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Uncovering Roman fort Matilo in Leiden, 70-250 AD

Jasper de Bruin

The passing of my dear colleague and friend Willem Willems on December 13, 2014, is the immediate reason for writing this article, that was originally intended for a liber amicorum on the occasion of his 65th birthday on July 19, 2015. Willem had been appointed as professor in Provincial-Roman archaeology in Leiden in 1991. In the autumn of 2006, freshly starting work at Leiden University, I took over the course of Provincial-Roman archaeology, that Willem had successfully taught for so many years. Being occupied with the Faculty's annual field school for our first year's students, research in the field of Provincial-Roman archaeology was not an integral part of my appointment, but this changed when Willem became not only the supervisor of my dissertation, but also my direct supervisor at work. Apart from being dean of our Faculty, Willem was very ambitious about setting up a full course in Provincial Roman archaeology in Leiden. In order to do so, attractive research projects, including excavations, were part of the strategy.

In 2008, the Municipality of Leiden approached Willem with a request for assistance in an excavation. In the coming years, the site of the Roman fort within Leiden's boundaries and its immediate surroundings were to be redeveloped as an archaeological park, with the outline of the fort forming the base of the park's design. In order to do so, the south-eastern corner of the fort had to be located by means of an excavation. The question was whether the Faculty wanted to participate in this research. Willem took up the challenge as an opportunity to gain more insight in the lay-out of one of the last unexplored Roman forts in the Netherlands. The fact that a substantial heritage element was involved in the project, was also right up the street for Willem. In 2009, the excavation was carried out and we were able to resolve the long lasting discussion of the location and lay-out of the fort. In this article, the main results of this research are presented. I am glad that Willem got to know the results of our excavation and that he was able to see the reconstruction in the park for himself in 2013. Looking back, I can say I was honoured that I could work with Willem, even though this proved to be of rather short duration.

1 INTRODUCTION

In the south-eastern part of the modern city of Leiden lies a Roman fort that was part of the Lower Rhine Frontier of imperial Rome. According to the Peutinger Map, the fort was called Matilone, but was probably called Matilo (fig.1). In Roman times, the site was located on the western bank of the river Rhine. The northern border of the site consisted of a wide gully, formed by the mouth of the Corbulo canal, which at this point flowed into the Rhine. The canal, dug around 50 AD (De Kort and Raczynski-Henk 2014, 63), connected the river Rhine with the Meuse estuary. The site was declared archaeological monument in 1976 and in 2008 the protected area of the monument was enlarged (de Vries 2008, 64-69). Despite reports of archaeological finds from the early sixteenth century onwards and several years of extensive archaeological research in the twentieth century, the exact location of Leiden's Roman fort remained unknown. Only in 1999 the north-western corner of the fort was discovered, although the exact dimensions of it remained unclear (Polak *et al.* 2004a). In 2008, the Municipality of Leiden approached the Faculty of Archaeology to participate in the search for the south-eastern corner of the Roman fort.

2 RESEARCH METHODS

Because the site is a protected archaeological site, the first step was to investigate whether it was possible to locate the forts' contour in a non-destructive way. Therefore, accessible parts of the site were examined using a Groundtracer, a geophysical survey method (fig. 2). The most important feature that was detected was a zone orientated northwest-southeast that might be the remains of the eastern wall of the fort or one or more of the fort's debris filled ditches (de Bruin *et al.* 2009, 14-17). This interpretation, however, had to be verified, because there was a possibility that the observed features were of a later date. A borehole survey by the Cultural Heritage Agency of the Ministry of Education, Culture and Science confirmed that the debris was of possible Roman date, but the context of the material could not be identified. In the end, excavation became inevitable.



Figure 1 The place Matilone on the Peutinger Map. The site is situated between Praetoriū Agrippine (Valkenburg) and Albanians (Alphen aan den Rijn). Picture courtesy of the Österreichische Nationalbibliothek / Vienna Cod.324, segm.1

To limit the extent of the disturbance of the archaeological monument, a small trench of 25 metres long and two metres wide would be dug, perpendicular to the northwest-southeast orientated zone with debris. If the debris zone was indeed the fort's wall, then it could be unearthed right in the middle of the trench. The possibility to dig a second trench, if required, was included in the research design.



