CURBING THE TIDE

The discovery of a Roman terp along the Heistlaan in Ramskapelle (Knokke-Heist)

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ABSTRACT
Archaeologists have long struggled trying to understand the nature of the Roman-period occupation of the coastal plain of Flanders. From the start of the 21st century, following academic and development-led projects, knowledge on the nature of the Roman occupation in the coastal plain has gradually been expanding. To assess the possible destruction of archaeological remains in the area along the A11-highway connection between Damme, Knokke-Heist, and Bruges, a different methodology was implemented. This resulted in the discovery of a 2nd to 3rd century AD site along the Heistlaan in Ramskapelle (Knokke-Heist). Based on geo-archaeological and sedimentological observations, coupled with micromorphological data, the site is interpreted as an artificial dwelling mound or terp. This discovery is a significant step in understanding the impact of human activities on the landscape in the coastal plain. The results help reinterpret older excavation data and aid future research projects.

KEYWORDS
Roman archaeology, coastal plain of Flanders, terp, soil science, micromorphology

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1. Introduction

For decades, understanding of the Roman occupation in the Holocene coastal plain of the Civitas Menapiorum (the most northern district of the Gallia Belgica Province) has lagged behind the knowledge of the higher-lying Pleistocene sandy area bordering the coastal plain. This resulted from a lack of insight into the link between human occupation and complex landscape evolution. Deposits of tidal flat environments and peat beds form the core of the coastal plain. The dynamic character of these sedimentary environments caused frequent changes in the landscape. Hence, it is not always obvious to pinpoint archaeological findings within the stratigraphic context of a site. Based on -the currently abandoned- models of transgression and regression, academic studies struggled for decades to interpret the occurrence of Roman period finds that were seemingly deprived of any clear context in the coastal area. These finds were often interpreted as the results of non-permanent occupation or off-site activity (Thoen, 1978, 1987; Pieters, 1996; Ervynck et al., 1999 and 2000). However, a scarcity or obscurity of data, does not necessarily mean that the coastal plains were a Roman no man's land. On the contrary: classical sources and isolated finds indicate a thriving economy, centred on salt production (Thoen, 1986; De Clercq, 2011,). Building on the increasing (geo)archaeological evidence available in the region (Baeteman, 2007; Baeteman et al., 2015; Baeteman, 2016) and a comparative analysis of excavated features in the adjacent Dutch side of the Menapian coastal plain, three possible forms of Roman habitation locations in the coastal plain can be put forward: 1) on outcropping Pleistocene sand ridges or on Pleistocene sand covered with a thin peat bed; 2) on artificially raised platforms; 3) on drained peat bogs (De Clercq, 2009, 215-217).

The construction of the A11, a 12 km long highway connection between Bruges, Knokke-Heist, and Damme, presented the perfect opportunity to test these hypotheses in the field in one micro-region of the Menapian civitas, located north of Bruges. Previous watching-briefs of infrastructural work in the area pointed to the presence of Roman-period salt-making (Hillewaert et al., 1987; Hollevoet, 1998 and 1989). The 19th century find of a Roman sea-going ship at Bruges (Vlierman, 2011, 49-50) implies a navigable sea-way crossing the area from Bruges towards the sea.

From 2008 till 2014 Raakvlak, Archaeology, Monuments and Landscapes of Bruges and Hinterland, was tasked with the archaeological survey prior to the construction of the A11 highway connection. Archaeologists and soil-scientists joined forces to pioneer a new approach, better adapted to the complex stratigraphy of the coastal plain. In 2013, this project resulted in the discovery of a small Roman settlement on top of a buried sandy ridge. The discovery of the settlement, consisting of a house and a well, along the Zonnebloemweg in Dudzele (Bruges) proved to be the first possible form of habitation (Hollevoet et al., 2019, 59). Additionally, a salt-production site is located on the flanks of this ridge.

In 2014 the second possible form of habitation in the coastal plain of Flanders was detected. On a field along the Heistlaan in Ramskapelle (Knokke-Heist) an artificially raised dwelling mound or 'terp' dating from the 2nd and 3rd century AD was discovered (Verwerft et al., 2019). The term 'terp' comes from Friesland and describes an artificial living platform, providing a dry living space at high water levels (Hendriks, 1996). Located on top of the terp, traces of a small-scale settlement were found consisting of five sod houses with sunken floors. The finds date the site between 175 and 250 AD. The site yielded the largest collection of Roman pottery so far encountered in the whole of the Bruges area. Some very rare metal and glass objects, as well as the archaeozoological remains, seem to point to a high, or at least to a quite deviating, status of the site and its inhabitants.

This paper focuses on the geo-archaeological and sedimentological field observations that led to the discovery of this Roman-period terp. It also presents the micromorphological data supporting the research and proposes guidelines for future fieldwork.

2. The A11-project: pioneering a geo-archaeological approach

This particular part of the eastern coastal plain north of Bruges is characterized by two distinct lithological sequences or soil types according to the pedological map: 1) a sequence consisting of Pleistocene sand overlain by peat and tidal-flat sediments and 2) sand-filled tidal channels, hereafter called gullies (for an in-depth overview of the Holocene geology of the Belgian coastal plain see Baeteman, 2018.). To assess the archaeological impact of the construction of the A11 highway connection, a strategy better adapted to this particular geological situation was implemented.

The first step is mapping the location of the sand-filled tidal channels in the so-called 'geulenkaart' or gully-map. The map is based on the study of Quaternary geological data, the land register, and the digital elevation model (Hillewaert et al., 2018, 5-7). As the map depicts the contrast between the two distinct lithological sequences, it serves as a tool to guide archaeological research (Lambrecht et al., 2017, 4-5). At the location of the gullies, where the original deposits have been deeply eroded, possible prehistoric to Roman sites have disappeared. As the archaeological surface is situated right underneath

