Raised by the River, Swallowed by the Sea

An archaeological study on the development of Stavoren between 837 and 1292

Geert Overmars

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1 Introduction

In 1963, a group of teenagers joined a professional archaeological excavation in Stavoren, a town situated along the IJsselmeer in the northern part of the Netherlands. The excavation took place in the southern part of the town, where a new lock and new houses were planned. The teenagers spent two weeks of their summer holiday at the excavation. Among them was a girl aged 17 with a keen interest in history.

Many years later, the archaeological excavation (that in total lasted two full summer seasons) had not yet been fully published. Most of the finds and documentation of the excavation in Stavoren had been gathering dust in large depositories. Nobody had looked at the material ever since the excavation had taken place.

As a research master student in archaeology, I was interested in this particular excavation in Stavoren. The very limited results of the excavation that were published, promised spectacular remains of medieval infrastructures and buildings. I decided to write my master thesis on this excavation. As I worked on the subject and spoke to my family about it, I learned that my mother had joined the excavation, aged 17 at that time. Now, after all those years, I will continue the work she experienced as a teenager.

Today, Stavoren is a town with about one thousand inhabitants. It is situated in the south-western part of the municipality Súdwest-Fryslân. Stavoren is one of the 'eleven Frisian towns' (*Friese elf steden*) and is best known for its water sport recreation during the summer season. The name Stavoren was officially put into use in 1978. Before that, the town was called Staveren. The name-change happened because it was thought that the name Staveren was too similar to Staverden, which is a small settlement on the Veluwe.

Illustration 1. The location of Stavoren.

By hearing the name Staveren or Stavoren, many people today are reminded of the famous Dutch folk tale of the 'Lady of Stavoren' (*Vrouwtje van Stavoren*). This tale tells the story of a rich merchant widow who lived in Stavoren. She desired ever greater riches and she therefore sent a sailor out in search of the greatest treasure in the world. When the sailor finally returned, he had loaded his ship with wheat. The widow, in her pride, was not satisfied with the 'ordinary wheat' and let the cargo be thrown overboard into the harbour of Stavoren. One of the inhabitants of Stavoren cautioned against the behaviour of the widow and reminded her of the fragility of fate. As a reaction, the widow took a golden ring from her finger and threw it in the sea. Upon doing that, the widow said that she would only fall into poverty if she would regain the ring. Soon after, the widow found the ring inside a fish that was served to her. And indeed, her fate changed and she lost all her wealth, living out her remaining days as a beggar.

Many different versions of the story have been documented over the centuries. The oldest written record of the story dates to 1588, but the story itself might be older.

The story of the Lady of Stavoren was probably based on real historic events.[1] It supposedly tells the story of the rise and fall of Stavoren as a rich trading town. Even though today Stavoren mostly lives from tourism, we learn in our history books that Stavoren used to be a thriving trading town. However, only little is known of this early history of Stavoren. When was Stavoren a trading town and how did it supposedly fall? What did Stavoren look like during that time? Does the nearby IJsselmeer has anything to do with it?

These and other questions have only partially been answered by historical and archaeological studies the past. A couple of recent archaeological excavations have given some insight in the early history of Stavoren. However, as mentioned above, the biggest excavation that ever took place in Stavoren, the Stadsfenne excavation that was carried out in 1963 and 1964 in the southern part of the town, has not yet given much information. The main goal of this thesis is to re-analyse the finds and documentation of the Stadsfenne excavation and to use the results, in combination with results from other historical and archaeological research, to reconstruct the development of Stavoren between the years 837 and 1292. This time period was chosen because very few studies on Stavoren have dealt with this period and therefore relatively little was known about it. The dates represent important events in the history of Stavoren: in 837 a canon from Utrecht, Odulfus, settled in Stavoren; and in 1292 the town of Stavoren was granted town privileges by the count of Holland.

This study was split into several chapters. In the second chapter, the relation between historical and archaeological sources when researching the past will be discussed. Also the pitfalls of interpreting written sources and material remains are mentioned.

The third chapter deals with the natural environment of Stavoren. It is concerned with the natural landscape around Stavoren during the medieval period. Stavoren was initially located near the river Vlie, which from the twelfth century onwards changed a large inland sea, the Zuiderzee. East of Stavoren, more inland, were large stretches of peat. Many peat streams flowed from these peat landscapes and discharged into the river Vlie. Stavoren was built along one of these peat streams. The final part of the third chapter will deal with the natural subsoil in Stavoren.

In the fourth chapter, the processes of medieval urbanisation in the Netherlands will be discussed. Also, several criteria to define a medieval urban town is presented.

In the fifth chapter the history

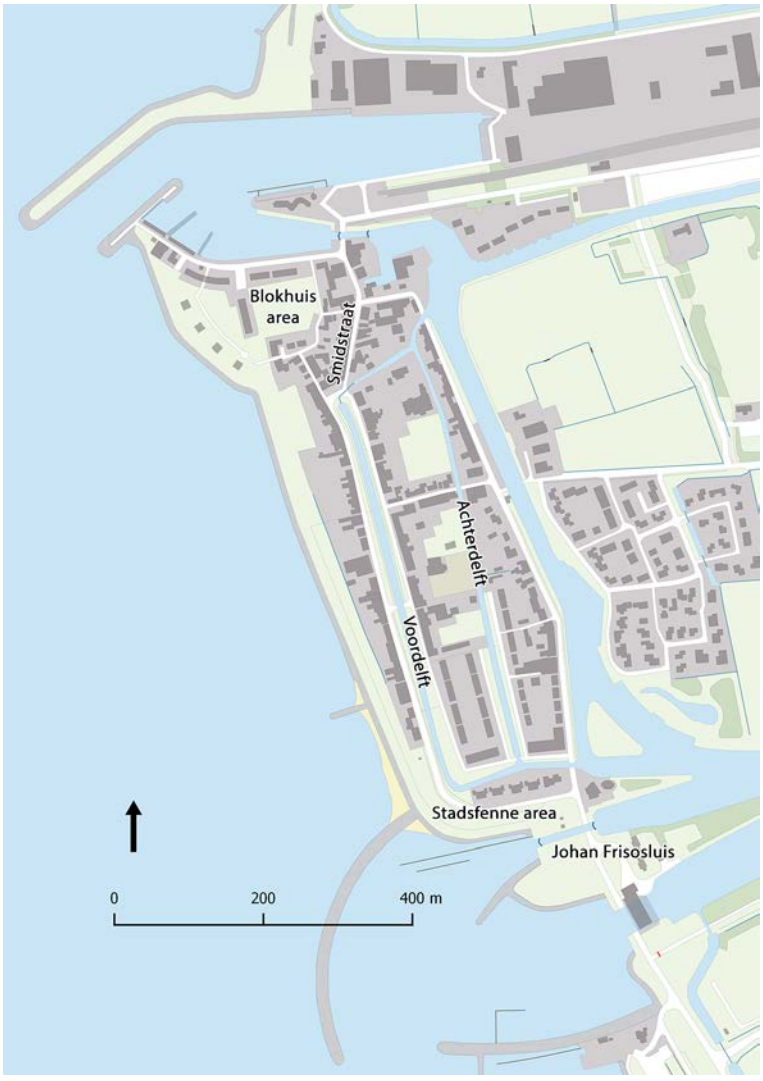


Illustration 2. Recent map of Stavoren with some of the place names that are referred to in this study.

1 Zwaan 2002

of Friesland and Stavoren up to the late thirteenth century is discussed. The concepts of the Frisian kingdom and Frisian trade are both common when describing the early and high medieval period in Friesland. But what do these concepts actually mean? And what role did Stavoren play during that time? Furthermore the history of the famous abbey of St. Odulfus that stood in Stavoren for centuries, as well as other ecclesiastical buildings, will be discussed.

The sixth chapter may be seen as a completely new contribution to the study on the history of Stavoren. In this chapter, the Stadsfenne excavation will be partly re-analysed and re-interpreted. First, the most important archaeological studies in Stavoren will be listed. Then, the excavation and documentation methods of the Stadsfenne excavation will be described in detail. A large part of chapter six deals with the description of digitised field and section drawings. The chapter ends with a discussion of the structures that were observed during this study and a discussion of the finds from the Stadsfenne excavation.

In the seventh chapter, all of the above will be combined in a conclusion. The development of Stavoren was split up into several phases which will be presented in this chapter. Also a reconstruction of the topography of Stavoren and ideas for future research are given.

1.1 Research questions

Main research question
How did Stavoren develop economically, topographically and religiously between 837 and 1292?

Sub-questions
Chapter 2
- How have archaeology and history, as two academic disciplines, been combined in studies by scholars in the past?
- How do text and matter relate when reconstructing the past?

Chapter 3
- How did the natural landscape surrounding Stavoren develop?
- What was the influence of people on these developments?
- How did the Zuiderzee emerge?
- What flora did grow in the area around Stavoren during the medieval period?
- What were the economic possibilities of the natural landscape surrounding Stavoren?
- How is the soil in Stavoren composed?

Chapter 4
- How can a medieval town be defined?
- What are the archaeological manifestations of a medieval town?
- How, when and where did towns develop in the Low Countries during the medieval period?

Chapter 5
- At what scale did Stavoren participate in an interregional trade network during the tenth and eleventh centuries?
- Which historical sources refer to the early history of Stavoren (the ninth, tenth and eleventh centuries)?
- What is the political history of Friesland during the eleventh to thirteenth centuries?
- Who was the authority and who had legal rights over Stavoren during the eleventh to thirteenth centuries?
- At what scale did Stavoren participate in an interregional trade network during the twelfth and

thirteenth centuries?
- Was there a mint in Stavoren?
- Was there a toll in Stavoren?
- Where there monasteries and churches in Stavoren?
- Who was Saint Odulfus and what role did he play in the development of Stavoren?
- When and where was the Benedict abbey of St. Odulfus founded in Stavoren?
- When was the parish church of Saint Mary founded and where was it built?
- How did the St. Odulfus abbey disappear?

Chapter 6
- What archaeological research has taken place in Stavoren?
- What field methods were used during the Stadsfenne excavation?
- How were the features and finds from the Stadsfenne excavation documented?
- What is the quality of the original analogue excavation data of the Stadsfenne excavation?
- What has been published about the Stadsfenne excavation so far?
- When was the Stadsfenne site inhabited?
- What medieval structures were present in the study area?
- What was the character of the structures at the site? What were the functions of these structures?
- What construction materials and building methods were used?
- To what period do these structures date?
- Are there any parallels in other medieval towns to the buildings and other structures that were documented in the Stadsfenne excavation?
- Do the houses documented at the Stadsfenne excavation fit into one of the two medieval urban house typologies that have been developed over the past years?
- Is the transition from wood constructions to brick or stone constructions observed at the Stadsfenne site?
- Was the study area divided into plots? How were these plots constructed and maintained?
- Were there indications of trade and production in the Stadsfenne area?
- How did the features and artefacts found at the Stadsfenne site relate to the activities and life ways of the people that lived at the location of the site?
- Were there any specialised geographical spaces or zones that relate to specific functions at the site?
- Were any distinctive or unique artefacts found during the Stadsfenne excavation?

Chapter 7
- Can the history of Stavoren be split up into phases?
- Was there continuity of habitation throughout the phases?
- Is there evidence for craft-production in medieval Stavoren?
- What are the historical and archaeological traces of trade in Stavoren?
- When and how did the trade activities in Stavoren diminish?
- What did the topography of the old town of Stavoren look like?
- How did the old town of Stavoren relate to the new town of Stavoren?
- What did the topography of the new town of Stavoren look like?
- How does the development of Stavoren relate to the origin and the development of the Zuiderzee?
- Are there any parallels to the topography of Stavoren found in other towns in the Netherlands?
- Where were the historically known buildings such as the mint, several churches and the monastery located in Stavoren?
- Who built and maintained the plots in the Stadsfenne area?
- How many houses stood in Stavoren and how many inhabitants did Stavoren have during the high medieval period?

- What was the role of the abbey of St. Odulfus in the development of the town?
- At which point during the development of Stavoren can the site be called 'urban'?
- Was there continuity between the old town of Stavoren and the new town of Stavoren?

2 Text and matter

This study is concerned with historical archaeology. That implies that the sources available on this specific topic, medieval Friesland, consist of both historical texts and archaeological material.

It is not self-evident that both types of sources of the past always give the same picture of the past. Because of the different nature of both types of sources, it is not unexpected that they shine a light on different aspects of past societies or, if you like, approach the past from different angles.

In the past, archaeology was considered inferior compared to history.[2] Classicists and medievalists characterised the archaeological record as mute, not being able to 'speak' the truth as ancient texts could. The argument was that texts could speak directly with the researcher about the past while objects just represent remains of past technologies and economies. For some historians, archaeology was just there to add flavour to historical frameworks that were constructed on textual evidence.

Counter arguments emerged from the 1980's onwards, when historical archaeologists emphasized that text might give a distorted picture of the past, because they were often written by and for the elites of past societies, while the archaeological record gives information on all layers of past societies.[3] Texts were purposefully constructed by people, possibly to meet economic and political needs, and may therefore give a biased image of the past. Objects however “are simply what they are; they have no agenda”[4].

Yet other researchers consider historical texts and archaeological material as parallel sources of information, both being mutual supplementary.[5] The key to this apparent duality between text and matter is that both categories of sources should be considered meaningful, both in the past and as a source of reconstructing the past. Both sources of information also require specific methodologies to be studied and interpreted.

Let's start with texts. During the high medieval period, historical sources usually were written by a select few people who could read and write. Many of the texts that are preserved from that period were written in ecclesiastical centres, such as monasteries. These texts usually deal with the granting of certain privileges, documenting the most important events at the time or the listing of properties. Other texts were written by (or rather on behalf of) local secular authorities such as kings and counts. Such texts deal with subjects like the granting of town or market privileges to a town or with various political matters. All of these texts were written with a certain purpose, with a specific goal in mind. These goals may vary widely, but the goal surely wasn't to inform present-day scholars. In order to interpret and use historical sources when studying the past, it is important to understand the context in which the text was written. It was not uncommon that medieval texts were written with a hidden agenda. Political propaganda or the falsification of older documents, for example, were not unknown during that time. Furthermore, it is important to know who wrote a text and who was meant to read it. Reports of Viking attacks, for example, were often written by clerics in monasteries who themselves were victims of these attacks. For that reason, Vikings were depicted as rough and brutal men and were associated with plunder. This image of the Vikings survived from the early medieval period up to popular culture in today's society, although scholars are recently trying to nuance the image of the brutal Viking.

2 A brief overview of the history of the relation between history and archaeology is given in Moreland 2006. See also Steuer 2004.
3 Andrén 1998
4 Kosso 2001, 30; after Moreland 2006, 137
5 For example Leone 1988 (after Moreland 2006, 138). See also Steuer 2004.

Illustration 3. Viking attack on Dorestad. This illustration was made by Johan Herman Isings for educational purposes. The illustration dates to around the middle of the twentieth century.

Similar cautions should be considered when dealing with archaeological sources. There is a wide variety of types of material remains dating to the medieval period that can be found in the Netherlands. The material that is found during excavations, however, does not necessary represent life during the middle ages. Depositional processes (how did the material end up in the soil?) and post-depositional processes (what happened to the material between the first deposition and excavation?) should be taken into account. The type of soil usually plays a big part in the conservation of materials. Organic matter, for example, will decay in dry, sandy soils whereas it will preserve in wet environments.

But how do text and matter relate when conducting research on past societies? The following paragraph will try to answer that question within the context of European medieval archaeology.

First, there is a difference in temporality between text and matter. In general, medieval texts refer to a specific event that happened at a specific moment. The granting of a town privileges, the report of a Viking attack, the administration of acquired properties, the account of a devastating flood, the transaction of tolls and fees; all are texts that are common in Europe during the high and late medieval period, and all are referring to one specific event at a given moment.

The archaeological record however generally shows the opposite. Long-term changes in, for example, the growth of a town or the various phases of construction of a building may be observed through archaeology, but very specific moments or events are seldom grasped. There are of course exceptions to this: battlefield archaeology, under water ship wrecks or town fires can be two examples where an event can be specifically dated with archaeology.

Secondly, with the difference in temporality in mind, text and matter may confirm, contradict or complement each other. They can even be totally different from each other, not confirming, contradicting nor complementing each other at all.

For example, there is friction between the specific date of a town privilege and the much broader dating of the development of a medieval town. Let's assume we're researching a town that,

through archaeological sources, we know got a new street with plots and houses in the first half of the thirteenth century. The same town was granted town privileges in 1230. It is nearly impossible to archaeologically date the development of a new town expansion to a specific moment.[6] Instead, town expansions may be dated to a time period. It is therefore impossible to say if the town expansion was a reaction on the granting of the privileges or if the new street was already present when the privileges were granted. At best we can say that both sources complement each other: both indicate a growth of the town at roughly the same time period.

One way to deal with the difference in temporality of the sources is by conducting comparative research. Elaborating on the example of a medieval town expansion above; studying multiple medieval towns that gained town privileges and town expansions could give more insight into how both developments relate. It is important however to pick towns that in some way relate to each other, for example towns that were granted privileges by the same count or towns that were located near each other.

If both the historical and archaeological sources of multiple towns are studied this way, new research questions could be asked. For example, do the different towns experience a growth in size or population at the same time? How does that relate to the granting of privileges in these towns? To answer such questions, a large research program is necessary. The present study will be concerned with Stavoren only, but may be of value for a future research program.

The archaeological and historical sources concerning Stavoren that were used in the present study do not contradict each other. They either confirm each other or complement each other. There are however a few problems with the sources dealing with Stavoren. The problems have to do with the fact that there are very few sources about the early period of Stavoren. As there is hardly any archaeology from that time period, we have to draw conclusions based on a very limited amount of historical sources. For example, concerning the abbey of St. Odulfus, the historical and archaeological sources are not clear on the architecture of the monastery building itself. From historical sources, we know that there must have been a stone building (see paragraph 5.4 and 5.5). But was the stone building constructed after the monastery was officially founded in 1132, or was there already a stone building belonging to the ecclesiastical centre that was present in Stavoren already before 1132? Due to the lack of sources mentioned above, this question will likely never be answered.

6 This is not always true. Sometimes, a construction can be dated through ^{14}C or dendrochronology to a very specific year or short time period. As this may be true for single, smaller constructions, to absolute date an entire street or town expansion is very rare. Furthermore, such town expansions usually took a period of time to be built which makes it hard to pinpoint the moment in time when construction began.

3 Landscape

Stavoren is situated in the northern part of the Netherlands at the IJsselmeer. Before 1932, the IJsselmeer was known as the Zuiderzee, a large inland sea that was directely connect to the North Sea. It was this connection with the sea that shaped Stavoren over the centuries.

In other words, until 1932, Stavoren was situated in a maritime landscape. This landscape developed after the last glacial period, the Weichselian. At that time, the sea-level started to rise and the northern part of the Netherlands became a marine environment, influenced by tidal effects.[7] During the Holocene, tidal channels started to erode the Pleistocene subsoil in the northern part of the Netherlands. The sea-level rise also led to a rising of the groundwater-table. At the same time, coastal barriers were formed, which led to a stagnation of the natural drainage. This in turn resulted in the growth of peat, not only in the lower basins but also partly on the higher Pleistocene areas. The maritime influences became stronger and new tidal channels emerged in Friesland from around 1000 BC. These tidal channels, such as the Marne system and Middelzee system in Friesland, intruded on the peat bogs. During high tide and floods, layers of marine clay were deposited on the peat areas. The erosion by the sea and the weight of the deposited clay resulted in the subsiding of the peat.

Illustration 4. Example of a peat landscape in Denmark. In this landscape grow sphagnum, cotton-grass, reed and small birch trees. Photo with permission, by Bert de Kok, 2012.

From around 500 BC onwards, the lowering of the peat was continued by large scale drainage and peat digging by people living in the landscape. To keep dry feet, these people lived on artificial dwelling hills, known as *terpen* in Friesland. The process of subsiding peat lead to new marine ingressions and an even stronger influence of the sea. In the period 700 – 1000 AD large parts of the coastal peat area in the northern part of the Low Countries were covered with a grey clay layer.[8] People in the Frisian coastal area continued to live on terpen during this period. However, people also started to built large scale dyke systems and sluices to keep the water of the sea out. During the

7 Vos 2015

8 Vos 2015, 214-5; a similar layer of clay was documented during the Stadsfenne excavation (see below).

late medieval period, almost the entire north-western part of the Netherlands was diked.

During the entire medieval period, Stavoren was situated in a landscape that was dominated by large stretches of peat. Around Stavoren, this peat consisted of raised bog containing remains of sphagnum moss, heath and cotton-grass (*Eriophorum sp.*).[9] Over the centuries, the sea had a growing influence which resulted in an increasing salty character of the soil.

This wet environment was not suitable for trees to grow, possibly only very small trees. An analysis of pollen and macro remains carried out during the Johan Frisosluis excavation in Stavoren showed that hardly any trees were present in the direct surroundings of Stavoren during the high and late medieval period.[10] The same study showed the presence of many plants that naturally grow in wet environments: Common spike-rush (*Eleocharis palustris*), Grey Club-rush (*Schoenoplectus tabernaemontani*), sedges (*Carex sp.*) and duckweed (*Lemna sp.*). Other plants that were observed in great quantities in the study typically grow on salty soils: Sea arrowgrass (*Triglochin maritima*), Annual seablite (*Suaeda maritima*) and Sea aster (*Aster tripolium*).

The landscape directly surround Stavoren was not suitable for growing wheat or most other kinds of cultivated plants. Grain and similar crops must have been imported from the nearby higher lands Gaasterland, areas in Drenthe or by ship from various places. The same is true for wood as a construction material. The economic possibilities of the landscape surrounding Stavoren during the medieval period can therefore mainly be found in the connection with the North Sea and the Rhine river system.

3.1 The emergence of the Zuiderzee

In Roman times, the southern part of the area that today is the IJsselmeer, consisted of an inland lake referred to by Roman writers as *Lacus Flevo*, the Flevo Lake. The water of the Flevo Lake was connected in the south via the river Utrechtse Vecht to the river Rhine and in the north via the river Vlie to the North Sea. The Vlie discharged in the North Sea east of what today is called the island of Vlieland.

During the early medieval period, the lake expanded and became known as the Almere. The Vlie was the main tidal channel in the Almere inlet system until the fourteenth century, when the Marsdiep between North-Holland and the island of Texel emerged.

From the Carolingian period onwards, we know of floods hitting the northern coast of the Low Countries. These floods were especially well documented during the high and late middle ages. From several historical sources we know floods happened in the years 1164, 1170, 1196, 1214, 1219 and 1248. The floods are considered to have had an important influence on the expansion of the Almere which ultimately resulted in the origin of the Zuiderzee in the thirteenth century. Consequently, these floods have had a great influence on the histories of towns and settlements along the Zuiderzee, including Stavoren.[11]

During these floods, large stretches of peat land and forests were destroyed and became permanently waterlogged. The flood of 1170 was particularly large and destructive. In the *Chronica regia Coloniensis* it is said that a large stretch of land was destroyed near Stavoren.[12]

More floods must have happened during the twelfth and thirteenth centuries that were not mentioned in historical texts.[13] For example, the monastery of St. Odulfus in Stavoren asked for help after part of the monastery lands was destroyed by floods in 1230 (see paragraph 5.5). A flood

9 Aaldersberg 2015, 15
10 Maurer/van der Veen 2015
11 Gottschalk 1971, 194
12 Gottschalk 1971, 81
13 Gottschalk 1971, 196

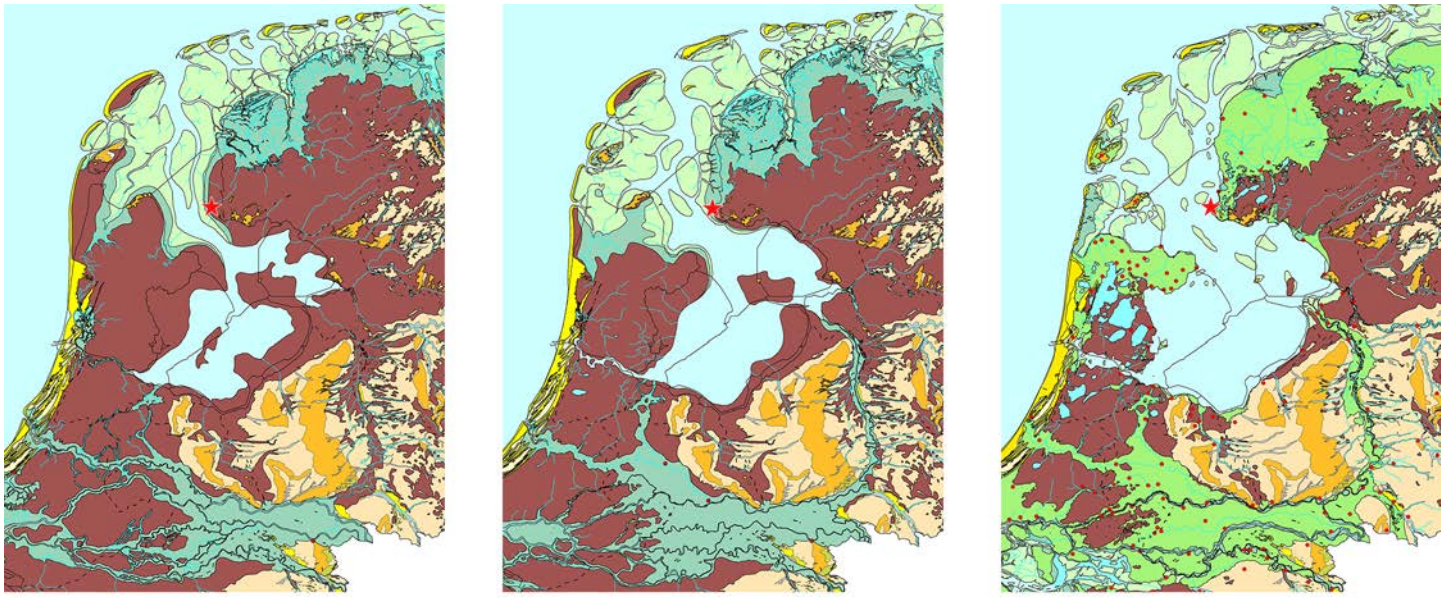


Illustration 5. Three palaeographic reconstructions of the Netherlands in 100 AD, 800 AD and 1500 AD. The location of Stavoren is indicated with a red star. After Vos/de Vries 2013.

dating to that year is not known from other sources.

With these floods, the inland lake Almere changed into the inland sea Zuiderzee. An exact date of origin of the Zuiderzee cannot be given. The change from lake to sea happened over the period from the twelfth to thirteenth centuries.

3.2 The peat stream in Stavoren

A natural peat soil basically consists of two elements: organic matter and water. The accumulated water in a peat soil tends to form little streams in the peat landscape. When multiple of such little peat streams are connected, a single larger peat stream can emerge, which discharges the water in river and ultimately in the ocean. A peat stream thus functions as a natural drainage of a peat landscape.

During the twelfth and thirteenth centuries, Stavoren was situated along such a peat stream. The peat stream was documented in section U-V during the Stadsfenne excavation (see paragraph 6.7). During the excavation it was noted by engineer J.P. Cnossen, who visited the excavation site, that the stream had a salty character.[14] This meant that the stream in Stavoren stood in direct contact with the North Sea and was influenced by the tides. The water in the stream therefore was brackish. An older course of the stream was observed by Cnossen in the deeper subsoil east of the excavation area.[15]

The stream likely originated east of Stavoren, in one of the large peat areas in the inland of Friesland. Many such peat streams existed in Friesland during the medieval period (see illustration 6).

According to archaeologist Herre Halbertsma (1920 – 1998), who also led the Stadsfenne excavation in 1963 – 1964, the name of the stream was Nagele. This river does not exist any more today but, according to Halbertsma, was a branch of the Overijsselse Vecht.[16] However, it is thought

14 As is written in the daily excavation report for September 21st 1964.
15 The exact location and depth of this observation was not documented.
16 Halbertsma 1964, *257

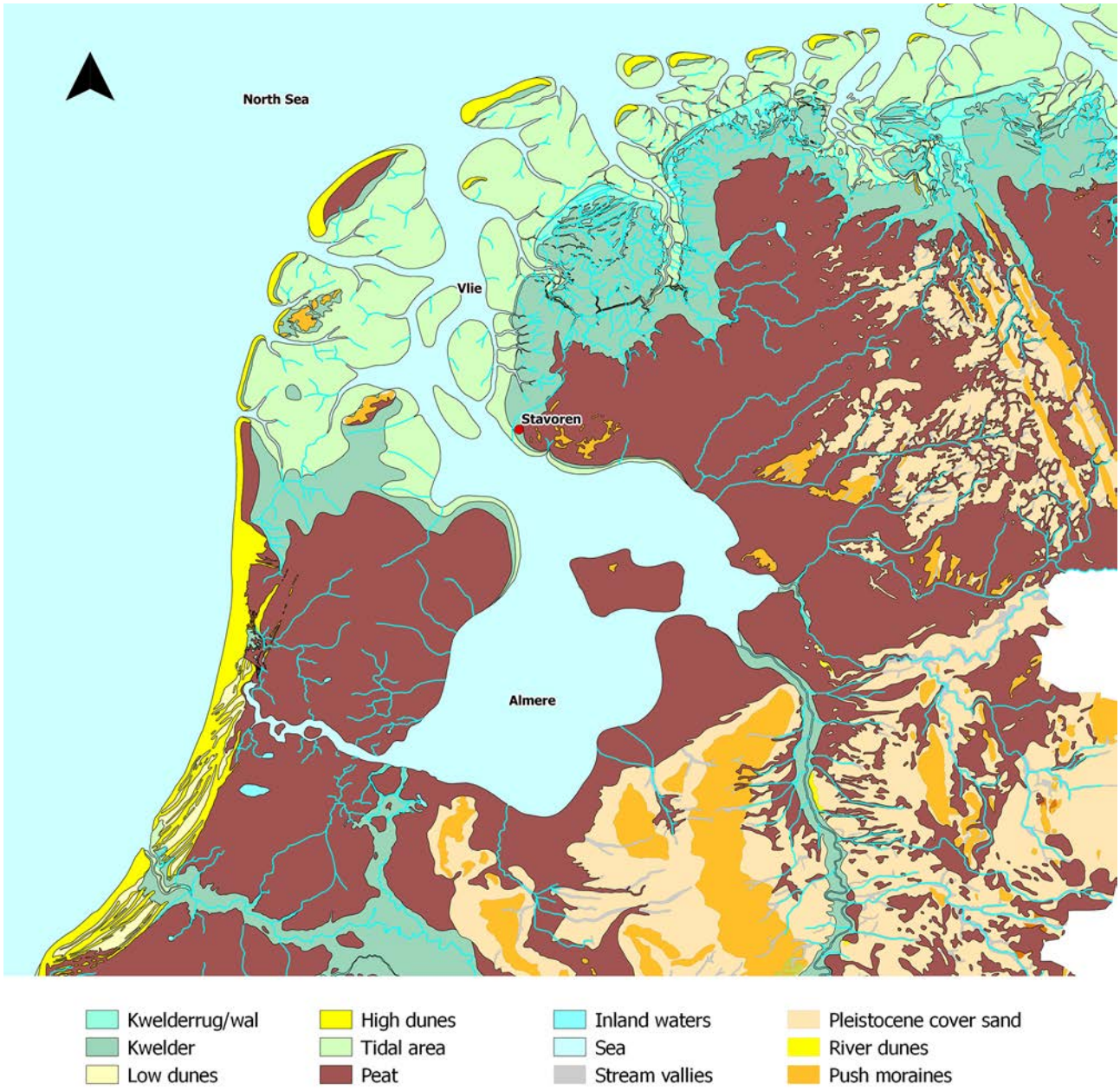


Illustration 6. Detail of the palaeographic map of the Netherlands of 800 AD. After Vos/de Vries 2013.

elsewhere that the river Nagele led into the river Vlie at the village Nagel, which was located near the village of Urk, about 50 km south of Stavoren.[17]

Others interpret the stream in Stavoren as a river called Sudermuda, that originated in the Frisian inland and flowed into the river Vlie at Stavoren.[18] This river is known from historical sources and probably was a peat stream. It is possible that the stream in Stavoren was indeed called Sudermude, although it remains speculation.

A part of the medieval stream still exists today in Stavoren as the canal with the name Voordelft. The suffix '-delft' suggests that the canal was dug by people. However, it seems unlikely that the canal was completely dug in the landscape. Instead, it seems to be that the name Voordelft comes from the time when the natural peat stream was reshaped and narrowed (or 'canalised') by the people of Stavoren.

17 Jaekel 1895, 114-5; 127-30

18 Also spelled 'Suthermutha'. See for example Boonstra/De Vries/Jansma 2011, 22 and Mebius 2002, 18.

It is impossible to say what the discharge of the stream in Stavoren was and if this was enough for boats to sail on. It is possible that the harbour of Stavoren was a tidal harbour, meaning that boats could only sail in and out of the harbour during high tide. During low tide, there would not have been enough water in the stream to sail on. However, this remains speculation. Based on a series of revetments documented during the Stadsfenne excavation, we know that the water capacity of the stream decreased over the centuries (see paragraph 6.8.1). The reason for the decrease of water capacity is not certain. It is possible that the stream carried less water because there was less and less peat in the inland, east of Stavoren. Because of peat digging, drainage and the resulting subsiding of the peat, the water source of the peat stream in Stavoren disappeared and consequently the peat stream dried up.

During the late fourteenth or early fifteenth century, the peat stream in Stavoren must have completely disappeared, except for the section that became the canal Voordelft.

3.3 The natural subsoil in Stavoren

The natural subsoil in Stavoren area consists of three main layers, each representing a time period with different climates and different depositions or accumulations of soil.

The oldest layer observed during the Stadsfenne excavation consisted of Pleistocene cover-sand (*dekzand*) that originates in the Weichselian glaciation (116.000 to 11.700 years ago). This layer is known as the *laagpakket van Wierden*, part of the *Formatie van Boxtel*.[19] The top of the layer was observed between -3,12 m in the eastern and -2,30 m NAP in the western part of the excavation.

On top of the layer of Pleistocene cover-sand, a layer of peat was documented. This layer is known as the *Basisveen Laag*, which is part of the *Formatie van Nieuwkoop*. This layer originates in the mid Holocene, during the Boreal and Atlantic ages (9000 – 5000 BC). During that time, the relative sea level rise led to a raise of the groundwater-table which resulted in a waterlogged landscape. A layer of boulder clay (*keileem*) in the deeper subsoil below Stavoren, a foothill of the push moraine of *Gaasterland*[20], prevented an easy discharge of water. In this wet environment, peat could develop.

In the Stadsfenne, the *Basisveen Laag* had a thickness of 90 cm in the eastern part of the excavation, with its top at -2,76 m NAP. Towards the west, the thickness of the peat layer decreased. At the location of the former water stream along which Stavoren was built (see below), the peat was completely eroded. Traces of natural erosion could be observed in the eastern part of trench 14 and in section O-P at -2,10 m NAP.[21]

During the Stadsfenne excavation, the *Basisveen Laag* was not described in detail. It is likely that the peat layer in the Stadsfenne was similar to the peat layer of the Johan Frisosluis excavation, about 100 m. south of the Stadsfenne.[22] There, the peat layer consisted of a layer of *hoogveen* on top of a small layer of *broekveen*. The layer of *hoogveen* (raised bog peat) could be subdivided into *veenmosveen* (sphagnum peat), *heideveen* (heath peat) and *wollegrasveen* (cotton-grass peat).

The top layer of the natural subsoil existed of a layer of clay and sand known as the *Formatie van*

19 The excavators interpreted the layer only as a 'natural sand layer'. The classification and origin of the natural subsoil layers in this study are based on recent studies of the soil in Stavoren (see Van Hoof 2015 and the website of DINOloket).

20 *Formatie van Drente, Laagpakket van Gieten*.

21 These traces were interpreted by the excavators as traces of peat digging. Unlike in the Johan Frisosluis excavation however (see Van Hoof 2015), no traces of peat digging were present in the Stadsfenne excavation.

22 Aalbersberg 2015, 15

Naaldwijk. This layer is the result of relatively recent tidal actions and marine floods. In the Stadsfenne excavation, the *Formatie van Naaldwijk* was observed as two different layers representing two different periods of marine deposition.

First, on top of the *Basisveen Laag* a layer of slightly layered blue/grey clay was deposited. This was the result of a gradual process of sedimentation caused by high tides and small floods. The layer was observed over the entire excavation area and had a thickness of 10 to 40 cm. The same layer was observed in the Johan Frisosluis excavation and was radiocarbon dated to the second half of the eleventh to the early half of the twelfth century.[23]

The second layer of the *Formatie van Naaldwijk* is the result of a much more dramatic process. It consists of a thick layer of clay with large lumps of peat and many wood chips. According to the excavators, the layer was clearly the result of influence of the sea.[24] It was deposited on top of the blue/grey layer mentioned above, but was only observed in the western part of the excavation area. Its thickness varied between 0,60 m and 1,40 m. In this layer, several fragments of pottery and other find material were recovered, all dating to approximately 1120 – 1140. Because of its thickness and its inclusions of lumps of peat and wood chips, the second layer must have been deposited during a large flood. During that flood, areas of peat and trees must have been eroded. The eroded material was taken by the water and deposited in Stavoren and possibly elsewhere. The presence of pottery in the layer probably means that the area around the Stadsfenne was already in use around the time of the flood. Another argument for this is a small revetment that must have been built before the flood (feature 356, see paragraph 6.8.1). The flood deposition did not reach beyond that revetment. The effects of the same flood possibly have also been observed during an archaeological excavation in Medemblik.[25]

23 Aalbersberg 2015, 17
24 The layer was described as 'washed over' (*verspoeld*).
25 Besteman 1979, 216-7

4 Urbanisation in the Low Countries

4.1 Defining a medieval town

“The concept of 'city' is notoriously hard to define.” This is the opening line in the famous article *The Urban Revolution* by Gordon Childe dating to 1950. He was not the first and certainly not the last author who tried to express the difficulty of defining a city or town. Variations on this sentence have been and probably will be used by numerous archaeologists, historians, geographers and urban planners. Others try to avoid defining the concept of 'town' altogether by not using the term 'town' while discussing the development of towns.[26]

In the past, a town has been defined by geographers with specific criteria. Two of such criteria were the concept of the 'Central Place', which is a town that provided services to neighbouring settlements (first published by Walter Christaller in 1933) and the criteria that a settlement should have a certain population threshold (by i.a. Russell in 1948). Today however, historians and archaeologists usually define a town by a number of criteria, making use of some of the definitions that have been proposed in the past.

Historical geographer Hans Renes, for example, gives five criteria for a medieval place in the Low Countries to be called a town: it has received town privileges, it has at least a thousand inhabitants, it has a non-agrarian economy (trading and craft-production), it has fortifications (like walls or ramparts) and it has dense housing.[27] According to Renes, a place does not need to satisfy all criteria to be called a town; the early medieval town of Dorestat for example did not have town privileges or fortifications but can still be considered a town.

Historian Peter Henderikx follows the criteria given by Renes, but adds the concept of Central Place mentioned above.[28] This concept meant that a medieval town had one or more central functions either regional, interregional or both. Such central functions could involve trade, production, administration or religion.

Similar lists of criteria for the definition of a medieval town can be found in many recent publications by historians. Some of the criteria listed above can also be tested archaeologically. For example, a craft-production and trade can be observed in the material culture found in a town. Some crafts require or produce very specific objects (as raw material, half-produced goods, finished goods or waste material). If such objects are found during an archaeological excavation, they may point to craft-production which in turn may point to an urban environment. The same is true for trade, which may be represented by the presence of (large quantities of) imported goods or foreign coins. Furthermore, fortifications and dense housing can of course also be observed archaeologically.

However, from a pure archaeological perspective, at least four more criteria can be added to this list.[29] These criteria are less often observed in historical sources: (1) infrastructure, such as a systematic layout of plots, roads and bridges, quays, ports and markets; (2) specialised buildings types that meet the needs of merchants and craftsmen (as opposed to agrarian buildings); (3) human changes in the landscape to prepare the land for construction and habitation (such as reclaimed and raised land as a foundation for town expansions); and (4) the medieval urban lifestyle[30] (which may, for example, be observed in unique urban material culture or as the state of health of the inhabitants that can be observed when excavating cemeteries). Together with some of the criteria listed above, these four criteria can be considered the material reflection of the concept of urbanisation.

26 Theuws 2012, footnote 1
27 Renes 2008, 15
28 Henderikx 2008, 47-8
29 Steuer 2007, 134-5
30 Steuer 2004, 41

Many medieval places in the Low Countries meet these 'archaeological criteria' for medieval urbanisation. Some examples are the systematic layout of plots and roads in Deventer[31], warehouses in Tiel[32] and large scale land raising in Dordrecht[33].

The archaeologist Herbert Sarfatij points to the transition from wood to brick houses, that occurred in many towns from the late medieval period onwards, as the major archaeological criterion for "a real urban settlement".[34] However, wooden houses remain common in towns long after the medieval period and often exist next to brick houses. Therefore, the presence of wooden or brick houses itself does not dictate whether or not a medieval place is 'urban'. Elaborating on that, the transition to brick houses was a process that took many centuries and cannot be pinpointed to an exact moment. The transition to brick houses can therefore be considered a part of the larger process of urban development but not as a single criterion for a medieval town.

4.2 Processes of medieval urbanisation

Some medieval towns in Europe North of the Alps were born inside the ruins of Roman predecessors. Examples include Cologne and Trier. Both towns were home to a bishop during the late Roman period. After the collapse of the Roman Empire the bishops could maintain their power, making Cologne and Trier religious centres during the medieval period. In the Netherlands, examples of medieval towns with a Roman origin include Nijmegen, Utrecht and Maastricht. Nijmegen never really was abandoned and has a strong continuity since Roman times, although the early medieval town did not have the full extend as it had during Roman times. Maastricht and Utrecht, like Cologn and Trier, became important bishop seats during the early medieval period which in turn caused the towns to grow during the high medieval period.

During the Merovingian period, there were relatively few urban centres in Europe. The concentrations of habitation that existed in North-West Europe during the fifth and sixth centuries consisted of settlements with a very rural character. The first (pre-)urban centres emerged during the Carolingian period. Most noticeable were the trade settlements or *emporia* that were built along coast lines and rivers, such as Dorestat, Domburg, Quentovic, Lundenwic, Hamwic and Hedeby. Over the past decades, different models on the development of towns in the Carolingian period have been presented.[35] One of the more recent models by Richard Hodges suggests that these towns could develop because of a combination of long distance trade through Europe and strong regional contacts of the towns.[36] Furthermore, archaeologist Frans Theuws suggests that not only the Carolingian elites were responsible for the demand in goods, as was often thought in previous studies, but also peasants generated a strong demand and consequently stimulated trade and the growth of towns. According to Theuws, the early medieval pre-urban settlements were the result of the trade system. During the Carolingian period, the trade system was "*an 'eclectic economy' containing elements of a range of types of economies and exchange systems (…). In such an economy, agents move between town and countryside, between monetary and non-monetary systems, between agricultural and artisan production, and between various forms of exchange.*"[37] Such an eclectic economy proved successful in early medieval Europe.

However, most of the early medieval trading towns had declined and disappeared before the year 1000. The reason for their disappearance remains uncertain. Substantial changes must have occurred to the practices in regional economies, long distance trade networks and the power of the

31 Mittendorff 2007, 241-8
32 Oudhof/Verhoeven/Schuuring et al. 2013, 130
33 Sarfatij 2007, 178-9
34 Sarfatij 1990b, 189
35 A good overview of the main theories is presented in Hodges 2012.
36 Hodges 2012
37 Theuws 2012, 44

elites.

In the Low Countries, Dorestat was the main *emporium* during the Carolingian period. When Dorestat lost its importance in the interregional trade network, and ultimately completely disappeared, other towns in the Low Countries emerged to take its place. First Deventer and shortly thereafter Tiel became the two main trading towns in the Low Countries during the tenth and early eleventh centuries. Other trading towns that developed at this time were Medemblik and Stavoren, each at the opposite side of the river Vlie. At the same time, Utrecht developed as the main religious centre of the region. These towns developed on the eve of a period of intense urbanisation that covered roughly four centuries.

In fact, all over Europe and Asia many towns emerged between 1000 and 1400. One of the most important factors of the urbanisation of Europe was a general rise in population. Already during the Carolingian period, some regions in Europe became more and more densely populated. Between 1000 and 1300 however, the population of Europe almost doubled.[38] The growing pressure on the countryside caused people to move to towns where they could adopt non-agrarian lifestyles. Agricultural surpluses stimulated the growth of urban markets, where bulk goods such as grain were distributed and commercialised. Land owners, such as monasteries and local counts, took an interest in promoting the development of commercialised trade by granting privileges to towns and by reclaiming large stretches of land. This came from an increasing tendency to organise and control society through administration, law, privileges and the church.[39]

In contrast to the early medieval period during which the landscape was often the decisive factor what kind of construction could be built, in the late medieval period humans start to change the physical landscape for their constructional needs.[40] This enabled humans to built larger and more complex structures at locations that in earlier centuries were considered uninhabitable wilderness.

During the high medieval period, trade existed of both regional economic exchange and long distance network. Both exchange networks were integrated with each other and often reinforced by yearly markets and fairs. Common bulk trade goods were grain and other staple food, beer, wool, leather and cloth, quern stones, pottery[41] and building materials such as wood, stones and tuff. Luxury items that were exchanged included spices, wine, glass, jewels and metal crafts.

The interregional contacts stimulated the formulation of bonds of trading towns. The most successful bond was the Hanseatic League, that formally started in the late thirteenth century as an association of merchants and later became a league of towns. Towns that were a member of the Hanseatic League could appeal to other members to ensure safe and fair travels and trades. Furthermore, the Hanseatic League became a major political force on its own, supporting its member towns on various occasions in political situations.

The high and late medieval towns didn't emerge just anywhere. Usually, towns arose at locations where they could sustain themselves: at strategic locations in the natural landscape, along rivers, at the sea or on higher ground such as beach ridges; at crossings between natural water ways and land routes. Many towns in Europe emerged near a seat of power such as a count, a bishop or near a monastery.[42] Such seats of power usually attracted many people and consequently had a relatively high demand in goods. People settled near these seats of power and held markets to sell their surplus goods produced on their royal or ecclesiastical estates. The market attracted more merchants and artisans which in turn led to the development of a town.

Throughout the eleventh to fourteenth centuries, many towns were given town privileges by

38 Blockmans/Hoppenbrouwers 2011, 265
39 Andersson 2011, 370-5
40 Bouwmeester 2014, 441
41 Although it is generally thought that the exchange of pottery was mostly the result of the exchange of the contents of the pots, such as food, wine or olive oil.
42 Verhulst 1999

the emperor, king or count. With these privileges, a town with all of its inhabitants became a legal entity with its own authority.[43] Town privileges often included the rights to administer an own jurisdiction within the borders of the town and a legislative right, enabling towns to frame their own laws. Furthermore, some town privileges gave the town the right to use an unique town seal, to mint coins and to either allow the town to charge a toll or to give the merchants of the town free access to areas without paying a toll. Town privileges could boost the growth of towns, because the inhabitants of the towns were better protected by laws and merchants could exercise their businesses more efficient.

Like in the rest of Europe, many towns emerged in the Low Countries during the high and late medieval period.[44] Some early towns dating to the tenth and eleventh centuries have already been mentioned above: Tiel, Deventer, Utrecht and Nijmegen. During the twelfth century, this process continued with the emergence of towns like Zutphen, Muiden and Groningen.

The real growth in the number of towns happened during the thirteenth century. In the regions Holland and Zeeland, towns like Sluis, Aardenburg, Middelburg, Zierikzee, Delft, Dordrecht, Leiden, Gouda, Haarlem, Amsterdam and Rotterdam all developed urban characteristics. Along the river IJssel, the towns Kampen and Zwolle started to grow. All the towns mentioned above were situated along rivers or open sea, which were favorable positions for trading.

In the eastern and southern part of the Low Countries, several towns were founded as part of the local politics of counts and bishops. Some of the towns that emerged as the result of a political strategy during the thirteenth century are Bergen op Zoom, Breda, 's-Hertogenbosch, Eindhoven, Roermond, Wagening and Doetinchem.

Not all of the towns would continue to grow during the late medieval period. Some places lost their favorable position due to a change of water courses or due to political changes. However, the process of urbanisation continued during the fourteenth century, when again new towns would emerge and sometimes took over the role of one of the older towns. The creation of new towns in the Low Countries finally stagnated around 1400 and would not continue until modern times.

Little research has been done on the development of medieval Frisian towns.[45] The histories of towns like Dokkum, Leeuwarden, Franeker, Harlingen, Bolsward, Workum, Hindeloopen, IJlst and Sneek seem to somehow relate to each other, but they remain unclear. Questions on how it was possible for so many towns to develop in a relative small area and how they could develop without the direct rule of a local count or bishop[46] have yet to be answered.

43 Cox 2005, 16-8

44 The following paragraph is loosely based on the concept of urban landscapes (*stadslandschappen*) by Reinout Rutte (2008).

45 Rutte 2008, 154

46 See also Cox 2005, 20

5 The history of Friesland and Stavoren

5.1 The legendary Frisian kingdom, counties and gaue

For centuries historians have argued that the present province of Friesland derived its name from the much larger and much older kingdom of Friesland or Frisia. Not much was known about this kingdom, only that during the seventh and eight centuries, it supposedly stretched from the river Zwin (in present day Flanders) to the river Wezer (in present day Bremen, Germany) and that it was controlled by legendary kings, of which king Radbod was the most well known.

Illustration 7. Seventeenth century drawing of the legendary Frisian king Radbod. From Chronique ofte historische geschiedenisse van Vrieslant by Pierius Winsemius, 1622.

However, recent studies have shown a different picture. Dutch archaeologist Johan Nicolay considers the medieval term 'Frisian' not referring to a single ethnic group or kingdom, but to a coastal area that, during the medieval period, outsiders associated with Frisians.[47] It is likely that during the early medieval period the area knew local rulers, but, according to Nicolay, a single king that ruled over a unified Frisian kingdom was probably not the case. Somewhere else it is argued that the term 'Frisian' was synonymous with 'merchant' during the late high medieval period.[48] Any merchant coming from the Low Countries and the neighbouring areas could bear the name 'Frisian'.

During the first half of the eight century, the Frisian coastal area was conquered by the Carolingians and was incorporated in the Carolingian Empire. The coastal area was split up into several administrative counties. Even after the Carolingian Empire itself was split into three smaller kingdoms, the Frisian lands remained counties under royal rule. How these counties were organised exactly during the ninth and tenth centuries is not clear.

We do know however that several waterways in the landscape were used as natural borders between the Frisian counties. West-Friesland was bordered in the west by the North Sea and in the east by the river Vlie. Central-Friesland was the area between the river Vlie and the river Lauwers and East-Friesland stretched from the river Lauwers to the river Wezer. In this study, only the area of Central-Friesland will be discussed, and will be referred to as Friesland. It roughly corresponds to the borders of the present day province of Friesland.

During the eleventh century, Friesland could be divided into several smaller gaue (*gouwen*, in England known as shires), which basically were separate regions with administrative functions. Today, place names in Friesland with the suffix -go remember of the old gaue. The largest gaue in the county of Friesland were Westergo, Oostergo and Zuidergo. Because Stavoren was the major town in Zuidergo, the name Stavoren has also been used in medieval sources to refer to the entire gau of Zuidergo.

The borders of the eleventh century gaue in Friesland are not certain, although they probably largely corresponded to the borders of the post-medieval administrative regions in Friesland with

47 Nicolay 2014, 21-3
48 Looijenga 1997, 35

the same names, even though the landscape itself must have changed a lot (see chapter 3).[49]

Illustration 8. Sixteenth century map of the northern part of the Low Countries. From the Atlas Comitatus Montensis et trium cornuum Rheni typus *(1573) by Christiaan Sgrooten. Friesland is coloured green on this map. Oostergo and Westergo are seperated by a brown line. Stavoren is in the central part of the map.*

49 Gerrets 2010, 12

5.2 Frisian trade

Connected to the legendary Frisian kingdom mentioned above is the so-called 'Frisian trade'. In literature, the term Frisian trade usually refers to the early medieval trade that originated in or took place in the Frisian coastal area. Testimonies of this trade are the numerous finds of early medieval coins, known as sceattas. These small silver coins were minted in seventh century Dorestat and have been found all over the Frisian coastal area, in England and in Scandinavia.

Historical sources sometimes make mention of the goods that were traded. For the early medieval period, the goods include glass, wine, weapons, hides, salt, quern stones and slaves. Probably the most famous Frisian product during the early medieval period was Frisian cloth (*Fries laken*), which is known from several different historical sources.[50] It is unclear however where exactly the Frisian cloth was produced and at what scale the cloth was traded.

