

# THE OSS-NOORD PROJECT

The Second Decade of  
Excavations at Oss 1986-1996

# 48

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H. FOKKENS, S. VAN AS  
AND R. JANSEN





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Sidestone Press



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H. FOKKENS, S. VAN AS  
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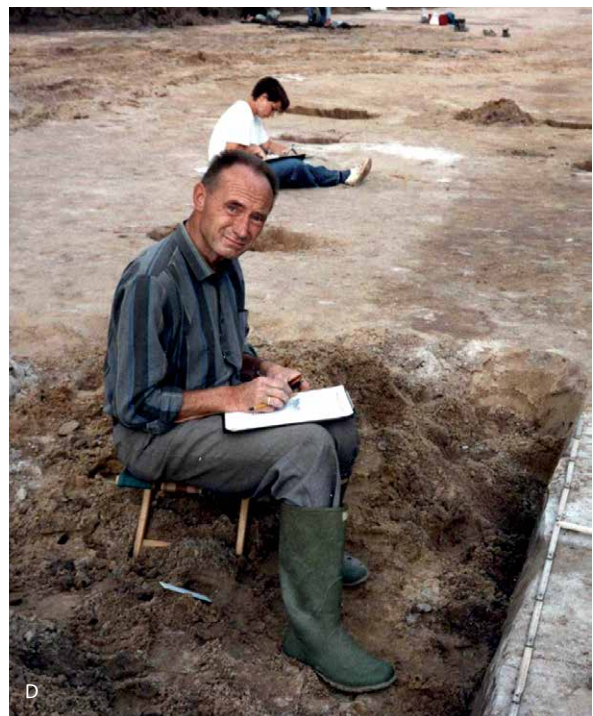
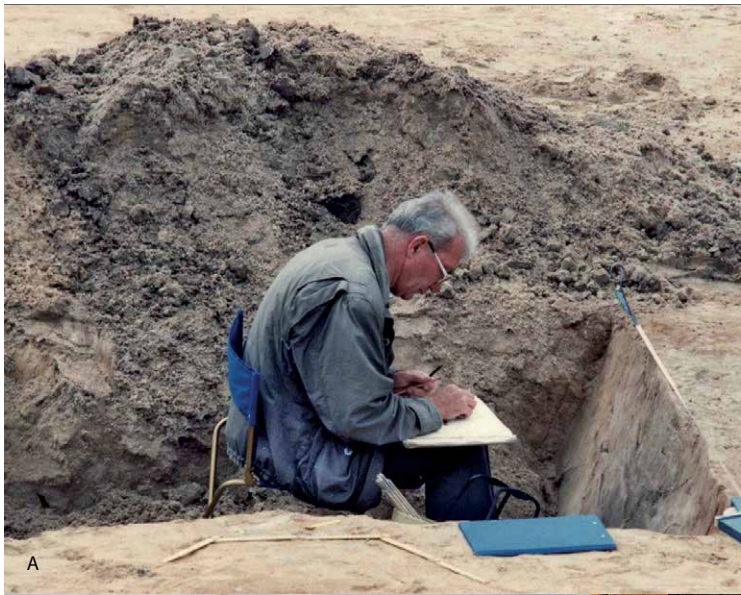
They were our ears and eyes in Oss and helped us during excavations. In the second place nothing would have been possible without the cooperation of the many aldermen of Oss and their functionaries. Especially Paul Spanjaard, policy officer for Culture of the municipality of Oss, has been a stable factor throughout the last 30 years of our work in Oss.

Municipal officials paved the way for getting access to building sites or farmlands, they lent us houses and farms that we could use as excavation houses, and last but not least provided part of the necessary finances. In that respect we also have to thank the archaeological committee of the Province of North-Brabant, who provided most of the finances necessary for the excavation costs in the Oss-Noord campaigns (machines, sheds, etc.). Leiden University provided all of the necessary funds for student housing, assistants and personnel.

Several generations of students constituted the core of fieldwork and of post excavation research. During fieldwork especially experienced doctoral students, PhD students (a.o. Anne de Hingh, Liesbeth Theunissen, Dieke Wesselingh, Kees Schinkel, Zita van der Beek, David Fontijn) and colleagues (a.o. Piet van de Velde, Hans Kamermans, Gerrit van der Kooij, Menno Hoogland and Aniek Abbink (†)) assisted in coaching the students. We have listed the students in a random order for the different years. Those student participants and guest workers have been listed that actually contributed to the excavation by making field drawings, field-diaries or section drawings. That was the way we could trace all of them, so there may be people missing, but then they did not turn up in the documentation.

**Mikkeldonk 1986:** director: Harry Fokkens; field technician: Ide Stoepker; student participants: Nico van Bodegraven, Rene van Dijk, Erik Jungerius, Els Lems, Gertrud van Loon, Jeltje Schreurs, Jose Schreurs, Arthur Sloos, Annette Vasbinder, Blanchefleur van der Velde, Jeroen Verhoog, René van Wilgen; guest excavators: Piet Haane, Gerard van Alphen.

**Mikkeldonk 1987:** director: Harry Fokkens; student participants: Ivar Schute, Huub Scholte Lubberink, Hans Oude Rengerink, Jaap Hoff, Paul Storm, Gerarda Baars, Wilco van Noppen, Kees Schinkel, José Schreurs, Saskia van Dokkum, Joost Mioulet, Dirk Roodzant, Paul Haanen, Take Alberts, Hans Jongepier, Piet van de Velde, Odette Brouwer, Liesbeth Theunissen, Frank Timmermans, Sabine Frines, Jeltje Schreurs-Verwer, Roos van der Velden, Jeroen ter Brugge; guest excavators: Jos Deeben, Gerard Smits, Gerard van Alphen



The local archaeologists who were our ears, eyes, and hands at Oss-North. A: Piet Haane (†) making one of his many magnificent section drawings; B: Gerard Smits (†), holding one of his precious finds; C: Gerrit van Duuren (†), a tireless digger; D: Gerard van Alpen, meticulous draughtsman and documenter. Photos H. Fokkens.



**Mikkeldonk 1987 – 1988 winter campaign:** director: Peter Deunhouwer; field technician: Ide Stoeper; guest excavator: Piet Haane

**Mikkeldonk 1988:** director: Harry Fokkens; student participants: Annette Vashinder, Jente van den Bosch, Ivar Schute, Harry Fokkens, Peter Deunhouwer, Yvonne Taverne, Monique van den Dries, Liesbeth Theunissen, José Schreurs, Huub Scholte Lubberink, Kees Schinkel, Claudio Ruffin; guest excavators: Piet Haane, Gerard Smits, Gerard van Alphen

**Mikkeldonk 1989 (Kraaijenest):** director: Harry Fokkens; student participants: Huub Scholte Lubberink, Hans Oude Rengerink, Marie-France van Oorsouw, Gerjan Sophie, Dieke Wesselingh, Edwin van Hagen, Martijn van Poecke, Patrick Ploegaert, Natascha Moses, Jan-Albert Schenk, Hans Jongepier, Erik Peters, Eric Olijdam, Monique van den Dries, Ivar Schute, Manon van Diemen, E. F. Groenland, Kees Schinkel, Liesbeth Theunissen; guest excavators: Gerard Smits, Gerard van Alphen, Piet Haane, Gerrit van Duuren, Jos Deeben.

**Schalkskamp 1990:** director: Harry Fokkens; student participants: Marie-France van Oorsouw, Dieke Wesselingh, Patrick Ploegaert, Tiziano Goossens, David Fontijn, Berrie van Hooff, Tim de Ridder, Jos de Graaff, Martijn van Poecke, Jan-Albert Schenk, Gerjan Sophie; guest excavators: Gerard Smits, Gerard van Alphen, Piet Haane.

**Mettegeupel 1991:** director: Harry Fokkens; student participants: Jos van Weerden, Frances Borghaus, Jacqueline Vlug, Sjaak Mooren, Dieke Wesselingh, Zita van der Beek.

**Mettegeupel 1992:** director: Harry Fokkens; student participants: Rob Houkes, Hugo Gons, Tamara Vernimmen, Margot Lawende, Harry Fokkens, Daan Raemaekers, Anne-Marie Visser, Marcella Marinelli, Arthur Reinink, Jos van Weerden, Liesbeth Theunissen, Rozemarijn Kneepkens, Tim de Ridder, Claudio Ruffin, Peter Jongste, Tiziano Goossens, Sjaak Mooren, Christo Thanos, Marcel de Koning, Henrik Aalders; guest excavators: Gerard van Alphen, Henk den Brok, Gerrit van Duuren, Piet Haane, Gerard Smits.

**Mettegeupel 1993:** director: Harry Fokkens; student participants: Leon van Hoof, Cees. v.d. Plaat, Arthur

Reinink, Deborah Paalman, Ilse van Amen, Wilco van Zijverden, Marie Claire Schallig, Marcel de Koning, Ruurd Kok, Xavier van Dijk, Liesbeth Theunissen, Allemkers, Boudewijn Voormolen, Marco Langbroek, Nienke Prangsmas; guest excavators: Gerard van Alphen, Henk den Brok, Gerrit van Duuren, Piet Haane, Gerard Smits.

**Mettegeupel 1994:** director: Harry Fokkens, David Fontijn, Zita van der Beek; student participants: Michiel Kappers, Ellen Smits, Anne-Marie Visser, Dieke Wesselingh, Alex Brokke, Xavier van Dijk, Leon van Hoof, Menno Hoogland, Hans Kamermans, Michiel Kappers, Yvonne Keijsers, Ineke Koren, Geertje Korf, Josara de Lange, Carla Mostert, Rob Mostert, Erik van Rossenberg, Dimitri Schiltmans, Jose Schreurs, Ellen Smits, Barbara Speleers, Liesbeth Theunissen, Jeroen van Valkenburg, Bas van Veen, Florentien Wijsenbeek; guest excavators: Gerard van Alphen, Henk den Brok, Gerrit van Duuren, Piet Haane, Gerard Smits.

**Mettegeupel 1995:** director: David Fontijn, Zita van der Beek, Harry Fokkens; student participants: Mireille Kirkels, Christel Brandenburg, Wilco van Zijverden, Richard Jansen, Esther Mietes, Anne-Marie Visser, Rozemarijn Kneepkens, Axel Müller, Christel Brandenburg, Xavier van Dijk, Leon van Hoof, Geertje Korf, Hans Kamermans, Rob Mostert, Rob Raymakers, Jeroen van Valkenburg, Marcel Vellinga, Gerard Smits, Marit Boulonois, Dimitri Schiltmans, Dirk Jacobs, Eugene Ball, Natasja de Bruin, Kirsten Leijnse, Karianne Winthagen, Yvonne Keijsers, Josara de Lange, Carla Mostert, Cees Klaassen, Katerina Volioti, Florentien Wijsenbeek, Lydie Ras; guest excavators: Gerard van Alphen, Henk den Brok, Gerrit van Duuren, Piet Haane, Gerard Smits.

Then there is the matter of the production of this book. That has been a very long process, characterized by short bursts of energy and long rests in between. Harry Fokkens and Richard Jansen were the constant factors in this work, but several generations of student assistants have contributed. Their work was vital because they collected data, went through the excavation documents to organize work for drawings and material determination.

Zita van der Beek and Richard Jansen organized the document and image structure. Miriam Bruineberg and Luc Amkreutz made an inventory of finds and field drawings. Eric van Wieren and Maikel Kuijpers prepared the work necessary to produce drawings of features and structures. Especially Eric's work has proven to be fundamental in this respect.

Then, in 2010, Richard Jansen obtained an NWO-Odysee grant<sup>1</sup> for the finalization of the project. Frank Stevens was hired to do the job in a year, but that proved to be too short. It was also clear that the knowledge of the original excavator (Harry Fokkens) about features and their interpretations was crucial and had to be added. Stijn van As was appointed research assistant from 2012 through 2014. Fokkens and Van As wrote the book. Fokkens was responsible for chapter 1-11 (Interpretation), Van As for the catalogue (chapter 12-16). Without his enthusiastic and very structured approach, this book would not have been finished even now. In the final stages of production Bastiaan Steffens was hired to do a final check,

first in 2015, next at the end of 2016. In 2015 the book was largely finished, but another project came first, also with Stijn van As and Bastiaan Steffens as valuable co-authors (cf. Fokkens *et al.* 2016).

One of the largest bottlenecks in producing this book were not the texts, but the images. They constitute the basis for interpretation and documentation. In the 1980's we started with an AutoCAD overview, but Stevens converted this into a large MAPinfo database, which was later updated and amended by Stijn van As. Final drawings were then prepared by Fokkens and Van As, with a final edit round by Joanne Porck (Geodesigns). The English text was corrected by Kelly Fennema (†)(Chapters 1 – 4, 12 -16) and Marc Lociciero (4 – 7, 9 – 11).

#### ENDNOTES

1. Dossiernummer 315-60-106: Oss-Mikkeldonk & -Mettegeupel: the dynamics of the late prehistoric and Roman period cultural landscape.

# Preface

This report should have been finished a long time ago of course, and in fact in 1999 most of the work had been finished and some texts had been written. From the start in 1986 we had digitised all data, all finds were weighted, measured and analysed. Many bachelor and master theses were written about separate excavation campaigns. But the last stage, the compilation of all data into the final report and a concluding description and selection of relevant features, was still lacking. Between 1999 and 2010 I spent off and on organizing data, but in the meantime the excavations in Oss continued: all time was invested in field work in Oss-Horzak and also in the Vorstengraf and Zevenbergen projects. A final thrust was needed. In 2010 this was provided by the *NWO Odyssee programme*, a grant programme set-up in order to conclude important field projects. Richard Jansen, since 1995 working as excavation leader in Oss and presently the municipal archaeologist of the town, drafted the grant proposal. It enabled us to engage Frank Stevens for the final task to compile all the data for this final report. But even after that it took several years of intermittent writing periods and very much work by Stijn van As and myself to edit the existing texts, fill in gaps in the data analysis and write the final synthese(s).

Because of the long time that elapsed after the start of the project, this book has become a hybrid between a field report, a personal account of fieldwork and synthesis of several years of fieldwork. It is not a straightforward account of the excavations. One reason is that for me this period of fieldwork also constitutes the start of my career as an independent archaeologist. I'm therefore now looking thirty years back and can contemplate decisions and developments better then would have been possible twenty years ago. Looking back, I can also follow theoretical developments within the project, generally inspired by visits to conferences abroad, reading new books and articles, etc. Whenever possible, these developments are incorporated in the narrative about the excavations.

In that respect, this report is a subjective account of the fieldwork at Oss-Noord. But in my opinion that is also necessary. Too often excavation data are presented as simple facts. Within the Dutch heritage 'excavation' is even labelled as preservation '*ex situ*'. That suggests that data are preserved in a similar manner through excavation as through conservation '*in situ*'. This presupposes value-free excavation and collection of data, but of course that is impossible. The archaeologist is an observer and every observer observes different things. My observation skills have also grown through the years. I see things different now than I saw in the initial years, or I interpret them different. That aspect is part of every field work, but it is seldom acknowledged. I hope this report contributes to a more conscious practice in that respect.

Harry Fokkens, February 2014 / September 2018







## PART 1: Analysis



# 1. Introduction to the project

H. Fokkens

## 1.1 INTRODUCTION

This book is a report on ten years of fieldwork in the Oss region, carried out between 1986 and 1995. As the first ten years have been published already (Fokkens 1998), the subtitle of the present book is: the second decade of excavations at Oss. There has also been a third decade of excavations, from 1997 until 2008, and again from 2013-2014

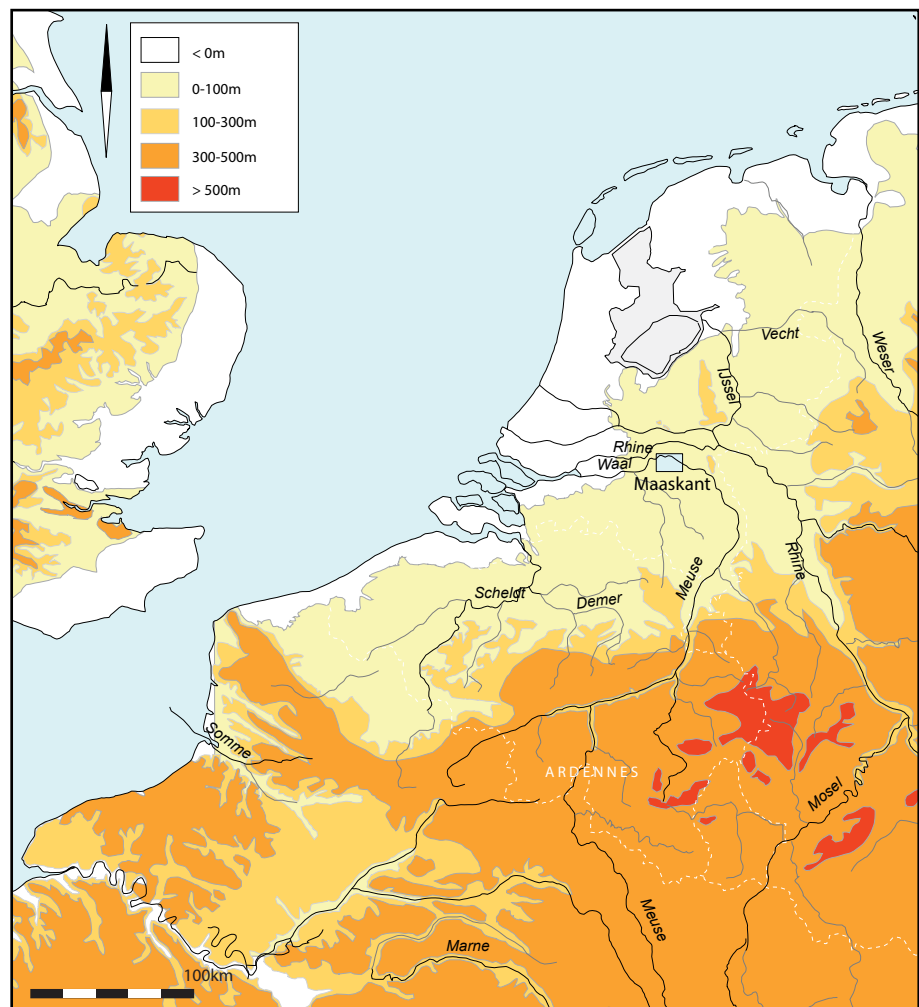


Figure 1.1 Elevation map of the Low Countries with the Maaskant Project area indicated.  
Drawing H. Fokkens.

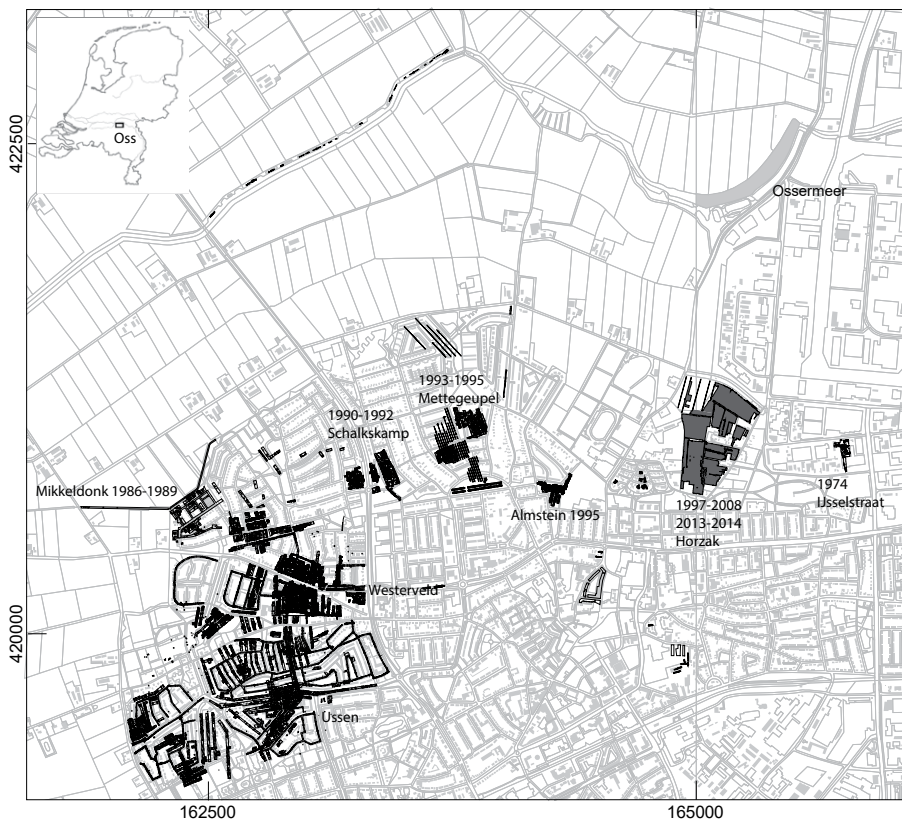


Figure 1.2 Plan of excavated areas in the north of Oss, including Oss-Ussen and Oss-Horzak. Drawing S. van As.

(Van As and Fokkens 2015), when we worked in the Horzak district. Even today excavations are still being carried out, but they have become the responsibility of development-led archaeology. The final report on the Horzak excavations is still work in progress.

The Oss-excavations are part of what is generally referred to as the *Maaskant project* (fig. 1.1). This project started in 1974 as a research project of Leiden University and continued with fieldwork and publications for 35 years. Excavations were carried out in four main regions: Oss-Oss-Ussen, Oss-North, Oss-Horzak and Oss-Vorstengraf-Zevenbergen.

The settlement excavations in Oss started in 1974 with research in Oss-IJsselstraat (Wesselingh 1993). From 1976 until 1984 fieldwork concentrated in the northwest of Oss, in the Ussen district. Therefore this part of the project is known as the Ussen Project. The excavations were supervised by dr. Jan Verwers, and later by dr. Wijnand van der Sanden (Van der Sanden and Van den Broeke 1987; Van der Sanden 1987a). The extensive settlement data of the Early Iron Age to Roman Period were published in two dissertations (Schinkel 1994; 1998; Wesselingh 2000).

Between 1986 and 1995 the municipality of Oss developed several districts in the northern part of the town, so our research covered a relatively wide area (fig. 1.2). The method, research aims and supervision were different from the Ussen Project, which is why we refer to this as the Oss-North Project. I was fieldwork and project leader of this particular project.

From 1997 until 2008, and again in 2013 and 2014 settlement excavations continued in the northeast of the town (the Horzak district). Here the methods and research aims of the Oss-North Project were continued. However, this research area is considered a separate research region because it is located at some distance from the most eastern district discussed in this book (Almstein), and because it is considered a coherent settlement area, occupied from the Middle Bronze Age to the Roman Period. The results of the Horzak Project will be published under supervision of Richard Jansen, who was the principal fieldwork leader.

Finally, from 1997 until 2008 we excavated a number of burial mounds and urnfields southeast of the town of Oss, especially the Oss-Vorstengraf



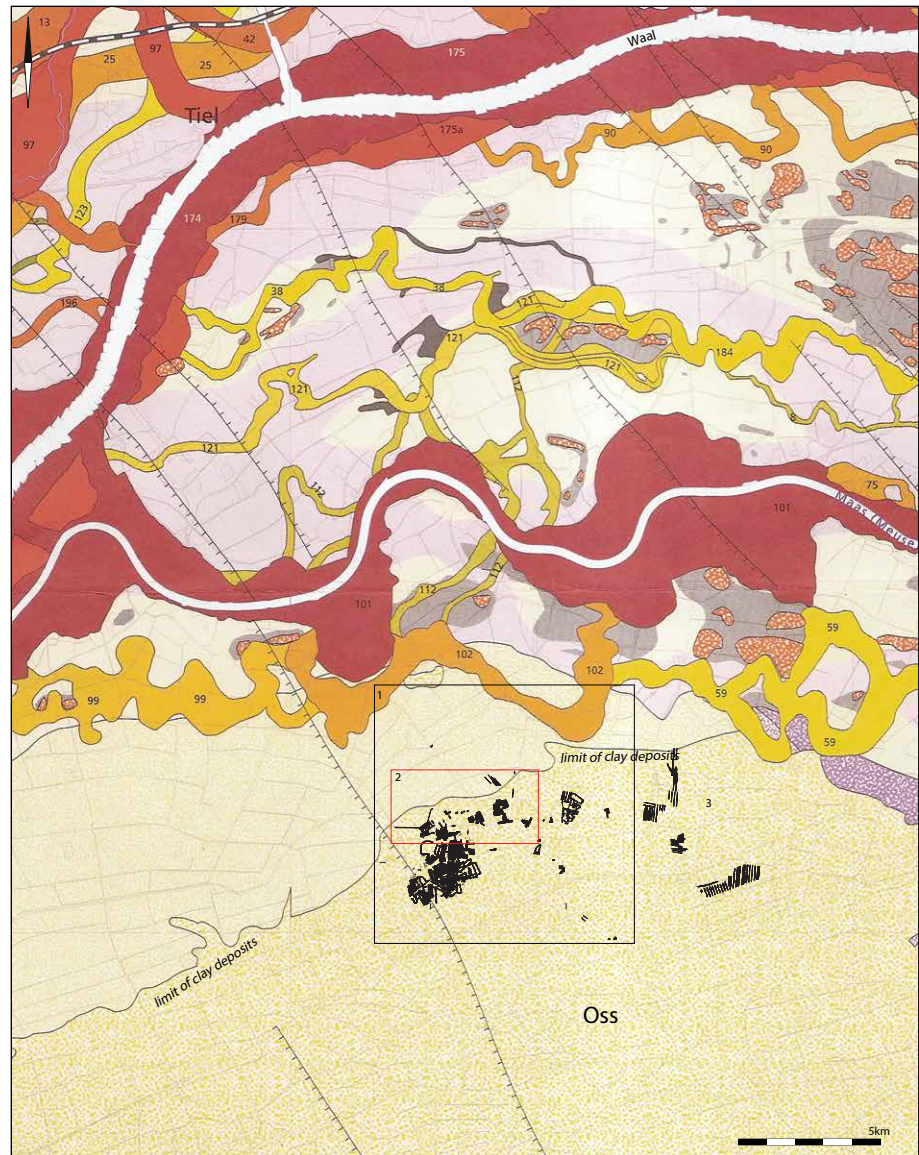


Figure 1.3 The courses of the rivers Meuse and Waal (red) and the streambeds they occupied over the ages. Streambed 102 probably was active from 1500 cal BCE until the Roman Period. Frame 1 indicates the area that was presented in Figure 1.2, Frame 2 indicates the Oss-North region. 3 indicates a number of commercial excavations that are not discussed in this book, but have been published as reports elsewhere. The lines across the image are geological vaults (see fig. 1.4). Drawing H. Fokkens; adapted from Berendsen and Stouthamer 2001 (excavation trenches added).

and Oss-Zevenbergen cemeteries. These were all published (Fokkens and Jansen 2004; Fokkens *et al.* 2009; Fontijn *et al.* 2013). A renewed and detailed analysis of the original Hallstatt ‘chieftains’ burial of Oss is published as part of the dissertation of Verschoof-Van der Vaart (2017).

The present publication presents the data of the 1986-1995 excavations known as the *Oss-North Project*. The book is structured as an excavation report in a more or less classical manner. It has two parts: a synthesizing part (1) and a descriptive part (2). In the synthesizing part we present the results of the research while referring to the catalogue (part 2) in which the

basic data are presented. The synthesis focuses on Oss-North (chapter 11), but takes into account the data that were generated in the entire 35 years of fieldwork in Oss. This book is written as a combined effort of the authors, but several chapters in the first part were written as are a more personalised account of the project by Fokkens.

In this chapter first the *Maaskant* as a research area is introduced (section 1.2). As the research history is important for understanding the methodical and theoretical choices that were made, next the history of research in the Oss region is discussed (section 1.3). Finally the research aims are stated (section 1.4).

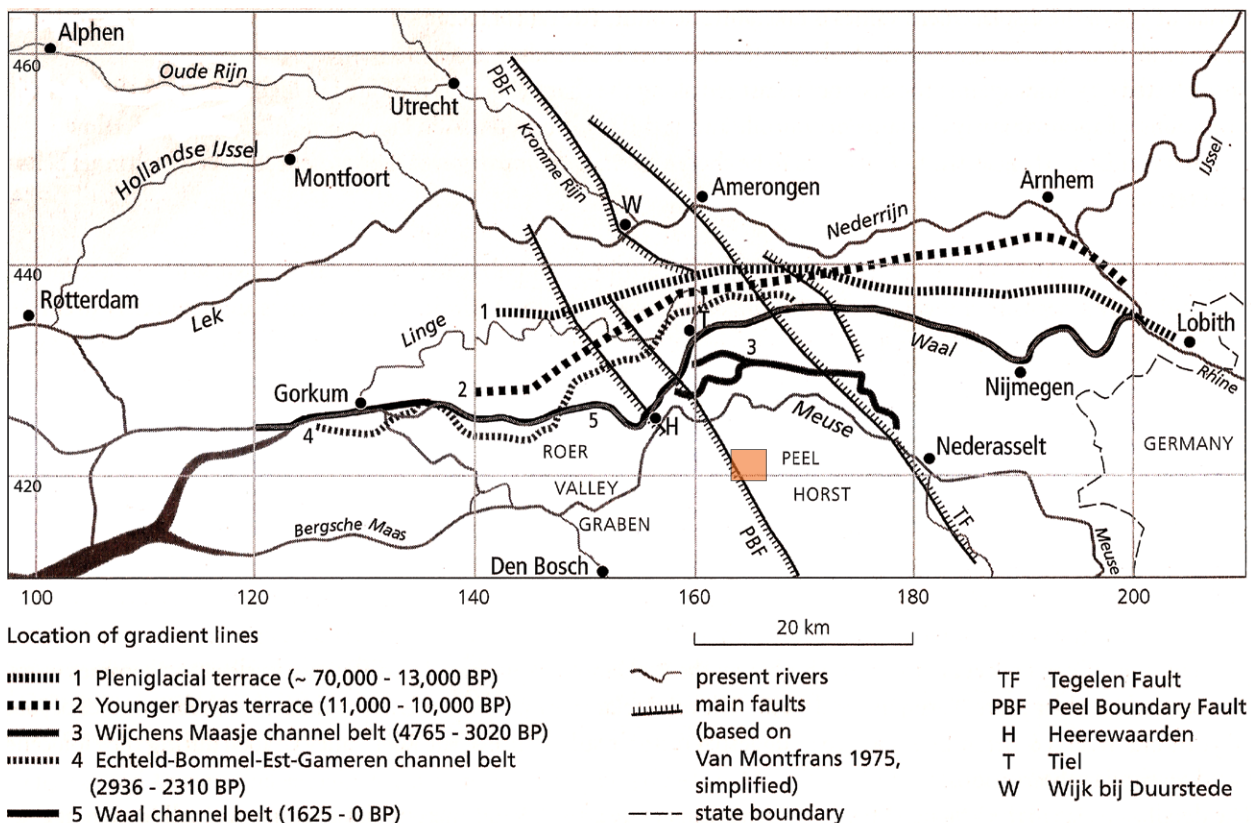


Figure 1.4 Geological situation showing Peel Blok and Meuse and major faults. With the area of Fig. 1.1 indicated in orange. From Berendsen and Stouthamer 2001, 81.