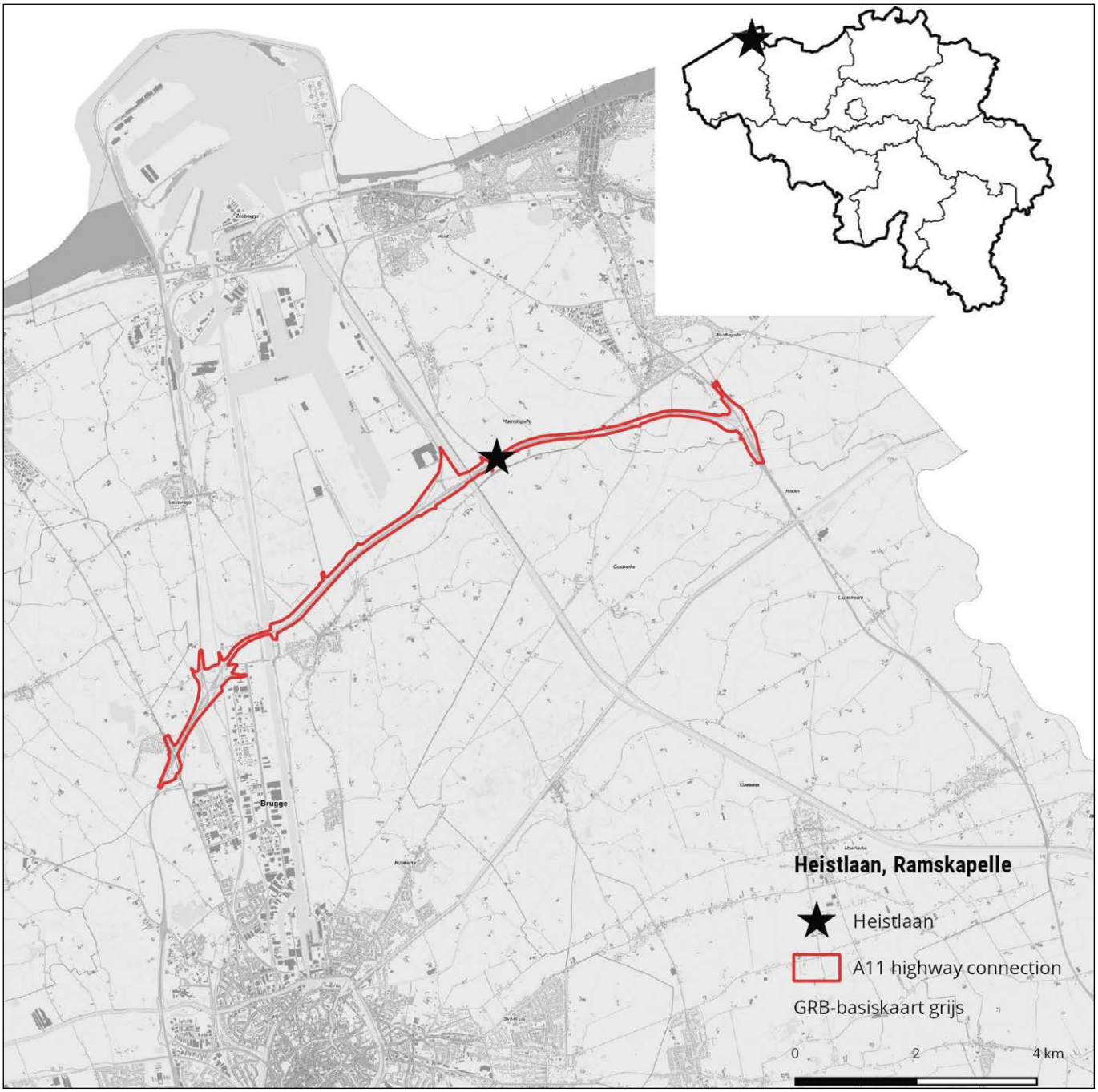


Figure 1. The location of the A11-highway connection and the site Heistlaan (star) indicated on the GRB-map (AGIV).

the ploughing soil, a combination of fieldwalking and trial trenches is the optimal method for detecting sites.

In the zones in between gullies, where the original stratigraphy is preserved, there are multiple archaeological surfaces, each potentially containing sites from the prehistory till the Middle Ages. The recent discovery of a late-Neolithic arrowhead on top of a peat layer in Koolkerke, just north of Bruges made this amply clear (Verwerft et al., 2018). In these zones a manual auger survey is needed to assess the basic landscape morphology and state of preservation, followed by an intensive, archaeological auger

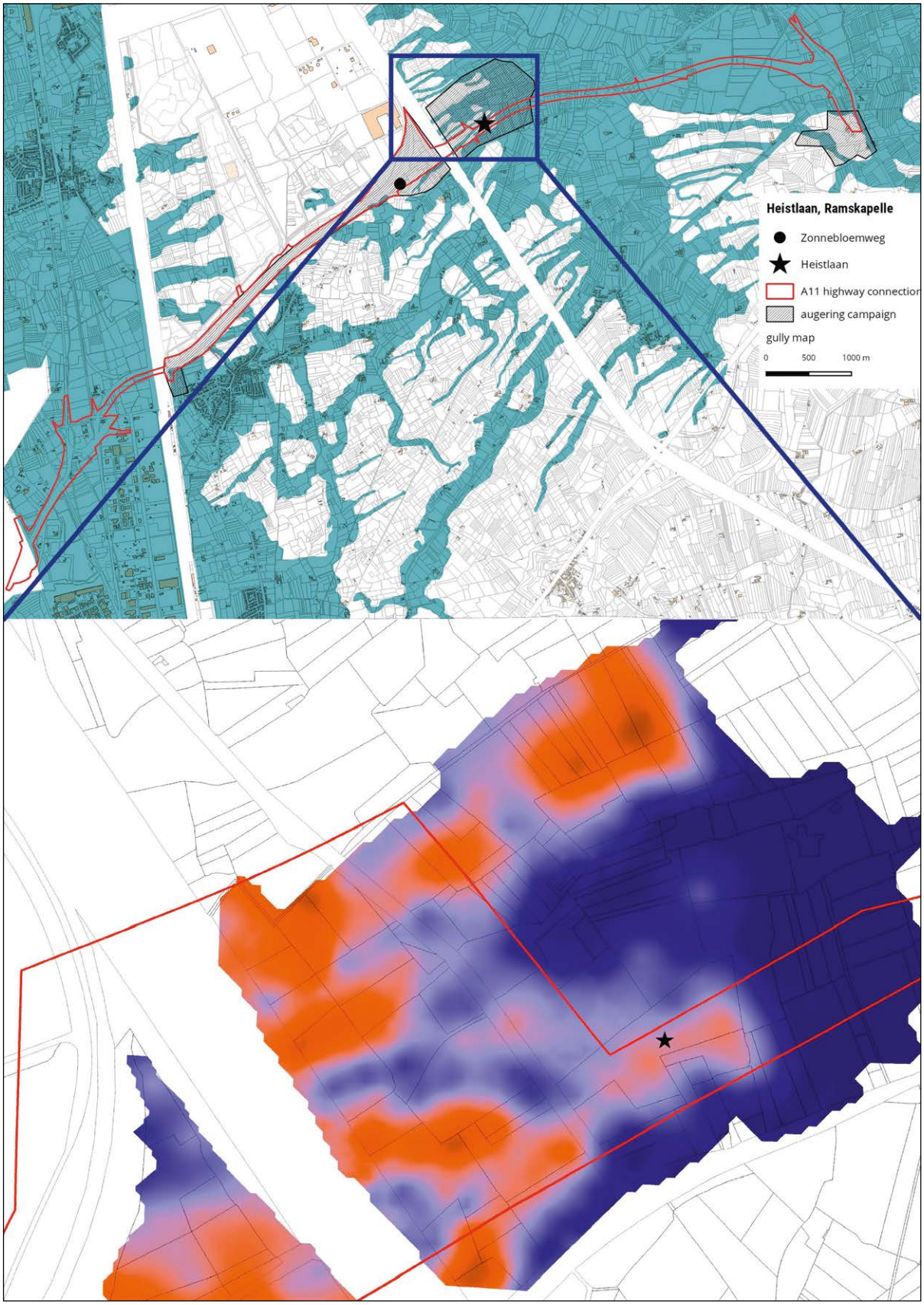


Figure 2. The location of the A11 indicated on the gully map and an interpretive map of the borehole survey (blue: gully, brown: conserved peat, orange: extracted peat).

survey if a well-preserved palaeo-landscape is discovered. This method has been introduced and refined in Flanders by Prof. dr. Philippe Crombé to detect prehistoric sites (Verhagen et al., 2011; De Clercq et al., 2011). In 2015, at the start of the next big project in the coastal plain, the Stevin power line, stepped trenches were introduced to evaluate different archaeological surfaces in one trench (Cruz et al., 2013, 60-61). Following positive test cases in the Belgian coastal plain (De Smedt et al., 2009; Delefortrie, 2012), it is clear that a geophysical prospection aimed at mapping buried landforms forms an (cost-)effective method to guide an auger survey.

3. The discovery and excavation of a Roman site along the Heistlaan in Ramskapelle

During the auger survey of the A11-project 712 boreholes covering an area of 212 hectares were carried out. Around the Zonnebloemweg in Dudzele, the research revealed a strongly pronounced palaeo-landscape with sandy ridges and hollows filled with peat. In prehistoric times, this Pleistocene landscape presented itself as a suitable location for an encampment. A subsequent, intensive auger survey and four small-scale excavations yielded the first fully recorded prehistoric site in the coastal plain (Verwerft et al., 2016; Noens et al., 2018). The open-area excavation also revealed a small Roman settlement on top of the sandy ridge.

