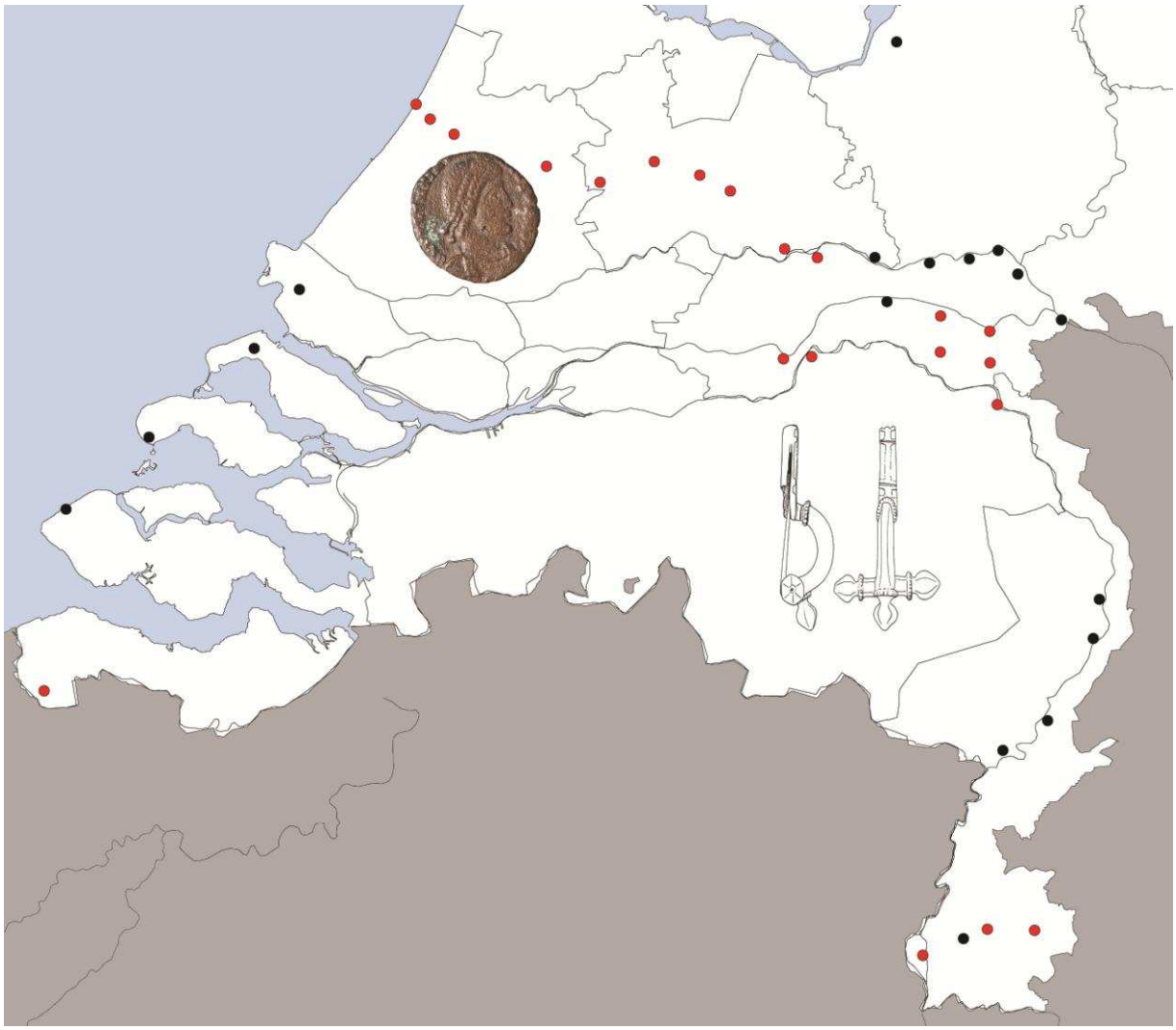
The Late Roman *limes* revisited. The changing function of the Roman army in the Dutch river/coastal area (AD 260-406/7)



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Cover: crossbow brooch from Kessel-Lith (Van Es/Verwers 1977, fig. 5) and an aes III coin struck by Valentinianus I from Woerden (http://www.rmo.nl/collectie/zoeken?object=h+1909%2f9.13).

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List of abbreviations

AAS	Amsterdam Archaeological Studies
AE	*l'Année Épigraphique*
AK	*Archäologisches Korrespondenzblatt*
AKU	Archeologische Kroniek Utrecht
Alzei	Unverzagt 1916.
BAR	British Archaeological Reports
BJ	*Bonner Jahrbücher*
BKNOB	*Berichten van de Koninklijke Nederlandse Oudheidkundige Bond*
BROB	*Berichten van de Rijksdienst voor het Oudheidkundig Bodemonderzoek*
Chenet	Chenet 1941.
CIL	*Corpus Inscriptionum Latinarum*
Drag./Dragendorff	Dragendorff 1895.
ER	*Excerpta Romana*; Byvank 1931; ibid. 1935; ibid. 1947.
Gellep	Pirling/Siepen 2006.
JMP	*Jaarboek voor Munt- en Penningkunde*
JRGZM	Jahrbuch des Römisch-Germanische Zentralmuseums Mainz
JROB	*Jaarboek van de Rijksdienst voor het Oudheidkundig Bodemonderzoek*
ILS	*Inscriptiones Latinae Selectae*
JRS	*Journal of Roman Studies*
MDS	Maas-Demer-Scheldt
NAR	Nederlandse Archeologische Rapporten
NKNOB	*Nieuws-Bulletin van de Koninklijke Nederlandse Oudheidkundige Bond*
NB/Niederbieber	Oelman 1914.
OMROL	*Oudheidkundige Mededelingen uit het Rijksmuseum van Oudheden te Leiden*
Pirling	Pirling 1966; Pirling 1974.
P. Oxy	*Papyrus Oxyrhynchus*
RAM	Rapport Archeologische Monumentenzorg
RMO	Rijksmuseum van Oudheden
ROB	Rijksdienst voor het Oudheidkundig Bodemonderzoek
SFMA	Studien zu Fundmünzen der Antike
SHA	*Scriptores Historia Augusta*
VOOGR	*Verslagen van de afdeling Oudheidkundig Onderzoek van Gemeentewerken Rotterdam*

Chapter 1. Introduction

The topic of this thesis is the Late Roman *limes* in the Netherlands, defined here roughly as the Dutch river area from the coastline to the Belgian and German borders from AD 260/270-406/7. Specifically, the aim is to arrive at a model for how the Late Roman *limes* evolved over time and to understand the functional roles of individual sites within the greater whole. An overview of the archaeological evidence for Late Roman military sites in the study region will be presented and analysed according to a theoretical and methodological framework, which will be elaborated upon in this and the next chapter.

The rest of chapter is mainly dedicated to an exploration of the most important theoretical publications on the Late Roman *limes* in more or less chronological order. At the end of the chapter, the theoretical discussion about the nature of the Late Roman *limes* will be distilled into seven smaller research questions, which together aim at formulating a model for the changing role of the north-western *limes* in the Late Roman period.

1.1 Theoretical background

The Late Roman period is traditionally portrayed as a period of decline and fall[1]: the empire suffered under the strains of bureaucracy, "barbarian" immigrations and attacks, civil wars and short-lived emperors. [2] This downward spiral starts with the event of the *Limesfall*, which saw the entire western frontier breached sometime between AD 240 and 250, and completely overrun by "barbarians" in AD 250-260. [3] In the case of the north-western frontier, the two main threats were the Goths on the Lower Danube and the Saxons and Franks on the Middle/Lower Rhine.[4] Some of the more dramatic accounts describe how the local population was completely wiped out and civilisation was erased. [5] As a result, the western provinces were usurped by Postumus and the Gallic Empire was founded in AD 260. After Aurelian recaptured the lost territories, Diocletian executed extensive army reforms, and according to some accounts, almost quadrupled the size of the army.[6] However, after Stilicho withdrew the army from the Rhine frontier, it eventually yielded to a large-scale Alamanni attack in AD 406/7, effectively ending Roman authority in Germania Secunda. Rome's rule was officially over when its capital Cologne was sacked in AD 456.

This is the traditional narrative of the Late Roman empire as a whole. A detailed synthesis of how the frontiers operated was first proposed by Edward Luttvak. This military historian conceived of the idea of a "Grand Strategy", according to which the *limes* was defended, consisting of three chronologically distinct "systems". The third and last system, the "Severan system" spanned the entire Late Roman period, describing Rome's reaction to the "barbarians" penetrating the defensive perimeter of the *limes*. According to Luttwak, the Romans had two options in restructuring their defence after the *Limesfall*: elastic defence (abandoning their frontier completely and relying solely on mobile forces) or defence-in-depth (employing self-contained strongholds along the frontier backed-up by mobile forces). Despite neither being as perfect as previous systems (which had become too costly to maintain) Luttwak proposes that defence in-depth was the more preferable choice strategically, and was thus most likely applied. [7] As a result, defence shifted behind the original perimeter, providing flexibility after the overland frontier collapsed around AD 260.[8] Fewer garrisons were stationed along the frontiers (*limitanei*), and a peripheral combat zone was established to intercept incursions. The mobile forces (*comitatenses*) were employed there, supported by fortified places in the hinterland, such as defended passageways, supply depots, road forts and fortified towns (see fig. 1).[9] Repeated invasions lead to a downward spiral of defence retreating further back until the death of Theodosius in AD 395, when the borders were finally overrun and elastic defence took over.[10]

[1] Originally coined by Gibbon 1998.
[2] MacMullen 1988; Collins 2012, 145.
[3] Van Es 1981, 47; Glasbergen 1947, 305; Bogaers 1967b, 107; De Boone 1954, 37-39; Schallmayer 1987, 488.
[4] Whittaker 1994, 133.
[5] Van Es 1981, 47; see also Heather 2005; ibid. 2009; Ward-Perkins 2005; Goldsworthy 2009; Christie 2011.
[6] Jones 1964, 615; Southern/Dixon 2000, 17; Lact. *De Mort. Pers*. 7.2.
[7] Luttwak 1976, 130-1.
[8] Luttwak 1976, 136, 144.
[9] Luttwak 1976, 132-133; 169-170.
[10] Luttwak 1976, 152.

This approach was radical at the time, as it was one of the first studies to combine archaeological data with an explanatory framework based on theoretical principles from military tactics and strategy. It is based on four key points, which each have received increasing attention in recent years, and it is useful to look at each component in some more detail. These are: the idea that frontiers were strictly linear and defensive, the event of the *Limesfall* as a catalyst for further decline, a separation of troops into mobile and stationary forces, and a move of defence in-depth.

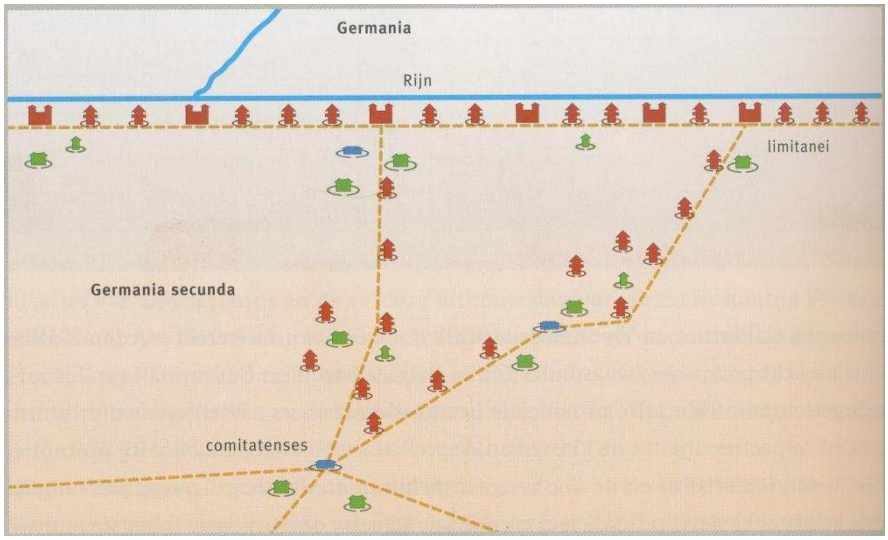

Fig. 1. Schematic map of defence-in-depth; after Van Enckevort/Thijssen 2005 fig. 67. **Red** *castella* and watchtowers; **Green** fortified *villae* and *horrea*; **Blue** fortified towns.

Much of the critique expressed about Luttvak's work focusses on his theoretical definition of the *limes* or frontier.[11] His presentation of a hard line, a perimeter, almost a kind of "no man's land" between the Roman empire and the rest of the world is clearly influenced by the Cold War period in which he was writing.[12] Besides, Whittaker has argued that the *de facto* frontiers of provincial administration, military frontiers of control and political frontiers of influence do not necessarily overlap, arguing instead to speak of "frontier zones".[13] The idea that "natural frontiers" such as rivers provided the best location for the *limes* has also been questioned.

Mann for instance has argued that "there is no such thing as a natural frontier", and that rivers especially are ineffective as boundaries between population groups.[14] Bloemers has stated in a similar vein that instead rivers serve as intermediates between different ethnic groups. [15] It has been shown that the rivers of the north-western empire were frequently crossed and used for transport.[16] They functioned as passageways and exchange zones under Roman control.[17] The Rhine and Danube for instance were never highly defensive frontiers, but rather fortified, controlled supply routes.[18] Also, it is demonstrated that client kingdoms were still used as a diplomatic tool well into the 5th century[19], suggesting a strategy aimed at creating forward buffer zones. For Mann, the choice to settle the border on rivers was therefore mostly a bureaucratic one, as it allowed perfectly for control of movement.[20] Similar thoughts have also been expressed about the eastern frontier, most notably by Isaac.[21]
Isaac's work on the frontier in the Roman East is based on the assumption that for the empire to maintain its conquered territory and ensure its authority and prosperity, the security of roads and other

[11] They are too many to discuss here, but good overviews of the available literature can be found in Kahan 2006; Mann 1979; Whittaker 1994; Isaac 1990.
[12] Cf. Halsall 2014a, 521
[13] Whittaker 1994, 195.
[14] Mann 1974, 513.
[15] Bloemers 1983a; cf. Willems 1986a, 209-10.
[16] Middleton 1979, 81; Whittaker 1994, 100-1.
[17] Whittaker 1994, 61-62; 77.
[18] Whittaker 1994, 158; see for detailed regional studies Van Dinter 2013; Sommer 2009; Langeveld *et al.* 2010.
[19] Heather 2001.
[20] Mann 1974, 513.
[21] Isaac 1988; ibid. 1990.

means of communication were vital.[22] Important towns and military forts were therefore invariably located near great rivers.[23]

He warns, however, against confusing lines of communication provided with forts for the protection of military traffic with lines of forts intended to prevent enemy movement across them (as argued by those authors cited above). He finds that the army was stationed along major waterways and strategic roads to safeguard its own traffic and to control the movement of the people subjected to Roman rule. Like Whittaker and Bloemers, Isaac identifies roads and rivers as connective entities, rather than barriers. For him, the two main decisive factors in the location of forts are the availability of local supplies and the distribution and attitudes of the civilian population.[24]
A final point that has been raised by Luttvak's critics about his theoretical standings, is the all-encompassing nature of his theory, which many view as anachronistic.[25] The Romans themselves did not describe their policies in such terms and in fact the term "grand strategy" as applied by Luttwak (one policy for the entire Empire) is not supported by any written or archaeological evidence. Alternative definitions of the term, such as the one proposed by Kagan ("*the use of all of the state's resources to achieve all of the state's major security objectives*") seem more applicable.[26] Based on his studies of literary sources, Le Bohec has proposed instead to speak of a "*petite stratégie*". As there is no direct evidence for a "grand", but as the Roman state had plenty of soldiers at here command, combined with reconnaissance on her enemies, he argues that she should have been capable of forming some form of organised defence.[27]

The second important aspect of Luttvak's work is the *Limesfall*, the devastating nature which has been nuanced in recent years.[28] It now seems that the scale and frequency of barbarian" incursions responsible for the lapse in Roman authority in the 3rd-5th centuries seems to have been exaggerated in historical texts. No widespread burnt deposits or large-scale ransacking of regional civil administration centres seem to have occurred, at least on the Lower Rhine, [29] with most archaeological evidence pointing towards raids focussing on sanctuaries and other places where booty was most likely to be found.[30] Any evidence that the entire western frontier was "overrun"[31] is not to be found in the archaeological record. It has even been argued that there was no barbarian desire to even conquer the Roman Empire, but only to raid on a local scale.[32] The complete devastation of the frontier as traditionally sketched might have been a little overdramatic. There are even indications that Constantine III "restored order" at least in the Lower Rhine by tightening relations with frontier tribes after the western frontier had already been abandoned by the army.[33]

It should be pointed out, however, that the settlement distributions of the later 3rd to the early 5th century differ widely from those from earlier periods. Much of the countryside around Tongeren became depopulated around the third quarter of the 3rd century, and the Cananefatian and Batavian settlement areas were similarly deserted somewhere in the 4th century, although the causes behind these developments remain unclear. Rural habitation resumed somewhere during the late 4th century. [34] The towns underwent a similar evolution. Whereas Cologne thrived throughout the late 3rd to early 5th century, Tongeren built a new wall sometime between the late 3rd century and the first half of the 4th

[22] Isaac 1990, 102-3.
[23] Isaac 1990, 102; cf. Richmond 1982, 33, 38; Wells 1972, 24ff; Driessen 2007, 190; Gechter 1979, 113-4; Van Dinter 2013, 25.
[24] Isaac 1990, 103.
[25] Brulet 2017, 45; Southern/Dixon 2009, 29.
[26] Kagan 2006, 348.
[27] Le Bohec 2012, 49.
[28] F.i. Schallmayer 1987; Heeren 2015; Kropff/Van der Vin 2003. See for an extensive summary of the topic Heeren 2016, especially 188-190.
[29] Contrary to the Obergermanisch-Raetische limes for which the term *Limesfall* was originally coined; Heeren 2015, 290; Heeren 2016, 193; Kropff 2015, 178; Dhaeze 2011, 197.
[30] Heeren 2015, 292.
[31] As stated by Van Es 1981, 47-8.
[32] Halsall 2014a, 522.
[33] Heeren *et al.* 2014, 4.
[34] Heeren 2015, 284; Heeren 2017, 155.

century, surrounding a markedly smaller site. Likewise, the civilian administrative centre of Ulpia Noviomagus in Nijmegen was partially deserted and a fortification was erected at the Valkhof.[35] The focus in this thesis lies on the frontier zone, however. For the Dutch part of the Lower Rhine which is considered here, it is generally taken as fact that almost all *castella* have end dates around 260/270.[36] New fortifications appear in the 4th century, often ascribed to the building programmes of Diocletian, Constantine I, Valentinian I and Julian.[37] Some of these are located along the Meuse, which has been interpreted by some as a sign of defence-in-depth, albeit not very deep.[38] This uniformity in end dates may be more informed the mindset of the excavators than actual archaeological data. It is common in the Netherlands to date conservatively and early, and type site for Middle Roman ceramics, Niederbieber, is assumed to have ended around AD 260/270, providing an end date for the Niederbieber typology. Pottery specialists are increasingly arguing for a softening of this end date (see paragraph 2.3), which presents an opportunity to reappraise some of the evidence for Dutch sites.

The usurpation of the Gallic Empire does not stand in the way of nuancing the impact of the *Limesfall*. It was a relatively short-term event and it was in itself mainly political in nature. Postumus did not violently separate Gaul, Germania Secunda and Britannia from the Empire by military force. Rather, he staged a political coupe made possible by local feudal tendencies of Gaulish land-owners[39] and the fact that Rome was otherwise engaged in civil war. Some sources even claim that one of the incentives for his actions was to secure the Rhine frontier from further invasions[40] by constructing a series of unknown fortifications in Free Germany against the Franks.[41]

Thirdly, there is the notion that the Late Roman army was devided into mobile and stationary troops, a theory that was already proposed by Mommsen based on epigraphical sources.[42] The stationary *limitanei* were presented, and are still assumed to have been, inferior to the *comitatenses*. Some have even argued that they were mere peasant- or farmer-soldiers, whose main task was to work the land.[43]

This strict division of two types of army has since been challenged. There is first of all the question of who first created the *comitatenses*, Diocletian or Constantine I.[44] Most scholars agree that Diocletian already had a large reserve of mobile troops at his command[45] as evidenced by epigraphical sources.[46] The argument for Constantine I[47] is that large mobile reserves would have increased the chances of usurpation, something that Diocletian was keen to avoid.[48] Also, a civil war was less likely under the divided empire of the Tetrarchy, rendering a mobile army centred around the emperor unnecessary.[49]

Furthermore, there are those who have argued that the whole division between mobile and stationary troops did in fact not exist, and that the terms *limitanei* and *comitenses* refer to something else. Isaac, for instance, has argued that the term *limes* was not used in Roman parlance as we understand and use it today, meaning a (fortified) frontier, and that the derived term *limitanei* therefore cannot have denoted troops stationed specifically on a fortified frontier.[50] More specifically, Le Bohec[51] has argued that although these phrases are used in bureaucratic, legal and administrative documents (such as the *Notitia Dignitatum*), the writer Ammianus Marcellinus (mainly interested in

[35] Thijssen 1980; Van Enckevort/Thijssen 2014.
[36] Van Es 1981, 47ff.; Bogaers/Rüger 1974.
[37] Van Es 1981, 50-52. See also Brulet 1995a; Von Petrikovits 1971; Schönberger 1969; Bogaers/Rüger 1974.
[38] Le Bohec 2012, 55; Gauthier et al. 2009; Gauthier 2002.
[39] Drinkwater 1987, 239.
[40] Drinkwater 1987, 226-227; Van Es 1981, 49.
[41] Schönberger 1969, 178; *SHA Tyr. Trig.* V, 4.
[42] Mommsen 1889, 195-279, in Le Bohec 2012 48.
[43] Luttvak 1976, 190; Von Petrikovits 1978, 221; Le Bohec 2007; Willems 1986, 306.
[44] Southern and Dixon 2000, 15.
[45] Mommsen 1889; Baynes 1925; Parker 1935, 272-3; Jones 1964, 54; Hoffman 1969, 2, 258.
[46] Egyptian papyrus *P.Oxy* 1.43, col. 24-8; *CIL* III 6196 (*ILS* 2781; *AE* 2000, 1270; *AE* 2001, 1739) and *CIL* III 5565 (*ILS* 6640); Hoffman 1969, 257-8.
[47] E.g. Nischer 1923, 10-12.
[48] Seston 1946, 305-7; Van Berchem 1952, 106-8; ibid. 1977, 542.
[49] Williams 1985, 93.
[50] Isaac 1988.
[51] Le Bohec 2012; see also for further criticism on this part Le Bohec 2007.

logistics and strategy) does not mention them.[52] Nor does he in fact describe such a division of the army in mobile and stationary forces in any other terms, suggesting that the terms *comitatenses* and *limitanei* did in fact not relate to entire branches of the army, but rather to individual units or soldiers.[53] There is also no indication in Ammianus Marcellinus' work that implies that troops stationed along the frontiers were some way inferior to mobile ones, or that they were involved agricultural work.[54]

Despite the fact that the *comitatenses*/*limitanei* division played such a central part to Luttwak's idea of defence-in-depth, however, Le Bohec does still identify with parts of this grand strategy theory. He first of all is still convinced of the fact that many, if not all, Roman fortifications along the Rhine were destroyed during the *Limesfall* and that they were subsequently rebuilt more inland.[55] This was caused, as he states, by the force on the frontier executed by "the Germans", and logistical constraints meant that armies needed to be stationed more closely to their supply nodes.[56] An in-depth strategy was thus not so much a Roman construct or ideal, but a coping mechanism in reaction to changing geo-political circumstances.

As has become clear from the above, the defence-in-depth system is still widely referenced, including by authors who have criticised specific aspects of the theory. It is therefore interesting to look at the way some contemporary scholars have incorporated and adapted Luttvak's theory. Admittedly, I have devoted a lot of space to this discussion, but I feel it is merited. After all, even after almost 40 years since Luttvak's publication, the latest edition of the *Limeskongress* devoted an entire session to the discussion of whether or not there was ever such a thing as defence-in-depth, either in the east or west.[57]

A good example is the work of Brulet,[58] who argues that defence-in-depth was not the sole method of Late Roman strategy, but as one element of it. Different strategies were applied by the Roman army, sometimes simultaneously, and these included maintaining a strong border defence, attacking the enemy on his own turf (including pro-active border attacks) and the use of mobile troops to defend the interior provinces in the case of an incursion.[59]
Rather than use in-depth defence to "catch" invading "barbarians", Brulet argues that it was a necessary feature against large-scale attacks, as only a large mobile army from a reserve military base could respond properly in such an event, thus relying on a varied provincial infrastructure. Towns were defended by walls, towers, and ramparts and could garrison troops on manoeuvres and function as reliable logistical bases. These strongholds were further supported by new small fortifications along communication routes (road forts etc.). Resident militia groups protected the rural areas. These reforms were not all introduced at the same time, but gradually came into effect during the course of the late 3rd to early 5th century.[60]

Closer to Luttvak stands Nicasie,[61] who maintains that natural barriers such as rivers proved the most effective lines of defence. The intrinsic defensive qualities of rivers, combined with their use as transport corridors were the reason the Romans built their defences there, despite the fact that Nicasie finds that the fortifications directly on the frontier were insufficient to stop a full-scale attack.[62] He recognises a defensive system in the hinterland of the Rhine, as early as the third quarter of the 3rd century, namely the fortifications along the Bavay-Tongeren road. Further in-depth fortifications were built in the Netherlands during the Gallic Empire and the Tetrarchy, with the aim to protect the roads. Again, however, all the sites he references[63] are situated along the Rhine and Meuse.

[52] Le Bohec 2012, 65.
[53] Le Bohec 2012, 65; contrary to Carrié 1999.
[54] Le Bohec 2012, 55.
[55] Le Bohec 2012, 53ff ; based on maps produced in Von Petrikovits 1971.
[56] Le Bohec 2012, 54 ; Halsall 2014a, 522.
[57] Session "Defence in Depth" in Ingolstadt; 16-09-2015.
[58] E.g. Brulet 1977; ibid. 1986; ibid. 1990; ibid. 1995ab; ibid. 2006; ibid. 2017.
[59] Brulet 2017, 45.
[60] Brulet 2017, 46.
[61] Nicasie 1997a; 1997b.
[62] Nicasie 1997a, 455-6.
[63] Willems 1986, 306-312, 433-438, 445, 451-457; fig. 143.

Other statements, for example that towns and *villae* were fortified and that refuges were built in easily defendable places[64] again are not readily attested by the archaeological record.[65]
Despite the fact that much of the more theoretical criticism of Luttwak has been duly noted, it seems that some aspects of his model of in-depth-defence continue to circulate. First of all, it is tacitly agreed that the fortifications along the frontier were deserted and/or burned down on a large scale and that "new" fortifications were needed.[66] Secondly, the distinction between mobile and stationary troops is still maintained. Thirdly, there is the common notion that "barbarians" (be they Germans, Franks or Alamanni[67]) were able to amass a large number of active troops and pose a serious military threat to the Empire, necessitating the fortification of the landscape. Fourth and final, it is assumed that although there might not have been a "grand", defence-in-depth was a Roman reality, with forts moving inland as a reaction to the barbarian threat.

In recent years, another line of thinking about the Late Roman empire has moved away from the threats of "barbarian" invasions, and focussed more on the cultural changes in the frontier zones that resulted from the collapse of the empire and the foundation of the Frankish kingdoms. Naturally, these scholars are far more interested in migration problems and ethnicity,[68] and in the process they offer a far more radical description of the Late Roman frontier zone without the constraints of having to incorporate army reforms or military strategies. The traditional view, which I have shortly touched upon above, is that besides attacking the frontiers, "barbarians" also migrated into the empire, changing the local culture, until "*the conditions became the same at both sides of the frontier*".[69]
Several Anglophone scholars, mostly ancient historians, have in recent years offered more nuanced interpretations.

A key scholar in this respect is Guy Halsall.[70] Focussing on the so-called Migration Age (*Völkerverwanderungszeit*), he traces the origins of "Germanic" migration and the problems inherent in ethnographic studies of that kind. More specifically, he attacks a number of scholars[71] on their repetitive argument that barbarian migrations were real, and brought down the Empire.[72]
In Halsall's opinion, the assumption of a binary opposition between Romans and "barbarians" was a popular view in late antiquity and was based on contemporary views on ethnography.[73]
Because of the, among other reasons, dividedness of the barbarians, Halsall places the balance of power firmly in Rome's hands. After all, their military manpower exceeded many of their more formidable foes in the East, let alone a barbarian confederacy. The numbers of the barbarian armies described in some Roman sources surely are an exaggeration for propaganda purposes.[74] It was only when they managed to form a confederate army when Rome was distracted by a civil war, that they could do real damage.[75] In fact, he believes that the Rhine frontier could be safely depleted of men, as evidenced by Claudian's remarks that Stilicho could defend the western frontier solely through the fear of his name and treaties with barbarian kings.[76] The insistence in contemporary Roman sources seems therefore to have functioned mostly as a "bogey man" and was largely a Roman construct.[77]
Fighting barbarians and pacifying regions were central in establishing an emperor as a good statesman, and many of the 4th-century emperors spend much of their time at the frontiers rather than in Rome.[78]
Rather than desperately trying to defend a straining frontier against a swarm of outsiders (be they raiders or immigrants), it seems to Halsall that most of the Late Roman period was fairly peaceful,

[64] Nicasie 1997a, 457.
[65] At least not in the Netherlands, where hardly any 4th century *villa* complexes are known. Tongeren does fit into this narrative of fortified towns, but falls outside of the scope of my thesis.
[66] Van Es 1981, 47.
[67] It largely depends on the modern scholar which one of these is seen as the most serious aggressor.
[68] See for instance the "Transformation of the Roman World" series at Brill.
[69] Drinkwater 1996, 20, 23; cf. Goffart 1980; ibid. 1981; ibid. 1989; Whittaker 1994.
[70] Halsall 2014ab.
[71] Most notable Heather 2005; ibid. 2009; Ward-Perkins 2005; see for comparable views; Goldsworthy 2009; Christie 2011.
[72] Halsall 2014a, 517.
[73] Halsall 2014a, 521; Anon. *De Rebus Bellicis* 6.1.
[74] Halsall 2014a, 523; for instance, the 35.000 Alamanni described at the battle of Strasbourg in 357; Amm. Marc. 17.2.
[75] Halsall 2014a, 527; Halsall 2014b, 161-2; cf. Drinkwater 1996.
[76] Halsall 2014a, 524; Claudianus *Panegyricus de Quarto Consulatu Honorii Augusti*, 439-58.
[77] See also below.
[78] Halsall 2014a, 524.

with occasional small-scale skirmishes or raids instead of large-scale incursions. The "default setting" was peaceful co-existence.[79] Halsall even goes as far as stating that during the Late Empire, there was more outward migration than inward, judging by the amount of Roman material culture found beyond the frontier.[80] Instead of two opposing power blocs, the Roman world and its barbarian surroundings were interlocked, as a core and periphery.[81] Close management of the borders facilitated migration meaning that more migration took place during the 4th and 5th centuries than after the end of the Empire.[82]

It is interesting to see that Halsall does still, to some extent, promote the idea of a deeper Late Roman frontier, which he, like Le Bohec[83] ascribes to the need to station troops closer to supply points. These, in his words "*late imperial administration's nodal points*" thus needed to be defended more closely, necessitating a shift of troops land inward.[84] His focus on immigration rather than invasion is also refreshing, although archaeological treatment of the former has always been somewhat problematic.[85] The military aspect of migration, namely the *laeti* and *foederati*, is a phenomenon predominantly encountered in the 5th century, and thus fall outside of the parameters of this thesis.

A similar approach to Halsall's, but far more radical in its conclusions was published by Drinkwater.[86] Basing himself predominantly on a critical analysis of contemporary sources, he comes to the same conclusion as Halsall, namely that the ancient writers believed as much in the barbarian (in his piece Frankish) threats on the frontiers as modern ancient historians do, but that these did not really exist.[87] In his more fighting words, the defensive architecture set up along the Rhine during the 4th century was a sham.[88] His explanation for the "busy-ness" of the 4th century when it comes to military activity on the Rhine is that Emperors needed a certain military reputation[89], to control the army during periods of political uncertainty or to provide individual Emperors (such as Valentinian I) with an excuse to go the Western front when it suited them for political reasons.[90] Rather than being under attack from hordes of barbarians, he paints Rome as the most frequent aggressor, and many military campaigns were geared towards internal politics, rather than defensive purposes.[91] Similar to Halsall's peaceful analysis of the "Germans", Drinkwater has found no real evidence for a growing tide of Frankish hostility against the Empire during the second half of the 4th century.[92]
The barbarians and the supposed threat they were posing were thus used as an excuse for the maintenance of a large military force in Gaul and along the Rhine and to justify the imperial system in the west. Drinkwater even goes so far as to suggest that an Emperor in charge of a relatively safe area, would start picking fights with barbarians and built fortifications against them when there was no practical need to do so.[93] Although admitting that a certain force was needed to police the activities of the peoples on the borders of the Empire and to prevent raiding, Drinkwater states that the military forces that were present along the western frontier in the 4th century were far larger in size than was strictly necessary for that purpose.[94]

Although this is a tantalising proposition and unique in the way it manages to combine an analysis of the politics of the Roman imperial court with archaeological data, it is slightly problematic. The suggestion that the investments made in the western frontier and in the number of troops stationed there were larger than necessary, automatically assumes that there is a certain number that "would

[79] Halsall 2014b, 123-131, 150-161.
[80] Regarding "carrier migration" as evidenced by weapon graves; Halsall 2014a, 525ff.
[81] Halsall 2014a, 528.
[82] Halsall 2014a, 529; Pitts 1989, 45-58.
[83] Le Bohec 2012.
[84] Halsall 2014a, 522.
[85] See for the most important writing on this the work of Goffart 1989; ibid. 2006 and indeed Halsall himself, especially 2014b.
[86] Drinkwater 1996.
[87] Drinkwater 1996, 20.
[88] Drinkwater 1996, 28 (misuse of "the taxpayer's money"; Cf. Goffart 1980, 30; contra Goffart 1987, 7.
[89] Cf. Mann 1979 for a similar argument, based on the martial culture Rome adopted under the Republic.
[90] Drinkwater 1996, 27.
[91] Drinkwater 1996, 22; see also Whittaker 1994, 199ff; *Pan.Lat* 4(8).8.1ff., 4(8).17.1f; 6(7).4.2ff; 7(6).10.1ff; 9(12).22.3; 9(12).23.2.
[92] Cf. James 1988, 51ff.
[93] Drinkwater 1996, 27.
[94] Drinkwater 1996, 28; Cf. Goffart 1980, 30; contra Goffart 1987, 7.

have sufficed". Naturally, we cannot calculate or know this number for certain, therefore making it difficult to adequately show this theory in working. A few studies have attempted to mathematically approach the minimum number of troops necessary to defend the Late Roman frontiers[95] but in their purely abstract approach they are far removed from the archaeological reality and are of no real practical use for further study.

1.2 Approach

There is an interesting division between the two groups of scholars presented above. The first group, mainly consisting of archaeologists, is mainly focussed on the army reforms of the late 3rd century and on the defensive nature of the frontier in the 4th century. The second group is made up almost entirely of (medieval) historians, interested in the transformation of the Roman world into the Frankish kingdoms of the 6th century. It is interesting to note for example, how Halsall presents the 4th through 6th centuries as one continuous chronological entity.[96] In sharp contrast stand the many archaeologists who compare the Late Roman period to the three centuries preceding it, in a sometimes outright nostalgic fashion.[97] Both approaches have their merits, however, have yielded various, often conflicting interpretations of how the Late Roman *limes* was constructed and how it operated.

Applying a number of these theories to the archaeological dataset should provide interesting new insights into the nature of the Late Roman *limes*. What I find them all to be lacking, however, is a thorough basis in archaeological evidence. Even noted archaeologists such as Van Es or Brulet do not move beyond sites as dots on a map. What we need is a proper understanding of those military sites: what they looked like, when they were built, whether they were contemporary, what they were used for, etc. An in-depth study of all the sites that make up the *limes* is needed to fully appreciate the role and purpose of the *limes* as a whole. With that raw data in hand, we can go back to those abstract theoretical understandings of Roman strategy and frontier defence, and reflect on them meaningfully.

The main aim of this thesis is therefore to study, in as far as possible by archaeological means, what the nature of the late Roman frontier was. There are many questions raised by the theoretical debate outlined above. Can we identify stationary and mobile forces? Is there a sharp cut-off around 260/270 of activity in the frontier fortifications or can we instead argue for continuity in some individual cases? And what function or functions did these fortifications serve, beside garrisoning troops? Can we identify an overarching strategy, however small in scale, that informed the positioning of military sites? Is there any evidence that (part of) the Late Roman fortifications were only a scam and were not functional (as suggested by Drinkwater)? Was the Late Roman period in fact as peaceful as Halsall has suggested?

For this thesis, the coastline and the most western part of the Lower Rhine (from the coast to Lobith), and Meuse (from the coast to Maastricht) were selected as a case study. It has the advantage that it is one of the most well-researched parts of the Roman *limes* in the amount of fieldwork done on it, [98] giving us plenty of archaeological data to work with. Despite this, the archaeological picture of the region is rather confused. Chronological maps for example differ greatly between different scholars in the number of sites depicted.[99] This is largely due to the fact that many sites in this area are identified solely on stray or dredge finds, or are only published in Dutch publications, making them inaccessible for foreign scholars. Furthermore, interpretations of sites often continue to purvey despite doubts about their legitimacy, because insufficient new fieldwork is being done. Older fieldwork is often hardly published and was subjected to different standards. For instance, finds of Late Roman coins and ceramics were in many cases noted (but not quantified or analysed) in many of their reports, and were

[95] Henning/Hedetniemi 2003; ReVelle/Rosing 2002.
[96] Halsall 2014a, 515; Halsall's overview of the Late Roman world (Halsall 2014b), for instance, starts in AD 376.
[97] E.g. Van Es 1981, 50ff.
[98] Willems 1988a, 241.
[99] Quality of maps also depends on the aims of the authors, as some merely give regional or chronological overviews (Poidebard 1934; Johnson 1983) or attempt a functional classification (Von Petrikovits 1971; Elton 1998; Lander 1980; ibid. 1984; Kennedy/Riley 1990).

said to be of no consequence, or to have been stray finds. In some cases, the possibility that these finds may have marked a Late Roman phase to a site was actively denied.[100]

In my opinion, a great deal can be gained from going back to these old publications and excavation reports (time permitting) and evaluating the evidence for late 3rd and 4th (perhaps early 5th) century phases for Roman military sites. To this dataset, we can add several modern commercial reports (in some cases even of ongoing research[101]), and coins currently in the online NUMIS database.[102] Although far from perfect, such a multi-faceted database of Late Roman finds can give us a more reliable picture of where and when the Roman army decided to invest and address the continuity issue.

This dataset will be used to study the role of the Lower Rhine *limes* between the late 3rd and early 5th century and the changes and developments it underwent during that period (AD 260-406/7). First of all, this poses some questions on dating and continuity.

1. *What is the nature of the evidence we have for military activity in the study area for the Late Roman period, and how does this affect the research questions we can reasonably pose?*

2. *Is it possible to "stretch" the conventional end dates of some military sites already located in the limes area into the late 3rd and perhaps even 4th century?*

3. *Can we identify different building or reconstruction phases for individual sites active between 260-406/7 and if so, are these related to each other (for instance through large-scale imperial building programs)?*

Secondly, some questions need to be asked relating to the function of individual sites and their place in the whole *limes* structure.

4. *Is there a positive link between site lay-out and military function? If so, do fortifications built or reconstructed during the years 260-406/7 differ strongly in lay-out from 1st and 2nd century fortifications?*

5. *Is there a positive link between site location and function? If so, is there any indication that a different choice of location was made for newly built sites between 260-406/7, due to a different function of these individual sites?*

6. *How are we to understand the Late Roman limes as a functioning system? How do the functions of individual sites relate to the limes as a whole and how did it develop over time and why?*

There is a multitude of methodological problems inherent in answering these questions. For instance, it assumes, like many previous studies, that the purpose of a site or even frontier "system" can be deduced from the archaeological remains of the fortifications it is made up of, [103] not to mention the methodological problems inherent in reliable showing contemporaneity and shared chronologies between sites. Furthermore, functions did not necessarily remain the same over prolonged periods of time.[104] Most important, however, is the matter of identifying and defining function. Many sites are simply referred to in the literature as "fort", whereas it was shown for other regions that many more site types may have existed (such as fortified towns, *horrea*, and *villae*).[105] My preferred terminology

[100] Eg. Valkenburg, Woerden, Vleuten-De Meern, Utrecht (Van Es 1981, 125); Vechten (Tijmann 1994); Woerden (Kemmers 2008a).
[101] Heerlen; Vechten and Nijmegen-Valkhof.
[102] https://nnc.dnb.nl/dnb-nnc-ontsluiting-frontend/#/numis/
[103] Kagan 2006, 338.
[104] Isaac 1990; Kagan 2006, 338.
[105] Arguably, it seems unlikely that this study will encounter many fortified towns and *villae*. *Villa* complexes generally did not survive into the Late Roman period, and no Late Roman towns are known with certainty from the Netherlands. Fortified *horrea* are more likely to be identified, and have been well-attested in the literatiure; cf. Manning 1975; Von Petrikovits 1971, 192, fig. 25.

therefore is to talk about fortified sites and I wish to study those fortified sites in which the army was involved (either in construction or occupation).
Chapter 2 will be devoted to examining these issues, and defining a framework for establishing chronologies and defining and identifying functions. This chapter will also entail a description of how I have collected the dataset. The list of sites used in this thesis is presented in chapter 3. The archaeological evidence for these sites will be discussed and a series of chronological maps will be presented, showing the construction and use of military sites in the study area over time. Chapter 4 will consist of a synthesis, in which these maps will be used to answer the research questions raised above. Finally, they will be compared to the theoretical works discussed in this chapter, and their respective interpretative applicability will be compared and contrasted.

Chapter 2. Methodological framework

This chapter deals with the methodological aspects of dating Late Roman military sites, and identifying their function. An overview of a selection of the relevant literature is discussed, after which some choices of approach are made. Finally, the different data sources my research is based on are explained and assessed.

2.1 Site definition

Most studies that deal with the specific functions of fortifications focus on the ground plan of the site, or on individual building plans (see paragraph 2.2). However, in the Dutch river area we are more often than not dealing with stray finds or dredge finds without any structural remains in context. The questions with these finds are whether they all belong to the same complex, whether they constitute a "site" and if so, to what extent they have been transported from their original context. In much of the literature, individual sites are often asserted because of the amount of material culture found at a specific spot. Rossum and Maurik for example are traditionally interpreted as Roman *castella* because of the large number of coins and other metal finds found in the river bed there. At Kessel-Lith, the quality of the finds and levels of erosion led to a reconstruction of different sedimentary contexts in the river bed, and an original context for some of the finds could be deduced.[106] An overall methodological framework for interpreting stray and dredge finds is hard to come by, however, although attempts have been made.

In his regional study of Roman sites in the Kromme Rijn area, Wouter Vos based his work on a combination of stray finds and excavation data. He decided that typical finds for settlements would be pottery, charcoal, animal bones, weaving weights and spindle whorls, small metal artefacts and roof tiles. A minimum of 10 such items would indicate the presence of a settlement.[107] For the Late Roman period specifically, he distinguished coarse-tempered ware from the Eifel region (specifically Alzei 27 jars), Argonne Samian ware, shell-tempered handmade pottery, *aes* coins, Wijster type hair pins, and crossbow brooches as type fossils.[108] Vos's definition of the concept of "site" is thus clearly very broad, and it leaves open the question of what amount of material culture constitutes a significant amount, as Vos's minimum requirements for sites are insufficient for reconstructing military complexes. In several case studies in this thesis, site reports make note of a certain number of Late Roman finds, but deem the amounts too small to be of significance or to be reflective of a Late Roman phase.[109] A balance must thus be struck between interpreting every 10 finds as a site and simply dismissing evidence for entire periods of history because its remains are not as plentiful as they are for earlier phases. This thesis, like these previous studies, also deals with a combination of excavated settlements and stray finds, so a combination of different "markers" is necessary and these are coins, pottery, crossbow brooches and structures.

The archaeological evidence dealt with in this thesis is a bit of a mixed bag. On the one hand, there are sites that have been extensively excavated and for which ground plans and material culture are well documented. On the other, there are plenty of sites for which only historical references or dredge or stray finds are known. We therefore need a comprehensive framework to interpret these more "tenuous" sites in a manner that allows us to compare them to excavated sites. This can be done by studying both the structural and the material remains, to the extent these are available.

2.2 Assigning function

Once a "site" has been identified, assigning it a function that is more specific than settlement, cemetery or fortification, is quite complicated. It is a well-known phenomenon that the lines between civilian and military life became increasingly blurred in the Late Roman period, so even deciding between military and civilian use of a site can be difficult. We know for instance from contemporary

[106] Roymans 2004, 107.
[107] Vos 2009, 21; cf. Willems 1986a, 90ff; Groenewoudt 1994, 19-20; Verhagen *et al.* 2016, 310.
[108] Vos 2009, 20, no. 137, 204.
[109] This seems to have happened predominantly in the western river area, for sites such as Woerden, Vleuten-De Meern, Utrecht and Vechten. For the eastern river area, much more conclusive excavation data is available. See also note 100.

sources that soldiers were sometimes garrisoned in cities, while civilians occasionally took up quarters in forts.[110]

Structural remains, i.e. the presence of identifiable features or building plans can be used quite well to tackle the first step, namely to identify what I will call sites of a military nature. These include sites that were used both by the army and civilian population, but my base line here is that the construction and/or maintenance of the site was overseen by the military. The investments must have been their initiative.

When we talk about Late Roman fortifications (and in most of the literature this tacitly means forts), these are predominantly built in stone[111] and much is written in the literature on how these fortifications were built. Johnson has written extensively about the specific masonry techniques used for the walls and towers of Late Roman forts, based on the works of Vitruvius and Vegetius.[112] A more frequently applied focus is the difference in layout between Late Roman stone forts and their Early and Middle Roman predecessors. "New trends" in Late Roman military architecture that are often noted include: a reduction in size, protruding interval and corner towers, blocked gates (in the case of restructuring specifically), a rectangular shape rather than playing card, thicker walls (often without the traditional rampart) with barracks built against the inner face and an increasing tendency to have walls follow natural contours, leading to irregular layouts with an "un-Roman appearance" (including polygonal and curvilinear appearances).[113] All these characteristics can be identified, especially in the west, although the idea that Early Roman forts were all playing card shaped and immaculately regular in appearance is out-dated at best.[114] The presence of thick stone mason walls, despite the fact that the Dutch part of the *limes* was largely refurbished in stone around the period AD 180-220[115], can be indicative though, and especially protruding towers are a new phenomenon. Other than stone walls, ramparts and ditches (especially those of a V-shape with anklebreakers) are characteristics for sites of a military nature. Besides forts per se, other fortified sites such as *villae*, *horrea* and refuge hills[116] could be equipped with such features.

On the other end, we have the material remains, material culture left as refuse. Particularly indicative, of course, would be items of military equipment, weapons or particular *fibulae* (most notably the crossbow brooch). The problem with the former two is that they are often difficult to date precisely. High profile finds of clearly Late Roman military gear such as the Peel helmet[117] or the Chi Rho helments[118] are rare. Furthermore, it has been noted that items of military equipment are often found in rivers during dredging activities and are, in such circumstances, often found near sanctuaries.[119] As such, they could also be linked to the ritual practices connected with the sanctuary. Another common argument has been that when a fort was abandoned under peaceful circumstances, it would likely have been cleaned out thoroughly and most of the expensive equipment would have been taken by the leaving army, whereas sites that were violently attacked and destroyed would still contain larger amounts of material (even taking into account looting).[120]

We therefore cannot simply state that the presence or absence of military gear is indicative of a military or civilian site.[121] Furthermore, weaponry and armour are generally difficult to date precisely and are thus not useful to interpret assemblages with little to no well-datable finds. A

[110] Johnson 1983, 226. Collins 2012, 146 also mentions find evidence to this effect.
[111] This may have been different in some instances. There are indications at Hadrian's wall, for example, that the Late Roman period signalled an increase in wood as a construction material; Collins 2012, 150; Pearson 2002.
[112] Johnson 1983, 33ff.
[113] Southern/Dixon 2009, 129; Collins/Weber 2015, 2; Von Petrikovits 1971, 193-6.
[114] Especially in the Netherlands, Early Roman forts have been known to deviate from these "rules" by following natural contours, for instance the Augustan *Doppellager* at Nijmegen (Niemeijer 2016, 8) or the trapezoidal castellum at Velsen I (Bosman 2006, 404-6).
[115] Polak *et al.* 2005, 66.
[116] Nicasie 1997a, 457 cf. Higham 1994.
[117] Derkx/Schatorjé 1980.
[118] Van der Heijden/Koster 2017, 42.
[119] Verhagen/Heeren 2016, 243. Examples are the temple complexes at Kessel-Lith and Empel; Roymans 2004; Roymans/Derks 1994.
[120] Allison 2013, 51.
[121] Cf. Nicolay 2007 for military gear in civilian contexts.

common solution is to pick a "type fossil" to guide interpretations. For Late Roman military activity, the two most common ones are belt fittings (with *Kerbschnitt* decoration) and crossbow brooches.[122] Belt fittings and buckles from the Late Roman period have been mapped extensively by Marcus Sommer.[123] His study revealed that certain type of buckles and fittings appear predominantly along the rivers Meuse and Sambre.[124] It has been suggested that this represents a new line of fortified defensive settlements along these rivers in the early 5th century, perhaps due to flooding of the Lower Rhine area in the late 4th century.[125] Chronologically, these belt fittings thus fall slightly outside of the restrictions for this thesis. Apart from larger regional studies such as the one by Sommer, not much detailed information about the distribution of belt fittings in the Dutch river area is otherwise known. I have therefore chosen the crossbow brooch as a guide fossil, as it dates from the late 3rd century to the early 5th century. Furthermore, an overview work of distributions of *fibulae* in the Netherlands was recently published[126], providing an extensive dataset of crossbow brooches and find spots.