The main trading hub during the Carolingian period in the Frisian coastal area was Dorestat. It has been suggested that Dorestat could gain such status because of the background of the Frisian trade that existed already during the Merovingian period in combination with the Frankish power that pacified the Frisian hinterland and stimulated growth.[51]

Several smaller places in the Frisian coastal area were also part of the trade network during the Carolingian period. These include Medemblik[52], Texel[53] and possibly Wieringen[54]. In their famous work *Welvaart in Wording*, Jappe Alberts and Jansen argue that the Carolingian trade in the Frisian area continues into the high and late medieval period.[55] The main trading routes and hubs changed over the centuries but the role that the Frisians played in the Northwest-European trade networks remained influential between eight century until the fourteenth century.

Illustration 9. Rune stone U 379 in Sigtuna, Sweden. Photo used under GNU Free Documentation License.

Based on historical sources, we know that during the early and high medieval period, Frisian merchants lived and traded in places like Saint-Denis, Trier, Duisburg, Cologne, in places in England and in the region Skåne in present-day South-Sweden.[56]

Furthermore, two rune stones in Central-Sweden refer to a Frisian guild. They were found in the Sigtuna Kyrkogården, in the Stockholm region

50 Jappe Alberts/Jansen 1964, 33-4
51 Lebecq 1992
52 Van Leeuwen 2014
53 Woltering 2000; see also Van Leeuwen 2014, 182-3
54 Van Leeuwen 2014, 175-7
55 Jappe Alberts/Jansen 1964, 51; See also Hodges 2012
56 Jappe Alberts/Jansen 1964, 28-35

in Central-Sweden, and have the following texts engraved in them[57]:

U 379
Frísa gildar létu reisa stein þenna eptir Þor[kel, gild]a sinn. Guð hjalpi ǫnd hans. Þorbjǫrn risti.
“The Frisian guild-brothers had this stone raised in memory of Thorkell, their guild-brother. May God help his spirit. Thorbjǫrn carved.”

U 391
Frísa gi[ldar] ... þessar eptir Albóð, félaga Slóða. Kristr hinn helgi hjalpi ǫnd hans. Þorbjǫrn risti.
“The Frisian guild-brothers ... these in memory of Albóð, Slóði's partner. May the holy Christ help his spirit. Thorbjǫrn carved.”

Both stones date to the late Viking Age, probably to the late tenth or eleventh centuries. The stones have been used as an argument for the presence of Frisian merchants in central Sweden during that period.[58]

The places mentioned above that had Frisian merchant guilds often had other merchant guilds belonging to different groups of merchants. The guilds served to consolidate trade and to protect the merchants from pirates and other dangers they could run into outside their homelands. For the merchant guilds, it was in each other's interest to protect each other and to protect the trade. These merchant guilds may be seen as the precursor of the late medieval artisan guilds seen in many towns.

However, as was mentioned above, the term 'Frisian' in medieval texts might not have meant a Frisian ethnicity but might rather have referred to merchants in general.[59] This would mean that the text “Frisian guild-brothers” on the rune stones mentioned above refers to members of a trading guild in general rather than to a Frisian ethnicity. The discussion on the meaning of the presence of Frisian guilds in the various towns and places and its connection to the 'Frisian trade' thus remains open.

5.3 Friesland and Stavoren in the high medieval period (approx. 1000 – 1250)

During the greater part of the medieval period, the Frisians east of the river Vlie enjoyed what later was called the 'Frisian Freedom' (*Friese Vrijheid*). This meant that the count or bishop ruling over the Frisian lands had little or no power over the people. Because of this, the feudal system that developed in large parts of Europe under the rule of Charlemagne in the ninth century and which was elaborated further during the high middle ages never really got a foothold in the Frisian lands. The Frisians were 'free' and used their own system of government.

This is, of course, a simplified version of the history of the Frisian Freedom. In reality, there was an almost constant tension between the Frisian people, the bishop in Utrecht and the various counts and dukes that had a legit or fabricated claim to rule over the Frisian lands during the medieval period. Numerous wars were fought and many charters concerning the rule over Friesland were written. There were moments during which the Frisians did accept the rule of a foreign count, only to revolt against the count shortly after. And then there were periods during which only a limited rule of a foreign count was accepted, based on a compromise between the claims of the count and the demands of the Frisian people. Indeed, the period during which the Frisians did not accept any form of foreign rule and were completely independent began only in 1345, when

57 Text and translations from the Samnordisk runtextdatabas (visited June 6th 2015).
58 Jonsson 2002, 238
59 Looijenga 1997, 35

William IV count of Holland was killed by the Frisians after his failed attempt to conquer Friesland with military force.[60] But finally, the Frisian Freedom ended for good in 1498 when Albert III, Duke of Saxonoy took control over the Frisian countries.

An overview of the most important political developments in Friesland during the high and late medieval period and the role of Stavoren in that history will be presented below.

As mentioned above, not much is known about the political organisation in Friesland, or Stavoren in particular, during the early medieval period. In fact, what happened in Stavoren remains unclear until the mid-eleventh century. There are however very sparse sources on events dating to the tenth century. In the year 991, Stavoren was (partly?) destroyed by the Vikings. We know this happened from the *Annales Hildesheimensis* in which is written: *Piratae etiam Staverun depredando vastaverunt aliaque in litore loca perdiderunt.*[61] This translates into something like 'Pirates destroyed and plundered Stavoren as well as other places along the coast'.[62] Apparently, Stavoren was worth plundering for the Vikings, meaning that there must have been something of value to take. However, nothing is known about the scale of this plundering and the context in which it took place. The last part of the sentence implies that Stavoren was just one among other places that was attacked. It is therefore not certain what the fact that Viking attacked Stavoren actually meant for the size and importance of Stavoren. This topic should be further examined by listing and comparing Viking attacks during the late ninth century.

Furthermore, the nineteenth century Dutch historian Abraham Jacob van der Aa makes mention of a big town fire that destroyed 329 houses in Stavoren in the year 996.[63] However, he did not mention a source for this event, and no recent historical studies do mention this fire, making the reliability of his statement uncertain.

Illustration 10. The front and back side of an eleventh century silver coin that was minted in Stavoren. On the back side (right), with difficulty, the text BRVN in the middle and STAV in the top can be read. This coin was found in Sweden and is currently held in the Uppsala University Coin Cabinet (catalogue number 239). After Berghaus/Mäkeler 2006.

From around the mid-eleventh century, we have more information. At that time, it were the counts of Brunswijk, the Brunonids, that possessed a direct rule over Friesland between the rivers Vlie and Lauwer. Their presence in Friesland is known from historical sources but is maybe best illustrated

60 This is true for the Frisian parts east of the river Vlie (later the Zuiderzee). West-Friesland has a different political development that will not be further discussed in this study.

61 After Waitz 1878, 25

62 The medieval latin *piratae* is usually interpreted as Vikings.

63 Van der Aa 1847, 677-86

by the large amounts of silver coins that were minted during the reigns of count Brun II, his brother Egbert I and his son Egbert II. These coins were minted in Leeuwarden, Dokkum, Bolsward and Stavoren and usually depicted the name of both the ruling count and the town of the mint.[64] The coins were used in trade transactions and, as a result, spread all over Northern-Europe.

No study on the distribution of eleventh century coins from Stavoren has ever been undertaken. Several publications list coin finds in different countries, but never with the goal to give a complete list of all coin finds.[65] Based on these publications, we know eleventh century coins minted in Stavoren were found in Poland, Germany (Holstein, Fulda), Czech Republic (Prague), Sweden (Uppveda, Stora Bjärs, Burge, Fjälkinge, Mannegårde), Finland (Rautu, Salla), Estonia (Kuusalu), Denmark (Stora Frigaard) and the Netherlands (Egmond-Binnen). However, these publications do not give any details on the amount of coins found per find spot. In Sweden, for example, at least 84 coins from Stavoren were found.[66] Such exact numbers are currently unknown for other countries.

In order to understand the meaning of the distribution of coins from Stavoren, the extent of the distribution and the amount of coins found has to be put into perspective. The coin finds of Stavoren need to be compared to coin finds from other trading towns in the region. Coins minted in Tiel, for example, were found in far greater amounts throughout Northern-Europe: in Sweden 1100 coins were documented.[67] Now this is not a surprise, as Tiel is generally considered to be one of the successors of Dorestat and consequently one of the main trading towns in the Low Countries. But how to the coins minted in Stavoren relate to coins minted in Leeuwarden, Dokkum and Bolsward? To really understand the meaning of the distribution of coins minted in Stavoren, future research is necessary in which these and other places are included.

The power of the Brunonids in Friesland was not only reflected in the distribution of silver coins, but also in the fact that Stavoren was given town privileges by count Egbert I sometime in the years before 1068. This privilege was later ratified by king Hendrik V in the early twelfth century (possibly in 1108[68]). The original charter of the privilege and the charter of the ratification are both lost; only two fourteenth century documents that refer to the privileges are preserved.[69] Because the actual privileges are lost, we have little information on what exactly the town privileges mean. However, based on the fourteenth century copies, we do know that the privilege included immunity for the inhabitants of Stavoren[70], meaning that the inhabitants of the town were now part of a town law opposed the land law. Furthermore, an agreement on the toll that merchants of Stavoren had to pay on the river Rhine is mentioned in the document. Also, a pilot used to guide ships over the river Nagel is mentioned. According to Jaekel, this was necessary because the currents were very strong and hard to navigate at the Nagel river mouth (where the river Nagel flows into the river Vlie).[71] Details on these agreements are however not given in the document.

The contents of the town privileges granted in the late eleventh century thus remain rather vague. However, the fact that the inhabitants of Stavoren were given special privileges in itself means that Stavoren was a town of some significance, especially if it is considered that other places in Friesland, like Leeuwarden, Bolsward and Dokkum were only given town privileges much later.

64 A typology of the coins minted in this period can be made, see for example Ilisch 2000, 221-48. However, in this study, the coins minted by the different counts during the eleventh century are not further differentiated.

65 Van der Chijs 1855 (1973); Scholten 1939; Puister 1975; Ilisch 2000; Berghaus/Mäkeler 2006

66 This number is based on unpublished results from a central database on coin finds in Sweden designed and maintained by Kenneth Jonsson, Stockholm University. The number is even higher because the database was not updated with the latest finds. E-mail conversation with Kenneth Jonsson on June 1st, 2015.

67 Oudhof/Verhoeven/Schuuring 2013, 137

68 Registers van de Hollandse grafelijkheid 1299-1345, FR 48

69 Registers van de Hollandse grafelijkheid 1299-1345, FR 48; Cox 2011, 91

70 Cox 2005, 216; Jaekel1895, 120-7

71 Jaekel 1895, 127-30

The counts of Brunonids were not the only authority in Friesland in the eleventh century. Ecclesiastical centres such as monasteries often had many possessions and generated wealth which could be used to consolidate their power. Consequently, it was not uncommon that these ecclesiastical centres were involved in politics and trade. One example from Stavoren is illustrated in a charter dating to the late eleventh or early twelfth century (preserved as a fifteenth or sixteenth century copy).[72] In this charter, it is hinted that Stavoren was a regional market centre and that the ecclesiastical centre in Stavoren devoted to St. Odulfus (before the Benedictine monastery was founded in 1131) took a part in that. The charter is about money that had to be paid by the manor of Urk to the abbot of St. Pantaleon in Cologne. The charter states explicitly that the transaction had to take place in Stavoren during the yearly market on St. Odulfusday (June 12th). Later during the twelfth century, the manor of Urk became part of the abbey of St. Odulfus.

The counts of Brunonids did not hold their power for long in Friesland. In 1089, during the rule of count Egbert II, the claim of the Brunonids on the county of Friesland was taken by emperor Henry IV. Counts had become too powerful for the emperor to control and this was a way for him to ensure the continuation of his empire. The rule over the county of Friesland was given to the bishop of Utrecht.

After a short rule, the bishop was murdered in the year 1100 and the power over Friesland fell in the hands of the legit heirs of the Brunonids: the counts of Northeim. However, since the counts of Northeim did not settle in their newly inherited county but remained living in their remote homeland in present day Germany, the people in Friesland enjoyed a certain freedom. Like the Brunonids however, the counts of Northeim did not keep the power over Friesland for long. During the first half of the twelfth century, the counts of Holland did inherit the claim over Friesland.

In the year 1138, emperor Conrad III did a second attempt to decrease the power of the nobility by giving the county of Friesland to the bishop of Utrecht. This led to a series of clashes between the counts and the bishop. In 1165 the matter was finally settled by emperor Frederick Barbarossa who decided that Friesland was to be ruled as a condominium. This meant that the county of Friesland was ruled by both the count of Holland and the bishop of Utrecht. A new count was to be elected by both parties.

However, the bishop and the count never got settled on the limitations of the power the new count should have. The clashes between both parties that followed were reinforced by the Frisian elites, who could in their turn be divided into a pro-Holland and an anti-Holland faction. Finally in 1213, the bishop lost and the count of Holland, Willem I, claimed full control over Friesland. However, the counts of Holland failed to exercise the full power they claimed. The Frisian elites that belonged to the anti-Holland faction still exercised a lot of power in Friesland, making it impossible for the count to impose his rules upon the people in Friesland. During the thirteenth century, the duality between Holland and Friesland resulted in a series of clashes. During that time, the count of Holland never got a good foothold in Friesland.

This changed at the end of the thirteenth century, when the town of Stavoren became more and more oriented to Holland. In the year 1292, Stavoren was granted town privileges by the count of Holland, Floris V. Apparently, the town privileges that were given to Stavoren in the late eleventh century were not valid any more, or at least were not accepted by the count of Holland.

Stavoren was given these privileges to confirm the towns loyalty to Floris V. At that time, Stavoren functioned as a strategic military foothold for Holland. The count of Holland wanted to strengthen his power in Friesland and used Stavoren as a strategic nodal point, from which the count planned to increase his influence over Friesland.

The town privileges itself were based on town privileges used in other towns in Holland. Consequently, the organisation of government in Stavoren became much like the organisation in towns in Holland. This meant that the count was represented by a *schout* (sherif) in Stavoren, as

72 OSU V – 3033

was common in towns in Holland.[73] In the town privileges of 1292 it is said that the inhabitants of Stavoren no longer had to pay toll within the borders of the county. Other notable privileges and regulations include a ban on duals, the retaining of the toll and mint in Stavoren and the permission of the local rulers of Stavoren (*schepenen*) to make new laws and rules.[74]

The fact that Stavoren became a Holland-oriented town did not affect the development and economy of the town in a negative way. There are several historical sources that indicate that Stavoren was successful in an interregional trading network during the twelfth and thirteenth centuries. First of all, Stavoren was a member of the Hanseatic League. When and how exactly Stavoren became part of this network of trading towns is unknown. A seal from Stavoren dating to 1246 found in the city archives of Lübeck does imply that Stavoren was involved in the Hanseatic League during the mid thirteenth century (see illustration 11).

Secondly, merchants from Stavoren are mentioned in several English charters dating to the thirteenth century.[75] At that time, there was a war between England and France and for a while, foreign ships that entered the English harbours were seized. If the seized ships did not come from France, they were released again later. These events were written in charters. Based on these charters, we known ships from Stavoren traded in Lynn (in the years 1224 and 1249), Portsmouth (1224), London (1224), Newcastle (1296) and Scarborough (1297).

In one of the charters referring to Lynn, the ships from Stavoren are said to be filled with grain (charter no. 374). A different charter mentions a cog named “Godyer” owned by a merchant from Stavoren (charter no. 1238). Another charter dating to 1296 mentions that merchants from Hamburg visiting the harbours of Stavoren and Franeker get reduction on the amount of toll they have to pay (charter no. 1218).

Illustration 11. A town seal from Stavoren dating to 1246. The seal reads 'SIGIL(LVM) BVRGENSIV(M) ..A'. Currently in the city archive of Lübeck.

Thirdly, charters referring to merchants from Stavoren that were made outside England are less common, but do exist. In 1178, a merchant from Stavoren was doing business in Cologne.[76] He was probably active in the Frisian trade district in Cologne. Merchants from Stavoren also traded in Scandinavian countries. In the late thirteenth century, Bara and Skåne (both regions in the southern part of present day Sweden) were visited by merchants from Stavoren.[77] In 1251 and 1294, Stavoren was given trade privileges by respectively the Danish and Norwegian king. These privileges included a reduction on the toll paid when passing through Öresund (the water between Denmark and Skåne) and the permission to found small trading settlements. It should be noted however, that many other trading towns in Northern-Europe were granted similar privileges by the Scandinavian kings.

Not much is published about the tolls in Stavoren. According to the nineteenth century historian Klaas Heeringa, there were three tolls in Stavoren during the fourteenth century: one from the bishop, one from the count and one from the town.[78] How old these tolls were is unknown. In recent historical studies, there is no mention of a toll during the early or high medieval period.

However, a toll is mentioned in the town privileges from the count of Holland dating to

73 Cox 2005, 216
74 Cox 2011, 593-7
75 Hansisches Urkundenbuch, Band 1, Charters numbered 160, 161, 162, 164, 167, 374, 1223, 1238 and 1314.
76 Boonstra/De Vries/Jansma 2011, 36
77 Brand 2011
78 Heeringa 1893, 38-9

1292 (see above).[79] Based on this document, we do know that there was a toll in Stavoren at least at the end of the thirteenth century.

5.4 Monasteries and churches in Stavoren

Throughout the history of the town, Stavoren has known several churches and two monasteries. One of them is still standing: the nineteenth century Nicolas Church (which has an early sixteenth century predecessor on the same location with the same name). From one of the monasteries, only the street name *Klooster straet* on a seventeenth century map, referring to the fifteenth century priory of Maria Magdalena, remains. Other have completely disappeared, such as the early medieval Church of Odulfus, the late medieval Maria Church and the high medieval Saint Odulfus abbey. The Nicolas Church and the priory of Maria Magdalena will not be further discussed, because they are outside the scope of this study.

Contrary of what is sometimes believed, Odulfus, who lived in the ninth century, did not found the monastery himself. Odulfus was a canon in Utrecht and was sent to Stavoren by bishop Frederik van Adelen to fight against heresies in Friesland. The life of St. Odulfus was described in the relative short *Vita Sancti Odulphi*, which was probably written by a cleric in Stavoren during the tenth century.[80] The Vita does not say if Odulfus founded a convent or built a church in Stavoren, but it is likely that he was surrounded by a group of other canons.[81] According to the Vita, Odulfus settled in Stavoren in the year 837.

As with other Christian saints, the life of Odulfus is full of miracles. One of them was published in the *Descriptio translationis et miraculorum sancti Odulphi*, which was written in approximately 1125 in the English abbey of Evesham.[82] In this short story that sets in the year 830, Odulfus was leading a service in a church in Stavoren when he was interrupted by an angel who urged him to leave immediately and go to Utrecht to visit bishop Frederik. Odulfus sails to Utrecht on a boat that, without a sail or crew, is miraculously moved by the angel. When meeting bishop Frederik, Odulfus confronts him with what the angel had told him: that bishop Frederik had sinned with his own sister. Upon hearing this, bishop Frederik renounced his position as bishop and he was exiled for ten years. According to Van Buijtenen, a fourteenth century seal of the town of Stavoren, that was found in the archives in Hamburg, depicts this story (see illustration 12).[83]

Illustration 12. Seal of Stavoren, dating to 1369. The hand of God emerges from the clouds on the right and moves the ship. City archives Hamburg. After Van Buijtenen 1977, 89.

During the centuries after Odulfus had died, the church in Stavoren probably functioned as a parish church. Not much is known about this period. We do know however that the church in Stavoren possessed several relics of St. Odulfus in the eleventh century. This is clear from text from Evesham, mentioned above. In this text is written that around the year 1034, people stole relics of Saint Odulfus from the church in Stavoren and brought them to London. There, bishop Aelfwardus was able to buy them and take them to the abbey of Evesham. It is not known what happened to the relics afterwards.[84]

79 Cox 2011, 596, number 19
80 Mol/Van Vliet 1998, footnote 4
81 Mol/Van Vliet 1998, 73
82 This miracle was published in Van Buijtenen 1977, 54-5
83 Van Buijtenen 1977, 89
84 Van Vliet 2002, 192

In the year 1132, the community of canons who lived in Stavoren had to give way to monks and nuns of the order of Benedict. Apparently, the church of Stavoren had fallen into the hands of layman and in order to restore the ecclesiastical power, the bishop had sent the monks and nuns to found an abbey and take control of the parish. The abbey was built west of the town near the waterside.

The abbey of Saint Odulfus that was founded was a double monastery, meaning that both monks and nuns were part of the community. At the time of foundation in 1132, the abbey also had two patron saints: Saint Odulfus and Saint Mary.[85]

The abbey owned land and farms, or monastic granges, in and around Stavoren, and also further away, in West-Friesland and Urk. The land owned by the abbey, which changed during the centuries, was documented on several charters dating to different centuries. Van Buijtenen (1977) and later Mol and Van Vliet (1998) have studied the land ownership of the monastery. In the latter study, a reconstruction of the distribution of possessions was mapped for the mid-thirteenth century (see illustration 13).

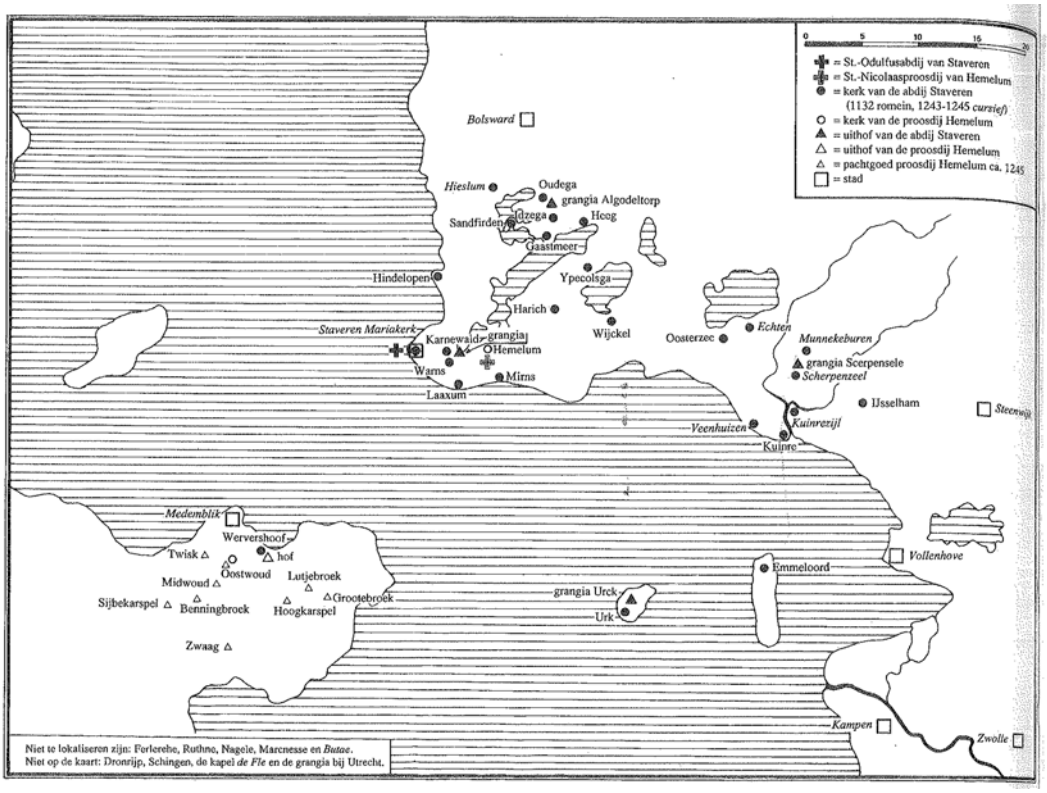


Illustration 13. Reconstruction of the land and farms that were owned by the abbey of St. Odulfus around the middle of the thirteenth century. Map by Mol/Van Vliet 1998.

In the late twelfth or early thirteenth century, the nuns at the abbey were replaced to a priory in Hemelum, a village about eight kilometres east of Stavoren. The priory in Hemelum was a daughter monastery of the abbey of Saint Odulfus in Stavoren and lived under the rule of the abbot. Part of the land owned by the abbey probably was given to the new priory in Hemelum.[86]

From 1230 onwards, the abbey building itself and its surrounding land was under constant threat by the sea. Over the centuries, the floods and the increasing amounts of water in the Vlie destroyed the abbey (see paragraph 5.5 for more on the threat of the water). Also, the abbey was used twice as a fortification during wars, in 1345 and in 1398. Both times the abbey suffered greatly. When in 1414 the abbey was still not rebuilt after the last war, the monks decided it was not

85 Mol/Van Vliet 1998, 106
86 Mol 1997, 99

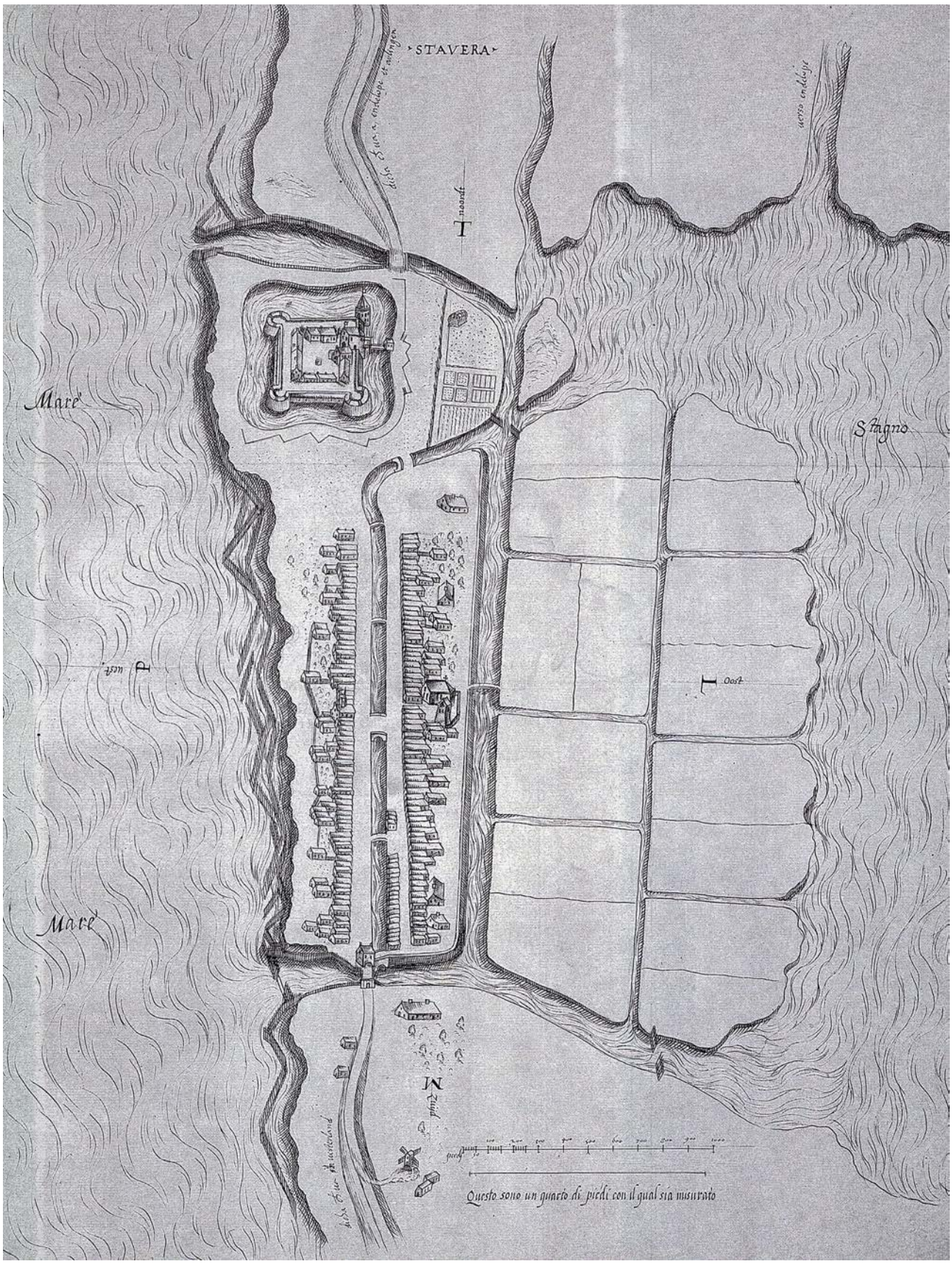


Illustration 14. Number 44 of the so-called Robles-maps of Stavoren made on behalf of the Spanish ruler Caspar de Robles around 1572. North is above. The northern part of the map is dominated by the sixteenth century block house. The town itself is built along one of the canals of Stavoren. South-east of the most southern bridge if an isolated building. Schroor and Van den Heuvel assume that this building was the relocated abbey of St. Odulfus (between 1415 and 1494).

possible to continue their monastery at the current location. In 1415, the monks got permission from the bishop to build a new monastery inside the town of Stavoren. The exact location of the new monastery is unclear. Meindert Schroor and Charles van den Heuvel argue that the monastery was built south-east of the medieval southern gate (*Zuiderpoort*), based on a map of Stavoren dating to 1572 (see illustration 14).[87]

During the fifteenth century, the abbey in Stavoren and the priory in Hemelum worked closely together. At the end of that century, in 1494, both monasteries were united again in one location. This time, the monks moved to Hemelum and the monastery in Stavoren was abandoned.

According to Van Vliet, it is likely that after the arrival of the Benedictine monks and nuns in 1132, the parish church in Stavoren was replaced by a new one inside the grounds of the abbey.[88] The function of parish church however was soon again transferred to the newly built church of Saint Mary inside the city, east of the monastery. The founding date of the church of Saint Mary is not known, but we can be sure that it was built between 1132 and 1243.[89] While the new parish church took the patron of Saint Mary, the abbey kept the patron of Saint Odulfus.

The exact location of the church of Saint Mary can only be guessed at. We know it stood close to the sixteenth century blockhouse (*Blokhuis*). A blockhouse was a small fortification that was used as a strategic stronghold when the town was under attack. The church of Saint Mary was demolished during the clearing of the direct area surrounding the blockhouse in order to remove possible hiding places for enemies.[90] This clearing can possibly be observed on several sixteenth century maps of Stavoren (see illustrations 14 and 15). Furthermore, possible remains of the church were found directly south of the location of the block house during an archaeological investigation in 1999.[91] The remains were found and documented by amateur archaeologist Auke Bult one day before the actual archaeological investigation began. The remains consist of several fragments of large medieval bricks (*kloostermoppen*) and a small fragment of stucco with the possible remains of a fresco. It is however uncertain if these remains were in fact part of the church of Saint Mary. After the demolition of the church of Saint Mary, the early sixteenth century church of Nicolaas took over its functions. The Nicolaas church was built in the centre of the present town.

87 Schroor/Van den Heuvel 1998, 125

88 Van Vliet 2002, 368

89 The church of Saint Mary is not mentioned on the foundation charter of the monastery dating to 1132. The church is however mentioned as part of the possessions of the monastery in a second charter dating to 1243. See Mol / Van Vliet 1998 for a detailed and convincing interpretation of the several copies of the charter concerning the foundation of the abbey.

90 While Eenling 2005 uses the year 1531 for its destruction, Mol and Van Vliet 1998 place the desctruction of the church in 1522. In the present study, the original source was not consulted.

91 Roller 2000, 8-12. The remains were at the time of excavation, and possibly still are, in the possession of Auke Bult.

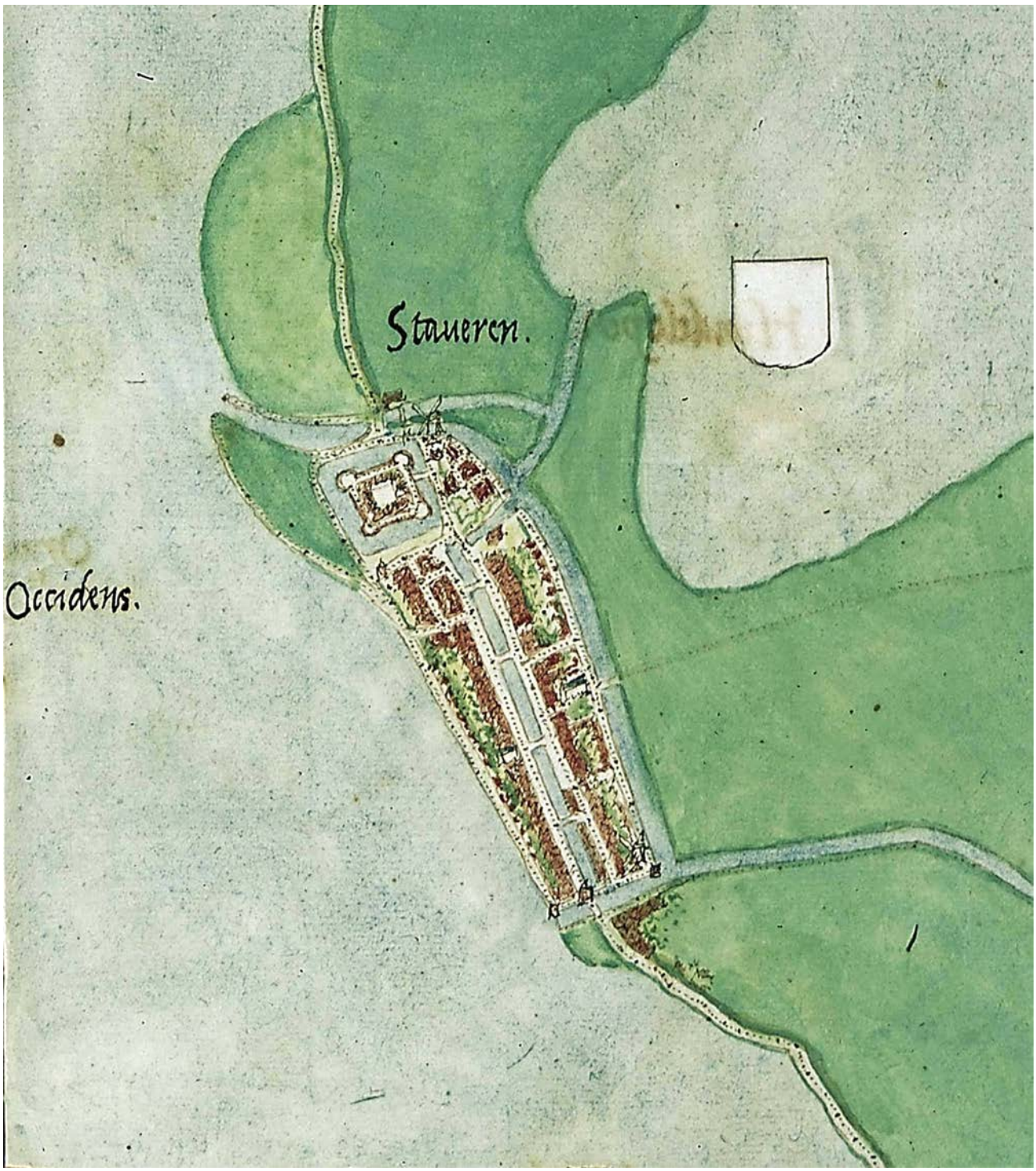


Illustration 15. The oldest known map of Stavoren, by Jacob van Deventer, dating to approximately 1560. North is above. The sixteenth century block house is in the northern part of the town. Directly south of the block house is a small area that seems empty. This area was possibly cleared for military purposes.

5.5 Stavoren and the battle against water, or, how the monastery disappeared

The the monastery of St. Odulfus and the land surrounding the monastery was under constant threat by floods during the late middle ages. It was the time when the delta of the river Vlie opened up, the Waddenzee emerged and the Vlie itself started to change into the Zuiderzee (see chapter 3).

The threat of the floods becomes clear in a series of charters that was written from 1230 onwards in which, again and again, the monks of the abbey of St. Odulfus ask for money to repair or reconstruct their buildings or to compensate their losses.[92] In a charter dating to 1307, it is written that the abbey stood so close to the water that the waves would destroy all of the monastery if help would not be given soon; and in a charter from 1323 it is written that two towers and some smaller buildings had collapsed because of the floods.[93]

The destructive floods must have started already before the first charter from 1230. In the *Chronica regia Coloniensis*, a flood that took place in 1170 is mentioned that swallowed large stretches of land near Stavoren.[94] The source does not specify if buildings were destroyed during that flood, but it is certainly possible.

Illustration 16. Part of the so-called nettekening of the Topographical Militairy Map of Stavoren dating to approximately 1850. The numbers in the water west of Stavoren mark the depth of the water. East of Stavoren, an area is marked with De Steenen ('the stones'). This was the location of the former abbey of St. Odulfus.

92 The charters of the abbey of St. Odulfus mentioning floods date to 1230, 1284, 1298, 1301, 1307, 1318, 1323, 1343, 1371 and 1389. After Heeringa 1893, 11

93 Heeringa 1893, 11

94 Mol/Van Vliet 1998, 107; Gottschalk 1971, 81

It is not clear if the attempts by the monks to ask for money were successful, but the monks managed to live in their abbey at the waterfront until 1415. Some time during the fifteenth century, the site of the abbey must have been complete lost to the water. On the oldest historical maps of the area, dating to the second half of the sixteenth century, the coast line is very similar to the present day coast line.

There are no historical sources concerning the demolition of the monastery, but it is not unlikely that the buildings were taken down in time to save valuable building materials. It is possible that the abbey or part of the abbey was built from tuff stones, which was a common building material for monasteries, churches and elite buildings such as palaces at the time the abbey was built in the beginning of the twelfth century. Fragments of tuff that were found during the Stadsfenne excavation possibly originate from the monastery.

However, some stones from the abbey must have remained at its original location until the nineteenth century. Joan Blaeuw, a seventeenth century cartographer and historian, refers to the remains of the abbey when he writes about a very cold winter in 1608, when an ice track was made over the water to Enkhuizen.[95] About fifteen minutes from Stavoren, 3 tot 4 feet (*voet*)[96] under the ice, many stones were found. The stones were dug up and taken by the people of Stavoren.

But still some stones remained. At the end of the eighteenth century, sailors placed wooden barrels in the water at the location of the (apparently remaining) stones to make the location of the stones visible for fishermen, in order to avoid the stones and save their boats and nets. These locations were still marked on a map dating to the mid nineteenth century (see illustration 16). Even though these historical notes sound promising, no remains of the abbey were found during recent under-water research (see paragraph 6.1).

95 From *Toonneel der Steden*, After Heeringa 1893, 23-4

96 Feet, as was used by Heeringa, probably referes to the seventeenth century *voet*. The depth at which the stones were found under the ice was between 90 and 120 cm.

6 The Stadsfenne excavation, 1963 – 1964

The Stadsfenne excavation is, up to today, the largest archaeological excavation that ever took place in Stavoren. In this chapter, the excavation will be discussed in detail for the first time. About half of the excavation will be fully described, analysed and interpreted in detail. The other half of the excavation will not be discussed in detail due to a lack of time.

6.1 The history of archaeological research in Stavoren

Since the nineteenth century, archaeological finds have been documented in Stavoren by enthusiastic amateur historians and archaeologists. Finds of medieval coins and fragments of pottery were reported in *Verslag van het Fries Genootschap* and in local newspapers. A large post-medieval amphora that was used as a rain barrel which was found in 1927 was one of the more notable finds.[97]

During the twentieth century, several small archaeological observations were conducted during various construction works in the town. Observations prior to 1999 were documented only as a short letter by the observer (usually a local archaeologist) to the Cultural Heritage Agency of the Netherlands (RCE, *Rijksdienst voor het Cultureel Erfgoed*; formerly known as the *Rijksdienst voor Oudheidkundig Bodemonderzoek,* ROB). The descriptions of the observations are often not clear on the exact character and location of the observations, which gives the observations a limited value in the reconstruction of medieval Stavoren.

Four noticeable observations shall be discussed briefly. The first observation was done in July 1951 by Halbertsma and concerns a medieval plank road.[98] It was observed during the construction of a waste pit north of the house at Voorstraat 47. The plank road consisted of pine and alder logs. A sample of the wood was taken but further research was never carried out.

The second observation concerns the remains of a wooden house dating to the period 1000 – 1300 (based on nearby pottery finds).[99] The remains were observed in the Smidstraat by archaeologist Gerrit Elzinga (1923) in 1960. The exact location and orientation of the wooden house is unclear.

The third observation that should be mentioned here, also done by Elzinga, dates to 1965.[100] In the southern part of Stavoren (directly north of the Stadsfenne excavation, see below), extensive remains of medieval wooden buildings and roads were observed. The area was not given a name by Elzinga, so the name 'Stadsweiland' is used in this study. According to Elzinga, the remains were very similar to the remains documented during the Stadsfenne excavation (see below). Other than a short letter by Elzinga, no documentation of these remains exist.

The fourth and last observation to be discussed here was carried out in 1999 by the archaeological company ARC.[101] It concerns the remains of a thirteenth century plank road and the possible remains of a medieval church in the Dwinger, in the northern part of Stavoren. The remains were drawn, photographed and finally published.

Furthermore, many finds were recovered by both amateur archaeologists and construction workers during the construction of the Johan Frisosluis in the period 1962 – 1965. Most of the finds

97 The amphora was taken to the Fries Museum in Leeuwarden where it stood in the museum garden for many decades. Today, the amphora is kept at the Noordelijk Archeologisch Depot in Nuis.
98 ARCHIS reference number 40091. Not published.
99 ARCHIS reference number 40092. See Elzinga 1960a and Elzinga 1960b.
100 ARCHIS reference number 40097. See Elzinga 1965.
101 ARCHIS reference number not present. See Roller 2000.

were taken to the Fries Museum and are currently in the Noordelijk Archeologisch Depot in Nuis. The archaeological contexts of these finds are unknown.

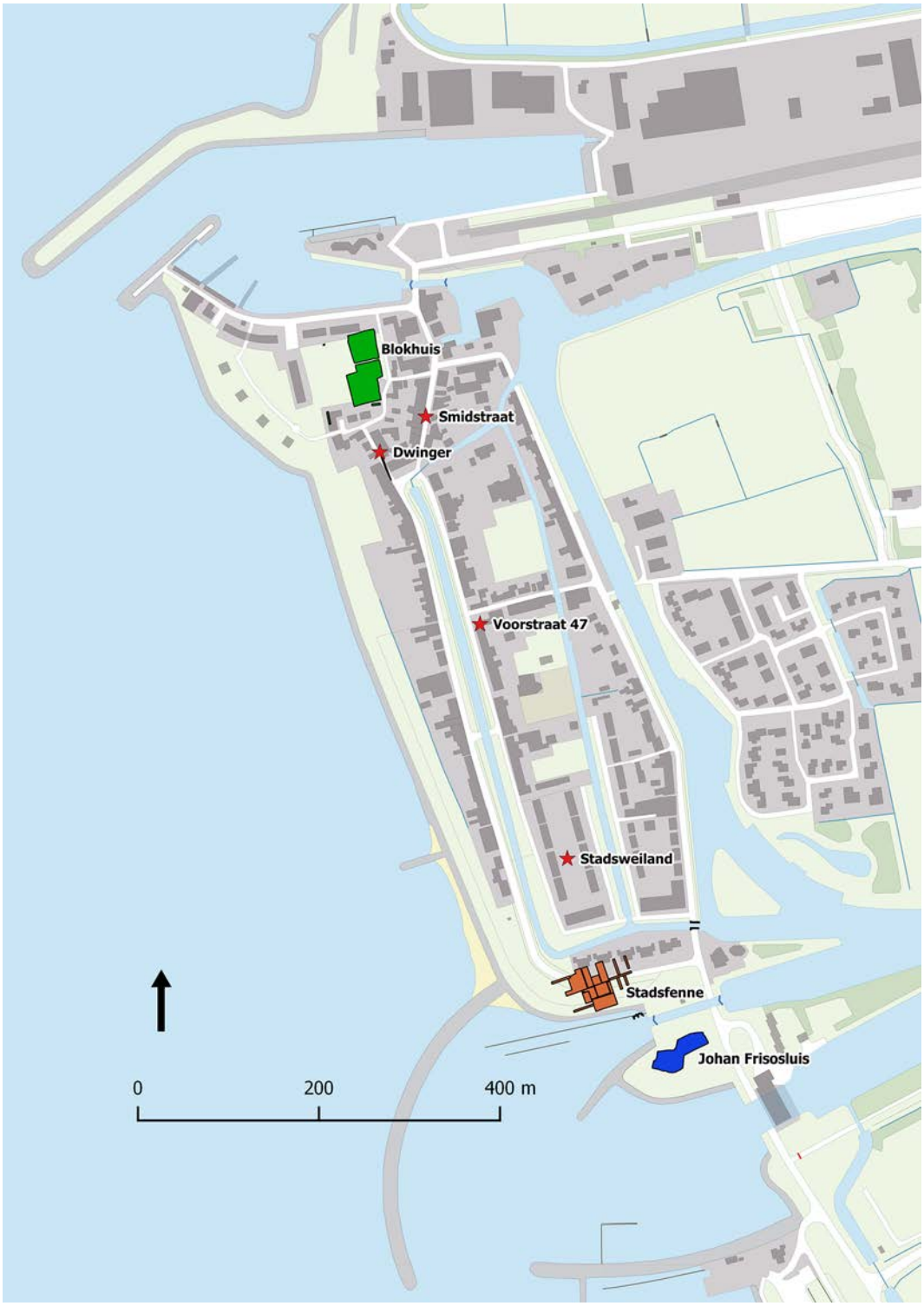


Illustration 17. Overview of the various archaeological observations and excavations in Stavoren.

The first professional excavation in Stavoren was carried out in 1962 by the *Groningen Institute of Archaeology* (GIA, formerly the *Biologisch-Archeologisch Instituut*, BAI) and was led by Elzinga. The excavation took place in the Stadsfenne area, which was being redeveloped for the construction of a lock. The Stadsfenne excavation continued in the years 1963 and 1964 during which it was led

by Halbertsma from the RCE. The GIA excavation from 1962 was never published. The results of the RCE excavation from 1963 – 1964 were summarised in one long article[102] and two short articles[103].

During the seventies and eighties no archaeological research took place in Stavoren. The third professional archaeological investigation in Stavoren started in 1995 at the location of the sixteenth century blockhouse (Blokhuis, the site is also known as the QVC-terrain). That year, RAAP conducted geophysical research to determine if there were any remains of the late medieval fortification.[104] In 1996 and 1997, ARC investigated part of the Blokhuis terrain with a full scale excavation and several test trenches.[105] Foundations of the sixteenth century Blokhuis were found, as well as remains of wooden houses and a plank road dating to the twelfth and thirteenth centuries. The medieval remains were very similar to the results of the Stadsfenne excavation. Due to a high groundwater-table, the medieval remains could not be fully excavated.

In 2013, a rescue excavation conducted by RAAP took place at the location of the Johan Frisosluis south of the town.[106] During this excavation, remains dating to the twelfth and thirteenth centuries were documented, as well as remains of the seventeenth century town fortifications. The results include evidence for twelfth century peat extraction and habitation. Like with the Blokhuis excavation, the medieval remains were very similar to the medieval remains of the Stadsfenne excavation.

At the moment of writing, the most recent archaeological investigation in Stavoren took place again at the Blokhuis location. Geophysical research was carried out by RAAP in order to find the exact dimensions and location of the sixteenth century Blokhuis.[107] Also, a small test trench was made by MUG Ingenieursbureau to determine the condition and exact location of the foundations of the former Blokhuis.[108]

Finally some archaeological research that was conducted under water in the IJsselmeer in front of Stavoren should be mentioned. In the period 1999 – 2012, various techniques have been used to search the bottom of the IJsselmeer for remains of the monastery of Saint Odulfus and for ship wrecks. The under water research was summarised in a final report by Stichting Archeos Fryslân.[109] Remains of the monastery have not been found. The most spectacular find is the wreck of a ship dating to approximately 1500.[110]

102 Sarfatij 1973
103 Clarke 1974 and Clarke 1975
104 Langen et al. 1995
105 Ufkes 1996 and Ufkes 1997. See also Bosma 1997.
106 Van Hoof 2015
107 Verschoof-van der Vaart 2014
108 Wieringa 2014
109 Zandstra 2010
110 Opdebeeck et al. 2014

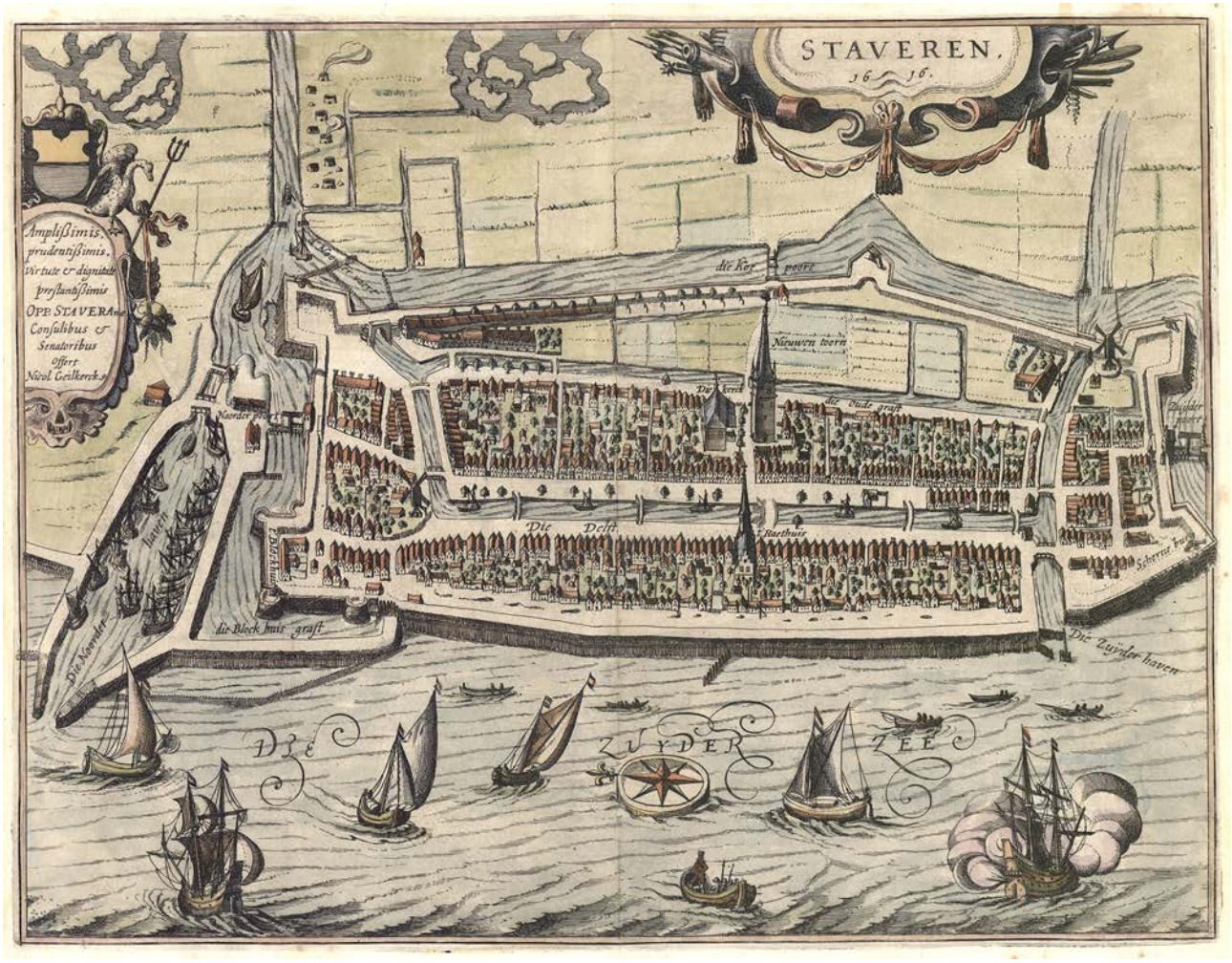


Illustration 18. Town map by Nicolaes van Geelkercken dating to 1616. Left is north.

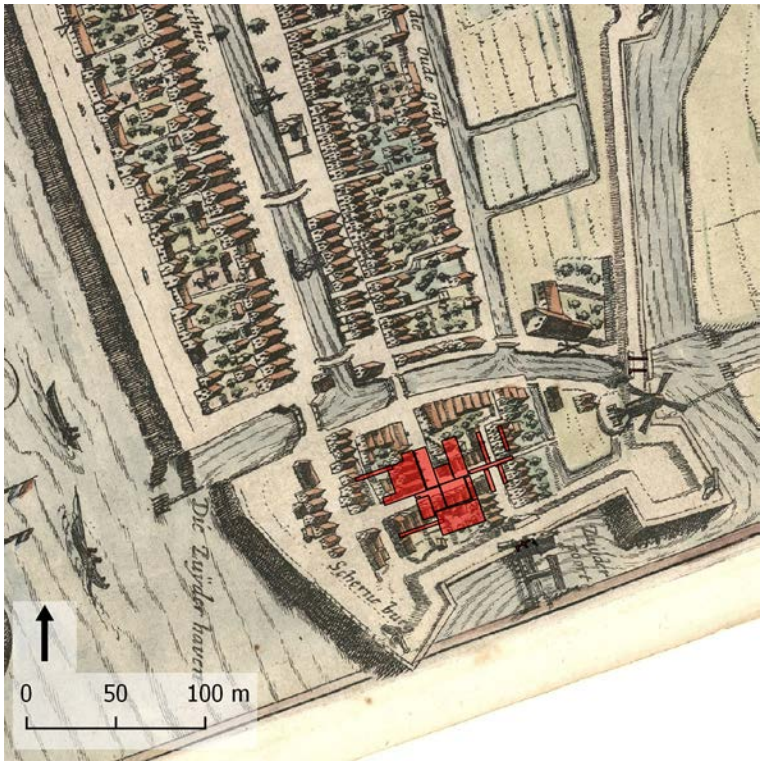


Illustration 19. Part of the map by van Geelkercken. The Stadsfenne trenches are in red.