Figure 2 Surveying the site with a groundtracer. Photo: author

At first, the trench was planned on the site of the local community gardens, but this caused too much protest by the owners. More to the south of the gardens, a disused greenhouse became the only possible location for the excavation. The excavation was carried out by a combined team of archaeologists from the Municipality of Leiden and the Faculty of Archaeology. A group of five students participated in the project as well (fig. 3). Even though excavating in a greenhouse seems very attractive considering the rainy Dutch climate, the weather during the excavation was sunny and fairly warm. Because the greenhouse had previously been heated, there were not many windows and in combination with the weather outside, the temperature regularly rose above forty degrees Celsius, even, in one occasion, causing the mechanical digger to fail because of the heat. The topsoil in the greenhouse was completely dried out, creating a very dusty environment for the research. Despite these difficulties, the excavation in the greenhouse can be regarded as successful.

3 THE EXCAVATION

From 7 to 25 September 2009 the first trench (trench 1) was excavated, running across the width of the greenhouse. On 5 and 6 October 2009, a second trench was dug (trench 2), in order to locate the southern wall of the fort. Trench 1



Figure 3 Students participating in the excavation. Photo: Erfgoed Leiden en Omstreken

yielded the most information, and is, therefore, discussed in more detail.

3.1 *The fort's wall*

Because of the complex stratigraphy Trench 1 (fig. 4) was excavated in seven levels. The first level merely removed the dusty topsoil as the first in situ finds and features were recorded directly under the topsoil, only fifty centimetres below the surface level. Instead of the expected robber trench of the fort's wall, a broad zone of Roman debris was found in the centre of trench 1. Apparently, the wall of the fort was located somewhere else. Yet, in the most western part of the trench, the edge of a robber trench was observed (fig. 5, A). After permission by the Cultural Heritage Agency to enlarge the trench here by 4,5 metres, a broad robber trench was exposed. During the course of the excavation this structure turned out to be the wall of the fort, because the characteristic postholes and wooden piles emerged from under the robber trench (fig. 5, A; fig. 6). The same situation was found in trench 2, making it possible to reconstruct the dimensions of the stone built fort.

In the north profile of trench 1, it appeared that the robber trench of the fort's wall was much broader, as if there was another robber trench attached to the remains of the wall of the fort. In the most north-western corner of the trench 1, a small part of this other robber trench was found at right angles to the fort's wall (fig. 5, B). No driven poles were found under this shallow feature, suggesting that this structure was less heavy constructed than the wall of the fort. Although a latrine could have been placed near the fort's wall, such a structure should be founded much deeper, because it had to be connected to a sewer. Therefore, it is possible that this robber trench marks the foundation of a tower that was bonded to the wall. It is known that towers were not founded as deeply as the walls of the forts itself, as has been observed in Utrecht (Kloosterman 2010, 21, with references to other examples).

3.2 *Ditches of the fort*

A series of ditches were found to the east of the fort's wall. The oldest ditches, consisting of a ditch that was exposed under the later fort wall (fig. 5, C) and another one located



Figure 4 Overview of trench 1, located in the greenhouse. Photo: Erfgoed Leiden en Omstreken

more to the east (fig. 5, D), were filled up in the first, maybe even in the first quarter of the second century AD. The western ditch, located under the later fort's wall, was filled up in at least two stages. Because of the lack of well-dated finds from the bottom of the ditch, it is unknown when it was dug, but a date in the first century seems plausible. This ditch was cut by a V-shaped ditch that was filled up in two phases (fig. 5, E). The oldest phase yielded a fragment of a *terra sigillata* bowl that can be dated between 60 and 85 AD (identification Ryan Niemeyer). However, this fragment could have been redeposited from the earlier ditch that was cut by the V-shaped ditch. In the second filling of the ditch a fragment of pottery was found that could be dated from 150 AD onwards, together with a concentration of construction rubble. According to inscriptions from Matilo constructions in stone were undertaken in 103-110, 196/198 and 198-205 AD (Brandenburgh and Hessing 2014, 30-31). Thus, the filling of the second phase of this ditch could have taken place in the second century.