The crossbow brooch has often been seen as a military *fibula*, as it is predominantly found within military zones.[127] Specifically, it is assumed that they were worn by high officers or were given by the emperor to members of his administration.[128] It is relatively rare to come across these in military cemeteries, although no fewer than 26 fragments of crossbow brooches were found in the excavations at Kelfkensbos of the Late Roman fortification in Nijmegen (Valkhof).[129] They are rarely found in small settlements and almost exclusively appear in the *limes* zone.[130] It is commonly assumed that crossbow brooches lost their military connotations in the 5th century.[131]

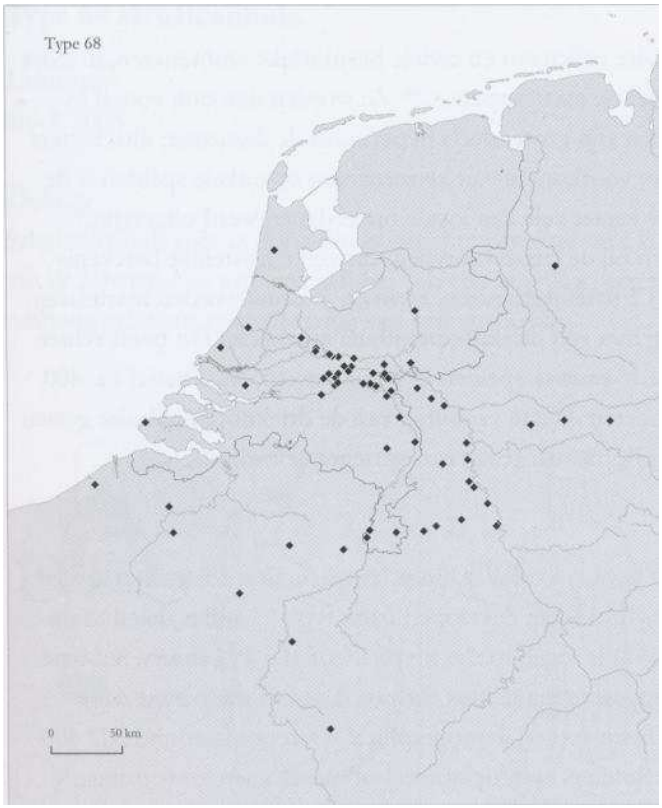

Fig. 2. Distribution map of the crossbow brooch; after Heeren/Van der Feijst 2017, type 68, fig. 4.136.

[122] Swift 2000, 99ff.
[123] Sommer 1984.
[124] Swift 2000, 113.
[125] Swift 2000, 113;
[126] Heeren/Van der Feijst 2017.
[127] Collins 2015, 64-5.
[128] Heeren/Van der Feijst 2017, 182, 395; cf. Van Buchem 1966; Parani 2007; Van Thienen 2017; Haalebos 1986, 69; Willems 1986a, 153; Keller 1971, 171-3.
[129] Heeren/Van der Feijst 2017, 395.
[130] Heeren/Van der Feijst 2017, 182, 397.
[131] Swift 2000, 113; Heeren/Van der Feijst 2017, 182.

Although relatively rare, crossbow brooches can thus be used to some extent to map military activity. If high numbers are present on a site, the presence of military personel can be assumed. To this end, I have made use of the digital database behind the study of Heeren and Van der Feijst.[132] They have recognised several subtypes of the crossbow brooch (type 68)[133] in the Netherlands, Belgium and Germany (see for a distribution map fig. 2). The total amount of occurences of the subtypes of the type 68 noted by Heeren and Van der Feijst are presented in table 1, including their circulation period. A significant portion of these are from cemetery sites, notably Krefeld-Gellep and Oudenburg, while most settlement sites are typically represented in the database by single digit numbers.

Table 1. Crossbow brooches from Heeren/Van der Feijst 2017.

(Sub)type		**Date (min.)**	**Date (max.)**	**N**
68		-	-	22
68a		270	300	33
68b		300	360	14
	68b1	300	360	21
	68b2	300	360	5
	68b3	340	400	18
68c		340	400	40
	68c1	340	400	33
	68c2	340	400	59
	68c3	340	400	17
	68c4	340	400	10
	68c5	340	400	5
68d		340	400	
	68d1	390	450	3
	68d2	390	450	7
68e		390	500	1
	68e1	400	500	1
	68e2	390	450	7
Total				**296**

In appendices 1-4, the relevant *fibulae* are discussed per site (all are executed in bronze, unless stated otherwise). I am particularly interested in specimens from the late 3rd and 4th centuries, as 5th century crossbow brooches have most likely lost their military connotations.[134]

Once the (semi-)military nature of a site has been established, we can look more closely at its function. Several examples have already been given, for instance fortified *horrea* and *villae*. We could add sites of a more infrastructural nature, such as docks or ports controlled by the army or bridges and roads. Because these are all clearly distinctive in their archaeological nature, I will not discuss the various criteria for identifying those in more detail. What does need to be discussed, however, is the problem of assigning specific functions to what are broadly referred to as "fortifications". In many cases, these will be forts garrisoning soldiers, but an enormous amount of literature[135] has been dedicated to further categorise them into different functions. These studies tend to focus predominantly on defence, and on the different defensive roles different types of sites fulfilled within the Late Roman *limes* and its hinterland. Several criteria, which are not mutually exclusive, but are also not used consistently, have been proposed to signify certain functions of fortifications. The overview of different functionalities in Late Roman fortifications presented by Southern and Dixon[136] perhaps best illustrates the confused nature of such an endeavour. The different functions they identify are: marching camps, *quadriburgia* (or forts of the "Diocletianic or Tetrarchic type"), forts of the Saxon Shores, road forts, river fortifications and watchtowers (or *burgi*).[137]

[132] Heeren/Van der Feijst 2017.
[133] This type is also known as: Haalebos 1986, type 16; Riha 1979, type 6.5; Feugère 1985, type 31; Ettlinger 1973, type 57; Keller 1971, type 26-54; Pröttel 1988.
[134] Swift 2000, 113.
[135] For example: Johnson 1983; Southern and Dixon 2009; Von Petrikovitz 1971; Elton 1996; Schönberger 1969; Hassal 1983; Brulet 1990; ibid. 1995ab; ibid. 2017; Lander 1980; ibid. 1984; Kennedy/Riley 1990.
[136] Southern/Dixon 2009, chapter 7.
[137] Southern/Dixon 2009, 132-147.

Such a categorisation uses the criteria of layout and location, but also mixes in several "specialised sites". *Quadriburgia*, for instance, are very specific sites, and this term is used exclusively for small, square forts with towers on each corner dating to the late 3rd and early 4th century.[138] So dating and layout are used here, whereas in other cases, location is key. Road forts, river fortifications and forts of the Saxon Shores (*Litus Saxonicum*) are categorised differently simply because they are located in different geographical areas, while theoretically they may well look identical in ground plan. Finally, marching camps and watchtowers are types of sites that imply a particular nature of occupation (temporary while on military campaign and year-round by a small detachment from a nearby garrison respectively). Watchtowers are most readily recognised by their distinctive ground plans.[139] Ground plans of marching camps are poorly understood by a lack of excavated examples, so location (linked to military campaigns known from the historical sources) is most often used here as a defining characteristic.

In the past, the focus was mainly on linking modern place names to names mentioned in the literary sources such as the *Itinerarium Antonini* and especially those on the *Tabula Peutingeriana*.[140] Attributions of sites were invariably based on the distances mentioned on the *Tabula* and similarities in Roman and modern toponyms.[141] Another set of studies have tried to assign functions to the different buildings and lay-outs of (Late) Roman forts from aerial photography.[142] It is no surprise that all of these have focussed their efforts on the Eastern Roman Empire, where stone-built remains are still clearly visible above ground. This is therefore also not a useful approach for my thesis. It is in other words an undertaking fraught with difficulty to say anything conclusive on what sites were used for or why they were built.[143]

Although it is far from ideal in its inconsistent use of criteria, I find the approach presented here by Southern and Dixon practical to use. Especially location is often a key element in a site's function, although we should be careful to avoid the danger of a self-fulfilling prophecy here. The assumption that sites were located in the hinterland (in-depth), for instance, should then not be used to explain sites found in the hinterland. Layout can be useful in specific instances, such as forts equipped with "special" features such as landing docks or *horrea*. Bridges, watchtowers and other military "non-fort" sites speak for themselves in this regard.

In this thesis, I have divided the sites under discussion into four sub-areas. These are the coastal sites (North Sea), sites along the rivers Rhine and Waal/Lek (the area traditionally referred to as the *limes*), sites along the river Meuse and finally other sites that are not directly linked to a river or sea route. These four areas partially overlap, they encompass different site types (forts, watchtowers etc.) and in no way, do I wish to suggest that they were not part of a cohesive whole functioning together. I do think, however, that splitting them up in this way makes it a bit more accessible to look at the entire study area.

2.3 Dating sites

Dating Late Roman sites of any kind is fraught with difficulties. This is partially due to the nature of the material evidence itself, and partially due to the way it is traditionally studied. The latter reason has

[138] Southern/Dixon 2009, 136.
[139] Graafstal/Langeveld 2010, 28, 33.
[140] Verhagen 2014, 543.
[141] See for examples of this method for the Dutch river area a.o. Stolte 1938; ibid. 1959; Kroon 1935; Cowan 1974; Verhagen 2014; Verhagen/Heeren 2016.
[142] E.g. Poidebard 1934; Parker 1987; Kennedy/Riley 1990.
[143] This is perhaps best summarised in the following quote: "*Archaeology reveals hardly any evidence for patrolling and police work, or the way in which troops were deployed. Contemporaneity of all the fortified structures, confidently placed on maps, cannot be demonstrated, nor can the actual number of men stationed in any of these sites be definitely known, despite the calculations that can be made from the size of the forts in question. As a result, frontiers which seem to have been elaborately defended may in practice only have been lightly manned, and, vice versa, frontiers where there only seem to have been a few defended points may have been more strongly garrisoned. Furthermore, a plethora of fort sites on any map reveals much more about the amount of archaeological work performed in that particular region than it does about the nature of Roman defences, and similarly a dearth in sites may only represent a dearth of archaeologists with an interest in the area.*"; Southern/Dixon 2000, 29.

already been discussed in the introduction: the notion that most if not all fortifications were abandoned or burned down during the *Limesfall* continues to purvey site reports and synthetic regional studies.[144] This paradigm was instrumental in the publication of the *castellum* at Niederbieber by Oelman.[145] In his study of the ceramics of the site, he dated the site to AD 185-260, [146] placing the definitive end date and destruction of the site at the time of the *Limesfall*, despite the fact that several years earlier it was already demonstrated that the coin series at Niederbieber suggested a much longer site history.[147] Despite all this, Niederbieber is is now widely accepted and used as a type site for 2nd and early 3rd-century Roman ceramics, and especially coarse-tempered ceramics. A hard line was thus created between Middle Roman coarse-tempered pottery (Niederbieber typology) and Late Roman coarse-tempered pottery (categorised under the typologies of Pirling or Gellep[148] and Alzei). A similar distinction is made in the study of samian ware (terra sigillata): the Dragendorff typology is used for the Early and Middle Roman period, Chenet for the Late Roman period.

In recent years, however, the study of Late Roman ceramics has seen a great boost of progress, and many scholars have argued for a less strict approach when it comes to the AD 260/270 caesura. Most importantly, it has been recognised that many of those typically Middle Roman coarse-tempered forms at Niederbieber, are also found in Late Roman contexts, not in the least at the type site Krefeld-Gellep. In many cases, we are dealing with developments of the same type, but in other cases, it is clear that these forms are identical. This shows that we cannot adhere to a strict end date of AD 260 for Niederbieber forms. Crucially, however, it also illustrates how difficult it is to differentiate between certain groups of ceramics from the late 3rd and early 4th century, especially in sites spanning that period.[149] Heeren therefore suggests an overall date of the Niederbieber horizon at at least AD 290, while some forms appear to date even later.[150] Recent developments in ceramics studies are proving useful in establishing more detailed typochronologies[151], but these developments are still in their infancy. As it is explicitly not the aim of this thesis to provide an up to date analysis of the ceramics of the sites compiled here, I will make do with what is published and attempt to evaluate whether there is a chance that Late Roman ceramics may have gone overlooked.

An alternative to ceramics when establishing site chronologies is to look at coins. Again, traditionally, the ending of the occupation of fortifications along the *limes* has been backed up by the fact that many of them appear to have a caesura in their coin series from AD 274 to Constantine I (AD 306-337)[152], whereas coins dated AD 259-273 (of both the Gallic and Central Empire) are numerous in the Dutch river area and in other northwestern provinces.[153] In fact, all coins minted by official Roman emperors from Aurelian to the Tetrarchy are rare in the Netherlands.[154] The fairly recent study by Kropff and Van der Vin[155] on the causes behind this caesura questioned the notion that a gap in the coin series necessarily means a gap in activity or that this was somehow caused by the *Limesfall*. Comparing coin series from the Netherlands to those of certain British sites (which although belonging to the Gallic Empire, had not experienced the *Limesfall*), they found that many sites showed many similarities. This leads them to the conclusion that during the Gallic Empire, coin circulation in the northwest part of the Empire began to deviate from the rest. Coins struck by the usurpers and local copies increasingly replaced official coins, and coins struck by Gallienus, Tetricus I and Claudius II

[144] E.g. Dhaeze 2009, 1238; ibid. 2011; Hessing 1995; Van Es 1994ab.
[145] Oelman 1914.
[146] Schallmayer 1987, 487.
[147] Heeren 2016, 199-203.
[148] The Pirling and Gellep typologies are the same one. Renate Pirling has published her typology of the ceramics of Krefeld-Gellep in several volumes, which are all referred to as "Pirling". "Gellep" refers to the volume she compiled with S. Siepen, in which these separate studies are reordered in a cohesive whole. As the label "Pirling" is most often used in the Netherlands (especially the volumes Pirling 1966 and Pirling 1974 are frequently used), I will refrain from using the term Gellep to avoid confusion.
[149] Steures 2013, 392; Curnow 1988; 61.
[150] Heeren 2016, 203.
[151] E.g. the corpus on terra sigillata rouletting stamps by Dijkman in prep. and Dijkman 1992; chrono-typology of coarse ware rims by Brulet *et al.* 2010, 415-418.
[152] Kropff/Van der Vin 2003, 55.
[153] King 1981, 89-126; Kropff/Van der Vin 2003, 83-4.
[154] Kropff/Van der Vin 2003, 57.
[155] Kropff/Van der Vin 2003.

entered this circulation with a considerable delay and only in very small numbers.[156] This theory was further advanced and improved upon by Heeren in his numismatic study of the MDS-area, [157] which shows that official emissions from AD 235-260 were struck in very low numbers and those from AD 275-296 were not distributed at all in the north-western provinces, making both groups rare in find assemblages. Copies of coins from AD 268-274 were numerous, however, and continued to circulate well into the 290's, until the official mint was restored under Constantine I.[158] This would explain the often noted, almost complete stop in official coin emissions in the Dutch and German *limes* zones after Severus Alexander.[159] Despite his short reign, coins issued by Gordianus III are a small yet constant factor in the Dutch *limes* zone and Meuse area. His predecessors and successors on the other hand are rare here.[160] The production of copies likely continued until at least the end of the 3rd century, as hardly any official coinage entered the region between AD 273 and AD 310.[161] Generally in the Dutch river area, coins issued by the House of Constantine dominate (at the Hunerberg in Nijmegen they outnumber coins of the House of Valentinian 2:1), and the total numbers of coins entering the area rapidly declines after AD 378. [162] This gives us a good practical tool to further investigate the end date for a number of sites, as it cannot be assumed that sites lacking official coins from 235-260/275-320 were necessarily abandoned.[163] Furthermore, this could be the key to bridging the gap between the late 3rd and early 4th century.

One of the main problems with compiling coin data is that their level of description depends largely on who published them and where. It is common among some numismatists to group Late Roman coins in groups of several decades, based on important developments in coin mint practices[164], instead of identifying them by individual emperor. Another factor is that many of the coins used in this thesis were copied from the NUMIS database. Its search engine presents you with a summarised overview of all the coins that are part of your query, but to view the individual records (which include general find spot, coin type and catalogue references) you need to click every record individually. I found that when I then tried to go back to the overview, the search engine had removed the filters from my query, requiring me to re-enter these and making it impractical to review every single coin from its database. I have therefore opted to present the coins by emperor if possible (and otherwise by numismatic period), and not include any reference numbers or coin types, even for those coins from published journals or reports. For this study, the dates of the coins are most important, and as they are all published in one way or another, their exact description or type can still be found if need be. I have included all Roman coins from AD 200 to the 5th century. The fact that the exact location of coins is also difficult to access in NUMIS is more troubling (see below note 176), as I have included both NUMIS data and publications of the *JMP* and there is thus a possibility in overlap. In those cases, I have checked the individual records of a sample of the coins, to check for duplicates (which did not occur in the sample). Another aspect of using NUMIS data is that its database mainly contains coins that have been offered to them by metal detectorists for analysis, and therefore tends to emphasise precious metal and well-preserved and datable coins. This has as an added side effect that it contains relatively few barbarous copies or imitations, which are harder to date precisely.

2.4 Data sources

One of the aims of this thesis is to identify previously unrecognised or underappreciated Late Roman military activities in the *limes* zone. However, it falls outside the scope of an RMA thesis to process large quantities of finds or analyse raw excavation data. Instead, I have opted to do some "digging" in relatively inaccessible literature, which has either been forgotten or was only ever published in Dutch. The goal here is specifically to unearth so-called "grey literature" (site reports etc.), which often goes unnoticed but has the benefit of being recent research, executed with contemporary standards and

[156] Kropff/Van der Vin 2003, 83.
[157] Heeren 2015, 274ff see more generally Heeren 2016, 193-196.
[158] Heeren 2015, 275.
[159] Kemmers 2008a, 22.
[160] Aarts 2000.
[161] Kropff/Van der Vin 2003, 59-66; Kemmers 2006, 113.
[162] Aarts 2000, 58-74; Kemmers 2006, 114.
[163] Heeren 2015, 275.
[164] F.i. Reijnen 2011; Kemmers 2006.

insights.[165] In the following I will discuss the different types of literature I have consulted. The nature of such an endeavour is that it is never finished (there are always more references to follow up on) but I hope that at the very least, my dataset adequately represents the region's research history.
The starting point is the scientific literature, and the many regional and overview studies that have been compiled. These always contain maps that list sites of which the nature is uncertain, and these are of course of great interest. The most recent and extensive distribution map is from 2006 and it lists no less than 27 Late Roman military sites in the Netherlands alone, a staggeringly high number (see fig. 3). However, only 8 of these are then compiled in the following site catalogue.[166] Presenting so many dots on a map gives the impression that the Dutch river area was riddled with fortifications, and the question is how much evidence is actually behind this.

Secondly, there are the commercial excavation reports that have been published since the Treaty of Valetta. These are all, safe a few examples, entirely compiled in Dutch, and because of this, many insights only slowly make their way to the academic world. The Late Roman watchtower at Wijchen-Tienakker is a good example of this, which is still not widely known as a military site, despite the fact that its site report was published in 2011 and published internationally in 2015.[167]

A third important source are the *BROB* and *JROB* reports.[168] These preliminary reports of the activities of the former State Service for Archaeological Research (ROB) provide incomplete but often incredibly detailed information on ongoing excavations or important stray finds by amateur archaeologists. As hardly any of these excavations were published, due to the extreme pressure of time and funds the State Service was operating under, these are in many cases our only source of information on key sites. Similarly, preliminary reports are often published in regional journals such as the *Maasgouw* or *Brabants Heem*, or in the news bulletin of the *KNOB*. In some cases, entire excavation reports or material studies were published in the *OMROL*.

As a fourth source, I have, in the select cases where insufficient other sources were available, used the NUMIS databases. The NUMIS database is compiled by the DNB (De Nederlandse Bank, The Dutch Bank) and contains all the coins reported by hobbyists, although some coins in there are also from older and modern excavations (it is not common practice yet for archaeological companies to report their finds to NUMIS). I have been hesitant and selective to use it, however, as it only provides a general find area (usually town or municipality).[169] The NUMIS database, for instance, allows you to search for coins online, but the most detailed geographic level is the name of the town. Finds from excavations are ideal, as these can be actually linked to contexts on for instance a *castellum* terrain, whereas surface finds recorded in NUMIS can only be linked to a much larger geographical area. It is thus impossible to completely exclude the possibility that coins were found at different find complexes or sites. Finally, some unpublished data has also been used. For Nijmegen-Valkhof, for instance, I was able to use a list containing all the coins found during the ROB excavations in Nijmegen from 1949 to 1986.[170] Furthermore I have had the chance prior to writing this thesis to study the ceramic assemblages of Cuijk and Kessel-Lith, so I have used those as well (comprehensive tables are provided in appendix 3). For the watchtowers of Goudsberg and

[165] Site reports from commercial companies are often not published or promoted widely and can be difficult to access. Many are deposited in the digital repository DANS/EASY (https://easy.dans.knaw.nl/ui/home), though certainly not all, and in certain cases when they are, special permission needs to be gained to access field documentation, finds lists or even the site report itself. For this thesis, I have been able to access those files in DANS/EASY which are open to the public and those from the "restricted archaeology group", but not those for which individual permission was required (the highest restriction level).
[166] This is in itself understandable, as the study was aimed at studying the morphology of military fortifications and architecture, and many of the Dutch sites are based only on stray finds. Unfortunately, the entry on Nijmegen (Haalebos 2006e) does not include any information on the Valkhof; similarly, Meinerswijk's debatable Late Roman phase and Utrecht's final stone construction phase are not discussed (Hulst 2006a, 198; Montforts 2006 respectively).
[167] Van Enckevort/Heirbaut 2011; see also for international publication Heirbaut/Van Enckevort 2015.
[168] A full list of the abbreviations used in the text and in the bibliography, is supplied at the beginning of this thesis.
[169] More detailed information on find spots can be gained from the NUMIS database by applying for special access; this would be something to be tried in a follow-up study.
[170] This document was kindly supplied to me by Vincent van der Veen in his capacity as a PhD student at the Radboud Universiteit Nijmegen. The coins were processed at the time by J.S. Boersma of the Vrije Universiteit Amsterdam.

Heumensoord, I have consulted the unpublished MA-thesis of Maurice Langeveld.[171] I have lifted the coins from the excavations at Vechten from the unpublished MA-thesis of Iris Tijmann.[172]

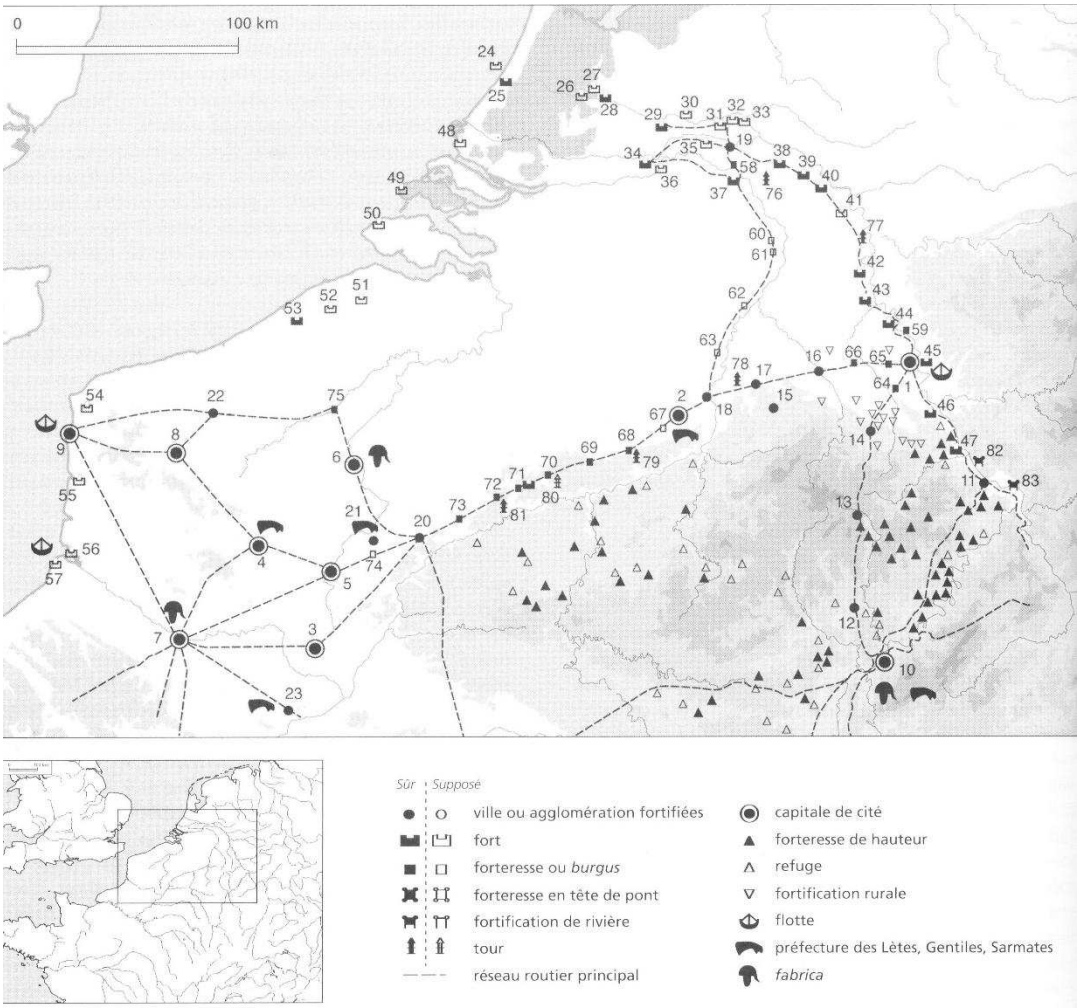

Fig. 3. Distribution map of Late Roman fortifications in Germania Secunda and Belgica Secunda with legend; after Brulet 2006, fig. 12. **17** Heerlen; **18** Maastricht; **24** Brittenburg; **25** Valkenburg aan de Rijn; **26** Woerden; **27** Vleuten-De Meern; **28** Utrecht; **29** Maurik; **30** Rhenen; **31** Driel; **32** Meinerswijk; **33** Huissen; **34** Rossum; **35** Ewijk; **36** Kessel; **37** Cuijk; **48** Oostvoorne; **49** Westerschouwen; **50** Domburg; **51** Aardenburg; **58** Heumensoord; **60** Lottum; **61** Blerick; **62** Heel; **78** Hulsberg/Goudsberg.

2.5 Methodology

The list of sites compiled in appendices 1-4[173] is based on a number of different sources. My starting points were several regional studies that focussed either specifically on *limes* sites or on the Late Roman period.[174] I then checked all the sites listed in these works for references and further evidence for Late Roman activity. Secondly, I reviewed recent archaeological investigations on known *limes* forts with conventional end dates of AD 260/270 to see whether any later evidence had come to light to suggest later activities. This has naturally meant that not all the sites listed in the appendices are necessarily Late Roman and military in nature. Closer scrutiny revealed that in some cases, such as

[171] Langeveld 2002.
[172] Tijmann 1994; cf. official publication Tijmann 1996.
[173] The reason that this part of the thesis is put in the appendix, is that it is largely descriptive in nature, and may thus get in the way of the arguments put forward in the text. Besides the descriptions of the finds for each site and the literature in which these can be found, I found it necessary in most cases to add some debate about the material evidence, as the archaeological evidence for many sites is not at all clear-cut. Such a discussion is useful, and has all to do with what I said about how to define a site in paragraph 2.1. I find it should be separate, however, from the rest of the thesis, which deals with what the identified sites "mean". Combining the two discussions in one single text would be unnecessarily confusing.
[174] Brulet 1990; Reddé *et al.* 2006; Willems 1986a; Bogaers/Rüger 1974; Van Es 1981; Schönberger 1969; Von Petrikovits 1971; ibid. 1978.

Ermelo or Arnhem-Meinerswijk, not enough evidence could be found to suggest a Late Roman date, whereas in others, such as Driel-Oldenhof, the military aspect remained unsupported. This is also due to the fact that several distinguished scholars, such as Wim van Es and Willem Willems, have written numerous regional studies of the Netherlands, in which they propose site identifications and locations of assumed Late Roman fortifications. As these are archaeologists who have led plenty of excavations, worked for the ROB etc., they have seen a lot of material that has not been published, so these unsubstantiated statements deserve to be examined. However, I have only looked at sites that were mentioned in at least two such works, because otherwise there was not enough contextual information to go on. Alphen aan den Rijn, for example, was therefore not included, as only one citation for Late Roman activity at the site could be found.[175]

For each of the sites I have looked at, its research history is briefly summarised, and a description of the relevant features and finds is given. In some cases, when insufficient excavated material culture was published or available, this overview is supplemented by coins from the specific site from the NUMIS database. A cut-off point of AD 200 was chosen, to exclude Early and Middle Roman coins, but to include the possibility raised above that coins struck as early as the beginning of the 3rd century remained in circulation until the early 4th century.

The coin lists for each site are added in appendix 1-4. The raw data is reworked into graphs in chapter 3, which also contains a short summary of the appendix. These graphs show the absolute numbers of coins issued over time divided into periods of five years. To arrive at these groups, an algorithm[176] was used that, for each dated coin, equally divided its frequency per circulation year (e.g. a coin dated to AD 200-204 had a value of 0,2 ascribed to each of these years). This process was repeated for all coins of a site, after which the cumulative coin frequencies per 5-year period was calculated and plotted. [177]

[175] For which Willem Willems claimed Late Roman material culture was "not lacking"; Willems 1983, 121.
[176] *N_coins/(Date_max-(Date_min-1))*
[177] This method was based on a similar approach used by Vincent van der Veen for processing numismatic data, whch in turn was derived from Allard Mees and Rien Polak's techniques for potters' stamps on Samian ware.

Chapter 3. Mapping the evidence

In this chapter, the sites that I have looked at within the study area will be discussed, divided in four spatial categories. A detailed description of each site, discussing the archaeological evidence found, their dates etc. are provided in appendices 1-4, which correspond to the four groups. In the appendices, 38 sites are listed, a number that is misleadingly high. In some of these cases, I have discussed sites that did not actually yield evidence for the presence of a Late Roman site of a military nature. These are sites that are rumoured or assumed to be such sites, or for which conflicting evidence exists (see also paragraph 2.5). I found that these discussions do have a place here, as they illustrate quite well how we handle and interpret inconclusive archaeological evidence and the way written sources may or may not be used. All in all, 21 Late Roman military sites were selected (see fig. 4), and these will be discussed in this chapter, focussing on their exact function and nature and their relation to other sites in their area. Because this chapter provides a summary of the extensive site list compiled in the appendices, notes and references have been kept to a minimum.

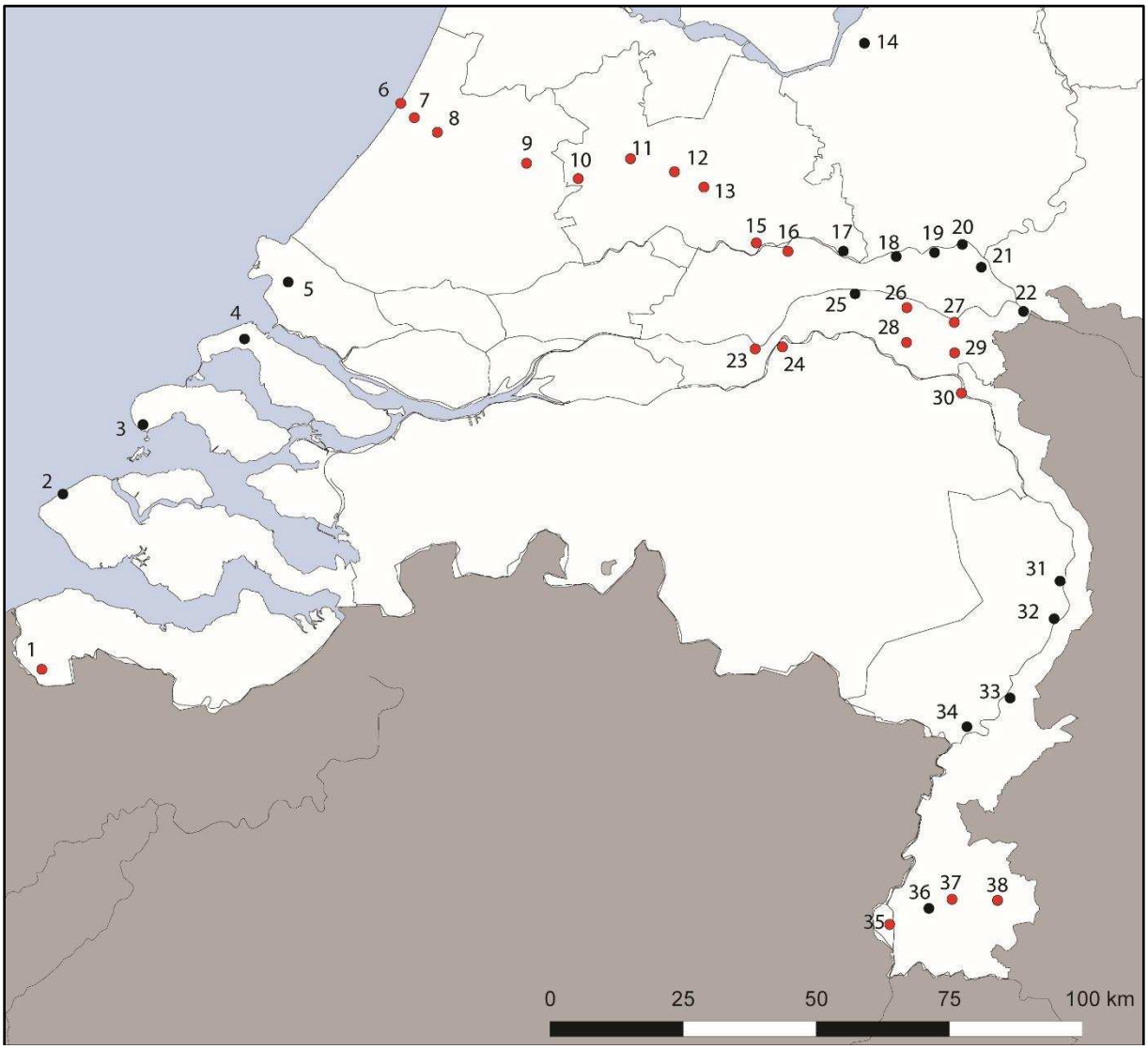

Fig. 4. Map of all the sites listed in appendices 1-4. The 21 sites for which evidence was found of Late Roman military activity are indicated in red sites for which no such evidence was found are in black. **1** Aardenburg **2** Domburg **3** Westerschouwen **4** Goedereede-De Oude Wereld **5** Oostvoorne **6** Katwijk-Brittenburg **7** Valkenburg **8** Leiden-Roomburg **9** Zwammerdam-De Hoge Burcht **10** Woerden **11** Vleuten-De Meern **12** Utrecht **13** Bunnik-Vechten **14** Ermelo **15** Wijk bij Duurstede **16** Maurik **17** Rhenen **18** Randwijk **19** Driel-Oldenhof **20** Arnhem-Meinerswijk **21** Huissen-Loowaard **22** Eversberg-Millingen aan de Rijn **23** Rossum **24** Kessel-Lith **25** Druten **26** Ewijk-Grote Aalst **27** Nijmegen-Valkhof **28** Cuijk-St. Martinuskerk **29** Heumensoord **30** Wijchen-Tienakker **31** Grubbenvorst-Lottum **32** Blerick-Venlo **33** Asselt **34** Heel **35** Maastricht **36** Rondenbosch-Houthem **37** Goudsberg-Hulsberg **38** Heerlen.

The following chapter will first summarise the discussion of archaeological data in appendices 1-4. I have divided the study area (Dutch river area and coast) into 4 areas: the coast line, the Rhine and its tributaries Waal and Lek, the Meuse and finally "other" sites, which are not linked to any of these three major topological features. The coastal area (area 1) was defined as any site situated along the modern coastline, as an extension of the *Litus Saxonicum* in Gallica Belgica.[178] The most northern site in this area is Valkenburg, which is exactly the location where area 1 overlaps with area 2: the sites along the Rhine delta, including the modern rivers Waal and Lek. These are the sites within the "traditional" scope of what we think of as the *limes*, and it does include for instance Leiden-Matilo, which could arguably be placed within the influence sphere of the coast. However, I have taken Valkenburg as the arbitrary node connecting the two areas, and every Rhine site east of Valkenburg falls into area 2. Area 3 encompasses every site located along the river Meuse, both its west-east stream and north-south. Spatially, it thus overlaps partially with area 2, as both rivers are part of the Dutch river delta. A separation, however, allows for a comparison between the two rivers in both site types and chronology. Finally, there is area 4, which is not an area as such, as it spans no spatial entity. It includes those sites which could not be fitted into any of the other three areas.
In the following paragraphs, a short geological description of the area is given, and the evidence for each of its sites is discussed. Special attention is paid to the *fibulae* and coins. At the end of the chapter, all this weighted data will be combined in three chronological maps, covering the periods AD 270-300, AD 300-350 and AD 350-406/7.

3.1 Area 1. Coastal line

Young Holocene deposits in the area limit how deep we can study archaeological remains. At the same time, coastal erosion due to floods and coastal weathering has meant that many sites (for instance the Nehalennia sanctuary at Domburg; Goedereede-Oude Wereld; Brittenburg) have disappeared. Generally, however, if a site has been preserved, it is generally well-preserved.[179] The second half of the 2nd century saw a decline in population in the western Netherlands, or in any case inhabitation of the area under archaeologically visible levels.[180] This has partially to do with the fact that very few sites are known, and that late 3rd and 4th-century material culture is often hard to date (see above).[181] Pollen diagrams and dendrochronological analysis for this period have, however, shown a strong regeneration of forest, suggesting diminishing agricultural activity.[182] Increasing growth of peat moors from the first half of the 3rd century onwards between the Old Rhine and the Meuse means that we know very little about settlement patterns in that area.[183]

Further socio-economic and military-political causes has been suggested, including the disintegration of the Roman empire, which solicited emigration[184], the Duinkerken II transgression[185], large-scale epidemics from 252 onwards[186] and the depletion of farmland due to too much surplus production.[187] Most authors have referred to the Duinkerken II transgression as the moment when the Dutch coastal area became too wet to inhabit,[188] despite increasing criticism on the simplistic division between transgressions and regressions[189] and the Duinkerken/Calais typology in general. [190] This is not to say that the influence of the sea was not felt here. It seems that around AD 340, the moors in the western river area were completely flooded, and inhabitation or reclamation became impossible.[191]

[178] Cf. Dhaeze 2009; ibid. 2011; Cools 1985; Johnson 1976.
[179] Trimpe Burger 1960/1961, 195.
[180] Henderikx 1986, 478; ibid. 1987, 41; Dijkstra 2011, 70.
[181] Willems 1989, 36.
[182] Dijkstra 2011, 26ff.
[183] Dijkstra 2011, 71; Van Dinter 2013.
[184] Dijkstra 2011, 70.
[185] Dijkstra 2011, 33ff.
[186] Cartwright 1972, 14-5.
[187] Groenman-van Waateringe 1983.
[188] Besuijen 2008, 62; Dijkstra 2011, 33, 70.
[189] Bazelmans *et al.* 2012, 16-7.
[190] Weerts *et al.* 2006.
[191] Bazelmans *et al.* 2012, 66; others maintain AD 300 (Boersma 1967, 66; cf. Van der Sluis *et al.* 1965, 6; Bennema/Van der Meer 1952, 32-4; Trimpe Burger 1960/1961, 195; Bennema 1954).

Furthermore, due to the dynamic nature of the Dutch coastline, many sites along have been destroyed by erosion and evidence for the few sites that we do have are scarce.[192] It is generally understood that these coastal forts were part of the continental *Litus Saxonicum*, and were meant to deflect pirate attacks by the Franks and later (after AD 350) the Saxons.[193] Alternatively, some have interpreted them as a fortified trade network.[194] Despite all this, the Helinium was still of great importance to sea transport, especially via the lower Meuse and Waal.[195]

3.1.1 Sites

The geological circumstances of the Dutch coastline have meant that if a Late Roman coastal defence system ever existed, very little has survived of this. The only site that has yielded features is Valkenburg. Here, we have three *horrea* and a *principia*, surrounded by a stone wall and ditches, and although the dendrochronological dating is uncertain, stratigraphically the do post-date the late 3rd century.[196] At Aardenburg, the material evidence is even less clear. The study of ceramics, as published, has not revealed any 4th-century ceramics,[197] although the coin evidence does allow for a date at least in the first half of the 4th century. It seems that its earlier end date is predominantly based on the assumption that the area became too inhabitable in the 4th century and that its role was taken over by Oudenburg in Belgium.[198] There is no reason for me to assume that they could not be partially contemporary. This would certainly explain the large peak in coin issued in the AD 270's (see fig. 5), which otherwise might be a little odd. If Aardenburg ended around AD 285/290 as suggested[199], this would mean that the vast majority of the coins circulated during the last 20 years of the sites occupation, whereas spreading them out over a longer time period would suggest a steadier coin circulation, comparative to other sites in the area.

Katwijk-Brittenburg is a slightly more problematic case. We do of course have the features as seen in the 16th century: a double *horreum* surrounded by a square fortification with protruding towers.[200] Not much material evidence is known from the Brittenburg to back up a possible Late Roman date for the site, but most authors agree that the *quadriburgium*-style ground plan confirms such a date and that the Brittenburg was operative from the Early Roman period to somewhere in the early medieval period.[201]

The Brittenburg also illustrates an odd pattern in the coastal sites: half of these (Domburg, Goedereede, Brittenburg and Oostvoorne) have been identified as Late Roman fortifications based on sigthings of washed up Roman building materials in the 16th-18th century.[202] This evidence is slightly troubling, as a stone construction does not necessarily date something in the Late Roman period; it is well established that the Dutch *limes* was reconstructed from wood into stone as early as AD 180-220.[203] Because we have no excavated evidence for any of these four sites, the finds attributed to them are all in essence stray finds. The coins found at Domburg include plenty that date in the first half of the 4th century, but there is not much to suggest a much later date. The ceramics were dated to AD 10-250.[204]

For Goeree-Oude Wereld, we do not even have any published material culture, although reports mention large amounts of pottery, metal finds and coins.[205] Oostvoorne has at least yielded some reused Roman construction materials (tuff stone),[206] but again, no argument has yet been put forward for why these were Late Roman. no material culture has been published to support such an

[192] Dijkstra 2011, 74.
[193] Dijkstra 2011, 75; De Boone 1954, 51-3, 78, 101-2, 116-120, 122.
[194] Pryor 2004.
[195] Bogaers 1974, 70.
[196] Personal comment Rien Polak.
[197] Van Dierendonck *et al*. 2013, 331; De Clerq 2009, 382.
[198] Vanhoutte 2015.
[199] Van Dierendonck/Vos/Besuijen 2013, 330.
[200] Hessing 1995, 96-7; Dijkstra/Ketelaar 1965, 91-2.
[201] Dijkstra/Ketelaar 1965, 94.
[202] Domburg: Trimpe Burger 2002, 64; Goedereede: Dijkstra 2011, 74, 454; Trimpe Burger 1960/1961, 201-2; Oostvoorne: Dijkstra 2011, 74; Bogaers 1974, 71.
[203] Polak *et al.* 2005, 66.
[204] Van de Vrie 1987; Besuijen 2008, 23.
[205] Pleyte 1899, 84-6; Dijkstra 2011, 455; Trimpe Burger 1960/1961, 202.
[206] Hessing 1995, 98; Bogaers 1974, 71, 75.

assumption. Westerschouwen, finally, is identified solely by its coin finds.[207] A seemingly substantial amount of coins can be dated to the first half of the 4th century, although there is nothing else to support active inhabitation.

3.1.2 Discussion

The archaeological evidence we have for many of these coastal sites is far from ideal, and it is difficult to interpret it with certainty. The large number of finds, including coins from many of these places seems to indicate that the region was still actively inhabited in the 4th and perhaps even 5th century, but the military nature of many of these settlements is to be doubted. The idea of a Dutch component of the *Litus Saxonicum* so far remains just an idea.

Valkenburg is a military site (originally *castellum*), which has shown evidence for a continued occupation until the end of the 4th century. It can be assumed based on its ground plan that a similar date, perhaps extending into the early 5th century, can be applied to Katwijk-Brittenburg. At Aardenburg, the coin evidence is highly suggestive of continuous occupation until at least the first half of the 4th century, although supporting evidence is so far lacking. For any of the other sites, however, the levels of coastal erosion have meant that their true nature will probably never be fully understood.

The fact that only Valkenburg was ever excavated makes it difficult to say anything about general phases of construction in the entire coastal area. It is assumed that the ground plan of the Brittenburg shows various successive phases, but the 16th century drawings do not provide enough detail (for instance on the difference between walls and foundations) to allow specific statements. And the Late Roman phase at Valkenburg is also a little different in this regard from its predecessors, in that only a part of the *castellum* was transformed for its new purpose. Older structures were incorporated, rather than a complete restructuring of the old fort.

Both Valkenburg and the Brittenburg also illustrate a new type of military settlement in the western river area: a fortification with *horrea* as its central inner feature. This is generally interpreted as indicative of a changing role of these forts from manned garrisons to merely fortified storage spaces. Large military *horrea* from this period exist elsewhere in the Netherlands too, at for example Cuijk and Nijmegen (see below). Combined with the fact that *horrea* were also used for other things than storing grain, including military equipment,[208] I do not think we can equivocally state that these sites were not also used to garrison a small regiment of soldiers.

In terms of location choice, it seems that the coastal area remained largely the same as in earlier periods. This of course depends on whether you include Domburg, Westerschouwen and Goeree in this comparison: these would definitely be new locations for military activity in this period. I find the evide too scant however to include them in this analysis. Both other sites in this area, Valkenburg and Brittenburg, were already established in the Early or Middle Roman period, and showed continuous use into the Late Roman period.

[207] Willems 1986a, 295; Boersma 1967.
[208] Von Petrikovits 1975; Groenman-Van Waateringe 1977, 238.

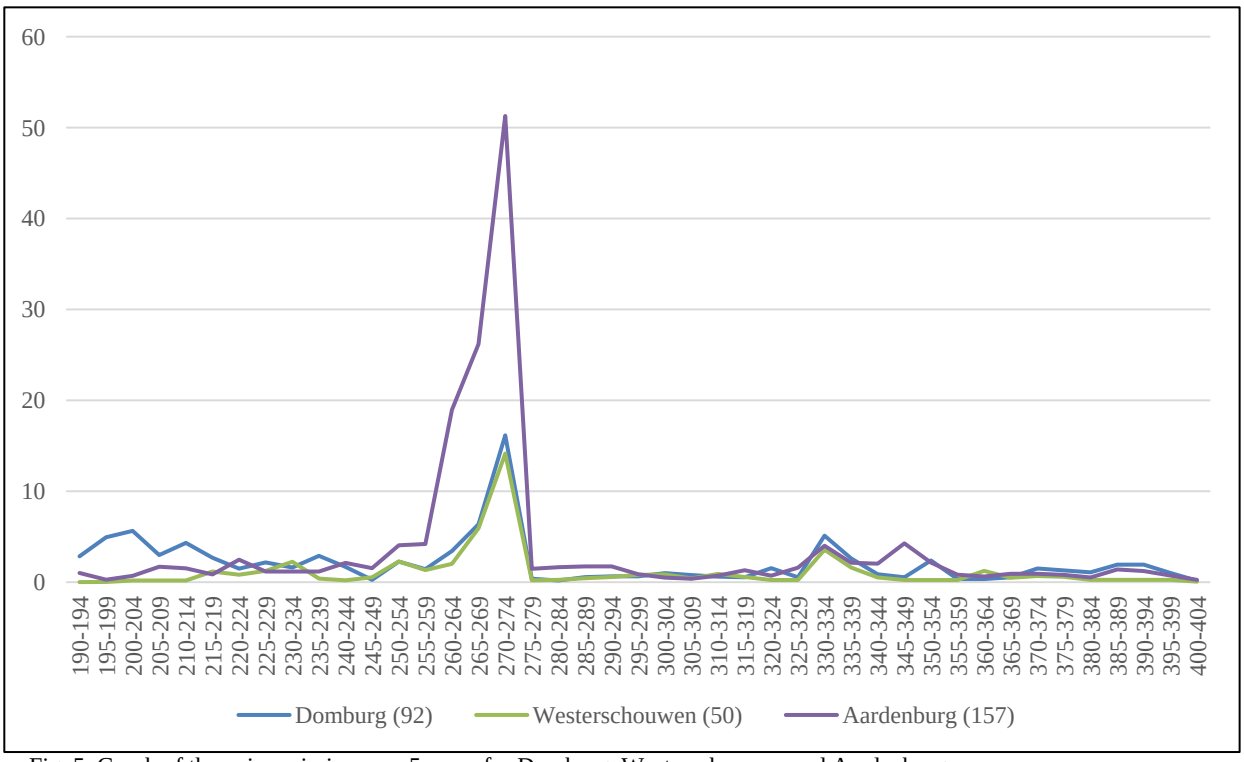

Fig. 5. Graph of the coin emissions per 5 years for Domburg, Westerschouwen and Aardenburg.

Looking at the coin series for the four sites that yielded enough coins (fig. 5), it is immediately clear that Aardenburg is an outlier. All sites show some peak around the AD 260/270, but at Aardenburg, this peak is especially pronounced. As already discussed above, this may point towards a longer circulation of these coins, and therefore a longer continuation of the site, as it does seem a little strange that roughly two-thirds of the coins (96 out of a total 157) would have been struck during the years AD 260-275. If Aardenburg really ended around AD 290, as was suggested recently,[209] activity at the site must have really intensified in its last two decades. Extending the coin circulation into the early 4th century would alleviate the almost complete stop in coin emissions in Aardenburg in the later 3rd century.

For the rest of the coastal sites, the AD 260/270 peak is much less pronounced, and it seems unlikely, especially given the lack of supporting evidence to that effect, that their occupation extended into the 4th century. The one exception to this is Wijk bij Duurstede, where Late Roman ceramics and several crossbow brooches and belt fittings have supported a 4th-century date, which would concur with the small peaks in coin issues we see there around the middle of the 4th century.
The crossbow brooches are conspicuously absent from the coastal area, with the exceptions of Domburg (one specimen) and Wijk bij Duurstede (at least nine). These include brooches dating all the way from the late 3rd century to the first half of the 5th century, suggesting that the coastal area, or at least Wijk bij Duurstede, was in active use all throughout the Late Roman period.

3.2 Area 2. The Rhine and Waal/Lek line

The river Rhine and its delta mark the region what is traditionally known as the *limes*: a string of auxiliary forts and watchtowers along the waterfront, including an extensive infrastructure of ports, river bank revetments and roads.[210] The landscape of the Dutch river delta in the Roman period has been classified by many scholars as inaccessible and marginal,[211] largely because of peat formation. The delta itself is characterised by a relative large number of distributaries and active river channels, bordered in the north and south by higher Pleistocene deposits.[212] As these relatively soft, sandy

[209] Van Dierendonck/Vos/Besuijen 2013, 330.
[210] Langeveld *et al*. 2010; Luksen-Ijtsma 2010.
[211] Van Es 1981, 18-21; Bloemers 1983a; Whittaker 1994, 87ff; Van Dinter 2013, 11.
[212] Van Dinter 2013, 11-2.

sediments are easily eroded,[213] the river channels of the Rhine form a constantly evolving network subjected to lateral migration, meanders and avulsions.[214] The distribution of water between the different Rhine arms has also changed various times throughout history.[215] In the 4th and 5th century, specifically, the tributaries of the Lek and Waal became more dominant.[216] From the second half of the 3rd century onwards, the Old Rhine itself became much more volatile in nature and harder to navigate.[217] Lateral migration and meanders have destroyed various sites such as Huissen-Loowaard, Maurik and Rossum.