Illustration 20. Cadastral map of Stavoren dating to 1832. Left is north. The canals and the former defensive structures are still visible. The most southern part of the town is called Stads Fenne ('town meadow').

Illustration 21. Part of the Cadastral map of 1832. The Stadsfenne trenches are in red.

6.2 Introduction to the Stadsfenne excavation (1963 – 1964)

The Stadsfenne is an area of Stavoren in the southern part of the town. The word 'stadsfenne' is Frisian and means 'town meadow' (*stadsweide*). The name Stadsfenne dates to the nineteenth century, when that part of Stavoren was uninhabited and used as a meadow (see illustrations 20 and 21). As can be seen on several historical maps (see illustrations 19, 21 and 22) the Stadsfenne excavation area was outside the medieval town during the sixteenth century but was integrated into the city when the post-medieval fortifications were built. When the fortifications were destroyed in the nineteenth century, the Stadsfenne became an empty part of town. In the sixties and seventies of the twentieth century, the Stadsfenne was again repopulated. New houses, a new road and, bordering south of Stadsfenne, a new lock was built. During the construction works of the lock, many fragments of medieval pottery and post-medieval stone foundations were found. In order to save these and other remains from the past, part of the Stadsfenne was archaeologically excavated before the construction work continued.

Illustration 22. Part of the town map by Jacob van Deventer dating to approximately 1560. The Stadsfenne trenches are in red.

In the summer of 1962 the GIA led by archaeologist Elzinga from the University of Groningen made a test trench in the Stadsfenne to assess the character and date of the archaeological remains (see illustration 23). The results of this excavation have never been properly published. Still, a very short note on the excavation published in the *Nieuws-Bulletin van de Koninklijke Nederlandse Oudheidkundige Bond* gives some ideas on the results.[111] Elzinga writes about wooden foundations and floor layers belonging to buildings that could be dated by pottery analysis to the tenth to twelfth centuries. Elzinga continues to say that there could be even older remains below the wooden structures but he remains vague on the details of this speculation. The current location of most of the documentation made during the test excavation in 1962 is unknown, only a handful of slides have been located in the archaeological depository of the provinces of Groningen, Friesland and Drenthe (NAD, *Noordelijk Archeologisch Depot)* in Nuis.[112] However, all of the find material is currently present in the NAD.

111 Elzinga 1962a; See also Elzinga 1962b

112 Field drawings belonging to Elzinga's excavation from 1962 were borrowed by Halbertsma in march 1969, who at the time was working for the RCE. The drawings have never been returned to the University of Groningen. Based on pers. comm. with Kirsten van der Ploeg (GIA, Groningen), 26-02-2014

Illustration 23. The Stadsfenne area before the excavations began. The picture was taken from the location of the excavations, with the town and the church on the background. The water on the left is the Voordelft. Houses are standing today where in 1963 cows were still grazing. Photo by the RCE.

Illustration 24. Excavation trench from the 1962 Stadsfenne excavation by Gerrit Elzinga. Photo by Gerrit Elzinga, GIA.

The results of the test trench made in 1962 were of such a quality that it was decided to continue the excavation in 1963 and eventually in 1964. The project was taken over by the RCE led by Halbertsma. The excavations were carried out from May 13th to October 11th in 1963 and from

April 20th to October 23rd in 1964. Even though Halbertsma was the scientific leader of the excavation, he visited the excavation only once a week. The team of excavators was led by S. Bokma, who drew all plan and section drawings and wrote all daily reports. The rest of the team consisted of five to six local workers, none of them which were trained as archaeologists. In July 1963 the team of excavators was joined by a group of teenagers. The teenagers were members of the *Nederlandse Jeugdbond voor de Bestudering van Geschiedenis* (NJBG), an organisation that offers summer activities to children and teenagers with an interest in history.[113]

On October 22nd 1964, in the last week of the excavation, the *Foto- en Filmdienst* (a film crew) from the Dutch steel producer Koninklijke Hoogovens (today Tata Steel) visited the excavation to shoot a colour film on archaeology. The film "*Het verleden present*" depicted a general introduction on archaeology with a length of about twenty minutes. The scenes that were shot during the Stadsfenne excavation feature about one or two minutes in this film. Furthermore, twelve black-and-white photos were made by the Foto- en Filmdienst. Both the film and the photos are currently present in the Tata Steel archives.

Illustration 25. Teenagers from the NJBG documenting the archaeological remains during the Stadsfenne excavation. Photo by W.I.M. Kersten, published in Kersten 1963.

The continued excavations in 1963 and 1964 were of much larger scale than the test trench made in 1962. In total an area of 1918 m² was excavated, divided over 16 trenches[114], each with different dimensions. The trenches were excavated in spits in two to nine levels. The first layers of topsoil of the trenches were removed with a tractor using an excavator bucket. The rest of the excavation was done by hand using shovels and trowels.

The analogue documentation of the excavation consists of plan drawings, section drawings, daily work reports, photographs and slides. All drawings were drawn during field work with pencils and were made on graph paper. Most of the drawings are coloured, some are just pencil drawings.

113 Apparently the children were allowed to bring pottery from the excavation to their homes. The mother of the author was one of the children joining the excavation at the time. She still keeps a box with medieval and post-medieval pottery from Stavoren in her house.

114 Fifteen trenches were numbered 1 to 15. One trench was, for some reason, not numbered and was merely documented as 'trench' (*sleuf*). This trench is indicated with the word *sleuf* in this study.

Several finds, mostly the well preserved complete pots, were drawn to scale or photographed. All analogue data is currently held in the NAD in Nuis, along with most find material from the excavation. Most (but not all) drawings were scanned by the RCE in Amersfoort.

Illustration 26. Cameraman of the Foto- en Filmdienst from the Koninklijke Hoogovens. The images were taken on October 22nd 1964 and were used in the informational film 'Het verleden present'. Photo by the Foto- en Filmdienst, today in the archive of Tata Steel.

Due to a lack of time and money, the excavation was never officially published. However, several small publications were written on the Stadsfenne research from 1963 and 1964. During and shortly after the excavation period, Halbertsma wrote short notes with the first preliminary results and gave updates on the progress of the excavation in the *Nieuws-Bulletin van de KNOB.*[115] Even though these short notes give some clues about the character of the site, they can hardly be used when studying the site in detail. In 1970, Herman van Regteren Altena (professor at the University of Amsterdam, 1927-2014) described some of the features of the Stadsfenne excavation in his article on the origin of Dutch towns.[116] It seems however that he is merely summarizing some of the results published earlier in the notes by Halbertsma.

In 1973 Herbert Sarfatij, who did not join the excavations himself, published the first full

115 Halbertsma 1963; Halbertsma 1964
116 van Regteren Altena 1970

interpretation of the site.[117] In twenty-five pages with text and illustrations, Sarfatij goes into detail on some of the structures on the site. Even though the article by Sarfatij cannot be considered an excavation report in full detail, the article does give a good impression of the character of the structures and find material. His article has up to today served as the only interpretation of the results of the Stadsfenne excavation. In the present study, the interpretations of Sarfatij will be referred to when relevant in the chapters below.

In the two years after the publication of Sarfatij, Helen Clarke published two short articles in which she analysed a selection of the pottery found during the excavation. Her first article deals with the pottery found in two wells and in her second article, Clarke looks at several fragments of medieval Andenne pottery.[118] After 1975, nothing new has been published on the Stadsfenne excavation.

6.3 Quality of the original data and methods of documentation

Each trench was drawn on graph paper on which the trench was linked to the main site recording system.

Each level that was made during the excavation was drawn on a field drawing. The individual features on most plan drawings were coloured according to the character of the feature. Wood was coloured dark brown, sand was coloured yellow, stone was coloured grey and so on. Notes about the character of the feature were sometimes added to features on the field drawing. These notes mention things like colour of the feature, the structure and character of the soil, the position and angle of an object or the features' position relative to other features. However, not all features were coloured and only some features came with notes on the plan drawings. Features that were drawn without any reference to its character are labelled 'unknown' in this study.

Only three individual features were sectioned. These are a kiln and a part of the revetments in trench 1 and a wall with wattle in trench 3. None of the other features were individually sectioned. However, several long section drawings were made along a few trench walls, both in north-south and in east-west direction. See illustration 27 for the position and numbers of the sections.

The features were not numbered on either the plan drawings or the section drawings. This makes it hard to connect features on plan drawings with features or layers on section drawings. In this study, each feature or group of linked features has been given a number.

Most wood and stone objects (such as posts and planks) were not recovered during excavation and can therefore not be considered find material in this project. Because of that, wood and stone objects are treated and numbered as features in this study.

The elevation of only very few features were measured individually. Most of the relative position and stratigraphy of the features is therefore based on the features' appearance on the drawings and the level on which the feature was documented.

The elevation of most levels were measured and noted on the field drawings. Measurements were taken at several locations on each level. Most levels were made relatively flat and horizontal. However, in some instances features were excavated in a small trench on a deeper level than the level they were documented in. This can best be illustrated with the photograph below (see illustration 28).

117 Sarfatij 1973
118 Clarke 1975

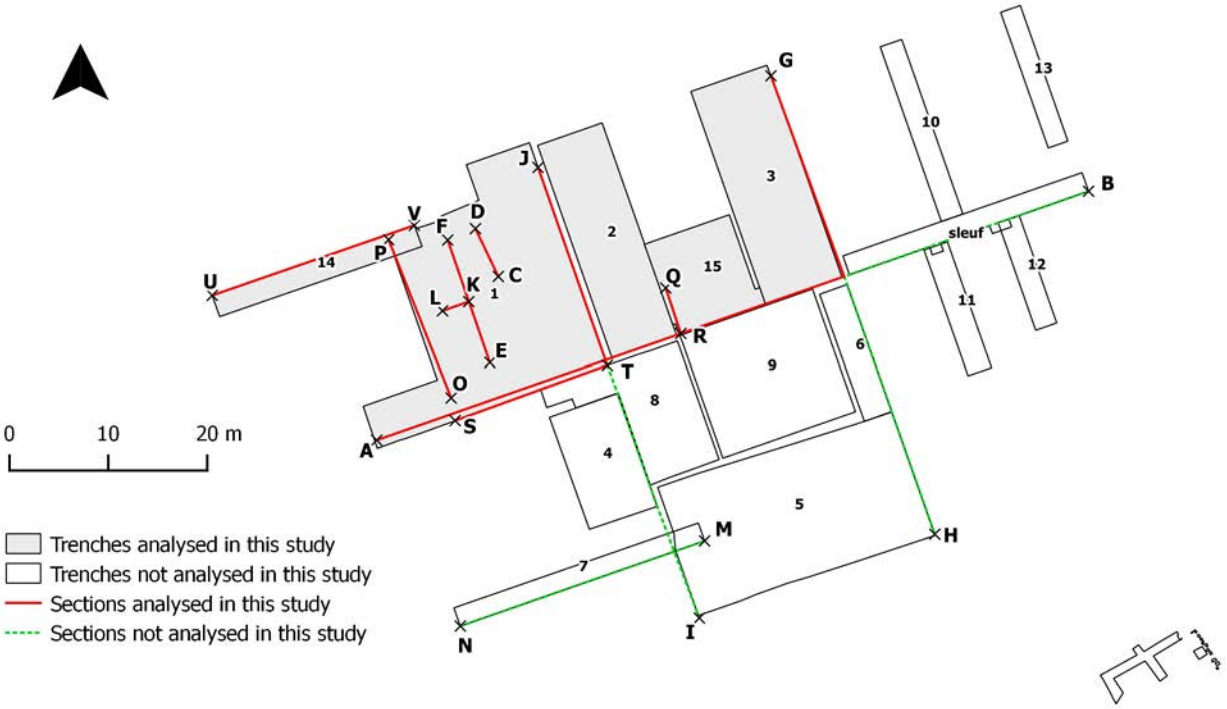


Illustration 27. The position and numbers of the trenches and sections of the 1963-1964 Stadsfenne excavation. The trenches in grey and the sections in red are discussed in this study. The remaining trenches and sections will not be discussed in detail.

Illustration 28. Revetments in trench 1, level 6. Parts of the revetments were excavated on a deeper level but documented on the same level. Photo by the RCE.

In this study, the average elevation of each level was calculated. Note the fact that the elevation of the first level of each trench differs per trench, meaning that in some cases level 1 of one trench may be on the same elevation as level 3 of another trench.

Finds were recovered from both the surfaces of most levels and from some individual features. The find numbers were noted on the plan drawings and section drawings within the feature or layer the find was found in. However, not all find numbers are present on the drawings. During the excavation 356 find numbers were issued. On the drawings, only 245 numbers are noted. This means that the location of 111 find numbers is unknown. Some levels of some trenches completely lack find numbers. It is possible that the excavators at the time forgot to note some find numbers on the drawings or that they only noted find numbers they thought were of importance or relevant. The finds of each find number were cleaned and put in a brown paper bag on which the find number, trench, level and sometimes the date were noted.

The find material mostly consists of medieval pottery. Only pottery rims, bases and handles were recovered. Small pieces and fragments of pottery base were not recovered. This was probably done to save time and money, and because such fragments are easier identified and dated.

Some fragments of metal and worked animal bone were also found and collected. As mentioned above, almost no wood and stone objects were recovered. Also very little post-medieval pottery was recovered, as this period was of little interest to the excavators at the time.[119]

Finds of particularly high quality or special interest were drawn to scale or photographed. Among others, these include a medieval golden ring with an amethyst stone and a very well preserved medieval comb made of bone (see paragraph 6.9).

6.4 The present study

In this study, the northern half of the excavation area will be republished, discussed and interpreted in full detail. This includes trenches 1, 2, 3, 14 and 15 (see illustration 27). Trench 10 and *sleuf* in the eastern part of the excavation area will be discussed only in relation to the wells that were documented in these trenches. Due to a lack of time, the southern half of the excavation (the remaining trenches) will not be discussed. The choice for these trenches is based on the fact that trench 1 was excavated deepest and thus possibly contains the most information on the earliest habitation phases. The medieval plots documented in trench 1 were oriented east-west and seemed to continue into trench 2, 3, and 15. To get a complete picture of the plots, these trenches were also selected for study. Trench 14 was selected because it extends furthest west, into the former water stream. Finally, it was thought that the character of the medieval features and finds in the entire excavation is well illustrated in the trenches mentioned above.

All level and section drawings of trenches 1, 2, 3, 14 and 15 were digitised, georeferenced and vectorised. All drawings are listed and described below.

A selection of the find material has been analysed and will be discussed in paragraph 6.9. This selection was primarily based on the context the artefacts were found in. Due to a lack of time for this study, it was not possible to analyse all find material from the selected trenches.

6.5 Methods of digitalisation

All analogue field drawings of the Stadsfenne excavation that were vectorised in this study, were already scanned by the RCE. For this study, a selection of the scanned field drawings were georeferenced using AutoCAD Raster Design 2014. Georeferencing the field drawings was done

119 According to a letter by Halbertsma concerning post-medieval maiolica artefacts.

using the main site recording system that was used during the excavation. The site recording system consisted of several known grid points, which in turned were marked on a cadastral map of Stavoren. That way, the exact location of all trenches could be reconstructed. After the field drawings were georeferenced, they were vectorised using the open source software QGIS version 2.8.

Each feature on the georeferenced field drawings was vectorised and saved as a separate feature within a shapefile. A separate shapefile was created for each level in each trench. Along with each feature, several characteristics of that feature were stored in the attribute table of that shapefile. The characteristics were based on the manner and colour of the features as drawn on the field drawings and on notes by the excavators on the field drawings.

The individual features in each shapefile were given a unique identifier (*feature_id*). This number is used when combining or merging layers and shapefiles. The *feature_id* does not represent the feature number (see below). The identification number consists of trench and level number on which the feature was documented followed by a four-digit unique number; for example 01040023 (trench 1, level 4, number 0023).

Feature numbers (*feature*) were given to individual features or groups of features and are labelled on the field drawings and are referred to in the text in this study. When features could be interpreted as belonging to each other, based on the character, location and position of the features, they were grouped together and given one feature number. Examples of this are a row of wooden posts or different parts of a well. All vectorised features were coloured using a fixed colour scheme.

Like the field drawings, all section drawings that are included in this study were already scanned by the RCE. For this study, they have been vectorised using the open source software Inkscape version 0.91. Only the relevant parts of the section drawings that cover the northern part of the excavation have been vectorised.

The vectorised section drawings were coloured using the same colour scheme as used for the field drawings. That means that soils and materials of the same type consistently share the same colour between section and field drawings.

If layers or features in the section drawings could also be observed in the field drawings, they were given the right feature number. If layers or features in the section drawings could not be observed on the field drawings, they were given a letter. The letters A to E were reserved for five layers that are common throughout the excavation (see paragraph 6.7).

Both the elevation measurements and the find numbers that were marked on the field drawings were vectorised as points and saved in two separate shapefiles. The value of the elevation, the number of the find, the trench and the level on which the point was documented were stored in the attribute tables of the shapefiles.

Not all find numbers that were used during the excavation are present on the field drawings. Some find numbers are only documented on the section drawings (see below). Other find numbers are mentioned on the drawings of individual finds or on photographs or slides but cannot be found on either the field or section drawings. The latter group of find numbers can therefore not be located.

All find numbers that were documented in any way have been listed in a worksheet using the open source software LibreOffice Calc, together with information on the trench, level and section in which each find number was documented, possible notes belonging to the find numbers and the current inventory number and location in the NAD (see digital appendix 2).

6.6 Descriptions of the field drawings

In the following pages, the field drawings and section drawings will be discussed. Each drawing is presented and discussed separately. Find numbers are shown on the illustrations but they will only be discussed if relevant. For a full list of the find numbers, see digital appendix 2.

Trench 1 – level 1

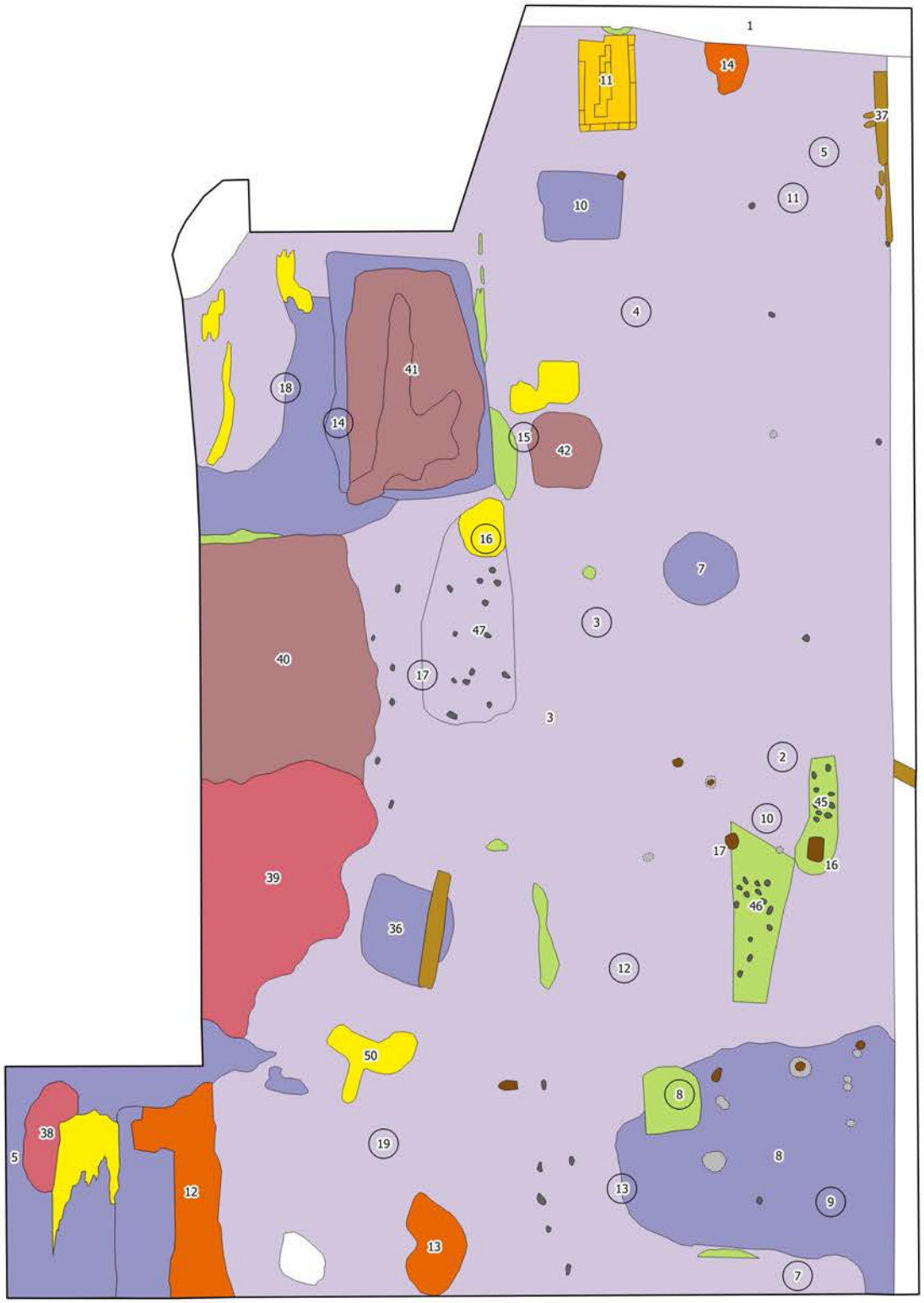
The first level of trench 1 was made on average at -0,01m NAP. The trench was bordered in the far north by recent intrusion (feature 1) and in the east by a gully for drainage made by the excavators. The surface of the trench mainly consisted of a mixture of peat (feature 3), clay and some sand and may be interpreted as the top of the medieval habitation layer. All material was deposited to raise the land or was accumulated during the habitation phase. Find numbers 5 and 12 both is pottery dating to the middle of the twelfth century.

This level was characterized by several late medieval and post medieval features. In the northern part of the trench, a small part of a floor made of yellow bricks (*IJsselstenen*) was found (feature 11) not far from traces of a rectangular kiln (feature 41). The fills of the kiln as well as the fills of two features close to the kiln (features 40 and 42) contained many fragments of iron slags and cinder. The stratigraphy of the kiln was documented in section C-D. This kiln was probably used for metalworking. South of the kiln, one large and one smaller pit contained late medieval 'debris' including red brick (features 38 and 39). The debris probably were the remains of a late or post medieval structure or of the destruction of that structure. On the earliest city map of Stavoren, by Jacob van Deventer dating to ca. 1560, some constructions (probably houses) are depicted at the location of the excavation site. Houses and other structures on the location also appear on maps dating to the seventeenth and eighteenth centuries. The late and post medieval remains found at the excavation site and documented on level 1 of trench 1 can therefore be attributed to the structures depicted on the historical maps mentioned above.

A small feature with a fill consisting of clay was the very top layer of a water well (feature 36, see other levels below), probably dating to the late medieval or post medieval period. A plank was found lying on top of the clay and possibly was a remaining fragment of a wooden seal for the well. More planks were found below the layer of clay (see level 2). Three features with a loam fill were possibly part of a floor layer (features 12, 13 and 14). However, a building the floor layers and the other features mentioned above might have belonged to, has not been found.

The purpose of the three concentrations of small stones found on level 1 is unclear (features 45, 46 and 47).

Two large rectangle posts (features 16 and 17) were part of the north wall of Building 1.



0 5 10 m

Trench 1
Level 1

- Wooden post
- Post hole
- Wood
- Slag
- Yellow brick
- Stone
- Loam
- Sand
- Peat
- Clay
- LM debris
- Unknown
- Recent
- Find number

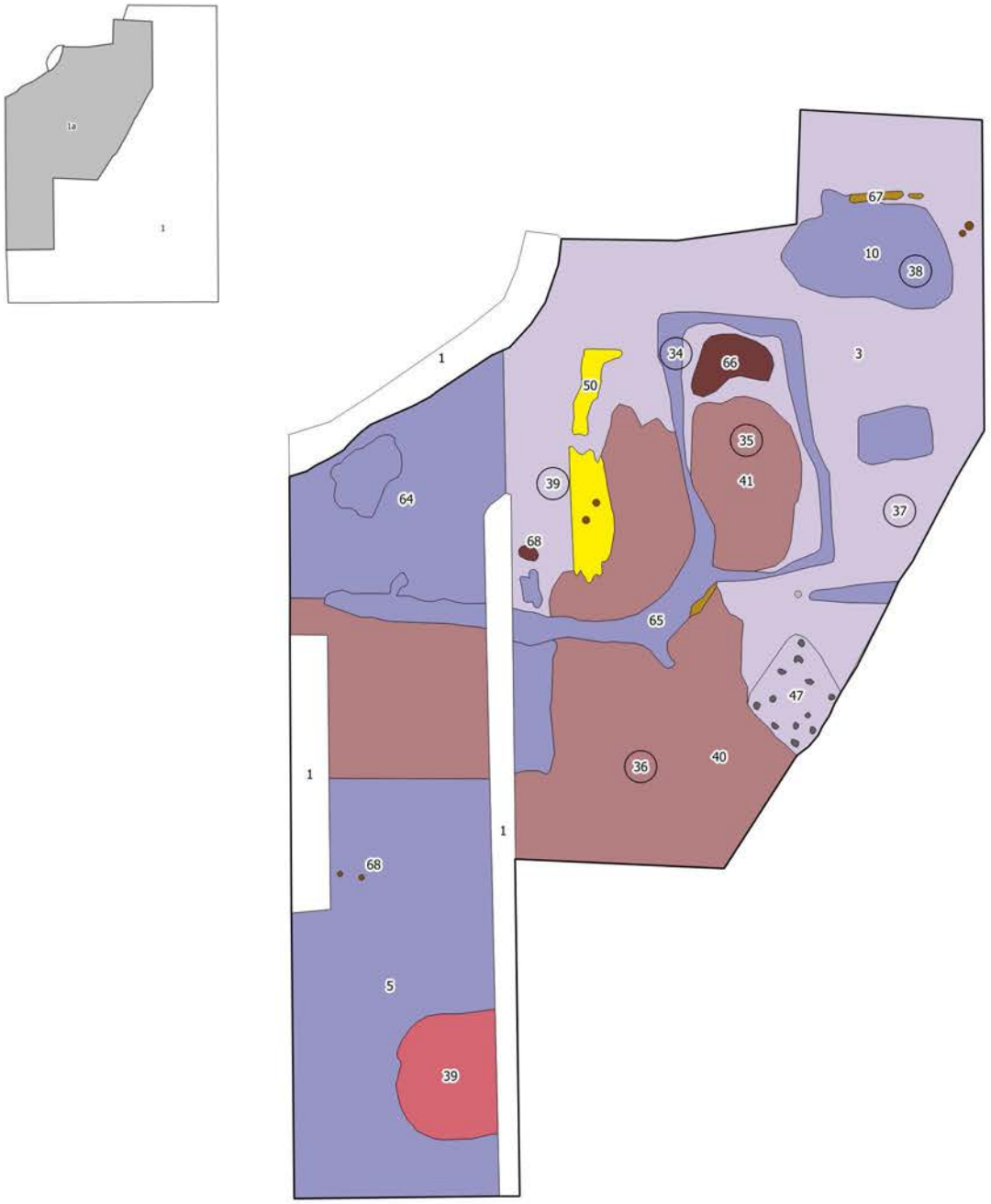
Trench 1 – level 1a

Level 1a was not an actual level of the whole trench but the first level of the north-western part of trench 1. It was bordering level 2 and was roughly on the same height as level 2. Part of level 1 overlapped with level 1a, but the latter was about 20 cm below the first. A patch of clay in the northern part of the trench could be dated with pottery to the first half of the twelfth century (find number 38).

The fill of the kiln with iron slags (feature 41) and ash (feature 66) is still clearly visible as well as the surrounding clay layer (feature 65). The kiln can be dated with pottery to the early fourteenth century (find number 34). South and east of the kiln a large area with iron slags and cinder was documented (feature 40). One of the concentrations of small stones documented on level 1 was also present on level 1a (feature 47).

In the south of level 1a, the pit with late medieval debris which was also documented on level 1 and 2 (feature 39) extends for about two meters to the west.

The wooden remains (features 67 and 68) probably belong to the seventeenth century structures that were built at this location.



0 5 10 m

Trench 1
Level 1a

Wooden post
Post hole
Wood
Slag
Stone
Sand
Peat
Clay
LM debris
Recent
Find number

Trench 1 – level 2

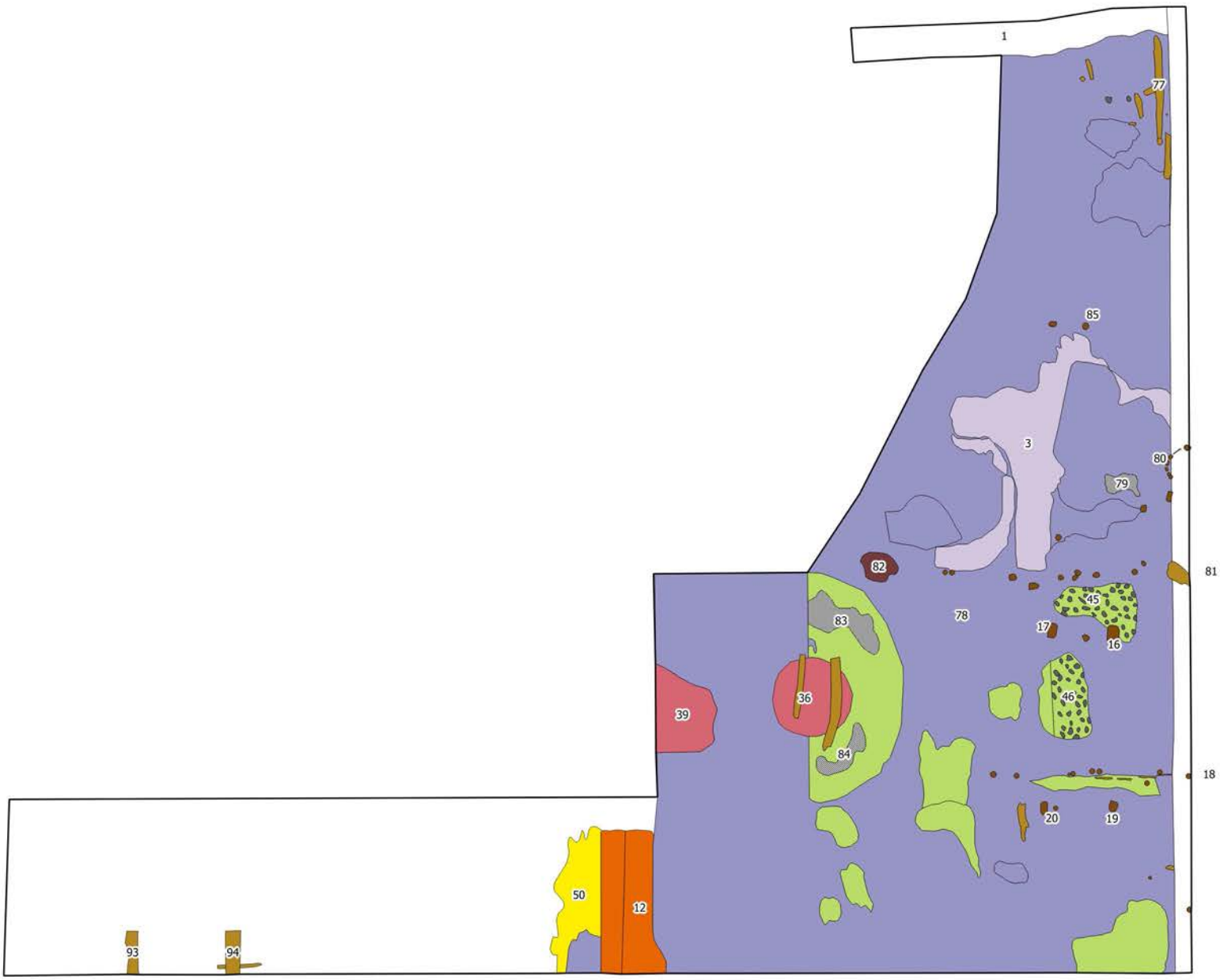
Level 2 was made at -0,16m NAP on average. Three rows of wooden posts belonged to the very top of a wharf construction that characterizes the lower levels of trench 1 (features 18, 81 and 85). Feature 85 is represented by only two posts on level 2. The rows of posts were oriented east-west and divided the land into several plots. The width of the plots differed but measured on average about 5 meter. In this study, the plots are numbered from north to south (see paragraph 6.8.1). It now becomes clear that the concentrations of small stones, also documented on level 1, were situated within plot 3 (features 45 and 46). However, it remains unclear if these stones were part of the plot or the construction on the plots, or if they were part of a later construction that was built after the plots fell in disuse. The water well (feature 36), also documented on level 1, now has a fill of late medieval debris. Two concentrations of mussels within the cut of the well are noticeable (features 83 and 84). Find numbers 24 and 50 both consist of pottery dating to the twelfth century. The pottery probably came from the surrounding raised land as the well was much younger. It is remarkable that only half of the cut of well 36 was documented on this level. It is probably safe to assume that the western half of the cut around well 36 was also present on this level but was not documented by the excavators.

A narrow trench for section drawing was made against the southern border of trench 1. This section trench continued to the far east of the excavation area. Features on the surface of this trench were for some reason not documented by the excavators. However, the remains of two revetments in the far south-west of trench 1 (features 93 and 94) were indeed documented. A patch of sea sand east of the revetments (feature 50) could be dated with pottery to the late fourteenth century (find number 51).

Wooden posts 16, 17, 19 and 20 belonged to Building 1. This structure consisted of two rows of heavy square or rectangle posts roughly 3,8 m. apart.

Feature 77 in the far north of level 2 consisted of several planks. They probably belonged to the seventeenth century structures that were built at this location.

Illustration 29. One of the excavators is working on level 1, trench 4. Photo by the RCE.



0 5 10 m

Trench 1
Level 2

- Wooden post
- Post hole
- Wood
- Stone
- Loam
- Sand
- Peat
- Clay
- Ash
- Mussels
- LM debris
- Unkown
- Recent
- Find number

Trench 1 – level 3

Level 3 was made about 18 cm below level 2. Like the other levels in trench 1, the northern part of level 3 was characterised by a small area of a recent intrusion and the eastern part consisted of a small drainage trench made by the excavators.

The northern part of level 3 was characterised by several east-west and north-south oriented features. Feature 105 consisted of a row of stones of different sizes bordered by some north-south oriented planks and a wooden post (feature 106). These features might have been part of the foundations of a wall or building. However, the dimensions, character and date of this structure remains unclear. It is possible that some planks found next to the stones were part of the same structure (feature 104).

Features 23 and 108 are interesting because they do not seem to be part of the rows of posts that divide the plots (see below). The features consisted a row of posts, both of which are oriented along the plot. The features could be part of a fence or wall or were made to strengthen the wharf construction.

The three rows of posts that divide the plots and were part of the wharf construction were also documented on level 2 (features 85, 81 and 18). On level 3, all three rows become apparent. Along the posts of feature 18, a plank was put on its side. Remains of such a plank are also visible at feature 85.

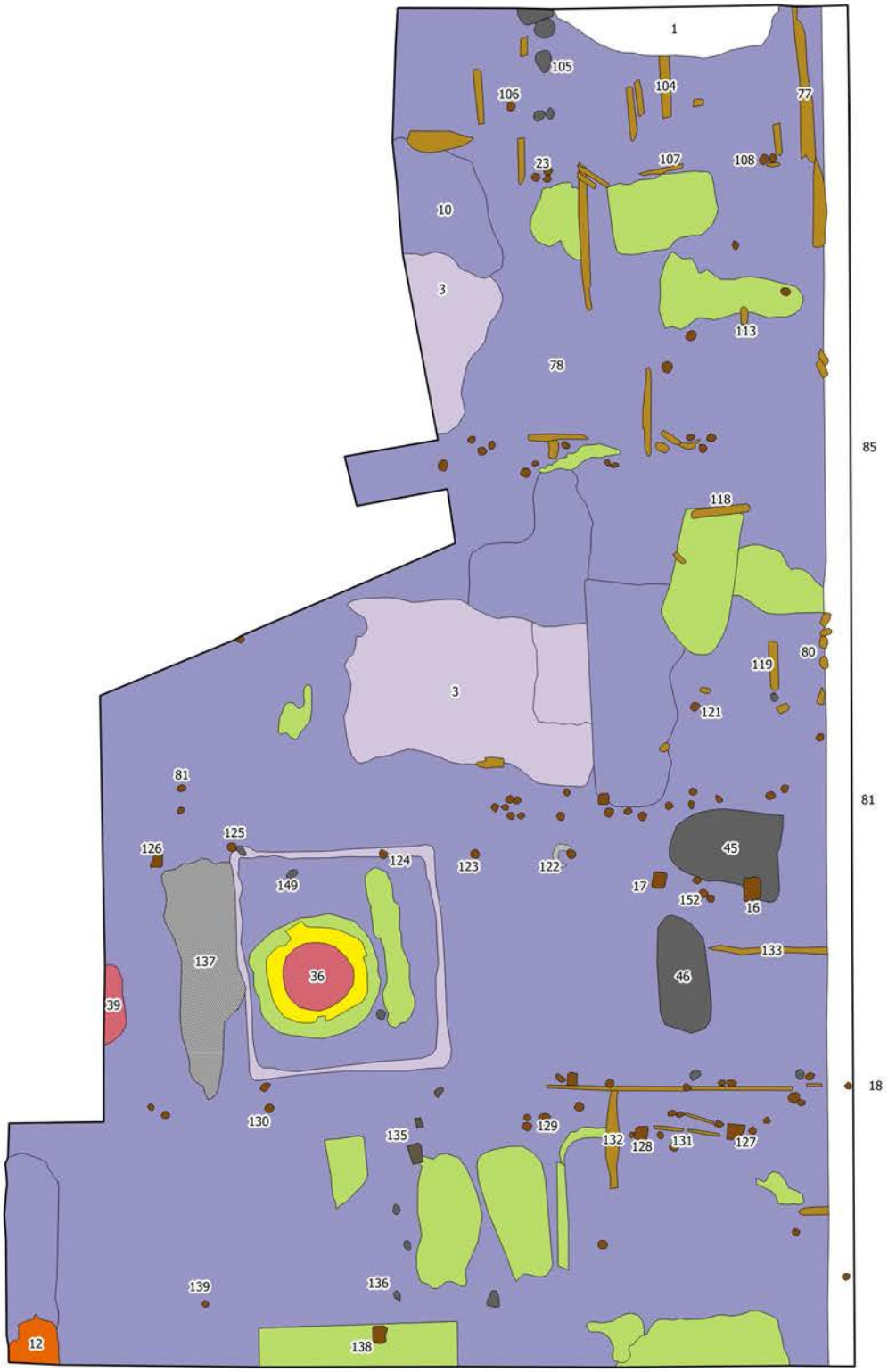
Between posts 127 and 128 some smaller posts and planks were documented (feature 131). These belong yet another part of the wharf construction and plot division, only 65 cm. south of plot division 18.

The two plot divisions 18 and 81 were intersected by a well (feature 36). The well was filled with late or post medieval debris. Although no pottery from the well was collected, it was noted by the excavators that all pottery dated to the fourteenth to seventeenth centuries. A small band of peat surrounding the well in a rectangle shape reveals that the well shaft was originally put into a rectangle pit filled with peat. A layer of food waste consisting of mussels (feature 137) was documented just west of the well.

South of the well three fragments of tuff were documented (feature 135). Tuff was a common construction material during the late and post medieval period. The three fragments probably belonged to one of the buildings which stood on the site during the sixteenth, seventeenth and eighteenth centuries.

Several heavy wooden posts belonging to Building 1 were documented on level 3. The northern row of posts of Building 1 consisted of the two posts that were already documented on level 1 (features 16 and 17) and features 122, 123, 124, 125 and 126. The southern row of posts on level 3 belonging to Building 1 are features 127, 128, 129 and 130. Posts 124 and 125 cut the well (feature 36). Building 1 is therefore younger than the well.

Features 45 and 46 were pits filled with small stones. Because they were already documented on level 1 they probably do not date to the time the plot divisions were made. Their precise date and their character remain unclear.



0 5 10 m

Trench 1
Level 3

- Wooden post
- Post hole
- Wood
- Stone
- Tuff
- Loam
- Sand
- Peat
- Clay
- Mussels
- LM debris
- Unkown
- Recent
- Find number

Trench 1 – level 4

Level 4 was made about 10 cm. below level 3, at -0,42 m. NAP on average. The east-west oriented rows of posts dividing the plots that were documented on the levels above are still present. They consisted of small wooden posts and planks on their sides. Row 131 was made before row 18, which is only 65 cm. north of the first. In the far north of the trench, feature 174 was yet another a row of posts and planks that divides the plots and was part of the wharf. Feature 174 was extended towards the east with features 150, 179 and 184, all consisting of planks or rows of planks oriented east-west. All of these features were part of the wharf construction.

Two patches of loamy soil in the far north of level 4 (feature 177) could have been part of a floor layer but might as well have been put there as part of reclamation deposit. Because a building or similar structure is missing in its direct environment, the character of the loam is not clear.

Also first documented on level 4 was a row of dual posts in the far north of the trench (feature 176). The posts appear in pairs with a seemingly fixed interval (this is better observed on level 5 and 6). The feature probably was part of the wharf construction. Several north-south oriented rows of posts were built between the east-west plot division in order to strengthen the wharves and keep the reclamation deposits in place.

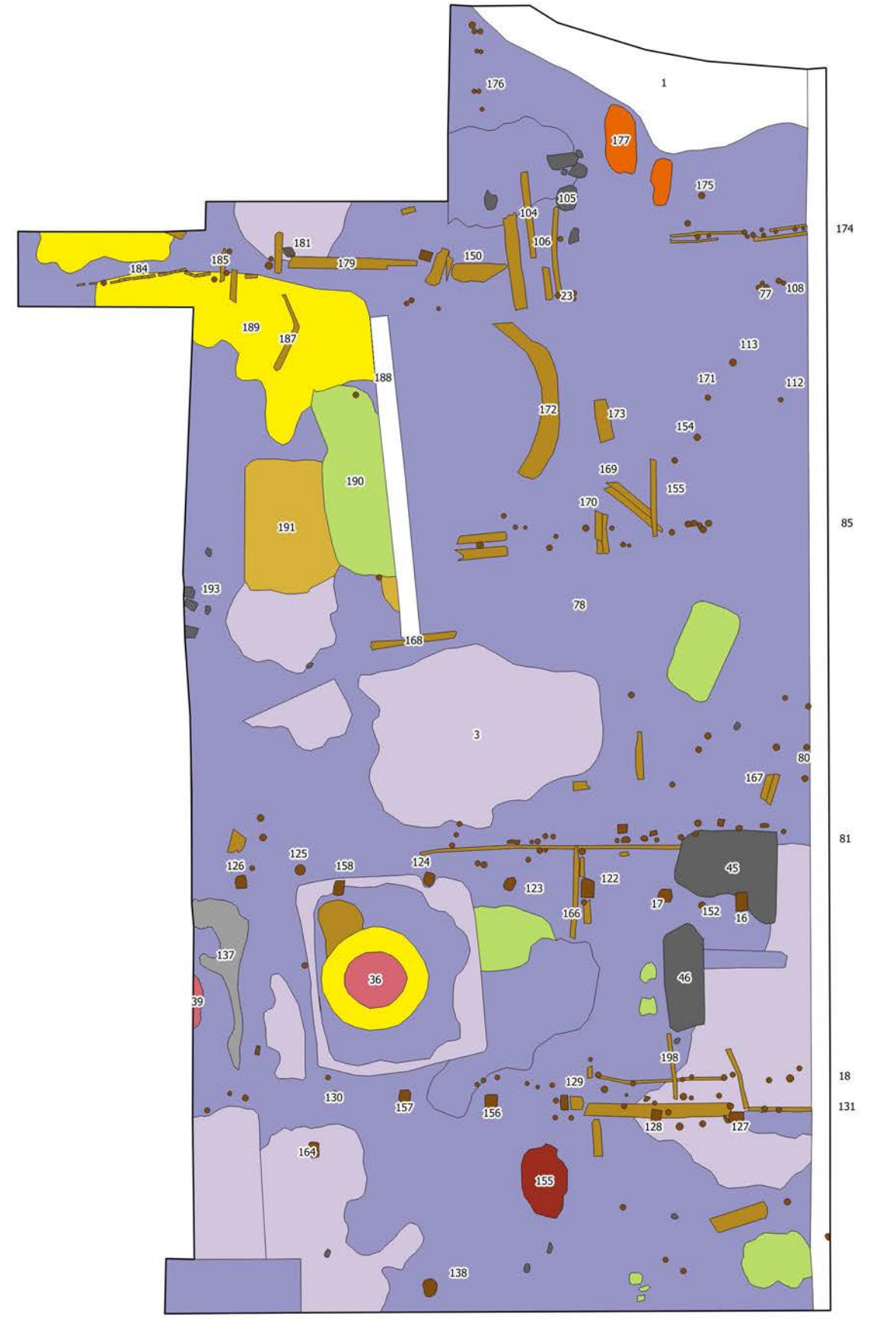
Feature 172 was a plank which function probably was similar to that of feature 176. Based on the shape of feature 172, it might have been a boat timber. The reuse of boat timber in buildings and other constructions was not rare during the medieval and post medieval period, especially in a town situated at the waterside. Other reused boat timbers have been documented on level 6 and 7 of trench 1 (see below).

Feature 190 was a pit situated below the kiln which was documented on level 1 and 1a (see above). The character of the fill of the pit was not documented by the excavators. The kiln was, however, sectioned. Feature 188 is a small section trench (see section C-D below).

A rectangular pit filled with animal manure (feature 191) was cut by the pit below the kiln. The pit could have been either a waste pit or have been part of the reclamation deposit. It is possible that during (parts of) the habitation period animals such as cattle were kept in or very close to the location of the excavation area. It is however also possible that animals were kept in other places in and around Stavoren and that manure was taken to the location of the excavation area to raise the land surface. Clay (feature 78), peat (feature 3) and sand (feature 189) were used for that purpose and it is therefore not unlikely that manure had a similar function.

Like on level 3, on level 4 it is clear again that two of the heavy wooden posts belonging to Building 1 were cutting the fill surrounding well 36 (posts 124 and 158). This means that Building 1 was younger than the well. The traces of Building 1 on level 4 consisted of two rows of posts, the northern row being features 16, 17, 122, 123, 124, 158, 125 and 126 and the southern row being features 127, 128, 129, 156, 157 and 130.

In the southern part of level 4, a patch with traces of fire was documented (feature 155). This patch could be the remains of a hearth. However, this is speculative because no clear traces of a house or any other building to which the hearth could have belonged was found around it.


1
176
177
175
105
104
106
174
181
179
150
184
185
23
77
108
189
187
113
188
171
112
172
173
154
190
169
155
170
191
85
193
78
168
3
80
167
81
125
126
158
124
123
122
45
17
152
16
166
137
36
46
39
198
18
129
130
157
156
131
128
127
164
155
138
0
5
10 m
Trench 1
Level 4
Wooden post
Wood
Post hole
Stone
Tuff
Loam
Sand
Peat
Clay
LM debris
Mussels
Manure
Fire traces
Unkown
Recent
Find number

Trench 1 – level 5

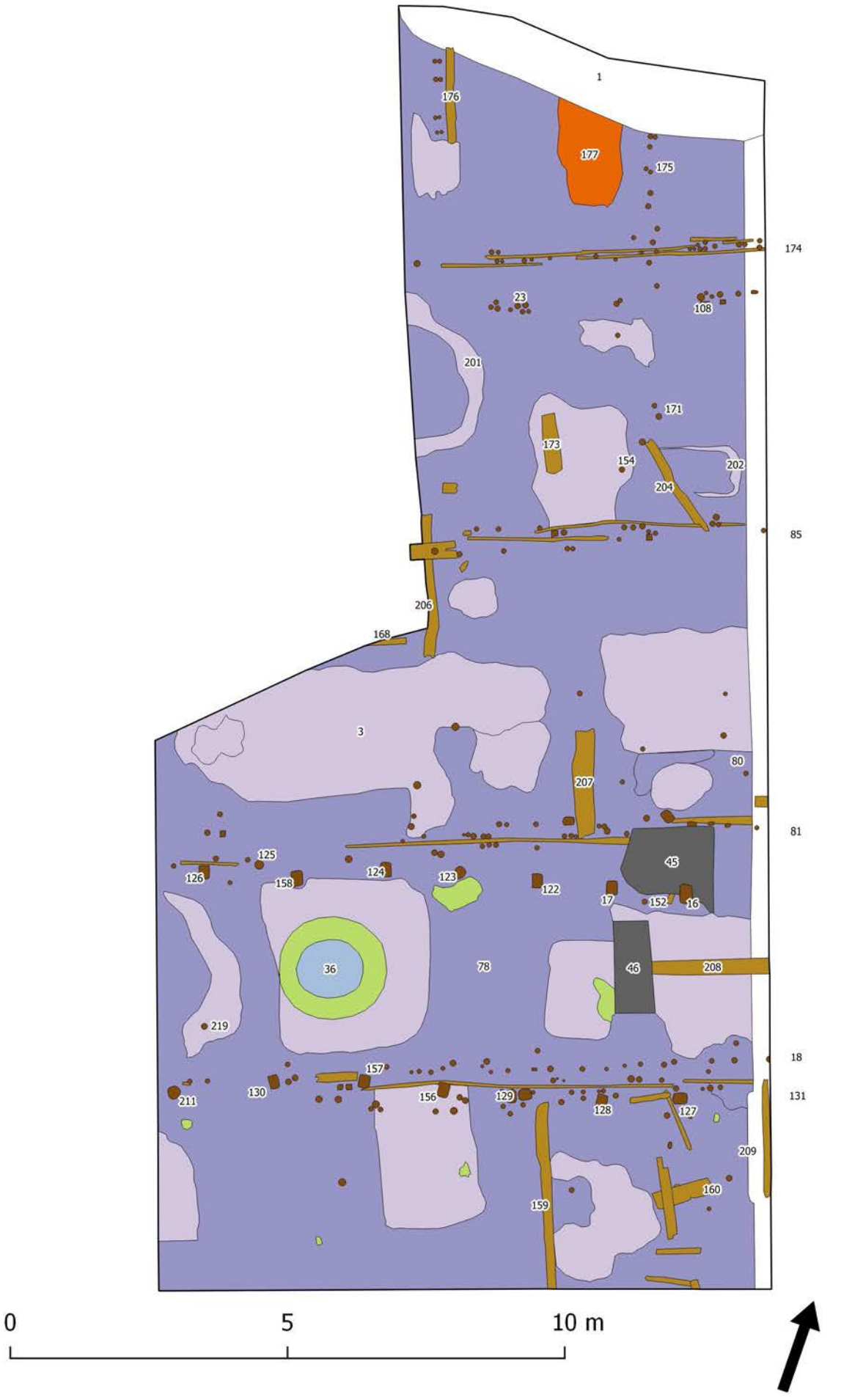
Level 5 lacks documentation on elevation, but must have been made at somewhere between -0,42 m. and -1,10 m. NAP, based on the elevation of levels 4 and 6. Features 176, 177, 174, 23 and 108 reappear on level 5 but have already been discussed above. Feature 175 was, like feature 176, a row of small wooden posts extending north from the northern most plot division (feature 174). Features 206, 207 and 159 were planks oriented north-south and were connected to the plot dividing rows of posts. These north-south rows of posts and planks must have been made during the same period as the plot divisions were made and were part of the same wharf construction. The north-south and east-west rows of posts and planks were similar in appearance and elevation and clearly connected to each other.

The rows of posts dividing plots 174, 85, 81, 80 and 131 (which were also documented on the levels above) are clearly visible on level 5. They consisted of round posts with planks on their sides between the posts. They were documented over the full width of the trench. As mentioned above, row 18 appeared higher in the stratigraphy (see level 2) and was therefore younger than row 131, which results in the fact that row 18 was only represented by a few posts while row 131 consists of many wooden posts and planks on level 5.

The plots were filled with clay and peat. Various pottery finds date this fill to the first half of the twelfth century (find numbers 132, 133, 136, 137 and 138). Noticeable are the patches of peat 201, 202 and 219. All three of them appear as a horseshoe shaped band and could be an outbreak of a deposit that was made when the plots were filled. It is indeed striking that every plot on level 5 has patches of peat within the layer of clay. These patches of peat were within the boundaries of each plot. Some of them were bordered by a row of posts dividing the plots but they did not cross it. It is therefore more likely that each plot was separately filled rather than all plots as a whole.

