

Archaeological desk- and coring research, location Sir Winston Churchilllaan 8 in Middelburg, municipality Middelburg

Walcherse Archeologische Dienst



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Archaeological desk- and coring research for the Sir Winston Churchill-Iaan 8 (municipality of Middelburg) Walcherse Archeologische Rapporten 52 WAD-Projectcode MIDD_021_003

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Summary

Dutch

De gemeente Middelburg is het plangebied aan de Churchill-laan aan het ontwikkelen. Waar nu school- en gymcomplexen staan, komen in de toekomst huur- en zorg-appartementen en een supermarkt. Dit houdt in een ingrijpende bodemverstoring, wat een dreiging kan vormen voor mogelijke archeologie in de bodem. In lijn met de landelijke wetgeving, het Walcherse archeologiebeleid en het gemeentelijke bestemmingsplan, wordt een verkennend archeologisch onderzoek uitgevoerd door de Walcherse Archeologische Dienst, in de vorm van een bureauonderzoek en booronderzoek. Dit rapport brengt de resultaten en verwachtingsmodel vanuit het vooronderzoek in kaart en presenteert de resultaten van de boringen. Het bevat ook een advies voor eventuele vervolgstappen in het onderzoek.

Het onderzoek heeft aangetoond dat het verwachtingsmodel ietwat afwijkt van de bodembeschrijving die Bennema & Van der Meer hebben opgesteld:

- Sommige boringen toonden intact veen met een veraarde top, wat er toe leidt dat de verwachting voor archeologie uit de IJzertijd en Romeinse tijd middelhoog is.

- Andere boringen toonden indicatoren van moernering, waarbij de bodem duidelijk verstoord is door menselijke toedoen, in lijn met de verwachting van Bennema & Van der Meer.

- Het Laagpakket van Walcheren was flink verstoord. Daarom is er een lage verwachting voor archeologie uit de Middeleeuwen. Ook bevindt de onderzoeks-locatie zich in een poelgebied, waar de nederzettingen tijdens de Middeleeuwen zich bovenop de kreekruggen bevonden. Door het vinden van intact veen in het plangebied, luidt het advies als volgt: wanneer de bouwplannen de bodem dusdanig verstoren op de plekken waar intact veen is gevonden, en dus een dreiging vormen voor eventuele archeologie, wordt een proefsleuvenonderzoek geadviseerd voorafgaand aan het begin van de bouwplannen. Dit zal worden voltrokken om de bevindingen uit het booronderzoek te testen, zowel als mogelijke archeologie te vinden en te waarderen. Dit zal specifiek gelden voor de bodem ter hoogte van boringen 1 en 8.

English

The municipality of Middelburg is developing the allocation plan at the location Churchill-laan 8 in Middelburg, where the current education facility is to become a supermarket and rental- and care appartements. The upcoming construction will disrupt the soil, posing a threat to possible archaeology underneath. In alignment with national legislation and the Walcherse policy for archaeology, the WAD (Walcherse Archaeological Service) has conducted an exploratory research in the form of a desk study and coring. The following rapport presents the results and model of expectations from the desk study and results from the coring. It also includes a concluding advice concerning subsequent research.

The research has shown that the model of expectation diverges slightly from the soil map by Bennema & Van der Meer:

- The top of the peat was amorphic in some corings and thus signals a possibility of archaeology from the Iron Age and Roman settlements in Zeeland;

- In other cases, the peat signaled moernering, the practice of extra peat for salt production, that has disturbed the walking surface and thus possible archaeology;

- The Laagpakket van Walcheren showed significant signs of disruptions. Therefore, there is a low expectation for archaeology from the Middle Ages. Additionally, the target location found itself in a 'poel' area, whereas settlements during this time were at the higher tidal ridges.

In case the construction plans for the Churchill-laan 8 pose a threat to archaeology, specifically in the south-west corner of the research area, the advice is to conduct a trial trench research. This is to assess the validity of the results from the coring, specifically 1 & 8, and to locate possible archaeology in the top of the intact peat.

1.1 Description of the research assignment

This research has been conducted for the siteallocation plan of the municipality Middelburg/ Walcheren, concerning the location Sir Winston Churchill-laan in Klarenbeek, Middelburg. The location is to become a supermarket and apartment complexes for rental and care purposes. The site has been used as a school facility, but the building is currently abandoned.

The construction that will be conducted for the transformation at the location is a potential threat to archaeological finds. According to national legislation, the Walcherse Archeological Policy Plan and the municipal allocation plan, an inventory archaeological inquiry needs to be done prior to the start of the development project. It will provide insight into a possible archaeological assemblage that can be found at the site that can influence the development plan as outlined by the municipality of Middelburg. The WAD has done exploratory research, consisting of a desk study and a coring-research in line with both the Kwaliteitsnorm voor Nederlandse Archeologie, or the KNA (Quality Norm for Dutch Archaeology) and local municipal guidelines as outlined in 1.2.