A recent geological study noted that many Early and Middle Roman *limes* forts also fell victim to flooding while operative and required frequent rebuilding. [218] According to the author, this was caused by a Roman desire to closely guard the river and its traffic, with necessitated the foundation of sites located directly along the waterfront, near major bifurcations[219] and minor nodal points where the river met small in-land peat brooks. [220] This shows that the Romans were careful in guarding all possible ways undesired traffic could enter the river system and that all the entry points through which military trade and expeditions could be performed were watched.[221] A similar hypothesis has been suggested for the contemporary forts along the Danube.[222] For the Early/Middle Roman period, it seems that a system was put in place where watchtowers were situated along the length of the river, with forts at its most important nodes, thus creating a network of control posts that oversaw the entire river network.[223] Despite these geological set-backs, it was apparently more important for the Romans to be properly positioned within the landscape, even when it meant constant flooding and rebuilding.

3.2.1 Sites

A few sites in this area have actually been excavated and quite a few of these are sites that have traditionally been assumed to have ended in the late 3rd century. Bunnik-Vechten for instance has only recently yielded Late Roman ceramics[224] which may throw a new light on the small but consistent series of 4th-century coins already known. Although these show a small gap between the late 3rd and early 4th century, they present a continual series right up to the end of the 4th century. The same goes for Leiden-Matilo, which was also reconstructed in AD 243.[225] Although very few late coins are known from Leiden, several 4th-century crossbow brooches suggest that this final phase could be extended into the 4th century. Similarly, the naval station at Vleuten-De Meern has recently yielded quite a few Late Roman coins and, despite the soil disturbance, signs of construction work which post-date the 3rd-century destruction layer.[226] The coins show a clear continuity from the late 3rd to early 4th century although no significant amount dated to the second half of the 4th century. A similar problem has befallen Woerden, where the top soil was stripped away in the 17th century, likely removing any Late Roman traces if present.[227] Many coins are said to be known of the site, but only very few were accessible. It is generally held that the coin series for Woerden continues to the reign of Theodosius I. A comparable argument can be made for Zwammerdam. On the *castellum* terrain, coins dating all the way to Honorius were found in the 18th century, although the 1970's excavations could not find any more.[228] In Utrecht, two 4th-century buildings have been recognised, but their function remains obscure (no ground plans seem to have been published).[229] In terms of material culture, publication has been

[213] Berendsen 2011, 286.
[214] Van Dinter 2013, 13.
[215] Berendsen 2008, 120.
[216] Berendsen 2008, 183.
[217] Weterings 2009, 12.
[218] Van Dinter 2013, 15.
[219] Driessen 2007, 190; Gechter 1979, 113-4.
[220] Van Dinter 2013, 25.
[221] Veg. 3.3.2-3, 3.8.8.
[222] Sommer 2009.
[223] Langeveld *et al.* 2010, 32.
[224] Van de Berg *et al*. 2012.
[225] Polak *et al*. 2005, 66.
[226] Jongkees/Isings 1963, 8-11, 38, 98.
[227] Willems 1986a, 295.
[228] Plemper 1728, 108-111; Franzen *et al*. 2000, 12-14.
[229] Van Dockum 1995, 85; Montforts 1996, fig. 3.

rather superficial, but plenty of references can be found to ceramics from the *castellum* at Utrecht dating to the 4th and even 5th century.[230] The evidence from coins and other metal finds are so far lacking.

The opposite is true for Arnhem-Meinerswijk, the final phase of which was originally dated to AD 350-425 based on very sparse finds,[231] and subsequent excavations revealed that no Late Roman phase could be recognised.[232] Willems has championed the idea that Arnhem-Meinerswijk should be equated with the name Castra Herculis on the *Tabula Peutingeriana* and the writings of Ammianus Marcellinus,[233] and this is most likely the basis for its Late Roman date. There are more sites that have been subjected to this line of thinking, namely Druten, Driel and Nijmegen. It is now generally accepted that Nijmegen is the correct interpretation.[234] For both Driel and Druten, the association with the name have meant that they are still listed in some overview studies of Late Roman fortifications, despite the fact that from Druten no Late Roman finds are known, and that Driel has yielded no evidence to suggest anything other than civilian activity in this period.

Three sites in this study area have been excavated, yielding actual structural evidence for Late Roman activity. The watchtower of Heumen-Heumensoord is a clear case in point, and dates from the early 4th century (perhaps even earlier given some 3rd-century coins) to the second half of the 4th century.[235] More complicated is the fortification at Nijmegen-Valkhof. From the amount of fortifications and coins found, we could probably conclude that the Valkhof was a larger site, more like the *castella* of the Early Roman period, with a fixed garrison. The few coins that have been published date from the late 3rd century to the very end of the 4th century with coins by Honorius and Arcadius.[236] A final case is similarly interesting, and consists of the *villa* complex at Ewijk. Two weapon graves from the early 5th century have been interpreted as Frankish *foederati*, and one 4th-century building with an absis has also been recognised.[237] This building looks somewhat similar to one found at the fortification at Maastricht (see below), but its interpretation remains equally unclear. The question whether the building and the graves are related also remains to be answered.

Finally, seven uncertain sites are located in this area. The dredge finds from Huissen-Loowaard may indicate a military occupation, but none of it is published and on the face of it, hardly any of it seems to date to the Late Roman period.[238] It thus seems like we have to discard this site as a possible location. The sites of Randwijk and Rhenen are also highly dubious, as I could find no material culture or structures that warrant their interpretation of Late Roman military sites. For Maurik and Rossum, we have large amounts of dredge finds, including plenty of coins and military gear.[239] Both sites show a clear gap between the late 3rd and second half of the 4th century. Given Van der Vin and Kropff's proposed longer circulation period of these 3rd-century coins,[240] we could suggest a continuation of both sites into the second half of the 4th century. At Wijk bij Duurstede, there is substantial coin evidence for the entire 4th century. Its military nature is supported by several 4th-century crossbow brooches and belt fittings. Occasional finds could stretch this date into the 5th century (hair pins, bird-shaped *fibulae*), but these do not necessarily belong to a military settlement. It is assumed in the literature that a fort was situated at Wijk bij Duurstede from the Early Roman period onwards,[241] but the exact nature of the site cannot be identified from the dredge finds alone.

3.2.2 Discussion

One of the main things that has become clear is that quite a few "classic" *limes* sites with traditional end dates around AD 270 have yielded a significant component of Late Roman material culture, including coins and ceramics. It is, however, always a question of how many finds are enough to

[230] Ozinga/De Weer 1989, 55; Montfort 1996, 6; Van Lith de Jeude 1993; Ozinga 1989, 152-3;Ozinga *et al*. 1989, 152.
[231] Willems 1980a, 342; ibid. 1986a, 350-1; ibid. 1986b, 190, fig. 113.
[232] Hulst 2000/2001; ibid. 2006a, 198.
[233] Willems 1981; Van Es 1994a, 67.
[234] Van Enckevort/Thijssen 2014, 33; Verhagen 2014, 34-5; Verhagen/Heeren 2016.
[235] Langeveld 2002, 146.
[236] Haalebos 1976, 204-5.
[237] Van der Feijst/Veldman 2012, fig. 4.16.
[238] Van Dockum 1995, 77; Willems 1980a, 343.
[239] Van Hemert 2010.
[240] Kropff/Van der Vin, 2003, 83; see also Heeren 2015, 274ff.
[241] Van Es 1984, 280.

establish an extra building phase or occupational phase. The example of Valkenburg, where no large-scale construction phase could be recognised and Late Roman finds are almost completely absent, shows that these are not always criteria that need to be met. For Utrecht, the absence of a clearly defined construction phase has been used to argue against a Late Roman occupation of the *castellum*, but the isolated buildings found and the large amount of ceramics from the 4th and 5th century tell otherwise.

Similarly, isolated building traces and plenty of Late Roman coins have been found in Vleuten, and coins and pottery from Vechten may also point towards renewed or continued activity. Both seem to have been in use until the end of the 4th century. The isolated finds of Leiden-Roomburg are few and far between, but as I could no studies discussing coin evidence, we might be missing a component. Equally, the coins on the *castellum* terrains of Woerden and Zwammerdam are a stand-alone, without much support from ceramic or structural evidence. Dredge finds such as from Wijk bij Duurstede, Rossum and Maurik are also a little more difficult to interpret chronologically of course, but all have yielded substantial amounts of Late Roman coins.

On the other side of the spectrum, the excavated sites of Nijmegen, Heumensoord and Ewijk pose their own problems. At Ewijk, plenty of finds support a Late Roman date, but the interpretation of the features and the nature of the settlement is still unclear. The Valkhof at Nijmegen has been the subject of many excavations, but as hardly any are published comprehensively, the exact chronology and the phases of its various fortifications are difficult to grasp. It has been suggested that the fortification was first built as early as the late 3rd century. For the *castellum* itself, two successive building phases have been proposed, while the fortifications have yielded evidence for at least three phases. The exact relation between the two is still a matter of debate. In fact, the only site for which a concrete chronology has been formulated, is Heumensoord, which was active from AD 313-380, and perhaps already in the late 3rd century.

The varying levels of evidence for different sites is most pronounced in the Rhine area, also because the majority of the sites are located there. Most sites have not yielded any concrete Late Roman features, however, so not much can be said about large-scale building activities. It is surprising, however, that both Heumensoord and Nijmegen-Valkhof, which are thought of as typically 4th-century sites, have yielded finds that may suggest they were already built in the late 3rd century. Apart from the watchtower at Heumensoord, we have no well-understood ground plans. At Nijmegen, only the fortifications (ditches and rampart) have been excavated, whereas the buildings found at Ewijk and Utrecht are not yet fully understood. This makes it close to impossible to say anything about the function of these sites. The size of the Valkhof fortifications has meant that it is mostly interpreted as a *castellum*. In the cases of Leiden, Vechten, Maurik, Rossum, Vleuten, Utrecht, Woerden and Zwammerdam, it is only an assumption that the Late Roman phase marked a continuation in function as well as time.

Despite the problems of interpreting what these fortifications were exactly used for, it appears that many show continuity with earlier periods. A few new ones appear too, namely Ewijk (if it can be interpreted as a military site at all), Heumensoord and Nijmegen-Valkhof. Both Ewijk and Nijmegen are located "conventionally" along the southern bank of the river Waal. Only Heumensoord marks a different location from what one might expect. This has likely to do with its function, as a watchtower can only function when it can maintain a communicative relationship with a larger garrison, in this case presumably Nijmegen.

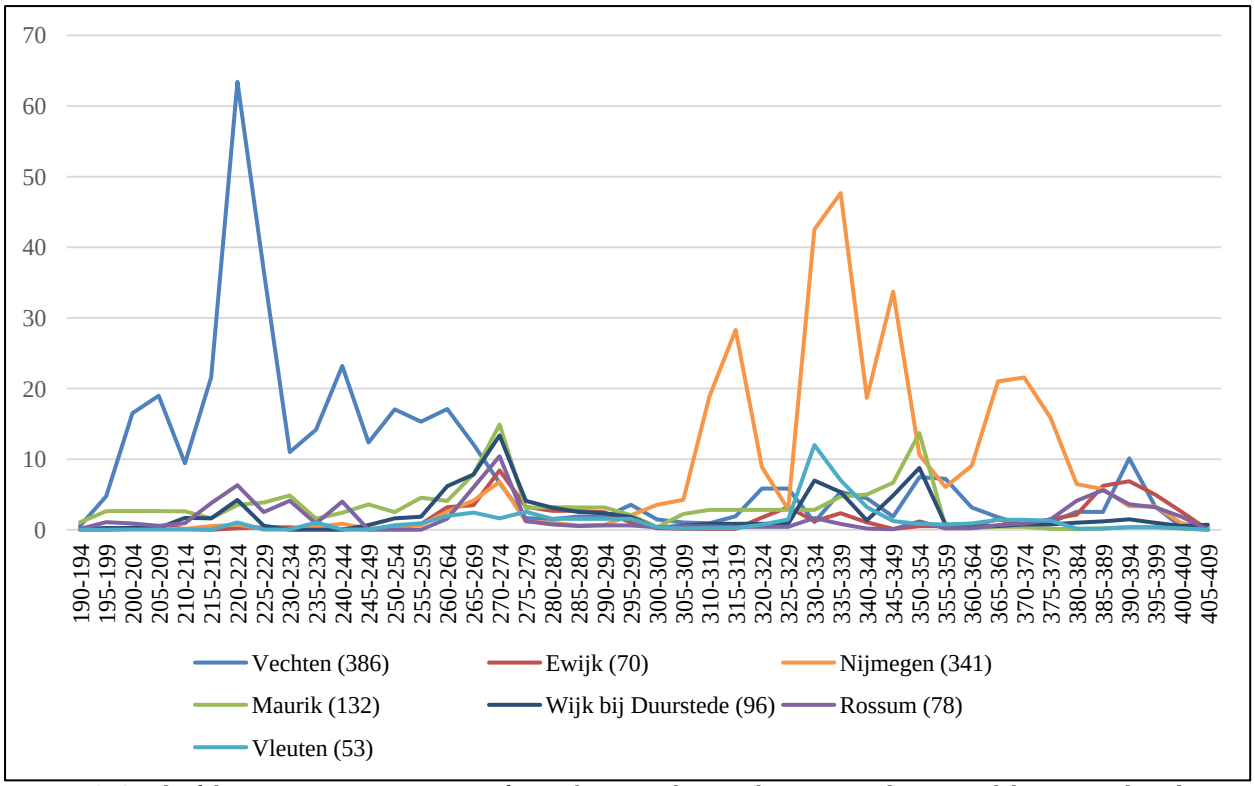

Fig. 6. Graph of the coin emissions per 5 years for Vechten, Ewijk, Maurik, Rossum, Vleuten, Wijk bij Duurstede and Nijmegen.

Six of the Rhine area sites have yielded sufficient numbers of coins to be quantified in a comparative graph (fig. 6). Apart from the peak around AD 260/270 which we have already seen in the coastal area, and which is much smaller here, each site seemingly follows its own pattern. Of course, the varying numbers of coins per site make a one-on-one comparison impossible. The graph does illustrate rather well the point that coin emissions drop significantly in the Dutch river area after AD 378.[242] Traditionally, many Late Roman fortifications are attributed to Constantine I, but this overview illustrates that only Nijmegen shows a distinct peak under his reign. The other sites peak much later, for instance Vleuten (AD 330) and Maurik (AD 350). Both Ewijk and Vechten show a slight boost in the late 4th century, which in the case of Ewijk may have something to do with the two *foederati* graves found there. Rossum is a little drowned out in this graph, but a small increase in coin emissions can be recognised around AD 380. In short therefore, although general numbers of coins go down in the late 4th century, most of the sites in the Rhine area consistently show activity from the late 3rd to the late 4th century.

This substantiates the theory that the crisis of the 3rd century had little effect on day-to-day life on the Dutch Lower Rhine frontier. The Late Roman *limes* sites are located at the same spots as the Early and Middle Roman *castella*, and show continuity in their inhabitation, whether they were never abandoned or were rebuilt at the exact same location. There are many reasons why garrisons and fortifications, once in place, remain there for long periods of time even after they had outlived their original purpose, not least of all path-dependency.[243] Therefore, it would have taken a major shift in circumstances to have urged the Roman army to completely overturn their approach. A *Limesfall* would have been such a dramatic event, and as we can see from the site evidence, there is no direct or indirect evidence for it. Sites were not burned down on a large scale, and remained stationary across the Roman period.

Quite a few of the sites in this area have yielded crossbow brooches. At both Maurik and Ewijk, two such brooches were dated to the first and second half of the 4th century. A late 3rd-century specimen is known from Leiden. Seven brooches from Rossum date from the late 3rd to the late 4th

[242] Aarts 2000, 58-74; Kemmers 2006, 114.
[243] Driessen 2007, 14-5; see for a more detailed explanation of "path-dependency" Mahoney 2000.

century and four undatable specimens from Woerden. It is interesting to see that the sites with the highest number of brooches (Rossum and Woerden) are of poor or no context, whereas the fully excavated site at Ewijk yielded only two brooches.

3.3 Area 3. The Meuse line

Geologically, the Lower Meuse has much in common with the Lower Rhine, as both are part of the same river delta. Further up-stream in Limburg, however, it cuts into harder Quaternary sediments composed of coarse gravel and sand.[244] Local subsidence means that the Meuse does not erode or deposit large quantities of sediment[245] and avulsions or lateral migration are thus far less common in the Meuse delta than in the Rhine delta. Furthermore, the Rhine depends on both rain water and meltwater, whereas the Meuse is only fed by rain water.[246] This means that the discharge of water can fluctuate strongly between seasons, which surely will have affected the Meuse's usability for transport.

Fortifications along the Meuse are a new phenomenon in the Late Roman period, and are generally taken as an indication of defence-in-depth. However, the majority of the identified sites here is located along its east-west axis, such as Cuijk, Kessel-Lith and Wijchen-Tienakker. What makes the Meuse even more interesting is that at least two bridges over it are known at Cuijk and Maastricht (a third has been suggested at Kessel-Lith), a unique feature in the Netherlands. Unfortunately, however, the Meuse is, like the Rhine, a volatile meandering river, and many sites are completely or partially eroded away and can only be identified by dredge finds.

Again, like the Rhine, the military sites along the Meuse have traditionally been identified based on written sources. Notably this concerns the comment by Ammianus Marcellinus that Emperor Julian rebuilt three forts situated on a line along the Meuse in AD 358, that were destroyed by invading Franks.[247] Several sites have been proposed in the past, including Cuijk, Blerick-Venlo, Grubbenvorst-Lottum, Heel and Kessel-Lith, several of which also appear on the *Tabula Peutingeriana*.[248]

3.3.1 Sites

Far fewer sites are known from the Meuse relative to the Rhine, but generally speaking the evidence they have yielded seems to have been better preserved. The amount of excavations carried out on some has also helped to establish better chronologies and material culture studies.

There are still some sites that are a little doubtful, however. These are the sites for which the interpretation as a military site was predominantly based on written evidence imposed upon scant archaeological evidence, such as Blerick, Grubbenvorst and Heel.

Blerick has yielded some Late Roman finds in the form of a relatively high amount of stray coins from the first half of the 4th century,[249] but no other evidence seems to exist. Its interpretation as a road fort is rooted in its location but in the absence of more concrete archaeological evidence this seems circumstantial. No Late Roman remains seem to have been found at all in Grubbenvorst-Lottum. From Heel, we only have a large Middle Roman cemetery with several stray finds of later coins and pottery from the top soil.[250] Even though Ammianus Marcellinus is very specific in his description of the location of the supposed repaired forts, it seems that the archaeological evidence for such a string of connected forts along the Meuse area is lacking, and his comments should not be taken too literally.

For all the other sites, plenty of archaeological evidence is available, although in varying degrees. Kessel-Lith is the only site on the Meuse based on dredge finds, although remains of walls and building materials were recovered more or less in situ.[251] Its foundation date remains obscure, but the coin series and ceramics suggest somewhere around the middle of the 4th century and continuous activity into the early 5th century. It is generally assumed in the literature that the building remains

[244] Berendsen 1997, 11.
[245] Berendsen 1997, 92.
[246] Berendsen 2008, 119.
[247] Amm. Marc. 17.9.1.
[248] Verhagen 2014.
[249] See appendix 3.2
[250] Bogaers 1964a, 155; ibid. 1964b.
[251] Roymans 2004, 107.

found at Kessel represent a small fort or *castellum* with perhaps a bridge nearby,[252] but the site's exact function is unclear.

The three remaining sites, Cuijk, Maastricht and Wijchen-Tienakker, have all been excavated to some extent. The *burgus* or watchtower of Wijchen was built on the grounds of a *villa* complex and the ceramics from its surrounding ditch suggest a foundation date somewhere in the late 3rd or early 4th century.[253] An unusually large amount of coin planchets from around AD 400 make it difficult to establish the end of Roman occupation here, but given the other material culture the end date would be at the end of the 4th century at the earliest. Wijchen is one of the rare sites in this thesis which was recently excavated and published in full. The *castellum* at Cuijk was partially excavated in the 1960's, and was never published, and Maastricht has seen numerous excavations pretty much throughout the 20th and early 21st centuries, many of which were also never published.

At Cuijk, the complex stratigraphy prevents a concrete interpretation of the site's chronology. Based on the finds, it has been suggested that the *castellum* may already have been founded in the late 3rd century.[254] Traditionally, the two building phases that have so far been recognised have been attributed to Constantine I and Valentinian I.[255] The bridge at Cuijk was seemingly built and rebuilt in three successive phases: AD 347/349, AD 368/9 and AD 388-398.[256] The dock which was part of the *castellum* complex has been dated to around AD 320, with subsequent continuous repairs from AD 342 to at least AD 373.[257]

As none of the excavations at Maastricht were comprehensively published, it is difficult to establish a concise chronology for the whole site. Most authors seem to agree that the *castellum* was founded around AD 325, on a previously empty terrain.[258] Its end date is a little harder to place, as the location was continuously inhabited from the 4th to the 6th century.[259] The inner buildings of the *castellum* are still poorly understood, although it does include a stone *horreum*.[260] For the bridge at Maastricht, three construction periods have been recognised: AD 334-357, AD 368-369 and AD 387-398.[261]

3.3.2 Discussion

All in all, it seems there are four confirmed military sites in the Meuse area: Kessel-Lith, Cuijk and Wijchen on its east-west axis and Maastricht way down south. Purely looking at location and the spread of these sites, no single line of defence along the Meuse can be identified. Rather, it seems that its sites interlock with those along the Rhine. Wijchen and Cuijk are located within the influence sphere of Nijmegen, and Kessel-Lith forms a chain with Waal sites such as Rossum and Ewijk.

The question of course is whether these sites are all contemporary, and some overlap could be argued for. A foundation date as early as the late 3rd century has been suggested for both Wijchen and Cuijk (Kessel seems to begin much later, around the middle of the 4th century), so some correlation between the sites of the Rhine and Meuse could be suggested.

The first research question of this thesis was whether traditional end dates for Middle Roman sites could be extended into the later 3rd and 4th century. This does not apply to the Meuse, as all sites are newly built in this period. As said before, construction could have begun on sites such as Cuijk or Wijchen as early as the late 3rd century, but Maastricht and especially Kessel-Lith appear to have been founded in the first half of the 4th century.

Compared to the evidence from the Rhine area, the quality of archaeological evidence is rather good on the Meuse. The partially eroded site of Cuijk can still be studied relatively well, and even Kessel-Lith has offered some context. Besides this geological aspect, the Meuse fortifications have practically all been excavated extensively, giving us good ground plans of fortifications and defences (although not so much of the inner buildings). The only downside is that apart from Wijchen, none of

[252] Heeren 2014, 243-4; Roymans 2004, 137; Meffert 2014, 76.
[253] Van Enckevort 2011, 51ff.
[254] Thijssen 2011, 194.
[255] Bogaers 1966b, 128.
[256] Goudswaard *et al*. 2001, 483.
[257] Mioulet/Bartens 1994, 47-8.
[258] Van der Vin/Panhuysen 1983, 125.
[259] Van Es 1991, 6.
[260] Panhuysen 2006, fig. 352.
[261] Panhuysen 2006.

these have been published in full detail, but this is a common problem elsewhere too. Stratigraphy is still often problematic (Maastricht, Cuijk) and extensive material culture studies are seriously lacking. The small selection of material culture discussed in the appendix is already informative. From every established site in the Meuse area, we have significant numbers of crossbow brooches, whereas the more doubtful sites have yielded none. Naturally, a certain amount of bias is in play here, but it also suggests that a clear relationship exists in this sub-area between fortified sites and the presence of crossbow brooches.

The coin graph of all the Meuse sites combined (see below fig 7.), shows that the large influx of coins to this area starts much later than in the Rhine delta, and results in much lower numbers per site. It is interesting that the large peak around AD 270 observed from the Rhine area is largely absent here (in absolute numbers at least), and relatively few coins struck by Gallic Emperors have been found (except of course for the coin hoard in Maastricht). The relative lower numbers of circulating coins may reflect the general population decline in the MDS-area. Heeren has shown that the area became almost entirely depopulated in the later 3rd century, and that there is very little evidence to suggest inhabitation in the early or mid-4th century.[262] New settlements only began to appear in the area around the late 4th or early 5th century,[263] which would correspond well with the sharp increase in coins we see at Maastricht and to a lesser extent Wijchen.

The graph is slightly problematic, however, as it contains very few sites, with widely varying numbers of coins. Maastricht dominates the spectrum, and its extreme peak around AD 400 is not representative for other sites. Likewise, the late 4th century peak at Wijchen is a deviation. The general pattern seems that most sites show a slight peak in coins struck between AD 360-370, and show a steady influx of coins into the 390's. I have already stated above that the often-observed spike in coin issues under the House of Constantine should perhaps be interpreted rather as a general development rather than an indication for a Constantinian construction phase. The AD 360-370 peak has similarly been interpreted for various sites as a sign of a Valentinian building programme. As I have already argued in appendix 3, this could very well reflect a general increase in coin emissions, rather than signal heightened activity at individual sites.

The problem of stratigraphy and the chronology of individual sites has been highlighted already, and it appears that this is equally the case for both excavated and non-excavated sites. There is definite proof in Cuijk for at least two building phases, although it cannot be stated how much of the *castellum* was overhauled for the second phase. The common assumption that its first phase was constructed of wood can also not be proven, as no actual remains of wooden buildings could be found in the excavation's documentation. For Maastricht, two successive phases have also been proposed, based on peaks under certain emperors (Constantine I and Valentinian I) in the coin evidence. As long as no comprehensive study of the excavated defences and stratigraphy have been published, I am sceptical as to the validity of this argument. Coins of the House of Constantine are numerous across the Dutch river area, and may thus reflect a general increase in official emissions in the study area rather than an increased influx in one particular site. For Kessel-Lith, the evidence is insufficient to establish any detailed chronology. The relatively short and steady influx of coins during the second half of the 4th century suggests that there was only one major construction phase. The ground plan of Wijchen similarly shows a single construction phase.

None of the Meuse sites are built on previous military terrains, but they do show a relation with already established activity: the *burgus* of Wijchen was built on a *villa* complex, Cuijk and Maastricht on or near thriving central settlements and Kessel-Lith was constructed of spolia from a nearby Gallo-Roman temple.

When we look at the coin series of the four identified sites in the Meuse area (fig. 7), it is immediately clear that they start much later: coins pre-AD 260 are almost completely absent, and the AD 260/270 peak is fairly small. Evidence for the 4th century is consistent, however, and the drop in coin emissions from AD 378 onwards seems less pronounced. The extreme peaks in the late 4th -early 5th century at Wijchen and Maastricht are probably related to an increase in coins circulating in the Meuse area generally.[264] At Wijchen, a large hoard of blank planchettes was found that was dated to

[262] Heeren 2015, 281.
[263] Heeren 2015, 284.
[264] Heeren 2015, 284; cf. Aarts 2015, 218 on the lack of 4th century coins in the MDS-area outside of the regional centres (such as Maastricht, Tongeren and Empel).

the late 4th-early 5th century. As already said above, the coin series at Maastricht seems to show continued occupation in the 5th century

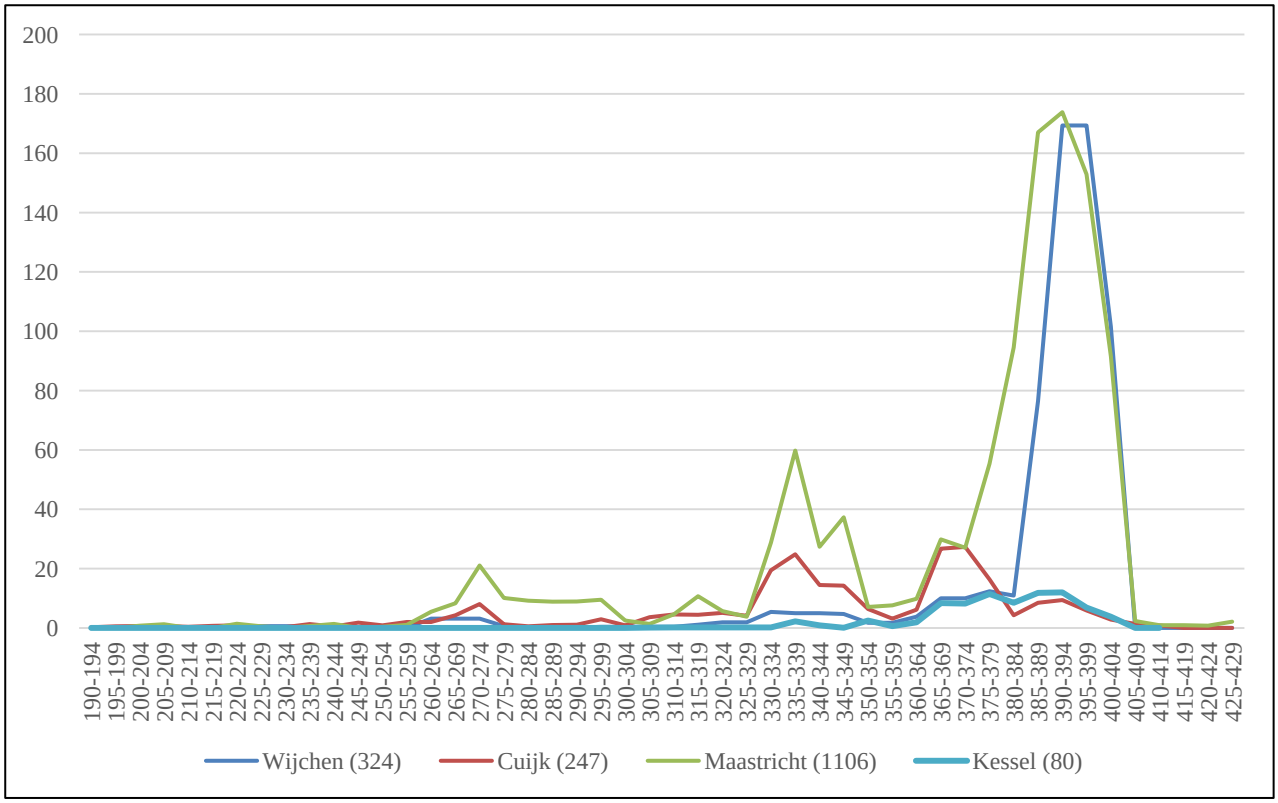

Fig. 7. Graph of the coin emissions per 5 years for Wijchen, Cuijk and Maastricht.

The Meuse fortifications seem to pick up around the beginning of the 4th century, so slightly later than their Rhine and Waal counterparts. It is interesting to speculate as to the underlying cause for this. Did the Rhine gradually go out of use, due to climatological changes? We have far fewer sites on the Meuse, which may suggest that it was not meant as a complete replacement, but rather as an extension. Of course, it could be that Meuse sites have not been preserved as well, so we should be careful in this. It is noteworthy, however, that two bridges and a port were found in this area, suggesting that the Meuse was very important in this period for transport purposes. It should also be noted that two previous studies into the distribution of Late Roman belt buckles and gold coin hoards both showed an increased archaeological activity in the Meuse delta as opposed to the Rhine delta, especially in the 5th century.[265] As such, these studies fall outside of this thesis's parameters, but it is interesting to see that that development, in which the Meuse seemingly becomes more important to the Roman authorities, can perhaps already be traced back to the 4th century.
All four sites have yielded crossbow brooches, be it in varying numbers. Cuijk, Wijchen and Maastricht have all yielded four (those from Kessel-Lith could not be quantified). The *fibulae* from Cuijk date from the late 3rd to the second half of the 4th century, those from Wijchen to the entire 4th century, while those from Maastricht date much later, from the second half of the 4th to the second half of the 5th century.

3.4 Area 4. Other sites

3.4.1 Sites

There are four sites that could not be categorised in any of the other three regional groups. First of all, there is Ermelo, which is still named in plenty of literature as the only positively identified Late Roman marching camp. Despite the fact that its location would match perfectly with the route of a

[265] Sommer 1984; Roymans 2017 respectively.

military campaign of Emperor Julian[266], there is no archaeological evidence that the camp was used in the Late Roman period, and all the material culture from the site dates to the Hadrianic period. [267] The watchtower at Goudsberg-Hulsberg is attested, and it was probably in use between AD 313-380.[268] There is no evidence that the site was burned down or otherwise destroyed when it was deserted.[269] What we have lacking here, however, is a more permanent base or garrison to which this watchtower could signal back. This means that we are either missing a fort here, or that this watchtower served a different purpose than warning the garrison of an upcoming incursion. It could just be that like the watchtowers along the river routes, the Goudsberg-Hulsberg purely functioned as a control mechanism on local traffic.

At Heerlen, two parallel ditches were dated to the Late Roman period, although not much else is known.[270] It is assumed that these ditches belonged to some kind of fortification, but its date is still a matter of debate. Circumstantial evidence does suggest it may have been built as early as AD 260. As research into the bath complex is still ongoing, I cannot say much else on the matter.
As for Rondenbosch-Houthem, I could not find any supporting literature to suggest a Late Roman military presence.

3.4.2 Discussion

Only two sites in this "area" ended up yielding evidence for Late Roman military activity: the watchtower at Goudsberg and the presumed *castellum* at Heerlen. Neither yielded sufficient coins to quantify in a graph. Only Heerlen produced crossbow brooches, four in total, dating predominantly to the second half of the 4th century. Spatially speaking, Heerlen could be said to have been part of the Cologne-Bavay route.[271] There is unfortunately too little archaeological evidence to understand the precise nature of the site to say anything about its relation to that particular line of infrastructure.

3.5 Discussion

Of the 39 sites listed in the appendix, I have found "acceptable" levels of evidence for 21. Given the varied nature of the archaeological evidence, this is based on a combination of criteria, namely the presence of identifiable features (mostly defences), coins and/or crossbow brooches. The individual sites are described in detail in appendices 1-4 and the previous paragraphs in this chapter. A summary is presented below in table 2, noting the nature of the site, its dates and stratigraphy, and whether sites are a new phenomenon or represent a continued phase of an already existing settlement.

Table 2. Selected sites from appendices 1-4.

Toponym	**Chronology**	**Date**	**Phases**	**Interpretation**
Area 1				
Aardenburg	Continued	AD 260/285/290-350?	Unknown	Camp
Katwijk-Brittenburg	Continued	AD 270-450?	Unknown	Camp, fortified *horrea*
Valkenburg	Continued	AD 270-300?	Unknown	Camp, fortified *horrea*
Wijk bij Duurstede	Continued	AD 300-400	Unknown	Unknown
Area 2				
Bunnik-Vechten	Continued	AD 275-450?	Unknown	Camp?
Ewijk	New	AD 270-450	Unknown	Unknown
Heumensoord	New	AD 270/313?-380	2-3	Watchtower
Leiden	Continued	AD 243?-300?	Unknown	Camp
Maurik	Continued	AD 260?-400	Unknown	Camp?
Nijmegen	New	AD 270?-450?	2-3	Camp, port?
Rossum	Continued	AD 270-400	Unknown	Camp?
Utrecht	Continued	AD 260-450	Unknown	Camp
Vleuten-De Meern	Continued	AD 270-380	Unknown	Camp?
Woerden	Continued	AD 270-350?	Unknown	Camp?
Zwammerdam	Continued	AD 270-400?	Unknown	Camp?

[266] De Boone 1954, 60ff, 75ff, 166, note 392.
[267] Hulst 2006b, 274.
[268] Langeveld 2002, 145-7.
[269] Langeveld 2002, 145ff.
[270] Bogaers 1959, fig. 10; Van Giffen 1948, 205.
[271] Cf. Vannérus 1939.

Area 3				
Cuijk	New	AD 270?-400	2	Camp, fortified *horreum*, bridge, port
Kessel-Lith	New	AD 300-400?	Unknown	Camp, bridge?
Maastricht	New	AD 325?-450?	Unknown	Camp, fortified *horreum*, bridge
Wijchen-Tienakker	New	AD 300?-400	Unknown	Watchtower
Area 4				
Goudsberg	New	AD 313-380	1	Watchtower
Heerlen	New	AD 260?-400	Unknown	Fortification

This table suggests that almost all sites discussed were built or rebuilt in AD 260/270; this is of course not entirely true. In the cases of Middle Roman sites for which I have extended the end date, I have taken their traditional end date (often AD 260/270) as the starting point for their Late Roman phase, which is a simplification of the chronologies of individual sites. However, it is interesting to note that for many of the newly built sites, a similar construction date can be argued. The new Late Roman sites, predominantly in the Meuse area, have traditionally been attributed to Constantine I, because of his historically known building programme and the peak in coin emissions we see at many sites during his reign. I have argued elsewhere in this thesis that that peak could be explained alternatively. For key sites such as Cuijk and Nijmegen, the stratigraphy and pottery typologies suggest a construction date in the late 3rd century. If we take that information to be generally representative (they are both of course located in the eastern river area), it could be argued that the Roman *limes* was restructured already during or immediately after the Gallic Empire, rather than rebuilt from scratch later on.

If we look more closely at the function of the individual sites, it becomes clear that it is practically impossible to assign a clearly defined role or function that these sites fulfilled. Of course, there are the theoretical difficulties associated with this, as outlined in paragraph 2.2, but it is often also down to the nature of the evidence. The exact nature of individual sites is impossible to pin down, because we do not know enough about the inner buildings, and functions may have changed over time. Looking at the role an individual site fulfilled within its region (focussing specifically on its location), however, does provide some insight. For instance, we have very little activity in the coastal region compared to the river area, but we do have two fortified *horrea* there, which we do not really see much elsewhere. Traditionally this has been interpreted as reflecting the trade relations between Britannia and the continent and in a larger sense it also shows that despite climatological difficulties, the Helinium was still as important to the Romans as it was in the 1st century.

The settlement pattern along the Rhine really does not seem to have changed much. Many sites show a continuity into the Late Roman period, and lacking any direct evidence to the contrary, I have made the simple and theoretically unsound assumption that this signalled a continuity in function as well. Their continued location directly along the river bank in the Late Roman period does suggest, as it did in the Early and Middle Roman period, that the main role of this line of fortifications was to control and police movement along the Rhine and its tributaries.

The Meuse fortifications are a new phenomenon, and they seem to be more elaborate than the Rhine sites. It could be a matter of preservation, but the Meuse has yielded overwhelmingly more evidence than the Rhine for infrastructural activities (bridges, ports), which occur in close association with the more standard fortifications. I will argue below that the Rhine and Meuse fortifications were probably at least partially contemporary, but it seems to me that each river also had its own specific function. Whereas the Rhine *limes* was installed to exercise control over the inhabitants and their movement, the Meuse was equipped with installations to safeguard transport. Both bridges and the port at Cuijk and possibly the bridge at Kessel-Lith were accompanied by large *castellum*-like sites, which were probably garrisoned year-round. As such, the Meuse seems to link directly to what we see at the coast with the fortified *horrea*. I will go into more detail about the interpretation and arguments for this in chapter 4.

3.5.1 *Fibulae*

Of the 21 sites ultimately selected, 13 have yielded crossbow brooches, at least as far as this study has found. Because not all the literature has quantified the total number of *fibulae* found, it is impossible to present a total number of crossbow brooches in the study area. The Heeren and Van der Feijst database has yielded a total 112 crossbow brooches (admittedly not all from those 21 sites), which are

presented below in table 3. It clearly shows that the second half of the 4th century is especially well-represented (the 68c types).

Table 3. Crossbow brooches from the study area			
Type	**Date (min)**	**Date (max)**	**N**
68a	270	300	16
68b	300	360	5
68b01	300	360	12
68b02	300	360	2
68b03	340	400	5
68c	340	400	28
68c01	340	400	8
68c02	340	400	15
68c03	340	400	12
68c04	340	400	4
68c05	340	400	1
68e	390	500	1
68e01	400	450	1
68e02	390	450	2
Total			**112**

When we look at where these are found in those 21 established sites (table 4.), it seems that all find locations, with the exception of Nijmegen, have yielded roughly the same number of *fibulae*, around 3 or 4. They are notably absent from the coastal area, further suggesting that there were no fortifications there in the Late Roman period. For the other areas, there are no real surprises. Every site where they are to be expected (established military sites, which have been excavated), has yielded them. The sites without crossbow brooches are invariably those were a Late Roman phase has not been positively identified by clear features or large amounts of other material culture, such as Woerden, Utrecht etc. The coin series may suggest a continuous, Late Roman date for these sites, but this is not directly reflected in the distribution of crossbow brooches. Of course, we have to take into account the level of research done on each individual site, the manner in which it was excavated and post-depositional processes. Most of the sites discussed in this thesis were excavated sometime in the 20th century (before the use of metal detectors became standard practice) and were subject to natural or man-made erosion. The absence of crossbow brooches from some sites is therefore not too surprising.

Table 4. Crossbow brooches per site[272]	
Location	**N**
Area 1	
Domburg	2
Wijk bij Duurstede	9
Area 2	
Ewijk	3
Heumensoord	3
Leiden	"several"
Maurik	2
Nijmegen	33[273]
Rossum	7
Vleuten-De Meern	4
Area 3	
Cuijk	4
Kessel-Lith	"several"
Maastricht	4
Wijchen-Tienakker	4
Area 4	
Heerlen	4

[272] Most of the *fibulae* in this table were taken from Heeren/Van der Feijst 2017. Additional *fibulae* were included from Leiden (Hazenberg 2000, Plate 4.c.l;) and Kessel-Lith (Van Es/Verwers 1977, fig. 5-6.).
[273] Counting only those of the St. Josephhof and Kelfkensbos excavations.

3.5.2 Coins

Earlier in this chapter, the coin series for individual sites were used to show continuity and activity for those sites per sub-area. Below in fig. 8, the total number of coins of areas 1-3 are presented in a graph. Of course, the total number of coins varies starkly, and each area is biased in its own way. Fig. 5 clearly shows that the large amount of coins dated to the Gallic Empire from Aardenburg are dominating the coastal area graph, whereas the later 4th and early 5th century in the Meuse area is being overshadowed by Maastricht and Wijchen.

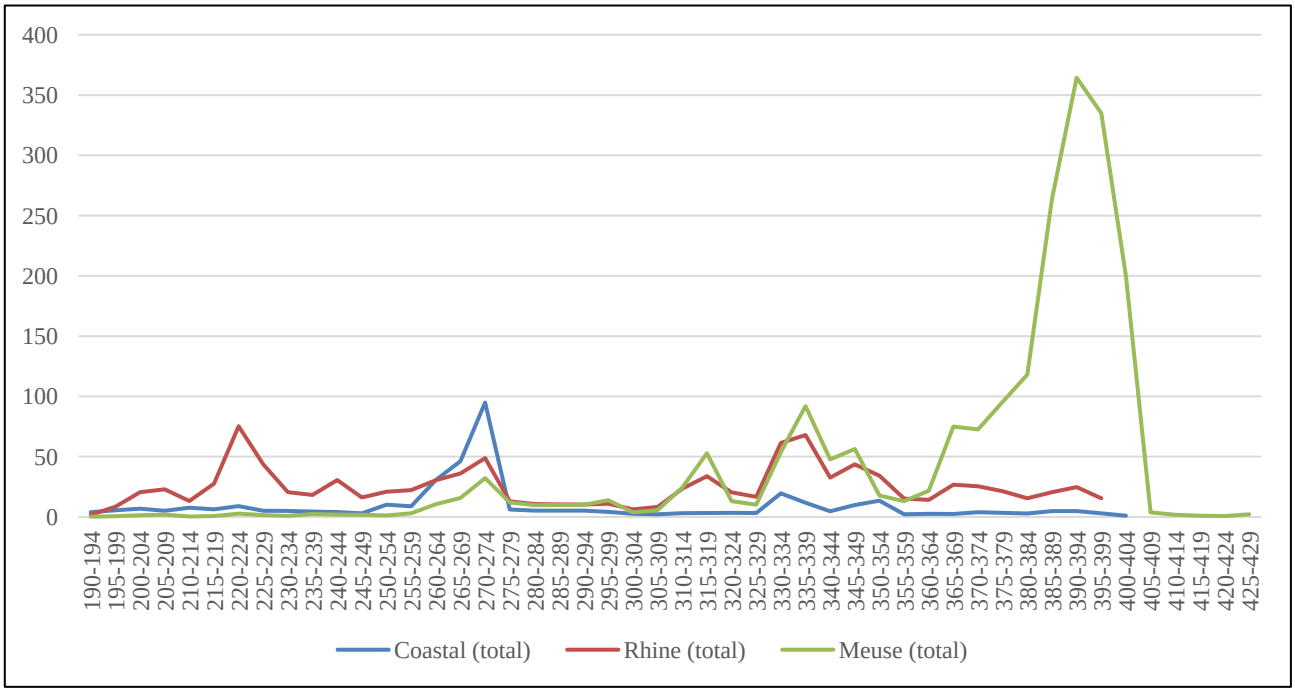

Fig. 8. Graph of the coin emissions per 5 years for the Rhine, Meuse and coastal areas.

Looking past that, however, it seems that both river areas show roughly the same activity pattern. Obviously, the same peaks in coin emissions are present, especially under the Constantinian dynasty. This shows that both rivers were actively engaged by the Roman military at the same time, and that a certain level of contemporaneity is to be expected between sites (cf. paragraph 3.2.2). The idea that the Meuse defences were a later invention to replace the Rhine frontier as a defence-in-depth is thus not reflected in the archaeological evidence. The smaller peak in the Meuse area around AD 270 in comparison to the Rhine could be taken as an indication that activity did not really take off until later in the 4th century as compared to the Rhine (which of course continued from the 3rd century onwards). The absolute number of coins we are dealing with, however, is much too low to be really significant. It should be noted, however, that the Meuse fortifications seem to continue a little bit longer than the Rhine ones, even when accounting for the Maastricht/Wijchen peak. Where the coin series for the Rhine tapers off rather sharply after AD 360-370, the Meuse series continues steadily into the early 5th century.

3.5.3 Maps

The information in table 2 has been simplified and illustrated in three maps, which are presented below (fig. 9-11). To make it easier to track patterns over time, the sites have been put into three brackets: AD 260/270-300, AD 300-350 and AD 350-406/7.

The first thing that is remarkable is the amount of continuity between these three periods. I have deliberately chosen period of half a century each, because the dating for these sites is often not very precise. Even then, practically every site shows activity for two consecutive periods and some even for all three. This is especially the case for the central and eastern river areas, which show almost no change from the late 3rd century to the late 4th century. The western river area becomes emptier around the middle of the 4th century, which could very well have to do with increased peat moor formations there. The area seems to have been unfit for inhabitation, rendering intense surveillance

unnecessary. The only site there in the final period is Katwijk-Brittenburg and there are no indications for a structured form of coastal infrastructure for this period.

Continuity is paired with the construction of new sites from the beginning of the 4th century onwards along the Meuse as well as the Rhine. The fortifications along the Meuse are situated exclusively in the eastern river area, probably due to the abandonment of the western part of the *limes*. In the central/eastern river area, however, a fairly dense settlement pattern forms, especially around Utrecht (Vleuten-De Meern, Woerden, Vechten) and Nijmegen (Heumensoord, Wijchen, Cuijk). A small cluster of sites also appears in the south around Maastricht, which is detached from the rest of the *limes*. On distribution maps in previous publications, see for instance fig. 3 above, the fortifications at Maastricht, Goudsberg and Heerlen are connected with the site cluster around Nijmegen by a north-south line of sites along Meuse (Grubbenvorst-Lottum, Blerick and Heel). This thesis found no evidence for Late Roman military activity at any of these three sites, and I have argued above that these locations have mainly been interpreted as such because they seemingly fit in well with historical sources. This means that the fortifications of Maastricht, Goudsberg and Heerlen lie in isolation from the river delta *limes*, and they are probably best interpreted as sites of the fortified Cologne/Bavay road.

Almost all of the fortifications built or already present in the first half of the 4th century continue into the second half. In addition, the middle of the 4th century marks an increase in investments in infrastructure. The first construction phase of the bridge at Maastricht can be placed sometime within between AD 330 and AD 350 and the bridge at Cuijk was first built somewhere around AD 350 as well. The port at Cuijk, again, was built around AD 320. No dates are known for the supposed bridge at Kessel, but the fortification seems to have been built also in the course of the early 4th century, suggesting a similar date may be assumed for the bridge. It is perhaps not surprising that all of these investments were focussed on the Meuse. As stated above, the Rhine delta became increasingly unreliable for transport. Also, the river banks of the Meuse are made up of much harder sediments, which reduced the risk of erosion and thus of the maintenance costs.

The same pattern appears in the distribution of fortified *horrea*. At Cuijk, the *horreum* is dated to the second construction phase, and the *horrea* at Nijmegen, Brittenburg, Maastricht and perhaps also Valkenburg are all 4th century. Apart from the fact that the majority is situated in the eastern river area, it is also interesting to note that two (Cuijk and Maastricht) are built near bridges. This further underlines the importance of safe transport and storage in the Late Roman period, and the close relationship between transport and infrastructure and the Roman army.