## 1.2 THE GENESIS OF THE MAASKANT

The name Maaskant project is derived from the regional distinction of the Oss region between *Maaskant* (side of the Meuse) and *Heikant* (side of the heath). Oss is situated just south of the river Meuse in the border zone between sandy heath lands and marshy riverbeds (fig. 1.3). The town is built on the sandy plateau, but presently extends its northern fringes onto the Holocene clay deposits of the river Meuse covering these sandy soils. Nowadays these clay deposits extend to c. 4 km south of the river Meuse and become thinner as the sandy subsoil rises towards the relatively high plateau of the *Maashorst* region.

### 1.2.1 Pleistocene geology

The geomorphology of the research area is to a large extent determined by the interplay between the ice cap glaciers and the rivers Rhine and Meuse during the Pleistocene. In the Pleistocene, the Rhine and Meuse deposited thick gravel beds that at present are lying

deep in the subsoil under almost the entire region of the Netherlands (De Mulder *et al.* 2003, 196 ff.). In the Maaskant, however, these old Rhine and Meuse gravels occur partly at the surface because they have been uplifted by tectonic movement. Uplift occurred especially in the geological entity known as the *Peel Horst* or *Peel Blok* south of the Meuse. The Peel Blok is – by Dutch standards – a relatively high ridge (up to 35 m above Dutch Datum). It is situated between two low areas; to the east the Venlo Graben, the present-day streambed of the river Meuse, and to the west the Roer Valley Graben (fig. 1.3; Berendsen and Stouthamer 2001, 81; De Mulder *et al.* 2003, 170). At present the rivers Aa and Dommel are flowing in this area.

The term *Graben* indicates an area that is sinking because of tectonic movements. The opposite is a *Horst* or *Blok*, indicating an area that is rising due to tectonic movement. Between these areas faults are present with relatively steep inclines. In the research region the most important fault is the Peel Boundary



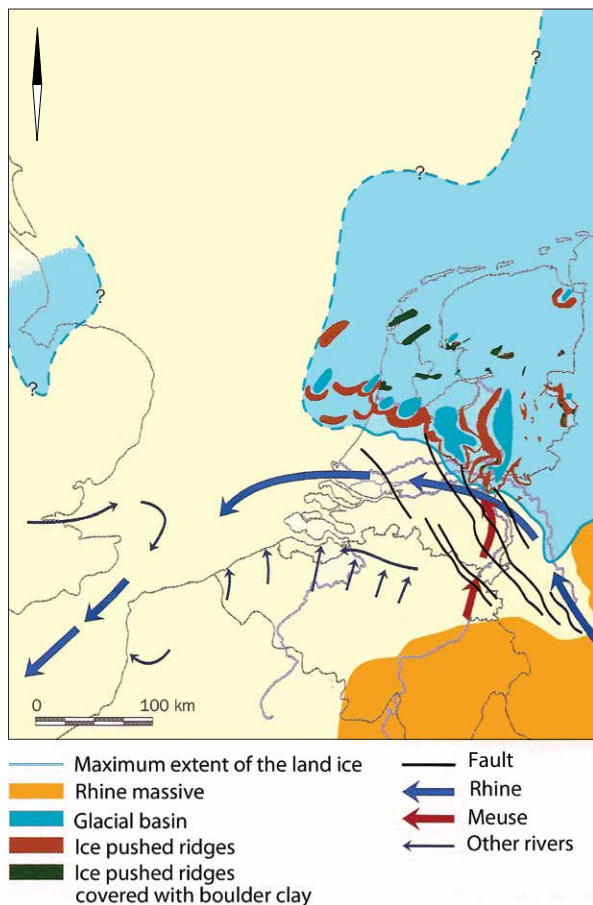


Figure 1.5 The distribution of the Saalien ice sheet in the Netherlands. From Berendsen and Stouthamer 2001, 81.

Fault (PBF), west of the Peel Blok (fig. 1.4). The tectonic movements that caused these faults date from the end of the Tertiary Period, c. 2.5 million years ago, but there still is some movement, resulting in earthquakes. The last and heaviest earthquake occurred near Roermond in 1992 (5.9 on the Richter scale; Berendsen and Stouthamer 2001, 79).

The geomorphology of the northern and central Netherlands is to a large extent determined by Middle Pleistocene developments. First the ice sheet of the Elsterian (Anglian) covered parts of the Northern Netherlands and left deep tunnel valleys in the subsoil. In that period (c. 475 000-410 000 years ago) the Rhine and the Meuse probably joined the Thames and then followed a southwesterly course towards the Dover Channel (De Mulder *et al.* 2003, 193). This situation continued in the Saalian (c. 370 000-170 000 years ago) when the ice sheet reached the central

Netherlands and caused the ice-pushed boulder clay ridges of the Utrechtse Heuvelrug, the Veluwe, the Nijmegen region and the Eastern Netherlands (De Mulder *et al.* 2003, 131). The Rhine and Meuse were forced to follow a westerly course in front of the ice sheet in the direction of the present Channel, where they joined the Thames (fig. 1.5).

Most of the current relief in the research area is the result of developments after the Saalian. In the lower areas the older Rhine and Meuse gravels are covered by wind-blown sands ('cover sands') that were deposited in the cold periods of the Middle and late Weichselian (c. 73000-12000 y ago; De Mulder *et al.* 2003 206 ff.). In the research area proper, the subsoil consists of cover sands, while the gravels lie deep below the surface. Though the Peel Boundary Fault passes through the excavated surface (cf. fig. 1.3), in this area little or nothing is noticeable of inclines. The original undulating surface of the cover sands has been levelled completely by (sub)recent cultural practices.

### 1.2.2 Holocene developments

Together with the Rhine, the river Meuse determines most of the Holocene developments in the central and western part of the Low Countries. The Meuse is a rain-fed meandering river that rises in Central France on the plateau de Langres near Pouilly en Bassigny, some 200 km north of Dijon. The Meuse follows a north-south course along much of its trajectory, but north of Nijmegen it bends towards the North Sea in the west.

Until the Meuse reaches Nijmegen, it flows in a relatively narrow riverbed that has cut into its own older terraces that were uplifted over time. To the west of Nijmegen the river flows into the vast Rhine-Meuse delta and starts to develop many different channels that have frequently shifted over time.

Berendsen and Stouthamer have sketched the development of different river channels in detail (cf. fig. 1.3). This shows that in the course of time the point where rivers start to avulse (abandon old streambeds and create new ones) moves from west to east. In other words, the place where the river delta starts as a region of many open and almost or already completely abandoned river channels, moves further east in time. In the beginning of the Late Neolithic (from 2850 BCE), the avulsion point of the Meuse was still positioned northwest of Oss and the main channel was situated just south of the present-day channel. But a thousand years later the main channel was situated a few kilometers south of the present-day river and only 1.5 km



from the excavated areas in Oss-North (cf. fig. 1.3, indicated with number 102). This channel is part of what Berendsen and Stouthamer call the Macharen stream belt, which was probably active until between c. 1500 BCE and the beginning of the Roman Period (Berendsen and Stouthamer 2001).

This implies that during most of the period discussed in this book the sites in the Oss-North region were lying much closer to the river than they do now, and that the inhabitants lived fairly close to an important 'national' and 'international' transport route to the Ardennes and central France, and via the Rhine to southern Germany.

### 1.2.3 Landscape and vegetation

The meandering river was probably bordered by natural levees that were suitable for habitation. From the perspective of the people who in Prehistory lived in the Oss-North area, these levees must have been visible in the far distance because they were probably covered with higher deciduous trees like beech and oak. Together with crevasse splays (sandy deposits near break-through channels), those were areas favourable for habitation.

Between the levees of the Meuse and the cover sands north of Oss lay the river marshes with lowland riparian forest. These must have been ideal for grazing in summer, but in winter they could flood. They probably had a vegetation of low trees (willow, alder) and bushes. Within the marsh area river dunes occurred: wind-blown dunes that had been deposited during the Weichselian. In prehistoric and present times they were excellent locations for occupation.

During the Neolithic the higher sandy soils must have been forested with an already open deciduous forest characterised by beeches and birches rather than oak trees. Locally there will have been springs of fresh water seeping from the Peel Blok. Water, therefore, was everywhere easily available from an inexhaustible source. The sandy soils were not very fertile, but for potential settlers this cannot have been problematic since they were accustomed to poor soils and knew how to work them. There was not much relief and the physical conditions for both cattle grazing and arable farming were good.

The prehistoric farmers probably lived in the transitional zone between the two landscapes: the forested uplands and the marsh. They exploited them both, gradually forcing the deforested zone southward. The latter is visible in the settlement developments in Ussen. During the Bronze Age

there was virtually no habitation in the central and southern area. The first sites date to the Early Iron Age (Schinkel 1998). In addition we know from surveys by local archaeologists that further, on levees and crevasse splays in the river valley of the Meuse to the north, the earlier periods (Neolithic and Early Bronze Age) are well represented, while they lack from the zone that we have excavated so far.

### 1.3 HISTORY OF THE OSS-NORTH PROJECT: CONTINUITY AND CHANGE

The excavations at Oss started in 1974 when local archaeologists of the Association for Advancement of Regional Studies in Maasland (*Heemkunde Kring Maasland*) notified dr. Jan Verwers of the Institute of Prehistory of Leiden University (IPL)<sup>1</sup> of their discovery of Iron Age finds on a building site at the IJsselstraat. Verwers already was renowned for his large-scale excavations near Haps, a small village to the northeast of the Peel moors (Verwers 1972). Therefore, he was the appropriate person to turn to with such a discovery. In 1974 and 1975 Verwers carried out a small excavation and found a Middle Iron Age cemetery that in the Roman Period was used for settlement (Verwers 1978; Wesselingh 1993). In addition, pits and wells from the Late Neolithic, the Bronze Age and the Early Iron Age were excavated, indicating the high potential of this region for diachronic settlement research.

At IJsselstraat there was no further opportunity for research, but a year later preparations started for the development of a large housing district to the west of Oss, a few kilometers from IJsselstraat (fig. 1.2). Again Verwers was alerted and again finds and features from several periods proved to be present. This time, however, the possibilities for further research were ample since the district of *Ussen*, as it was named, was meant to be some 200 hectares in area. The Ussen Project had begun.

Verwers arranged with the contractor (in this case the municipality of Oss) that the road trenches necessary for the new district would be excavated in such a way that an archaeologist could record the archaeological features. Whenever a cluster of features was found, a second team would be called in from Leiden to assist in the excavation of a larger area. The University of Leiden made extra grants available for the cost of the machines (Van der Sanden 1987b, 18).

Verwers started the Ussen Project and prepared the technical side of a publication, but never intended to publish the sites himself. In 1981 he considered the

District	Years	Total area	Excavated area	Percentage
Ussen	1976-1984	126	33	38%
Mikkeldonk/Suikerkamp/Kraaijenest	1986-1989	28	7,2	39%
Schalkskamp	1990-1992	6	2,2	27%
Mettegeupel	1993-1995	14	2,8	50%
Almstein	1995	3	0,8	38%
Horzak	1997-2014	45	14	32%
Total		222 ha	60 ha	37%

Table 1.1 Excavated areas in the Oss-Ussen and Oss-North quarters.

project as closed and Wijnand van der Sanden was appointed to start the evaluation and publication of the settlement data. A year later Peter van den Broeke obtained a grant of the Dutch Science Foundation (ZWO, now called NWO) for a study of the pottery. The latter was of crucial importance for dating settlement phases because for large segments of the Iron Age,  $^{14}\text{C}$  dating turned out to be not accurate enough (Van den Broeke 1987; 2012).

Although officially the fieldwork had ended in 1981, Van der Sanden continued to excavate. He realised that the previous period of research had not concentrated enough on specific questions on the settlement level of research. Therefore he decided to excavate as much as possible of the Westerveld settlement, a unique enclosed settlement of the Roman Period. In 1984, 65% of this settlement of over six hectares had been documented, the remainder having been either destroyed by buildings or unavailable for research (Van der Sanden 1987a). This was the real end of the Ussen Project, the results of which were published in two dissertations: Schinkel (1994; 1998) published the prehistoric settlement remains, and Wesselingh (2000) the Roman Period settlements. In 2012 Van den Broeke also finished his dissertation on the Iron Age pottery typology, a crucial part of the entire project.

In 1982 I was appointed at the Institute of Prehistory in Leiden with the mandate to teach field methods and theory, and to start Bronze Age settlement research in order to provide field school opportunities for the ever growing number of students. Considering the fact that until then no undisputed Bronze Age settlements had been excavated in the southern Netherlands, that was a challenging assignment indeed.

After the first projects in Empel (Jungerius *et al.* 1990) and in Gassel (Fokkens and Smits 1989), unex-

pectedly Oss came into view again. In 1985 one of the local archaeologists in Oss, Piet Haane, warned us that in 1987 the municipality of Oss was going to start another large building project to the north of Ussen, in a district called Suikerkamp. Already in 1976 two Bronze Age wells had been discovered in this area, in a trench for the main sewer (Vasbinder and Fokkens 1987). I reasoned that these wells ought to be part of a farmyard, so if a settlement from the Bronze Age was to be found anywhere, this could be a good start. Therefore, in 1986 we started an exploratory excavation. To our own surprise and against all expectations we did indeed find a longhouse (Vasbinder and Fokkens 1987), and a year later a second one.

And thus the Institute of Prehistory at Leiden University again became involved in a large-scale settlement project in Oss. While the first decade of excavations in Oss concentrated on the Ussen district, the second decade of research extended over several areas to the north of Oss, following the new housing development. They are indicated with different toponyms: Suikerkamp, Mikkeldonk, Kraaijenest, Schalkskamp, Mettegeupel and Almstein (cf. fig. 1.2). These toponyms refer to old – and now often meaningless – field names. In all, the Oss-North Project covers an area of about 220 ha, of which we excavated c. 37% (table 1.1). Nowadays these figures are not exceptional anymore, but in the last part of the twentieth century this was one of the largest excavation projects in the Netherlands.

#### 1.4 AIMS OF THE PROJECT

The purpose of the Ussen Project was to investigate the cultural history of the Ussen area in relation to the larger framework of the Maaskant region. In principle the second decade of research had the same overall goal, but with much more specific questions.

Generally we developed the idea of investigating the cultural landscape in all its facets and dynamics. Whereas in the first period of research the structure of settlements, the relationship between settlements, cemeteries and cult sites, or the meaning of landscape elements, 'off-site' structures, etc. were not specific goals, these questions became explicit in the second decade (Fokkens 1996). Important for the project was that we recognised the importance of continuous research in what we called a 'micro-region'. In other regions excavations often focused on individual house plans, urnfields or barrows, sometimes on larger settled areas, but seldom with the aim to uncover the way in which these different elements were connected. Several developments within and outside the *Maaskant Project* as a larger regional research framework caused these changes in orientation.

In the first place, the overall picture of the distribution of sites and the diachronic developments only began to become clear in the early 1980s when Van der Sanden started with the evaluation of the field data gathered in the previous years. Crucial for his work was Van den Broeke's type-chronological analysis of the pottery that created the necessary chronological framework (Van den Broeke 2012). Most of the excavation work had already finished before they could develop adequate models. There was – for instance – hardly any model for the structure and distribution of Iron Age sites. This implied that during fieldwork in Oss-Ussen, the strategy was not guided by the search for a settlement system, but only by the distribution of features. When in a road trench a cluster of features was encountered, its extension and character were examined, but without specific questions and without attention for the areas in between the clusters.

When Van der Sanden, and later Schinkel, tried to build models for Iron Age settlement, it turned out that data on the principal unit of settlement, the farmstead, were under-represented. Very few farmsteads could be said to have been excavated completely. Of course only then it became clear that until the Late Iron Age solitary farmsteads were the principal settlement unit. Villages, as clusters of houses with neat yards, did not exist. Only from the Late Iron Age onwards were houses rebuilt on the same yard and appeared in clusters (Schinkel 1994; Fokkens 1996). Given the excavation strategy during the Ussen Project of following road trenches, this explains why most of the larger excavations in the first decade of research concern settlements from the Roman Period: these were much

easier to trace archaeologically than the dispersed Iron Age and even more dispersed Bronze Age settlements.

The moment this became clear, we changed our excavation strategy in order to answer more specific questions for the settlement level of research. We tried to also excavate areas outside clusters of features in order to determine the extent of farmyards and their dispersion. At the same time we tried to get more insight into the structure of the farmstead. Since the yard appeared to extend minimally 50 m to all sides of farms, this involved excavations of more than 1 hectare. In smaller areas it turned out to be very difficult to get a clear picture. Of course this also required different planning: we stopped excavating only road trenches. That strategy appeared to be not systematic enough as it brought us 'on-site' too late in the building process. Especially after listening to an inspiring lecture by Vincent Blouet at the Sorbonne in Paris in 1985, and a subsequent visit to his excavations in Metz with Corrie Bakels, Anne de Hingh and Liesbeth Theunissen, we decided that a different approach was called for. So, from 1993 onwards we tried to remain ahead of any building operations. We surveyed first with narrow trenches (1.5 m wide), *le méthode Lorraine* or *diagnostique à 5 pourcent* as it was then known in France (cf. chapter 6.1.1; fig. 6.1). This enabled us to assess the distribution of features and subsequently execute a well-planned and goal-oriented excavation. Close contact with the municipality of Oss, the principal contractor, and – even more important – financial support from the same source and from the Province of North-Brabant, actually made our new strategy possible.

Another problem formed the diffuse settlement pattern of the prehistoric period. Apparently farmsteads lay more or less solitary and dispersed and moved to other locations each generation or so. This resulted in a low-density site pattern that was very difficult to get hold of. The whole area of Ussen and Oss-North was littered with such small settlement clusters. If one really wanted to 'reconstruct' meaningful habitation patterns, the location and extent of these clusters ought to be known. Only then the dynamics could become visible. The more we excavated, the more it became clear how little we actually knew. It showed how futile it would be to move to different research locations outside Oss every time and thus merely 'sample' the cultural landscape. Such a strategy would never provide us with reliable models. Instead of becoming bored with digging in the same area year after year, it became a new means of conducting regional archaeology (Roymans 1996; Fokkens 1996).

We could ask more questions every time and start to predict patterns. Questions of social organisation came within reach because settlements and their related cemeteries could be excavated. An approach developed which looked at different dimensions of the landscape (physical, economic, social, cosmological) and their development through time.

In this respect we were influenced by discussions about the ‘cultural biography of the landscape’ in the NWO-funded research project ‘Settlement and Landscape in the Meuse-Demer-Scheldt area’ carried out by the Universities of Leiden and Amsterdam (Free University, University of Amsterdam) (Fokkens 1996; Roymans 1996). In this project long-term development within micro-regions in the research area formed the central research problem. Generally, periods of habitation are treated separate from each other, but in micro-regions like Oss-Ussen and Oss-North we can study diachronic processes and try to find out how people used and incorporated relicts of the past in their cultural landscape. It became more and more clear that abandoned yards, derelict houses or out-of-use wells were not converted into fertile farmland, as was generally believed. Through the fact that abandoned features were re-used in different periods, it became clear that at least some relicts of the past had become part of a collective memory. Our long-term research in Oss thus provided the opportunity to study even those difficult to grasp aspects of the cultural landscape.

Gradually we realised that the areas between clusters of features, like settlements and cemeteries, were just as important for the interpretation of the prehistoric landscape as the sites themselves. Foley (1981) coined the term ‘off-site archaeology’ to indicate the study of *activities* that had taken place outside settlements, in his case of hunter-gatherers. But this concept emphasises *activities* too much and leaves little room for the perception of the landscape or for ideological aspects of social life. From our perspective *the whole landscape* is a site because practically all parts of it were being used or given meaning.

For us, archaeology of the cultural landscape is an approach in which we want to investigate and interpret all aspects of and features in the (pre)historic landscape as a coherent whole. Though it is clear that the physical landscape provides an important framework for human action and interaction, we acknowledge also the increasing emphasis on social and ideological aspects of landscape: landscape as a “cultural image” (Daniels and Cosgrove 1988, 1), or landscape “as a dynamic and active element in the

evolution of past societies” (Beneš and Zvelebil 1999, 74). This has implications for the way in which we visualise the landscape as a part of peoples’ cultural identity, since it has conditioned their ways of living. Such a perspective, moreover, required an analysis of how ‘ancestral’ relicts of the past are actively used in the present and of the role of collective and social memory in the development of the cultural landscapes (Bradley 2002; Connerton 1989).

Such theoretical considerations have guided our fieldwork over the years, but never in a very strict manner. In general terms we want to understand the way in which people lived in Oss-North and the ways in which they perceived the landscape that surrounded them and gave it meaning. Moreover, we want to analyse and interpret changes in use and perception of the land over time (c. 2000 BCE – 400 AD).

### 1.5 RESEARCH QUESTIONS

Ultimately our ambition was to understand how people in the past lived, how they structured their surroundings into a cultural environment and how that changed over time. In the end we wanted to understand how and why they structured their surroundings the way they did. Apart from fieldwork, we pursued this goal by constantly updating our knowledge and explanatory models through discussion, reading, attending conferences, etc. Our range of research questions was thus continuously growing, even if they were not explicitly written down.

There were a few basic points of departure that determined our choices and field strategies. There was no written scheme of investigation, like is customary today, but even without that, or maybe rather just because of that, I would dare to say that we were conducting cutting edge research. We could have formulated the obvious questions as are often found in written schemes in the Netherlands:

What is the extent of the settlement features?

What is the dating of the site?

How is the structure of the settlement, etc.

But would these really have provided us with *new* knowledge, instead of just *more of the same* knowledge? Moreover, we hardly knew what to expect since what we were doing was oriented towards exploring the unknown and that is difficult to catch in well-structured research questions. Having said that, we were not ‘just’ digging around. There were a few principles that guided our strategies.

1. For all periods we wanted to get as much information as possible about the structure of farmyards and the way neighbouring farmsteads were organised in relation to each other and to other elements of the cultural landscape: cemeteries, sacred places, arable lands, etc. In terms of fieldwork strategy the lessons learnt from the Ussen project told us that in order to analyse farmyards and their organisation, excavations of small areas (less than one hectare) were almost useless, unless they could be linked to other excavated areas. This implied that we needed to work ahead of building activities, instead of following them, like had been the practice in the Ussen project. Only then could we know in advance where to expect sites or important areas between sites and excavate those in advance of housing development.

2. If we wanted to study entire cultural landscapes and not just (settlement) sites rich in finds, a strategy had to be developed that not only detected (house)sites and finds, but gave insight into the whole landscape. That implied that we had to survey large areas in a manner that could really inform us about presence, but above all also about absence of features. That ruled out for instance auguring as a means of prospection. Although in the Netherlands auguring has become one of the most used prospective tools, in my opinion this method is useless for the investigation of late prehistoric landscapes. That implies that it can only detect a small part of the spectrum of sites. Moreover, one can auger in the middle of a rich site with dispersed features but low find density without ever detecting that site. We decided that the only way to really get insight into the distribution of sites and 'non-sites' was to apply the French method of *sondage à cinq pourcent*, or rather *à dix pourcent*, mentioned above.

3. The relationship between different elements of the cultural landscape we considered of great importance, so when within reach, extra effort should be devoted to bringing links into view. This could imply, for instance, that ditch and fence systems were to be followed. Like in West Frisia and in the river area these can reveal the structured landscape in detail (Bakker *et al.* 1977; Theunissen 1999; Arnoldussen 2008). In general, we would try to unravel this pattern of ditches first and subsequently choose locations for excavation.

4. Our overall goals for botanical and pollen analysis was to make inferences about which plants

were cultivated, about developments through time, and about vegetation on site. During the days of the Ussen project an extensive sampling programme had been set up, but discussions with professor Bakels, our palaeo-ethno botanist, taught us that systematic sampling in this particular type of soil context had proven to be not very useful. Having sieved thousands of systematically sampled features in the Ussen campaigns without much result, she asked us to collect only samples from features that showed any kind of grey or black coloration, and that – just as important – could be dated. This considerably reduced the number of samples to be taken and sieved.

5. We wanted to study diachronic developments of settlement practices. That implied that wherever possible we would try to excavate regions with features from different periods and analyse how they related to each other. That way we could also study the ways in which elements of the past, derelict yards and farms, had been (re)used in later periods of habitation.

## 1.6 STRUCTURE OF THE BOOK: A NARRATIVE APPROACH

In this report I will try to give an insight into our answers to these research questions, but not in a detached or 'scientific' objective manner. I am well aware of the fact that no such thing as objective observation exists. Everything we do is guided by what we already know, by experience, but also by theories, ideas and even by moods. And the weather and all kinds of other aspects come in. In my opinion this does not mean that 'anything goes' or that every side of a story is as good as the next, I'm not an extreme relativist in that sense. But I do think that we should realise that it is impossible to present our data as facts. At most they are coloured observations.

The way we have tried to deal with this given is that as much as possible we will try to discuss with which preconceptions we went into the field, how we discovered new elements and how we decided on (changes) of strategy (see also Chapter 3). In this way I will try to follow a kind of narrative approach without losing sight of the descriptive mode. The book is divided in two parts. Part 1 is the interpretative part of the book, part 2 the descriptive part. In the first chapters we discuss the methods and methodology of the excavation, and post-excavation analysis (chapter 2) but also the points of departure for dating and chronology (chapter 3). Next we discuss

the features in the different excavation districts (chapter 4: Mikkeldonk, chapter 5: Schalkskamp, chapter 6: Mettegeupel and chapter 7: Almstein). Chapters 8 and 9 are devoted to botanical and archaeozoological analyses. In chapter 10 the distribution of a few important find categories is discussed, in chapter 11 we discuss the developments in the Oss-north region in general and in relation to the Maaskant as a whole.

Separate features and structures are discussed in the catalogue (part 2: chapters 12-16). It is a catalogue in the sense that all structures and relevant features are described. These descriptions and analyses form the basis for the interpretations in part 1 (chapters 4-11).

## NOTES

1. In 1985 the Institute of Prehistory of Leiden University, IPL for short, became the Faculty of Pre- and Protohistory. From 1997 onwards all archaeology studies were encompassed by the present Faculty of Archaeology.

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## 2. Field methods and methodology

H. Fokkens

### 2.1 INTRODUCTION

Field methods determine the possibilities of the interpretation of data to a very large extent. Therefore, it is important to describe the methods used in the field: excavation techniques, drawing procedures, finds registration, sampling strategy, etc. But not just methods determine observation, just as important are the theoretical and practical background of the excavators. These determine how and what is observed and how the data are interpreted. In this chapter I therefore focus first on research methods and excavation practice and next on the method and theoretical background of the documentation. Sometimes that requires details of how sections were drawn and described because that generates meta-information about how to read and translate our field documentation. Again, this is a personalised chapter, because it is my personal background and theoretical development that determined observation to a large extent.

Basically the Oss excavations were carried out in normal standard Dutch tradition, devised by Van Giffen and dispersed by to him all excavation institutions in the Netherlands. Generally this involves the use of a hydraulic digger. The digger takes off the plough soil and the excavation level is shovel-cleaned manually by workmen, in our case by students. Features are indicated by accentuating them with something sharp. Then the features are drawn.

On excavations of the Groningen Institute of Archaeology (where I learned the tricks of the trade) marking the features by enhancing their contours – a general practice elsewhere – was absolutely taboo in the seventies and eighties of the last century. The idea was that the draughtsman would then draw the incised contours rather than the features in their most natural appearance. That meant he (it somehow always was a he) would not observe the features critically enough. I was trained in Groningen, so I started to work in the Groningen tradition. But I soon learned that soil conditions in the Oss region (very quick drying Younger Coversands) made enhancing the contours necessary. In Leiden the features were marked by encircling them with a measuring pin or such like. Marking, however, was never done ‘on automatic pilot’ but was always a matter of discussion between the draughtsman and the fieldwork leader. Even nowadays, I will always shovel away the contour lines before drawing a feature, and teach students that kind of critical observation practice.

After the features had been marked, they were drawn, in principle always by a professional field technician/draughtsman. Unclear sections of the trench, for instance those that had been left lying overnight, would sometimes be shovel-cleaned and marked again before being drawn. Only after the drawing had been finished, features are sectioned by digging out first one half with a shovel. Then the section would be drawn and the second half excavated.

Until 1987, it was the custom in most Dutch institutions to let field technicians carry out all measuring and drawing. In actual practice they had the daily super-

vision of the excavation. The scientific leaders would sometimes visit the excavation only once a week to discuss strategy. In Groningen, however, and in Leiden too, staff members were also in the field on a day by day basis. The field technicians were a great help and would guarantee a high quality of work in most cases. But they also could be a restraining factor, because their pace determined the overall pace of the excavation.

In 1988 I decided that we should try to work without a field technician. The reason was I wanted to be fast and flexible and try out new methods. Employing a field technician meant that only one person could draw all trenches and supervise all documentation, as this was traditionally their prerogative. Since we wanted to open up more trenches simultaneously we needed more documentary (wo) man power. Also drawing features is one of the best ways to observe and interpret them. That is what I wanted students to experience and learn. So I decided that experienced students would take over the work of the technician. Under my supervision they learned to direct the hydraulic excavator, mark features, draw plans and sections. We always decided together what and how to draw, where to dig and what to excavate. In my perception it was real teamwork and I still feel that we did not loosen up on quality, certainly not of the excavation drawings. Of course not all sections were drawn with equal high quality, because we allowed all students to draw. But, with hindsight, the results are very well interpretable.

## 2.2 FIELD CAMPAIGNS

The excavations were carried out during several campaigns, mostly in the months of May, June and July. The 1986 campaign lasted six weeks and in most other years campaigns lasted eight weeks or more. In 1987 a winter campaign was also held because a large area was threatened by building activities. In that period c. 2.5 hectares of road trenches were screened for archaeological features. In total, this report describes about 20 months of fieldwork, during which time just over 13 hectares were excavated (see table 1.1).

The work was carried out on the northern fringe of the town of Oss where subsequently the residential estates of Mikkeldonk, Schalkskamp, Almstein and Mettegeupel were built (cf. fig. 1.2). The whole area covers about 80 hectares. In the beginning we followed the same routine as was practiced during the first 10 years of the Ussen Project (Van der Sanden 1987). Road trenches served as survey trenches and the areas in between the roads were excavated as much

as possible when features were encountered. Soon it became clear, however, that in this way much was lost because the roads covered only a small part of the area, and because the building activities went too fast for us to keep up. The money that was available for excavation only allowed us to excavate two to three months a year. When a concentration of features was found too late, time and money lacked for adequate research and much was destroyed unrecorded. At the end of 1989 we discussed this with the municipal officials who leased arable land in planning areas to farmers. They helped us enormously by not leasing out particular areas that we wanted to survey and excavate, thus enabling us to work in regions that were not under building stress yet. After 1990 we tried to survey areas that would be developed some years later. In theory we finished the work when the building preparations started. Sometimes that strategy worked well, often we were still too late.

Funds for the excavations came from different sources. From 1986 until 1992 the University of Leiden paid all the costs of staff, living and housing. The Province of North-Brabant covered a large part of the cost of digging machines. From 1993 onwards the municipality of Oss gave a grant and from 1995 also lent us farmsteads that could be used as a base for fieldwork. That was a considerable improvement after years of moving in and out expensive holiday bungalows, camp sites and deserted schools.

The last campaign of the Oss North Project took place in 1995. In 1997 we continued excavating in Oss-Horzak, some three kilometers further east, but still in Oss-North (cf. fig. 1.1). That project lasted another twenty years and ended in 2017. In that district alone some 16 ha have been excavated so far, almost 70% of the entire development area.

