trenches XXV > XXXII	excavation	1960 (8/8-9/9)	north of Mariastraat, to the west of the church	putting out of order of the city cemetery / search for the inner building of the Roman fort	Trench XXV, XXVI, XXVIII, XXIX, XXX, XXXII: see Appendix 2; Trench XXVII: sloping layers of earthen rampart with sand sods on top of cultivated soil	position of western defence wall, gate and several phases of fort defences	Archive Mertens OE 1960; Mertens 1962
ET05b	1960 JM <i>castellum</i> Trench XXXV	excavation	1960 (8/8-9/9)	north of Mariastraat, to the west of the church	putting out of order of the city cemetery / search for the inner building of the Roman fort	see Appendix 2	position of western defence wall, gate and several phases of fort defences	Archive Mertens OE 1960; Mertens 1962



SITE CODE	project name (year/responsible archaeologist/location)	project type	date	location	motive for research	general results for Roman period	principal info concerning Roman occupation	bibliographical references
ET05c	1960 JM <i>castellum</i> <i>Trench XXXVI</i>	excavation	1960 (8/8-9/9)	north of Mariestraat, to the west of the church	putting out of order of the city cemetery / search for the inner building of the Roman fort	see Appendix 2	position of western defence wall, gate and several phases of fort defences	Archive Mertens OE 1960; Mertens 1962
ET06	1963-64/68 JM Hoogwegel / t Hooghe <i>Graveyard A</i>	excavation	1963 (1-30/08) 1964 (13/03-24/07) 1968	Kasteldreef 5	new housing estates, direct motive: finds during sewerage works in the Kasteldreef and the discovery of graveyard B	graveyard A of c. 450 m <sup>2</sup> , c. 70 by 70 m, 50 trenches: 216 graves uncovered with rich gravegoods, under- neath: traces of earlier settlement, with different phases (at least 3): wooden structures, remains of stone building with sewer channel, presumed bath house, two or three wells, waste pits and ditches	graveyard A with 216 uncovered graves, second half 4th century - early 5th century; settlement second half 1st century - third quarter 3rd century AD	Mertens 1963a; Mertens 1964b; Mertens 1964a (graf 46); Mertens 1968a; Mertens & Van Impe 1971; Creus 1975; Hollevoet 1985, 134-140 (Oudenburg 115)
ET07	1970 JM <i>castellum</i> <i>Trenches I (east) and II</i> <i>(west)</i>	excavation	1970 (6-30/04)	east of Kerkstraat, south-east of the city hall, north west of the church	putting out of order of the city cemetery / search for the inner building of the Roman fort	Trench I: complex sequence of occupation layers <i>intra muros</i> , with indications for industrial activi- ties, locally covered by fire layers; at excavation level 2: presumed wall remains of final fort period, at excavation level 3: remains of oven with a lot of iron and bronze, at excavation level 4: features and layers of inner building, at excavation level 5: remains of inner building of fort with indications for handicraft (production waste, iron slags, fire layers), at excavation level 6 to 8: occupation layers and fire layers, at the north side of the trench; possible start of ditch of one of the earth-and-timber forts Trench II: see Appendix 2	position western stone defence wall - earthen wall - complex stratigraphy inner building of fort	Archive Mertens OE 1970; Mertens 1970, 23
ET08	1975 JM Hoogwegel	trial trenches	1975 (24/11-24/12)	Hoogwegel (9 trenches)	new housing estate	two parallel Roman ditches running WNW-ESE, cut into the Pleistocene sand; underneath sand: clay at -2 m depth	Roman ditches pointing to land division or draining of arable land; edge of sand ridge	Archive Mertens OE 1975
ET09	1976 JM <i>castellum</i> <i>Test pit A</i>	excavation	1976 (21/10-5/11)	at the north-west corner of the church, in the western corner of the cemetery (pit of bones)	putting out of order of the city cemetery / search for the inner building of the Roman fort	occupation layers and features of the fort's inner building, covering different phases	different phases of inner building Roman fort	Archive Mertens OE 1976
ET10	1976-1977 JM <i>castellum</i> <i>Trench I</i>	excavation	1976 (22/10-5/11) -1977 (tussen 24/03 en 7/7)	between Kappellestraat and church	putting out of order of the city cemetery / search for the inner building of the Roman fort	occupation layers and features of the inner building of the fort. At the N. side of the trench: start of ditch; according to Mertens, this ditch dates to the first fort period, but according to the recent re- search it is presumably related to the pre-castellum occupation; several levels resemble layers recorded in the 2001-2005 excavation at the SW corner of the fort, although caution is required to relate layers over such a distance. Above the cultivated soil, a green clay level is reminiscent of the clay layer of level 2 of the SW corner site. A green clay layer with flints is possibly related to fort level 3. A sod layer can be related to fort period 4, as is possibly also the case for a large pit, probably a waste pit; a well cutting this pit probably belonged to fort level 5	different phases of inner building Roman fort	Archive Mertens OE 1976-1977
ET11	1977 JM <i>castellum</i> <i>Trenches II, III, IV, V, VI, VII, VIII, IX, X, XI</i>	excavation	1977 (24/3-12/08)	between Kappellestraat and church	putting out of order of the city cemetery / search for the inner building of the Roman fort	occupation layers and a large number of features of the inner building of the fort, consisting of hearths, cart tracks, road levels, construction slots of wooden barracks, walls of stone building, pits, postholes. One of the most substantial structures was a rectangular stone building, of which the remains are to be dated in fort period 4 according to the recent research	different phases of inner building Roman fort: presumed road level related to level 2 or 3; stone building related to level 4, hearths, pits, occupation features of all sorts, from different phases	Archive Mertens OE 1977; Mertens 1977a & b; Hollevoet 1985, 191-194 (Oudenburg 148: church); Hollevoet 1985, 195-203 (Oudenburg 149: Roman level)

SITE CODE	project name (year/responsible archaeologist/location)	project type	date	location	motive for research	general results for Roman period	principal info concerning Roman occupation	bibliographical references
ET12	1990 YH Bekestraat A	excavation	1990 (07-11)	along Bekestraat, south of the Millebeek	new housing estate and expansion of sport infrastructure, with the implantation of a new football field	start of the large southern mid-Roman graveyard, part with c. 100 cremation graves and some five inhumations, with possibly related undep gullies, ditches and two pits with animal skeletons; in the northern half of the excavation area: occupation features (postholes, pits, ditches, ponds, a well), all from the mid-Roman period; a late Roman depression and cart tracks (4th century)	graveyard of the mid-Roman period and possible edge of civil settlement in the northern half of the excavation area (southern edge of civil settlement); indications for late Roman passage route	Hollevoet 1993 ('area A')
ET13	1990-92 YH Bekestraat B <i>Ter Beke</i>	excavation	1990 (07-mid/11); trial trench at area B 1991 (08-mid/11) and 1992: excavation	along Bekestraat, south of the Millebeek	new housing estate and building of sport hall <i>Ter Beke</i>	land division ditches with related structures: gullies, ponds, two wells, pits, all from the mid-Roman period; late Roman cart tracks in the southwestern half of the area	indication of possible cattle breeding on the lower, more humid areas at the southern edge of the sand ridge with small parcels during the mid-Roman period; indications for a late Roman passage route	Hollevoet 1993 ('area B')
ET14	1993 YH Hoveniersstraat/ Groeningestraat	salvage excavations during road works and prior to sew- erage works, excavations on several parcels, minimal site observations on parcels where no excavation was permitted	1993	along Westkerkestraat	new housing estate	graveyard from the mid-Roman period, continua- tion of the 1990 graveyard on area A: c. 500 graves uncovered, mainly cremations, some 10 inhumations; Roman ditches and gullies indicating the use as arable land and a well, all mid-3rd century; some late Roman pits with horse skeletons and numerous cart tracks; a covering clay level in the southwestern half of the area related to waterway	graveyard from the mid-Roman period; indications for farming around the mid-3rd century; late Roman horse burials; indica- tions for late Roman passage route; remains of northern end of water way related to increasing marine influence around the end of the 4th century	Hollevoet 1994
ET15	1993 MD Westkerkestraat	excavation	1993	along Westkerkestraat	new housing estate	continuation of cremation graveyard from mid-Roman period	cremation graveyard mid-Roman period	Archive Dewilde OE 1993
ET16	2003 SV Hoogstraat	trial trench	2003 (10-14/02)	along Hoogstraat 5 and 7	dismantling of two houses and plans for new housing estate	structures (with corner of wooden building) from the end of the 2nd to 3rd century	indication for occupation in the mid-Roman period	Vanhoutte 2004a
ET17	2003-5 EP/MD Kapellestraat <i>Jacali</i>	excavation	2003-beginning 2005	along Kapellestraat	new housing estate	remains of robber trench north east corner tower and of north and east stone defensive wall of fort; remains of inner building	position of northeastern corner tower and remains of different phases in inner building	Parouille 2004, 71-72; Vanhoutte <i>et al.</i> 2014
ET18	2004 SD Hoveniersstraat/ Groeningestraat	trial trenches and test pits	2004 (09-10)	between Hoveniers- and Groeningestraat	new allocation	no occupation features of the Roman period	evidence that the graveyard to the north does not extend as far south in this area	Devos 2004a & b
ET19	2005 JV Marktstraat <i>Afsligebouw</i>	excavation	2005 (07/07-24/08)	along Marktstraat, at the N and NE side of the abbey buildings	planned expansion of the museum	no Roman features	Roman level probably disturbed by medieval level	Vandevelde 2005a; 2005b; 2006
ET20	2001-5 SV Kerkstraat <i>Spiegelrae</i>	excavation	2001 (01/08) - 2005 (08/04)	along Kerkstraat, central area of building block in between Kerkstraat, Hoogstraat, Weststraat and Mariastraat	planned building of new supermarket	southwestern corner area of the fort: complete fort stratigraphy with different phases in the defence system and inner building	phasing and chronology of the Roman fort, spatial organisation and evolution	Vanhoutte & Parouille 2003a & b; Parouille & Vanhoutte 2003; Vanhoutte 2004b; 2005; 2006a; 2006b; 2006c; 2007a; 2007b; 2007c; 2008; 2009a; 2009b; 2009c; 2012; 2015

SITE CODE	project name (year/responsible archaeologist/location)	project type	date	location	motive for research	general results for Roman period	principal info concerning Roman occupation	bibliographical references
ET21	2006 JD Markstraat <i>Afstegebouw</i>	excavation	2006	along Markstraat, behind abbey building (3 trenches)	planned building of new archaeological museum and polyvalent space	no Roman features	Roman level probably disturbed by medieval level	Archive JD
ET22	2007 JD Markstraat <i>Afstegebouw</i>	trench	2007	along Markstraat, behind abbey building	construction works for new archaeological museum and polyvalent space	no Roman features	Roman level probably disturbed by medieval level	Archive JD
ET23	2009 WD Markstraat	trench	2009	along Markstraat, behind abbey building	construction works for new archaeological museum and polyvalent space	no Roman features	Roman level probably disturbed by medieval level	Archive WD
ET24	2008-2009 WD/SV Kapellestraat	excavation	2008 (24/11, 28/11, 04/12) 2009 (19/01; 06-30/04)	along Kapellestraat	planned building of new flat complex	north side of Roman fort, with the stratigraphy at the base of the earthen wall, the earthen wall (largely cut by late to post-medieval ditch), the robber trench of the northern stone defence wall and the remains of intermediate stone tower; NS trench through defence system, different phases	the Roman levels resemble to a large extent those of the site at the SW corner of the fort. The earthen rampart itself was largely cut away by a late to post-medieval ditch. The last remains of the robber trench of the northern defensive wall and of a projecting intermediate tower were found, the first evidence for the presence of bas- tions at the fort of Oudenburg. A N-S oriented trench was made transversally on the robber trench up to the north in order to investigate several defensive ditches. They seem to belong to different phases of the fort. Also the possible start of a natural waterway could be detected	Dhaeze & Vanhoutte 2009a; Vanhoutte <i>et al.</i> 2014
ET25	2009 WD Hoogstraat	excavation	2009 (08-10)	along Hoogstraat, on the corner with Markstraat	planned building of new flat complex	no Roman features found, probably mostly cut away by late medieval ditches and late and post-medieval structures (cloth hall and inn)	Roman level probably disturbed by medieval level	Dhaeze & Vanhoutte 2009a; Dhaeze, Hantson, Dewilde & Vanhoutte 2010
ET26	2007-9 JD/WD Ertelgensestraat <i>Rietbove</i>	excavation	2007 (09) - 2009 (08)	along Ertelgensestraat, in the garden of the old peoples home Rietbove	planned expansion of old peoples home and building of service flats	occupation structures, pits and wells of the 2nd and 3rd century, some isolated Roman cremation graves, four inhumation graves, late Roman cart tracks	edge of Roman civil settlement and edge of mid-Roman (and later?) cemetery	Dhaeze, Decorte & Vanhoutte 2008; Dhaeze & Vanhoutte 2009a; Dhaeze & Vanhoutte 2010
ET27	2009 WD Bekestraat	excavation	2009	along Bekestraat	planned building of new sports canteen	ditches and pits from end 2nd – first half 3rd century	Roman so-called 'off-site' features, edge of the mid-Roman civil settlement	Dhaeze 2009
ET28a	2009 WD Ertelgensestraat	trial trenches	2009 (17-20/11)	along Ertelgensestraat	planned new housing estate	Roman ditches, construction slots, pits, cremation graves	edge of settlement mid-Roman period	Dhaeze 2010
ET28b	2014 TD Ertelgensestraat <i>Bellerube</i>	excavation	2014 (summer)	along Ertelgensestraat	new allocation	structures of settlement mid-Roman period border- ing road, cremation graveyard mid-Roman period, edge of late Roman inhumation graveyard	settlement mid-Roman period with related cremation graveyard bordering east-west road and connected south-north road; western edge of late Roman cemetery	Dyselincx <i>et al.</i> 2020
ET29	2010 MD Bekestraat		2010 (05)	along Bekestraat	construction of new sports canteen (contin- uation of research of 2009)	Roman features from end of 2nd – first half 3rd century	edge of settlement mid-Roman period	Archive Dewilde OE 2010

SITE CODE	project name (year/responsible archaeologist/location)	project type	date	location	motive for research	general results for Roman period	principal info concerning Roman occupation	bibliographical references
ET30	2010 SV Weststraat	test pits (A, B, C, E)	2010	Weststraat	renovation sewerage	no Roman features, all cut by late medieval ditches	Roman level probably disturbed by medieval level	Vanhoutte & Dhaeze 2011; Dhaeze & Vanhoutte 2011
ET31	2010 SV Hoogwegel	test pit (D)	2010	Hoogwegel	renovation sewerage	Roman pits	features of settlement mid-Roman period	Vanhoutte & Dhaeze 2011; Dhaeze & Vanhoutte 2011
ET32	2010 WD/SV Westkerksestraat- Hoogstraat	test pits (F, G, H, I, J)	2010	Westkerksestraat- Hoogstraat	renovation sewerage	some Roman features underneath (late) medieval roads and ditches: Test pit F: no Roman features; Test pit G: no Roman features, but some Roman finds; Test pit H: no Roman features; Test pit I: two presumable mid-Roman features: one posthole (?), one pit; Test pit J: presumed mid-Roman horizon	features of settlement mid-Roman period	Dhaeze & Vanhoutte 2011
ET33	2011 WD/JDG Nieuwstraat	trial trenches	2011 (07/11)	along Nieuwstraat	new allocation	total absence of Roman features and finds	confirmation of the research of De Vos 2004: no continuation of S. cremation graveyard in this area	Dhaeze & Degryse 2011
ET34	2016 MVDK Ertelgensestraat	excavation	2016 (17/10-16/11)	Ertelgensestraat 20	expansion retirement village	some features from the 2nd-3rd centuries (gullies, pits, postholes however without visible configuration)	features of (edge) settlement mid-Roman period	Lefere & Bruyninckx 2020
SO01	1956 JM Weststraat A	site observation	1956 (10)	along Weststraat	new housing estate	Pleistocene sand at 0.70 m below current surface, no 'dark earth', no Roman features	absence of Roman features; absence of 'dark earth'	Archive Mertens 1956 OE (registered on old land registry map)
SO02	1956 JM Weststraat B	site observation	1956 (10)	along Weststraat	new housing estate	presumed start of ditch in western part, medieval ditch?	outside defence ditch of stone fort	Archive Mertens 1956 OE (registered on old land registry map)
SO03	1962 JM Hoogwegel <i>Graveyard B</i>	site observation	1962 (spring)	along Goedeboterstraat, 't Hooghe	new housing estate, digging of cellar	three inhumation graves with grave goods: grave A with face pot from Hadham (UK), graves B and C with 'Spruchbecher'; underneath: remains of occupation of 2nd-3rd century, consisting of mortar floor debris and pottery sherds	part of graveyard B, generally dated to end 3rd – first half 4th century; continuation of earlier settlement, with stone building nearby?	Mertens 1963a, 68; Mertens 1964a, 220-221; Mertens & Van Impe 1971, 6, 18,afb. 7; Creus 1975, 35; Hollevoet 1985, 131-133 (Oudenburg 114); Hollevoet 2002
SO04	1975 JM Goedeboterstraat	site observation	1975	along Goedeboterstraat	new housing estate	Pleistocene sand at 0.80 m below current surface; no Roman features	still on the sand ridge	Archive Mertens 1975 OE
SO05	1975 JM Hoogwegel/ Kasteldreef	site observation	1975	at corner of Hoogwegel and Kasteldreef	new housing estate	two presumed Roman ditches, running parallel W/NW-ESE	presumed remains of land division / draining of arable land	Archive Mertens 1975 OE
SO06	1982 YH Kasteldreef B	site observation	1982 (late)	along Kasteldreef (‘Oude Molen’)	new housing estate	Roman finds: ceramics, ceramic building material, daub, 6 iron nails, iron slag, bronze hook with snake head, animal bones, some presumed human bones	remains of settlement from the mid-Roman period, finds from disturbed level of late Roman graveyard?	Hollevoet 1985, 24-29 (Oudenburg 1)
SO07	1982 YH Brouwerijstraat	site observation	1982 (17/09)	along Brouwerijstraat (‘Oude Molen’)	building new school	Roman ceramics (14 sherds)	finds from the mid-Roman settlement	Hollevoet 1985, 43-44 (Oudenburg 12)
SO08	1982 YH Abdijlaan A	site observation	1982 (11/11)	along Abdijlaan	new housing estate	Roman ceramics (3 sherds)	finds from the mid-Roman settlement	Hollevoet 1985, 86-88 (Oudenburg 78)
SO09	1983 YH Bekestraat	site observation	1983 (22/01)	along Bekestraat	new housing estate	Roman ceramics (3 sherds)	finds from the mid-Roman settlement	Hollevoet 1985, 217-220 (Oudenburg 163)
SO10	1982 YH Weststraat	site observation	1983 (22/04)	along Weststraat	new housing estate	Roman ceramics	finds from the mid-Roman settlement	Hollevoet 1985, 299-302 (Oudenburg 212)
SO11	1982 YH Burgstraat	site observation	1982 (end)	along Brouwerijstraat (‘Oude Molen’)	building new school	large amount of Roman ceramics, also ceramic building material, 3 iron nails, a weststone, some animal bones	finds from the mid-Roman settlement	Hollevoet 1985, 45-47 (Oudenburg 13)

SITE CODE	project name (year/responsible archaeologist/location)	project type	date	location	motive for research	general results for Roman period	principal info concerning Roman occupation	bibliographical references
SO12	1983 YH Burgstraat	site observation	1983 (02/09)	along Burgstraat	new housing estate	two Roman ditches and several wall remains; a lot of Roman ceramics, some ceramic building material, 1 iron stylus, limestone fragments, some animal bones	structures, features and finds from the mid-Roman settlement	Hollevoet 1985, 318-321 (Oudenburg 225)
SO13	1984 YH Burgstraat	site observation	1984 (08/11)	along Burgstraat ('Oude Molen')	new housing estate	Roman ceramics (4 sherds) and 2 tile fragments	finds from the mid-Roman settlement	Hollevoet 1985, 363-364 (Oudenburg 247)
SO14	1984 YH Kasteeldreef	site observation	1984	along Kasteeldreef	earthworks new house early 1970s, reported in 1984 to YH together with new finds found on this parcel	Roman ceramics, bronze crossbow brooch, fragments of human skeleton	finds from the settlement of the mid-Roman period and of the late Roman graveyard	Hollevoet 1985, 30-32 (Oudenburg 2)
SO15	1984 YH Marienstraat	site observation	1984 (02/09)	along Marienstraat	new housing estate	no Roman finds	outside defence ditch of stone fort	
SO16	1984 YH 'Stationsstraat' / Marktstraat A	site observation	1984 (10-11)	Marktstraat (in publ. 'Stationsstraat')	earthworks for the renovation of the road R68	along the complete length of the Marktstraat (to the south of the crosspoint with Abdijlaan) a 13th-century accumulation was registered, to a depth of 1.50 underneath the current surface, containing mainly household waste (ceramics, leather finds, animal bones); the bottom of this level could not be reached	continuation of the medieval dark earth	Hollevoet 1985, 370 (Oudenburg 250); Hillewaert & Hollevoet 1994
SO17	1984 YH 'Stationsstraat' / Marktstraat B	site observation	1984 (10-11)	Marktstraat, between abbey and museum (in publ. 'Stationsstraat')	earthworks for the renovation of the road R68	no 13th-century accumulation as in SO16, but ditch related to the fort built from 1584 onwards around the remains of the ruined medieval abbey; at a depth of 1.5 m Roman features	features of the settlement of the mid-Roman period	Hillewaert & Hollevoet 1994; pers. comm. YH
SO18	1984 YH 'Stationsstraat' / Marktstraat C	site observation	1984 (10-11)	Marktstraat 21 (in publ. 'Stationsstraat')	earthworks for the renovation of the road R68	Roman pit (with ceramic building material, shells, some animal bones, ceramics from 2nd-3rd century)	feature of the settlement of the mid-Roman period	Hillewaert & Hollevoet 1994
SO19	1984 YH Abdijlaan / Stationsstraat	site observation	1984 (10-11)	corner of Abdijlaan and Stationsstraat	earthworks for the implementation of a new gaz pipeline	two inhumation graves belonging to the Saint-Peters church; remains of the abbey; no Roman features	Roman level disturbed by medieval site	Hollevoet 1985, 370-373 (Oudenburg 250); Hillewaert & Hollevoet 1994, 279
SO20	1984 YH Marktstraat	site observation	1984?	along Marktstraat, behind the abbey homestead	inventory project	no Roman finds	outside the Roman settlement	Hollevoet 1985, 337-339 (Oudenburg 237)
SO21	1989 YH Bekestraat	site observation	1989 (09 end)	along Bekestraat	installation pipeline on the municipal sports complex and playground <i>De Time</i>	some Roman pits and ceramics from the mid-Roman period (with samian sherd from the first half of the 3rd century)	features of the mid-Roman settlement	Hollevoet 1990, 61; Hollevoet 1993, 195
SO22	1991 YH Weststraat	site observation	1991 (06)	along Weststraat	earthworks for the renovation of the back of the city hall	only 1 Roman sherd; 13th-century ditch; 14th-, 15th- and 16th-century levels	no traces of the late Roman defence ditch; only 13th-century ditch (for drainage or land division)	Hollevoet 2001, 76
SO23	1993-5 YH Westkerksestraat / Nieuwstraat / Hovenierstraat	site observation	1993-5 1995	between Westkerkse- and Nieuwstraat, along Groeninge- and Hovenierstraat	new housing estates in new allocation	continuation of cremation graveyard from mid-Roman period: mainly cremation graves, 1 inhumation grave	extent of mid-Roman graveyard	Archive Hollevoet 1992-5 OE
SO24	1992 YH Nieuwstraat / Groeningestraat	site observa- tion (part of SO23)	1992 (23/09)	at corner of Nieuwstraat and Groeningestraat	new housing estate in new allocation	eight cremation graves	continuation of the mid-Roman graveyard	Archive Hollevoet 1992-5 OE; Hollevoet 1994, 213
SO25	1997 YH Ertelgensestraat / Karpelhofstraat	site observation	1997 (start)	at corner of Karpelhofstraat and Ertelgensestraat	new housing estates	absence of Roman finds; only late to post-medieval layers and finds (because of limited depth of trenches?)	possible indication for absence of occupation at this location in the mid-Roman period	Hollevoet 1993, 195; Hollevoet 2001, 77



SITE CODE	project name (year/responsible archaeologist/location)	project type	date	location	motive for research	general results for Roman period	principal info concerning Roman occupation	bibliographical references
SO26	199X YH Cono van Einlaan	site observation	end 1990s	along Cono van Einlaan	new allocation	Iron Age silo		Archive YH, pers. comm.
SO27	1990-2000: YH Laurierenlaan	site observa- tion and 10 auctings	1990-2000?	along Laurierenlaan	new allocation	no archaeological features; marine sediments on top of Pleistocene sand, locally only Pleistocene sand	position on the edge of the sand ridge	Hollevoet 2001, 76-77
SO28	2010 WD Weststraat	site observation	2010 (28-29/01)	Weststraat 13, garden	earthworks to clear contaminated soils	3rd-century well, with wickerwork basket	well of the mid-Roman settle- ment, to the west of the fort	Dhaeze & Vanhoutte 2010b; Vanhoutte <i>et al.</i> 2016
FF01 (a and b)	1955 YH Hoogstraat	fieldwalking in gardens and cultivated land, and two small test-pits	1955	near Hoogstraat		many Roman finds in orchard shortly before it changed into cultivated land; test-pit east of the Kerkstraat (a): no features or finds; test-pit west of the Kerkstraat (b): Roman ceramic building material, at 1.5 m depth stone foundation which could not be dated, presumably post-Roman	dug-up items from the Roman fort	Hollevoet 1985, 303-304 (Oudenburg 213)
FF02	1982 YH Kasteeldreef A	fieldwalking in vegetable garden	1982 (11/09)	along Kasteeldreef (‘Oude Molen’)	inventory project	Roman ceramics (10 sherds, of which 1 late Roman roller-stamped samian sherd)	the roller-stamped samian sherd (Hübener (1968) group 3, dated AD 340-370) is prob- ably related to the late Roman graveyard A; the earlier ceramics come from the mid-Roman settlement	Hollevoet 1985, 41-42
FF03	1982 YH Goedeboterstraat	fieldwalking on arable land	1982 (04/12)	north of Goedeboterstraat	inventory project	only 2 fragments of a late medieval reduced vessel	absence of Roman finds is indicative for position outside the sand ridge	Hollevoet 1985, 116-117 (Oudenburg 104)
FF04	1982 YH Ertelgensestraat/ Karpelhofstraat	fieldwalking in flowerbeds	1982 (23/10)	corner of Ertelgensestraat and Karpelhofstraat	inventory project	Roman ceramics (19 sherds)	finds from the mid-Roman settlement	Hollevoet 1985, 59-62
FF05	1982 YH Abdijlaan B	fieldwalking on pastures	1982 (05/12)	near Abdijstraat, SW corner of pasture	inventory project	no Roman ceramics, only medieval ceramics related to the Saint-Pieters abbey	absence of Roman finds is indicative for position outside the sand ridge	Hollevoet 1985, 118-120 (Oudenburg 106)
FF06	1982 YH Westkerksestraat	fieldwalking on arable land	1982 (31/12)	near Westkerksestraat (Hoveniersstraat)	inventory project	1 Roman samian sherd, worn	find from the mid-Roman settlement	Hollevoet 1985, 163-164 (Oudenburg 134)
FF07	1982 YH Millebeek	fieldwalking on arable land	1982 (10)	near the Millebeek	inventory project	Roman ceramics (with some late Roman roller stamp samian) and a tile fragment	finds probably from a late Roman passage route, near the southern gate of the fort	Hollevoet 1985, 63-65 (Oudenburg 54)
FF08	1983 YH Westkerksestraat	fieldwalking on arable land	1983 (05/01)	near the Westkerksestraat	inventory project	1 rim sherd decorated with stamped circles, Roman?	absence of (more) Roman finds may be indicative for limited presence of Roman features	Hollevoet 1985, 165-169 (Oudenburg 135-136)
FF09	1983 YH Cortemweg A	fieldwalking in vegetable garden	1983 (27/01)	near the Cortemweg	inventory project	Roman ceramics (5 sherds)	finds from the mid-Roman settlement	Hollevoet 1985, 224-225 (Oudenburg 169)
FF10	1983 YH Millebeek	fieldwalking in vegetable garden	1983 (04/02)	near the Millebeek	inventory project	Roman ceramics (17 sherds)	finds from the mid-Roman settlement; some sherds possibly related to a late Roman passage route?	Hollevoet 1985, 234-235 (Oudenburg 177)
FF11	1983 YH Cortemweg B	fieldwalking on arable land	1983 (09/01)	near the Cortemweg (‘Kortem’)	inventory project	no Roman ceramics, large amount of high medieval sherds related to a occupation site	absence of Roman finds is indicative for position outside the sand ridge	Hollevoet 1985, 170-172 (Oudenburg 137)
FF12	1983 YH Ieperleed	fieldwalking on arable land	1983 (13/01)	near the Ieperleed, Palingsstraat	inventory project	Roman ceramics (4 sherds)	finds from the mid-Roman settlement	Hollevoet 1985, 176-177 (Oudenburg 143)

SITE CODE	project name (year/responsible archaeologist/location)	project type	date	location	motive for research	general results for Roman period	principal info concerning Roman occupation	bibliographical references
FF13	1983 YH Cottenweg C	fieldwalking on arable land	1983 (15/01)	near the Cottenweg	inventory project	no Roman finds, only high, late and post-medieval sherds	absence of Roman finds is indicative for position outside the sand ridge	Hollevoet 1985, 178-179 (Oudenburg 144 and 145)
FF14	1983 YH Baarsstraat	fieldwalking on arable land	1983	along Visserstraat (Baarsstraat)	inventory project	only 1 Roman sherd, worn	Roman find on the edge of the sand ridge	Hollevoet 1985, 209-210 (Oudenburg 153)
FF15	1983 YH Cottenweg D	fieldwalking on arable land	1983 (05/02)	along Cottenweg	inventory project	no Roman finds, only late medieval finds	absence of Roman finds is indicative for position outside the sand ridge	Hollevoet 1985, 239-242 (Oudenburg 179)
FF16	1983 YH Ertelgensestraat/Zeeweg	fieldwalking on arable land	1983 (20/01)	near Ertelgensestraat and Zeeweg	inventory project	1 late Roman pottery fragment (Eifelware) on the northern half of the parcel	find from late Roman passage route?	Hollevoet 1985, 211-212 (Oudenburg 160)
FF17	2010 DV Goedeboerstraat	fieldwalking on arable land	2010	along Goedeboerstraat, south side	inventory project	Roman ceramics; observation of a lot of clay in the soil	finds from the mid-Roman settlement at the edge of the sand ridge	Archive Dhacze, McD file 9
FF18	2012 DV Goedeboerstraat	clearing of parcel ditch	2012	along Goedeboerstraat, north side (Goedeboerstraat 84)	inventory project	only post-medieval ceramics from ditch	absence of Roman finds is indicative for position outside the sand ridge	Archive Dhacze, file 11
FF19	2012/13 WD/DV Goedeboerstraat	fieldwalking on arable land	2012-2013	along Goedeboerstraat, south side	inventory project	concentration of Roman ceramics, 2nd-3rd century, in area of c. 50 x 50 m; many large and well preserved fragments indicating that sherds <i>in situ</i> were ploughed up	finds from the mid-Roman settlement	Archive Dhacze, file 10
FR01	1890? MG Hoogstraat/Westerkersestraat	find reporting	c. 1890	near Hoogstraat and Westerkersestraat, on parcel aligned by Hoogstraat and Millebeek	digging of pump pit	remains of a ship (?) (published in newspaper); further data on techniques, measurements, finds, ... lack	very suspicious (find only known from report in newspaper, could never be verified); rather likely that it concerns the remains of a late or post-medieval boat, related to the nearby medieval ditch/channel	Gyseling 1939, 23; Gyseling 1950, 55; Hollevoet 1985, 237-238 (Oudenburg 178)
FR02	1955X YH Millebeek	find reporting	1950s	south of Millebeek, south of Saint-Andreas school	farm work	coin of Antoninus Pius, <i>sestertius</i> , Rome, 140-143	find from the mid-Roman settlement	Hollevoet 1985, 202-203 (in Creus 1975 wrongly located on the Markt: see p. 35, afb. 2:9)
FR03	1950 YH Zeeweg	find reporting	1950	near Zeeweg	farm work	coin of Antoninus Pius, <i>as</i> , Rome, 140-144	find from the mid-Roman settlement, so far the most eastern find known, indicative for the eastern extent of the settlement	Hollevoet 1985, 204-205 (Oudenburg 151)
FR04	1956 JM Markt	find reporting	1956	Markt		'Roman coin', no more information known	most likely a grave good, indicative for western extent of mid-Roman graveyard or for another mid-Roman graveyard	Archive Mertens OE 1956 Archive Mertens OE 1960; Creus 1975, 35, afb. 2:7; Hollevoet 1985, 112-113 (Oudenburg 98)
FR05	1959 JM Goedeboerstraat	find reporting	1959	corner of Goedeboerstraat and Inkweg		intact colour-coated beaker with rouletting, Cologne, type NB32c/Gose 198, end 2nd – beginning 3rd century	cremation grave(s) of the mid-Roman graveyard, indication for the extent of the southern graveyard, most southern find so far	Hollevoet 1994, 213; note 20, and pers. comm. S. De Cock
FR06	1955X SDC Nieuwstraat	find reporting	1950s	Nieuwstraat 26	construction of foundation of house	3 complete vessels (a samian beaker, a colour-coated dentated beaker and a jug), probably coming from niche of grave, probably <i>in situ</i> vessels		
FR07	1966X YH Burgstraat	find reporting	1960s	near Burgstraat	farm work	coin of Constantius II, unknown workshop, 330-335	coin from late Roman passage route?	Hollevoet 1985, 74-75 (Oudenburg 72)

SITE CODE	project name (year/responsible archaeologist/location)	project type	date	location	motive for research	general results for Roman period	principal info concerning Roman occupation	bibliographical references
<b>FR08a</b>	1960JM Hoogwegel A	find reporting	1960 (06/09)	along Hoogwegel (‘t Hooghe)	installation of sewerage	many sherds; Pleistocene sand at -0.80 m with many features, waste pits (Mertens also points to ‘a grave’: cf. Kegel’ (amateur-archaeologist from Aardenburg, who had a lot of finds from Oudenburg); note however not clear)	features of the mid-Roman settlement	Archive Mertens OE 1960
<b>FR08b</b>	1960JM Hoogwegel B	find reporting	1960 (06/09)	along Hoogwegel (‘t Hooghe)	installation of sewerage	a lot of ceramic building material and red fresco	indications for an important Roman building of the mid-Roman settlement?	Archive Mertens OE 1960
<b>FR09</b>	196X YH Hoogwegel	find reporting	1960s	near Hoogwegel		3 fragments of bronze brooches, according to the finder ‘originating from a waste pit full of bones’	find from the mid-Roman settlement	Hollevoet 1985, 329-330 (Oudenburg 234)
<b>FR10</b>	1964-5 YH Kasteeldreef	find reporting	1964-65	along Kasteeldreef (Akkerstraat)	new housing estate	complete late Roman vessel (Piriling 250, dated to AD 300-325) and coin of Hadrianus, <i>sestertius</i> , Rome, c. 120-125	the complete vessel probably originates from an isolated grave of the 4th-/early 5th-century Graveyard A; the coin is related to the mid-Roman settlement	Hollevoet 1985, 295-296 (Oudenburg 210)
<b>FR11</b>	196X YH Burgstraat	find reporting	1960s	along Burgstraat	sewerage works	2 Roman sherds (one samian)	finds from the mid-Roman settlement	Hollevoet 1985, 72-73 (Oudenburg 71)
<b>FR12</b>	1969? YH Jeugdpad	find reporting	end 1960s	Jeugdpad	sewerage works	several skeleton fragments with intact skull, presumably adult person, and a colour-coated beaker type Piriling 250 which can be generally dated to the first half of the 4th century	finds from the late Roman Graveyard A	Hollevoet 1985, 33-34 (Oudenburg 3)
<b>FR13</b>	197X YH Kasteeldreef	find reporting	1970s	near Kasteeldreef		almost completely preserved small Mercurius statue (2nd-3rd century)	find from the mid-Roman settlement	Hollevoet 1985, 35-37 (Oudenburg 4); Hollevoet 1986
<b>FR14</b>	19XX JM Hoogstraat/ Weststraat	find reporting	s.d.	corner of Hoogstraat and Weststraat, near SW corner fort		some Roman vessels	possible indication for a graveyard of the 2nd-3rd century on this location, but very uncertain find	Mertens & Van Impe 1971, 18; Creus 1975, 6: afb. 2; 5; 35; Hollevoet 1985, 77, see also note 1: according to Hollevoet confusion with find at same time of presumed late medieval vessels along the Weststraat (see: Oudenburg 97)
<b>FR15</b>	197X JM Burgstraat	find reporting	1970s	along Burgstraat	new housing estate	some samian sherds (of which a Drag. 31 with the stamp LANVARIVS)	finds from the mid-Roman settlement	Thoen 1974, 22; Creus 1975, 6: afb. 2; 6 (but wrong location); Hollevoet 1985, 141-142 (Oudenburg 116)
<b>FR16</b>	1978 YH Burgstraat	find reporting	1978	along Burgstraat		complete small vessel wit stud	possible grave good, dug up from a mid- or late Roman grave?	Hollevoet 1985, 38-40 (Oudenburg 5)
<b>FR17</b>	19XX YH Weststraat	find reporting	s.d.	along Weststraat, former rectory garden (found along Keiweg, but transported soil)	new housing estate	coin Trajanus, <i>sestertius</i> , Rome, 115-116	find from the mid-Roman settlement	Hollevoet 1985, 297-298 (Oudenburg 211)
<b>FR18</b>	1990? YH Burgstraat/ Hoogwegel	find reporting	1990?-2000?	corner of Hoogwegel and Burgstraat		samian sherd with stamp IVLLINVS, Lezoux, second half 2nd century AD	find from the mid-Roman settlement	Hollevoet 2001, 76
<b>FR19</b>	1992 YH Jeugdpad	find reporting	1992	along Jeugdpad	earthworks	several Roman ceramics	finds from the mid-Roman settlement	Hollevoet 2001, 76
<b>FR20</b>	19XX YH Millebeek	find reporting	s.d.	east of the Westkerkestraat, south of the Millebeek	farm work	coin Septimius Severus, <i>sestertius</i> , Rome, 193	find from the mid-Roman settlement	Hollevoet 1985, 331-332 (Oudenburg 235)

SITE CODE	project name (year/responsible archaeologist/location)	project type	date	location	motive for research	general results for Roman period	principal info concerning Roman occupation	bibliographical references
MD01	2009 WD Cottenweg (1)	metal detecting	2009 (third quarter)	east and north of abbey/homestead		only late to post medieval metal finds and coins	absence of Roman finds is indicative for position outside the sand ridge	Archive Dhacze, file MdD 1
MD02	2009 WD Markstraat (2)	metal detecting	2009 (third quarter)	directly east of abbey homestead (strip of c. 20 m wide)		at the west side of plots 377k and 379r: concentration of 4 Roman coins: 1 <i>dupondius</i> 2nd century, 3 late Roman coins (Constantine dynasty), a bronze pendant	finds from the mid-Roman settlement and indications for late Roman features: passage route? occupation? graveyard?	Archive Dhacze, file MdD 2
MD03	? WD Cottenweg (3)	metal detecting	s.d.	south of Cottenweg		only late to post medieval metal finds and coins	absence of Roman finds is indicative for position outside the sand ridge	Archive Dhacze, file MdD 3
MD04	? WD Goedebooterstraat (4)	metal detecting	s.d.	south of Goedebooterstraat		some Roman metal finds, no more information available	finds from the mid-Roman settlement?	Archive Dhacze, file MdD 4
MD05	? WD Goedebooterstraat (5)	metal detecting	s.d.	south of Goedebooterstraat		concentration of Roman coins (11); 2 coins Septimius Severus, 1 <i>denarius</i> of Hadrianus, 1 coin of Faustina, 1 silver <i>denarius</i> , 1 coin of Crispus(?), rest: heavily corroded coins	finds from the mid-Roman settlement; indication for late Roman features	Archive Dhacze, file MdD 5
MD06	? WD Goedebooterstraat (6)	metal detecting	s.d.	south of Goedebooterstraat		'some Roman coins'	indicative for position of western edge of sand ridge and western edge of mid-Roman settlement	Archive Dhacze, file MdD 6
MD07	? WD Goedebooterstraat (7)	metal detecting	s.d.	north of Goedebooterstraat		only late to post-medieval finds	absence of Roman finds; indicative for absence of Roman features at this location?	Archive Dhacze, file MdD 7
MD08	? WD Goedebooterstraat (8)	metal detecting	s.d.	north of Goedebooterstraat		mainly metal finds from late Middle Ages till present and 2 early medieval buckles	absence of Roman finds is indicative for position outside the sand ridge	Archive Dhacze, file MdD 8
MD09	2013 WD Nieuwstraat (9)	metal detecting	2013 (04)	corner Nieuwstraat- Redinstraat (Nieuwstraat 10)		4 Roman coins, no further information available	finds from mid-Roman graveyard stretching this far?, or from passage-route	Archive Dhacze, file MdD 14
MD10	2013 WD Goedebooterstraat (10)	metal detecting	2013 (end)	corner Goedebooterstraat / Bombeurgedeel		certainly 1 ( <i>sestertius</i> 2nd half 2nd century AD), maybe 3 Roman coins (but heavily corroded)	interpretation uncertain	Archive Dhacze, file MdD 16
MD11	2013 WD Cottenweg (11)	metal detecting	2013 (summer)	north side of Cottenweg?		4 Roman coins, no further information available	interpretation uncertain	Archive Dhacze, file MdD 22
MD12	2014 WD Nieuwstraat (12)	metal detecting	2014 (beginning)	Nieuwstraat 40		2 Roman coins, no further information available	finds from mid-Roman graveyard stretching this far?, or from passage-route	Archive Dhacze, file MdD 26

## Appendix 2

# Trenches of J. Mertens in the 1950s, 1960 and 1970s on the defence area of the Oudenburg fort. Interpretations

Trenches made by J. Mertens in the 1950s, 60s and 70s cutting the defensive area: overview of main features and structures of, or related to, the defence system of the successive fort periods; interpretations according to the findings at the south-west corner site. See Figures 9 and 13 for the location of the trenches.