For the research, the WAD has formulated a Methodology Plan (PVA-code), in which research problem, goal, research question and proposed method are included.

For the MP (Methodology Plan) the WAD has conducted a desk study, of which the results are discussed in sections 2 and 3.

There are some preliminary conclusions based on a survey of the cartography and geological maps that are available for the site: (Bennema & Van der Meer)

- The location of the Churchill-laan is located in an old low 'poel' area according to a very reliable and detailed map by Bennema & Van der Meer of 1959 (MOp11). This infers that in the lower soil strata, there is expected to be a peat-stratum. A peat layer was the surface level during the Iron Age and Roman times and therefore indicates possible archaeology from these periods.

-However, the historical research also shows that these peatlands have a history of being excavated on a large scale in Medieval times to produce salt, which could have posed a threat to archaeology. Therefore, the expectancy for possible archaeological finds from the Iron or Roman time is limited. - There is legislation concerning archaeology in Zeeland and the expectations have been mapped. This chart of the archaeological value assessment signals a middle-high expectation model for an archaeological assemblage. Combined with the Bennema map, the expectation is to find a possible archaeological assemblage from the Roman time.

1.2 Active laws and policies

The current archaeological research is necessary to comply with the Erfgoedwet accepted in 2016 (Heritage Law). This law is in transition to become the Omgevingswet, which was accepted by the government in 2015-2016. The law states that the municipality oversees archaeology in their allocation plans. The municipalities of Walcheren have therefore established an archaeology policy. An inventory was made based on the archaeological values and expectations which was then translated into the Archeologische Waarden- en Verwachtingskaart Walcheren 2016 (Archeaological Value and Expectation Map). The target area for the current research is located on this map and indicates a middle-high expectancy for archaeology. Archaeological research was thus deemed necessary. For the conduction of the inventory coring and desk research the additional Provincial guidelines of 2019 are also applicable.

1.3 Location of the research area

The research location, the Churchill-laan 8, is situated just outside of the city center of Middelburg in the district Klarenbeek. The target area can be found in between the Sir Winston Churchill-laan and the Nadorstweg, as illustrated/ indicated by figure 1. On the map, the area comprises lots 157-159

1.4 Current and projected use of project area

The project area was being used as a school facility for the Nehalennia school community but is currently abandoned. The projected allocation is a Jumbo supermarket, as well as several rentals and health care apartment complexes for Housing Corporation Woongoed and healthcare organization Zorgstroom.

1.5 Goal of the research

The municipality of Middelburg wants to develop the allocation plan for the location Churchill-laan. The aim is to turn the lot into a supermarket and housing facilities. To initiate the development process, an exploratory archaeological research has been ordered to establish all characteristics of the site and to chart possible risks.

The purpose of the research is to assess, document and evaluate the allocation site through desk research and exploratory coring research. Based on the results, an advice plan will be drawn up to decide whether to conduct further archaeological research at the site. The purpose of this research is to establish specifically whether the stratigraphy of the site is intact and whether it aligns with the expectation model drawn up following the desk study. Furthermore, it aims to establish whether within the intact stratigraphical soil layers an archaeological assemblage may be expected.

1.6 Research Problems and Questions

- What are the archaeological expectations based on a study of geological, geomorphological and soil maps?

- What are the archaeological expectations based on a study of historical maps?

- What are the expectations for possible disturbances based on a historical study of the area?

- Is it possible to format a proper stratigraphy, based on coring research and what is the nature of this section?

- In case of an intact soil section, can we expect archaeological assemblage? What can be said about the time period specifications of these findings?

- Has the coring already revealed archaeological finds?; Is it possible to make inferences about the nature, dating and level of conservation of these finds?

1.7 Questions concerning value assessment & proceedings

- What is the value assessment of the findings (in accordance with KNA)?

What is the advice for subsequent research?

1.8 Methodology

Following the research assignment, the WAD has conducted a desk study (chapters 2&3). The goal is to establish a model of expectations, which is thereafter tested by means of a coring.

For this, the WAD has drawn up a methodology plan (MP) in which the research problem, goal of the study, research question and proposed method has been listed. Successively, the coring research has been performed by B. Meijlink, B. Silkens & H. van Veen.

The findings of the exploratory field research by means of coring are listed in the appendix and are discussed in chapter 4.

The results, conclusions and answers to the research questions have been listed in the concluding chapters.