## 2.3 STAFF AND STUDENTS

Fieldwork was organised along the following lines. Excavation trenches were dug generally 10 m wide and 50 to 100 m long. Usually I would direct the hydraulic digger myself or leave this to experienced students for a couple of hours (fig. 2.1). We would shovel clean the excavation level right after digging and mark the features to be drawn. Drawing started once the machine had excavated the first 10 meters, as otherwise drawing could not be finished during that day and we would have to shovel-clean the surface again next day (fig. 2.1).

Subsequently the actual excavation (sectioning and documenting features) was carried out by experi-



Figure 2.1 The cleaning of the excavation level behind the hydraulic digger in 1989 (top) and by hand in a row (below). Photo H. Fokkens.

enced students under my supervision. They each had four or five, sometimes more, fellow students at their disposal who carried out the work. Until 1994 I was on site on a daily basis, and from 1995 onwards I was in the field only two or three days a week. The daily supervision of the excavation in 1994 and 1995 was delegated to David Fontijn and Zita van der Beek who both had several months of excavation experience in Oss and on other sites. In 1996 and following years, Richard Jansen took over most of the daily supervision of the excavations.

The excavations at Oss have always been host to the field school for undergraduate students of the Faculty. We trained them in measuring techniques, excavation methods and find registration. Until 1987 they were trained in the field for two weeks in groups of 5 to 10 per week, supervised by staff members of the Faculty and by experienced students or research students.

In 1987 a bit of a crisis developed due to the fact that Leiden University, as the first university in the



Figure 2.2 Field school in Almstein (1995). Students learn to draw a field drawing. First as a group, later individually. Photo H. Fokkens.

Netherlands, had started an undergraduate course in archaeology. Until then we had only provided a field school for the graduates in Prehistory and people who took Prehistory as a minor subject, but from 1987 all archaeology students were supposed to attend the field course at the end of their first undergraduate year (fig. 2.2). So, instead of 10 to 15 graduate students in Prehistory we suddenly had to accommodate 52 undergraduate students in archaeology, which number in later years never fell below 45 and since 2000 has been at a steady 80-90.

It will be clear that these field schools quite complicated the logistics and that the strain on the excavation was quite high: on the one hand we got a number of free 'labourers', but on the other hand all the work of these 'freshmen' had to be supervised, and in the end the returns were not very high. It enabled us to work fast and open up large areas with a limited budget. It certainly improved our efficiency in several tasks, as we constantly had to find ways to cope with large numbers of people. Of course there were many problems as well, but let's not discuss these, generally they involved logistics rather than quality.

## 2.4 FIELD METHODS AND FINDS REGISTRATION

Since the Oss-North Project started in the same area where the Ussen Project had ended, we started using the same field methods and documentation system. We also continued with the same system of numbering finds and features. But gradually these were changed.

### 2.4.1 Features and numbers

From 1986 until 1992 we were – technically speaking – still working in the region that originally was considered part of the Ussen Project. Since we wanted

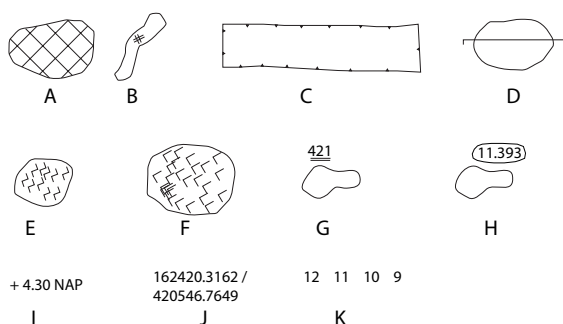
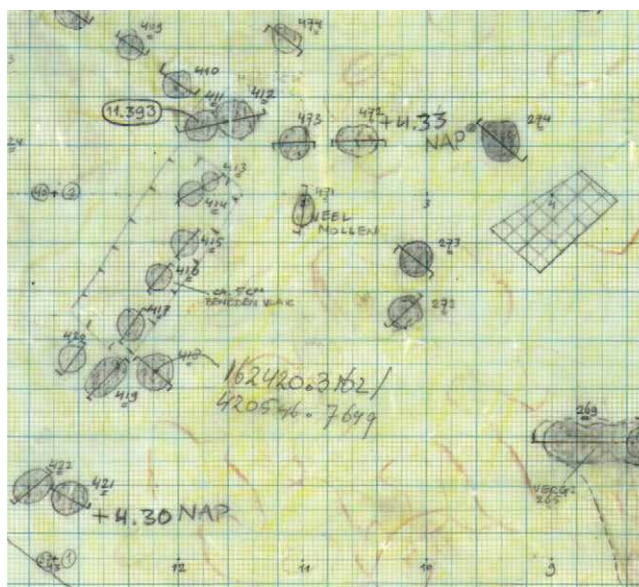


Figure 2.3 Part of the field drawing of trench OU 917, drawn by Peter Deunhouwer. A-K indicate 'codes' used on the field drawings. A, B: modern disturbance (B generally being a disturbance due to bio-turbation); C: area dug out deeper (generally to locate missing features); D: feature sectioned. The 'hooks' pointing to the lower half, indicate that the lower half was excavated first, the section was drawn facing the top part; E: indication of cremated bone; F: indication of charcoal; G: feature with the feature number; H: indication of a find number; I: indication of elevation above Dutch Datum; J: georeference point for the Dutch National Grid; K: indication of the measuring tape (every meter) as it was positioned in the trench. In this case one can read from it that the drawing was drawn in a scale 1:40. Drawing P. Deunhouwer, H. Fokkens.

to keep things comparable, I did not change the recording system very much. The system consisted of trench numbers, feature numbers and find numbers, all of which were not logically connected

(fig. 2.3). For instance, a trench number could be 89, containing features numbered 1 through 305, and feature 301 could contain find lots 9002, 9013 and 9100. This might happen when finds, samples or layers within the same feature were distinguished as individual units. That they did not always have a neat consecutive order was due to differences in time of excavation and recording. One can imagine that without computers to keep track of all these data, it was difficult to know what had been found where. In essence the system gave no problems in the field, but rather in the phase of analysis and publication.

Gradually this system was changed. At first the find numbers were still separate from the feature numbers, but different find numbers for one feature were no longer allowed. Instead numbers were subdivided by assigning letters to different find lots and samples (e.g. find number 9002 a, b and c). Soon also the separate find number was dropped, and from then on the combination of trench number + feature number (with subdivisions for separate find lots, e.g. 89.123 a, b, c, meaning trench 89, feature 123, lot a, b, c) became the way of indicating features. For the finds registration, both in the field and in the lab this was a great improvement.

Since in 1986 we were still working in the Ussen area, the numbering of trenches and structures continued from the last one dug in 1984. The first trench excavated in 1986, therefore, was 886 and the first house H122.<sup>1</sup> Only in 1993, when we started to work in a new residential area, Mettegeupel, we decided to start a new numbering system that would be preceded by the letters MG, while the letters OU (for Oss-Ussen) always preceded the old numbers. Also the numbering of structures started with 1 again.

#### 2.4.2 Drawings, scales and sections

In the Netherlands there have always been two traditions in the scale of drawing. Professor Van Giffen, the godfather of Dutch archaeology, prepared his field drawings on a scale of 1:40. He introduced the same system at the institutions that he founded in Groningen, Amersfoort and Amsterdam, but in Amsterdam his successor Glasbergen changed it to a scale of 1:50. The 1:40 scale was convenient because the drawing paper used by Van Giffen had a grid of slightly thicker lines every 5 cm, thus providing a convenient and easily recognisable grid of lines at 2 m intervals (scale 1:40). Moreover, by using a scale of 1:40, every mm on paper was 4 cm in reality, and easily divisible into smaller units of 2 cm or less. A



scale of 1:40 allowed therefore slightly more precision than the scale of 1:50 that was used at the University of Amsterdam and later also by the State Service for Archaeological Research in Amersfoort.

The matter of the scales was not that important as long as professional field draughtsmen made the field drawings. They were used to it and there was no need for any change. In Leiden the scale of 1:40 was introduced by the late professor Modderman, who had learned his trade under Van Giffen. The standard drawing scale, however, became more and more a subject of discussion because students found this scale of 1:40 difficult to master. Especially when in 1986 we introduced polythene drawing film on the excavation that had no longer the convenient 5-cm grid on it, the complaints became stronger. Therefore, when in 1993 we started work in a new area, Mettegeupel, I finally gave in. From that moment onwards all excavation levels were drawn on a scale of 1:50, and 1:20 for details. Nowadays, this is the common standard in both academic and commercial archaeology.

A few words about the method of drawing of surfaces and sections are necessary as well in order to be able to judge the quality of work practice. In this respect too we have changed the traditional practice in the course of time. Van der Sanden, who directed the excavations from 1982 to 1984, and I had both been educated by Waterbolk, Van Der Waals and (Jan) Lanting in Groningen. The Groningen methods were a little different from the Leiden tradition. We were used to colouring in the field the entire field drawing and to drawing and colouring all section drawings. Especially the latter was not standard practice in Leiden. Of most features only the depth below the excavation surface was measured, which is one of the reasons why the sections always were presented as rectangular blocks (e.g. Verwers 1972). After 1982 all sections were drawn to a scale of 1:10 (only large pits and wells were 1:20) and coloured as natural as possible. The site supervisors were trained to decide in the field how deep a feature was dug in, what its possible function was, the taphonomic processes, etc. This information was added to the drawing in text as much as possible (fig. 2.4). Increasingly drawing and colouring was supplemented by photography, which made colouring less urgent but still important.

We have always tried to put as much information on the drawings as possible. Drawings were coloured, but not as a 1:1 copy of nature, rather as a means of facilitating interpretation of genesis, superposition, structure, and abandonment. Colour and texture

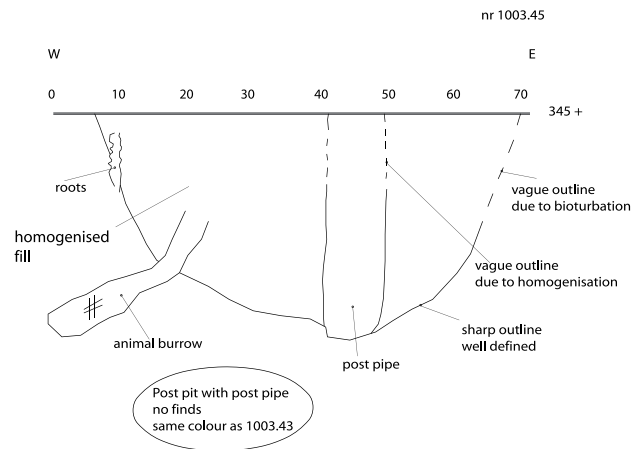


Figure 2.4 Ideal section drawing. Taken from the manual for the students of how to document features and conduct field work in Oss. Drawing H. Fokkens.

are a means to differentiate features and especially a tool for grouping the features, to decide which features were contemporary and belong to the same structure. This appears a self-evident and standard practice, but I stress this because in Dutch commercial archaeology in the Netherlands colour and fine-tuned drawing have disappeared almost completely. Quality has been replaced by efficiency, interpretation in the field by descriptive archaeology. It is now felt that if one describes colour, structure and texture of every feature in text, data input is faster and data becomes comparable because all is also entered into databases.<sup>2</sup>

Drawings of the trench surfaces were made directly after digging of the trench. A group of workers would shovel-clean the trench immediately and mark the recognised features. Here it should be noted that the subsoil is sand and can be worked easily with the aid of a shovel. The drawing team, consisting of two people, would then draw the features. Ideally the person taking the measurements also carried a shovel and cleaned the marked features to check outline and colour. The colours of the features were transferred onto paper and compared with neighbouring features (fig. 2.4). Ideally, remarks about their differences, soil conditions, etc. are added in the margin, as well as other remarks about possible association. We used a consistent way of indicating features and find numbers, inclusions, etc. These are slightly different from the present-day Dutch standard, which is why they are indicated in figure 2.4. As we explained in section 2.4.1, find numbers disappeared when we





Figure 2.5 Digitising field drawings in the excavation shed. Behind the IBM personal computer Liesbeth Theunissen, taking measurements from the drawing: Joost Mioulet. Photo H. Fokkens.

started in the Mettegeupel district. In the course of time also the double lines underneath a number indicating a feature number as opposed to a find number (fig. 2.4 G, H), disappeared. In the drawings we would also indicate measured elevations in m + NAP (Nieuw Amsterdams Peil), the Dutch Datum Level (fig. 2.4I). Later the locations of some of the points in the Dutch National Grid were added (fig. 2.4J). In the early years these were derived from the digitised and geo-referenced field drawings, in later years all measurement points in the trenches were measured with a laser-theodolite and transferred to the drawings.

Sections of features were drawn after excavating half of the feature with the aid of a shovel. No effort was made in troweling the exact form of the feature as the soft subsoil made that practically impossible. The form of the feature was determined in the section. When larger finds were recovered, they were first left *in situ* until it was decided whether they were to be drawn in that way or not. Often, however, only small pottery sherds were encountered which were immediately collected in bags or boxes.

### 2.4.3 Computers

In 1984 we bought the first computer for our institute. It was an IBM personal computer, initially without a

hard disk and only 512 KB internal memory. Speed was not an issue. Soon we supplied it with a 20 MB hard disk. It was this same computer that from 1987 onwards became one of our most important tools for the construction of line drawings. Until that moment we used to go to the department of astronomy of Leiden University where they had a large camera to photograph our field drawings. These were then reduced 2.5 times to a scale of 1:100 on photographic film. The result resembled a Röntgen photograph. The films were placed on a light box and traced on transparent paper. For the Ussen excavations this work was carried out by our draughtsman Jan Boogerd (†) who in the course of time produced 125 sheets of 1 x 1 m (scale 1:100). For further reduction these drawings again had to be reduced, for instance to a scale of 1:500, and traced again for publication.

This worked well, but the problem was that during fieldwork we had no overview and it took very long before the drawings were traced. Even then it was difficult, because there was no easy way to analyse the large numbers of 1 x 1 m sheets in coherence. When I started in 1986, I therefore had no idea, or only a vague one, what the Ussen campaigns had yielded between 1978 and 1984. By then the first stage of reduction and tracing had been completed for all

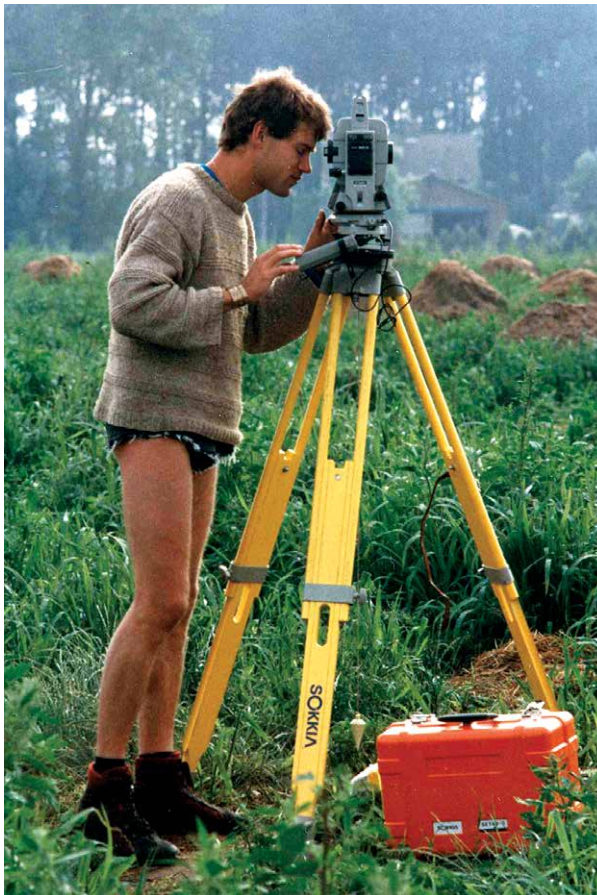


Figure 2.6 Using the SOKKIA total station (Mettegeupel 1993). Left: Patrijs Folkertsma; right: Ruurd Kok. Photo H. Fokkens.

drawings of the Ussen-excavations. But the further reduction to 1:500 or smaller scales and a summary or synthetic overview had not yet started. Such an overview was only present in Wijnand van der Sanden's mind, since he was carrying out the settlement analysis of the Ussen project.

To avoid this problem for our own campaigns, I first reduced every field drawing immediately (manually and schematically) on graph paper to a scale of 1:500 to keep an overview. At the end of the second season in 1987 the introduction of the computer came to our aid. Milco Wansleebe, one of our two computer experts, took our field drawings to the municipal archaeologist of the city of Utrecht (then Huib Kok) where he could use a digitizer. Using an early version of AUTOCAD – ACAD 1.2 – he digitised the drawings and there they were, ready for reduction to any scale. It seemed a miracle and we decided to continue the test the following year in the field.

In 1988, we took the old IBM PC with us into the field, although we had no digitizer tablet (fig. 2.5). Of every feature we measured the co-ordinates of several points (nodes) that were needed to describe its form on the field drawing, typed them in AUTOCAD, and in that manner digitised the maps manually. We did not get everything done, but with the help of all the students we got far. Of course in order to measure and type as little as possible, we took not that many measurements and the resulting forms became either very edgy or very round because digitising a circle required only two measurements: the centre and the diameter. After the end of the 1988 season we finally bought a digitizer. It was only a small one (A2) and although digitising A0 drawings on it was a bit odd, it worked fine and served us the next ten years. The problem of the edgy features, however, was not solved immediately since our old IBM – and also its successor (a first generation Tulip laptop weighing 8 kilos) – still





Figure 2.7 H. Fokkens in 1988 drawing a plan using the first drawing table ever in a Leiden excavation.

had only limited internal memory, no co-processor and limited storage capacity. Therefore we still tried to use as few bytes as possible and digitise accordingly.

Yet the ability to produce fast overviews in the field aided our strategy. The field drawings could be combined on screen, analysed and reduced. Thus structures that continued in different trenches could be more easily studied and the results could be used in the field immediately. The planning of the trenches and the areas to excavate became much easier. Another advantage was that we could use the digitised drawings for demonstration purposes, for adding to the day notes and as a basis for fast publication of the results. This new technique certainly added to the speed of (preliminary) publication and it also made the final publication of Oss-Ussen possible. Eventually with the help of a number of students all 125 1 x 1 m tracings of the Ussen excavations were digitised. They were published by Schinkel in 1994 and in an adjusted version in 1998.

#### 2.4.4 *Theodolites and total stations*

Yet another new tool came to our aid: the theodolite (fig. 2.6). First we used ordinary *Wild* levelling equipment for measuring horizontal angles and heights. Everyone who has operated them, however, knows that they are difficult to work with, especially on short and long distances. Neither are they very accurate since much depends on the way the levelling rod is kept level, etc. However, a theodolite does make it possible to look down or up, and can therefore focus on – for instance – a measuring pin. This made our measurements much faster and much more accurate, especially within the trenches.

There were of course much more accurate machines available, but they were too expensive. In 1990, however, the Leiden institute was granted a large sum of money by the Dutch Foundation for Scientific Research (NWO) to purchase an advanced set of machines for the automation of fieldwork. We

## Faculteit der archeologie, Leiden

BESCHRIJVINGSFORMULIER VONDSTEN:			VONDSTNUMMER:		
<b>OVERIGE MATERIALEN</b>		gew.	aant.	<b>INHEEMS (HANDGEVORMD)</b>	<b>ROMEINS</b>
Baksteen; (recent)puin				<b>AARDEWERK</b>	<b>IMPORT-AARDEWERK**</b>
Tegulae, imbrices				<b>Randen</b>	Terra sigilata
Basaltlava***				Vingertopindrukken(VTI)	Terra nigra
Bot***				Nagelindrukken (NI)	Kurkurn
Bronzen voorwerpen***				Spatelindrukken	Belgisch waar
Glas***				Golfrand	'Dolium' fragm.
Hout				Touw	'Amfoor' fragm.
Houtskool				Overig	Geverfde waar
IJzeren voorwerpen***				<b>Wanden (hals - buik)</b>	Gladwandig
Leem				Vingertopindrukken(VTI)	Ruwwandig
Post-ME aw.				VTI ('Kalenderberg')	(Overig) dikwandig
Slakken				Nagelindrukken (NI)	Ondet./overig
Slingerkogels*				Spatelindrukken	<b>MIDDELEEUWS</b>
Spinklossen*				Golfrand	<b>AARDEWERK*</b>
Steen; bewerkt				Besmeten	Merov./Karol.
Steen; onbew., kiezels				Kamstreek	Andenne-/Pingsdorf aw.
Vuurstenen artefacten				Groeven	Laat-ME, geglazuurd
Weefgewichten*				Touw	Steengoed
Overig				Wikkeldraad	Totaal Middel. aw.
<b>AARDEWERK TOTAAL</b>	gew.	aant.		Getande spatel	
fragmenten aardewerk				Staiband met VTI/NI	<b>KUSTAARDEWERK</b>
gruis (<1 cm <sup>2</sup> )				Riet/bot indrukken	<b>Type</b>
<b>INHEEMS AARDEWERK</b>				Overig	Kustaw., niet-rood
<b>Magering</b>	aant.			<b>Bodems</b>	Kustaw., rood
Steengruis					Totaal fragm. kustaw.
Grof zand/grind				<b>Opbouw</b>	<b>Vormtype</b>
Plantaardig				I Open	Gootje'
Potgruis				II Gesl. zonder hals	Dunwandig
Onduidelijk/overig				III Gesl. met hals	Dikwandig
<b>Bijzonderheden</b>				Onduidelijk	Onduidelijk
(Secundair) verbrand					
(Sterk) afgerond					
Dateringscode:		****	Opmerkingen:		
Overige opmerkingen:					

\* = zo mogelijk beschrijven / tekenen op achterzijde formulier  
 \*\* = beschrijvingen op form. Rom. aw. (model UW02)  
 \*\*\* = vraagt om speciale behandeling (zie specificaties vondstbehandeling)  
 \*\*\*\* = Datering: 30=LN, 40=BR, 41=VBR, 42=MBR, 43=LBR, 44=VMBR, 45=MLBR, 46=LBR/VIJT, 50=IJT, 51=VIJT, 52=MIJT, 53=LIJT, 54=VMIJT, 55=MLIJT, 56=LIJT/RT, 60=RT, 61=VRT, 62=MRT, 63=LRT, 64=VMRT, 65=MLRT, 66=LRT/VME, 70=ME, 71=VME, 72=MEV, 73=KAR, 73=MME, 74=LME, 75=PME, 90=recent, 99=onbekend

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model UW01

Figure 2.8 Example of a data form used in the post-excavation analysis. This version is an update from the originals that we started in 1986, and more condensed and systematic than we used in the early days. The variables recorded for sherds are related to the variables that Van den Broeke since 1985 used for his typological determinations. Design P.W. van den Broeke, R. Jansen, H. Fokkens.

could now buy an infrared theodolite with a field book attached (a total station), a portable computer and other kinds of hard and software, including a generator to power these gadgets. This new equipment brought a number of exciting possibilities within reach: the use of Geographical Information System techniques, GIS for short. We already were used to

putting an abstract of the field data in a database. But by using script files we could now also generate plots of data in AUTOCAD, which was much more sophisticated. The infrared theodolite really was a great improvement: the co-ordinates of the features were automatically transferred to a database and we only needed to add the other data like depth, date, finds, etc.

This did not imply though that it facilitated our work. A new source of possible errors was introduced, and I spent endless hours and weekends editing the raw data and correcting for forgotten measurements. Much of the work was also done by Jan Albert Schenk, who would become our data person for a couple of years. Because of the possible errors, we continued digitising the field drawing in a temporal co-ordinate system. This probably saved us from many disasters on the digital front. We did also a few experiments with digitising features directly in the field, but I considered this a loss of quality with respect to the analogue drawings. Therefore we never adopted that system. It is still my opinion that digital drawing, which is now common practice in Dutch commercial archaeology, – even though it may be accurate and fast – introduces a considerable loss of quality with respect to the interpretation of field drawings.

## 2.5 DOCUMENTATION AND DESCRIPTION

Per trench of generally 10 x 100 m one level was excavated and documented on a scale of 1:40, after 1993 on a scale of 1:50 (fig. 2.8). All field drawings were digitised. For quick documentation supplementary to field notes, we used a Polaroid camera. All permanent field photographs were taken by me with an analogue Canon T90 reflex camera. For publication photography, the faculty-based professional photographer Jan Pauptit was responsible, but he only came on site for special situations. He also made most of the object photographs presented in the catalogue (chapters 12-16).

As identification for the features, we photographed only the feature numbers and no scale or north arrows. We considered this redundant because on the field drawing was already indicated how a feature was sectioned. Since they were also drawn to scale, we considered it unnecessary to add all kinds of scales etc. That basically repeated information. In fact the system proved to be adequate: even thirty years after the excavation we were able to relate most photographs to the respective features.

Day notes were always kept per day and per trench (at least after 1986). The separate trenches were the basic documentary unit. Day notes carry information on activities carried out and especially about insights, interpretations, and changes in interpretation including sketches and Polaroid situation recordings or feature photographs. The quality of day notes of course depended on the person who wrote

them. I tried to check all of them, but that was not always possible.

Finds were washed, dried, weighed, classified and bagged in the field. During the post-excavation phase we would – per feature with finds – describe finds on a special form (fig. 2.7). All diagnostic finds were pencil drawn. The find analysis was always done under the supervision of Fokkens and later also Jansen in Leiden or on site, often during post-excavation seminars.

The description of the pottery, by far the most important category of finds, was basically aimed at the dating of features. We described only variables relevant for that purpose. This meant that not the individual sherd was the subject of study, but the complex as it was present in features or in units within features. The reason is that according to the dating system devised by Van den Broeke (1987, 2012) the composition of form, structure and decoration elements in a feature is decisive for dating (fig. 2.8).

## NOTES

1. To be honest, we had started new numbers, but after the first field season and a discussion with Van der Sanden, the then director of the Ussen Project, it was decided to renumber trenches 1, 2 and 3 of 1986 into 886, 887 and 888. The analysis of the 1986 results also became part of the Ussen-project. Schinkel published them in his dissertation (1994/1998).
2. The idea that a description of colour and texture can be treated as 'hard' or as comparable data is in my view scientifically untenable. In my view the loss of critical remarks and observations on drawings means an enormous loss in quality that is not compensated anywhere else in the process. This loss of quality is even more noticeable when features are digitised in the field with the aid of a laser theodolite.

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# 3. Chronology and typology of structures

H. Fokkens

## 3.1 INTRODUCTION

In the various books and theses that have been published now on the Oss excavations, we have always reverted to the typology and chronology presented by Schinkel (1994 and 1998) and Van den Broeke (2012). The latter publication about pottery typology is of fundamental value for the excavations in Oss, but also for the southern Netherlands in general. I will not try here to reproduce it or its point of departure, but would refer to the original work (Van den Broeke 2012).

The typologies of houses, granaries and pits, however, have never been discussed in detail since their publication by Schinkel (1994, 1998). Everyone refers to his schemes as *the* Oss-typology and copies the well-made images of house reconstructions. With respect to houses and granaries Arnoldussen (1998) added new descriptive typologies to the discussion. He departs from the central work of Huijts (1992) at some points (see below). Also Waterbolk (2010) and recently Lange *et al.* (2014) have discussed house plans and outbuildings from different periods. The latter publication discusses all evidence from the Netherlands, while Waterbolk focuses on the northern Netherlands only. A fundamental chapter on house structure was published by Fokkens *et al.* 2016. In the following paragraphs I will discuss in more detail especially the existing Oss-typologies and analyse their value and implications for understanding settlements and settlement structures.

A note on dating terminology: we have calibrated all <sup>14</sup>C dates on the basis of Intcal13, while citing also the original PB dates and labnumbers. In the catalogue, chapters 12-16 these dates have been cited in the context of the description of features. Labnumbers and BP dates are generally not repeated in the synthetic chapters 4-11. In these chapters we cite dates with a reference to the relevant section or to figure 4.8 where the labnumbers can be found and with the *cal BC* indication. In the case of more general date ranges, but still based on calibrated dates, we used a BCE indication: *e.g.* episode 12 probably lasted from 1200-1000 BCE, based on a <sup>14</sup>C date of a well to 1178-1053 *cal BC* (cf. fig. 4.8).