Another V-shaped ditch (fig. 5, F) was situated too close to be contemporary with the first mentioned V-shaped ditch. No datable finds could be obtained from this ditch. Next to the ditch, a third ditch was located (fig. 5, G). This ditch, with a flat bottom, may have been contemporary with the first V-shaped ditch, but this is not clear. This flat-bottomed ditch was filled up after 100 AD. The two V-shaped ditches could have succeeded each other, while the ditch with the flat bottom may have been contemporary with the first, most western V-shaped ditch. All three ditches were filled up in the second century and this process was finished around the end of this century, when a new ditch was dug (fig. 5, H). This ditch was more U-shaped and much broader than the

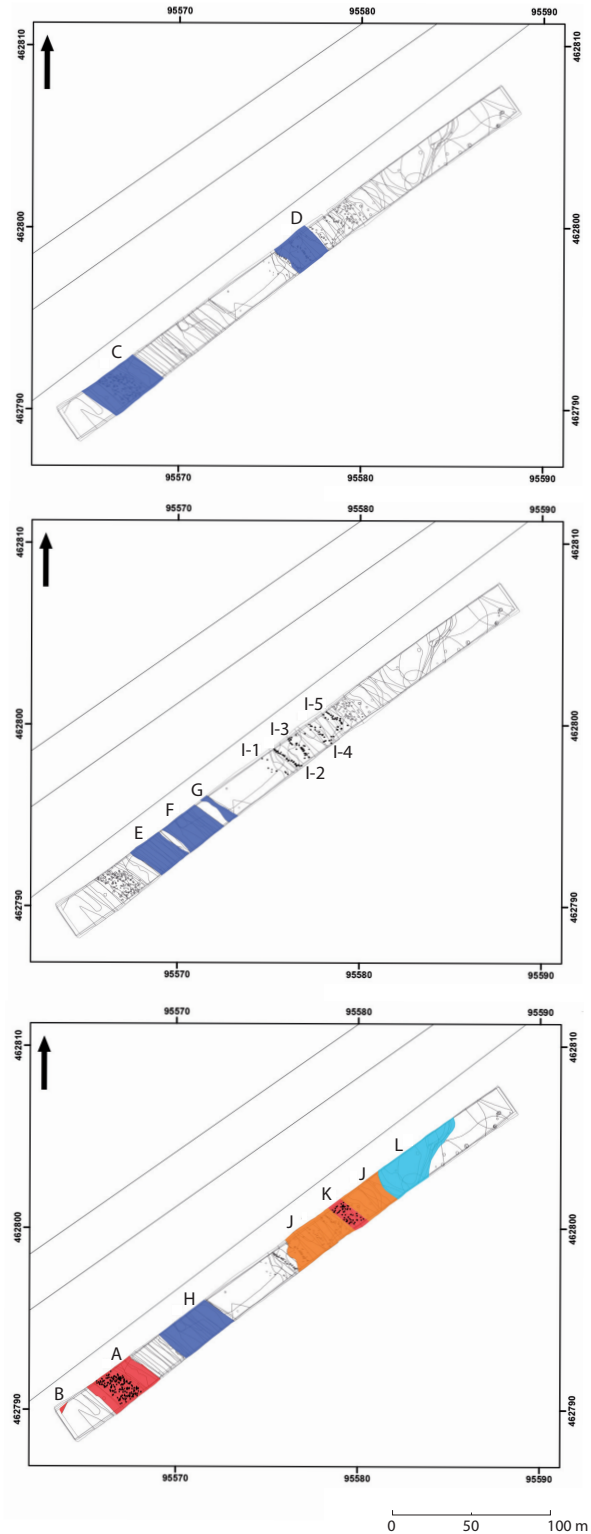


Figure 5 Trench 1 with the main features, numbered A-L. The features are pictured by Phase. Picture: Erfgoed Leiden en Omstreken and author



Figure 6 Postholes under the fort's Stone wall. Photo: Erfgoed Leiden en Omstreken

previous ditches. Find material from the ditch can be dated between the end of the second century and the middle of the third century AD. It belonged to the last building phase of the fort and is associated with the stone wall.