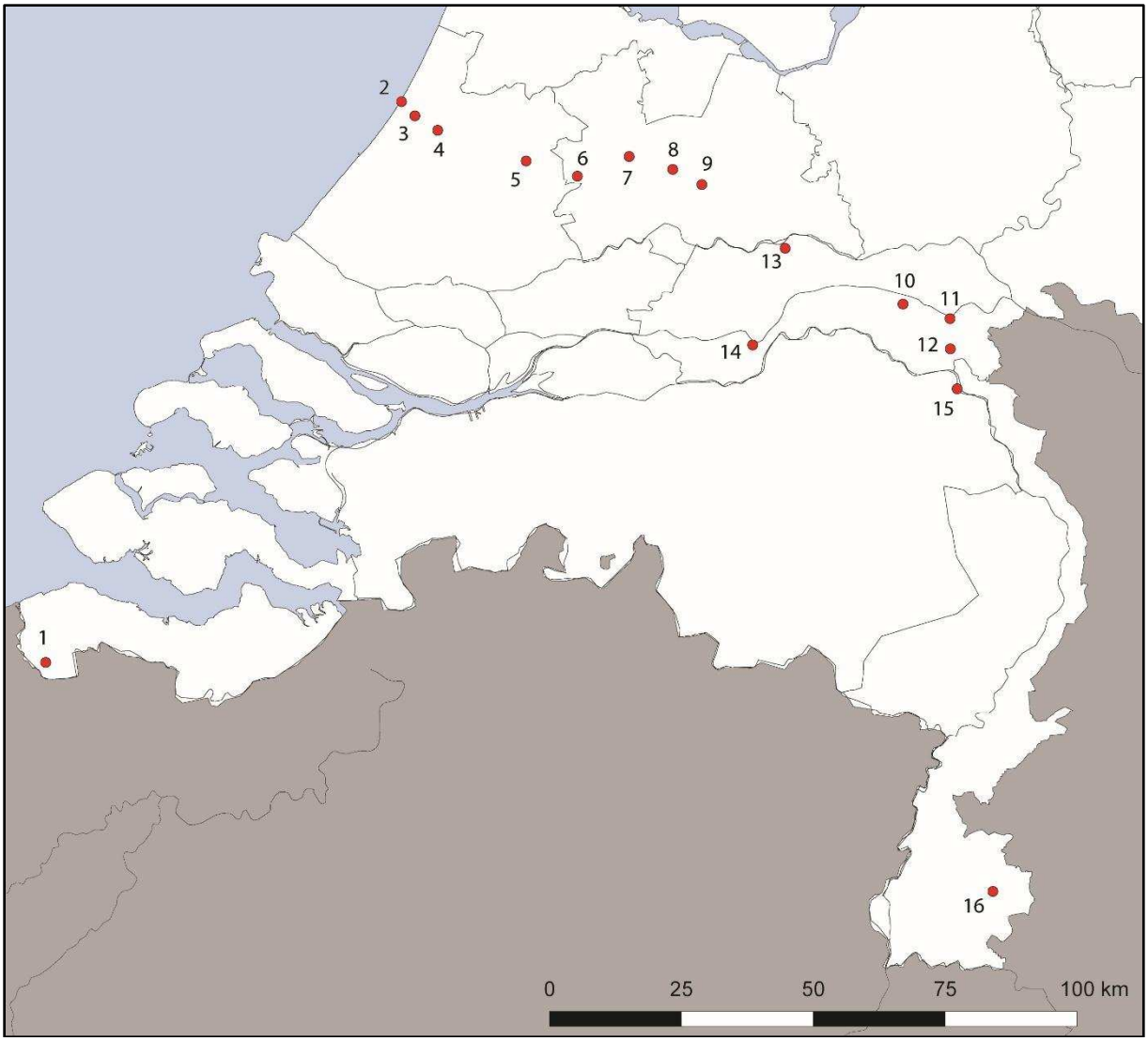

Fig. 9. Distribution map of sites with active occupation in the period AD 270-300. **1** Aardenburg; **2** Katwijk-Brittenburg; **3** Valkenburg; **4** Leiden-Roomburg; **5** Zwammerdam-De Hoge Burcht; **6** Woerden; **7** Vleuten-De Meern; **8** Utrecht; **9** Bunnik-Vechten; **10** Ewijk-Grote Aalst; **11** Nijmegen-Valkhof; **12** Heumensoord; **13** Maurik; **14** Rossum; **15** Cuijk-St. Martinuskerk; **16** Heerlen.

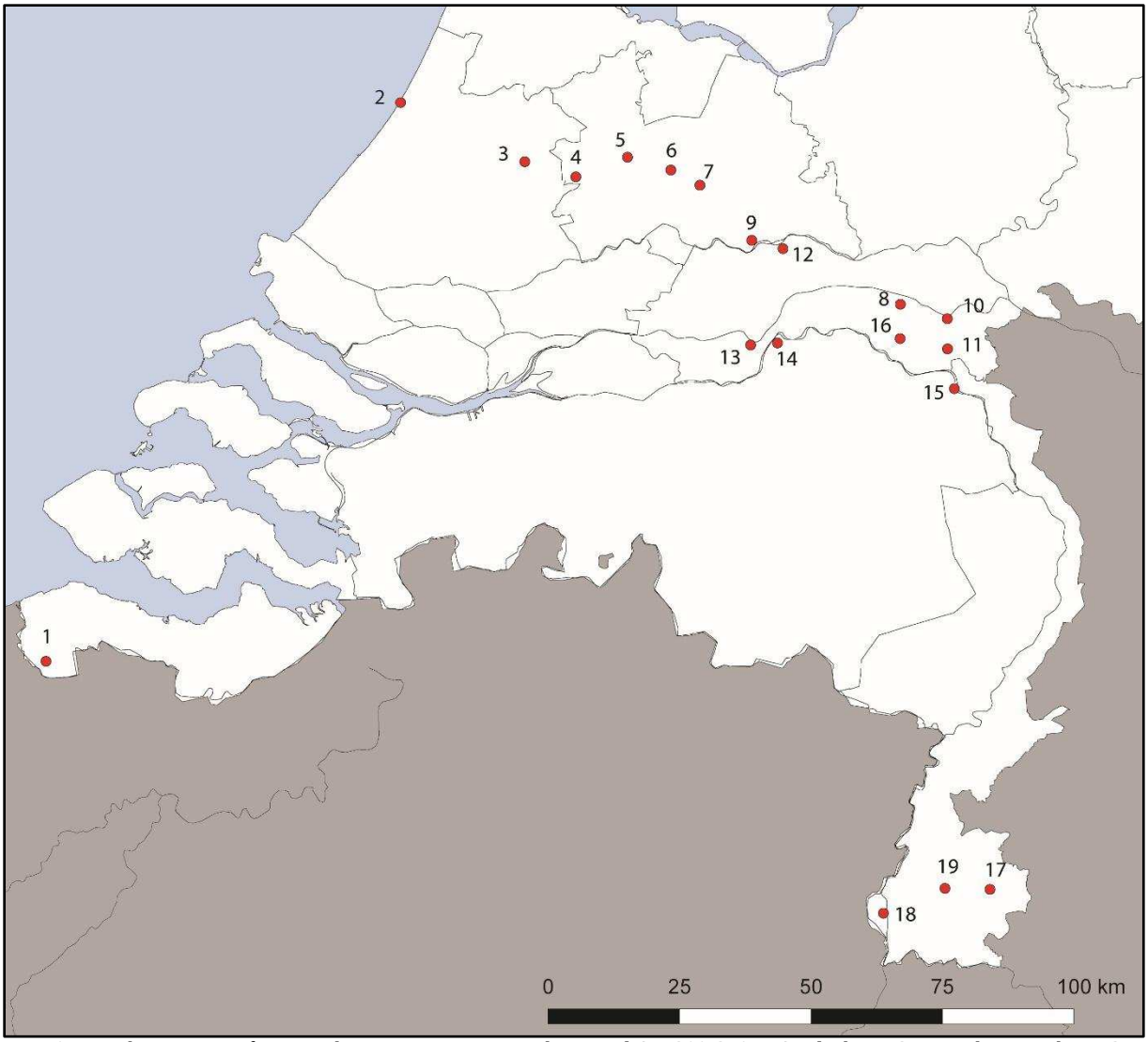

Fig. 10. Distribution map of sites with active occupation in the period AD 300-350. **1** Aardenburg; **2** Katwijk-Brittenburg; **3** Zwammerdam- De Hoge Burcht; **4** Woerden; **5** Vleuten-De Meern; **6** Utrecht; **7** Bunnik-Vechten; **8** Ewijk-Grote Aalst; **9** Wijk bij Duurstede; **10** Nijmegen-Valkhof; **11** Heumensoord; **12** Maurik; **13** Rossum; **14** Kessel-Lith; **15** Cuijk-St. Martinuskerk; **16** Wijchen-Tienakker; **17** Heerlen; **18** Maastricht; **19** Goudsberg-Hulsberg.

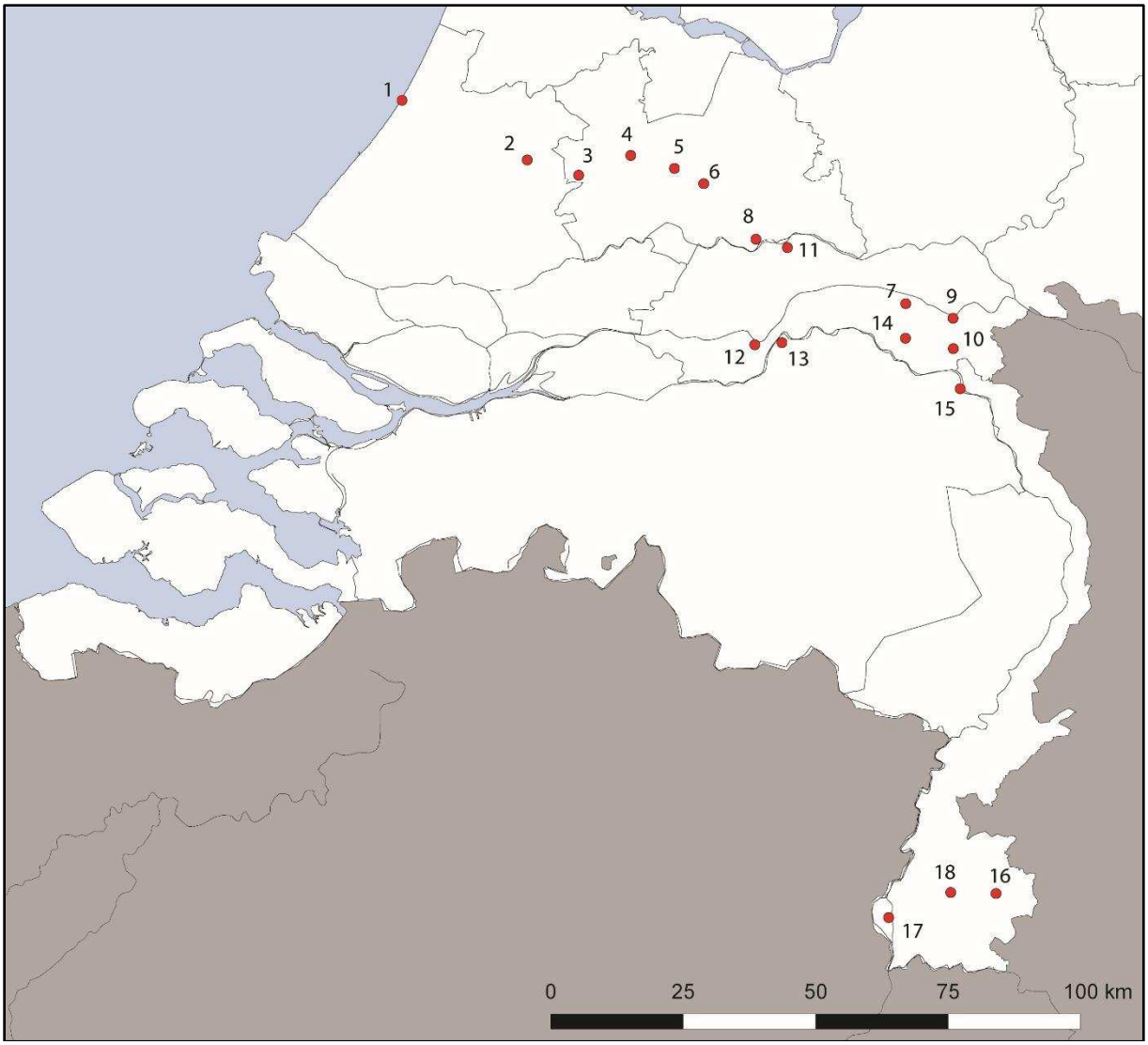

Fig. 11. Distribution map of sites with active occupation in the period AD 350-406/7. **1** Katwijk-Brittenburg; **2** Zwammerdam-De Hoge Burcht; **3** Woerden; **4** Vleuten-De Meern; **5** Utrecht; **6** Bunnik-Vechten; **7** Ewijk-Grote Aalst; **8** Wijk bij Duurstede; **9** Nijmegen-Valkhof; **10** Heumensoord; **11** Maurik; **12** Rossum; **13** Kessel-Lith; **14** Cuijk-St. Martinuskerk; **15** Wijchen-Tienakker; **16** Heerlen; **17** Maastricht; **18** Goudsberg-Hulsberg.

Chapter 4. Synthesis

In this final chapter, answers to the six research questions formulated in the introduction will be addressed. In some cases, parts of these have already been answered above in chapter 3, but the express purpose of this chapter is to link the archaeological interpretations of chapter 3 to the more theoretical points raised in chapter 1. The answers to several questions also overlap, as they are part of the same multifaceted problem. The aim of this final chapter is therefore to analyse the function, and role, of the Late Roman *limes* in the study area in relation to previous periods.

Question 1: What is the nature of the evidence we have for military activity in the study area for the Late Roman period, and how does it affect the research questions we can pose?

The quality of the archaeological evidence discussed is influenced predominantly by two factors: local find circumstances (local geology and topography, post-depositional processes) and past research interests. Both present a bias in the archaeological record, and Late Roman finds are exorbitantly struck by both.

Local find circumstances influence the visibility and preservation of archaeological remains. First of all, there are natural processes such as erosion. In the coastal area, various sites have relatively recently been destroyed by coastal erosion.[274] The almost complete lack of solid evidence for any of these sites makes it impossible to formulate questions on continental *Litus Saxonicum* sites along the Dutch North Sea coast. In the Meuse and Rhine delta, sites have suffered to varying degrees from river erosion. The result of this is that various important sites have only been identified by stray and dredge finds.[275] This means that interpreting these find complexes as military sites is strenuous, leaving aside any attempt to identify their function in more detail.

The sites that have been (partially) excavated have also been subject to post-depositional processes. In several cases, the top soil of sites was stripped for clay extraction (Woerden) or parts of the site were destroyed by river erosion (Cuijk; Valkenburg). In such cases, the top layers of the stratigraphy would have been most badly affected, damaging Late Roman features more than underlying strata. In the cases of Cuijk, Nijmegen, Maastricht and Utrecht, medieval and post-medieval occupation of the site also limits the extent which we can "reach" the Late Roman layers.

The second factor is our attitude as archaeologists towards the Late Roman period. As already discussed in great length in the introduction, the Late Roman period has often been portrayed in the past as a period of decline; a period in which things never were as good as they were before.[276] It is somewhat of a generalisation, but it cannot be denied that most of the attention of excavators has often gone to the -usually better preserved- Early and Middle Roman phases of sites. In several of the cases discussed above, Late Roman finds were noted in publications, but not deemed sufficient in numbers to actually represent activity in that period.[277] As a result, many Late Roman sites, features and finds have gone unpublished and remain underrepresented in our understanding of the Roman *limes*. Publishing selectively because of a preconceived notion of the inferiority of a historical period reinforces our bias. In the specific case of this thesis, it also makes it difficult to present a representative overview of the Late Roman period in the Dutch river area without delving into archives or processing primary excavation data. That approach falls well outside of the scope of an RMA-thesis, but it would be the only way of overcoming the shortcomings expressed above.

Question 2: Is it possible to "expand" the conventional end dates of some military sites already located in the limes area into the late 3rd and perhaps even 4th century?

As discussed in paragraph 3.2, it may be possible in a select number of cases to extend the end dates of several *limes* sites in the coastal area and the Rhine delta. The arguments for this are predominantly based on coin evidence, specifically on the peak in coins struck around AD 260/270, which can be

[274] Notably Domburg, Goedereede, Oostvoorne, Westerschouwen and Katwijk-Brittenburg.
[275] In the most extreme cases: Maurik, Rossum, Kessel-Lith and Wijk bij Duurstede
[276] Van Es 1981, 54-9, 121.
[277] E.g. Van Es 1981; Willems 1986.

observed at virtually every site discussed in this thesis. There are, however, two ways in which this phenomenon can be interpreted and both have their implications.

First of all, it could be argued that this peak represents an increase in activity. It is a common understanding among numismatists that during the construction phase of a site, coins tend to peak due to the increased activity, and that afterwards, those levels of circulating coins and coin losses are never parallelled.[278] Given the fact that a great number of sites in the Dutch river area show such a sharp increase around AD 260/270, we could argue that a wide-ranging building programme was implemented in this region in the late 3rd century. The impact of the *Limesfall* in the study area has been nuanced in recent years, so we can question whether it is realistic to date the reinstallation of the *limes* under Constantine I, as is traditionally done,[279] leaving a gap in the late 3rd and early 4th century. It could very well be argued that we need to bring the restructuring of the *limes* back a few decades, and in some cases[280] it has been argued that new sites were built in this specific period too.

The problem is, however, that none of the sites where such a AD 260/270 coin peak could be seen, has yielded any buildings from that period. This again has to do partially with the fact that so far not many Late Roman features have been published in sufficient detail.[281] Furthermore, it has proven difficult to reliably date stone structures by means of material culture, as I have shown for the sites of Cuijk and Nijmegen. Given the general lack of structural evidence from the rest of the study area, I am hesitant to interpret coin peaks as an indication of a building programme across the southern Netherlands.

An alternative interpretation can be formulated when looking at the circulation period for these AD 260/270 emissions. These coins from the mid-3rd century (and especially copies) tended to circulate, due to a lack of official emissions under the Gallic Empire, for a long time, in some cases even into the early 4th century.[282] I would thus argue that an AD 260/270 peak, which after all represents minting dates, should be "spread out" across a longer time period. After the large influx of coins minted around AD 260/270, the number of coins drops at many sites or even comes to a complete stop, until a second, smaller peak occurs under the reign of Constantine I in the early 4th century. It does seem a little unusual to me that a supposed building progamme around AD 260/270 would be followed by a period of very little activity, until a subsequent building programma initiated by Constantine I. Instead, I would suggest the peak in coin emissions reflects continuity of activity throughout the late 3rd and early 4th century. This extends the end dates of a number of *limes* sites, and makes them contemporary with those new fortifications built in the 4th century. Such a timelime, which is not dependent on dramatic events as a catalyst for change, would also resonate with the lack of evidence we have seen for any large-scale destruction related to the *Limesfall*.[283] After all, without a complete collapse of the defences, a coordinated overhaul of the infrastructure would not have been necessary and the Roman army could simply continue to build on an already existing infrastructure.

Question 3: Can we identify different building or reconstruction phases for individual sites active between 260-406/7 and if so, are these related to each other (for instance through large-scale imperial building programs)?

In the question above, I have already expressed some doubts about the explanatory value of the concept of "building programmes". This skepticism is mainly driven by the fact that we know of these programmes from written sources, which can be propagandistic in nature.[284] The idea that the Roman frontier was constructed by these means is closely linked to Luttvak's theory on grand strategy: state efforts are made to reform one frontier system into another.[285] What is more important, however, is the fact that archaeology can very rarely draw up precise enough chronologies to date sites or building phases accurately to individual emperors. The building programme then becomes something of a self-

[278] Tijmann 1994; Kemmers 2006.
[279] E.g. Van Es 1981; Bogaers 1966b.
[280] Cuijk, Nijmegen.
[281] Most notably Utrecht, Maastricht and Nijmegen.
[282] Kropff/Van der Vin 2003, 59-66; Kemmers 2006, 113-4; Aarts 2000, 58-74; Heeren 2015, 275.
[283] Heeren 2015, 290; Kropff 2015, 178; Dhaeze 2011, 197.
[284] Whately 2013.
[285] Luttvak 1976.

fulfilling profecy. As certain emperors were known to have been active builders, construction phases are attributed to them and other sites are then made to depend on those chronologies. The reputations of Constantine I and Valentinian I as investors in the *limes* appear to be corroborated by the small peaks we see on many sites in coins struck during their reign. The numbers are very small, though, and appear on practically every site for which the coin evidence is discussed in this thesis. I therefore find it much more likely that these peaks represent a general influx of certain emissions into the research area during their reigns.

Another aspect is that thinking in terms of building programmes or even building phases at individual sites is perhaps too simplistic. For the Early and Middle Roman period, we are used to seeing entire sites being refurbished in one single effort.[286] It seems that that practice was not as common anymore in the Late Roman period. At Valkenburg, for instance, it seems that a number of *horrea* were built, whereas the defenses and *prinicipa* from a previous phase were simply restored and incorporated. A similar interpretation could be given to the partial building plans we have for Vleuten-De Meern and Utrecht.

Question 4: Is there a positive link between site lay-out and military function? If so, do fortifications built or reconstructed during the years 260-406/7 differ strongly in lay-out from 1st and 2nd century fortifications?

In chapter 2, much attention was paid to several studies presenting site typologies specific to the Late Roman period. First of all, there is the generally accepted notion that Late Roman fortifications differed significantly in lay-out and architectural style from Early and Middle Roman fortifications. Sites are said to have been reduced in size, have protruding interval and corner towers, and rectangular and irregular lay-outs. [287] Of course, these are no "rules", but rather a generally observed pattern. The sample of sites in the Netherlands is much too small to say anything conclusive about building styles, but it is interesting to pick out a few examples. At Nijmegen-Valkhof, for example, the complex system of ditches is still poorly understood, but it has been suggested that the site seems to become larger over time, instead of smaller.[288] A similar suggestion has been made for Heumensoord, although the two ditches there are more likely to be contemporary.[289] In terms of general lay-out, the Dutch river area is a bit of a medley. Practically every excavated site is built differently. Cuijk appears to have been trapezoidal in shape, whereas the Brittenburg was perfectly square and Maastricht polygonal. This is fairly typical for the Netherlands, however, as castella here have never really conformed to an idealised lay-out.

Plenty of sites have yielded evidence for specifically Late Roman types of architecture, such as protruding corner and interval towers as part of the precinct wall. At Aardenburg, Cuijk and Maastricht, they are incorporated in the wall, and appear as semi-circular towers. The towers at the Brittenburg are entirely semi-circular and double towers are placed at the corners. Several other sites, however appear to have had square towers placed against the inner face of the outer wall (Valkenburg, Vechten). As both sites were rebuilt in stone well before the Late Roman period, these may well be remnants of an earlier period, whereas the round and semi-circular towers could be considered a new Late Roman phenomenon.[290]

In terms of identifying precise site types, this thesis has come up short. An overview was given above of Late Roman site types, including fortified *horrea* and *villae*, infrastructural works, marching camps, *quadriburgia*, coastal forts, road forts, river fortifications and watchtowers (*burgi*). [291] If one thing has become abundantly clear, it is that the vast majority of military fortifications in the Netherlands in the Late Roman period are located along major rivers. No road forts were recognised, except for that the fortifications at Heerlen and Hulsberg, which were related to the Cologne-Bavay road. Some overlap between the two site types is also to be expected: both Maastricht and Cuijk for

[286] Van Dinter 2013, 15.
[287] Southern/Dixon 2009, 129; Collins/Weber 2015, 2; Von Petrikovits 1971, 193-6.
[288] Bloemers 2016a, 211-213.
[289] Haalebos 1972, 86
[290] Cf. Johnson 1983, fig. 11 for various examples from across the empire of square towers on the inner face of the precinct wall from the 2nd and early 3rd century.
[291] After Southern/Dixon 2009, 132-147.

example are classified in this thesis as river forts, but were also likely located along nodal points of major roads. This "composite" location further increases their logistical importance for the Roman army. The evidence for any coastal forts was also scare, and only Aardenburg and Brittenburg can probably be identified as such. Unlike road or river forts, fortified *horrea* and *villae*, infrastructural works, marching camps, *quadriburgia* and watchtowers are not location-bound and are identified instead by their ground plan. As already presumed,[292] no fortified *villa* complexes were found, although the *burgus* of Wijchen was built on a former *villa* site and Ewijk was presumably also reused for military purposes. It is surprising that no fortified *horrea* were identified. Instead, *horrea* frequently appear in or near military fortifications.[293] It seems that rather than move forts inland nearer to supply depots to shorten supply lines, as has been suggested,[294] the Romans preferred to keep their storage facilities closer to their military infrastructure. This point will be further elaborated upon below, although it is clear that a significant number of sites yielded both evidence for fortifications and the presence of at least one *horreum*.[295]

There are no Late Roman marching camps in the Netherlands, as the camp at Ermelo has recently been dated to the Hadrianic period.[296] Katwijk-Brittenburg is the only *quadriburgium*-type site. Its foundation date and building phases are contested, however, so the Diocletian term *quadriburgium* may be incorrect. The research area finally included three watchtowers, but these vary in lay-out. The *burgi* at Wijchen-Tienakker and Heumensoord consist of a rectangular foundation trench, without a central supporting structure, whereas the watchtower at Hulsberg was rectangular in shape, and built in stone featuring four stone posts to support a second storey. There thus seems to be little consistency in the construction of *burgi* in the Netherlands. As very little is known about the lay-out and construction of the instrastructural works, they will be further discussed below under question 5.

All in all, the fragmentary nature of the archaeological evidence makes it difficult to infer functions for individual sites. Site plans or building plans are incompletely excavated or published, and a large part of the sites discussed here are only based on stray or dredge finds. I have argued above for continuity into the late 3rd and early 4th century at a number of *castella* pre-dating the Late Roman period.[297] There is no basis for assuming continuity in their function as well, i.e. primarily as a garrison for troops. Strictly speaking, Late Roman finds on a Middle Roman military site do not necessarily reflect Late Roman military activity. On the other hand, these sites have invariably yielded significant numbers of 4th century crossbow brooches. So, despite the fact that we cannot say for sure how those fortifications were used, the presence of military personnel seems likely.

The situation is slightly different for those fortifications which were newly built in the 4th century. In several cases, these were equipped with bridges, river bank revetments, ports and *horrea*, which indicates that they served multiple functions besides garrisoning soldiers. This trend shows that the *limes* was adapting to the changing times. Aside from being a temporal phenonenon, it is also strongly related to location, as such infrastructural structures are found almost exclusively along the Meuse.

Question 5: Is there a positive link between site location and function? If so, is there any indication that a different choice of location was made for newly built sites between 260-406/7, due to a different function of these individual sites?

As suggested in question 4, and in chapter 3.3, there seems to be a connection between the occurence of infrastructural works in the vicinity of fortifications, and the river Meuse. Four sites have yielded varying degrees of evidence for the construction of a bridge in the Late Roman period. Notable are of course Cuijk and Maastricht, where extensive diving and excavation work has given us a good idea of how these bridges were built. We also have dendrochronological dates that place these structures firmly in the Late Roman period. At Cuijk, we have the addition of a port with river bank revetment

[292] See note 105.
[293] Cuijk, Nijmegen, Valkenburg, Brittenburg and Maastricht.
[294] Le Bohec 2012, 54 ; Halsall 2014a, 522.
[295] Katwijk-Brittenburg (a dounle *horreum*), Valkenburg (possibly three), Cuijk, Nijmegen, Maastricht.
[296] Hulst 2000/2001; ibid. 2006a.
[297] E.g. Leiden, Woerden, Vleuten-De Meern, Vechten.

and a pier, which was part of the *castellum* complex. More questionable are the supposed bridges at Kessel and Nijmegen, which are based on dredge finds of iron pile shoes. These may not necessarily date to the Late Roman period, although in the case of Kessel this is rather likely. The presence and date of a port in Nijmegen on the Waal is far from certain.

What does become clear is that all these sites are located in the eastern river area. It has already been explained above that the western river area was largely abandoned over the course of the 4th century, and that the Meuse's course was much more stable than that of the Rhine, especially in the 4th and 5th centuries. This was especially the case further upstream (the eastern river area and especially Limburg), where the Meuse's bedding was made up of Quarternary coarse sand and gravel sediments, which were less prone to erosion.[298] On the one hand, this would explain the conservation of these structures (they have not eroded away), but a role for the Meuse in the Late Roman military infrastructure is supported by distribution studies on Late Roman belt buckles and gold hoards.[299] I do not think, therefore, that it is a coincidence that the vast majority of large infrastructural investments in the Late Roman period appear in the eastern Meuse delta. Bridges and ports constructed on more reliable sediments were less likely to need excessive rebuilding over time. Dendrochronological samples of the bridges at Cuijk and Maastricht have shown that repairs were made, but fairly infrequently and over a long period of time. Another point of interest is that (supposed) bridges always appear in the direct vicinity of a fortification. At both Cuijk and Maastricht, the foundation of the *castella* is dated well before the first construction phase of the bridge, suggesting that these camps may not have purely functioned to defend or control the bridge. It is also possible that these bridges were built there because the labour force (soldiers) were stationed there. At Cuijk at least, it has been argued that the bridge was built by army personnel.[300] Regardless of the precise relationship between forts and bridges, there is a definite link between the army and large investments in infrastructure.

Generally speaking, some different choices were made regarding site location within the Late Roman *limes*. The Meuse became important for transport and was equipped in the eastern river delta with an extensive, fortified infrastructure. Looking at each site specifically, however, reveals that much the same decisions were made as before. It has been remarked that the fortifications of the Early/Middle Roman *limes* were invariably located close to the river,[301] and the same is true for the Late Roman *limes*, in both the Meuse and Rhine delta. Even the few coastal sites dating to the Late Roman period were not new, but date back to previous centuries.

Question 6: How are we to understand the Late Roman limes as a functioning system? How do the functions of individual sites relate to the limes as a whole, how did it develop over time and why?

The question remains how all this relates back to the theoretical literature discussed in the introduction. It already proved difficult to relate the archaeological evidence to certain aspects of the methodological framework, so applying fairly abstract concepts to our inherently flawed understanding of the archaeological record may prove problematic. The best way is probably to first tackle each concept at a time.

First of all, we have the defence-in-depth theory of Luttvak. There is, on a purely archaeological level, no evidence to support it. No buffer zone or "peripheral combat zone" was created as an alternative for the former "perimeter defence", and we see no fall-back of sites behind the frontier. Luttvak's system also consisted of other aspects as well, namely the division of *limitanei* and *comitatenses*, fewer garrisons along the frontier with defended passageways, supply depots, road forts and fortified towns in the hinterland. These nodal points in the hinterland are also largely absent, with the notable exception of the cluster of sites in southern Limburg (Maastricht, Heerlen, Goudsberg). I am limited of course to studying sites in the Netherlands, but if we look at fig. 3, which also includes Belgium and parts of Germany, we see that the hinterland of the Dutch *limes*, was for the most part devoid of military sites. The closest sites of the fortified Cologne-Bavay route are Goudsberg, Maastricht and Heerlen in the south of Limburg. Besides, as already explained in question 4, *horrea* appear exclusively in (or in the case of Nijmegen near) fortifications. It thus seems that the

[298] Berendsen 1997, 11.
[299] Respectively Sommer 1984; Roymans 2017.
[300] Van der Meulen/Van der Veen 2015.
[301] Van Dinter 2013.

Roman army preferred to have its immediate storage facilities nearby, rather than in the (supposedly safer) hinterland.

The question of course is why. Le Bohec assumed that fortified supply depots were less likely to be attacked, and that the army later moved its line of fortification in-land to ensure shorter and more direct supply lines.[302] This is evidently not the case and never really was at any point in the Roman period. Early and Middle Roman forts rarely feature *horrea* within their walls, and very often there are storage facilities outside the fort or in the surrounding *vicus*. The move of *horrea* within the forts could be because of security issues, but also by the fact that Late Roman army detachments were generally smaller than in previous periods,[303] so it could just be a matter of space. There is also very scant evidence for large supporting *vici* in this period.

Other aspects of Luttvak's defence-in-depth, such as the defended passageways, road forts and fortified towns were also not found in this particular case study. We do know of course that the city of Tongeren was defended by a stone wall in this period,[304] but again this is probably further into the hinterland than was practical for any troops at the frontier. There is some debate whether Maastricht should be seen as a fortified town or as an independent fortification; I am inclined here towards the latter explanation, as recent excavations (see fig. 36) have found that the precinct wall was surrounded by a V-shaped ditch. We have seen several instances of defended passageways, such as the bridges at Cuijk and perhaps Kessel, which were both overseen by fairly large *castella*. These sites, however, were located within the Dutch river area, not far into the hinterland. There is no archaeological or in any case architectural data that positively illustrates a "peripheral combat zone" or a division between mobile or stationary troops. The former is of course a strategic and abstract concept which may be difficult to grasp within a distribution map of fortifications. The *limitanei*/*comitatenses* distinction can also not be shown from settlements only, as there is no way of knowing what kind of troops were stationed at various sites. The fact that the distribution of fortifications along the *limes* in the Late Roman period shows so much similarity with the Early and Middle Roman *limes* does suggest, however, that such a strict division in troops was not upheld in this particular part of the empire. After all, the deeper combat zone in which mobile troops intercepted incursors cannot be shown in the archaeological record.

More polemic authors like Halsall and Drinkwater have instead argued in the past for a far more radical re-interpretation of the 4th century, in which peaceful co-existence was the *status quo* that was only occasionally disturbed by small-scale skirmishes and raids.[305] Generally speaking, this absence of large-scale evidence for violence is reflected in the archaeological record: there are no overall burnt desposits to suggest the study area was extensively raided and destroyed. Taking the number of military sites as a measure of fortification of the landscape, it could be used as a proxy value for how "unsafe" or prone to attack the *limes* region was. It seems to me that the high level of continuity suggests that little changed from the Middle to the Late Roman period. There is no real evidence to suggest a sharp increase in army investments in this area, either because of barbarian attacks or because of supposed political motives.[306] For instance, the overall number of sites remains practically the same, with some sites being abandoned (western river area) and some being added (eastern river area). This marks a shift in the area of interest, but not in the overall amount of fortification needed for the Roman army to stay in control. Furthermore, quite a few sites show continuity from the 3rd into the 4th century (question 2), while newly built sites in the 4th century are situated in similar locations: directly along rivers with access to the hinterland by the means of roads (Cuijk, Maastricht).

I would argue that this continuity in location choices over time is reflective of a continuity in function as well. Various authors cited in the introduction have argued for the idea that rivers, rather than being natural borders, represent a mode of communication.[307] The Early and Middle Roman *limes* is thought of as a fortified transport corridor.[308] Detailed studies have further argued that one of the

[302] Le Bohec 2012, 54 ; Halsall 2014a, 522.
[303] Johnson 1983, 179.
[304] Heeren 2017, 155.
[305] Halsall 2014b, 123-131, 150-161.
[306] As was suggested by Drinkwater 1996, 27.
[307] Mann 1974, 513; Bloemers 1983a; Willems 1986a, 209-10; Whittaker 1994, 61-62; 77.
[308] Van Dinter 2013; Sommer 2009; Langeveld *et al.* 2010.

main aims of *castella* and watchtowers in the Dutch river area was to regulate and police movement over water. In the Early and Middle Roman period, the line of fortifications was located exclusively along the Rhine/Waal delta. In the Late Roman period, we see activity along both the Rhine and the Meuse, but in distinctive ways. The Rhine sites show no real difference from before and although we do not know much about how they were built or what kind of troops they garrisoned, it can be assumed that they generally fulfilled the same regional purposes as before. The western river area had been abandoned by the 4th century, but the Rhine delta in the east has yielded plenty of evidence for *castella* and watchtowers along the waterfront. The Meuse has yielded sites that are located according to similar principles, but its fortifications seem to be more often equipped with extra features, such as *horrea*, port facilities or bridges. This suggests that the Meuse took over that important role of transport corridor that enabled the army to secure its supply- and trade lines to the hinterland. Both rivers continued to be actively used by the army, but for different purposes. We do not know of course how the river courses ran exactly in that period, and how transport/trade routes from the Helinium to the hinterland ran. Presumably, ships entering the Helinium could travel up both the Meuse and Waal, and at some point would have been able to connect to the Rhine as well, althoug the exact point where this would take place remains unknown. It could very well be that the Corbulo canal, given the find of a Late Roman *fibula* there,[309] was still in active use at that time.

In short, therefore, I would argue that for a large part of the Late Roman period, i.e. the late 3rd and most of the 4th century, it was "business as usual" in the Dutch river area. There is no denying that the Late Roman *limes* was organised a little bit differently than it was before, but hopefully I have been able to show convincingly that the same logistical and strategic choices were made. Slight shifts in the site distribution pattern can be explained by environmental and landscape-related considerations, showing that the Late Roman *limes* was still flexible and able to adapt to local changes in circumstances. What happened to the *limes* zone after the end of the 4th century is a topic I have mostly left aside for this thesis. This would be more suitable for a more in-depth study, which could incorporate a long-term perspective and make more use of unpublished excavation data. Some first impressions can be given, though, as the developments of the early 5th century did not come about in complete isolation. Other scholars have already remarked on the focus of military activity around the Meuse delta in the early 5th century.[310] Rather than a sudden shift, this thesis has shown that this development process, in which the Meuse river delta became increasingly important for the Roman infrastructure, already started as early as the 4th century.

[309] Brandenburgh/Hessing 2005, 37.
[310] Sommer 1984; Roymans 2017.

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Appendix 1. Site catalogue Area 1

1.1 Aardenburg

Many excavations were carried out in the 20th century by Trimpe Burger, which were only recently published as part of the Odyssee effort to publish old excavations.[311] This publication focusses predominantly on establishing a chronology of the different construction phases, and on the analysis of a selection of finds that can be well dated. From the *castellum* complex, the coins, Samian ware, Gallo-Belgic ware and colour-coated wares of several selected ceramic assemblages have been studied extensively. The fabrics of smooth- and coarse-tempered wares, dolia, amphorae and mortaria are also described, albeit in less detail.

Features

The final occupational phase is dated by Van Dierendonck and Vos to 260-285/290.[312] It consists of a rectangular fort surrounded by a stone wall with towers at the corners and at intervals in between these (see fig. 12). The whole fort was surrounded by a single large ditch. Within, a central *principia* was found as well as a number of wells and fragments of other buildings. Several ovens were active outside the confines of the fort as well.

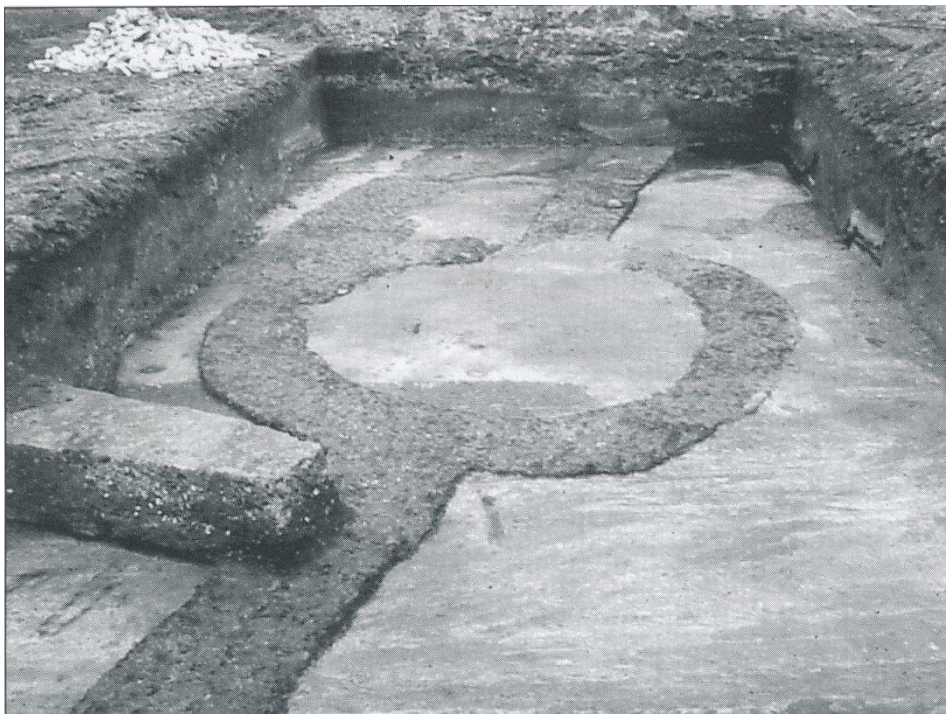

Fig. 12. Excavation photographs of the fortifications at Aardenburg; after Trimpe Burger 2002, 27.

Finds

The authors also note that their research did not yield any indications for 4th century activity at Aardenburg. No features or buildings dating to the 4th century were found during the Trimpe Burger excavations and no 4th century material culture was recognised by him (Van Dierendonck and Vos do admit that this may have been due to the state of knowledge of Late Roman ceramics at the time).[313] They do note 15 coins from that period from the *castellum* terrain itself and its immediate surroundings.[314] They are also aware of 4th century Saxon and Germanic pottery seen by Wim de

[311] Van Dierendonck/Vos 2013; see for preliminary studies Trimpe Burger 1978; ibid. 1992; ibid. 2002.
[312] Van Dierendonck *et al*. 2013, 330.
[313] Van Dierendonck *et al*. 2013, 331.
[314] Van Dierendonck *et al*. 2013, 331; Chameroy 2013, table 5.1.

Clerq, which has been interpreted by some as indicating the presence of a small Germanic occupation sometime during the 4th century.[315]

A similar broader date is suggested by Besuijen in his analysis of the metal objects from Aardenburg. Basing himself on coin evidence, he allows for an abandonment of the site in the late 3rd or early 4th century.[316] This was based predominantly coins from the excavations up to 1966 published by J.S. Boersma in his numismatic overview of Roman Zeeland.[317] He also makes use of a more recent MA thesis on the then current state of Roman coins from Zeeland[318], but this last manuscript could not be consulted. In the NUMIS database, however, 49 Late Roman coins were documented, and these are different from those published by Boersma. Both sets of coins (with a *terminus post quem* of AD 200) are presented in table 5. The coins as identified by Chameroy have been left out, as his method for dating imitations rendered his dataset incompatible.

Table 5. Coins from Aardenburg from publications[319] and the NUMIS database[320] (AD 200<)

Coin type	**Authority**	**Date (min.)**	**Date (max.)**	**N**
NUMIS				
aes	indet.	0	400	1
denarius	Septimius Severus	205	207	1
antoninianus	indet.	214	294	1
sestertius	Severus Alexander	222	235	1
antoninianus	Philippus I	244	247	1
antoninianus	Gallienus	253	268	1
antoninianus	indet.	253	294	3
antoninianus	Gallienus	253	268	1
antoninianus	Gallienus	257	268	1
antoninianus	Postumus	259	268	2
double sestertius	Postumus	259	268	2
dupondius	Postumus	259	268	1
sestertius	Postumus	259	268	1
antoninianus	Claudius II	268	270	2
antoninianus	Claudius II/Tetricus I	268	273	1
antoninianus	barbarous imitation of Victorinus	268	270	1
antoninianus	Claudius II	269	269	1
antoninianus	indet.	270	295	1
antoninianus	Tetricus I	270	273	3
antoninianus	barbarous imitation of Tetricus I	270	273	1
antoninianus	barbarous imitation of Tetricus I/II	270	273	1
antoninianus	barbarous imitation of Divus Claudius II	270	275	1
antoninianus	indet.	280	295	1
aes	Diocletian-Licinius	284	324	1
nummus	Constantinus I	313	318	1
nummus	Constantinus I	316	330	1
nummus	Constantinus I	325	329	1
nummus	Constantinus I	330	335	1
nummus	Constantinus I c.s.	330	335	1
nummus	Constantinus I	330	333	1
nummus	Constantinus I; Constantinus II Caesar	333	334	1
nummus	Constantinus I c.s. Or Constantius II c.s.	335	341	1
nummus	Constantius II	337	361	1
AE	Constans of Constantius II	343	348	1
nummus	Constans	343	348	1
nummus	Constans or Constantius II	343	348	1
nummus	Constantius II c.s.	347	348	1
nummus	Constans	348	350	1
aes	Constantius II c.s.	348	361	1
AE	Valens	364	378	1

[315] De Clerq 2009, 382.
[316] Besuijen 2008, 61; cf. Willems 1983, 123 for a similar suggestion.
[317] Boersma 1967.
[318] Van Eert 2003.
[319] After Boersma 1967.
[320] Accessed 25-01-2017; out of a total of 56 Roman coins.

AE	Valentinianus I and Valens c.s.	364	378	1
aes	Theodosius I	384	387	1
Total				**49**
JMP				
sestertius	Septimius Severus	193	193	1
denarius	Septimius Severus	196	211	1
sesterius	Caracalla	210	210	1
denarius	Elagabalus	218	222	1
denarius	Severus Alexander	223	223	1
sesterius	Severus Alexander	222	235	1
antoninianus	Gordianus III	238	244	1
sesterius	Gordianus III	238	244	1
antoninianus	Traianus Decius	249	251	1
antoninianus	indet.	250	250	1
antoninianus	indet.	235	253	1
antoninianus	indet.	250		1
antoninianus	indet.		260	1
antoninianus	Valerianus/Gallienus	254	254	1
antoninianus	Valerianus/Gallienus	256	256	1
antoninianus	Valerianus/Gallienus	257	257	1
antoninianus	Gallienus	259	269	1
antoninianus	Postumus	260	260	1
sesterius	Postumus	260	261	1
antoninianus	Postumus	261	261	1
antoninianus	Postumus	263	263	2
antoninianus	Postumus	260	269	4
sesterius	Postumus	260	269	1
dupondius	Postumus	260	269	3
as	Postumus	260	269	4
copper	Postumus	260	269	1
antoninianus	Claudius II	268	269	3
antoninianus	Divo Claudio	269		1
antoninianus	Victorinus	269	271	1
antoninianus	Tetricus I/II	271	273	14
antoninianus	Victorinus/Tetricus	269	273	4
antoninianus	indet.	260	273	2
antoninianus	indet.	260		1
antoninianus	indet.		268	1
antoninianus	indet.	200	300	2
copper	indet.	270	400	1
aes III	Constantinus I c.s.	335	341	1
aes I	Magnentius	351	353	1
aes IV	indet.	388	395	1
aes IV	indet.	388	402	1
copper	indet.	300	400	3
indet.	indet.	300	400	1
Total				**42**
Grand total				**91**

1.2 Domburg

The structural evidence for Roman military occupation at Domburg is rather limited. Due to coastal erosion, not much is left of the original Roman coastal occupation (see for instance the Nehalennia sanctuary, originally found in 1647, which is now located on the North Sea seabed). [321] If there ever were any structural remains of a fortification or military site, they are now completely destroyed and under sea level. Some indications for Roman activity at Domburg are known, however.
Historical sources from 1618 tell of sightings of "artefacts" and "foundations of large houses and streets". In the past, this description has been interpreted as referring to a fortification, as an accompanying *vicus* was excavated nearby in 1958-9 and 1982.[322]

[321] Trimpe Burger 2002, 40.
[322] Besuijen 2008, 26.

Finds

Ceramics from the *vicus* have been dated to AD 70-275.[323] The site of the presumed *castellum* has been dated to the Late Roman period by coin finds. [324] These are reproduced below in table 6. Several scholars have argued that these coins could indicate a short-term presence at the site of military personnel or merchants.[325] That interpretation is in turn based on the historically informed assumption that Domburg was located in the most favourable location between the Rhine, Scheldt and England with places for transhipments for the international trade (most notable with Britannia).[326]

Other ceramics may relate more directly to a fortification. Retired medievalist M.I. Gerhardt over 8 years in the 1970's and 1980's collected hundreds of sherds of Roman pottery from the beach at Domburg. These were described in a now inaccessible MA thesis[327], although its general conclusions have been summarised elsewhere. The assemblage as a whole was dated to AD 10-250. [328] The "special nature" of the site was shown by the fact that 29% of the ceramics were Samian ware.[329] The ceramics were collected per area marked by a beach pole and could therefore be plotted well. The frequency of the material combined with the transporting power of currents and waves, it was suggested that the settlement to which the material belonged was located roughly 1 km from the current centre of Domburg. [330]

Furthermore, the Heeren/Van der Feijst database includes two crossbow brooches from Domburg: a bronze 68b1 type (AD 300-360) and a gold 68e1 (400-500).

Table 6. Coins Domburg from publications (AD 200<)[331]

Coin type	**Authority**	**Date (min.)**	**Date (max.)**	**N**
denarius	Septimius Severus	193	211	1
denarius	Caracalla	193	211	1
denarius	Iulia Domna	193	211	1
denarius	Septimius Severus	193	211	3
denarius	Iulia Domna	193	211	1
denarius	Geta	193	211	1
denarius	Septimius Severus	194	194	2
denarius	Caracalla	196	198	1
denarius	Iulia Domna	196	211	2
denarius	Septimius Severus	198	200	2
denarius	Caracalla	200	200	1
aes IV	indet.	200	400	2
denarius	indet.	200	250	1
antoninianus	indet.	200	300	1
copper	indet.	200	400	2
denarius	Septimius Severus	202	202	1
denarius	Caracalla	210	213	1
denarius	Divus Septimius Severus	211	211	1
denarius	Divus Septimius Severus	211	217	1
denarius	Caracalla	213	217	1
antoninianus	Caracalla	215	215	1
denarius	Elagabalus	218	222	1
denarius	Severus Alexander	222	228	1
denarius	Severus Alexander	222	235	1
denarius	Severus Alexander	228	231	2
denarius	Maximinus I	235	236	2
antoninianus	Gordianus III	238	244	2
antoninianus	indet.	250	275	3
copper	indet.	250	275	2
antoninianus	Volusianus	252	253	1

[323] Besuijen 2008, 27; Van Eert 2003, 27-8.
[324] Willems 1986a, 295; Boersma 1967.
[325] Bogaers 1967b, 107, no. 37; Van Es 1981, 125-8; Henderikx 1986, 480; ibid. 1987, 43.
[326] Besuijen 2008, 23; Bogaers 1974, 70-1.
[327] Van de Vrie 1987.
[328] Besuijen 2008, 23.
[329] Heeringen 1988, 135; Besuijen 2008, 23.
[330] Heeringen 1988, 135.
[331] Boersma 1967.

antoninianus	Gallienus	253	268	1
tetradrachme	indet.	260	260	1
antoninianus	Postumus	262	262	1
antoninianus	Postumus	265	265	1
antoninianus	Claudius II	268	269	1
antoninianus	Marius	269	269	1
antoninianus	Victorinus/Tetricus	269	273	8
antoninianus	Victorinus/Tetricus	269	273	2
antoninianus	Victorinus	270	270	1
aes IV	barbarous imitation end 3rd-4th century	270	400	1
antoninianus	Tetricus I	271	273	4
antoninianus	Tetricus I	271	273	1
antoninianus	Tetricus I	273	273	1
follis	indet.	286	311	1
antoninianus	Maximianus Herculius	286	305	1
aes III	indet.	300	400	1
aes IV	indet.	300	400	2
aes IV	barbarous imitation 4th century	300	400	1
aes III	indet.	300	350	1
aes IV	indet.	300	350	1
aes III	Constantinus I c.s.	320	320	1
aes III	Constantinus I c.s.	330	335	3
aes III	Constantinus I c.s.	330	337	2
aes III	Constantinus I c.s.	330	341	2
aes IV	indet.	350	350	1
aes II	Magnentius/Decentius	350	353	1
aes III	Valens	369	378	2
aes IV	barbarous imitation end 4th century	370	400	1
aes IV	indet.	383	Indet.	1
aes IV	indet.	383	395	3
sesterius	indet.	indet.	indet.	1
antoninianus	barbarous imitation Victorinus/Tetricus	indet.	indet.	4
aes IV	barbarous imitation Constantius II/Magnentius	indet.	indet.	1
aes IV	barbarous imitation Magnentius/Decentiius	indet.	indet.	1
antoninianus	barbarous imitation of Claudius II	indet.	indet.	1
antoninianus	barbarous imitation of Divo Claudio	indet.	indet.	1
antoninianus	barbarous imitation of Victorinus/Tetricus	indet.	indet.	8
aes III	barbarous imitation of Constantius II	indet.	indet.	1
aes III	barbarous imitation of Constantius II	indet.	indet.	1
denarius	Elagabalus/Severus Alexander			1
Total				**92**

In arguing whether the Roman occupation at Domburg was military or not, most scholars seem to have judged its location along the coast to be of great importance. However, the sighting of buildings in itself is non-conclusive when it comes to determining the exact nature of the site. The idea that a high percentage of Samian ware points towards a "special" i.e. non-rural interpretation seems flawed to me, as Samian ware has a higher visibility on beach sand then for example grey coarse-tempered ware. Given the relatively high number of Late Roman coins, I would say it is safe to assume activity at that time in Domburg, and given the location a military or trade-related settlement seems likely, though far from certain.