1.9 References (Addresses, historical & geological maps)

Addresses

- ARCHIS (AMK, IKAW, omg en wng)

- FlexiWeb/Nedbrowser gemeente Middelburg (topografie, kadastergegevens en luchtfoto's)

- Geoweb/CHS (Provincie Zeeland) (historische kaarten, luchtfoto's)

- Google Earth

- Luchtfotografische documentatie (Geoweb Provincie Zeeland)

- Luchtfotografische documentatie 1974 (Erfgoed Zeeland)

- Zeeuws Archief (historische kaarten, foto's,
- bouwtekeningen, kadastrale minuut)
- Zeeuwse Bibliotheek (fotobank)
- Zeeuws Archeologisch Archief

-Actueel Hoogtebestand Nederland (AHN) - https://www.zeeuwsbodemvenster.nl/ duurzaam-bodemgebruik/de-zeeuwse-bodem - https://www.zeeland.nl/digitaalarchief/zee0700105

Oude kaarten

- Jacob van Deventer (1550)
- Visscher-Romankaart (1650)
- Topografische Kaart van de Hattinga's (1750)
- Kadastrale kaart van Walcheren (Kuijper 1852)
- Kadastrale kaart van Walcheren (1875)
- Bonnebladen (1926)

Aardwetenschappelijke kaarten

- Rijks Geologische Dienst (RGD). Geologische kaart van Nederland 1:50.000, Blad Walcheren, Haarlem: 1972, Tweede druk 1997.

- RGD. Paleogeografischekaarten van Zeeland, Holoceen, 1:500000, Haarlem: 1996.

- RGD. Geologische kaarten van Zeeland, Holoceen, 1:250000, Haarlem: 1996.

- Bennema, Ir. J. en Dr. Ir. K. van der Meer. De Bodemkartering van Nederland, deel XII, De Bodemkartering van Walcheren. Ministerie van Landbouw, Visserij en Voedselvoorziening, Directie van de Landbouw, Stichting voor Bodemkartering, 's-Gravenhage: 1952.





Fig 1. The research area indicated in red and blue on the topographical map. The planned spots for coring are indicated with orange dots.

2. Geology & soil

The stratigraphy of Walcheren is characterized by four recognizable layers coinciding with periods of sedimentation. There is Pleistocene, a period of alternating warmer and cooler periods, more than 11 Kya ago. During this era, Zeeland was covered in a thick layer of sand, which is visible in the soil profile. Following the Pleistocene is the Holocene era, characterized by a warmer period, in which the North Sea expanded in volume and the sea level rose.

About 4000 years later, the sea-level rise came to a halt and in Zeeland and a tidal region started to form. Between 5000 and 2000 BC salt marshes and mud flats started to form in the tidal region. Sediments belonging to this period are called Laagpakket van Wormer. Then, around 2000 BC, the coast lines closed up due to natural formation of dunes, causing the formation of peat swamp under influence of the saltwater hinterlands. Eventually, the area started to silt up and around 3500 years ago (1500 BC), Zeeland was covered under a firm and thick layer of peat, called the Hollandveen Laagpakket.

Around 400 BC the coastline reopens, causing the peat to drain. The peat stratum then becomes sedimentary and habitable. Thus, from circa 400 onwards, settlements returned to the region of Zeeland.



Fig 2. The natural formation of a tidal ridge.

The Romans came upon the area of Holland about 2000 years ago and settled down on this new soil (14 BC). During this time, the sea level rose, which, in combination with the intense irrigation the Roman settlers conducted with the peat lands causes the landscape to change. The settled peat started to occupy a lower position in the landscape and instigated a degradation of the peat, which would be completely degraded around 300 CE. The settling of the peat in combination with the rising of the sea level led to frequent flooding. In between creek trenches, the area was repeatedly being flooded, causing the sedimentation to become more clay-like. Eventually, the Zeeland soil became uninhabitable and over the course of several hundred years, a height difference in the landscape became visible. The land alternated between areas of clay soil with peat underneath and areas with sand soil from the former creeks. The landscape of Walcheren characterizes itself by the alternation of lower and higher areas. These lower areas are called the poelgebieden, surrounded by the inversion ridges, which are higher. The lower located poel areas were too wet for settlements, so they were used for pasture. Nearly no medieval settlements can be found on these areas. The dryer land on the tidal ridges was occupied by settlements.

These higher creek banks were the places where people settled down. It was also the location of agricultural practice. The medieval time knew much damage to the peat stratum, because it was being dug in in large quantities and burned to produce saline. But, because the peat in some of these poel areas has not been damaged manually or naturally, there is a possibility of the presence of archaeology.

The target area for the current research is in Klarenbeek is located in between two of these tidal ridges, signaling the soil likely consists of clay-like upper layers as described above, with a layer of peat underneath. What is probable, is that the soil will not contain early Medieval archaeology. These settlements were located on the creek banks, rather than beside it in the poel area, as to be safe from the water running through the tidal channels. Because the soil contains a layer of peat underneath, there is a possibility of archaeology from the Iron Age & Roman time, whom, during their settlement in Zeeland, practiced agriculture and built small settlements. The archeological traces can be found in the upper layer of the Hollandveen, as well as in the sedimentary layer resulting from small flooding, known as Slufterlaag.