3.3 The river bank

The biggest surprise of the excavation was the former bank of the River Rhine, which appeared more or less in the middle of Trench 1. Apparently, the builders wanted to place their fort as close as possible to the river. As a result, an early ditch (fig. 5, D), located on the edge of the higher ground, was eroded. Possibly as a reaction to this, several rows of thin wooden posts were erected parallel to the course of the river (fig. 5, I, rows numbered 1 to 5). These rows of poles probably formed fences of wattle that could contain soil, as a sort of bank protection. At the end of the second century, additional measures were necessary to stop the eroding force of the Rhine. In several phases, layers of highly fragmented rubble were laid to protect the vulnerable bank of the river (fig. 5, J). These layers were the features that had been detected by the Groundtracer and were at first mistakenly interpreted as remains of the forts' wall. Layers of rubble, that served as a bank reinforcement, were also found on the site along Corbulo's channel (Hazenberg 2000, 35; Polak and De Groot 2009, 11), and also along the Roman fort of Zwammerdam (Haalebos 1977, Beilage Ia, g).

Another measure to protect the bank of the river was the construction of a riverside wall, 70 centimetres wide and constructed on a foundation of poles (fig. 5, K). This wall does not define an annex, because it comprises an area that was too small to serve as a temporary enlargement of the fort. Additional layers of rubble were necessary to protect this wall from erosion. These layers were, in turn, affected

by water. A depression situated directly to the east of these layers was probably responsible for the continuous risk of erosion, because it carried water during floods (fig. 5, L). In this depression, fragments of at least five Roman shoes were found, dating to around the end of the second or beginning of the third century (identification Carol van Driel-Murray).

4 THE RESULTS OF THE EXCAVATION IN RELATION TO OTHER EXCAVATIONS OF MATILO

Although the area around the position of the fort has been excavated quite extensively, the site of the fort itself has not been thoroughly investigated. Trenches 1 and 2 were excavated in 2009. The other trenches are numbered 3-6 (fig. 7). In 1927, Jan Hendrik Holwerda from the Dutch National Museum of Antiquities excavated to the west of the fort (trenches 3). He was able to locate the U-shaped ditch that belonged to the stone built phase of the fort (Polak *et al.* 2004a, 66). In 1999, a geophysical survey and small excavation uncovered the north-western corner of the Roman fort (Polak *et al.* 2004a, trench 4 and coloured area). In the excavation (which was actually a small trench, comparable to Trench 1 from the 2009 campaign) finds and features from earlier fort phases could also be documented. Additional information was obtained from two trenches in 2011 and 2012 during the construction of the park (Van der Feijst and Brandenburgh in prep., trenches 5-6). Combining the evidence from these fieldwork campaigns, it is possible to outline the construction history of Matilo. Also, an attempt

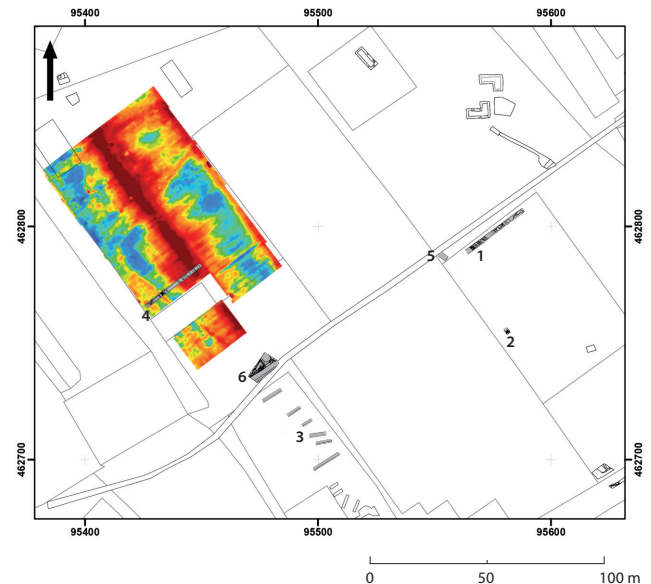


Figure 7 Trenches, dug on the site of the fort, numbered 1-6 (shaded), the area that was researched by means of a geophysical survey is coloured. Picture: author

can be made to reconstruct the plan of the fort during the different phases.