Along the Heistlaan in Ramskapelle, the auger survey showed buried soils varying between silted up gullies and peat covering Pleistocene sand. The terrain borders a more than 1.5 km wide complex of silted up gullies. Several smaller gullies branch out in a southwestern direction. Extensive peat extraction and sparse patches of a well-conserved peat layer characterise the areas in between these gullies. As the original stratigraphy has almost completely disappeared, trial trenching is the logical next step in the research campaign.

The trial trench evaluation of the terrain yielded an unexpected, positive result. The archaeologists discovered enigmatic Roman traces buried under a 10 to 40 cm thick topsoil: ditches, pits, waste layers, and a possible artificially raised mound. The team gathered a large amount of pottery dating from the 2nd and 3rd century AD. An excavation was needed to better understand the nature of this settlement and subsequently improve our understanding of this complex landscape.

According to the Belgian Soil Map the terrain is located in 'peat extracted areas' (OU2). From an agricultural perspective, this type of soil is considered of a lesser

Figure 3. An aerial view of the excavation along the Heistlaan in Ramskapelle (Knokke-Heist).

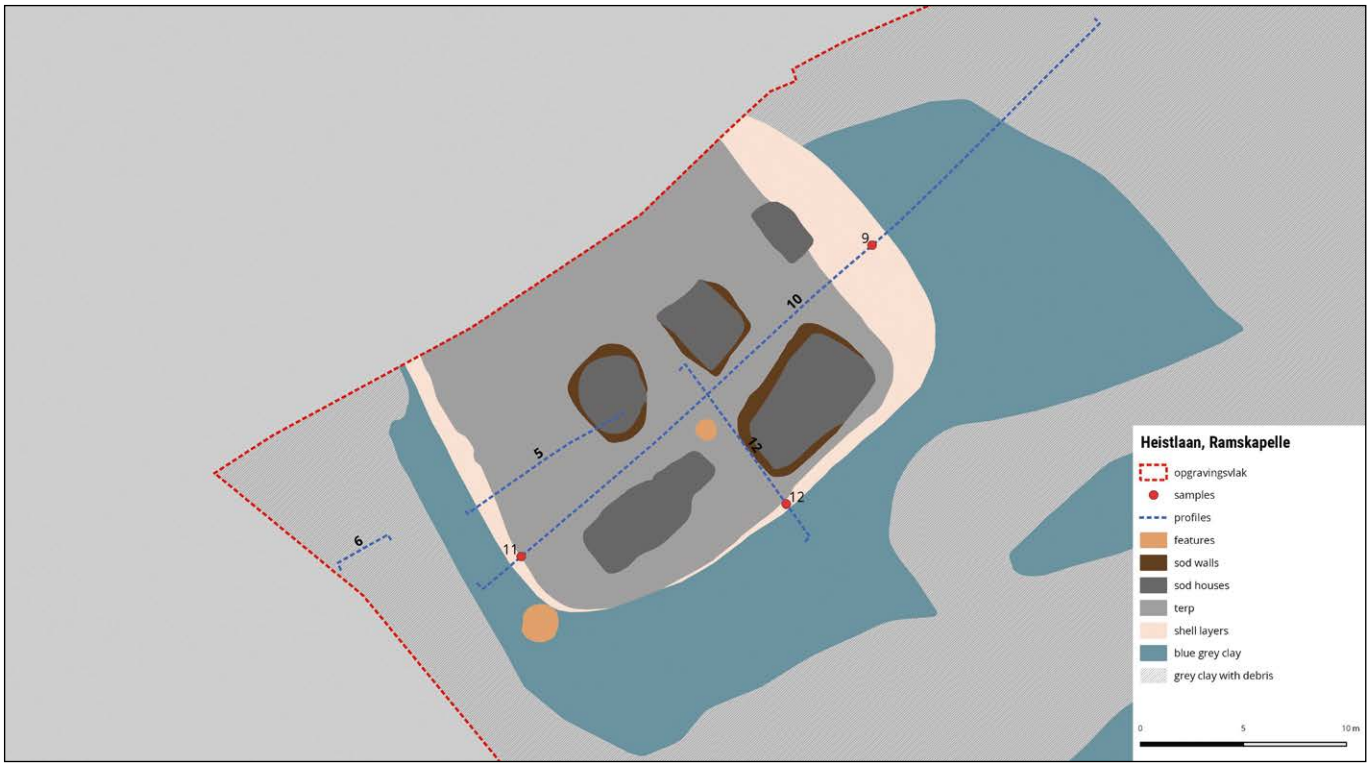


Figure 4. The location of the profiles and micromorphological samples discussed in this paper indicated on the excavation plan.

quality. But, from an archaeological viewpoint such a terrain is of significant value: here older traces are potentially conserved, safeguarded from the erosion by gullies. The Belgian Soil Map depicts stretches of 'covered creek ridges' (D5) north and south of the terrain. These reflect the smaller gullies branching out of the big gully in a south-western direction. The elevation of the terrain varies from +230 to +263 cm TAW (*Tweede Algemene Waterpassing*). During the investigations, the terrain is used as a pasture.

During the summer of 2014, an area of 2 203 m² was excavated. The excavation resulted in the discovery of 26 Roman features and no less than 14 328 artefacts. To better understand the archaeological site and its relation with the surrounding landscape, the team registered 14 soil profiles. The most important profiles are discussed in detail in the following chapter.

4. The geo-archaeological observations

4.2. PROFILE 6: THE SURROUNDING LANDSCAPE

Profile 6 gives an overview-from the Pleistocene subsoil to the present-day surface. It serves as a witness of the landscape prior to, during, and after the Roman occupation of the site. The profile is marked by three distinct units. The lowest unit consists of Pleistocene light grey cover sands (H11). There are no traces of soil development in this substrate. Following the sea-level rise (although at a reduced rate), the groundwater table rises. The site became humid and -compared with data in other regions- peat growth probably started around 6000-5500 cal BP (Baeteman, 2018).

A 220 cm thick peat layer between -153 cm TAW and +75 cm TAW overlies the Pleistocene sand. This marks the second unit of deposition. Originally, the peat layer was much thicker. Due to drainage, the peat layers in the coastal plains have compacted. The drainage could have been caused by the scouring of tidal channels with the return of the tidal system in the late Holocene (Baeteman, 2005). Another possibility is human intervention: the peat bog could be drained for better accessibility.

Situated on top of the peat, is alternating cm and mm-layered sand/silt and clay with peat detritus originating from the erosion of peat (some cm or mm wide), deposited within a tidal bedding (H7-H4). In a tidal bedding, silt and sand are deposited at flood- and ebb-current, while mud with peat detritus is deposited at turning tide and no current (see Baeteman et al., 2015 for examples). The absence of cross-stratification -pointing to a high-energy environment- and bioturbations from bottom-dwelling animals suggest a deposition in a shallow gully. The filling of a shallow gully can happen relatively fast, within a few months. On top lays the transition from the shallow

Figure 5. Profile 6. In the two pictures on the right, the upper part of the profile was damaged by the excavator.

gully to a mudflat (H3). The transition from mudflat to salt marsh is situated at the next boundary (between H3 and H2). The topsoil (H1) is developed in these salt marsh sediments.

4.3. PROFILE 5: THE ROMAN TRANSFORMATION OF THE LANDSCAPE

This profile is studied in a southwest to northeast oriented trench. Both the side and the plane of the trench have been registered. Within the profile are three distinct parts. They are discussed here form the southwest to the northeast.

Based on three augerings in the surface of the trench, this profile is situated above a 100 cm thick layer of peat and 85 cm of sand and clay. The top of the peat layer varies between +85 and +115 cm TAW.