1.3 Goedereede-De Oude Wereld

Like Domburg, Goedereede (or Goeree)-De Oude Wereld is a site largely destroyed by coastal erosion. In 1618 and 1681, remains of Roman buildings were seen to emerge from the sand, which have been interpreted by some as indicating the presence of a fortification.[332] At these events, Roman coins, rings and ceramics were also seen.[333]

[332] Dijkstra 2011, 74, 454; Trimpe Burger 1960/1961, 201-2.
[333] Pleyte 1899, 84-86; Dijkstra 2011, 455.

Finds

Remains of houses were identified[334] and large amounts of coins and ceramics were found at the site.[335] Based on the Samian ware, the nearby civilian settlement of Goedereede-Oude Oostdijk was dated to somewhere in the 3rd century.[336] During archaeological research in 1958-9 in the Oude Oostdijkpolder, two military rooftiles and one military inscription were found[337] although these have not been dated. A Late Roman date seems unlikely, as epigraphical evidence from this period is generally rare.[338] The results from the excavations at Oude Oostdijk are generally interpreted as a *vicus*, belonging to a nearby fortification. According to Dijkstra, military activity here would not preclude that the site was active well into the Late Roman period.[339]

All in all, the evidence for Late Roman military activity at Goedereede-De Oude Wereld is rather scarce. Its location on the coast, in connection to the *Litus Saxonicu*m would be the main argument for such an interpretation.

1.4 Katwijk-Brittenburg

The archaeological remains of the Brittenburg are elusive. In 1520, the stone remains of a fortification, including several buildings (barracks and a *horreum*) and a stone wall with intersecting towers and coins were first seen at the beach during low tide. [340] No archaeological excavation of these remains has taken place, although over time, various etchings and pen drawings have been produced (see for an overview fig. 13). These days, the Brittenburg lies well under sea level, at an estimated 500 meters to 2 kilometres from the coast.[341]

Features

Opinions on the fortification at the Brittenburg are divided, not in the least because the ground plan as it was recorded is a little suspect and has been drawn by various artists with slight variations (see fig. 13).[342] In total it measures 75 by 75 meters, and it is clear that it represents several construction phases. [343] It is unclear, however, to what extent the drawing is an idealised representation of what was actually witnessed. The most widespread interpretation is that what the drawing shows is a fort or naval base with *horreum* dating to the Late Roman period.[344] That dating is primarily based on the shape and lay-out of the camp, which closely resembles a *quadriburgus* with its corner towers.[345] Parallels for the double *horreum* have been found in Housesteads and South Shields in England, although these date to the Hadrianic period. [346] This is interesting, as it has previously been suggested based on epigraphical evidence that the Brittenburg may already have garrisoned soldiers from the Hadrianic period onwards. [347]

Others have argued, however, that the fort's appearance may well look Late Roman, but that such shapes continued into the medieval period as small castles and fortifications and that the site therefore dates much later. Also, the double corner towers have been deemed to be “un-Roman”.[348] An added argument to this effect is that no Late Roman finds were found, only Late Medieval ones.[349] However, no excavations have taken place, so the finds that we do have, are stray finds. It is possible that the double foundations of the corner towers are an incorrect representation of reality, and that single towers were originally built on top of them. A drawing of the site from 1567 for example does

[334] *ER* III, 152.
[335] Trimpe Burger 1960/1961, 202.
[336] Trimpe Burger 1960/1961, 202.
[337] Trimpe Burger 1960/1961, 202.
[338] Whately 2013; ibid 2015.
[339] Dijkstra 2011, 455.
[340] Pars 1745, 103; Pleyte 1899, 55-6, Pl. IX fig. 5; Dijkstra/Ketelaar 1965, 10.
[341] Hessing 1995, 96; Bloemers/De Weerd 1995, 47.
[342] Dijkstra/Ketelaar 1965, 91-2.
[343] Dijkstra/Ketelaar 1965, 91-2.
[344] Dijkstra 2011, 74.
[345] Hessing 1995, 96-7.
[346] Dijkstra/Ketelaar 1965, 92.
[347] Bogaers 1969, 32, 46; Hessing 1995, 97.
[348] Dijkstra/Ketelaar 1965, 93-4.
[349] Bloemers/De Weerd 1983; ibid. 1984.

show single corner towers. [350] A further argument for suggesting Late Roman activity at the Brittenburg is the citation of Ammianus Marcellinus that Valentinian I built and reconstructed several fortifications in this area in AD 370.[351] This could refer to an original construction, or to the reconstruction of the supposed Hadrianic fortification.

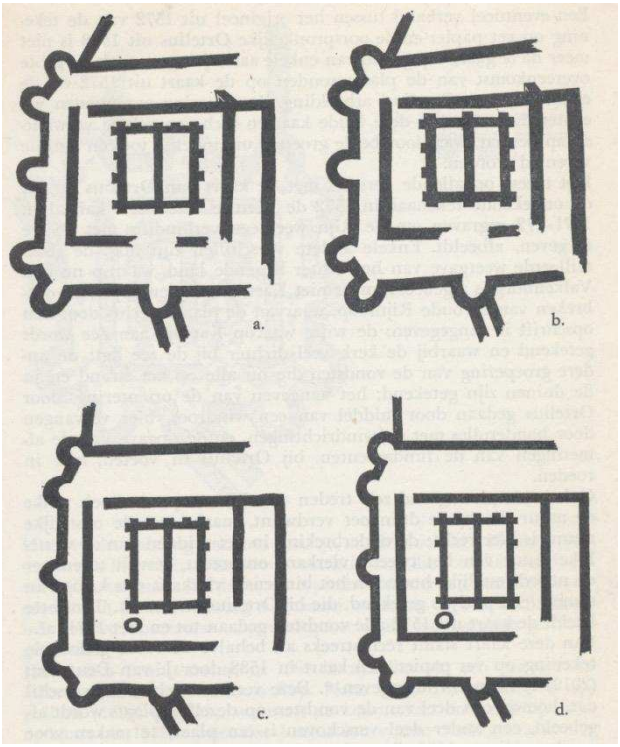

Fig. 13. Several silhouettes of the fortification at the Brittenburg, as seen in 1581 (a), 1588 (b), 1572 (c) and 1588 (d); after Dijkstra/Ketelaar 1965, fig. 17.

Finds

Excavations in 1982[352] in Katwijk revealed the remains of a civilian settlement, interpreted as the *vicus* to the Roman fortification of the Brittenburg. [353] The finds from this site date to AD 160-240 and include Samian ware, a silver coin issued by Commodus and several stamps of the *Classis Germanica*.[354] Although no features of buildings were found, the site did yield a well, refuse pit and several ditches and pallisades. A complete lack of 4th-century material to the excavators meant that this ruled out a 4th century date of the Brittenburg. They felt that the supposed Late Roman ground plan could just as well be a 6th century Frankish fortification. The 7 coins from the Brittenburg they managed to locate all dated between Antoninus Pius (AD 138-161) and Severus Alexander (AD 222-235) which fits in nicely with the ceramics from the *vicus*. [355]

With the evidence for Late Roman *horrea* at Valkenburg in mind (see below), however, I find it difficult to completely rule out Late Roman occupation. Rather, it seems that the site may have been originally built under Hadrian or in the 160's (some even argue for the mid-1st century[356], which I find rather extreme), which fell into disrepair somewhere in the mid-3rd century. In the 4th century, the site was reoccupied, this time as a double *horreum* protected by a small fortification.[357]

1.5 Oostvoorne

[350] Hessing 1995, 97.
[351] Willems 1986a, 293-5; ibid. 1989, 40; Reichmann 1987, 512-4; De Boone 1954, 106.
[352] Bloemers/ De Weerd 1983; De Weerd 1986.
[353] Bloemers/De Weerd 1984, 47.
[354] Bloemers/De Weerd 1984, 43-4.
[355] Bloemers/De Weerd 1984, 48.
[356] Dijkstra/Ketelaar 1965, 95.
[357] Dijkstra/Ketelaar 1965, 95.

Like Domburg, Goeree and Brittenburg, there has been a sighting of stones and wall foundations at Oostvoorne, this time during an extremely low tide in 1752. [358] Subsequent dredging activities in the same area in the early 20th century led to other Roman finds.[359] During the erection of the Noorddijk in Oostvoorne in 1970, roof tiles and coarse-tempered pottery was found, and it is assumed that these were used here in a secondary context as construction materials in the 12th century.[360] At an excavation of the local church, two blocks of tuff were found, again in a secondary context. [361] It has been suggested that the remains of building materials seen in the 18th century and those found since belonged to a Roman *castellum*.[362]

Finds

A lot of material culture has also been found, although we have to understand that most of it has been washed away from its original context by the Meuse and its delta.[363] Modern building activities in the Helinium (mostly the construction of ports) have meant that many stray and dredge finds are known from the area around Oostvoorne, mostly in private collections. [364] These include mostly pottery, roof tiles, small bronze objects and coins. The ceramics, as far as these have been analysed, date from the last quarter of the 1st century to the second half of the 3rd. Bogaers further claims that the coins from Oostvoorne form an almost uninterrupted series from Augustus to AD 270, while 4th-century coins are almost lacking completely.[365] Unfortunately, the coins have not been published in any greater detail, although it seems to me that the smaller bronze denominations of the 4th century (predominantly the *aes*) is generally less visible, especially in a dredging context. This does leave open the door for a slightly later date of Oostvoorne, although the evidence is extremely scarce and its military nature cannot be ascertained.

1.6 Valkenburg (ZH)

Valkenburg is one of the few sites in the Dutch coastal area for which there is undisputed evidence of a Late Roman occupational phase.[366] It has been extensively excavated since 1941 onwards[367], and is still the most completely excavated fortification we have from the Roman period.

Features

Valkenburg is best known for its succession of playing-card shaped forts dating from AD 40 onwards.[368] These were originally divided into 6 different phases,[369] until a further study of the stratigraphy[370] and some dendrochronological analysis and C14 dating revealed that the *principia* and three *horrea* could be confidently dated into the Late Roman period (see fig. 14 for the ground plan). Along with these new structures of phase 7, it is presumed that the stone wall and ditches around the camp were also still active. The felling date of a piece of wooden drain was estimated at AD 316 (± 10).[371] Two other pieces of wood from one of the *horrea* were dated to AD 365 (±40) and AD 223 (±20) (the latter was reused as evidenced by a non-functional nail).[372]

The foundations of the south wall of the *principia* were dated to the late 3rd and 4th century. The final tree rings on the posts used in the principia date to AD 264, 265, 346 and 364.[373] These dates

[358] Dijkstra 2011, 74, site no. 136; Bogaers 1974, 71; Hoek 1970, 9-10; ibid. 1971; ibid. 1972, 4-5; ibid. 1973.
[359] Hessing 1995, 98.
[360] Bogaers 1974, 71.
[361] Bogaers 1974, 72; Hoek 1972, 5; ibid. 1973, 111.
[362] Bogaers 1974, 71-2; Hoek 1970, 9; ibid. 1972, 4ff.; ibid. 1971, 128-130; ibid. 1973, 110ff.
[363] Bogaers 1974, 75.
[364] Bogaers 1974, 75.
[365] Bogaers 1974, 76.
[366] Dijkstra 2011, 72, site no 57.
[367] Haalebos 2006f, 397.
[368] Glasbergen/Groenman-van Waateringe 1974, 6.
[369] Glasbergen/Groenman-Van Waateringe 1974, 6.
[370] Groenman-van Waateringe 1977, 235; Groenman-van Waateringe 1986, 159.
[371] Groenman-van Waateringe 1986, 166; Haalebos 2006f, 402.
[372] Groenman-van Waateringe 1986, 166.
[373] Groenman-Van Waateringe/Van Beek 1988, 32-4; De Hingh/Vos 2006, 112; Haalebos 2006f, 402.

are further supported by the fact that Julian mentioned the *horrea* at Valkenburg in his address to the Athenians and comments on their importance in regard to the grain transports from England.[374] They also show that the site was not rebuilt in its entirety but was repaired in small instances, which suggests a small, yet continuous and prolonged inhabitation. The lack of material culture (see below) points towards the use of the site by a small garrison.[375] These *horrea* were further interpreted as having been used for the storage and transhipment of grain from Britannia, which was meant to alleviate the grain shortage experienced on the continent as a result of overexploitation.[376]

The revised chronology of Valkenburg, as proposed by Vos and de Hingh, now states that the formerly final phase 6 dates from AD 178 to around 240, while phase 7 is dated, rather generously in my opinion, to AD 240-400.[377] However, a preliminary (and unpublished) reappraisal of the dendrochronological analysis by Esther Jansma has concluded that almost all of the dates referenced above are incorrect and need to be recalibrated. Several specimens that were dated to the second half of the 4th century now seem to date to the 1st century AD, and Rien Polak is currently reviewing the original field documentation of both the Van Giffen and later ROB campaigns[378] to match the sample numbers to the features in order to see which buildings have been affected.[379]

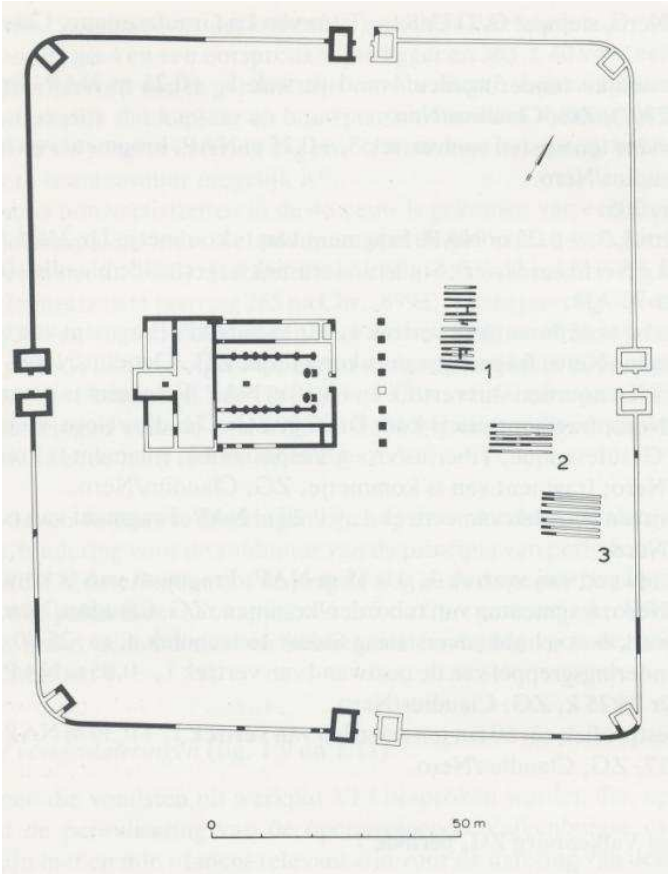

Fig. 14. Ground plan of Valkenburg in the Late Roman period; after Groenman-van Waateringe/Van Beek 1988, fig. 1.24. **1-3** *horrea*.

Finds

Unfortunately, only a handful of finds from the site date to the Late Roman period, which is blamed by Dijkstra to the field strategy at the time: only from 1962 onwards did it become customary to

[374] Groenman-van Waateringe/Van Beek 1988, 57.
[375] Groenman-van Waateringe/Van Beek 1988, 56.
[376] De Hingh/Vos 2006, 113.
[377] De Hingh/Vos 2006, 108.
[378] Van Giffen 1944-9; see also Groenman-van Waateringe 1977; ibid. 1986; ibid. 1990.
[379] Rien Polak has kindly shown me the original field drawings and his reconstruction of the sampling registration. He pressed on me, however, that he has not located every sample yet and that there is no certain re-interpretation.

systematically collect finds from the top soil. Coins are lacking completely, something that may be attributed to the fact that no metal detectors were used.[380] In total, 7 sherds of Late Roman pottery were identified as such[381], including two fragments of a Samian ware bowl Chenet 320. [382]

Besides field strategy, the nature of the site itself may also have played a role in the lack of Late Roman finds. It was found, that the stratigraphic layers of phase 5 and 6, contained extremely large quantities of finds from earlier periods, in the case of Samian ware 88 and 70% of the total assemblage.[383] What is even more troubling, is that the Rhine has eroded the complete eastern corner of the *castellum* terrain and that depending on the exact location, all archaeological layers younger than phase 3 (so after AD 70[384]) have been completely lost (safe for some deep foundations).[385] To suggest activity right to the end of the 4th century, like proposed by De Hingh and Vos[386] therefore seems a little over-enthusiastic, as we do not have enough material culture to make any meaningful statements about this.

1.8 Westerschouwen

Occupation at Westerschouwen has been dated to the Late Roman period based exclusively on coin finds.[387] These have been taken as an indication of the short-term presence of military personnel or merchants.[388] A total of 73 coins from Westerschouwen have been published by Boersma, which all date AD 200 <. They have been summarised below in table 7.

Table 7. Coins from Westerschouwen from publications (AD 200<)

Coin type	Authority	Date (min.)	Date (max.)	N
denarius	indet.	100	300	1
antoninianus	indet.	200	300	3
denarius	Macrinus	217	218	1
denarius	Severus Alexander	222	235	3
denarius	Severus Alexander	230	230	1
antoninianus	indet.	238	indet.	1
sestertius	Trajanus Decius	249	251	1
sestertius	Trebonianus Gallus	251	253	1
antoninianus	Gallienus	253	259	1
antoninianus	Gallienus	253	268	1
antoninianus	Gallienus	259	268	1
antoninianus	Postumus	260	269	2
antoninianus	Claudius II	268	269	1
antoninianus	Victorinus/Tetricus	268	273	1
antoninianus	Victorinus	269	271	1
antoninianus	Victorinus/Tetricus	269	273	12
antoninianus	Tetricus I	271	273	2
antoninianus	Tetricus II	271	273	1
indet.	Diocletianus	284	305	1
follis	Constantius Chlorus	293	306	1
aes III	indet.	300	400	1
aes III/IV	indet.	300	400	2
aes IV	indet.	300	400	1
follis	Constantinus I	313	315	1
aes III	Constantinus I	330	335	4
aes III	Constantinus I c.s.	335	341	1
indet.	Iulianus	360	363	1
aes III	Gratianus	367	378	1
aes IV	indet.	370	400	1

[380] Dijkstra 2011, 72.
[381] See for description Dijkstra 2011, no. 226. They are mostly Samian ware.
[382] Glasbergen 1972, 125; cf. Van Es 1981, 125.
[383] Glasbergen 1972, 56.
[384] Glasbergen/Groenman-van Waateringe 1794, 6.
[385] Groenman-van Waateringe 1986, 160, 166.
[386] De Hingh/Vos 2006, 108.
[387] Willems 1986a, 295; Boersma 1967.
[388] Bogaers 1967b, 107, no. 37.

aes IV	Constantinus I c.s.	indet.	indet.	2
copper	indet.	indet.	indet.	15
antoninianus	barbarous imitation of Victorinus/Tetricus	indet.	indet.	2
aes IV	barbarous imitation of Constantinus I	indet.	indet.	3
aes IV	barbarous imitation of Constantius II	indet.	indet.	1
Total				**73**

This is a relatively large amount of coins, more than are known from many other sites in this area, but no other finds or features are known to provide some form of context. Again, Westerschouwen's location on the coast has been the main argument in giving it a military status in the Late Roman period, but this is not necessarily valid, especially given the complete lack of any other material culture to support such a claim. It is also one the few coastal sites for which there are no sightings of foundations or reused Roman construction materials, so I find the evidence for Roman activity a little scarce.

Appendix 2. Site catalogue Area 2

2.1 Arnhem-Meinerswijk

In many publications, Arnhem-Meinerswijk is named as one of the few Late Roman fortifications in the eastern river area.[389] It was first built around AD 10-20, and has 6 successive construction phases.[390] Originally, the 5th phase was dated AD 200-275 (see fig. 15), and the 6th AD 350-425.[391] This interpretation is based almost solely on the detailed publication of excavation results by Willem Willems.[392] The precise interpretation of the site is not unproblematic, as several floods during the occupation of the site have eroded parts of the *castellum*.[393]

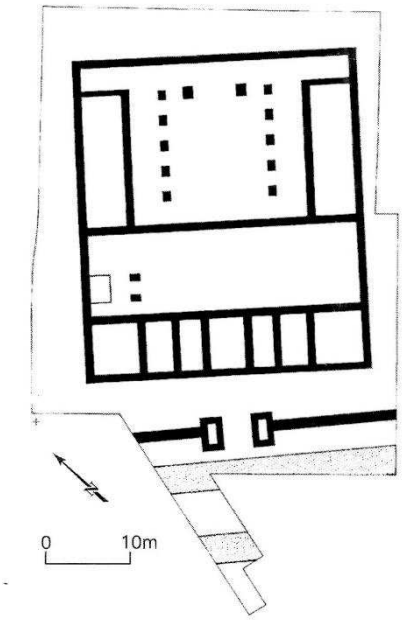

Fig. 15. Ground plan of the *principia* at Arnhem-Meinerswijk from the 5th phase (AD 200-275); after Hulst 2006a, fig. 193.

In articles prior to his full publication, Willems already mused on the nature of inhabitation of the site, offering the suggestion that a military nature was uncertain, but likely, as the amount of pottery found per square meter of excavated soil was extremely large compared to other known *castella*.[394] Only one robbing trench of a wall was dated to the Late Roman period, based on strati graphical grounds.[395]
In his final report of finds and features, Willems is surer of the military nature of the site. It is, after all, surrounded by ditches and Willems poses that the site was most likely already erected in the Early Roman period[396] and continued somewhere into the 4th century.[397] However, he already notes that Late Roman finds are rather scarce. Although there were some Alzei 27 jars found in Mayen fabrics, other Late Roman pottery was lacking, especially Samian ware.[398] He concluded that the excavated area was rather small[399], and that it was likely that the top soil had been removed in the past, resulting in relatively few Late Roman finds. As these seemed to cluster in the northern area of the site, that is

[389] Brulet 2006; Hessing 1995.
[390] Van Dockum 1995, 77-8.
[391] Hulst 2006a, 198.
[392] Willems 1986a, 329-356; ibid. 1980b; ibid. 1986b.
[393] Van der Gaauw 1989, 6.
[394] Willems 1980a, 342, note 25.
[395] Willems 1986b, 190, fig. 113.
[396] Willems 1981, 169.
[397] Willems 1980a, 342.
[398] Willems 1986, 350-1.
[399] Willems 1980a, 335.

where Willems located his Late Roman *castellum*.[400] This interpretation was widely accepted in the literature, including Willems suggestion that Arnhem-Meinerswijk is to be equated with Castra Herculis.[401] Van Es even suggests that Meinerswijk was built on the cusp of the late 4th and early 5th century.[402]

Years later, however, renewed archaeological investigations at the site showed that no real evidence could be presented for a Late Roman occupation of the site, let alone an entire *castellum*. Hulst argued that the finds from this period were too few and far between and were irrelevant to the interpretation of the site, as they were found predominantly in disturbed layers and in the top soil.[403] Of the total 297 sherds of pottery found at the site, 251 dated to the Middle Roman period, whereas only 6 were Late Roman.[404] Hulst deemed at the time that there is no indication that a Late Roman fortification or inhabitation took place in Arnhem-Meinerswijk.[405] In later years, however, he has been more lenient on the matter and stated that the site was still actively inhabited in the 4th century, but that the precise nature was uncertain and that it could not be ascertained that Julian had reoccupied Arnhem in AD 359.[406] Subsequent studies have also opted for this suggestion.[407]

2.2 Asselt

In a rather cryptic statement, Van Es poses in his seminal work on the Roman occupation of the Netherlands[408] that the shape of the Late Roman settlement at Asselt may be unknown, but that its military function is ascertained.[409] However, this sentence is a one-off in his writing, and he never mentions Asselt again, or offers any back-up for this claim. The only other reference to a Late Roman fortification at Asselt that I could locate was in Schönberger's overview of Roman fortifications in Germany, who mentions it as a possible site.[410]

2.3 Bunnik-Vechten

Our best and most recent source for information on the Roman occupation at Vechten is the publication by Auxilia of the 1946-7 campaigns on the *castellum* terrain.[411] They identified at least 5 construction phases for the inner buildings of the fort, and 6 for the fortifications.[412] They note that the final construction phase (see fig. 16) and the end of the occupation by the Roman army cannot be dated with certainty[413] (it has been tentatively placed at AD 275). [414] No material culture was analysed that could be dated exclusively to the 3rd century, although a previous study into the coins of Vechten could suggest continuity into the reign of Postumus or Tetrichus I.[415]

[400] Willems 1986, 352.
[401] Willems 1981; cf. Van Es 1994a, 67.
[402] Van Es 1994a, 67.
[403] Hulst 2000/2001.
[404] Hulst 2000/2001, 406.
[405] Hulst 2000/2001,.
[406] Hulst 2006a, 198.
[407] Van Dockum 1995, 77-8.
[408] Van Es 1981.
[409] Van Es 1981, 122.
[410] Schönberger 1969, fig. 23.
[411] Zandstra/Polak 2012.
[412] Zandstra/Polak 2012, 43, 69.
[413] Zandstra/Polak 2012, 259-260.
[414] Polak 2006, 247.
[415] Zandstra/Polak 2012, 260.

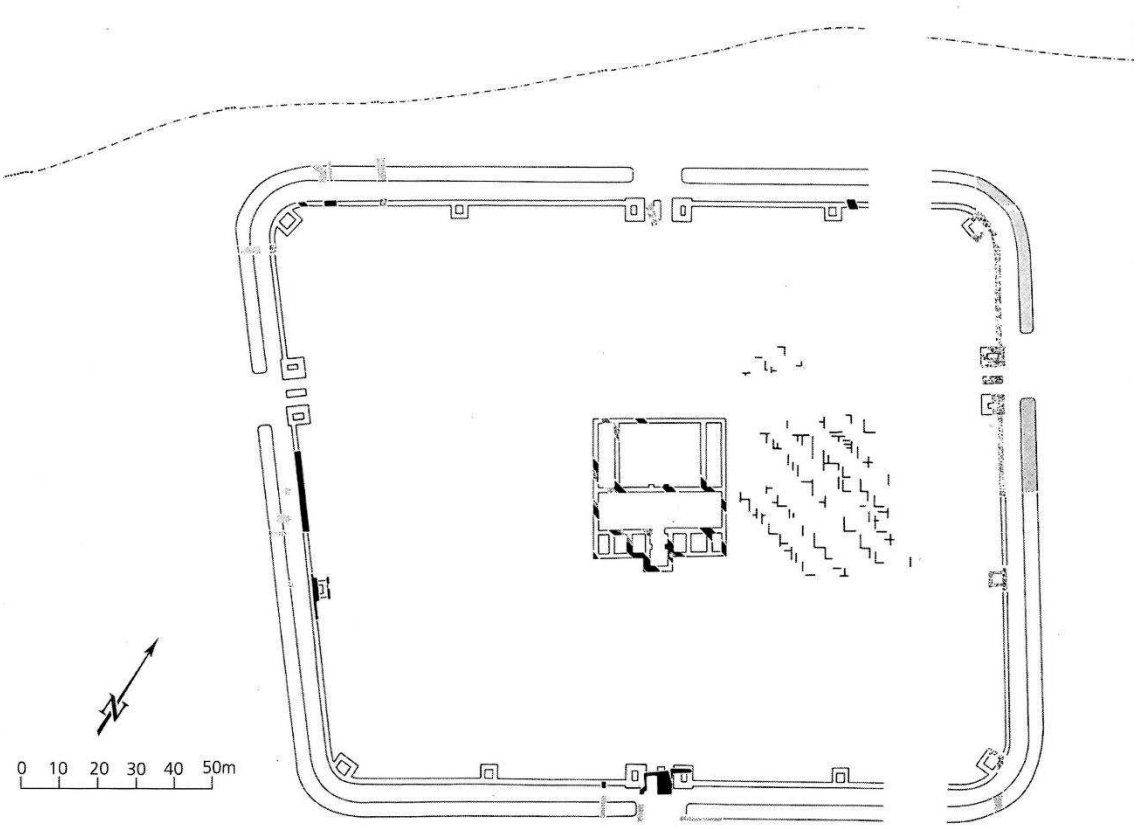

Fig. 16. Ground plan of the final phase (AD 200-275) of the *castellum* at Bunnik-Vechten; after Polak 2006, fig. 253.

Finds

This MA thesis by Iris Tijmann[416] studied the coins found at Vechten from various museum collections. This includes a database of 1518 coins, 163 of which were struck after the year AD 200. These have been replicated in table 8 below. Tijmann concluded, however, that this number was insufficient to warrant any speculation as to a possible Late Roman occupation at Vechten and set the period of occupation at Vechten at AD 274-5. [417]

A similar statement was made earlier by Willems, who deemed the minimal amount of late coins and pottery doubtful, and at a stretch suggestive of early, rather than late 4th-century activity.[418] What pottery Willems was writing about exactly is unknown to me[419], but in recent years, field surveys at the *castellum* terrain by students from Saxion Hogeschool Deventer have yielded a small (deemed significant) amount of Late Roman ceramics.[420] These include Late Roman amphorae, several fragments of the Samian ware bowl Chenet 320 and a flagon in *rot marmorierte* or *gestrichene ware*. A surprising find was a large component of Late Roman coarse-tempered wares. Fragments of the NB 89 and Alzei 27 jars were identified, with most dating somewhere in the 4th and 5th (some even 6th) century. Similarly, 18 fragments of the 5th century Alzei 33 jar were found. The majority of the finds came from the eastern part of the site.[421]

The small number of coins from the *castellum* terrain proper could be easily explained by the fact that no metal detectors were used in those days. Most of the Late Roman finds found in the (admittedly limited) field survey tend to concentrate in the eastern part of the *castellum* terrain just

[416] Tijmann 1994; Tijmann 1996.
[417] Tijmann 1996, 62, 148. I have been made aware by Rien Polak of an upcoming BAAC archaeological report of recent fieldwork at the *castellum* of Vechten, in which 1300 new coins (analysed by Fleur Kemmers) will be published. It is unknown to me whether these include more Late Roman coins.
[418] Willems 1986a, 294.
[419] Some Late Roman ceramics, including coarse-tempered wares from Vechten are stored in the depot of the National Museum of Antiquities, but it is impossible to tell whether this is what Willems was referring to.
[420] Van den Berg *et al.* 2012.
[421] Van den Berg *et al.* 2012, 88.

outside of the walls of the Middle Roman *castellum*. This suggests that if it was reoccupied or continued to be occupied after period III, it probably took the shape of a much smaller fortification although it cannot be stated for certain that the *castellum* itself was not active during that period.[422] Vos notes in his assessment of reported stray finds that Vechten has yielded some more Late Roman finds, namely a coin weight, a Wijster hair pin and Samian ware (Chenet 320 bowl) from the Argonne.[423] Finally, a MA thesis was written about metal finds from Vechten now stored by the National Museum of Antiquities,[424] but this manuscript was not accessible. A more recent BA thesis with a similar premise only took in a selection of the metal finds, and was consulted.[425] This study did not yield any Late Roman metal finds or military equipment.
Finally, a watchtower is also presumed to have existed at Bunnik-Vechten[426], somewhere along the A12.[427] Unfortunately, the site was only identified as being a site during the construction work that completely destroyed it. No traces of a square ditch were found, although the limited spatial distribution of finds (10 by 10 meters) and the lack of handmade pottery subsequently led to its interpretation as a watchtower.[428]

Table 8. Coins from Bunnik-Vechten from unpublished manuscript[429] and the NUMIS database[430] (AD 200<)

Coin type	**Authority**	**Date (min.)**	**Date (max.)**	**N**
Tijmann 1994				
denarius	Septimius Severus	200	200	1
as	Septimius Severus	200	201	1
dupondius	indet.	200	300	1
as	indet.	200	300	1
denarius	indet.	200	300	2
denarius	Caracalla	201	201	1
denarius	Septimius Severus	202	202	1
denarius	Septimius Severus	202	210	2
denarius	Geta	203	208	1
denarius	Septimius Severus	205	205	1
denarius	Septimius Severus	206	206	1
denarius	Caracalla	207	207	2
denarius	Septimius Severus	208	208	1
denarius	Geta	209	209	1
denarius	Septimius Severus	210	210	1
denarius	Geta	211	211	1
denarius	Julia Domna	211	211	1
denarius	Caracalla	215	215	1
denarius	Caracalla	216	216	1
denarius	Macrinus	217	218	1
denarius	Elagabalus	218	220	1
denarius	Elagabalus	218	222	12
denarius	Julia Maesa	218	222	1
denarius	Elagabalus	220	222	2
denarius	Julia Soaemias	221	221	1
denarius	Severus Alexander	222	222	5
denarius	Severus Alexander	222	228	10
denarius	Julia Mamaea	222	235	2
denarius	Julia Maesa	223	223	1
denarius	Severus Alexander	223	223	3
denarius	Severus Alexander	223	224	1
denarius	Severus Alexander	224	224	1
denarius	Septimius Severus	224	224	1
denarius	Severus Alexander	225	225	1

[422] Van den Berg *et al.* 2012, 87-8.
[423] Vos 2009, site no 83; cf. Willems 1986, 294; Van Es 1991, 16.
[424] Rodenburg 1998.
[425] Van der Veen 2012.
[426] Vos 2009, 40
[427] Kluit 2007.
[428] Kluit 2007, 263.
[429] After Tijmann 1994
[430] Accessed 25-01-2017; out of a 1973 Roman coins.

denarius	Alexander Severus	225	225	1
denarius	Severus Alexander	226	226	3
denarius	Severus Alexander	227	227	2
denarius	Severus Alexander	228	231	3
denarius	Severus Alexander	230	235	1
denarius	Alexander Severus	231	235	1
sestertius	Alexander Severus	235	235	1
denarius	Maximinus I	235	236	2
antoninianus	Maximinus I	236	238	1
antoninianus	Gordianus III	238	239	1
denarius	Gordianus III	238	240	1
antoninianus	Gordianus III	240	240	1
antoninianus	Gordianus III	241	241	1
antoninianus	Gordianus III	241	243	6
antoninianus	Gordianus III	243	244	1
antoninianus	Philippus II Caesar	244	246	1
antoninianus	Philippus II Augustus	244	247	1
antoninianus	Philippus I	244	247	2
antoninianus	Philippus I	245	245	1
antoninianus	Philippus I	248	248	1
antoninianus	Trajanus Decius	249	251	2
antoninianus	Herennia Etruscilla	249	251	1
antoninianus	Herennius Etruscus	250	251	1
antoninianus	Trebonianus Gallus	251	253	4
antoninianus	Valerianus I c.s.	253	259	1
antoninianus	Valerianus I	253	259	2
antoninianus	Valerianus II Caesar	254	255	1
antoninianus	Valerianus I	257	257	1
antoninianus	Gallienus jr.	258	259	2
antoninianus	Gallienus jr.	258	259	1
antoninianus	Postumus	259	268	22
antoninianus	Postumus	261	262	1
antoninianus	Tetricus I	270	273	2
antoninianus	indet.	270	290	1
as	Maximianus Herculeus	286	305	1
follis	Diocletianus	296	297	1
follis	Constantinus I	320	330	1
follis	Crispus	323	324	1
follis	Constantinus I	324	325	1
follis	Constantinus II Caesar	324	325	1
follis	Constantinus II Caesar	325	326	1
follis	Constantinus I c.s.	335	341	1
follis	Helena	337	340	1
follis	Divus Constantinus I	337	340	1
follis	Constantinus II	340	340	1
aes II	Constantinus II	351	355	1
aes III	Constantinus II	351	361	3
aes III	Constantinus II	353	361	1
aes IV	Constantinus II	355	360	1
aes II	Valentinianus II	378	383	1
aes IV	Arcadius	388	395	1
aes IV	Valentinianus II c.s.	388	395	1
aes II	Theodosius I	388	395	1
aes II	Honorius	392	395	1
aes II	Arcadius	392	395	1
aes II	Theodosius I	392	395	1
Total	163			
NUMIS				
aes II	Arcadius	392	395	1
aes II	Arcadius	392	395	1
aes II	Constantius II	351	355	1
aes II	Honorius	392	395	1
aes II	Honorius	393	395	1
aes II	Magnus Maximus	383	388	1

aes II	Theodosius I	392	395	2
aes II	Valentinianus II	378	383	1
aes III	Constantius II	351	361	3
aes III	Constantius II	353	361	1
aes III	Constantius II c.s.	351	361	1
aes III	Gratianus	367	375	1
aes IV	Arcadius	388	395	1
aes IV	barbarous imitation of Decentius Caesar	351	353	1
aes IV	Constantius II	355	360	1
aes IV	Theodosius I	388	392	1
aes IV	Valentinianus II c.s.	388	395	1
aes IV	Valentinianus II-Honorius	388	402	1
antoninianus	barbarous imitation of Tetricus I	270	273	1
antoninianus	Elagabalus	218	222	1
antoninianus	Gallienus	258	259	2
antoninianus	Gordianus III	238	239	1
antoninianus	Gordianus III	238	240	1
antoninianus	Gordianus III	240	240	1
antoninianus	Gordianus III	241	243	7
antoninianus	Gordianus III	243	244	1
antoninianus	late 3rd-century	268	294	1
antoninianus	Philippus I	244	247	2
antoninianus	Philippus I	244	249	1
antoninianus	Philippus I	245	245	1
antoninianus	Philippus I	248	248	1
antoninianus	Philippus I, Philippus II Caesar	244	246	1
antoninianus	Postumus	259	268	5
antoninianus	Postumus	259	368	17
antoninianus	Postumus	261	262	1
antoninianus	Tetricus I	270	273	2
antoninianus	Tetricus I, Tetricus II Caesar	270	273	1
antoninianus	Trajanus Decius	249	251	2
antoninianus	Trajanus Decius, Herennia Etruscilla	249	251	1
antoninianus	Trajanus Decius, Herennia Etruscus Caesar	250	251	1
antoninianus	Trebonianus Gallus	251	252	4
antoninianus	Valerianus I	253	260	3
antoninianus	Valerianus I	257	257	1
antoninianus	Valerianus II Caesar	254	255	1
as	3rd-century	192	280	2
as	Galerius Maximianus	286	305	1
as	indet.	300	500	1
as/dupondius	indet.	300	500	1
centenionalus	Gratianus	379	383	1
centenionalus	Magnentius	350	350	1
coin weight	4th/5th century	300	500	1
denarius	2nd-3rd-century	98	235	1
denarius	Antoninian/Severan	138	235	1
denarius	barbarous imitation of Septimius Severus	202	210	1
denarius	Caracalla	201	201	1
denarius	Caracalla	207	207	2
denarius	Caracalla	210	210	1
denarius	Caracalla	211	217	1
denarius	Caracalla	215	215	1
denarius	Caracalla	216	216	1
denarius	Elagabalus	218	222	16
denarius	Elagabalus	219	220	1
denarius	Elagabalus	220	222	2
denarius	Elagabalus	222	222	1
denarius	Elagabalus, Julia Maesa	223	223	1
denarius	Geta	209	209	1
denarius	Geta	211	212	1
denarius	Geta Caesar	198	200	1
denarius	Geta Caesar	200	202	2
denarius	Geta Caesar	203	208	1

denarius	Gordianus III	241	241	2
denarius	indet.	138	350	1
denarius	Julia Domna	193	211	1
denarius	Julia Domna	193	217	1
denarius	Julia Domna	196	211	5
denarius	Julia Domna	211	217	1
denarius	Julia Maesa	218	222	1
denarius	Julia Paula	219	220	1
denarius	Julia Soaemias	221	221	1
denarius	Macrinus	217	218	1
denarius	Maximinus I	235	236	1
denarius	Maximinus I	236	238	1
denarius	Septimius Severus	193	211	1
denarius	Septimius Severus	196	202	1
denarius	Septimius Severus	198	200	1
denarius	Septimius Severus	200	200	1
denarius	Septimius Severus	200	201	1
denarius	Septimius Severus	202	202	1
denarius	Septimius Severus	202	210	1
denarius	Septimius Severus	205	205	1
denarius	Septimius Severus	206	206	1
denarius	Septimius Severus	208	208	1
denarius	Septimius Severus	210	210	1
denarius	Severian dynasty	193	235	1
denarius	Severus Alexander	222	222	5
denarius	Severus Alexander	222	228	11
denarius	Severus Alexander	223	223	4
denarius	Severus Alexander	223	224	1
denarius	Severus Alexander	224	224	2
denarius	Severus Alexander	225	225	2
denarius	Severus Alexander	226	226	3
denarius	Severus Alexander	227	227	3
denarius	Severus Alexander	228	228	1
denarius	Severus Alexander	228	231	5
denarius	Severus Alexander	229	229	1
denarius	Severus Alexander	231	235	2
denarius	Severus Alexander	235	235	1
denarius	Severus Alexander, Julia Mamaea	222	235	7
dupondius	3rd-century	192	280	1
nummus	Constans	340	340	1
nummus	Constantinus I	320	330	1
nummus	Constantinus I	324	325	1
nummus	Constantinus I c.s.	335	341	1
nummus	Constantius II	240	340	1
nummus	Constantius II	347	348	1
nummus	Constantius II Caesar	324	325	1
nummus	Constantius II Caesar	325	326	1
nummus	Crispus Caesar	323	324	1
nummus	Diocletianus	296	297	1
nummus	Divus Constantinus I	337	340	1
nummus	Helena	337	340	1
nummus (half)	Divus Maximianus	318	318	1
sesterius	barbarous imitation of Septimius Severus	196	211	1
sesterius	Maximinus I	235	236	1
sesterius	Septimius Severus	193	211	1
sesterius	Severus Alexander	235	235	1
solidus	Honorius	393	423	1
solidus	Valentinianus I	364	367	1
Total				**223**

2.4 Driel-Oldenhof

The supposed Late Roman fortification at Driel is problematic. It was asserted in the past that a fortification was located there, because large amounts of Late Roman and Merovingian ceramics had

been found.[431] This was in the days that Late Roman ceramics were less well-known or recognised and I do not find it a conclusive argument. The interpretation of the scant evidence is most likely influenced by the fact that Driel was once equated with Castra Herculis [432], although that has recently been rejected.[433] Unfortunately, the area where the pottery was found has now been completely built over.[434] Willems has further blamed "local find circumstances" for the complete lack of coins from Driel.[435] He has presented an overview of the Late Roman pottery from Driel, however, and these include late terra nigra foot bowls Chenet 342, coarse-tempered wares from Mayen, including Alzei 27 jars and derivatives of Samian ware.[436] Excavations, however, have so far yielded only Early and Middle Roman traces of occupation.[437]

2.5 Druten

Druten is yet another example of a site previously thought to have been Castra Herculis.[438] According to the overview study in 1974 by Bogaers and Rüger, no archaeological remains had so far been found that could be connected to a fortification at Druten[439] and no later archaeological research seems to have either.

2.6. Eversberg-Millingen aan de Rijn

According to Van Enckevort and Thijssen, a Late Roman watchtower was located on the Eversberg in Millingen.[440] They base themselves on a reference in *ER*, which mentions an excavation carried out on the site in 1886. This yielded a square building, surrounded by a ditch and roof tiles, bricks, remains of a *hypocaustum*, iron weapons and tools, silver bracelets, horse gear, glass vessels and beads, flagons, amphorae, 2nd and 3rd-century Samian ware, colour-coated and coarse-tempered pottery and a coin issued by Postumus.[441]

Van Enckevort and Thijssen are the only modern source interpreting this reference as a Late Roman watchtower, however.[442] Furthermore, no evidence for significant amounts of Late Roman material culture could be found.

2.7 Ewijk-Grote Aalst

Ewijk is a relatively new addition to the limes was excavated extensively between 2009 and 2011. The Early and Middle Roman phases of the site have been identified, with some scepticism, as a Roman *villa* in two phases, the latter of which in stone.[443] The Late Roman phase includes features dated from the late 3rd century to the 5th and it can be assumed that Ewijk was inhabited continuously.[444] The features of a large building with an absis was recognised (see below fig. 17), which is supported by several Late Roman finds and especially coins.[445]

Finds

These finds include two pieces of rouletted Samian ware from the Argonne region[446], which were dated by Wim Dijkman to respectively AD 350-400 (die UC-351) and AD 375-425 (UC 199).[447] One

[431] Van Es 1981, 125; Bogaers 1981a, 20; Willems 1980a, 343.
[432] Bogaers 1981a, 20; cf. Bogaers 1981b.
[433] Willems 1981; Verhagen/Heeren 2016.
[434] Willems 1980a, 343.
[435] Willems 1986, 293.
[436] Willems 1986a, 165-7, 176.
[437] Willems 1986, 252ff.
[438] Bogaers 1968, 151ff; Bogaers/Rüger 1974, 72.
[439] Bogaers/Rüger 1974, 72.
[440] Van Enckevort/Thijssen 2014, 32.
[441] *ER* III, 98.
[442] Others have suggested it should be interpreted as a milestone; Van Mousch 2006, 8.
[443] Van der Feijst/Veldman 2012, 86-98; Vos/Blom 2012, 316-8.
[444] Van der Feijst/Veldman 2012, 99; Van Enckevort 2012, 247; Van der Feijst/Veldman 2012, 79-101; Vos/Blom 2012, 303-308.
[445] Van der Feijst/Veldman 2012, 99.
[446] Van der Linden/Besuijen 2012, 120.
[447] Van der Linden/Besuijen 2012, 121.

fragment of a late terra nigra foot bowl was also found[448], one fragment of a beaker NB 33 in Brunsting technique D (*metallescente*)[449] and an unquantified amount of coarse-tempered ware pottery in fabrics from Mayen (including types Alzei 28, 30 and 34).[450] None of these ceramics have a later end date than the early 5th century.[451]

Very few Late Roman *fibulae* were found, although Van der Feijst and Langeveld mention one complete specimen (see below fig. 18) of a crossbow brooch: a Keller type 1/Pröttel type 1 dating from the end of the 3rd to the early 4th century.[452] This brooch was included in the Heeren/Van der Feijst database as type 68b1, which dates to AD 300-360. They also mention a fragment of a type 68c, dating AD 340-400. Other military gear consists of two pieces of a hip guard, with *Kerbschnitt* decoration[453] found in two graves, dated to AD 400-470.[454]

It was already speculated in the past whether Ewijk may have been the base of a Late Roman fortification.[455] The relative large number of 4th-century coins found during the 2009-2011 excavations has reinforced this idea.[456] The excavators interpret the two graves with military belts as possible Frankish *foederati*, who may have temporarily used the abandoned *villa* complex.[457] To my mind, this would be a relatively late phenomenon, and unrelated to the two 4th-century crossbow brooches. Perhaps the military nature of Ewijk-Grote Aalst was already established prior to its function as housing for *foederati*, although this remains speculative.

[448] Van der Linden/Besuijen 2012, 123.
[449] Van der Linden/Besuijen 2012, 125.
[450] Van der Linden/Besuijen 2012, 134.
[451] Van der Linden/Besuijen 2012, 146.
[452] Van der Feijst/Langeveld 2012, 205.
[453] Van der Feijst/Langeveld 2012, 205.
[454] Van der Feijst/Langeveld 2012, 260.
[455] Willems 1986a, 293.
[456] Vos/Blom 2012, 320.
[457] Vos/Blom 2012, 303.

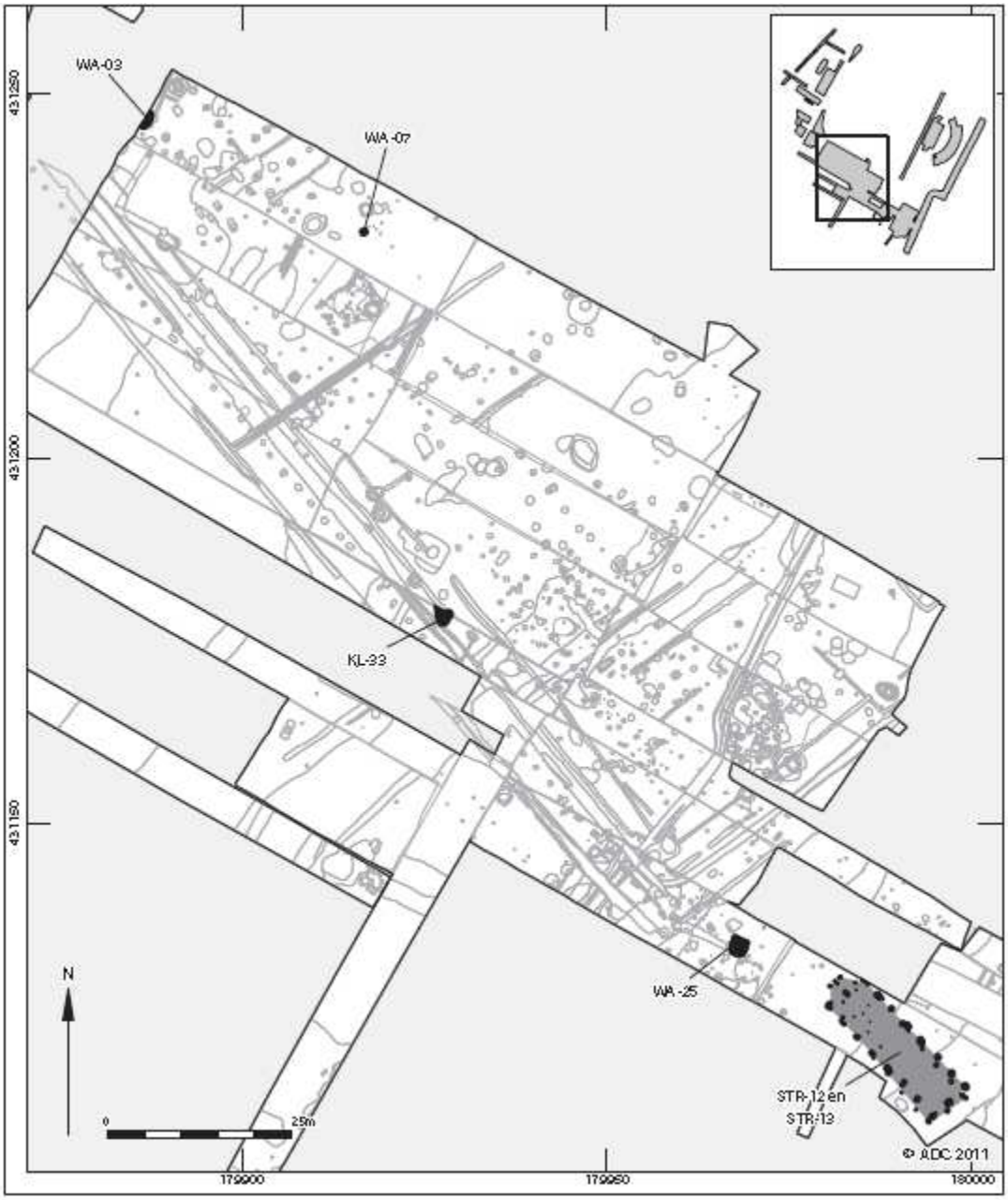

Fig. 17. Ground plan of the 4th-century building at Ewijk-Grote Aalst; after Van der Feijst/Veldman 2012, fig. 4.16.