### 1. Trenches at the western defence area: listed from S to N

#### 1960 Trench XXXVI (ET05a) (Plate XIII)

V-shaped ditch fort level 1; ditch fort level 2, cutting earlier ditch; two postholes (remains of tower or bridge construction?) fort level 3; robber trench of wall of northern gate tower fort level 4/5 (stone fort).

#### 1960 Trench XXIX (ET05a) (Plate XIV)

Edge of ditch fort level 2; robber trench of wall of gate tower fort level 4/5 (stone fort).

#### 1960 Trench XXV (ET05a) (Plate XIV)

V-shaped ditch fort level 1; ditch fort level 2, cutting ditch fort level 1; ditch fort level 4/5 (stone fort); robber trenches of walls of northern tower of western entrance gate of stone fort; earthen rampart layers and occupation layers *intra muros*.

#### 1960 Trench XXXII (ET05a)

Robber trench of western defence wall, at transition with gate tower of stone fort.

#### 1960 Trench XXVIII (ET05a) (Plate XV)

Eastern edge of ditch fort level 1; *in situ* base of foundation wall of gate tower; on top: robber trench of stone wall; to the east: earthen rampart, first phase with sand sods.

#### 1960 Trench XXXI (ET05a)

Edge of robber trench of stone wall of gate tower; earthen rampart with clear composition of sods.

#### 1960 Trench XXX (ET05a)

Edge of robber trench of tower wall; earthen rampart with sand sods in first phase.

#### 1960 Trench XXXVI (ET05c) (Plate XV)

V-shaped ditch fort level 1; robber trench defence wall, 1.30 m wide at the bottom.

#### 1960 Trench XXXV (ET05b) (Plate XVI)

V-shaped ditch fort level 2; construction trench stone wall?; robber trench stone wall with to the west some large wall fragments not *in situ* but with preserved facing of small Tournai limestone blocks; earthen rampart built of sods

#### 1956 Trench II (ET01a) (Plate XVI)

East of the fort: presumed western edge of defence ditch stone fort (fort level 4/5).

#### 1957 Trench XIV (ET02j) (Plate XVI)

Robber trench of western defence wall; earthen rampart to the east.

#### 1970 Trench II (ET07) (Plate XVII)

*In situ* foundation and part of the stone wall itself, within wall trench; to the west: start of unattributed ditch; to the east: earthen rampart with first phase built of (grass) sand sods, on top: elevation with more sand, according to Mertens possibly from the ditch, because characterized by thin flood layers; on top of rampart slope: gravel layer of Tournai limestone on top of earthen rampart: construction level of stone fort or related to renovation of fort; at level -2.36 m below 1970 running surface: two parallel construction slots.

#### 1957 Trench XIII (ET02i) (Plate XVIII)

V-shaped ditch fort level 2; robber trench of wall of north-west corner tower, fort level 4/5.

#### 1957 Trench XV (ET02k)

Ditch of stone fort (fort level 4/5).

#### 1957 Trench X (ET02g)

Robber trench of wall of north-west corner tower, base width of 1.70 m.

#### 1957 Trench IX (ET02f) (Plate XVIII)

Robber trench of stone wall north-west corner tower with foundation base still *in situ* with irregular blocks of Tournai



limestone, some set on their sides, with a width, according to the drawing, of 1.35 m, but noted by Mertens as 1.25 m; to the north side: two presumed construction slots (of quay(?) construction fort level 3?).

## 2. Trenches at other sides of the fort

### 1957 Trench XI (ET02h) (at north(-west) side)

Up to -2.38 m depth: robbed wall debris of northern defence wall; underneath: black organic layer, probably edge of ditch of stone fort.

### 1957 Trench VI-VIa-VIb combined (ET02b-c-d) (at north(-west) side) (Plate XIX)

From south to north: pre-fort ditch, earthen rampart, very wide robber trench of stone wall, presumed postholes fort level 3 (diameter: 0.28 m) (related to construction slots of

trench IX?), deep ditch stone fort of 7.75 m wide, shallow ditch stone fort of 6.70 m wide, preceded by shallow ditch of 2.80 m wide; to the north: horizons indicating wetland slope, cut by natural waterway.

### 1957 Trench XXIII (ET02p) (at east side)

Robber trench of eastern defence wall, full of shell mortar and tuff stone: debris from another stone construction nearby?

### 1957 Trench V (ET02a) (at south-east side)

Ditch fort level 1 or 2; to the north: undetermined feature of the same or a later level; ditch stone fort; robber trench of defence wall: wall was broken out and removed after the ditch related to the stone fort was filled in.

### 1957 Trench XVII (ET02l) (at south-east side) (Plate XIX)

Presumed defence features of fort level 1 or 2 (two postholes or construction slots); robber trench of southern defence wall.

# Appendix 3

## Features identified in the 1957 trenches VI-VIa-VIb. Interpretation of the descriptions by J. Mertens

Table 13. Trench profiles VI-VIa-VIb (Plate XIX): (summarized) descriptions of the features by J. Mertens (data from Archive Mertens NDO (earliest predecessor of Flanders Heritage Agency)) and interpretation by the present author. (Where 'Tournai limestone' is listed, Mertens in fact wrote 'blue stone', but this should be recognized as the Tournai stone).

Trench VI East profile (N-S) (according to Mertens 'cum grano solis' since 'recorded partly under water')		
feature	description by Mertens	interpretation
1	more recent pit, green sticky clay, with recent, large brick, fragment of Raeren pot	post-medieval pit
2	firm, black mud, very sticky and quite hard, very little debris; at the bottom many wood remains, sticks, peatlike, clear line with sand	black organic clay level: flooded in
3	yellow sand, brown at the top	Pleistocene sand
4	firm, black mud, cf. 2 but with layers of sand, clear flood layers, very little material, piece of stone	flood layers and silting up
5	flood layers, sand alternating with mud, animal bones and medieval grey sherds	flood level, medieval
6	black 'heavy' mud, hard and sticky; fragment of Roman tile	black organic clay, flood level: marsh
7	peat layer with vegetation, c. 9 cm thick	peat layer
8a	cover layer of wind-borne sand, presumed silted-up sand, only registered by augering	sand sedimentation?
8b	sterile white grey sand	sand sedimentation
9	black clay-sand, with fragments of Tournai limestone, some white 'Roman' shell mortar and charcoal, no pottery sherds, very little debris	flood level
10	silted up sand and mud, some shells, piece of stone	sedimentation
11	mud, with some white Roman mortar, some tile fragments (not always 'old'), pink mortar, fragments of Tournai limestone	flood level
12	dark grey to black, peaty layer	flood level: marsh
13	greyish green sand with debris, piece of Tournai limestone, mortar	medieval or later infill
Trench VI East profile (N-S), southern part		
feature	description by Mertens	interpretation
1	black earth with stone and mainly Roman mortar debris, some Tournai limestone	dark earth
2/9	grey sand with a lot of debris, charcoal, bones, Roman tiles and pottery sherds	medieval accumulation
3	grey sand with dark bottom flood layer, debris; bottom: bones of large animals, Roman tiles, Roman pottery sherds, mussel shells, black mud, pink mortar and many Tournai limestone gravel fragments	infill of shallow ditch? or start tidal landscape?
4	brown black sand, almost sterile; few pieces of Tournai limestone but less than in 3, some fragments of Roman tile	
5	silted-up sand with shells and Roman tiles, charcoal, flooding but not pure	
6	cf. 4 but more sterile	
7	sterile sand, top layer brownish, no finds	Pleistocene sand
8	cut in brown sand, filled in with grey sand, charcoal and many Tournai limestone fragments	edge of ditch of stone fort (fort level 4)

Trench VIa East profile (N-S)		
<i>feature</i>	<i>description by Mertens</i>	<i>interpretation</i>
1	grey sand, recent debris	recent accumulation
2	grey sand, mixed up layering, with large amount of Tournai limestone and mortar	dark earth
3	black earth with Tournai limestone, white and pink mortar	initial robber trench of stone wall
4	cf. 3, but a lot of demolition debris of Tournai limestone, almost nothing else than stone, a lot of pink mortar and tiles, ceramic building material with mortar, pink and white	initial robber trench of stone wall
5	grey sand with a lot of Tournai limestone, fragments of Roman tiles, shells, pottery sherds	
6	organic, black mud, more or less peaty, with a few stone fragments and charcoal	fill of ditch level 4
7	hard sand, original?, sedimentation?, not deep, underneath sterile sand	Pleistocene sand with podzol and bioturbation
8	posthole?, round, diameter <i>c.</i> 28 cm; grey brownish sand, almost sterile	posthole, of earlier date than fort level 4?
9	cf. 8, at the top a lot of humus, black layer with grey sand	posthole, of earlier date than fort level 4?
10	grey sand, sterile	Pleistocene sand
11	humus infiltration layers	Pleistocene sand with podzol and bioturbation
12	cf. VIb 1	medieval robber trench of stone wall
13	bottom of 12: grey sand with thick silt layers, flooded in, with Tournai limestone fragments	
Trench VIb West profile (N-S)		
<i>feature</i>	<i>description by Mertens</i>	<i>interpretation</i>
1	grey sandy fill with Tournai limestone, tiles, pottery sherds	medieval robber trench of stone wall
2	hard yellow sand with thick humus deposition and infiltration	Pleistocene sand with podzol, infiltration and bioturbation
7	accumulated sand, mixed up layering, hard sand with clay and mud, fragments of bone, charcoal, black mud and white sand, 'menapian' pottery sherds	earthen rampart fort level 4/5
8	heterogeneous brown sand	part of earthen rampart fort level 4/5
9	cf. 2	Pleistocene sand with podzol, infiltration and bioturbation
10	greyish brown sand, homogeneous, no finds	ditch prior to stone fort: fort level 2 or 3?
11	horizontal layers yellow sand, clay, brown sand, very-thin layered	base of earthen rampart fort level 4?
12	grey sand, some debris	earthen rampart fort level 4/5
13	black earth with demolition layers, fire layers and Tournai limestone	

## Appendix 4

# Analysis of trench profiles at the south-west corner site of the Oudenburg fort

The following trench profiles at the south-west corner site are selected as being representative of the stratigraphy encountered at the site (cf. Chapter II.2, Figure 9 for the location of these trench profiles):

- **trench profile 5.1**, the southern profile of trench T5 (Plate II),
- **trench profile 3.1**, the central profile of trench T3 (Plate III), in fact not a 'trench' profile, but included here as indispensable in this series of profiles to understand the defence system,
- **trench profile 3.5**, the northern profile of trench T3 (Plate IV),
- **trench profile 6.2**, the northern profile of trench T6 (Plate V), the prolongation of trench 3.5,
- **trench profile 6.1**, the southern profile of trench T6 (Plate VI),
- **trench profile 1.1**, the eastern profile of trench T1 (Plate VII),
- **trench profile 2.7**, the eastern profile of trench T2(bis) (Plate VIII),
- **trench profile 2.2**, the western profile of trench T2 (Plate IX),
- **trench profile 4.9**, the eastern profile of trench T4bis (Plate X),
- **profiles 7.1 and 7.2**, central profiles of trench T7 (Plate XI).

Trench profiles 5.1 and 3.5+6.2 and 6.1 show the connection between the defence system and the inner building area by sectioning the site straight on the defence system, while profiles 7.1 and 7.2 give additional information on the transition between the earthen rampart and the inner area. Trench profiles 1.1, 2.7 and 2.2 yield cross-sections through the inner building area parallel to the defence system. The descriptions and interpretations of the different features on the trench profiles are listed in Table 14 and accompany the summaries below.

### Trench profile 5.1

Trench profile 5.1, the southern profile at the west side of the excavation area, yields a section through successive defence systems and the transition to the inner fort area (Plate II).

Four ditches can be distinguished: the fort level 1 ditch (4); the fort level 2 ditch (5) cutting the previous one; on the same trace the fort level 3 ditch (6) in relation to posthole 9; the edge of a large ditch (3) continuing further to the west. The bottoms of ditch fort level 1 and ditch fort level 2 silted up. These successive ditches were filled

in prior to the cutting of a new ditch. The three earliest ditches are overlapped by the robber trench of the stone defence wall, which has been completely removed in medieval times.

To the east side of the robber trench, parts of the successive earthen ramparts are preserved. The earliest earthen rampart phase (11), built up of sandy turves, was immediately laid onto the cultivated soil. This phase was partly dug away for the construction of a new earthen rampart (12), presumably to rebuild the palisade. This second earthen rampart phase partly shows a clay layer at the base at the west side, probably to solidify the sand body. In its turn, this earthen rampart was dug out partially to construct the earthen rampart of the following level (13), of which the stone debris in its body seem to indicate that this structure coincides with the construction of the stone wall (fort level 4). At the base of this earthen rampart (13), the edge of the large waste-pit OS 4980 immediately connects. The structure (15) underneath this earthen rampart is therefore probably to be identified as part of an intermediate level (fort level 3) or is related to earthworks prior to the construction of the earthen rampart of fort level 4. The layers stratigraphically related to the latest earthen rampart body phase (14) and coinciding with the filling in of the depression of waste-pit OS 4980, are to be linked with the last phase of the defence system (fort level 5).

### Profile 3.1

The central profile of trench T3 represents a cross-section through the defence system (Plate III) and provides insight into the continuation of several features documented in trench profile 5.1.

Ditches (4), (5) and (6) appear in the same sequence as in the southern profile. The earliest ditch is related to two features to the west, feature (21) and double construction slot (23). Ditch (6) is related to feature (9), in surface level recognized as a gully. Its predecessor (22) is likely to be attributed to the same level as an earlier phase being renovated later on, as their trace are identical. To the east a posthole (14) registered right in front of the profile is equally linked to this level. To the west, these features are cut by the edge of the large ditch (3), the area raised prior to its digging (25). The three earliest ditches are, as noticed on the southern profile,

overlapped by the robber trench of the stone wall, which marks a clear cut into the earthen rampart body. The sharp aligned trench at this east side (2), also clear in trench profile 5.1, must have been the location of the original course of the defence wall. Its straight vertical eastern side testifies that the underground extractions were executed from the outside. In comparison to the southern profile, the earlier ditches moved slightly to the west, pointing to a minor changing orientation of the stone fort in comparison to its earth-and-timber predecessors.

The earliest earthen rampart (11) was built directly on top of the cultivated soil and was made of sandy turves, as was clear from the humus dark lines visible in the surface trace. Covering this earthen rampart body, a clay level served as solidification, indicating the preserved original level of the earthen rampart on this location or representing a modification prior to the construction of the second earthen rampart (12). Prior to the construction of the latest preserved earthen rampart body (24), part of the present earthen rampart was cut away, perhaps to renew the palisade. This earthen rampart (24), built up of sandy turves, is likely to be part of the defence system of fort level 3. Alongside the edge of the robber trench, the parallel trench (10) continuing to the south and up north, is identified as the construction trench for the stone wall.

### Trench profile 3.5

The northern profile of trench T3 (Plate IV), over 3.5 m high, collapsed before registration and could not be remade for logistical reasons. The photos made before the collapse however confirm the continuation of the main features documented in profiles 5.1 and 3.1, as is indicated by the marked ditches (only the certain features are marked). The ditches of fort level 1 and 2 which were overlapping in profiles 5.1 and 3.1, are now clearly separated, pointing to a slightly changing orientation between the first and second earth-and-timber fort.

### Trench profile 6.2

The longest profile at the north of the excavation area shows a cross-section through the transition of the earthen ramparts into the inner building area, being situated straight on the defence system (Plate V).

At the west side, cut by the medieval robber trench (26), only the base of the eastern edge of the earliest earthen rampart is still visible (11), built immediately onto the cultivated soil. This fort level 1 earthen rampart is constructed with cultivated soil sand. To the east of the earthen rampart, leaving a space of c. 2.5 m with the base of the rampart, the earliest features are cut directly into the cultivated soil, like feature (27), which is the continuation of gully Plate XXI: f. Further to the east, the area appears to be levelled first with clay and sand layers, only c. 5 cm thick, before the following construction took place, which is clear from the cut of feature (28) (the continuation of feature Plate XXI: b) and of feature (29) (the extension of the northern construction slot of the adjacent unit of Unit I). The extraction trace (30) of the latter

indicates that the beam of this construction slot was recycled during the following period.

Prior to the occupation of fort level 2, the area was elevated with sandy layers, locally up to more than 20 cm. To the west, the earthen rampart was built on top of a gravel layer of Tournai limestone covering these levelling layers. The body of the fort level 2 earthen rampart consisted of sloping layers of sandy turves (12). Directly at the base of the earthen rampart, two gullies ((31) and (32), the continuation of Plate XXIII: i) are dated to the construction phase of fort level 2. A level with some Tournai limestone and a boulder on top of these filled in gullies probably marks the last remains of a road level (33), presumably the *via sagularis*, along the earthen rampart, although this level could not be distinguished in surface further in Trench T7.

The earthen rampart of fort level 2 has been covered by a more clayish sloping body in fort level 3, with some sterile clay layers (24). The inner building area is elevated c. 10 cm, mainly with sand (with some clay) layers, before construction took place with which hearth pit (34) can be related. The different fort level 3 structures uncovered in surface indicate that this level had at least three subphases, of which the hearth pit marks the first one. This explains the phased levelling on top of this hearth pit prior to the occupation of fort level 4. The remains of a presumed post through the earthen rampart (35) may be the last remnant of the continuation of a camp shedding of the rampart.

In this profile, no earthen rampart can be distinguished related to fort level 4. On the contrary, the earthen rampart seems to be cut off to enlarge the inner building area. As the earthen rampart of fort level 4 could be recognized in profile 7.2, the situation on trench profile 6.2 may be local. At this level, the inner building area was elevated by more or less 20 cm of sandy and clayish material, thus resulting in a horizontal level with the area on top of earthen rampart fort level 3. This fort level 4 equally represents several subphases, demonstrated by the renovations in the workshops uncovered in horizontal surface. After a first occupation phase, a large extraction took place at the east of this area (36); the reason for this is unclear. A first fire layer of fort level 4 (37) fills up this extraction. After elevating the area, a clay layer serves a following subphase of fort level 4. The fire layer ending this subphase stretches over the whole profile up to the west (38) and is rich in charred grains; this layer covers a large part of the northern half of trench T7. To the west of the profile, this fire layer is covered by a level of sterile sand (39), identified as the level of sandy turves covering the northern part of trench T7, apparently a floor level for the workshops (cf. Plate XXVII: 'sod level').

After the area had been elevated, a level of coarse sand with mortar and loam grit (41) covered the area, a surface level preserved in parts of Trenches T7 and T2 and recognized as the first subphase of fort level 5. The occupation layer on a higher level is marked by two postholes, of which posthole (40) is the continuation of the S-N construction slot of structure Plate XXIX: i, and represents the second subphase of fort level 5. This final occupation is covered by a fire layer, characterized by charcoal layers, burnt daub and white chalk layers, the demolition remains of the final destruction of the fort.



## Trench profile 6.1

Trench profile 6.1 (Plate VI) is important as confirmation of the interpretation of the stratification of trench profile 6.2 (Plate V). It also yields additional information though. As will be clear on the surface plans, the sectioned construction slot (43) is part of a structure to be dated prior to the construction of the fort (Plate XXI: underneath b).

Again, features of fort level 1 are constructed immediately on the cultivated soil (see (27), (28), (29), (44)). As this profile is situated more to the east compared to profile 6.2, the base of the earthen rampart of fort level 1 is situated outside this trench profile. Clay layer (12) is presumably the western end of the solidification clay on top of the earthen rampart body of fort level 1. It forms the base for the earthen rampart of fort level 2, consisting of thick clay layers and sand levels. Right next to this earthen rampart base, a feature was dug, filled in with the same clay layer. The small shift in the layers is probably due to post-depositional processes of compaction.

Prior to the construction of fort level 2, the area was elevated with a thick sandy level of 10 to 15 cm thickness. At the eastern end of the profile, this level changes into a homogeneous greenish clay level. Ditch (45) (identified as draining ditch Plate XXIII: i) cuts into the levelling layers, indicating that the area was drained after it was elevated and after the earthen rampart was raised. The occupation fort level 2 is marked by postholes (46) and (47).

Prior to the construction of fort level 3, the area was again elevated, with mainly sandy and some clayish layers. The later earthen rampart of fort level 3 is here seen extending more to the west, consisting of a clay body and a sandy, humus brown cover. The occupation fort level 3 is marked by pit (48) and a hearth with sherd level (50), but as was clear in profile 6.2, fort level 3 represents different subphases.

For the construction of fort level 4 only the inner building area was elevated, but not as drastically as with the previous phases. As the occupation layers stretch further to the west, covering the base of the earthen rampart of fort level 3, thus forming a quasi-horizontal level, the earthen rampart seems to be situated locally further to the west. The sequence of hearths at the east of the profile, together with the simultaneous levelling up of the area demonstrates the phasing and the long duration of this occupation. A first sublevel ended with a massive fire, indicated by layer (38), containing a lot of burnt daub and charred grains. The area was then levelled with a level of sandy turves (39), on which further workshop activities took place (see hearths (53) and (54)). The stratigraphic relations with pit (49) have been disturbed by slumping due to the underlying pit (48).

After an elevation of the site, a thin mortar and daub grit layer, related to a stone level more to the east, marks the first phase of fort level 5. Construction slot (40) (Plate XXVIII: i) represents a later subphase. On top of a clay level, a debris layer full of white and pink mortar and ceramic building material (42) relates to the demolition of the fort after its last abandonment.

## Trench profile 1.1

Trench profile 1.1 is the most eastern trench profile of the southwestern excavation area (Plate VII). It yields a more or less north-south section through the inner building area situated parallel to the defence system and therefore to the axes of the fort.

At the north side of the trench profile, a presumed road level consisting of 'fieldstones'<sup>414</sup> embedded in sand had cut away the cultivated soil over a distance of at least 4 m (57) (cf. Plate XXI: c). No relation in surface to defined fort level 1 features could be indicated, leaving the date of this road uncertain. This road may predate the fort or may belong to fort period 1. As a consequence of the deeper position of this road, this area was elevated with a thick sandy level prior to the construction of fort level 2 to cover the road. These sandy make-up layers, running over the whole length of the trench profile, are interrupted by a thin fire layer in the central part of the trench profile in which fragments of metal slag relate to metalworking (58).

Fort level 2 is characterized by a level of fragments of wall painting positioned horizontally and the covering level of clay containing a lot of plaster pieces. This greenish clay level, specked with plaster fragments, and occasionally even with larger parts of wall painting, was revealed over significant areas of the site. The discovery at the south side of the excavation area of wood imprints of timber framework in the clay upon which a fallen plaster wall was preserved facing up, proves that this clay represents the remains of the 'timber and daub' walls of which the fort level 2 building was constructed. One section of a construction slot or posthole (60) (Plate XXIII: k) is situated in the prolongation of the northern slot of the double construction slot (v). No construction slot was found in between the corner of the building as revealed in surface (Plate XXIII) and this profile feature (60), leaving a space of c. 2 m, pointing to a possible portico.

Fort level 3 seems to be built here immediately on top of the debris of fort level 2. The postholes ((65), (66), and in between) of fort level 3 situated at the south side of the profile indicate that renovations took place. More to the north a hearth pit (63) and a hearth with a level of ceramic building material (68) (Plate XXV: h) is related to this level. The area aligned by the postholes (65) and (67) (Unit IVb) suffered from severe fire (69), marking the end of this level.

Right on top of the demolition layer, (the remains of) a road stretching over almost the entire length of the profile (70) can be identified as fort level 4. Only at the northern end this road is preserved as a dense gravel level. More to the south, it shows as a layered, mainly sandy, level with some large blocks of Tournai limestone (cf. Plate XXVII: east side).

At the northern end, this road is covered by a thick burnt sandy level (71), which occurs also in other trenches. This level continues further south over the entire profile, but as a dark brownish level

414 This un-descriptive name is used locally for specific glauconite-rich sandstones.

(more clayish sand) with a fired top level (72). A robbed foundation trench of a stone wall (Tournai limestone and mortar) indicates a stone wall of fort level 5 (73). This fort level 5 is furthermore only distinctively marked by a compacted demolition layer of mortar debris (white and pink) with fragments of Tournai limestone and ceramic building material (42).

### Trench profile 2.7

A large part of the Roman levels had been cut away at the south side of trench profile 2.7 (Plate VIII) by a large pit cut from at least the bottom part of the dark earth (74). This post-Roman 'disturbance' stretches out to trench profile 1.1 and is characterized by a stone (Tournai limestone) and mortar base filling. This pit is the robber trench of the bath house of fort level 5.

No features can be distinguished which are cut directly into the cultivated soil. At the north side of this trench profile, a thin fire layer with burnt daub grit (75), situated on top of a levelling level of sterile sand layers and clay, marks the end of a first identifiable occupation level.

Since this thin fire layer is covered by a sterile greenish clay layer for the construction of fort level 2, this fire level is likely to have occurred during the establishment of fort level 2 and may thus be linked with gully (79). In the middle section of the trench profile, on top of the cultivated soil, a clear elevation can be distinguished consisting of a layered level of sand with some thin clay layers prior to the construction of fort level 2. At the north side, prior to this fort level 2, the area is levelled with a greenish sterile clay level. This trench profile clearly sections the building complex of fort level 2 revealed in surface, as shown by the construction slots (76) and (77), and the postholes (81), (82) and (85). A similar but slightly sandier clay level (86), speckled with charcoal, covers fort level 2. As pointed out for trench profile 1.1, this level most likely represents the fallen 'timber and daub' walls of the building of fort level 2, and thus the demolition level of this occupation. According to a local fire layer in the northern part of the profile underneath this layer, a fire took place prior to this demolition, characterized by a charcoal rich layer containing plaster fragments. In this northern part of the profile, the third level is implanted directly on top of this demolition level, while more to the south the area was elevated with heterogeneous sand and more clayish layers. Feature (87) testifies of the recuperation at fort level 3 of a construction beam from the construction slot of fort level 2. Construction slot (78) of fort level 3 follows the same path as the construction slot of the previous level (77). At the north side of the profile, the succession of fort level 3 and fort level 4 layers is somewhat unclear.

Fort level 4 is mainly represented here as fire layers. Fire layer (92) is characterized by an abundance of charcoal, burnt daub and some mortar gravel, a clear demolition layer following a fire, while layer (72) represents fired soil. No clear fort level 4 construction features are sectioned in this profile. Construction slot (93) can be related to fort level 5. The end of fort level 5 is marked by a fire layer at the north of the trench profile and a thick demolition layer (42) consisting of debris of the bath house more to the north.

### Trench profile 2.2

The post-Roman pit at the north side of trench profile 2.2 (Plate IX) is the same as the one at the south of trench profile 6.2, cutting away most of the Roman stratification at this location.

The level 1 occupation took place directly on top of the cultivated soil, as is clear in the other trench profiles. The start of fort level 2, constructed after a levelling of the area with mainly sand layers and locally some sterile clay, is marked by the gullies (97) and (99). Shortly after, these were filled in to serve as trace for construction slots (98) and (100). A level of horizontally positioned plaster fragments (101) represents the demolition of the building of fort level 2 and the end of this occupation.

Prior to the implantation of fort level 3, the site was again elevated with sandy layers. Fort level 3 is marked by a posthole (103), pits (104) and (106) (with declined southern edge) and construction slot (102); local fire layers with daub burnt to red ((107) and further north) mark the destruction of this level.

Prior to the implantation of fort level 4, the area was again levelled. Fort level 4 itself is equally characterized by several elevations. A shell layer consisting mainly of cockles (109) marks one of the first subphases, filling in also the base of pit (105). On top of this layer, the pit is filled in with a layer of sand sods, stretching further north and also in surface over a large part of the northern half of trench T7. The burnt soil (111) was revealed in a large part of the northern half of trench profile 1.1. The large pit of fort level 4 situated at the south side of trench profile 2.2 and which was also cut at the east side of trench profile 5.1, was clearly dug or re-dug while fort level 4 was already installed. Impressive fire layers, full of burnt daub, mark the last but one (layer 112) and the final phase (layer 114) of fort level 4.

Immediately on top of this last demolition level, the fine gravel layer of sand, mortar and daub, revealed over a large part of trench T7 and T2, is interpreted as walking surface of fort level 5 (41). The end of this fort level 5 is again characterized by the demolition layer (42), visible at the southern end of the profile.

### Trench profile 4.9

Trench profile 4.9, situated in the extension of trench profile 2.7, sections the area right on the southern defence system inside the earthen rampart (Plate X). The large feature of c. 5.0 m wide, filled in with sand, pre-dating the first fort and even pre-dating the cultivation of the soil, can be identified as a tree-fall. The organic and the silty layers in the top half are indicative for a temporary exposure of the pit. At the base the remains of roots of buried vegetation were reaching further outside the feature, possibly the roots of the tree originally standing here. The cultivated soil, more substantial on top of the pre-fort pit because of subsidence, did not show any level 1 feature at this location.

The sectioned postholes and/or construction slots which can be assigned to fort level 2 (132, 133, 134, 136) reveal two building phases. After a first phase, the area was raised with a greenish clay level (135). This level is closed off by a thin charcoal layer (136b) with here and there plaster fragments positioned horizontally (136a), clearly indicating the end of occupation fort level 2b. The clay level on top, covered by a dense level of *in situ* fallen plaster fragments, is the extension of the fallen down plaster wall of the building of fort level 2b, uncovered at the south of Trench 8 (cf. Plate XXIII).

Fort level 3 is marked by posthole (139); this level could not be defined further to the south and appears to have been cleared away with the installation of fort level 4. Layer 143 containing many larger stone fragments and interpreted as a robbed out road level, represents a first phase in this fort level 4. This level was covered by a level full of burnt material (144) which can be associated with a burnt surface uncovered at the south of trench T8 and assigned to a burnt workshop (Unit V) (Plate XXVII).

The distinct level (145) represents the sectioned remains of a metallised road of fort level 5, also uncovered at the south of trench T8 and identified as the *intervallum* road along the southern earthen rampart (Plate XXVIII: f). Layer (145a) shows the only *in situ* remains of the original gravel.

## Profiles 7.1 and 7.2

Profiles 7.1 and 7.2 give more insight into the transition between the earthen rampart and the inner area (Plate XI). These profiles do not show construction features of level 1, from which it may be assumed that it occurs right on top of the cultivated soil.

Underneath the earthen rampart of fort level 2 (12), the solidification clay layer on top of the earthen rampart fort level 1 (see trench profile 3.1 east) can be recognized. Prior to the construction of fort level 2, an elevation took place consisting of mainly sand layers containing some clay. Humus brown sandy layers on top of a sterile clay layer at the west side of profile 7.2 are the last remains of the earthen rampart of fort level 2, made

of sandy turves (12). A ditch (116), starting right at the base of this earthen rampart, is related to this fort level 2 (cf. Plate XXII: h). The alternated fill of sterile sand layers and dark silt layers indicates that this ditch lay open for a (short) while whereafter it was filled in prior to the occupation of this level. The direct stratigraphic relationship is lacking (disturbed by feature (122)), but it can be assumed from the straight vertical western edge of the ditch that it cuts the earthen rampart. The pit (117) which cuts into this ditch filling, is also related to fort level 2. A thin fire layer (115) marks the end of this occupation.

Prior to the fort level 3 occupation, the area was again levelled, now with more heterogeneous layers, containing some debris. An extraction (120) took place, which was rapidly filled in, with a horizontally layered level, sand to clayish sand, forming also the earthen rampart body (24). Since the extraction cuts into pit (118) of the same fort level 3, this earthwork probably reflects renovation works to the earthen rampart. The base of the earthen rampart is covered by sloping burnt layers (121).

Prior to fort level 4, a levelling of the site was conducted where it was necessary, as can be concluded by the differences in profiles 7.1 and 7.2. On profile 7.1, an elevation took place at the base of the earthen rampart; on profile 7.2 a levelling of the whole area is clear. A first occupation level is marked by a heavy fire (124). The last phase of fort level 4 is characterized by layers of sandy turves (110). This level changes to the west into a thick level of heavily burnt soil (111), a level uncovered over a large part in the northern half of trench T7, T2 and T2bis and also detected in the north end of trench profiles 2.2 and 1.1 (see also Chapter II, Section II.4.6.2.c: Fig. 69).

Right on top of this level, the gravel layer of fort level 5 (41) was laid over, running further west as a sterile sand elevation level which served the construction of the earthen rampart and the levelling of the sunken area due to ditch fort level 2. Construction slot (129) and posthole (130) are features of fort level 5B (cf. Plate XXIX, respectively the construction slot at the west side and the posthole (of the first phase of the construction?) at the northwestern side of the presumed stable). Since they are cut from into the layer on top of layer (126), layer (128) – only slightly different in colour from the ‘dark earth’ – appears to belong to fort level 5(B).

Table 14. Descriptions and interpretations of the different features of the selected trench profiles of the south-west corner site.

Trench profile 5.1 (Plate II) east-west section through defence system and transition to stratigraphy <i>intra muros</i>		
with indication of presumed ground water level during late 4th C. AD (based on context double well OS 2562, latest absolute datable context (felling date for inner well: AD 379/380): at c. 3.50 m T.A.W.		
with indication of presumed ground water level during late 3rd C. AD (based on context OS 22926, well fort level 4 (felling date: AD 260-275): at c. 3.30 m T.A.W.		
with indication of presumed ground water level during late 2nd C. AD (based on assumption that ground water level raised appr. 20 cm in 100 years as indicated by the raise from late 3rd to late 4th C. AD): at c. 3.10 m T.A.W.		
feature no.	interpretative description	interpreted as
1	rubble layer of mortar and Tournai limestone gravel	the (medieval) robber trench of the Roman defence wall
2	slightly heterogeneous dark brown gray sandy filling with only small amount of mortar and stone debris, bottom half more compact and with more greenish clay spots and fine layers; at the bottom thin layers of sterile sand	the medieval robber trench for the extraction of the defence wall, the thin layers at the bottom interpreted as trampling levels, with above backfilled level
3	layered heterogeneous dark greyish sand with yellow sand and clay inclusions	the edge of the defence ditch of fort level 4 (stone fort 1)
4	layered grey to brown sandy levels, bottom level consisting of silt layers with organic material	the defence ditch of fort level 1 (earth-and-timber fort 1)
5	layered grey to dark grey sandy levels, with silt layer and heterogeneous, diffuse bottom layer with clay inclusions; with possible redigging	the defence ditch of fort level 2, two phases? (earth-and-timber fort 2)
6	slightly heterogeneous grey brown clayish sand, same filling as 9	remains of defence ditch of fort level 3 (earth-and-timber fort 3)
7	homogeneous dark brown to dark grey clayish sand with little bit of stone and mortar debris, at the bottom heterogeneous yellowish to brown sand	bottom of robber trench
8	cf. 1. but with less debris	continuation of 1
9	posthole, more or less in the prolongation of gully OS 3983	posthole fort level 3, presumed part of palisade of the defence system
10	straight trace in surface level, filled with heterogeneous grey and yellow sand	part of construction trench for building the defence wall fort level 4 (stone fort)
11	homogeneous humic dark brown level (little to differentiate from the cultivated soil) with thin humic layers	the earthen rampart fort level 1, made from grass sods, cut out from sandy soils
12	brown to beige sandy fillings, mainly homogeneous levels; at the base of the earthen rampart (west side) green clay layer	the earthen rampart fort level 2, made with sand loads, with clay layers for solidification of the sand body
13	heterogeneous grey brown mixed sand-clay level, with concentrations of Tournai lime stone gravel and mortar fragments	the earthen rampart presumably fort level 4
14	heterogeneous dark brown to grey sand/clay level, with a lot of stone and mortar debris	presumed part of earthen rampart fort level 5
15	feature with homogeneous dark brown grey sandy filling	presumed feature of construction of defence system fort level 3 or prior to construction of defence system fort level 4
16	waste layers	edge of large waste pit OS 4980 fort level 4
17	compact rusty-coloured clayish layer with shell concentration	top of primary fillings of large waste pit OS 4980 fort level 4
18	debris layers, closed off by level of mortar fragments	secondary fillings of depression of OS 4980 fort level 5, fort levelling of this area
19	hearth with stone and mortar concentration	hearth HP OS 44160, of late Carolingian date
20	posthole	part of post-medieval north-south post row, uncovered in Trench T3

**Central profile 3.1 (Plate III)****east-west section through defence system**

with indication of presumed ground water level during late 4th C. AD (based on context double well OS 2562, latest absolute datable context (felling date for inner well: AD 379/380): at c. 3.50 m T.A.W.

with indication of presumed ground water level during late 3rd C. AD (based on context OS 22926, well fort level 4 (felling date: AD 260-275): at c. 3.30 m T.A.W.

with indication of presumed ground water level during late 2nd C. AD (based on assumption that ground water level raised appr. 20 cm in 100 years as indicated by the raise from late 3rd to late 4th C. AD): at c. 3.10 m T.A.W.