## 3.2 HOUSES

### 3.2.1 House structure and roof construction

In order to understand the house typology, one should first understand the basic structure of traditional house building. In structural discussions, archaeologists try to derive the structure of a house from the horizontal distribution of posts, walls and entrances. Larger posts are generally seen as structural elements. They support the roof and give the house its stability. Therefore it is important to discuss the principles of roof construction. One of the important sources for understanding roof constructions in term of history and terminology is Janse (1989). His work gives a very detailed analysis of historical structures and explains the principles

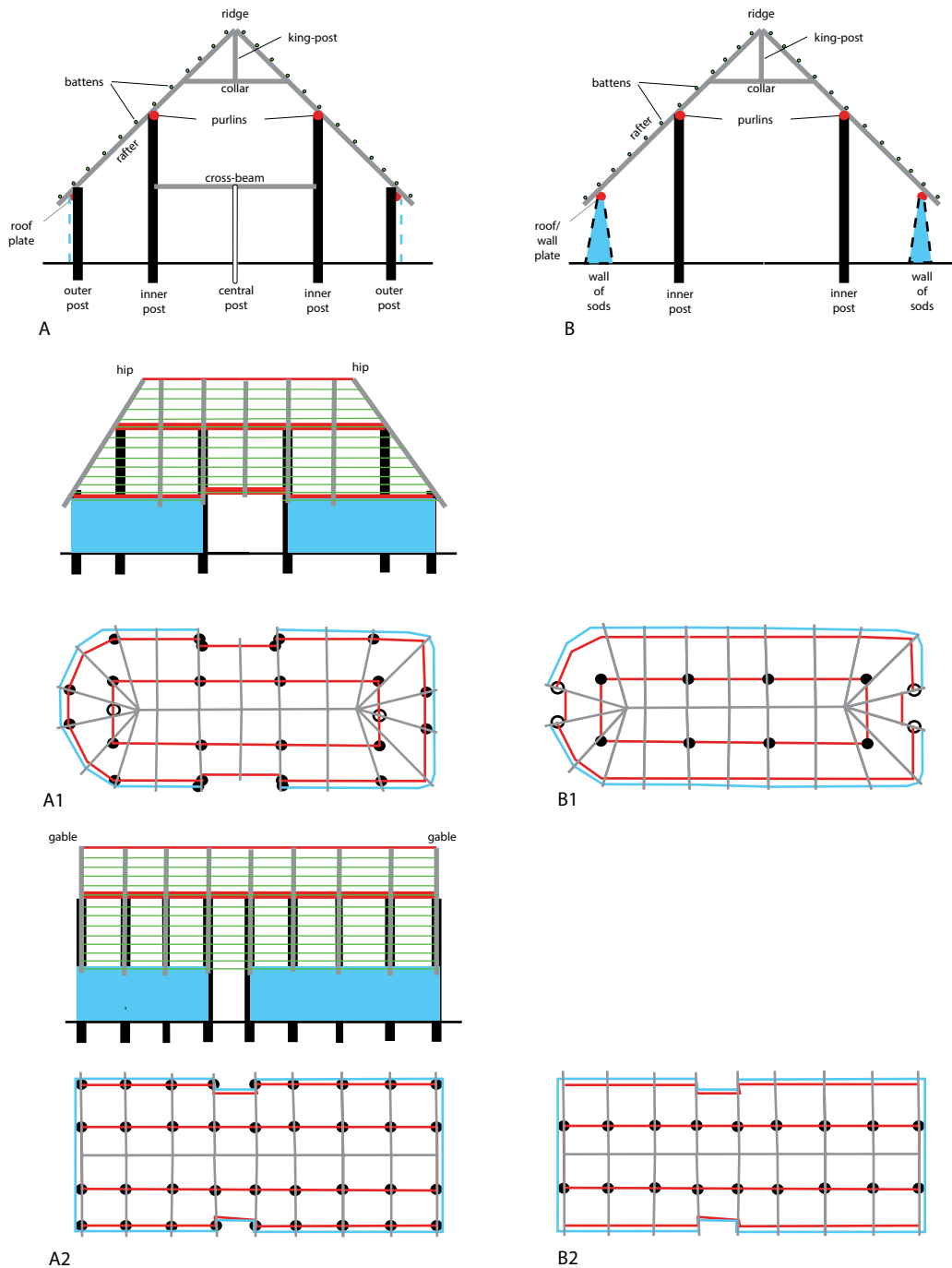


Figure 3.1  
Schematic reconstruction of mayor Bronze Age house constructions and terminology. A1: construction with hipped roof and wall-posts supporting a roof plate; A2: construction with a gable roof and wall-posts supporting a roof-plate. B, B1 and B2 show the same roof construction but with walls of sods supporting a roof-plate. Drawing H. Fokkens.

of roof construction. Janse barely discusses prehistoric building techniques however. That gap is filled by Huijts (1992). As director of the foundation for historical farm research (*Stichting Historisch Boerderij-onderzoek*), one of the research questions of his dissertation was to study the development of the Dutch

traditional aisled-hall farm (Dutch *Hallehuis*, German *Hallenhaus*) (Huijts 1992, 203). That term indicates the division of a farm into one, two or three 'aisles'. These aisles become visible in archaeological examples as rows of posts inside the house. In the Bronze Age, for instance, two or three rows were common, so we speak

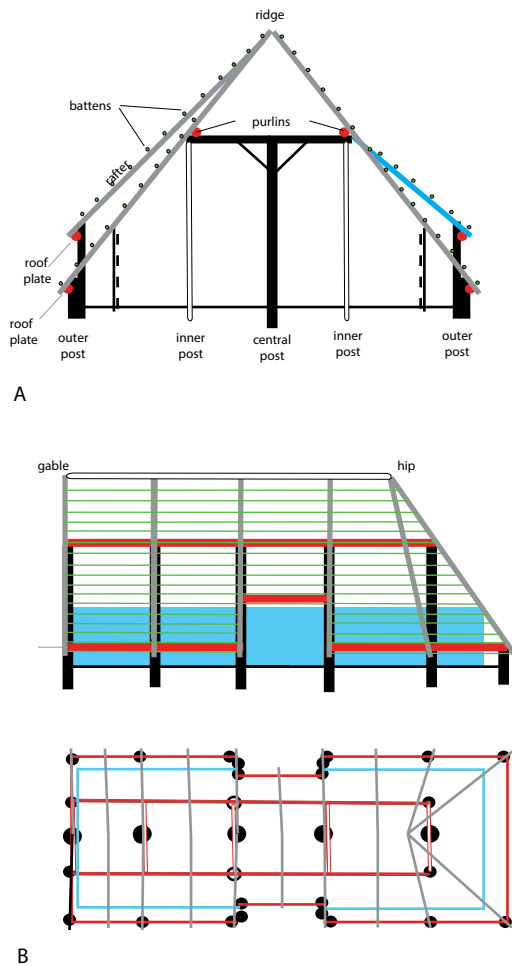


Figure 3.2 Schematic reconstruction of an (Iron Age) house with a roof resting on posts outside the wall. A: front side. B: side view and top view. Drawing H. Fokkens.

of a three- or four-aisled farm. But that changes in the Iron Age to a two-aisled farm, and back to a three-aisled farm in the Medieval Period (Huijts 1992, 11).

### 3.2.1.1 Horizontal elements: collars, purlins, beams, and plates

For the layman – that is for most archaeologists – the building world is a maze of terms and jargon. What is the difference between a purlin and a beam, or the rafter and a truss. These are the kinds of terms that we have to work with when we discuss house structure and especially roof structures. The skeleton of a roof is nowadays constituted by the rafters (Dutch *sporen*) and purlins (Dutch *gordingen*) keeping the rafters in place. But according to Huijts, following Janse (1989, 18),

purlins were absent in prehistoric farms. Referring to a plan of Hijken, which Harsema used in his reconstruction at Orvelte (Harsema 1980; cf. fig. 3.4), Janse states that the prehistoric farm had a common rafter roof or collar-roof (Janse 1989, 379; 24). The rafters may have formed a span, but were according to Janse (1989, 18) not connected by a truss-beam or tie-beam (beam at the base of the roof; Dutch *trekbalk*). According to him the structural bond of the rafters in the transverse direction was probably made by one or more collars (fig. 3.1A; Dutch *hanebalken*). The rafters either came together with or without a ridge beam (Dutch *nokbalk*). Huijts avoids the term beam (Dutch *balk*) because it suggests a straight-sided piece of wood, and that was almost certainly not the case in prehistory (Huijts 1992, 33). For the same reason, he also avoids the term plate, like in wall-plate (see below). Instead he uses the more neutral Dutch term *ligger*, as an indication for all horizontal parts in the construction (1992, 33). In this book we will use the English term beam. Like the Dutch *ligger*, a beam is a horizontal element of any form, either in the length of the house, or across. In this book a beam is therefore not used to indicate a straight-sided wooden element, unless that is specifically stated.

Some beams, however, have a special function and place and therefore often get a special name in construction language. The lowermost part of a roof for instance is often carried by a beam called a roof-plate (Dutch *muurplaat*, *topplaat*, *dakplaat*). A roof-plate is a longitudinal beam that supports the lower side of the roof. In prehistoric farms the roof-plate was either carried by posts in, or just inside the wall (fig. 3.1A), or by the wall itself (fig. 3.1B), or by posts outside the wall (fig. 3.2). Roof-plates were (in theory) only necessary if there were not enough posts in a plan to support each span of rafters. According to Huijts, most Emmerhout-type farms, for instance, have so many inner and outer posts in line that plates would not be necessary. In those plans, every rafter is supported by a set of inner and outer posts (fig. 3.1A1) (for a definition of posts see below). But when the distance between the sets of inner and outer posts becomes larger or when the wall is made of sods, then a roof-plate is necessary (fig. 3.1).

One of the problems with this principle as presented by Huijts, however, is that the distance between sets of inner and outer posts along the longitudinal axis of the house generally is 1.9-2.3 m, with 2.2 m as a mean (Arnoldussen 1998, 221). If these sets of posts were the only ones that supported rafters, that would imply that there were only rafters



at every 2.2 m. That is rather far from each other. Such a distance is probably not a problem when the wood-joints are sophisticated and the battens of high quality, but that is hardly to be expected for prehistoric houses. Therefore we depart from the principle that there was normally a roof-plate (though it could be absent) and – as a consequence – that there was normally a set of mid-beams to support the rafters about half-way the roof (figs. 3.1, 3.2). Rafters are often projected about every meter of the roof, though that may even have been less. None of the authors mentioned so far has given an estimate for the distance between rafters.

### 3.2.1.2 Vertical elements: posts and walls

Vertical parts that support the roof are often indicated in different ways. Huijts prefers the Dutch term *stijl* (Eng. post: Janse 1989, 360) to indicate any standing element (Huijts 1992, 31). The term post generally has a prefix that refers to the place where it is present in a ground plan (fig. 3.1A, D). That place is not necessarily identical with a function. So, a central post may support a ridge beam (fig. 3.1), but also may only support a cross-beam that supports a floor or garret (Dutch *Vlieringzolder*: Janse 1989, 379; fig. 3.1 A). Huijts (1992) discusses all of these variations in detail in his dissertation. A few principles are important. The vertical elements generally support – directly or indirectly – the rafters and the roof. There are basically two different ways to support the rafters. Longitudinal beams like mid-beams can be added, but are not necessary according to Huijts (1992, 43; see the remark above: we assume they were always present). Janse (1989, 18) adds to this that the rigidity in the longitudinal axis to a large extent depends on the hipped roof-construction. A house with a gable end gets its rigidity from purlins (if present) and from the depth to which central posts are embedded in the soil, or from trusses of inner posts are connected in the longitudinal direction of the house. That system, however, did not occur until the Late Middle Ages (Huijts 1992, 161 ff.). We encounter gable roofs mostly in the late Iron Age and the Roman Period, though they are also projected for the Oss Bronze Age houses of type 1 (see below).

The central posts, according to Huijts (1992, 33) seldom support the ridge beam directly. A central post is thought to support a cross-beam at mid-height of the roof on which mid-beams are laid to support the rafters (fig. 3.1D). If necessary a ridge-beam could be added that could be supported by king posts (Dutch *makelaar* [Janse 1989, 377]; fig. 3.1A). The Dutch term

*makelaar* also refers to ornamental elements outside the roof on a gable (not on a hipped roof).

With respect to the walls, a lot of variation is possible. Generally, in excavations walls are not visible at all, only posts are visible. But in very good circumstances, walls are visible as bedding trenches or as rows of stakes, for instance. In Iron Age plans they appear to be more frequently visible than in Bronze Age plans. Sometimes outer posts are even completely absent, like for instance in West Frisia or in the River Area. In those cases, only a set of two inner posts is present. That implies that the roof must have rested on a wall-plate lying on a wall built of sods (IJzereef and Van Regteren Altena 1991, fig. 10; Huijts 1992 49; fig. 3.1B). In West Frisia and the River Area, the entrances are made in the short ends of the house, as indicated in Figure 3.1B1 (Roessingh 2018). For houses with a construction as presented in Figure 3.1A, it is not evident where the walls were placed. We have examples from Emmerhout (house 13, Huijts 1992, 53) with a line of stakes just outside the wall posts, but the wall posts could just as well be part of the wall. In any case, the walls of these houses are generally reconstructed slightly higher, say at least 1.0-1.4 m high (Huijts 1992, 53).

If the eaves are not very long, the lower part of the walls is not very well protected against rain dripping from the eaves. Rainwater will splash up against the walls and cause erosion of the wattle and daub walls (fig. 3.3). If the roof was supported outside the walls by outer posts, like in Iron Age houses, that would be less of a problem (figs. 3.2, 3.4). A problem in those situations is to create a proper entrance. If the roof is carried by the wall or posts just inside the wall, the entrance does not require much extra construction (figs. 3.1A2, 3.2B). When the roof is carried by posts outside the wall however, then the eaves posts extend only a meter or lower above ground, depending on the distance between the wall and the outer posts (fig. 3.1D, E). This is too low to enter, so the roof-plate has to be raised at the place of the entrance (figs. 3.1E, 3.4C, D, E). This implies that extra posts are needed. This was the situation in most houses of the Iron Age. The roof angle above the entrance then becomes less than the minimum roof angle of about 45°, which may be a problem in the run-off of rainwater. This is especially so in case one only connects the rafters above the door with the mid-beam, like on the south side of the Orvelte farm reconstruction (fig. 3.4D). The alternative is to connect the rafters above the door with the ridge, like has been tried on the north side of the Orvelte



Figure 3.3 Rain water dripping from the eaves and the damage that this does to the lower sides of the walls. Photo taken in Orvelte in 2003 of a preserved historical farm. Photo H. Fokkens.

house (Harsema 1980; fig. 3.4E). By making the entire roof higher, the angle of the roof above the door also becomes more suitable for run-off.

### 3.2.1.3 Space division: aisles, living quarters and stalls

Dutch archaeologists use the number of post rows inside a house to indicate the number of aisles. But if we read Huijts closely, the number of aisles did not matter much in the prehistoric period (Huijts 1992, 33). That only becomes an issue in the Late Medieval halls. Yet the number of aisles was one of the main criteria for Schinkel's typology. I will discuss that issue below when it comes to a critical analysis of the typology.

With respect to the difference between a living quarters and stalls, not much can be said. In the northern Elp and Emmerhout farms, stalls are often visible by the placing of extra posts, but in the south these are generally absent. Also in West Frisia and in

the River Area they are not visible. But that does not mean that there were no animals stalled inside these farms. Animals could also have been tied to beams connected in the longitudinal direction between inner posts. In historical times that was still the practice in many parts of the country. I do not wish to continue this discussion here, so let's decide for the moment that stalls could have been present even if archaeologically they are invisible.

### 3.2.2 The house typology of Oss-Ussen

Schinkel based his typology on the variation in three variables: the number of aisles, the ways in which the walls were founded, and the presence or absence of posts outside the walls supporting the roof edge (Schinkel 1998, 184). Given the discussion above, especially the second criterion appears to be important for house construction. To that I would add that also the type of roof ending is important, and the spots where the entrances are placed. They can be placed in the short side, like in the Westfrisian farms, or in the long sides opposite each other. If there are consequent differences between types in the ways entrances are placed, that may have been important for the perception of the space and for movement through the house.<sup>1</sup>

Schinkel's classification was based on the plans of 127 (parts of) farmhouses, and is commonly known as the 'Oss-typology'. This typology is still regularly used for the determination of individual farmhouses in the Southern Netherlands, but has been amended now to accommodate plans from later research in the southern Netherlands (Hiddink 2014). Figure 3.5 shows of the different types and sub-types as determined by Schinkel (1998, 186). With the Oss-North excavations we have added another 37 plans to these series, mostly from the Iron Age. This offers a solid basis for a critical analysis. I will discuss the plans excavated and the typology in general.

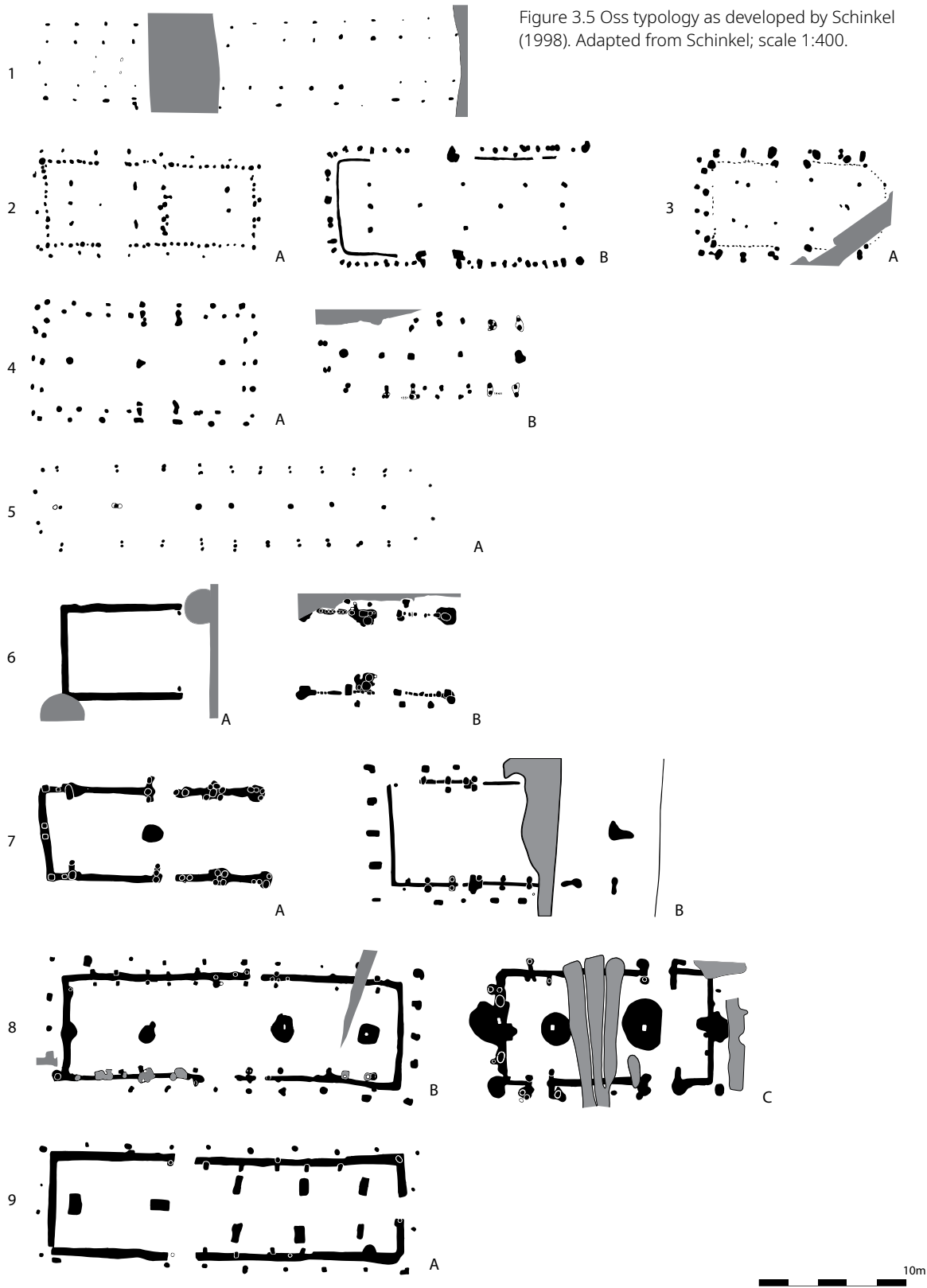
#### 3.2.2.1 Middle Bronze Age: type Oss-Ussen 1

Type 1 was in Schinkel's work represented by one example, in fact a house from Oss-North Mikkeldonk, House MD125. In 1989 we discovered an exact parallel, MD128, with almost identical dimensions and structure (fig. 3.6), though MD128 is the most regular of the two. Both probably had a gable roof at both ends. The sets of inner and outer posts are set wide apart (2.2 m), so we think that roof-plates and mid-beams were necessary to support additional rafters. Since in both plans the sets of outer posts and





Figure 3.4 The Early Iron Age house reconstruction at Orvelte. All photographs are taken in 2009. A The interior with a portal construction. The position of the mid-beam and the rafters is well visible; B the eaves and the roof-plate resting on the eaves posts; C, D, E raised roof plates above the door. Photo H. Fokkens.



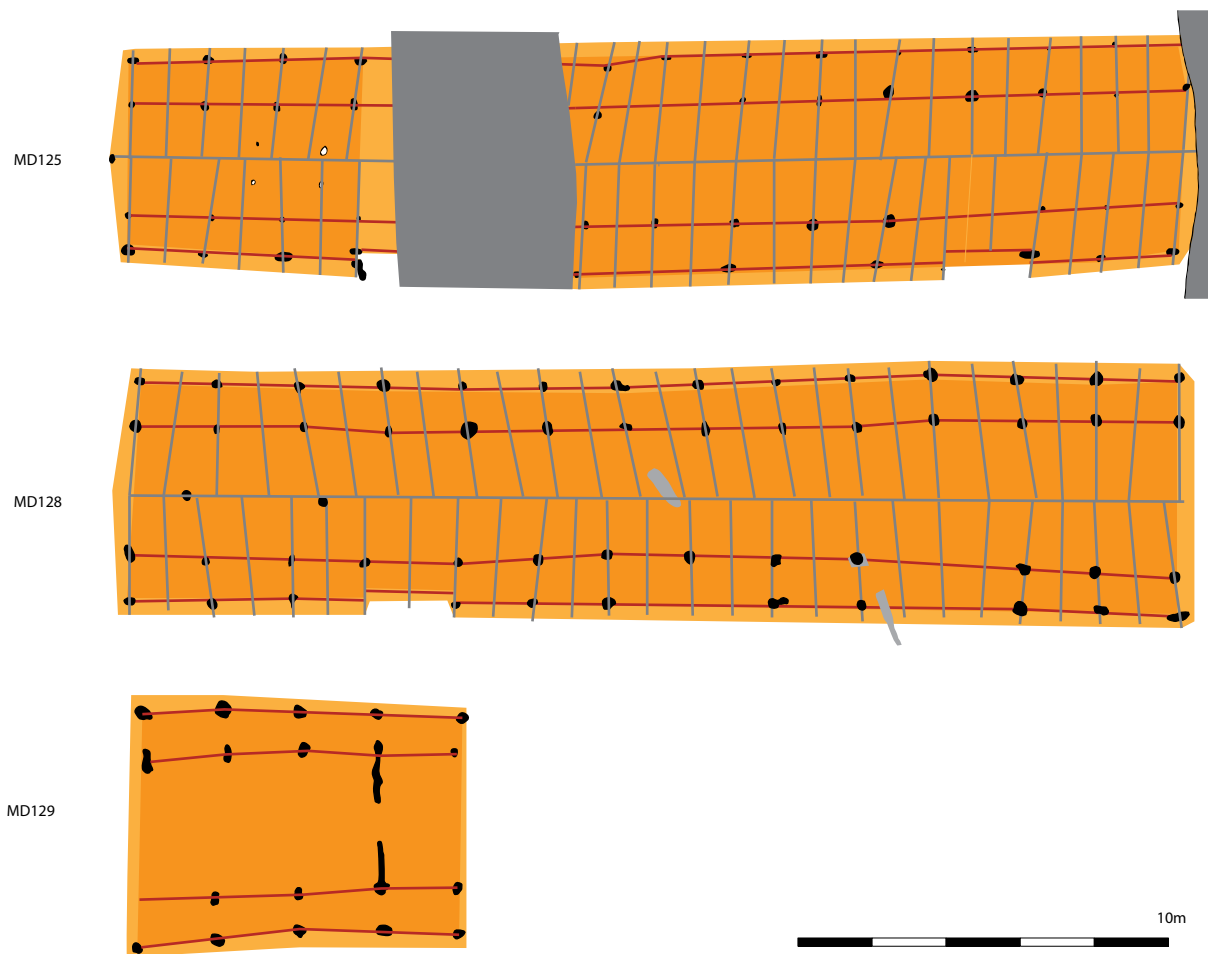


Figure 3.6 House MD125, MD128, and MD129, all of type 1 (Middle Bronze Age). Drawing H. Fokkens, M. Oberendorf.

inner posts are not very well in line, a ridge-beam may have been necessary. It is not necessary to distinguish subtypes, so we simply refer to this type as type Oss-Ussen 1. Hiddink (2014, 173 ff.) proposed that type Oss-Ussen 1 could also be named type Nijnsel. The Nijnsel plan has been much discussed, however, and to us it still fits better in the type 2 tradition (Vasbinder and Fokkens 1987, 131: note 2). The Nijnsel plan lacks the paired inner and outer posts, the outer posts are too close to the inner posts, and the central row of posts does not fit the Oss-Ussen type 1 definition. Therefore, I think the Nijnsel plan probably is an Early Iron Age house. Since none of the sherds that were supposed to date the Nijnsel plan, nor the  $^{14}\text{C}$ -date, actually comes from one of its post pits, those dates have little value. Post pits of the plan proper yielded no pottery.

This type of house is not very well datable. Only a few potsherds were found in either of the two houses in Oss. A date in the Middle Bronze Age is possible, but pit 917.254 at the eastern end of OU128 yielded a date of 1200-1000 BCE. This implies that this type existed in the Middle Bronze Age and the first part of the Late Bronze Age, c. 1500-1000 BCE.

### 3.2.2.2 Late Bronze Age: absence or presence 1000-800 BCE?

Late Bronze Age house plans are very rare, or absent in the Netherlands. The ones that have been claimed to date in the Late Bronze Age should generally be placed in the earlier part, like house Oss MD125. Houses that with certainty date to the second half of the Late Bronze Age do not exist (see Fokkens 1997; 1999). The latest survey of house plans from the Netherlands



(Lange *et al.* 2014) confirms this in broad terms. None of the authors has concrete evidence for plans dating between 1000 and 800 BCE. Indeed, Waterbolk places the Elp-type between 1200 and 800 BCE, but there is in fact very little to support the late dates. Van de Velde (2014, 98) discusses the typology that Waterbolk has devised for the northern Netherlands (latest version Waterbolk 2009). He is correct when he ascertains that Waterbolk operates strictly from a continuity perspective. In his model there is no room for discontinuity. Moreover, there is no analysis of the dating range of house types. Arnoldussen and Theunissen (2014) also signal a lack of plans from the Late Bronze Age in the River Area, especially from the period between 1000 and 800 (2014, 129). In West Frisia they are absent as well (Roessingh 2018). Hiddink (2014, 177 ff.) discusses Late Bronze Age / Early Iron Age plans, but he refers to Oss type 2 plans (see below) that probably developed after 800 BCE or a little earlier. In the coastal area of the western Netherlands, Late Bronze Age plans are also absent (Kok and Besselsen 2014).

In other papers I have discussed this problem of the empty second half of the late Bronze Age in some detail (Fokkens 1997; 1999; 2005; 2008). I will not repeat that discussion here in detail. The basic idea is that this is the very period when type 1 plans are replaced by type 2 plans of a substantially different structure and size (Hiddink 2014, 179). Therefore the plans may have become less visible in those 200 years (Fokkens 2009; Arnoldussen and Theunissen 2014, 129; fig. 3.9). Fact is that from the moment they become visible, the structure is really clear, consistent and well developed. <sup>14</sup>C-dates from this particular period are almost absent. In Oss only in the Mikkeldonk area we have wells that date in the second half of the Late Bronze Age (cf. chapter 13.4.4, feature 11277).

### 3.2.2.3 Early Iron Age: Oss-types 2 and 3

Types 2 and 3, both dating to the Early Iron Age, indicate a radical change from the type 1 house. In the type 2 house the walls generally are visible, sometimes as rows of posts, sometimes as the remains of stakes, sometimes as a bedding trench. I see no reason to use that as a criterion for distinguishing subtypes, as Schinkel did. The roof is carried by posts outside the wall instead of inside the walls (figs. 3.5, 3.7). That is really a major structural difference compared to the earlier plans of type 1. Basically the roof is still carried by three rows of posts: two inner and two outer posts, but the walls are different. They are probably constructed of wattle-work made

windproof with loam, or in other words: wattle and daub (as in fig. 3.5). Sods are no longer used. Sometimes, like in house MD132 and in MG1, the stakes of the wattle-work walls are still visible.

Schinkel distinguishes between a type 2 and a type 3 house: type 2 has four aisles, type 3 has three (fig. 3.5; Schinkel 1998, 191). But plan MG1, which in all respects is an exact copy of MD132, shows that also type 3 can have extra central posts (four aisles; fig. 3.7). Therefore his types 2 and 3 have the same basic construction: generally the mid-beams are supported by extra central posts with a cross-beam. Only in plan MD132 are these missing. It is improbable that the row of central posts supported a ridge-beam because the central posts do not form the end of the roof (fig. 3.7). Therefore I propose to discard type 3, as it is almost identical in structure to type 2. Hiddink (2014) completely ignores type 3, so he probably would agree with us. Hiddink also discusses a regional type for West-Brabant (type Breda-Goirle; 2014, 181 ff.). In Oss we have discovered no examples of this type, which has a type 1 structure, and also bedding trenches between the inner and outer posts that are often set in pairs. They date to the end of the Late Bronze Age or the to the Early Iron Age, comparable to type 2.

Schinkel proposes to differentiate between type 2A and type 2B. According to Schinkel (1998, 191) type 2A has wall posts set at short intervals and outer posts spaced far apart, while type 2B has a bedding trench for the wall and the outer posts are spaced at short intervals (fig. 3.5). Inside the house, however, the roof support construction is exactly the same in both types. For Oss-Ussen, Schinkel cited three examples of type 2B (OU112, OU43 and OU57) and one of type 2A (MD130). The Oss-North excavations, in fact have only yielded houses with outer posts spaced wide apart. With hindsight, the short spacing of the outer posts of OU112, could just as well be due to a replacement of those posts, like seems to be indicated by the posts in the western short side. In our view the spacing between the outer posts is not really important, even though Hiddink (2014, 180) suggests that the wider spacing indicates that the roof was carried by the walls. But the other examples in Oss-North (fig. 3.7) of this type do not show heavier walls. Moreover, if there is a roof-plate resting on the outer posts, the difference between types 2A and 2B is related to structural differences (fig. 3.7). Therefore, I suggest to merge 2A, 2B and 3A into one type: type Oss 2.

With respect to the very close comparisons in structure between MD132 and MG1 on the one hand and

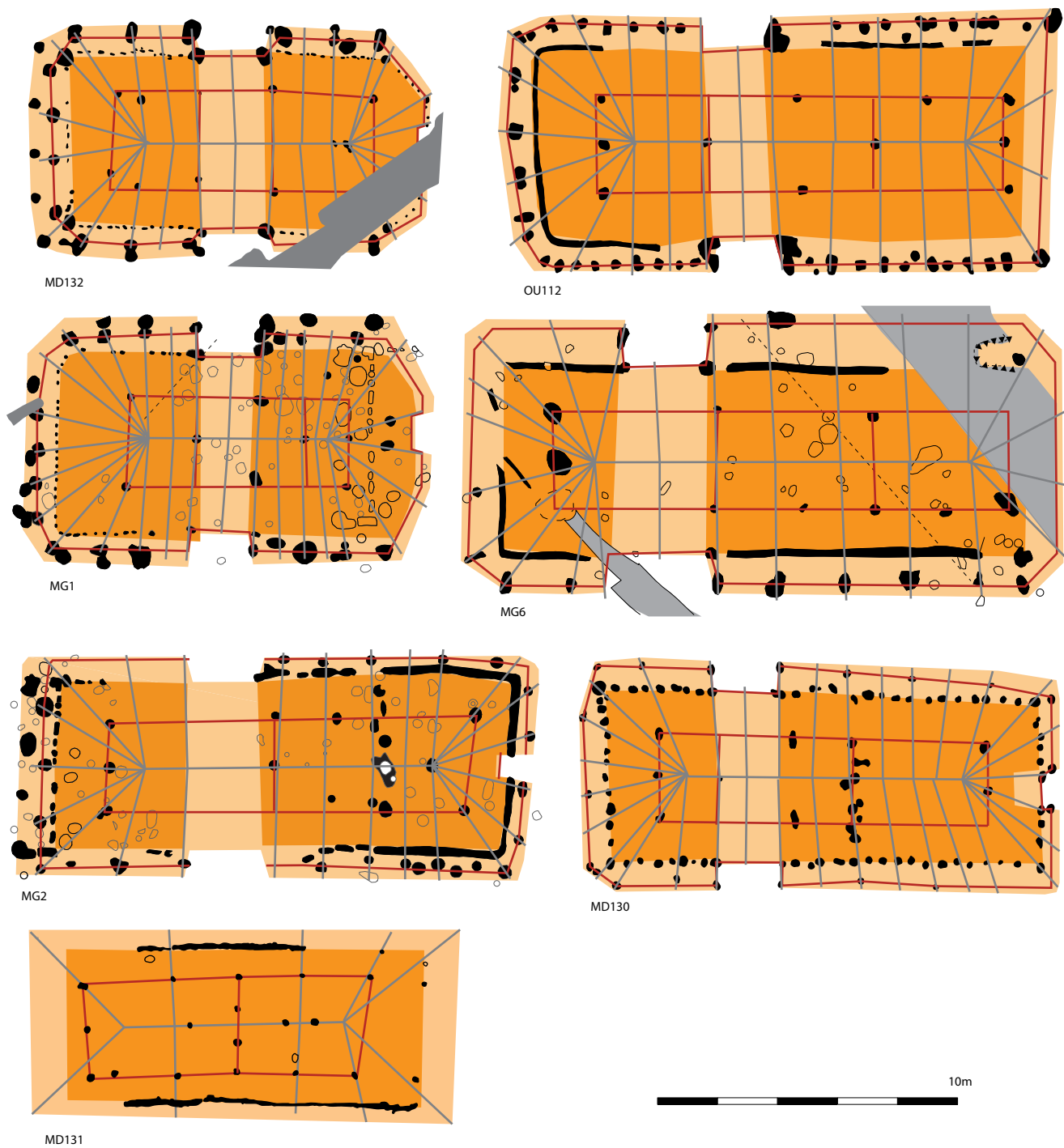


Figure 3.7 The six houses of type 2 in Oss North, and for comparison House OU112, the role model for type 2 as presented by Schinkel. Drawing H. Fokkens, M. Oberendorf.