The features 45 and 46, which were pits filled with small stones, were documented on levels 1 to 5. This means that the pits could have been about 80 cm. deep (the precise depth is problematic due to the uncertainty of the elevation of the original ground level and the lack of elevation measurements on level 5). Sadly, during the excavation the individual stones were only roughly sketched on level 1 while on the other levels the locations of the pits with stones were just marked. This makes a detailed study of the two pits with stones difficult. The function of the two stone pits remains unknown. It is however clear that they must date before the construction of Building 1 and possibly after the construction of the wharf.

Feature 208 probably was a construction part that once belonged to Building 1, although it could also have belonged to the plank road or to the wharf construction. Feature 209 probably was part of a plank road.


1
176
177
175
174
23
108
201
171
173
154
202
204
85
206
168
3
80
207
81
125
126
158
124
123
122
45
17
152
16
36
78
46
208
219
18
157
130
211
156
129
128
127
131
209
160
159
0
5
10 m
Trench 1
Level 5
Wooden post
Post hole
Wood
Stone
Loam
Sand
Well
Peat
Clay
Unkown
Recent
Find number

Trench 1 – level 5a

Level 5a was made west of level 5. In fact, the two levels border each other and both lie within trench 1. It is not certain why level 5a was made a new level instead of just expanding level 5 towards the west. Like level 5, level 5a lacks information on its elevation. The elevation will probably be similar as level 5 which must be between -0,42 m. and -1,10 m. NAP.

Many features on level 5a were already documented on level 4 and thus discussed above. These features include an area of sand (feature 189), a row of posts and planks oriented east-west (features 179 and 184), a pit below the kiln (feature 190), a pit with animal manure (feature 191), a concentration of stones (feature 193), a concentration of mussels (feature 137) and a pit with late medieval debris (feature 39).

A couple of new features appear on level 5a. Two other pits with animal manure (features 230 and 228) can probably be explained the same way as pit 191. The pits with manure could have been either *in situ* waste pits pointing at the presence of animals at the site, or the pits with manure were part of the reclamation deposit (see also the interpretation of feature 191 on level 4 above).

A row of posts oriented north-south represented the western extend of the wharves. The row consists of several small posts (features 131, 226, 227 and 231) and a few heavy posts (features 225, 232 and 233). The wharves and plots in which they were laid out did not continue further to the west. This way the plots did connect to the revetments and the original waterside. The connection between the wharves and the revetments is best seen on level 7 (see below).

Find numbers 197 and 198 consist of pottery both dating to the late twelfth to early thirteenth century.

Illustration 30. Level 5 of trench 1 from the south-east. Photo by the RCE.


5a
5
180
185
179
184
198
189
3
190
196
233
85
191
236
78
193
197
232
231
230
229
227
81
225
224
223
226
228
137
39
196
131
0
5
10 m
Trench 1
Level 5a
Wooden post
Post hole
Wood
Stone
Loam
Sand
Peat
Clay
Manure
LM debris
Mussels
Unkown
Recent
Find number

Trench 1 – level 6

Level 6 was made at an average of -1,10 m. NAP, which is more than one meter under level 1. Many of the features on level 6 have already been discussed above and shall not be discussed again.

Other parts of the wharf construction become visible on level 6, such as features 242 and 249. They are east-west rows of posts and planks which were parallel to the rows and planks documented on the higher levels.

Several north-south oriented rows of posts and planks were made to strengthen the wharf and to keep the reclamation deposits in place. These are features 176, 175, 244, 206, 247, 207 and 256.

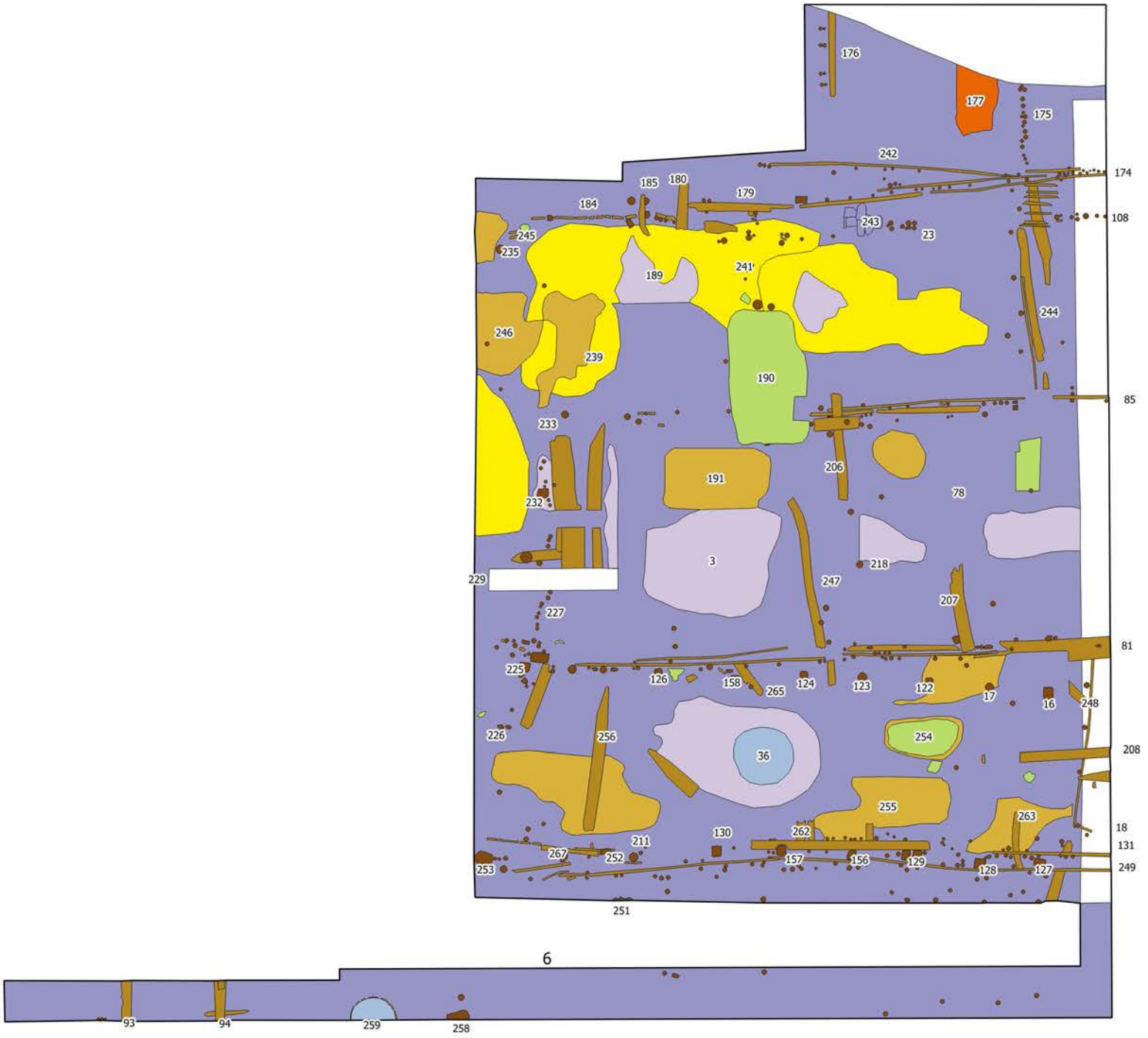
Well 36, which was first documented on level 1, now lacks the rectangle shaped cut with a fill of peat, as was visible on levels 3, 4 and 5. This was the very bottom of the well, as the well was not documented on level 7 (see below). The character of the fill of the well on this level was not documented. Also no finds from the well were documented. South of well 36 a small concentration of tuff was found bordering the trench wall (feature 251). The tuff probably belonged to one of the buildings that stood at this location from the seventeenth century onwards.

A small ‘section trench’ was made in the south of trench 1 in order to create section A-B. This small trench was first documented on level 2 and again on level 6. The western part of this narrow trench contained two phases of revetments which were already discussed above (see level 2). Feature 259 was a barrel well also documented on section drawing A-B (see below).

Two large rectangular posts, one next to the well (feature 258) and the other a little north of the first (feature 253) were revetments that were built when the plot were laid out and the wharf was built (Revetment 2).

Find numbers 207 and 208 both are pottery dating to the twelfth century.

Illustration 31. Level 1, trench 6. Overview from the south-east. Photo by the RCE.



0 5 10 m

Trench 1
Level 6

- Wooden post
- Post hole
- Wood
- Well
- Stone
- Tuff
- Loam
- Sand
- Peat
- Clay
- Manure
- Unkown
- Recent
- Find number

Trench 1 – level 7

This was the lowest level of trench 1 and was made at -1,45 m. NAP on average. It covers the largest extension of trench 1. The layout of the original wharf construction and the first phases of the revetments are clearly visible on this level. The revetments can best be seen in the south-west corner of the trench. Feature 287 consists of a series of heavy square posts with the remains of planks that must have connected the posts (Revetment 2). Feature 287 is also part of the wharf construction itself, meaning that the original west end of the wharves were directly bordering the waterside. Feature 287 continued from the south wall of the trench about five meters north, up to the row of posts that divide plots 3 and 4. Revetment 2 continued north as a row of posts (feature 227) and planks (feature 283) up to the north wall of the trench at feature 277. The original revetments were cut by a deposition of manure (feature 246).

A second phase of revetments lies little further west and was only visible in the southern part of the trench (Revetment 3). Feature 288 consisted, like feature 287, of a series of posts connected by planks. It was also documented in section drawing O-P (see below). The revetment was partly cut by the cut of water well 259 in the south of the trench and by well 293 in the middle of the trench.

The original layout of the wharf construction consisted of rows of posts and planks both in east-west and north-south orientation. The east-west rows divided the reclaimed land into plots and are numbered as features 268, 85, 81, 249 and 295. Feature 295 was documented only on level 7 and lies in the very south of the trench bordering the trench wall (see also section S-T). The north-south rows strengthened the wharves and kept the reclamation deposits in place. These are features 273, 270, 269, 248 and 294.

Some of the planks used in the wharf construction were reused boat timbers, as was noted by the excavators and as can be seen in the shape of some of the planks. These are features 269, 270, 273, 283 and 248. Feature 248 consisted of several planks with a clinker construction. Between the planks some caulking was recovered (find number 286).

A pit with a fill of manure was documented in the southern part of the trench (feature 297). It was dated with pottery to the second half of the twelfth century (find number 295).

A layer of sand in the western part of the trench (feature 281) was documented as 'younger' by the excavators. The layer can be dated with pottery to the late thirteenth or early fourteenth century (find number 294).

Two noticeable finds are a golden ring with an amethyst stone which was found in the natural clay deposit just behind the first revetment (find number 278); and a very well preserved bone comb (find number 275; the location was not marked on the field drawing).

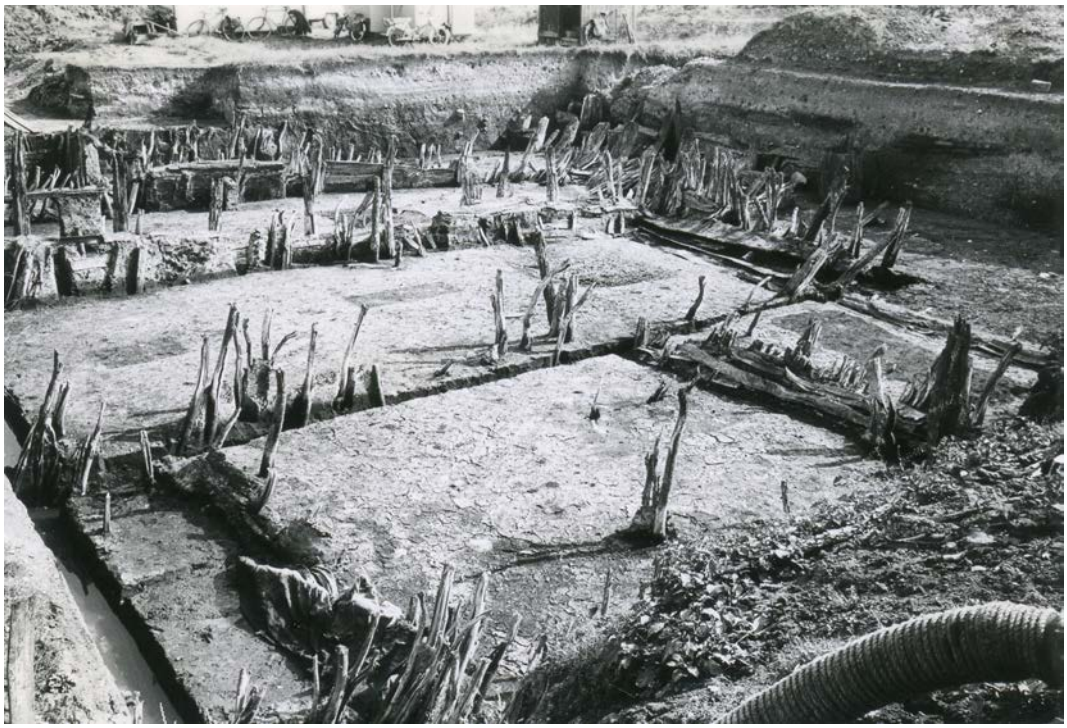
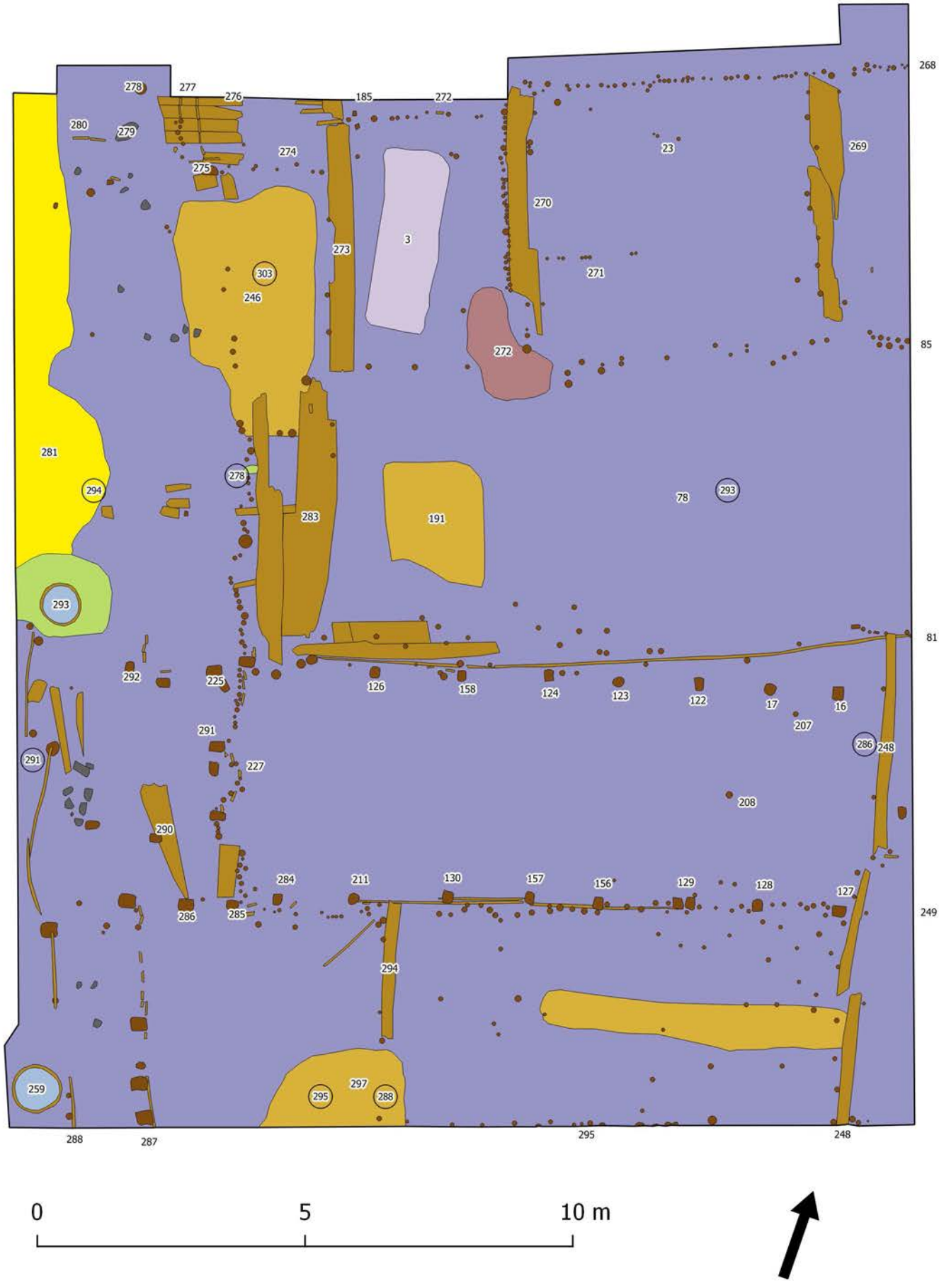


Illustration 32. Trench 1, level 7. Overview from the north-east. Photo by the RCE.



0 5 10 m

Trench 1
Level 7

- Wooden post
- Post hole
- Wood
- Stone
- Well
- Loam
- Sand
- Peat
- Clay
- Slag
- Manure
- Unkown
- Find number

Trench 2 - level 1

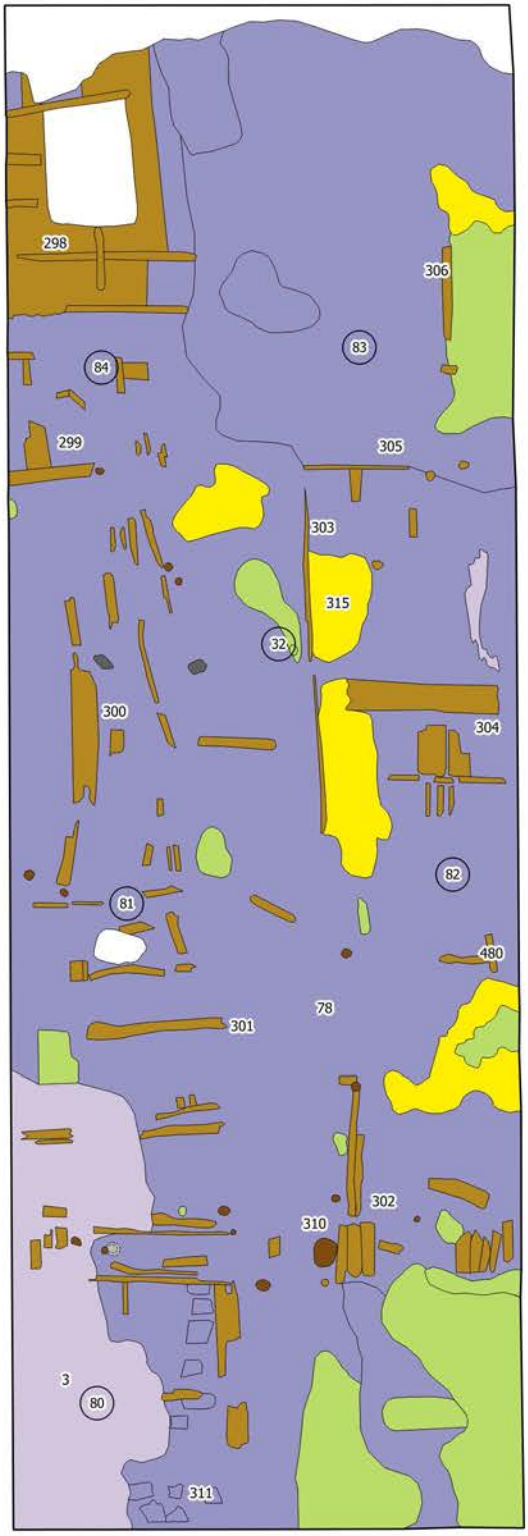
Trench 2 lies approx. 80 cm. east of trench 1. Level 1 of trench 2 was made at -0,35 m. NAP on average, which was the same elevation as level 3 of trench 1. The north side of trench 2 was characterised by the same recent cuts as in trench 1.

A large amount of timber in the western part of trench 2 probably was the remains of a plank road running north-south perpendicular to the plots. The top layer of the road was visible on level 1 as planks oriented north-south (features 298, 299 and 300). Under the layer of north-south oriented planks was a layer of east-west oriented planks. This second layer of the plank road can be seen on lower levels (see below). The east-west oriented planks in the south of level 1 (feature 301) were probably part of the plank road as well. Near the south of trench 2, the plank road was disturbed by the construction of Building 1 (near feature 301).

Find numbers 81 and 84, both documented on top of or near the plank road, both consist of pottery dating to the first half of the twelfth century.

East of the plank road, remains of several houses can be observed. Feature 306 was part of the west wall of Building 5. Features 303, 304 and 305 were the remains of Building 4 and included the north, west and south walls and also some displaced planks. Building 3 was represented by several planks that were part of the south and west walls (feature 480). Feature 310 was a single large post that belongs to Building 1.

Feature 311 consisted of a series of spade-marks. These traces may be interpreted as part of the deposition of soil to raise the surface. People must have used instruments such as spades to work and move the soil. Another interpretation is that the traces are part of an original surface level made of clay. In the latter case people must have tried to make an even surface.



0 5 10 m

Trench 2
Level 1

Post hole
Wood
Stone
Sand
Peat
Clay
Wooden post
Unkown
Recent
Find number

Trench 2 – level 2

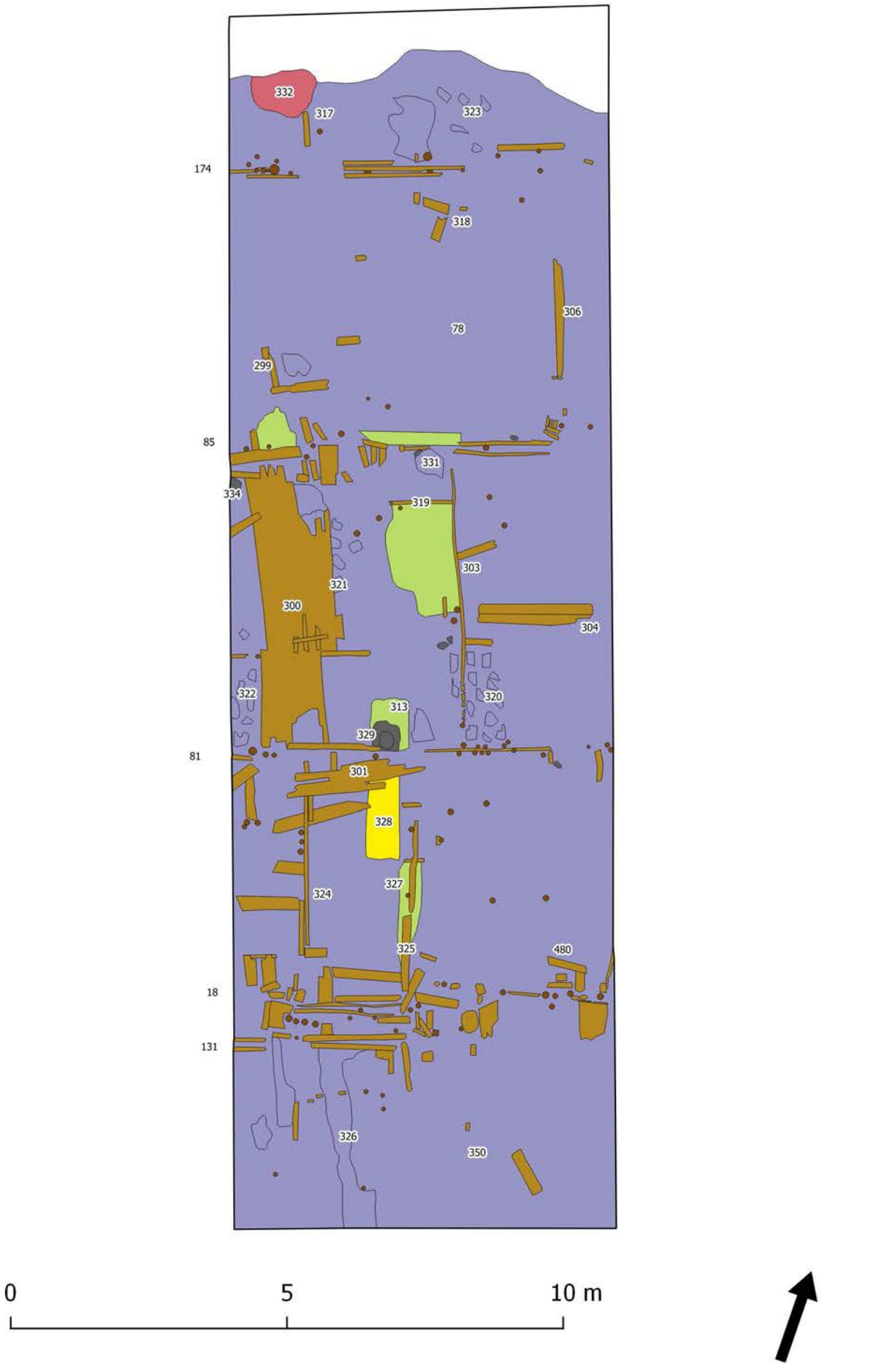
Level 2 was made at -0,51 m. NAP on average which is 16 cm below level 1. Like in trench 1, the east-west oriented rows of posts and planks were part of the wharf construction and divided the reclaimed land into plots (features 174, 85, 81, 18 and 131). These features consisted of small round posts with planks on their sides between the posts.

A large part of the plank road became visible on level 2 (feature 300). The length of the north-south oriented planks of feature 300 corresponded with the width of plot 2. This means the plots were still in use at the time the plank road was made. The north-south and east-west oriented planks (features 301 and 324) were also part of the plank road. However, the plank road was cut by the construction of Building 1 near feature 324. Features 325 and 327 were the eastern border of the plank road

Feature 329 was a large stone that might have been used as a sill for a post of a later phase of Building 4 (see paragraph 6.8.2).

Feature 303 and 304 were the remains of Building 4. Find number 119 was documented from within Building 4 and consists of pottery dating to the late eleventh to early twelfth century. Features 320 to 323 were spade-marks. See the interpretation of feature 311 above. Feature 480 was a collection of planks that belonged to Building 3.

Illustration 33. Trench 1, level 5 and trench 2, level 2 from the south. Photo by the RCE.



Trench 2
Level 2

- Wooden post
- Post hole
- Wood
- Stone
- Sand
- Peat
- Clay
- LM debris
- Unkown
- Recent
- Find number

Trench 2 – level 3

The elevation of level 3 was not documented, but must be between -0,51 m. and -0,91 m. NAP. The average elevation of level 3 in trench 2 might therefore have been close to the average elevation of level 5 of trench 1. The east-west oriented rows of posts and planks that were part of the wharf construction were again present on level 3 (features 174, 85, 81, 18 and 131). Several north-south rows of posts and planks were part of the wharf construction as well. These are features 341, 350 and 302.

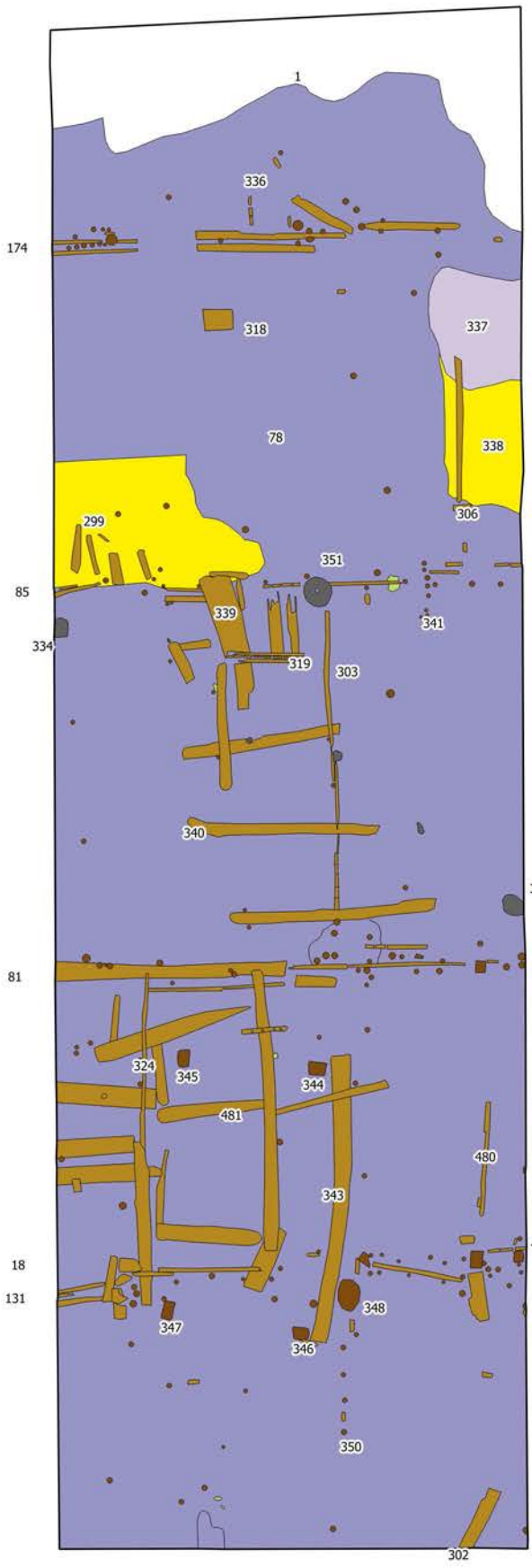
Some traces of the plank road that were observed on level 1 and 2 (see above) were present on level 3 (features 318, 339, 340 and 324). Find number 141, found near the plank road, is pottery dating to the first half of the twelfth century. However, the planks in plot 2 (feature 340) were misplaced and lie further east than their original position. This must have happened in a period when the plank road fell in disuse. The plank road was cut by the construction of Building 1.

Four heavy rectangle posts in the south of trench 2 belonged to Building 1 (features 344 to 347). The two rows of posts documented in trench 1 thus continued and ended in trench 2. Feature 343 was a large plank that connected the two last wooden posts. Because the rows of posts did not continue east after this plank, it is likely that this plank is part of the construction of Building 1. One large post (feature 348) was also part of the construction, as well as several planks that lied disorganised near the heavy posts (feature 481).

Feature 306 was part of the west wall of Building 5. Feature 303 was part of the western wall of Building 4. A quern-stone in the north-western corner of the building (feature 351) was part of the foundation of the north-western corner of Building 4. Just inside Building 4, some pottery dating to the first half of the twelfth century was recovered (find number 142).

Feature 480 was the west and south wall of Building 3. In the south-western corner of Building 3, a fragment of red brick was found (find number 143). Its character and date is unknown, however the excavators refer to the brick as being possibly Roman.

Illustration 34. Trench 2, level 3 from the south. Photo by the RCE.



0 5 10 m

Trench 2
Level 3

Wooden post
Post hole
Wood
Stone
Sand
Peat
Clay
Unkown
Recent
Find number

Trench 2 – level 4

Level 4 was made at an average of -0,91 m. NAP. No finds were recovered from this level.

Features 174, 85 and 81 were the east-west rows of posts that belonged to the wharf constructions. In the south, the three phases of wharf construction that were already seen in trench 1 are present. The last phase was feature 18, which was preceded by feature 131. The first phase of this part of the wharf construction was feature 249. Features 352, 341 and 350 were part of the wharf construction as well.

On this level, feature 355 is the only north-south plank that was part of the upper layer of the plank road (see above). Features 318 and 340 were the east-west planks that were part of the lower layer of the plank road (see also paragraph 6.8.3). The plank road was cut by the construction of Building 1.

Like on level 3, the structure Building 1 was in trench 2 represented by features 343 to 347 (the wooden posts), the large plank (feature 343) with a single large post (feature 348) and several planks (feature 381). Feature 354, which was not visible on level 3, was also part of Building 1.

A large area of sand (feature 338) as well as a pit with sand (feature 358) and two pits with peat (features 359 and 360) must be interpreted as either waste pits or as part of the reclamation deposits.

The west wall of Building 4 was represented by several small planks (feature 303). Feature 380 represented the south-western corner of Building 3.

Finally, feature 356 was a small revetment that was built before the buildings and the plank road was built (Revetment 1). The revetment is also observed in section A-B.

Illustration 35. Trench 2, level 4 from the north. Photo by the RCE.


174
318
338
352
85
341
339
319
78
340
303
81
354
345
344
359
358
481
343
360
355
480
18
347
348
131
346
249
302
350
356
0
5
10 m
Trench 2
Level 4
Wooden post
Post hole
Wood
Stone
Sand
Peat
Clay
Unkown
Recent
Find number

Trench 2 – level 5

Level 5 was the lowest level of trench 2 and was made at an average of -1,26 m. NAP. This level covered only the southern part of trench 2. No finds were recovered from this level.

Features 81 and 249 were part of the wharf and have also been documented on the levels above and in trench 1. Features 362 and 363 were part of the first phase of the wharf construction and connected to feature 350. Feature 362 was a reused boat plank.

Features 344 to 347 and feature 354 belonged to construction Building 1.

Feature 364 was a small patch of ash. The ashes could be the remains of burned timber that belonged to Building 2.

Feature 367 was a wall construction made of upright posts and waddle. The feature was sectioned, see section drawing Q-R below. The feature is part of Building 2.

A row of small upright planks (feature 480) was the remains of the south wall of Building 3. A fill of sand (feature 358) possibly was used as a foundation or floor layer of Building 3.

Illustration 36. Trench 2, level 5 from the south. Photo by the RCE.

0 2 4 m

Trench 2
Level 5

Wooden post
Wood
Sand
Clay
Ash
Unkown
Recent

Trench 3 – Level 1

Trench 3 was located east of trench 1 and 2 and was bordering trench 15. Level 1 was made at an average of -0,23 m. NAP, a little below level 2 of trench 1. Like in trench 1 and 2, the north of the trench was characterised by a recent intrusion.

Feature 174 in the north of the trench was a fragment of the east-west rows of posts and planks belonging to the wharf construction.

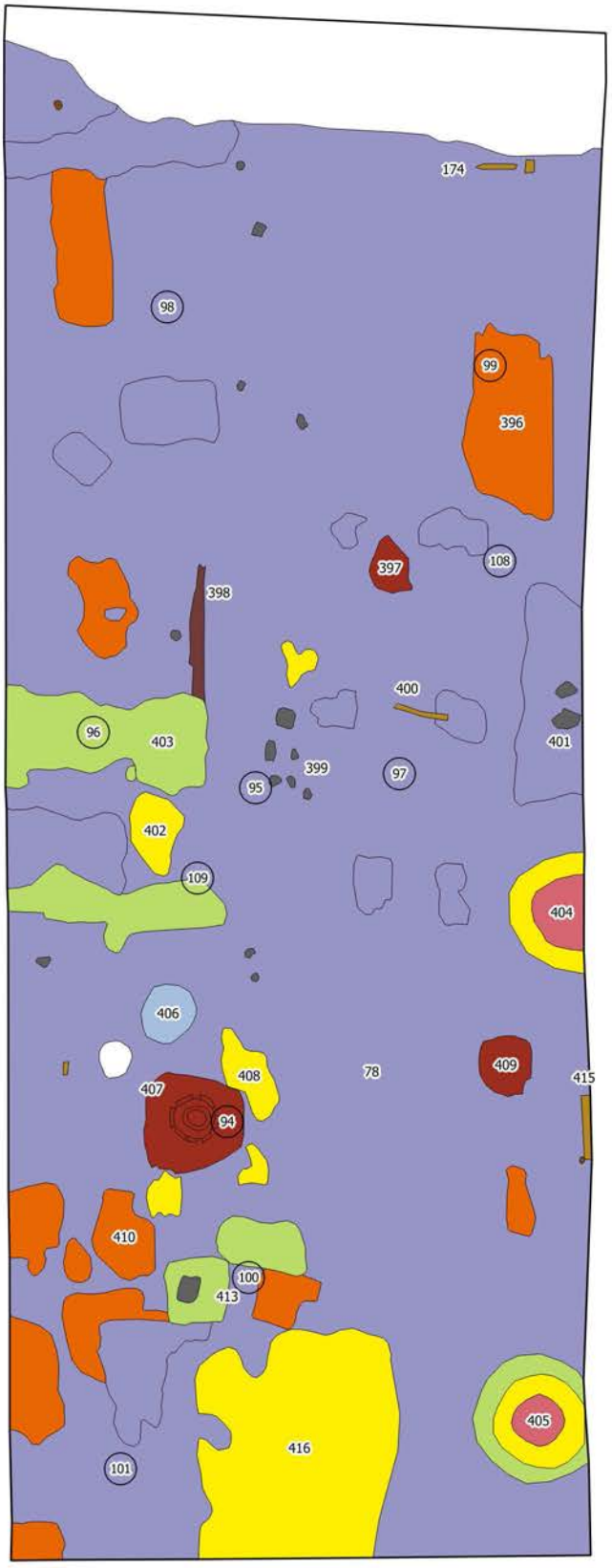
Several patches of loam (features 396 and 410) and sand (features 402, 408 and 416) were part of the reclamation deposits that were put at the site to raise the surface of the soil.

Feature 398 contained ash, which can be seen as evidence of a fire that must have burned structures or part of structures during the medieval or post medieval period. Three more traces of such fires were documented on level 1 (features 397, 407 and 409). Within feature 407 several round shapes were drawn on the original plan drawing. What these shapes were and how feature 407 should be interpreted is unclear. Find number 94, that was recovered from feature 407, is a fragment of local unglazed pottery (*kogelpot*) that could only be roughly dated to the high medieval period.

On this level, three wells were documented (features 404, 405 and 406). Feature 404 is cut by the eastern trench wall and is therefore visible on section G-H. The core of both well 404 and 405 are filled with late medieval debris, consisting of fragments of red bricks. No wooden well constructions are observed on this level. Feature 406 was documented as a recent cut on level 1. However, in the lower levels it will become clear that this was in fact a well (see below).

On level 1, several concentrations of small stones were observed (features 399, 401 and 413). Their functions are unknown. However, stone 413 was slightly larger than the others and lied within something that could be a small pit. The stone was probably used as a sill for a later phase of Building 2.

Find numbers 97 and 99 both consist of pottery dating to around the middle of the twelfth century.



0 5 10 m

Trench 3
Level 1

- Wooden post
- Wood
- Stone
- Loam
- Sand
- Peat
- Clay
- LM debris
- Ash
- Fire traces
- Unkown
- Recent
- Find number

Trench 3 – level 2

Level 2 was made at an average of -0,48 m. NAP. Four wells were documented on this level (features 432, 404, 405 and 406). All were documented with a fill of late or post medieval debris, but no finds from the wells were recovered. According to a note by the excavators, they all date to the seventeenth century. Features 432 and 404 can also be observed on section G-H.

Features 417, 418 and 426 in the north of the trench were remains of burned loam that probably came from either Building 5 or from a building that stood north of Building 5. Also part of Building 5 were two rectangular posts in the north wall (features 422 and 423) as well as possible remains of the east wall (feature 427). Fragments of local unglazed pottery and import pottery found within Building 5 date to the first half of the twelfth century (find numbers 129 and 134).

Building 4 was represented on this level by a square post that belonged to the north wall (feature 484) surrounded by clay spits (feature 434), remains of the east wall (feature 483) and two posts and post holes that belong to the south wall (features 436 and 438).

Of Building 3, only the north and south corner posts of the east wall were observed (features 437 and 485). The rest of the east wall was cut by a well (feature 406).

Feature 482 was a plank and was possibly part of the north wall of Building 2. A second plank possibly was an inner wall of Building 2 (feature 445).

Feature 446 was documented as a spot with burned loam. However, on level 3 it becomes clear that this was another seventeenth century well (see below).

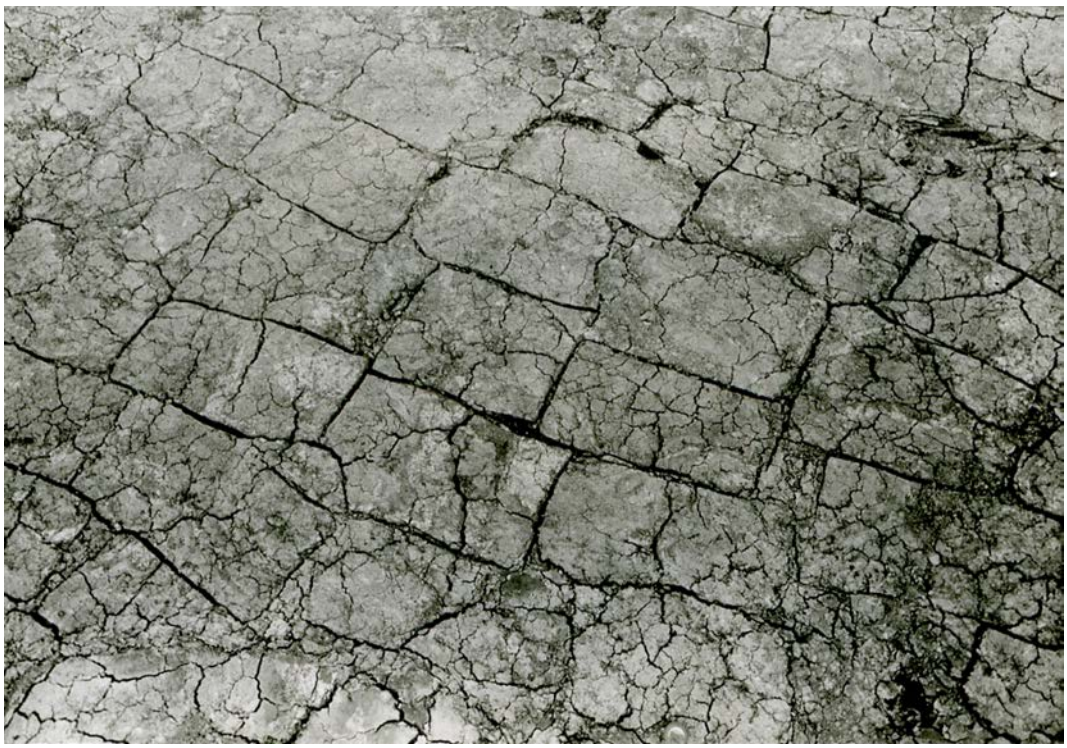
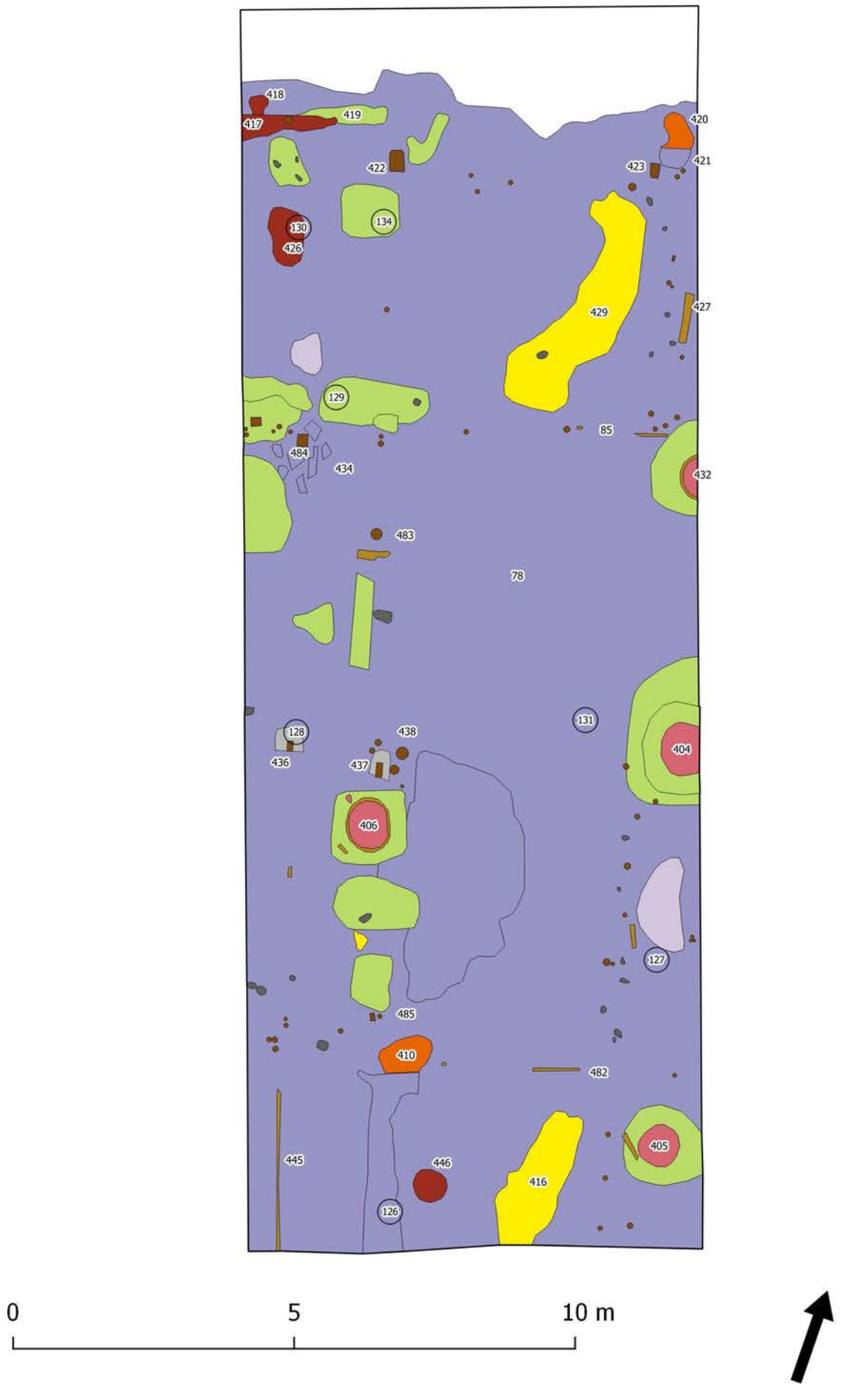


Illustration 37. Detail of the spit marks observed in trench 3, level 3. Photo by the RCE.



Trench 3
Level 2

- Wooden post
- Post hole
- Wood
- Stone
- Loam
- Sand
- Peat
- Clay
- LM debris
- Fire traces
- Unkown
- Recent
- Find number

Trench 3 – level 3

Level 3 of trench 3 was made at -0,73 m. NAP on average, about 25 cm. below level 2. Five wells dating to the late or post medieval period were documented (features 432, 404, 405, 406 and 446). None of these wells were contemporain with the buildings documented in trench 3.

Two post holes in the north of the trench (features 448) were probably part of a building that stood north of Building 5.

Feature 422 was a rectangular post, which was already documented on level 2. It was part of the north wall of Building 5. The post was founded on a sill of small planks. A second rectangular post stood in the north-eastern corner of Building 5 (feature 423). The east wall of Building 5 was presented by a row of small posts (feature 427). One rectangular post and a row of smaller posts was all that remains of the south wall (feature 486).

Building 4 was represented by two rounds posts that belonged to the north wall, a smaller post that was part of the east wall and two large round posts that were part of the south wall (features 484, 335 and 460).

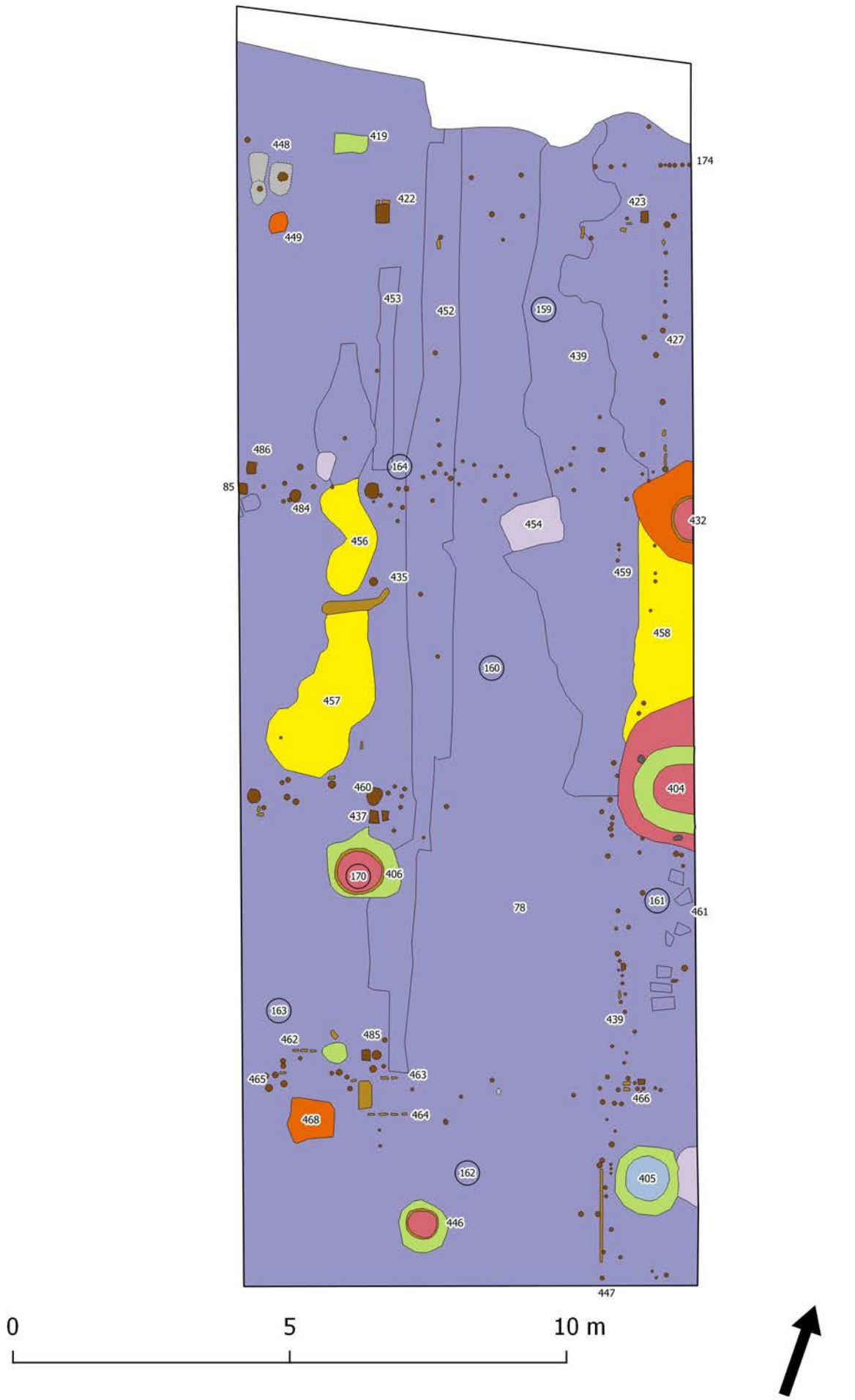
Feature 437 was the north-eastern post of Building 3. Feature 485 was the South-Eastern post. Feature 462 consisted of three small upright planks that were part of the south wall of Building 3. Features 463 and 465 possibly also belonged to Building 3, but must be of a different phase of the building.

Feature 464 was a short row of planks standing upright, which was part of the north wall of Building 2. Feature 447, consisting of a plank with several smaller posts, was the possible remains of the east wall of Building 2.

On a large part of the eastern side of this level, spit marks in the clay could be observed (features 439 and 452; see also illustration 37).

Find numbers 159, 160 and 162 all consist of local unglazed pottery dating to the first half of the twelfth century.

Illustration 38. Trench 3, level 3. Overview from the south-west. Photo by the RCE.

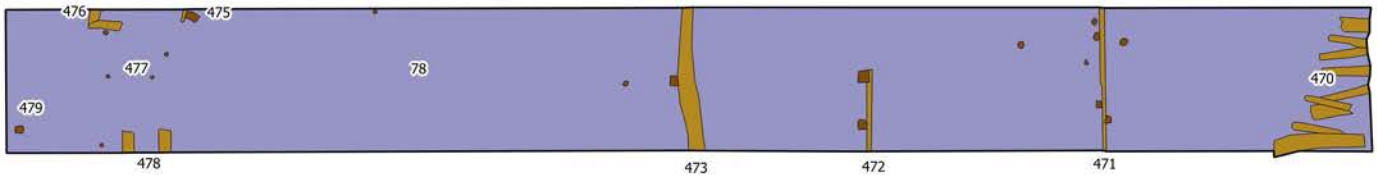

448
419
174
422
423
449
453
452
159
427
439
486
164
85
484
454
432
456
459
435
458
160
457
460
404
437
170
406
161
461
78
163
439
462
485
465
463
466
468
464
162
405
446
447
0
5
10 m
Trench 3
Level 3
Wooden post
Post hole
Wood
Stone
Loam
Sand
Peat
Well
Clay
LM debris
Unkown
Recent
Find number

Trench 14 – level 1

In trench 14, only one level was made and documented. The elevation of the level was not documented, but it must have been made between -1 and -1,5 m. NAP. No finds were recovered from level 1.

Trench 14 documents the bank of the medieval peat stream and the peat stream itself. A series of revetments was built on the eastern bank of the stream which is documented in this trench (features 470, 471, 472 and 473). A revetment that was built on the opposite side of the peat stream was also documented (feature 475), as well as several planks (features 476, 478) and small posts (features 477 and 479) that probably were part of that revetment.