<i>feature no.</i>	<i>interpretative description</i>	<i>interpreted as</i>
1	rubble layer consisting of Tournai limestone gravel and mortar	the (medieval) robber trench of the Roman defence wall, result of stone rubble loads
2	upper half: humic dark brown sand (cf. earthen wall), with thin clay layers at the base; bottom half: mainly stone debris (cf. 1) with thin sandy layers cf. earthen wall	the medieval robber trench for the extraction of the defence wall
3	homogeneous dark grey clayish sand, with inclusions of stone and mortar debris	the edge of the late Roman defence ditch, filled up after the abandoning of the fort (water-filled ditch)
4	layered filling, dark grey clayish sand layers and yellowish heterogeneous sandy layers	defence ditch fort level 1 (dry ditch)
5	layered filling, dark grey clayish sand layers and heterogeneous more sandy grey-yellowish layers, alternated with humic black layer	defence ditch fort level 2 (dry ditch) (surface feature OS 3982)
6	more homogeneous dark grey clayish sand	gully, part of defence system fort level 3
7	mixed up cultivated soil and virgin soil, level with spade cuts at the base	traces of digging out the stone wall
8	cf. 1 with less debris	continuation of 1.
9	cf. 6	gully, part of defence system fort level 3
10	homogeneous brown grey sand with clay inclusions and small mortar fragments	construction trench for building the defence wall fort level 4 (stone fort)
11	homogeneous humic dark brown level (little to differentiate from the cultivated soil) with thin humic layers	the earthen wall from fort level 1, made from sand sods
12	brown beige sand with thin white sand layers, on top of clay layer covering the earthen wall of level 1	the earthen wall from fort level 2, made from sand
14	posthole, cf. 6 and 9	posthole belonging to fort level 3
21	presumed posthole, same filling as 22 and 23	posthole (?) belonging to level 1
22	gully, same filling as 21 and 23	gully, part of defence system fort level 1 (surface feature OS 3983)
23	double construction slot, same filling as 21 and 22	double construction slot, part of defence system fort level 1 (surface feature OS 3991)
24	mixed grey and white to beige sand, layered blocks of sand	the earthen wall from presumably fort level 3, made from sand sods
25	humic dark brown sand	fort levelling layer prior to the digging of ditch fort level 4

**Trench profile 3.5 (Plate IV)****west-east section through defence system**

<i>feature no.</i>	<i>interpretative description</i>	<i>interpreted as</i>
1	rubble layer of Tournai limestone gravel and mortar	the (medieval) robber trench of the defense stone wall
4	V-shaped ditch	continuation of ditch fort level 1, as documented in profiles 5.1 and 3.1
5	V-shaped ditch	continuation of ditch fort level 2, as documented in profiles 5.1 and 3.1
6	V-shaped ditch	continuation of ditch fort level 3, as documented in profiles 5.1 and 3.1
8	cf. 1 with less debris	continuation of 1
22	gully	continuation of gully level 1, as documented in profile 3.1



**Trench profile 6.2 (Plate V)**  
**west-east section through robber trench of stone wall, earthen ramparts and inner building area**

<i>feature no.</i>	<i>interpretative description</i>	<i>interpreted as</i>
1	concentration of Tournai limestone gravel and mortar, part of large extraction	remains of the defensive stone wall, part of the (medieval) robber trench
11	homogeneous humic dark brown level (little to differentiate from the cultivated soil), with some pale sand spots and charcoal	the earthen rampart from fort level 1, built up with sand (cut off cultivated soil)
12	level of grey brown to pale grey sand blocks	the earthen rampart from fort level 2, built up with sand sods
24	level of greenish clay layers and pale grey, more sandy layers	the earthen rampart from presumably fort level 3, built up with clay and more sandy material
26	different fillings of large extraction pit	the (medieval) robber trench of the defensive stone wall
27	gully	gully OS 72630-632, level 1
28	construction slot	construction slot of fort level 1, OS 6029, uncovered in surface in Trench T6
29	construction slot	construction slot of fort level 1, OS 6004, uncovered in surface in Trench T6
30	feature 28 redug starting from higher level	recuperation trench of fort level 2, presumably for the extraction of the construction beam of fort level 1
31	ditch	ditch of fort level 2, OS 6050-51, uncovered in surface in Trench T6
32	(pit in) part of ditch	feature OS 6039, of fort level 2, uncovered in surface in Trench T6
33	sandy level with sterile sand and clay layers, with some large stones (Tournai limestone and a boulder)	presumed road fort level of fort level 2
34	hearth pit	hearth pit of fort level 3
35	remains of posthole	posthole, possibly part of camp shedding fort level 3
36	large digging out of area	extraction at fort level 4
37	fire layer	fire layer fort level 4
38	fire layer, full of burnt daub and with concentrations of charred grains	fire layer fort level 4
39	level of sand sods, as registered in surface over a large area in the northern half of Trench T7	fort level of sand sods, fort level 4
40	posthole	posthole, presumably part of construction slot OS 7978, fort level 5
41	white grey level of sand with mortar grit, uncovered in surface over large area in Trench T7 and partly in Trench T2	surface fort level of first phase of fort level 5
42	fire and demolition layer, with charcoal layers, burnt daub and white chalk layers	fire and demolition layer fort level 5

**Trench profile 6.1 (Plate VI)**  
**east-west section through transition inner building area to earthen ramparts**

<i>feature no.</i>	<i>interpretative description</i>	<i>interpreted as</i>
12	green clay layer	the base of earthen rampart fort level 2, presumably the clay layer solidifying the earthen rampart body of fort level 1
24	core of gray-greenish clay covered by level of more sandy, humic dark brown layers	the earthen rampart of presumably fort level 3, built up with clay and more sandy material
27	gully	gully OS 72630-632, level 1
28	construction slot	construction slot of fort level 1, OS 6029-72680, uncovered in Trench T7
29	construction slot	construction slot of fort level 1, OS 6004, cutting pit OS 6002-3, uncovered in Trench 7

38	fire layer, full of burnt daub and with concentrations of charred grains	fire layer of fort level 4
39	level of sand sods, as registered in surface over a large area in the northern half of Trench T7	fort level of sand sods, fort level 4
40	construction slot	construction slot OS 7978 of fort level 5
41	white grey level of sand with mortar grit, uncovered in surface over large area in Trench T7 and partly in Trench T2	surface fort level of first phase of fort level 5
42	demolition layer full of fragments of mortar and ceramic building material	demolition layer fort level 5
43	construction slot	construction slot OS 72618, feature prior to first fort level
44	construction slot	construction slot OS 72678 of fort level 1
45	ditch	ditch OS 72639 of fort level 2
46	posthole	posthole of fort level 2
47	posthole	posthole of fort level 2
48	pit	pit OS 70959 of fort level 3
49	pit	pit OS 71054 of fort level 4
50	hearth with sherd level	hearth of fort level 3
51	hearth with level of ceramic building material	hearth OS 72202 of fort level 4
52	hearth with level of stones	hearth OS 70938 of fort level 4
53	hearth with sherd level	hearth OS 7988 of fort level 4
54	hearth with sherd level	hearth OS 7989 of fort level 4
55	area dug out and filled with demolition debris, with a large amount of iron finds	dug out and fort levelled area of fort level 5
56	stone level with the stones (Tournai limestone and mortar) lying horizontal	stone fort level of fort level 5

**Trench profile 1.1 (Plate VII)**  
**north-south section through the inner building area parallel to the defence system**

<i>feature no.</i>	<i>interpretative description</i>	<i>interpreted as</i>
42	demolition layer full of fragments of mortar and ceramic building material	demolition layer fort level 5
57	yellowish-grey-dark grey layered sand with level of pebbles	road, prior to fort or fort level 1
58	level locally marked by thin burnt layer full of metal slag and some fragments of Tournai limestone in covering sand layer	occupation level 1 with evidence for metalworking
59	posthole or construction slot with bottom layer of charred wood	posthole or start of construction slot of fort level 2, with remains of charred beam
60	construction slot or posthole	construction slot or posthole of fort level 2, in the extension of the northern slot of the double construction slot OS 82843/11099A, but no feature in surface in Trench T1
61	level of plaster fragments	demolition layer of fort level 2
62	greenish clay level with a lot of plaster fragments	demolition fort level of fort level 2
63	hearth pit with burnt sand edges and bottom of charcoal	hearth pit of fort level 3
64	construction slot	construction slot OS 1976, fort level 3
65	construction slot	construction slot OS 1802 (1587), fort level 3
66	construction slot	construction slot OS 1648 (11081), fort level 3
67	construction slot	construction slot OS 8970 (1642), fort level 3
68	hearth built on top of green clay layer and with level of ceramic building material	hearth of fort level 3

69	fire layer full of charcoal, burnt daub, charred grains and some fragment of ceramic building material	fire layer of end of fort level 3
70	layered level of mostly sand with some thin clayish layers, level in which large blocks of Tournai limestone are enclosed; the most northern part is best preserved with a dense concentration of fragments of Tournai limestone	road fort level belonging to fort level 4
71	level of burnt sandy soil, black to dark brown at the edges, dark yellow in the center, cf. (111) of trench profile 2.2 and 7.1/7.2	fort level of burnt sand belonging to fort level 4, marking the end of fort level 4
72	level of burnt soil, continuation of (71) but here more clayish, brownish debris layer, burnt to black on top	burnt fort level, end of fort level 4
73	concentration of large mortar and smaller Tournai limestone fragments	remains of stone wall of fort level 5
74	large extraction pit cutting from in the so-called 'dark earth' onwards	the medieval robber trench of the bath house of fort level 5

**Trench profile 2.7 (Plate VIII)**  
**north-south section through the inner building area parallel to the defence system**

<i>feature no.</i>	<i>interpretative description</i>	<i>interpreted as</i>
42	demolition layer full of fragments of mortar (white and pink) and ceramic building material	demolition layer fort level 5
72	burnt soil layer	fort level with fire layer marking the end of fort level 4
74	large extraction pit cutting into the so-called 'dark earth'	the medieval robber trench of the bath house of fort level 5
75	charcoal layer with burnt daub grit	thin fire layer, probably dated from
76	double construction slot	construction slot of fort level 2, OS 82843-845
77	construction slot	construction slot of fort level 2, OS 23587
78	construction slot on a higher level, following the same trace	construction slot of fort level 3, OS 81224
79	gully	gully of fort level 2, OS 23966
80	feature	feature of fort level 2
81	posthole	posthole OS 23569 of fort level 2
82	posthole	posthole OS 23559 of fort level 2
83	feature	feature OS 23558 fort level 2
84	pit	pit OS 23555 of fort level 2
85	posthole	posthole OS 23553 of fort level 2
86	greenish clay level with charcoal particles, slightly more sandy than the sterile clay level on which level 2 is constructed	demolition fort level, end of fort level 2
87	grey greenish clay layer, sandier than 80, and clearly cutting into this layer	fort level presumably related to the construction of fort level 3, digging into the construction slot 71 probably to recuperate the construction beam
88	construction slot	construction slot OS 80837/81522/82085, fort level 3
89	posthole	posthole of fort level 3
90	posthole	posthole of fort level 3
91	posthole	posthole OS 82519 of fort level 3
92	fire layer consisting of dark brown clayish sand, full of burnt daub, charcoal and mortar grit	burnt demolition layer of fort level 4
93	construction slot (oblique section)	construction slot OS 8338/8657/80418 of fort level 5
94	edge of structure OS 2562	edge of context OS 2562, double well
95	homogeneous dark greenish brown clayish sand layer, many charcoal fragments	layer on top of fort level 5, full of debris of fort level 5
96	hearth, marked by burnt soil on which Tournai limestone pieces and ceramic building fragments are lying horizontally	medieval hearth, probably of Carolingian date according to the level

**Trench profile 2.2 (Plate IX)**  
**south-north section through the inner building area parallel to the defence system**

<i>feature no.</i>	<i>interpretative description</i>	<i>interpreted as</i>
41	white grey level of sand with mortar grit on top, uncovered in surface over large area in Trench T7 and partly in Trench T2	fort levelling and running surface of first phase of fort level 5
42	demolition layer full of fragments of mortar (white and pink) and ceramic building material	demolition layer fort level 5
95	homogeneous dark greenish brown clayish sand layer, many charcoal fragments	layer on top of fort level 5, full of debris of fort level 5
97	gully	gully of fort level 2, OS 71439 (70920)
98	posthole of construction slot	part of construction slot of fort level 2, OS 71083
99	gully	gully of fort level 2, OS 23966
100	construction slot	construction slot of fort level 2, OS 72750a
101	level of plaster fragments	fallen off wall plaster, marking the demolition of fort level 2
102	construction slot	construction slot of fort level 3, OS 23646
103	posthole	posthole of fort level 3, OS 23722
104	pit	pit of fort level 3, OS 23968
105	pit at the same location as 104, but clearly redug	pit of fort level 4, OS 23087
106	pit	pit of fort level 3, not uncovered in surface
107	fire layer of daub burnt to red	fire layer of fort level 3
108	edge of pit, with burnt bottom layer full of cockles	edge of pit of fort level 4
109	shell layer, mixed with charcoal and other burnt material	occupation layer of fort level 4
110	level of sand sods	sod layer of fort level 4
111	heavily burnt soil, dark yellow (center) to black; based on a burnt sod at the southern end this is the sod level being heavily burnt	burnt soil of fort level 4, to be linked with layer 66 of trench profile 1.1
112	fire layer full of charcoal and burnt daub	fire layer of level 3, prior to the end of this level
113	large pit	primary fillings of pit OS 4980 of fort level 4
114	demolition/fire layer, full of burnt debris and daub, locally many copper alloy fragments, charred cereals and coins	demolition layer marking the end of fort level 4

**Trench profile 4.9 (Plate X)**  
**north-south section through the inner building area parallel to the defence system**

<i>feature no.</i>	<i>interpretative description</i>	<i>interpreted as</i>
95	homogeneous dark greenish brown clayish sand layer, many charcoal fragments	layer on top of fort level 5, full of debris of fort level 5
131	large pit-like feature consisting of sand fillings; lower half: shifted Pleistocene sand, both sterile and slightly more mixed layers, at the base some layers with remains from buried vegetation; top half: more mixed up sand, some silty layers, organic layers and pieces of bog iron ore	tree-fall pre-dating the fort and the cultivation of the land
132	posthole	part of alignment earthen rampart fort level 2a
133	posthole or sectioned construction slot	posthole fort level 2a
134	posthole or sectioned construction slot	posthole or construction slot fort level 2b
135	greenish, sterile, compact clay level	fort levelling clay for fort level 2b
136	posthole	posthole fort level 2b
137a	<i>in situ</i> plaster fragments positioned horizontally	<i>in situ</i> plaster level related to building fort level 2b
137b	thin charcoal layer	occupation level of fort level 2b

138	greenish clay on top of occupation level 137, distinguished from clay level 135 in being slightly sandier and mixed with charcoal and some small plaster fragments	related to fallen down plaster wall uncovered at the south of Trench T8; clay level likely representing fallen down wall of building of fort level 2b
139	level of <i>in situ</i> fallen down plaster fragments, with some larger parts, with fragments still connected to each other, in several directions	continuation of fallen down plaster wall uncovered at the south of Trench T8
140	posthole with leached post remains <i>in situ</i> , the layers on top indicate a (partial) extraction of the post	posthole fort level 3
141	substantial level of rather homogeneous browngreyish slightly clayish sand with a lot of charcoal, some shell and burnt daub fragments and greenish clay inclusions	levelling layer consisting of mixed material
142	thin stone layer with fieldstone fragment and mortar piece	part of original road level fort level 4a
143	beigegrey rather sandy level characterized by large fragments of Tournai limestone, clearly positioned on a horizontal level	remains of a broken out road level of fort level 4a
144	thick, burnt, heterogeneous level, consisting of slightly clayish sand, many charcoal fragments, at places a lot of shell fragments, some copper alloy remains	continuation of burnt level uncovered in Trench T8 Unit V
145	distinct, heterogeneous, sandy layer rich in small fragments of Tournai limestone, fieldstone, mortar, ceramic building material (b); c: pale beige sand layer full of gravel inclusions, stone fragments and clay inclusions	remains of metallised road fort level 5
145a	<i>in situ</i> small fieldstone fragments positioned horizontally	<i>in situ</i> remains of metallised road fort level 5

**Trench profiles 7.1 & 7.2 (Plate X1)**  
**west-east sections through the transition earthen rampart and inner building area, straight on the defence system**

<i>feature no.</i>	<i>interpretative description</i>	<i>interpreted as</i>
12	homogeneous grey sand; at the base of the earthen wall (west side) green clay layer	the earthen rampart from fort level 2, made with sand loads, on clay bed?
24	grey and brown to beige sand layers	the earthen rampart from fort level 3, made from sand sods, the continuation of this earthen rampart level of profile 3.1
41	white grey level of sand with mortar grit, uncovered in surface over large area in Trench T7 and partly in Trench T2	surface level of first phase of fort level 5
95	homogeneous dark greenish brown clayish sand layer, many charcoal fragments	layer on top of fort level 5A (41), full of debris of fort level 5, but according to stratigraphic relation to features 119 and 120 still belonging to fort level 5 (5B)
110	level of sand sods; in profile 7.1: in between and on top: rusty layer, probably caused by the humus layer on top of the sods	sod layer of fort level 4
111	heavily burnt soil, dark yellow (center) to black; based on the gradual transition with sod level 102 interpreted as the sod level totally burnt	burnt soil of fort level 4, to be linked with layer 103 of trench profile 2.2 and layer 66 of trench profile 1.1; in trench profile 2.7 this level can be linked with layer 86
114	demolition layer: dark grey clayish sand, full of small burnt debris and daub, copper alloy fragments, coins, charred cereals	demolition layer marking the end of fort level 4
115	thin fire layer	occupation layer fort level 2, of which the end is marked with fire layer
116	ditch	ditch fort level 2, OS 70960 (fort level 2A)
117	pit	pit fort level 2, OS 72620 (fort level 2B)
118	pit	pit fort level 3, OS 70942
119	construction slot	construction slot of fort level 3, OS 7984
120	extraction, filled in with earthen wall layers	extraction of fort level 3, filled in with earthen rampart fort level 3
121	black to dark grey layers full of charcoal, with fragments of burnt daub and shells	fire layers on the presumed base of earthen rampart fort level 3
122	pit	pit of fort level 4, OS 71830, dug at the beginning of this occupation



123	layered level of sand with clayish layers	fort levelling and elevation layer of fort level 4, forming the base of the earthen rampart to the west
124	charcoal layer	fire layer of fort level 4
125	heterogeneous layer, sand with clay, base of layer: thin-layered, with a lot of charcoal and some shell fragments, on top: elevation with more greenish clay	elevation level on top of presumed occupation layer fort level 4
126	sterile yellow sand, cut from the virgin soil	elevation level of pure sand, related to level 41 (fort level 5A), and forming part of the earthen rampart to the west
127	pit	pit of fort level 5, OS 7656
128	dark grey brown sandy level, with some stone grit, shell and clay inclusions	top layer of Roman level, according to the features 119 and 120 still belong to fort level 5 (5B)
129	construction slot	construction slot of fort level 5, OS 7200
130	large posthole	posthole of fort level 5, OS 7453

## Appendix 5

# The hearths of fort level 4 at the south-west corner site of the Oudenburg fort

Table 15. The hearth structures uncovered at the south-west corner site and attributed to fort period 4. Description and characteristics. The illustrated hearths are localized on the excavation map of the south-west corner site on Plate XXVII, presented according to hearth no. Illustrated hearths are on Plates XXX tot XXXIX.

HEARTH No.	ILL.	hearth level (when different levels: 1=uppermost)		composition of hearth		top layer preserved	basis	specifics
		location	level	pottery sherds	pottery sherds			
1a	ill.	hearth level 1	UNIT I	pottery sherds	pottery sherds	burnt crusty clay layer on top, partly preserved	bed of greenish clay level (burnt to crusty layer underneath pottery sherds)	
1b	ill.	hearth level 2	UNIT I	pottery sherds	pottery sherds		bed of greenish clay level (burnt to crusty layer underneath pottery sherds)	
1c	ill.	hearth level 3	UNIT I	pottery sherds	pottery sherds		bed of greenish clay level (burnt to crusty layer underneath pottery sherds)	
1d	ill.	hearth level 4	UNIT I	pottery sherds	pottery sherds		bed of greenish clay level (burnt to crusty layer underneath pottery sherds)	
1e	ill.	hearth level 5	UNIT I	ceramic building material + some Tournai limestone fragments	pottery sherds		bed of greenish clay level (burnt to crusty layer underneath CBM and stones)	
1f	ill.	hearth level 6	UNIT I	pottery sherds	pottery sherds		bed of greenish clay level (burnt to crusty layer underneath pottery sherds)	the pottery sherds cover the complete clay bed
1g	ill.	hearth level 7	UNIT I	ceramic building material: 3 square lateres	pottery sherds		bed of burnt clay level	
2a	ill.	hearth level 1	UNIT I	pottery sherds	pottery sherds		bed of greenish clay level, burnt underneath pottery sherds	
2b	ill.	hearth level 2	UNIT I	ceramic building material	ceramic building material	burnt crusty clay layer on top	bed of greenish clay level, burnt underneath ceramic building material	
3	ill.	hearth? or a workbench?	UNIT I	Tournai limestone blocks, mortar, some boulders and some ceramic building fragments	pottery sherds		soil underneath burnt to black, but not absolutely certain if this layer is related to the stones	
4	ill.		UNIT I	ceramic building material	ceramic building material	burnt crusty clay layer on top, partly preserved	bed of greenish clay level (burnt to crusty layer underneath CBM)	
5	ill.	hearth or furnace remains?	UNIT I	ceramic building material + a few Tournai limestone fragments	ceramic building material		bed of greenish and burnt clay	destroyed; density of CBM spread over large area

hearth level (when different levels: 1=uppermost)		composition of hearth			top layer preserved		basis		specifics
HEARTH No.	ILL.	location	level						
6	ill.	UNIT II	ceramic building material + pottery sherds				bed of greenish clay level, centrally burnt		only three ceramic building fragments <i>in situ</i> preserved; located underneath hearths OS 7927 and OS 7915
7	ill.	UNIT II	pottery sherds				bed of burnt clay level		only small area of sherd level preserved; underneath hearth OS 7991
8	ill.	UNIT II	pottery sherds		burnt crusty clay layer on top, completely preserved		bed of greenish clay level, burnt underneath pottery sherds		
9a	ill.	UNIT II	ceramic building material + some pottery sherds				bed of greenish clay level, burnt underneath ceramic building material and pottery sherds		with border of fragments of ceramic building material on slightly lower level
9b	ill.	UNIT II	pottery sherds		burnt crusty clay layer on top, completely preserved		bed of greenish clay level, not very burnt		with border of stone and mortar blocks (recycled building material) on a slightly lower level
9c	ill.	UNIT II	ceramic building material + some pottery sherds				CBM and pottery sherds set in greenish clay level on top of bed of large blocks of stone and mortar (recycled building material) and a single animal bone		
10	ill.	UNIT II	ceramic building material + Tournai limestone fragments				bed of burnt clay level		remains of hearth, disturbed; with concentration of shell fragments which may refer to a function of this hearth in the roasting of shells to make lime (the same possibility is proposed for a cluster of hearths located in the settlement c. 400 m to the south-east of the east gate of the Aardenburg fort: see de Visser 2001, 213-216)
11	ill.	UNIT II	pottery sherds				bed of greenish clay level, partly burnt underneath sherd level		sherd level not completely preserved
12	ill.	UNIT II	ceramic building material		burnt crusty clay layer on top, partly preserved		bed of greenish clay level, burnt underneath CBM level		
13	not ill.	UNIT II	pottery sherds						only small area of sherd level preserved
14	not ill.	UNIT II	undetermined, no hearth level preserved				bed of burnt clay level		only bed of burnt clay preserved; no hearth level left
15	ill.	UNIT II	pottery sherds		burnt crusty clay layer on top		bed of greenish clay level, burnt underneath sherd level		same level as oven OS 7905; on a higher level than hearth OS 7988
16a	ill.	UNIT II	pottery sherds		burnt crusty clay layer on top		bed of greenish clay level, burnt underneath sherd level		
16b	ill.	UNIT II	pottery sherds				bed of greenish clay level, burnt underneath original hearth level		only some pottery sherds preserved

HEARTH No.	ILL.	hearth level (when different levels: 1=uppermost)		composition of hearth		top layer preserved	basis	specifics
		location	level	level	level			
16c	ill.	hearth level 3	UNIT II	ceramic building material	ceramic building material	burnt clay layer on top	bed of greenish clay level, burnt underneath CBM level	surrounding hard iron-rich clay rim (oxidized)
17	not ill.		UNIT II	pottery sherds	pottery sherds		bed of greenish clay level, centrally burnt	only remains of hearth preserved
18	not ill.	hearth or furnace remains?	UNIT II	ceramic building material	ceramic building material		bed of burnt clay level	destroyed; only density of CBM; the burnt daub pieces may point to an oven rather than a hearth
19	ill.		UNIT II	ceramic building material	ceramic building material		bed of greenish clay level, burnt underneath and around CBM level	
20a	ill.	hearth level 1		ceramic building material	ceramic building material		bed of greenish clay level, burnt underneath CBM and stone level	
20b	ill.	hearth level 2		Tournai limestone fragments + some ceramic building material	Tournai limestone fragments + some ceramic building material			
21	ill.			ceramic building material: only one <i>tubulus</i> side	ceramic building material: only one <i>tubulus</i> side		bed of burnt clay level	very small hearth on the same location of hearth OS 7973 but clearly a level higher
22	not ill.		UNIT V	undetermined	undetermined		bed of burnt clay level	only some small pieces of CBM preserved
23	not ill.		UNIT V	pottery sherds	pottery sherds		bed of burnt clay level	only some concentrations of pottery sherds on horizontal level on top of clay level preserved
24	ill.		UNIT V	pottery sherds and ceramic building material	pottery sherds and ceramic building material	burnt crusty clay layer on top	bed of burnt clay level	
25	ill.		UNIT V	pottery sherds	pottery sherds	burnt crusty clay layer on top	bed of burnt clay level	
26	ill.	hearth remains	UNIT V	undetermined	undetermined			remains of hearth, disturbed: mixture of burnt clay, crust fragments, some sherds and CBM fragments
27a&b	ill.	hearth level 1&2	UNIT VI	two levels of pottery sherds, separated by thin clay layer	two levels of pottery sherds, separated by thin clay layer	burnt crusty clay layer on top	bed of burnt clay level	
28	not ill.		UNIT VII	undetermined (only layer of clay fragments, burnt to red, preserved)	undetermined (only layer of clay fragments, burnt to red, preserved)		bed of greenish clay, centrally burnt	remains of hearth; on top of filled-in pit of fort level 3 (OS 80925)
29	ill.		UNIT VII	pottery sherds	pottery sherds		bed of completely burnt clay	on top of hearth 30; the edge is situated underneath the west wall of the <i>praefurnium</i> of the bath house fort level 5
30	ill.		UNIT VII	ceramic building material	ceramic building material		bed of completely burnt clay	only partly preserved; situated partly underneath west wall of <i>praefurnium</i> of bath house fort level 5
31	ill.		UNIT VII	pottery sherds	pottery sherds	burnt crusty clay layer on top	bed of greenish clay level, completely burnt to dark brown to orange underneath and around the pottery sherds	on top of hearth 32a

hearth level (when different levels: 1=uppermost)		composition of hearth			specifics	
HEARTH No.	ILL.	hearth level	location	level	top layer preserved	basis
32a	ill.	hearth level 1	UNIT VII	some large fragments of ceramic building material ( <i>tegulae</i> )		bed of burnt sand
32b	ill.	hearth level 2	UNIT VII	pottery sherds (fragmented tableware flagon)	burnt crusty clay layer on top	bed of greenish clay level, completely burnt to dark brown to orange underneath and around the pottery sherds
33	not ill.		UNIT VII	pottery sherds		the covering crust layer is delimited by an iron-rich clay rim (oxidized), which may indicate that originally there was an upstanding rim or a dome
34	not ill.			undetermined, no hearth level preserved		on top of filled-in pit; only partly preserved
35	not ill.			only burnt crust layer		remains of hearth, on top of filled-in pit; only thick burnt clay level preserved
36	not ill.			undetermined	fragments of burnt crust layer	remains of hearth; on top of filled-in pit
37	ill.			ceramic building material	burnt crusty clay layer partly preserved	remains of hearth?
38a	ill.	hearth level 1	UNIT IX	pottery sherds		small part preserved
38b	ill.	hearth level 2	UNIT IX	pottery sherds		on top of hearth 38b
						only central part of sherds level preserved (underneath original sherds level)





## Appendix 6

# Absolute chronological data available for the south-west corner site of the Oudenburg fort

### Radiocarbon dates

Only seven radiocarbon determinations were ascertained for the south-west corner site of the Oudenburg fort (Table 16).<sup>415</sup> They represent at the same time so far the only radiocarbon dates for the entire fort site of Oudenburg. Since the initial samples (the four KIA-samples 30987, 30986, 31727 and 33606) did not yield the desired tight results for the Oudenburg site – demonstrating that the period in question is less suited for this dating technique because of the many wiggles in the graphs<sup>416</sup> – this research was not further enlarged. Moreover, it is difficult to avoid the possibility that residual material is dated (reused wood, older reworked charcoal, residual bone). Three more samples could be dated, though, within the context of a scientific research programme at the KIK / Royal Institute for Artistic Heritage (KIA-46100<sup>417</sup> and the two RICH-samples<sup>418</sup>). Nevertheless, some important conclusions can be drawn from the obtained radiocarbon results.

Sample KIA-30987 is a piece of charred construction beam that was preserved in one of the construction slots of the building complex of fort level 2B. The calibrated result indicates that fort period 2 is situated definitely prior to AD 250.

Five samples derive from fort level 4. While the first one, KIA-30986 (burnt grain from the workshop area), gives a result that is far too old in comparison with the other two, the samples KIA-31727 and KIA-33606 (both charred grains), resulted in the same calibrated date: AD 240-390 (at 95.4%). The latter two results confirm that this level is to be dated after AD 240. The date ranges of the animal bone samples from two carrions found in the primary infill of the large waste-pit OS 4980 of fort level 4, are too wide and cannot add more specification. The dated textile fragment of fort level 5 derives from the bottom of the shaft in between the two frameworks of the double well OS 2562; its burial thus dates the installation phase of the inner well. Its calibrated date – prior to AD 390 – in combination with the result from the dendrochronological analysis of the wood of the inner well (see below) seems to evidence that fresh wood was used for this construction and that the felling date is representative for this final construction phase.

### Dendrochronological datings

Only two structures of the south-west corner site yielded wood that was suited for dendrochronological analysis. This research was performed by dr. K. Haneca, Flanders Heritage Agency. These structures comprise well OS 22926 from fort level 4 and well OS 2562, the double well from fort level 5. The obtained dendrochronological dates are unique for the Oudenburg fort and are most important for our understanding of the chronology of the fort's occupation.

Eight boards of well OS 22926 were selected for dendrochronological research. Wood anatomic analysis established that the wood was oak in all cases, summer oak (*Quercus robur*) or winter oak (*Quercus petraea*). The growing ring patterns of four different boards could be synchronised and resulted in one curve. The growth ring pattern of three other boards were strongly similar, and possibly at least two of them were from one and the same tree. That also enabled a synchronisation and a middle curve. Both curves were joined in a series of 189 years' length. The first series yielded 13 sap rings. The most recent ring was formed in AD 260 and therefore the felling date can be situated between AD 260 and 275 (Haneca 2009).

<sup>415</sup> This radiocarbon dating research was executed at the KIK / Royal Institute for Artistic Heritage, Brussels. KIA-46100 was executed by dr. M. Boudin within the context of his PhD research (Boudin *et al.* 2011; Boudin *et al.* 2013).

<sup>416</sup> See for this topic: Eryvnc *et al.* 2009, 244-245.

<sup>417</sup> KIA-46100: dating analysis on a textile fragment from the double well OS 2562 of fort period 5, within the context of a research programme by dr. M. Boudin (Boudin *et al.* 2011; Boudin *et al.* 2013), after publication of this context (Vanhoutte *et al.* 2009c).

<sup>418</sup> The RICH-analyses were executed within the context of radiocarbon research by dr. M. Boudin on leather for which several samples of shoes from the site were analyzed (among which shoes from the primary infill of the large waste-pit OS 4980 of fort period 4). The RICH-samples of animal bones (from carrions, hence primary depositions) from the same layer of OS 4980, analyzed to verify the obtained leather dates, pointed out that the obtained leather results were clearly far too young. The typological dating of the leather shoes already indicated that the results could be questioned. The radiocarbon dates of the two selected animal bones then confirmed that the results from the leather analysis were not representative. Therefore, these leather results are not retained here.

Table 16. Overview of the radiocarbon determinations of the south-west corner site.

inv. no. KIK	inv. no. OS	fort level	dated material	BP result	Cal result	
KIA-30987	OS 83039a	2	charred wood	BP 1835±25	AD 130 (68.2%) 215	AD 120 (93.7%) 250
KIA-30986	OS 70424a	4	charred grain	BP 1900±25	AD 75 (68.2%) 130	AD 50 (91.9%) 180
KIA-31727	OS 7945	4	charred grain	BP 1725±25	AD 250 (62.4%) 350	AD 240 (95.4%) 390
KIA-33606	OS 82555	4	charred grain	BP 1730±25	AD 250 (68.4%) 350	AD 240 (95.4%) 390
RICH-23879	OS 44914	4	animal bone	BP 1745±31	AD 245 (68.2%) 335	AD 220 (95.4%) 390
RICH-23881	OS 44900	4	animal bone	BP 1771±30	AD 220 (68.2%) 330	AD 130 (95.4%) 350
KIA-46100	OS 2562 (60)	5	textile	BP 1750±25		AD 230 (95.4%) 390

Also the double well OS 2562 was entirely constructed out of European oak (*Quercus robur* or *Quercus petraea*). The dendrochronological research is described in detail by Haneca in Vanhoutte *et al.* 2009b. In general, the wood was characterized by wide growth rings and as a consequence ring-width series were often too short for dating. One beam from the outer framework, however, yielded a felling date of *c.* AD 266, but intentionally made holes, with a regular inner spacing, indicated that at least some of these timbers were reused construction wood. As it is a likelihood that wood from the previous fort was reused, this date may be representative for fort period 4. The wooden frame, at the bottom just inside the outer well, could be dated too. It must have been

constructed there in between AD 319 and 329, as a construction element in building the outer framework or for cleaning out the pit during its use or before its reactivation in the second quarter of the 4th century. The felling date of AD 379/380 for boards of the inner framework sets a *terminus post quem* for the construction of the inner well and also for the final occupation phase of the stone fort. Since the general Roman practice shows that timber was used soon after it was felled (Hollstein 1965), it is most likely that these dendrochronological dates indicate the effective building activities. This is confirmed by the calibrated radiocarbon date of the textile fragment which situates the construction phase of the inner well prior to AD 390 (see before).