MD130 and MG2 on the other hand (fig. 3.7), I suggest that there is some relation here. Of MD132 and MG1 not only the form of the walls and structure of the roof are identical, but also the entrances on the east side. Another feature MD132 and MG1 share is the doubling of the outer posts on all sides except the east side. This doubling is also present on the west side of MG2. These are otherwise unique features. MG1 and MG2 are actually overlapping, so they could never have been contemporary. But MG1 and MD132 certainly could be, as could MG2 and MD130.

Type Oss 2 is entirely comparable to the ‘transitional Hijken type’<sup>2</sup> that Waterbolk has recognised in the north (Huijts 1992; Van de Velde 2014). It has the same characteristics, the same dating. Therefore the transition from type 1 houses to type 2 houses indicates a major change in house construction in the Netherlands. The fact that type 2 houses are always relatively short (compared to type 1 houses; Hiddink 2014, 178) could imply also a relation with social change because type 2 houses were only large enough for single families or smallhouseholds, while the larger type 1 houses could have harboured extended families (Fokkens 1997; 1999).

### 3.2.2.4 Type Oss-Ussen 4 or type Haps: the most common Middle Iron Age house

Oss-Ussen type 4, better known as the Haps-type house (Verwers 1972), is structured differently from type 2 houses with respect to the central row of posts and

the walls. The plan has become two aisled, and that remains so during the Middle and Late Iron Age. That implies that the roof is now supported as indicated in fig. 3.2A. This manner of supporting the mid-beams by central posts would become the hallmark of Iron Age houses in the southern Netherlands until the Roman Period (type 9, see below). Since in the north of the Netherlands houses kept their three-aisled structure, this means that from the Middle Iron Age onwards there was a difference in house structure between the northern Netherlands on the one hand and the central and southern Netherlands on the other.

Apart from the single row of inner posts, type 4 also has generally very clearly visible entrance constructions that divide the house into two parts. This construction is needed to raise the roof-plate above the door in order to create an entrance that is high enough to enter (see figs. 3.2, 3.4). The roof is generally reconstructed in line with the outermost door posts. So, even if the outer posts are badly visible, the construction of the entrance gives away the roof-line.

Schinkel (1998, 193) distinguishes between types Oss-Ussen 4A and 4B. In type 4A the wall-posts and outer posts are not in line, while in type 4B they sometimes are (fig. 3.5). There is not yet much regularity in the paired placement of wall posts like in type 5. The examples that were shown of type 4B, however, do not convince us that the recognition of two subtypes is relevant in this case. So instead of 4A and 4B, I will refer to this plan as type 4 only.

Frequency	MIA										LIA										Rom	
	500	475	450	425	400	375	350	325	300	275	I	250	225	200	175	150	125	100	75	50	25	0
4																						
1																						
1																						
14																						
1																						
3																						
2																						
11																						
2																						
1																						
1																						
1																						

Figure 3.8 Dating range of Oss-type 4 houses (the ‘Haps-house’). Drawing H. Fokkens.

It is clear that type 4 fully developed in the Middle Iron Age, but it is not exactly clear when. A few dates span the phase E-H range, but most start in phase G (fig. 3.9). From the data it is quite clear that type 4 was the general building tradition from 400 BCE onwards, but it must have developed earlier in phases E-H. Therefore, we set the beginning around 500 BCE. In the analysis of the Almstein settlement we have seen that the latest date was phase K, probably the beginning of phase K (chapter 7); I suggest a date range of 400 – 125/100 BCE (fig. 3.8; fig. 3.9). In the northern Netherlands the equivalent type Hijken also starts around 400 BCE, though according to Huijts (1992) it last until 250 BCE.

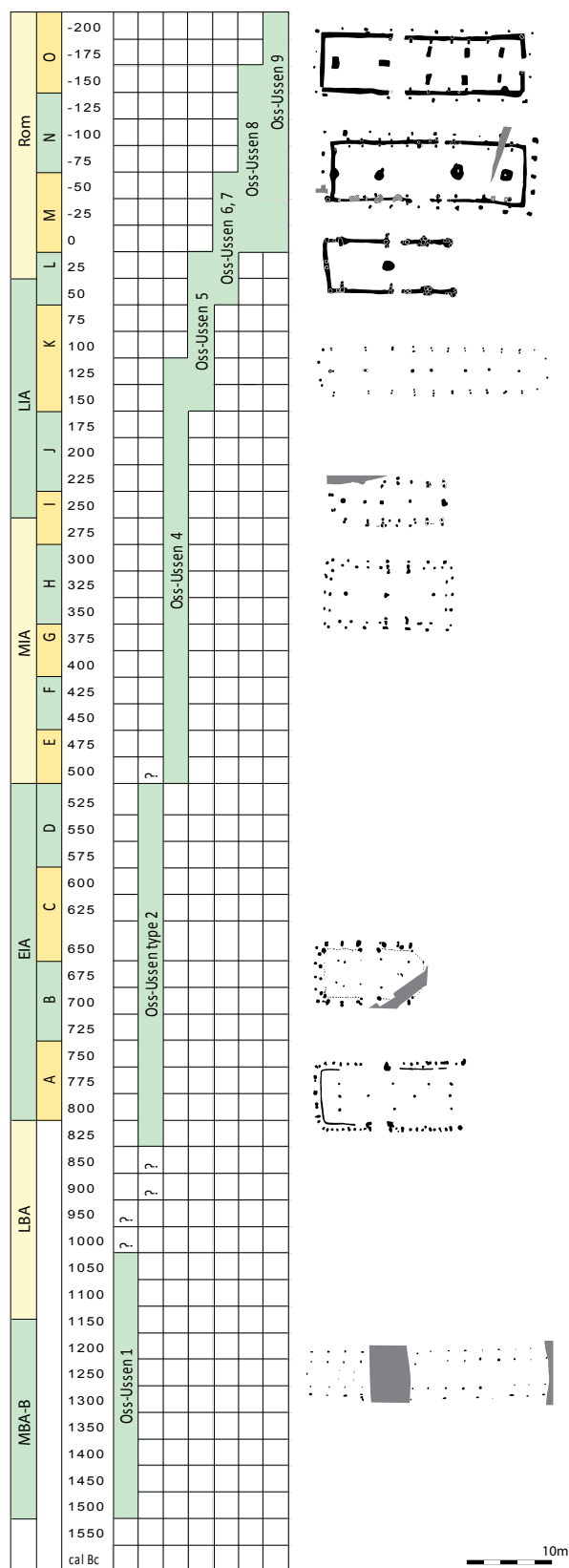
### 3.2.2.5 Houses of the Late Iron Age: type Oss-Ussen 5

In the Late Iron Age a new house type develops alongside the traditional type 4. The problem is that almost all of these houses have a dating range from phases I-L, or 250-0 BCE.<sup>3</sup> But it is equally well possible that they developed not earlier than phase K, say after 150 BCE. That would be more in line with the end of type 4. But in the absence of more precise dates, that is only a hypothesis. Two of the type Oss-Ussen 5 houses are dated in the Roman Period, but we agree with the critique by Hiddink (2014, 197) that this is not based on strong arguments.<sup>4</sup>

One of the reasons that we think that the development of type Oss-Ussen 5 started later, is that type 5 houses are structured entirely different from the type 4 house. The roof is no longer carried by posts outside the walls, but must have been carried by plates resting on the walls. The walls are always visible as a pair of posts set close together (max 40-50 cm), most of which are in line with the central posts. The latter always are founded deep, the wall posts less so. That is one of the reasons why houses of this type are sometimes difficult to recognise: they are not very visible if the wall posts have already disappeared.

In addition, Hiddink distinguishes a transitional Oss-Ussen 5-Alphen-Eekeren type (2014, 187). The difference with the normal type 5 house is that in the transitional type the central posts are much larger and often still contain fragments of the posts, like in the regular Alphen-Ekeren type (cf. section 3.2.2.7; fig. 3.10). But that is no reason to distinguish a different type.

Figure 3.9 The dating schema for the Oss-typology. Drawing H. Fokkens.



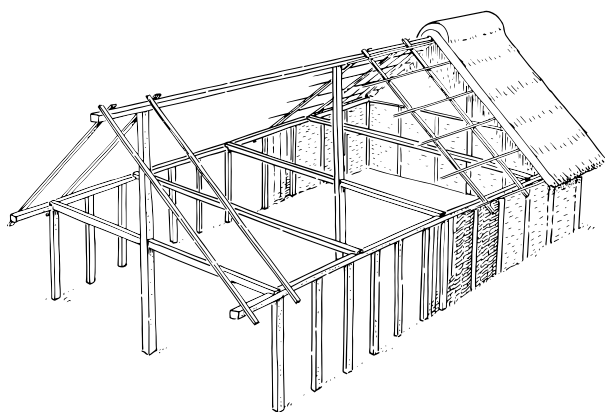


Figure 3.10 Reconstruction of the Alphen-Ekeren house of the Early Roman Period (Oss-Ussen type 8). Slofstra 1991, fig. 6.

### 3.2.2.6 Houses of the Late Iron Age and the Roman Period: type 6 and type 7

In the Late Iron Age, alongside type 5, there is quite a lot of variation. Type 6 houses have no central posts, only bedding trenches. Type 6A, as Schinkel distinguished it, even has no outer posts; therefore the question here is how the roof is supported in this type of house. The plan of Schalkskamp SK135 shows that the bedding trenches ‘hide’ closely set wall posts that are not embedded very deeply (fig. 14.4; section 14.2.1). This is in fact one of the best-preserved examples of the type. The width is 5.5-6 m, which is just the normal width for a house. Even if SK135 – because of its smaller size – would be interpreted as a barn, a roof should have been constructed with some kind of central support. There are in fact two options: one is that the roof was supported by central posts without deep foundation. The other option is that the roof obtained its structure from a construction with one or more collars. As a consequence, the rafters and collars may have been squared and joined with a kind of mortise and tenon (Dutch *pen-en-gat*) joint. From the constructions of wells we know that squaring wood was common practice in the Roman Period and also the use of mortise and tenon joints (Schinkel 1998, 281, fig. 308).

In conclusion, I think that the latter option was the most plausible. Another option would be that the central posts were supported above ground by staddles (Dutch: *stiepen/poeren*). There is, however, but one clear example of such a house: Hoogeloon house XXVIII, dating some three hundred years later to the

third century AD (Slofstra 1991, 143, fig. 9). This option therefore seems unlikely.

We suggest that houses of type 6 developed in phases L or M, just at the beginning of the Roman Period. Only two houses of type 6 have a possible date starting in the last decennia before the start of the Christian Era (Schinkel 1998, 250 cites one), one of which is house SK135 in Oss-Schalkskamp. The dating of that house is only based on circumstantial evidence, though.

The same type of roof support must have been applied in type 7 houses. These also have a section without any visible support (Schinkel 1998, 195). The lower side of the roof was either supported by posts set in the walls (bedding trenches) or by posts outside the walls (fig. 3.5). The combination of few, but deeply founded central posts in this type shows that in type 6 the option of central posts founded above ground is the less plausible option for roof support. The development of types 6 and 7 probably show closely related roof constructions with collars and mortise and tenon construction. In that respect type 6 and type 7 are completely comparable. Type 7 also has dates starting in the first century AD, therefore in phase L/M. Also outside Oss are there examples of these types, for instance at Venray-Hoogriebroek house P (Van Enckevort 2000, fig. 25).

### 3.2.2.7 Houses of the Roman Period: types 8 and 9

Type 8 is one of the best visible house types in the Oss typology. The reason is that central posts, outer posts, and bedding trenches are always dug in deep. Many of the central posts were dug in below the groundwater table. Therefore the lower parts of these oak posts – nicely worked – have often been preserved (Schinkel 1998, fig. 186). These post pits often have the so-called ‘pistol-holster’ type in sections (Schinkel 1998, fig. 176). They are generally very large and have an a-symmetrical form. One side is steep, the other is askew. The idea is that this is done to enable the placing of large posts upright. Posts that are too heavy to lift. One of the reasons that these posts were dug in so deep is to give the structure more rigidity in the longitudinal direction. Especially houses of type 8 that often have central posts in the short sides of the house and therefore a gable roof, would need that kind of stability because they lack the support of the rafters present in the hipped roof (Jansen 1989, 18).

This type of post pit is the hallmark of the Oss-Ussen type 8, which is also referred to as the Alphen-Ekeren type as defined by De Boe (1988) and



Slofstra (1991, 139 ff.). Because of these large central post pits, house plans of the Alphen-Ekeren type are still recognisable if the surrounding features of walls and outer posts have completely eroded. Slofstra indicates that many of the posts of the Alphen-Ekeren type are straight sided, and his reconstruction drawing does show joint constructions (fig. 3.10). This is also the case in the Oss-Ussen type 8 (and 9) plans (fig. 3.5). It is therefore probable that from the Roman Period onwards, possibly earlier, straight-sided wood (Dutch *balken*) and mortise and tenon constructions (see above) were an integral element of house construction (*contra* Huijts 1992, 33).

If we look at the house plans that Enkevort and Hendriks (2014, fig. 3) present as Alphen-Ekeren type houses, one realises that the Alphen-Ekeren type combines Oss-Ussen types 6, 7, and 8. The reason is that any house with large central post pits is considered to belong to the Alphen-Ekeren type. Because the Oss-Ussen typology is more refined with respect to this type, we will stick to the Oss-Ussen 7, 8 and 9 types.

Schinkel (1998, 199) distinguished between subtype 8A, B and C. Type 8A has no central posts in the short walls, while type B has a central post in one of the short walls (fig. 3.5). Type 8C has central posts embedded on both ends of the house. Since all of the 8A and 8B houses, and most of the 8C houses, date to the Roman Period, Schinkel (1998) has only briefly documented them, but left the detailed description to Wesselingh (2000). She has presented plans of all of the type 8-houses.

This shows that the roof construction of type 8A houses and type 9 houses (fig. 3.6) are entirely comparable. The only difference is that type 9 houses have a section with paired inner posts instead of one central posts. As is clear from the discussion in section 3.2.2.1, structurally the difference is comparable: both types support mid-beams. In the type 9 house, however, the three-aisled section allows for stall partitions to be constructed more easily, as is shown in a plan from Oss-Zaltbommelseweg. In time type 8A and type 9 are supposed not to be entirely comparable. Most of the type 9 farms date to RP Id or RP II (Schinkel 1998, 250-251); their post pits contain almost exclusively wheel-turned imported pottery. Type 8A farms are contain also locally made pottery, which dates them in the first century AD. There is one clear exception, however: type 9 house SK134. The trees used for the central posts were felled in 17AD, which implies that type 9 is in fact older than previously suggested. The nearby well 995.1 indeed contained some wheel-turned

pottery, but still in low percentages and the complex was dated to phase M (cf. chapter 14.4.5). This, and the fact that both types are of the same basic construction, suggests that both types became in use in the same period in the first decennia of the Christian Era (phase M), though type 9 'survived' longer.

Type 8B and 8C almost all date to the Roman Period. Only OU81 is dated in phase K, and OU80 possibly in phase L (Schinkel 1998, 250). Since OU81 really is an anomaly, I think it is not wise to date type 8C from the Late Iron Age phase K to the Early Roman Period. There is another example of an early date that was refuted: type 9 house SK134 in Oss-Schalkskamp was dated to period K as well on the basis of pottery. But a dendro-date of one of the main posts proved that it was actually built in 17 cal AD (Wesselingh 2000, 173; section 5.7) All 285 (diagnostic) sherds in the bedding trenches apparently derived from an older occupation on the site of which we indeed had good evidence. Therefore I think that we may discard the Late Iron Age date of type 8C and let it start at the beginning of the Roman Period (c. 25 BCE; fig. 3.9).

### 3.3 OUTBUILDINGS AND GRANARIES

Granaries (Dutch *spiekers*) and sheds were considerably smaller buildings than the houses. The granaries are by far the best represented category of outbuildings. We use the term granary as a general indication of four- or six-post structures with a square or rectangular plan (Schinkel 1998, 255; Arnoldussen 1998, 236 ff.). Four, six, eight or nine-posts are interpreted as structures that had a raised floor in order to prevent moist and vermin to destroy the crop that is stored there. There are examples of such storage facilities all over the world. They were common from the beginning of the Bronze Age, probably from the Middle Bronze Age B (1500 BCE).

Whether or not they actually have been used for grain storage only is difficult to corroborate. Arnoldussen lists all strands of evidence from different parts of northwest Europe and concludes 'the available iconographic, anthropological and archaeological evidence supports a function of these structures as *raised* storage facilities for agricultural products' (Arnoldussen 2008, 237). But he adds that this not necessarily was the only function.

Four- and six-posters generally have deeply founded posts set in a post pit. Their depth exceeds even those of central posts of houses. Often this is supposed to have been related to the weight they had to carry, but in our view that is not the reason. Roof-

posts also had to carry heavy weights. In our view it is the construction above ground that dictates the depth of the posts. If posts were connected by cross-beams above ground, the construction gets its rigidity from the beams and strictly speaking posts need not be dug in. But if no cross-beams are constructed, like in granaries, posts need to be dug in to stand upright and give stability to the construction. That they were not that stable or very durable structures is demonstrated by the fact that many granaries have irregular post positions, some had clearly keeled over, and many were rebuilt once or twice on the same spot (cf. chapter 12-15).

Granaries were raised, according to the general wisdom, in order to prevent vermin from digging their way in. A raised wooden floor is supposed to have prevented this, possibly in combination with wooden collars around the posts. Some kind of an opening would be needed in order to retrieve grain for daily or

weekly purposes, although grain also could be taken from the top (fig. 3.11). Subterranean silos, like those present in other parts of the country, have not been found in Oss. The groundwater table was too high and the grain would have rotted away. Interestingly, even in places where they are present (Slofstra 1993; Van der Hoeven 1993) there are also above-ground granaries. I suspect that the silos had a different function, maybe for the storage of sowing grain. Granaries would then be used for the storage of consumption grain. Sowing grain might have been stored in a separate compartment in a granary as well, but one would need to prevent germination, so the compartments or jars would have to be closed with a lid.

With respect to typology, in fact anything goes. Given the lack of specific datable types, all authors have only made descriptive classifications, even if these are generally called typologies. For a general discussion of granaries I point to the work of Arnoldussen



Figure 3.11 Four-post granary as reconstructed at Orvelte. Photo H. Fokkens (2010).

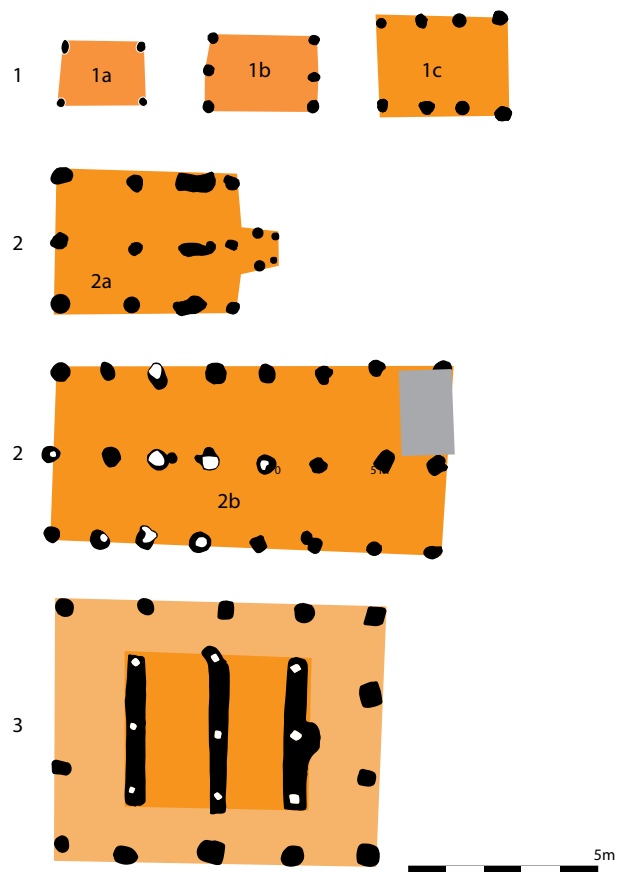


Figure 3.12 The typology of outbuildings and granaries. Drawing H. Fokkens.

(2008, section 5.4). We have decided not to use his classification here since as a descriptive tool it is not better than the already existing Oss-classification.

Schinkel's classification is basically quite simple: type 1 has two rows of posts, type 2 has three rows of posts, and type 3 has structures with a floor surrounded by walls (*horrea*; five rows of posts) (fig. 3.12). I have decided not to follow the subtypes of type 1 in detail, but otherwise our classification is comparable to that of Schinkel. Type 2b requires some discussion (see also chapter 11). The question is whether this is a house or an outbuilding. We have chosen for the last option since this type of plan does occur more often, but it is totally different from the normal type Oss-Ussen 2 farm from the same period, the Early Iron Age. In the southern Netherlands this type of building is considered a house, though discussion is ongoing (Hiddink 2014).

### 3.4 WELLS AND WATERING HOLES

In the Oss-Ussen excavations, pits were classified by Schinkel according to a descriptive model (Schinkel 1998, fig. 288; Wesselingh 2000, 20). We will not use this classification in this publication as it only describes form. In his classification, wells are classified as group A pits, with different kinds of linings. These different kinds represent different kinds of effort to construct a well, therefore we will reproduce that classification with a major difference: we distinguish between pit wells (PW) and surface wells (SW) (fig. 3.14).

#### 3.4.1 Pit wells

Bronze and Iron Age wells were bowl-shaped and between 2 and 3 m (or larger) in diameter at the surface. They were dug until the groundwater level was reached (fig. 3.13A). But without a lining, the bottom would collapse and merge with the groundwater table, which would make the extraction of water impossible (fig. 3.13A). But when a lining of some kind was put in, that would prevent the pit from caving in at groundwater level, and raise the level of the water inside. After a rain shower the pit would probably be filled higher than the lining, but that would be only a temporary situation. On several occasions we have observed that these pits were covered with sods, in order to stabilise the sides. In many occasions also a pole was stuck in the bottom of the well, not in the well itself, but alongside. In some cases these poles may have been used to lever the construction or lining of a hollowed-out tree-trunk out of the well after abandonment (fig. 3.13D). But there is also some evidence that these poles were used to climb out of the well again.

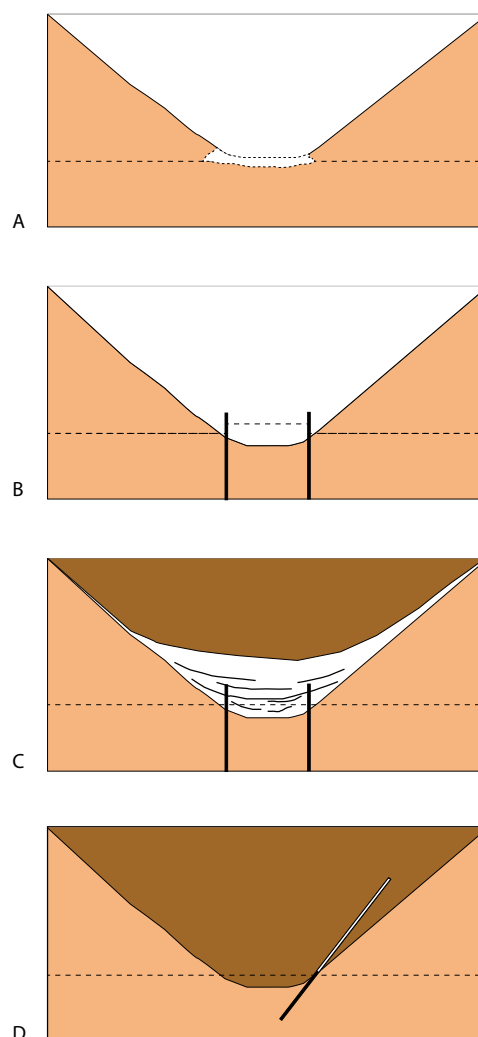


Figure 3.13 Model of well-construction. A: digging of a pit, showing the collapse of the bottom part; B: a lining helps welling of ground water; C: natural layered fill in the lower parts, man-made back-filled top part; D: pit with a lever for removing the lining, or hand-rail. Drawing H. Fokkens.

When the well was abandoned and the lining was left in place, generally laminated fills developed within and above the lining. At a certain point these wells were generally backfilled (fig. 3.13C), often even to be dug out again centuries later.

Pit wells basically show three types of linings. One of the most common types in the Middle Iron Age and in the Roman Period is the wattle-work lining (PW1, Schinkel's type A1). According to Schinkel 58% of the wells in Oss-Ussen is of this type (1998, 270). The wattle-work must have been prepared before the pit was

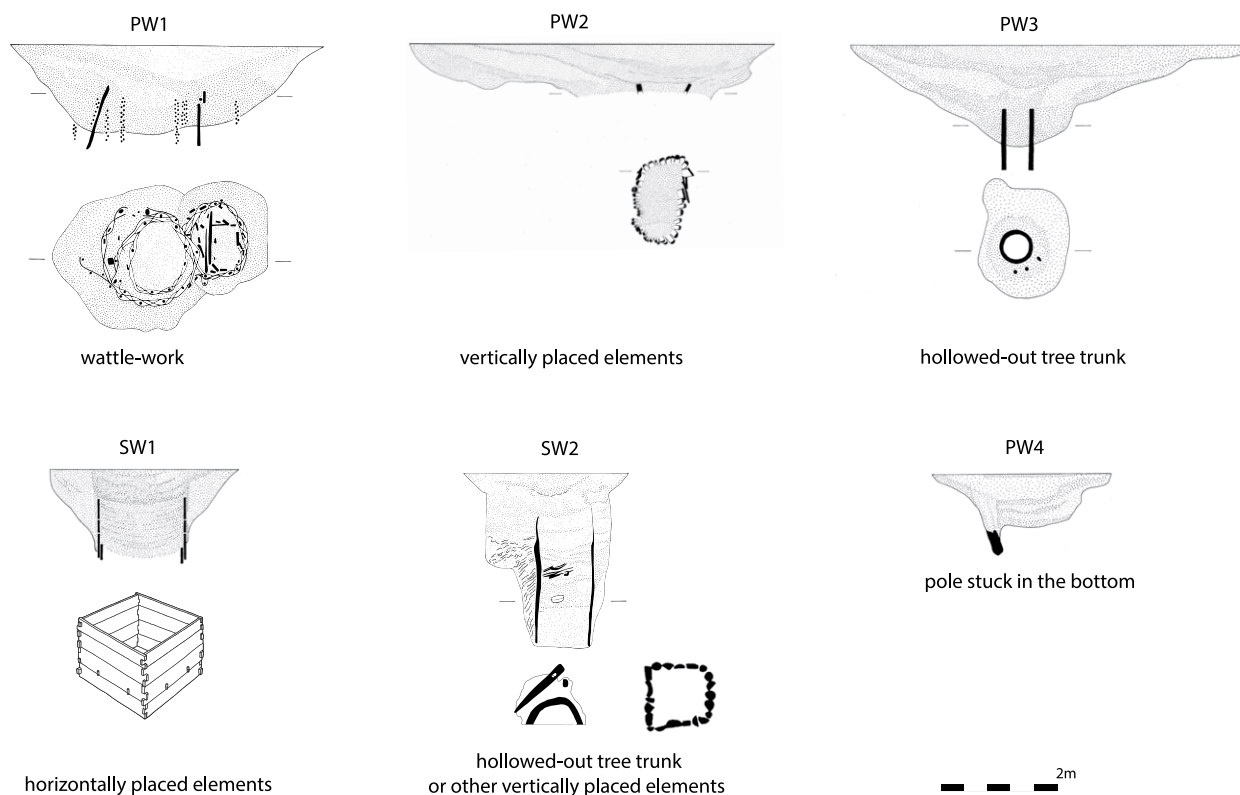


Figure 3.14 Typology of well in Oss. The images are taken from Schinkel 1998.

dug and then placed in the pit, probably after digging out the pit below the groundwater table. Hammering these elements in, is no option. The example in figure 3.13 shows several linings (possibly rejuvenations) in one pit well.

The lining PW A2 is the simplest form (fig. 3.14). It consists of a number of loose vertical elements (stakes, planks) set in a (squared) circle form. The diameter varies between 40 and 100 cm. We have found this type of well for instance in the Mikkeldonk district, where it probably features in a watering hole (MD 898.1; fig. 13.31). In that well a number of *Alnus* stakes, not even cleaned of their bark, were placed in a circle. OU P220, illustrated by Schinkel (1998, fig. 299; reproduced in fig. 3.14 as PW2), has an almost identical shape and structure. Also P220 is interpreted as a watering hole. The oldest well that we encountered, in the Schalkskamp district (dated to the Middle Bronze Age A), was constructed of vertical elements as well, in that case thin oak planks (cf. section 14.4.1).

In 1989, when the excavations in the Mikkeldonk district were carried out, Kees Schinkel was still

working on his dissertation, and worked on the site as coach for the field school. Under his supervision (fig. 3.15A) we dug a number of deep pits and wells in 1:1 scale in order to see how this worked in the sandy soils of Oss. One of the types we experimentally dug was a PW2-type (fig. 3.15C, D). It became clear that this worked very well, especially if one did not dig the pit *into* the sand underneath the groundwater table, but stopped just above that. If one hammered in the vertical elements and dug out the remaining sand inside, that would immediately start the water flowing (fig. 3.15D). The same would hold true for hollowed-out tree-trunks, though in those cases the pits may have been dug below the groundwater level in order to place the lining deeper. To hammer them in would not work. This implies that the operation must have been prepared well, because the bottom of the pit would fill up with water within a few minutes and then start to collapse, or rather the sand would flow back to form a watery pool. The trunk would have to be placed the minute the lowest point was reached.

The lining of PW 3, a hollowed-out tree-trunk has been found in wells from all periods. We have encountered trees of several species, but often oak or alder. They can be rather narrow in diameter (40 cm). We have often found wells where the lining probably had been present but had been removed. This probably was a major operation, which must have involved a lot of wrenching and levering (fig. 3.15E, F). It is not likely that this was only done by hand, so the poles stuck at an angle in large pits (figs. 3.12D; 3.13), may be the remains of those actions. That is one of the reasons that we categorised this type of pit among the pit wells as type PW 4.