Illustration 39. Overview of trench 14 from the south-west. Photo by the RCE.



0 5 10 m

Trench 14
Level 1

Wooden post Wood Clay

Trench 15 – level 1

Trench 15 was a small trench between trench 2 and 3. Level 1 was made at an average of -0,33 m. NAP, roughly on the same elevation as level 1 from trench 2. No finds were recovered from trench 15.

Two east-west rows of posts and planks were part of the wharf construction (features 18 and 81).

In the southern row, several large wooden posts belonged to the north wall of Building 2 (features 379, 380, 382 and 383). Feature 372 was a plank and was part of the western wall of Building 2. Feature 373 was the remains of a floor layer of Building 2.

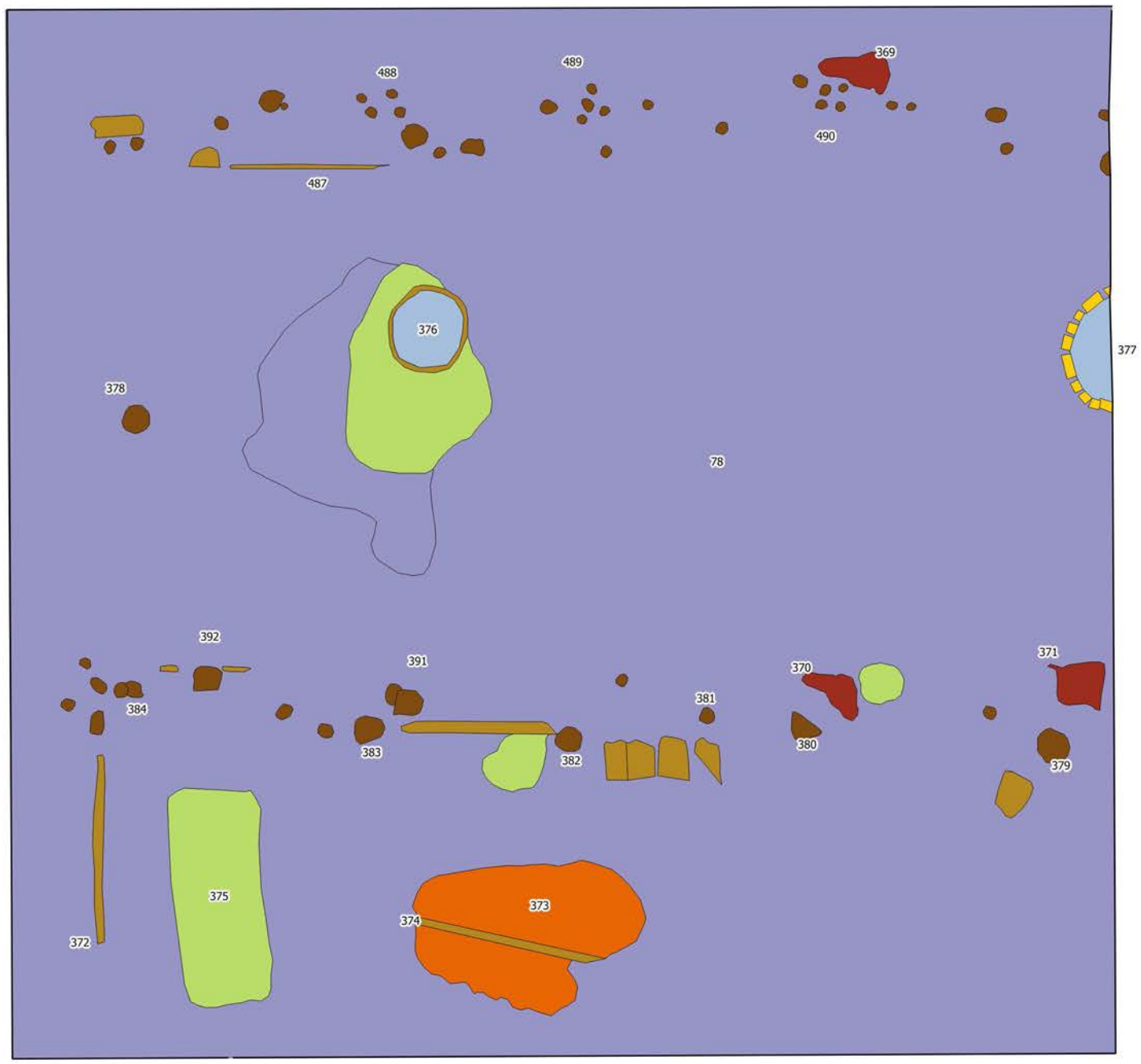
Features370 and 371 were small patches with traces of fire. They were probably the burned remains of wooden posts that belonged to the south wall of Building 3. Also the posts 381, 391, 392 and 384 were part of the south wall of Building 3. The north wall of Building 3 remained as a plank and several small posts (feature 487).

Clusters of small wooden posts in the north of the trench were probably used as the foundations for larger wooden posts of Building 4 (features 488, 489 and 490). The burned remains of another post (feature 369) also was part of the south wall of Building 4.

Two wells were documented in trench 15; features 376 and 377. The latter is made of yellow bricks ('IJ*sselstenen*'), which indicates that the well dates to the late or post medieval period. Well 376 is a barrel well with an unknown date.

Feature 378 is a large post close to well 376. The post could be the remains of a construction belonging to the well or it could have been part of the construction of Building 3.

Illustration 40. Trench 15, level 2 from the north. Photo by the RCE.



0 2 4 m

Trench 15
Level 1

Wooden post
Wood
Yellow brick
Loam
Clay
Fire traces
Well
Unkown

Trench 15 – level 2

Level 2 was made at -0,54 m. NAP on average, a little below the average elevation of level 2 of trench 2. No finds were recovered from trench 15.

As was observed in trench 1 and 2 (see above), some of the reclamation deposits are limited within one plot (features 358, 390 and 388). This again is an indication that the plots were filled with deposits individually rather than collectively.

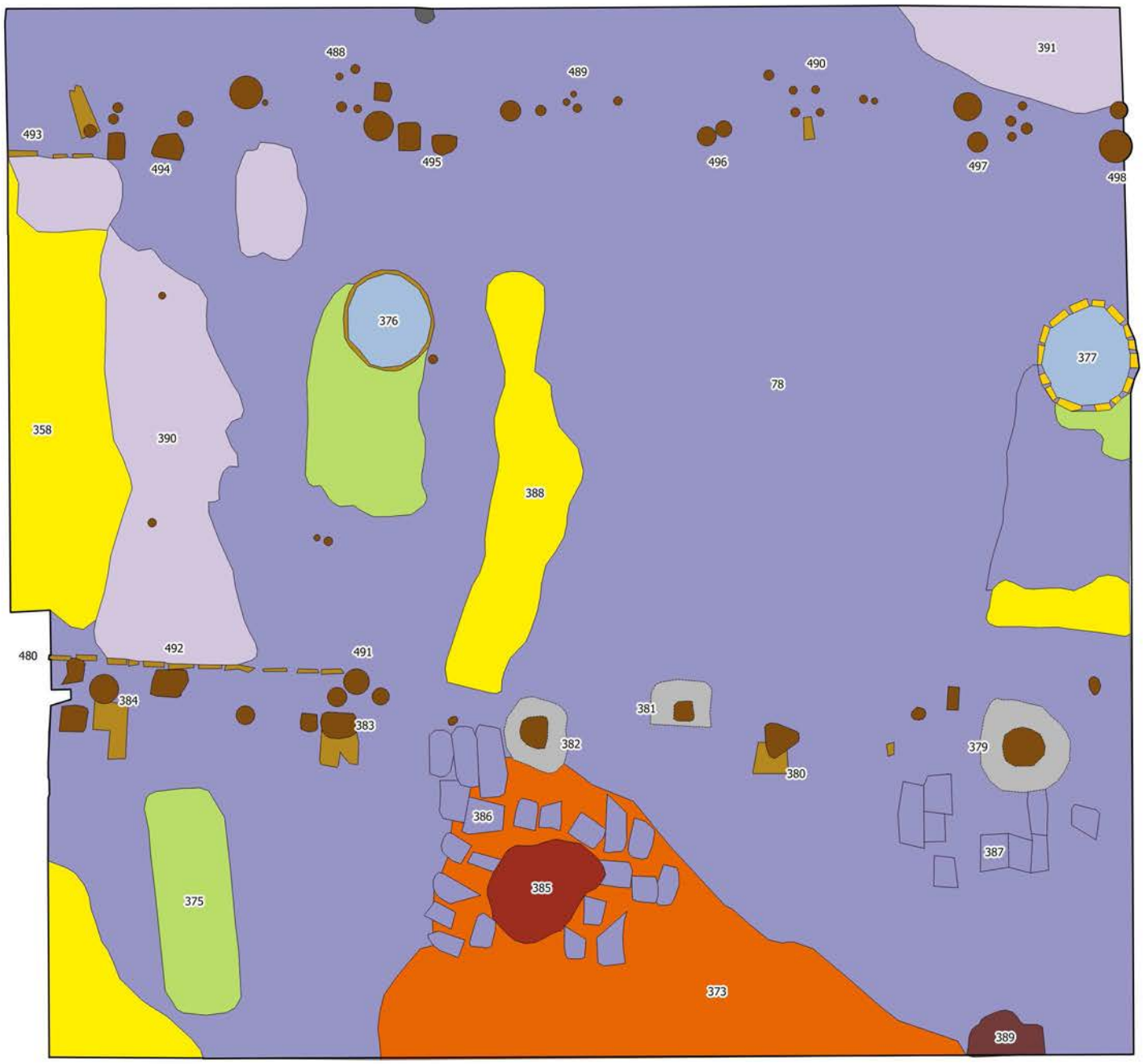
The north wall of Building 2 is represented by a series of large posts (features 379, 380, 382, 383 and 384), remains of a loam floor layer (feature 373) and the remains of a hearth (feature 385) surrounded by spit marks (feature 386). Posts 379, 381 and 382 all are surrounded by traces of a post hole. This is in itself not unique. However, these large post holes are not common in the Stadsfenne excavation. The large post holes may indicate that the posts were dug deep into the soil. Posts 380, 383 and 384 are standing on a sill consisting of several small planks.

Remains of both the north and the south wall of Building 3 are observed on this level. The planks observed in trench 15 are a continuation of the planks observed in trench 2, level 5 (feature 480). The south wall of Building 3 also exists of the posts 492, 491 and 381. The north wall of Building 3 consists of a short row of upright planks (feature 493) and several large wooden posts (features 494, 495, 496, 497 and 498).

Like on level 1, the south wall of Building 4 is observed as clusters of small posts that probably functioned as the foundation of a larger post (features 488, 489 and 490).

Wells 376 and 377 have already been discussed in the description of level 1 above.

Illustration 41. Trench 15, level 2 from the east. Photo by the RCE.



0 2 4 m

Trench 15
Level 2

Wooden post	Loam	Ash
Post hole	Sand	Well
Wood	Peat	Fire traces
Yellow brick	Clay	Unkown

6.7 Descriptions of the section drawings

In this paragraph, each section drawing will be discussed. If possible, features that could be observed on both the section and the field drawings was given the same feature number on both drawings. If a feature or layer was not observed on a field drawing, the feature or layer was given a letter.

The letters A, B, C, D and E represent several layers that were observed in most of the sections. These layers are described below. Layers that are unique per section are labelled for each section from the letter F onwards.

Layer letter	**Description**
A	Topsoil
B	Natural sand layer. Pleistocene cover-sand deposit. *Laagpakket van Wierden* (see paragraph 3.3).
C	Natural peat layer. A layer consisting of several sub-layers of peat. These sub-layers are however not differentiated in this study. *Basisveen laag* (see paragraph 3.3).
D	Natural clay layer. This layer of clay is the result of marine influence in the region and was deposited during the regular high tides and floods (see paragraph 3.3).
E	Natural clay layer. A layer of clay with natural wood chips, chunks of peat and some fragments of pottery, wood, leather, animal bone and metal. This layer is the result of one flood or a series of floods in the first half of the twelfth century. The layer is considered a natural layer that was deposited over a relative short period of time. The wood chips in this layer came from washed over trees or from the wood that is contained in the natural peat layers. The human artefacts included in the layer are probably carried by the water from nearby locations and are washed in the layer.
F and further	Character of the layer varies per section.

Section A-B - trench 1

Section A-B is a very long section, and for practical purposes it has been split up into three separate parts. Each part will be discussed separately below.

In the eastern part of this part of section A-B, in layer E, a small wooden post was documented that was part of the wharf construction (feature 248).

The layers F, G and H, just like feature 297, were waste pits that were filled with manure and clay. The finds in these pits do not allow for a more precise dating of these pits than 1100 – 1250.

Layer I was a layer of clay with small wood chips. The excavators date this layer to the seventeenth century (no finds from the layer were recovered).

The letter J refers to several smaller layers of clay and peat on top of each other. This was probably an occupation or land reclamation layer.

Layer K was similar to the natural layer E, but includes sand in addition. Find number 68 was a fragment of pottery which dates to the middle of the twelfth century. A large wooden post with planks attached to it was documented in layer K (feature 287). The large post is part of Revetment 2 (see also the field drawing of trench 1, level 7). Feature 288 was a fragment of a plank that belonged to Revetment 3. Layer K was cut by a seventeenth century well (feature 259).

The letter M refers to several small layers of clay and peat. Based on pottery (find number 70) these layers can be dated to the fourteenth century.

Layer N was a thick layer of clay that was deposited by water. Based on the pottery from this layer, it can be dated to the late thirteenth to the fifteenth century. Layer N differentiates from layer E in that layer N was not the result of a flood: it carried no chunks of peat and did not contain wood chips. Two revetments were cutting layer N (features 93 and 94), both of which date to the late medieval period.

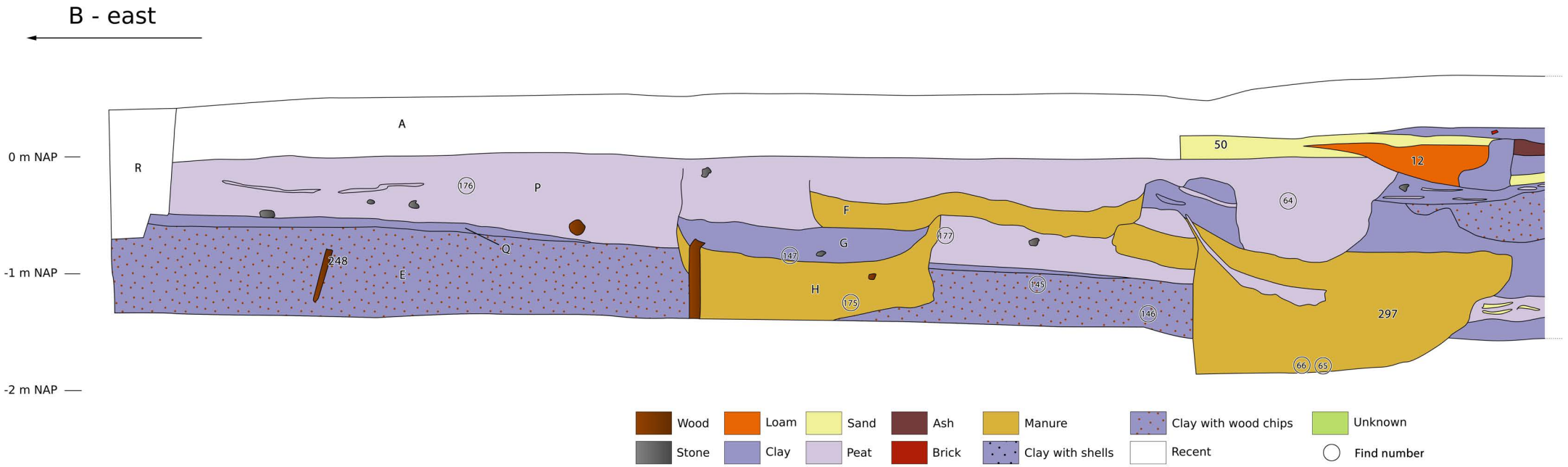
Layer O lied on top of layer N and contained many fragments of red brick. This could be either waste or a deposit to strengthen the soil or one of the nearby revetments.

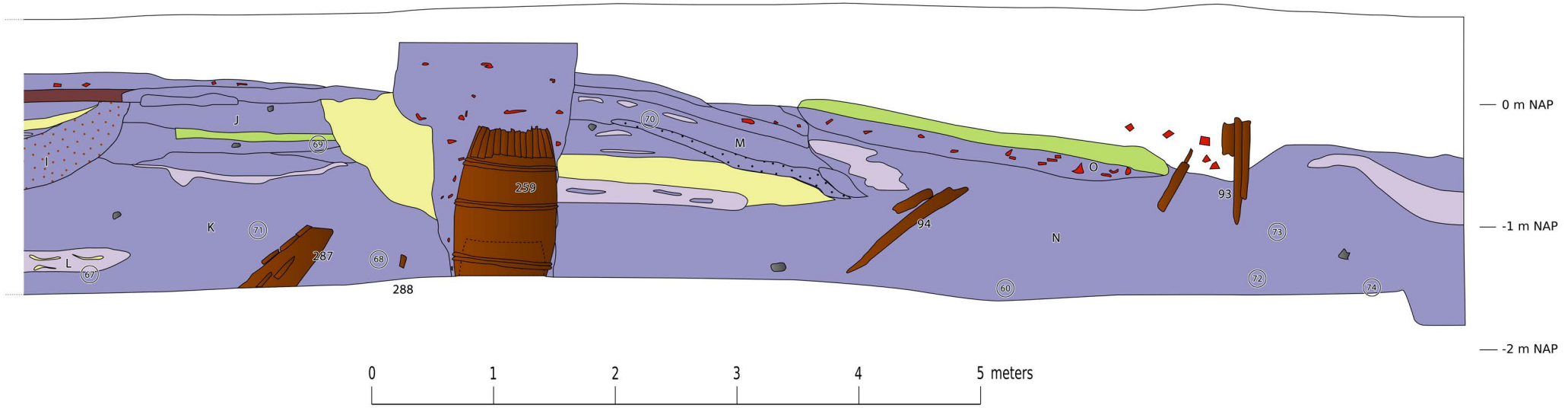
Layer P was observed only in the eastern part of this part of section A-B. This was a reclamation deposit: a deposit that was used to raise the land. This layer was the actual surface during the high medieval period. Even though it was documented as one layer by the excavators, it probably consisted of a series of smaller layers that were deposited during the period of habitation.

Layer Q was a small layer of clay with some peat that probably was deposited to strengthen the raised land after the flood has deposited layer E.

Layer R was a drainage trench that was made by the excavators during the Stadsfenne research. It separates trench 1 from trench 2.

Trench 1


B - east
0 m NAP
-1 m NAP
-2 m NAP
A
R
P
Q
E
F
G
H
248
176
147
177
175
145
146
50
12
64
297
66
65
Wood
Stone
Loam
Clay
Sand
Peat
Ash
Brick
Manure
Clay with shells
Clay with wood chips
Recent
Unknown
Find number


A - west
0 m NAP
-1 m NAP
-2 m NAP
I
J
K
L
M
N
O
259
287
288
94
93
67
68
69
70
71
73
72
74
60
0
1
2
3
4
5 meters

Section A-B, trench 2

This part of section A-B is interesting because it shows the divide between the natural flood deposition (layer E) and the cultural reclamation depositions (layers G, K and L). Both types of depositions are sharply divided by Revetment 1 (feature 356) which was also documented on this section. Shortly after the flood layer (layer E) was deposited, people stabilised the soil by building the wharf construction. Part of the wharf construction was documented here as feature 350.

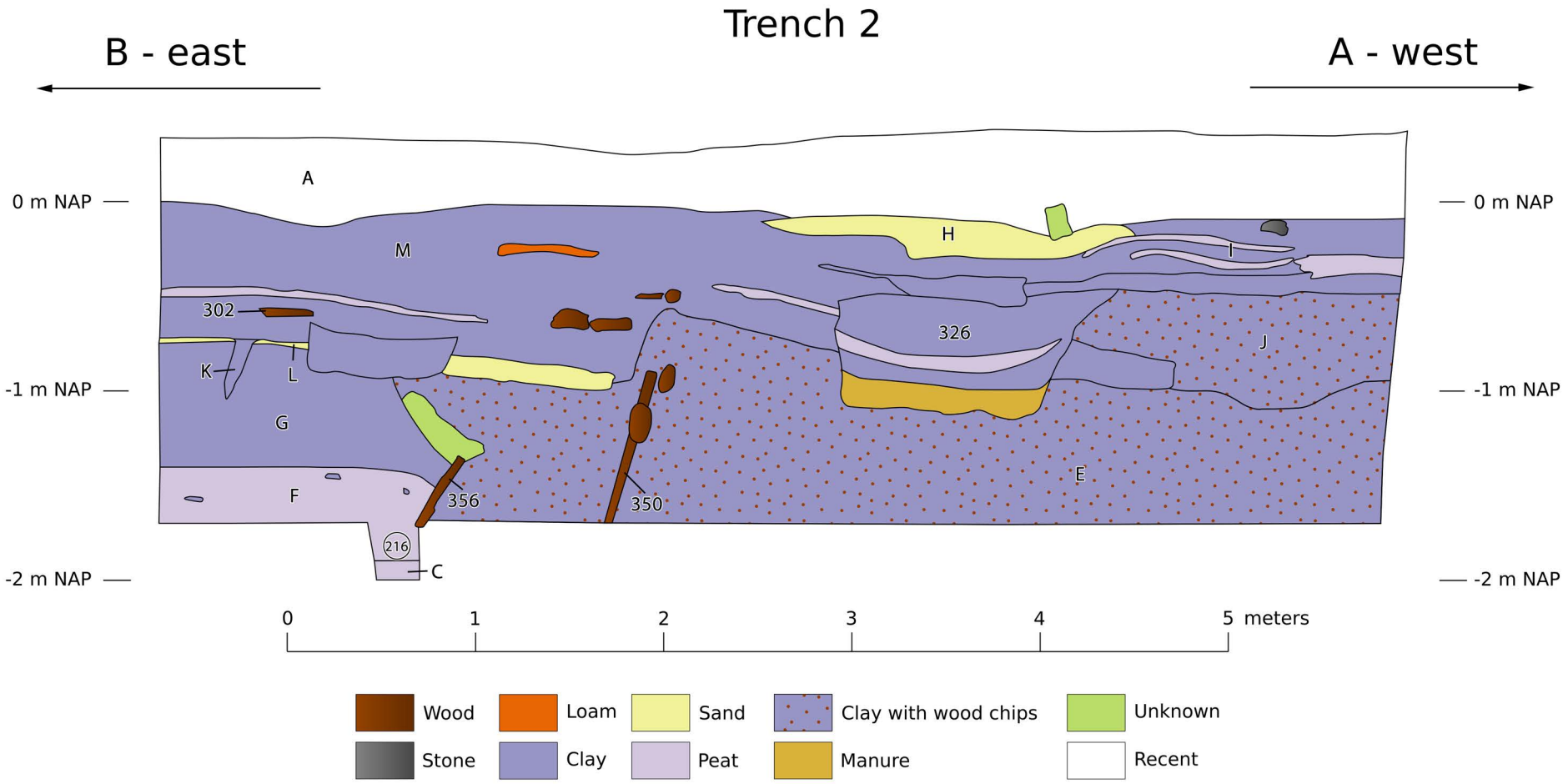
East of Revetment 1 were several layers that were deposited by people on top of the natural peat layer (*Basisveen laag*; layer C) to raise the land and prepare it for habitation. On top of the natural peat layer was a layer of dug peat with clay (layer F), on top of that a dug layer of clay with chunks of blue clay and some peat and on top of that a layer with sea sand (layer L). All of these layers were deposited by people when at the same time Revetment 1 was constructed, which was before the flood deposited layer E. Layer F could be dated with pottery to before 1150 (find number 216). Similar reclamation deposits are known from inter alia Tiel[120] (tenth century), Dordrecht[121] (twelfth century), Medemblik[122] (twelfth and thirteenth centuries) and Utrecht[123] (eleventh and twelfth centuries). A single post hole suggests that people built something on this raised land (layer K). It is however not clear what was built.

Above the natural and human deposits on both sides of Revetment 1 was a habitation layer (layer M), which includes layers of loam, sand (layer H) and peat (layer I). In this layer a waste pit was dug which was filled with manure, clay and peat (feature 326).

Layer J was similar to layer E and probably was also part of the flood deposition. The difference between the two layers is the fact that layer J has less wood chips and is firmer.

Illustration 42. Section A-B in trench 2. Notice the pit (feature 326) and the wooden posts in the far left side of the picture (features 350 and 356). Photo by the RCE.

120 Oudhof/Scheringa/van der Voet 2013
121 Sarfatij 2007
122 Besteman 1979; Van Leeuwen 2014
123 Van Rooijen 2010, 168


Trench 2
B - east
A - west
0 m NAP
-1 m NAP
-2 m NAP
A
M
H
I
302
326
J
K
L
G
F
E
356
350
216
C
0
1
2
3
4
5 meters
Wood
Loam
Sand
Clay with wood chips
Unknown
Stone
Clay
Peat
Manure
Recent

Section A-B, trench 3 and 15

This part of section A-B covers both trench 3 and trench 15. It is further interesting because it is the only section of a medieval building in the Stadsfenne excavation. Several thin layers of loam (layer H) were the remains of at least three different floor layers of Building 2 (see below). Layer I was a small pit with traces of fire. It is uncertain what this pit was, it could be either the remains of a hearth or the remains of a burned post. Layer I was not documented on the level drawings.

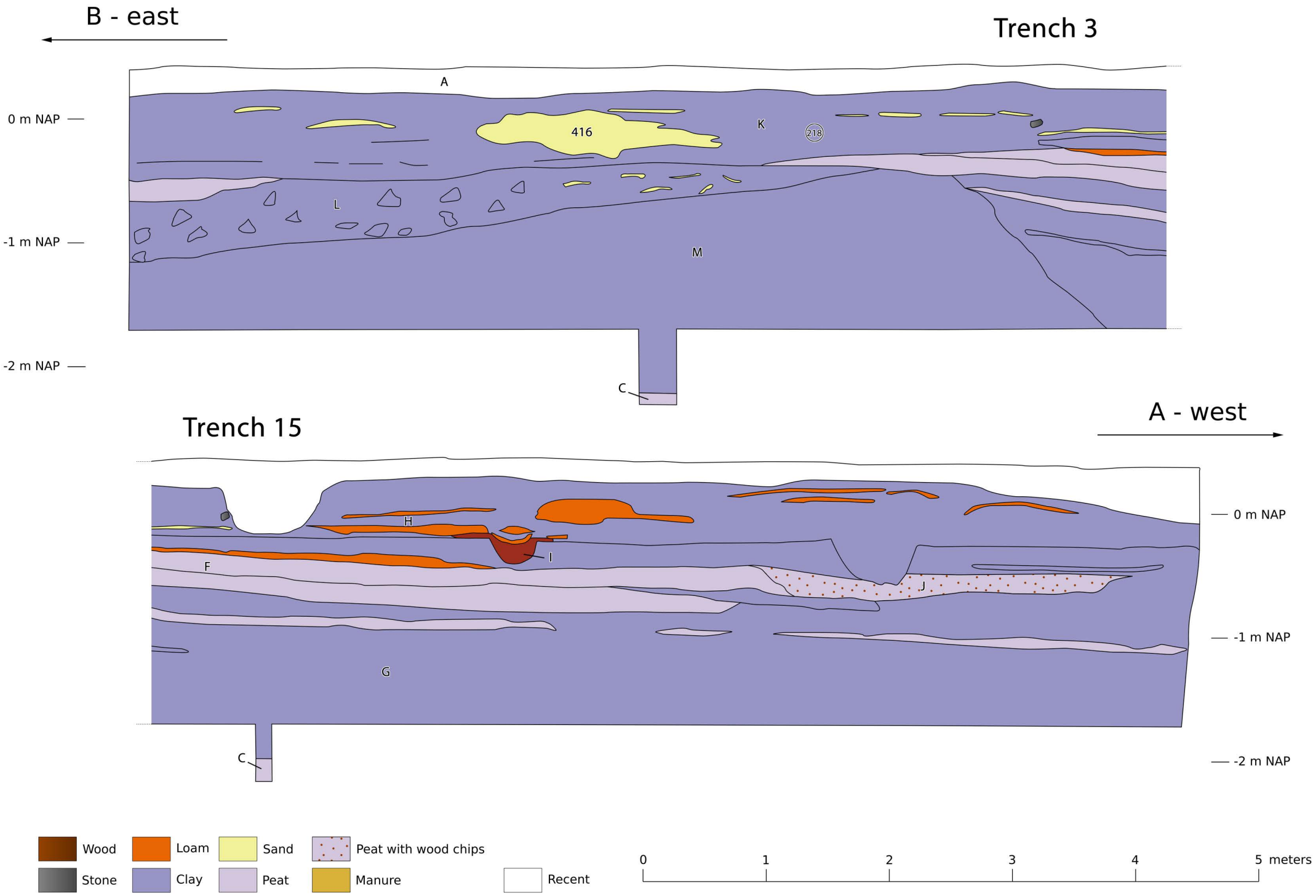
Below the floor layers were several layers of peat (layer F) which probably were put there to raise the land or as a foundation to the floor layers. The western part of this layer of peat contains more fragments of wood (layer J).

Under the layers of peat was a thick layer of clay (layer G), which was a reclamation deposit that was put by people on top of the natural peat (*Basisveen laag*, layer C) to raise the land. Layer G was also documented in section A-B trench 2.

Layer M was similar to layer G in that both layers were reclamation deposits that was put on top of the *Basisveen laag* to raise the land. Where layer G was heterogeneous with chunks of clay and peat, layer M was more homogeneous clay. Layer M was the oldest and it was described by the excavators as 'clean clay'. On top of that layer was another layer of clay (layer L) which, according to a note by the excavators, had clear spit-marks.

The reclamation deposits (layers G, M and L) were covered by a habitation layer (layer K). This layer dates to the twelfth and thirteenth centuries. Inside the layer were the floor layers mentioned above (layer H) and an area of sand (feature 416; see also field drawing trench 3, level 1).

Illustration 43. Detail of section A-B in trench 3 and 15. Photo by RCE.

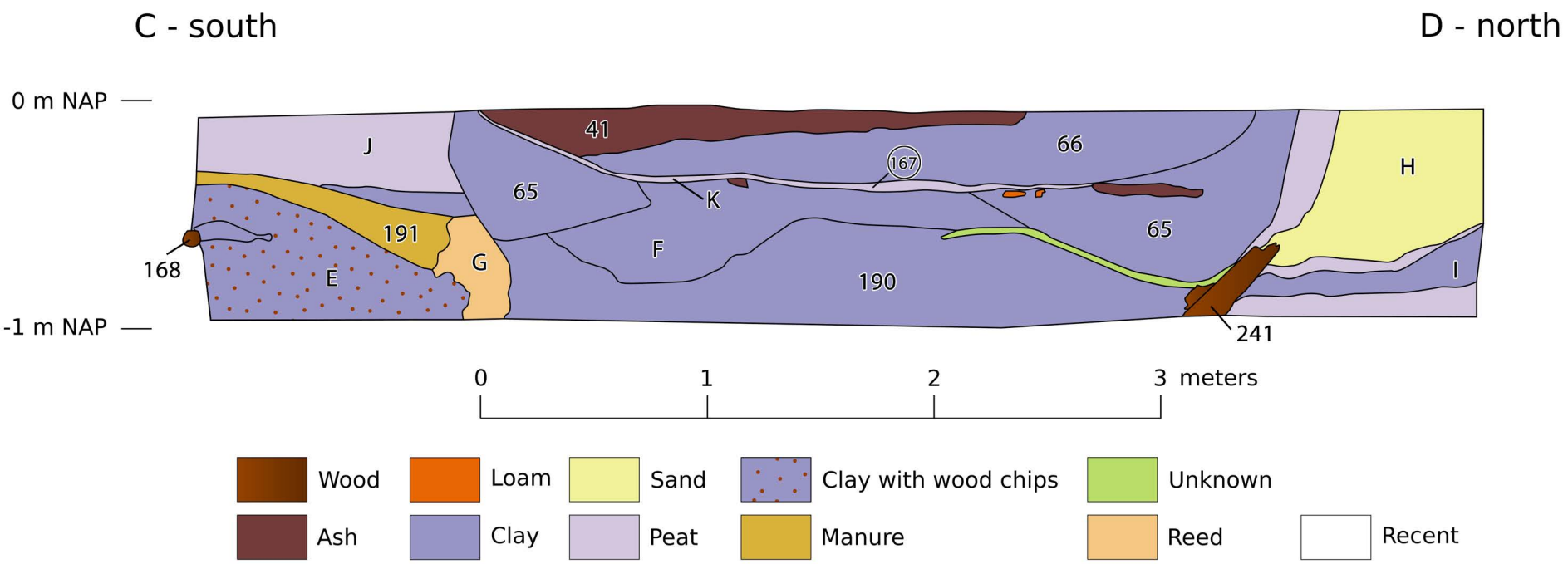

B - east
Trench 3
A
0 m NAP
-1 m NAP
-2 m NAP
416
K
218
L
M
C
Trench 15
A - west
H
I
F
J
G
C
0 m NAP
-1 m NAP
-2 m NAP
Wood
Loam
Sand
Peat with wood chips
Stone
Clay
Peat
Manure
Recent
0
1
2
3
4
5 meters

Section C-D

Section C-D was a section of the kiln that was documented in trench 1 (see level 1 and 1a). The top of the kiln consisted of two layers; one of ash (feature 41) and one of clay with slags (feature 66). Both layers were surrounded by a layer of clay (feature 65, see the field drawing).

The kiln was surrounded by layers of peat (J), sand (H), manure (191) and clay (I). Below the kiln was a layer that was documented as a pit (feature 190) filled with clay. The kiln was stabilised by two wooden posts on each side of the kiln (features 168 and 241). The reed found next to the kiln (layer G) might have belonged to the construction of the kiln.

Based on pottery found in the kiln (find number 34 and 35), the kiln can be dated in the fourteenth century.


C - south
D - north
0 m NAP
-1 m NAP
J
41
66
167
H
65
K
191
65
168
F
G
E
190
I
241
0
1
2
3 meters
Wood
Loam
Sand
Clay with wood chips
Unknown
Ash
Clay
Peat
Manure
Reed
Recent

Section E–F

Section E-F was a north-south section through trench 1. The section was made through the wharf construction, although the section was not made deeper than approx. -0,80 m. NAP, so only the top layers were documented.

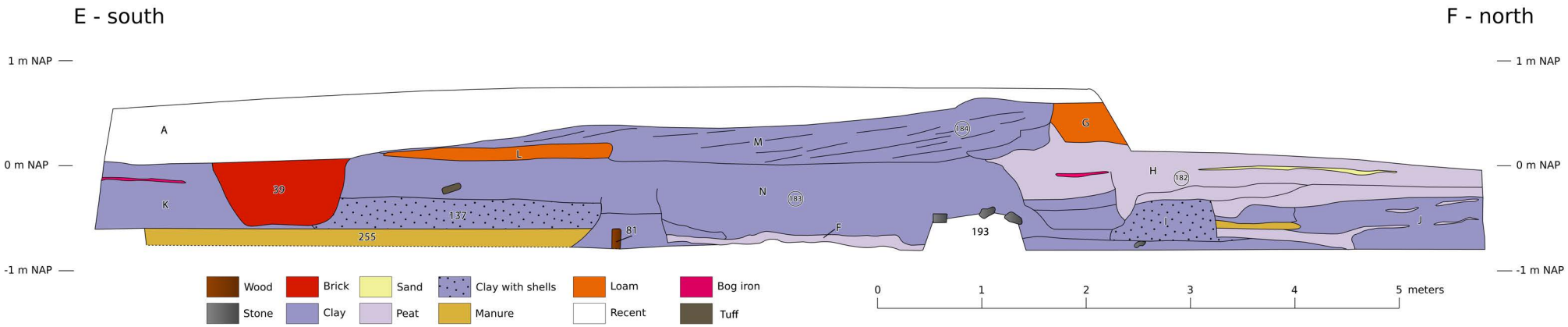
The section was made not far from the kiln (see section C-D above). Layer M was connected to the kiln. The layer consisted of small layers of clay with layers of iron ore, slags, charcoal and burned loam. With pottery, this layer could be dated to the fourteenth century (find number 184) which corresponds to the date of the kiln. Layers G and M consisted of mainly burned loam with charcoal and some iron ore. They were therefore considered to be part of the kiln as well.

Feature 39 was a late or post medieval cut with a fill of debris consisting mostly of red brick.

Layers K, N and H were reclamation deposits that were put on the older layers by people to raise the land. The layers can be dated with pottery to the thirteenth and fourteenth centuries (find numbers 182 and 183).

The older reclamation deposits were layers F, I, J and feature 137. These layers consist of clay or peat, sometimes with shells and can be dated to the twelfth or early thirteenth centuries.

Feature 255 was a waste pit with a fill of manure (see also the field drawing of level 6). Feature 81 was a wooden post that was part of the wharf construction. Feature 193 consisted of a concentration of stones that was not completely drawn in this section drawing. The stones were also documented on the field drawing of level 5a.


E - south
F - north
1 m NAP
0 m NAP
-1 m NAP
A
K
39
L
M
N
137
255
81
F
193
184
183
182
G
H
I
J
Wood
Stone
Brick
Clay
Sand
Peat
Clay with shells
Manure
Loam
Recent
Bog iron
Tuff
0
1
2
3
4
5 meters

Section G–H

Section G-H was made in the eastern part of the excavation area, just east of the buildings. It cuts through two wells (features 432 and 404), both of which can be dated to the post-medieval period. Also dating after the medieval period were the remains of a small basement made of red brick (layer L).

The top layer in section G-H was a clay layer with small layers of loam, traces of phosphate and charcoal (layer H). It was a habitation layer dating to the twelfth and thirteenth centuries. Below layer H were several layer that also belong to the habitation period of the twelfth and thirteenth centuries. These clay and peat layers (layers S, T, I and P) were heterogeneous and often contain charcoal and wood chips. Several traces of habitation were observed on this level: a post hole with post (feature 174) which was part of the plot division; and three pits with fills consisting of clay and peat (O, Q and R).

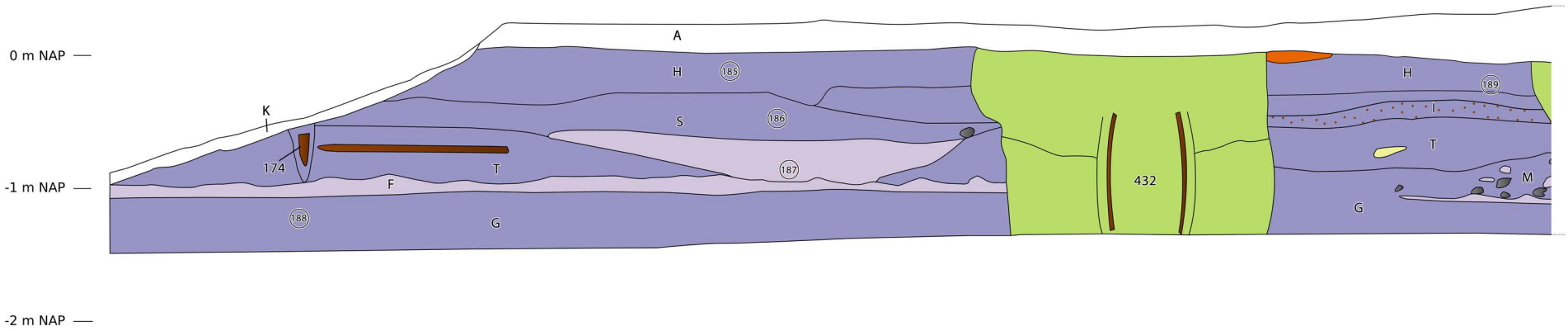
Below the habitation layers, and directly on top of the natural peat layer (*Basisveen laag*, layer C), several reclamation deposits can be observed (features F, G, M and N). These reclamation deposits were made by people to raise the land and make the area suitable for habitation. These layers consist of clay with chunks of peat and stones. Layer G was dated with pottery to the early twelfth century (find number 188).

In the southern part of the section, a natural layer of clay (layer D) was deposited by the sea on top of the *Basisveen laag*. This layer was observed in several sections in the Stadsfenne excavation as well as in the Johan Frisosluis excavation (see paragraphs 3.3 and 6.1). This layer was dated to the late eleventh to the early twelfth century.

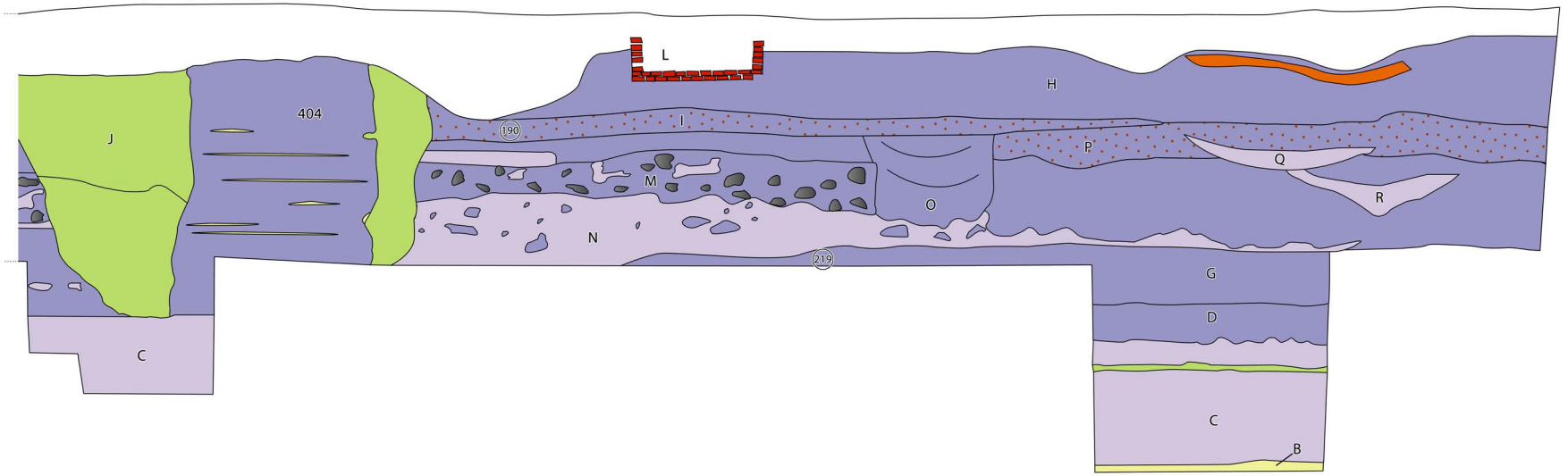
Below the *Basisveen laag*, the top of the Pleistocene cover-sand can be observed (layer B).

Illustration 44. Section G-H in trench 1, from the south. Photo by the RCE.

G - north



H - south



Wood
Brick
Sand
Clay with wood chips
Loam
Unknown
Stone
Clay
Peat
Manure
Recent

0 1 2 3 4 5 meters

Section I–J

Section I-J was made at straight angles to the plots and the wharf construction. All of the plots that are discussed in this study can be observed in this section. The plots were divided by rows of posts and planks (see for example the field drawing of trench 1, level 7). The rows of post that can be observed in this section were (from north to south) features 174, 85, 81 and 131.

The wooden posts numbered R in this section probably was an earlier phase of feature 131, although it was not clearly documented on the field drawings. The same can be said about the posts numbered N which probably were a later phase of feature 81.

Between the rows of posts mentioned above, different fillings of the plots may be observed. The plot between features 174 and 85 (Plot 1) was filled with several layers of clay, peat and sand (layers K and G). In layer K, spits were clearly visible (see illustration 45). In Plot 2 (between features 85 and 81) two waste pits with a filling of manure were observed (layers L and M). Another waste pit with manure (layer Q) was observed in Plot 3 (between features 81 and 131).

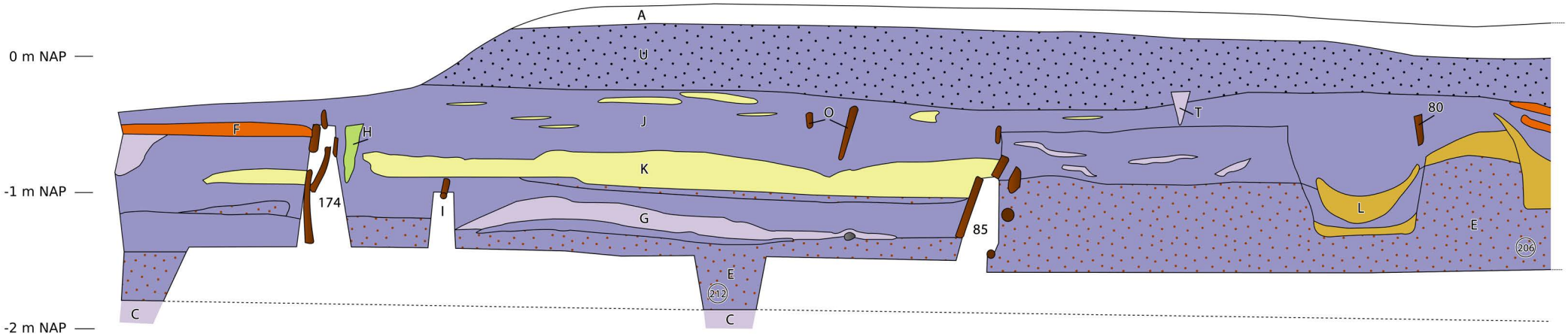
All plots also show remains of constructions consisting of posts, post holes and planks (layers I, O, T, P and features (80, 208 and 209). Feature 208 was a plank that belongs to Building 1. Feature 209 was also a plank that probably was part of the wharf construction.

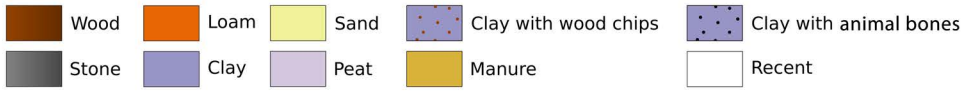
All of these features and layers were within a habitation layer (layer J) that dates to the twelfth and thirteenth centuries. Above this layer was a clay layer with some sea sand and many animal bones (layer U) that might be considered a second and slightly later phase of the habitation layer.

The rows of posts that divide the plots were driven into a layer of clay that was deposited during one or more floods (layer E). This layer contained chunks of peat and many wood chips. Several finds from this layer all date to the early twelfth century (find numbers 206, 209 and 212). This layer was deposited on top of the natural peat layer (*Basisveen laag*, layer C) and a layer of clay that was deposited by the sea (layer D).

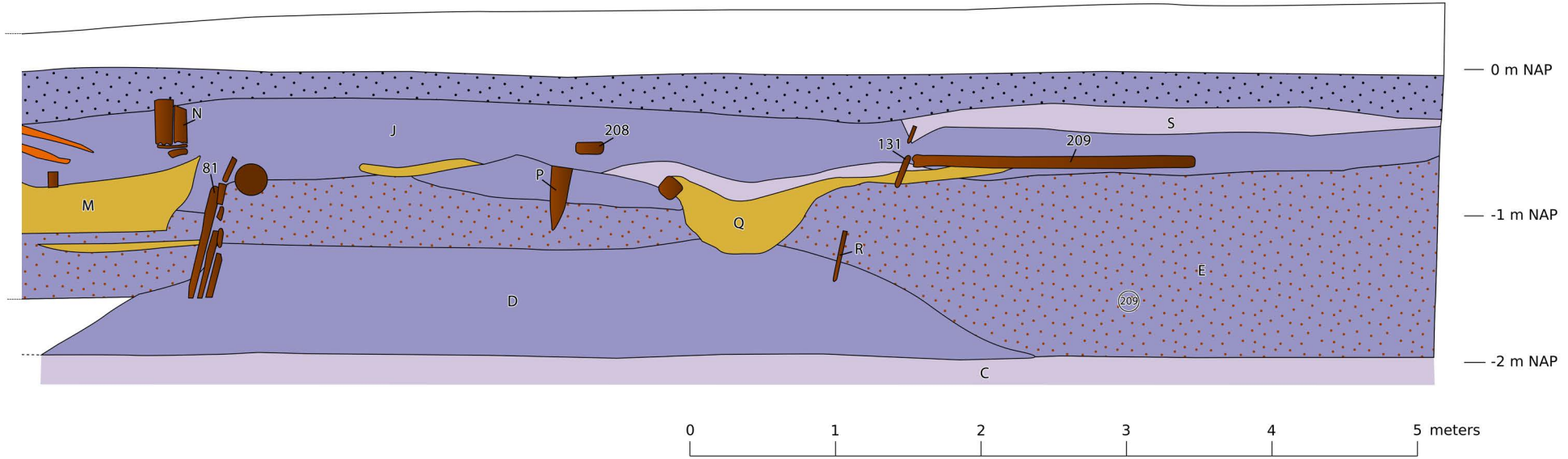
Illustration 45. Section I-J in trench 1. The wood remains in the bottom right corner is feature 85. Photo by the RCE.

J - north





I - south



Section K-L

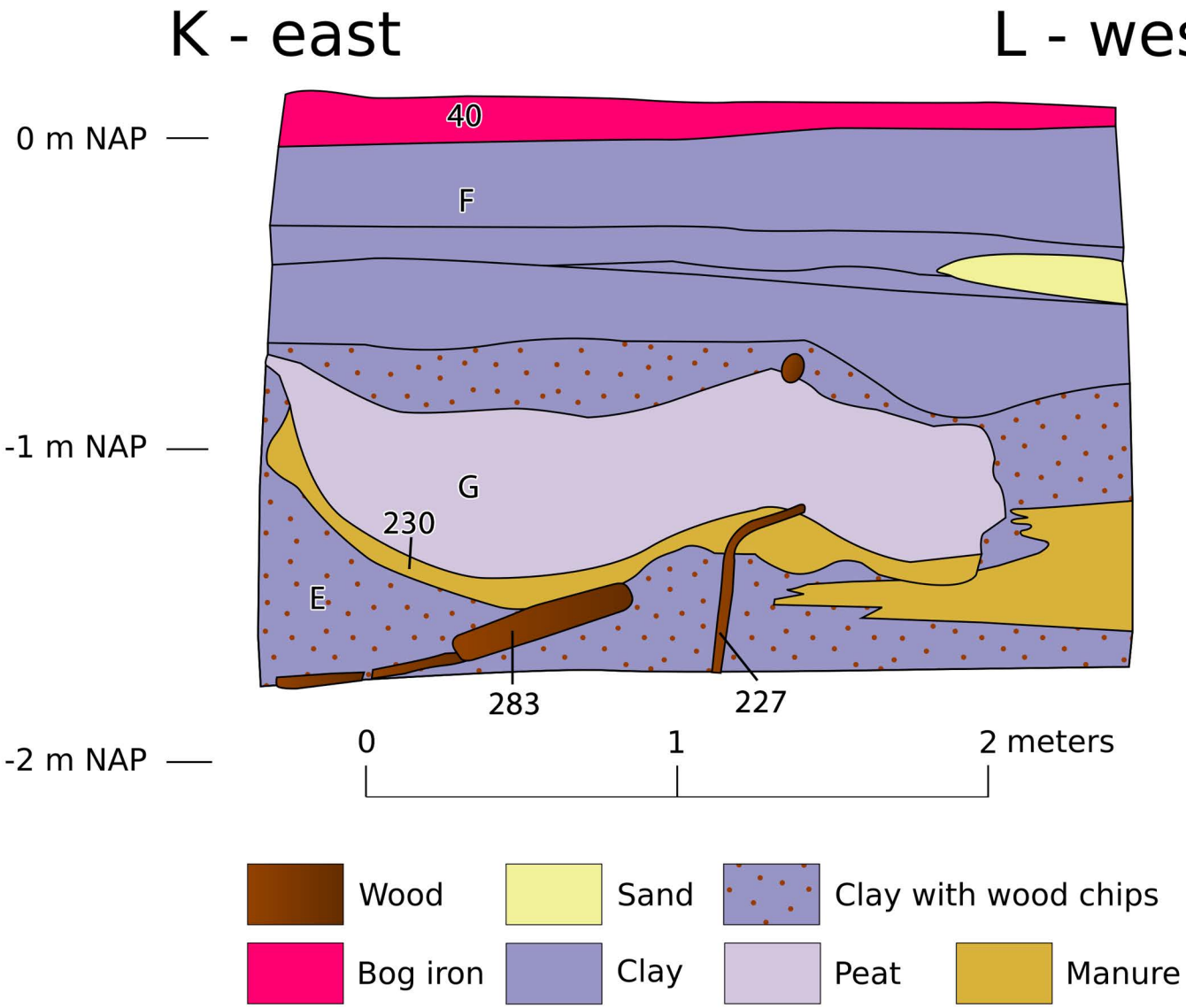
Section K-L was made through Revetment 2 in trench 1.