## Appendix 7

# Oudenburg Graveyard A. Overview of the burials, their characteristics and content

Table 17. Overview of the 216 graves of Graveyard A. Burial characteristics and general content. Based on the data from Mertens and Van Impe (1971). The burial numbers which are underlined appear in Table 18.

graves graveyard A	disturbed grave	no 'grave good'	coins	crossbow brooch	bracelet	samian vessel	other ceramic vessel	glass vessel	part of belt set / buckle	'weapon'?	other finds	physical- anthropological data (Delsaux 1973)	age	gender conclusion
<u>1</u>				1		1	1		X		iron knife	adult	< 25 years	male
<u>2</u>	X			1										male
<u>3</u>							3	1	X		iron knife	male	40-50 years	male
4	X				2									female
5		X												?
6	X	X												?
7	X				1									female
8		X										adult	>25 years	male/female
9	X	X										adult	18-20 years	male/female
10					3							child	c. 4 years	child female
11	X	X										adult	c. 40 years	male/female
12		X												?
13							1					adult	c. 50 years	male/female
<u>14</u>			1	1					X		iron knife; bone comb			male
<u>15</u>	X					1	1	1						?
<u>16</u>									X		half of cilindrical piece: bronze bead?			female?
17	X	X										child	4-5 years	child
18	X	X												?
19	X			1					X			adult		male
20				1					X			adult		male
21	X										iron rod			?
22							1	2						?
23							1				iron rod			?
24						1	1	1						?
25		X										child		child
<u>26</u>	X?			1										male
<u>27</u>				1			2		X		iron pin; iron knife	male	c. 30 years	male
28							1					adolescent	16 years	adolescent
29								2						?
30							1				bronze (finger?) ring	male?	35 years	male/female
31	X						1				dice and counters; one or two chickens			?
<u>32</u>							1	1						?
<u>33</u>	X					1		1						?

graves graveyard A	disturbed grave	no 'grave good'	coins	crossbow brooch	bracket	samian vessel	other ceramic vessel	glass vessel	part of belt set / buckle	'weapon'?	other finds	physical- anthropological data (Delsaux 1973)	age	gender conclusion
34	X			1		1		1			iron knife	adult	c. 30 years	male
35	X						1					adult	40-45 years	male/female
36		X										adolescent-young adult	c. 20 years	male/female
37				1				1	X					male
38		X										adult	c. 35 years	male/female
39		X										young adult	c. 25 years	male/female
40	X	X												?
41				1							check bone cattle on belly	adult	40-45 years	male
42	X			1								adolescent	18 years	adolescent male
43	X					1	1					adult	c. 45 years	male/female
44						1	1	2			bone counter			?
47		X												?
48	X	X												?
49				1			1	1				adult		male
50	X							1			spindle whorl			female
51	X	X												?
52							1							?
53											iron knife			male
54		X										adult	30-35 years	male/female
55	X					1	1	1						?
56		X										adult	25-30 years	male/female
57				1			1	2	X		pewter plate	adult	25-30 years	male
58						1		3	X		pewter plate; bone comb			?
59				1					X		iron knife			male
60							1	1				young adult	c. 25 years	male/female
61							1					child	c. 4 years	child
62							3	2						?
63		X												?
64			1			2	2	1			bronze tweezer; bronze ring			?
65	X	X												?
66	X	X												?
67					3		1	1			silver ring; necklace with glass beads and golden pendant; <i>Tutulus</i> brooch; small chest; four bronze hair pins	child	<13 years	child female
68									X		iron knife			male
69							1	1			pewter plate			?
70						1	2				pewter plate	young adult	c. 20 years	male/female
71								1			bone comb; bronze tweezer; iron pin; bronze hook or needle	young adult	20-25 years	male/female
72				1			2		X		iron knife	adult	40-45 years	male
73		X										male	c. 35 years	male
74		X										adolescent	18-20 years	adolescent
75								1				child	3 years	child
76			88 coins (purse)						X		dog burial; iron steel; two silex pieces and touchstone	young adult	c. 20 years	male
77	X	X												?
78					3		1				check bone of goat or sheep	adolescent	18-20 years	adolescent female



graves graveyard A	disturbed grave	no 'grave good'	coins	crossbow brooch	bracket	samian vessel	other ceramic vessel	glass vessel	part of belt set / buckle	'weapon'?	other finds	physical- anthropological data (Delsaux 1973)	age	gender conclusion
79											three beads (two golden, one of glass), remains of necklace	young adult		female
80		X										male	c. 35 years	male
81		X										young adult	20-25 years	male/female
82							1				shoulder blade of horze underneath skull	child	3-4 years	child
83				1			1				touchstone; iron knife	adolescent-young adult		male
84							2	1			bone comb	adolescent	16 years	adolescent
85		X										adolescent-young adult		male/female
86	X	X												?
87	X							1			iron knife			male
88											two silver <i>Tutulus</i> brooches; bronze disc brooch; <i>Armbrust</i> brooch; <i>Stützarm</i> brooch; silver finger ring; bronze needle; bone comb	young adult	25 years	female
89		X										young adult	20 years	male/female
90	X	X												?
91		X										adult	35-40 years	male/female
92	X	X										young adult	20-25 years	male/female
93			1			1	2	3			parts of three pig(s), goose, three chickens	adult	c. 30 years	male/female
94								1						?
95		X										adult	45-55 years	male/female
96		X										adult	30-35 years	male/female
97											bones of pig and sheep	male	30-35 years	male
98		X										adult		male/female
99						1	3	1			bones of cock; iron rod	adult	40-45 years	male/female
100					3		1	2			pewter plate; bones of chicken			female
101								2	X			adolescent-young adult		male/female
102			1 (Early Empire)				1				shoulder blade of cattle			male/female
103				1					X			young adult	c. 20 years	male
104			1 + 3	1			2	1	X		one silex; iron knife; purse content: six pieces of silex, one iron steel, one bronze needle, small bronze knife, bronze ring, iron nails, three coins			male
105											one silex			male?
106		X												?
107	X	X												?
108		X										young adult	20-25 years	?
109									X		iron steel	adult	30-35 years	male
110		X										male?	25 years	male?
111				1					X		iron scissors, iron knife	adult	30 years?	male
112							2				spindle whorl, bones of pig and cattle	adult	c. 40 years	female
113	X	X										adult	35-40 years	male/female

graves graveyard A	disturbed grave	no 'grave good'	coins	crossbow brooch	bracket	samian vessel	other ceramic vessel	glass vessel	part of belt set / buckle	'weapon'?	other finds	physical- anthropological data (Delsaux 1973)	age	gender conclusion
<u>114</u>				1	1 (arm- let)				X			young adult	22-25 years	male
<u>115</u>			1	1		1	1				pewter plate; bones of pigs; oyster shell	adult	40-45 years	male
<u>116</u>	X										bronze needle; bronze sheet			female?
<u>117</u>		X										young adult	22-25 years	male/female
<u>118</u>											one silex	adult	25-30 years	male?
<u>119</u>	X	X												?
<u>120</u>		X										child	12-13 years	child
<u>121</u>	X	X										adult	25-30 years	male/female
<u>122</u>								1 (part of grave?)	X	iron axe	iron knife, iron scissors, bronze sheet, skull fragment of pig	male adult		male
<u>123</u>							2				bead			female
<u>124</u>				1								adult	c. 35 years	male
<u>125</u>		X										male adult	40-45 years	male
<u>126</u>		X										male adult	c. 35 years	male
<u>127</u>		X												?
<u>128</u>							2	1						?
<u>129</u>				1					X	iron lance- head	iron knife; undefined bone object	young adult	20-25 years	male
<u>130</u>						1	3	2				male adult	35-40 years	male
<u>131</u>		X										adult	40-45 years	male/female
<u>132</u>				1					X			adult		male
<u>133</u>											bronze ring	adult	c. 35 years	male/female
<u>134</u>		X										adult	40-45 years	male/female
<u>135</u>						1	1					adolescent-young adult	c. 20 years	male/female
<u>136</u>		X												?
<u>137</u>			1 (undet.)									adult	30-35 years	male/female
<u>138</u>				1			3		X		bones of pig and chicken	male adult	25-35 years	male
<u>139</u>		X												?
<u>140</u>		X										child	12-14 years	child
<u>141</u>			5				3	1			half of skull of pig, bones of chicken			?
<u>142</u>										six iron arrow heads	iron knife, half of skull of pig and chicken bone			male
<u>143</u>											glass counter, iron rod			?
<u>144</u>						2	1	1			bones of pig			?
<u>145</u>	X	X										adolescent-young adult		male/female
<u>146</u>									X		bones of pig, cheek bone of goat or sheep, antler of roe-buck used as tool	child	14 years	child
<u>147</u>		X										young adult	c. 25 years	male/female
<u>148</u>			1									young adult	20-25 years	male/female
<u>149</u>									X			adolescent-young adult	c. 20 years	male/female
<u>150</u>							1					female? adult	c. 25 years	female?
<u>151</u>						1	1				bones of chicken, half of skull of pig	adult	35-50 years	male/female

graves graveyard A	disturbed grave	no 'grave good'	coins	crossbow brooch	bractlet	samian vessel	other ceramic vessel	glass vessel	part of belt set / buckle	'weapon'?	other finds	physical- anthropological data (Delsaux 1973)	age	gender conclusion
152				1										male
153		X										male? adult	25-30 years	male/female
154							1					child	c. 4 years	child
155		X												?
156		X										adult		male/female
157									X			young adult	c. 25 years	male/female
158		X										female? adult	c. 25 years	female?
159											bone hair pin			female
160							2	1			bones of pig and of chicken			?
161									X			adult	c. 65 years	male/female
162							1				iron knife, bronze bell	young adult	20-25 years	male
163		X												?
164		X										adult	25-30 years	male/female
165				1					X			male? adult	25-30 years	male
166		X										adolescent	16-18 years	male/female
167		X										male? adult		male
168							1				iron knife	adult	≥ 40 years	male/female
169				1								young adult	20-25 years	male
170	X					1								male/female
171									X			male? adult	≥ 35 years	male
172				1					X		iron knife	male? adult	c. 25 years	male
173		X										adolescent-young adult	18-25 years	male/female
174		X												?
175		X												?
176							1	1						male/female
177							1				golden ring, two silver (hair) pins, five glass beads	female adult	c. 30 years	female
178							3					female young adult	20-25 years	female
179							3					female young adult	c. 20 years	female
180							1	1	X		bones of goose			?
181	X	X												?
182		X										male adult	30-40 years	male
183		X										male young adult	20-25 years	male
184		X										male young adult	c. 20 years	male
185						1		2						?
186							2					child	c. 6 years	child
187		X										child	c. 5-6 years	child
188				1			1		X		iron knife	male adult	40-45 years	male
189		X												?
190				1								male adult	c. 25 years	male
191			1		2						bronze finger ring, bone finger ring, 24 beads (necklace)	female adult	20-25 years	female
192		X										male adult	c. 40 years	male
193		X										male adult	>50 years	male
194					2		2				20 glass beads (necklace)	female adult	25-30 years	female
195	X	X												?
196									X		bronze <i>torques</i> , glass bead from necklace			female
197	X	X												?
198	X	X										child	5-6 years	child
199			1		1		3	1			silver hair pin	adolescent-young adult	max. 20 years	female

graves graveyard A	disturbed grave	no 'grave good'	coins	crossbow brooch	bracket	samian vessel	other ceramic vessel	glass vessel	part of belt set / buckle	'weapon'?	other finds	physical- anthropological data (Delsaux 1973)	age	gender conclusion
200							2					female child-very young woman		child-adolescent female
201			1			1	1	1			bones of chicken	male young adult	c. 20 years	male
202	X	X										male adult	50-60 years	male
203	X					2		1				female adoles- cent-young adult + female adult	>18 years + >50 years	2x female
204		X										male adult	c. 50 years	male
205		X										female young adult	max. 25 years	female
206				1			1					male young adult	c. 20 years	male
207											bones of two pigs and of a chicken	male adult	60-80 years	male
208		X										child	c. 12 years	child
209											iron knife, undeter- mined metal object	male adult	c. 25 years	male
210									X			male adult	c. 50 years	male
211	X	X										male adult		male
212	X						2							?
213											bronze wire fragment, bones of pig, cattle and chicken	male adult	c. 40 years	male
214	X (grave?)	X												?
215	X	X										older child		child
216	X				3							female young adult	c. 20 years	female
45-46			2						X		horse bone under- neath skull	adolescent + young adult	15-18 years and c. 25 years	male/female

Table 18 (opposite page). Detailed overview of the Graveyard A burials with 'closely' datable grave goods and/or presumed weapons. The dates marked in orange represent conflicting data between Böhme (1974/1987) and Sommer (1984).

	'WEAPON'	(CLOSING) COIN	DATE AD	BROOCHES	DATE AD	BUCKLES AND BELT FITTINGS / BRACELETS	DATE AD	ARGONNE SIGILLATA WITH ROLLER-STAMP DECORATION/ SPECIFICALLY DATABLE NORTH GAULISH BEAKER	DATE AD	DATING RANGE GRAVE ASSEMBLAGES (TPQ)	~ FORT period
graves with 'closely' datable finds and 'weapon' graves GRAVEYARD A											
grave 001				crossbow brooch Keller-Pröttel 3a-4c / Swift 3/4d	330-410	buckle and plate Sommer (1984) Sorte 1 Form A Typ a	310 – 350/360 ( <i>Gürtelgruppe</i> 1 Sommer 1984)			AD 330-360	5A
grave 002				crossbow brooch Keller-Pröttel 3b-4a / Swift 3/4b	350-410					AD 350-410	5
grave 003						chip-carved belt garniture Böhme Typ B / Sommer (1984) Sorte 1 Form E Typ a with animal-ornamented buckle (see Sommer 1984, 31); lancet shaped strap-end Böhme (1974) Typ 1 / amphora shaped strap-end Sommer (1984) Form B Typ c Var. 1b	according to Böhme (1974/1987) c. 390-430/435 ( <i>Findgruppe</i> A), based on the belt garniture; according to Sommer (1984) <i>Gürtelgruppe</i> 2: 364/370 – 407, based on buckle plate and strap-ends		AD ? 364/370-407	5B	
grave 014		Magnentius, Trier (Lallemant 1966, 131: 9)	350-353	crossbow brooch Keller-Pröttel 2b / Swift 2i	300-365					AD 350-365	5A
grave 015								Chenet 320 with roller stamp UC-117	350-400	AD 350-400	5B?
grave 016						single buckle with to the middle biting animal heads Chadwick Hawkes and Dunning (1962; 1964) type 1A; Sommer (1984) Sorte 1 Form C Typ d	364/370-407 dating by Sommer 1984 ( <i>Gürtelgruppe</i> 2) / late 4th – middle 5th century by Chadwick Hawkes (1962/1964)			AD 364/370-407	5B
grave 019				crossbow brooch Keller-Pröttel 4c / Swift 3/4d	330-410	buckle Sommer (1984) Sorte 1 Form C Typ f Var. 1a-b	364/370-407 ( <i>Gürtelgruppe</i> 2 Sommer 1984)			AD 364/370-407	5B
grave 020				crossbow brooch Keller-Pröttel 3a / Swift 3/4d	330-410					AD 330-410	5
grave 026				crossbow brooch Keller-Pröttel 4c / Swift 3/4c	330-410					AD 330-410	5
grave 027				crossbow brooch Keller-Pröttel 4a; Swift 3/4b	350-410	buckle Sorte 1 Form C Typ f Var. 1a-b (Sommer 1984); strap-end Sommer (1984) Form D	364/370 – 407 ( <i>Gürtelgruppe</i> 2 Sommer 1984)			AD 364/370-407	5B
grave 032								beaker Brulet B4.2	+ 375	+ AD 375	5B
grave 033								Chenet 320 with under- mined roller stamp	+ 320	+ AD 320	5
grave 034				crossbow brooch Keller-Pröttel 4c / Swift 3/4d	330-410					AD 330-410	5
grave 037				crossbow brooch Keller-Pröttel 4 / Swift 2iii	300-365	animal-ornamented buckle Form Hermes-Loxstedt (Böhme 1974) / Sorte 1 Form C Typ f Var. 1a-b (Sommer 1984)	according to Böhme 1974 c. 330-400 ( <i>Zeitsstufe</i> I); according to Sommer 1984 364/370-407 ( <i>Gürtelgruppe</i> 2) (Böhme 1987 places this buckle in <i>Findgruppe</i> B but this seems rather unlikely)			AD 364/370-407	5B



graves with 'closely' datable finds and 'weapon' graves GRAVEYARD A	'WEAPON' COIN	(CLOSING) COIN	DATE AD	BROOCHES	DATE AD	BUCKLES AND BELT FITTINGS / BRACELETS	DATE AD	ARGONNE SIGILLATA WITH ROLLER-STAMP DECORATION/ DATABLE NORTH GAULISH BEAKER	DATE AD	DATING RANGE GRAVE ASSEMBLAGES (TPQ)	~ FORT period
grave 041				crossbow brooch Keller-Pröttel 2b / Swift 2i	300-365					AD 300-365	5(A?)
grave 042				crossbow brooch Keller-Pröttel 4c / Swift 3/4d	330-410					AD 330-410	5
grave 45/46		Valentinianus I, <i>Aries, Securitas Reipublicae</i> (Lallemant 1966, 131: 11)	364-375			round iron buckle, undecorated				AD 364-375 (intersected by grave 33: grave 45/46 probably dates from early in the second phase)	5B
grave 049				crossbow brooch Keller-Pröttel 6 / Swift 6i	390-460			beaker Brulet B4.2	+ 375	AD 390-460	5B
grave 057				crossbow brooch Keller-Pröttel 2b-3b / Swift 3/4b	350-410	buckle and plate Sommer (1984) Sorte 1 Form C Typ a	310-350/360 ( <i>Gürtelgruppe</i> 1 Sommer 1984)			AD 350-360	5A?
grave 058								Chenet 320 with roller stamp UC-108	350-400	AD 350-400	5B?
grave 059				crossbow brooch Keller-Pröttel 2b / Swift 2ii	300-365	buckle and plate Chadwick Hawkes and Dunning (1962; 1964) type 1A; Sommer (1984) Sorte 1 Form A Typ c Var. 2	Although Chadwick Hawkes (1962/1964) dates this buckle type to the late 4th – middle 5th century, the combination with this type of buckle plate is only possible in period 310-350/360 according to Sommer (1984)			AD 310-360	5A?
grave 061								beaker Brulet B4.2	+ 375	+ AD 375	5B
grave 064		Gratianus, Arles (Lallemant 1966, 131: 10)	367-383							+ AD 367	5B
grave 067				<i>Tiutulus</i> brooch Typ Oudenburg (Böhme 1974)	c. 390-430/435 (Fundgruppe A, Böhme 1987)					AD 390-430/435	5B
grave 068						buckle and plate Sommer (1984) Sorte 1 Form C Typ b	310-350/360 ( <i>Gürtelgruppe</i> 1 Sommer 1984)			AD 310-350/360	5A?
grave 070								Chenet 320 with roller stamp UC-304	325-375	AD 325-375	5
grave 072				crossbow brooch Keller-Pröttel 3b / Swift 3/4b	350-410	oval iron buckle		beaker Brulet B4.2	+ 375	AD 375-410	5B
grave 076		Theodosius I, Arles, <i>Fel temporatio</i> (Lallemant 1966, 138: 83; van Heesch 1998, 278)	379			buckle Sommer (1984) Sorte 1 Form C Typ e 'Einzellaged mit vier Terköpfen'	364/370-407 ( <i>Gürtelgruppe</i> 2 Sommer 1984)			+ AD 379	5B

graves with 'closely' datable finds and 'weapon' graves GRAVEYARD A	'WEAPON'	(CLOSING) COIN	DATE AD	BROOCHES	DATE AD	BUCKLES AND BELT FITTINGS / BRACELETS	DATE AD	ARGONNE SIGILLATA WITH ROLLER-STAMP DECORATION/ SPECIFICALLY DATEABLE NORTH GAULISH BEAKER	DATE AD	DATING RANGE GRAVE ASSEMBLAGES (TPQ)	~ FORT period
grave 078				crossbow brooch Keller-Pröttel 4b / Swift 3 / 4c	350-410	three bracelets of which one of the cogwheel type which is closely datable	c. 350-425 (Swift 2000/2010)			c. AD 350-425	5B?
grave 083										AD 350-410	5
grave 088				<i>Stützarmfibel mit Trapezfuss</i> <i>Gallische Typ 4i;</i> <i>Armbrustfibel mit Trapezfuss Variant</i> <i>C; Titulusfibel</i> <i>Typ Oudenburg;</i> early composed disc-brooch (all after Böhme 1974)	c. 390-430/435 ( <i>Fundgruppe</i> A; Böhme 1974/1987); the early composed disc-brooch however is dated by Böhme 1987 in <i>Fundgruppe</i> B (430/435-465/470)				c. AD 430?	5B	
grave 093		Constantinus I, <i>Aeles, Gloria Exercitus</i> two standards (Lallemand 1966, 131: 6)	330-335							+ AD 330	5A?
grave 099								Chenet 320 with roller stamp with repetitive scheme of oblique lines	+ 320	AD 320+	5
grave 100								beaker Brulet B4.2	+ 375	+ AD 375	5B
grave 101						buckle and plate Sommer (1984) Sorte 1 Form C Typ d Var. 1-4	364/370-407 ( <i>Gürtelgruppe</i> 2 Sommer 1984)			AD 364/370-407	5B
grave 103				crossbow brooch Keller-Pröttel 3a / Swift 3 / 4a	325-355	buckle and plate Sommer (1984) Sorte 1 Form C Typ a	310-350/360 ( <i>Gürtelgruppe</i> 1 Sommer 1984)			AD 325-355	5A?
grave 104		Valentinianus II, Aries (Lallemand 1966 132: 4)	388-392	crossbow brooch Keller-Pröttel 3b-4a / Swift 3 / 4b	350-410	animal-ornamented buckle Form Hermes-Loxstedt (Böhme 1974) / Sommer (1984) Sorte 1 Form C Typ f Var. 4a; <i>Einfache Gürtelgarnitur</i> ' (Böhme 1974)	according to Sommer 1984 <i>Gürtelgruppe</i> 2: 364/370-407; according to Böhme 1974, <i>Zeitsstufe</i> 1 (c. 330-400) for the buckle Form Hermes-Loxstedt and <i>Zeitsstufe</i> III (c. 400-450 – end 5th century) for the ' <i>Einfache Gürtelgarnitur</i> '; however both of them were revised by Böhme (1987) as being part of <i>Fundgruppe</i> B dated to c. 430/435-465/470	beaker Brulet B4.2	+ 375	certainly + AD 388, possibly AD 430+?	5B
grave 109						strap-end Sommer (1984) Form D	364/370-407 ( <i>Gürtelgruppe</i> 2 Sommer 1984)			AD 364/370-407	5B

	'WEAPON'	(CLOSING) COIN	DATE AD	BROOCHES	DATE AD	BUCKLES AND BELT FITTINGS / BRACELETS	DATE AD	ARGONNE SIGILLATA WITH ROLLER-STAMP DECORATION/ SPECIFICALLY DATABLE NORTH GAULISH BEAKER	DATE AD	DATING RANGE GRAVE ASSEMBLAGES (TPQ)	~ FORT period
graves with 'closely' datable finds and 'weapon' graves GRAVEYARD A											
grave 111				crossbow brooch Keller-Pröttel 6 / Swift 6ii	390-460	animal-ornamented buckle Typ Cuijk-Tongeren (Böhme 1984) / Sommer (1984) Sorte 1 Form C Typ f Var. 1a-b; strap-end Sommer (1984) Form D	according to Sommer 1984 <i>Gürtelgruppe</i> 2: 364/370-407; Böhme 1974 placed this type of buckle in <i>Zeistufe</i> 1 (380-420), but revized it into <i>Findgruppe</i> B (Böhme 1987) dated to c. 430/435-465/470, which is still compatible with the date of the crossbow brooch			c. AD 430?	5B
grave 114				crossbow brooch Keller-Pröttel 3b / Swift 3/4b	350-410	buckle plate Sommer (1984) Sorte 1 Form A	310-350/360 ( <i>Gürtelgruppe</i> 1 Sommer 1984)			AD 350-360	5A?
grave 115		Constans, Trier, <i>Feltempreparatio</i> (Lallemand 1966, 131: 8)	337-350	crossbow brooch Keller-Pröttel 3b / Swift 3/4b	350-410			Chenet 320 with roller stamp UC-335	350-400	c. AD 350	5A?
grave 122	axe					' <i>Schnalle mit Rechteckbeschlag und Steckachse</i> ' (Böhme 1974, 65), according to Mertens and Van Impe 1971, 31 type Chadwick Hawkes and Dunning (1962; 1964) IIA, which is the equivalent of Sommer (1984) Sorte 2 Form D; however this buckle shows very close resemblances with the examples listed by Sommer 1984 for Sorte 2 Form A Typ b; see Taf. 13: 3-4	according to Böhme <i>Zeistufe</i> 1: c. 330-400 (Böhme 1974, 157); Keller 1971, 63-64 dated this buckle in the first half of the 4th century (these types were not classified in a particular <i>Gürtelgruppe</i> by Sommer 1984)			AD 330-350/(400?) (intersection by grave 123 places this grave 122 in the first phase)	5A
grave 124				crossbow brooch Keller-Pröttel 6 / Swift 6ii	390-460					AD 390-460	5B
grave 129	spear			crossbow brooch Keller-Pröttel 4a / Swift 3/4b	350-410	punched-decorated belt garniture ( <i>Punzierte Garnituren</i> ) Böhme 1974; buckle and plate Sommer (1984) Sorte 1 Form C Typ f Var. 5; strap-end Sommer (1984) Form C Typ d	according to Böhme 1987 c. 430/435-465/470 ( <i>Findgruppe</i> B) based on the <i>Punzierte Garnituren</i> ; according to Sommer 1984 <i>Gürtelgruppe</i> 3: first half 5th century, based on buckle with plate and strap-end			AD ? 400/430-465/470	5B
grave 132				crossbow brooch Keller-Pröttel 3c-4c / Swift 3/4d	330-410	buckle and plate Sommer (1984) Sorte 1 Form A Typ a; amphora shaped strap-end Sommer (1984) Form B Typ c Var. 2e	310-350/360 ( <i>Gürtelgruppe</i> 1 Sommer 1984)			AD 330-360	5A
grave 135								Chenet 320 with roller stamp UC-308; beaker Brulet B4.2	350-400 / + 375	AD 375-400	5B
grave 138				crossbow brooch Keller-Pröttel 5 / Swift 5ii	350-415	buckle and plate Sommer (1984) Sorte 1 Form A Typ a	310-350/360 ( <i>Gürtelgruppe</i> 1 Sommer 1984)			AD 350-360	5A
grave 141		Constans, Arles (Lallemand 1966, 133: 5; van Heesch 1998, 278)	c. 336					beaker Brulet B4.2	+ 375	+ AD 375	5B

graves with 'closely' datable finds and 'weapon' graves GRAVEYARD A	'WEAPON' six arrowheads	(CLOSING) COIN	DATE AD	BROOCHES	DATE AD	BUCKLES AND BELT FITTINGS / BRACELETS	DATE AD	ARGONNE SIGILLATA WITH ROLLER-STAMP DECORATION/ SPECIFICALLY DATABLE NORTH GAULISH BEAKER	DATE AD	DATING RANGE GRAVE ASSEMBLAGES (TPQ)	~ FORT period
grave 142								Chenet 320 with roller stamp UC-157	325-375	AD 325-375	5
grave 144											5
grave 146						chip-carved belt piece compara- ble to belt garniture Böhme 1974 Typ B / Sommer (1984) Sorte 1 Form E	c. 390-430/435 (Böhme 1987 <i>Fundgruppe</i> B)			AD 390-430/435	5B
grave 148		Constantius II or Constans (Lallemand 1966, 131: 7)	337-361							AD 337-361	5A?
grave 149						animal-ornamented buckle Chadwick Hawkes and Dunning (1962; 1964) Type IA; Sommer (1984) Sorte 1 Form A Typ c or Form C Typ d	310-350/360 or 364/370-407 ( <i>Gürtelgruppe</i> 1 or 2 Sommer 1984)			AD 310-407	5
grave 151								Chenet 320 with roller stamp with repetitive scheme of oblique lines	+ 320	AD 320+	5
grave 152				crossbow brooch Keller-Pröttel 5 / Swift 5ii	350-415					AD 350-415	5(B?)
grave 162								beaker Brulet B4.2	+ 375	+ AD 375	5B
grave 165				crossbow brooch Keller-Pröttel 2b / Swift 2ii	300-365					AD 300-365	5A?
grave 169				crossbow brooch Keller-Pröttel 4c-6 / Swift 3 / 4c	330-410					AD 330-410	5
grave 170								Chenet 320 with roller stamp UC-117	350-400	AD 350-400	5
grave 171						buckle and plate Chadwick Hawkes and Dunning (1962; 1964) Type IA / Sommer (1984) Sorte 1 Form A Typ c Var. 2; heart shaped strap-end (Sommer 1984)	310-350/360 ( <i>Gürtelgruppe</i> 1 Sommer 1984) (how- ever, Chadwick Hawkes (1962/1964) dates the buckle later)			AD 310-350/360	5A
grave 172				crossbow brooch Keller-Pröttel 3b-4 / Swift 3 / 4b	350-410	animal-ornamented buckle Form Hermes-Loxstedt (Böhme 1974) / buckle and plate Sommer (1984) Sorte 1 Form C Typ d Var 1-4; buckle and plate Sommer (1984) Sorte 1 Form C Typ a Var. 5	according to Böhme 1987 c. 430/435-465/470 ( <i>Fundgruppe</i> B) based on the buckle Form Hermes- Loxstedt; according to Sommer 1984 364/370-407 ( <i>Gürtelgruppe</i> 2) based on both buckles		AD ? 430/435-465/470		5B
grave 176								beaker Brulet B4.2	+ 375	+ AD 375	5B
grave 180										AD 310-407	5
grave 185						D-shaped buckle	4th century	Chenet 320 with roller stamp with repetitive scheme of oblique lines	+ 320	AD 320+	5

graves with 'closely' datable finds and 'weapon' graves GRAVEYARD A	'WEAPON'	(CLOSING) COIN	DATE AD	BROOCHES	DATE AD	BUCKLES AND BELT FITTINGS / BRACELETS	DATE AD	ARGONNE SIGILLATA WITH ROLLER-STAMP DECORATION/ SPECIFICALLY DATABLE NORTH GAULISH BEAKER	DATE AD	DATING RANGE GRAVE ASSEMBLAGES (TPQ)	~ FORT period
grave 188				crossbow brooch Keller-Pröttel 2b / Swift 3/4b	350-410	buckle and plate Chadwick Hawkes and Dunning (1962; 1964) Type IA, Sommer (1984) Sorte 1 Form A Typ c Var. 2; D-shaped iron buckle	310-350/360 (Gürtelgruppe 1 Sommer 1984)			AD 350-360	5A
grave 190				crossbow brooch Keller-Pröttel 2b-3b / Swift 3/4b	350-410					AD 350-410	5
grave 191		copy from after AD 388	+ 388							AD 388+	5B
grave 199		copy <i>Urbs Roma</i>	330-340							AD 330-340	5A
grave 201		Constantinus II , <i>Gloria Exercitus</i> one standard	337-341					two Chenet 320 bowls both with roller stamp UC-117; beaker Brület B4.2	350-400 / + 375	AD 375 + AD 375	5B
grave 206				crossbow brooch Keller-Pröttel 3c-4c / Swift 2i	300-365					AD 300-365	5A?

Table 19 (opposite page). Overview of the mentioned buckles/plates and strap-end types from Sommer (1984) as interpreted by Swift (2000a). Taken over from Swift (2000a).



cf. Sommer (1984) buckles and plates	<i>Sorte 1 Form A Typ a</i>	oval or kidney shaped plate and round, D-shaped or oval buckle	wide distribution in <i>Gallia, Britannia</i> and along the Rhine and Danube limes; large cluster in the west of <i>Belgica</i> , along the Rhine limes and in <i>Pannonia</i>	AD 310 – 350/360 for Rhine region – North Gaul	<i>Gürtelgruppe 1</i>
	<i>Sorte 1 Form A Typ c Var. 2</i>	oval or kidney shaped plate and animal-head buckle, with two to the middle biting dolphins			
	<i>Sorte 1 Form C Typ a</i>	rectangular plate and D-shaped buckle	mainly found in <i>Pannonia</i> and west of the Rhine	AD 310 – 350/360 for Rhine region – North Gaul	<i>Gürtelgruppe 1</i>
	<i>Sorte 1 Form C Typ a Var. 5</i>	rectangular plate and D-shaped buckle; plate with punched decoration			
	<i>Sorte 1 Form C Typ b</i>	rectangular plate and saddle shaped or oval buckle	roughly same distribution as <i>Sorte 1 Form A</i> ; no finds in <i>Germania Libera</i>	AD 310 – 350/360 for Rhine region – North Gaul	<i>Gürtelgruppe 1</i>
	<i>Sorte 1 Form C Typ d Var. 1-4</i>	rectangular plate and two animal heads confronted at the centre of the frame, with lion heads, dolphin heads or dolphin-like animals		AD 364/370 – 407 for Rhine region – North Gaul	<i>Gürtelgruppe 2</i>
	<i>Sorte 1 Form C Typ e</i>	rectangular plate and buckle with four animal heads, two confronted at the centre of the frame and two where the frame meets the plate	mainly found west of the Rhine	AD 364/370–407	<i>Gürtelgruppe 2</i>
	<i>Sorte 1 Form C Typ f Var. 1a-b</i>	rectangular plate and two animal heads where the frame meets the plate; Variation 1: with curved frame, wedge shaped in cross-section or with a pronounced lip; the animal heads are quite flat; 1a: the plate is decorated with a central field surrounded by a decorative band; the field contains niello figures, punched circles, S shaped, star or flower motifs; 1b: the plate has a decorative border enclosing two fields with the same type of decoration as 1a	found west of the Rhine, along limes and further west, scattered in the two provinces, not in Britain	AD 364/370 – 407 for Rhine region – North Gaul	<i>Gürtelgruppe 2</i>
	<i>Sorte 1 Form C Typ f Var. 4a</i>	rectangular plate and buckle with two animal heads where the frame meets the plate; with two fields with star shaped chip-carved ornament or with simple punched circle or cross patterns	found mainly along the Rhine limes with a few finds further west	AD 364/370 – 407 for Rhine region – North Gaul	<i>Gürtelgruppe 2</i>
	<i>Sorte 1 Form C Typ f Var. 5</i>	rectangular plate and buckle with two animal heads where the frame meets the plate; with very large buckle	found west of the Rhine beyond the Meuse in a more restricted area of <i>Germania Inferior</i> and in a small area along the Rhine in <i>Germania Superior</i> , not in Britain	AD 400-450	<i>Gürtelgruppe 3</i>
	<i>Sorte 1 Form E Typ a</i>	rectangular plate with two rectangular fields on the plate with ordered star, tendril, and pointed oval motifs, occasionally triangles or rectangles; sometimes there is an ornamented band between the fields; with astragal tube along one side	distribution along the Rhine limes and further to the west, some finds along the Danube limes	AD 364/370–407 (west of the Rhine)	<i>Gürtelgruppe 2</i>
	<i>Sorte 2 Form A Typ b</i>	rectangular plate and rectangular, oval or saddle shaped bow		no date range specified by Sommer	
	<i>Sorte 2 Form D</i>	rectangular plate with curved sides; animal heads extend from the frame; the tongue has curved projections at the sides	found in small numbers west of the Rhine, only one found in <i>Pannonia</i> , two in Britain; mainly distributed in the east	no date range specified by Sommer	
cf. Sommer (1984) strap-ends	<i>Anphoraformige Riemenzunge Form B Typ c Var. 1b</i>	amphora shaped strap-end with ornamental formed or no elaborate handles; Var. 1b: with end decoration with the borders of the leaf reaching over the top		AD 364/370 – 407 for Rhine region – North Gaul	<i>Gürtelgruppe 2</i>
	<i>Anphoraformige Riemenzunge Form B Typ c Var. 2e</i>	amphora shaped strap-end with ornamental formed or no elaborate handles; Var. 2e: without end decoration and without handles		AD 310 – 350/360 for Rhine region – North Gaul	<i>Gürtelgruppe 1</i>
	<i>Riemenzunge Form C Typ d</i>	disc or plate shaped strap-end with undecorated smooth edges		AD 400-450 for Rhine region – North Gaul	<i>Gürtelgruppe 3</i>
	<i>Riemenzunge Form D</i>	rectangular or almost square strap-end, made of a folded tin plate		AD 364/370 – 407 for Rhine region – North Gaul	<i>Gürtelgruppe 2</i>

## Appendix 8

## Oudenburg Graveyard C. Overview of the burials, their characteristics and content

Table 20. Graveyard C burials: characteristics and content. The excavation data (orientation, measurements, number of finds) are based on Dyselinck *et al.* 2020. The physical-antropological data are taken over from Cuijpers 2017; ongoing in-depth analysis at Ghent University comes to a few different results though (to be published).

GRAVES GRAVEYARD C	ORIENTATION	INTERSECTION	LENGTH OF COFFIN	SKELETON	NO GRAVE GOODS	GRAVE GOODS		
						POTTERY	BROOCHES	COINS
grave 1	E-W/W-E		undet.	no remains		three undecorated beakers ARG SA Chenet 334 <i>c.</i> AD 320-425 (Brulet in Brulet <i>et al.</i> 2010, 226); fragment (CP) of Mayen dish Alzei 34c ( <i>c.</i> AD 325-375)		
grave 2	E-W/W-E		undet.	no remains		one dish Mayen Alzei 34 ( <i>c.</i> AD 325-375, according to Brulet in Brulet <i>et al.</i> 2010, 418); one flagon Brulet F5 (found upside down in the grave, probably originally on the lid of the coffin)		
grave 3	E-W		1.84	skeleton remains, clear position of the head	X			
grave 4	N-S	intersects grave 18	1.62	skeleton remains, clear position of the head		NOG jug Brulet F5		
grave 5	E-W/W-E		undet.	only a few skeleton remains				
grave 6	N-S/S-N		1.84	some skeleton remains	X			
grave 7	N-S		1.79	skeleton remains, clear position of the head		NOG flagon Brulet F5		

GRAVE GOODS			DECEASED gender/age (based on physical-anthropological analysis, grave goods and/or length of coffin)	PHASING (cf. graveyard A) based on grave goods and/or intersection
OTHER METAL	GLASS	OTHER		
			undet.	
			undet.	PHASE 1
			remains of two individuals: one of 4-9 years, one late juvenile / young adult	
remains of pewter plate (cf. the remains of six pewter plates found in graves 57, 58, 69, 70, 100 and 115 at graveyard A: Mertens and Van Impe 1971)			adult, female considering the bracelets	PHASE 2
bronze bracelet, hook-and-eye fastening largely broken off, flat-sectioned with faceted edges, badly preserved but most likely Swift (2000a) decoration b13		jet bracelet, smooth, round-sectioned (outer diameter: 4.5 cm; inner diameter 3.5 cm)	child	
			child 5-10 years	
six bronze bracelets (badly preserved), found together, next to the head (probably all with hook-and-eye fastening (of one bracelet both ends were broken off)), two round-sectioned, four flat-sectioned of which three with clear zigzag chip carving decoration, badly preserved but likely to be Swift (2000a) decoration e2; part of very fine chain, clustered together, with double round links and one eye-end preserved: necklace?	five different glass beads (1x blue, polyhedral; 1x blue-green, bar shaped; 1x green, short hexagonal; 1x blue, round; 1x blue, small biconical), possibly from a bracelet and generally dated to the 4th century (see Cosyns 2016a)		child 4-8 years	

GRAVES GRAVEYARD C	ORIENTATION	INTERSECTION	LENGTH OF COFFIN	SKELETON	NO GRAVE GOODS	GRAVE GOODS		
						POTTERY	BROOCHES	COINS
grave 8	S-N	intersects grave 18	1.36	skeleton remains, clear position of the head		one ARG SA roller-stamped bowl Chenet 320 with roller stamp UC-125 dated <i>c.</i> AD 350-400 (identification by W. Dijkman); two beakers RE (Brulet B1.1; Brulet B2.6); one NOG flagon Brulet F2		eight bronze coins, possibly an assemblage of <i>c.</i> AD 350 (+/- 10 years) (dated by Stroobants F. and van Heesch J. (both Coin Cabinet of the Royal Library of Belgium, Brussels)
grave 9	W-E		1.78	skeleton remains, clear position of the head	X			
grave 10	W-E/E-W		1.91	some skeleton remains (skull remains of child: second burial?)		one ARG SA bowl Chenet 320 with roller stamp decoration group Hübener 2	bronze crossbow brooch type Swift-Pröttel-Keller 3/4B, dated to the second half of the 4th century, possibly still occurring in the early 5th century AD; common crossbow brooch type at graveyard A (identified by V. Van Thienen (2016c))	
grave 11	N-S/S-N		undet.	no skeleton remains	X			
grave 12	E-W		1.76	skeleton remains (too deteriorated for further study), clear position of the head		two beakers RE Brulet B4.3		
grave 13	W-E		2.12	almost complete skeleton	X			
grave 14	E-W	presum- ably two burials on top of each other	1.79 (coffin of the earliest burial)	only skeleton remains of the earliest burial preserved, with clear position of the head	X			
grave 15	E-W/W-E		(grave pit: 1.40)	no skeleton remains	X			
grave 16	E-W/W-E		undet.	no skeleton remains	X			
grave 17	E-W/W-E	inter- sected by grave 8	1.23	some skeleton remains		two beakers RE: small Brulet E6, Brulet B4.3	completely fragmented brooch?, undetermined	
grave 18	N-S/S-N	inter- sected by grave 4 and 8		no skeleton remains	X			
grave 19	E-W/W-E	disturbed grave?; intersects grave 20		only a few skeleton remains	X			
grave 20	W-E	inter- sected by grave 19	1.12	skeleton remains, clear position of the head		one handmade bowl		

GRAVE GOODS			DECEASED gender/age (based on physical-anthropological analysis, grave goods and/or length of coffin)	PHASING (cf. graveyard A) based on grave goods and/or intersection
OTHER METAL	GLASS	OTHER		
bronze buckle (no belt plate preserved) with strap end through: buckle, badly preserved, with stylised confronting animal heads with ridge biting to the centre type Sommer (1984) Sorte 1 Form A typ c (with bag-shaped belt plate) (cf. Sommer 1984, Taf. 1: 6) or Sorte 1 Form C typ d (with rectangular belt plate) (cf. Sommer 1984, Taf. 4: 3) (possibly buckle Form Spontin by Böhme (1974) dated in <i>Stufe</i> II, c. AD 380-420) + amphora-shaped strap end with central, rather large, round perforation Sommer (1984) Form B, too little preserved for further identification, according to Keller (1971, 65) 2nd half 4th century AD >> <i>Gürtelgruppe</i> 2 of Sommer (1984) c. AD 364/370-408 is most likely for the combination of these two finds; fragment of fine, twisted rod (with chip carving?) with small transversal piece on top, with broken off end: undet.	batch of small fragments of vessel, unidentifiable, decolourized glass with rosy shine (see Cosyns 2016a)		child of 4-9 years, male considering the buckle and strap end	PHASE 2
			late juvenile or adult	
bronze D-shaped buckle with bronze tongue Simpson (1976) Group I / Sommer (1984) Sorte 1 Form A / Sorte 1 Form C typ b Var. 3 depending on the shape of the missing belt plate: therefore datable in Sommer (1984) <i>Gürtelgruppe</i> 1 or 2 : c. AD 310-350 or 364/370 – 408			adult, male considering the crossbow brooch and buckle; however, analysis of preserved teeth points to a child of 3-6 years: from a second burial??	PHASE 2?
			undet.	
bronze buckle with stylised, to the centre biting, dolphin heads, with belt plate with punched circle-and-dot decoration and bronze tongue Sommer (1984) Sorte 1 Form C typ d Var. 2, according to Sommer (1984) dated in <i>Gürtelgruppe</i> 2 c. AD 364/370 – 408; cf. also Keller 1971, 52; according to Chadwick Hawkes (1962) buckle Type I A, dated to a longer time-span until middle of 5th century AD			adult, male considering the buckle	PHASE 2
possible shoe spike sole fragment	dark bleu micro biconical glass bead AD 200-400		adult of 20-40 years	
			adult (earliest burial)	
			child (based on length grave)	
			undet.	
			child of 2-5 years	PHASE 1
			undet.	PHASE 1
	(one gilt micro globular glass bead, for which parallels were found in a cremation grave, was most likely a residual find in the filling of the grave pit) (see Cosyns 2016a)		undet.	PHASE 2?
shoe spike sole fragments			child of 4-10 years	PHASE 1





# Bibliography

## Classical sources

Magie D. (transl. by) 1921: *The Scriptores Historiae Augustae I*, Loeb Classical Library 139, Cambridge / London.