Fig 3. Soil map by Bennema & Van der Meer 1952; the target area indicates a 'poel' area that has been moerneerd (the practice of peat extraction for salt production.

3.1 Research history

The target area has not been investigated on an archaeological basis prior to the current research. At the parcel right next to the target area, there is documentation of archaeological research and coring, according to the Archis3 service (case number 2102827100). However, there have not been any significant finds. The lot is indicated as an area that has primarily an agricultural background that does not have a history of construction (map 1).

3.2 Documentented archaeological values

The information presented here is derived from the Bennema & Van der Meer map that indicates the soil type, as well as The Archaeological Value and Expectation Map Walcheren. The Archaeological Judicial Advice Map of 2016 is formulated based on the Value and Expectation map.

The archaeological record in Archis3 documentation of several research areas shows and some archaeological finds within direct proximity (figure 5, below). There is one instance of Medieval pottery, yet all the other listings are negligible finds from the Nieuwe Tijd (New Era). Interesting is the research area adjacent to the Churchill-location, case number 2102827100. It was conducted by Wilbers & Moerman (2006). This research did show intact peat from several coring spots, which could prove as indication that the current research area also contains intact peat. Yet, it was insufficient to lead to a consecutive trial trench research.

Archis3 entry also shows no results from execution.

According to the Archaeological Policy Advice Map, the target area has a middle-high expectancy for archaeology. This means that archaeological research must be conducted prior to construction processes deeper than 40 cm below surface-level for an area larger than 500 m2.

On behalf of the ZAD, Zeeuwse Archaeological Depot, drs. Hans Jongepier in his position as advising archaeologist has noted there is no additional archaeological information available at the Depot regarding the target area. They concur with the information that is available for the site in Archis3.



Map 1: Map by Visscher-Roman, 1680.

Kaart/luchtfoto	Periode	Indicator	Opmerkingen
Van Deventer	1550	no	pasture
Visscher-Roman	1650	no	pasture
Hattinga	1750	no	pasture
Kadasterkaart	1832	nee	pasture
Bonnebladen	1910	nee	pasture
Luchtfoto	1959	ja	large structures with an open square, possibly school facility
Luchtfoto	1974	ja	large structures with an open square, possibly school facility
Luchtfoto	heden	ja	current school and sports facilities

Table 1: Indicators



Fig. 4 Luchtfoto 1959



Fig. 5 Het plangebied met gegevens uit ARCHIS 3. Bron: ARCHIS III (TBD)

3.3 Documented historical data

Based on the maps by Visscher-Roman from 1650 and Hattinga from 1750, it becomes evident that the target location has not been used for settlements. It is in between two habitual areas as indicated by the Hattinga map, which is an extension of the rural agricultural use as indicated by Visscher-Roman map of 1650. The historical topographical map of 1844-1852 shows a similar structure, where the land continues to be used for agricultural purposes. It appears the topographical map of 1912 confirms this as well. The aerial picture from 1959 shows the lot has been built upon, but only partially (figure 4, above). The surrounding area remains largely agricultural. The aerial photography of 2020 reveals the area now inhabited and indicates the current building. An overview of the information gained from the historical maps can be found above (table 1).

3.4 Disruptions

The area has had some disruptions. It is to be expected that the peat layer has been partially excavated in Medieval times, causing harm to the possible archaeology from Iron or Roman time. Bennema & Van der Meer apparently found evidence for this. However, in the adjacent research area an intact peat layer still appears to be present in some spots. Next, after centuries being used as an agricultural area, the lot undergoes construction, as indicated by the aerial photography from 1959. It shows several buildings with a large central square. It is possible this was used educational already as an facility. buildings However, the look more like warehouses. The type of building is debatable, but it is certain the construction has disrupted the soil, because of the size of the construction. The larger building that currently occupies the lot also must have required extensive construction and coring into the soil, posing a possible risk to archaeological finds.

The construction plans of the building currently at the site show foundation beams that had been placed into the ground at the time of construction (1976). The records at the archive show that these have been placed at a depth of approximately 1.35 meters below ground level. This indicates that the possible intact peat layer is most likely already suffered damage, thus lowering the expectation for archaeology at the exact site of the building.

3.5 Specified model of expectations

Based on the afore-mentioned results from the desk study for the Churchill-laan in Middelburg, the following model of expectations has been drawn up:

- Based on a study of soil and geological maps, the soil underneath the Churchill-laan is most likely a peat layer. This peat layer was the surface area during the Iron Age and the Roman era, and thus may contain archaeological evidence from that time. Bennema & Van der Meer thus allow us to give the area a middlehigh expectation rate for archaeology. However, because of the damage done to the peat in Medieval times to produce saline, the expectation that the peat is largely intact is minimal. Additionally, since the Medieval settlements were located on the higher ridges, there is little indication that archaeology from this period can be found. Therefore, we have a low expectation of finding archaeology from the abovementioned periods.