Schinkel thought that they started a water flow (1998, 285), so may have been a kind of water extraction tool. Technically, that might be true: if one 'pumps' or wrenches a pole stuck into the ground at the contact between the groundwater table and the bottom of the pit, some water will appear. But only a small amount, and only for a short time. So I think that this is a less plausible explanation. During the 1992 experiments we experimentally dug such a pit (fig. 3.15A, B), but found that even after hours no water started to flow around the pole.

### 3.4.2 Surface wells

In the Roman Period wells became a closed construction that even may have extended above ground (fig. 3.13). There is only one well in Oss-North that has this type of construction (Mettegeupel 20.34, fig. 15.29). Most wells of this type date to the second half of the first century AD or later. They are generally wider in diameter than the pit wells because the water table may have been more than a meter below the rim of the well, which would make the use of some kind of bucket necessary. This type of well may become an artefact trap because people did not retrieve (small) objects from the bottom. Pit wells, however, were easy to access. People would gather water from the well with a bowl or spoon, put it in a container and carry it to the surface. Lost objects could easily be retrieved from it. Generally, the bottom layers are completely findless. One would also want to protect such wells from animals running in, so they may have been fenced, like the Mikkeldonk and Mettegeupel evidence shows. After abandonment, such pits were often backfilled at some stage. Wood, bones, pottery, all kinds of objects that were not needed anymore, were dumped. For this reason, especially pit wells in Oss are a very important source of information on organic remains, including bone and plant remains.

### 3.4.3 Watering holes

In Dutch archaeology there is a tendency to call every deep pit without a lining a 'watering hole'. We have not followed this practice. In our view positive evidence is required to interpret a deep pit as an area used for animals to drink. In sandy soils that simply does not work. Without a lining, a well erodes into a pit that contains no longer any water. Moreover, one would see hoof marks in the subsoil. We have in fact only a very few examples of such pits, and they all have a lining.

## 3.5 DITCHES

In general, a ditch can mean 'a long narrow trench or furrow dug into the ground, as irrigation, drainage, or boundary line' (<http://www.thefreedictionary.com/ditch> visited 1 Aug. 2014). In Dutch we use different kinds of indication for a wet or a dry ditch. A dry ditch is called a *greppel* which indicates a shallow ditch that contains water if it rains, but does not reach as deep as the groundwater table. *Greppels* have a function in structuring the landscape, channelling rainwater, or in general the draining of an area.

Wet ditches are called *sloot* in Dutch. We know them very well from the low peat districts of Holland, where they always contain water. They are called wet, because they are dug in lower than the groundwater table. In fact, none of the ditches in Oss appears to have been of the wet type. Very often however we can see though that they were occasionally wet. So there will be alternating layers of organic matter and then wind-blown sand or erosion deposits, for instance. Very often the top has been backfilled at once, but sometimes after decades or even centuries of having been open.

## 3.6 FENCES

Fences are a category of features that in principle is not difficult to detect, but the problem is that they are generally superficially founded. So we only detect them when the circumstances are optimal. As explained in chapter 11, we started in the Oss-Mikkeldonk area with the Zijderveld template. There farmyards are surrounded by fences consisting of stakes with wattle-work (fig. 3.16) or paired sets of stakes, presumably with branches stacked between them (fig. 3.15). Such structures are in fact not easily recognised. We discovered most fences in areas surrounding wells or watering holes. Therefore, I think that these types of features are connected (cf. chapter 11).





Figure 3.15 A-D: Experimental wells dug in 1992 during the Schalkskamp excavations. A: Kees Schinkel measuring the diameter of the experimental well of 2 m wide and 70 cm deep; B: pit with a pole in it. This pit was dug to test a hypothesis that such poles generate water; C: An experimental well with a lining of vertical elements driven into the ground. In the background Marie France van Oorsouw; D: close-up of the well. The diameter is 40 cm. Photos H. Fokkens (A, B, D, D), E, F unknown.

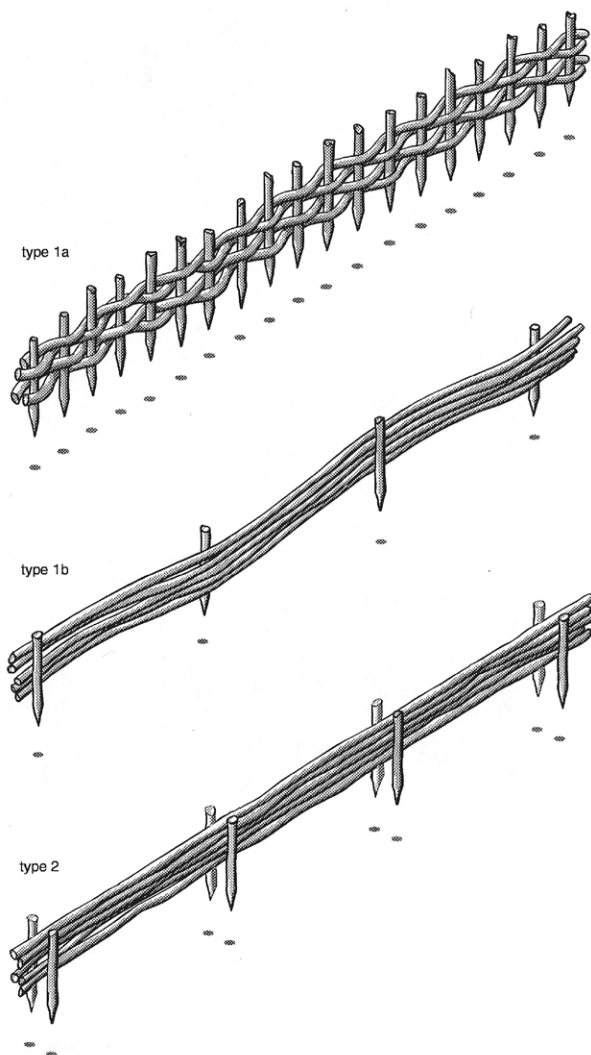


Figure 3.16 Typology of fences and the way they are visible in the archaeological context. From Theunissen 1999, Fig. 4.39.

### 3.7 FINDS

Finds are an important tool for dating features and structures. Dating of finds has been discussed by Schinkel (1998), Wesselingh (2000) and Van den Broeke (2012). We will not repeat these discussions here, but refer to relevant work where appropriate. The typological dating of all Iron Age pottery complexes in Oss-North was carried out or checked by Peter van den Broeke. Bronze Age pottery was determined by Fokkens. P. de Geer determined the glass arm rings (cf. chapter 10). For other categories of objects we have referred to literature or consulted specialists. This will be stated when relevant. Finds

are discussed in chapter 10 and in the catalogue in the context of the features in which they were discovered (chapters 13-16).

### NOTES

1. See Fokkens 2005 for a more detailed discussion.
2. Waterbolk (2009) has now replaced this type with several others, but it is not always clear why these types are types at all.
3. Schinkel places two houses of type 5 (OU15 and OU26) in phase G-H (Schinkel 1998, 229, 236). The plans are very fragmented, however, and could equally be seen as type 4 houses. We therefore have calculated them as type 4 houses.
4. The two cases that Hiddink cites (2014, 187) with a Middle Iron Age date are due to a wrong determination of these houses (OU 15 and 28) as type Oss-Ussen 5 houses, they are type 4 houses. In which case the date tallies.

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## 4. Excavations in the Mikkeldonk district

H. Fokkens

### 4.1 INTRODUCTION

Since the Mikkeldonk campaigns are fundamental to the entire Oss-North Project, the initial campaigns and the strategic decisions made were of great importance for the project as a whole. Therefore, they are discussed in some detail in section 4.1.

The Mikkeldonk area measures about 300 x 300 m, which means that it is difficult to 'present' the whole area on one plan (fig. 4.1). The westernmost area was known as *Mikkeldonk* (excavated in 1987-1988), although it is also known as Mikkeldonk-west. The central area was known locally as the *Suikerkamp* (excavated in 1986, 1987 and 1989), yet here we refer to this area as Mikkeldonk-east. The easternmost region of *Kraaijenest* was not excavated. We only were able to investigate a few trial trenches in 1989.

The work in Mikkeldonk-west started in the fall of 1987 as a watching brief. This work lasted from October 1987 to March 1988. In this period a small team documented about 3.25 hectares. During the last weeks of December 1987 the weather was terrible: snow and rain made the conditions too poor to work (fig. 4.2). The clayey topsoil had become so wet that the hydraulic digger could not work anymore without destroying archaeological features. The topsoil here was thin (30 – 40 cm) and not covered by a *plaggen* soil.

During the watching brief, three (or four) house plans from the Middle Bronze Age, and the Late Bronze Age or Early Iron Age were discovered within an area of 0.5 hectares (Fokkens 1991). None of these houses was excavated optimally. The trenches cross-cut the plans and we were unable to work systematically. This was due to the fact that we were told initially that building activities would soon start in the area. So, we had to race against time to finish what we could. In the end, the weather and the lack of finances stopped our excavations in March. When we returned to the site at the end of May with a fresh team of students, it turned out that construction had not yet started and that we could still work in the area. We then tried to excavate as much as possible around the three house plans in order to determine the extent and structure of the farmsteads. In the end an additional area of 0.5 hectares was excavated around the houses. While this was not a significantly larger area, it provided us with the general extent of the farmyards and raised some interesting questions about the re-occupation of deserted farmyards (cf. chapter 13).

At the same time, we surveyed the remainder of the area with as many excavation trenches as possible. We discovered an additional house footing/foundation and quite a number of sheds, fences, wells and large pits. The total picture, however, was rather fragmented because we had to work in limited and discontinuous areas. Therefore, we had problems positioning the trenches and spoil heaps. It soon became clear that the road trenches provided only a limited amount of information regarding the habitation of the area. While some



areas preserved even the shallow traces of fences, at others the trenches had been dug too deep to detect such features. In these cases it was impossible to tell whether prehistoric features had been destroyed, or whether they never had been there at all. This was obviously not the right procedure.

At the end of the 1988 season, the ditches that were going to enclose the new estate were dug. As with most of the digging operations in the area, these ditches were surveyed by the local archaeologist, Piet Haane (†). He discovered the remains of several large pits. This explains why the long trenches to the west and north-east were added to the overview plan (fig. 4.1). They are rather important, because the

concentration of Middle Bronze Age features in these trenches indicates that the inhabited area extends northwards beyond the limit of the surveyed area. These areas are now used as grassland and agricultural land.

In 1989 we returned to Mikkeldonk-east, where we had started work in 1986 and 1987. We were able to investigate a substantial area here, revealing that habitation remains like wells and ditches continued in the area to the north of what we already had excavated. Yet, houses of any period were absent here. Much to our surprise, however, we did discover a small Late Iron Age cemetery (cf. section 13.6).



Figure 4.1 Survey of all trenches in the Mikkeldonk quarter excavated between 1976 and 1989. Drawing H. Fokkens.



## 4.2 HISTORY OF RESEARCH

### 4.2.1 The 1986 campaign: searching for fences

In 1986 we started with a short campaign in an area north-west of the Ussen-excavations in a development area that was called ‘Suikerkamp’. A local amateur archaeologist, Piet Haane (†), tipped us off that building was imminent in this area. The main sewer was installed in the area ten years earlier, uncovering two wells that dated to the Middle Bronze Age (fig. 4.1, 4.3; Vasbinder and Fokkens 1987). These were in fact the first wells from that period ever found in the southern Netherlands. This ‘sewer trench excavation’ was a few meters wide (6 m) and several hundred meters long. The excavations at that time, carried out by Joost Assendorp, were in fact only a watching brief.

Other features dating to the same period were not found, but we considered the wells to be a good starting point for research into Bronze Age settlement in the Oss region. We reasoned that those wells ought to have been dug close to, or even on, the yard around a farm. In theory, therefore, a survey excavation should be able to locate the farm house or at least some other Bronze Age features. Since at that time virtually no Bronze Age house plans from the Southern Netherlands were known, this was more a bold than a realistic working hypothesis.

We started with a small team, consisting of the excavation leader, one field technician and five students. Our base was an empty school building where we slept on the floor and could hardly talk

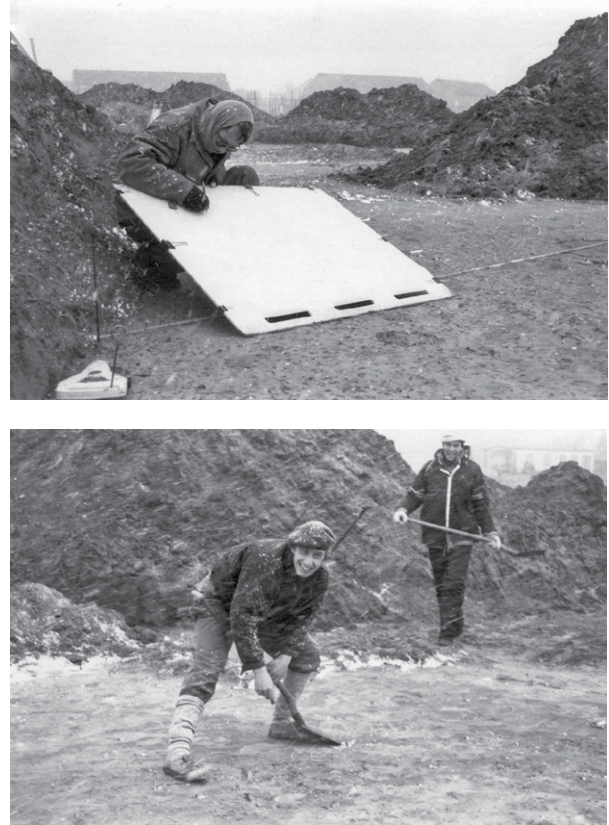


Figure 4.2 Work under bad conditions in the winter of 1987-1988. Top: Ide Stoeper; Bottom: Peter Deunhouwer, unknown student. Photos H. Fokkens.

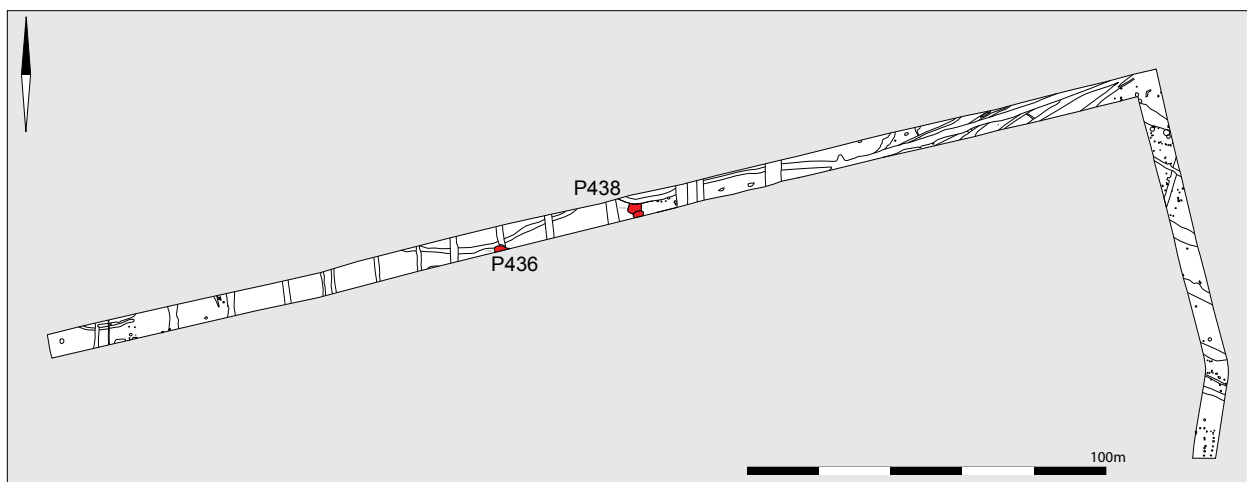


Figure 4.3 The sewer trench excavated in 1976 by Joost Assendorp. The trench is 332 m long in E-W direction. Two Bronze Age wells are indicated in black. Drawing H. Fokkens.

with each other because of the terrible acoustics in the empty class rooms. We stayed for a month, and during that time excavated a long trench to the south of the sewer trench that had been excavated ten years earlier by Assendorp. In the westernmost part of the excavated area we found little of interest. However, many features came to light in the neighbourhood of the two wells discovered in 1976, including postholes, pits, wells, and even traces of fences (fig. 4.4). The latter consisted of rows of small (5 cm in diameter) stakes set at regular distance of c. 30 cm.

We had been on the alert for fences because our role model was the Zijderveld excavation (Hulst 1973; Theunissen 1999). Though the site plan was still unpublished at that time, our archives contained a slide of the Zijderveld site plan, which was taken by prof. Modderman during a visit of the site. We had a blown-up print of that slide with us in Oss, just to remind us of what we ought to find: staked fences were prominently present on that image (fig. 4.5; Theunissen 1999).

We relate these circumstances in more detail, because the discovery of the fences was quite interesting from a methodological point of view. In 1986,

virtually no Bronze Age sites had been published in a proper manner. Waterbolk had published Elp (Waterbolk 1964), but Angelslo-Emmerhout had not been published, nor had the other northern sites. The sites in West-Frisia only were published very provisionally and in large overviews (IJzereef 1983). Hulst had published house plans from Dodewaard and Zijderveld (Hulst 1975), but not the site plan. Finally, there was the disputed plan of Nijnsel (Beex and Hulst 1968). Though this site was published as a Bronze Age settlement, I still think that its characteristics belong more to the Early Iron Age, or possibly Late Bronze Age, rather than the Middle Bronze Age (chapter 3.2.2). Thus, there were virtually no sites known from the southern sandy soils and we did not know what to expect.

Zijderveld was one of the nearest Bronze Age sites and was very well preserved, which is why we took it to be an example of what we wanted to find, as a kind of mental template. In hindsight it is interesting to see how this aided us in recognising fences. We were alert for them, and that is probably why we discovered them. It was kind of a revelation, and I remember the moment vividly. Annette Vasbinder, one of our



Figure 4.4 Features in trench 882 and 883. At the top the sewer trench is located. Drawing J. Porck, H. Fokkens.

students, saw the traces first and indicated a row of small black dots that were almost indistinguishable from mole-holes. They only stood out because they existed in a line and at regular distances. We discussed the possibility of a mole-made feature, but decided against it because the row was too long and regular. Once we had identified the first row, we looked at the trench surface with different eyes and discovered many such rows. The next step was to prove that they were really there and that they were not just mole holes. Therefore, we opened a trench next to the existing one and predicted that if they were really fences, the lines of dots must continue into the new trench. Not only did they continue, but they appeared to be attached to a farm dating not to the Bronze Age, but to the Late Iron Age.

Later we re-excavated parts of the 1976 sewer trench because it was adjacent to our trench (fig. 4.1, 4.4). There, no fences had been discovered. We found that the surface of the excavated sewer trench lay some 15 cm lower than ours. Since the fence posts in our surface were only 5 cm deep, this meant that any additional posts had been dug away in the sewer trench.

By the end of the four weeks of excavation, we had discovered three Late Iron Age houses that were subsequently rebuilt on the same yard, and wells from the Late and Early Iron Age (fig. 4.4). Furthermore, we had discovered part of a building with rows of paired central and wall-posts that was about 5.50 m wide. The length of these rows was unknown since it extended underneath a modern ditch (fig. 4.4). As our trenches continued right up to the fences of a gardening centre, we now had reached the limits of the area that was available for research.

When we came back to Leiden after that first campaign, we were rather disillusioned. We had tried to find Bronze Age settlement remains, but we had not found them, not even one ceramic fragment from that period. Instead, we had discovered yet another Late Iron Age homestead, similar to the many other homesteads already excavated in Oss-Ussen. However, when we looked at the excavation plans on the Monday morning after the end of the season, Wijnand van der Sanden pointed out that he did not know of any other house plans with paired posts, like the one we had only half excavated during the last days of the campaign. It did not resemble any of the other plans in Oss-Ussen. The finds had not been washed yet since the posts had been excavated only at the very last moment. Going over them in more detail, we discovered that only one posthole contained a sherd, but it was a sherd

tempered with stone grit as is customary for pottery from the Middle Bronze Age in the Netherlands.

That was quite a surprise. Could we have found a Bronze Age farm after all? We did not hesitate, and immediately went back into the field (for one day only). The existing trench was enlarged a little further until the entire plan was just visible. The trench to the north side had already been excavated, the southern side was blocked by our spoil heaps, and the eastern side was blocked by a modern ditch. Nevertheless it was clear that we had discovered a Bronze Age house plan and that we could start thinking of a continued excavation campaign. We assumed that where there was one house, there would be more (Fokkens and Vasbinder 1987). This assumption would prove to be incorrect in the following years, but here we were influenced by another mental template: a model of concentrated settlement after the examples of Elp (Waterbolk 1961, 1987), Hijken (Harsema 1974, 1980) and Angelsoo. Only the first two had been published, but from the latter it was known by reputation that it also contained concentrations of house plans. In the next few years we would discover that none of these templates fitted Oss.

#### 4.2.2 *The campaign of 1987: looking for round houses*

In 1987 we started a longer campaign of nine weeks. We shifted our excavation area a bit to the west



Figure 4.5 Survey of all features from the Zijderveld excavations and the fences around the house. After Theunissen 1999.

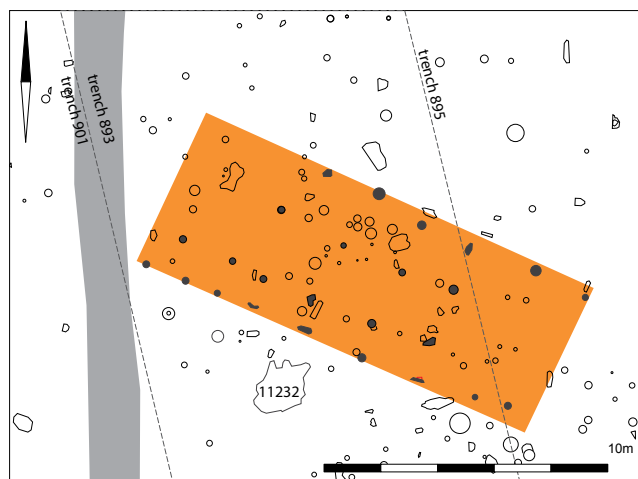


Figure 4.6 A possible Middle Bronze Age house. Looks fine on a small scale, but we discarded it because it lacked the rigid structure of the other Bronze Age houses recognised in Oss, and especially the northern part is too fragmentary. Postholes are of unequal quality. The dimensions of the shaded area are 15 x 5.7 m. Drawing H. Fokkens.

because we wanted to excavate the area to the north of the Bronze Age house we had discovered (H 125) in the previous year. However, this northern area was still rented out to a farmer who used it for grazing his horses. Moreover, building activities were going to start more to the north-west, so we had to concentrate our work there.

The first trench (890) was more than 100 m in length, and landed us in the middle of hundreds of features dated to the Middle Bronze Age and the Middle Iron Age. In addition to finding several wells from the Middle Bronze Age and many fences, we even thought that we had discovered a new house plan. The problem was, however, that a Middle Iron Age farmyard obscured this partial plan. In the end, we decided to discard the interpretation as a house. Nevertheless, on a small scale it appears to be rather convincing compared to many other Bronze Age plans that have been published as houses (fig. 4.6).

The problem with a clear interpretation came from the arrangement of the identified posts. Although we identified sets of post that could be interpreted as roof bearing posts, they were not regular enough. In our view there was not enough consistency in the form and fill of the features. The structure does not look too odd in figure 4.6, but that is because of the small scale at which it was drawn (1:40). At this scale, one can see that the structure is much less regular than it

appears. Also the shading in figure 4.6 works suggestive. We discussed it for a long time in the field, looking at sections, spatial distributions, and other factors. Yet, we could not convince ourselves that it really was a house plan. Too much was ‘missing’ although there was no indication of differential erosion. On the other hand, this area had been intensively used in the Middle Iron Age, which could have obscured the earlier Bronze Age features. An additional obstacle is that we never saw the ‘structure’ in its entirety because our trenches were oriented Perpendicular to the orientation of the possible plan. The finds seem to offer a more certain interpretation, as several of the postholes yielded typical Middle Bronze Age pottery. In the most recent analysis, we have designated the general area as a house site, but it still remains a house with a question mark.

Another, similar problem was encountered just south of this house site. Here we excavated a dense concentration of features, mostly postholes. Such clusters always invite creative discussions. In this case, we discussed the possible presence of a round house. For Zijderveld, but also for Nijnsel, Hulst had published possible round ‘houses’ (Hulst 1975; Beex and Hulst 1968). Hulst’s round houses fitted nicely in older hypotheses about the origins of the people who had founded the Bronze Age Hilversum Culture. According to its author, prof. W. Glasbergen, the Hilversum people had been immigrants from England (Wessex) who founded trading outposts for bronze in our area (Glasbergen 1954). Since round houses were common in Bronze Age England, it was expected to find them in the Netherlands as well. This interpretive framework ‘caused’ the discovery of round structures in several sites, though most were discovered after the excavation, on the drawing table (Theunissen 1999). During the Dodewaard excavations, some of these structures were already recognised in the field. Since their existence was considered to be highly plausible, no effort was undertaken to confirm or refute the wider hypothesis of round houses, for example by examining post sections. As these sections were not drawn, a positive or negative identification cannot be reached anymore (Theunissen 1999, 180-184).

When we started our work in Oss, round houses were still commonly believed in, but we severely doubted them. I had discussed them with British colleagues (e.g. Francis Pryor and Chris Evans), and none of them considered these constructions to realistically be round houses. They could have been sheep pens or the like, but not houses. Their structures were

highly irregular, both in their forms and the distances between the postholes. There always were posts lacking at crucial places (indicated on the plans by X's), and they did not seem to fit with the rectangular structures that we were used to in the farm yards of the northern and western parts of the Netherlands.

When the British origin of the Hilversum Culture began to be doubted in the 1970s and 1980s, the British origin of the round house was contested as well. Since there was no tradition of round houses in the Netherlands, their presence in Middle Bronze Age settlements would have been odd rather than plausible. Nevertheless, we decided to give the theory the benefit of the doubt and we were on the alert for possible round structures.

Therefore, when we encountered such a dense cluster of postholes (fig. 4.7A, B) that it was easy to recognise several round plans (fig. 4.7D), we discussed their feasibility in the field. With a large group of students, including Kees Schinkel and Liesbeth Theunissen, we carefully shovel-cleaned the trench and marked all the features that had the same fill and structure, indicating they were contemporaneous with each other. We tried several reconstructions, and several looked nice on paper, especially when we reduced them to a 1:100 scale. Despite this, we could not find a round structure that fulfilled our criteria of uniformity of form, fill, and regular distance between the posts. Finally we resorted to the one structure that at least looked very nice on paper and compared the sections of the posts in the field. The same problems remained: not enough uniformity in fill, form, and depth. Moreover, the pot sherds recovered from the postholes were not all from the same period. Therefore, we decided to discard the interpretation of this structure as a round house, just as we had previously done with the possible rectangular house of figure 4.6. Also the quadrangular structures that we tentatively distinguished in this cluster did not survive the test of form, fill, and depth (fig. 4.7C).

This anecdote is important because it demonstrates that there is no such thing as objective observation or 'hard' data. It also touches upon methodological problems of interpreting field drawings. One can only be sure of structures when they have been recognised in the field and when that hypothesis has been checked carefully afterwards. In practice, this means that the person responsible for the interpretation and publication, a 'scientist', has to be present in the field as much as possible. S/he has to check field drawings and sections in order to be able to incorpo-

rate them in the interpretation as much as possible. From this perspective, one always has to be very careful with the identification of structures after the completion of the excavation proper, especially from field drawings reduced in scale. Sometimes it cannot be avoided, but in such cases, careful consideration of section drawings and field drawings at the original scale is an absolute condition. Our critique of the round houses published in the 1970s and subsequently, is that this aspect of careful consideration in the field has been lacking.

This episode of searching for round structures is discussed at length because it revealed fundamental differences in the freedom of interpretation between different schools of practice. At the same time we never found a better example of a possible round structure at Oss. We have kept alert, but maybe not enough. I have not erased them from my mental template, but I must confess that after 1997 they were not among the first types of structures that we tried to recognise in the field.

#### *4.2.3 The campaigns of 1988 and 1989: more Bronze Age*

Although we were searching for Bronze Age features in 1986 and 1987, gradually it became obvious that this aim was too narrow. It took some time before we translated this awareness into a new strategy. Part of our hesitation was due to the legacy of the Ussen project. This had finished in 1984 because it was thought that enough data had been assembled to build a model for Iron Age settlements in the area. Therefore, I decided not to continue the Ussen project proper, but start new Bronze Age settlement research, be it still in Oss. In the summer of 1988, however, we practically ran out of Bronze Age features. We kept finding wells and smaller features, but the question remained whether these were enough to support continued research in that area. Colleagues were already asking: 'are you still working in Oss?', 'Don't you want to start somewhere else?', 'Is the potential of Oss not exhausted by now?'.

Still, for several reasons we decided to continue at Oss. One reason was that Bronze Age settlements appeared to consist of dispersed rather than nucleated farmsteads. Therefore, the settlement system could only be explored adequately by surveying and excavating extensive areas. Moreover, while Iron Age and Roman Period sites are often visible in field-walking surveys, Bronze Age sites are virtually invisible in surveys. Any identified settlement features appeared to yield only very few potsherds. Not only was the



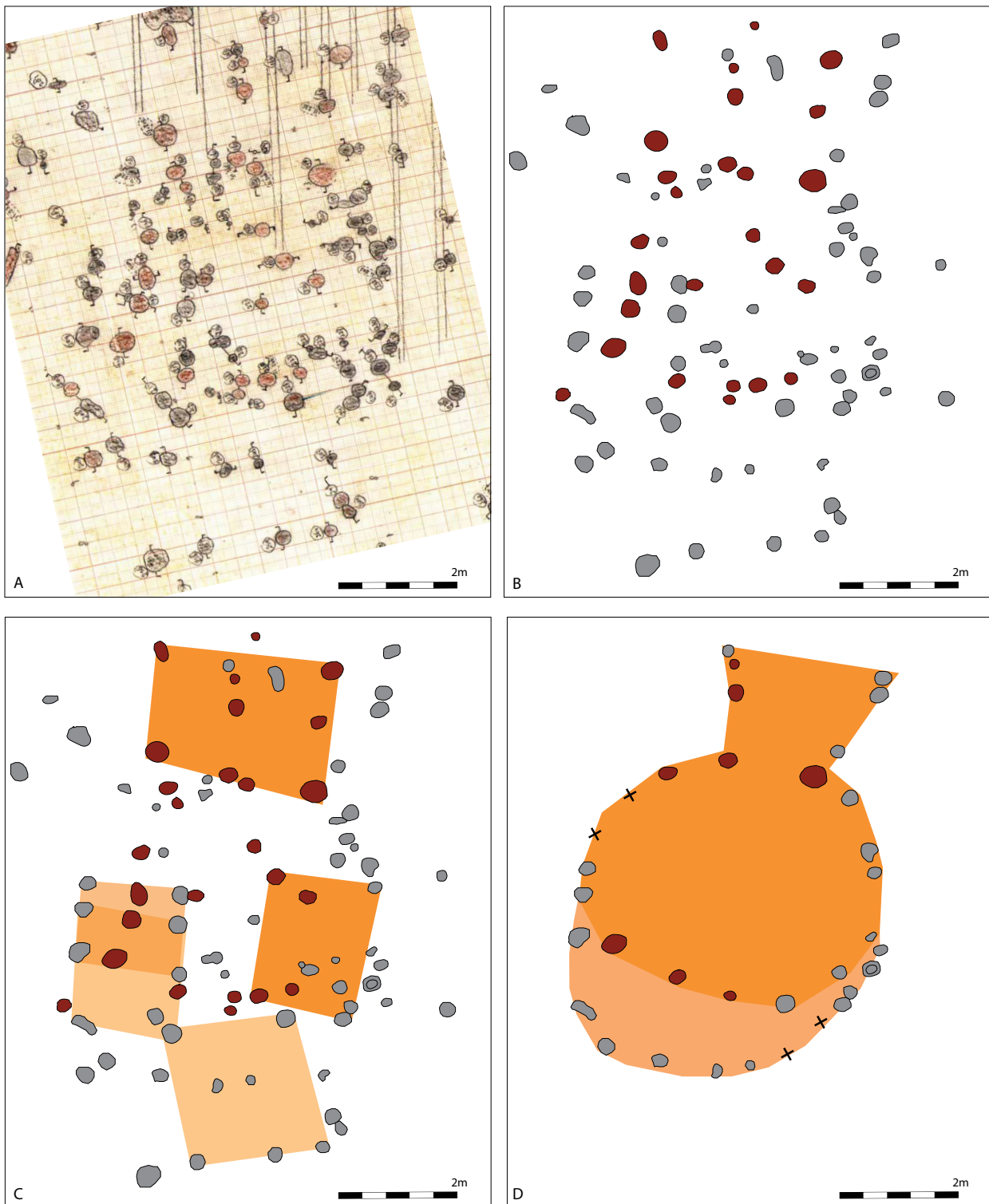


Figure 4.7 A cluster of postholes in trench 898. A) fragment of the field original drawing (Schinkel/Fokkens); B) Digitised version taking colour similarities observed in the field into account; C) Possible interpretation as a series of granaries; D) Possible interpretation as a two phases of a round house. Drawing H. Fokkens.