Rolfe J.C. (transl. by) 1963: *Ammianus Marcellinus. The surviving books of the History*, Loeb Classical Library 300, 315, 331, Cambridge.

Seeck O. (ed.) 1876: *Notitia Dignitatum accedunt Notitia urbis Constantinopolitanae et Latercula provinciarum*, Berlin.

## Modern works\*

Albone J., Massey S. & Tremlett S. 2007: *The Archaeology of Norfolk's Coastal Zone. Results of the National Mapping Programme. English Heritage Project No: 2913*, Dereham.

Albrecht C. 1942: *Keramik aus Oberaden*, Das Römerlager in Oberaden II, Dortmund.

Aldhouse-Green M. 2001: *Dying for the Gods: Human Sacrifice in Ancient Europe*, Stroud.

Alexander J.J.G. 1976: Illustrated manuscripts of the Notitia Dignitatum. In: Goodburn R. & Bartholomew P. (eds), *Aspects of the Notitia Dignitatum: papers presented to the Conference in Oxford, December 13 to 15, 1974*, BAR. Supplementary Series 15, Oxford, 11-25.

Alföldi M.R. 1959: Zu den Militärreformen des Kaisers Gallienus. In: *Limes-Studien. Vorträge des 3. Internationalen Limes-Kongresses in Rheinfelden/Basel 1957*, Schriften des Institutes für Ur- und Frühgeschichte der Schweiz 14, Basel, 13-18.

Alföldi M.R. 1963: Fragen des Münzumschlufs im 4. Jahrhundert n. Chr., *Jahrbuch für Numismatik und Geldgeschichte* 13, 75-104.

Allason-Jones L. 1989: *Women in Roman Britain*, London.

Allason-Jones L. 1995: "Sexing" Small Finds. In: Rush P. (ed.) 1995, 22-32.

Allason-Jones L. 1999: Women and the Roman army in Britain. In: Goldsworthy A. & Haynes I. (ed.), *The Roman Army as a Community. Including papers of a conference held at Birkbeck College, University of London on 11-12 January, 1997*, Journal of Roman Archaeology. Supplementary Series 34, Portsmouth, 41-51.

Allason-Jones L. 2001: Material culture and identity. In: James S. & Millett M. (eds) 2001, 19-25.

Allason-Jones L. 2005: *Women in Roman Britain*, London.

Allason-Jones L. 2010: Personal Appearance. In: Collins R. & Allason-Jones L. (eds) 2010a, 78-85.

Allason-Jones L. (ed.) 2011a: *Artefacts in Roman Britain. Their Purpose and Use*, Cambridge.

Allason-Jones L. 2011b: Recreation. In: Allason-Jones L. (ed.) 2011a, 219-242.

Allason-Jones L. & Dungworth D.B. 1997: Metalworking on Hadrian's Wall. In: Groenman-van Waateringe W. et al. (eds) 1997, 317-322.

Allen J.R.L. & Fulford M.G. 1999: Fort Building and Military Supply along Britain's Eastern Channel and North Sea Coasts: The Later Second and Third Centuries, *Britannia* XXX, 163-184.

Allen J.R.L., Fulford M.G. & Pearson A.F. 2001: Branodunum on the Saxon Shore (North Norfolk): a Local Origin for the Building Material, *Britannia* XXXII, 271-275.

Allen J.R.L., Rose E.J. & Fulford M. 2003: Reuse of Roman stone in the Reedham area of East Norfolk: intimations of a possible "lost" Roman fort, *Britannia* XXXIV, 129-141.

\* To the publication date a/b/c/... is added to specify the reference of the same author in the same year, even when the other reference(s) only occur(s) in the bibliography of Volume II, this to prevent any confusion.

- Allison P.M. 2005: Mapping artefacts and activities within Roman military forts. In: Visy Z. (ed.) 2005, 833-846.
- Allison P.M. 2006a: Artefact distribution within the auxiliary fort at Ellingen: evidence for building use and for the presence of women and children, *Bericht der Römisch-Germanischen Kommission* 87, 387-452.
- Allison P.M. 2006b: Mapping for gender. Interpreting artefact distribution inside 1st- and 2nd-century A.D. forts in Roman Germany, *Archaeological dialogues* 13/1, 1-20.
- Allison P.M. 2008: *Measuring Women's Influence on Roman Military Life: using GIS on published excavation reports from the German frontier [e-publication]*, Internet Archaeology 24 [online], <https://doi.org/10.11141/ia.24.5>
- Allison P.M. 2009: The women in the early forts: GIS and artefact distribution analyses in 1st and 2nd Germany. In: Morillo A. *et al.* 2009, 1193-1201.
- Allison P.M. 2013: *People and Spaces in Roman Military Bases*, Cambridge.
- Allison P.M. 2015: Characterizing Roman Artifacts to Investigate Gendered Practices in Contexts Without Sexed Bodies, *American Journal of Archaeology* 119/1, 103-123.
- Allison P.M., Fairbairn A.S., Ellis S.J.R. & Blackall C.W. 2005: *Extracting the social relevance of artefact distribution in Roman military forts [e-publication]*, Internet Archaeology 17 [online], <https://doi.org/10.11141/ia.17.4>
- Arbuthnot S. 2014: *When Where Extramural Settlements Abandoned in the Hadrian's Wall Frontier Zone?* (unpublished master thesis Newcastle University), Newcastle.
- Baatz D. 1973: *Kastell Hesselbach und andere Forschungen am Odenwaldlimes*, Limesforschungen 12, Berlin.
- Baatz D. 2006a: Des Flaviens aux Sévères. In: Reddé M. *et al.* (dir.) 2006, 34-42.
- Baatz D. 2006b: Echzell. Hesse, Allemagne. In: Reddé M. *et al.* (dir.) 2006, 270-272.
- Baatz D. 2006c: L'architecture défensive sous le Principat. In: Reddé M. *et al.* (dir.) 2006, 77-89.
- Baeteman C. 2007a: De laat holocene evolutie van de Belgische kustvlakte: Sedimentatieprocessen versus zeespiegelschommelingen en Duinkerke transgressies. In: de Kraker A.M.J. & Borger G.J. (red.) 2007, 1-17.
- Baeteman C. 2007b: De ontstaangeschiedenis van onze kustvlakte, *De Grote Rede. Nieuws over onze Kust en Zee* 18, 2-10.
- Baeteman C. 2008: *De Holocene geologie van de Belgische Kustvlakte*, Geological Survey of Belgium Professional Paper 2008/2, Brussel.
- Baeteman C. 2013: History of research and state of the art of the Holocene depositional history of the Belgian coastal plain. In: Thoen E., Borger G.J., De Kraker A., Soens T., Tys D., Vervaeke L. & Weerts H. (eds), *Landscapes or seascapes? The history of coastal environment in the North Sea area reconsidered*, CORN publication Series 13, Turnhout, 11-30.
- Baeteman C. & Pieters M. 2015: Hoe en waarom het landschap veranderde tijdens de Romeinse periode te Raversijde (Oostende, Belgische kustvlakte), *Westvlaamse Archaeologica* 25, 2-25.
- Baker P. 2002: The Roman military *valetudinaria*: fact or fiction? In: Arnott R. (ed.) 2002, *The Archaeology of Medicine. Papers given at a session of the annual conference of the Theoretical Archaeology Group held at the University of Birmingham on 20 December 1998*, BAR. International Series 1046, Oxford, 69-79.
- Baker P.A. 2004: *Medical Care for the Roman Army on the Rhine, Danube and British Frontiers in the First, Second and Early Third Centuries AD*, BAR. International Series 1286, Oxford.
- Baker P., Forcey C., Jundi S. & Witcher R. (eds) 1999: *TRAC 98: Proceedings of the Eighth Annual Theoretical Roman Archaeology Conference, Leicester 1998*, Oxford.
- Bakker L. 1993: Raetien unter Postumus: Das Siegesdenkmal einer Juthungenschlacht im Jahre 260 n. Chr. aus Augsburg, *Germania* 71, 369-386.
- Barber B. & Bowsher D. 2000: *The Eastern Cemetery of Roman London. Excavations 1983-1990*, MoLAS Monograph 4, London.
- Bartholomew Ph. 1984: Fourth-Century Saxons, *Britannia* XV, 169-185.
- Bauwens-Lesenne M. 1963: Oudenburg. In: *Bibliografisch repertorium der oudheidkundige vondsten in West-Vlaanderen (vanaf de vroegste tijden tot aan de Noormannen)*, Oudheidkundige repertoria IV, Brussel, 91-94.
- Bechert T. 1980: Zur Terminologie provinzial-römischer Brandgräber, *Archäologisches Korrespondenzblatt* 10, 253-258.
- Bechert T. & Willems W.J.H. 1995: *De Romeinse Rijksgrens tussen Moezel en Noordzeekust*, Stuttgart.
- Belot E. 1989: Les enduits peints d'époque sévérienne d'une caserne de la Classis Britannica à Boulogne-sur-Mer, *Revue du Nord. Histoire & Archéologie. nord de la France. Belgique. pays-bas* LXXI/280, 105-151.
- Besuijen G.P.A. 2008: *Rodanum. A Study of the Roman Settlement at Aardenburg and its Metal Finds*, Leiden.

- Bet P. & Delage R. 2008: Les ateliers de sigillée tardive en Seine-et-Marne: l'atelier de Mareuil-les-Meaux. In: Griffisch J.-N., Magnan D. & Mordant D. (dir.), *La Seine-et-Marne, Carte Archéologique de la Gaule 77/1*, Paris, 198-203.
- Bet P. & Delor A. 2000: La typologie de la sigillée lisse de Lezoux et de la Gaule centrale du Haut-Empire. Révision décennale, *S.F.E.C.A.G. Actes du Congrès de Libourne*, 461-483.
- Bet P., Fenet A. & Montinéri D. 1989: La typologie de la sigillée lisse de Lezoux, Ier-IIIe s.. Considérations générales et formes inédites, *S.F.E.C.A.G. Actes du Congrès de Lezoux*, 37-53.
- Bidwell P.T. 1991: Later Roman Barracks in Britain. In: Maxfield V.A. & Dobson M.J. 1991 (eds), 9-15.
- Bidwell P. 1997: *Book of Roman Forts in Britain*, London.
- Bidwell P. 2009: The earliest occurrences of baths at auxiliary forts. In: Hanson W.S. (ed.) 2009: *The Army and Frontiers of Rome. Papers offered to David J. Breeze on the occasion of his sixty-fifth birthday and his retirement from Historic Scotland*, Journal of Roman Archaeology. Supplementary Series 74, Portsmouth, 55-62.
- Bidwell P. & Hodgson N. 2009: *The Roman Army in Northern England*, Newcastle upon Tyne.
- Birley A. 2013: The fort wall: a great divide?. In: Collins R. & Symonds M. (eds.) 2013, *Breaking down Boundaries. Hadrian's Wall in the 21st century*, Journal of Roman Archaeology. Supplementary Series no. 93, 85-104.
- Bishop M.C. & Coulston J.C.N. 1993/2006: *Roman Military Equipment: From The Punic War To The Fall of Rome*, Oxford.
- Blagg T. 1989: Richborough. In: Maxfield V.A. (ed.) 1989, 140-145.
- Blamangin O. & Demon A. 2020: *Gesoriacum-Bononia*: un port commercial et militaire aux portes de la *Britannia*. In: Blamangin O., Demon A. & Hoët-van Cauwenberghe C. (dir.), *Boulogne-sur-Mer antique, entre terre et mer. Gesoriacum-Bononia, le port et son arrière-pays. Actes de la table ronde du Projet collectif de recherche (PCR). Atlas topographique de la ville antique de Boulogne-sur-Mer, Boulogne-sur-Mer, 24-25 septembre 2015*, Archaiologia, Villeneuve d'Ascq, 29-41.
- Blondiaux J. 1993: La présence germanique en Gaule du nord: La preuve anthropologique? A propos des nécropoles de Vron (Somme) et de Neuville-sur-Escout (Nord). In: Hässler H.-J. & Lorren C. (Hrsg.): *Studien zur Sachsenforschung 8. Beiträge vom 39. Sachsensymposium in Caen, Normandie, 12. bis 16. September 1988*, Veröffentlichungen der urgeschichtlichen Sammlungen des Landesmuseums zu Hannover. Band 40, Hildesheim, 13-20.
- Boersma J.S. 1967: The Roman coins from the province of Zeeland, *Berichten van de Rijksdienst voor het Oudheidkundig Bodemonderzoek* 17, 65-97.
- Bogaers J.E. 1990: Een epigrafische puzzel: Een bouwinscriptie uit de noordelijke zijtak van de Rijn op het Marktveld te Valkenburg (ZH). In: Bult E.J. & Hallewas D.P. (red.), *Graven bij Valkenburg. III: Het archeologisch onderzoek in 1987 en 1988*, Delft, 52-56.
- Böhme H.W. 1974: *Germanische Grabfunde des 4. bis 5. Jahrhunderts zwischen unterer Elbe und Loire. Studien zur Chronologie und Bevölkerungsgeschichte*, Münchner Beiträge zur ur- und frühgeschichte 19, München.
- Böhme H.W. 1987: Gallien in der Spätantike. Forschungen zum Ende der Römerherrschaft in den westlichen Provinzen, *Jahrbuch des Römisch-Germanischen Zentralmuseums Mainz* 34, 770-773.
- Böhme H.W. 1996: Söldner und Siedler im spätantiken Nordgallien. In: *Die Franken. Wegbereiter Europas. Vor 1500 Jahren: König Chlodwig und seine Erben*, Mainz, 91-101.
- Böhme H.W. 2009: Migrants' Fortunes: the Integration of Germanic People in Late Antique Gaul. In: Quast D. (ed.), *Foreigners in Early Medieval Europe: Thirteen International Studies on Early Medieval Mobility*, Römisch-Germanisches Zentralmuseum. Forschungsgeschichte für Vor- und Frühgeschichte. Monographien 78, Mayence, 131-147.
- Böhme-Schönberger A. 1997: *Kleidung und Schmuck in Rom und den Provinzen*, Schriften des Limesmuseums Aalen 50, Stuttgart.
- Böhner K. 1963: Zur historischen Interpretation der sogenannten Laetengräber, *Jahrbuch des Römisch-Germanischen Zentralmuseums Mainz* 10, 139-167.
- Bosworth L. 2016: *Report on a Geophysical Survey of Stutfall Castle, the Roman Saxon Shore Fort at Lympne, Kent. Undertaken by Classical and Archaeological Studies, University of Kent*, Canterbury.
- Bot B. 2005: *De IJzertijdbewoning in De Panne-Oosthoekduinen: een materiaalstudie* (unpublished master thesis Ghent University), Gent.
- Boudin M., Boeckx P., Vandenabeele P., Mitschke S. & Van Strydonck M. 2011: Monitoring the presence of humic substances in wool and silk by the use of non-destructive fluorescence spectroscopy: quality control for <sup>14</sup>C dating of wool and silk, *Radiocarbon* 53.3, 429-442.
- Boudin M., Boeckx P., Vandenabeele P. & Van Strydonck M. 2013: Improved radiocarbon dating for contaminated archaeological bone collagen, silk, wool and hair samples via cross-flow nanofiltrated amino acids, *Rapid Communications in Mass Spectrometry* 27, 2039-2050.
- Braithwaite G. 2001: The face pots of Gallia Belgica seen in the light of the early development of Roman face pots and face beakers and their connection with the Roman army. In: Tuffreau-Libre M. & Jacques A. (dir.) 2001, *La céramique en Gaule et en Bretagne Romaines: commerce, contacts et romanisation. Actes de la Table Ronde d'Arras (23 au 25 octobre 1998) organisée par le Centre de*

- Céramologie gallo-romaine et le Study Group for Roman Pottery*, Nord-Ouest Archéologie 12, Berck-sur-Mer, 117-136.
- Brandl U. (Hrsg.) 2008: *Frauen und Römisches Militär. Beiträge eines Rundes Tisches in Xanten vom 7. bis 9. Juli 2005*, BAR. International Series 1759, Oxford.
- Breuer J. & Roosens H. 1957: *Le cimetière franc de Haillot*, Archaeologia Belgica XXXIV, Bruxelles.
- Brickstock R. 2010: Coin Supply in the North in the Late Roman Period. In: Collins R. & Allason-Jones L. (eds) 2010a, 86-91.
- Brinkkemper O., Duistermaat H., Hallewas D.P. & Kooistra L.I. 1995: A native settlement from the Roman period near Rockanje, *Berichten van de Rijksdienst voor het Oudheidkundig Bodemonderzoek* 41, 123-171.
- Brulet R. 1989: The Continental Litus Saxonicum. In: Maxfield V.A. (ed.) 1989, 45-59.
- Brulet R. 1990a: La chronologie des fortifications du Bas-Empire dans l'interland de la Gaule Septentrionale. In: Vetter H. & Kandler M. (Hrsg.) 1990, *Akten des 14. Internationalen Limeskongresses 1986 in Carnuntum*, Der Römische Limes in Österreich Heft 36/1, Wien, 301-309.
- Brulet R. 1990b: *La Gaule septentrionale au Bas-Empire. Occupation du sol et défense du territoire dans l'arrière-pays du Limes aux IV<sup>e</sup> et V<sup>e</sup> siècles*, Trierer Zeitschrift Beiheft 11, Trier.
- Brulet R. 1991: Le Litus Saxonicum continental. In: Maxfield V.A. & Dobson M.J. (eds) 1991, 155-169.
- Brulet R. 1993: Les dispositifs militaires du Bas-Empire en Gaule septentrionale. In: Vallet F. & Kazanski M. (réd.) 1993, 135-148.
- Brulet R. 1994: La céramique du Bas-Empire à Tournai: importations et vaisselle locale. In: Tuffreau-Libre M. & Jacques A. (réd.) 1994, 81-94.
- Brulet R. 1995: Het laat-Romeinse verdedigingssysteem tussen Moezel en Noordzeekust. In: Bechert T. & Willems W.J.H. (red.), *De Romeinse Rijksgrens tussen Moezel en Noordzeekust*, Stuttgart, 103-119.
- Brulet R. (dir.) 1996a: *La nécropole du Bas-Empire romain de la Rue Perdue à Tournai (Fouilles 1989)*, Collection d'archéologie Joseph Mertens XII. Publications d'histoire de l'art et d'archéologie de l'université catholique de Louvain XCI, Louvain-la-Neuve.
- Brulet R. 1996b: Les transformations du Bas-Empire. In: Reddé M. (dir.) 1996, *L'armée en Gaule*, Paris, 223-226.
- Brulet R. 2006a: De Dioclétien à Valentinien Ier. In: Reddé M. et al. (dir.) 2006, 44-47.
- Brulet R. 2006b: Du milieu du III<sup>e</sup> s. à Dioclétien. In: Reddé M. et al. (dir.) 2006, 42-44.
- Brulet R. 2006c: Furfooz/Hauterecenne. In: Reddé M. et al. (dir.) 2006, 335-336.
- Brulet R. 2006d: L'architecture militaire romaine en Gaule pendant l'Antiquité tardive. In: Reddé M. et al. (dir.) 2006, 155-179.
- Brulet R. 2006e: L'organisation territoriale de la défense des Gaules pendant l'Antiquité tardive. In: Reddé M. et al. (dir.) 2006, 50-66.
- Brulet R. 2006f: Pont-à-Celles/Liberchies. Geminiacum? In: Reddé M. et al. (dir.) 2006, 364-367.
- Brulet R. 2010c: La céramique rugueuse de l'Eifel. In: Brulet R., Vilvorder F. & Delage R. (réd.) 2010, 402-423.
- Brulet R. (dir.) 2012: *La cathédrale Notre-Dame de Tournai. L'archéologie du site et des monuments anciens. Volume 2. Matériaux et céramiques*, Études et Documents. Archéologie 28, Namur.
- Brulet R. 2017: The Roman army and military defence in Northern Gaul and the Germanic provinces during the Late Empire. In: Roymans N. et al. (eds) 2017, 39-56.
- Brulet R., Guiducci G. & Vilvorder F. 2012: La céramique romaine du Bas-Empire. In: Brulet R. (réd.) 2012, 118-179.
- Brulet R. & Verslype L. (dir.) 1999: *Saint-Pierre de Tournai. L'archéologie d'un monument et d'un quartier*, Collection d'Archéologie Joseph Mertens XIII. Publications d'histoire de l'art et d'archéologie de l'université catholique de Louvain XCIX, Louvain-la-Neuve.
- Brulet R., Vilvorder F. & Delage R. (réd.) 2010: *La céramique romaine en Gaule du Nord. Dictionnaire des céramiques. La vaisselle à large diffusion*, Turnhout.
- Brunsting H. 1937: *Het Grafveld onder Hees bij Nijmegen. Een bijdrage tot de kennis van Ulpia Noviomagus*, Allard Pierson stichting, Universiteit van Amsterdam. Archeologisch-historische bijdragen 4, Amsterdam.
- Bullinger H. 1969: *Spätantike Gürtelbeschläge: Typen, Herstellung, Trageweise und Datierung*, Dissertationes Archaeologicae Gandenses 12, Brugge.
- Bushe-Fox J.P. 1926: *First Report on the Excavation of the Roman Fort at Richborough, Kent*, Reports of the Research Committee of the Society of Antiquaries of London VI, Oxford.
- Bushe-Fox J.P. 1928: *Second Report on the Excavation of the Roman Fort at Richborough, Kent*, Reports of the Research Committee of the Society of Antiquaries of London VII, Oxford.



- Bushe-Fox J.P. 1932: *Third Report on the Excavations of the Roman Fort at Richborough, Kent*, Reports of the Research Committee of the Society of Antiquaries of London X, Oxford.
- Bushe-Fox J.P. 1933: *Richborough Castle*, London.
- Bushe-Fox J.P. 1949: *Fourth Report on the Excavations of the Roman Fort at Richborough, Kent*, Reports of the Research Committee of the Society of Antiquaries of London XVI, Oxford.
- Callander Murray A. 2000: *From Roman to Merovingian Gaul*, Readings in Medieval Civilizations and Cultures V, Peterborough.
- Cammas C. 2004: Les "terres noires" urbaines du Nord de la France: première typologie pédo-sédimentaire. In: Verslype L. & Brulet R. (éd.) 2004, 43-55.
- Carreras Monfort C. 2002: The Roman military supply during the Principate. Transportation and staples. In: Erdkamp P. (ed.) 2002, 70-89.
- Carroll M. 2001: Supplying the Roman fleet: native Belgic, Frisian and Germanic pottery from Cologne, *Journal of Roman Archaeology* 14, 311-324.
- Casey P.J. 1977: Carausius and Allectus – Rulers in Gaul?, *Britannia* VIII, 283-301.
- Chadwick Hawkes S. & Dunning G.C. 1964: Krieger und Siedler in Britannien während des 4. und 5. Jahrhunderts. Mit einem Katalog der Schnallen und Gürtelbeschläge mit Tierornamenten, *Bericht der Römisch-Germanischen Kommission* 43-44 (1962-1964), 155-231.
- Chadwick Hawkes S., Hawkes S.C. & Dunning G.C. 1961: Soldiers and Settlers in Britain, Fourth to Fifth Century. With a Catalogue of Animal-Ornamented Buckles and Related Belt-Fittings, *Medieval Archaeology* 5/1, 1-70.
- Chameroy J. 2011: Schatzfundhorizonte des späten 3. Jahrhunderts (276-294) in den Nordwestprovinzen, *Jahrbuch des Römisch-Germanischen Zentralmuseums Mainz* 58/2, 661-706.
- Chameroy J. 2013: Vondstmateriaal: Munten (Fundmaterial: Münzen). In: van Dierendonck R.M. & Vos W.K. 2013, 75-85.
- Chardon-Picault P. 2005: L'artisanat des alliages à base de cuivre de Vertault-Vertillum (Côte-d'Or), *Revue Archéologique de l'Est* 54, 135-147.
- Chardon-Picault P. & Pernot M. (eds) 1999: *Un quartier antique d'artisanat métallurgique à Autun (Saône-et-Loire). Le site du Lycée militaire*, Documents d'archéologie Française 76, Paris.
- Charlesworth D. 1976: The Hospital, Housesteads, *Archaeologia Aeliana* 5/IV, 17-30.
- Charlwood M. 2013: *Summary of Geophysical Survey Work Oudenburg, Flanders November 2012. CL809 Practical Assignment. University of Kent*, Canterbury.
- Chenet G. 1941: *La céramique gallo-romaine d'Argonne du IV<sup>e</sup> siècle et la terre sigillée décorée à la molette*, Fouilles et documents d'archéologie antique en France Tome 1, Mâcon.
- Christie N. 2011: *The Fall of the Western Roman Empire. An Archaeological & Historical Perspective*, Historical Endings Series London / New York.
- Cichy B. 1971: *Das römische Heidenheim*, Heidenheim.
- Clarke G. 1979: *Pre-Roman and Roman Winchester. Part II: The Roman Cemetery at Lankhills*, Winchester Studies 3, Oxford.
- Clarke S. 2000: In search of a different Roman period: the finds assemblage at the Newstead military complex. In: Fincham G., Harrison G., Holland R. & Revell L., *TRAC 99: Proceedings of the Ninth Annual Theoretical Roman Archaeology Conference*, Durham 1999, Oxford, 22-29.
- Coello T. 1996: *Unit Sizes in the Late Roman Army*, BAR. International Series 645, Oxford.
- Collins R. 2008: Identity in the Frontier: Theory and Multiple Community Interfacing. In: Fenwick C., Wiggins M. & Wythe D. (eds), *TRAC 2007: Proceedings of the Seventh Annual Theoretical Roman Archaeology Conference, London 2007*, Oxford, 45-52.
- Collins R. 2012: *Hadrian's Wall and the End of Empire: The Roman Frontier in the 4th and 5th Centuries*, Routledge Studies in Archaeology 4, New York / London.
- Collins R. 2013: Soldiers to Warriors: Renegotiating the Roman Frontier in the Fifth Century. In: Hunter F. & Painter K. (eds), *Late Roman Silver: The Traprain Treasure in Context. Proceedings of a Conference Held in Edinburgh, 9-10 May 2009*, Edinburgh, 29-43.
- Collins R. 2017: Decline, collapse, or transformation? The case for the northern frontier of Britannia. In: Roymans N. et al. (eds) 2017, 203-220.
- Collins R. & Allason-Jones L. (eds) 2010a: *Finds from the Frontier: Material Culture in the 4th-5th Centuries*, CBA Research Report 162, York.
- Collins R. & McIntosh F. (eds) 2014: *Life in the Limes. Studies of the People and Objects of the Roman Frontiers, presented to Lindsay Allason-Jones on the occasion of her birthday and retirement*, Oxford / Philadelphia.
- Cool H.E.M. 2000: The Significance of Snake Jewellery Hoards, *Britannia* XXXI, 29-40.
- Cool H.E.M. 2010: Finding the foreigners. In: Eckardt H. (ed.) 2010, 27-44.

- Cools E. 1985: De Romeinse kustverdediging van maritiem Vlaanderen. Werkhypothese voor een systematische prospectie, *Westvlaamse Archaeologica* 1, 16-27.
- Cools E. 1986: De "Karolingische kerk" van Torhout ... een Romeinse wachttoren?, *Westvlaamse Archaeologica* 2/3, 81-90.
- Cools E. 1987: De Romeinse kustverdediging: een theoretisch model. In: Thoen H. (red.) 1987, 90-99.
- Cooremans B. 1994: Palynologisch onderzoek van een Romeinse poel te Oudenburg, *Archeologie in Vlaanderen* III (1993), 229-231.
- Cooremans B., Desender K., Ervynck A., Schelvis J., Hanraets E. & Van Strydonck M. 2002: Onderzoek van plantaardige en dierlijke resten uit een Romeinse waterput van de vindplaats 'Refuge' te Sint-Andries, Brugge (prov. West-Vlaanderen): economie en ecologie, *Archeologie in Vlaanderen* VI (1998/1999), 209-229.
- Cotterill J. 1993: Saxon raiding and the role of the Late Roman coastal forts of Britain, *Britannia* XXIV, 227-239.
- Coulston J.C.N. 2013: Late Roman Military Equipment Culture. In: Sarantis A. & Christie N. (eds), *War and Warfare in Late Antiquity*, Late Antique Archaeology 8/2, Leiden / Boston, 463-492.
- Cuijpers S. 2017: *Fysisch antropologisch onderzoek inhumatie- en crematiegraven Oudenburg*, EARTH rapport 2016-79, s.l.
- Cunliffe B.W. (ed.) 1968: *Fifth Report on the Excavations of the Roman Fort at Richborough, Kent*, Reports of the Research Committee of the Society of Antiquaries of London XXIII, Oxford.
- Cunliffe B. 1975: *Excavations at Portchester Castle. Vol I: Roman*, Reports of the Research Committee of the Society of Antiquaries of London XXXII, London.
- Cunliffe B. 1977: The Saxon Shore – some problems and misconceptions. In: Johnston D.E. (ed.) 1977, 1-6.
- Cunliffe B. 1980: Excavations at the Roman fort at Lympne, Kent 1976-78, *Britannia* XI, 227-288.
- Curle J. 1911: *A Roman frontier post and its people: the fort of Newstead in the Parish of Melrose*, Glasgow.
- Cuyt G. 1999: Romeins gebouw en waterputten in Wijnegem 'Steenakker', *Jaarboek AVRA* 1999, 59-66.
- Cuyt G. 2001: Archeologisch onderzoek te Wijnegem 1999-2000, *AVRA Bulletin* (2000) 1, 79-83.
- Daniels C. 1980: Excavations at Wallsend and the fourth-century barracks on Hadrian's Wall. In: Hanson W.S. & Keppie L.J.F. (eds) 1980, 173-193.
- Dannell G. & Mees A. 2015: Getting samian ware to Britain: routes and transport possibilities, *Journal of Roman Pottery Studies* 16, 77-92.
- Darling M.J. 1977: Pottery from Early Military Sites in Western Britain. In: Dore J. & Greene K. (eds), *Roman Pottery Studies in Britain and Beyond. Papers presented to John Gillam, July 1977*, BAR. Supplementary Series 30, Oxford, 57-100.
- Darling M.J. & Gurney D. et al. 1993: *Caister-on-Sea. Excavations by Charles Green, 1951-55*, East Anglian Archaeology Report 60, Norfolk.
- Davies G., Gardner A. & Lockyear K. (eds) 2001: *TRAC 2000: Proceedings of the Tenth Annual Theoretical Roman Archaeology Conference, London 2000*, Oxford.
- Davies J.A. 2006: Roman forts and ports: the archaeology of the Saxon Shore in Norfolk. In: Ottaway P. (ed.), *A Victory Celebration: Papers on the Archaeology of Colchester and Late Iron Age-Roman Britain presented to Philip Crummy* Colchester, 113-120.
- Davison D.P. 1989: *The Barracks of the Roman Army from the 1st to 3rd Centuries A.D. A comparative study of the barracks from fortresses, forts and fortlets with an analysis of building types and construction, stabling and garrisons*, BAR. International Series 472, Oxford.
- De Boe G. 1984: Nieuw onderzoek in de Romeinse vicus te Grobbendonk: de houtbouwfase, *Archaeologia Belgica* 258, Brussel, 69-73.
- De Boe G. 1988: De inheems-Romeinse houtbouw in de Antwerpse Kempen. In: Brenders F. & Cuyt G. (red.), *Van beschaving tot opgraving. 25 jaar archeologisch onderzoek rond Antwerpen door de Antwerpse Vereniging voor Romeinse Archeologie*, Brussel, 47-62.
- De Boone W.J.D. 1954: *De Franken van hun eerste optreden tot de dood van Childekrik*, Amsterdam.
- De Ceunynck R. & Termote J. 1987: Een zoutwinningssite uit de Midden-Laat-La Tène-periode te Veurne, *Westvlaamse Archaeologica* 3/3, 73-82.
- Déchelette J. 1904: *Les vases ornés de la Gaule romaine (Narbonnaise, Aquitaine, Lyonnaise)*, Paris.
- Declercq G. 1991: Oorsprong en vroegste ontwikkeling van de burcht van Brugge (9de-12de eeuw). In: De Witte H. (red.) 1991, 64-70.
- Declercq G. 1995: *Vlaanderen en de Vlaanderengouw in de vroege middeleeuwen*. In: Meulemeester J.L. (red.) 1995, 10-17.
- De Clercq W. 2009: *Lokale gemeenschappen in het Imperium Romanum. Transformaties in rurale bewoningsstructuur en materiële cultuur in de landschappen van het noordelijk deel van de civitas Menapiorum. (Provincia Gallia-Belgica, ca. 100 v. Chr. – 400 n. Chr.)*. Unpublished doctoral thesis Ghent University, Gent.

- De Clercq W. 2011: Roman rural settlements in Flanders. Perspectives on a “non-villa” landscape in extrema Galliarum. In: Roymans N. & Derks T. (eds), *Villa Landscapes in the Roman North. Economy, Culture and Lifestyles*, Amsterdam Archaeological Studies 17, Amsterdam, 235-257.
- De Clercq W. (red.) 2012: *Over Vlees en Bloed. Menapische boeren en soldaten aan de rand van het Romeinse Rijk*, Publicaties van het Provinciaal Archeologisch Museum Velzeke. Gewone Reeks 5, Oostkamp.
- De Clercq W., Hoorne J. & Vanhee D. 2008: *Een inheems-Romeinse boerderij en versterking. Preventief archeologisch onderzoek te Knesselare – Kouter (2005-2006)*, KLAD-Rapport 8, Aalter.
- De Clercq W. & van Dierendonck R.M. 2008: Extrema Galliarum. Zeeland en Noordwest-Vlaanderen in het Imperium Romanum, *Zeeuws Tijdschrift* 58/3-4, 5-34.
- De Clercq W. & van Dierendonck R.M. 2009: Extrema Galliarum. Noord-West-Vlaanderen en Zeeland in het Imperium Romanum, *VOBOV-Info* 64, 34-75.
- De Cock S., Rogge M. & Van Doorslaer A. 1987: Het archeologisch onderzoek te Zerkegem-Jabbeke, *Westvlaamse Archaeologica* 3/2, 37-50.
- Deconynck J. 2009: Het Gallo-Romeins brandrestengraf in zandig civitas Menapiorum: een regionale diversificatie, *Romeinendag – Journée d'archéologie romaine*, 29-38.
- De Decker S. & Himpe K. 2002: *Archeologisch en cultuurhistorisch onderzoek in het kader van het natuurinrichtingsproject “Oostends Kreekegebied”*. Ongepubliceerd rapport AMINAL – Afdeling Natuur (afdeling West-Vlaanderen) Vlaamse Landmaatschappij – Provinciale Directie Brugge, Brugge.
- Deforce K. 2004: *Rapport palynologisch onderzoek van enkele archeologische sporen van de site Oudenburg-Spegelaere*, Gent.
- Degbomont J.M. 1984: *Le chauffage par hypocauste dans l'habitat privé de la place St-Lambert à Liège à Aula Palatina de Trèves*, ERAUL. Etudes et Recherches Archéologiques de l'Université de Liège 17, Liège.
- de Hingh A. & Vos W. 2005: *Romeinen in Valkenburg (ZH). De opgravingsgeschiedenis en het archeologische onderzoek van Praetorium Agrippinae*, Leiden.
- de Kraker A.M.J. & Borger G.J. (red.) 2007: *Veen-Vis-Zout. Landschappelijke dynamiek in de zuidwestelijke delta van de Lage Landen*, Geoarchaeological and Bioarchaeological Studies 8, Amsterdam.
- De Laet S.J., Dhondt J. & Nenquin J. 1952: Les Laeti du Namurois et l'origine de la civilisation mérovingienne. In: *Études d'histoire et d'archéologie (dédiées à Ferdinand Courtoy)* I, 149-172.
- De Loë A. 1939: *Catalogue descriptif et raisonné de la Belgique ancienne IV: La période franque*, Publications Musées royaux d'art et d'histoire Bruxelles.
- Delsaux M.-A. 1973: Rapport anthropologique sur la nécropole romaine d'Oudenburg, *Bulletin de l'Institut Royal des Sciences Naturelles de Belgique / Bulletin van het Koninklijk Belgisch Instituut voor Natuurwetenschappen* 49/4, 1-51.
- Demandt A. 2007: *Die Spätantike. Römische Geschichte von Diocletian bis Justinian 284-565 n. Chr.*, Handbuch der Altertumswissenschaft III/6, München.
- De Meulemeester J. 2004: Fortifications romaines de la côte flamande et leur occupation médiévale: quelques réflexions. In: Vermeulen F., Sas K. & Dhaeze W. (eds) 2004, 425-433.
- De Meulemeester J. & Dewilde M. 1987: Romeinse en middeleeuwse landelijke bewoning langs de Zeeweg te Roksem (gem. Oudenburg). Interimverslag 1986, *Archaeologia Belgica* III, 225-231.
- Demey D., Vanhoutte S., Pieters M., Bastiaens J., De Clercq W., Deforce K., Denys L., Eryvynck A., Lentacker A., Storme A. & Van Neer W. 2013: Een dijk en een woonplatform uit de Romeinse periode in Stene (stad Oostende, prov. West-Vlaanderen), *Relicta. Archeologie, Monumenten- en Landschapsonderzoek in Vlaanderen* 10, 7-70.
- Demiddele H. & Eryvynck A. 1994: Diatomeeën als ecologische indicatoren in de Vlaamse archeologie: Romeins en middeleeuws Oudenburg (prov. West-Vlaanderen), *Archeologie in Vlaanderen* II (1993), 217-231.
- De Moor G. 1990: *Geomorfologische kaart van België. Kaartblad Oostende*, Gent.
- Demougeot E. 1975: La Notitia Dignitatum et l'histoire de l'empire d'occident au début du Ve siècle, *Latomus* 34, 1079-1134.
- De Poorter A. & Claeys P.-J. 1989: *Les sigles sur matériaux de construction romains en terre cuite en Belgique*, Acta Archaeologica Lovaniensia Monographiae I, Leuven.
- Desbat A. 1986: Céramiques romaines à glaçure plombifère de Lyon et de Vienne, *S.F.E.C.A.G. Actes du Congrès de Toulouse*, 33-39.
- Deschietter J. 2012: In de bres voor het Imperium: de milites Menapii in het Boven-Rijng gebied. In: De Clercq W. (red.) 2012, 90-93.
- Despriet Ph. 1985: Archeologische veldprospectie in Watten, 1980-1985. In: De Meulemeester J., Despriet Ph. & Roosens B., *Archeologische verkenning van de Westhoek II*, Koksijde, 24-28.
- Despriet Ph. 1991: *Romeins Kortrijk. I. Bibliografisch vondstenrepertorium*, Kortrijk.