- Based on a study of historical maps and records from Archis3, we can infer that the area was largely used for agricultural purposes from the Middle Ages onward. Maps from 1650 till the 1800's show no evidence of construction at the target location. Only on aerial photography from 1959, there is evidence from construction. Therefore, the expectation to find archaeology from closer in time (Nieuwe Tijd) is small.

- Earlier research from the Churchill-laan location indicated intact peat. Thus, we may expect to find similar results in the current exploratory coring. However, because all other indicators suggest a low expectancy, the results will only become clear after conducting the coring.

3.6 Conclusions and advice

Concludingly, the area has a low expectancy for archaeology. But, because there is a possibility the peat is intact, an exploratory coring investigation is necessary to confirm the condition of the peat. For an area of this surface-size, the advice is to place 8 coring spots (illustrated by figure 1).

4.1 Introduction and method

Eight corings were planned on the research location to test the model of expectation (fig 1 of coring spots). The actual spots of the coring changed upon the day of the fieldwork for safety purposes in accordance with the KLIC-map (a map of known electrical linings and piping). Furthermore, coring spots were altered when the situation onsite made this necessary, e.g.unremovable tiles. Additionally, if the soil proved to be disturbed in the first meter below the surface, indicating a possibility of electricity or pipes on a deeper level below the surface that did not show on the KLIC-map, or a disturbance due to construction or ancient practice, the coring was moved to a different location that was decided upon in the moment. These have been carefully mapped and documented (fig 7).

All coring was first done with an Edelman-auger of 7 cm diameter up to a depth of about 0.8 meters below the surface. Hereafter, if necessary, the exploratory coring proceeded with a gauge auger of 3 cm diameter. For corings 5 and 6, the gauge auger was not used, because the Edelman-auger already showed disturbance of the soil within the first meter below surface indicating a possible hazard of electricity and piping at a deeper level. All other corings were placed up to the Laagpakket van Wormer at about 2,6-2,9 meter below the surface.

The field team consisted of B. Silkens, B. Meijlink and H. van Veen. The description of the stratigraphy was done by B. Silkens, assisted by B. Meijlink and H. van Veen.

Due to extensive foliage of the surrounding trees, the individual corings were difficult to be located and measured using the GPS-system. Therefore, the spots were measured manually using available local topography.

4.2 Stratigraphy

The surface of the coring is between -0,13 m NAP & -0,24 m NAP. The chart below gives the results from the bottom-up to ground level, so earliest time-period first: - Basisveen & Pleistocene:

Not reached during the fieldwork.

- Laagpakket van Wormer (depositions of Calais).

In corings number 1-4 and 7 & 8 the Wormer Laagpakket was reached with the gauge auger, respectively at a depth of 2,5 -2,9 meter below ground level. The deposition is a soft clay that is gray blue in color. It has a low to moderate silt component. The Wormer clay was found relatively clean. In corings 2 & 4, small amounts of vegetation were found. Figure 6 shows a beautiful transition from peat to wormer clay, found during the coring.

- Hollandveen

The first coring (no. 1), revealed an intact peat layer with an oxidated amorphic top at a depth of about 1,30 m below ground level. The peat stratum was respectively around 70 cm in depth and contained a minimal clay component. The amorphic peat was dark brown in color, which turned lighter downward.

The other corings in which peat was reached (2-4 and 7) showed a damaged and less thick and layer of peat, indicating it may have been removed. As indicated in chapter 2, this could be due to erosion by natural causes or the anthropomorphic practice of *moernering*, peat extraction for salt production. For coring 2, the peat layer was circa 60 cm, with a sharp upper boundary. This is an indicator for erosion. The peat had a low sand component. Coring 3 had a peat stratum of circa 100 cm, with a sharp upper & lower boundary. The nature of the peat was similar to coring 2 in having a low sand component. Coring 4 revealed a layer of about 50 cm, with just a small amount of the top amorphic peat left. It also had a low sand component.

In corings 5 & 6, the Hollandveen was not reached due to impregnable soil condition.

Coring 8 was placed nearby coring 1 to assess the validity of the intact peat from the first coring. Here, we encountered a similar stratigraphy as the first coring. The upper boundary was found at 167cm below surface, with a lower boundary at 228, indicating a peat layer of circa 40 cm. The peat was dark brown in color, with a low sand component. This coring research focused mainly on the peat layer, as this is where we expect to find an archaeological assemblage from either lron Age or Roman times. The fact that amorphic intact peat was found during the exploratory coring signals that the stratum functioning as the walking surface may not have suffered extensive damage and disruptions. This indicates a possibility of finding archaeology.