Features 283 and 227 both were part of the revetment. They were originally built in the clay layer that was deposited by one or a series of floods in the early twelfth century (layer E). This section illustrates how the planks of the revetment collapsed under the weight of the soil after the revetment fell in disuse.

Feature 230 and layer G were the remains of a waste pit that was filled with manure and peat. The pit must have been made after the revetment fell in disuse. Above the waste pit were several clay layers (layer F) that together were a habitation layer that date to the twelfth and thirteenth centuries.

The top layer of this section, feature 40, consisted of slags or iron ore that came from the fourteenth century kiln that was built at about five meters north-east of section K-L.

Illustration 46. Section K-L. The wood remains in the center of the picture were in front of the section and therefore not drawn on the section drawing. The revetments (feature 283) are just visible on this photograph on the very bottom of the trench.


K - east
L - west
0 m NAP
-1 m NAP
-2 m NAP
40
F
G
230
E
283
227
0
1
2 meters
Wood
Sand
Clay with wood chips
Bog iron
Clay
Peat
Manure

Section O–P

This section was made in line with Revetment 3 (feature 288), in the western part of trench 1. It was made over three meters deep and was therefore one of the few sections in this part of the Stadsfenne excavation that covered a section of the entire soil, from topsoil to the Pleistocene cover-sand.

Revetment 3 consisted of large posts that were driven into the *Basisveen laag* (natural peat soil, layer C). planks were attached to the posts at the east side of the posts (at the land-side, opposed to the water-side of the posts). On the photo below can be seen that the posts and planks were partly collapsed because of the weight of the soil (see illustration 47). They all leaned towards the west. The posts on the north side of the section (layer K) were not documented on the field drawing or on photographs, but probably were part of Revetment 3 (feature 288).

In between the posts and the planks of the revetment was a thick layer of clay with many fragments of red brick and stones, as well as smaller layers of sand, peat and manure (layer I). Pottery dates this layer to the late thirteenth or early fourteenth century (find number 269). This layer was probably deposited when the revetment was built to stabilise the soil directly behind the revetment.

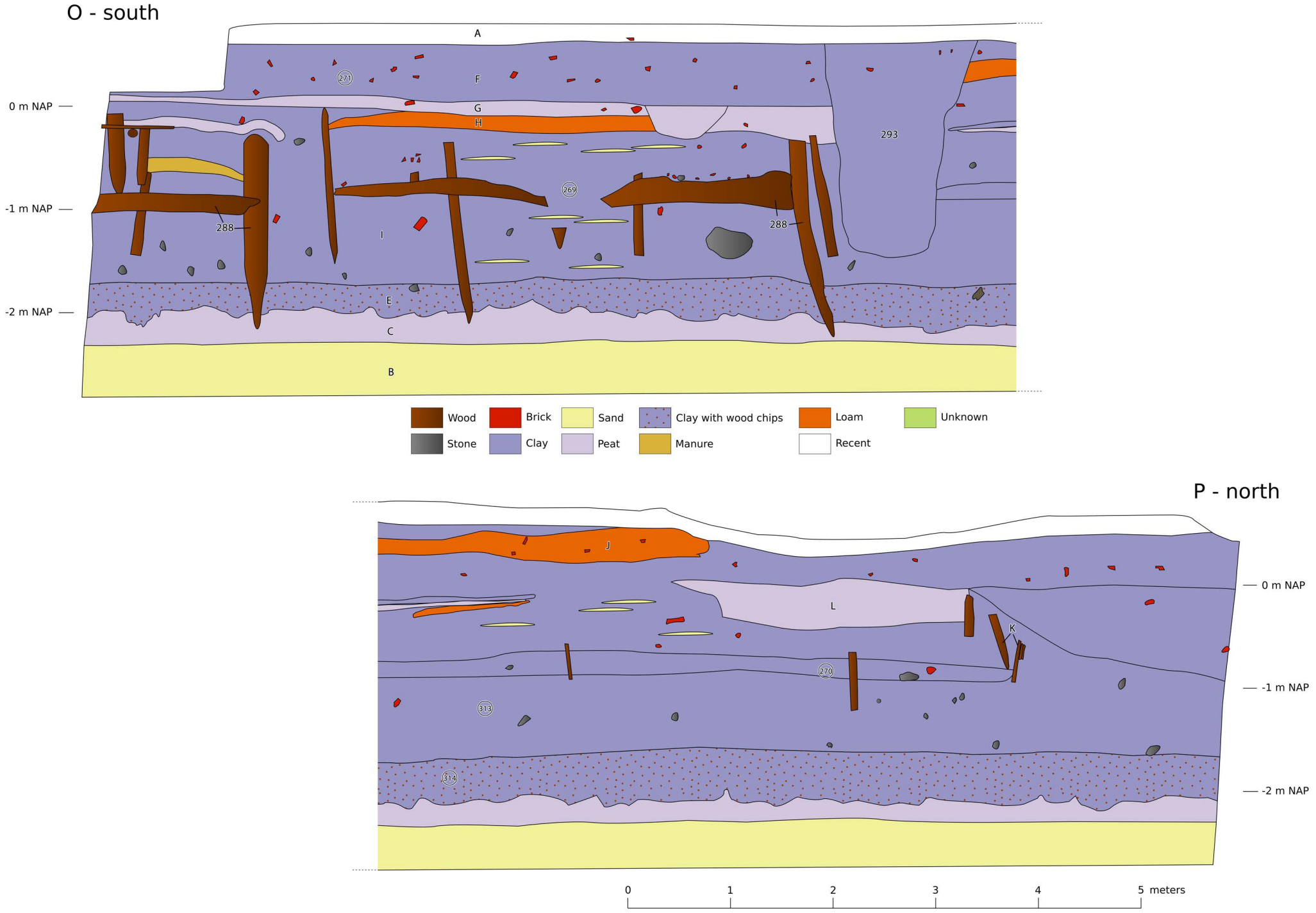
On top of layer I and the revetments were several layers of loam, peat and clay (F, G, H, J and L). These layers were part of the continued raising of the land by people. Pottery dates the top layer (layer F) to around the mid fourteenth century (find number 271).

All layers referred to above were cut by a well, of which the cut was documented in this section (feature 293). The well dates to the seventeenth century.

Layer I was deposited directly on top of the clay layer that was deposited by a flood (layer E). This layer can be dated with pottery to the twelfth century (find number 314). The fact that layer I lies above layer E means that there was no habitation in this part of the Stadsfenne area before the late thirteenth century. The water of the peat stream must have had influence here up to the twelfth century, as may be observed by the eroded surface of the natural peat layer (layer C).[124]

Illustration 47. Section O-P from the south-east. Notice how the posts and planks of the revetment were pushed forward under the weight of the soil. Photo by the RCE.

124 According to the excavators, the rough surface of the peat layer was the result of human peat digging. However, the surface of the peat layer being so irregular and the location being so close to the peat stream suggests that natural erosion seems more likely.


O - south
A
271
F
G
H
293
0 m NAP
-1 m NAP
-2 m NAP
269
288
288
I
E
C
B
Wood
Brick
Sand
Clay with wood chips
Loam
Unknown
Stone
Clay
Peat
Manure
Recent
P - north
J
L
K
270
313
314
0 m NAP
-1 m NAP
-2 m NAP
0
1
2
3
4
5 meters

Section Q–R

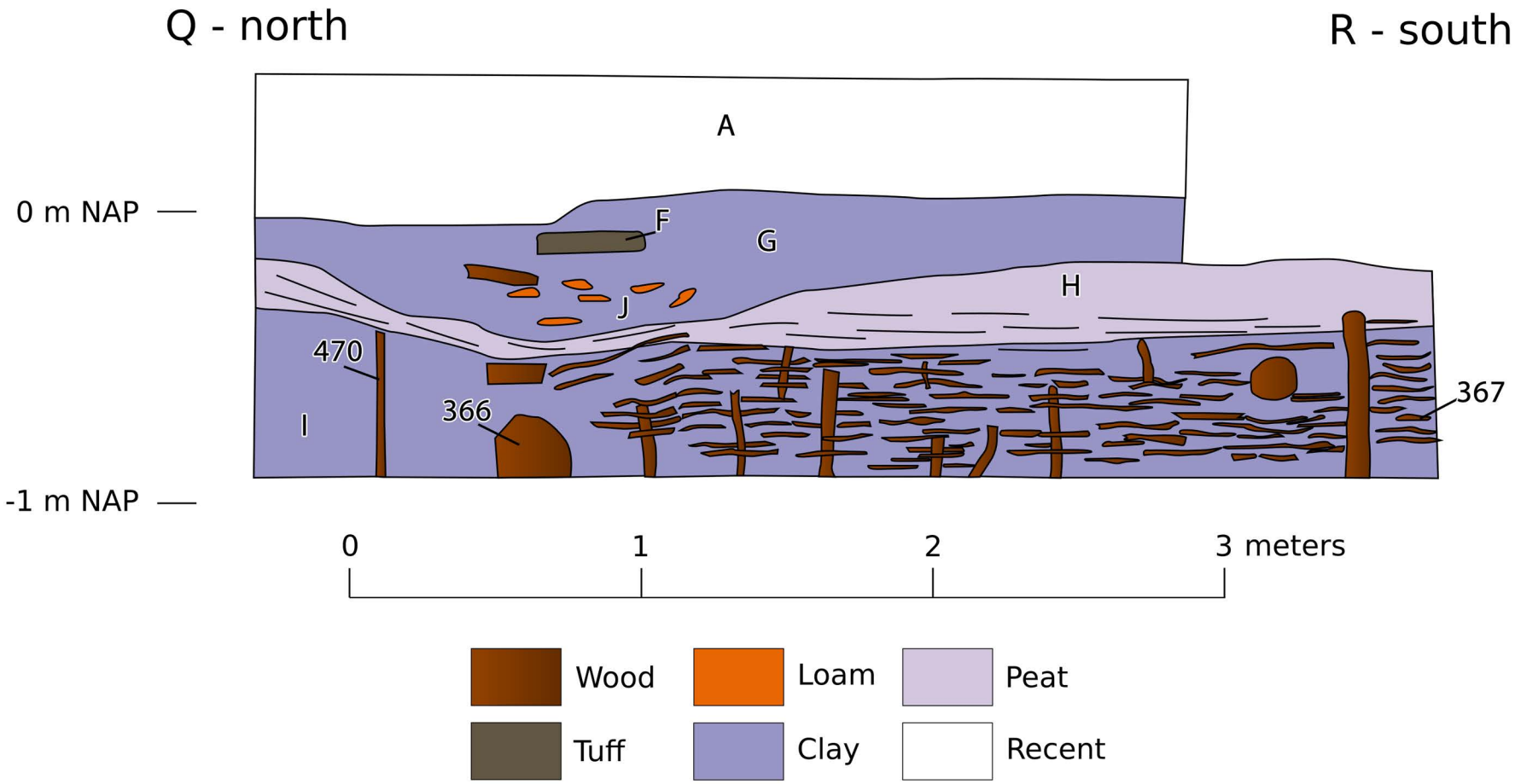
Section Q-R was made along a wattle wall that was documented in trench 2, level 5 (feature 367). The wattle wall was the western wall of Building 2. It consisted of small upright posts with twigs between them. The wall continued to the south outside the section drawing (according to a note on the drawing). The bottom of the wattle wall was not documented.

Feature 366 also belonged to Building 2 and was a large post that stood in the north-western corner of the building.

Feature 480 was a small plank that stands upright. It was part of the south wall of Building 3.

The wooden remains of both buildings were covered by a layer of peat (layer H). The same layer was documented in section A-B (trench 3; layer F). In section A-B, several loam floor layers were documented above the layer of peat. The fragments of loam observed in section Q-R might be the remains of such floor layers (feature J; contained in layer G). Feature F was a tuff stone that might have been part of a late or post medieval building.

Illustration 48. Section Q-R. Photo by the RCE.


Q - north
R - south
A
0 m NAP
F
G
H
J
470
I
366
367
-1 m NAP
0
1
2
3 meters
Wood
Loam
Peat
Tuff
Clay
Recent

Section S–T

Section S-T was made along one of the rows of posts that was part of the wharf construction and divided the plots (feature 295). This row of posts was also documented on the field drawing of trench 1, level 7.

Some of the posts were more than two meters tall and were driven into the natural sand soil (layer B). The posts also cut through a natural peat layer (layer C) and two natural clay layers (layers D and E). The row of posts was cut by a large waste pit filled with manure (feature 297) that could be dated with pottery to the late twelfth century (find number 295).

It is noticeable that the natural layer of peat (layer C) on the east side of the section has a smooth surface, while on the west side of the section the layer becomes much thinner and gets a more rough surface. In the west side of the section, the peat layer was eroded by the water of the peat stream. The eroded and non-eroded sides of the peat layer is more or less divided by Revetment 2 (feature 287). This means that, in the first half of the twelfth century, the revetment was made near the foreshore of the peat stream.

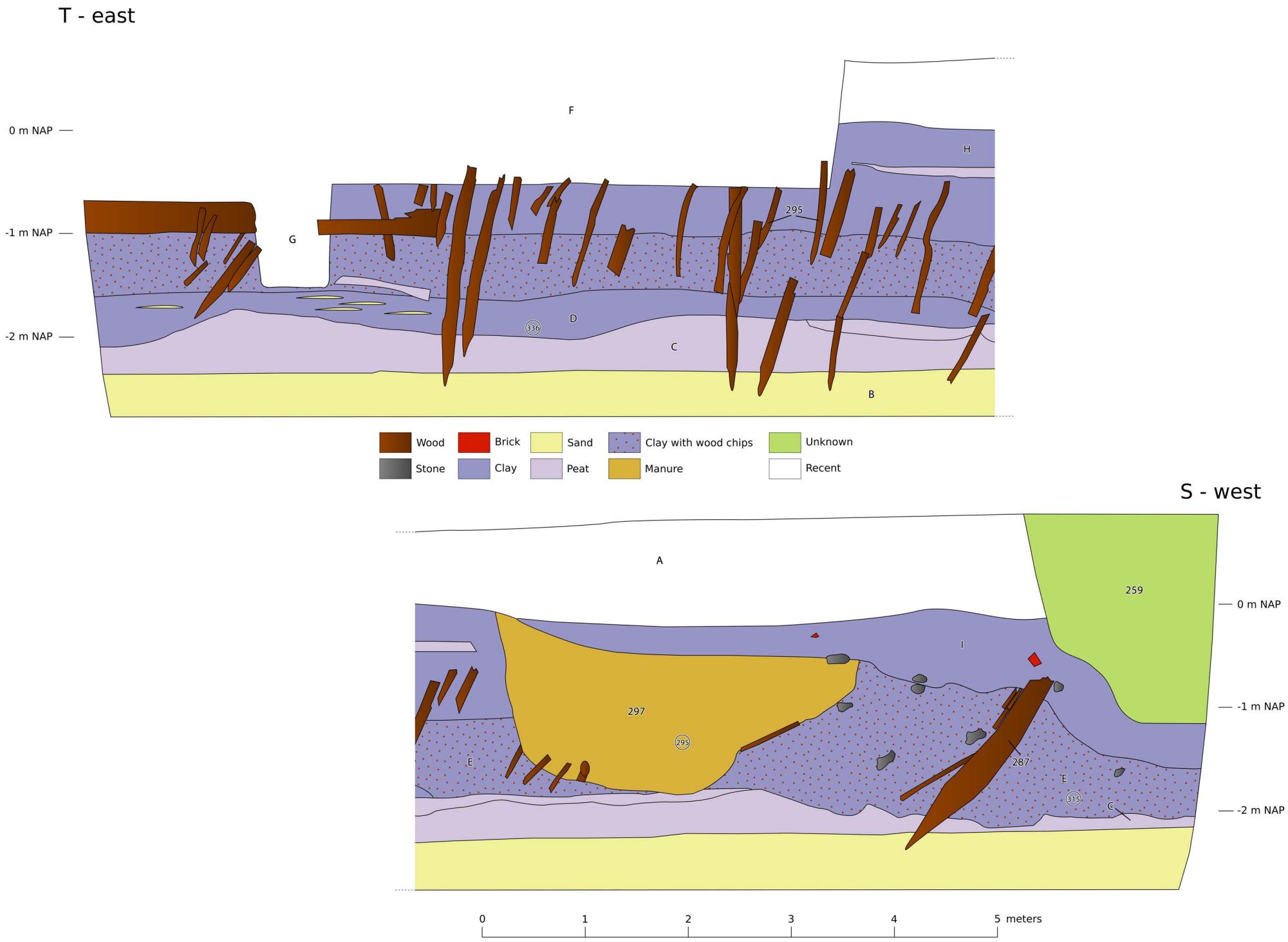
But before the revetment and the wharf were made, the natural peat layer was covered with a natural clay deposit (layer D) that can be dated with pottery to the first half of the twelfth century (find number 336). Above the natural peat and clay layers is a thick flood deposit (layer E), that consisted of clay with many wood chips and chunks of peat. This layer can be dated to 1120 – 1180 (find number 315).

The row of posts that belonged to the wharf construction (feature 295) was covered by a habitation layer that dates to the twelfth and thirteenth centuries (layer H). Towards the west, this layer contained more stones and fragments of red brick. In the western part of the section, this layer was described by the excavators as “younger” (layer I).

The cut of a seventeenth century well was documented in the far western side of the section (feature 259).

The top of the section in the eastern part of the section was not documented (here noted as layers F and G). This has to do with the fact that this section borders trench 4 of the excavation. At the moment this section was made, these parts were already excavated as part of trench 4.

Illustration 49. Section S-T. Photo by the RCE.


T - east
0 m NAP
-1 m NAP
-2 m NAP
F
H
G
295
D
336
C
B
Wood
Brick
Sand
Clay with wood chips
Unknown
Stone
Clay
Peat
Manure
Recent
S - west
A
259
0 m NAP
I
297
295
-1 m NAP
E
287
E
315
C
-2 m NAP
0
1
2
3
4
5 meters

Section U–V

Section U-V was made through the peat stream along which Stavoren was built. The peat stream can be observed in three ways: first, as a slight rise in the layers in the west and east sides of the section. Second, several revetments were documented in this section, both on the east and on the west shore of the peat stream. And finally, the natural layer of peat (layer C) was only documented in the eastern part of the section; in the middle and western parts of the section (where the peat stream had its main course), the peat had been eroded by the water.

In the eastern part of this section (on the eastern shore of the stream) four revetments were documented (features 470, 471, 472 and 473). They were, from east to west, in chronological order. Each new revetment was built further to the west; in other words further to the centre of the peat stream. The eastern most revetment in this section (feature 470, Revetment 2) was built when the foreshore of the stream was made suitable for habitation in the early twelfth century. The other revetments follow and the last one (feature 473; Revetment 6) was made in the late fourteenth or early fifteenth century.

In the western part of the section, one other revetment was documented (features 475; Revetment 7). In consisted of a large wooden post with (on the west-side; or land-side) planks attached to it. One such plank was documented a little west of the revetment (feature 476). This revetment was built at the western shore of the peat stream.

Between Revetments 6 and 7, the peat stream was almost 7,5 meters wide. This must have been the last phase of the peat stream, before it was closed in the fifteenth century, as is illustrated by the amount of debris in the layers that filled the stream (layer H and find number 354). The presence of older revetments suggests that the peat stream was wider during the twelfth to fourteenth centuries.

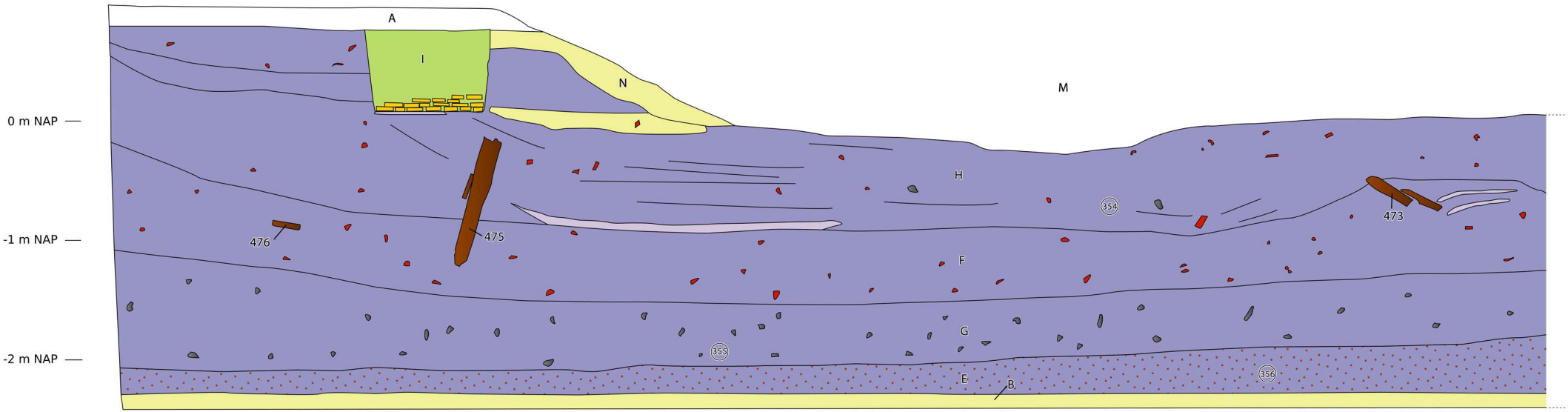
The layer of ashes with traces of iron (layer J) in the east part of the section was not observed in the field drawing of trench 14. It probably has something to do with the fourteenth century kiln that was documented in trench 1.

The character of a large pit in the eastern part of the section (layer L) is unknown. It might have been a waste pit, although the excavators did not give any details on the fillings of the feature.

At the western end of the section, the remains of a foundation made of yellow bricks (*IJsselstenen*) was documented (layer I). It must have belonged to a structure dating to the seventeenth century or later.

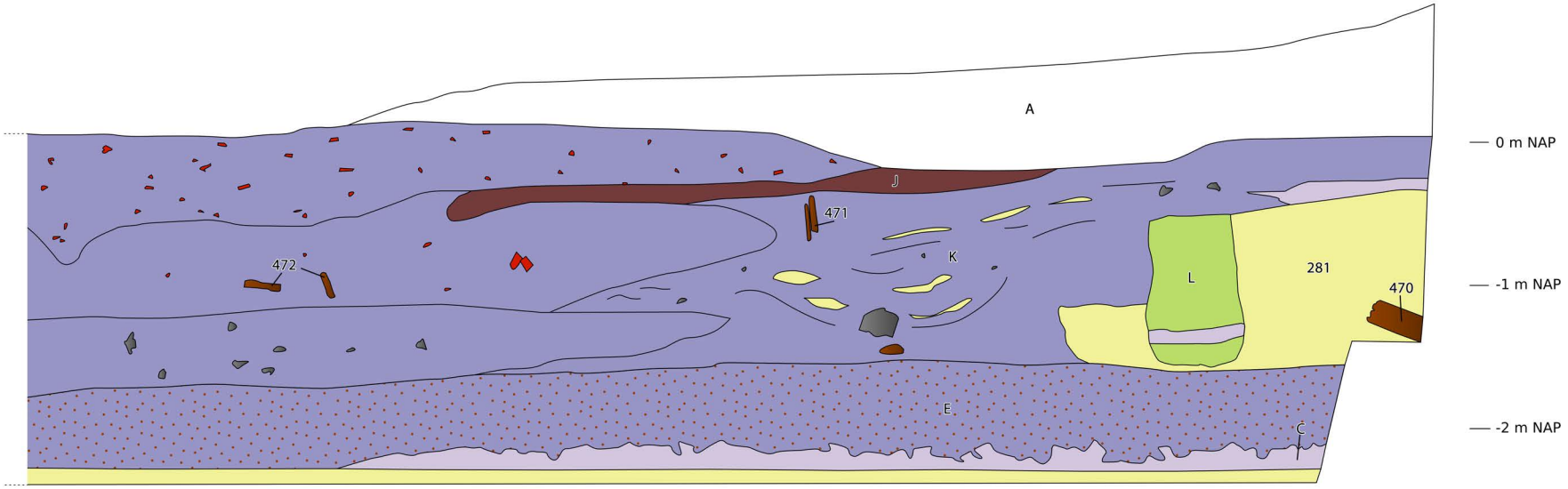
The top of the section was not documented in the middle part (here illustrated with the letter M). This top had already been dug for the nearby construction works before trench 14 was made.

U - west



Wood
Brick
Sand
Ash
Clay with wood chips
Stone
Clay
Peat
Yellow brick
Unkown
Recent

V - east



0 1 2 3 4 5 meters

6.8 Structures

Many of the features observed in the trenches and sections were part of structures. The structures in the Stadsfenne area were a wharf, revetments, a plank road, houses and wells.

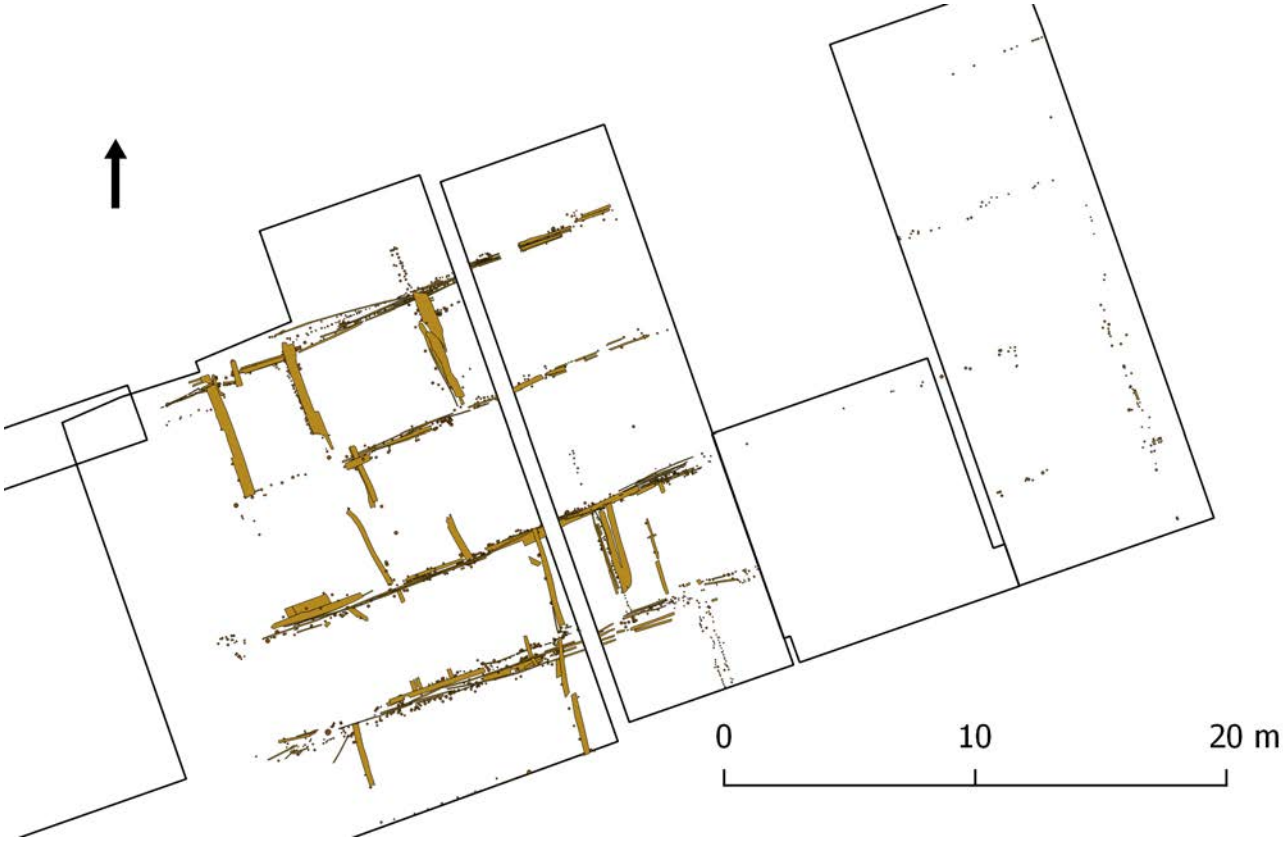


Illustration 50. Overview of the wharf construction.

6.8.1 The wharf construction

Around the years 1120 – 1140, one or more floods caused a thick layer of clay with chunks of peat and natural wood chips present in the peat to be deposited on the foreshore of the water stream in the Stadsfenne area (layer E in the sections). This flood deposit was only present between the peat stream and Revetment 1 (see below). The land east of Revetment 1 was already raised before the floods of the early twelfth century happened (see chapter 3).

Shortly after the natural flood deposition in the western part of the excavation area, people added a layer of reclamation deposits on top of the natural deposits to further raise the land. These cultural deposits existed of clay, peat and sand. To stabilise the natural and cultural deposits, posts were driven into the ground in rows and planks laying on their sides were laid between the posts. The rows were made both in east-west and north-south orientation, creating boxes to keep the soil in one place. The construction of rows of posts and planks with reclamation deposits may be understood as a wharf.

The posts were driven into the soil, into the natural sand layer beneath the natural peat layers. The posts were round, raw wood, often with the bark still attached, but with a pointed end. Some of the posts were over two meters tall. The diameter varies between four and ten cm. They were driven in the ground in a disorganised manner at uneven distances from each other, but still shaping a row. The planks had a thickness varying between three and five cm. Some of the planks were over five meters long.

The wharf construction was also observed during a recent archaeological excavation at the

Johan Friso Sluis, about 140 m. south of the Stadsfenne area.[125] The wooden posts were made of oak and alder, but in a few cases also of poplar and softwood. The wooden remains were radiocarbon dated to the late eleventh or early twelfth century. It is assumed that the wharf construction in the Stadsfenne area had similar characteristics.

In the western part of the wharf construction, the rows of posts and planks slanted to the west due to land pressure. The fact that the rows slanted to the west means that the habitation zone was east of the rows of posts.

The rows of posts and planks also functioned as boundaries, dividing the land into plots measuring 4,1 up to 5,8 m. wide. The plots were oriented east-west. The western end of the plots was facing the waterfront. This side was reinforced with heavy wooden posts and planks to make it function as a revetment (Revetment 2). One of the plots extended approximately 1,5 m. further west than the other plots, meaning that the revetment was not made on one line along the waterfront. The plots had a length of 36 to 38 meters.

Both from the natural flood deposits and the cultural reclamation deposits, human artefacts were recovered. These consisted mostly of high medieval pottery, but also included worked animal bone, a golden ring and a leather shoe.

After the initial wharf construction was finished, it was put into use immediately. The first structures built on top of the wharf construction date to the same time span as the construction of the wharf itself (see below).

During the time the reclaimed land was in use, the land was raised with small layers several times. It is noticeable that these small deposits, which usually consisted of peat and sand, are limited by the boundaries between the plots (see for example the field drawings of trench 1, level 5 and of trench 15, level 2). In other words, the small deposits were conducted within individual plots. Together with these small deposits, the rows of posts and planks were rebuilt and repaired. Each younger row could be observed on a higher level in the stratigraphy. This process could be observed at several locations in the wharf construction.

Boat timbers

In the construction of the wharf, at least ten fragments of boat timbers were reused. Most of the timbers were marked on the field drawings as *scheepshout* (boat timbers) by the excavators. Nine of the boat timbers were found on the lowest levels of the excavation, which probably means that they were used in the first phase of construction of the wharf. These nine boat timbers were found close to each other. It is therefore possible that the timbers had been part of the same boat that was de-constructed and reused. Because none of the boat timbers was dated, recovered or described in detail, it is impossible to say what type of boat was used.

At least one of the fragments of reused boat timbers was clinker-built (feature 248). Caulking material was recovered from this fragment (see paragraph 6.9.6). Furthermore, in the northern most plot, the bow of a dugout boat was used in the wharf construction (feature 269; see paragraph 6.9.6).

The reuse of boat timbers in wharves and revetments was not uncommon during the medieval period. Apparently it was a good purpose for timber that otherwise could not be used any more. Reused boat timbers dating to the eleventh and twelfth centuries have been observed in inter alia Tiel[126], Deventer[127] and Utrecht[128].

125 Van Hoof 2015, 17-8
126 Oudhof/Verhoeven/Schuuring et al., 2013, 129
127 Sarfatij 1990a, 72-4
128 Van Rooijen 2010, 170-1

Illustration 51. An overview of the western part of trench 1, level 7. Revetment 2 is in the middle of the picture and Revetment 3 in the far left of the picture. Photo by the RCE.

Revetments

In total, seven revetments could be observed in the Stadsfenne excavation. Their are listed in chronological order below.

Revetment 1 was documented in the south of trench 2. It consisted of a row of posts and a plank. It was built before the wharf construction was built (see above). Revetment 1 was made when the land in the eastern part of the excavation area (east of the revetment) was raised. On section A-B, the revetment is clearly visible as a dividing line between the reclamation deposits in the east and the natural flood layers in the west (feature 356). This revetment was documented only in the very southern part of trench 2. If and how it continued further north is not certain.

Revetment 2 was made when the wharf construction was made. This revetment is the western end of the plots. It consists of heavy wooden posts with planks in between. The large posts were close to two meters tall, had pointed ends and measured roughly 25 x 25 cm. (feature 287 in trench 1 and feature 470 in trench 14). The posts stood between 60 cm. and more than 2 meters apart. Part of the planks were reused boat timbers (feature 283). Revetment 2 was cut by a later waste pit with a manure filling (feature 246).

Revetment 3 was made around the middle of the thirteenth century (feature 288 in trench 1 and feature 471 in trench 14). It's construction is similar to the construction of Revetment 2. Feature 288 was documented on field drawing trench 1 level 7 and in section drawing O – P. As can be seen on the section drawing, the revetment is only partly preserved.

Revetment 4 was built around the middle of the fourteenth century (feature 94). It's construction is much lighter than the previous two revetments. The posts are smaller and shorter. This indicates that the stream had become smaller and the water pressure on the revetments had decreased. Similar phenomenons were documented with revetments dating to the eleventh century along the river Vecht in Utrecht[129] and medieval revetments along the river IJssel in Deventer[130]. Here too, the younger revetments were made in a lighter construction.

Revetment 5 (features 93 and 472) and Revetment 6 (feature 473) were built closely after each other around the middle of the fifteenth century. Both revetments had a similar light construction as the fourth revetment. At the time of Revetment 6, another revetment at the opposite side of the water stream was built (Revetment 7). Between Revetments 6 and 7, the width of the stream was about 7,5 m. The revetment on the western shore was built with heavy posts, similar to the older revetments mentioned above.

Similar series of revetments dating to the high and late medieval period are observed in many medieval towns in the Netherlands. Examples include Utrecht[131], Tiel[132] and Medemblik[133].

129 Van Rooijen 2010, 169

130 Communication by Bart Vermeulen during his lecture *Deventer en de IJssel, Archeologie van de stad en de rivier*, June 2nd 2015, Deventer. Currently the IJsselstraat excavation is being analysed by the archaeological service of the municipality Deventer and it will be published in the near future.

131 Van Rooijen 2010, 170

132 Dijkstra 1998, 14-5

133 Besteman 1979, 217-8; Van Leeuwen 2014

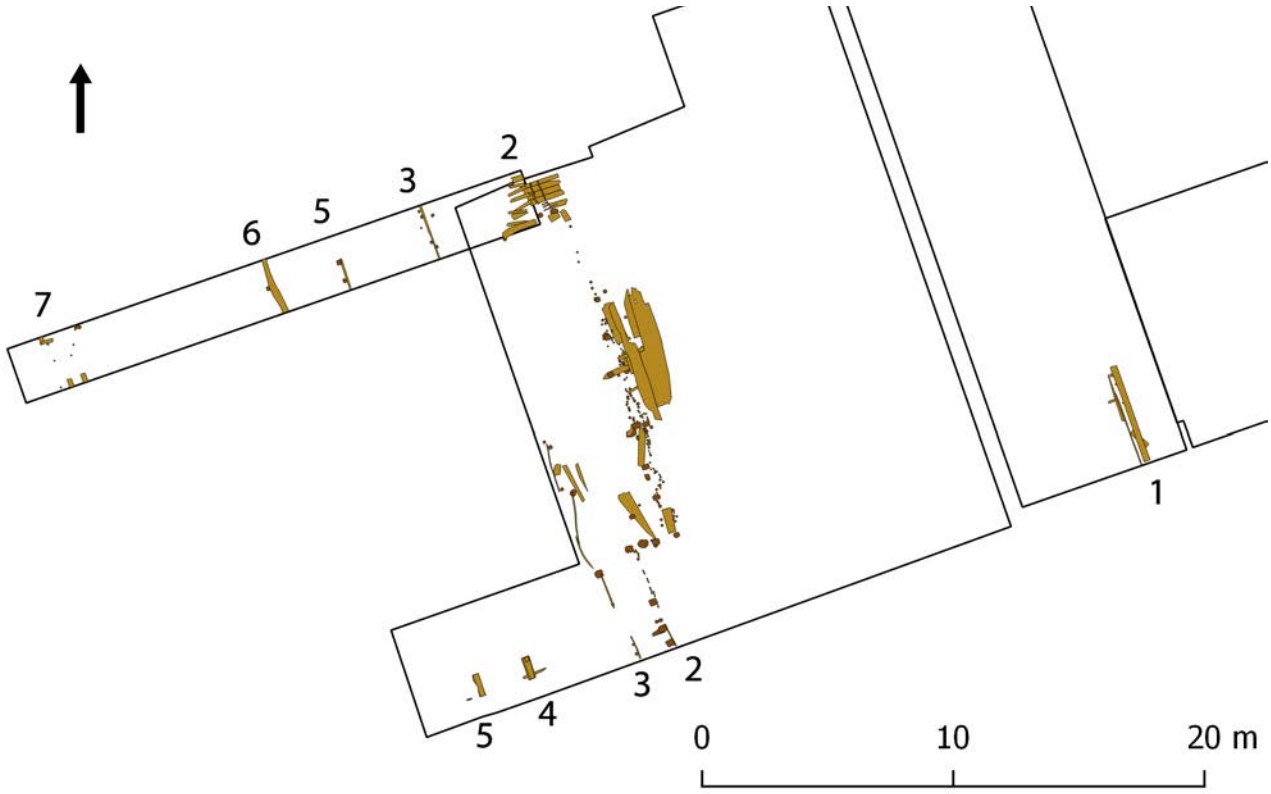


Illustration 52. Overview of the revetments in the Stadsfenne excavation.

Illustration 53. The timber plank on the bottom of the picture is part of Revetment 1. Photograph from section A-B in trench 2. Photo by the RCE.

6.8.2 Buildings

In this study, the focus lies on medieval building remains. The post-medieval remains of buildings that were documented in the research area will not be included in the following paragraphs, with the exception of Building 1 (see below).

Building 1

The nature of Building 1 is unclear. Even though it is referred to as a building in this study, it could indeed have been any other type of structure. The structure consists of two rows of twelve heavy posts observed in trench 1 and 2. The posts were leaning slightly inwards. It is possible that the top sides of some of the posts were burned. Furthermore, several large wooden beams that were observed in trench 2 belonged to Building 1. With their size, shape and position, they stand out from the medieval remains in trench 2.

The top sides of some of the posts, most noticeable feature 16, were observed in the topsoil. Some of the posts (features 124 and 158) cut the outer cut of a seventeenth century well. Also its orientation deviates from the orientation of the medieval plots, suggesting that the structure was built in a time when the plots were not used any more. All of this suggests that the structure was built in or even after the seventeenth or eighteenth centuries. The structure was interpreted as a medieval jetty by Sarfatij.[134] However, there was no water at the exact location of the structure during the post-medieval period. Therefore, the interpretation of a jetty seems unlikely.

Illustration 54. Overview of Building 1.

134 Sarfatij 1973, 398

Illustration 55. Photo of the central part of trench 2, level 3.Photo taken from the east. The heavy beams that belonged to Building 1 clearly stand out from the older wooden remains of the Stadsfenne excavation. Photo by the RCE.

Building 2

Building 2 was documented in trench 15, 3, 9 and 6. The latter two trenches are outside the limits of this study. The southern wall of Building 2 was observed in these two trenches and for that reason these features have been included in this study. The western wall of the building was sectioned in section drawing Q – R. The building was also documented in section drawing A – B. No find material was recovered from Building 2. Building 2 was interpreted as a dwelling house with room for storage.

At least four phases of use can be observed. The first phase was best documented, with a floor layer, a possible hearth and remains of all four walls. The three later phases were only observed as three floor layers in section drawing A – B.

During the first phase of use, Building 2 was a rectangle building measuring about 15,5 x 4,5 meters[135] and was built on Plot 4. The foundations of the four outer walls and one inner wall were partly preserved. Several layers of loam, spade-marks and an area with fire traces were all that remains of several floor layers of the interior of the building.

The foundations of the western part of the northern wall were preserved as relatively large post holes with remains of the posts. The posts stood in one line at regular intervals of 1,7 to 1,9 meters. The posts varied in diameter between 26 and 34 cm.

At least three of the posts in the northern wall were standing on a sill of small planks (*sloffen*). These small planks gave extra stability to the posts. Similar sills of small planks were observed in the recent Johan Frisosluis excavation just south of the Stadsfenne area.[136] There, the small planks were made of oak, had a tongue and groove joint (*messing-en-groefverbinding*) and were probably reused. The wood was imported from Central or Western Germany and was tree-ring dated to the early twelfth century.

135 The length of Building 2 is not clear. It is possible that the inner wall actually was the eastern outer wall. In that case, the building had a length of 9,5 meters.

136 Van Hoof 2015, 18

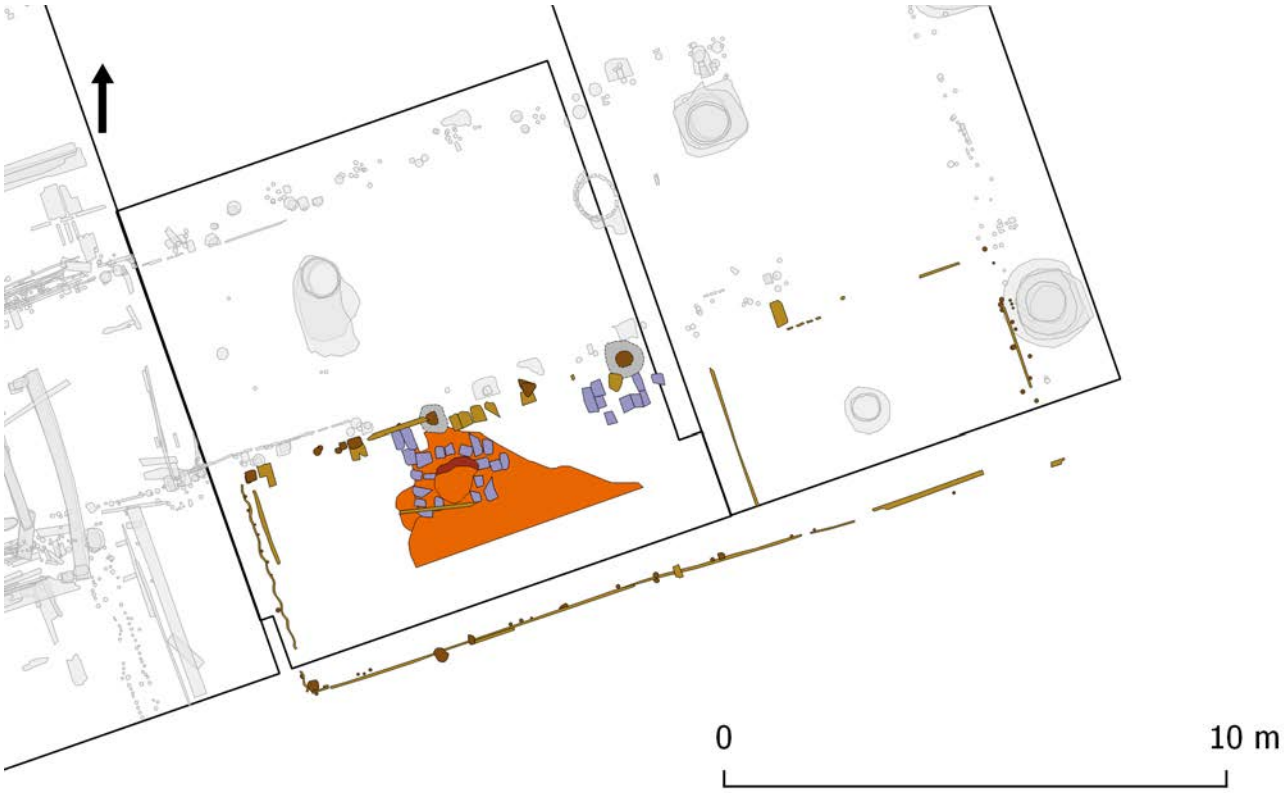


Illustration 56. Overview of Building 2.

Illustration 57. A sill of small planks, upon which a post stood. This photo was taken during the Johan Frisosluis excavation in 2013 (feature 286). Similar sills were observed in the Stadsfenne excavation. Several posts of Building 2 in the Stadsfenne excavation were founded upon such a sill. Photo by B.I. van Hoof, RAAP Archeologisch Adviesbureau, after Van Hoof 2014.

Furthermore, similar sills were observed in a timber house dating to the late thirteenth or fourteenth century in Gorinchem (Krijtstraat)[137] and in a timber house dating to the second half of the thirteenth century in Rotterdam (building on plot NH4; Willemsspoortunnel)[138]. Other than the posts, not much remains of the northern wall.

The southern wall is less well preserved. Some posts remained in the western part of the wall, but only two of them are of the size of the posts in the northern wall. No sills were documented with these posts. Between the posts, several planks were laying horizontal on their small sides.

The western wall consisted of a wattle construction (see section drawing Q-R and illustration 48). The wattle construction was not fully excavated, therefore is the depth of the feature unknown.

Only one plank and a few smaller post holes remain of the eastern wall. A large post-medieval well next to the eastern wall possibly has disturbed other remains of the wall.

About 9,5 meters east from the western wall, remains of a possible inner wall were documented. This means the building could have been split in at least two sections. No features were documented in the eastern section of the building. Therefore, it is possible that the eastern part of Building 2 was in fact not part of the interior but rather open space surrounded by a fence.

In the western section however, several layers of loam, peat, spade-marks and fire traces were documented at approximately -0,55 m NAP. These features may be interpreted as the original floor layer of the first phase of use of the building. The fire traces, surrounded by spade-marks, could very well be the remains of a hearth.

It is likely that Building 2 was built simultaneously with the other buildings east of the plank road (see below), meaning that its construction can be dated to approximately 1120 – 1140.

The second to fourth phase of use of Building 2 were observed in section drawing A – B. They consist of three layers of loam between 0 m and -0,5 m NAP, interpreted as floor layers. A possible sill that supported a post of one these later phases of Building 2 was documented on trench 3, level 1. The sill was a large stone inside a small pit (feature 413). No other remains of walls or other construction features belonging to the later phases of use could be observed. The three floor layers cannot be dated exactly, but it is likely that they date to the later twelfth and thirteenth centuries.

The above interpretation of Building 2 differs from the interpretation of Sarfatij.[139] First, even though Sarfatij does mention the (possible) hearth in the western section of the building, he does not recognize the layers of loam and spade-marks as a floor layer. In his interpretation, the original floor layers were higher in the stratigraphy and had disappeared. However, the floor layers observed in both section A-B and the field drawings of trench 15 speak otherwise. Second, Sarfatij interprets the building not as a house for living but as a building for storage, because it was built in a harbour area. As Jeroen Bouwmeester recently argued, the presence of a hearth is a strong argument for the interpretation as a dwelling house (which actually does not exclude a second function for storage).[140] Also, there is no reason to believe that people did not live in the harbour area. And third, Sarfatij did reconstruct a rather different construction for Building 2. The northern and southern walls of Building 2 were, according to Sarfatij, made of a double wall of planks. In this study, these 'double walls' are interpreted as being part of multiple buildings. See the conclusion below for more details.

137 Van Genabeek 2005, 16-8
138 Carmiggelt 1997
139 Sarfatij 1973, 402
140 Bouwmeester 2014, 457

Building 3

Building 3 was documented in trenches 2, 3 and 15. A small part of the southern wall is documented in section drawing Q – R. No other features belonging to Building 3 were sectioned. Find numbers 143 (trench 2 level 3) and 163 (trench 3 level 3) are the only finds numbers of interest within Building 3.

Building 3 was a rectangular building of approximately 12,8 x 4,4 meters. Like Building 2, 4 and 5, the western wall faced the plank road. Compared to the western wall of Building 2, the western wall of Building 3 extends 1,3 meters further to the west. An opening of approximately 75 cm in the western wall may represent an entrance. No floor layers or traces of a hearth were documented inside Building 3.

Remains of the foundations of the north, west and south walls were preserved. They consisted of posts, post holes and planks. Traces of the eastern wall are missing. However, because remains of the north and south walls do end abruptly at the same extend and there is no evidence for any later intrusions further east, the eastern wall probably was located between the documented northern and southern wall ends.

The north wall consisted of a row of round and rectangle posts, varying in diameter between 15 and 25 cm. They were positioned in a row at regular intervals of 2 to 2,5 m. No traces of sills were documented in any of the walls.

Illustration 58. Overview of Building 3.

In the western part of the northern and southern walls, rows of vertical planks were found, varying in width between 15 and 20 cm. These planks were part of the wall of Building 3. The vertical planks were situated on the inside of the building and the roof-bearing posts were on the exterior. The way the vertical planks were connected to each other and were attached to the earth-fast posts is not known. No information regarding the construction of the planks was documented.

Walls of vertical planks that were dug or driven into the ground were not uncommon in

medieval timber buildings. Similar wall-construction techniques can be found in Kampen[141] (mid thirteenth century), Zutphen[142] (thirteenth century) and Middelburg[143] (eleventh century) and outside the Netherlands along the Baltic Sea in Elbląg[144] (Poland; thirteenth century), Riga (Latvia), Kołobrzeg (Poland), Tartu (Estonia) and in South-Scandinavia in Bergen (Norway) and Lund[145] (Sweden).

A variation on this technique, where the vertical timbers were not driven into the ground but instead attached to a horizontal sill beam on the ground was found in Groningen[146] (second half of the thirteenth century), Leeuwarden[147] (late thirteenth century), Rotterdam[148] (late thirteenth century), Delft[149] (twelfth century), Middelburg[150] (eleventh century), Geervliet[151] and Monnickendam[152]. This wall-construction was exceptionally well preserved in Lübeck (Germany, late twelfth century).[153]

With almost all of the walls found at the sites mentioned above, the vertical planks were connected to each other with a tongue and groove joint. Apparently it was a common technique during the high and late middle ages and it is therefore likely that the vertical timbers of Building 3 in Stavoren were connected to each other in the same manner. However, in Middelburg, where several buildings with walls made of vertical planks were found, some of the vertical planks were built overlapping other planks, similar to the clinker technique used in medieval boat building.

Two features with traces of fire in the southern wall may be interpreted as the remains of burned posts. However, no other traces of fire were found. There is no evidence that the entire building had burned down.

About 1,5 meter from the western wall at the middle of the building, a single wooden post of approximately 20 cm in diameter and two smaller posts with a diameter of 5 cm were documented. It is uncertain if these posts belonged to the building or not, but it could have been part of the construction, possibly an inner wall.

Find number 163, in the eastern part of the building, is a fragment of a Roman roof tile. How the tile ended up where it was found and how it was used, remains unknown. Find number 143 is a fragment of a red brick which was found in the south-western corner of the house. It is possible it was used as a sill for later phases of Building 3.

According to Sarfatij, no structures were built on Plot 3.[154]

Building 4

Building 4 was documented in trenches 2, 3 and 15. A large part in the middle of the building, north of trench 15, was not excavated. No sections were made from features belonging to Building 4. Find numbers 119 (trench 2 level 2) and 142 (trench 2 level 3) are the only find numbers of interest for Building 4, both consisting of pottery dating to the first half of the twelfth century.

141 Smit 1990, 76
142 Groothedde 2001, 180-1
143 Excavation at Bachtensteene, not yet published. Pers. comm. with Patrice de Rijk and Bernard Meijlink (4 and 5 June 2015).
144 Nawrolska 2001, 475-6
145 Carelli 2001, 662-3
146 'Gebouw O' in the Wolters-Noordhoff-Complex: Kortekaas/Waterbolk 1992, 206-8
147 Excavation at the Gouveneursplein, De Langen 1992, 229-30
148 House on plot NH2 in the excavation at the Willemsspoortunnel: Carmiggelt 1997
149 Kistemaker 1989, 69-70
150 Excavation at Bachtensteene, not yet published. Pers. comm. with Patrice de Rijk and Bernard Meijlink (4 and 5 June 2015).
151 Referred to in Carmiggelt 1997
152 Referred to in Carmiggelt 1997
153 Gläser 2001
154 Sarfatij 1973

The building measures about 15 x 5,5 meters. The building is facing the plank road in the west. The west side of Building 4 extends 2,5 meters to the west compared to Building 3. The east side of the building is on the same line as the east side of Building 3.

The foundations of the walls were represented by round and rectangle wooden posts between 15 and 30 cm in diameter. In the western part of the building, several planks that were part of the walls were preserved.

Illustration 59. Overview of Building 4.