OxCal v4.2.4 Bronk Ramsey (2013); r5 IntCal13 atmospheric curve (Reimer et al 2013)

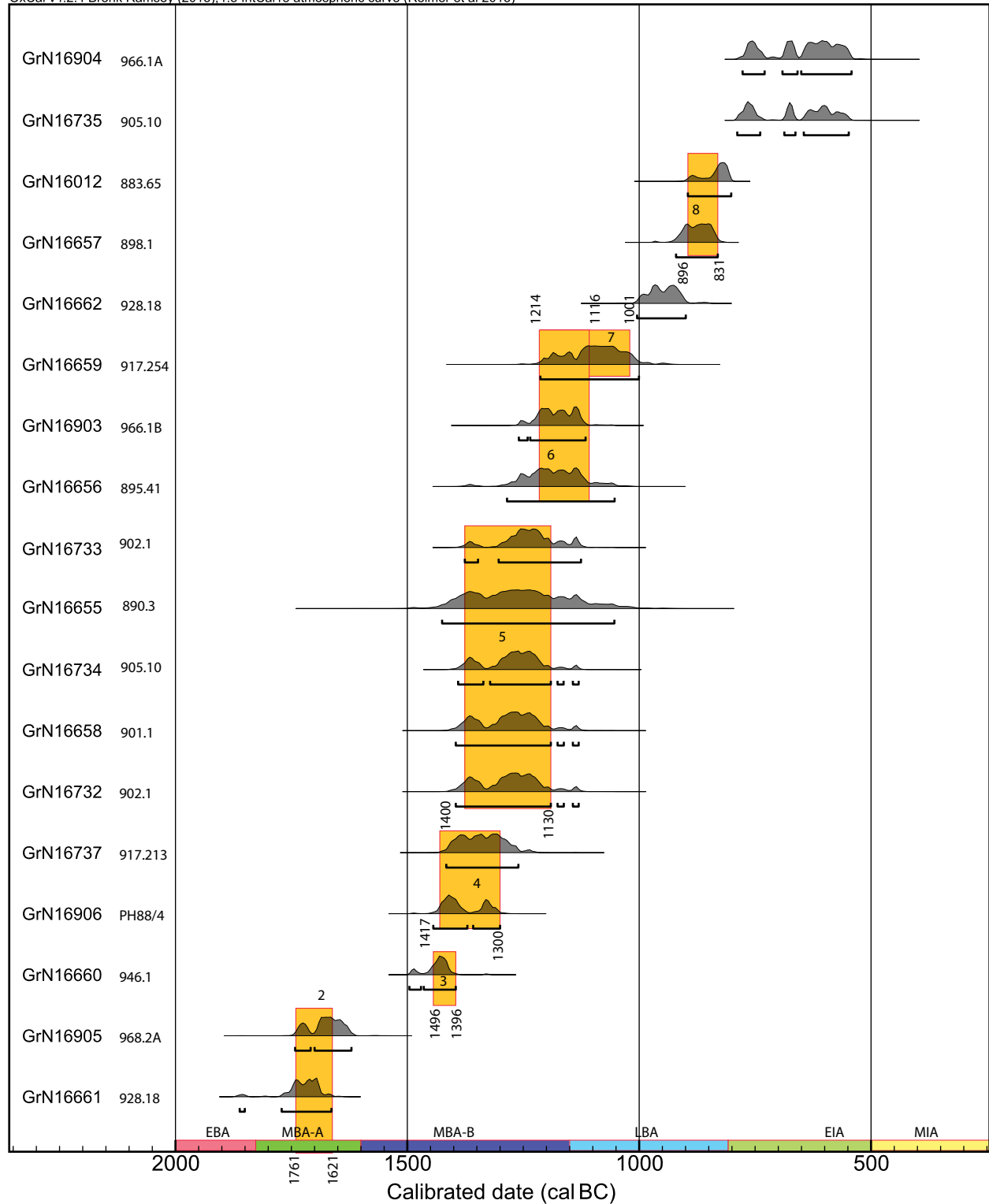


Figure 4.8 Distribution of all  $^{14}\text{C}$  dates in the Mikkeldonk quarter and the periodisation based on the calibrated data.  
Drawing H. Fokkens.

absolute quantity very small, but the pottery was also very brittle and highly susceptible to weathering. Within one or two years after having been ploughed to the surface, Bronze Age potsherds ‘dissolve’.

Another reason to carry on research in Oss was that we realised the potential of continued excavation in a relatively small area. Instead of merely producing more of the same type of data, we discovered new aspects of the prehistoric settlement system. Apart from the Bronze Age, the Early Iron Age also came into view. We found fences everywhere, and we started to get good data on the extent and structure of farmyards, and on all kinds of other aspects. These only made sense because we could compare them with the data from the first decade of research. This gave us a much better basis for building models of the settlement system, rather than moving to another region where we would have to start from scratch.

Gradually, we also became more interested in the totality of the cultural landscape; not only in the settled areas, but also in the areas in between. We sought to develop a more holistic view on cultural landscapes (Fokkens 1996). For this reason we tried to excavate as much area as possible outside clusters of features, but this would hardly work because we always were short on time and funding. In hindsight, the 1988 and 1989 campaigns were very useful because we researched the area around the house that we had discovered in 1986. With some measure of certainty we could now tell how the Bronze Age features were distributed across an area of approximately 400 x 200 m. At the same time, the excavated area also showed us what lay to the north of the area researched during the Ussen project. This enabled us to re-assess the distribution of Bronze Age, Iron Age, and Roman Period material as discussed by Schinkel in his dissertation of 1994 (1998).

The remainder of this chapter will first report on the results of the excavations in the western part of the Mikkeldonk district (1987, 1988 campaigns), before discussing the excavations in the east of Mikkeldonk. This region was investigated between 1986 and 1989.

#### 4.3 EPISODES OF SETTLEMENT IN THE MIKKELDONK DISTRICT

We have divided the data into several episodes (fig. 4.8) that are not necessarily connected to each other in time. Though the calibration ranges of the <sup>14</sup>C-data overlap, the data never spanned the whole of the 1200 years presented here. Therefore, we think that habitation was intermittent, which is one of the reasons that we have given the aspect of aban-

donment some emphasis. For every episode we will try to discuss how it ended and whether habitation continued later on the same spot or not.

The oldest settlement traces in the Mikkeldonk district (episode 1) are represented by two or three small pits in the north of the Mikkeldonk area. One of those contained three large sherds of a Maritime Bell Beaker that probably dates to the period 2500-2300 BCE (cf. section 13.4.8). We know of no other features with Bell Beaker material in Oss-North or Oss-Ussen.. It is probable that they belong to settlement activities that were situated further to the north, nearer to the river Meuse. We have no indications that we are dealing with a burial in this case, so we interpret this find as belonging to settlement activities.

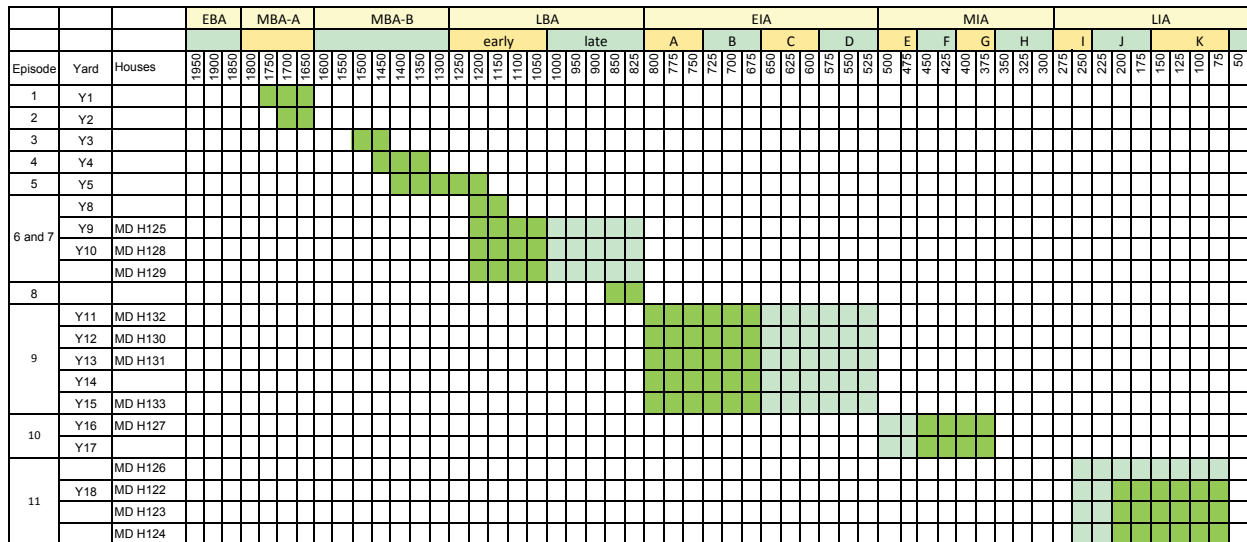
The distribution of <sup>14</sup>C-dates in the Mikkeldonk area (fig. 4.8), shows that the next episode of settlement that is archaeologically detectable, may have started in the 18th century BCE, some 500 years later. In the following section we discuss each of the different habitation episodes. For each episode one or more hypothetical ‘yards’ may be distinguished, suggested by the presence of house structures or clusters of fences together with wells or large pits (fig. 4.9).

##### 4.3.1 Early Middle Bronze Age pits and wells

The oldest wells in the Mikkeldonk area come from the north-western part (fig. 4.10A, B). This area also contained a cluster of large pits. Only one pit (928.1) contained two small Bronze Age potsherds; the others were find-less except for a wooden pole that was dendrochronologically dated between 1772 and 1664 cal BC (cf. section 13.4.1).

The pits were originally all 200 cm in diameter or even larger, with the largest being over 400 cm in diameter (928.18). Only two pits (928.1 and 928.7) reached the groundwater table, which was c. 120 cm below the prehistoric surface. Of these two, we suspect that only pit 928.1 served as a well. We cannot be sure about this identification because the original wooden lining to prevent the well from caving in had already been removed in the Bronze Age (cf. section 13.4.1). The fill within the pit showed disturbances that pointed to the extraction of the lining. Although this may sound like a strange practice, we have documented this practice several times in Oss (cf. section 3.4).

The other pits were between 60 and 100 cm deep and had neatly rounded cross sections and rather steep slopes. These dimensions seem to exclude the interpretation that the pits were used for watering animals.



In theory, such pits would have a shallow profile and many hoof prints preserved in the bottom part. Since these two pits lack such features, they may represent an activity in the sphere of craft rather than animal husbandry. But we have found no additional evidence for the kind of activity that was carried out here. One might propose the rotting of flax for tanning hides.

It is hard to determine whether the pits were located on a farmyard or were situated in the fields. The absence of finds in most features in this area, even of small weathered potsherds, could indicate that the features are located on the periphery of a farmyard or out in the fields. However, because other pits and postholes were situated directly to the north and the west, one might conclude that the farm was not far away (fig. 4.10A). Some of these larger pits contained substantial amounts of pottery (for Bronze Age standards). The pottery is not the small bits that could have rolled into the pit after laying on the surface for ages, but instead are large fragments of thick walled pottery. Still, none of these shows any decoration that one might expect on pottery of an Early Bronze Age date for instance sherds with cord impressions. Therefore I think that these pits represent a younger episode, indicated as episode 3. Contemporary with this cluster of ceramic-filled pits, I propose that a farm likely existed a bit to the north of the pits in the unexcavated area (fig. 4.10: Y1).

The pits in trench 928 were filled in not long after abandonment, but even during episode 3 of habitation

new pits were dug through already filled-in pits (cf. section 13.4.1). Therefore, I think that this episode of habitation lasted at least for a few decades. On the other hand, they apparently remained wet places that attracted vegetation that favoured such wet conditions, like alder trees. Roots from this kind of tree were found embedded in the fill of these pits, and could be dated to the Early Iron Age (cf. section 12.4.1, note 3; fig. 4.8B: 928.18). I do not consider them to represent an episode of secondary use in that period.

To sum up, we know that in the 17<sup>th</sup> century BCE a couple of wells and deep pits were dug in the north-western area of Oss-Mikkeldonk. Probably a farm was not very far away, perhaps to the north or the west just outside the excavation limits (fig. 4.10: Y1). From the available data from Oss it is impossible to tell how Early Bronze Age farmers modified the landscape, what their farms looked like, let alone how they thought about their dead or the supernatural. From research elsewhere in the region and in the Netherlands in general, we might expect that their farms were two- or possibly already three-aisled farms that were situated in a fairly open landscape. Where they buried their dead remains unknown, since we have not discovered any Bronze Age graves in the research area. Comparison with other regions suggests that we could expect an occasional low barrow. These may have been located further to the north where we expect there to be more extensive habitation; survey finds by local archaeologists

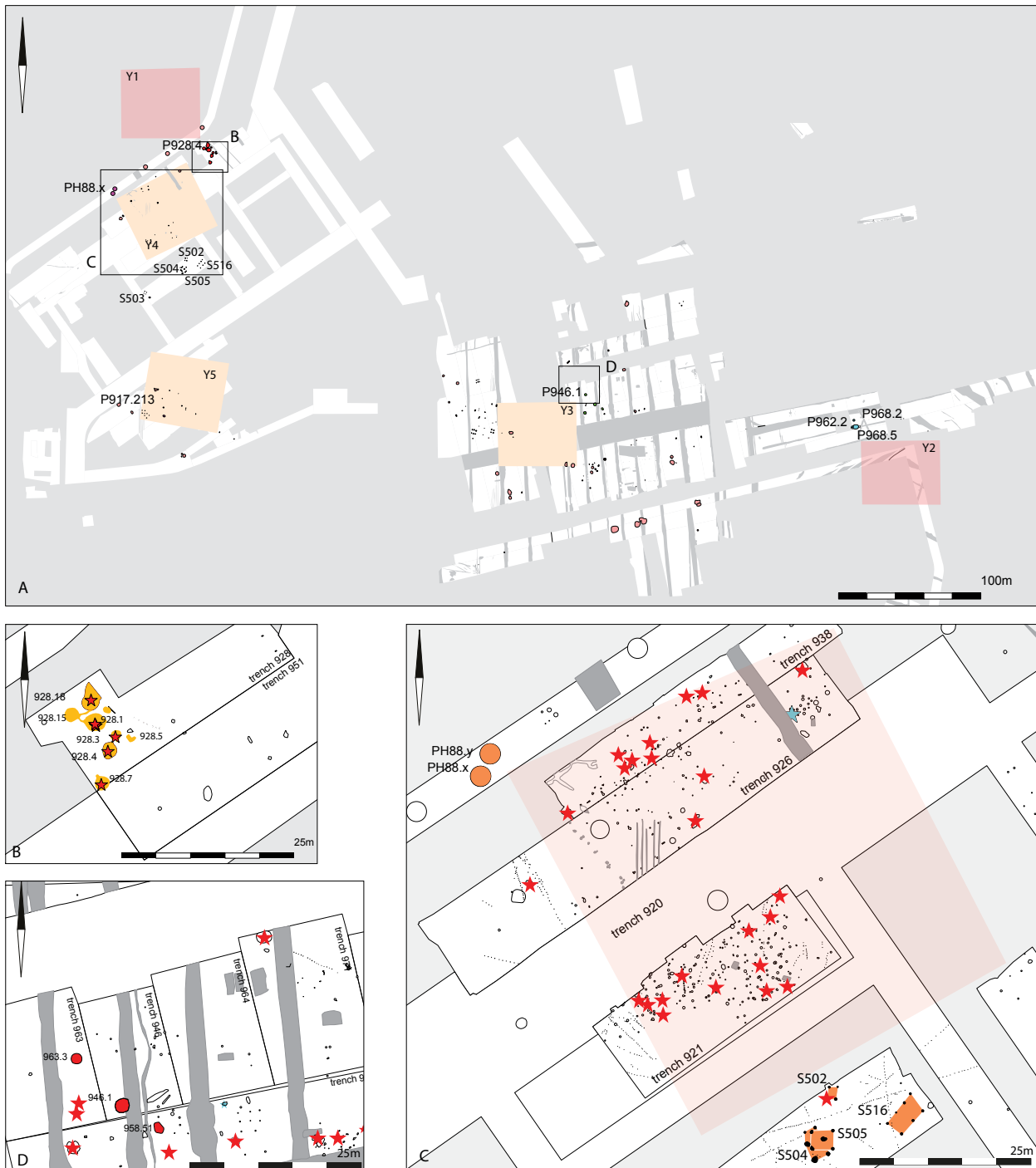


Figure 4.10 Early Middle Bronze Age features in the Mikkeldonk quarter, episodes 1-4. Based on  $^{14}\text{C}$  dates several clusters are indicated as possible 'yards' (A: Y1-Y5). A) survey of all features, with detailed plans indicated (B-D); B) cluster of features in trench 928; C) Cluster of finds indicated as a possible yard Y4; D) cluster of finds and features in the centre of the Mikkeldonk quarter. Drawing H. Fokkens.



Gerard Smits and Piet Haane point in that direction (Jansen and Smits 2014).

We think that the farmstead to which the pits in trench 928 belonged lasted a few generations and then were abandoned. Where the inhabitants of the farmstead(s) of this early habitation phase moved to afterwards is not evident from the finds. It is, however, probable that they moved to a place a little further to the north, in any case outside our excavation area. There are no positive indications of continued use of this location in the period directly after 1700 BCE.

About 500 m to the south-west of the cluster of pits just discussed were at least two deep pits or wells that date to about the same period, possibly between 1700 and 1621 cal BC (feature 968.2; fig. 4.10A; cf. section 13.4.15). These are the only deep pits in that region. They may belong to yet another farmstead, but we have no definitive indications to support that hypothesis. Therefore, I have proposed the existence of a hypothetical farmyard (Y2) to which these pits may have belonged in the unexcavated area north of the pits. These pits probably were filled in when the farmstead was abandoned, so their existence would have been almost 'erased' from the landscape; minor topographical depressions and alder trees may have given away their location to later inhabitants.

#### *4.3.1 Episodes of settlement in the Middle Bronze Age B*

We have no evidence for habitation in the 16<sup>th</sup> or the first half of the 15<sup>th</sup> century BCE. For this period, <sup>14</sup>C-dates are absent in the excavated area of Oss-Mikkeldonk, and also in Oss-Schalkskamp and Oss-Mettegeupel. The first indications for renewed settlement are represented by the <sup>14</sup>C-date of wood from a well in the central part of Mikkeldonk (feature 946.1: fig. 4.8, 4.9A, D) indicating settlement activities somewhere between 1496 and 1396 cal BC (fig. 4.8). I have indicated this as episode 3 (fig. 4.9D). It is difficult to decide which other features may belong to this episode. There are many features with Bronze Age pottery in the vicinity, but none of these can be dated more precisely than 'Middle Bronze Age', so these do not necessarily date to the same period of settlement. There is no overlap between episodes 3 and 5, but there is overlap with episode 4 (fig. 4.8).

Episode 4 is represented by a <sup>14</sup>C date from a well PH88-x (fig. 4.10A, C). Very little is known about this well because it was discovered in a road trench that was dug-out for a ditch surrounding the new living

district by local archaeologist Piet Haane in 1988 (hence PH\*\* as prefix). By the time he had identified the features, only parts of the lining and some pottery sherds were left, and no sections were drawn. Figure 4.9C indicates all known features in the neighbourhood. Taken together, the wells PH88-x and y are not isolated, but that they may have belonged to a farmyard just south of the wells. This is demonstrated by numerous features in that area. In Figure 4.9C this hypothetical farmyard (Y4) is accentuated by a shaded area of 50 x 50 m. A number of fences appear to surround this farm. The wells are situated just outside this possible yard, as are a few granaries in trench 925 (S502, S503, S504, S505, S016). Several of the features contain Bronze Age pottery, though they could not be directly dated to this particular episode (red stars). A few Iron Age finds (fig. 4.10: blue stars) were present as well, but in much fewer numbers.

A feature that probably dates to the same episode is a pit just south of houses MD128 and MD129: feature 917.213 (fig. 4.10A). Though it is tempting to relate these features together, there is no overlap in <sup>14</sup>C-range between the pit (917.213) and the date of 917.254, which may be a construction element of house MD128. Material from feature 917.254 has been used to date house MD128 (1417-1261 cal BC vs 1214-1001 cal BC). It's the location of feature 917.254 in the very middle of the eastern end of the house plan is too conspicuous to be accidental. Therefore, I think that the houses must be younger. Feature 917.213 appears to represent a settlement episode before the farmyard around MD128 developed.

#### *4.3.2 Pits and wells from the 14<sup>th</sup> to the 11<sup>th</sup> century BCE*

Episode 5 has large overlap with episode 4 (1417-1300 BCE vs 1400-1130 BCE; fig. 4.8), as attested by the overlapping <sup>14</sup>C-dates. It is very well possible that they represent a period of continuous habitation from c. 1400 BCE to 1130 BCE. I have interpreted episodes 6 and 7 as separate settlement periods because their mean appears to lay a bit later than that of episode 5. The range of episode 7 extends to 1000 BCE (1214 – 1001 cal BC). But it is highly likely that episodes 6 and 7 are in fact part of the same phase of continuous settlement of c. 300 years (1400-1100 BCE) in Oss-Mikkeldonk.

Though well 946.1 (episode 3) may have been abandoned and left open for a while, I do not think that it remained open until a 100 years later. Since the gap in time between previous episodes of settle-

ment and episodes 4, 5, and 6 is not very long, I expect people to have been aware of former farmsteads in the area. These previous settlements may have structured their choice for new locations, but I can detect no positive evidence for conscious reference to prior habitation.

Episode 5 is represented by a number of  $^{14}\text{C}$  dates between c. 1400 and 1200 BCE (fig. 4.8). These dates all come from wells situated around farmyard Y6 in the central part of Oss-Mikkeldonk (fig. 4.11, fig. 4.12). This is the farmyard where we first interpreted the remains as belonging to a house (cf. fig. 4.6), but later discarded this interpretation because of the lack of positive evidence. The wells are located around this yard, and also fences seem to surround it (fig. 4.12). Interestingly, three wells (901.1, 902.1, and 905.10) have identical or almost identical dates. Well 905.10 is situated some 250 m to the west of the other wells, just south of farmyard Y5, which dated to episode 4 (fig. 4.11). The wood samples from 901.1 and 905.10 were taken from the lining of these wells, consisting of sections of a hollowed-out oak tree with an internal diameter of 26 cm and a length of 83 cm (cf. fig. 11.36). Already in the field we had the impression that these

linings were made out of the same tree, and the almost identical  $^{14}\text{C}$ -dates confirm this. Since these wells are situated some 250 m apart, we think that they belonged to different farmyards, which would indicate that at least two farms existed here in episode 5, and that the inhabitants shared in the construction of wells. The identical date of the wood lining in wells 902.1 to 901.1 suggests that yet another section of the same tree was placed in a well 50 m further to the north of 901.1, in fact on the other end of the same yard. Two pieces of wood were analysed from that well and both had approximately the same age, between 1300 and 1125 BCE (cf. section 13.4.4).

Apart from the wells, I also have indicated three granaries (S489, S492, S517) that may belong to this episode, but this remains impossible to tell. They are dated by only a few potsherds that could have been deposited across the entire Bronze Age, or even later if they were laying on the surface.

Southeast of this yard was a cluster of deep pits, one of which yielded a date between 1286 and 1054 cal BC (feature 890.3). This well also was surrounded by fences and appears to have been located just outside yard Y6 as well. The wooden lining was removed from one of

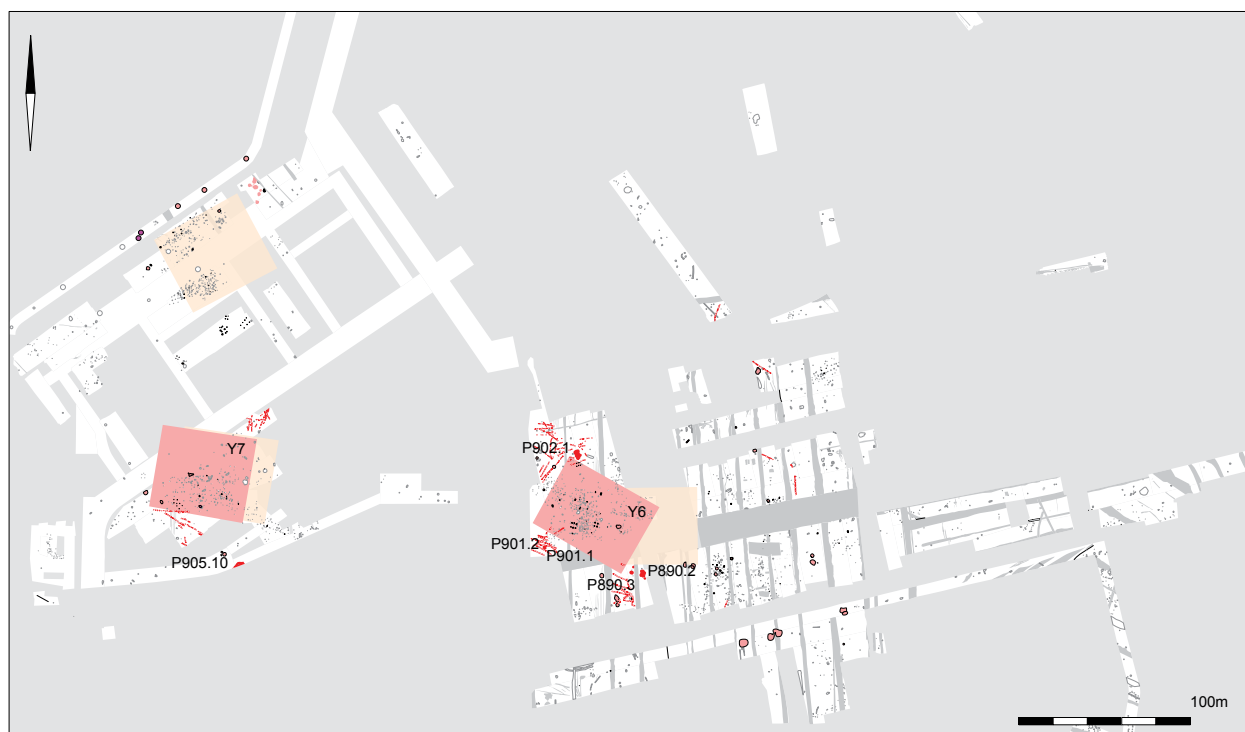


Figure 4.11 Episode 5 of settlement in the Middle Bronze Age B, yard 6 and 7 (red). Older phases of episode 3 and 4 are indicated in yellow. Drawing H. Fokkens.

Figure 4.12 Middle Bronze Age B yard Y6 in the Mikkeldonk quarter with a well dated to the end of the Middle Bronze Age. A possible house structure (fig. 4.6) was not accepted, but the yard appears to be clearly demarcated by fences and deep pits and wells. An older phase is indicated in grey. Drawing H. Fokkens.