4.1 Phase 1 (around 70 AD-around 100/125 AD)

The ditches from the oldest fort were found in trench 1 and 2. This ditch was located under the later fort wall. A second ditch, found more to the east in trench 1, probably dates from the same period. This ditch was only observed in trench 1. To the west side of the fort, two ditches from the same building phase were excavated in trench 4 (Polak *et al.* 2004a, 33-37, ditches A-B). The western of these two ditches, resembles the eastern, oldest ditch in trench 1. Since this is the outer ditch, it can be assumed that a second ditch was present more to the west of trench 1. Because the outer ditch of the oldest fort was also found in trench 2, it is possible to reconstruct the dimensions of the first fort in Leiden (fig. 8). Remarkably, the ditch yielded several artillery balls, in both trench 1 and trench 4. The ditches of this fort were filled up in the (late?) first century or first quarter of the second century. Pottery collected at several locations in and around the fort suggests a starting date of the occupation before 70 AD. In trench 5, the only trench dug in the inner area of the fort, a *terra sigillata* bowl from the type Dragendorff 24/25 was found that could be dated between 40 and 80 AD (van der Feijst and Brandenburg in prep). However, it is possible that before the construction of a fort, only a small military post was present. Therefore, it is possible that the fort itself was

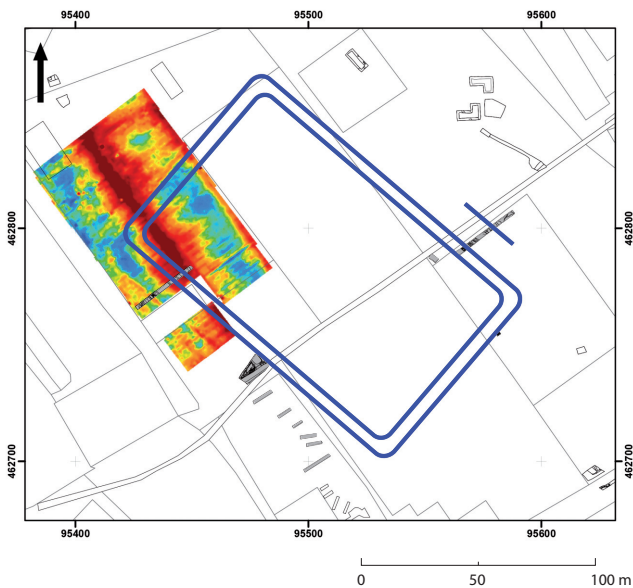


Figure 8 Reconstruction of the dimensions of the two ditches (blue lines) of the first fort phase (around 70-around 100/125 AD). A third ditch was only found on the east side of the fort. Picture: author

constructed around 70 AD and that it could have been used until around 100 AD. Nevertheless, it remains possible that the fort could be dated earlier.

4.2 Phase 2 (2nd century AD)

In the next building phase, two V-shaped ditches and a ditch with a flat bottom were dug on the eastern side of the fort. In trench 4, a single V-shaped ditch can also be dated around the same period; this ditch cuts an older one that might be dated from an earlier period (Polak *et al.* 2004a, 37-38, ditch D). The ditches from this new phase are located on the same spot as the ditch from the stone-built phase. Presumably, the fort was enlarged around this time, almost to its final dimensions. However, the reconstruction of this phase (fig. 9) remains more hypothetical than the others, as the ditches on the north and south side of the fort were not excavated. This second building phase can be dated in the second century. A building inscription, dating between 103 and 111 AD, suggests the first occasion for construction with stone (Brandenburg and Hessing 2014, 30). Evidence for building in stone in this second phase of the fort was also found in the form of building debris, in the western V-shaped ditch in trench 1 (see paragraph 3.2).

4.3 Phase 3 (end of 2nd-3rd century AD)

In the final phase, a broad ditch was dug around the fort and a stone wall was built. The ditch has been found in trench 1