4.4. PROFILE 5: PART A TO B

The first horizon (H1) is formed by light grey sediment with patches of iron oxides. The sediment, formed in a shallow gully, shows a distinct stratification of alternating layers of light gray, silty to fine sandy sediments and darker, more clayey sediments. Very strikingly, the stratification is not continuous. In the horizontal plane, this discordant stratification is clearly visible. This indicates that the originally horizontal lamination is no longer *in situ*. The length of the divergent stratigraphy and the discordant pattern indicate displaced blocks of sediment. The sides of the block vary between 20 and 40 cm. The clay blocks were stacked, creating a 250 cm wide and 91 cm high wall, encompassing a surface of 367 m². Horizons 2 to 7 are found on the inside of this wall, forming an artificial platform or terp. The top of the terp varies between +241 and +260 cm TAW.

Horizon 2 (H2) consists of greyish clay, lacking stratification. This absence of stratification can be explained by a lack of stratification in the parent material. Horizon 3 (H3) has a clayey texture, rich in humus. The layer has been carefully placed on horizons 1 and 2. The horizon was exposed for a relativly short period, possibly a couple of weeks. Abundant precipitation caused a sorting of the soil: light grey and beige, silty sediments run parallel to the mound.

4.5. PROFILE 5: PART B TO C

The next horizon (H4) connects to the previously placed blocks, thus creating a terp. The outlines of the displaced blocks are clearly visible: the stratification is no longer *in situ*. Horizon 5 (H5) is less clayey, with a less pronounced stratification. Its deposition, during a period of abundant precipitation, is comparable to horizon 3 (H3). This causes a sedimentary stratification parallel to the wall. In some horizons (H1 and H4), the blocks are placed one upon the other in alternating directions. This creates a very recognizable checkerboard pattern. In other horizons (H3), all blocks are placed at an angle of 45°.

4.6. PROFILE 5: PART C TO D

Horizon 6 (H6) is a relatively wide, clayey layer, completing the sequence of clayey fill layers. The layer is, again, characterised by a distinct pattern of discordant stratification,

proving that this material is displaced to create a terp. The innermost horizon (H7) differs from the previously deposited layers. It consists of silt with little clay. A possible explanation for this distinction is a careful selection of material with a coarser texture. This leads to a better permeability of the soil, avoiding flooding of the mound after heavy showers. The irregular border between horizons 6 and 7 points to the fact that they were placed shortly after one another.

4.7. SUMMARY OF THE GEO-ARCHAEOLOGICAL OBSERVATIONS

The Roman settlement along the Heistlaan in Ramskapelle is situated at a favourable position in the Holocene landscape: at the edge of a large complex of tidal channels connecting the Pleistocene coastal hinterland to the sea and hence, connecting it to the rest of the Roman Empire. The large complex of gullies runs along Heist over Koolkerke towards the Roman harbour at Fort Lapin in Bruges. From these large channels, several smaller gullies branch out in a south-western direction.

The soil at the site was studied during the augering campaign, the trial trenching, and the excavation. Within the study area, the Pleistocene cover sand surface is preserved. A 220 cm thick peat bed overlays the Pleistocene sand. Originally, this layer was much thicker, but it has since then compacted. Only scattered patches of this layer are fully conserved: the augering campaign reveals intensive peat extraction in the area between the gullies. The sediments on top of the layer of peat were deposited within a shallow gully.

Profile 5 yields the most remarkable observations. The profile is marked by a discordant stratigraphy, visible in the horizontal plane. The original horizontal stratigraphy formed in a shallow gully is no longer *in situ*. The shape and dimension of the discordant stratification are a clear indication of the displacement of the blocks. These blocks have been dug out elsewhere and placed on the site. The oldest layers form a wall. Subsequent layers of displaced blocks are placed against this wall, creating an artificial dwelling mound or terp. Some of these layers have been exposed for some time: the building of the mound probably took several weeks or longer. The inner layer differs from the outer layers. This layer is made up of a coarser material with little clay: this provides a better permeability of the soil, enabling effective water management.

The landscape in the period of Roman occupation at this location most probably consisted of peat at the surface and small areas already affected by tides. This period is characterised by the renewed tidal extension with the formation of tidal channels, which progressively penetrate the plain. Before the construction of the terp, the peat bog was intentionally drained and added to through intensive peat extraction in the surrounding areas, the peat bog has been de-watered and consequently compacted. This caused a lowering of the landscape. The lowering, in turn, provided an accommodation space for the deposition of tidal sediments. At this location, interlaminated sand and mud with peat detritus formed in a shallow gully. The thickness of the deposit and the small amount of tidal bundles (representing a fortnight), with almost no reactivation surfaces, suggest that the gully silted up in a period of a few months. These deposits have to have been excavated somewhere else to build the terp. An almost similar situation was found at Raversijde (Oostende) (Baeteman et al., 2015). Here, laminated gully deposits were used to build a dike or a causeway.

These observations indicate a well-planned and

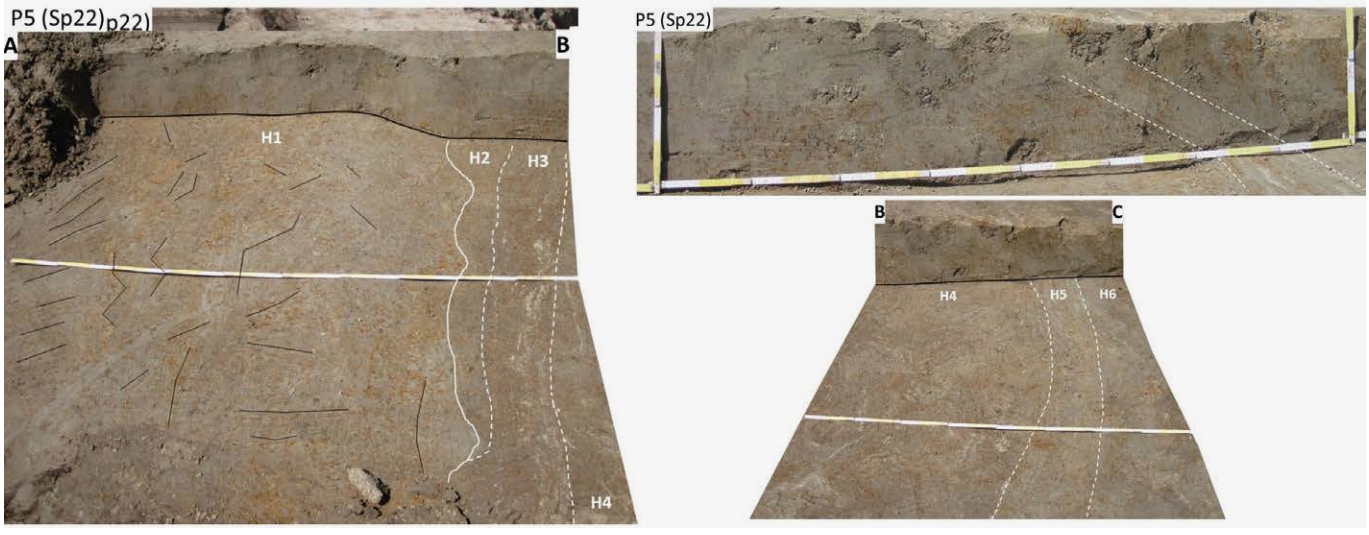


Figure 6. Profile 5.

well-organised construction. On top of the tidal sediments a 367 m² large and 91 cm high terp was created, between +241 and +260 cm TAW. According to a conservative estimation, over 330 m³ of soil has been displaced. As silt and clay weigh about 1.7 metric tons per m³, about 567 tons of soil must have been moved. Assuming the soil contained 10 % water, this adds another 33 tons, bringing the total weight of the transported soil to roughly 600 tons. The terp can only be constructed from ripe soil, meaning only the top 20 cm of the surrounding soils could have been used. This implies that an area of 1 650 m² was stripped from its topsoil. On top of that, the textural difference between the clayey, sturdy outer rim and the coarser, permeable inner side point to the careful selection of the material.