The north-western corner of the building features a quern-stone that probably functioned as a sill upon which a wooden post was positioned. The use of a quern-stone as a sill was also documented in a twelfth century timber house in Deventer.[155] The quern-stone was found at roughly -0,70 m. NAP (no exact elevation measurements were taken for the quern-stone or for the level the stone was found on). The quern-stone was drawn on the field drawing but was probably not recovered.

A large natural stone of 60 cm in diameter was documented at about 1 meter west of the south-west corner of the building. It was documented at -0,47 m. NAP. It is possible this stone was somehow displaced after it was used as a sill for a post in the south-west corner of Building 4, similar to the use of the quern-stone in the north-west corner. However, this is not certain. It would explain the lack of a post or post-hole in the south-west corner.

In the western part of the building, within trench 2, several planks were laying in east-west orientation. These planks probably were part of the walls or roof that at some point in time had collapsed. The planks were found at approximately -0,50 m. NAP.

One feature with traces of fire was found in the southern wall of Building 4. This is probably the remains of a burned post. No other traces of fire were found in or directly around Building 4.

The southern wall was possibly founded on sills which themselves were founded on

155 Bartels/Vermeulen 2005, 18

concentrations of small posts. Only these small posts have been documented, no traces of the sills were found.

Because less features had been preserved and less of the original layout of the building was excavated, not much more is known about the construction or original floor levels of Building 4.

This building was also observed by Sarfatij, but was not discussed in detail.[156]

Building 5

Building 5 was documented in trenches 2 and 3. No features in the building were sectioned. Only the far west and far east ends of the building were excavated. Most of the building was not excavated (north of trench 15). Only a few wooden posts and some planks remain of the construction of Building 5. A spot with traces of fire surrounded by a patch of loam may represent a hearth and floor layer.

Building 5 was approximately 18,3 x 4,6 meters. The west wall of Building 5 was located about 2 meters further east than the west wall of Building 4. The east wall of the building probably was located where the plot ends, near the eastern wall of trench 3. A large rectangular post in the north-east corner of the building together with several smaller posts and plank fragments speaks for this interpretation.

Not much can be said about the construction of the building. In the south-western corner short planks that stood upright can be observed (similar to the construction of Building 3). In the north wall of Building 5 a large rectangle post was preserved. The post was founded on a layer of small planks, similar to the posts of the north wall belonging to Building 2.

The remains of a possible hearth and two areas of a possible loam floor layer were preserved in the eastern section of the building. A sherd of Pingsdorf pottery was found inside the possible hearth, which could only be dated to 900 - 1250. Other relevant find numbers for Building 5 are 129 and 134, both of which date to the first half of the twelfth century.

According to Sarfatij, this plot was empty.[157]

156 Sarfatij 1973
157 Sarfatij 1973

Illustration 60. Overview of Building 5.

Conclusions on the buildings

Building 2, 3, 4 and 5 were all rectangular buildings, east-west oriented. Together with the plank road, the houses were built early in Phase 1, in the first half of the twelfth century. Different phases of use could only be observed in Building 2. These phases could not be dated.

It is likely that the houses have been used over a longer period of time. However, due to the limited documentation we do not know any details about the time span the buildings were in use. Several finds of large stones and bricks suggest that the later phases of the buildings were founded on sills above the ground. This is a construction technique that leaves very little archaeological traces in the ground, making it hard to observe the houses during field work.

The transition from town houses with earth-fast posts to posts on sills was observed in Deventer.[158] There, it took place around the end of the eleventh century. A similar transition likely took place in Stavoren a little later, possibly in the mid twelfth century.

The built-up plots were not, as Sarfatij argued, alternated with empty plots.[159] Instead, on all plots a building was constructed. North of Building 5, some remains were documented that could be attributed to another house. This suggests that the row of houses continued towards the north. In the southern part of the Stadsfenne excavation (which is not discussed in this study), the row of houses continue towards the south.

The width of Buildings 2, 3, 4 and 5 was equal to the width of the plot the building was built on. The length of the buildings varied between 12,8 and 18,3 meters.

The buildings must have had an entrance towards the plank road in the west. One possible entrance was found in Building 3. The buildings probably had a second entrance in the eastern wall, but no traces of entrances were found on that side.

158 Bartels/Vermeulen 2005, 18
159 Sarfatij 1973, 398

The western ends of the buildings were not built along a fixed building line. Instead, the western walls of the buildings vary up to two meters. This means no laws existed in the town of Stavoren during the construction of the wooden buildings that would order the buildings to be built along one line along the road. Similar construction patterns with wooden houses were observed in, inter alia, Deventer[160] (tenth century), Rotterdam[161] (fourteenth century) and Antwerpen[162] (eleventh to thirteenth century).

There was very little space between the walls of the buildings, on average between 20 and 30 cm. The space in between the buildings was probably used as a gutter or drain for rainwater. However, no remains of such a drain were found between the buildings during the excavation. The reason and practical consequences for building wooden houses so close to each other has been a topic for debate recently.[163]

To be able to build the houses so close to each other, Building 3 had its roof-bearing posts on the exterior of the building, while the actual walls were on the interior. This made it possible that the walls were better accessible for construction and repairs. This construction technique was also observed in Emden[164] (Germany, twelfth century), Middelburg[165] (eleventh century), Antwerpen[166] (Belgium, eleventh to thirteenth century) and Bergen[167] (Norway, mid twelfth century).

The buildings were dwellings houses, probably with room for storage.[168] The best argument for this are the remains of two hearths documented in Building 2 and 5. The buildings had just one storey, as the documented foundations and walls would not be able to support a second storey. It is possible that the later phases of the buildings which probably were built on sills (but of which very little was documented) did have a second storey.

Two house typologies have been made in the recent past that could be applied to the houses in Stavoren. The first was developed in 2007 and was based on houses in Deventer.[169] Buildings 2, 3, 4 and 5 in Stavoren show some similarities with house type *Deventer 2*: the houses had rectangular plans with earth-fast posts at regular intervals. However, most houses of this type found in Deventer were made of larger posts which also were dug deeper into the ground. Furthermore, type *Deventer 2* was dated to 850 – 950, two centuries before the houses in Stavoren were built.

Buildings 2 and 4 in Stavoren also show characteristics of house type *Deventer 6*. This type was a transition type between houses with earth-fast posts and posts founded on sills above ground. The posts of type *Deventer 6* had a diameter of 20 to 40 cm and where dug about 50 cm in the ground. However, also type *Deventer 6* pre-dates the houses in Stavoren.

The second house typology was recently developed by Jeroen Bouwmeester.[170] He distinguishes five different types of wooden town houses between 750 and 1300, based on floor plans, construction of foundations and size. Buildings 2, 3, 4 and 5 all have characteristics of house type 2-late.[171] This type is characterised by single aisled houses with two parallel rows of roof-

160 Bartels/Vermeulen 2005, 15-6
161 Ploegaert 2013, 122
162 Veeckman 2001, 148
163 Bouwmeester 2014, 454
164 Rasink 2002
165 Excavation at Bachtensteene, not yet published. Pers. comm. with Patrice de Rijk and Bernard Meijlink (4 and 5 June 2015).
166 Veeckman 2001
167 Herteig 1975, fig. 32
168 Even though Sarfatij (1973, 398) does mention one of the hearths, he interprets the buildings as warehouses or silos rather than dwelling houses. See also Bouwmeester 2014, 457.
169 Mitteldorff 2007
170 Bouwmeester 2014
171 Bouwmeester attributes Building 2 in Stavoren to house type 3 (based on the publication by Sarfatij 1973). However, based on the size and depth of the roof-bearing posts, type 2-late does better fit the house. See Bouwmeester 2014, 457.

bearing posts and with walls of either wattle or planks. The earth-fast posts are dug up to 50 cm in the ground and have a diameter up to 30 cm.

However, Buildings 2 and 4 also showed characteristics of house type 4: both buildings made use of sills to support the roof-bearing posts. Therefore, these two buildings may be interpreted as a combination of house type 2-late and 4.

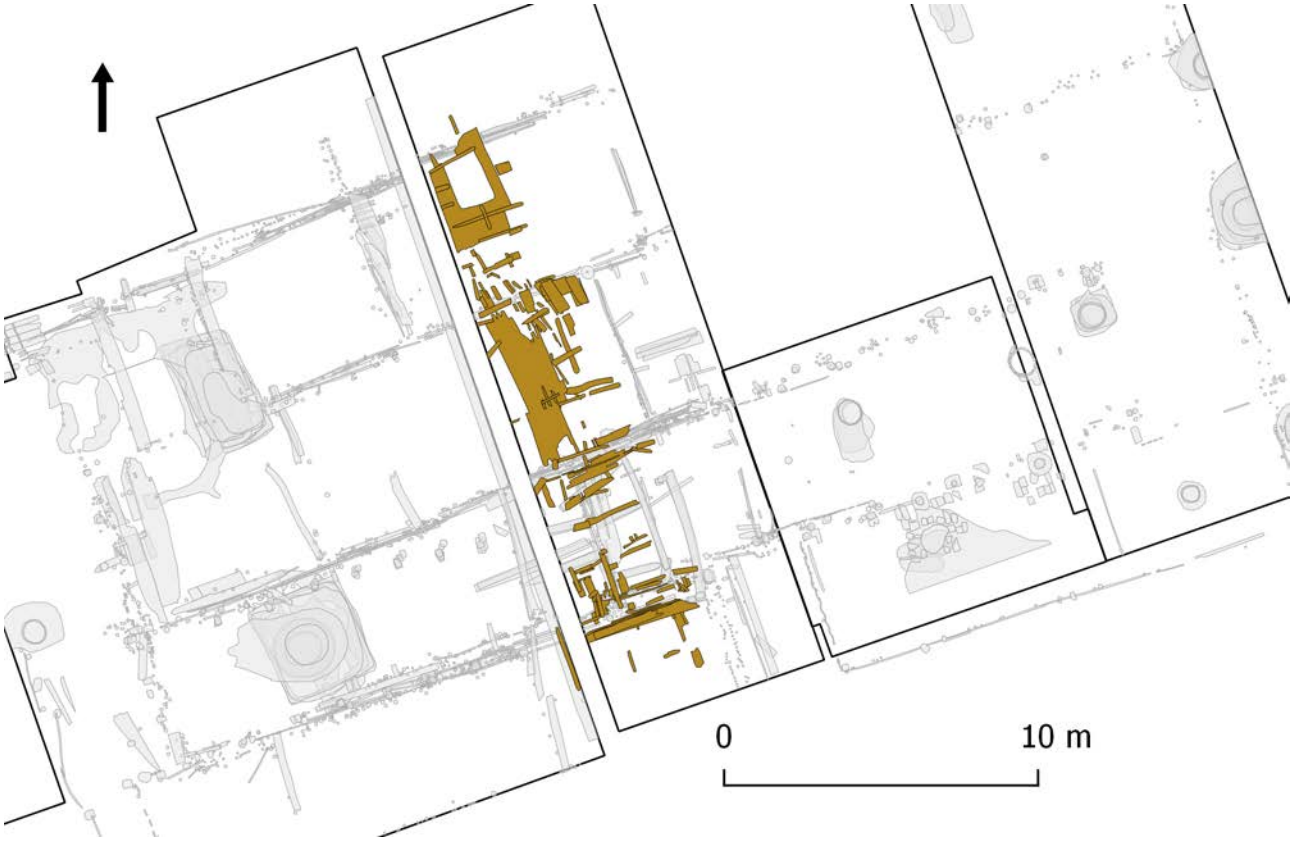


Illustration 61. Overview of the plank road.

6.8.3 Plank road

West of the houses, remains of a plank road were documented. The plank road ran parallel to the water stream and at right angles to the orientation of the plots. Most of the plank road were documented in trench 2, although some small remains were documented in trench 1. Remains of the plank road were not observed in any of the section drawings. Find material recovered between and on top of the planks date to the early twelfth century (find numbers 81, 84, 117, 120 and 141).

The remains of the plank road consisted of (at least) two layers of planks. The planks in the bottom layer were east-west oriented. The planks in the upper layer were north-west oriented, in longitudinal direction of the road. At two locations a dense concentration of planks belonging to the upper layer were documented. These concentrations may be interpreted as remains of the original medieval road surface. The plank road was cut in the post-medieval period by Building 1 as can be observed in the southern part of trench 2.

No elevation measurements were taken from the planks. However, based on the elevation measurements taken from the surface of the excavation level near the plank road, the top layer of the planks (the possible original road surface) was at approximately -0,45 m. NAP. Using the same technique to determine the elevation measurements of the planks belonging to the bottom layer, the planks were situated at approximately -0,75 m. NAP. Based on these measurements it can be concluded that the road construction must have been about 30 cm thick. That seems to be rather thick for a construction made of two layers of planks. Therefore it is likely that the road was in fact

made of multiple layers of planks of which only some fragments were preserved. It is also likely that the surface of the plank road was repaired or reconstructed during the period the road was in use, a process during which several layers of planks may have been added on top of existing layers. Because the elevation of the planks were not measured exactly and because no section drawings were made, the exact composition of the plank road construction and the stratigraphy of the planks remain unclear.

Sarfatij states that the plank road was 5 to 5,5 m. wide.[172] This seems to be too wide, the position of the planks do not support this. A width of approximately 3,5 m. is more appropriate for the plank road.

The eastern side of the road bordered the buildings, although some buildings were built at a distance of up to 2,5 m. away from the plank road. The western side of the road bordered the wharf area. The plank road was observed over the full length of trench 2, meaning that the road continued in both north and south directions outside the study area.

Several planks belonging to the upper layer that were observed on level 2 of trench 2 have a length that exactly corresponds to the width of the plot they are situated in (roughly 5 meters). Because the planks of the plank road at other locations were only partially preserved, it is unknown if all planks in the upper road layer were exactly as long as the width of the plots. What can be said however is that none of the planks in north-west orientation cross the rows of posts that divide the plots. Therefore it can be argued that, for extra stability, the planks of the road were partially built on top of the rows of posts belonging to the wharf construction. This suggests that the plank road was built at the same time as the wharf construction, at the time the plots were laid out.

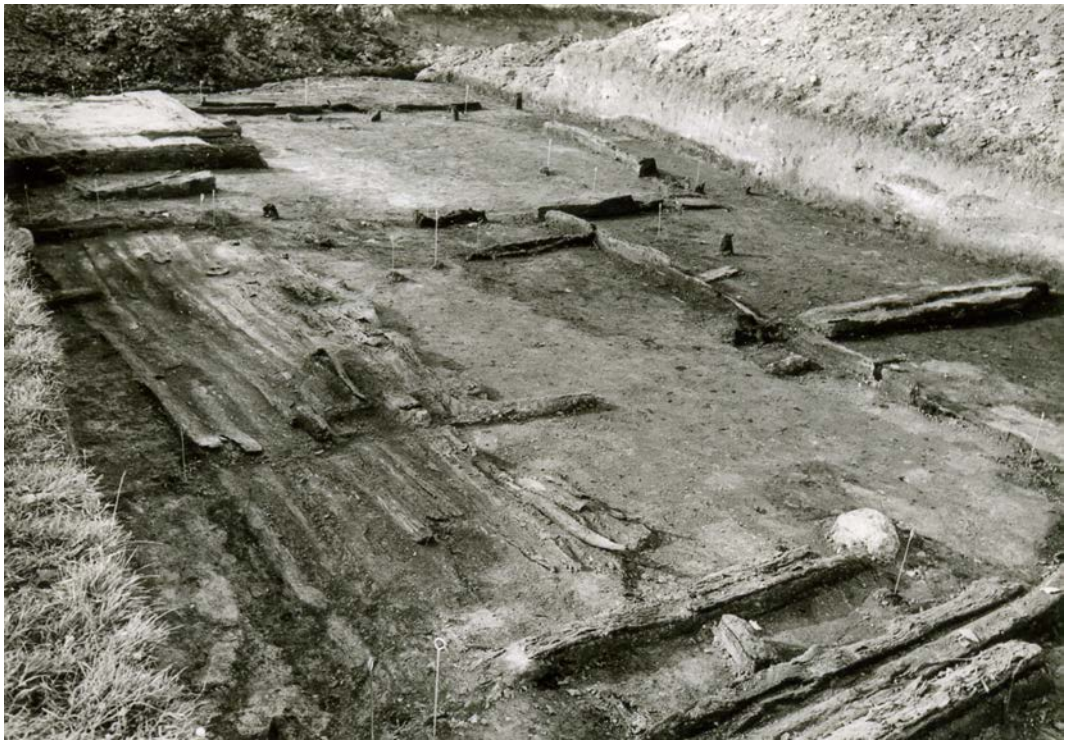


Illustration 62. Detail of the plank road on trench 2, level 2. Photo by the RCE.

172 Sarfatij 1973, 394

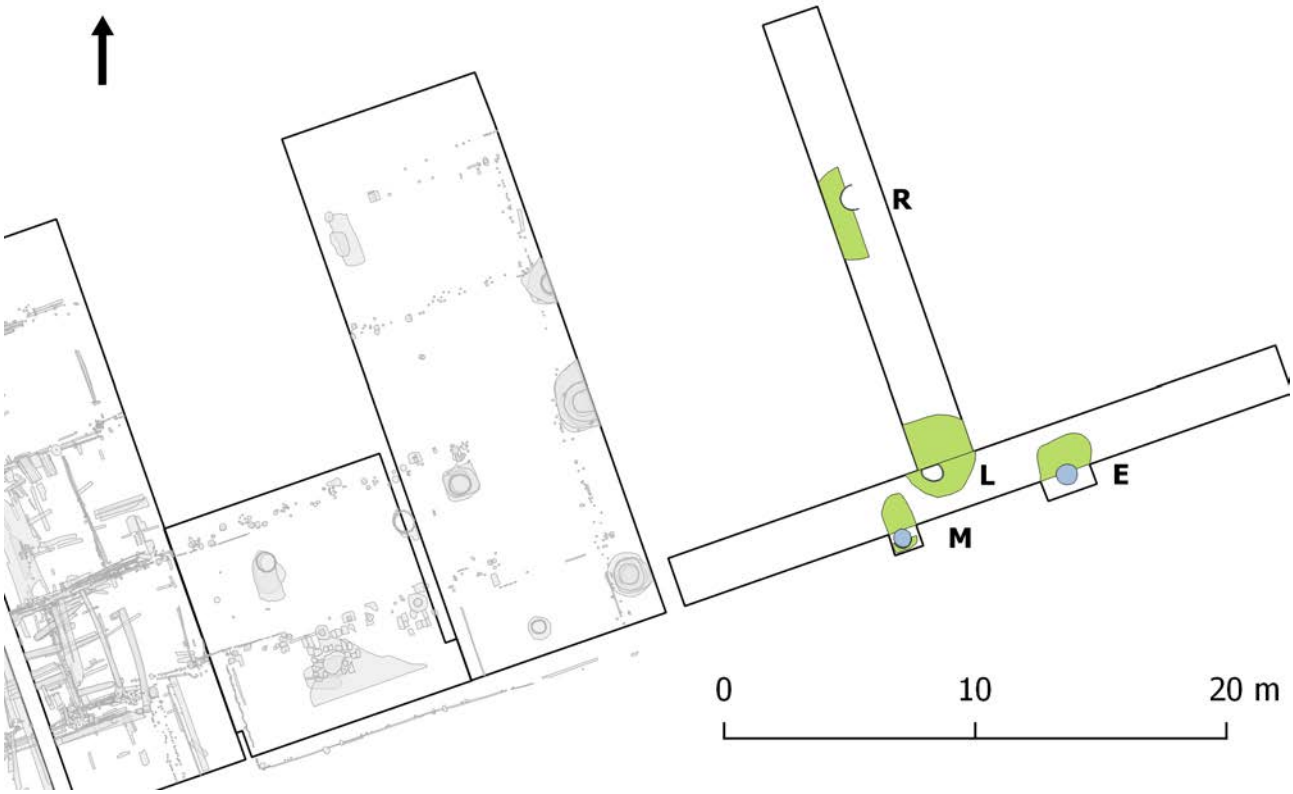


Illustration 63. Overview of the four high medieval wells documented in the Stadsfenne excavation. They were observed east of the houses.

6.8.4 Wells

Most of the wells from the Stadsfenne excavation have been fully excavated. However, the excavations of the individual wells have been poorly documented. Usually, only a couple of sentences were written in the daily reports per excavated well. The descriptions on the constructions of the wells are very basic, usually only referring to the material and amount of barrels that were present. Only one well was photographed in detail (see below) and only those wells that cross a section were drawn in detail. On the other hand, many of the finds from the wells were recovered.

Based on this find material, it is possible to date four wells from the Stadsfenne excavation to the high medieval period: wells E, L, M and R. It is remarkable that all four wells were documented in the eastern part of the excavation area, east of the buildings. Wells E, L and M were situated in the extension of Plot 4 (east of Building 2). Well R was situated in the extension of Plot 2 (east of Building 4).

Of the other wells documented in the Stadsfenne excavation, only two date to the late medieval period (wells S and N, both outside the present study area). The remaining wells date to the post-medieval period. Both the late-medieval and post-medieval wells may be found all over the excavation area, excluding the location of the plank road. This means that the topography and land-use during the high medieval period was very different than during the late and post-medieval period.

The high medieval wells will be discussed below.

Well E

Find number 226.
The well was made of two wooden barrels put on top of each other. The upper barrel was overlapping the lower barrel. The wooden staves of the lower barrel were approximately 1,82 m tall and exceptionally well preserved. The staves had a width of approximately 6 to 8 cm. In the central part of the lower barrel, a square bunghole (*tapgat*) was present. The lower barrel was dug or driven into the natural sand soil (see illustration 64).

Hardly any finds came from the fill of the well. The bottom of the well consisted of a small layer of pebbles, which served to filter the water. Between the pebbles, several pottery fragments and an incomplete Pingsdorf jug were found.

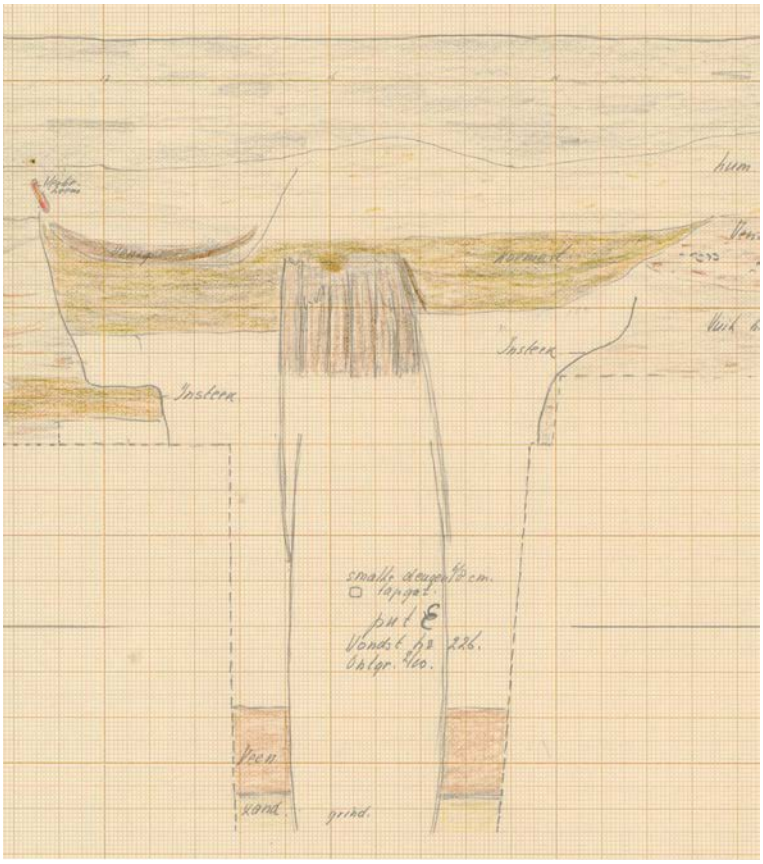


Illustration 64. Section drawing of Well E. Drawing by the RCE.

Well L

Find number 317.
Well L was made out of three wooden barrels. The lowest barrel was made out of oak wood, with staves over two meters tall. A photo of the well was made before it was excavated (see illustration 65).

The pottery from Well L has been drawn and discussed by Helen Clarke.[173] The well contained four imported pots and seven locally produced pots (see illustration 66). Most noticeable is the base of a jug with black fleur-de-lis decorations, attributed by Clarke to the polychrome group of Saintonge wares, named after the production site in South-western France. The well also contains one complete jug of highly decorated pottery (*hoogversierd aardewerk*), although it lacks the characteristic decoration. Furthermore, one complete jug of proto-stoneware (s5-kan-1 in the *Deventer Systeem*) and the base of a second proto-stoneware jug.[174]

The locally produced wares consist of local unglazed wares, most of them with ring foots, which are likely made in IJlst near Stavoren. The pottery dates to the first half of the thirteenth century.

173 Clarke 1974
174 Clarke interprets both proto-stoneware jugs as near-stoneware jugs produced in Schinveld. However, the fabric and shape of the jugs closely resemble proto-stoneware. Also, production sites of proto-stoneware are hard to determine (Verhoeven 2012, 43). Both jugs could very well have been produced in another production site, such as Langerwehe.

Illustration 65. Well L. Photo by the RCE.

Illustration 66. A selection of the finds from Well L. Photo by the RCE.

Well M

Find number 318.
No details on the construction of Well M were documented. It was only noted that the construction of Well M was similar to that of well L (see above). Finds from Well M include pottery fragments of Pingsdorf and Andenne wares.

Illustration 67. A selection of the finds from Well R. Photo by the RCE.

Well R

Find number 329.
The well consisted of two barrels. The upper barrel was poorly preserved. The lower barrel was made of very tall staves: measuring appropriate 2,20 meters. The bottom of the well was dug or driven into the natural sand soil and was situated at -3,40 m. NAP.

The pottery from Well R has been drawn and discussed by Helen Clarke.[175] The well contained eight imported individual pots and sixteen locally produced individual pots (see illustration 67). One complete jug of highly decorated pottery (but like the jug in Well L, it lacks the typical decorations), three complete jugs of proto-stoneware (s5-kan-1)[176], several handles of unknown ware and one rim of a Paffrath cooking pot.

The local unglazed wares consist of nine complete jugs and cooking pots (one of them could be determined as kp-kan-2), ring-footed bases of at least five pitchers, a rim, a handled ladle (*haakoor*) and a crucible (*smeltkroes*). Two of the pots are decorated with horizontal brush swipes (*bezemstreken*).

The pottery in Well R is very similar to that of Well L. It can therefore be dated to the first half of the thirteenth century.

Helen Clarke has dated Well L and Well R to the late thirteenth to fourteenth centuries. In this study however, both wells are dated to the first half of the thirteenth century. The difference between both dates occurred mostly due to her attribution of certain wares to near-stoneware; whereas in this study these wares are interpreted as proto-stoneware.

6.9 Finds

The artefacts found in the four high medieval wells that were documented in the Stadsfenne excavation have already been discussed above. The present paragraph deals with artefacts found outside the wells.

Because of a limited amount of time, only a selection of the find material was analysed in

175 Clarke 1974
176 See note 174.

the present study. The selection of find numbers was based on the find context: only finds coming from relevant and promising contexts and layers were selected.

The fact that a selection of the find material will be discussed in this study, means that there is potential for a more detailed study on the find material from the Stadsfenne excavation. See paragraph 7.5 for some ideas for future research on the find material.

Furthermore, as mentioned above, the excavators only recovered pottery rims, handles and bases. Small pieces and fragments of the body were not recovered. This was probably done to save time and money, and because the recovered fragments are better and easier determinable than the small pieces that were not recovered. This means however that the total amount of recovered pottery is biased.

The find material mostly consists of pottery, but also contains some wood, bone and metal remains. Most of the ceramics date to the High Medieval period (the twelfth and early thirteenth century). A remarkable smaller proportion of the ceramics date to the Late Medieval period (1250 – 1500). No Post-Medieval ceramics were recovered. The very few older finds are several ceramics dating to the Roman period (see below). No find material dating to the early medieval period was found.

6.9.1 Roman period

In total two of the analysed finds could be dated to the Roman period. These are one fragment of a possible roof tile (find number 143) and a fragment of a mortarium (*wrijfschaal*; find number 12). The fragment of the mortarium was found high in the stratigraphy (on level 1), meaning that it is likely that the fragment came from the top soil and was not in its original position and location.

The roof tile is poorly preserved and therefore difficult to identify. A Roman origin is likely but a medieval origin cannot be excluded.

6.9.2 High Medieval pottery

Roughly half of the analysed pottery consisted of local unglazed wares (*kogelpot*). The shapes and types of the local unglazed wares consisted of basic cooking pots, usually with coarse sand or gravel inclusions. The analysed material also included fragments of several frying pans, spouted pitchers, pots with ring foots, pots with handles and a single *zwaluwnestoor* (a type of handle). The fabric and shape of a large part of the local unglazed wares are similar to that of IJlst (about 22 km inland from Stavoren) and a smaller part is similar to that of Oudemirdum (about 12 km along the coast from Stavoren).[177]

About a third of the sherds of the local unglazed wares was decorated with brush swipes (*bezemstreken*) and a single sherd with grooved lines (*ingeritste lijnen;* find number 313, see illustration 68). Fragments with such decoration are usually interpreted as late local unglazed wares, roughly dating to 1150 – 1350. The undecorated sherds probably date to the first half of the twelfth century.

Another large part of the analysed material consisted of imported wares from Pingsdorf, with spouted pitchers, drinking cups and jugs being the most dominant shapes. Many of the fragments could be dated based on the shape of the rim. Rim type 2.15b and 2.17 for spouted pitchers were the most common types, both of which can be dated 1120 – 1180.[178] Other rim types in the analysed material confirm a twelfth century date.

Several fragments of so-called Pingsdorf *Grauwaren* could also be dated to the twelfth century. The fabric and shape of Pingsdorf *Grauwaren* is very similar to that of pottery from

177 The determination and dating of the local unglazed wares was based on Verhoeven 1998 and Verhoeven 2012
178 Sanke 2002

Paffrath (see below) and is therefore often misinterpreted.[179] The presence of *Grauwaren* fragments in Stavoren means that not only decorated pottery was imported from Pingsdorf but also the more basic grey pottery.

Illustration 68. A sherd of local unglazed ware with grooved lines (find number 313). Photo by author.

Local unglazed wares and imported pottery from Pingsdorf make up the bulk of the medieval pottery found in Stavoren. Slightly less material originates from Paffrath and the central Meuse region (*Midden-Maasgebied*; also known as 'Andenne pottery'). The Paffrath material could not be dated in more detail but generally confirms the twelfth century date.

Pottery found during the Stadsfenne excavation originating from the central Meuse region has been the subject of a study by Helen Clarke.[180] Her conclusions are confirmed in the present study: a general date of the twelfth century seems right. Most of the rim fragments are characterized by a so-called *manchetrand* (a type of rim), which dates to 1125 – 1175. Furthermore, several spindles of Andenne-type were found.

A single fragment of highly decorated pottery (*hoogversierd aardewerk*) originating in Brugge (Belgium) was found (find number 355). The fragment could only roughly be dated to 1175 – 1350.

Several fragments of proto-stoneware (*proto-steengoed*) were part of the selected material. The pottery sherds consist of three rims (one with a spout), several fragments of bodies and several bases. One of the bases was decorated with slip (*engobe;* find number 271). One of the fragments could be determined using the *Deventer Systeem*[181] as s5-kan-2 which dates to 1250 – 1300 (find number 355), the other fragments could only generally be dated to 1200 – 1300. The production site of the proto-stoneware could in two cases be determined as Siegburg (find numbers 184 and 269) and in three cases as Mayen (find numbers 294, 295 and 313). The latter production site is not often

179 Pers. comm. with Arno Verhoeven, July 6th 2015.
180 Clarke 1975
181 A database and classification system for Dutch medieval pottery. Used version: April 2012.

recognized by archaeologists in the Netherlands.[182] Relatively large white inclusions and very small inclusions of volcanic glass (visible as 'glitters' in the fabric) are typical for proto-stoneware from Mayen (see illustration 69). The production sites of the remaining fragments of proto-stoneware is uncertain.

Illustration 69. Front and section view of a sherd of a proto-stoneware jug from Mayen (find number 295). Photo by the author.

6.9.3 Late Medieval pottery

Relatively few pottery finds date to the late medieval period. The finds consist of near-stoneware (*bijna-steengoed*), stoneware (*steengoed*), grey ware (*grijs aardewerk*) and red ware (*rood aardewerk*).

Five fragments of near-stoneware could be determined using the *Deventer Systeem* as s4-kan-1 (two fragments); s4-kan-2 and s4-kan-3 (two fragments). A few other near-stoneware fragments could not be identified in detail. Near-stoneware generally dates to 1275 – 1325.

Stoneware both with and without slip (*angobe*) was found. Most of the stoneware pottery found was produced in Siegburg. The material was fragmented and therefore could not be further divided into different types. However, all stoneware could roughly be dated to the fourteenth and early fifteenth century.

Only three fragments of grey ware were present in the selected material. A fragment of a body, a base with thumbed feet (*standlobben*) and a fragment of a possible fire cover (*vuurstolp;* find number 313). Like the stoneware, the grey ware finds from the Stadsfenne excavation can be dated to the fourteenth century.

A handful red ware pottery sherds was found. The remains of at least three frying pans could be identified, one of them being similar to type r-bak-35 in the *Deventer Systeem* which dates to the fifteenth century (find number 72). Also a base with thumbed feet was found.

182 Pers. comm. with Arno Verhoeven, July 6th 2015.

Illustration 70. The golden finger ring with amethyst stone that was found in trench 1, level 7 (find number 278). Photo by the RCE.

6.9.4 Metal

Very few metal find were present in this study: the rim of a bronze tripod (*grape*; find number 183). Based on the context and surrounding finds, it probably dates to the late fourteenth or fifteenth century.

A golden ring with an amethyst stone was found in trench 1 level 7 (find number 278). Because of its iconic value, the ring was mentioned in several publications.[183] The ring was also photographed both in black-and-white and in colour (see illustration 70). The ring is currently held in the collection of the Fries Museum in Leeuwarden.[184] However, the ring has never been the subject of a detailed study.

6.9.5 Animal bone and shells

During the excavation, animal bones were not systematically recovered. Instead, only artefacts that were made out of animal bones (such as skates or combs) were recovered.

Two medieval bone skates (*glissen*) were part of the selected material (find numbers 175 and 192), both with perforated holes. Based on the context and surrounding finds, find number 192

183 Halbertsma 1964; Sarfatij 1973
184 Inventory number 2007-II-723.

could be dated at the beginning of the twelfth century.

In trench 1, level 7, a very well preserved comb made out of animal bone was found (find number 275). However, the exact location of the find was not documented on the field drawing. Furthermore, the current location of the comb is unknown.

In trench 1, a concentration of mussels was documented near a well (feature 137). The shells were not recovered. They can probably be dated to the late medieval period, as they are high in the stratigraphy and probably must be seen as waste disposal.

Illustration 71. Detail of the dugout boat that was observed in trench 1, level 7 (feature 269). Photo by the RCE.

6.9.6 Wood, organic material and leather

Although a lot of wood was found and documented during Stadsfenne excavation, very little wood was recovered. Most of the wooden remains have probably been thrown away.

An exception to this are the remains of a dugout boat (*boomstamboot;* see illustration 71). The fragment of the boat measures about 280 x 59 x 24 cm and was reused as part of the wharf construction (see paragraph 6.8.1). Although it was poorly preserved, it was recovered and taken to the maritime museum in Ketelhaven by archaeologist Gerrit van der Heide. Once there, the dugout boat was measured, described, drawn and photographed.[185] The dugout boat has only been dated based on the find context (early twelfth century), but as Van der Heide mentions in his publication,

185 Van der Heide 1974, 117-9

it could be much older. Because the museum in Ketelhaven has been closed, the current whereabouts of the dugout boat is uncertain. The remains possibly are in the maritime depot of the Rijksdienst voor Cultureel Erfgoed in Lelystad.

Furthermore, several small wooden staves (*duigen*) that originally were attached to each other as a small container such as a small bowl were found in a manure pit (find number 288). On the outside of the staves, a small cut was visible in which a string or small metal hoop was pressed. With it, remains of a piece of robe were found. Based on the find context, it is likely that the remains date to the twelfth century. The remains have not been further analysed.

Wooden staves were also recovered from well E in trench 16. According to the excavation diary, the staves were exceptionally well preserved and approximately 1,82 m tall. On the bottom of the well, an incomplete Pingsdorf jug was found, which dates the well to 900 – 1250. The wooden staves were taken by Elzinga to the Fries Museum in Leeuwarden in 1963. It is uncertain if these remains are still present in the Fries Museum today.

Also, the remains of caulking material (*breeuwsel,* find number 286) were found between several boat timbers that were used as part of the wharf construction (see paragraph 6.8.1).[186] This secondary use of the boat timbers can be dated to the beginning of the twelfth century. The exact date of the boat timbers and the caulking material themselves remains uncertain.

The remains of a leather shoe were documented in section drawing G-H in layer G. The shoe was only pointed out with a small 'x' and a short note. It was not recovered or described in detail.

6.9.7 Natural stone

At several locations in the excavation area, complete and fragmented tuff stones (*tufstenen*) were documented. However, the tuff stones have not been recovered. It is likely that they were used as building material for late medieval and post medieval buildings.

Furthermore, a complete quern-stone was documented in trench 2. Like the tuff stones, the quern-stone was not recovered which makes any detailed study impossible. The quern-stone was probably used as the foundation of a house (see paragraph 6.8.2).

Several other large round natural stones were documented in trench 2. None of them were recovered or described. Their function is unknown, but was possibly the same as the quern-stone mentioned above.

In trench 1, two concentrations of small stones or pebbles were documented (features 45 and 46). Their function is uncertain. It is possible they were part of a late or post medieval floor layer. None of the stones were recovered or documented in detail.

6.9.8 Soil and wood samples

On August 13th 1964, eleven wooden posts in trench 1 were sampled for dendrochronological analysis. The posts were numbered 1 to 11 as can be seen on the analogue field drawing of trench 1 level 7. However, the selected samples never have been subject of an analysis. It is uncertain what happened to the samples, although it is very likely they have been thrown away.

More wood samples were taken in trench 9 (outside the present study area) and trench 15 on the 20th and 21st of October 1964. Like the previous wood samples, the samples were never analysed.

Several soil samples were taken during the excavation. The samples were sent to amateur archaeologist B.J. Wieland Los to be analysed for macro and pollen analysis. According to a letter dating to September 17th 1964, Wieland Los never finished his work on the soil samples from

186 The boat timbers themselves were not recovered by the excavators.

Stavoren, although he had already started.[187] The results from his half-finished work on the soil samples were never published, and it is likely that the samples have been thrown away.

187 The reason he quit working on this project was a disagreement between B.J. Wieland Los and Jules Bogaers of the RCE. Apparently Wieland Los wanted more money for the job but did not get it.

7 Conclusion: a reconstruction of Stavoren between 837 and 1292

The main goal of this study is to combine historical and archaeological sources to reconstruct the development of Stavoren between 837 and 1292. Both dates have a special meaning in the development of Stavoren. In the year 837, the canon Odulfus came from Utrecht and settled in Stavoren. This date may be considered the starting point of Stavoren as a place of interest, although we do not know if Odulfus settled in an uninhabited area or in an existing settlement. In 1292 Stavoren was granted town privileges by the count of Holland. This date illustrates the beginning of a new chapter in the history of Stavoren, during which Stavoren became more oriented towards Holland and less to Friesland and also lost its part in the interregional trading network.

The conclusions of this study will be presented in this final chapter. Because there is hardly any archaeological data from Stavoren covering the period between 837 and approximately 1100, the conclusions have been split into two time periods: the old town of Stavoren until 1100 and the new town of Stavoren that emerged in the early twelfth century. Both periods will be discussed separately below. First however, the general development of Stavoren between 837 and 1292 will be briefly discussed.

7.1 A reconstruction in phases

The phases below are based on the chronology of historic events and on the stratigraphy of the various excavations. The division of Phase 1 to Phase 7 (the medieval period) is partly based on the revetments that were built along the peat stream as observed in the Stadsfenne excavation. For completeness, the phases go to the present day. The main period on which the present study is focussed consists of Phases 1 to 5.

7.1.1 The phases

Phase 0
Phase 0 represents the natural development of the area around Stavoren before people inhabited the land (see chapter 3). The natural layers from Phase 0 comprise of a layer of peat on top of a layer of sand.

Phase 1 (approximately 837 – 1075)
In 837, Odulfus, a canon from Utrecht, settled in Stavoren. The settlement grew into a town with interregional trade connections. In the year 991, the town was attacked by Vikings. In the eleventh century, the town was granted town privileges by the count of Friesland and silver coins were minted in Stavoren. There are hardly any archaeological traces dating to this period. Most of our knowledge of Phase 1 is based on historical documents.

Phase 2 (approximately 1075 – 1120)
The land surrounding Stavoren was dug for peat. Traces of peat digging were observed during the Johan Frisosluis excavation just south of the Stadsfenne. After the peat digging, the layer of peat was covered by maritime clay that was deposited during a series of small floods.

Phase 3 (around 1120)
The eastern shore of a peat stream was raised with reclamation deposits. The raised land was

bordered by Revetment 1.

Phase 4 (approximately 1120 – 1225)
Not long after Phase 3, a thick layer of clay with chunks of peat and natural wood chips was deposited on the shores of the peat stream. This layer was deposited during one or several bigger floods that happened in a short period of time. The new land was stabilised with rows of posts and planks, both in north-south and east-west direction. The western end of the new wharf was closed with Revetment 2. On top of the reclaimed land, along the peat stream, a plank road and houses were built. In 1132, around the same time when these structures were built along the peat stream, the Benedict abbey of St. Odulfus was founded. During Phase 4 (the exact date is not known), the church of Saint Mary was built in the northern part of Stavoren, along the peat stream. In the year 1170, a large flood swallowed large stretches of land near Stavoren.

Phase 5 (approximately 1225 – 1300)
Revetment 3 was built further west along the peat stream. It was made of heavy wooden posts and planks. The abbey of St. Odulfus repeatedly asked for help in their battle against the water. In 1292, Stavoren was granted town privileges by the count of Holland.

Phase 6 (approximately 1300 – 1425)
Revetment 4 was built further to the west along the peat stream. During this time, a kiln for metallurgy near the waterfront was put into use. During the fourteenth century, the abbey of St. Odulfus partly collapsed because of the floods. In 1415, the abbey was replaced to a location inside the town of Stavoren.

Phase 7 (approximately 1425 – 1500)
Revetments 5 and 6 were made further to the west along the peat stream. Revetment 6 was paralleled with Revetment 7 at the opposite side of the stream. At the end of the fifteenth century, the southern part of the peat stream was closed with debris. The northern part (the present Voordelft) remained in use. The abbey of St. Odulfus was finally abandoned in 1494.

Phase 8 (around 1500 – before 1560)
In the northern part of Stavoren, the blockhouse was built. This was a military defensive construction made out of earthen ramparts surrounded by a moat. Inside several garrisons for soldiers were built. The Stadsfenne area was abandoned during this period.

Phase 9 (before 1560 – before 1616)
Early in phase 9, a small group of houses were built on the Stadsfenne location. The blockhouse in the northern part of Stavoren was destroyed. Around the town, defensive fortifications consisting of stone walls were built. The Stadsfenne area was repopulated and was incorporated in the new fortifications.

Phase 10 (before 1616 – around 1800)
Stavoren expanded. Houses, streets and gardens were built in the Stadsfenne area.

Phase 11 (around 1800 – 1968)
The size of Stavoren decreased and consequently the Stadsfenne area was abandoned. The Stadsfenne area was used as a meadow for cattle, from which the name 'Stadsfenne' was derived ('Stadsfenne' meaning 'town meadow' in Frisian).

Phase 12 (1968 – 2015)
The town expanded again and the meadows had to make way for new houses.

7.1.2 A brief history of Stavoren

When the development of Stavoren between 837 and roughly 1100 is discussed, all information is based on historical documents. Hardly any archaeological data from Stavoren is dating to this early time period. This has to do with the fact that Stavoren was situated near the river Vlie, which stood in direct contact with the North Sea during the medieval period. From the early medieval period onwards, a series of floods hit the shores near Stavoren. The floods and the simultaneous emergence of the Zuiderzee likely caused parts of the town of Stavoren to be washed away by the water. The floods were reported to have destroyed large stretches of land near Stavoren in 1170. During the thirteenth and fourteenth centuries, the floods were responsible for the destruction of the Benedict St. Odulfus abbey that had stood in Stavoren from 1132 to 1494.

The historical sources that are concerned with the period before 1100 have been discussed in chapter 5. Based on these sources, we know that a canon from Utrecht settled in Stavoren in the year 837 to fight against heresies in Friesland. We do not know if Stavoren already existed before that time, but it is not unlikely that Stavoren was a rural settlement when Odulfus settled there. It is assumed that Odulfus travelled with a few other canons and that they built a church in Stavoren.

Over the centuries that followed, Stavoren grew into a town of some importance with interregional trade connections. Silver coins that were minted in Stavoren have been found in countries around the Baltic Sea. The coins were minted in the second half of the eleventh century on behalf of the counts of Friesland, the Brunonids, who also issued silver coins in other Frisian towns. The same family of counts granted town privileges to Stavoren around the year 1068. These privileges are considered the first town privileges that were granted to a town in the Netherlands.

Other than the coins and the historically documented events mentioned above, there is very little that remained of Stavoren before 1100. Much more is known about the period after 1100. Around that time, Stavoren expanded and a new part of the town was built. An area of land on both sides of a peat stream that previously was never used, was cultivated and inhabited. A large part of this new part of the town is still inhabited today; it is the location of the present town of Stavoren.

The earliest traces of land use at the location of the present town date to the late eleventh to the early twelfth centuries. Around that time, the area was dug for peat. The peat digging did not happen on a large organised scale but was rather carried out by individuals or small groups of people. This is clear from the small pits that were dug in varying orientations and in a seemingly disorganised manner; as could be observed during the Johan Frisosluis excavation in 2013. The fact that the peat digging was a small scale practice suggests that people lived nearby and used the land whenever they needed peat as fuel or as a building material.

Around the years 1120 – 1140, the eastern shore of a peat stream was raised and prepared for habitation. A small revetment was built to keep the reclamation deposits from being washed away during high tide and storms. It is likely that the western shore was also raised, although no archaeological evidence can back this up. The raised shores can still be observed in the present town on a modern elevation map of Stavoren (see illustration 72).

Shortly after the land was raised, in the first half of the twelfth century, one or several big floods ravaged the surrounding area. The floods caused a thick layer of clay to be deposited on the foreshores of the water stream, between the raised land and the waterfront. The revetment that before kept the raised land in place now divided the cultural reclamation deposit and the natural flood deposit. The clay of the flood deposit was filled with natural wood chips and chunks of peat and also contained several fragments of pottery and metal objects. This particular flood was not mentioned in any historical source, but it does fit in the series of floods that hit the northern part of

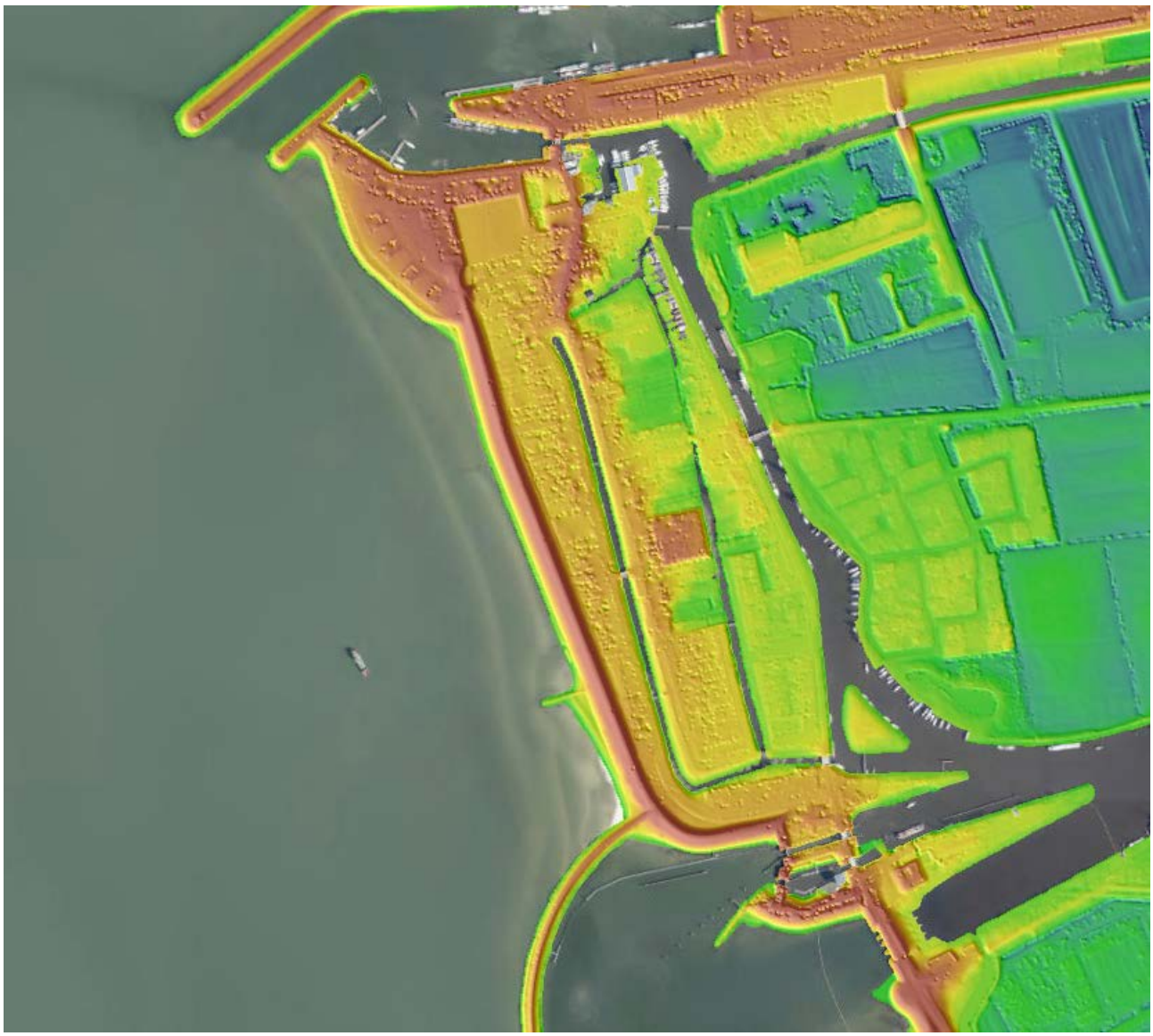


Illustration 72. Digital elevation model of Stavoren, based on the AHN3. Note how the zone along the Voordelft is slightly higher than the other parts of Stavoren. Also note the dyke (in red), the current location of the church (dark orange square in the middle) and the raised Smidstraat in the north.

the Low Countries during the high and late medieval period.

The natural flood deposit was used by the people of Stavoren to further prepare the shore of the stream for habitation. The flood deposit was stabilised by rows of posts and planks, both parallel and at right angles to the water stream. On top of the stabilised flood deposit, a wharf, a plank road and a row of houses were built. This construction has been observed during archaeological excavations both in the southern and in the northern part of the present-day town.

The houses that were built in the first half of the twelfth century have not only been observed during the Stadsfenne excavation, but remains of houses dating to the same period have also been documented during the Johan Frisosluis and Blokhuis excavations. If we assume that the plank road and houses on these locations were all connected, the newly built layout of Stavoren along the peat stream stretched for at least 825 meters (see illustration 75).

The construction of wharves and houses on that scale must have been a massive project. On top of that, the constructions functioned not only to house people, but also to facilitate trade. In short, it was a harbour. This means that Stavoren must have experienced a strong position in the interregional trading network in the early twelfth century. Based on historical documents we know

that Stavoren continued to be a successful trading port until at least the late thirteenth century. Stavoren was a member of the Hanseatic League around the middle of the thirteenth century.

Meanwhile, Stavoren played a central role in the local political developments. For centuries, the count of Holland considered Friesland part of their legal properties while Friesland did not accept an imposed foreign rule. During the twelfth up to the fourteenth centuries, Stavoren was geographically and politically located between Friesland and Holland. The town was used several times by authorities from both Friesland and Holland as a political and military stronghold. At the end of the thirteenth century, in 1292, Stavoren accepted the count of Holland as their ruler. In return, the town was granted town privileges for the second time in its history.

The character and name of the peat stream along which Stavoren was built in the twelfth century remains unclear. Most likely, the stream was one of the many peat streams that flowed into the Vlie river (see illustration 6). It probably flowed from the south to the north, because there was no place for water to dispatch south of Stavoren. There, pleistocene boulder clay reached the surfaced the land, an area that today is known as Gaasterland. Boulder clay is poorly permeable for water.

Their must have been a bend in the water stream in Stavoren towards the Vlie river (towards the west). Possible remains of this bend can be observed as the northern harbour on the Jacob van Deventer map dating to approximately 1560.