Fig. 18. Crossbow brooch from Ewijk-Grote Aalst (Keller 1 type); after Van der Feijst/Langeveld 2012, fig. 8.8. Scale 1:2.

Table 9. Coins from Ewijk from publications[458] and the NUMIS database (AD 200<) [459]				
Coin type	**Authority**	**Date (min.)**	**Date (max.)**	**N**
Excavations 2009-2011				
denarius	Septimius Severus	202	210	1
denarius	Severus Alexander	222	235	1
antoninianus/denarius	indet.	235	300	1
antoninianus	indet.	250	300	2
antoninianus	indet.	260	275	1
antoninianus	Gallic Empire	259	274	2
antoninianus	Postumus	259	268	1
antoninianus	Postumus	259	268	1
antoninianus	Postumus	259	268	1
antoninianus	Victorinus	268	270	1
antoninianus	Tetricus I	271	274	1
antoninianus	barbarous imitation of Tetricus I	271	indet.	2
antoninianus	Divus Claudius II	272	275	2
antoninianus	barbarous imitation pf Divus Claudius	272	indet.	1
follis	Constantinus I	323	324	1
follis	Constantinus II	324	326	1
follis	Constantinus I	324	330	1
follis	Fausta	324	330	1
follis	Constantinus I	326	326	1
aes III	House of Constantinus	330	335	1
aes III	House of Constantinus	335	341	1
aes III	Constantius/Constans	337	341	1
aes III/IV	indet.	350	400	4
aes III	Valens	365	367	1
aes III	Valens/Gratianus	375	378	1
aes IV	Magnus Maximus	383	387	1
aes II	Magnus Maximus	383	387	2
aes IV	Falvius Victor	387	388	1
aes IV	Valentinianus II	388	392	1
aes IV	Theodosius I	388	395	2
aes IV	House of Theodosius	388	402	3
aes IV	House of Theodosius	388	402	2
Total				44
NUMIS				
antoninianus	Postumus	259	268	1
antoninianus	Tetricus I	270	273	2
antoninianus	Tetricus I	270	290	1
antoninianus	indet.	270	295	6
antoninianus	indet.	270	295	3
antoninianus	barbarous imitation after Tetricus II	270	300	2
nummus	Helena	337	340	1
aes IV	Theodosius I	388	395	1
aes IV	barbarous imitation	380	402	2
aes IV	Valentinianus II/Honorius	388	402	5
aes IV	Honorius	393	423	2
Total				**26**
Grand Total				**70**

2.8 Heumen-Heumensoord

The watchtower or *burgus* at Heumensoord (also known as Heumensoord-Rauwshans) was first excavated by Holwerda in 1931-2[460], with subsequent smaller investigations in 1972 by J.K. Haalebos and 1998-9 by the municipal archaeological service of Nijmegen.[461]

[458] After Kemmers 2012, table 9.3 and 9.4
[459] Accessed 26-01-2017; out of a total 26 Roman coins.
[460] Holwerda 1933.
[461] Langeveld 2002, 140.

Features

Holwerda found a wooden square structure surrounded by two parallel ditches (respectively of 24 by 24 m and 38 by 38 m in area)[462] which followed more or less the outline of the central structure (see fig. 19). However, at the north-western side, he noted that both ditches seemingly overlapped, but showed exactly the same strati graphical layering in their fillings, and showed these also at the same height. He deduced from this that both ditches were contemporary (they were filled in at the same time and rate with the same material) and that this overlapping represented the entrance to the watchtower. By making the two parallel ditches become one narrower ditch, only one bridge was needed to cross them and enter the watchtower.[463] In 1972, a pipe line was accidently dug straight through the entrance of the watchtower. Subsequent rescue evaluations cut straight through the two ditches, and Haalebos came to the conclusion that they in fact belonged to two phases, and that the site was made smaller in the second building phase.[464] He noticed that the inner ditch at one point cut straight through the outer ditch. The foundation trenches of the inner site also showed two phases.[465] There is not much detailed information about the stratigraphy of these foundation trenches in Holwerda's account of his work, but I find his interpretation of the ditches well-informed and rather elegant. The analysis of the consistent fillings of the ditches (see also fig. 20 for photographic evidence) is convincing, and not unimaginable: a similar situation seems to have occurred in Cuijk (see below).

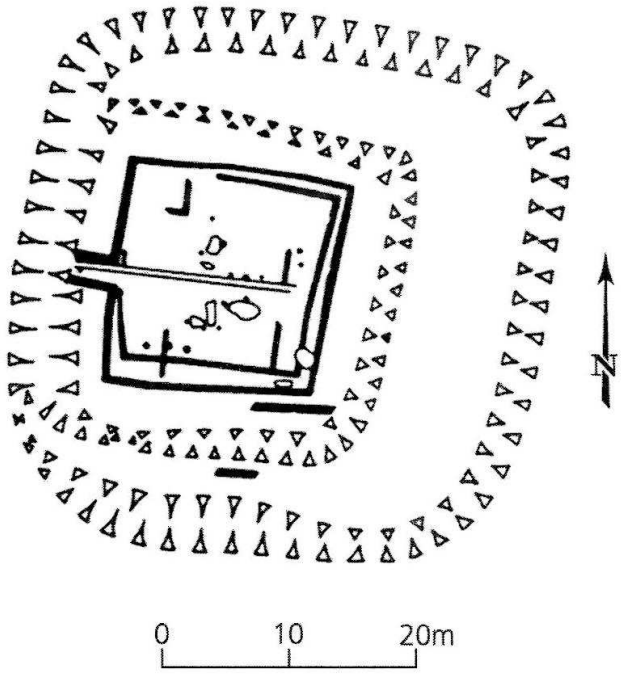

Fig. 19. Ground plan of the watchtower at Heumensoord; after Haalebos 2006c fig. 320.

The fortification is composed of a wooden structure of 1,3 by 1,2 m, of quasi-square shape, with a port to the west and perhaps a large tower in the middle. The poles discovered in this place, and black on the plan, appeared not to have been removed. The traces of small structures are visible against the inside of the enclosure, in particular the facade wall, parallel to the rampart. There is a drain that crosses the fort, but cannot be contemporary.[466]

It was further assumed for a long time that the first phase of Heumensoord was built in wood and the second in tuff stone (based on stray finds of tuff)[467], but according to Langeveld, no traces of stone construction have been found.[468] Some unquantified coins from the site are known, all Late

[462] Haalebos 2006c, 294.
[463] Holwerda 1933, 12.
[464] Haalebos 1972, 86; contra Bogaers 1970, who argued that the site was expanded.
[465] Haalebos 1972, 86.
[466] Haalebos 2006c, 294.
[467] Bogaers/Rüger 1974, 81; Willems 1986a, 149.
[468] Langeveld 2002, 141.

Roman (L. Verus, Gallienus, Claudius II Gothicus, Tetricus I, Arelianus, Maximianus Herculius, Constantinus I, Valens, Valentinianus I and Gratian).[469]

Fig. 20. Cross-section of the ditches surrounding the watchtower at Heumensoord; after Holwerda 1933, fig. 18.

Finds[470]

The ceramic assemblage from Heumensoord includes several late 3rd-century finds, although according to Langeveld, these seemingly bear no relation to the *burgus*.[471] He also explains the few 3rd-century coins in this way, as these tended to circulate until the beginning of the 4th century.[472] The absence of coins issued between AD 282 and 294 and the small amount of coins from Diocletian signify to him that the *burgus* was most likely not built in the late 3rd century.[473] Langeveld mentions 63 coins from Heumensoord (it is unclear whether these are the ones found by Holwerda or whether he has included later finds also). 27 of these date to AD 330-348, and the inhabitation seems to have been most intense at this time. A small gap in the coin series between AD 313 and 320 is enough for him to further suggest that the *burgus* was temporarily abandoned during that time, and that it was not inhabited continuously.[474] Activity resumed around AD 330, with an uninterrupted coin series until AD 348. The end of this phase is marked by a burnt deposit, and coins from Magnentius to AD 364 are completely absent.[475]

The reconstruction of the *burgus* is dated by Langeveld to the reign of Valentinian I, based on a peak in coin finds. The ceramic evidence suggests that this phase ended somewhere around AD 380.[476] It thus seems that there are indeed at least two phases to the *burgus* at Heumensoord, perhaps even three.

Table 10. Ceramics from Heumensoord and Goudsberg[477]

	Heumensoord					*Goudsberg*			
	N rim	**N wall**	**N base**	**Total**	**%**	**N rim**	**N wall**	**N base**	**Total**
Samian ware									
Dishes and platters									
Chenet 304	1			1		2			2

[469] Bogaers/Rüger 1974, 81.
[470] Unfortunately, the copy of Langeveld's thesis that I consulted, had several pages are missing, including the exact one with his description of the coins from Heumensoord. These are therefore left out of this section.
[471] Langeveld 2002, 145.
[472] Van Heesch 1998, 159, 167.
[473] Langeveld 2002, 146.
[474] Langeveld 2002, 146.
[475] Langeveld 2002, 146.
[476] Langeveld 2002, 146-7.
[477] after Langeveld 2002, app. 1-2.

Hussong and Cüppers 12	1			1					
(Flanged)bowls									
Drag. 37	1			1					
Chenet 310	1			1					
Chenet 319/320	9	1	2	12		4			4
Chenet 320		3		3		3	6		9
Chenet 323		1		1					
Chenet 324	3	11	4	18		1			1
Beakers and cups									
Pirling 16/Chenet 335A			1	1					
Pirling 56		1		1					
Chenet 333C			1	1					
Chenet 334B	2			2					
Chenet 338-340	3	6	2	11					
Jars									
Pirling 100	3			3					
Mortaria									
Chenet 326B						1			1
Chenet 328-330		2		2		18			18
Flagons									
Hussong and Cüppers 25			1	1					
Other									
indet.							14		14
Total	**24**	**25**	**11**	**60**	**100**	**29**	**20**		**49**
Colour-coated wares									
Painted ware									
Pirling 100	3			3					
Chenet 334B	2			2					
Technique C									
Pirling 56									
Pirling 59-62									
NB 82						1			1
indet.								2	2
Technique D									
Pirling 56		1		1					
Pirling 59-62	3	10	2	15		1	12	4	17
Total	**8**	**11**	**2**	**21**		**2**	**12**	**6**	**20**
Late terra nigra									
Foot bowls									
Chenet 342	3	2	2	7					
Flagons									
Chenet 343B						1			
Other									
indet.							8	8	
Total	**3**	**2**	**2**	**7**	**100**	**1**	**8**	**8**	**17**
Coarse-tempered wares									
Dish and platters									
Pirling 120/121	9						1		
Pirling 122	13						2		
Pirling 128	16						2		
Pirling 128E								5	
Alzei 34								2	
Jars and lids									
NB 88	1								
Alzei (general)							7		
Alzei 27 (“heart”)	44								
Alzei 27 (outward rim)	16								
Alzei 27 (“hammer)	31								
Alzei 27 (“sickle”)	9								
Pirling 100	1								
Pirling 102/103	1								

NB 120A	3							3	
(Foot)bowls									
Chenet 342								1	
Hussong and Cüppers 66							1		
Flagons									
Hussong and Cüppers 47								1	
Other									
Indet.	1	22	3				111	15	
Total	**145**	**22**	**3**	**170**	**100**		**124**	**27**	**151**
Grand total	**180**	**60**	**18**	**258**		**32**	**164**	**41**	**247**

Other finds that indicate that this is indeed a military installation are three crossbow brooches (including one Pröttel 1988 3/4B). One fragment of a bronze ring could further be interpreted as a piece of horse gear.[478]

2.9 Huissen-Loowaard

This toponym refers to an assumed *castellum*, eroded away completely by the Rhine.[479] Its military nature is deduced from its strategic location, on a higher alluvial ridge leading into the hinterland.[480] Dredge and stray finds include ceramics, tuff, floor and roof tiles and military graffiti. The original foundation of the site is placed by Van Dockum in the Tiberian-Claudian period.[481] Willems prefers a slightly later date of AD 70, with a final end date at 260.[482] Several finds date to the 4th century, including a relatively large amount of 4th-century ceramics[483] and the site is supposed to have been reoccupied in that period. Huissen remained inhabited into the 7th century, after which it was washed away by the Rhine.[484] An almost complete absence of coins can be explained, according to Willems, by local find circumstances.[485] He also noted that most of the finds from Huissen were secondary in nature.[486] Surprisingly, only one or two Roman coins from Huissen could be found in the NUMIS database. I do not think there is enough constructive or comprehensive evidence here to suggest activity at the site in the Late Roman period, let alone of a military nature.

2.10 Leiden-Roomburg

The Roman fortification at Leiden-Roomburg is generally equated with Matilo.[487] The site is traditionally dated based on its ceramic finds to AD 50-260, with a military function maintained until the third quarter of the 3rd century.[488]

Features

Recent trial trenches and resistance measurements uncovered 5 ditches belonging to different *castella*.[489] The wooden *castellum* was rebuilt at some time in stone and one of the foundation poles underneath the outer wall could be dated to AD 243.[490] Matilo's prime function was probably to protect and patrol the canal of Corbulo.[491] The many finds of roof tiles with stamps of the *Classis Germanica Pia Fidelis* may further indicate the presence of a marine base.[492] Activity in the second half of the 3rd century is attested by a C14 dating of one of the wooden piles used in the foundation of

[478] Langeveld 2002, 147; cf. *ER* III, 104.
[479] Willems 1988b.
[480] Bogaers 1968, 156; Van Dockum 1995, 77.
[481] Van Dockum 1995, 77.
[482] Willems 1980a, 343; cf. Bogaers/Rüger 1974, 73.
[483] Bogaers/Rüger 1974, 73; Van Es 1981, 125.
[484] Van Dockum 1995, 77.
[485] Willems 1986a, 293.
[486] Willems 1980a, 341-2.
[487] Verhagen 2014, 544, table 1.
[488] Bogaers/Rüger 1974, 44.
[489] Polak *et al.* 2005, 64.
[490] Polak *et al.* 2005, 66.
[491] Bogaers 1974, 71.
[492] Bogaers 1974, 71; Bogaers 1962, 194; Van der Kley 1964, 99; cf. similar stamps from Arentsburg: Holwerda 1923b, 140, fig. 103.

one of the stone walls of the fortification, which gives a *terminus post quem* of construction of AD 243.[493]

Finds

The military nature of the possibly 4th-century occupation at Matilo is supported by several (fragments of) crossbow brooches found in the canal next to the *castellum*. One of these was published (see fig. 21). [494] A 4th-century coin and several small metal objects were furthermore found on the *castellum* grounds itself.[495] A more extensive analysis of the metal objects from Matilo exists, in the shape of an inaccessible MA thesis.[496] Matilo's continued existence could possibly be further supported by literary reference to the place name in the 8th century, although the source is problematic. [497]
Coins from Matilo are relatively rare in the NUMIS database, although they present a uniform picture of activity in the second half of the 4th century.

The Heeren/Van der Feijst database includes one crossbow brooch from Leiden-Roomburg, a type 68a (AD 270-300). This is most likely the same individual that was published.

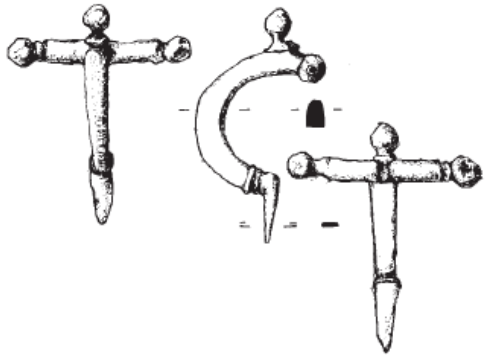

Fig. 21. Drawing of a crossbow brooch from Leiden-Roomburg; after Haenberg 2000, Plate 4.c.1. Scale 1:2.

Table 11. Coins from Leiden-Roomburg from the NUMIS database (AD 200<)[498]

Coin type	**Authority**	**Date (min.)**	**Date (max.)**	**N**
denarius	Severus Alexander	223	223	1
antoninianus	Barbarous imitation after Tetricus I	270	290	1
antoninianus	Barbarous imitation after Tetricus I	270	290	1
AE 18mm	Constantinus II; Constantius Gallus caesar	352	354	1
Indet.	Indet.	350	450	1
AE 16mm	Constantinus II	354	361	1
AE 17mm	Constantinus II	354	361	1
AE 17mm	Constantinus II	354	361	1
nummus	Constantinus I; Caesar	304	305	1
Total				**9**

2.11 Maurik

The *castellum* of Maurik is located on the south bank of a now derelict bend in the river Rhine. It is yet another site eroded by river channel migration.[499] During the years 1972-3, large-scale dredging took place in the area, yielding an enormous amount of coins and metal finds (especially *fibulae*).[500] This has meant that most authors nowadays agree there is no doubt to its military nature. The site has been dated in the past to around AD 70-260 with a stone construction from the Flavian period

[493] Polak *et al.* 2005, 104.
[494] For drawing see Hazenberg 2000, Plate 4.c.l. A photograph of seemingly the same individual published in Brandenburgh/Hessing 2005, 37.
[495] Brandenburgh/Hessing 2005, 37.
[496] Rodenburg 1998.
[497] *Anon. Rav*. IV, 24; cf. Willems 1986a, 295
[498] Accessed at 24-01-2017; out of a total 16 Roman coins.
[499] Van Dockum 1995, 80.
[500] Coins: Haalebos 1976; *fibulae*: Haalebos 1986.

onwards[501], and renewed activity somewhere under Julian or Valentinian I[502], whereas others have argued that the site continuously functioned into the 4th century.[503]

Finds

The Late Roman coins were originally judged by Haalebos to be too small in number to be of any real meaning and he rejected the idea of Late Roman activity at all.[504] Late Roman finds however did include a late 4th-century hairpin and parts of crossbow brooches.[505] A fragment of a 4th-century late terra nigra foot bowl is also known.[506] Willems has blamed the local find circumstances for the lack of coins[507] and indeed small bronze coins such as the Late Roman aes are easily missed in dredge circumstances as well as excavations. The coins from Maurik published by Haalebos are reproduced below in table 12, together with those coins from the site currently in the NUMIS database. It should be noted that the latter group is relatively small compared to some of the other sites in this study. 4th-century coins are extremely rare, with the vast majority dating to the second half of the 3rd century (and especially the Gallic Empire).

The Heeren/Van der Feijst database contains two crossbow brooches from Maurik, both already published by Haalebos himself.[508] They are fragments of a type 68b and 68c, which date AD 300-360 and AD 340-400 respectively.

Table 12. Coins from Maurik from publications[509] and the NUMIS database (AD 200<)[510]

Coin type	**Authority**	**Date (min.)**	**Date (max.)**	**N**
Dredge activities 1972-3				
Denarius	Septimius Severus	193	211	10
Denarius	Elagabalus	218	222	2
Denarius	Severus Alexander	222	235	6
Denarius	Philippus Arabs	244	249	1
As	Gallienus	253	268	1
As	Postumus	260	269	1
As	Victorinus	269	271	1
As	Tetricus	271	273	7
As	barbarous imitation			12
As	Claudius II	268	270	3
As	Constantinus I	306	337	17
As	Constantinus II	337	351	15
As	barbarous imitation			2
As	Magnentius	351	353	11
As	Constantius II	351	361	1
As	Valentinianus I	364	375	1
Total				**91**
NUMIS				
denarius	Caracalla	210	213	1
denarius	Julia Domna under Caracalla	211	217	1
denarius	Elagabalus	218	222	1
denarius	Severus Alexander; Julia Mamaea	222	235	1
denarius	Severus Alexander	222	235	1
denarius	Severus Alexander	228	231	2
denarius	Severus Alexander	231	231	1
denarius	Maximinus I	235	238	1
antoninianus	Gordianus III	240	240	1
antoninianus	Gordianus III	241	243	1
antoninianus	Philippus I	244	247	1

[501] Bogaers/Rüger 1974, 68; Van Dockum 1995, 80.
[502] Willems 1986a, 294; Haalebos 1976, 209.
[503] Van Es 1994a, 67.
[504] Haalebos 1976, 197.
[505] Willems 1986a, 294; Haalebos 1976, 209; Böhme 1974, 35f.
[506] Bogaers/Haalebos 1972, 88.
[507] Willems 1986a, 294.
[508] Haalebos 1986, 100-1, types 186-7.
[509] After Haalebos 1976.
[510] Accessed 24-01-2017; out of a total 67 Roman coins.

antoninianus	Philippus I	246	246	1
antoninianus	Philippus I	247	249	1
antoninianus	Volusianus	251	253	1
antoninianus	Valerianus I	253	260	1
antoninianus	Aemilianus	253	253	1
antoninianus	Gallienus	253	268	1
antoninianus	Salonius Caesar	255	259	1
antoninianus	Valerianus I	257	257	1
antoninianus	Gallienus	258	259	1
antoninianus	Postumus	259	268	3
antoninianus	indet.	260	280	1
antoninianus	Gallienus	260	268	1
antoninianus	Victorinus	268	270	1
antoninianus	Claudius II	268	270	1
antoninianus	Victorinus	268	260	1
antoninianus	barbarous imitation	268	300	1
antoninianus	indet.	268	294	2
antoninianus	Victorinus	268	270	1
antoninianus	indet.	270	295	2
antoninianus	Tetricus I	270	273	2
antoninianus	indet.	270	295	1
antoninianus	barbarous imitation	270	300	1
antoninianus	barbarous imitation after Tetricus I	270	300	1
antoninianus	Tetricus I	270	273	1
antoninianus	barbarous imitation	273	300	8
antoninianus	Indet.	280	295	1
nummus	Constantinus I	307	337	1
nummus	Constantius c.s.	347	348	1
aes III	Constans	348	350	1
aes IV	barbarous imitation	375	450	1
aes IV	Valentinianus II/Honorius	388	402	1
Total				**55**
Grand Total				**164**

2.12 Nijmegen-Valkhof

The most recent theory, proposed by Jan Verhagen, is that the Late Roman fortification at the Valkhof in Nijmegen can most likely be equated to the toponym Castra Herculis.[511] Like any other part of Nijmegen, the Valkhof's archaeological history is incredibly complex. It was previously thought that after the *Limesfall*, Ulpia Noviomagus was completely abandoned except for a fortified refuge on the Valkhof.[512] This view has since been deconstructed (many late 3rd and 4th-century coins are known from all over Nijmegen) and the Valkhof is currently interpreted as a small fort or *castellum*, with some civilian inhabitation surrounding it.

There are many different archaeological investigations that have unearthed parts of the *castellum* and its defences.[513] Most excavations were carried out by the former ROB and municipal archaeological service and not many are adequately published. The most important excavations are those at the Lindenberg in 1969, the St. Josephhof in 2005-6 and the ROB excavations at the Kelfkensbos in 1973-5 and 1979-80[514], of which only the Josephhof has been published. Furthermore, much of the site has disappeared, as it was built on the banks of the river Waal, which has now been partially eroded away.[515]

[511] Van Enckevort/Thijssen 2014, 33; Verhagen 2014, 34-5; option was already suggested by Bogaers 1968, no. 37-8.
[512] Van Enckevort/Thijssen 2014, 31; Van Enckevort/Thijssen 2005, iii; Van Enckevort/Thijssen 2003, 7; Willems 1983, 119; Wynia 1979, fig. 71.
[513] A recent reappraisal was offered in Bloemers 2016b.
[514] Sarfatij 1986; ibid. 1988; Van Enckevort/Thijssen 2000, 12, 17.
[515] Bloemers/Thijssen 1990, 138.

Features

No less than 4 ditches are known. Their interrelation however is still unclear, as they have only been partially excavated and never all in one location.[516] There is an extremely large, multi-period ditch, which was 5 meters deep and 14 meters wide (see fig. 22)[517], a single-period ditch, and two contemporary parallel ditches (see fig. 23).[518] Whether these are all consecutive or partly contemporary is still unknown.[519]

Fig. 22. Large ditch at the excavation at the Mariënburg, Nijmegen; after Van Enckevort/Thijssen 2000, 17.

In his most recent description of the Valkhof excavations, Bloemers described the stratigraphy of these ditches in detail. The single period ditch is assumed to have gone out of use sometime after AD 350.[520] The coin evidence also suggests that the two parallel ditches were filled in around this time. They did contain a number of Valentinian coins, however, and Bloemers judged that the exceptionally bad state in which the ceramics from these two ditches were found meant that they had been allowed to be exposed to the open air for a prolonged period of time. This phenomenon was identified in both ditches. The later coins, combined with the presence of Valentinian coarse-tempered wares and rouletted Samian ware led Bloemers to date the filling in of the ditch somewhere in the last quarter of the 4th century.[521] The construction of the multi-period ditch is based on a fragment of a Chenet 320, which gives it a *terminus post quem* of AD 325/330. It was filled back in at least three stages and remained operative until long after the middle of the 4th century.[522]

In 1990, however, Bloemers published an article together with Jan Thijssen in which he discussed the general chronology of the Valkhof in broader terms. Here, he describes how the ditch system can be divided into three stages. The defences were first constructed around AD 325-330, with a total surface area of 2,6 ha. Sometime before AD 350, this was replaced by a larger construction surrounding at least 4 ha. The ditch around the centre partially was filled in between AD 364 and 375, but was still used in the third stage and well into the 5th century.[523] This is an interesting analysis, as it suggests that the Valkhof fortification became larger over the span of the Late Roman period, contrary to the common notion that most fortifications shrunk in size during this period. However, because different descriptions are used, and no clear identifiers exist for these features, I have no idea how this development relates to his later interpretation. The only thing the two descriptions have in common is the terminus post quem of AD 325/330.

[516] Bloemers 2016a, 175; Hendriks/Den Braven 2015.
[517] Bloemers/Thijssen 1990, 140; Haalebos 1976, 205; Willems 1986b, 146-8.
[518] Bloemers 2016a, 175.
[519] Bloemers 2016a, 211-213.
[520] Bloemers 2016a, 193; cf. Haalebos 1976, 205; both contra Thijssen 2002, 14; Willems/Van Enckevort 2009, 100 who argue for coins issued by Arcadius and Theodosius.
[521] Bloemers 2016a, 192-4.
[522] Bloemers 2016a, 191; contra Willems 1986a, 307; Willems/Van Enckevort 2009, 100-103.
[523] Bloemers/Thijssen 1990, 139.

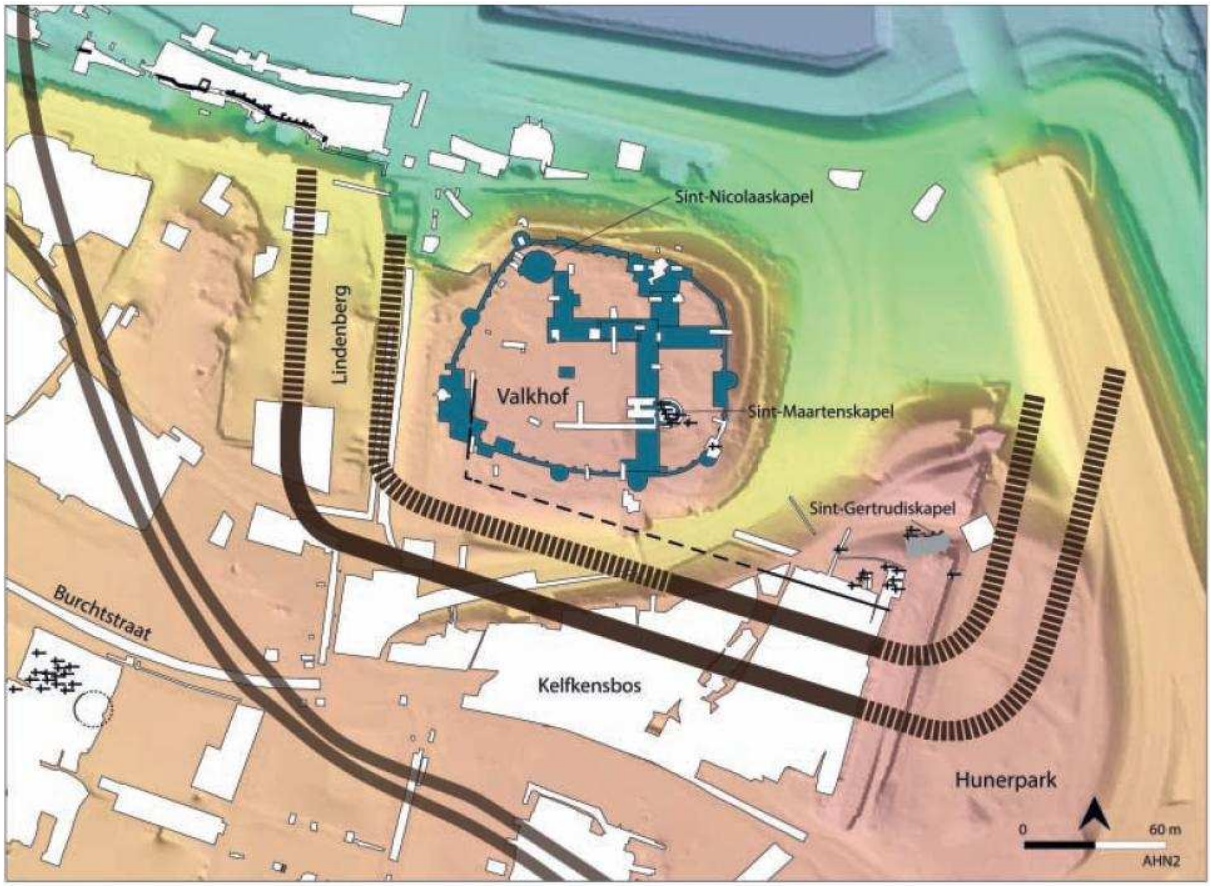

Fig. 23. Map of the Late Roman ditches at Nijmegen-Valkhof, with some toponyms named in the text. The 4 ditches are indicated in brown (white squares mark excavation trenches). The buildings in blue are post-Roman. After Hendriks/Den Braven 2015, fig. 7.

The fortification itself is assumed to first have been built in wood, around the end of the 3rd century, surrounded by an earthen and wooden rampart and a double ditch. [524] No signs of this rampart have been found, however[525], although Jan Thijssen has previously claimed that it looked remarkably similar in appearance and construction to the rampart found in Cuijk (see below).[526] The interpretation of a wooden and subsequent stone building phase is also based on a comparison with the *castellum* at Cuijk.

In the third quarter of the 4th century the rampart was built over in a second construction phase by a stone wall, of which a 1.5-meter-wide robbing trench was found in the Kelfkensbos excavations.[527] The surrounding ruins and grave monuments were used as quarries for this second building phase.[528]Another stone wall was recognised during the construction of the casino in Nijmegen and parts of a stone wall made of tuff blocks with two protruding towers were found at the foot of the Sint-Nicolaaskerk at the northwest side of the Valkhof.[529] These latter two featured similarly sized building blocks, and are both presumed to have belonged to the second, stone-built phase of the Valkhof.[530] Again, the excavators have stressed that these fortifications look remarkably similar to the ones found in Cuijk.[531] A final aspect of the second phase is that two more ditches (the parallel ones) were dug, even further away from the walls. These were found in 1981 during excavations at the

[524] Van Enckevort/Thijssen 2014, 23.
[525] Van Enckevort/Thijssen 2014, 33.
[526] Bloemers/Thijssen 1990; Van Enckevort/Thijssen 2000, 19.
[527] Van Enckevort/Thijssen 2014, 35.
[528] Van Enckevort/Thijssen 2014, 31.
[529] Van Enckevort/Thijssen 2014, 35.
[530] Van Enckevort/Thijssen 2014, 35.
[531] Van Enckevort/Thijssen 2014, 35.

Eiermarkt and the St. Josephhof.[532] Outside the confines of the Valkhof, a *horreum* was constructed, just outside the outer ditches east of the road to Cuijk (see ground plan in fig. 24).[533] On the bank of the Waal river, trade flourished thanks to the port facilities located there.[534] One iron pile shoe has also been found here in the river, which was part of a roster of crossing wooden beams, although the wood has not been preserved.[535] This find could mean that a bridge was also built over the river Waal, but its date remains unknown.

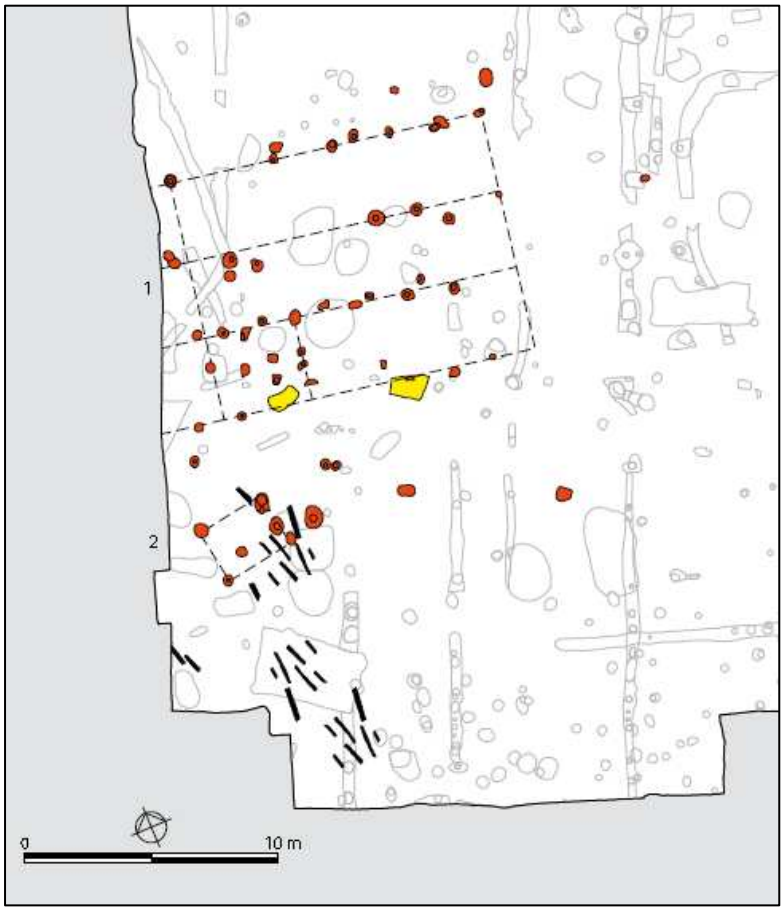

Fig. 24. The Late Roman *horreum* outside the fortification at Nijmegen-Valkhof (the large reconstructed ground plan at the top); after Heirbaut/Van Enckevort 2010, fig. 167.

Finds

From the Valkhof itself, there is also important evidence from earlier investigations.[536] The 1910-1 excavations have yielded plenty of rouletted Samian ware, which have previously been published. [537] Stamps from the 4th and early 5th century are present. The coarse-tempered ceramics from these excavations included late variants of the Alzei 27 in Mayen fabrics and Alzei 28/33 dating to the 5th century.[538] Of the Alzei 27, fragments of the 27e[539] were recognised, dating from the last quarter of the 4th century onwards.[540] This is in accordance to ceramics found elsewhere at the Valkhof, such as the Lindenberg and Kelfkensbos excavations.[541] A recent overview of the Roman period in Nijmegen did

[532] Bloemers 1983b, 30; Sarfatij 1983; Van Enckevort/Thijssen 1996, 91; Heirbaut/Van Enckevort 2010, 255-6, fig. 163-4, 258.
[533] Van Enckevort 2014, 37; Heirbaut/Van Enckevort 2010, 258-261.
[534] Willems 1990, 78-9.
[535] Van Enckevort/Thijssen 1996, 70.
[536] Daniëls 1921.
[537] Unverzagt 1919, 35; Bloemers/Thijssen 1990, 142.
[538] Bloemers/Thijssen 1990, 142; cf. Willems 1986a, 163-182, 324-5.
[539] Subtype according to Von Petrikovits 1937, 333-4.
[540] Bloemers/Thijssen 1990, 140.
[541] Van Enckevort/Thijssen 2000, 17.

publish a not unsubstantial amount of Late Roman ceramics from the Valkhof,[542] but it was quantified in such a manner that it could not be reproduced here.

The city archiver Daniëls has published several overviews of all the coins and other finds found in Nijmegen,[543] although his descriptions of find contexts are often lacking in detail. Based on these, Haalebos has calculated that around 60 coins found at the Valkhof were struck by Constantine the Great or members of his family and five were struck for Magnentius and Decentius (350-353). No coins seem to date to the 10 years following them, with around 20 coins from the last quarter of the 4th century struck by Valentinian I, Valens, Gratian, Magnus Maximus, Arcadius and Honorius.[544] There are also coins of Arcadius and Honorius dated by Daniëls to 388-395.[545]

A more representative sample has been acquired, however, during the municipal excavations at the St Josephhof, which intensively employed metal detectors and yielded around 3000 coins. The prevalence of barbarous imitations of late 3rd-century antoniniani, especially those of Claudius II Gothicus allow us to re-date the construction to the late 3rd century. The coin series at the St. Josephhof begins with several heavily weathered antoniniani struck in 268-270.[546] Unfortunately, due to the high number of finds, the site report from the municipal excavations at the Josephhof only managed to analyse a selection of the coins in detail. The 128 coins that were studied in detail were mostly from the southwest corner of the Josephhof, where some Late Roman stone structures were found. Of the total 128 coins, 90 were from the Late Roman period (see fig. 25).[547] Unfortunately, the site report does not contain raw data, and the coin specialist has only provided a modified graph of the coins, divided into the standard numismatic categories (see below).[548]

In a separate publication, Van Enckevort and Thijssen claim that from "both ditches" (presumably the two parallel ditches) around the Valkhof, coins dated to Arcadius and Theodosius I were found as well as coins from the second quarter of the 4th century, suggesting they were still open and functioning around AD 400.[549] They also state that the coins from the terrain within the ditches date to roughly AD 400. [550]

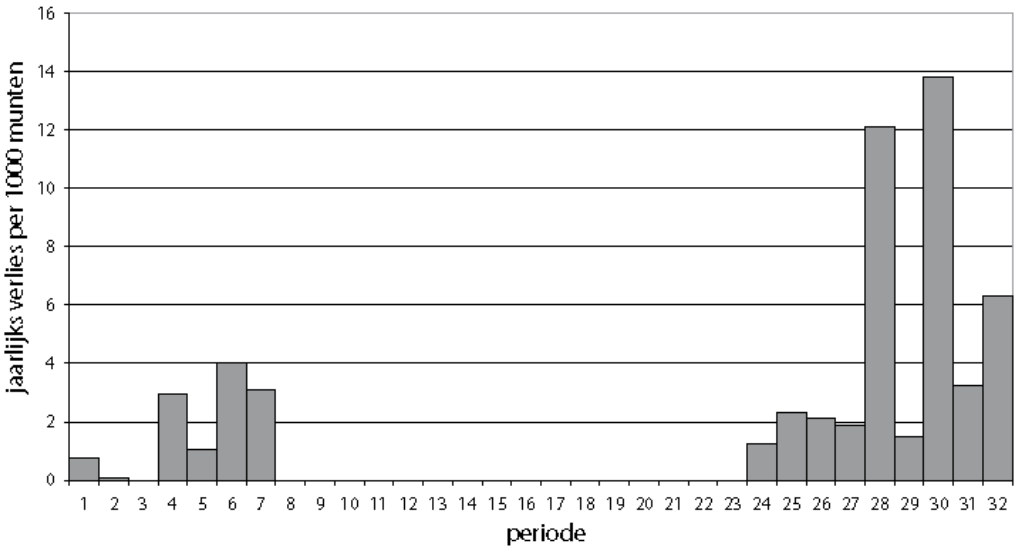

Fig. 25. The 128 coins from the St. Josephhof excavations in Nijmegen, divided in numismatic periods; after Reijnen 2010, fig. 120.

[542] Bloemers 2016a.
[543] Daniëls 1921; ibid. 1927; ibid. 1950; ibid. 1955.
[544] Haalebos 1976, 204-5.
[545] Bloemers/Thijssen 1990, 142; Bogaers/Rüger 1974, 78.
[546] Van Enckevort/Thijssen 2014, 37; Reijnen 2010, 173.
[547] Reijnen 2010, 173.
[548] Reijnen 2010, 166.
[549] Van Enckevort/Thijssen 2000, 19.
[550] Van Enckevort/Thijssen 2000, 15-6.

Table 13. Coins from Nijmegen from ROB excavations 1949-1986 (AD 200<).				
Coin type	**Authority**	**Date (min.)**	**Date (max.)**	**N**
1/2 Follis	Mauricius Tiberius	582	602	1
aes	Arcadius	383	408	2
aes	Constantinus I	330	341	1
aes	Constantinus I	335	341	2
aes	Constantinus I	337	341	1
aes	Constantinus I	337	346	1
aes	Constantinus I	348	351	3
aes	Constantinus I		361	1
aes	Constantinus II	317	317	1
aes	Constantinus II	332	335	1
aes	Constantinus II	337	347	1
aes	Constantinian dynasty	346	361	1
aes	Constantius II	348	348	1
aes	Decentius	352	352	1
aes	Decentius/Magnentius	351	353	1
aes	Gratianus	367	375	6
aes	Gratianus/Magnus Maximus	378	387	1
aes	Gratianus/Magnus Maximus	378	388	1
aes	IV	300	400	11
aes	IV	320	390	1
aes	IV	330	380	6
aes	IV	330	400	2
aes	IV	348	361	1
aes	IV	350	380	2
aes	IV B	350	399	5
aes	IV bc	325	375	1
aes	IVb	350	399	5
aes	Magnentius	350	353	1
aes	Magnus Maximus	383	388	1
aes	Valens	364	375	2
aes	Valens	364	378	1
aes	Valens	367	375	2
aes	Valens	375	375	1
aes	Valens	375	378	1
aes	Valens/Gratianus?	364	378	1
aes	Valentinianus I	361	378	1
aes	Valentinianus I	364	367	1
aes	Valentinianus I	364	375	3
aes	Valentinianus I	364	378	19
aes	Valentinianus I	364	379	1
aes	Valentinianus I	364	383	1
aes	Valentinianus I	367	375	6
aes	Valentinianus I	378	388	1
aes	Valentinianus II	378	383	1
aes	Valentinianus II	379	402	1
antoninianus	Claudius II (posth.)	270	300	1
antoninianus	Claudius II Gothicus	268	270	1
antoninianus	Claudius II Gothicus	270	270	1
antoninianus	Claudius II Gothicus (imit.)	268	270	1
antoninianus	Claudius II Gothicus/Tetricus I (imit.)	270	274	1
antoninianus	Gallienus	260	268	1
antoninianus	III	250	300	2
antoninianus	III	270	299	1
antoninianus	IIIc	250	275	1
antoninianus	Postumus	259	268	1
antoninianus	Probus	276	282	1
antoninianus/aes	III/IV	250	380	1
as	Gordian III	238	244	1
as	III	200	250	1
as	Indet.	Indet.	Indet.	1
as/dupondius	Indet.	Indet.	Indet.	3

as/dupondius	Indet.	(blank)	(blank)	1
bronze	Indet.	Indet.	Indet.	1
bronze	Indet.	(blank)	(blank)	3
denarius	Elagabalus	218	222	1
follis	Constans	333	334	1
follis	Constans	336	336	1
follis	Constans	340	340	1
follis	Constans	347	348	9
follis	Constans(?)	337	340	1
follis	Constantinus I	314	315	1
follis	Constantinus I	316	316	1
follis	Constantinus I	317	317	1
Follis	Constantinus I	317	318	1
follis	Constantinus I	318	318	1
follis	Constantinus I	320	320	1
follis	Constantinus I	320	327	1
follis	Constantinus I	322	323	1
follis	Constantinus I	323	324	1
follis	Constantinus I	324	330	2
follis	Constantinus I	330	331	1
follis	Constantinus I	330	333	1
follis	Constantinus I	330	335	12
follis	Constantinus I	330	337	1
follis	Constantinus I	330	341	8
follis	Constantinus I	330	350	1
follis	Constantinus I	333	333	1
follis	Constantinus I	333	334	1
follis	Constantinus I	335	341	11
follis	Constantinus I	337	340	3
follis	Constantinus I	337	341	2
follis	Constantinus I	347	348	13
follis	Constantinus I (imit.)	335	337	1
follis	Constantinus I (imit.?)	335	337	1
follis	Constantinus II	330	335	1
follis	Constantinus II	332	333	2
follis	Constantinus II	333	334	2
follis	Constantinus II	335	337	1
follis	Constantinus II	337	340	2
follis	Constantinopolis	330	340	2
follis	Constantinopolis (imit.)	330	340	4
follis	Constantius I Chlorus	301	303	1
follis	Constantius II	335	337	1
follis	Constantius II	335	340	1
follis	Constantius II	337	340	1
follis	Constantius II	337	341	3
follis	IV	300	400	1
follis	IV	330	380	3
follis	IV (imit.)	301	399	1
follis	IVb	330	335	3
follis	IVb	335	340	1
follis	IVB (imit.)	340	399	4
follis	Licinius	313	315	1
follis	Magnus Maximus	383	388	1
follis	Maximianus	299	303	1
follis	Urbs Roma	330	331	1
follis	Urbs Roma	330	340	3
follis	Urbs Roma	332	333	2
follis	Urbs Roma (imit.)	340	399	3
follis/aes	Constantinus/Valentinianus	330	378	1
follis/aes	Constantinian dynasty	330	335	1
follis/aes	Constantinian dynasty	335	341	2
follis/aes	Constantinian dynasty	347	348	2
follis/aes	IV	330	380	6
indet	Indet.	(blank)	(blank)	1

quadrans/semis	Constantius II	337	361	1
sestertius	Indet.	(blank)	(blank)	1
siliqua	Jovian	363	364	1
Total				**274**

Metal finds from the St. Josephhof included no less than 8 crossbow brooches, one of which was too fragmented to be identified in any more detail.[551] These are reproduced below in table 14.[552] Several military belt fittings are also known.[553]

Table 14. Crossbow brooches from the St. Josephhof excavations[554]

Type	**N**	**Date**
Riha 6.5.1	1	AD 290-330
Riha 6.5.1-2	1	AD 290-350
Riha 6.5.1-3A	1	AD 290-360
Riha 6.5.2-3A	1	AD 310-360
Riha 6.5.3A	1	AD 340-360
Riha 6.5.2-4	1	AD 310-380
Riha 6.5	1	-
Riha 6.5.6	1	AD 400-425

Heeren and Van der Feijst have compiled a further 79 crossbow brooches from Nijmegen, including from the Valkhof and various other sites. These are listed in table 15. Because of Nijmegen's long research history, the provenance of some of these *fibulae* is no longer known. A significant portion was found at the Late Roman cemetery OO[555], which helps account for the alarmingly high number of crossbow brooches in comparison to other sites. However, no less than 25 crossbow brooches were found during the Kelfkensbos excavations, which covered parts of the fortifications of the Valkhof. This clearly shows that the peak of type 68c *fibulae* in Nijmegen is largely due to the finds of the Valkhof, firmly supporting this site's existence in the second half of the 4th century.

Table 15. Crossbow brooches from Nijmegen in Heeren/Van der Feijst 2017.

Type	**Date (min)**	**Date (max)**	**N Total**	**N Kelfkensbos**
68	-		8	6
68a	270	300	9	
68b	300	360	4	2
68b1	300	360	8	
68b2	300	360	1	
68b3	340	400	3	
68c	340	400	19	13
68c1	340	400	4	
68c2	340	400	11	3
68c3	340	400	8	
68c4	340	400	2	
68c5	340	400	1	
68e	390	500	1	1
Total			**79**	**25**

2.13 Utrecht-Traiectum

Similarly complex is the *castellum* at Utrecht (see fig. 26). Because it is located under the modern day Domplein, only 5% has been excavated up until now.[556] Six construction phases can be identified.[557] The first four phases were built in earth and timber, with defences of a rampart with two V-shaped ditches. The 5th phase was rebuilt in stone in AD 210 (see fig. 27).[558] The 6th and final phase remains

[551] Zee 2010, 207.
[552] Drawings can be found in Zee 2010, fig. 138.
[553] Van Es 1994a, 69.
[554] After Zee 2010, table 11.
[555] Cf. Steures 2014.
[556] Van Es 1994a, 67; contra Montfort 1996, 3 who claims 10%.
[557] Van Dockum 1995, 83.
[558] Montfort 1996, 4; Montfort 1995.

obscure. Two 4th-century buildings have recently been identified in the site's stratigraphy, but their exact nature is unknown.[559] Unfortunately, many of the general publications on Roman Utrecht do not pay much attention to the Late Roman period[560] and I could not find a map of the 4th-century features. Even though large quantities of construction wood were found during the various excavations from 1933 onwards, these have not been subjected to dendrochronological analysis or C14 dating. [561]

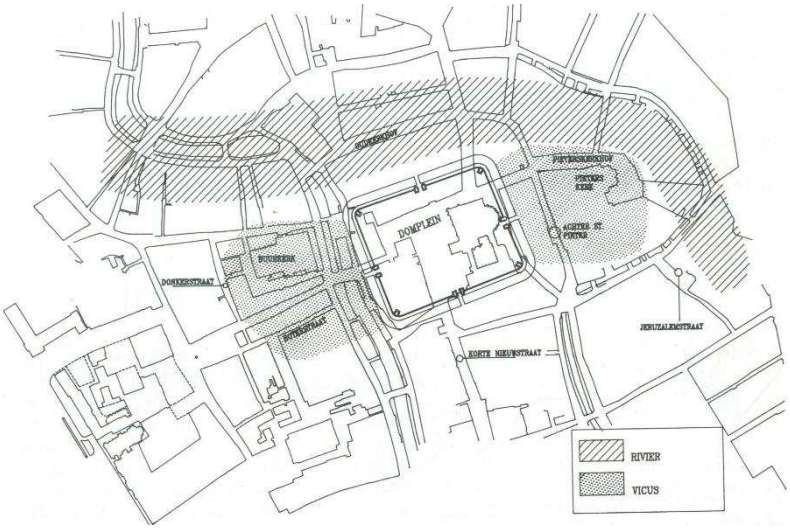

Fig. 26. Location of the *castellum* at Utrecht in the city centre; after Monforts 1996, fig. 4.

The military nature of the two 4th-century buildings is uncertain. Ozinga and De Weerd, for instance, argue that with military activity, one would expect a completely new construction phase, which was not found. I personally think that is not a valid criterion for reoccupation: at Valkenburg, for instance, the Late Roman period did not mark a complete overhaul of the *castellum*, but rather a long period of small but continuous refurbishments (see above). Furthermore, only 5-10% of the site was excavated, so it is unclear what has been missed. There is very little known about the defensive ditch(es) around the *castellum* at Utrecht, for example, which could give us more information about Late Roman rebuilding.

[559] Van Dockum 1995, 85; contra Van Es 1994a, 67.
[560] A study dedicated to the description and stratigraphy of the inner buildings of the castellum for instance, Chorus 2015, only covers phases 1-5; a similar problem was encountered in Montforts 2006.
[561] Polak *et al.* 2005, 100.