Also observed, are layers of clay containing large amounts of mollusc shell fragments. These layers, 2 to 8 m wide, were recognised all around the terp. These are very probably reinforcing layers, deposited after the building of the terp, rather than waste layers. Based on several overcuts by structures, these layers have effectively enlarged the living space on top of the terp. An alternative or additional explanation is the added visibility of the white shells, making the terp a landmark in an otherwise flat landscape.

The terp creates a patch of land permanently above the water level. After the silting up of the large complex of gullies, the reclamation of the coastal plains and the compacting of the peat, the site was in a low position in the landscape. Because of the lower position, the terrain has never again been suited for settling and was only used as pasture. This has safeguarded the archaeological remains for centuries.

5. The micromorphological data

During the excavation, the team collected undisturbed soil samples for micromorphological research. The location of the samples was carefully chosen to answer questions regarding the landscape prior to the construction of the mound, the transition from natural to anthropogenic layers, and the post-site deposits. Three sequences were selected for thin sections.

The micromorphological research is executed by Sara Pescio (Pescio, 2019) of the Quaternaria di Pescio Sara Micromorphological Services. The samples were transported as in situ oriented blocks. After drying, all pores were filled and all soil particles fixed by using a polyester or epoxy resin. After hardening, the samples were cut, thinned, and polished until the standard thickness of 30 µm (micron) was reached. Thin sections were studied under the petrographic or polarizing microscope and described using the terminology and concepts introduced by Georges Stoops (2003). The most important findings are discussed here per sample, from bottom to top.

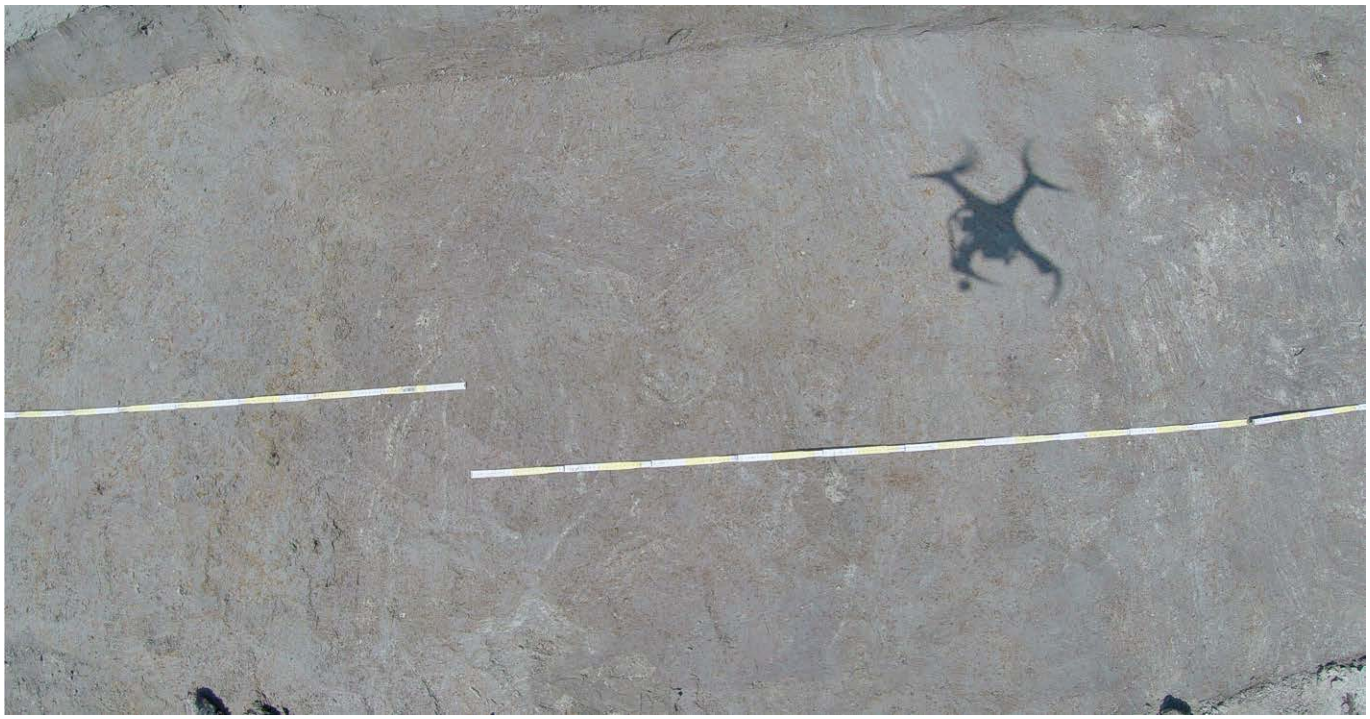


Figure 7. A drone shot of the discordant stratigraphy in profile 5.

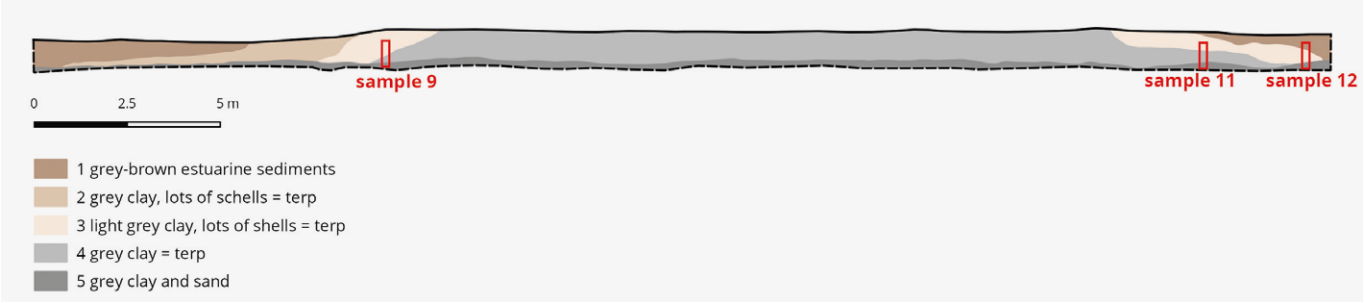


Figure 8. An abstracted location of the samples discussed in the micromorphological study indicated on profile 10.

5.1. SAMPLE 9

The first sequence to be discussed is sample 9 from profile 10. This sample was collected at the north-eastern edge of the mound. The main focus of this sequence is the transition from *in situ* estuarine sediments to the anthropogenic layers of the mound. From this sequence, four thin sections were analysed.

The bottom half of this sample contains two superimposed layers. The features present in the bottom layer point to sediments deposited in a tidal environment. The presence of sponge spicules and diatoms indicate wet conditions and water stagnation. The upper layer consists of alternating laminae of peat and of sandy silt minerogenic sediments. The presence of diatoms remains and Chrysophycea stomatocysts, abundant horizontally-aligned plant fragments, and the laminated aspect of the sediments testify that this unit originated from marshy or palustrine conditions, but was transported by currents and deposited in a shallow gully characterised by tidal bedding. The section contains no anthropogenic elements.

The upper layer contains the same elements (algal remains and iron features) as the bottom half, but the laminated aspect has disappeared. This leads to the conclusion that this material has been displaced. The sediments were deposited *in situ* in a marshy environment, later they eroded and were transported and eventually displaced in the Roman period to this location. The upper part of this sample contains a widespread amount of mollusc shell fragments.

5.2. SAMPLE 12

The second sequence is situated on the south-eastern edge of the mound. Three sections within this sequence were investigated. The sequence covers the transitions between the mound, the layer with shell fragments, and the post-site clay deposits.