It is not known how much water the peat stream contained. We can assume however that, at least in the early twelfth century, the stream was large enough for small boats to arrive at the harbour. The harbour was influenced by tidal actions, resulting in a changing amount of water during the day. It is possible that larger ships such as the late medieval cog could only enter and leave the harbour during high tide.

Based on a series of medieval revetments found along the stream, it is clear that the water stream used to be much wider than it is today. Each revetment was built further towards the middle of the stream than the former. Together with the last revetment on the eastern shore of the stream, a revetment on the western side of the stream was built. During the last phase of the peat stream in the Stadsfenne area, it had the exact same width as the present canal Voordelft.

It is likely that the stream carried less and less water over the centuries. This was a result of large scale peat digging in the inland east of Stavoren. When the peat slowly disappeared, so did the peat stream which fed it. Ultimately, the peat stream in the Stadsfenne area was closed in the late fifteenth century. Only the part that today is known as the Voordelft remained.

While the plots along most of the water stream remains used and inhabited up to today, the plots in the Stadsfenne area were inhabited until at least the second half of the fourteenth century and possibly until the fifteenth century. The youngest medieval features in the Stadsfenne area were a kiln for metallurgy and several waste pits dating to the fourteenth century. After that, the plots were abandoned.

Around 1560, the Stadsfenne area was again populated with some houses, but they were built outside the medieval town walls and did not follow the topography of the earlier plots (see illustrations 15 and 22). In the early seventeenth century, the area was again rebuilt and incorporated in the post-medieval town.

Over the centuries, Stavoren increased and decreased in size. From around 1800, the southern part of Stavoren was not inhabited any more and was used as a meadow. The Stadsfenne, as this meadow was called at the time, was again inhabited from 1967.

7.2 Production and trade in Stavoren

Usually in excavations, semi-finished products or specific waste of production processes indicate

the presence of production at a site. In Stavoren however, there is very little evidence for production during the medieval period. The only hint for production is a fourteenth century kiln that was used for metallurgy. In and around the kiln, many slags were found. The kiln was documented in trench 1 of the Stadsfenne excavation.

It is likely that more production took place in medieval Stavoren. It is for example not unlikely that the harbour area was used for the construction and repair of ships. However, no traces of such productions were documented in Stavoren.

Traces of trade are more extensive in Stavoren. The evidence for trade in Stavoren before 1100 is found only outside of Stavoren itself: in historical documents and coin finds in several countries around the Baltic and North Sea. This has been discussed in paragraph 5.3.

From around 1100, there are multiple traces for trade in Stavoren. Based on various historic sources, we know that during the twelfth and thirteenth centuries, merchants from Stavoren travelled to Scandinavia, England and to towns along the river Rhine. In Stavoren itself, a harbour was constructed in the first half of the twelfth century. The new harbour had a length of at least 825 meters. The harbour area itself consisted of a zone of approximately 13 m. wide between the waterfront and a plank road. This zone was documented only on the east side of the peat stream, but it is not unlikely that it was also present on the west side of the stream. In the archaeological record, this zone seems empty; meaning that during the twelfth and thirteenth centuries, no buildings or other constructions were present in this harbour zone. It is therefore likely that the zone was used for the loading and unloading of ships and the storage of goods and possibly for the construction and repair of ships.

It is difficult to draw any conclusions on the evidence for trade when looking at the finds from the Stadsfenne excavation. Only a selection of the pottery finds have been analysed in this study. Furthermore, only rim fragments were recovered during the Stadsfenne excavation. It is therefore impossible to do a statistical analysis of the pottery at this moment.

However, a statistical analysis was conducted by Kristin Bosma for the Blokhuis excavation in the northern part of Stavoren.[188] There, about 70% of the total high medieval pottery was locally produced pottery while about 30% was imported pottery. Most of the imported pottery was produced in Pingsdorf and Paffrath, two known pottery production centres along the Rhine near Cologne. This ratio between locally produced and imported pottery does not show an exceptionally high proportion of imported wares. In excavations in Tiel and Deventer, the percentage of imported wares are not uncommonly above 70% or even above 80% of the total amount of pottery.[189] In other words, the imported pottery found in Stavoren do argue for trade contacts with sites along the Rhine, but does not necessarily make Stavoren a central point in the interregional trade, like Tiel and Deventer were.

The construction of a whole new harbour in the early twelfth century suggests a rise in the trade activities that Stavoren was involved in. Historical sources confirm the increased trading activities during the twelfth and thirteenth centuries, even though the ratio of imported pottery put the importance of Stavoren in the trading network into perspective.

Interestingly enough, the harbour of Stavoren did not seem to suffer from the big floods that destroyed vast amounts of land around Stavoren during the twelfth and thirteenth centuries. Even though the abbey of St. Odulfus was having difficulties coping with the floods, the merchants from Stavoren somehow flourished during that time. Apparently, the abbey and the trading town were not economically attached nor were they dependent on each other.

188 Bosma 1997, table VI. The numbers are based on the amount of individual pottery sherds found of each pottery type.

189 Verhoeven 2013, table 7.1.

We can only guess what goods were traded during the high medieval period. Stavoren had to import grain and wood as the landscape surrounding Stavoren was not suitable for grain and large trees to grow. As there is no natural resource for stone in the northern part of the Low Countries, natural stones such as quern stones and tuff also had to be imported. These products were imported from Scandinavia and other countries around the North Sea and Baltic Sea, but also from the lands bordering the river Rhine. In return, Stavoren probably exported products like wool and cloth, salt, fish and dairy products. Luxury products like glass, wine and weapons were likely also traded in Stavoren.

During the late thirteenth and fourteenth century trade activities diminished. Several reasons for the decline of the trade activities in Stavoren come to mind. First, it is likely that the amount of water that was carried by the peat stream along which Stavoren was built decreased during the thirteenth and fourteenth centuries. Because an increasing amount of peat east of Stavoren was dug for fuel or fertile soil, the peat areas in the inland decreased, which in turn resulted in less discharge of water from the peat areas. That the stream became smaller over the centuries was observed as a series of revetments, each closer to the centre of the stream. For ships to dock at the harbour, the water needed to have a certain depth.

This series of revetments could also reflect a process of silting up of the stream, although no such silting layers were observed during field work. In other places such as Dorestat, Tiel and Utrecht, the gradual movement of revetments and harbours was connected with silting up of rivers, meaning that it was not uncommon practice to rebuilt revetments over the year. Although no proof exists this happened in Stavoren, it cannot be excluded either.

From the thirteenth century onwards, the cog became the most common trading ship in North-Western Europe. A cog needs considerable more water depth to dock in a harbour than the older ships that were used for the transport of goods. So for a town to play a part in the interregional trading network, with the cog as its main trading vessel, it needed a harbour with enough water depth. If the water depth of the peat stream in Stavoren was decreasing, the town might have had problems with harbouring cogs.

Furthermore, the cog was able to sail longer distances than before, and, on top of that, was better suited to sail on seas such as the North Sea and the Baltic Sea. This meant that, with the adoption of the cog and the support of the Hanseatic League, new trade routes emerged in Northern Europe. Towns in Vlaanderen, Zeeland and Holland now became better accessible to ships from the Baltic region, and there was no longer a need for an extra stop in Stavoren.

With the Hanseatic League, other towns flourished as trading towns. Lübeck, for example, took over most of the trade in and around the Baltic Sea. Towns such as Kampen, Deventer and Zutphen along the river IJssel were able to attract merchants that travelled between the river Rhine and the North Sea. Dordrecht became the largest hub in the trade network in the western part of the Low Countries. Stavoren could not deal with this competition and lost its position.

And last, Stavoren suffered from the unstable political situation between Holland and Friesland during the late medieval period. More than once, the town of Stavoren was used as a military base, by both the count of Holland and the Frisians (and later even the Spaniards). This resulted in several skirmishes that were fought out in Stavoren. The abbey of St. Odulfus was destroyed twice during wars, first in 1345 and again at the end of the fourteenth century. Although it depicts a situation of several centuries later, one of the Robles maps dating to approximately 1570 illustrates beautifully how the town was set on fire during combat (see illustration 73).

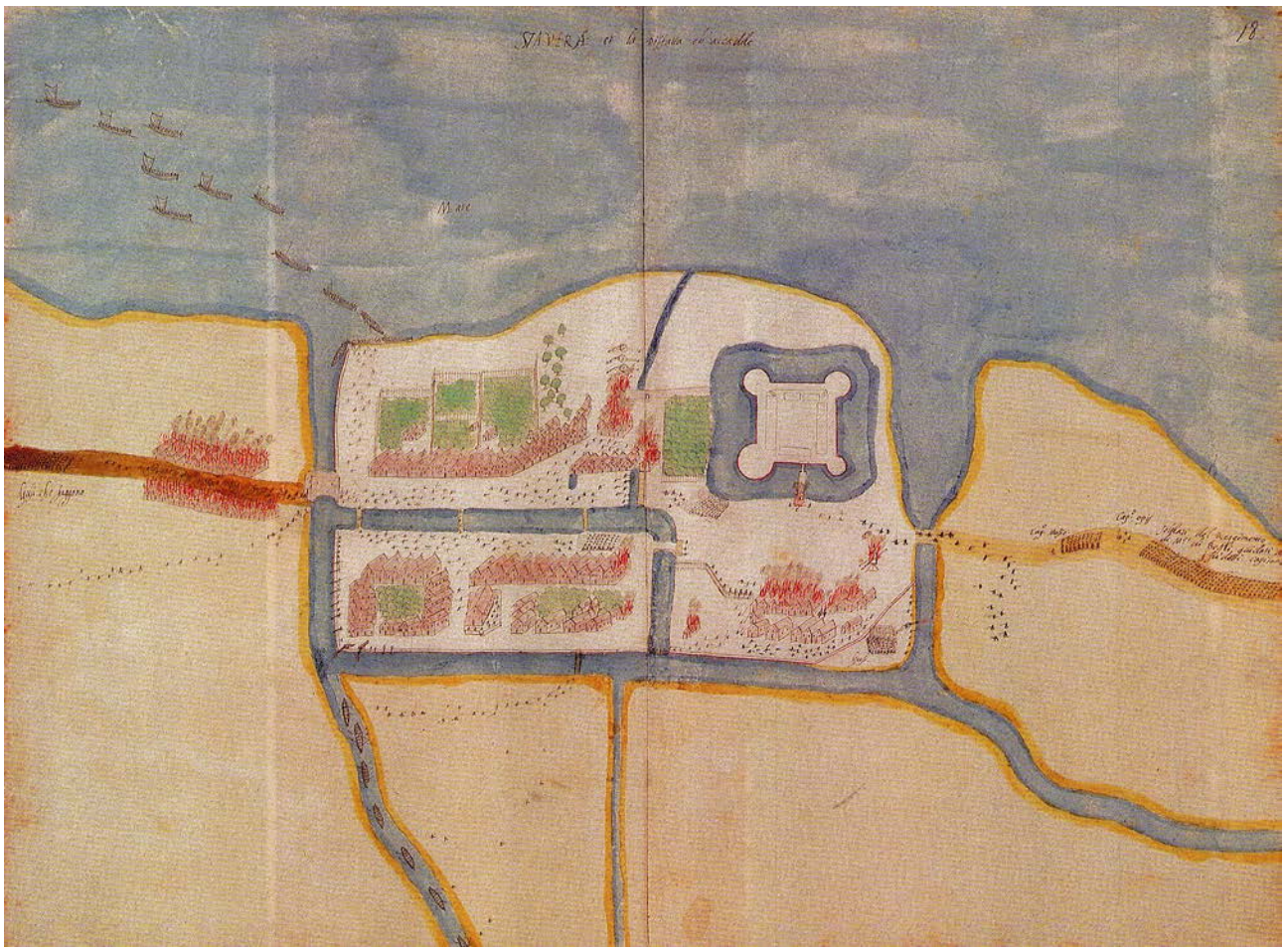


Illustration 73. Number 18 of the so-called Robles-maps of Stavoren made on behalf of the Spanish ruler Caspar de Robles around 1572. North is right. This map documents the war between the Spanish and the Dutch ('Geuzen') during the Eighty Years' War. This map tells the story of the battle, with the two armies, the battle and several houses on fire.

7.3 The topography of Stavoren before 1120

We can only speculate what Stavoren looked like prior to the year 1120. No archaeological structures or features dating to this period have been observed. Even the location of the town is uncertain. Several scenario's on the location of the old town of Stavoren have been proposed.

Most historians believe that the old town of Stavoren was situated near or around the location where in the ninth century Odulfus settled and built a church, roughly one kilometre west of the present town. Historians generally assume that the location of this 'church town' was the same as where in 1131 an abbey was built. In this interpretation, the present town of Stavoren, which was built from around the year 1120, must be interpreted as a 'trading town' that both geographically and functionally was separated from the church town.[190] A similar separation of church and trading towns was present in Bolsward, Dokkum, Leeuwarden and Emden (see illustration 74).[191] From around 1120, both the church town and the trading town existed together. Because of the rising water and the floods, the church town was eventually given up to the sea sometime during the thirteenth to fifteenth centuries. The trading town then became the main town of Stavoren.

Another explanation for the old town of Stavoren was given by Halbertsma and Elzinga. Both archaeologists, who excavated in Stavoren during the sixties, believed that the present location and general layout of the town date back to the Carolingian period. Their assumption was based on

190 See for example Mol/Van Vliet 1998, 106; footnote 87
191 Kullberg 1992, 17-22

several fragments of early medieval pottery found during the Stadsfenne excavation[192] and the Stadsweiland observation done in the central part of the town.[193] In their interpretation, the monastery of St. Odulfus was built isolated one kilometre west of the town.

A third possibility is that the old town of Stavoren was moved to the new location. When the threats of the water became dangerous for the inhabitants of Stavoren, the entire town was moved to a location further inland. It is likely that, at the same time, a dyke was built to protect the new location from the water. After the entire town was moved to a safe area behind a dyke, the monastery of St. Odulfus was all that remained near the water-side. It is possible that the town of Stavoren was moved several times, each time further to the west, until it stayed at the current location around 1120.

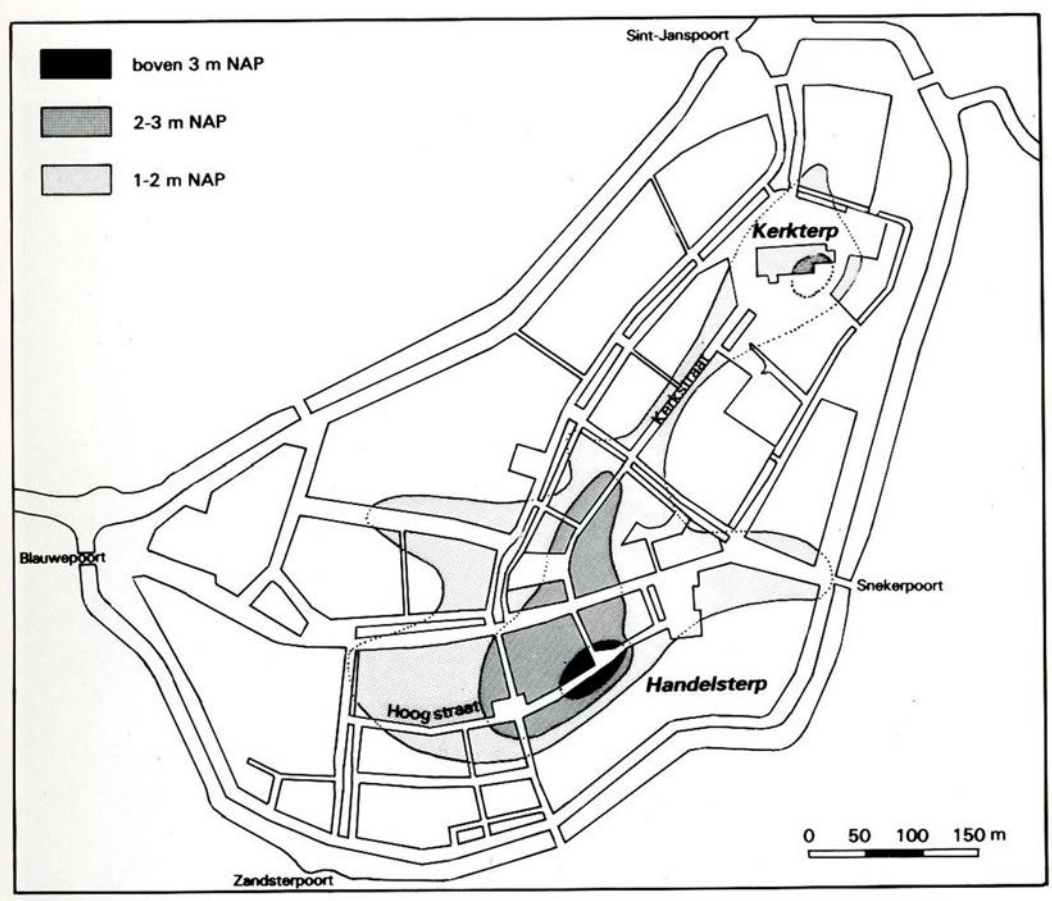


Illustration 74. The town of Bolsward around the year 1000, as reconstructed by Jeanet Kullberg. The trading town (in the south) and the church town (in the north) were two separate settlement sites that only during the late medieval period were connected. From Kullberg 1992.

This movement of settlements is not unheard of around the Zuiderzee area. There are many cases of villages or towns that were (partly) moved to new locations behind a dyke during the high and late medieval period. See for example the predecessor of Enkhuizen.[194]

The fourth and last possibility is a combination of the possibilities above. It is possible that the present town of Stavoren is indeed older than 1120. There is no archaeological or historical proof to claim this, but since only the far south and far north sides of the town have been excavated, it is possible that older layers still exist in the central part of the current town.

192 Halbertsma 1964
193 Elzinga 1965
194 Duijn 2011

However, it is likely that the old habitation in Stavoren concentrated around the abbey of St. Odulfus, of which the location is known to have been about a kilometre west of the present town. It is possible that Stavoren was split up between a church town and trading town, and this division might even be older than 1100. It is however also possible that the town was not split up into two centres but instead was built in the area between the location of the present town and the monastery. Over the centuries, Stavoren was moved step by step to its current location.

Whatever the location and topography of Stavoren was, we do know that Stavoren was a trading place of some significance before 1120. The town privileges, the mint and the distribution of silver coins around the Baltic Sea argue for this. At that time, Tiel and Deventer were the main trading towns in the region. Both towns had an urban character and were involved in extensive trading activities. Although Stavoren also had certain urban characteristics and did participate in the trade network through Northwest-Europe, there is an important difference between Tiel and Deventer on the one hand and Stavoren on the other: the scale of the town and trade. When comparing the distribution of silver coins from Tiel and the urban architecture in Deventer with the coin finds and architecture from Stavoren, the latter clearly had a smaller magnitude.

Stavoren around the tenth and eleventh centuries can therefore be considered a trading town comparable to for example Medemblik, but of less importance in the interregional trade network than Tiel and Deventer.

7.4 The topography of Stavoren after 1120

As already explained above, Stavoren expanded with new reclaimed land along a peat stream around 1120. The same general lay out was used for the entire town: a wharf was constructed on the foreshore of a peat stream with, on top of it, a plank road parallel to the water stream and a row of houses bordering the road. Traces of this layout were observed at the Stadsfenne, Johan Frisosluis and Blokhuis excavations. The total length of the wharf along the peat stream was 825 meters.

The wharf consisted of rows of posts and planks, both parallel and at right angles to the peat stream. The rows of posts that were built at right angles to the water stream also functioned as plot boundaries. The boundaries were extended further to the east into the area that was raised before the flood. The plots varied in width and length and were probably built and maintained by the individual owners of the plots. The water sides of the plots were closed with a large revetment made of heavy square posts and planks.

On the east side of the plank road, away from the waterfront, a row of rectangular wooden houses was built. Each house was built on the full width of a plot and consequently the houses were built close to each other. The construction methods of the houses varied. On the open space behind the houses, wells were constructed.

Most of the medieval house remains documented in Stavoren date to the early twelfth century. Traces of medieval houses of the later twelfth and following centuries were much less observed. This might have something to do with the limited documentation and excavation methods that were used during the Stadsfenne and Blokhuis excavations. It is also possible that part of the stratigraphy was destroyed during the constructions in the seventeenth century and that consequently most traces of the late medieval buildings were erased.

However, the most likely explanation for the lack of building remains from the late twelfth century onwards is the fact that the houses were probably built on sills above ground instead of on earth-fast posts. This construction method was not unknown during the twelfth century, as it was already used in other towns such as Deventer.

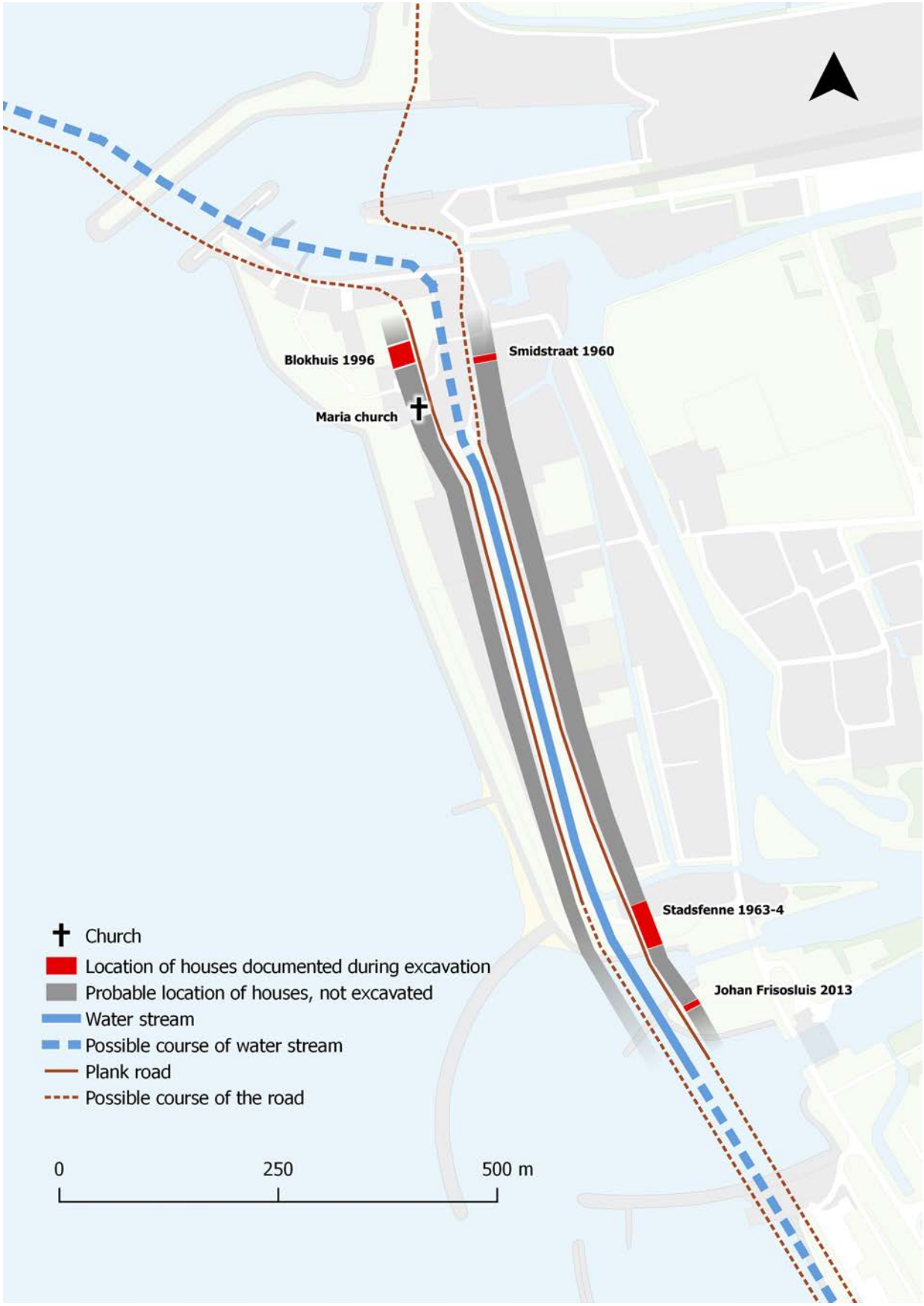


Illustration 75. A reconstruction of Stavoren after 1120. Both foreshores of the peat stream were built on with plots and houses. Remains of actual houses that were documented during archaeological excavations are in red.

Buildings that were founded on sills leave very little traces in the soil and are therefore hard to observe. In most cases, a wooden building on sills is only observed as a series of loam floor layers in a section drawing. In Stavoren, such floor layers were observed in the Stadsfenne excavation in Building 2. The other buildings in the Stadsfenne and Blokhuis excavations were not sectioned, which made it almost impossible to recognize floor layers during field work. However, possible sills such as large stones, concentrations of wooden planks and a brick were observed in the Stadsfenne excavation.

The plots observed in the Stadsfenne, Blokhuis and the Johan Frisosluis excavations varied in length and width. This means that the plots had individual owners who probably built and maintained their own plots. The same can be said about the houses, as they varied in construction and size per plot. It can even be argued that each plot owner was responsible for the maintenance of that part of the plank road that was on their plot: the length of the planks of the road was exactly the same as the width of the plots. Furthermore, during the period of habitation, the plots were clearly raised with reclamation deposits which were added per plot.

That being said, it is likely that the plot owners did make agreements and work together during both initial construction and continued maintenance. There must have been some kind of master plan for the expansion of the town. There are two arguments for this. First, the initial construction of the wharf took place as a single project rather than as individual projects. The construction techniques of the wharf and plots were all similar and the construction was made on the same level. The same is true of the first and the later revetments. The second argument for agreements on construction and maintenance is that the plots remain the same during the period of habitation. During the period in which the plots were in use, no alterations were made to the lay out or dimensions of the individual plots. Apparently, the borders of land ownership were fixed.

The construction of wharf, plank road and houses along the water stream was probably initialised by one of the local seats of power. The tradition was also known in Scandinavia, according to two sagas in the thirteenth century Heimskringla by Snorri Sturluson: "*King Olav brought his men to the mouth of the Nid River. He built houses on the shore and decided that a trading town should be established at this place. He gave plots to people where they could build houses (...)*" (From the saga of Olav Tryggvason). In the saga of king Olav Haraldsson, a similar process is described: "*[The king] marked out plots for the houses and gave them to farmers and merchants or others he favoured and who wanted to build.*"[195]

Such historical information is not available for Stavoren. In fact, their is hardly any information known on land ownership in Stavoren during the late eleventh and twelfth centuries, making it impossible to say anything conclusive on the initial owner of the land on which the plots were built. It could have been either the count, the bishop, the monastery or the town itself.

In 1131, around the time the plots in the Stadsfenne area were constructed (approximately 1120 – 1140), the abbey of St. Odulfus was founded in Stavoren. It's possible the newly founded abbey immediately wanted to take control over the town or part of the town by reclaiming new land and selling the land as plots.

Another possibility is that the inhabitants of the town reclaimed the land and built houses on their own initiative. Stavoren was given town privileges not long before the expansion of the town (around 1060), and it is possible that the reclaimed land was part of the town territory.

As mentioned above, the total length of the new part of Stavoren that was built around 1120 is at least 825 meters. How many houses could fit into that area? The four houses that were documented in the northern part of the Stadsfenne excavation (Buildings 2 – 5) had an average width of five meters each. That would mean that there could have been a maximum of 165 houses on one side of the peat stream. On both sides of the peat stream, there would have been 330 houses in the twelfth

195 After Tesch 2001, 734-5

century. With an average household size of 4 to 5 people, Stavoren had about 1300 to 1600 inhabitants. This of course is a very rough estimation, as only a handful of houses were actually excavated and because it is not known if both sides of the stream were actually inhabited over the full length of the stream. However, it is possible that the habitation zone continued in north or south directions or that there were more houses east and west of the peat stream.[196] In other words, the actual habitation area has not been limited. This could mean that the number of houses along the peat stream was even larger.

Did Stavoren between 1100 and 1300 had urban characteristics? In chapter 4 of this study, several criteria for defining a place as a medieval town have been given. Stavoren meets several of the criteria:
- There was a relatively large number of inhabitants (more than 1000);
- Stavoren was granted town privileges in the late eleventh century;
- Stavoren had at least in part a non-agrarian economy: trade was an important part of the town and critical resources such as wood and grain would have to be imported;
- The housing was dense: the houses documented in the Stadsfenne excavation were built very close to each other;
- The houses and plots were characterized by a systematic layout;
- Before the houses and plots were constructed, the landscape was adapted to make it suitable for habitation: the houses were built on top of a thick layer of reclamation deposits.
- The abbey of St. Odulfus had a central religious role in the local region: the abbey owned several manors in the area;

As far as we know, Stavoren did not have fortifications at that time and there is no evidence for large scale craft-production. In conclusion, although it lacks the fortifications and craft-production, Stavoren meets many of the criteria. Twelfth century Stavoren therefore can easily be referred to as an urban town.

The construction of the new part of Stavoren in the first half of the twelfth century fits into the general trend of urbanisation that can be observed in Europe around the same time. Many towns expanded, or were founded, in the twelfth and especially the thirteenth centuries. This urbanisation was the result of an explosive growth of the European population and of new technical developments in agriculture and land reclamation. These changes in society also affected Stavoren.

Stavoren was a linear settlement, meaning that it formed a long line and that it was built along a central axis, in this case the peat stream. Similar layouts can be observed at many settlements in the Netherlands at the same time: Part of Tiel was built along the river Linge, Medemblik along a small river *Medemelake*, Leiden along the river Oude Rijn and Amsterdam along the river Amstel. Many more examples of linear settlements in the Netherlands could be given. In many cases, the banks of the river were raised and built on with houses and streets.

Since the twelfth century, the basic layout of Stavoren has stayed the same. The present layout of the Voorstraat and Voordelft, where a canal is bordered on two sides by a row of houses facing a road, originates in the early twelfth century. The shape of the plots will broadly have stayed the same, as can be seen on several historical maps (see illustrations 14, 15, 18 and 20).

The continuity of the topography and the infrastructure in a town over the centuries is what geographer Gerard Hoekveld called inertia.[197] Inertia can be observed in many European towns. For

196 The oldest maps of Stavoren by Jacob van Deventer, dating to approx. 1560, show a second canal east of the peat stream discussed in this study. This second canal is still present today as the Achterdelft. Along the Achterdelft, some houses were built. Nothing is known about the time when the Achterdelft was made or when the houses along it were constructed.

197 After Renes 2008, 33

example, many sixteenth century maps of towns in the Netherlands could still be used today to navigate the town centres. Most of the sixteenth century roads and building blocks are still present.

The biggest change in the layout of Stavoren since the twelfth century can be seen in the far north and south of the town: here the peat stream and rows of houses extended further to both the north and the south. How far the layout extended in unknown. Furthermore, at sometime before 1560, a new canal known as the Achterdelft was dug east of the Voordelft. As the Achterdelft has never been the subject of an archaeological excavation, we do not know when it was dug.

Was there continuity between the old Stavoren before 1120 and the new Stavoren after 1120? The answer to this question is yes. If the old town of Stavoren was indeed situated west of the present town, which is likely, both the old and the new town must have existed together for some time. The ecclesiastical centre in Stavoren, that was founded by Odulfus in 837 and was turned into a Benedict abbey in 1132, knew a history that continued for exactly 657 years until it was moved away from Stavoren for good in 1494. As the monastery and the town of Stavoren shared their histories to a large extent, the town knew a similar continuity, in this case between the early medieval period and the present day.

Around the time the Benedict abbey of St. Odulfus was founded, in the first half of the twelfth century, the town was growing extensively and a completely new harbour was built. The town flourished and the merchants of Stavoren could be found all over North-western Europe. At that time, the town had reached a size that was not matched until the late twentieth century.

7.5 Future research

The present study has answered many questions but also has raised a few more. In the following paragraph, several potential research subjects to continue the study on the medieval history of Stavoren will be discussed.

First of all, this study has dealt with the northern part of the Stadsfenne excavation only. This is about half of the total excavated area. The southern half of the excavation likely will not reveal a drastic change in the layout of Stavoren or the land-use during the high medieval period. Based on the publication by Sarfatij[198] and a quick glance at the original field drawings, it seems that the wharf, the revetments, the plank road and the houses continue south in a similar fashion. Nevertheless, a detailed study of the southern half of the Stadsfenne excavation will give more information on the construction of the various structures, might reveal more on the early land use before the wharf was constructed and might give more or better dates to the various phases.

Secondly, only a selection of the find material of the Stadsfenne excavation has been analysed in the present study. To be able to get more and more precise dates for the Stadsfenne excavation, all find material should be analysed. Also, if the total number of finds was to be analysed, statistical analysis on the finds would be possible. It would be valuable, for example, to study the ratio between locally produced pottery and imported pottery. Other artefacts, such as the golden ring that was found during the excavation (find number 278), could be analysed on technique and possibly on provenance.

Several other archaeological excavation that were conducted in Stavoren could be (re-)analysed similar to how the Stadsfenne excavation was analysed in the present study. First of all, the test trenches that were made in the Stadsfenne area in 1962 have never been studied yet. Only a very short note with just a couple of lines have been written on the results of this excavation. An analysis

198 Sarfatij 1973

of this excavation might reveal more details on the development of the Stadsfenne area. The problem however is that the location of the original drawings of the excavation is currently not known.

The 1996 and 1997 excavations in the Blokhuis area could also be re-analysed. Although this excavation has been published, the focus of the publication was on the sixteenth century blockhouse itself. The medieval remains were only briefly discussed. The original field drawings of the Blokhuis excavation should therefore be re-analysed to better understand the wooden remains of houses and the wharf at this location in Stavoren.

Fourth, as has been discussed in paragraph 5.3, there is no overview of the distribution of eleventh century silver coins that were minted in Stavoren. Several publications on medieval coins mentioned various coin finds in different countries in Europe, but there is no overall study on the distribution of the coins. To get a better picture of the extent of the coin production and the associated trade in Stavoren, such a study is necessary. Furthermore, not only the coin finds from Stavoren should be analysed, but also the coin finds from other Frisian towns such as Bolsward and Leeuwarden should be considered. A distribution map showing coins that were minted in Stavoren is only meaningful if it can be compared with the distribution of coins that were minted in other towns.

And fifth, a more detailed historical study on the trade of Stavoren is necessary. Although some historical information on merchants from Stavoren is known, it can be expected that more information can be found. For example, it is likely that merchants from Stavoren appear in various medieval toll lists. Such a study has not been done yet for Stavoren.

Most historical studies on Stavoren have dealt with the town privileges or with the history of the abbey of St. Odulfus. The focus of such studies usually was on political, administrative, economic or religious changes. The same sources however sometimes contain topographical characteristics. In a charter dating to 1325, for example, a dike and a stretch of land north of the monastery is mentioned.[199] Such information is valuable when reconstructing the topography of Stavoren. A detailed study of topographical characteristics of the various historical sources is therefore recommended.

The seventh and last potential research subject that will be mentioned here concerns the development of Stavoren in a broader perspective. Not much has been published on nearby Frisian towns such as Bolsward, Hindeloopen and Workum. How does the development of Stavoren relate to the development of these other towns? To answer this question, other Frisian towns should be the subject of studies similar to the present study.

199 Mebius 2002, 20

Nederlandse samenvatting

Stavoren is een van de Friese elf steden en is gelegen aan het IJsselmeer. De stad ligt in de gemeente Súdwest-Fryslân. Stavoren is ontstaan in de vroege middeleeuwen. Het landschap rond Stavoren bestond toen uit een uitgestrekt veengebied waarin verschillende veen riviertjes stroomden. Die veenriviertjes mondde uit in de rivier de Vlie, die van het Almere naar de Noordzee stroomde, voordat de Zuiderzee was ontstaan.

De exacte locatie waar Stavoren is ontstaan is niet bekend. Waarschijnlijk is de plaats ontstaan aan de Vlie of aan een van de veenrivieren die naar de Vlie stroomden. Vanaf de twaalfde eeuw lag een groot deel van Stavoren zeker aan een veenrivier. De huidige Voordelft in Stavoren is nog een restant van die veenrivier.

Stavoren lag dus strategisch aan het water en heeft daarom kunnen groeien tot een middeleeuwse handelsplaats. Het water heeft echter ook een vernietigende kracht gehad op Stavoren. Gedurende de twaalfde en dertiende eeuw kreeg de zee meer invloed in de kuststreken van Nederland. Tijdens een aantal stormvloeden zijn grote delen land weggeslagen en verspoeld. De Vlie en het Almere veranderen gedurende die eeuwen in de Zuiderzee. Tijdens deze ontwikkelingen is onder andere het St. Odulfusklooster van Stavoren door het water verzwolgen. Waarschijnlijk zijn ook delen van de stad vernietigd tijdens stormvloeden. De ontwikkeling van de Zuiderzee en de vernietigende kracht van het water heeft een grote invloed gehad op de ruimtelijke en economische ontwikkeling van Stavoren.

Onze kennis van de middeleeuwse geschiedenis van Stavoren is gebaseerd op historische en archeologische bronnen. Uit de vroegste periode uit de ontwikkeling van Stavoren, vóór ca. 1100, is echter nauwelijks archeologische informatie. Uit die periode zijn vrijwel geen materiële resten meer over.

Over de periode ná 1100 weten we meer dankzij verschillende archeologische opgravingen en waarnemingen die hebben plaatsgevonden in de stad. Drie opgravingen in het bijzonder zijn van groot belang geweest voor ons begrip van de middeleeuwse ontwikkeling van Stavoren. Tijdens de onderzoeken op het Blokhuis terrein in 1996 en 1997 en op het Johan Frisosluis terrein in 2013 zijn resten gevonden van middeleeuwse houten huizen, percelen en werven. Het grootste en belangrijkste archeologische onderzoek naar de middeleeuwse geschiedenis van Stavoren tot nu toe vond echter plaats op het Stadsfenne terrein in het zuiden van de stad. Hier heeft archeoloog Herre Halbertsma in 1963 en 1964 een archeologische opgraving geleid. Op een enkel kort artikel van Herbert Sarfatij uit 1973 na, is het Stadsfenne onderzoek echter nooit goed uitgewerkt en gepubliceerd. Het Stadsfenne onderzoek is daarom in het kader van deze studie opnieuw bekeken, gedigitaliseerd en opnieuw geïnterpreteerd. Omdat het Stadsfenne onderzoek te groot was om in zijn geheel te behandelen is in deze studie ongeveer de helft van de opgraving opnieuw bekeken. Het doel van deze scriptie was om de middeleeuwse geschiedenis van Stavoren te onderzoeken aan de hand van de resultaten van deze nieuwe uitwerking van het Stadsfenne onderzoek.

Deze studie beperkt zich tot de periode tussen 837 en 1292. Beide data waren belangrijk in de geschiedenis van Stavoren. In het jaar 837 vestigde Odulfus, een kanunnik uit Utrecht, zich in Stavoren. In het jaar 1292 kreeg Stavoren stadsrechten van de graaf van Holland. In het onderstaande zal kort uitgelegd worden hoe Stavoren zich in die periode ontwikkelde.

Odulfus werd in 837 door de bisschop in Utrecht naar Friesland gestuurd om de Friezen te kerstenen. Hij vestigde zich in Stavoren om van daaruit de Friezen te bekeren. We weten eigenlijk weinig over het verdere leven van Odulfus, op een aantal wonderverhalen na. Het is ook niet zeker wat Stavoren in die tijd precies voorstelde en wat de komst van Odulfus voor Stavoren betekende.

Historici nemen over het algemeen aan dat Odulfus een kerk stichtte in Stavoren en in een gemeenschap met andere geestelijken leefde. In de eeuwen die volgden bleef er een religieus centrum in Stavoren. In het jaar 1132 moesten de geestelijken in Stavoren plaats maken voor monniken en nonnen van een Benedictijnen klooster die in Stavoren werd gesticht. Het klooster was gewijd aan St. Odulfus en Maria. Het St. Odulfusklooster had bezittingen in de directe omgeving, maar ook in de omgeving van Urk en in West-Friesland.

De stedelijke ontwikkeling van Stavoren liep parallel aan de ontwikkeling Stavoren als een religieus centrum. Zoals gezegd zijn er nagenoeg geen archeologische resten van Stavoren van vóór de late elfde eeuw. In de negende, tiende en elfde eeuw lag Stavoren waarschijnlijk meer westelijk dan de huidige stad. Een handjevol historische bronnen vertellen ons iets over Stavoren in deze periode. In het jaar 991 was Stavoren het slachtoffer van een Viking plundertocht. Nog geen eeuw later, rond 1068, kreeg Stavoren stadsrechten van de graaf van Friesland. Stavoren is daarmee de eerste plaats in Nederland die middeleeuwse stadsrechten kreeg. Naast stadsrechten kreeg Stavoren ook een munthuis van de graaf. Veel munten uit de late elfde eeuw die zijn geslagen in Stavoren, zijn teruggevonden in de landen rond de Oostzee. Deze muntvondsten mogen gezien worden als een aanwijzing dat Staverse handelaren actief waren in Scandinavië en in het Baltische gebied. Uit historische bronnen is ook bekend dat Stavoren handelscontacten had met Keulen. Op welke schaal die elfde eeuwse handel plaatsvond en hoe de Staverse handel zich verhoudt tot handel van bijvoorbeeld Tielse kooplui is onduidelijk; er is nog geen studie gedaan naar de exacte aantallen en vindplaatsen van de elfde eeuwse munten.

Rond de tijd dat het St. Odulfus klooster werd gesticht (in 1132), kreeg Stavoren een stadsuitbreiding. Een strook land van ten minste 825 meter lang aan weerszijden van een veenriviertje werd ontgonnen en gereed gemaakt voor bewoning. In eerste instantie werd een strook langs de oevers van het riviertje opgehoogd en verstevigd met beschoeiingen. Kort daarna werd Stavoren getroffen door een stormvloed. Hoewel deze stormvloed niet bekend is uit historische bronnen, past de vloed wel in de serie van stormvloeden die de Nederlandse kuststreek trof gedurende de middeleeuwen. Tijdens deze stormvloed, die plaatsvond tussen 1120 en 1140, is een dik pak klei afgezet op de oevers van het riviertje. Dat het kleipakket het gevolg was van een stormvloed getuigen de veenbrokken met houtfragmenten en menselijke artefacten die moeten zijn weggeslagen tijdens de storm. De laag werd door de archeologen van de Stadsfenne opgraving als 'verspoeld' beschreven.

Het afgezette kleipakket werd door de bewoners van Stavoren handig benut. Rijen van palen en houten planken werden in noord-zuid en in oost-west richting in het pakket geslagen om de laag te stabiliseren. De palen rijen in oost-west richting markeerden daarnaast ook de perceelsgrenzen. De percelen waren gemiddeld 5 meter breed en 37 meter lang. Aan de waterkant werd een nieuwe beschoeiing gebouwd.

Op de percelen werden houten huizen gebouwd, gemaakt van ingegraven palen en met wanden van liggende of staande planken. De precieze constructiewijzen van de huizen verschilden per perceel, wat een aanwijzing is dat de huizen individueel gebouwd en onderhouden werden. De huizen werden op bijna de volle breedte van de percelen gebouwd, wat betekende dat de huizen dicht tegen elkaar stonden. Voor de westgevel van de huizen werd een weg gebouwd die, haaks op de percelen, parallel aan het riviertje liep. De weg was gemaakt van verschillende lagen houten planken. De bovenste laag, het wegdek, bestond uit lange planken die in de lengterichting van de weg lagen. Tussen de planken weg en de waterkant was een zone van ongeveer dertien meter breed die onbebouwd bleef. Deze zone werd waarschijnlijk gebruikt voor het opslaan van goederen en het laden en lossen van schepen.

Deze houten weg, huizen en kadewerken zijn waargenomen tijdens de Stadsfenne opgraving. Delen van de percelen en een huis zijn echter ook waargenomen tijdens het Johan Frisosluis onderzoek en tijdens het Blokhuis onderzoek. Op basis van de resultaten van deze opgravingen, en een aantal waarnemingen, kan een reconstructie gemaakt worden van deze

twaalfde eeuwse stadsuitbreiding (zie afbeelding 75).

Deze nieuwe stadsuitbreiding langs het veenriviertje bleef bewoond tot in ieder geval het midden van de veertiende eeuw. Gedurende die tijd veranderde de bewoning echter wel. In de loop van de twaalfde en dertiende eeuw zullen de huizen zijn herbouwd. De nieuwe huizen werden niet meer gebouwd met ingegraven palen. De dragende palen werden gebouwd op stiepen; kleine funderingen gemaakt van hout of steen. Een aantal van dergelijke stiepen zijn teruggevonden tijdens de Stadsfenne opgraving. Ook de waterkant veranderde gedurende de latere twaalfde en dertiende eeuw. Gedurende de eeuwen werden steeds nieuwe beschoeiingen gemaakt, steeds een paar meter verder richting het midden van de veenrivier. De rivier werd op die manier dus steeds smaller.

De bouw van de nieuwe stadsuitbreiding rond het begin van de twaalfde eeuw kan te maken hebben gehad met een aantal zaken. Stavoren werd vanaf die tijd bedreigd door stormvloeden. Het klooster, dat ten westen van de nieuwe stadsuitbreiding lag, heeft gedurende de dertiende en veertiende eeuw herhaaldelijk om hulp gevraagd omdat het klooster vernietigd dreigde te worden door het oprukkende water. Het is dus goed denkbaar dat de inwoners van Stavoren hun stad tijdig verder landinwaarts hadden verplaatst. Daarnaast is het ook mogelijk dat de nieuwe stadsuitbreiding het gevolg was van het feit dat Stavoren groeide en behoefte had aan een nieuwe haven. In dat geval zou het oude Stavoren bij het klooster en het nieuwe Stavoren langs het riviertje een tijd tegelijkertijd hebben bestaan.

Hoe dan ook, in de twaalfde eeuw had Stavoren ruimte om een nieuwe haven met bewoning te bouwen. Dat het in de twaalfde en dertiende eeuw goed ging met Stavoren bewijzen ook een aantal historische bronnen waarin Staverse handelaren en handelsgildes worden genoemd. Het handelsnetwerk van Stavoren strekte zich tot in Engeland, Scandinavië en Keulen.

Tegen het eind van de dertiende eeuw verloor Stavoren haar handelspositie in het interregionale handelsnetwerk. Ook verdween een deel van de twaalfde eeuwse haven. De veenrivier waarlangs Stavoren was gebouwd, werd deels dicht gegooid. Het St. Odulfusklooster werd in de vijftiende eeuw voor korte tijd verplaatst naar de stad, maar verliet nog in diezelfde eeuw definitief Stavoren. Tegen het einde van de vijftiende eeuw stelde Stavoren niet veel meer voor.

De redenen voor de achteruitgang van de handelspositie van Stavoren vanaf de late dertiende eeuw zijn divers. Ten eerste zal de veenrivier waarlangs Stavoren was gebouwd steeds minder water zijn gaan dragen. De veengebieden, van waaruit de veenrivier stroomde, werden gedurende de middeleeuwen steeds verder ontgonnen. Dat betekende dat veen op grote schaal verdween en dat het land inklonk. Door dat proces verdwenen ook veel van de veenrivieren. Op een gegeven moment was de hoeveelheid water in de veenrivier van Stavoren wellicht niet meer voldoende om schepen te voeren.

Wat daarmee te maken heeft, is dat vanaf de dertiende eeuw de kogge steeds meer gebruikt werd in Noordwest-Europa. De kogge was schip dat aanzienlijk groter was dan de schepen die daarvoor gebruikt werden. Dat betekende ook, dat het schip meer diepgang had en dus dieper vaarwater nodig had. Het kan zijn dat de haven van Stavoren niet geschikt meer was om de kogge te ontvangen.

De kogge was ook instaat om grotere en langere reizen te maken dan haar voorgangers. Dat betekent dat schepen vanuit de Oostzee en Noordzee nu verder konden voeren, direct naar grotere plaatsen die op dat moment opkwamen zoals Dordrecht en Kampen. De concurrentiepositie van Stavoren verslechterde.

Tot slot was ook de politieke situatie in Stavoren niet gunstig voor de handel. Stavoren was meer dan eens het strijdtoneel van de oorlogen tussen Holland en Friesland. Tot twee keer toe is het St. Odulfusklooster gebruikt als militaire versterking, waarbij het klooster en de stad ernstig beschadigd raakten.

Stavoren kent een lange geschiedenis als handelsstad. Het vroegste deel van die geschiedenis is onduidelijk, een groot deel van het Stavoren uit die tijd is verzwolgen door de zee en is voor altijd verdwenen. Rond de tijd dat het Benedictijnenklooster van St. Odulfus was opgericht, in de eerste helft van de twaalfde eeuw, was Stavoren snel aan het groeien. Dat waren de hoogtijdagen van Stavoren. De stad bereikte een grootte die pas in de twintigste eeuw werd geëvenaard.

Abbreviations

AHN	Actueel Hoogtebestand Nederland (Dutch digital elevation model).
ARC	Archaeological Research & Consultancy (Dutch commercial archaeological company, 1999 – 2013).
ARCHIS	Archaeological Informationsystem (Dutch database with archaeological sites).
BAI	Biologisch-Archaeologisch Instituut (today known as GIA).
GIA	Groningen Institute of Archaeology.
NAD	Noordelijk Archeologisch Depot (provincial archaeological depository).
NAP	Normaal Amsterdams Peil (Amsterdam Ordnance Datum).
OSU	Oorkondenboek van het Sticht Utrecht (charter book of the Sticht Utrecht).
RAAP	Dutch commercial archaeological company.
RCE	Rijksdienst voor het Cultureel Erfgoed (Cultural Heritage Agency of the Netherlands; formerly known as ROB).
ROB	Rijksdienst voor het Oudheidkundig Bodemonderzoek (today known as RCE).

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Digital appendices

This written report comes with several digital appendices.

Appendix 1

A collection of several ESRI shapefiles:

Stavoren-Stadsfenne_1963-4_features_by-Geert-Overmars
Format: Shapefile, polygons
CRS: Amersfoort / RD New (EPSG:28992)
Description: Vectorised drawing of trenches 1, 2, 3, 14 and 15 of the Stadsfenne excavation (polygons). The attribute table contains the values: feature-id, material, interpretation, trench, level, type, well number, structure and feature.

Stavoren-Stadsfenne_1963-4_find-numbers_by-Geert-Overmars
Format: Shapefile, points
CRS: Amersfoort / RD New (EPSG:28992)
Description: Find numbers of the Stadsfenne excavation, as documented by the excavators.

Stavoren-Stadsfenne_1963-4_NAP-values_by-Geert-Overmars
Format: Shapefile, points
CRS: Amersfoort / RD New (EPSG:28992)
Description: Elevation measurements (in NAP) of the Stadsfenne excavation, as documented by the excavators.

Stavoren-Stadsfenne_1963-4_section-lines_by-Geert-Overmars
Format: Shapefile, polylines
CRS: Amersfoort / RD New (EPSG:28992)
Description: Location of the section drawings.

Stavoren-Stadsfenne_1963-4_section-point_by-Geert-Overmars
Format: Shapefile, points
CRS: Amersfoort / RD New (EPSG:28992)
Description: End points of the section drawings with letters.

Stavoren-Stadsfenne_1963-4_trenches_by-Geert-Overmars
Format: Shapefile, polygons
CRS: Amersfoort / RD New (EPSG:28992)
Description: All trenches of the Stadsfenne excavation.

Stavoren-Stadsfenne_1963-4_site-recording-system-lines_by-Geert-Overmars
Format: Shapefile, polylines
CRS: Amersfoort / RD New (EPSG:28992)
Description: Location of the site recording system, used for georeferencing the raster data.

Stavoren-Stadsfenne_1963-4_site-recording-system-points_by-Geert-Overmars
Format: Shapefile, points
CRS: Amersfoort / RD New (EPSG:28992)

Description: End points of the site recording system.

Stavoren-Stadsfenne_1963-4_raw_by-Geert-Overmars
Format: Shapefile, polygons
CRS: Amersfoort / RD New (EPSG:28992)
Description: Raw data after vectorising. Contains drawings of all Stadsfenne trenches (including the trenches that were not discussed in this study). Note: Their may be minor differences between features in this file and features in the features-shapefile (Stavoren-Stadsfenne_1963-4_features_by-Geert-Overmars).

Appendix 2

List of find numbers from the Stadsfenne excavation by Herre Halbertsma (1963 – 1964) in Stavoren. Only a selection of the find numbers was analysed for this study.

Note: Numbers marked red in the list belong to the 1962 Stadsfenne test excavation by Gerrit Elzinga.

Appendix 3

Vectorised field drawings of the Stadsfenne excavation by Herre Halbertsma in Stavoren (1963 – 1964). Original field drawings by the RCE. Digitalisation by Geert Overmars.

Appendix 4

Vectorised section drawings of the Stadsfenne excavation by Herre Halbertsma in Stavoren (1963 – 1964). Original field drawings by the RCE. Digitalisation by Geert Overmars.

Appendix 5

List of the original field drawings that belong to the Stadsfenne excavation by Herre Halbertsma in Stavoren (1963 – 1964). The drawings were made by the RCE during field work. The list includes original drawing number, trench and level number and inventory number.