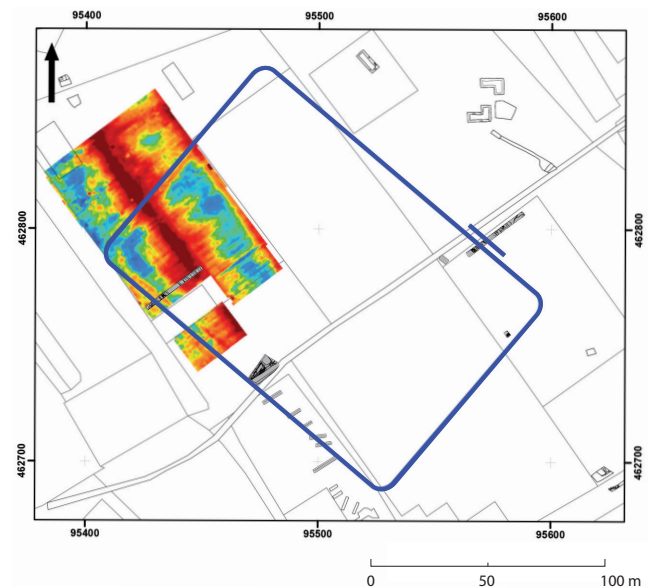


Figure 9 Reconstruction of the dimensions of the V-shaped ditch (blue line) of the second fort phase (2nd century AD). A second, contemporary, flat-bottomed ditch was only observed on the east side of the fort.. Picture: author

and 4, but was also revealed in the 1927 excavation by Holwerda (trenches 3). The fort’s wall appears in trenches 1, 2 and 4. In trench 1 there is evidence for a tower, that was attached to the wall. In trench 6, parts of the western gate of the fort, the so-called *porta decumana*, were found (van der Feijst and Brandenburg in prep.). If the evidence is combined, it is possible to reconstruct the dimensions of this third phase of the fort (fig. 10). Because the location of one gate and a tower were found, it is possible to reconstruct the plan of the fort in more detail (fig. 11). The building of the stone fort of Matilo started around the end of the second century. Two building inscriptions, dating in 196/198 and 198-205 AD, suggest building activities in the fort (Brandenburg and Hessian 2014, 30-31); this might be the starting date for the stone-built phase. The fort was probably in use until 250 AD.

5 MATILO: SIZE AND LOCATION

The Roman forts along the western part of the Lower Rhine Frontier are characterized by their small size when compared to other forts on the Roman Frontier. This was a deliberate adjustment to local circumstances, because the forts were built to supervise the Rhine river and its many tributaries in the area (Graafstal 2002, 19; van Dinter 2013, 25). This made a spread of the available troops at multiple strategic locations necessary. However, if the stone built fort in Matilo is compared to the other stone forts in the area, it appears to

be one of the biggest (Table 1). Maybe the fort housed somewhat more soldiers or it fulfilled a special purpose. Yet, without any knowledge of the fort’s interior, it is impossible to make any statements about the purpose of the fort in Matilo. Being one of the bigger forts in terms of dimensions, its extended design is aberrant, but may have been dictated by local circumstances. In other respect the Matilo fort resembles the position of the others forts in the region with the long side of the fort located parallel to the river.

Matilo was located in close proximity to the river Rhine and the Corbulo channel. Sporadic flooding occurred, as is reflected in the measures to protect the bank of the Rhine (paragraph 3.3). For a long time, it wasn’t clear why these forts were built on such unsuitable natural locations. However, the discovery of artillery bullets in Leiden and the other forts in the region indicates that the forts were equipped with artillery. Some of the towers (in Leiden up to seven) of the longest side of the forts, were in fact artillery towers from which boats on the river could be targeted. Evidence from excavations in Utrecht suggests that the artillery had a range of 150 to 160 metres, so that the bullets could reach the opposite bank of the Rhine (Dielemans 2012, 260). The location of the fort in Leiden shows that supervising of the river, the Corbulo channel and other waterways was its primary function. Monitoring of water transport was carried out by soldiers who were on watch in the towers, of which some were equipped with artillery.

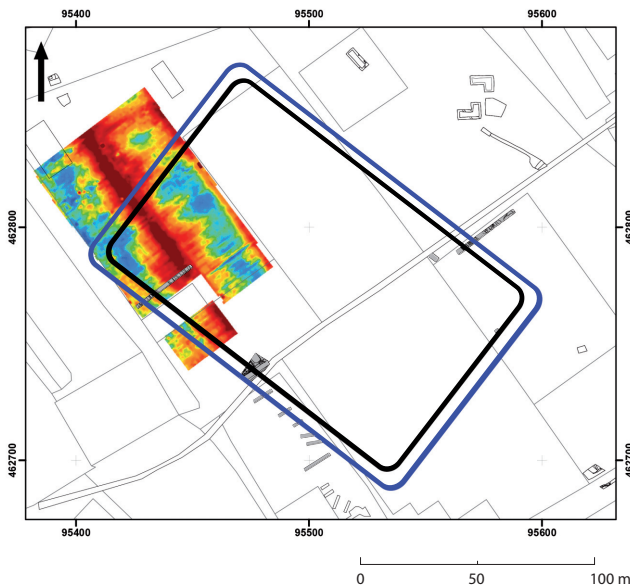


Figure 10 Reconstruction of the dimensions of the wall (black line) and ditch (blue line) of the third fort phase (end of 2nd-3rd century AD). Picture: author