The bottom part of this sample is composed of displaced sediments. In contrast to the previous sections, this layer contains a large amount of anthropogenic elements. Within the sections, fragments of charcoal, bone and eggshell could be recognised. The section contains sparse fragments of mollusc shells. Iron nodules point to wet conditions and hydromorphic processes. The top part of this layer shows more evident traces of bioturbation. Charcoal and bone fragments are the result of an anthropogenic presence. Mollusc shell fragments are more abundant than in the lower zone of the sequence.

The upmost part of the sample is characterised by a decrease of hydromorphic traces and indicators of human presence. The section is situated on the transition from the terp to clay sediments, deposited after the abandonment of the site.

5.3. SAMPLE 11

The third sequence is located at the south-western edge of the terp. Two sections within this sequence were investigated. The sequence encompasses the transition from tidal sediments to anthropogenic layers.

The bottom half of this sample is made up of sandy silt. The presence of diatoms, Chrysophycea stomatocysts, sponge spicules, and the lamination of the sediments point towards sedimentation processes in a shallow gully. Iron nodules suggest hydromorphic processes. No anthropogenic elements were recognised. Within the upper half of the sample, fragments of reworked material are visible, suggesting displaced material. Which is another indication of the human origin of this layer.

5.4. SUMMARY OF THE MICROMORPHOLOGICAL DATA

The micromorphological research contributes significantly to our understanding of the formation of the terp. Before the construction of the terp, the site was made up of sediments deposited in a shallow gully. Micromorphological data deliver clear proof of the anthropogenic origin of the layers described as 'terp'. These layers consist of displaced material, with characteristics strongly resembling the underlying, natural (in situ) sediments. The building blocks of the terp were probably excavated close by.

Within the layers of the terp, there is a clear distinction between the core and the edge. At the core, there are no inclusions of anthropogenic origin, while these are

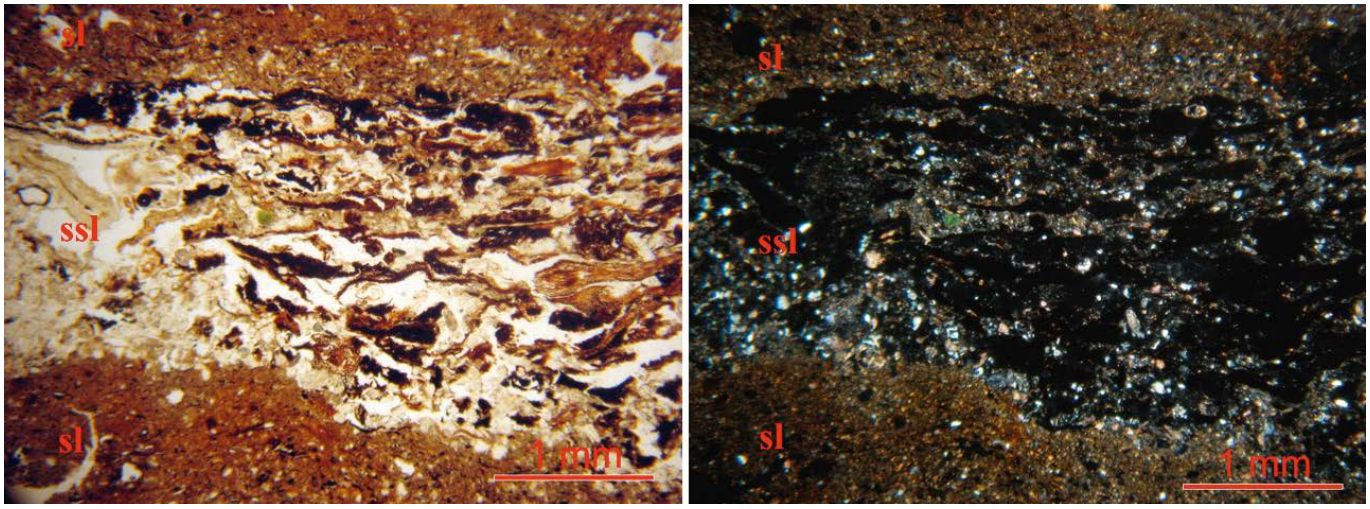


Figure 9. The alternation of silt loam (sl) and sandy silt loam-textured micro-layers (ssl) including abundant plant residues. The laminated aspect of sediments and the horizontal alignment of the organic remains suggest a palustrine/marshy environment with alternation of higher and lower energy periods. Thin section 39664. PPL and XPL (Pescio, 2019, 10).

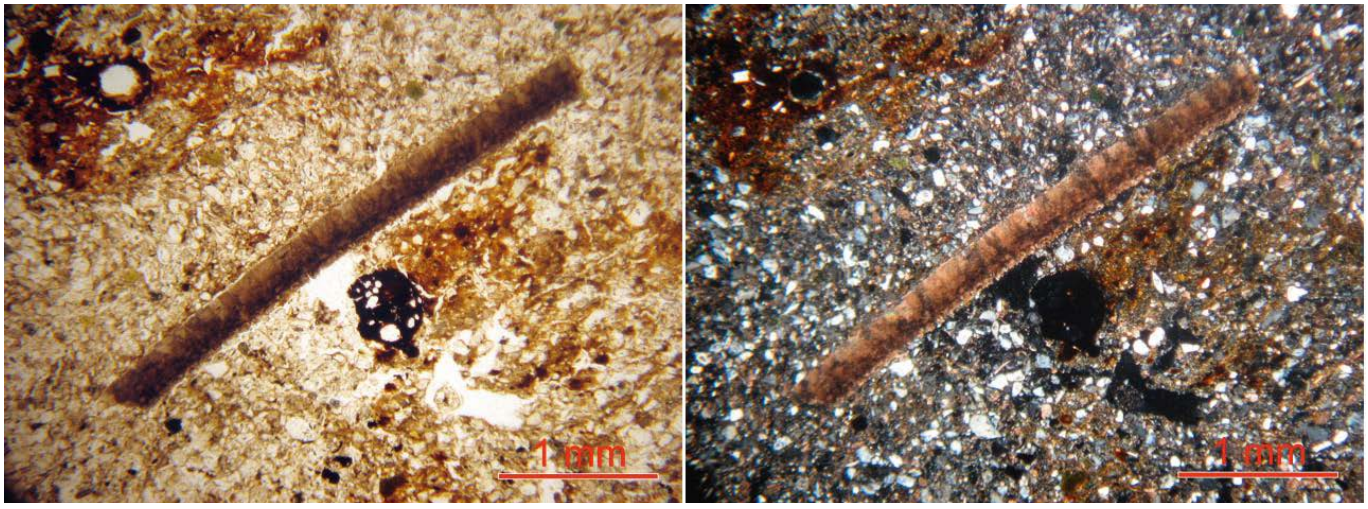


Figure 10. Anthropic indicators: an eggshell fragment. Thin section 39667. PPL and XPL (Pescio, 2019, 12).