- Laagpakket van Walcheren (Duinkerke depositions)

Coring 1 revealed the Laagpakket van Walcheren with a sharp lower boundary at 135 cm below ground level. The clay soil with a moderate sand component was dark green and gray in color. The layer was quite muddled with sandy and clay fragments. The lithogenic nature is tidal ridge deposition.

Coring 2 showed the Walcherse Laagpakket lower boundary at circa 150 cm below ground level, with a low silt component and a gray color. The layer is heterogenic. Coring 3 differs slightly from no. 2 in color, which borders more on blue green, with a low sand component and a small amount of vegetation. It shows a low level of iron and becomes more calciumrich downward. Coring 4 showed the layer quite deeper than the other two, with a lower boundary of 224 cm below ground level, thus indicating there has been no natural sediment. The clay can be characterized as going from moderately sandy to low silt-components to low sand-components. In corings 5 & 6 the stratum was not reached.

Coring 8 indicated a moderate sand-level at a deeper level, containing moderate levels of iron and calcium. Just below the Topsoil, the soil leaned more towards sand with a low salt component.

Overall, the layer of Walchers Laagpakket was muddled and showed signs of damage and disruptions. Only on some occasions, the soil became cleaner near the upper boundary of the peat layer.

Due to the location being in a 'poel' area, the expectancy for Medieval archaeology was low at the start of the research. Comparable sites have shown similar disruption and rubble in the soil profile. Therefore, this research had a limited focus on this layer. 14 The findings during the field

work confirmed the initial expectations, which is why the Laagpakket receives little attention in the current rapport.

For most spots, the soil stratigraphy in between the topsoil & the Laagpakket van Walcheren characterized as heavy, sandy clay, or sand with a low silt component. Some contained indicators of vegetation, indicating disruptions of the soil. In some cases, the soil right above the peat was cleaner.

The area indicated by Bennema & Van der Meer shows two small creek branches in the landscape. These are also part of the Laagpakket van Walcheren. Although these do not precisely cross the target area, these could be extrapolated to the current location. This indicates the possibility of underneath these branches, the peat layer is undisturbed, as these would not be excavated during the Middle Ages.

- Topsoil

Coring 1 contained a Topsoil stratum with strongly humus and sandy clay, with small rests of vegetation and some iron spots. Corings 2, 3 and 4, were very similar to coring one. Coring 2, however, contained clay with moderate humus levels. Coring 3 differed in the soil type, indicating clay with low salt levels and moderately humus soil. Coring 8 revealed a clay with a strong silt component and was emphatically humus, with small amounts of vegetation

4.3 Features and structures

No archaeological material was found during the coring research.



fig. 6 (right) coring with visible stratigraphical transition from peat to wormer clay. Photo: H. van Veen (8 June 2021)



fig. 7 Executed coring, numbered and altered from the original coring plan.

5.1 General information

As mentioned in the introduction and the already established methodology plan, this research has been conducted in line with the development plans for the target area Churchill-laan 8 in Middelburg. The location of the target area is illustrated in figures on page 1.

According to the Walcherse Archaeological Policy and National legislation, the development of the allocation plan of this kind needs to be preceded by an exploratory archaeological study. This rapport is the result of such exploratory desk research and coring (IVO-O coring).

Based on the desk study, the following model of expectation has been drawn up as stated in paragraph 3.5:

Based on a study of soil and geological maps, the soil underneath the Churchill-laan is most likely a peat layer. The top of this peat layer was the surface area during the Iron Age and the Roman era, and thus may contain archaeological evidence from that time. Based on Bennema & Van der Meer's map, the area has been given a middle-high expectation rate for archaeology. However, because of the damage done to the peat in Medieval times to produce salt, the expectation that the peat is largely intact is minimal. Additionally, since the Medieval settlements were located on the higher ridges, there is little indication that archaeology from this period can be found. Therefore, we have a low expectation of finding archaeology from the above-mentioned periods.

- Based on a study of historical maps and records from Archis, we can infer that the area was largely used for agricultural purposes from the Middle Ages onward. Maps from 1650 till the 1800's show no evidence of construction at the target location. Only on aerial photography from 1959, there is evidence from construction. Therefore, the expectation to find archaeology from closer in time (Nieuwe Tijd) is small.

- Earlier research from an adjacent parcel to the Churchill-laan 8 found intact peat. At the time, no subsequent research was conducted. Thus, we may expect to find similar results in the current exploratory coring. However, because all other indicators suggest a low expectancy, the results will only become clear after conducting the coring.

The projection of the coring was to assess the above stated model of expectation to establish a suitable advice for possible subsequent research. This will be further elaborated upon in paragraph 5.3 & 5.4.

During the execution of the exploratory coring, the approach was altered slightly based on the findings in the fi eld. The original plan δ r the coring was to conduct 8 corings spread out over the target area. The locations of these corings have been altered due to obstructions and limitations at the site, for instance, unremovable concrete tiling (figures 1 & 7).