- Despriet Ph. 2008: Romeinen in Watten (Frankrijk). In: Meulemeester J.L. (red.) 2008, 94.
- Despriet Ph. 2019: Het laat-Romeinse Kortrijk. In: Hillewaert B. & Ryckaert M. (red.) 2019, 86-87.
- Detalle M.-P. 2002: *La Piraterie en Europe du Nord-Ouest à l'Époque Romaine*, BAR. International Series S1086, Oxford.
- Devliegheer L. 1958: *Oudheidkundig onderzoek van de Sint-Pieterskerk te Oudenburg*, Handelingen van het Genootschap voor Geschiedenis gesticht onder de benaming "Société d'Emulation" te Brugge XCV, Brugge.
- Devliegheer L. 1984: De Romaanse Sint-Pieterskerk te Oudenburg (1056-1070). In: Meulemeester J.L. (coörd.), *Sint-Arnoldus en de Sint-Pietersabdij te Oudenburg 1084-1984. Tentoonstellingscatalogus*, Oudenburg, 83-87.
- Devliegheer L. 1991: De voorromaanse Sint-Donaaskerk en de Romaanse westelijke kloostervleugel (opgravingen 1955 en later). In: De Witte H. (red.), 1991, 46-92.
- Devos S. 2004: *De Romeinen voorbij: middeleeuwse off-site sporen aan de Hovenier- en Groeningestraat te Oudenburg (prov. West-Vlaanderen)* (unpublished report), Oudenburg.
- De Wilde S. 2012: *Gallo-Romeinse muurschilderingen. Kennismaking en onderzoek van muurschilderingen uit archeologische context* (unpublished master thesis Artesis Hogeschool Antwerpen), Antwerpen.
- De Witte H. (red.) 1991: *De Brugse Burg. Van grafelijke versterking tot moderne stadskern*, Archo-Brugge 2, Brugge.
- Dhaeze W. 2009: *Waarderend Archeologisch Onderzoek te Oudenburg, kantine voetbalplein (Bekestraat) (28 en 29 oktober 2009)*, Archeologische Rapporten Oudenburg 4 (unpublished report), Oudenburg.
- Dhaeze W. 2010: *Waarderend Archeologisch Onderzoek te Oudenburg, site Ettelgemsestraat (17 t.e.m. 20 november 2009)*, Archeologische Rapporten Oudenburg 5 (unpublished report), Oudenburg.
- Dhaeze W. 2011: *De Romeinse kustverdediging langs de Noordzee en het Kanaal van 120 tot 410 na Chr.: een onderzoek naar de rol van de militaire sites in de kustverdediging en drie casestudies over de militaire versterkingen van Maldegem-Vake, Aardenburg en Boulogne-sur-Mer*. Unpublished doctoral thesis Ghent University, Gent.
- Dhaeze W. 2012: Het castellum van Maldegem-Vake: een kamp in de campagne tegen de Chauken. In: De Clercq W. (red.) 2012, 78-79.
- Dhaeze W. 2013: Studie van enkele volledige aardewerkcontexten uit het centrale nederzettingsareal van Romeins Aardenburg. In: van Dierendonck R.M. & Vos W.K. 2013, 209-286.
- Dhaeze W. (with the collaboration of H. Goeminne & H. Thoen) 2019: *The Roman North Sea and Channel Coastal Defence. Germanic Seaborne Raids and the Roman Response*, Wetteren.
- Dhaeze W., Decorte J., Vandeveld J. & Meulemeester J.L. 2016: Van Steentijd to Wereldoorlog. Tien jaar archeologiebeleid in Oudenburg (2005-2015), *Brugse Ommeland* LVI/2, 3-56.
- Dhaeze W., Decorte J. & Vanhoutte S. 2008: Sporen aan de rand van de Romeinse nederzetting van Oudenburg. De opgravingen langs de Ettelgemsestraat (project Riethove), *Journée d'Archéologie Romaine – Romeinendag*, 35-36.
- Dhaeze W. & Degryse J. 2011: *Waarderend archeologisch onderzoek te Roksem, site Nieuwstraat (7 november 2011)*, Archeologische Rapporten Oudenburg 13 (unpublished report), Oudenburg.
- Dhaeze W. et al. 2018: *Archeologisch onderzoek op de site Oudenburg-Riethove (19 juli 2007 – 29 juli 2009). Nederzettingssporen uit de Romeinse periode, volle en late middeleeuwen en nieuwe tijd*, Archeologische Rapporten Oudenburg 16 (unpublished report), Oudenburg.
- Dhaeze W., Hantson W., Kellner T., Dewilde M., De Buyser F. & Minten N. 2013: *Archeologisch onderzoek aan de zuidwestelijke hoek van de markt van Oudenburg (site Hoogstraat-Marktplein) (W-VL). Vol- en laatmiddeleeuwse bewoning en resten van de laat- en postmiddeleeuwse lakenhalle en herberg De Slotete (augustus-oktober 2009)*, Archeologische Rapporten Oudenburg 12 (unpublished report), Oudenburg.
- Dhaeze W. & Vanhoutte S. 2009: Archeologisch nieuws uit Romeins Oudenburg: onderzoek 2008 – voorjaar 2009, *Romeinendag – Journée d'archéologie romaine*, 83-87.
- Dhaeze W. & Vanhoutte S. 2011: *Archeologische begeleiding rioleringswerken schoolomgeving Zuidpoort, centrum Oudenburg (29/04-06/05/2010, 23-25/08/2010, 16/09/2010 en 05/10/2010)*, Archeologische Rapporten Oudenburg 10 (unpublished report), Oudenburg-Zarren.
- Dhaeze W. & Verbrugge A. 2007: *Archeologisch onderzoek langs de Kortewaagstraat te Menen (2006-2007) (plangebied Menen-Oost-Uitbreiding)*, VIOE Intern Rapport.
- Dhaeze W., Verbrugge A., Cooremans B., Cosyns P., Deforce K., Delrue P., Deschietter J., Haneca K., Reniere S., Van Strydonck M. & Willems S. 2015: Een inheems-Romeinse nederzetting in het zandlemige deel van de civitas Menapiorum (midden 1ste eeuw-eind 3de eeuw na Chr.). Archeologisch onderzoek op de site Menen-Kortewaagstraat, *Relicta. Archeologie, Monumenten- en Landschapsonderzoek in Vlaanderen* 14, 9-118.

- Díaz-Andreu M. 2005: Introduction. In: Díaz-Andreu M. *et al.* 2005, 13-42.
- Díaz-Andreu M. & Lucy S. 2005: Introduction. In: Díaz-Andreu M. *et al.* 2005, 1-12.
- Díaz-Andreu M., Lucy S., Babic S. & Edwards D.N. 2005: *The Archaeology of Identity. Approaches to gender, age, status, ethnicity and religion*, London / New York.
- Dijkman W. 1992: La terre sigillée décorée à la molette à motifs chrétiens dans la stratigraphie maastrichtoise (Pays-Bas) et dans le nord-ouest de l'Europe, *Gallia* 49, 129-172.
- Dijkstra J. & Zuidhoff F.S. 2011: *Kansen op de kwelder. Archeologisch onderzoek op en rond negen vindplaatsen in het nieuwe tracé van de Rijksweg 57 en de nieuwe rondweg ter hoogte van Serooskerke (Walcheren)*, ADC Monografie 10, Amersfoort.
- Dolata J. 2012: De verspreiding en productie van gestempelde dakpannen van de milites Menapiorum – Bouwmateriaal voor de Rijnlimes. In: De Clercq W. (red.) 2012, 93-95.
- Donnadieu J. & Willems S. 2015: Faciès céramique en contexte d'ateliers de sauniers: comparaison du mobilier des sites ménapiens de Steene, Pitgam et Looberghe (Nord), *S.F.E.C.A.G. Actes du Congrès de Nyon (Suisse)*, 315-342.
- Douglas A., Gerrard J. & Suds B. 2011: *A Roman settlement and bath house at Shadwell: Excavations at Tobacco Dock and Babe Ruth restaurant, The Highway, London*, Pre-Construct Archaeology Monograph 12, London.
- Doyen J.-M. 2007: *Économie, monnaie et société à Reims sous l'Empire romain. Recherches sur la circulation monétaire en Gaule septentrionale intérieure*, Collection archéologie urbaine à Reims 7 / Bulletin de la Société archéologique champenoise 100/1-2, Reims.
- Dragendorff H. 1895-1896: Terra Sigillata, *Bonner Jahrbücher* 96 / 97, 18-155 / 54-163.
- Dreesen R. & Duser M. 2017: Volcanic tuff: an exotic historical building stone in Flanders. In: Nijland T.G. (ed.), *Use and conservation of Rhenish tuff in the Netherlands, Germany, Flanders and Denmark. Proceedings of the symposium in Amersfoort, March 20, 2017*, Delft, 33-45.
- Dressel H. 1899: *Inscriptiones Urbis Romae Latinae. Instrumentum domesticum*, Corpus Inscriptionum Latinarum XV, Berolini.
- Drinkwater J.F. 1983: *Roman Gaul: The Three Provinces, 58 BC – AD 260*, London.
- Drinkwater J.F. 1987: *The Gallic Empire. Separatism and continuity in the north-western provinces of the Roman Empire A.D. 260-274*, Historia. Einzelschriften Heft 52, Stuttgart.
- Drinkwater J.F. 1998: The Usurpers Constantine (407-411) and Jovinus (411-413), *Britannia* XXIX, 269-298.
- Dubuis B. 2013: De la consommation au recyclage du plomb. L'étude des déchets de l'agglomération antique de Mathay-Mandeure Epomanduodurum (Doubs), *Les Nouvelles de l'archéologie* 131, 39-44.
- Duncan-Jones R.P. 1996: The impact of the Antonine plague, *Journal of Roman Archaeology* 9, 108-136.
- Duser M., Dreesen R. & De Naeyer A. 2009: *Renovatie & restauratie – Natuursteen in Vlaanderen, versteend verleden*, Mechelen.
- Dyczek P. 1997: The *valetudinarium* at Novae – new components. In: Groenman-van Waateringe W. *et al.* (eds) 1997, 199-204.
- Dyczek P. 1999: A Sacellum Aesculapi in the *valetudinarium* at Novae. In: Gudea N. (ed.) 1999, 495-500.
- Dyczek P. 2005: On the genesis of Roman legionary hospitals. In: Visy Z. (ed.) 2005, 871-880.
- Dyczek P., Kolendo J. & Sarnowski T. 2001: *Novae – 40 lat wykopalisk / Novae – 40 years of excavations*, Warszawa.
- Dyselinck T. *et al.* 2020, *Op het kruispunt van de Zandstraat en de Zeeweg, Archeologische opgraving Oudenburg, Bellerochelaan*, BAAC Vlaanderen Rapport 1405, Bassevelde.
- Eckardt H. (ed.) 2010: *Roman Diasporas. Archaeological approaches to mobility and diversity in the Roman Empire*, Journal of Roman Archaeology. Supplementary Series 78, Portsmouth.
- Eckardt H. 2014: *Objects & Identities. Roman Britain and the North-Western Provinces*, Oxford.
- Eckardt H., Chenery C., Booth P., Evans J.A., Lamb A. & Müldner G. 2009: Oxygen and strontium isotope evidence for mobility in Roman Winchester, *Journal of Archaeological Science* 36, 2816-2825.
- Eckardt H., Chenery C., Leach S., Lewis M., Müldner G. & Nimmo E. 2010: A long way from home: diaspora communities in Roman Britain. In: Eckardt H. (ed.) 2010, 99-130.
- Eckardt H., Müldner G. & Lewis M. 2014: People on the move in Roman Britain, *World Archaeology* 46/4, 534-550.
- Eckardt H., Müldner G. & Speed G. 2015: The Late Roman Field Army in Northern Britain? Mobility, Material Culture and Multi-Isotope Analysis at Scorton (N Yorks.), *Britannia* 46, 191-223.
- Eggermont S. 2017: *Het vroegmiddeleeuwse aardewerk uit de zwarte laag van het castellum van Oudenburg* (unpublished master thesis Ghent University), Gent.
- Elton H. 1996: *Warfare in Roman Europe A.D. 350-425*, Oxford.

- Engemann J. 2007: Konstanins Sicherung der Grenzen des Römischen Reiches. In: Demandt A. & Engemann J. (Hrsg.), *Imperator Caesar Flavius Konstantin. Constantinus der Grosse. Ausstellungskatalog*, Mainz, 155-159.
- Erdkamp P. 2002a: Introduction. In: Erdkamp P. (ed.) 2002, 5-16.
- Erdkamp P. 2002b: The Corn Supply of the Roman Armies during the Principate (27 BC – 235 AD). In: Erdkamp P. (ed.) 2002, 47-69.
- Erdkamp P. (ed.) 2002: *The Roman Army and the Economy*, Amsterdam.
- Erdkamp P. (ed.) 2011: *A Companion to the Roman Army*, Oxford.
- Erdrich M. 2001: *Rom und die Barbaren. Das Verhältnis zwischen dem Imperium Romanum und den germanischen Stämmen vor seiner Nordwestgrenze von der späten Republik bis zum Gallischen Sonderreich*, Römisch-Germanische Forschungen Band 58, Mainz.
- Erdrich M. 2004: Anmerkungen zum historischen Hintergrund des Truppenlagers von Maldegem-Vake. In: Vermeulen F., Sas K. & Dhaze W. (eds) 2004, 155-163.
- Ervynck A., Baeteman C., Demiddele H., Hollevoet Y., Pieters M., Schelvis J., Tys D., Van Strydonck M. & Verhaeghe F. 1999: Human occupation because of a regression, or the cause of a transgression? A critical review of the interaction between geological events and human occupation in the Belgian coastal plain during the first millennium AD, *Probleme der Küstenforschung im südlichen Nordseegebiet* 26, 97-121.
- Ervynck A., De Cupere B., Fret M., Lentacker A., Massagé L., Udrescu M., Vanhoutte S., Wouters W. & Van Neer W. 2017: Het castellum aan het eind van de wereld. Vlees en vis voor de soldaten te Oudenburg, *Signa. Tijdschrift uitgegeven door het Comité voor de verspreiding van het onderzoek in de Gallo-Romeinse archeologie* 6, 41-45.
- Ervynck A., Degryse P., Vandenabeele P. & Verstraeten G. 2009: *Natuurwetenschappen en archeologie. Methode en interpretatie*, Leuven.
- Esmonde Cleary A.S. 1989: *The Ending of Roman Britain*, London.
- Esmonde Cleary S. 2013: *The Roman West, AD 200-500. An Archaeological Study*, Cambridge.
- Esmonde Cleary A.S. 2017: Roman state involvement in Britain in the later 4th century: an ebbing tide? In: Roymans N. *et al.* (eds) 2017, 179-202.
- Ettlinger E. 1973: *Die römischen Fibeln in der Schweiz*, Bern.
- Evans J. 1995: Roman Finds Assemblages, Towards an Integrated Approach? In: Rush P. (ed.) 1995, 33-58.
- Evans J. & Millett M.J. 1992: Residuality revisited, *Oxford Journal of Archaeology* 11/2, 225-240.
- Fellmann R. 2006: Yverdon-les-Bains. Eburodunum. Vaud, Suisse. In: Reddé M. *et al.* (dir.) 2006, 432.
- Fischer T. 2006: Monheim/Haus Bürgel. In: Reddé M. *et al.* (dir.) 2006, 335-336.
- Fobe B. & De Geyter G. 1986: Petrographical characterization and origin of the rock fragments found at the Roman site of Maldegem (1984 Excavation Campaign), *Scholae Archaeologicae* 6, 40-44.
- Fölzer E. 1913: *Die Bilderschüsseln der Ostgallischen Sigillata-Manufakturen*, Römischen Keramik in Trier 1, Bonn.
- Frere S. (ed.) 1984: *Verulamium Excavations Vol. III*, Oxford University Committee for Archaeology Monograph 1, Oxford.
- Friedhoff U. 1991: *Der römische Friedhof an der Jakobstrasse zu Köln*, Kölner Forschungen Band 3, Mainz am Rhein.
- Fuentes N. 1991: Fresh thoughts on the Saxon Shore. In: Maxfield V.A. & Dobson M.J. (eds) 1991, 58-64.
- Fulford M.G. 1975: *New Forest Roman Pottery*, BAR. British Series 17, Oxford.
- Fulford M. 1977: Pottery and Britain's Foreign Trade in the Later Roman Period. In: Peacock D.P.S., *Pottery and Early Commerce: Characterization and Trade in Roman and Later Ceramics*, London, 35-84.
- Fulford M. & Tyers I. 1995: The date of Pevensey and the defence of an "Imperium Britanniarum," *Antiquity* 69/266, 1009-1014.
- Funari P.P.A. 2002: The consumption of olive oil in Roman Britain and the role of the army. In: Erdkamp P. (ed.) 2002, 235-263.
- Furger A.R. 1989: *Römermuseum und Römerhaus Augst. Kurztexte und Hintergrundinformationen*, Augster Museumshefte 10, Augst.
- Furger A. 1990: Exkurs 3: Ringgrössen. In: Riha E. 1990, 49-51.
- Gard L. 1937: *Beiträge zur Kenntnis der Reliefsigillata der 3. und 4. Jahrhunderts aus den Werkstätten von Trier*. Unpublished doctoral thesis Universität Tübingen, Tübingen.
- Gardner A. 1999: Military identities in late Roman Britain, *Oxford Journal of Archaeology* 18/4, 403-418.
- Gardner A. 2001: Identities in the Late Roman Army: Material and Textual Perspectives. In: Davies G. *et al.* (eds) 2001, 35-47.
- Gardner A. 2002: Social identity and the duality of structure in late Roman-period Britain, *Journal of Social Archaeology* 2/3, 323-351.



- Gardner A. 2007a: *An Archaeology of Identity. Soldiers & Society in Late Roman Britain*, Publications of the Institute of Archaeology, University College London, Walnut Creek.
- Gardner A. 2007b: Soldiers and Spaces: daily life in late Roman forts. In: Lavan L., Swift E., Putzeys T. (eds), *Objects in Context. Objects in Use. Material Spatiality in Late Antiquity*, Late Antique Archaeology 5, Leiden / Boston, 657-683.
- Gautier A. 1972: Dierenresten van het Laatromeins grafveld te Oudenburg (prov. West-Vlaanderen, België), *Helinium* XII, 162-175.
- Gerrard J. 2013: *The Ruin of Roman Britain. An Archaeological Perspective*, Cambridge.
- Gerrard J. (ed.) 2016: *Romano-British Pottery in the Fifth Century*, Internet Archaeology 41 [online], <http://intarch.ac.uk/journal/issue41/index.html>
- Gheysen K., Vanhoutte S. & De Clercq W. 2013: Sporen van een nederzetting uit de Romeinse tijd in de Kustvlakte te Wenduine, *Signa. Tijdschrift uitgegeven door het Comité voor de verspreiding van het onderzoek in de Gallo-Romeinse archeologie* 2, 63-70.
- Giddens A. 1979: *Central Problems in Social Theory: Action, Structure and Contradiction in Social Analysis*, Houndmills.
- Glasbergen W. 1972: *De Romeinse castella te Valkenburg Z.H. De opgravingen in de dorpsheuvel in 1962*, Cingvla 1, Groningen.
- Gohier P., Capelli C. & Cabella R. 2016: Les céramiques à glaçure plombifère en Gaule méridionale: nouvelles données archéologiques et archéométriques, *S.F.E.C.A.G. Actes du Congrès d'Autun*, 583-596.
- Going C.J. 1999: Oxidised Hadham wares. In: Symonds R.P. & Wade S. 1999, 297-309.
- Gose E. 1950/1976: *Gefässtypen der römischen Keramik im Rheinland*, Beihefte der Bonner Jahrbücher 1, Köln.
- Gowland R. 2001: Playing Dead: implications of mortuary evidence for the social construction of childhood in Roman Britain. In: Davies G. et al. (eds) 2001, 152-168.
- Grafs B. 1994: *Metallverarbeitende Werkstätten im Nordwesten des Imperium Romanum*, Antiquates 8, Hamburg.
- Gramaye B. 1611: *Brugae Flandrorum sive primitiae antiquitatum Brugensium*, Lovanii.
- Green C.M. 1986: The waterfront group: amphorae and analogous vessels. In: Miller L., Schofield J. & Rhodes M. (eds), *The Roman Quay at St Magnus House, London. Excavations at New Fresh Wharf, Lower Thames Street, London 1974-78*, London and Middlesex Archaeological Society. Special Paper 8, London, 100-106.
- Greene E.M. 2011: *Women and Families in the Auxiliary Military Communities of the Roman West in the First and Second Centuries AD*. Unpublished doctoral thesis University of North Carolina, Chapel Hill.
- Greene E.M. 2017: The families of Roman auxiliary soldiers in the military diplomas. In: Hodgson P., Bidwell N. & Schachtman J. (eds) 2017, 23-25.
- Greene K.T. 1978a: Mould-decorated Central Gaulish glazed ware in Britain. In: Arthur P.R. & Marsh G.D. (eds), *Early Fine Wares in Roman Britain*, BAR. British Series 57, Oxford, 31-60.
- Greene K.T. 1978b: Roman trade between Britain and the Rhine provinces: the evidence of the pottery to AD 250. In: du Plat T. & Cleere H. (eds), *Roman shipping and trade: Britain and the Rhine provinces*, CBA Research Report 24, London, 52-58.
- Greene K.T. 1986: *The Archaeology of the Roman Economy*, Berkeley.
- Greep S.J. 1983: *Objects of animal bone, antler, ivory and teeth from Roman Britain*. Unpublished doctoral thesis University College Cardiff, Cardiff.
- Grewe K. 1991: Aquadükt-Marmor. Kalksinter der römischen Eifelwasserleitung als Baustoff des Mittelalters, *Bonner Jahrbücher* 191, 277-343.
- Gricourt D. 1988: Les incursions de pirates de 268 en Gaule septentrionale et leurs incidences sur la politique de Postume, *Trésors monétaires* 10, 9-43.
- Groenman-van Waateringe W., van Beek B.L., Willems W.J.H. & Wynia S. L. (eds) 1997, *Roman Frontier Studies 1995. Proceedings of the 16th international congress of Roman Frontier Studies*, Oxbow Monograph 91, Oxford.
- Gschwind M. 1998: Pferdegeschirrbeschläge der zweiten Hälfte des 3. Jahrhunderts aus Abusina / Eining, *Saalburg Jahrbuch* 49, 112-138.
- Gudea N. (ed.) 1999: *Roman Frontier Studies XVII/1997. Proceedings of the XVIIth International Congress of Roman Frontier Studies*, Zalău.
- Guillaumet J.-P. 1993: *Les fibules de Bibracte. Technique et typologie*, Publications du Centre de Recherches sur les techniques gréco-romaines 14, Dijon.
- Gurney D. 2002: *Outposts of the Roman Empire. A Guide to Norfolk's Roman Forts at Burgh Castle, Caister-on-Sea and Brancaster*, Norfolk.
- Gysseling J. 1979: *Het zogenaamde "anglosaksische" aardewerk in België* (unpublished master thesis KUL), Leuven.
- Gysseling M. 1939: Folklore uit Oudenburg en omliggende, *Oostvlaamse Zanten* XIV, 9-15.

- Gysseling M. 1944: De Romeinse Kustverdediging in *Belgica Secunda* volgens de *Notitia Dignitatum*. In: *Feestbundel H.J. van de Wijer*, Louvain, 287-301.
- Gysseling M. 1950: *Toponymie van Oudenburg*, Nomina Geographica Flandrica. Monographieën IV, Brussel.
- Gysseling M. 1983: Inleiding tot de oude toponymie van West-Vlaanderen, *De Leiegouw* XXV, 39-58.
- Haalebos J.-K. 1997: Van Nijmegen naar Utrecht. De limes in Nederland. In: van der Eerden R. *et al.* (red.), *Jaarboek Oud-Utrecht 1997. 1950 jaar Romeinen in Utrecht*, Utrecht, 35-66.
- Haalebos J.-K., Franzen P.J.F. *et al.* 2000, *Alphen aan den Rijn-Albaniana 1998-1999. Opgravingen in de Julianastraat, de Castellumstraat, op Het Eiland en onder het St.-Jorisplein*, Libelli Noviomagenses 6, Nijmegen.
- Hallewas D.P. & van Dierendonck R.M. 1993: The Valkenburg-Marktveeld and Valkenburg-the Woerd Excavations 1985-1988: a Preliminary Report. In: Hallewas D.P. & Waugh K.E. (eds), *The Valkenburg excavations 1985-1988. Introduction and detail studies*, ROB. Nederlandse Oudheden 15, Amersfoort, 11-46.
- Halsall G. 1992: The origins of the Reihengräberzivilisation: forty years on. In: Drinkwater J.F. & Elton H. (eds) 1992, 196-207.
- Halsall G. 2000: Archaeology and the late Roman frontier in Northern Gaul: the so-called "föderatengräber" reconsidered. In: Pohl W. & Reimitz H. (Hrsg.), *Grenze und Differenz im frühen Mittelalter*, Österreichische Akademie der Wissenschaften. Philosophisch-Historische Klasse. Denkschriften, 287. Band. Forschungen zur Geschichte des Mittelalters Band 1, Wien, 167-180.
- Halsall G. 2006: Movers and Shakers. The barbarians and the fall of Rome. In: Noble T.F.X. (ed.) 2006, 277-291.
- Halsall G. 2007: *Barbarian Migrations and the Roman West*, 376-568, New York.
- Halsall G. 2012: Archaeology and Migration: Rethinking the Debate. In: Annaert R., De Groote K., Hollevoet Y., Theuws F., Tys D. & Verslype L. (eds), *The very beginning of Europe? Cultural and Social Dimensions of Early-Medieval Migration and Colonisation (5th-8th century)*. *Archaeology in Contemporary Europe. Conference Brussels – May 17-19 2011*, Relicta Monografieën 7, Brussel, 29-40.
- Halsall G. 2014: Two Worlds Become One: A 'Counter-Intuitive' View of the Roman Empire and 'Germanic' Migration, *German History* 32/4, 515-532.
- Hamerow H., Hollevoet Y. & Vince A. 1994: Migration Period Settlements and "Anglo-Saxon" Pottery from Flanders, *Medieval Archaeology* XXXVIII, 1-18.
- Haneca K. 2009: *Verslag dendrochronologisch onderzoek. Bekisting van een waterput (WP22, sp. 22926) uit het Romeinse Castellum te Oudenburg (prov. West-Vlaanderen)*, Rapporten Natuurwetenschappelijk Onderzoek VIOE. RNO.VIOE.2009-022, Brussel.
- Haneca K. 2015: *Bekisting van waterputten uit Oudenburg-Riethove (OU-RI)*, Rapporten Natuurwetenschappelijk Onderzoek, Onroerend Erfgoed. RNO.OE.2015-009, Brussel.
- Hanel N. 2009: Zur Rekonstruktion der Mannschaftsbaracke der Ausgrabung 1998 (phase 5) im Flottenlager Alteburg bei Köln-Marienburg. In: Morillo A. *et al.* 2009, 1291-1295.
- Hanson W.S. & Keppie L.J.F. (eds) 1980: *Roman Frontier Studies 1979. Papers presented to the 12th International Congress of Roman Frontier Studies*, BAR. International Series 71, Oxford.
- Harrington S. 2008: *Aspects of Gender Identity and Craft Production in the European Migration Period. Iron Weaving Beaters and Associated Textile Making Tools from England, Norway and Alamannia*, BAR. International Series 1797, Oxford.
- Hartley B.R. & Dickinson B.M. (eds) 2008-2012: *Names on Terra Sigillata: An Index of Makers' Stamps And Signatures on Gallo-Roman Terra Sigillata (Samian Ware). Volume 1-9*, Bulletin of the Institute of Classical Studies. Supplement 102, London.
- Hartley K.F. & Perrin J.R. 1999: *Mortaria from Excavations by E. Greenfield at Water Newton, Billing Brook and Chesterton 1956-58*. In: Perrin J.R. (ed.), *Roman Pottery from Excavations at and near to the Roman Small Town of Durobrivae, Water Newton, Cambridgeshire, 1956-58*, *Journal of Roman Pottery Studies* 8, 135.
- Hassall M.W.C. 1977: The historical background and military units of the Saxon Shore. In: Johnston D.E. (ed.) 1977, 7-10.
- Hassall M. 1978: Britain and the Rhine provinces: epigraphic evidence for Roman trade. In: du Plat Taylor J. & Cleere H. (ed.), 41-48.
- Hassall M. 2004: The defence of Britain in the 4th century. In: Le Bohec Y. & Wolff C. (éd.) 2004, *L'armée Romaine de Dioclétien à Valentinien Ier. Actes du Congrès de Lyon (12-14 septembre 2002)*, Collection du Centre d'Études Romaines et Gallo-Romaines. Nouvelle Série 26, Lyon, 178-189.
- Haupt D. 1984: Römischer Töpfereibezirk bei Soller, Kreis Düren. Bericht über eine alte Ausgrabung. In: Haupt D. (Hrsg.), *Beiträge zur Archäologie des römischen Rheinlands. 4 Rheinische Ausgrabungen* 23, Bonn / Köln, 391-470.
- Hawkes C.F. & Hull M.R. 1947: *Camulodunum*, Report of the Research Committee of the Society of Antiquaries of London 14, London.
- Hayes J.W. 1972: *Late Roman Pottery*, London.

- Haynes I. 1999a: Introduction: the Roman army as a community. In: Goldsworthy A. & Haynes I. (eds) 1999, 7-14.
- Haynes I. 1999b: Military service and cultural identity in the auxilia. In: Goldsworthy A. & Haynes I. (eds) 1999, 165-174.
- Haynes I. 2013: *Blood of the Provinces: The Roman Auxilia and the Making of Provincial Society from Augustus to the Severans*, Oxford.
- Heather P. 2005: *The Fall of the Roman Empire. A New History*, London.
- Heeren S. 2015: The depopulation of the Lower Rhine region in the 3rd century. An archaeological perspective. In: Roymans N., Derks T. & Hiddink H.A. (ed.), *The Roman Villa of Hoogeloon and the Archaeology of the Periphery*, Amsterdam Archaeological Studies 22, Amsterdam, 271-294.
- Heeren S. 2017: From Germania Inferior to Germania Secunda and beyond. A case study of migration, transformation and decline. In: Roymans N. et al. (eds) 2017, 149-178.
- Hiddink H.A. & Seijnen M. 1998: Gennep 2. Das Gräberfeld. In: Beck H. et al. (Hrsg.), *Reallexikon der Germanischen Altertumskunde*, 11, Berlin / New York, 76-77.
- Hill J.D. 2001: Romanisation, gender and class: recent approaches to identity in Britain and their possible consequences. In: James S. & Millett M. (eds) 2001, 12-18.
- Hillewaert B. 1987: Prospectie in het Brugse havengebied. In: Thoen H. (red.) 1987, 50-51.
- Hillewaert B. 2019: Het kustgebied wordt moeilijk toegankelijk vanaf de 3de eeuw n. Chr. In: Hillewaert B. & Ryckaert M. (red.) 2019, 83.
- Hillewaert B. & Hollevoet Y. 1994: Huisvuil onder het wegdek. Een vroeg 13de-eeuws aardewerkcomplex uit de Marktstraat te Oudenburg (prov. West-Vlaanderen), *Archeologie in Vlaanderen* IV, 279-289.
- Hillewaert B. & Ryckaert M. (red.) 2019: *Op het Raakvlak van twee landschappen. De vroegste geschiedenis van Brugge*. Tweede, herziene en uitgebreide uitgave, Brugge.
- Hillewaert B., m.m.v. Baeteman C., Bastiaens J., Deforce K., Ervynck A. & Mikkelsen J. 2019: Een dynamisch getijdenlandschap tijdens de eerste eeuwen. In: Hillewaert B. & Ryckaert M. (red.) 2019, 46-47.
- Hinchliffe J.C. & Sparey-Green C. 1985: *Excavations at Brancaster 1974 and 1977*, East Anglian Archaeology Report 23, Gressenhall.
- Hind J.G.F. 1980: Litus Saxonicum – The Meaning of “Saxon Shore”. In: Hanson W.S. & Keppie L.J.F. (eds) 1980, 317-324.
- Hodgson N. 1991: The Notitia Dignitatum and the later Roman garrison of Britain. In: Maxfield V.A. & Dobson M.J. (eds) 1991, 84-92.
- Hodgson N. 2003: *The Roman Fort at Wallsend (Segedunum). Excavations in 1997-8*, Tyne and Wear Museums Archaeological Monograph 2, Newcastle upon Tyne.
- Hodgson N. 2009: *Hadrian's Wall 1999-2009. A Summary of Excavation and Research prepared for The Thirteenth Pilgrimage of Hadrian's Wall, 8-14 August 2009*, Kendal.
- Hodgson N. 2014a: The accomodation of soldiers' wives in Roman fort barracks – on Hadrian's Wall and beyond. In: Collins R. & McIntosh F. (eds) 2014, 18-28.
- Hodgson N. 2014b: The British Expedition of Septimius Severus, *Britannia* 45, 31-51.
- Hodgson N. & Bidwell P. 2004: Auxiliary Barracks in a New Light: Recent Discoveries on Hadrian's Wall, *Britannia* XXXV, 121-157.
- Hodgson N., Bidwell P. & Schachtman J. (eds) 2017: *Roman Frontier Studies 2009. Proceedings of the XXI International Congress of Roman Frontier Studies (Limes Congress) held at Newcastle upon Tyne in August 2009*, Archaeopress Roman Archaeology 25, Oxford.
- Hoffmann B. 2002: *Römisches Glas im Baden-Württemberg*, Archäologie und Geschichte. Freiburger Forschungen zum ersten Jahrtausend in Südwestdeutschland 11, Stuttgart.
- Hoffmann D. 1969/1970: *Das Spätromische Bewegungsheer und die Notitia Dignitatum*, Epigraphische Studien 7, Düsseldorf.
- Hofmann B. 1968: Catalogue des poinçons pour moules à vases sigillés des décorateurs argonnais, *OGAM* XX, 273-307.
- Hollevoet Y. 1985: *Archeologisch onderzoek in de gemeente Oudenburg. Prospectie – analyse – synthese (6 volumes)* (unpublished master thesis RUG), Gent.
- Hollevoet Y. 1987a: Archeoscopie van een stad: het Oudenburgse bodemarchief doorgelicht, *Kunsttijdschrift Vlaanderen* 39/231, 41-44.
- Hollevoet Y. 1987b: Prospectie in Oudenburg. In: Thoen H. (red.) 1987, 48-50.
- Hollevoet Y. 1991: Een vroeg-middeleeuwse nederzetting aan de Hoge Dijken te Roksem, *Archeologie in Vlaanderen* I, 181-196.
- Hollevoet Y. 1992: Merovingische huizen – Karolingische waterputten: het archeologisch onderzoek van een vroeg-middeleeuwse nederzetting op het domein van de Hoge Dijken te Roksem (gem. Oudenburg), *Westvlaamse Archaeologica* 8, 53-58.