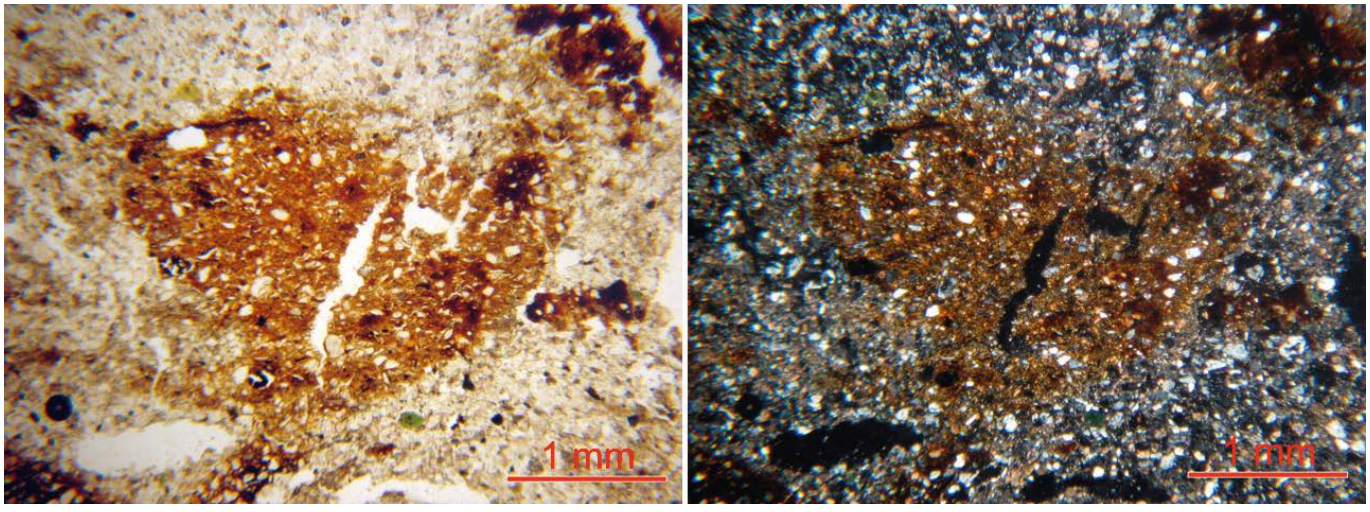


Figure 11. Fragments of allochthonous reworked materials (from the lower layer?). Thin section 39670. PPL and XPL (Pescio, 2019, 16).

numerous at the edges. This entails that the terp was not inhabited during its construction. With the exception of the presence of anthropogenic inclusions, the outer layers do not differ from the inner layers. Additionally, shell fragments are present, but they do not dominate the material. This reinforces the idea that the outer layers of the terp are not waste layers, but have been placed here during the occupancy of the terp to enlarge the living space and to strengthen the terp.

Supplementing field observations with micromorphological data allowed for a detailed reconstruction of the evolution of the terp. The results of the micromorphology are used to test hypothesises and to contribute to new insights. To enable this research, all key profiles must be specifically sampled for thin sections.

6. Discussion

Since the start of the 21st century, knowledge on the nature of the Roman occupation of the coastal plains has been expanding. Excavations around Ostend and in Zeeland (The Netherlands) provide evidence for the Roman transformation of the landscape, to accommodate habitation and economic activities. The two sites that are most similar to the terp in Ramskapelle are Serooskerke-Wattelsweg and Stene. But, also in other, more northern areas along the Roman coast and beyond, comparable features have been documented (Van Londen, 2006; Meier, 2006). While no pre-Roman terps have been encountered in the Flemish coastal area yet, an exclusive Roman cultural and chronological attribution should not be made. Indeed, Plinius (Nat. Hist. 16,2) describes extensively how the Chauci, a Germanic tribe living in the Elbe, Ems and Weser estuaries, lived on platforms near the sea 'raised with their own hands above the highest of tide known'. Aside from elevated sand ridges or dried-out peat bogs, artificially raised dwelling mounds seem a logical human adaptation to a complex and dynamic landscape.

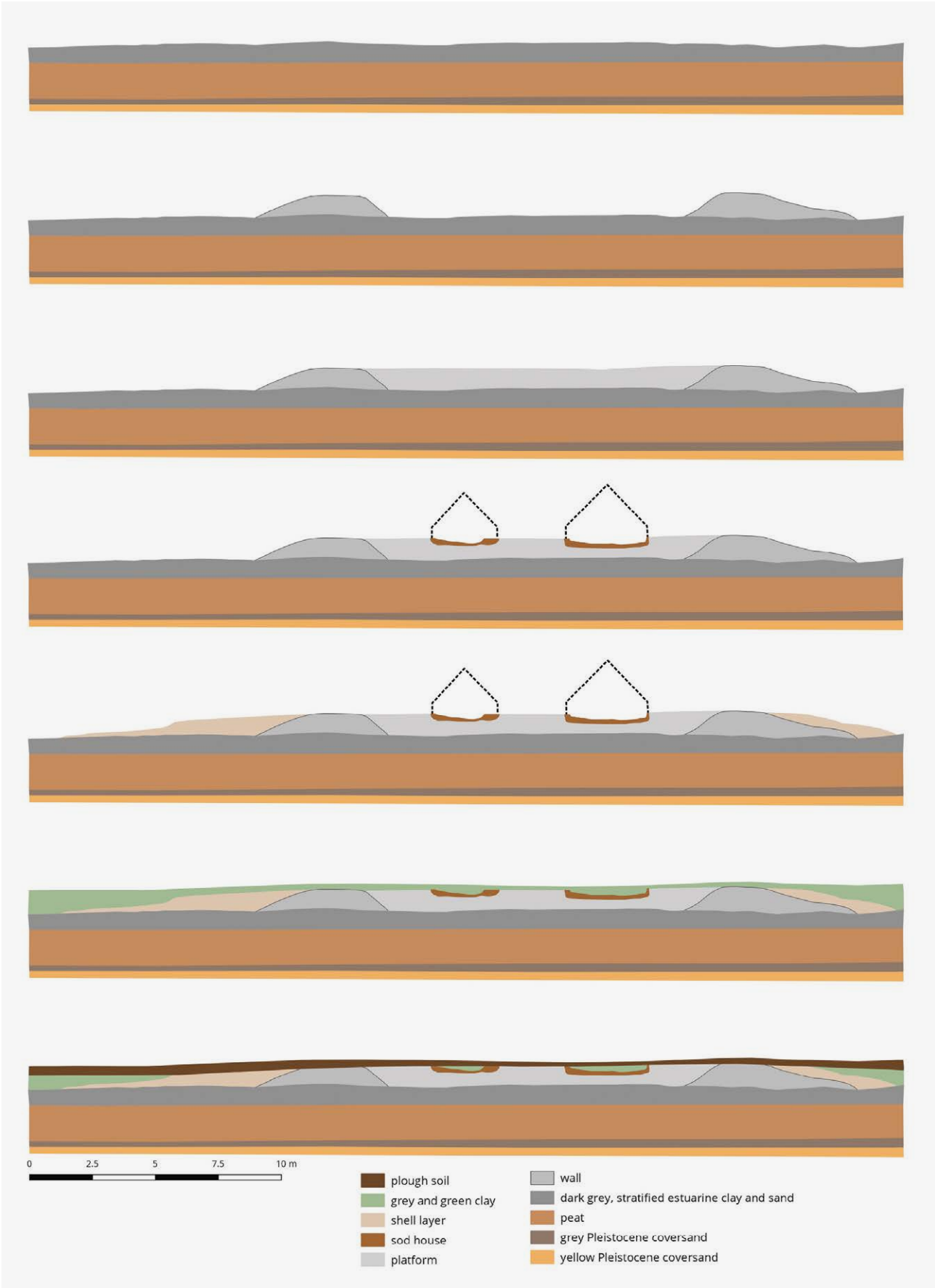
Along the Wattelsweg in Serooskerke (Zeeland, the Netherlands) (Dijkstra, 2011, 65), the landscape starts changing in the 3rd century AD as the influence of the sea increases. To protect themselves against the rising water level, the inhabitants constructed a terp and a dike. The excavated part of the dike is 85 m long and 80 cm high. The dike is made up of blocks of clay and peat, excavated nearby. The dike joins the south-western corner of the terp. The exact measurements of the terp are unknown. It is larger than 7.5 by 7.5 m, but not larger than 7.5 by 9 m. The minimal height is 80 cm. On top of the platform, some possible traces of sod-houses could be observed (De Clercq, 2011, 204).