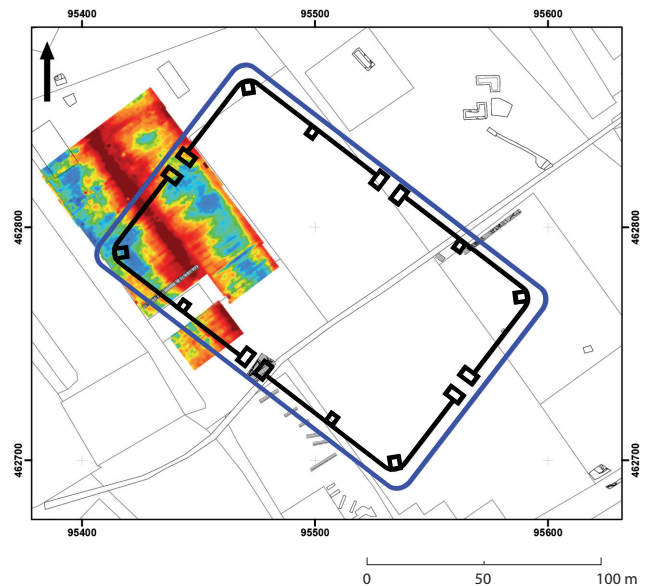


Figure 11 Hypothetical reconstruction of the of the third fort phase (end of 2nd-3rd century AD), with towers and gates. The dimensions of the towers and gates are derived from the fort of Valkenburg 6 (Glasbergen 1972, 145). Picture: author

Fort name	Square Meters	Acres	Literature
De Meern	9200	2.3	Langeveld 2010, 16
Alphen aan den Rijn Period 3	9750	2.4	Polak et al. 2004b, Kaart B1
Woerden IV	10406	2.6	Haalebos & Lanzing 2000, 19, Afb. 13
Zwammerdam Period III	12408	3.1	Haalebos 1977, Beilage Ia
Roomburg Phase 3	14725	3.6	This article
Valkenburg 6	16080	4.0	Glasbergen 1972, 145
Utrecht Period V	18710	4.6	Ozinga & De Weerd 1989, 54
Vechten Period III	27000	6.7	Zandstra & Polak 2012, 258

Table 1 Dimensions of the stone built phases of Roman forts along the Lower Rhine Frontier in the Netherlands

The threat of being hit by these bullets was probably enough to minimise the chance of disturbance.

6 THE PARK MATILO

The results of the excavations of 2009 will be published in the foreseeable future (Brandenburgh and De Bruin in prep.) Shortly after the excavations ended the results were shared with the designers of the park. Since the excavation yielded the location of the south-western corner of Matilo, it became possible to reconstruct the outline of the stone-built fort and the construction of archaeological park Matilo could begin. The whole site was covered under a 50 centimetres thick layer of soil in order to preserve the site. In September 2013, the park was officially opened. The fort itself is visualized by an earthen rampart 3 metres high, and three gates are visualized by cuts through the rampart flanked on each side by towers (fig. 12). The fourth gate, the *porta decumana*, is visualized by a tunnel, in which graffiti refers to some of the finds that were collected on the site. Outside the fort, two



Figure 12 The reconstructed fort in archaeological park Matilo, seen from the northeast. Photo: Buro JP

parallel ditches have been reconstructed, although, from an archaeological point of view, this particular phase was equipped with only one (U-shaped) ditch. Nevertheless, the reconstruction provides a good notion of the dimensions of a Roman fort along the Lower Rhine Frontier. Moreover, it is the only Roman fort in the Netherlands that is not only located in the residential area of a town, but is it also almost completely preserved *in situ*. Therefore, Matilo is one of the key-sites of the UNESCO nomination of the Roman Frontier of Lower Germany (see also Willems *et al.* this volume).

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