- Hollevoet Y. 1993b: Een nieuwe vroeg-middeleeuwse nederzetting te Roksem, *Archeologie in Vlaanderen* II (1992), 223-226.
- Hollevoet Y. 1993c: Speuren onder het sportveld. Romeinse en middeleeuwse sporen ten zuiden van de Stedebeek te Oudenburg (prov. West-Vlaanderen). Interimverslag 1990-1992, *Archeologie in Vlaanderen* II (1992), 195-207.
- Hollevoet Y. 1994: Ver(r)assingen in een verkaveling. Romeins grafveld te Oudenburg (prov. West-Vlaanderen), *Archeologie in Vlaanderen* III (1993), 207-216.
- Hollevoet Y. 1995: Toen Roksem nog Heroaldolugo heette... In: Meulemeester J.L. (red.) 1995, 162-168.
- Hollevoet Y. 2000: Vroegmiddeleeuwse nederzettingssporen nabij de Zandstraat te Ettelgem (stad Oudenburg, prov. West-Vlaanderen), *Archeologie in Vlaanderen* VII (1999), 83-94.
- Hollevoet Y. 2001: Nieuwe gegevens over een rijk verleden, *Brugse Ommeland* 41/2, 67-87.
- Hollevoet Y. 2002: d'Hooghe Noene van midden Bronstijd tot volle Middeleeuwen. Archeologisch onderzoek in een verkaveling langs de Zandstraat te Varsenare (gem. Jabbeke, prov. West-Vlaanderen), *Archeologie in Vlaanderen* VI (1997/1998), 161-189.
- Hollevoet Y. 2004: Le site militaire d'Oudenburg et la Bretagne insulaire durant l'Antiquité tardive; quelques éléments inédits. In: Vermeulen F., Sas K. & Dhaze W. (eds) 2004, 335-342.
- Hollevoet Y. 2009a: Romeinse brandrestengraven in de regio Brugge-Oudenburg. In: Hillewaert B. & Hollevoet Y. (red.), *Vondsten uit vuur. Romeins grafveld met nederzettingssporen aan de Hoge Dijken in Jabbeke*, Brugge, 68-73.
- Hollevoet Y. 2009b: Vroegere vondsten in Jabbeke. In: Hillewaert B. & Hollevoet Y. (red.), *Vondsten uit vuur. Romeins grafveld met nederzettingssporen aan de Hoge Dijken in Jabbeke*, Brugge, 12-15.
- Hollevoet Y. 2011: Het inheems-Romeins dodenritueel in Westelijk Vlaanderen. In: *De Romeinen in West-Vlaanderen. Jaarboek West-Vlaamse Gidsenkring* 2011, 109-125.
- Hollevoet Y. 2016: Entre Frisons, Francs et Anglo-Saxons: la Flandre maritime au haut Moyen Âge. In: Leroy I. and Verslype L. (red.) 2016, 69-76.
- Hollevoet Y. (†) 2019a: Een Romeinse versterking in het Brugse centrum? In: Hillewaert B. & Ryckaert M. (red.) 2019, 92.
- Hollevoet Y., Cooremans B., Desender K. & Eryvynck A. 1994: Een Karolingische vlechtwerkwaterput uit Zerkegem (gem. Jabbeke, prov. West-Vlaanderen): culturele en ecologische archaeologica, *Archeologie in Vlaanderen* III (1993), 243-254.
- Hollevoet Y. (†) & De Clercq W. 2019: Laat-Romeinse vondsten en vindplaatsen. In: Hillewaert B. & Ryckaert M. (red.) 2019, 84-85.
- Hollevoet Y. (†) & Hillewaert B. 2019a: De vroege middeleeuwen in noordwestelijk Vlaanderen. Het ruimere historische kader. In: Hillewaert B. & Ryckaert M. (red.) 2019, 120-127.
- Hollevoet Y. (†), Hillewaert B. & De Clercq W. 2019: Boeren, soldaten en handelaars. Vondsten en vindplaatsen uit de eerste eeuwen van onze jaartelling. In: Hillewaert B. & Ryckaert M. (red.) 2019, 55-77.
- Hollstein E. 1965: Jahrringchronologische Datierung von Eichenhölzern ohne Waldkante, *Bonner Jahrbücher* 165, 12-27.
- Hooper B. 1975: The human bones. In: Cunliffe B. 1975, 375-377.
- Höpken C. 1999: Die Produktion römischer Gefässkeramik in Köln, *Kölner Jahrbuch* 32, 759-770.
- Höpken C. 2005: *Die römischen Keramikproduktion in Köln*, Kölner Forschungen 8, Köln.
- Howe M.D., Perrin J.R. & Mackreth D.F. 1980: *Roman Pottery from the Nene Valley: a Guide*, Peterborough City Museum Occasional Paper 2, Peterborough.
- Hübener W. 1968: Eine Studie zur spätromischen Rädchensigillata (Argonnensigillata), *Bonner Jahrbücher* 168, 241-298.
- Huld-Zetsche I. 1971: Glatte sigillaten des "Massenfundes" aus Trier, *Rei Cretariae Romanae Fautorum. Acta* XIII, 21-39.
- Huld-Zetsche I. 1993: *Trierer Reliefsigillata Werkstatt II*, Materialien zur Römisch-Germanischen Keramik Heft 12, Bonn.
- Hull M.R. 1958: *Roman Colchester*, Report of the Research Committee of the Society of Antiquaries of London 20, London.
- Hull M.R. 1963: *The Roman Potters' Kilns of Colchester*, Report of the Research Committee of the Society of Antiquaries of London 21, London.
- Hull M.R. & Hawkes C. F. C. 1987: *Corpus of ancient brooches in Britain: pre-Roman bow brooches*, BAR. British Series 168, Oxford.
- Hutchinson J.N., Poole C., Lambert N. & Bromhead E.N. 1985: Combined Archaeological and Geotechnical Investigations of the Roman fort at Lympne, Kent, *Britannia* XVI, 209-236.
- Hussong L. & Cüppers H. 1972: *Die Trierer Kaiserthermen. Die spätromische und frühmittelalterliche Keramik*, Trierer Grabungen und Forschungen I/2, Mainz am Rhein.
- Huys E. 2005: *Zoutwinning in de IJzertijd. Een studie van het briquetagemateriaal van de sites De Panne-Romeins Kamp, Brugge-Fort Lapin en Veurne-Stabelinckleed* (unpublished master thesis KUL), Leuven.

- In 't Ven I. & De Clercq W. (red.) 2005: *Een lijn door het landschap. Archeologie en het vTn project 1997-1998. Deel I*, Archeologie in Vlaanderen. Monografie 5, Brussel.
- In 't Ven I., Hollevoet Y., Cooremans B., De Grootte A. & Deforce K. 2005: Romeinse bewoning aan de Antwerpse Heirweg in Sijsele-Damme. In: In 't Ven I. & De Clercq W. 2005, 47-76.
- Isings C. 1957: *Roman Glass from Dated Finds*, Archaeologica Traiectina 2, Groningen/Djakarta.
- Ivleva T.A. 2012: *Britons abroad: the mobility of Britons and the circulation of British-made objects in the Roman Empire*. Unpublished doctoral thesis Leiden University, Leiden.
- Jacques A. 1993: La présence militaire à Arras au Bas-Empire. In: Vallet F. & Kazanski M. (réd.) 1993, 195-207.
- Jacques A. 2007a: Arras-Nemetacum, chef-lieu de cité des Atrébates. Bilan des recherches 1984-2002. In: Hanoune R. (dir.), *Les villes romaines du Nord de la Gaule. Vingt ans de recherches nouvelles. Actes du XXVe colloque international de HALMA – IPEL UMR CNRS 8164*, Revue du Nord. Hors Série. Collection Art et Archéologie 10, 63-82.
- Jacques A. 2007b: Le sanctuaire germanique d'Arras. Les fouilles de la rue Baudimont. In: Compatangelo-Soussignan R. & Schwentzel C.-G. (dir.), *Étrangers dans la cite romaine. "Habiter une autre patrie": des incolae de la République aux peuples fédérés du Bas-Empire*, Histoire, Rennes, 221-238.
- James S. 1999: The Community of the Soldiers: A Major Identity and Centre of Power in the Roman Empire. In: Baker P. et al. (eds) 1999, 14-25.
- James S. 2001: Soldiers and civilians: identity and interaction in Roman Britain. In: James S. & Millett M. (eds) 2001, 77-89.
- James S. & Millett M. (eds) 2001: *Britons and Romans: advancing an archaeological agenda*, CBA Research Report 125, Walmgate.
- Jobst W. 1975: *Die römischen Fibeln aus Lauriacum*, Linz.
- Johnson A. 1987: *Römische Kastelle des 1. und 2. Jahrhunderts n. Chr. in Britannien und in den germanischen Provinzen des Römerreiches* (übersetzt von G. Schulte-Holtey, bearbeitet von D. Baatz), Kulturgeschichte der Antiken Welt 37, Mainz am Rhein.
- Johnson J.S. 1970: The Date of the Construction of the Saxon Shore Fort at Richborough, *Britannia* 1, 240-248.
- Johnson J.S. 1976: Channel commands in the Notitia. In: Goodburn R. & Bartholomew P. 1976, 81-102.
- Johnson S. 1977: Late Roman Defences and the Limes. In: Johnston D.E. (ed.) 1977, 63-69.
- Johnson S. 1979: *The Roman Forts of the Saxon Shore*, London.
- Johnson S. 1983a: *Burgh Castle: excavations by Charles Green. 1958-61*, East Anglian Archaeology Report 20, Hunstanton.
- Johnson S. 1983b: *Late Roman Fortifications*, London.
- Johnson S. 1983c: Late Roman urban defences in Europe. In: Maloney J. & Hobley B. (ed.), *Roman urban defences in the West*, CBA Research Report 51, London, 68-76.
- Johnson S. 1989a: Bradwell. In: Maxfield V.A. (ed.) 1989, 135-136.
- Johnson S. 1989b: Brancaster. In: Maxfield V.A. (ed.) 1989, 129-131.
- Johnson S. 1989c: Burgh Castle. In: Maxfield V.A. (ed.) 1989, 132-134.
- Johnson S. 1989d: The architecture of the Saxon Shore forts. In: Maxfield V.A. (ed.) 1989, 30-44.
- Johnson S. 1991: Introduction to the Saxon Shore. In: Maxfield V.A. & Dobson M.J. (eds) 1991, 93-97.
- Johnston D.E. (ed.) 1977: *The Saxon Shore*, CBA Research Report 18, London.
- Jones A.H.M. 1986: *The Later Roman Empire. 284-602. A Social, Economic, and Administrative Survey*, Baltimore.
- Jones R.F.J. 1981: Cremation and inhumation – change in the third century. In: King A. & Henig M. (eds) 1981, 15-19.
- Jones S. 1997: *The Archaeology of Ethnicity*, London.
- Junkelmann M. 1991 (2008): *Die Reiter Roms. Teil II: Der militärische Einsatz*, Kulturgeschichte der Antiken Welt. Band 49, Mainz am Rhein.
- Keller E. 1971: *Die spätromische Grabfunde in Südbayern*, München.
- Kienast D. 1996: *Römische Kaisertabelle. Grundzüge einer römischen Kaiserchronologie*, Darmstadt.
- King A. 1991: The date of the stone defences of Roman Bitterne. In: Maxfield V.A. & Dobson M.J. (eds) 1991, 108-110.
- Klein M.J. 2017: Women and children in military inscriptions from northern Germania Superior. In: Hodgson P., Bidwell N. & Schachtman J. (eds) 2017, 34-41.
- Knorr R. 1919: *Töpfer und Fabriken verzierter Terra-Sigillata des ersten Jahrhunderts*, Stuttgart.
- Koenen C. 1904: Beschreibung von Novaesium, *Bonner Jahrbücher* 111-112, 97-242.
- König I. 1981: *Die gallischen Usurpatoren von Postumus bis Tetricus, Vestigia. Beiträge zur alten Geschichte* Band 32, München.

- Konrad M. 2011: Castra Regina – Das Lager der Legio III Italica in Regensburg. Kontinuitätsformen im Legionslager, in den Canabae Legionis und im Umland. In: Konrad M. & Witschel C. (Hrsg.) 2011, 371-407.
- Kooistra L.I. 1996: *Borderland farming. Possibilities and limitations of farming in the Roman Period and Early Middle Ages between the Rhine and Meuse*, Amersfoort.
- Kulikowski M. 2000: The 'Notitia Dignitatum' as a Historical Source, *Historia. Zeitschrift für Alte Geschichte* 29/3, 358-377.
- Kunow J. 1987: Die Militärgeschichte Niedergermaniens. In: Horn H.G. (Hrsg.), *Die Römer in Nordrhein-Westfalen*, Stuttgart, 27-109.
- Künzl E. 2005: Aesculapius im Valetudinarium, *Archäologisches Korrespondenzblatt* 35, 55-64.
- Künzl S. 1997: *Die Trierer Spruchbecherkeramik. Dekorierter Schwarzfirniskeramik des 3. und 4. Jahrhunderts n. Chr.*, Trierer Zeitschrift Beiheft 21, Trier.
- Laken L. 2016: *Muurschilderingen van het militair hospitaal in het Romeinse castellum te Oudenburg*, Auxiliaria 15 (unpublished report), Nijmegen.
- Laken L. & Vanhoutte S. 2016: Ruiten en ranken: wandschilderingen in het militair hospitaal van het Romeins castellum te Oudenburg, *Relicta. Archeologie, Monumenten- en Landschapsonderzoek in Vlaanderen* 14 (2015), 119-172.
- Lakin D., Seeley F., Bird J., Rielly K. & Ainsley C. 2002: *The Roman Tower at Shadwell: a reappraisal*, MoLAS Archaeology Studies Series 8, London.
- Lallemand J. 1966: Monnaies romaines découvertes à Oudenburg, *Helinium* VI, 117-138.
- Laloo P., Cruz F., Mikkelsen J., Taelman D., Langohr R., Rozek J. & Windey S. 2014: *Archeologische evaluatie en waardering van de Romeinse site Aalter Loveld (Aalter, provincie Oost-Vlaanderen)*, GATE – rapport 74 (unpublished report), Bredene.
- Laloo P., De Clercq W., Perdaen Y. & Crombé P. 2009: *Het Kluizendokproject. Basisrapportage van het preventief archeologisch onderzoek op de wijk Zandeken (Kluizen, gem. Evergem, prov. Oost-Vlaanderen). December 2005 – december 2009*, UGent Archeologische Rapporten 20 (unpublished report), Gent.
- Lamarcq D. & Rogge M. 1996: *De taalgrens van de oude tot de nieuwe Belgen*, Leuven.
- Lanting J.N. & van der Plicht J. 2010: De 14C-chronologie van de Nederlandse pre- en protohistorie VI: Romeinse tijd en Merovingische periode, deel A: historische bronnen en chronologische schema's, *Palaeohistoria. Acta et Communicationes Instituti Archaeologici Universitatis Groninganae* 51/52 (2009/2010), 27-168.
- Leach S., Eckardt H., Chenery C., Müldner G. & Lewis M. 2010: A Lady of York: migration, ethnicity and identity in Roman Britain, *Antiquity* 84/323, 131-145.
- Leach S., Lewis M., Chenery C., Müldner G. & Eckardt H. 2009: Migration and Diversity in Roman Britain: A Multidisciplinary Approach to the Identification of Immigrants in Roman York, England, *American Journal of Physical Anthropology* 140/3, 546-561.
- Lebecq S. 2006: The two faces of King Childeric: history, archaeology, historiography. In: Noble T.F.X. (ed.) 2006, 327-344.
- Le Bohec Y. & Wolff C. (éd.) 2004: *L'armée Romaine de Dioclétien à Valentinien Ier. Actes du Congrès de Lyon (12-14 septembre 2002)*, Collection du Centre d'études Romaines et Gallo-Romaines. Nouvelle Série 26, Lyon.
- Lefere M. & Bruyninckx T. 2020: *Archeologische opgraving. Oudenburg Ettelgemsestraat 20 (prov. West-Vlaanderen). Basisrapport conceptversie*, Monument Vandekerckhove nv. Afdeling Archeologie. Rapport 2020/20 (unpublished report), Ingelmunster.
- Leman P. 2004: À propos de quelques lieux de la Notitia Dignitatum. État de la recherche et suggestions. In: Vermeulen F., Sas K. & Dhaze W. (eds) 2004, 335-342.
- Liebeschuetz W. 2011: Warlords and Landlords. In: Erdkamp P. (ed.) 2011, 479-494.
- Lodewijckx M. (ed.) 1996: *Archaeological and historical aspects of West-European societies. Album Amicorum André van Doorselaer*, Acta Archaeologica Lovaniensia Monographiae 8, Leuven.
- Lodewijckx M. (ed.) 2001, *Belgian Archaeology in a European Setting I. Album Amicorum Prof. J.R. Mertens (°1921)*, Acta Archaeologica Lovaniensia Monographiae 12, Leuven
- Lodewijckx M. 2001: Introduction. In: Lodewijckx M. (ed.) 2001, 5-11.
- Loeschcke S. 1909: *Keramische Funde in Haltern. Ein Beitrag zur Geschichte der augusteischen Kultur in Deutschland*, Mitteilungen der Altertumskommission für Westfalen 5, Münster.
- Lonnée H.A. & Maat G.J.R. 1998: *Inhumations in a Roman Cemetery at Valkenburg-Marktveeld (Zuid-Holland) in The Netherlands*, Barge's Anthropologica 3, Leiden.
- Ludowici W. 1904: *Stempel-Namen Römischer Töpfer von meinen Ausgrabungen in Rheinabern Tabernae Rhenanae 1901-1904*, München.
- Ludowici W. 1905: *Stempel-Bilder Römischer Töpfer aus meinen Ausgrabungen in Rheinabern nebst dem II. Teil der Stempel-Namen 1901-1905*, München.



- Ludowici W. 1908: *Urnen-Gräber Römischer Töpfer in Rheinzabern und III. Folge dort gefundener Stempel-Namen und Stempel-Bilder bei meinen Ausgrabungen 1905-1908*, München.
- Ludowici W. 1912: *Römische Ziegel-Gräber. Katalog IV. Meiner Ausgrabungen in Rheinzabern 1908-1912. Stempel-Namen, Stempel-Bilder, Urnen-Gräber*, München.
- Ludowici W. 1927: *Katalog V. Stempel-Namen und Bilder Römischer Töpfer, Legions-Ziegel-Stempel. Formen von Sigillata- und anderen Gefässen aus meinen Ausgrabungen in Rheinzabern 1901-1904*, München.
- Lyne M. 1999b: The end of the Saxon Shore fort system in Britain: new evidence from Richborough, Pevensey and Portchester. In: Gudea N. 1999, 283-292.
- Lyne M. 2009: *Excavations at Pevensey Castle 1936 to 1964*, BAR. British Series 503, Oxford.
- Lyne M. 2016: The End of Roman Pottery Production in Southern Britain. In: Gerrard J. (ed.) 2016.
- Macphail R. & Linderholm J. 2004: "Dark earth": recent studies of "Dark earth" and "darker earth-like" microstratigraphy in England, UK. In: Verslype L. & Bruilet R. 2004, 35-42.
- Maddens N., Van Doorselaer A., Viérin J., Warlop E. & Vancolen P. 1990: *De Geschiedenis van Kortrijk*, Tielt.
- Magerman K. 2005: *De vici. Een inventarisatie en functionele analyse van enkele zogenaamde vici in Vlaanderen tussen het begin van de 1ste eeuw n.C tot het einde van de 4de eeuw n.C.* (unpublished master thesis KUL), Leuven.
- Magerman K. 2006: De vici. Een inventarisatie en functionele analyse van enkele zogenaamde vici in Vlaanderen tussen het begin van de 1ste eeuw n.C tot het einde van de 4de eeuw n.C., *Terra Incognita* 1, 139-142.
- Mann J.C. 1976: What was the Notitia Dignitatum for? In: Goodburn R. & Bartholomew P. 1976, 1-9.
- Mann J.C. 1977: Duces and comites in the 4th century. In: Johnston D.E. (ed.) 1977, 11-15.
- Mann J.C. 1991: The Notitia Dignitatum – Dating and Survival, *Britannia* XXII, 215-219.
- Manning W.H. 2011: Industry. In: Allason-Jones L. (ed.) 2011a, 68-88.
- Manning W.H. 2014: The Roman army and the Roman smith: some evidence from Britain. In: Collins R. & McIntosh F. (eds) 2014, 11-17.
- Marshall F.H. 1911: *Catalogue of the Jewellery, Greek, Etruscan and Roman in the Departments of Antiquities, British Museum*, London.
- Martens M. 2012: *Life and culture in the Roman small town of Tienen. Transformations of cultural behaviour by comparative analysis of material culture assemblages*. Unpublished doctoral thesis Vrije Universiteit, Amsterdam.
- Martens M. & Hayen M. 2015: *Preventief archeologisch onderzoek in de Spikdorenstraat te Tienen, 2005 (prov. Vlaams-Brabant)*, Onderzoeksrapporten Agentschap Onroerend Erfgoed 15, Brussel.
- Massagé L. 2015: *Archeozoölogisch onderzoek te Romeins Oudenburg* (unpublished master thesis KUL), Leuven.
- Maxfield V.A. 1981: *The Military Decorations of the Roman Army*, London.
- Maxfield V.A. (ed.) 1989: *The Saxon Shore. A Handbook*, Exeter Studies in History 25, Exeter.
- Maxfield V.A. & Dobson M.J. (eds) 1991: *Roman Frontier Studies 1989. Proceedings of the XVth International Congress of Roman Frontier Studies*.
- Meijns B. 1994: Een 11de-eeuwse synthese van de geschiedenis van Oudenburg: het Tractatus de Ecclesia Sancti Petri Aldenburgensis, *Westvlaamse Archaeologica* 10, 34-55.
- Meijns B. 2008: 'Het oudste opgravingsverslag betreffende een Belgische archeologische site'. In: Meulemeester J.L. (red.) 2008, 112-113.
- Mertens J. 1958a: *Oudenburg en de Vlaamse kustvlakte tijdens de Romeinse periode*, *Archaeologia Belgica* 39, Brussel.
- Mertens J. 1958b: Oudenburg. Romeins steunpunt aan de Vlaamse kust, *Wetenschappelijke Tijdingen* 28, 89-94.
- Mertens J. 1962: Oudenburg et le Litus Saxonicum en Belgique, *Helinium* II, 51-62.
- Mertens J. 1963a: Oudenburg, *Archeologie* 2, 68-71.
- Mertens J. 1963b: Oudenburg camp du Litus Saxonicum en Belgique. In: *Ve Congres Internationale Limes Zagreb*, 123-131.
- Mertens J. 1964a: Oudenburg: Laat-Romeins grafveld, *Archeologie* 1, 25-28.
- Mertens J. 1964b: Laatromeins graf te Oudenburg, *Helinium* IV, 219-234 (= *Archaeologia Belgica* 80, Brussel).
- Mertens J. 1967: Het grafveld van Oudenburg en de Laat-Romeinse Kustverdediging, *Handelingen van het Genootschap voor Geschiedenis "Société d'émulation" te Brugge* CIII/3-4, 273-275.
- Mertens J. 1968a: Oudenburg: Laat-Romeins grafveld, *Archeologie* 1, 22.
- Mertens J. 1968b: Oudenburg: Romeins graf, *Archeologie* 2, 77.

- Mertens J. 1970: Oudenburg: castellum, *Archeologie* 1, 23.
- Mertens J. 1972: *Oudenburg, Romeinse legerbasis aan de Noordzeekust*, Archaeologicum Belgii Speculum IV, Brussel.
- Mertens J. 1974: Oudenburg (W. Vl.): Romeins, *Archeologie* 1, 22.
- Mertens J. 1976a: Le litus saxonicum, *Archeologie* 1, 45.
- Mertens J. 1976b: Oudenburg: laat-Romeins castellum en parochiekerk, *Archeologie* 2, 119.
- Mertens J. 1977: Oudenburg and the northern sector of the continental Litus Saxonicum. In: Johnston D.E. (ed.) 1977, 51-62.
- Mertens J. 1978: Het laat-Romeins castellum te Oudenburg. In: *Conspectus MCMLXXVII*, Archaeologia Belgica 206, Brussel, 73-76.
- Mertens J. 1980: Recherches récentes sur le limes en Gaule Belgique. In: Hanson W.S. & Keppie L.J.F. (eds) 1980, 423-470.
- Mertens J. 1983: Urban wall-circuits in Gallia Belgica in the Roman period. In: Maloney J. & Hobley B. (ed.), *Roman urban defences in the West*, CBA Research Report 51, London, 42-57.
- Mertens J. 1987: De Romeinse legerbasis te Oudenburg. In: Thoen H. (red.) 1987, 81-90.
- Mertens J. 1988a: De verdwenen kerk van Roksem. In: Meulemeester J. L. (ed.), *Kerkschatten uit Oudenburg. Tentoonstellingscatalogus*, Oudenburg, 45-56.
- Mertens J. 1988b: Fouilles dans l'église disparue de Roksem (Belgique). In: Much F.J. (Hrsg.), *Baukunst des Mittelalters in Europa. Hans Erich Kubach zum 75. Geburtstag*, Stuttgart.
- Mertens J.R. 1996: La fin de l'Antiquité dans le nord-ouest de la Gaule Belgique – Quelques réflexions. In: Lodewijckx M. (ed.) 1996, 229-236.
- Mertens J. 2006: Oudenburg. In: Reddé M. et al. (dir.) 2006, 362-364.
- Mertens J. & Crabbé R. 1987: *Oudenburg. Romeinse legerbasis aan de Noordzeekust*, Archaeologicum Belgii Speculum IV, Brussel.
- Mertens J. & Van Impe L. 1971: *Het laat-Romeinse grafveld van Oudenburg*, Archaeologia Belgica 135, Brussel.
- Mestdagh H. 1990: Micromorfologische studie van mortel-, pleister- en vloerbetonfragmenten in de Civitas Menapiorum, *Westvlaamse Archaeologica* 7/3, 77-84.
- Mestdagh H. 1991: *Micromorfologische studie van mortel-, pleister- en vloerbetonfragmenten in de Civitas Menapiorum* (unpublished master thesis Ghent University), Gent.
- Meulemeester J.L. (red.) 1995, Licht in de Middeleeuwen. 1250 jaar Roksem en de kerstening in westelijk Vlaanderen, *Kunsttijdschrift Vlaanderen* 44 (256).
- Meulemeester J.L. (red.) 2008: Pax Romana. De Romeinse vrede in de Lage Landen, *Kunsttijdschrift Vlaanderen* 57 (320).
- Middleton P. 1979: Army supply in Roman Gaul: an hypothesis for Roman Britain. In: Burnham B.C. & Johnson H.B. (ed.): *Invasion and response: the case of Roman Britain*, BAR. British Series 73, Oxford, 81-97.
- Mildenberger G. 1975: Buchbesprechung: H.W. Böhme, Germanische Grabfunde des 4. bis 5. Jahrhunderts, München, Beck, 1974, *Germania* 53, 256-263.
- Milne G. 1990: Maritime traffic between the Rhine and Roman Britain: a preliminary note. In: McGrail S. (ed.) 1990, 82-84.
- Moen J., De Clercq W., Laloo P. & Vanhee D. 2009: Aalter Loveld 08. In: Vanhee D. (red.), *Jaarverslag 2008. Kale – Leie Archeologische Dienst Aalter*, 48-55.
- Morillo A., Hanel N. & Martín E. (eds) 2009: *Limes XX. XXth congreso internacional de estudios sobre la frontera romana. XXth International Congress of Roman Frontier Studies*, Anejos de Gladius 13, Madrid.
- Mostaert F. 2000: Geografische situering en ontwikkeling van de Vlaamse kuststreek, *Kunsttijdschrift Vlaanderen* 49/3, 2-6.
- Müssemeier U. 2011: Bonn von der Spätantike zum Frühmittelalter. In: Konrad M. & Witschel C. (Hrsg.) 2011, 233-261.
- Nenquin J. 1961: *Salt. A Study in Economic Prehistory*, Dissertationes Archaeologicae Gandenses VI, Brugge.
- Nicasie M. 1998: *Twilight of Empire. The Roman army from the reign of Diocletian until the Battle of Adrianople*, Dutch Monographs on Ancient History and Archaeology XIX, Amsterdam.
- Nielsen I. 1993: *Thermae et Balnea. The Architecture and Cultural History of Roman Public Baths*, Aarhus.
- Nijland T.G. (ed.) 2017: *Use and conservation of Rhenish tuff in the Netherlands, Germany, Flanders and Denmark. Proceedings of the symposium in Amersfoort, March 20, 2017*, Delft.
- Noble T.F.X. (ed.) 2006: *From Roman Provinces to Medieval Kingdoms*, Rewriting Histories, London / New York.
- Oelmann F. 1914: *Die Keramik des Kastells Niederbieber*, Materialien zur Römisch-Germanischen Keramik Heft 1, Mainz.
- O'Hara R. 2013: *An Assessment of the Notitia Dignitatum as a Historical Source for the Late Roman Bureaucracy*. Unpublished doctoral thesis NUI, Dublin.

- Oldenstein J. 1993: La fortification d'Alzey et la défense de la frontière romaine le long du Rhin au IV<sup>e</sup> et au V<sup>e</sup> siècles. In: Vallet F. & Kazanski M. (réd.) 1993, 125-133.
- Oldenstein J. 2006: De Valentinien I<sup>er</sup> à la fin de l'Empire romain occidental. In: Reddé M. *et al.* (dir.) 2006, 44-47.
- Ooghe R., Debrabandere F. & Despriet Ph. 1979: *Harelbeke*, Archeologische en Historische Monografieën van Zuid-West-Vlaanderen 1, Kortrijk.
- Osterhaus U. 1984: Wurde aus römischer Baderuine eine frühmittelalterliche Kirche? Zu den Ausgrabungen in Regensburg-Harting, *Das Archäologische Jahr in Bayern* 1983, 148-151.
- Oswald F. 1936-1937: *Index of figure-types on terra sigillata* ("Samian Ware"), Liverpool.
- Parlasca K. & Seemann H. 1999: *Augenblicke: Mummienporträts und ägyptische Grabkunst aus römischer Zeit*, München.
- Patrouille E. 2004: Archeologisch onderzoek in Oudenburg – site Jacali, noordoosthoek van het laat-Romeinse castellum, *Romeinendag – Journée d'archéologie romaine*, 71-72.
- Patrouille E. & Vanhoutte S. 2002: Vroegmiddeleeuwse sporen onder de gemeenteschool in Ettelgem (Oudenburg) (W.-VI.), *Archaeologia Mediaevalis* 25, 31-32.
- Pearce J. 2001: Infants, Cemeteries and Communities in the Roman Provinces. In: Davies G. *et al.* 2001, 125-142.
- Pearson A. 2002a: Stone Supply to the Saxon Shore Forts at Reculver, Richborough, Dover and Lympne, *Archaeologia Cantiana* CXXII, 197-220.
- Pearson A. 2002b: *The Roman Shore Forts: coastal defences of southern Britain*, Stroud.
- Pearson A. 2003: *The construction of the Saxon Shore Forts*, BAR. British Series 349, Oxford.
- Peters W.J.Th. 1965-1966: Mural painting fragments found in the Roman *castra* at Nijmegen, *Berichten van de Rijksdienst voor het Oudheidkundig Bodemonderzoek* 15-16, 113-144.
- Peters W.J.Th. 1979: Mural painting fragments found in the Roman legionary fortress and the *canabae legionis* at Nijmegen, *Berichten van de Rijksdienst voor het Oudheidkundig Bodemonderzoek* 29, 373-402.
- Phang S.E. 2001: *The marriage of Roman soldiers (13 BC – AD 235). Law and family in the imperial army*, Leiden.
- Philp B.J. 1966: The Roman Fort at Reculver – Reculver Excavation Group, *Kent Archaeological Review* 3 [online], [http://cka.moon-demon.co.uk/KAR3AND4/KAR3AND4\\_Reculver.htm](http://cka.moon-demon.co.uk/KAR3AND4/KAR3AND4_Reculver.htm)
- Philp B. 1981: *The excavation of the Roman forts of the Classis Britannica at Dover, 1970-1977*, Research Report in the Kent Monograph Series 3, Dover.
- Philp B. 2005: *The Excavation of the Roman Fort at Reculver, Kent*, Research Report in the Kent Monograph Series 10, Dover.
- Philp B. 2012: *The Discovery and Excavation of the Roman Shore-Fort at Dover, Kent*, Kent Archaeological Society Monograph 11, Dover.
- Picard C. 1962: Le dieu thraco-phrygien Sabazios-Sabazius à Vichy, *Revue Archéologique du Centre* 1/1, 10-29.
- Pieters M., Baeteman C., Bastiaens J., Bollen A., Clogg P., Cooremans B., De Bie M., De Buyser F., Decorte G., Deforce K., De Groote A., Demerre I., Demiddele H., Ervynck A., Gevaert G., Goddeeris T., Lentacker A., Schiettecatte L., Vandenbruaene M., Van Neer W., Van Strydonck M., Verhaeghe F., Vince A.(†), Watzeels S. & Zeebroek I. 2013: *Het archeologisch onderzoek in Raversijde (Oostende) in de periode 1992-2005. Vuurstenen artefacten, een Romeinse dijk, een 14de-eeuws muntdepot, een 15de-eeuwse sector van een vissersnederzetting en sporen van een vroeg 17de-eeuwse en een vroeg 18de-eeuwse belegering van Oostende*, Relicta Monografieën 8, Brussel.
- Pirling R. 1966: *Das Römisch-Fränkische Gräberfeld von Krefeld-Gellep*, Germanische Denkmäler der Völkerwanderungszeit. Serie B. Die Fränkischen Altertümer des Rheinlandes Band 2, Berlin.
- Pirling R. 1993: Römische Gräber mit barbarischem Einschlag auf den Gräberfeldern von Krefeld-Gellep. In: Vallet F. & Kazanski M. (réd.) 1993, 109-123.
- Pirling R. 1997: *Das Römisch-Fränkische Gräberfeld von Krefeld-Gellep 1975-1982*, Germanische Denkmäler der Völkerwanderungszeit. Serie B. Die Fränkischen Altertümer des Rheinlandes. Band 17, Stuttgart.
- Pirling R. *et al.* 1979: *Das Römisch-Fränkische Gräberfeld von Krefeld-Gellep 1964-1965*, Germanische Denkmäler der Völkerwanderungszeit. Serie B. Die Fränkischen Altertümer des Rheinlandes. Band 10, Berlin.
- Pirling R. & Siepen M. 2000: *Das Römisch-Fränkische Gräberfeld von Krefeld-Gellep 1983-1988*, Germanische Denkmäler der Völkerwanderungszeit. Serie B. Die Fränkischen Altertümer des Rheinlandes. Band 18, Stuttgart.
- Pirling R. & Siepen M. 2006: *Die Funde aus den Römischen Gräbern von Krefeld-Gellep*, Germanische Denkmäler der Völkerwanderungszeit. Serie B. Die Fränkischen Altertümer des Rheinlandes. Band 20, Stuttgart.
- Piton D. & Schuler R. 1981: La nécropole de Nouvion-en-Ponthieu (Somme) IV-VI<sup>e</sup> siècle, *Cahiers archéologiques de Picardie* 8, 217-284.

- Pitts M. & Versluys M.J. (eds) 2015: *Globalisation and the Roman World: World History, Connectivity and Material Culture*, Cambridge / New York.
- Plas J. 2016: *Archeometrische studie van Romeinse metallurgie in het castellum van Oudenburg* (unpublished bachelor thesis KUL), Leuven.
- Polak M. 2000: *South Gaulish Terra Sigillata with Potters' Stamps from Vechten*, *Rei Cretariae Romanae Fautorum Acta Supplementum* 9, Nijmegen.
- Polak M., Kloosterman R.P.J. & Niemeijer R.A.J. 2004: *Alphen aan den Rijn-Albaniana 2001-2002. Opgravingen tussen de Castellumstraat, het Omloopkanaal en de Oude Rijn*, *Libelli Noviomagenses* 7, Nijmegen.
- Poulton R. & Scott E. 1993: The Hoarding, Deposition and Use of Pewter in Roman Britain. In: Scott E. (ed.), *Theoretical Roman Archaeology: First Conference Proceedings*, *Worldwide Archaeology Series* 4, Avebury, 115-132.
- Pouriel J. 2015: *Nempont-Saint-Firmin – Rue du Warnier. Une occupation militaire sur l'Authie de la fin de l'Antiquité*, *Archéologie en Nord – Pas-de-Calais* 37, Lille.
- Press L. 1988: *Valetudinarium* at Novae and other Roman Danubian hospitals, *Archaeologia* XXXIX, 69-89.
- Pröttel P. 1988: Zur Chronologie der Zwiebelknopffibel, *Jahrbuch des Römisch-Germanischen Zentralmuseums Mainz* 35, 347-372.
- Raepsaet G., Demaiffe D. & Raepsaet-Charlier M.-T. 2015: La production, la diffusion et la consommation du plomb "germanique" en Gaule du Nord. Apports des isotopes du plomb, *Vie Archéologique. Bulletin de la Fédération des Archéologues de Wallonie et de Bruxelles ASBL* 74, 65-89.
- Raepsaet-Charlier M.-T. & Clausse R. 1978: Terre sigillée découverte à Vieux-Virton (Saint-Mard), *Le Pays Gaumais* 38/39, 25-105.
- Reddé M. 2006a: Fabricae et autres installations de production. In: Reddé M. *et al.* (dir.) 2006, 116-119.
- Reddé M. 2006b: Les thermes. In: Reddé M. *et al.* (dir.) 2006, 122-124.
- Reddé M. 2006c: *Valetudinarium*, In: Reddé M. *et al.* (dir.) 2006, 121.
- Reddé M. 2014: Boulogne-sur-Mer dans le dispositif militaire de l'Empire romain. In: Blamangin O., Demon A. & Révillion S. (éd.), *Actualité de la recherche archéologique à Boulogne-sur-Mer*, *Revue du Nord. Hors Série. Collection Art et Archéologie* 22, Villeneuve d'Ascq, 29-39.
- Reddé M., Brulet R., Fellmann R., Haalebos J.-K. & Von Schnurbein S. (dir.), 2006: *L'architecture de la Gaule romaine 1: Les fortifications militaires*, *Documents d'archéologie Française* 100, Bordeaux.
- Reece R. 2005: The coins. In: Philp B. (ed.) 2005, 103-113.
- Reynolds P.J. 1974: Experimental Iron Age Storage Pits: An interim report, *The Prehistoric Society* 40, 118-131.
- Richardot P. 2005: *La fin de l'armée romaine 284-476. 3e édition revue et augmentée avec une traduction de la Notitia Dignitatum*, Paris.
- Richardson A. 2004: *Theoretical Aspects of Roman Camp and Fort Design*, *BAR. International Series* 1321, Oxford.
- Ricken H. 1934: Die Bilderschüsseln der Kastele Saalburg und Zugmantel, *Saalburg Jahrbuch* 8, 130-182.
- Ricken H. & Fisher C. 1963: *Die Bilderschüsseln der römischen Töpfer von Rheinzabern. Textband mit Typenbildern zu Katalog VI der Ausgrabungen von Wilhelm Ludowici in Rheinzabern 1901-1904*, *Materialien zur Römisch-Germanischen Keramik Heft* 7, Bonn.
- Ricken H. & Thomas M. 2005: *Die Dekorationsserien der Rheinzaberner Reliefsigillata*, *Materialien zur Römisch-Germanischen Keramik Heft* 14, Bonn.
- Riha E. 1979: *Die römischen Fibeln aus Augst und Kaiseraugst*, *Forschungen in Augst* 3, Augst.
- Riha E. 1990: *Der römische Schmuck aus Augst und Kaiseraugst*, *Forschungen in Augst* 10, Augst.
- Riha E. 1994: *Die Römische Fibeln aus Augst und Kaiseraugst. Die Neufunde seit 1979*, *Forschungen in Augst* 18, Augst.
- Rippon S. 2000a: *Holding back the tides. Explaining Romano-British and Early Medieval reclamation around the Severn Estuary, South West Britain*, *C.J.C.-Reuvensteining* 12, Amsterdam.
- Rippon S. 2000b: *The Transformation of Coastal Wetlands. Exploitation and Management of Marshland Landscapes in North West Europe during the Roman and Medieval Periods*, Oxford.
- Rogers G.B. 1974: *Poteries sigillées de la Gaule Centrale. Part I: Les motifs non figurés*, *Gallia. Supplément* XXVIII, Paris.
- Rogers G.B. 1999: *Poteries sigillées de la Gaule Centrale. Tome 2: Les potiers*, *Cahiers du Centre archéologique de Lezoux* 1, Lezoux.
- Rogge M. 1988: Een overzicht van de laat-Romeinse vondsten te Kortrijk, *Westvlaamse Archaeologica* 4/2, 45-54.
- Rogge M. 1996a: De consolidatie (van Chlodio to Clovis, ca. 430-511). In: Lamarq & Rogge 1996, 138-157.