5.2 Discussion

To meet the purpose of the research and to answer the research question, the following research questions have been drawn up in the MP and will be answered below:

- Is it possible to make up a stratigraphy based on the coring research?

Yes, it was possible to make out a proper stratigraphy of the soil. There were some differences between the corings, that indicated disruptions. Overall, the stratigraphy aligns with the projection made by Bennema & Van der Meer, as some corings confirm *moernering*, while other corings show peat with an amorphic top. However, corings 1 & 8 differ from Bennema's projection by presenting an intact peat layer.

- How deep is the (intact) peat stratum?

The peat layer is approximately 50-80 cm thick, reaching a depth of about 2,10-2,28 m below ground level. In corings 2-4 & 7, the top layer of the peat has been washed away by natural causes or extracted for salt production. The amorphic top layer can be found respectively at a depth of 1,35 m (coring 1) & circa 1,67 m (coring 8) below ground level.

- Are there any disruptions visible in the stratigraphy?

The heavy clay below the Topsoil & above the peat shows much rubble soil and possible disruptions, that may be attributed to recent construction at the site or older practices. In corings 2-4 & 7, as stated above, the top layer of the peat had been washed away, or possibly due to peat extraction for salt production during the Middle Ages. Coring numbers 5 & 6 showed signs of heavy disruptions, obstructing the ability to go any further into the ground. It is likely that electricity, gas, or water pipes have been laid deeper into the ground at those specific spots. Therefore, the ground below can be considered disrupted as well.

-What can be said and concluded about the expectancy for archaeology? What is the argumentation for this?

Based on the coring research and desk study, the expectation for archaeology at the Churchill-laan 8 is divided. On the one hand, the overview of the available historical and geographical information indicated a likely scenario of archaeology having been damaged over time, either by natural or anthropomorphic causes in the past or more recent. Contrary, the earlier research by Becker & Van der Graaf signaled intact peat right next to the current target location. The coring research confirmed both the damage and the intact peat, as illustrated by the coring descriptions (§ 4.2; Appendix 1.2). However, the intact peat with an amorphic top that was found during the coring is enough indication that there is a possibility for archaeology of Iron Age and Roman time. The damage found in the soil above the peat confirms the low expectation for archaeology from the Middle Ages. To conclude, there expectation for Iron Age or is an Roman archaeology based on the condition of the peat found during the field work, specifically in the southwest corner of the research area.

- Has the coring or inspection of the target area led to archaeological findings If the answer is yes, can one make inferences about the nature, date and conservation of the material?

The coring at the target area has not produced any archaeological findings yet.

- Can inferences be made about the conservation of paleo-ecological remains?

In those corings where the peat has remained intact (1 & 8), the conservation of paleo-ecological remains is promising.

- Is subsequent research necessary, based on the findings from the desk study and coring? If the

answer is yes, what are these subsequent steps and what is the argumentation for taking these steps?

A subsequent research, namely a trial trench project, is advised and considered necessary. During this investigation, no archaeological hot spot has been located. But, as this is common, it should not be taken as a definitive indicator that there is no archaeology present at the site.

The condition of the soil profile discovered during the coring at the target area was very promising: it revealed an amorphic top peat layer in two of the trial cores, followed by a substantial peat layer in 5 of the 8 spots (50-70 cm). The Wormer Laagpakket was encountered in 6 of the 8 coring spots. Bennema & Van der Meer already allowed us to give the location a middle-high expectation for archaeology.

A trial trench research is necessary to:

- assess whether there is an archaeological assemblage at the top layer of the peat at the location of coring 1 & 8.

- evaluate possible archaeological findings and come to a selection advice.

However, the research team has requested the projected construction plans that are part of the development at the Churchill-laan 8. In case they indicate that there will be no exhaustive construction at the location of the target area where the intact peat was found, the advice may be altered accordingly. This is to avoid unnecessary excavation in line with the perspective of keeping archaeology in its place unless extenuating circumstances demand it differently. After having reviewed the received plans, it became clear that they are still in development. One model would cross the south-west target corner where intact peat was found, another shows no construction at that specific corner.

For this reason, the research team finds it necessary to postpone a concluding advice. Once specific construction plans are in place, these need to be reviewed in order to formulate a proper advice whether or not these pose a threat to the possible archaeology. At present, the advice goes as follows: a trial trench research is found necessary if the specified plans for construction could disrupt the soil of the research area in the south-west corner at the location of corings 1 & 8.

5.3 Evaluation and selection advice

The value assessment meets the quality norms as specified in the KNA.

- What is the value assessment of the findings at the research location?

The current state of the research allows for a formulation of a value assessment, as no specific archaeological assemblage has been found. Therefore, the rapport will not contain a value assessment.