The second known Roman terp is the site situated at Stene (Ostend) (Demey et al., 2013). This was the first excavated Roman terp in Flanders. The site consists of a dike and a mound. The mound is at least 17 by 8 m and 97 cm high. The terp has been adjusted several times: at the slopes, alternating layers of sods and waste layers are visible. On top of the mound, the archaeologists found traces of buildings, although their exact nature could not be ascertained. Pottery dates the site between the late 1st and early 2nd century AD.

Based on our experience during the A11-project and other projects, and with the experience of others working in this complex landscape, we would like to propose three simple guidelines to assist future research in the coastal plains of Flanders:

1. During a desktop study concerning a project in the coastal plain: use a gully map. While proprietary data can enable the creation of alternative gully maps, the map presented here is freely available upon request to the author.
2. Use the information from the gully map to differentiate the archaeological research. At the location of the gullies, where the original deposits have been eroded, a combination of fieldwalking and trial trenching is preferred for detecting sites. In the zones between gullies, where the original stratigraphy is preserved, the first step is a geophysical prospection aimed at mapping buried landforms. Following the results of this prospection, a manual auger survey is used to examine key landscape features. At promising locations, this survey is supplemented with a close-grid auger survey aimed at tracing down archaeological remains. If this study reveals superimposed well-conserved archaeological surfaces, stepped trenches are the most efficient way to evaluate each one of them.
3. When encountering Roman features or scattered finds in the coastal plain: carry out long soil profiles, stretching several meters and register both the sides and the plane of the trenches. Alternate these long profiles with deep pits, to register each subsequent period of deposition. Supplement this with manual boreholes to fill in any gaps in the evolution of the landscape.

Figure 12. An abstracted representation of the evolution of the Roman terp along the Heistlaan in Ramskapelle.


0
2.5
5
7.5
10 m
plough soil
grey and green clay
shell layer
sod house
platform
wall
dark grey, stratified estuarine clay and sand
peat
grey Pleistocene coversand
yellow Pleistocene coversand

7. Conclusions

The discovery of the terp along the Heistlaan in Ramskapelle constitutes a significant step in understanding the nature of the Roman occupation in the coastal plain of Flanders. Not only is it the largest Roman terp discovered to date, it is also the most complete. With an area of 367 m² and a height of 91 cm the construction was a considerable endeavour, involving the handling of around 600 metric tons of displaced material, stemming from an extraction area of 1 650 m², close to the site. This indicates the investment of a considerable amount of man- and animal effort and the presence of a social force and framework to mobilise this power. As with the construction of embankments, this could point to (local) Roman authorities or a local power-holder involved in supra-local networks.

Furthermore, soil characteristics, sedimentological observations, and micromorphological data indicate a well-organised and well-planned structure and hence, point to a well-known and probably widespread building-concept, as well as to good knowledge of the landscape and its opportunities. The extracted sediments were indeed carefully selected: clayey, sturdy material for the outer rim, forming a firm base and coarser, silty material for the inner structure, providing a better permeability and avoiding the flooding of the terp. During the occupation of the mound, the surface used for living was enlarged with white layers of estuarine sediments and containing mollusc shell fragments, making the raised platform a landmark in an otherwise flat landscape.

These findings not only confirm that artificially raised platforms indeed occur in the northern part of the civitas Menapiorum, they lead us to suspect that these dwelling mounds or terps were indeed much more widespread than suspected so far and should provoke the reinterpretation of older excavation data (De Clercq 2009, 208; Vanhoutte et al., 2003; Vanhoutte et al., 2006). This form of habitation seems to have been popular in a more or less uniform fashion for centuries, well into the Middle Ages (Tys, 2004).

Figure 13. An artistic reconstruction of the Roman terp along the Heistlaan in Ramskapelle (Yannick De Smet, http://yannick.de-smet.me/).

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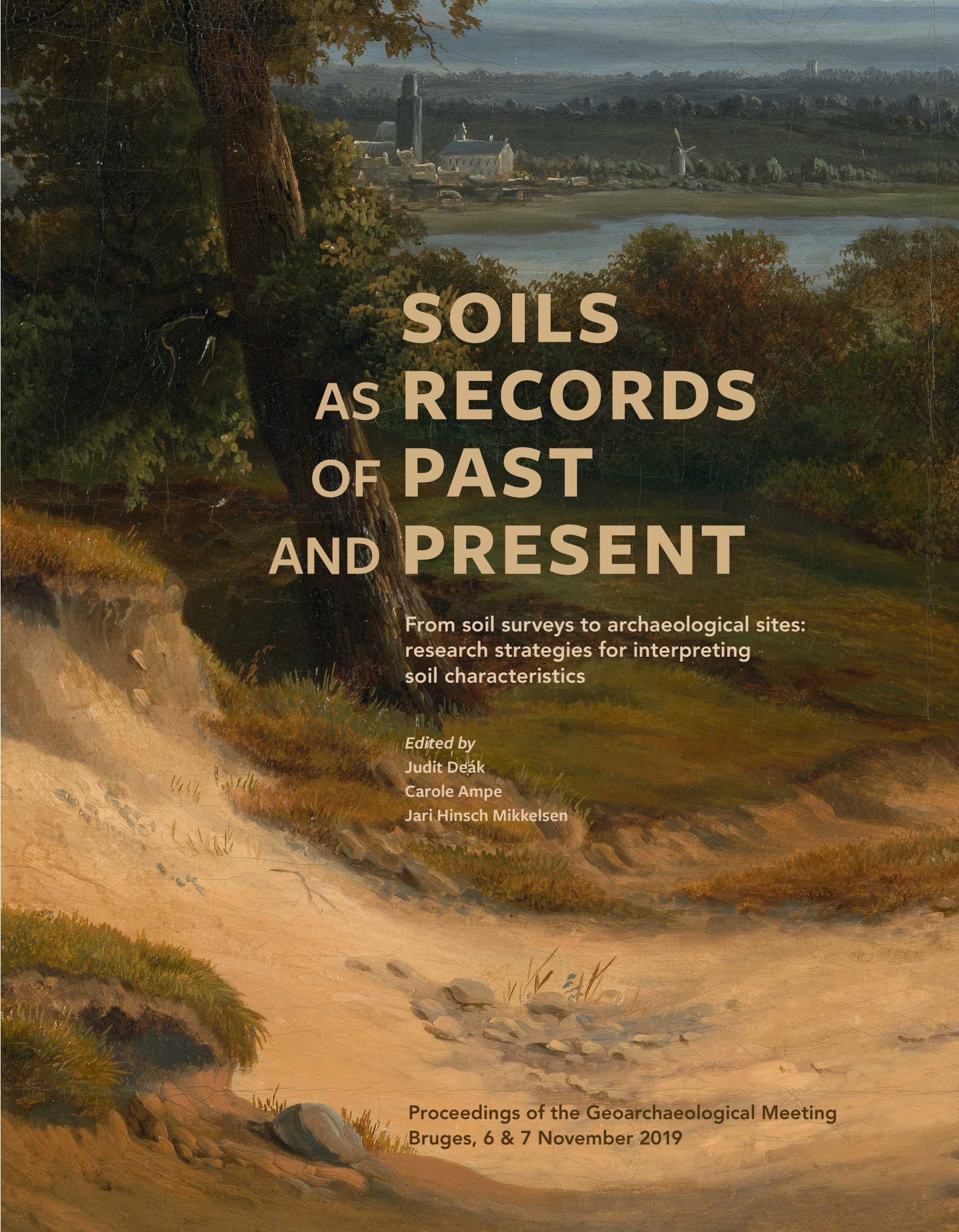

SOILS AS RECORDS OF PAST AND PRESENT

From soil surveys to archaeological sites: research strategies for interpreting soil characteristics

Edited by
Judit Deák
Carole Ampe
Jari Hinsch Mikkelsen

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