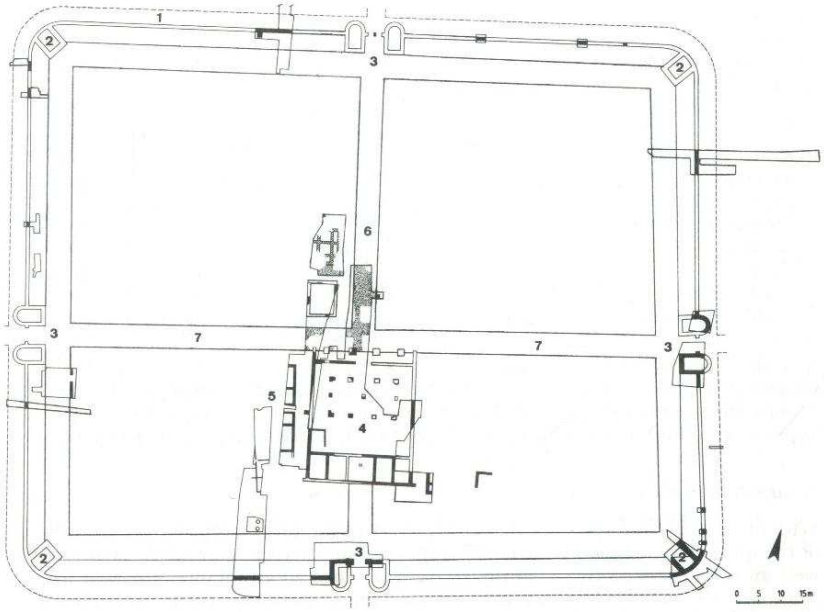

Fig. 27. Ground plan of the 5th phase of the *castellum* at Utrecht; after Montforts 1996, fig. 3.

Finds

Bogaers and Rügers mention 4th-century ceramics and coins (Galerius Maximianus, Helena, Crispus).[562] They proposed an end date of AD 260, however, despite the fact that Van Giffen had already dated several strati graphical layers to the reign of Julian based on his 1929-1949 campaigns.[563]

Quite a lot of material culture seems to have been found on the *castellum* grounds over the years, but its publication has been rather scattered. In 1989, the results of Van Giffen's campaigns from 1936, 1938, 1943-4 and 1949 was published[564] and the overview below is mainly based on that dataset. A reappraisal of a selection of the ceramics found during the excavations in 1935 yielded 10 sherds of Late Roman coarse-tempered ware, and a similar amount is generally presumed to have been found in 1934 and 1935 (Late Roman pottery was completely absent in the 1929 excavation).[565] Finds from the later municipal excavations also included some 4th and 5th century pottery (predominantly from the Eifel area[566]), although this only amounted to a few percentages of the total find assemblage.[567] Van Es has judged that this is enough to ascertain a Late Roman phase, but not enough to suggest that the site was garrisoned continuously by troops. A small, temporary occupation could be possible, however.[568] To him this means that use of the *castellum* by *limitanei* can therefore not be excluded.[569] Jan Thijssen has analysed some of the Late Roman ceramics, and he describes exclusively coarse-tempered wares. From the 4th century, he notes the Alzei 27, 28, 29 and 34 and from the 5th century the Alzei 38 and 33.[570] According to Julia Chorus, the ceramics from the final phase of the *castellum* should he dated to AD 270-450.[571]

The 1936, 1938 and 1949 campaigns combined yielded a total of 15 coins, the youngest of which was struck by Gordianus III in AD 240.[572] A hair pin from the first half of the 5th century is also known.[573]

[562] Bogaers/Rüger 1974, 58; cf. Bogaers 1967b, 107, no. 37 for two coins from Constantinus I and one from Valens.
[563] Willems 1986, 294.
[564] Ozinga *et al.* 1989.
[565] Ozinga/De Weerd 1989, 55.
[566] Montfort 1996, 6.
[567] Van Lith de Jeude 1993; Ozinga 1989, 152-3.
[568] Montfort 1996, 6; Van Es 1994a, 67 presumes the short-term presence of *limitanei*.
[569] Van Es 1994a, 67.
[570] Ozinga *et al*. 1989, 152.
[571] Chorus 2015, 96.
[572] Gerritsen/Kalee 1989, 156.
[573] Ozinga *et al*. 1989, 152.

2.14 Randwijk

Willems claims that erosion of the riverbank of the Nederrijn led to the destruction of Roman camps at Randwijk and Kesteren.[574] For Randwijk a Late Roman period of activity is also assumed.[575] I could not find any specific data about this site, other than these claims.

2.15 Rhenen

Rhenen is best known for its Late Roman and Early Medieval cemetery. It is assumed by a number scholars that the Germanic soldiers buried here during the Late Roman period manned a fortified post on a sediment ridge someplace nearby.[576] As 62% of all the male graves contained weapons, the cemetery was therefore deemed "clearly military"[577], an interpretation that assumes an overly simplistic interpretation of weapon graves. Despite the absence of archaeological evidence for a fortification at Rhenen, Willems judged such an assumption "more than a mere possibility" and "not improbable".[578] I do not agree with him as my minimum standards for something to be interpreted as a site or a military site are higher.

2.16 Rossum/Alem

Like many other sites in the Dutch river area, Rossum-Grinnes has been eroded away by riverine migration and is therefore poorly understood. It is further problematic because of the way the finds are documented. Generally speaking, there are two major find complexes at Rossum: Rossum and Alem. Rossum itself has mainly yielded coins (published by Leemans),[579] whereas from Alem we have a large amount of weaponry, coins and pottery.[580] The finds from both sites are generally interpreted as belonging to a military complex from the Early/Middle Roman period, consisting of a *castellum* and *vicus*.[581] This Early Roman fort is represented by various dredge finds, largely from private collections, which include "native-Roman" ceramics, Early Roman pottery (including 1st and 2nd century stamped Samian ware), inscriptions[582] and Early Roman coins (even including Republican and Augustan halved coins).[583] A large selection of Samian ware was also published by Glasbergen, all dating to the 1st-early 3rd century.[584]

Fig. 28. Hair pin with Wijster type decoration from Alem decorated with gold leaf; after Van Hemert 2010, fig. 19. No scale.

[574] Willems 1986a, 250-2.
[575] Van Dockum 1995, 79.
[576] Willems 1986a, 157-8, 294,
[577] Böhme 1974, 185, 268-72.
[578] Willems 1986a, 157.
[579] Leemans 1842.
[580] Van Hemert 2010.
[581] Van Hemert 2010, 4; Stolte 1959, 63.
[582] Bogaers 1962-3.
[583] Elzinga 1959, 116-7.
[584] Glasbergen 1946.

Fig. 29. Late Roman belt buckles decorated with animal heads from Alem; after Van Hemert 2010, fig. 20. No scale.

Finds

The large amount of dredge finds from the Rossum/Alem complex also includes a significant amount of Late Roman finds, and it has been suggested that they represent a Late Roman phase at the *castellum*.[585] In his overview of the metal finds from various find locations at Rossum and Alem, Van Hemert notes 31 4th-century coins, predominantly from Rossum. As he collected his coin data from NUMIS, I have not reproduced his list here; I have instead presented the current number of coins from Rossum in NUMIS below in table 16.

Heeren and Van der Feijst describe seven crossbow brooches. Five of the brooches they describe are are complete. The two incomplete specimens cannot be identified any closer than type 68. The others are a type 68a (AD 270-300), 68b1 (AD 30-360), 68c1 (AD 340-400), 68c2 (AD 340-400) and 68c3 (AD 340-400). Both the first and second half of the 4th century thus seem to be represented in Rossum. Finally, Van Hemert notes three Wijster type hair pins, a Late Roman hairpin with gold leaf Wijster-like decoration (see fig. 28), and Late Roman three belt buckles decorated with animal heads (fig. 29).[586]

Haalebos also describes a late terra nigra foot bowl from Rossum/Alem.[587] Hubrecht has recorded several coins found by amateur archaeologists in the Waal at Rossum acquired by the Museum Kam, which include, among several 1st and 2nd century coins, an aes III dated after 341.[588] Boersma describes one *maiorina* struck by Magnentius.[589] Leemans has described a further 233 coins which were found in the 19th century. [590] These date from the reign of Emperor Augustus onwards. Despite the fact that Leemans was writing in 1842, he has described the coins in great detail and has ordered them chronologically by emperor. A relatively large amount of coins was identified by him, probably because barbarous imitations were not as well-known then as they are now. His list is reproduced below in table 16. This table also includes the Late Roman coins from Rossum currently listed in the NUMIS database.

Table 16. Coins from Rossum from publications[591] and the NUMIS database[592] (AD 200<)

Coin type	**Authority**	**Date (min.)**	**Date (max.)**	**N**
NUMIS				
denarius	Septimius Severus	198	200	1
denarius	Julia Maesa under Elagabalus	218	222	1

[585] Stolte 1959, 63.
[586] Van Hemert 2010, 68-71; see also Haalebos 1976, 203.
[587] Haalebos 1976, 203.
[588] Hubrecht 1969, 47.
[589] Boersma 1965/1966, 56.
[590] Leemans 1842, 131-145.
[591] After Leemans 1842, 131-145.
[592] Accessed 24-01-2017; out of a total 263 Roman coins.

denarius	Julia Soaemias under Elagabalus	218	222	1
denarius	Elagabalus	218	222	2
denarius	Severus Alexander	222	235	3
denarius	Severus Alexander	231	235	2
sestertius	Gordianus III	240	243	1
antoninianus	Gordianus III	241	243	1
sestertius	Gordianus III	241	243	1
antoninianus	Gordianus III	241	43	1
antoninianus	Gallienus/Claudius II	260	270	1
antoninianus	Gallienus	260	268	2
antoninianus	Victorinus/Tetricus I	268	270	1
antoninianus	Victorinus	268	270	2
antoninianus	Claudius II	268	270	1
antoninianus	Severina	270	275	1
antoninianus	Tetricus I	270	273	2
antoninianus	Tetricus I	270	300	2
nummus	Constantinus I	307	337	1
nummus	Constantinus I	330	341	1
nummus	Constantinus I	330	335	1
aes III/IV	indet.	348	402	2
aes II	Magnentius/Decentius	350	353	1
aes III/IV	indet.	364	402	1
aes III	Gratianus	367	383	2
aes IV	Theodosius I	378	395	2
aes IV	Gratianus	378	383	1
aes II	Magnus Maximus	383	388	1
aes IV	Magnus Maximus	383	388	2
aes IV	indet.	383	402	11
Total				**52**
Leemans				
silver	Septimius Severus	145	211	4
bronze	Julia Domna	211	217	1
silver	Caracalla	198	217	1
silver	Julia Soaemias	218	222	3
silver	Elagabalus	218	222	1
silver	Alexander Severus	222	235	1
silver	Julia Mamaea	222	235	3
bronze	Victorinus	268	270	3
bronze	Tetricus I	271	274	4
bronze	Severina	270	275	1
bronze	Aurelius Probus	276	282	1
bronze	Maximianus Herculeus	285	310	1
bronze	Constantinus I	306	337	1
bronze	Julius Constantius	289	337	1
silver	indet.	indet.	indet.	4
bronze	indet.	indet.	indet.	51
lead	indet.	indet.	indet.	1
Total				**82**

2.17 Vleuten-De Meern

The small station at Vleuten-De Meern was first erected in the Early Roman period and is commonly assumed to have been abandoned around AD 270. [593] Later finds are admittedly scarce, but excavations have resulted in two massive wooden foundation posts which post-date the late 3rd-century destruction layer.[594] Several different dates have been suggested for this new building phase; IId, IVA and IVB, while Willems deems the latter two to be the most likely.[595] Van Es mentions that "isolated coins and sherds" are known from Vleuten-De Meern, but provides no reference as to their provenance.[596]Unfortunately, all stratigraphic layers dating after AD 100 have been severely disturbed

[593] Bogaers/Rügers 1974, 55.
[594] Jongkees/Isings 1963, 8-11, 38, 98.
[595] Willems 1986, 295.
[596] Van Es 1981, 125

by post-depositional processes and the top 1-1.5 meter of the soil was removed in the past.[597] This surely will have effected any Late Roman occupational layer.

Finds

The excavators only mention one Late Roman coin, struck under Magnentius. A recent study of the coins found during a commercial excavation did present some more information. 50 coins could be identified that formed an almost continuous line from the early 3rd century to the 380's (see below in table 17).

Table 17. Coins from Vleuten-De Meern from publications[598] (AD 200<)

Coin type	Authority	Date (min.)	Date (max.)	N
antoninianus	Gordianus III	238	239	1
antoninianus	Indet.	250	300	6
antoninianus/as III	Indet.	250	380	1
antoninianus	Postumus	259	268	2
antoninianus	Gallic Empire	259	274	1
antoninianus	Victorinus	268	270	1
antoninianus	Claudius II	270	Indet.	2
antoninianus	barbarous imitation; after Tetricus	Indet.	Indet.	1
antoninianus	Tacitus	275	276	1
antoninianus	barbarous imitation	275	300	3
indet.	House of Constantinus	320	350	2
indet.	House of Constantinus	324	330	1
indet.	House of Constantinus	324	348	1
indet.	House of Constantinus	330	335	12
indet.	House of Constantinus	330	341	1
indet.	House of Constantinus	335	341	2
indet.	House of Constantinus	337	341	2
indet.	House of Valentinianus	364	378	2
indet.	Arcadius/Honorius	388	402	1
indet.	indet.	330	380	7
Total				**50**

Kemmers notes that 3rd-century coins are scarce across the entire *limes* area and that whereas most *castella* terrains only yield one or two Late Roman coins, De Meern deviates from the pattern in its chronology.[599] However, she argues that these late bronze coins were worth very little and were therefore issued in such large numbers that to truly represent a Late Roman occupational phase, one would expect even more coins. Comparatively, she proposes that from "proper" 4th-century centres of activity like Nijmegen and Maastricht "thousands" of coins are known.[600] Although I admit this is a valid caveat, Nijmegen and Maastricht are notable exceptions as these are large, urban and administrative centres. Furthermore, the poor visibility of Late Roman bronze denominations and the fact that many excavations in the past did not employ metal detectors, means that these supposedly abundant coins were still only found in small numbers. This suggests to me that we should at least consider the idea that they may mean or reflect something. It should be noted, however, that the NUMIS database only yielded 4 post-AD 200 coins from Vleuten-De Meern, which is very few indeed.

The Heeren/Van der Feijst database includes four incomplete crossbow brooches from the *castellum* terrain, possibly supporting a later date for the site. Unfortunately, all four could not be further identified beyond the general 68 type.

2.18 Wijk bij Duurstede/Rijswijk-Roodvoet

[597] Willems 1986, 294.
[598] After Kemmers 2008a, table 19-21.
[599] Kemmers 2008a, 22-3.
[600] Kemmers 2008a, 23.

The Lower Rhine at Rijswijk has, besides some ritually deposited helmets, yielded pottery, coins, roof tiles and building materials that are suggestive of washed up debris of a flooded army camp.[601] These finds suggest, according to Van Es, that the fortification at Rijswijk was in use from the 1st century to somewhere in the 3rd century[602], most likely AD 270.[603] In his article on the dredge finds at Rijswijk, he presents a table of ceramics dredged from the Rhine around Rijswijk, collected there by the ROB in 1979. In total, 1793 sherds of pottery were found (see table 18).

Table 18. Pottery from the Lower Rhine near Wijk bij Duurstede/Rijswijk (after Van Es 1984, 279, table 1)					
Category	N rim	% rim	N wall and base	N total	% total
Samian ware	65	22,8	166	231	22,7
Terra nigra-like ware	13	4,6	40	53	5,2
Colour-coated ware	20	7,0	109	129	12,7
Smooth-tempered ware	37	13,0	76	113	11,1
Coarse-tempered ware	114	40,0	244	358	35,1
Dolia	-	-	10	10	1,0
Amphorae	6	2,1	56	62	6,1
Mortaria	30	10,5	33	63	6,2
Hand-thrown pottery	73	20,4	701	774	43,2
Total	358	100	1435	1793	100

According to Van Es, this shows a strongly Romanised settlement, despite the fact that 43.2% of the ceramics is hand-thrown, vs. 56.8% wheel-turned.[604] Roughly 350 fragments of roof tiles were found, one of which featured an incomplete EX GER INF stamp. Stone was not sampled systematically, but a few tuff blocks, most likely Roman construction materials were found. Finally, three fragments of leather shoes (one sole with spikes) were found, as well as two denarii of Septimius Severus and Elegabalus.[605]

There is, however, a strong Late Roman component in the wider area around Wijk bij Duurstede. The civilian settlement at Wijk bij Duurstede-De Geer has long been known for its richness in material culture. According to the preliminary reports of the last ROB field campaign there in 1994[606], the amount of Late Roman ceramics was substantial and includes coarse-tempered wares from the Eifel region, Argonne Samian ware with Christian motives and decorated shell-tempered hand-thrown pottery.[607] Ceramics studied by Stijn Heeren from a recent commercial excavation[608] further illustrate the large amount of imported wheel-turned ceramics at De Geer in the Late Roman period (the site itself has yielded finds dating from the 1st century onwards).

Coins, *fibulae* and over 20 Wijster hair pins were also found, the latter predominantly by amateur archaeologists.[609] A substantial amount of 4th-century coins were also found during the 1994 ROB campaign, predominantly in the eastern part of the site.[610] The hair pins have been dated to the 4th-6th century.[611] Two further *fibulae* in the shape of birds date to the 4th and early 5th century.[612] Vos further mentions in his description of Late Roman metal finds from De Geer 24 belt fittings (some with Kerbschnitt decoration)[613], a silver and a Germanic crossbow brooch and several Late Roman coins.[614] Furthermore, the Heeren/Van der Feijst database contains seven crossbow brooches, four of which are from the De Geer complex. These four are a tinned bronze type 68a (AD 270-300), a 68b2

[601] Nicolay 2007, 183; Van Es 1984, 277-281.
[602] Van Es 1984, 280.
[603] Van Es/Verwers 1978, 223.
[604] Vn Es 1984, 279.
[605] Van Es 1984, 280.
[606] Cf. Van Doesburg 1998, 137.
[607] Vos 2009, 105-8.
[608] Heeren in prep.
[609] Van Es *et al.* 1995, 159; Vos 2009, 105-8. In his publication of the ceramics, Van Es has also "taken into account" but not described the coins found at Rijswijk, notably by the detectorists J.N. Brouwer, W.B. Kuijpers and D.J. van Veelen; Van Es 1984, 255.
[610] Van Doesburg 1998, 140.
[611] Van Dockum 1997b, 118.
[612] Van Dockum 1997b, 118; Vreenegoor 1994; Van Dockum 1997a.
[613] See also Vos 2009, site no. 35; Nicolay 2007, app. 3.3.
[614] Vos 2009, site no. 31.

(AD 300-360), a 68c2 (AD 340-400) and a type 68. The other brooches are another 68, 68c2 (AD 340-400) and 68c (AD 340-450).

Wijk bij Duurstede/Rijswijk-Roodvoet is situated on the bifurcation of several waterways, a typical location for Roman fortifications.[615] The relatively large component of Late Roman finds suggests that the site, whatever form it took, may have continued well into the 4th century.[616] I do not know what the exact relationship between the supposed military site of Rijswijk and the civilian settlement Wijk bij Duurstede-De Geer is. According to Willems no exact statement on the nature of Rijswijk was possible[617], and I am inclined to agree with him.

Table 19. Coins from Wijk bij Duurstede/Rijswijk from the NUMIS database (AD 200<)[618]

Coin type	Authority	Date (min.)	Date (max.)	N
denarius	Septimius Severus	193	211	1
denarius	Septimius Severus	210	211	1
denarius	Julia Domna under Caracalla	211	217	1
denarius	Elagabalus	218	222	2
denarius	Julia Maesa under Elagabalus	218	222	1
denarius	Severus Alexander	222	222	1
denarius	Severus Alexander	222	228	1
denarius	Severus Alexander	223	223	1
antoninianus	Trajanus Decius; Herennius Etruscus Caesar	249	251	1
antoninianus	Trajanus Decius	249	251	1
antoninianus	Valerianus I	253	259	1
antoninianus	Postumus	259	261	1
antoninianus	Postumus	259	268	6
antoninianus	Postumus/Tetricus I	259	273	1
antoninianus	Gallienus	260	258	2
antoninianus	Gallienus/Divus Claudius II	260	275	1
antoninianus	Indet.	260	290	4
antoninianus	Indet.	260	294	1
antoninianus	Gallienus	264	264	1
antoninianus	Claudius II	268	270	5
antoninianus	Victorinus/Tetricus I	268	273	1
antoninianus	Claudius II/Tetricus I	268	273	1
antoninianus	Quintillus	270	270	1
antoninianus	Tetricus I	270	273	1
antoninianus	barbarous imitation after Tetricus I	270	273	2
antoninianus	barbarous imitation after Divus Claudius II	270	275	1
antoninianus	Aurelianus	270	275	1
antoninianus	barbarous imitation Tetricus I	270	280	1
antoninianus	Indet.	270	280	1
antoninianus	Indet.	270	290	2
antoninianus	Tetricus I	270	290	1
antoninianus	Indet.	270	295	2
antoninianus	Indet.	270	300	1
antoninianus	barbarous imitation Divus Claudius II	270	300	1
antoninianus	Tetricus I	271	273	1
antoninianus	Probus	276	282	1
antoninianus	Indet.	280	295	1
antoninianus	Indet.	290	295	1
nummus/aes III	Indet.	293	408	1
nummus/aes III	Indet.	294	378	1
nummus/aes IV	Indet.	294	402	1
aes	Indet.	294	402	1
nummus	Constantius I Caesar	298	299	1
nummus	Constantinus I	307	337	4
nummus	Constantinus I	330	331	1

[615] Sommer 2009; Van Dinter 2013.
[616] Van Dockum 1995, 81.
[617] Willems 1986a, 294; cf. Van Es 1980, 280-1.
[618] Accessed 25-01-2017; out of a total of 126 Roman coins. The broad description of find location in NUMIS means that it is likely that these coins actually come from several different site complexes.

nummis	Constantinus II Caesar	330	335	1
nummus	Constantinus II c.s.	330	335	1
nummus	Constantinus I	330	337	1
nummus	barbarous imitation after Constantinus I c.s.	330	337/341	1
nummus	Constantinus I	330	341	1
nummus	Constantinus I	332	333	1
nummus	Constantinus I	333	334	1
nummus	Constantinus I c.s.	335	337	1
nummus	Constantinus I c.s.	335	341	1
nummus	Divus Constantinus I	337	340	1
nummus	Constantinus I	337	340	1
nummus	Constans	347	348	2
nummus	Constantinus I	347	348	2
aes III	Constans-Constantius II	348	350	1
aes II	Magnentius	350	351	2
aes II	Magnentius/Decentius	350	351	1
aes II	Decentius Caesar	350	353	1
aes II	Magnentius	350	353	2
aes II	Decentius Caesar	351	353	2
aes III	Constantius II	353	361	1
aes III	Valentinianus I	367	375	1
siliqua	Arcadius/Honorius	375	402	1
aes II	Valentinianus II c.s.	378	387	1
aes IV	Indet.	378	402	1
aes	Honorius	388	395	1
aes IV	Valentinianus II/Honorius	388	402	1
Total				**96**

2.19 Woerden

Another problematic site is Woerden. During the Claudian period a *castellum* was founded here which, according to the more traditional literature, continued until around AD 270.[619] Van Es, however, mentions isolated 4th-century coin and pottery finds[620] and Bogaers and Rüger note coins from Augustus to Aurelius, Severus Alexander and Constantinus II to Theodosius.[621] Noted stray finds in the past have included further coins issued by Valens, the House of Constantine and Theodosius.[622] A similar gap can be seen in the coins from NUMIS. A total of 169 Roman coins from Woerden are listed, of which only 7 date after AD 200. A further 7 late coins could be found in the online collection of the RMO. A few early 3rd-century coins are complemented with a handful of coins from the mid-4th century and one coin struck by Theodosius, which provides rather curious reading. Finally, 7 more 4th-century coins were noted by Fleur Kemmers.[623] All three are presented in table 20.
Unfortunately, the top layers of the soil were stripped from the *castellum* terrain sometime around 1700.[624] This has meant that for example Merovingian and Late Medieval pottery from Woerden is scarce.[625]

Table 20. Coins from Woerden from the RMO and NUMIS database[626] (AD 200<)

Coin type	**Authority**	**Date (min.)**	**Date (max.)**	**N**
NUMIS				
antoninianus	barbarous imitation	270	300	1
denarius	Maximinus I	235	236	1
antoninianus	Philippus I	244	247	1
denarius	Severus Alexander	228	229	1
denarius	Elagabalus	222	222	1
denarius	Caracalla	210	210	1

[619] Bogaers/Rüger 1974, 53.
[620] Van Es 1981, 125.
[621] Bogaers/Rüger 1974, 53.
[622] *ER* III, 133.
[623] Kemmers 2008b, 281.
[624] Van Dockum 1995.
[625] Bogaers/Haalebos 1983, 309.
[626] Accessed 24-01-2017; out of a total 168 Roman coins.

nummus	Constans	347	348	1
Total				**7**
RMO				
aes/follis	Constans	347	348	1
aes III	Valentinianus I	364	375	1
follis	Constans Augustus	347	348	1
aes IV	Theodosius I	388	392	1
follis	sons of Constantine I	335	341	1
antoninianus	Tetricus I	270	290	1
antoninianus	Postumus	250	300	1
Total				**7**
Kemmers 2008b				
-	Indet.	330	380	1
-	House of Constantinus	330	335	1
-	House of Constantinus	337	340	1
-	House of Constantinus	337	350	1
-	House of Constantinus	341	346	1
-	House of Constantinus	341	346	1
	House of Valentinianus	367	375	1
	Theodosius	379	395	1
Total				**7**
Grand total				**21**

It has been suggested that Woerden was possibly connected to an expedition by Constans against the Franks in the summer of AD 341.[627] Laurum (Lauri) on the *Tabula Peutingeriana* is currently associated with Woerden[628] and some have argued that Emperor Constans issued a decree while staying there during one of his military campaigns.[629] This is based on some records of his battles[630] and his decree on the Codex of Justinian.[631]

2.20 Zwammerdam-De Hoge Burcht

The *castellum* at Zwammerdam was first identified in the 16th century just south of the village of Zwammerdam at the terrain of "De Hoge Burcht".[632] It was extensively excavated between 1968 and 1971[633] and yielded a complete *castellum* in three phases (from AD 47 to 270[634], not all phases were documented equally well[635]), a small *vicus* and famously, 6 Roman ships.[636] A recent excavation at Zwammerdam concluded that there was no evidence in terms of finds or features for Late Roman activity, and it maintained a traditional end date for the site of AD 270.[637] A small survey just north-west of the *castellum* terrain in 1971 yielded some Roman pottery and an isolated 9th century sherd, although this find has been connected to the medieval farm "De Hoge Burcht" rather than the *castellum*.[638]

Finds

The existence of a Late Roman phase at Zwammerdam is predominantly based on coin finds, most notably those found on the *castellum* terrain in the 18th century.[639] Their exact find location has been questioned, however, as some argue that these were instead found at Alphen aan den Rijn rather than

[627] Stolte 1976, 93; Beunder 1975, 100-2.
[628] Verhagen 2014, 544.
[629] Beunder 1975; contra Stolte 1976.
[630] A.o. Hieronymus, Chronicon ad annos, 2357-8; cf. *ER* I 442.
[631] Cod. Just. X, 71, 1; Cod. Theod. VIII, 2,1 and XII, 1,31.
[632] Cf. Plemper 1728, 114.
[633] Haalebos 1972.
[634] Haalebos 2006a, 192.
[635] Franzen *et al.* 2000, 6.
[636] Haalebos 1977; De Weerd 1988.
[637] Franzen *et al.* 2000, 6.
[638] Sarfatij 1973, 97; ibid. 1977.
[639] Plemper 1728, 108-111.

Zwammerdam.[640] Zwammerdam's excavator mentions only one 4th-century coin from the *principia*.[641] Haalebos further notes that the 18th century stray finds, Haalebos date up until Honorius.[642]

[640] Reuvens *et al.* 1845, 2.
[641] Willems 1986a, 295; Haalebos 1977, 203, 216.
[642] Haalebos 1976, 203; see similar statements in Willems 1986a, 295; Bogaers 1967b, 107, no. 37.

Appendix 3. Site catalogue Area 3

3.1 Blerick-Venlo

In his survey of Late Roman fortifications in the civitas Tungrorum[643], Brulet has denoted Blerick to be a "road agglomeration" or road fort (comparably to Heel and Heerlen; see below). Material evidence for Late Roman activity at the site includes coins of Constantinus I and Valentinianus I. [644] In relation to this, he mentions an *antoninianus* struck by either Victorinus or Tetricus and ceramics found in disturbed top soil in the city center of Venlo.[645]

Brulet's reason for giving a military interpretation to the site is probably because it is a common assertion that Blerick is one of the three forts Julian is said to have restored in AD 358, according to the accounts of Ammianus Marcellinus.[646] Many forts along the Meuse have been suggested to match this quote, including Kessel-Lith, Cuijk and Heel.[647] Further argument to this is that Blerick is mentioned as Blariaco on the Peuringer Map and may therefore have been actively occupied in the Late Roman period.[648]

48 Late Roman coins were listed in the NUMIS database, and these are reproduced below in table 24. Whithout any supporting evidence, however, I do not think these are sufficient evidence for a Late Roman military site at Blerick.

Table 24. Coins from Blerick-Venlo from the NUMIS database[649] (AD 200<)

Coin type	**Authority**	**Date (min.)**	**Date (max.)**	**N**
nummus	Diocletianus	295	295	1
nummus	Constantinus I	307	337	1
nummus	Constantinus I	310	313	2
nummus	Maximinus II	310	312	1
nummus	Licinius I	310	313	1
nummus	Constantinus I	313	318	15
nummus	Licinius I	313	316	9
nummus	Licinius I	313	313	1
nummus	Licinus II Caesar	315	316	1
nummus	Constantinus I	315	316	3
nummus	Licinus I	316	316	5
nummus	Constantinus I	316	316	7
nummus	Constantinus I	317	317	1
Total				**48**

3.2 Cuijk-St. Martinuskerk

By far the best understood and researched site in this thesis is Cuijk. The site comprises both a stone-built Late Roman *castellum* as well as a contemporary stone and wooden bridge over the Meuse with wooden port complex (fig. 30). It is situated at a cross-road of two major Roman roads.[650]
The site of the *castellum*, Cuijk-St. Martinuskerk, was extensively excavated by trial trenches by A.E. van Giffen in 1937-8 and 1948 and subsequently by J.E. Bogaers in 1964-1966. Neither excavation was fully published, although Van Giffens field reports can still be found in the personal archives of Bogaers[651] and Bogaers himself did publish a stream of articles with interim reports and interpretations.[652] Because the 1964-1966 excavations were a rescue operation preceding the refurbishment of the river bank, no archaeological research on this spot has been conducted since.

[643] Brulet 1990.
[644] Brulet 1990, 120; Braat 1936.
[645] See original publication Bogaers 1966a, 7.
[646] Amm. Marc. *Rerum Gestarum* 17.9.1.
[647] C.f. Bogaers 1967b; ibid. 1971a; Heeren 2014, 263.
[648] Bogaers 1966a, 65.
[649] Accessed 29-01-2017; out of a total 51 Roman coins.
[650] Haalebos *et al.* 2002a, 23.
[651] Currently held at the library of the Radboud University, Nijmegen.
[652] A.o. Bogaers 1966ab; ibid 1967ab.

Cuijk-St. Martinuskerk is remarkable for its stratigraphy, covering features from the Mesolithic to the early modern period.[653]

The castellum

The Roman period has yielded an urban-like civilian settlement from the 1st to 3rd centuries with at least two Gallo-Roman temples, and the remains of a Late Roman *castellum*. The 1964-1966 excavations were a rescue operation, and no archaeological investigations have taken place there since, although extensive research has been done in the city centre of Cuijk[654] and in the nearby stretch of the Meuse. It is commonly understood, based on peaks in the coin series, that the site hosted two successive *castella*, one in wood built under Constantine I and a stone successor built under Valentinian I.[655] In the light of Ammianus Marcellinus claim that Julian rebuilt three Meuse forts in AD 358, the phase has also been ascribed to him in the past.[656]

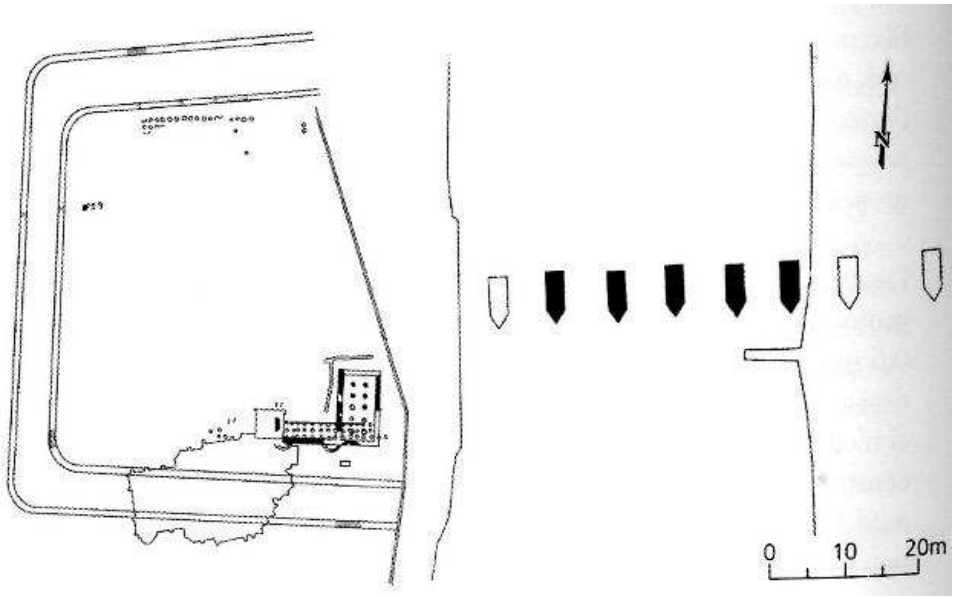

Fig. 30. Ground plan of the *castellum* at Cuijk, with piles of the bridge indicated; after Haalebos 2006a, fig. 262.

Features

The combined excavations of Bogaers and Van Giffen yielded two parallel V-shaped ditches that surround the fortification. Bogaers based his reconstruction of the complete precinct on the assumption that the ditches formed a square or "playing card" shape. This was in turn based on the idea that the outer walls of the *castellum* formed a square, and that the ditches therefore would follow this outline.[657] However, no actual bends or corners of the ditches have been excavated, and the wall remains found are too fragmentary to make any statements about their general lay-out. Because the Meuse has eroded the entire eastern part of the site, it is impossible to tell the total surface area of the site. In his initial publication, Bogaers stated that for the ditches, "there was no reason to assume they were not built in the same period".[658] However, in later publications he suggested that they represented two different building phases, and that the inner ditch was constructed earlier.[659] In my own reappraisal of the original documentation,[660] I have argued that rather than run perfectly parallel, the two ditches meet up at the southwestern corner of the site, merging as it were into one larger ditch. A

[653] The prehistoric and medieval finds from Cuijk are elaborated upon in Haalebos *et al.* 2002ab.
[654] Notably the Roman *vicus* and cemeteries, although most excavations have not been published. See for a good overview of the cemeteries Ball 2006; Lippok 2013; and for the *vicus* Van Enckevort/Thijssen 1998; ibid. 2002; Verwers 1988, 65-6.
[655] Haalebos *et al.* 2002c; Haalebos 2006b, 256; Bogaers 1966abc; ibid. 1967ab.
[656] Haalebos 1976.
[657] Bogaers 1966b, 128.
[658] Bogaers 1966b, 128.
[659] Bogaers 1974, 84.
[660] Van der Meulen, in prep.

good parallel of this the watchtower of Heumensoord, where a similar ditch system was found (see below).

The connection point was interpreted there as the point where the ditches could be more easily crossed into the watchtower precinct. Such an interpretation would indicate they are of one phase, which unfortunately cannot be proven outright as only one has yielded any datable material culture. Within the confines of the ditches, a large earthen rampart was constructed. Its support structure has been found at all three preserved sides of the *castellum*, and consisted of three rows of postholes measuring 50-75 cm in diameter and 50 to 100 cm in depth. The rampart is reconstructed as measuring a total 4-5 meter in width. At several points, this rampart was levelled, and a stone wall was built, which was found two have sported semi-circular protruding towers. One building plan of a stone *horreum* of 26 by 14,5 meters was found, which seemed to have been built directly against the outer wall.[661]

Finds

The ceramics from Cuijk-St. Martinuskerk have never been published in full, but a few specialist studies exist. Jan Thijssen compiled a list of all the rouletted Samian ware from Cuijk from both the Van Giffen and Bogaers excavations for his MA thesis[662] and dated these according to the groups of decorative styles distinguished by Hübener.[663] His results are summarised below in table 21. Various authors have recalibrated Hübener's original dates in the light of new finds for their respective research areas. Brulet for example has proposed radical new dates for the 8 groups for northern Gaul, and Dijkman has done similarly for the Samian ware from Maastricht. This latter study is spatially closest to Cuijk, so his proposed dates for Hübener groups 1-8 are included in table 21.

Table 21. Rouletted Samian ware from Cuijk[664]

Hübener group	**Date[665]**	**N**
1	AD 330-360	7
1?	AD 330-360	0
2	AD 325-400	15
2?	AD 325-400	1
3	AD 330-450	14
3?	AD 330-450	14
4	AD 380-450	6
4?	AD 380-450	4
5	AD 330-450	26
5?	AD 330-450	3
6	AD 350-450	11
6?	AD 350-450	2
7	AD 330-450	8
7?	AD 330-450	0
8	AD 400-525	1
8?	AD 400-525	0
Other	-	3
Indet.	-	21
Total		**136**

Thijssen further published a large amount of Late Roman ceramics in 2011, including Samian ware, colour-coated wares and coarse-tempered wares from the Meuse at Cuijk, found by divers.[666] He dated this complex from the late 3rd to th end of the 4th century, and suggested that the traditional foundation date of Cuijk under Constantine I could be placed further back, somewhere in the late 3rd century.[667] This is an interesting suggestion, but my own study of the Late Roman ceramics from the Bogaers excavations has yielded some problems as to its feasibility. Apart from the Late Roman *castellum*, the

[661] Haalebos 2006b, 256.
[662] Thijssen 1979.
[663] Hübener 1968.
[664] After Thijssen 1979, 42.
[665] After Dijkman 1992, fig. 19.
[666] Thijssen 2011.
[667] Thijssen 2011, 174.

Cuijk finds from the -St. Martinuskerk represent a long history, and its stratigraphy is still poorly understood both due to its complexity and the methods of excavation used. As it stands, the continuity between the different Roman occupational phases (1st-early 3rd-century settlement, Late Roman *castellum*) cannot be solved. Many Late Roman features have yielded Early and Middle Roman ceramics, and vice versa. This is not aided by the fact that the late 3rd century is exactly the period where traditional pottery typologies are highly problematic (see also paragraph 2.4). It would not surprise me if the *castellum* was founded in the late 3rd century, but it is equally possible that the civilian settlement continued right up to the end of the 3rd or beginning of the 4th century.
It would go too far to reproduce all the ceramics from Cuijk here, as my selection of Late Roman contexts and finds includes over 600 sherds. In the light of the site's chronology, however, it is interesting to look at a small selection. Thijssen has already provided the backbone of the chronology with the rouletted Samian ware, and to this I can add the variations of rim profiles of the coarse-tempered Alzei 27 jar (the Late Roman counterpart of the Middle Roman NB 89). This typical Late Roman form has a sickle-shaped rim, which shows a clear development over time. Several studies have aimed at establishing a chrono-typology[668] and I have applied the most recent one by Raymond Brulet.[669] In table 22, I have summarized the various rim types and their respective dates according to Brulet.

Table 22. Relative chronology of the NB 89/Alzei 27[670] at Cuijk

Form	**Date**	**N sherds[671]**
Alzei A	AD 200-275	26
Alzei B	AD 275-300	2
Alzei C	AD 275-325	0
Alzei DE	AD 300-325	12
Alzei FG	AD 300-350	15
Alzei H	AD 300-375	4
Alzei I	AD 325-375	9
Alzei K	AD 350-400	8
Alzei L	AD 375-425	2
Total		**78**

The rouletted Samian ware showed a clear cluster around the middle of the 4th century, with Hübener groups 2, 3 and 5. The Alzei 27 follows a similar pattern (types D-G), but also shows a distinct peak in the (late) 3rd century with the early type A (which equals the NB 89).
The excavations at Cuijk also mean that we have a relatively large amount of coins. Below, I have summarised the Late Roman coins from the Bogaers excavations (I have not looked into Van Giffen's work), a number of coins found along the site in the river bed published by Boersma and a selection of coins from NUMIS (see table 23).

Table 23. Coins from Cuijk from the JMP[672], unpublished manuscripts[673] and the NUMIS database[674] (AD 200<)

Coin type	**Authority**	**Date (min.)**	**Date (max.)**	**N**
Bogaers 1964-1966				
antoninianus	-	200	300	1
denarius	Caracalla	214	241	1
indet.	Claudius II	268	269	1
indet.	barbarous imitation	270	275	1
as III	-	270	337	1
indet.	Aurelianus	274	275	1
antoninianus	-	275	300	1
as IV	-	300	400	1

[668] Such as Von Petrikovits 1937, 272; Fellmann 1952, fig. 54, 27d/e; Stamm 1962, 103; Pirling 1966, 86; these were deemed unreliable according to Hiddink 2011, 230.
[669] Brulet *et al.* 2001, 418.
[670] As adapted from Brulet *et al.* 2010, 418.
[671] Excluding the 11 sherds that could not be classified under one of the subtypes.
[672] Boersma 1963.
[673] The Bogaers excavations 1964-1966; original find list.
[674] Accessed 29-01-2017; out of a total 119 Roman coins.

follis	Licinius	300	400	1
bronze	-	300	400	2
as III	Constantinus I	306	324	1
follis	Constantinus I	306	320	1
as III	Constantinus I	324	330	1
as III	Constantinus I	330	335	3
as III	Constantinus	330	337	1
as III	-	330	341	1
as IV	Constantinus I	330	335	1
as III	Constantinus I c.s.	330	361	1
as III-IV	-	335	341	1
as III	Constantinus II	335	341	1
as III	Constantinus I c.s.	335	341	2
as III	Constantinus II	337	341	1
as III	Constans	341	346	3
as IV	-	341	402	1
as II	Constans	346	350	1
minimus	imitation as III	350		2
as IV	-	350		1
minimus	imitation as III	360		1
as II	Valens?	364	378	1
centenionalis	Valentinianus I	364	375	1
as III	Valens	364	378	1
as III	Valentinianus I	364	365	1
as III	Valentinianus I	364	367	1
as III	Valens	364	367	2
as III	Valens	364	378	2
as III	Valens/Valentinianus/Gratianus	364	378	1
as III	Valentinianus/Gratianus	364	375	1
as III	Valentinianus I	365	375	1
as III	Valens	367	375	4
as III	Valentinianus I	367	375	1
as III	Gratianus	367	375	1
as III	Gratianus	367	378	1
as III	-	367	375	1
as II	Gratianus?	378	383	1
as IV	Arcadius/Honorius	383	402	1
as IV	Arcadius/Honorius	383	395	1
as III	-	383	395	1
as III	Magnus Maximus	383	388	1
as IV	-	383	395	1
as IV	Arcadius	383	408	1
as IV	Arcadius	383	395	1
as IV?	-	383		1
as IV	Arcadius	388	402	1
as IV	-	388	395	1
as IV	Arcadius	388	395	1
as IV	Theodosius I	388	305	1
as IV	Arcadius	388	392	1
as IV	-	388	402	2
antoninianus	barbarous imitation of Claudius II Gothicus	-	-	1
silver	Valens	-	-	1
Total				**73**
NUMIS				
aes	indet.	200	450	1
denarius	Elagabalus	218	222	1
antoninianus	Gallienus	253	268	2
antoninianus	Claudius II	268	270	1
antoninianus	Tetricus I	270	273	1
antoninianus	indet.	270	295	1
nummus	Galerius Caesar	298	299	1
nummus	Galerius Maximianus Caesar	298	299	1
aes	indet.	300	400	1
nummus/aes IV	indet.	307	402	2

nummus	Licinius I	313	315	1
nummus	Constantinus I	319	320	1
nummus	Crispus Caesar	321	323	1
nummus	barbarous imitation Constantinus I c.s.	330	337/341	5
nummus	Constantinus II	330	331	2
nummus	Constantinus II	330	335	1
nummus	Constantinus I c.s.	330	337	1
nummus	Constantinus I c.s.	332	333	1
nummus	Constantinus II Caesar	332	332	1
nummus	barbarous imitation Constantinus I c.s.	335	337/341	3
nummus	Constantius II Caesar	335	337	1
nummus	Constantinus I; Constantinus II Caesar	336	337	1
nummus	Theodora	337	340	1
nummus	Constantius II	337	340	2
nummus	Constans	337	337	1
nummus	Constans/Constantius II	340	341	1
nummus	Constantius II c.s.	347	348	4
nummus	Constans	347	348	2
nummus	Constantius II/Constans	347	348	2
aes II	Constantius II	348	353	2
aes III	Constantius II	353	361	1
aes III	Valens	364	378	8
siliqua	Valens	364	378	1
aes III	Valens	364	378	8
siliqua	Valentinianus I	364	367	1
aes III	indet.	364	378	1
aes III/IV	Valens	364	367	1
aes III	Valens	367	375	7
aes III	Valens	367	378	2
aes III	Gratianus	367	375	1
aes III	Valentinianus I	367	375	3
aes IV/nummus	barbarous imitation	370	402	1
aes III	indet.	375	395	1
aes III	Valens	376	378	2
aes II	Magnus Maximus	383	388	1
aes IV	Constantinus III	407	411	1
aes IV	barbarous imitation Constantinus III	407	411	1
Total				**87**
JMP				
denarius	Septimius Severus	193	211	2
antoninianus	indet.	200	300	1
AR	Gordianus I	238	238	1
antoninianus	Philippus I Arabs	244	249	2
antoninianus	Valerianus I	253	260	1
antoninianus	Gallienus	253	268	2
antoninianus	Postumus	260	269	1
antoninianus	barbarous imitation of Victorinus	269	271	1
antoninianus	barbarous imitation of Divus Claudius	270	270	2
antoninianus	Tetricus I	271	274	1
antoninianus	Tetricus I	271	274	1
aes	Maximianus Herculius	286	305	2
follis	Galerius	305	311	1
aes	Constantinus I	306	337	2
aes	barbarous imitation of Constantinus I	306	337	1
aes	barbarous imitation of Constantinus I	306	337	3
aes	barbarous imitation of Constantinus I	306	337	8
aes	Licinius	308	324	1
aes	Constantinus I	324	330	1
aes	Constantinus I	330	335	2
aes III/IV	ìndet.	330	341	1
aes	Constantinus I	330	335	2
aes	barbarous imitation of Constantinus I	330	337	1
aes	Constantinus I c.s.	335	341	3
aes	Constantinus I c.s.	335	346	1

aes	Constantinus II	335	341	2
aes	Constantinus II	335	341	1
aes	Constans	337	350	1
aes	Constans	337	341	1
aes	Constantinus I c.s.	337	361	6
aes	barbarous imitation of Constantius II	337	361	1
aes	barbarous imitation of Constans/Constantius II	337	361	1
aes	Constans	341	346	3
aes	indet.	351	353	1
aes	Magnentius/Decentius	351	353	1
aes	indet.	364	378	1
solidus	Valentinianus I	364	375	1
aes III	Valentinianus I	364	367	1
aes III	Valens	364	367	1
siliqua	barbarous imitation of Valentinianus I	364	375	1
aes III	indet.	364	378	1
aes III	Valentinianus I	367	375	3
aes III	Valens	367	375	2
aes III	Valens	367	378	2
aes III	Valens/Valentinianus I	367	375	1
aes III	Gratianus	375	378	1
aes IV	indet.	383	402	6
aes IV	Arcadius	383	402	1
aes IV	Theodosius I	388	395	1
aes IV	barbarous imitation	388	402	2
Total				**87**
Grand Total				**247**

Finally, the Heeren/Van der Feijst database contains four crossbow brooches from Cuijk, two of which were found at the river bank of the Meuse (for the other two, the find context is unknown). They are a type 68c, 68c1 and 68c3 (AD 340-400) and a 68a (AD 270-300). *Fibulae* from both the early 4th century and the second half of the 4th century would fit in well with the proposed chronology of the site and again it seems that a small portion of potentially late 3rd-century material is present.

The bridge and port

The first remains of the Roman bridge at Cuijk were found during the excavations in 1964, when Bogaers send out several divers, who collected 8 wooden piles from the river bed.[675] A subsequent pilot study and large-scale excavations in the 1980's and 1990's revealed five clusters of wooden piles and stone blocks, representing five out of the six piers of the bridge.[676] An extensive overview of the excavation and its finding was published by Goudswaard et al.[677], so the basics will suffice here. 36 dendrochronological samples were used to date the bridge, and these revealed three phases of construction. The first dates sometime between AD 347 and 349, the second to the winter or early spring of AD 368/9 and the third sometime between AD 388 and 398.[678]

The piles that Bogaers found belonged to a revetment, complete with pier, of which 36 piles were preserved. Seven dendrochronological samples showed it was first constructed between AD 320 and 342 and was continually in repair at least as late as AD 373.[679] Subsequent surveys and monitoring have suggested that this pier may be part of a larger dock complex,[680] and its remains are artificially covered for protection.[681] The combination of *castellum*, bridge and dock would be unique in the Netherlands.

[675] Bogaers 1966, 338.
[676] Goudswaard *et al.* 2001, 450.
[677] Goudswaard *et al.* 2001; cf. for an interim report Goudswaard 1995; a detailed analysis of the military nature inscription of the bridge can be found in Van der Meulen/Van der Veen 2016.
[678] Goudswaard *et al.* 2001, 483.
[679] Mioulet/Bartens 1994, 47-8.
[680] Seijnen/Van den Besselaar 2014.
[681] Manders/Brouwers 2016, 41-3; cf. Van Breda 2011.

3.3 Grubbenvorst-Lottum

According to Van Es, a military settlement was located in the Late Roman period, although its exact form remained unknown.[682] Bogaers and Rüger provide a similar interpretation, describing a possible Middle Roman *beneficiarius* station and Late Roman *burgus*. They base themselves on coins from Claudius and Valentinian [683] and the reference by Ammianus Marcellinus that Julian repaired three forts along the Meuse[684], of which Grubbenvorst would then be one. I have not found any indication of a Roman fortification at Grubbenvorst, although a cemetery and several house plans are known.[685]

3.4 Heel

This is another site identified as a Late Roman fortification because it is geographically located in the zone of the Meuse that Julian is said to have restored.[686] Brulet interprets it as a "road agglomeration" but remarks that no actual features of such a structure are known.[687] He further references coins issued by Constantine I and II, Magnentius, Valens and Valentinian/Valens and Theodosius II, and rouletted samian ware.[688]

Not much other literature is available on this fortification, however. Bogaers has reported many cremation graves at Heel (at least 65), notably at the Panheelderweg.[689] These excavations also yielded some 4th-century pottery from the top soil (Bogaers describes some rouletted Samian ware and a coarse-tempered jar with sickle-shaped rim).[690] Modern commercial excavations have found more graves connected to this cemetery and the Roman road is also known here[691], but no traces of Late Roman activity have since been reported.