- Rogge M. 1996b: Van nieuw evenwicht tot chaos (van Marcus Aurelius tot Severus Alexander, 161-235). In: Lamarq & Rogge 1996, 59-67.
- Rogge M. 1996c: Van tijdelijk herstel to desintegratie (van Diocletianus tot Honorius, 284-423). In: Lamarq & Rogge 1996, 99-137.
- Rogge M. 1996d: Vlaanderen en het zuiden van Nederland weken zich los van het centrum (van Postumus tot Carinus, 260-285). In: Lamarq & Rogge 1996, 68-98.
- Rogge M. & Van Durme L. 1987: *Archeologisch Museum van Zuid-Oost-Vlaanderen. Algemene Brochure*, Zottegem.
- Roxan M.M. 1991: Women on the frontiers. In: Maxfield V.A. & Dobson M.J. (eds) 1991, 462-467.
- Roymans N. 2017: Gold, Germanic foederati and the end of imperial power in the Late Roman North. In: Roymans N. *et al.* (eds) 2017, 57-80.
- Roymans N. & Heeren S. 2017: Introduction. New perspectives on the Late Roman Northwest. In: Roymans N. *et al.* (eds) 2017, 1-9.
- Roymans N., Heeren S. & De Clercq W. (eds) 2017: *Social Dynamics in the Northwest Frontiers of the Late Roman Empire. Beyond Decline or Transformation*, Amsterdam Archaeological Studies 26, Amsterdam.
- Rush P. (ed.) 1995, *TRAC 92: Theoretical Roman Archaeology: Second Conference Proceedings*, Worldwide Archaeology Series 14, Aldershot, Avebury.
- Ruseva-Slokoska L. 1991: *Roman Jewellery: A Collection of the National Archaeological Museum, Sofia*, London.
- Rushworth A. 2009: *Housesteads Roman Fort – The Grandest Station. Excavation and survey at Housesteads, 1954-95, by Charles Daniels, John Gillam, James Crow and others*, English Heritage Archaeological Report, Swindon.
- Rütti B. 1991: *Die römischen Gläser aus Augst und Kaiseraugst*, Forschungen in Augst 13/1-2, Augst.
- Sas K. 2004: “Military” Bracelets in Oudenburg: Troop Movements, Origins and Relations in the Litus Saxonicum in the 4th century AD. In: Vermeulen F., Sas K. & Dhaeze W. (eds) 2004, 343-378.
- Schaltenbrand Obrecht V. 2012: *Stilus. Kulturhistorische, typologisch-chronologische und technologische Untersuchungen an römischen Schreibgriffeln von Augusta Raurica und weiteren Fundorten*, Forschungen in Augst 45, Augst.
- Scharf R. 2005: *Der Dux Mogontiacaensis und die Notitia Dignitatum. Eine Studie zur spätantiken Grenzverteidigung*, Ergänzungsbande zum Reallexikon der Germanischen Altertumskunde. Band 50, Berlin.
- Schelvis J. & Eryvynck A. 1993: Mijten (acari) als ecologische indicatoren in de archeologie. Onderzoek op de Romeinse vindplaats Oudenburg (prov. West-Vlaanderen), *Archeologie in Vlaanderen II* (1992), 175-189.
- Schenke G. 2003: *Schein und Sein: Schmuckgebrauch in der römischen Kaiserzeit*, Monographs on Antiquity I, Leuven.
- Schönberger H. 1978: *Kastell Oberstimm. Die Grabungen von 1968 bis 1971*, Limesforschungen 18, Berlin.
- Schönberger H. 1979: Valkenburg Z.H. : Praetorium oder Fabrica ?, *Germania* 57, 135-141.
- Shubert A. 2015: *Die Müllentsorgung an römischen Militärstandorten – Ein Überblick*. In: Sommer C.S. & Matešić S. (Hrsg.) 2018, 249-254.
- Seillier C. 1986a: Boulogne, base navale romaine. In: Lottin A., Hocquet J.-Cl. & Lebecq S. (eds), *Les Hommes et la mer dans l'Europe du Nord-Ouest de l'antiquité à nos jours. Actes du colloque de Boulogne-sur-Mer, 15-17 juin*, Revue du Nord. Hors série. Collection Histoire 1, Villeneuve d'Ascq, 163-178.
- Seillier C. 1986b: Développement topographique et caractères généraux de la nécropole de Vron (Somme), *Archéologie Médiévale* XVI, 7-32.
- Seillier C. 1994: La céramique romaine tardive de Gaule septentrionale en milieu funéraire daté (fin IVe-Ve siècle). In: Tuffreau-Libre M. & Jacques A. (éd.) 1994, 53-63.
- Seillier C. 1996: La présence militaire à Boulogne-sur-Mer (F) au Bas-Empire. In: Lodewijckx M. (ed.) 1996, 237-244.
- Seillier C. 2004: Les casernes romaines de la Ville-Haute de Boulogne-sur-Mer, *Les Cahiers du Vieux Boulogne* 55, 2-5.
- Seillier C. 2006: Le cimetière germanique de Vron (Somme) : essai de reconstitution historique et sociale. In: Delestre X., Kazanski M. & Prin P. (eds), *De l'âge du Fer au haut Moyen Age. Archéologie funéraire, princes et élites guerrières. Actes des tables rondes Longroy I et Longroy II*, Mémoires publiés par l'Association française d'Archéologie mérovingienne XV, Saint-Germain-en-Laye, 159-168.
- Seillier C. 2010: Rupture et continuité dans le Boulonnais et le Ponthieu entre le Bas-Empire et le haut Moyen Age. In: Béthouart B., Lebecq S. & Verslype L. (eds.), *Quentovic. Environnement, archéologie, histoire. Actes du colloque international de Montreuil-sur-Mer, Etaples et Le Touquet et de la journée d'études de Lille sur les origines de Montreuil-sur-Mer (11-13 mai 2006 et 1er décembre 2006)*, Lille, 125-146.

- Shennan S.J. (ed.) 1989: *Archaeological Approaches to Cultural Identity*, One World Archaeology 10, London.
- Smeets M., Bakx R. & Clerbaut T. 2012: *De archeologische opgraving aan de Kreupelstraat te Eppegem (gem. Zemst)*, Studiebureau Archeologie. Archeo-rapport 134 (unpublished report), Kessel-Lo.
- Söderberg A. 2002: Metalliska spår efter gjuteriverksamhet: en skiss till en arkeologisk fältmetod = Metallic Evidence for Casting Activities: An Idea for an Archaeological Field Method, *Fornvännen* 97/4, 255-264.
- Sommer C.S. 1988: Kastellvicus und Kastell: Untersuchungen zum Zugmantel im Taunus und zu den Kastellvici in Obergermanien und Rätien, *Fundberichte aus Baden-Württemberg* 13, 457-707.
- Sommer C.S. 1989: The inner and outer relations of the military fort to its vicus. In: van Driel-Murray C. (ed.), *Roman Military Equipment: The Sources of Evidence*, BAR. International Series 476, Oxford, 25-30.
- Sommer C.S. & Matešić S. (Hrsg.) 2018: *Limes XXIII. Proceedings of the 23rd International Congress of Roman Frontier Studies Ingolstadt 2015. Akten des 23. Internationalen Limeskongresses in Ingolstadt 2015*, Beiträge zum Welterbe Limes. Sonderband 4/I, Mainz.
- Sommer M. 1984: *Die Gürtel und Gürtelbeschläge des 4. und 5. Jahrhunderts im römischen Reich*, Bonner Hefte zur Vorgeschichte 22, Bonn.
- Southern P. & Dixon K.R. 1996: *The Late Roman Army*, London.
- Speidel M.A. 1996: *Die römischen Schreibtafel von Vindonissa*, Veröffentlichungen der Gesellschaft Pro Vindonissa. Band XII, Baden-Dättwil.
- Speidel M.A. 1998: Frauen und Kinder beim römischen Heer, *Gesellschaft Pro Vindonissa. Jahresbericht 1997*, 53-54.
- Steine H. 1898: Das Kastell Böckingen. In: Fabricius E., Hettner F. & von Sarwey O. (Hrsg.), *Der Obergermanisch-Raetische Limes des Römerreiches. Abteilung B. Band 5*, Heidelberg.
- Steures D.C. 2013: *The late Roman Cemeteries of Nijmegen*, Nederlandse Oudheden 17, Nijmegen.
- Stickler T. 2011: The Foederati. In: Erdkamp P. (ed.) 2011, 495-514.
- Strobel K. 2011: Strategy and Army Structure between Septimius Severus and Constantine the Great. In: Erdkamp P. (ed.) 2011, 267-285.
- Stuart P. 1977: *Gewoon aardewerk uit de Romeinse legerplaatsen en de bijbehorende grafvelden te Nijmegen*, Beschrijving van de verzamelingen in het Rijksmuseum G.M. Kam te Nijmegen 6, Leiden.
- Stuart P. & Bogaers J.E. 2001: *Nehalennia: römische Steindenkmäler aus der Oosterschelde bei Colijnsplaat*, Leiden.
- Swan V.G. 1992: Legio VI and its Men: African Legionaries in Britain, *Journal of Roman Pottery Studies* 5, 1-33.
- Swift E. 2000a: *Regionality in Dress Accessories in the late Roman West*, Monographies Instrumentum 11, Montagnac.
- Swift E. 2000b: *The End of the Western Roman Empire. An Archaeological Investigation*, Stroud.
- Swift E. 2010: Identifying Migrant Communities: A Contextual Analysis of Grave Assemblages from Continental Late Roman Cemeteries, *Britannia* 41, 237-282.
- Symonds R.P. 1992: *Rhenish Wares: Fine Dark Coloured Pottery from Gaul and Germany*, Oxford University Committee for Archaeology. Monograph 23, Oxford.
- Symonds R.P. & Wade S. 1999: *Roman pottery from excavations in Colchester, 1971-86*, Colchester Archaeological Report 10, Colchester.
- Tassignon I. 1997: À propos du bracelet sabaziaque d'Oudenburg (Fl.-Occ.), *La parure dans nos régions. De la Préhistoire au Moyen Âge*, 100-103.
- Termote J. 1987: Prospectie in het natuurreervaat "De Westhoek" te De Panne. In: Thoen H. (red.) 1987, 51-52.
- Therkorn L.L. 1987: The structures, mechanics and some aspects of inhabitant behaviour. In: Brandt R.W., Groenman-van Waateringe W. & van der Leeuw S.E. (eds), *Assendelver Polder Papers I*, Cingvla 10, Amsterdam, 177-224.
- Theuvs F. 2009: Grave goods, ethnicity, and the rhetoric of burial sites in Late Antique Northern Gaul. In: Derks T. & Roymans N. (eds), *Ethnic Constructs in Antiquity. The Role of Power and Tradition*, Amsterdam Archaeological Studies 13, Amsterdam, 283-319.
- Thoen H. 1977: Artisanat et industrie, *Les dossiers de l'archéologie* 21 (*La Belgique de César à Clovis*), 46-55.
- Thoen H. 1978: *De Belgische kustvlakte in de Romeinse tijd. Bijdrage tot de studie van de landelijke bewoningsgeschiedenis*, Verhandelingen van de Koninklijke Academie voor Wetenschappen, Letteren en Schone kunsten van België. Klasse der Letteren XL, Brussel.
- Thoen H. 1981: The third century Roman occupation in Belgium: the evidence of the coastal plain. In: King A. & Henig M. (eds) 1981, 245-257.
- Thoen H. (red.) 1987: *De Romeinen langs de Vlaamse kust*, Leuven.
- Thoen H. 1988: De vroegste bewoning: de Gallo-Romeinse aanwezigheid te Bredene (1e-3e eeuw na Chr.). In: Deplancke



- R., Desopper G., Eerebout R., Gevaert B., Gevaert F., Gevaert P., Gevaert W., Rotsaert D., Rotsaert F., Thoen H., Vande Castele L. & Verbanck R. (red.), *Bredeniana – Jubileumboek 900 jaar Bredene*, Bredene, 13-17.
- Thoen H. 1991a: Le camp romain de Maldegem (Flandre orientale, Belgique) et les invasions des Chauques en 172-174 de notre ère. In: Thoen H., Bourgeois J., Vermeulen F., Crombé Ph. & Verlaeck K. (eds), *Liber Amicorum Jacques A.E. Nenquin*, Studia Archaeologica, Gent, 185-200.
- Thoen H. 1991b: Römische Militäranlagen im westbelgischen Raum. Ein status quaestionis. In: *Die römische Okkupation nördlich der Alpen zur Zeit des Augustus. Kolloquium Bergkamen 1989. Vorträge*, Bodenaltertümer Westfalens 26, Aschendorff, 49-59.
- Thoen H. 1993: Maldegem-Vake en Aardenburg, Romeinse verdedigingswerken, *Nehalennia. Bulletin van de werkgroep historie en archeologie van het Koninklijk Zeeuwsch Genootschap der Wetenschappen en de Zeeuwse Vereniging voor Dialectonderzoek* 95 (*Archeologie in Zeeland*), 22-28.
- Thoen H. 2019: De Romeinse muntschat van Roksem. In: Hillewaert B. & Ryckaert M. (red.) 2019, 64-65.
- Thoen H. & De Cock S. 1980: De opgravingen aan de Sluisvlietlaan te Bredene, *Jaarboek Heemkring Ter Cuere*, 1-5.
- Thoen H. & Hollevoet Y. 2001: A network of creeks and Roman land division in the coastal plain. In: Vermeulen F. & Antrop M. (ed.), *Ancient Lines in the Landscape. A Geo-Archaeological Study of Protohistoric and Roman Roads and Field Systems in Northwestern Gaul*, Babesch-Supplement 7, Leuven, 149-150.
- Thoen H. & Ryckaert M. 1988: Een te verifiëren hypothese: het 'Romeinse castellum' van Brugge. In: De Witte H. (red.), *Brugge Onder-zocht. Tien jaar stadsarcheologisch onderzoek 1977-1987*, Archeo-Brugge 1, Brugge, 64-70.
- Thoen H. & Vanhoutte S. 2004: De Romeinse wegen in het Vlaamse kustgebied. Leiden alle wegen naar Oudenburg?, *Kunsttijdschrift Vlaanderen* 53/301, 178-184.
- Thoen H. & Vermeulen F. 1998: Phasen der Germanisierung in Flandern in der mittel- und spätrömischen Zeit. In: Bridger C. & Gilles K.-J. (eds), *Spätrömische Befestigungsanlagen in den Rhein – und Donauprovinsen. Beiträge der Arbeitsgemeinschaft. "Römische Archäologie" bei der Tagung des West- und Süddeutschen Verbandes der Altertumsforschung in Kempten 08.06.-09.06.1995*, BAR. International Series 704, Oxford, 1-12.
- Thomas M. 2001: Terra Sigillata mit Weissbarbotine-Verzierung aus Rheinzabern, *Rei Cretariae Romanae Fautorum. Acta* 37, 243-245.
- Thompson E.A. 1977: Britain, A.D. 406-410, *Britannia* VIII, 303-318.
- Tomber R. & Dore J. 1998: *The National Roman Fabric Reference Collection. A Handbook*, MoLAS Monograph 2, London.
- Tomlin R.S.O. 1979: Ammianus Marcellinus 26.4.5-6, *The Classical Quarterly. New Series* 29, 473-475.
- Trimpe Burger J.A. 1997: *De Romeinen in Zeeland. Onder de hoede van Nehalennia*, Goes.
- Trumm J. 2018: Littering und Legionäre – Der „Schutthügel“ von Vindonissa. In: Sommer C.S. & Matešić S. (Hrsg.) 2018, 239-248.
- Tuffreau-Libre M. 1980b: Un four gallo-romain à Labuissière (Pas-de-Calais), *Gallia* 38/2, 291-309.
- Tuffreau-Libre M. & Jacques A. 1992: La céramique gallo-romaine du Bas-Empire à Arras (Nemetacum), Pas-de-Calais, *Gallia* 49, 99-127.
- Tuffreau-Libre M. & Jacques A. 1994: La céramique gallo-romaine du Bas-Empire à Arras (Pas-de-Calais). In: Tuffreau-Libre M. & Jacques A. (red.) 1994, 9-19.
- Tuffreau-Libre M. & Jacques A. (red.) 1994: *La céramique du Bas-Empire en Gaule Belgique et dans les régions voisines. Actes de la table ronde de céramologie gallo-romaine, Arras, 8-10 octobre 1991*, Revue du Nord. Hors Série. Collection Archéologie 4, Villeneuve d'Ascq.
- Tyers P. 1996b: *Roman Pottery in Britain*, London / New York.
- Unverzagt W. 1916: *Die Keramik des Kastells Alzey (Rheinbessen)*, Materialien zur Römisch-Germanischen Keramik Heft 2, Frankfurt-am-Main.
- Unverzagt W. 1917: Römerfunde zwischen Wenduyn und Blankenberghe, *An Flanderns Küste. Kriegszeitung für das Marinekorps* 43, 343-344.
- Vallet F. & Kazanski M. (red.) 1993: *L'armée romaine et les barbares du IIIe au VIIe siècle*, Mémoires publiées par l'Association Française d'Archéologie Mérovingienne (A.F.A.M.) V, Condé-sur-Noireau.
- van den Broeke P.W. 2007: Zoutwinning langs de Noordzee: de pre-middeleeuwse sporen. In: de Kraker A.M.J. & Borger G.J. (red.) 2007, 65-80.
- van der Linden E. & Huijben K. 2013: Vondstmateriaal: Terra Sigillata. In: van Dierendonck R.M. & Vos W.K. 2013, 63-74.
- Vandeveld J. 2005a: Speuren naar de resten van de Sint-Pietersabdij, *Oudenburg Informatief* 27/3, 2.
- Vandeveld J. 2005b: *Verslag Opgravingen Abtsgebouw Oudenburg* (unpublished report), Oudenburg.
- Vandeveld J. 2006: Onderzoek naar de voormalige Sint-Pietersabdij in Oudenburg (W. Vl.), *Archaeologia Mediaevalis* 29, 102-103.

- van Dierendonck R.M., Hallewas D.P. & Waugh K.E. (eds) 1993: *The Valkenburg Excavations 1985-1988. Introduction and Detail Studies*, ROB. Nederlandse Oudheden 15 / Valkenburg Project I, Amersfoort.
- van Dierendonck R.M. & Swinkels L.J.F. 1983: Wall-painting fragments found in the Roman settlement at Aardenburg, *Berichten van de Rijksdienst voor het Oudheidkundig Bodemonderzoek* 33, 153-196.
- van Dierendonck R.M. & Vos W.K. 2013: *De Romeinse agglomeratie Aardenburg. Onderzoek naar de ontwikkeling, structuur en datering van de Romeinse castella en hun omgeving, opgegraven in de periode 1955-beden*, Hazenberg Archeologische Serie 3, Middelburg.
- Van Doorselaer A. 1964: *Repertorium van de Begraafplaatsen uit de Romeinse tijd in Noord-Gallië. Répertoire des nécropoles d'époque romaine en Gaule septentrionale. Repertorium der römischen Gräber in Nord-Gallien. 1. België, Belgique, Belgien*, Oudheidkundige repertoria Reeks C / Répertoires archéologiques Série C, Brussel.
- Van Doorselaer A. 1967: *Les nécropoles d'époque romaine en Gaule septentrionale*, Dissertationes Archaeologicae Gandenses 10, Brugge.
- van Driel-Murray C. 1994: A question of gender in a military context, *Helinium* XXXIV/2, 342-362.
- van Driel-Murray C. 1995: Gender in question. In: Rush P. (ed.), *TRAC 1992: Theoretical Roman Archaeology: Second Conference Proceedings*, Aldershot, 3-21.
- van Driel-Murray C. 1998: Women in forts?, *Gesellschaft Pro Vindonissa. Jahresbericht* 1997, 55-61.
- van Enkevort H., Hendriks J. & Nicasie M. 2017: *Nieuw licht op donkere eeuwen. De overgang van de laat-Romeinse tijd naar de vroege middeleeuwen in Zuid-Nederland*, Nederlandse Archeologische Rapporten 058, Amersfoort.
- van Enkevort H. & Thyssen J. 2002: *Cuijk. Een regionaal centrum in de Romeinse tijd*, Archeologische Berichten Nijmegen, Utrecht.
- van Es W.A. 1981: *De Romeinen in Nederland*, Haarlem.
- van Giffen A.E. 1948: De Romeinse Castella in de dorpsheuvel te Valkenburg aan den Rijn (Z.H.) (Praetorium Agrippinae). I: De opgravingen in 1941, *Jaarverslag Vereniging voor Terpenonderzoek* 25-28 (1940-1944), 1-316.
- van Heesch J. 1991: Het muntsysteem en de muntcirculatie in de Romeinse tijd aan de hand van enkele Westvlaamse vondsten, *Westvlaamse Archaeologia* 7/1-2, 16-30.
- van Heesch J. 1998: *De muntcirculatie tijdens de Romeinse tijd in het Noordwesten van Gallia Belgica. De civitates van de Nervii en de Menapii (ca. 50 v.C. – 450 n.C.)*, Koninklijke Musea voor Kunst en Geschiedenis. Monografie van Nationale Archeologie 11, Brussel.
- van Heesch J. & Weinkauf E. 2016: Coin deposits in Roman graves at Turnacum (Belgica Secunda) and the monetary circulation at the end of the 3rd and early 4th century AD. In: Chameroy J. & Guihard P.-M. (dir.), *Produktion und Recyceln von Münzen in der Spätantike. Produire et recycler la monnaie au Bas-Empire. 1. Internationales Numismatikertreffen / 11èmes Rencontres internationales de numismatique (15-16 mai 2014, Mainz)*, RGZM – Tagungen Band 29, Mainz, 105-117.
- Vanhoutte S. 2004: Een korte archeologische interventie ten zuiden van het Romeins castellum te Oudenburg (prov. West-Vlaanderen), *Archeologie in Vlaanderen* VIII (2001-2002), 219-228.
- Vanhoutte S. 2007a: Het Romeins castellum van Oudenburg. Post-excavation-onderzoek resulteert in nieuwe chronologie, *Romeinendag – Journée d'archéologie romaine* 2007, 39-43.
- Vanhoutte S. 2007b: Het Romeins castellum van Oudenburg (prov. West-Vlaanderen) herontdekt: de archeologische campagne van augustus 2001 tot april 2005 ter hoogte van de zuidwesthoek. Interimrapport, *Relicta. Archeologie, Monumenten- en Landschapsonderzoek in Vlaanderen* 3, 199-236.
- Vanhoutte S. 2009: Brooch production at the Roman fort of Oudenburg (Belgium) in the later 3rd century A.D. In: van Enkevort H. (ed.), *Roman Material Culture. Studies in honour of Jan Thyssen*, Zwolle, 41-52.
- Vanhoutte S. 2013: Wenduine, Gallo-Romeinse “prinses der badsteden,” *Ex Situ. Tijdschrift voor Vlaamse Archeologie* 3, 87-91.
- Vanhoutte S. 2015: The late Roman coastal fort of Oudenburg (Belgium): spatial and functional transformations within the fort walls. In: Collins R., Symonds M. & Weber M. (eds), *Roman Military Architecture on the Frontiers. Armies and Their Architecture in Late Antiquity*, Oxford / Philadelphia, 62-75.
- Vanhoutte S. 2018: The Roman fort at Oudenburg (Belgium): a 4th century bathhouse *intra muros*. In: Pöschke H., Binsfeld A. & Hoss S. (dir.), *Thermae in context, the Roman bath in town and life. Actes du colloque de Dalheim, Luxembourg, 21 au 24 février 2013*, Archaeologia Mosellana 10, 159-174.
- Vanhoutte S., Bastiaens J., Deforce K., Eryvynck A., Fret M., Haneca K. & Stieperaere H. 2009a: A remarkable “double” well at the Saxon Shore fort at Oudenburg (Belgium). In: Morillo A. *et al.* 2009, 1383-1392.
- Vanhoutte S., Bastiaens J., De Clercq W., Deforce K., Eryvynck A., Fret M., Haneca K., Lentacker A., Stieperaere H., Van Neer W., Cosyns P., Degryse P., Dhaeze W., Dijkman W., Lyne M., Rogers P., van Driel-Murray C., van Heesch J. & Wild J.P. 2009b: De dubbele waterput uit het laat-Romeinse castellum van Oudenburg (prov. West-Vlaanderen): tafonomie, chronologie en interpretatie, *Relicta*.

- Archeologie, Monumenten- en Landschapsonderzoek in Vlaanderen* 5, 9-142.
- Vanhoutte S. & De Clercq W. 2007: Het Gallo-Romeins aardewerk aangetroffen tijdens het archeologisch noodonderzoek op het toekomstige bedrijventerrein Plassendale III. Opgravingscampagne 2000-2001 (Zandvoorde, stad Oostende, prov. West-Vlaanderen), *Relicta. Archeologie, Monumenten- en Landschapsonderzoek in Vlaanderen* 1, 81-119.
- Vanhoutte S. & Dhaeze W. 2011: *Archeologische opvolging van de riolerings- en wegenwerken in het stadscentrum van Oudenburg (Weststraat, Hoogwegel, Westkerksestraat en Hoogstraat) (W-Vl.). Fase 1: Weststraat – Hoogwegel (29 april – 6 mei 2010)*, Intern VIOE-rapport (unpublished report), Brussel.
- Vanhoutte S., Dhaeze W. & De Clercq W. 2009c: The pottery consumption c AD 260-270 at the Roman coastal defence fort, Oudenburg, Northern Gaul, *Journal of Roman Pottery Studies* 14, 95-141.
- Vanhoutte S., Dhaeze W., Deforce K., Demeyer H., Eryvynck A., Haneca K., Lentacker A. & Stieperaere H.(†) 2016: Een Romeinse waterput met een vlechtwerkmand uit de vicus van Oudenburg, *Relicta. Archeologie, Monumenten- en Landschapsonderzoek in Vlaanderen* 14, 173-204.
- Vanhoutte S., Dhaeze W., Eryvynck A., Lentacker A., van Heesch J. & Stroobants F. 2014: Archeologisch onderzoek aan de noordzijde van het Romeinse castellum van Oudenburg: nieuwe inzichten in de lay-out, het verdedigingssysteem en de bewoningsgeschiedenis van het fort, *Relicta. Archeologie, Monumenten- en Landschapsonderzoek in Vlaanderen* 11, 163-269.
- Vanhoutte S. & Eryvynck A. 2011: Een bruine beer in Romeins Oudenburg! In: Meulemeester J.L. (red.) 2011, 102-104.
- Vanhoutte S. & Laken L. 2009: De muurschilderingen van het militair hospitaal in Oudenburg, *M&L. Monumenten, Landschappen & Archeologie* 28/5, 20-21.
- Vanhoutte S. & Laken L. 2011: Post-excavation onderzoek van het Romeinse castellum van Oudenburg: De muurschilderingen, *Romeinendag – Journée d'archéologie romaine* 2011, 137-146.
- Vanhoutte S. & Pieters M. 2003: Archeologisch noodonderzoek op het toekomstige bedrijventerrein Plassendale III (Zandvoorde, prov. West-Vlaanderen). Interimverslag 2000-2001, *Archeologie in Vlaanderen* VII, 95-110.
- Vanhoutte S., Pieters M. & Demey D. 2011: Stene: eerste harde bewijzen voor Romeinse bewoning en landname in de Belgische kustvlakte. In: Hillewaert B. & Ryckaert M. (red.) 2019, 43-44.
- Vanhoutte S. & Verbrugge A. 2017: Women and children at the Saxon Shore fort of Oudenburg (Belgium). In: Hodgson P., Bidwell N. & Schachtman J. (eds) 2017, 48-52.
- Van Kerckhove J. 2014: Het Romeinse aardewerk. In: Driessen M. & Besselsen E. (red.) 2014, 321-472.
- van Londen H. 2001: Landscape and water management: Midden Delfland, a region south of the Limes. In: *Germania inferior. Besiedlung, Gesellschaft und Wirtschaft an der Grenze der römisch-germanischen Welt*, *Ergänzungsbande zum Reallexikon der Germanischen Altertumskunde* 28, Berlin / New York, 169-184.
- van Londen H. & van Rijn P. 1999: The Midden-Delfland Project: an example of cooperation between planners and archaeologists in The Netherlands. In: Coles B., Coles J. & Jorgensen M.S. (eds), *Bog bodies, sacred sites and wetland archaeology*, Wetland Archaeology Research Project Occ. Pap. 12, Exeter, 133-138.
- van Loon J. 2000: *De ontstaansgeschiedenis van het begrip "stad". Een bijdrage van de diachrone semantiek tot de sociaal-economische geschiedenis van Noord-West-Europa, inzonderheid van de Nederlanden*, Studies op het gebied van de cultuur in de Nederlanden 1, Gent.
- Van Thienen V. 2011: *Een studie van de Romeinse fibulae uit Oudenburg*. Unpublished master thesis Ghent University, Gent.
- Van Thienen V. 2016: *Abandoned, neglected and revived: Aspects of Late Roman society in Northern Gaul*. Unpublished doctoral thesis Ghent University, Gent.
- Van Thienen V. 2017a: A symbol for Late Roman authority revisited. A sociohistorical understanding of the crossbow brooch. In: Roymans N. et al. (eds) 2017, 97-126.
- Van Thienen V. 2017b: The absence of late Roman archaeology: identification issues in the Flemish archaeological record, *Signa. Tijdschrift uitgegeven door het Comité voor de verspreiding van het onderzoek in de Gallo-Romeinse archeologie* 6, 119-126.
- Van Ossel P. 1991: Incinération et inhumation dans le nord de la Gaule Belgique durant le Haut-Empire. In: Vidal M. (coord.), *Incinérations et Inhumations dans l'Occident romain aux trois premiers siècles de notre ère (France, Espagne, Italie, Afrique du Nord, Suisse, Allemagne, Belgique, Luxembourg, Pays-Bas, Grande-Bretagne). Actes du colloque international de Toulouse-Montrejeau (IVe congrès archéologique de Gaule méridionale) 7-10 Octobre 1987*, Toulouse, 209-217.
- Van Ossel P. 1992: *Établissements ruraux de l'Antiquité tardive dans le nord de la Gaule*, 51e supplément à Gallia, Paris.
- Vannerus J. 1944: "Portus Aepatiaci" lez Boulogne, *Revue des Etudes Anciennes* XLVI/3-4, 299-317.
- Vanvinckenroye W. 1984: *De Romeinse zuidwest-begraafplaats van Tongeren*, Publicaties van het Provinciaal Gallo-Romeins Museum te Tongeren 29, Tongeren.

- Vanvinckenroye W. 1991: *Gallo-Romeins aardewerk van Tongeren*, Publicaties van het Provinciaal Gallo-Romeins Museum te Tongeren 44, Tongeren.
- Verduyn P. 1960: *Geschiedenis van Wenduine*, Wenduine.
- Vermeulen F. 1992: *Tussen Leie en Schelde. Archeologische inventarisatie en studie van de Romeinse bewoning in het zuiden van de Vlaamse Zandstreek*, Archeologische Inventaris Vlaanderen. Buitengewone Reeks 1, Gent.
- Vermeulen F. 2001: Les campagnes de la Belgique septentrionale et des Pays-Bas méridionaux aux IV<sup>e</sup> et V<sup>e</sup> siècles. In: Ouzoulias P., Pellecuer C., Raynaud C., Van Ossel P. & Garmy P. (dir.), *Les campagnes de la Gaule à la fin de l'Antiquité. Actes du colloque Montpellier, 11-14 mars 1998*, Antibes, 45-68.
- Vermeulen F., Sas K. & Dhacze W. (eds) 2004: *Archaeology in Confrontation. Aspects of Roman Military Presence in the Northwest. Studies in honour of Prof. Em. Hugo Thoen*, Archaeological Reports Ghent University 2, Ghent.
- Verslype L. & Brulet R. (réd.) 2004: *Terres noires. Dark earth. Actes de la table-ronde internationale tenue à Louvain-la-Neuve, les 09 et 10 novembre 2001*, Collection d'Archéologie Joseph Mertens XIV, Louvain-la-Neuve.
- Vertet H. 1972: Projet d'un répertoire des vases à décor moulé fabriqués à Lezoux, *Revue Archéologique du Centre* 11, 283-298.
- Visy Z. (ed.) 2005: *Limes XIX. Proceedings of the XIXth International Congress of Roman Frontier Studies held in Pécs, Hungary, September 2003*, Pécs.
- Vlierman K. 2011: Een nieuwe blik op de boot van Brugge. In: Hillewaert B., Hollevoet Y. & Ryckaert M. (red.), *Op het Raakvlak van twee landschappen: De vroegste geschiedenis van Brugge*, Brugge, 59-60.
- Waasdorp J.A. (red.) 2012: *Den Haag Ockenburgh. Een fortificatie als onderdeel van de Romeinse kustverdediging*, Haagse Oudheidkundige publicaties 13, Den Haag.
- Wacher J.S. 1969: *Excavations at Brough-on-Humber 1958-1961*, Reports of the Research Committee of the Society of Antiquaries of London XXV, Leeds.
- Wallace C. 2006: Long-lived samian?, *Britannia* 37, 259-272.
- Walters H.B. 1908: *Catalogue of the Roman Pottery in the Department of Antiquities, British Museum*, London.
- Walton P. & Moorhead S. 2016: Coinage and Collapse? The contribution of numismatic data to understanding the end of Roman Britain. In: Gerrard J. (ed.) 2016.
- Ward C. 1999: *Iron Age & Roman Piddington: Fascicule 4. The Roman Ceramic & Stone Building Materials 1979-1998*, Northampton.
- Webster P. 1996: *Roman Samian Pottery in Britain*, Practical Handbooks in Archaeology 13, York.
- Welsby D.A. 1982: *The Roman Military Defence of the British Provinces in its Later Phases*, BAR. British Series 101, Oxford.
- Werner J. 1950: Zur Entstehung der Reihengräberzivilisation, *Archaeologica Geographica* 1, 23-32.
- Wessex Archaeology 2014: *Brancaaster Roman Fort (Branodunum), Norfolk. Archaeological Evaluation and Assessment of Results* (unpublished report), Salisbury.
- White D.A. 1961: *Litus Saxonicum. The British Saxon Shore in Scholarship and History*, Madison.
- Whittaker C.R. 1994: *Frontiers of the Roman empire. A social and economic study*, Baltimore / London.
- Whittaker C.R. 2002: Supplying the Army. Evidence from Vindolanda. In: Erdkamp P. (ed.) 2002, 204-234.
- Whittaker C.R. 2004: *Rome and its Frontiers: The Dynamics of Empire*, London / New York.
- Wightman E.M. 1985: *Gallia Belgica*, London.
- Wijnendaele J. 2013: *Romeinen en Barbaren. De ondergang van het Romeins Rijk in het Westen*, Leuven.
- Wijnendaele J.W.P. 2017: The early career of Aëtius and the murder of Felix (c. 425-430 CE), *Historia. Zeitschrift für Alte Geschichte* 66/4, 468-482.
- Will E. 1973: Compte rendu de J. Mertens & L. Van Impe 1971, Het Laat-Romeins grafveld van Oudenburg, *Archaeologia Belgica* 135, Bruxelles, *Revue du Nord* 216, 71-72.
- Williams H.P.G. 2004: *Carausius. A consideration of the historical, archaeological and numismatic aspects of his reign*, BAR. British Series 378, Oxford.
- Willis S. 2005: *Samian Pottery, a Resource for the Study of Roman Britain and Beyond: the Results of the English Heritage Funded Samian Project. An e-monograph*, Internet Archaeology 17 [online], [http://intarch.ac.uk/journal/issue17/willis\\_index.html](http://intarch.ac.uk/journal/issue17/willis_index.html)
- Willis S. & Hingley R. 2007: Roman Finds: Contexts and Theory. In: Hingley R. & Willis S. (eds), *Roman Finds: Context and Theory. Proceedings of a conference held at the University of Durham*, Oxford, 2-17.
- Wilmott T. 2005: Richborough: The context of the invasion of AD 43 and of the Saxon Shore fort. In: Visy Z. (ed.) 2005, 71-78.
- Wilmott T. 2010: The Late Roman Frontier: A Structural Background. In: Collins R. & Allason-Jones L. (eds) 2010a, 10-16.

Wilmott T. 2012: *Richborough and Reculver*, English Heritage Guidebooks, London.

Wilmott T. & Smither Ph. 2020: The Plan of the Saxon Shore Fort at Richborough, *Britannia* 51, 147-174.

Wilson M. G. 1984: The other pottery. In: Frere S. (ed.) 1984, 200-266.

Wood I. 1990: The Channel from the 4th to the 7th centuries AD. In: McGrail S. (ed.) 1990, 93-97.

Wood I.N. 1992: Continuity or calamity?: the constraints of literary models. In: Drinkwater J.F. & Elton H. (eds) 1992, 9-18.

Young C.J. 1977: *The Roman Pottery Industry of the Oxford Region*, BAR. British Series 43, Oxford.

Ypey J. 1969: Zur Tragweise frühfränkischer Gürtelgarnituren auf Grund niederländischer Befunde, *Berichten van de Rijksdienst voor het Oudheidkundig Bodemonderzoek* 19, 89-127.

Zienkiewicz J.D. 1986: The Legionary Fortress Baths at Caerleon, I: the buildings, Cardiff.

In the later Roman period the North Sea and Channel region was the scene of seaborne attacks, political crises, army reforms, Germanic invasions and changing imperial defence strategies. Literary evidence for this era is poor. On the other hand the Shore forts can yield highly significant information, but have been subject to little study in recent decades. At the Belgian coastal fort at Oudenburg large-scale excavations in the first decade of the 21st century revealed a strikingly well-preserved chronological, spatial and functional evolution of this military base, with five main fort periods running from the late 2nd until the early 5th century AD. For the first time within the context of the Shore forts securely datable structural evidence demonstrates the stages in progression of a mid- to late Roman fort where the horizons can be related to historically recorded processes and events in the region. Political, economic and social developments can be seen within this evidence, as a result of the assessment of the huge quantity of well-stratified finds types. Reports on the finds assemblage by specialist experts, using various analytical methods, represent 'touchstones'

for regional military and later Roman studies in the North-West provinces.

The study of Oudenburg, and in relationship to other Shore forts, enables exploration of 'change and continuity' and 'identity', in respect of the everyday lives of soldiers, and in their interaction with other forts and wider regional spheres. This is achieved by examining find contexts as reflections of the socio-cultural world. The study of 'military identities' is further emphasized through looking at the associated graveyards wherein the direct relationship with the successive fort periods is established. It is clear this fort was closely connected with the British forts and that there occurred an increasing Germanic influence as the fort transformed into a community of military families.

*This is volume one of three. This volume provides a detailed analysis of the Oudenburg site and the report of the research of its significance within the wider context of the Roman North Sea and Channel frontier zone, on a historic-military, a socio-cultural and a socio-economic level.*

Agentschap  
Onroerend Erfgoed



Vlaamse  
overheid

**sidestonepress**

ISBN: 978-94-6426-083-0



9 789464 260830 >