By lack of a value assessment, it is not possible to include a selection advice in the current rapport, which requires further exploratory and evaluation research.

- What subsequent research is advised?

The advice is as follows: A trial trench research (IVO-P) is found necessary if the specified plans for construction could disrupt the soil of the research area in the south-west corner at the location of corings 1 & 8. The trial trench functions to further test and assess the model of expectation drawn up for the coring.

5.4 Conclusions and advice

The desk study and coring has indicated intact stratigraphy at the research location Churchilllaan 8. The specific expectation goes as follows:

- At a depth of about 1,35 – 1, 70 m below ground level in the top of the peat, there is a middle-high expectation for archaeology of the Iron Age as well as the Roman era. This is where intact peat with an amorphic top was found during coring in the south-west corner of the research area, signaling the soil has not been disrupted at that level.

- Above the peat stratum, the soil showed significant signs of disruption. Therefore, the expectation for archaeology from the Middle Ages has been confirmed and remains low.

The coring has provided a valuable insight into the stratigraphy at the location Churchill-laan 8. However, it is insufficient to negate or confirm the possibility of an archaeological assemblage that could be valuable to society. Therefore, the advice is to conduct a trial trench research with the projection to:

- Assess the model of expectation drawn up for the coring;

- Locate possible archaeology at the level specified above;

- Investigate whether the soil level at the location of corings 1 & 8 is indeed intact and

whether there is archaeology at these specific locations;

- Formulate a advice in case archaeological traces are found about the progression of the research .

In case the specific construction plans show no significant disruptions to the soil in the south-west corner of the project area, the advice will be not to conduct a trial trench, as to not disturb possible archaeology.

List figures and tables

Figures

fig. 1: The location of the research area on topographical maps. The target area is outlined in red or blue. The planned spots for coring are indicated with orange dots.

fig 2: The natural formation of a tidal ridge.

fig. 3: Soil map by Bennema & Van der Meer 1952. Source: Zeeuws Archief

fig. 4: Aerial photography from 1959

fig. 5: The research area as shown in Archis3, with an overview of the surrounding archaeological activity.

fig. 6: picture taken during the fieldwork illustrating the stratigraphy.

fig. 7: overview of the executed corings, that are different from the coring plan.

Maps

Map 1: Visscher-Roman (1680), indicative of pasture.

Tables

Table 1: Overview of the historical data of the target area.

Literature

Bennema J. & Van der Meer K., 1952, *De Bodemkartering van Nederland. Deel 12, Walcheren*. Wageningen, Stichting voor Bodemkartering.

S. Moerman & A. Wilbers, 2006, Inventariserend veldonderzoek, verkennende fase, Olmenlaan, Churchilllaan en Gerbrandylaan in Middelburg, gemeente Middelburg, Nijmegen.

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Appendices

Appendix 1 CORING RESULTS



Rapportage Archeologisch Booronderzoek

Project: Churchillaan MIDD_021_003

Plaats: Middelburg Gemeente: Middelburg

OM-nummer: 5078517100 Bepaling Locatie: ingemeten aan de hand van de lokale topografie Bepaling Maaiveldhoogte: AHN4



Dunny. I	FIUJECI.	Churchina	all					
Datum: 8-6-2021 Maaiveld: Struikgewas	Beschrijver: B. S Opmerking: Op s	ilkens speelplaats in bo	Ikens X: 31984.40 peelplaats in border			Z: -0.18		
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	Bodem:	Bouwvoor Weini	a roestvlekker	n				
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		Aan de top amo	rf					
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\backslash		Weinig plantenre	esten					
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Boring: 1 Project: Churchillaan

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	Bodem:	Bouwvoor				
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	Archeologie:	Baksteen spikke	els			
	Opmerking:	Vuil		A	O alta and	
	Ondergrens:	115 -mv	NAP: -0.91	Aard ondergr.:	Scherp	Boortype: Steekguts 3
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Walcherse Archeologische Dienst

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	Ondergrens:	168 -mv	NAP: -1.48	Aard ondergr.:	Scherp	Boortype: Steekguts 3
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Boring: 5 Datum: 8-6-202 Maaiveld: Struik

Project: Churchillaan

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Project: Churchillaan

Boring: 7

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	Lithologie:	Klei, matig zand	lig Stevig Bruin	-Grijs Gevlekt-ge	evlekt	
	Bodem: Ondergrens:	verstoord 55 -mv	NAP: -0.42	Aard ondergr.:	Scherp	Boortype: Edelman 7
	Lithologie: Bodem:	Klei, matig zand Verstoord Weini	lig Grijs ig roestvlekken	I		
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	Lithologie:	Veen, zwak zan Aan de top amo	dig Donker Bru rf	Jin		
	Opmerking:	Veraarde veento	op, nog maar e	nkele cm bewaai	rd	
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