NUMIS also lacks large amounts of Late Roman coins that could point towards something substantial. Of the 9 Roman coins listed from Heel, five are struck by Late Roman emperors (respectively Valens, Constantius II, Theodosius, Honorius and Magnentius). This would hardly be sufficient to suppose a Late Roman road fort at Heel.

3.5 Kessel-Lith

Kessel-Lith (also referred to as Maren-Lith) is located on the southern bank of the Meuse. Any traces of habitation have subsequently been eroded by the activity of the river, but interest in its history has remained due to the astonishing amount of dredge finds found there during the 1930's to 1970's. Most famous are the La Tène swords, connected to either a Caesarian battlefield or an Iron Age sanctuary[692] and the stone remains of a Gallo-Roman temple.

Large-scale sand mining in the area started in 1969 and in 1975, dredge activities started to create a recreational area known as the Lithse Ham.[693] It was at this point that on the southern bank of the Meuse, remains of a large stone-built structure were found.[694] A hastily assembled rescue excavation by the then State Service for Archaeological Investigations (ROB) found that these were the remains of the stone temple, reused in a second context dated to the 4th century by surrounding coin evidence.[695] These remains were interpreted as belonging to a *castellum*, most likely founded in the second half of the 4th century.[696] There has been speculation that besides a fort, a bridge may also

[682] Van Es 1981, 122.
[683] Bogaers/Rüger 1974, 88.
[684] Amm. Marc. 17.9.
[685] De Winter/Weterings 2011, 13.
[686] Amm. Marc. *Rerum Gestarum* 17.9.1.
[687] Brulet 1990, 104.
[688] Brulet 1990, 104-5; cf. Habets 1881, 203.
[689] Bogaers 1964a, 155; ibid. 1964b.
[690] Bogaers 1964a, 155.
[691] Bink 2010, 8, 27.
[692] Respectively Roymans in prep.; Roymans 2004.
[693] Arts *et al.* 1979, 160.
[694] See for a detailed account of the events Verwers 1977.
[695] Verwers/ Beex 1978; Roymans 2004, 135-7.
[696] Heeren 2014, 253-4; Roymans 2004, 137.

have been part of the military complex here.[697] Also, it has been suggested that occupation of the site continued into the 5th century.[698]

The military nature of the site in this period is further supported by several 4th-century crossbow brooches.[699] A silver medaillon with the portrait of Emperor Jovinus (AD 411-413) has been seen as indication that the site continued to be operative into the early 5th century.[700] There is indeed some more evidence to this. I recently studied 237 sherds of Roman pottery (almost exclusively Samian ware) collected from one of the dredge boats by an amateur archaeologist. The vast majority of these dated somewhere in the 2nd and early 3rd century, but a small portion of Late Roman Samian ware could also be identified. These are presented below in table 25 (unidentifiable pieces have been left out, as their date cannot be determined). The quality of the material and the fact that several sherfds could be re-fitted suggests that this find complex represents a more or less closed context.

Table 25. Late Roman Samian ware from Kessel-Lith

Ceramic forms	**N Rim**	**N Wall**	**N Base**	**N**
Dishes and platters				
Chenet 304	3	1	1	5
Chenet 313			1	1
Chenet 318	2			2
Mortaria				
Chenet 328	1	1	1	3
Chenet 328-330			1	1
Chenet 329	1			1
Chenet 330	3			3
Bowls				
Chenet 320		3	1	4
Chenet 324	1	1		2
Bottles				
Bottle			1	1
Total	**11**	**6**	**6**	**23**

The majority of the samian ware dates to the middle of the 4th century and onwards. Both the Chenet 304 and the 318 date to the 4th and early 5th century, whereas the Chenet 313 and Chenet 320 are typical for the entire 4th century. The mortaria 328-330 hint at a slightly earlier component as well, as these date from the end of the 3rd to the early 4th century.[701] Four of the Chenet 320 sherds featured rouletting, and these were kindly examined by Wim Dijkman, who managed to date 3 specimens precisely (see below table 26 and fig. 31-33).

Table 26. Rouletted samian ware from Kessel-Lith

Form	**Sherd**	**Date**	**Corpus reference[702]**
Chenet 320	Wall	IVd-Va	NS-1037
Chenet 320	Wall	IVd-Va	UC-163
Chenet 320	Base	IVd-Va	UC-121

Another portion of ceramics, including colour-coated and coarse-tempered wares found by another amateur archaeologist, was published in 1979.[703] This study, however, described predominantly Early and Middle Roman ceramics.

Finally, a number of crossbow brooches are known from Kessel. Heeren/Van der Feijst mention two specimens, although it is unclear whether these partially overlap. The type 68c3 (AD 340-400) they have included was already published[704], but an incomplete type 68 may be unique.

[697] Meffert 2014, 76.
[698] Roymans 2004, 137.
[699] F.i. Verhart/Roymans 1998, plate 9.3; Van Es/Verwers 1977, 165 describe four specimens.
[700] Roymans 2004, 137.
[701] Brulet 1990, 33-7.
[702] These codes refer to Dijkman's unpublished corpus on Late Roman rouletted samian ware; Dijkman in prep.
[703] Arts *et al.* 1979.
[704] Verwers 1988.

However, in unrelated publications more crossbow brooches have emerged, and these have been reproduced below in fig 34.

Fig. 31. Rouletted samian ware from Kessel-Lith (NS-1037). Scale 1:1.

Fig. 32. Rouletted samian ware from Kessel-Lith (UC-163). Scale 1:1.

Fig. 33. Rouletted samian ware from Kessel-Lith (UC-121). Scale 1:1.

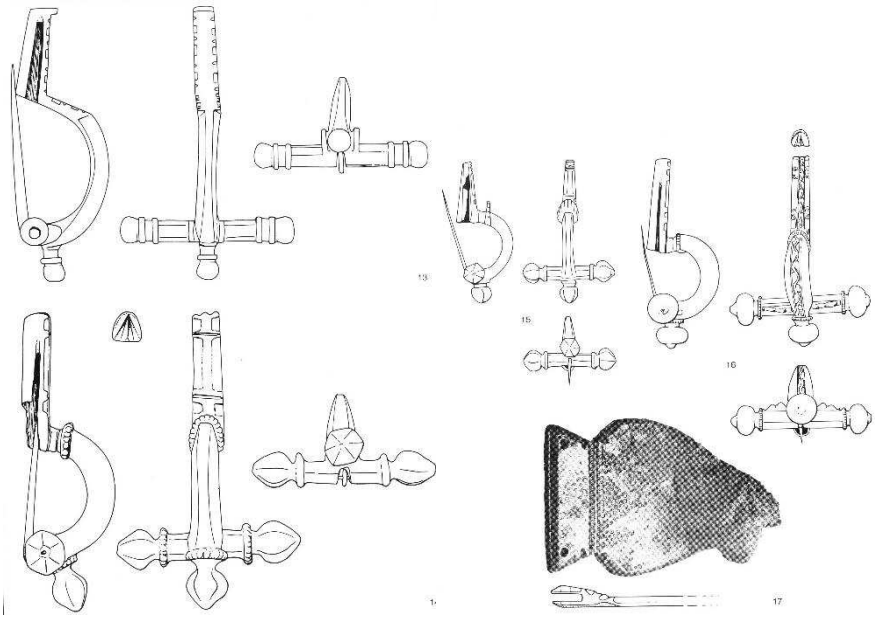

Fig. 34. Crossbow brooches from Kessel-Lith; after Van Es/Verwers 1977, fig. 5-6. Scale 1:2.

In his description of the finds from Kessel, Roymans mentions ca. 60 Late Roman coins, dating predominantly to the 4th century.[705] These were analysed at the time by the then Koninklijk Nederlands Penning Kabinet, although this data has not yet made the transition from paper archive to online database.[706] Another 80 Late Roman coins, mostly stray finds and one coin hoard, are currently listed in the NUMIS database, and these are reproduced below in table 27.

Table 27. Coins from Kessel-Lith from the NUMIS database[707] (AD 200<)				
Coin type	**Authority**	**Date (min.)**	**Date (max.)**	**N**
aes	Magnentius	350	353	1
aes II	Gratianus	378	383	1
aes II	indet	348	383	1
aes II	Magnentius	350	353	1
aes II	Magnus Maximus	383	388	2
aes III	Constantius II	351	361	1

[705] Roymans 2004,137, note 349.
[706] Personal comment Paul Beliën.
[707] Accessed 28-01-2017; out of a total 81 Roman coins.

aes III	Gratianus	367	375	1
aes III	Gratianus	375	378	2
aes III	Magnus Maximus	383	388	1
aes III	Valens	364	367	1
aes III	Valens	364	378	8
aes III	Valens	367	375	1
aes III	Valens	367	378	1
aes III	Valens	375	378	2
aes III	Valentinianus I	364	375	5
aes III	Valentinianus I c.s.	364	378	3
aes III	Valentinianus I/Valens	364	378	2
aes III	Valentinianus II	378	383	1
aes III/IV	indet	364	402	1
aes III/IV	indet	378	402	29
aes IV	Arcadius/Honorius	383	395	1
aes IV	indet	378	402	7
aes IV	indet	383	402	4
aes IV	Theodosius I	388	392	2
aes IV	Theodosius I	388	395	3
aes IV	Valentinianus II	388	392	1
aes IV	Valentinianus II c.s.	383	395	1
aes IV	Valentinianus II c.s.	388	392	2
nummus	Constantinus I	307	337	1
nummus	Constantinus I	335	341	3
Total				**80**

3.6 Maastricht

Several historical sources mention the settlement in Maastricht[708] and even a reference to the bridge at Maastricht in the second half of the 4th century can be found.[709] The Roman inhabitation of Maastricht has been known for a long time, with incidental finds already reported in 1840, 1868 and 1883.[710] Ever since, numerous institutions and commercial companies have been executing surveys and excavations here, mostly concentrating on the western river bank and the immediate surroundings of the Onzelievevrouwekerk. [711] The *castellum* (1,5 ha)[712] is situated on the road from Bavay to Cologne.[713] Floods caused by the river Jeker at the end of the 4th century have covered the site in a sandy layer of roughly 60 cm deep, which is extremely rich in finds, including ceramics, glass, small metal finds, coins and worked bone. [714]

Features

The most recent map of the Late Roman *castellum* at Maastricht is reproduced below (fig. 36). In total, the walled enclosure measures roughly 2 ha. It is crossed by two main streets which open on two gates in respectively the western and eastern side. The eastern gate connects to the contemporary bridgehead on the Meuse (see below).[715] The defensive wall features 10 interspersing round towers. The entire construction is surrounded by a single ditch. The wall is between 1,20 and 1,53m thick and the towers measure 8-9 meters in diameter. They are built on top of timber piles (see fig. 35).[716] The excavated port building on the western side of the site is made up of 2 fortifications of 3,2 by 6 meters.[717] The oldest woods of the fortification have been dated dendrochronologically to AD 320 and AD 342.[718]

[708] Gregory of Tours *Hist. Franc.* II, 5.
[709] *De Gloria Confessorum* LXXII.
[710] Goossens 1923; Van Leeuwen 1963.
[711] For an excellent overview work of the major archaeological campaigns and their findings see Panhuysen 1984; ibid. 1996; Bloemers 1973b; Brulet 1990, 84-87; for smaller in-depth studies Sprenger 1948; ibid. 1949; Timmers 1961.
[712] Van Es 1991, 7.
[713] Panhuysen 2006, 316.
[714] Van der Vin/Panhuysen 1983, 121-2; Isings 1971.
[715] Brulet 1990, 84.
[716] Panhuysen 2006, 316-7.
[717] Brulet 1990, 84.
[718] Panhuysen 2006.

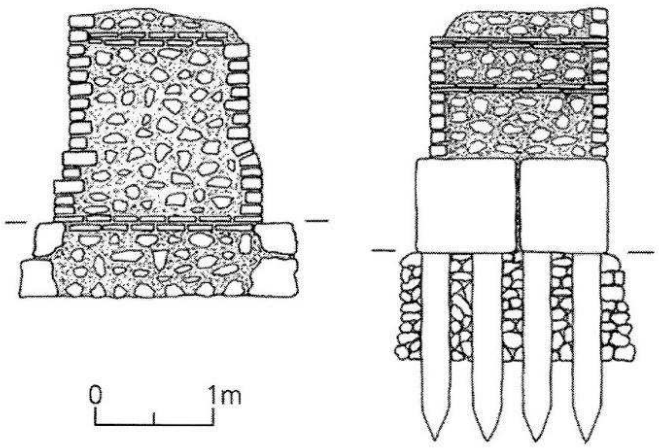

Fig. 35. Construction method of the stone walls (left) and *horreum* (right) of the *castellum* at Maastricht; after Brulet 1990, 84 and Panhuysen 2006, 353.

Several incomplete building plans dating to the Late Roman period have been found within the *castellum* precinct, including a *hypocaustum*, a *horreum* and a building with a double absis. There has been a discussion in the past whether these features belong to a fortified town or a full *castellum*.[719] It is quite possible that the Late Roman wall in Maastricht should be compared to for instance the city walls at Tongeren, where the city area was drastically reduced from the Late Roman period onwards.[720] However, more recent excavations at Maastricht (the ground plan in fig. 36 includes the results of a so far unpublished excavation by the municipality) clearly shows the presence of a ditch around the wall, which would be far more fitting for a *castellum*-like site. I have therefore interpreted Maastricht here as a military fortification, rather than a fortified town.

[719] See for a good overview Panhuysen 1996.
[720] Heeren 2017, 155; Vanderhoeven 2012.

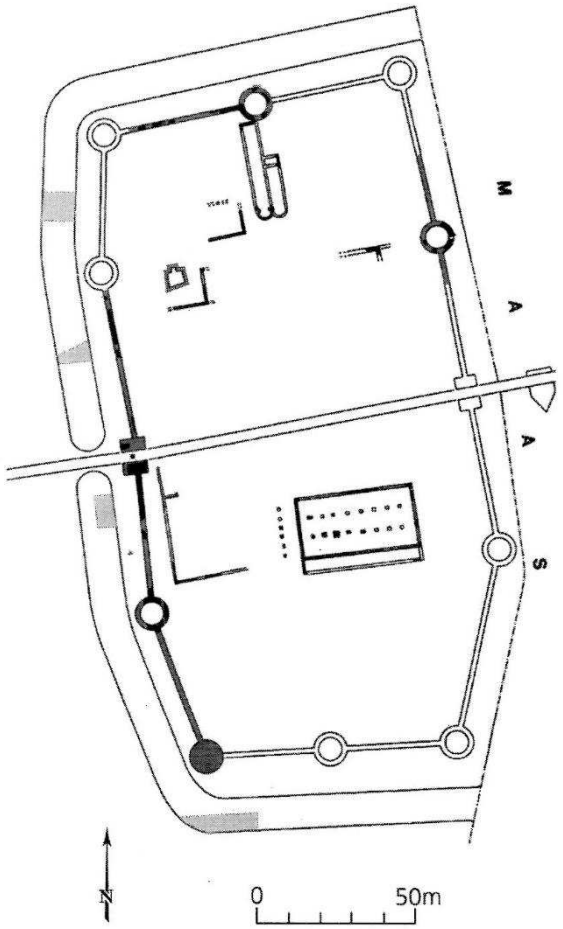

Fig. 36. Ground plan of the inner buildings and fortifications of the *castellum* at Maastricht; after Panhuysen 2006, fig. 352.

Finds

Four crossbow brooches from Maastricht are included in the Heeren/Van der Feijst database, although their state of preservation is unknown. Three specimens (a 68c2, 68c3 and 68c4) date to AD 340-400 and one type 68e2 to AD 390-450.

A preliminary report in 1983 noted that 341 coins had been found during excavations, of which 139 had been identified up to that point.[721] I could not find any subsequent publication with the rest of the coins and the report itself does not quantify its data in any reproducible form. The 139 specimens that are described present a largely uniform picure, with coins predominantly emitted between AD 325 and 400. [722] Apart from 6 coins dated to AD 268-273 (five of which were copies), no coins predating AD 325 were found. The vast majority, roughly 50 coins, were issued between AD 380 and 400. [723] A coin hoard found in the 4th-century ditch contained around 100 barbarous imitations of Gallic emperors. Van der Vin and Panhuysen thus concluded that the *castellum* terrain was likely not occupied prior to AD 325, although they could not formulate a certain end date, suggesting that the *castellum* may have continued into the 5th century. [724]

Below, I have reproduced the 1106 Late Roman coins from Maastricht currently in the NUMIS database (table 28), which also include quite a few coins minted before AD 325. Haalebos has suggested that the coins indicate at least two succesive construction phases, one under Constantine I and one under Valentinian I or Julian.[725] He has the proposed the same chronology for Cuijk, despite the absence of coins issued by Julian from Cuijk. There are quite a few in Maastricht, and a definite

[721] Van der Vin/Panhuysen 1983, 123.
[722] Van der Vin/Panhuysen 1983, 123.
[723] Van der Vin/Panhuysen 1983, 124-5.
[724] Van der Vin/Panhuysen 1983, 125.
[725] Panhuysen 2006.

peak seems to occur around AD 360, but it seems that the 370's and 380's showed much more of a boom in coin emissions than Julian's reign.

Table 28. Coins from Maastricht from the NUMIS database[726] (AD 200<)

Coin type	Authority	Date (min.)	Date (max.)	N
denarius	Caracalla; Plautilla	202	205	1
denarius	Septimius Severus	207	207	1
sesterius	Elagabalus	221	221	1
denarius	Severus Alexander	222	228	1
aes	Gordianus III	237	244	1
antoninianus	Gordianus III	238	244	1
antonianus	Gallienus	253	268	3
as	Postumus	259	268	1
antonianus	indet.	260	280	1
antonianus	Gallienus	260	268	1
Indet.	indet.	260	364	4
antoninianus	Gallienus/Claudius II	260	270	3
antoninianus	Gallienus	260	268	3
antonianus	Claudius II	268	270	1
antonianus	indet.	268	280	1
antonianus	Claudius II	268	270	1
antonianus	Victorinus	268	270	1
antoninianus	barbarous imitation after Claudius II	268	300	1
antoninianus	indet.	268	294	1
antoninianus	Claudius II	268	270	2
antonianus	Tetricus I	270	290	2
antonianus	indet.	270	290	1
antonianus	Tetricus I	270	273	1
antonianus	Divus Claudius II	270	280	2
antonianus	Tetricus I	270	273	1
antonianus	indet.	270	295	1
antoninianus	barbarous imitation after Tetricus I	270	300	5
antoninianus	barbarous imitation after Divus Claudius II	270	300	3
antoninianus/aes	barbarous imitation	270	402	14
antoninianus	barbarous imitation after Tetricus I	270	300	9
antoninianus	barbarous imitation after Divus Claudius II	270	300	14
antoninianus	barbarous imitation	270	300	8
antoninianus	Tetricus I	270	273	7
antoninianus	barbarous imitation after Tetricus I	270	300	1
antoninianus	Tetricus I	270	300	1
antonianus	indet.	280	295	1
nummus	Diocletianus	294	305	1
nummus	Galerius Maximianus	294	295	1
nummus	Diocletianus	298	299	1
nummus/aes III	indet.	307	378	8
nummus	indet.	307	347	3
nummus	Constantinus I/Licinius I	313	318	2
nummus	Constantinus I	313	316	1
nummus	Constantinus I	313	314	1
nummus	Constantinus I	315	315	1
nummus	Constantinus I	316	316	3
nummus	Constaninus I c.s.	317	318	1
nummus	Constantinus I	317	318	1
nummus	Constantinus II Caesar	317	313	1
nummus	Constantinus I/Licinius I	317	313	1
nummus	Constantinus I	320	325	1
nummus	Constaninus I c.s.	321	324	1
nummus	Constantinus II Caesar	321		1
nummus	Constantinus I	323	324	1
nummus	Constantinus I c.s.	324	337	1
nummus	Constaninus I c.s.	324	347	3

[726] Accessed 23-01-2017; out of a total of 1127 Roman coins.

nummus	Constaninus I c.s.	327	328	1
nummus	Constantinus I	330	335	1
nummus	Constantinus I c.s.	330	330	1
nummus	barbarous imitation of Constantinus II c.s.	330	341	1
nummus	Constaninus I c.s.	330	341	10
nummus	barbarous imitation after Constantinus I c.s.	330	337/341	4
nummus	Constaninus I c.s.	330	337	4
nummus	Constaninus I c.s.	330	334	1
nummus	Constaninus I c.s.	330	335	2
nummus	Constantinus II Caesar	330	331	3
nummus	Constaninus I c.s.	330	331	2
nummus	Constaninus I c.s.	330	330	1
nummus	Constantinus I	330	335	1
nummus	Constantinus I	331	334	1
nummus	Constantinus I c.s.	332	333	3
nummus	Constantinus II Caesar	332	332	2
nummus	Constantius II Caesar	333	334	1
nummus	Constantinus I	333	334	1
nummus	Constantius II Caesar	334	335	1
nummus	Constantinus I	334	335	1
nummus	Constantinus I	335	341	1
nummus	Constantinus I c.s.	335	341	22
nummus	barbarous imitation after Constantinus I c.s.	335	337/341	7
nummus	Constantius II Caesar	335	337	4
nummus	Constantius II c.s.	335	337	1
nummus	Constantinus I	335	337	2
nummus	Constantinus I	336	340	1
nummus	Constantinus I	336	337	1
nummus/aes IV	barbarous imitation	337	402	1
nummus	Constans/Constantius II	337	341	7
nummus	Theodora	337	340	1
nummus	Helena	337	340	1
nummus	barbarous imitation after Constantinus II c.s.	337	341	1
nummus	Constantinus II c.s.	337	341	16
nummus	Constans	337	341	2
nummus	Theodora	337	340	3
nummus	Helena	337	340	3
nummus	Divus Constantinus I	337	340	2
nummus	Constantinus I c.s.	337	340	1
nummus	Constans	340	340	2
nummus	Constans/Constantius II	340	341	1
nummus/aes IV	barbarous imitation after Constantinus I c.s.	341	402	1
nummus/aes IV	barbarous imitation	341	402	1
nummus	Constans/Constantius II	347	348	6
nummus	Constans	347	348	7
nummus	barbarous imitation after Constans/Constantius II	347	348	2
nummus	Constantius II	347	348	2
nummus	Constans/Constantius II	347	348	16
aes II	Constans/Constantius II	348	350	1
aes IV	barbarous imitation of Constantinus II c.s.	348	402	1
aes III	barbarous imitation	348	368	1
aes II	indet.	348	388	1
aes III	Constans/Constantius II	348	350	2
aes II	Constantius II/Magnentius/Decentius	350	353	1
aes III	Magnentius/Decentius	351	351	2
aes I	Magnentius/Decentius	352	352	1
aes II	barbarous imitation after Constantius Gallus/Julianus II Caess.	354	361	1
aes III	Constantius II	355	361	1
aes III	Julianus II Caesar	355	360	1
aes III	Constantius II/Julianus Caesar	355	360	3
aes III	Constantius II/Julianus Caesar	355	355	1
aes IV	Jovianus	363	364	1
aes III	Valentinianus I/Valens c.s.	364	378	1

aes III/IV	indet.	364	402	3
aes III	Valentinianus I/Valens	364	378	40
aes III	Valens	364	378	14
aes III	Valentinianus I	364	375	4
aes III	Valens	364	375	1
aes III	Valentinianus I	364	367	2
aes III	Valens	364	367	4
aes III	Valentinianus I/Valens	367	378	1
aes III	Gratianus	367	378	1
aes III	Valentinianus I	367	375	2
aes III	Valens	367	375	4
aes III	Gratianus	367	375	1
aes IV	Valentinianus II	375	392	1
aes III	Gratianus	375	378	2
aes IV	indet.	378	402	393
aes IV	Valentinianus II	378	383	1
aes IV	Gratianus/Valentinianus II	378	383	1
aes IV	Gratianus/Theodosius I	378	383	3
aes IV	barbarous imitation	378	402	2
aes II	Valentinianus II c.s.	378	388	3
aes II	Gratianus	378	383	2
aes IV	Theodosius I	379	395	5
aes IV	Arcadius	383	408	4
aes II	Magnus Maximus	383	408	1
aes IV	Valentinianus II/Honorius	383	402	1
aes IV	indet.	383	402	41
aes IV	Arcadius	383	395	1
aes IV	Valentinianus II/Theodosius I	383	388	2
aes IV	Arcadius	383	384	1
aes IV	Magnus Maximus/Flavius Victor	387	388	10
aes IV	Magnus Maximus	387	388	9
aes IV	Flavius Victor	387	388	3
aes IV	Magnus Maximus/Flavius Victor	387	388	9
aes IV	Magnus Maximus	387	388	3
aes IV	Flavius Victor	387	388	2
aes IV	Valentinianus II/Honorius	388	402	100
aes IV	Theodosius I	388	402	1
aes IV	barbarous imitation after Valentinianus II/Honorius	388	402	2
402	Arcadius	388		12
395	Theodosius I	388		6
aes IV	Valentinianus II	388	392	9
aes IV	Theodosius I	388	392	8
aes IV	Valentinianus II/Honorius	388	402	46
aes IV	Arcadius/Honorius	388	402	1
aes IV	Arcadius	388	402	4
aes IV	Valentinianus II/Honorius	388	395	1
aes IV	Theodosius I	388	395	2
aes IV	Theodosius I	388	393	1
aes IV	Arcadius/Honorius	388	393	1
aes IV	Valentinianus II	388	392	2
aes IV	Theodosius I	388	392	2
aes IV	Arcadius	388	392	3
aes IV	Eugenius	392	394	1
aes IV	Honorius	393	423	3
aes IV	Honorius	393	407	1
aes IV	Honorius	394	408	3
aes IV	Honorius	394	402	3
aes IV	Arcadius	394	402	1
aes IV	Arcadius	394	395	1
aes IV	Honorius	408	423	1
aes III/IV	Honorius	408	423	1
solidus	Valentinianus III	425	455	1
solidus	Valentinianus III	425	426	1
Total				**1106**

The layer of sediment from the late 4th-century floods was furthermore rich in ceramics (including roulette Samian ware and coarse-tempered wares from the Eifel region[727]), glass, and small metal finds. [728] Excavations at the Maastrichtse Broodfabriek terrain in 1981-2[729] revealed a 6th century ditch close to the 4th-century ditch[730], which yielded 76 identifable pieces of Late Roman and Merovingian glass.[731]

The bridge

In 1963, dredge activities found pieces of stone, subsequent diving found 30-meter-wide dam, made up of collapsed bridge piles.[732] Spolia from 2nd to late 3rd century, various construction materials, including limestone, tuff, marlstone and basalt, mostly from grave monuments.[733]

Further diving in 1963-5 found wooden framework of 8-10 meter with stone fragments within.[734] Made of oak beams, connected to each other around 6 meters in length. Horizontal beams placed on top, to carry bridge. Finds include tiles and bricks, ceramics (late 1st to early 3rd, rouletted Samian ware, coins, small metal finds, weapons and tools.[735] Dredging activities have also yielded several iron "shoes".[736] Dendrochronological dates of some of the piles of the bridge showed three construction phase: AD 334-357, AD 368-369 and AD 387-398.[737]

3.7 Wijchen-Tienakker

The recent excavation by the municipal archaeological service in Nijmegen at Wijchen-Tienakker has unearthed an Early-Middle Roman *villa* complex, with a Late Roman reoccupation in the form of a *burgus*.[738] Whether this military occupation was in any way related to the many Late Roman graves found in Wijchen[739] is unknown. Late Roman finds from former *villae* terrains certainly are not rare in the Netherlands.[740]

Features

The map of the Late Roman phase is reproduced below in fig. 38. The *burgus* itself clearly consists of a square wooden structure, surrounded by a ditch. Large parts of this ditch were destroyed by sand digging activities in 1971. Its entire circumference can be estimated at 25 by 25 meters. No traces of a rampart could be found, although the excavators assume it must have been there. The preserved southern part of the ditch has a more or less V-shaped form and must have originally measured roughly 1,5 meters deep and 3,5 meters wide.[741]

Finds

The ceramics from the ditch date predominantly to the second half of the 3rd and the first half of the 4th century, such as the beakers Pirling 58-61 from Trier, suggesting that the ditch was dug sometime between AD 300 and 350.[742] Such a date is supported by several early 4th-century coins; namely two *folles* from AD 307-310 and AD 313-314 respectively. The end date of the *burgus* is harder to date, but the complete lack of blank planchettes from AD 400 (which were found elsewhere on the site in

[727] Van der Vin/Panhuysen 1983, 121-2.
[728] Van der Vin/Panhuysen 1983, 121-2; Van Lith 1985, 146.
[729] Panhuysen 1984, 67-81.
[730] Panhuysen 1984, 70.
[731] Van Lith 1985, 146-7.
[732] Van Welie 1966, 29-30.
[733] Van Welie 1966, 30.
[734] Van Welie 1966, 31.
[735] Van Welie 1966, 32-3.
[736] Bogaers 1962-3, 58.
[737] Panhuysen 2006.
[738] Van Enckevort/Heirbaut 2011; Heirbaut/Van Enckevort 2015.
[739] Heeren/Hazenberg 2010.
[740] Besides Tienakker, Haalebos *et al.* 1976, 82 mention Overasselt, Ravesteinseweg, De Hoenberg and De Pas.
[741] Van Enckevort 2011, 51, fig. 6.2.1.
[742] Van Enckevort 2011, 52.

abundance) or later suggest the ditch may have been filled up before the end of the 4th century.[743] The only coin from the ditch dated AD 330-240 was found in a secondary filling.[744]

In table 29 all coins from the Wijchen-Tienakker excavation that post-date AD 193 have been summarised. It is interesting that the rest of the site presents such a different picture from the ditches. Plenty of earlier and later coins were found, although the bulk still dates to the 4th century. The large number of coins from the final decade of the 4th century is especially remarkable, and proves what using a metal detector on an extensive excavation can do. The large number of blank planchettes is especially interesting. It has been suggested that these could indicate local production of coins in the Dutch river area.[745] However, it is more widely assumed that the net worth of bronze coinage in the late 4th century was so low, that these were used as payments based on the net worth of the bronze.[746] Several Late Roman *fibulae* were found during the excavation, but none have them with military connotations.[747] No crossbow brooches from Wijchen-Tienakker are included in the Heeren/Van der Feijst database, but it does contain four brooches from its immediate vicinity. Two type 68c (AD 340-400) were found at Wijchen-Alverna-Geitweg and a type 68c and 68b2 (AD 300-360) at Wijchens Meer. These were all in bronze, whereas a gold specimen is mentioned by Willems (see fig. 37).[748]

Table 29. Coins from Wijchen-Tienakker from publications (AD 193<)[749]

Period	N silver	N bronze	N imitation	N planchet	N total
193-222	2				2
222-238	2				2
238-260					
260-275		6	4		10
275-294					
294-318		2			2
318-330		5			5
330-348		17	2		19
348-364		2	1		3
364-378		15			15
378-388		11	1		12
388-402		151	16	87	254
Total	**4**	**209**	**24**	**87**	**324**

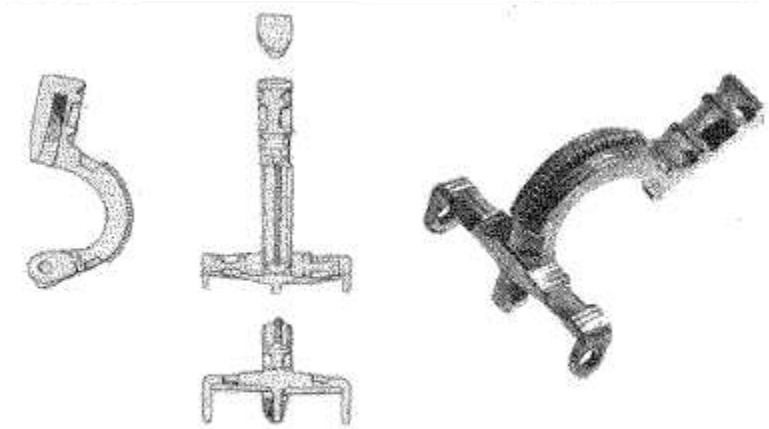

Fig. 37. Gold Germanic crossbow brooch from Wijchense meer (scale unknown) after Willems 1986, fig. 89.

[743] Van Enckevort 2011, 53.
[744] Van Enckevort 2011, 54.
[745] Reijnen 2011, 96-7.
[746] Reijnen 2011, 95.
[747] Zee/Heeren 2011, 75, table 8.1.
[748] Willems 1986a, 153, 159, fig. 89.
[749] After Reijnen 2011, 89, table 10.1. I have taken AD 193 as a starting date, rather than AD 200 as Reijnen has not given exact dates and emperors for each coin, but rather grouped them in larger, numismatic categories.

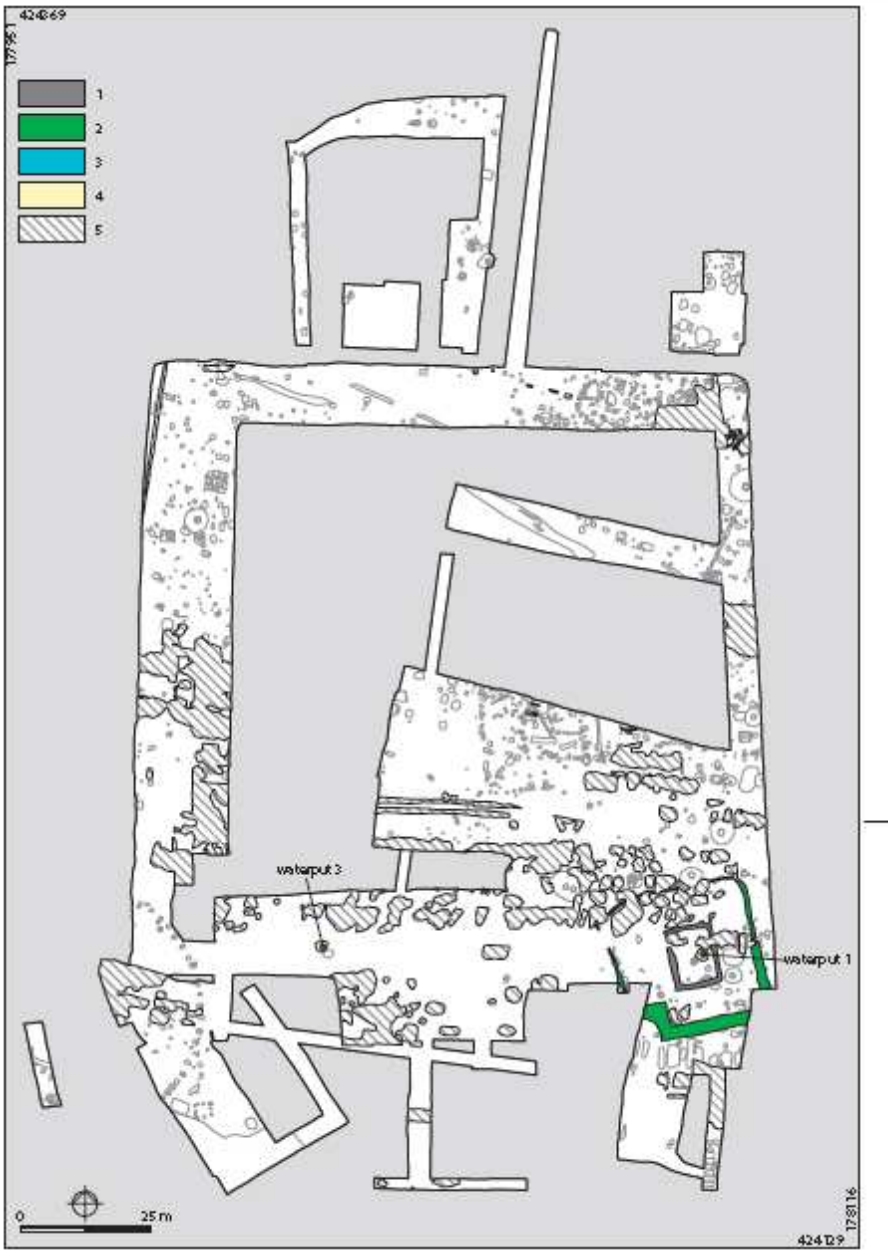

Fig. 38. Groundplan of the watchtower at Wijchen-Tienakker; after Van Enckevort 2011, fig. 6.1. **Grey** foundation trench; **Green** ditch.

Appendix 4. Site catalogue Area 4

4.1 Ermelo

The site of Ermelo is long held to have been the only (Late) Roman marching camp in the Netherlands, if not Germania Secunda and it continues to be noted as such in international literature.[750] The reason for this is that it fits rather well with a panegyric claiming that Emperor Julian was campaigning in the region sometime in the second half of the 4th century.[751] The marching camp at Ermelo would have been built and used by his troops *en route*.

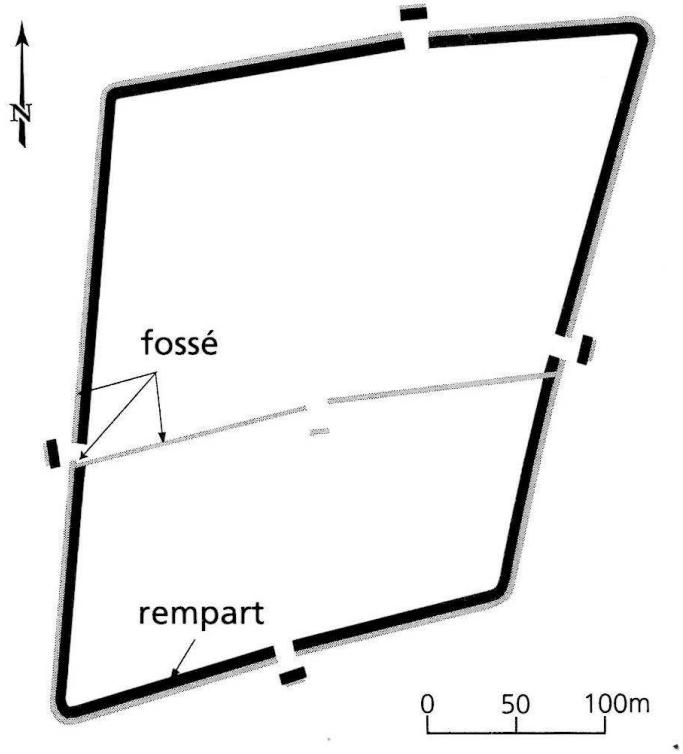

Fig. 39. Ground plan of the marching camp at Ermelo; after Hulst 2006b, fig. 290.

The archaeological basis for this interpretation is the excavation by Holwerda in 1922.[752] He found the remains of two ditches in the shape of a slant rectangle (fig. 39), which he dated, with the historical sources in mind, to the late 4th century. Subsequent test excavations in 1989, however, showed no evidence of Late Roman activity, with all material culture dating to the Hadrianic period.[753] Although the interpretation as marching camp is still valid and its location so far north of the *limes* is remarkable, it simply does not date to the Late Roman period.[754]

4.2 Goudsberg-Hulsberg

The *burgus* or watchtower of the Goudsberg was fully excavated by Holwerda in the early 20th century.[755]

Features

The ground plan of the watchtower (see fig. 40) is relatively simple and consists of a square stone foundation of roughly 12,2 by 8,8 meters with 4 wooden posts in the middle to support a second storey

[750] Johnson 1983, 32; Southern/Dixon 2009, 132.
[751] De Boone 1954, 60ff, 75ff, 166, note 392.
[752] Holwerda 1923a; Hulst 2006b, 274.
[753] Hulst 2006b; ibid. 2007.
[754] An excellent discussion of the ground plan and finds can be found in Hulst 2006b, 274.
[755] Haalebos 2006c, 300.

(see fig. 40-42). The postholes found were all roughly equal in depth (1,9 to 2 meters deep). The walls are 0,9 to 1 meter wide.[756] Surrounding the watchtower is a more or less rectangular V-shaped ditch (Holwerda does not describe its depth). On the inner facing side of the ditch, remains of a double wooden palisade which was part of a small rampart have been identified.[757]

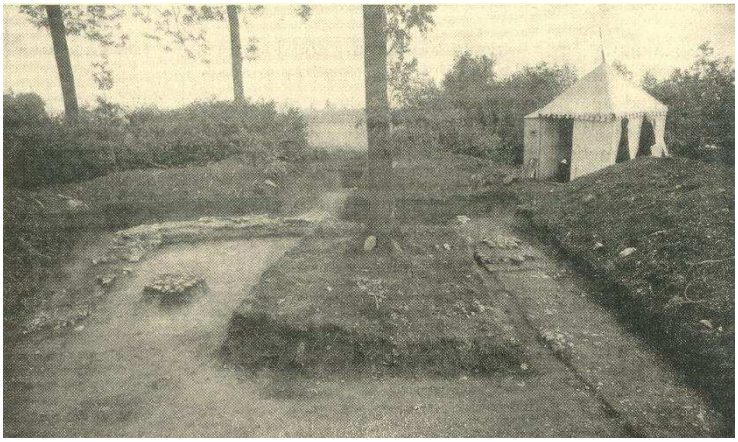

Fig. 40. Foundations and post of the watchtower at Hulsberg; after Holwerda 1916, fig. 1.

Fig. 41. North-western corner of the wall foundations of the watchtower at Hulsberg; after Holwerda 1916, fig. 2.

[756] Holwerda 1918, 138-9.
[757] Haalebos 2006c, 300; Holwerda 1916, 141.

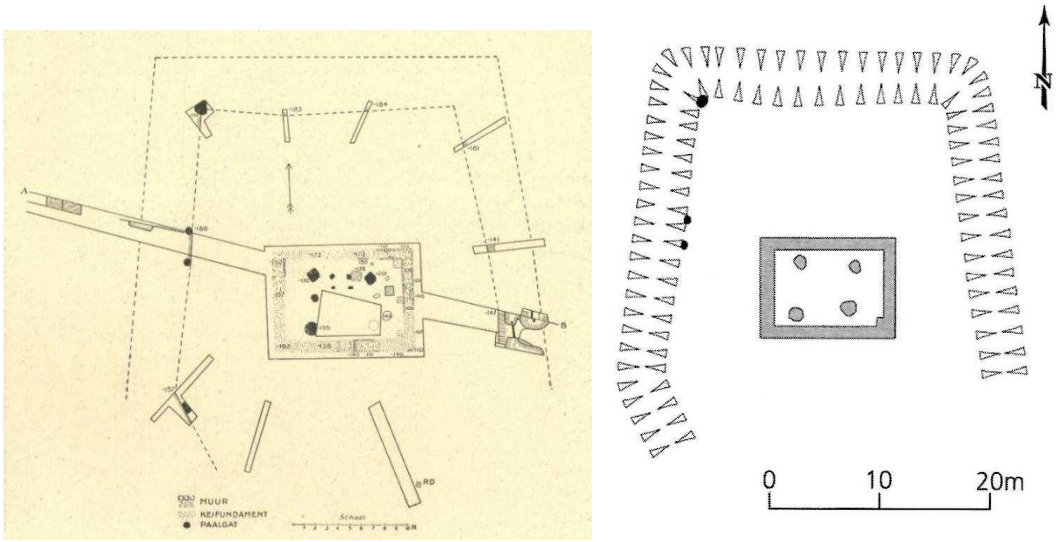

Fig. 42. Ground plan of the watchtower at Hulsberg; after Holwerda 1916, fig. 4 (left) and Haalebos 2006c, fig. 329 (right).

Finds

Initially, Holwerda dated the occupation of Goudsberg around AD 300, while others have extended this date to the second half of the 3rd century and the entire 4th century.[758] Langeveld's analysis of the ceramics and coins has led him to specify the date of occupation to AD 313-380.[759]
Holwerda notes 5 coins from his excavations, of which 3 could be identified: a bronze coin struck by Claudius II Gothicus (AD 268-270) and two folles by Licinius (AD 307-324).[760] Other metal finds include several pieces of pierced fittings and bronze rings, interpreted by Holwerda as horse gear.[761]

The vast majority of the ceramics (see table 10 above) dates to the first half and middle of the 4th century, apart from a handful of pottery sherds that could also date to the late 3rd century. Langeveld further notes a lack of pottery forms that would firmly date within the second half of the 4th century and late variants of the Alzei 27 jar or other coarse-tempered forms in late fabrics such as Mayen are lacking. In general, however, the Goudsberg has yielded too little material culture to say much more on chronology, or on whether the site was actively used year-round.[762]

4.3 Heerlen

The archaeological evidence for a Late Roman military site in Heerlen is rather scarce, and this is due to the fact that the available features are located at the earlier bath complexes there. These baths naturally gathered most the attention over the years, and the various unpublished excavations of these baths are currently being re-evaluated.[763] Some pottery kilns on the complex have also been studied extensively.[764] For the military complex, which was more or less a side effect of the bath excavations, we have to make do with what has so far been published.

Features

Van Giffen described two ditches, north and south of the bath complex[765], between the Kruisstraat and the Tempsplein (see fig. 43). Different sections of these could also be seen in a more eastern direction.[766] In this east area, two phases of ditches could be identified, while in the north only one was found.[767] The ditches were previously interpreted as belonging to 2 or even 3 *castella*, which Van

[758] Bogaers 1974c, 171; Brulet 1990, 151.
[759] Langeveld 2002, 145-7.
[760] Langeveld 2002, 150.
[761] Langeveld 2002, 150-1; cf. Barfield 1968, 97.
[762] Langeveld 2002, 153.
[763] Lichtenberg 2016.
[764] Bloemers/Haalebos 1973.
[765] The southern ditch was also picked up in ROB excavations; S.n. 1957, 97.
[766] Van Giffen 1948, 205.
[767] Bogaers 1957, 135.

Giffen deemed unlikely. He interpreted the ceramics, coin evidence and military stamps as Roman occupation in Heerlen from the mid-1st century to the early 5th.[768] In his assessment of the Samian ware from the baths' excavations, Glasbergen described no less than 23 fragments of rouletted Samian ware (bowls Chenet 308 and 320), but did not provide dates.[769] He also admitted that not all rouletted Samian ware was described and that more fragments were known.[770]
Further dating is supplied by an inscription found in the destruction layer of the bath complex, which was cross-cut by the southern ditch.[771] The inscription dates to around AD 260.[772] This suggests that at least one phase of the *castellum* defences was constructed after AD 260.

Fig. 43. Ground plan of the bath complex at Heerlen, with parallel ditches; after Bogaers 1959, fig. 10.

We may be able to supplement this with evidence for Late Roman activity in the direct vicinity of the baths. During the excavations of the kilns, for instance, 4th-century ceramics were also found, including a rouletted Samian ware sherd from the Argonne.[773] During the large-scale ROB excavations of 1952, 1954 and 1956-7 under J.E. Bogaers, several stone structures were also recognised as not belonging to the bath complex[774], including a number of heavy square piles placed 1,20 meters apart.[775] This sounds to me like some sort of rampart construction, comparable to the one found in Cuijk. Recent excavations at the complex have again found traces of the Late Roman ditches (fig. 44), although the results are yet to published.

[768] Van Giffen 1948, 206.
[769] Glasbergen 1948, 251-2.
[770] Glasbergen 1948, 238.
[771] Bogaers 1957, 134.
[772] Bogaers 1957, 136.
[773] Gielen 1985, 46.
[774] S.n. 1956a, 126; S.n. 1956d, 209.
[775] S.n. 1956b, 140.


Fig. 44. Late Roman ditch at the bath complex in Heerlen; after Lichtenberg 2016, 6.

Finds

From the ditch, 4th-century coins, 2nd-4th-century pottery and bronze fittings (decorated with *millefiori*) are known.[776] In 1976, an extraordinary hoard was found in the ditch, consisting of 869 barbaric imitations of 3rd-century *antoniniani*.[777] This uniformity is rare, as imitations usually occur alongside official emissions of the second half of the 3rd century.[778] This also makes them harder to date. The prototypes for these imitations invariably date around AD 270 (Claudius II, both Tetrici) and Constantinian types are completely absent. Jamar and Van der Vin argue that there is only a limited amount of time between the issue of the original and the subsequent imitation[779] and set the issue date of these *antoniniani* at AD 290-310.[780] Only ten coins from Heerlen are listed in the NUMIS database (table 30), and these give a rather strange reading. More than half are from the second half of the 3rd century, while two coins date to the very late 4th century and the early 5th century.
The Heeren and Van der Feijst database contains four crossbow brooches from the bath complex at Heerlen: a type 68a (AD 270-300), 68b3 (AD 300-360), 68c4 (AD 340-400; found in one of the ditches) and a 68c3 (AD 340-400).

It is impossible to date the Roman baths at Heerlen, as the research into them is still ongoing. No conclusion can therefore be drawn as to when they ended and whether they were (partially) contemporaneous with the fortification, or if they ended first and the fortification was built somewhere thereafter. The latter interpretation is most popular. The baths are generally dated to the first 3 centuries AD and the fortification to the 4th.[781] As stated above, however, Van Giffen on suggested that they may be one and the same site, and that the baths themselves were part of the fortification.[782] Although I certainly do not think that this is likely, I have no precise chronology of Roman Heerlen. The presence of late 3rd-century coins and one *fibula* may indicate that the fortification was constructed as early as the late 3rd century.

Table 30. Coins from Heerlen from the NUMIS database[783] (AD 200<)

Coin type	Authority	Date (min.)	Date (max.)	N
antoninianus	Philippus I	244	249	1

[776] S.n. 1956c, 176.
[777] Jamar/Van der Vin 1976, 169; cf. Bloemers 1976, 5-6.
[778] Jamar/Van der Vin 1976; 171.
[779] Cf. Wheeler 1937, 37, 215; Hill 1949, 16.
[780] Jamar/Van der Vin 1976, 171.
[781] Cf. Bloemers 1973a, 237-8.
[782] Van Giffen 1948, 206.
[783] Accessed 26-01-2017; out of a total of 10 Roman coins.

sestertius	Postumus	259	268	1
antoninianus	Postumus	259	268	2
antoninianus	Tetricus I	270	273	1
antoninianus	Quitillus	270	270	1
tetradrachme	Diocletianus	285	286	1
lead seal	Constantinus I; Constantinus II caesar	320	337	1
aes IV	Honorius	393	423	1
solidus	Honorius	402	421	1
Total				**10**

4.4 Rondenbosch-Houthem

Van Es states that at Rondenbosch-Houthem a military site of an otherwise unknown function was located, based on the remains of an earlier *villa* complex, which to him suggests an increasing militarisation of the civilian population.[784] I have not been able to ascertain this statement in the literature or find any indications of Late Roman finds from Rondenbosch.

[784] Van Es 1981, 122-123.