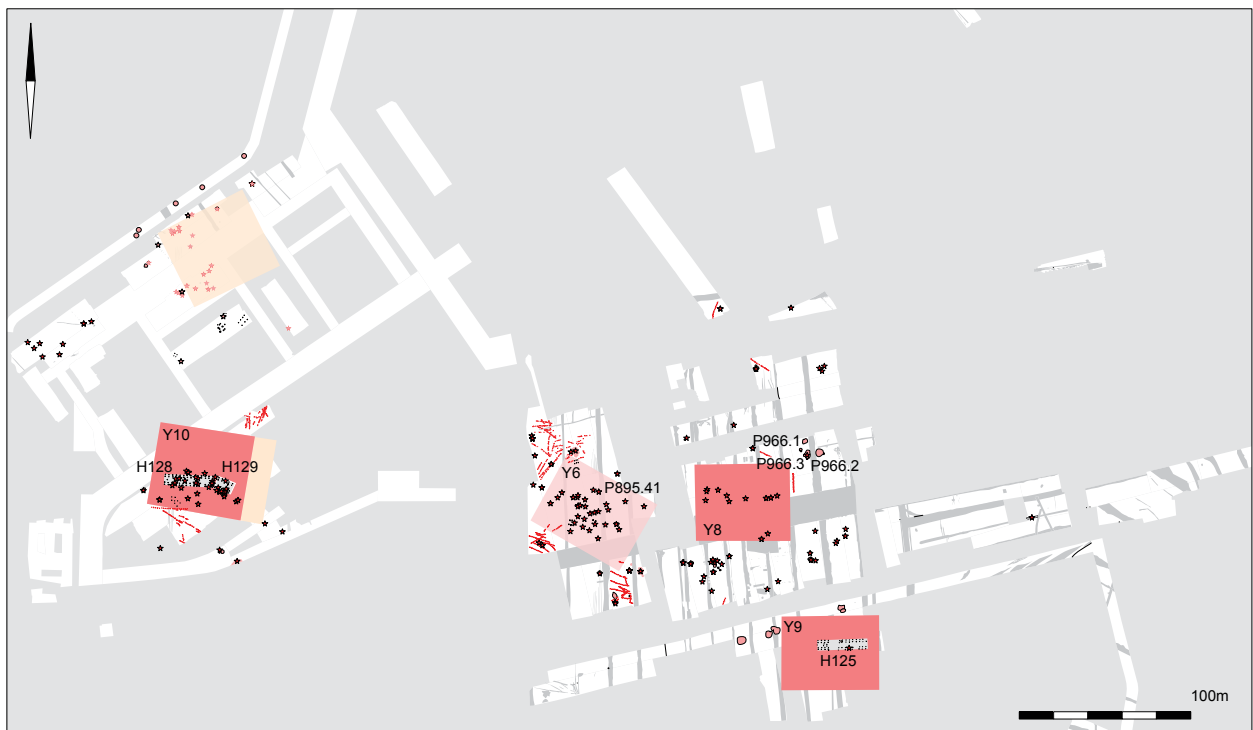
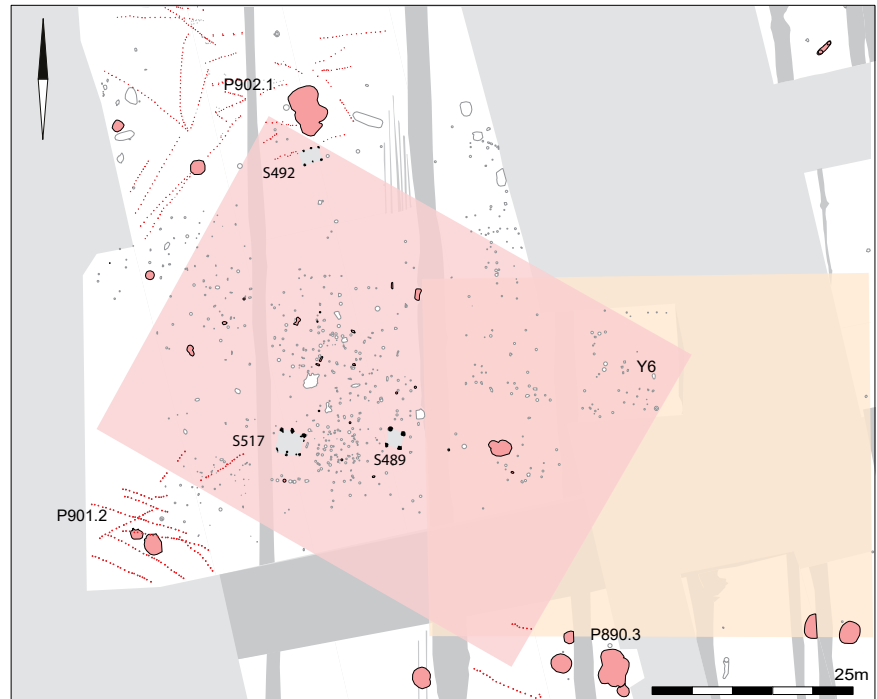


Figure 4.13 Late Bronze Age episode 6 yards 8, 9 and 10 in the Mikkeldonk quarter, probably 1200-1100 cal BC, indicated in red. Older yards are indicated in yellow and purple. Drawing H. Fokkens.

these wells and has probably been re-used elsewhere. Though the farm itself remains undetected, the clusters of fences around the wells suggest that the farmyard had an area of about 50 x 60 m.

Most pits and wells from this episode (5) seem to have been left open after abandonment. Therefore, I think that the yard was abandoned before it was resettled again in the 9<sup>th</sup> century BCE. At least 200 years must have passed before the features of episode 8 were dug, but the location of the older wells may have been noticeable at this time because of depressions in the soil and water-loving alder trees.

#### 4.3.3. Several farmsteads in the Late Bronze Age

Episode 6 is represented by two dates (fig. 4.8; fig. 4.13). Feature 895.41 is situated in the cluster of farmyard 6, and technically could belong to episode 5 as well. Also the cluster of pits and wells around feature 966.1 (a well), might date to the same period because there is some overlap with the ranges of the episode 5 dates. Nevertheless, I think that it represent a slightly younger episode between c. 1200 and 1100 BCE.

Feature 966.1B represents a cluster of features a little more than 100 m to the east of P895.41. Therefore I assume they were part of another yard, indicated here as Y8 (fig. 4.13, fig. 4.14). This hypothetical yard was 'located just a little to the south-west of the cluster of wells because there were a few features with Bronze Age finds in that area. Its north-western corner is demarcated by a fence. However, this hypothesis remains very schematic and hypothetical.

Interestingly well 966.1 was filled-in after abandonment of the farmyard, but was re-opened again a few hundred years later, probably in the 8<sup>th</sup> or 7<sup>th</sup> century BCE (fig. 4.8). The <sup>14</sup>C-date extracted from this well is situated on the 'Hallstatt plateau', but the pottery appears to indicate an Early Iron Age date. In any case, it shows that the location of abandoned wells was still noticeable or visible as a depression in the landscape even if they had been filled in. Apparently that also attracted re-use. However, in the Middle or Late Iron Age their location was forgotten, since the wells are over-run by cart tracks from that period. The carts appear to have sunken into muddy depressions



Figure 4.14 Cluster of wells in the Mikkeldonk quarter with yard 8 projected just southwest of it. Drawing H. Fokkens.

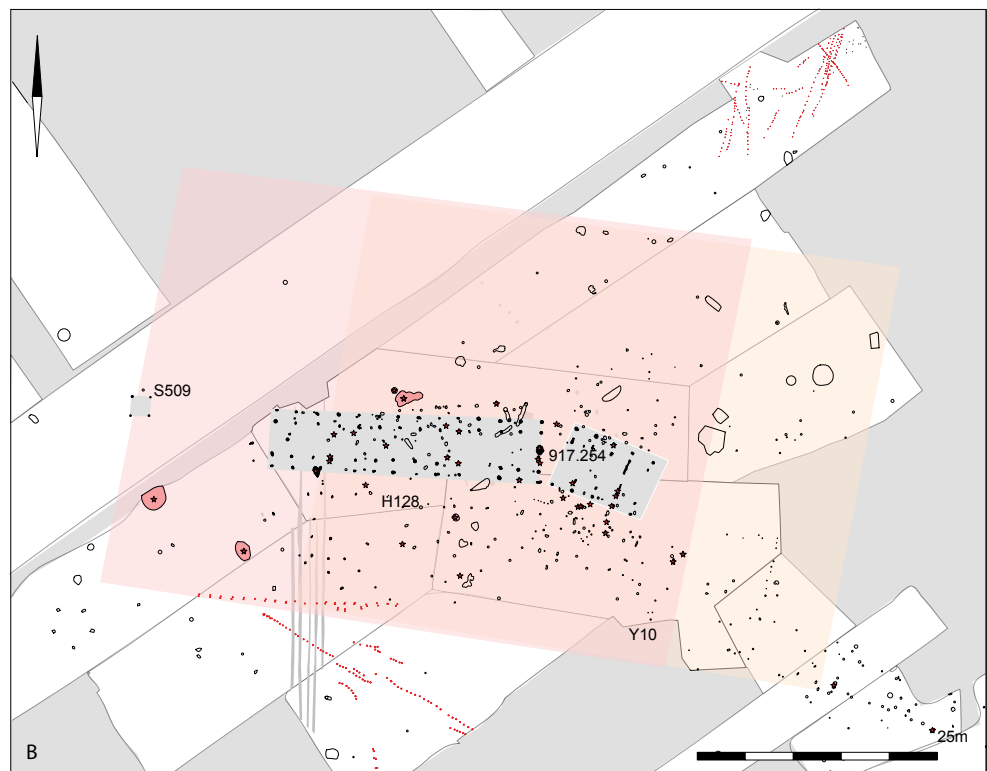


Figure 4.15 Episode  
6 yards 9 and 10  
(1200-1100 BCE) in the  
Mikkeldonk quarter.  
Drawing H. Fokkens.



above these wells, which is why they were archaeologically visible.

Probably in the same period (episode 6) yards 9 and 10 developed, as did Houses MD125, MD128, and MD129 developed (fig. 4.13, fig. 4.15). This is in fact the best preserved Bronze Age period in Oss, at least in terms of farmsteads. We cannot be sure about their contemporaneity, but we think that these yards existed between 1200 and 1100 BCE, or possibly longer. For yard 9, which was projected around house MD125, we have no <sup>14</sup>C-dates; there are only a few wells with Bronze Age pottery (for details see Vashbinder and Fokkens 1987; section 13.2.2). There are no visible granaries or fences. The fences that are visible in the area belong to a Late Iron Age farmstead. We can say very little about the extent of farmyard 9 in episode 6. The house was a little over 25 m long and we have projected a 40 x 50 m yard around it in such a manner that the wells lie outside the limits of the yard. The dimensions of this projection are based on the situation at yard 6, which existed a few decades earlier some 100 m to the north-west (fig. 4.13).

Yard 10 comprises houses MD128 and its extension or replacement MD129. A <sup>14</sup>C-date comes from charcoal retrieved from a large but shallow feature (917.254) on the eastern side of the farm (fig. 4.8). The farmstead seems to be bordered by a fence (row of paired stakes) on the south side. The cluster of fences around a deep pit to the north-east of the house is probably younger and belongs to episode 8. A granary (S509) probably also belongs to that phase. No wells can be attributed to this farm, and the projection of the farm remains hypothetical. It is situated in the same area as yard 7, which existed somewhat earlier in episode 6. So possibly we are dealing here with a century or more of continuous habitation.

We have little evidence for habitation in the last part of the Late Bronze Age. Dates for the period between c. 1000 and 850 BCE are lacking. There is no clear habitation evidence that can be placed in this period. This situation is a common characteristic of the Bronze Age settlement history of all of the Netherlands. House plans from the phase in which the short three-aisled plan with posts outside the wall develops (type Oss 2) are absent in all of the Netherlands.<sup>1</sup>

The only features that date with certainty to the Late Bronze Age, are a large watering hole (898.1) and a well (884.65), but neither are directly connected to a yard. They may represent a period in which the area was in use as arable land, likely between 900 and 830 BCE (fig. 4.8; 4.16).

#### 4.3.4 *Farmsteads in the Early Iron Age*

Episode 9 spans the entire the Early Iron Age (825-500 BCE). In this period we have projected five farmyards (yards 11, 12, 13, 14, 15), four of which actually have a farm in its centre (fig. 4.16). The other is marked by clusters of granaries. Dating these features is a problem, however. The only date for this episode is the re-use phase of well 905.10 (789-549 cal BC; cf. section 12.4.4.). None of the yards are necessarily from the same period; they could all represent several stages of 'wandering farmsteads', as Schinkel called them (1998). This is, however, almost impossible to tell. Only in two of the yards can we be fairly sure that they were not contemporaneous, yard 12 and 13.

Yard 11 is projected around house MD132, and has a number of other features, including two granaries. (fig. 4.17). The yard appears to have been surrounded by a fence on the north, west and south side, enclosing an area c. 40 m in width wide. There is a shallow narrow ditch on the north side as well. Well 940.1 is situated at the south-west corner of the projected yard, and might belong to this farm. Pottery from this well dates to the Early Iron Age, phase A or B (cf. section 12.2.6; c. 825-600 cal BC). The house may be of the same age. The eastern half of this yard remains unexcavated.

The house was not rebuilt on the same spot, so the yard appears to have been abandoned after this period of habitation. How long that was, we do not know, but it likely lasted a few decades. After abandonment, the yard probably became part of arable land, indicated by the fences that run over the house plan in a north-west by south-east orientation. The fences on the north side of the farm yard were overrun by fences running in the same direction as the ones that were built through the house plan. Since these later fences show no indications of being influenced by the older ones, I assume these already had completely disappeared. The postholes of the house itself give no indication about its abandonment.

Yard 12 comprises house MD130, and is located on the same spot as yard 10, which goes around houses MD128 and MD129. I assume that the builders of house MD130 were aware of the presence of the former yard, even though its remains had become invisible (fig. 4.18). This implies that the features of yard 10 were already closed and filled-in. This interpretation follows from the fact that some of the postholes of house MD130 overlap with those of MD128.

House MD131 is rather small and has only small posts and a narrow trench outside the walls. It is not



Figure 4.16 Episode 8-9 (Early Iron Age) in the Mikkeldonk quarter. Possible yards 11, 12, 13, 14 and 15 indicated in blue, older yards in purple. Drawing H. Fokkens.

clear how its roof was supported. One would expect larger posts to support the roof plates, but these are absent in MD131. That makes it an anomalous house in terms of the typology.

A few granaries probably belong to these yards: S508, S509, S510 and S511 (fig. 4.8). Well P915.10, which was used a few hundred years earlier in episode 5, must have been still visible because it was re-used some time after 800 BCE (fig. 4.8). This date may suggest that it was associated with house MD131.

Yard 14 is projected around a cluster of granaries (S513, S497, S514; fig. 4.19) that can be dated to the Early Iron Age phase B (725-625 BCE; section 11.3.4). Such a date implies that this yard may be a little younger than the other yards. Structure B13 cannot be dated properly, but its proximity to the others may suggest a date in the Early Iron Age as well. These granaries are substantial, with eight or nine posts. We see this kind of granary more often in the Early Iron Age, but the question is: why? Most farms have become substantially smaller than in the Bronze Age, so I have no idea why larger storage spaces would have been necessary. A well (P884.65) may belong to

an older phase of habitation, but may still have been visible in episode 9.

A standard interpretation for Late Prehistoric economics would probably suggest that the larger granaries indicate increased wealth and that the yards with these larger storage spaces belonged to influential people or elites because they were able to assemble large stocks of critical resources (grain). We think much more supporting evidence is needed to substantiate such an inference. I am not a priori denying that this is a possibility; in my view, present day archaeological practice is too quick to view things that are larger or bigger in terms of economic and political power. Since these larger granaries are rather common in this period in Oss, I think that the reason for their development should be sought in different directions as well. However, that lies beyond the scope of the present discussion.

Yard 15 (fig. 4.20) is projected around structures MD133 and S533, the latter being a very large four-post granary (cf. section 11.2.7 for a full discussion of this type of structure). The conclusion remains rather unsatisfying. I have no clue what kind of structure

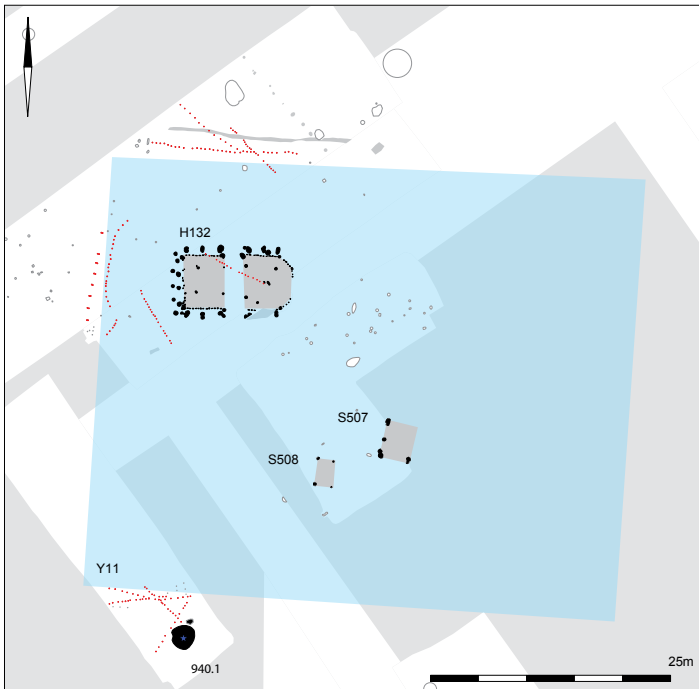


Figure 4.17 Early Iron Age yards Y11 in the Mikkeldonk quarter. Drawing H. Fokkens.

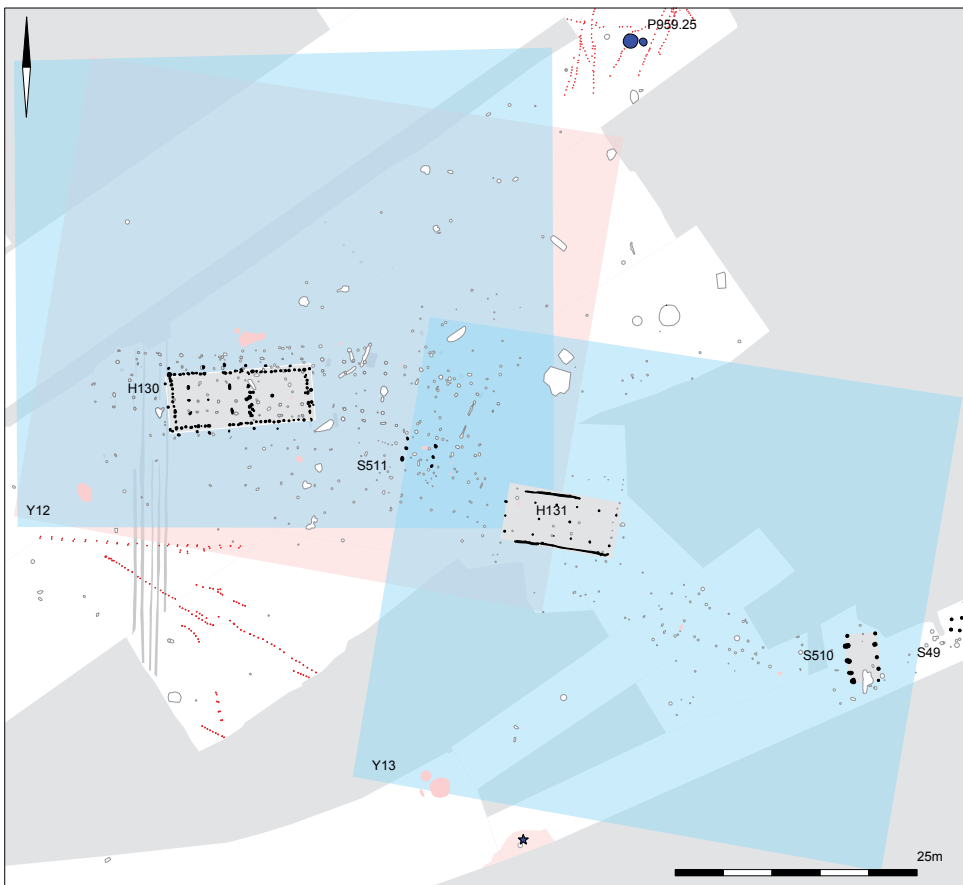


Figure 4.18 Early Iron Age yards Y12 and Y13 in the Mikkeldonk quarter indicated in blue, older yard indicated in purple. Drawing H. Fokkens.

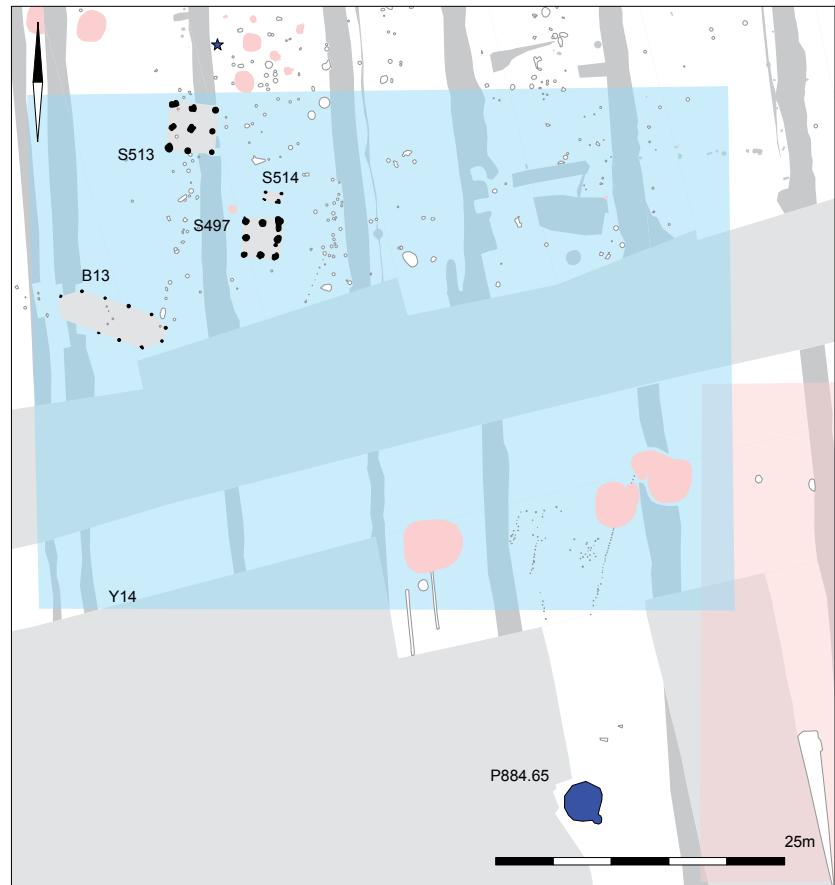


Figure 4.19 Early Iron Age yards Y14 in the Mikkeldonk quarter indicated in blue, older yard indicated in purple. Drawing H. Fokkens.

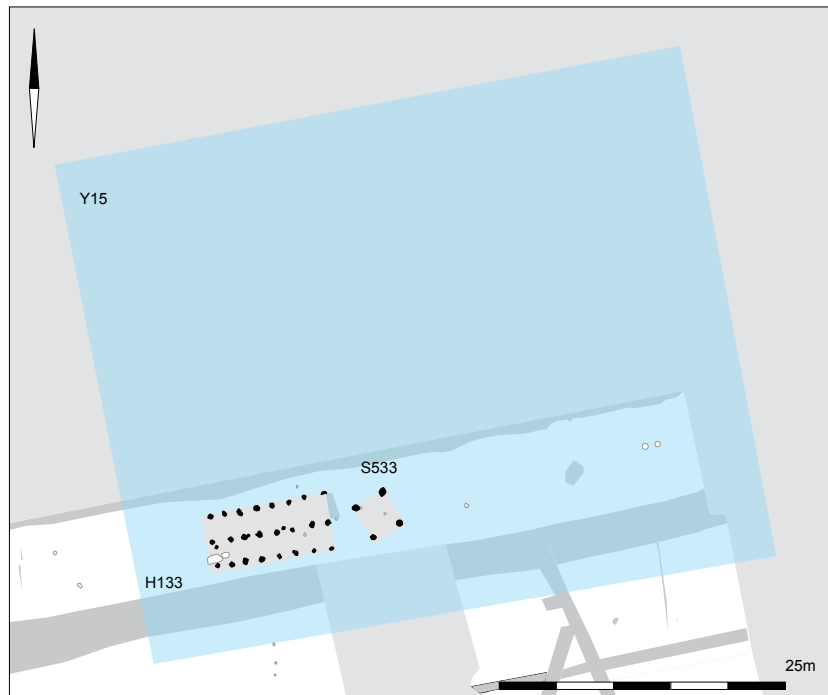


Figure 4.20 Early Iron Age yards Y15 in the Mikkeldonk quarter. Drawing H. Fokkens.

MD133 is. It is generally dated to the Early Iron Age, but although such structures are not rare, they also are not common. Every site has one or a few of these enigmatic Early Iron Age structures. In Oss we had two examples so far. There are no other structures or fences in the neighbourhood, and hardly any other features. That may be an indication that we are not dealing with a normal type of farm here.

#### 4.3.5 Two farmsteads in the Middle Iron Age

Episode 9 occurred during the Early Iron Age, roughly between 825 and 500 BCE. Episode 10 is restricted to Phases E, F, and G of the Middle Iron Age, between 500 and 325 BCE (fig. 4.21). The western part of Oss-Mikkeldonk appears to have been deserted, and was probably converted to agricultural purposes. This is supported by the fences that overlay house MD132 and its surrounding fences (cf. section 4.2.4.). I assume that the remains of the previous episode in this region (yards 14 and 15) were still visible or somehow remembered, but there is no clear reference to these older structures. The gap between episodes 9 and 10 could be 100-200 years, but also could be of a shorter duration.

The typological dating of the pottery from house MD127 (F-G) and of well 977.1 (E-F) does overlap, so they could have existed in the same period between

450 and 375 BCE (Van den Broeke 2012, 36). Additional arguments for contemporaneity come from two kinds of features that are attributed to this period: a ditch system and a set of cart-tracks (fig. 4.21). Section 11.5 discussed these features in some detail, and the conclusion was that they belong to the Middle Iron Age because they overlay older features. They also are intersected by features attributed to an unknown phase of the Iron Age (cf. section 12.4.10).

The ditch systems F298 and F299 appear to enclose yards Y16 and Y17 more or less. Certainly yard 16 seems to be enclosed on its western side. Yet, dating material for these ditches is lacking, so it still is possible that the proximity of these features is coincidental. They cannot be much older since Early Iron Age ditches are unknown in Oss. They do exist in the Middle and Late Iron Age though. The cart ruts depart from this enclosed area in between the yards (fig. 4.21). Unfortunately, the only place where the two ditches and the cart ruts intersect had to be left unexcavated. I have no clear indication that there was an opening in the enclosure here or that the features did in fact intersect. The story is much appealing if we hypothesize that the cart tracks led into the opening of a settlement enclosure. This enclosure is not interpreted as a defensive system. Ditches of this type appear to demarcate a settled area, but they are not substantial enough to be called

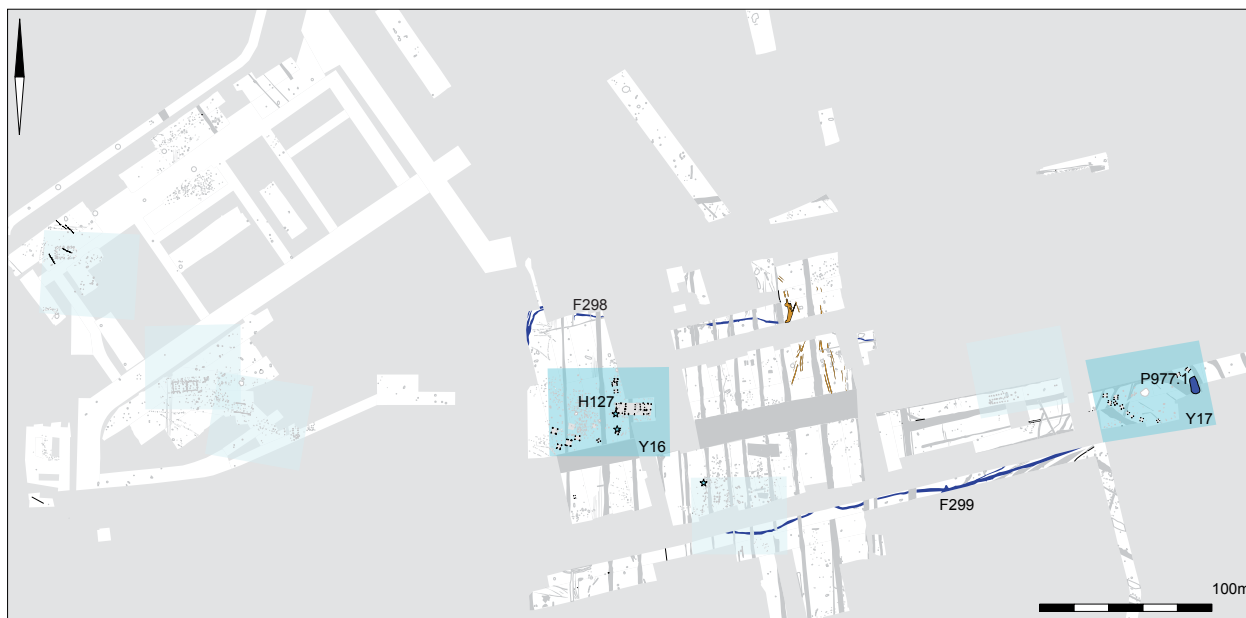


Figure 4.21 Middle Iron Age yards 16 and 17 (dark blue) and ditches against the background of Early Iron Age yards (light blue) in the Mikkeldonk quarter. Drawing H. Fokkens.



defensive. If we want to see this as a physical boundary, one needs to image that these ditches were accompanied by fences or hedges. The latter would be nearly invisible in the archaeological record.

In the west, yard 16 is centred around house 127, a clear example of the so-called Haps-type (fig. 4.22; cf. chapter 3; 11.2.4). It is surrounded by at least nine granaries of different types. Several of those, like the northern cluster (S493, S594, and S495) probably represent successive replacements of the same structure at almost the same spot. Possibly only two or three granaries existed at the same time. If that is correct, the number of granaries demonstrates the longevity of the yard rather than the richness of its owner. The duration of these granaries again is difficult to assess. Given that granaries are less stable than houses, a 3:1 rate might possibly be expected. If houses stood 60 years or more, granaries would have been replaced every 20 years.

Thus, this sequence of granaries may indicate that yard 16 (fig. 4.22) existed for about 60-80 years. The longevity of the house is also indicated by replacements of posts at its eastern end. Interestingly, the large central posts and some of the wall posts were filled with potsherds at its abandonment (cf. section 4.2.11). This indicates that after its life cycle had been completed, the house was dismantled, its posts extracted, and the post-pits filled with potsherds and burnt bone. Van den Broeke (2002) has studied these kinds of deposits and concludes that they consist generally of carefully selected vessels, and not just debris or garbage. Therefore, I assume that the deposits really represent the final stage in the life cycle of this house.

Wells or other deep pits that can be dated to this period are absent in or around yard 16. A different exists in yard 17, which is projected around a very large watering hole and eleven granaries (fig. 4.23). A house is lacking within the excavated area. Theoretically, a connection to yard 15 could be possible because the typology of houses like MD133 remains unclear. But there is a fair distance (+ 50 m) between house MD133 and the granaries, which we have considered to be the standard size of a yard. An additional argument is that there are no other features between the row of granaries and MD133: the area is empty. If we depart from the hypothesis that these granaries represent several phases of two or three granaries, we would expect also that other features would have been dug during their 40 to 60 years of existence.

Watering hole 977.1 is a complex feature that probably was left open for a long time after aban-

donment. This follows from the peaty substance that developed in this pit. In Phase E/F of the Middle Iron Age it was filled-in with debris of all sorts. It looks like the inventory of a complete yard was deposited here (cf. section 1.4.16): 1442 pot sherds, 33 pieces of loam, 2 spindle whorls, 19 pieces of iron slag, 78 pieces of basaltic lava (querns). Like the oven in ditch F144 in Oss-Schalkskamp (cf. chapter 5), the metal slag is accompanied by large amounts of pottery, but also with fragments of loam (tuyere supports?).

#### 4.3.6 *Farmsteads and a cemetery in the Late Iron Age*

Based on the data in the previous section, we think that in the Middle Iron Age (probably before 325 BCE) two farmsteads existed in the eastern Mikkeldonk area, surrounded by a narrow enclosure ditch. In the Late Iron Age (episode 11), in the same area at least one yard (Y18) is present (fig. 4.24).<sup>2</sup> Yard 18 has a very clear chronology (fig. 4.25). Here we probably have three phases of one farm (MD122, MD123, MD124). Together they probably represent a farmstead that existed between 200 and 0 BCE (cf. section 13.2.1). Repeatedly rebuilt and slightly moved fences border the yard on the west and northwest. Granaries are present too, but not in abundance. The three granaries in the south-west probably were contemporaneous with the house MD124, the youngest farm of the three.

Rebuilding a farm on the same yard becomes more common in the Late Iron Age, often within a kind of enclosure ditch. Such a ditch appears to be lacking at Oss-Mikkeldonk, unless the ditch that I have attributed to the previous episode in fact should belong to episode 11.

To the east of the two yards is a small cemetery (fig. 4.26) that very well could be connected to these yards, at least to yard 18. One of the monuments (R202; feature 967.1)<sup>3</sup> is dated between 203 and 50 BCE, which is consistent with the relative date of the pottery from the cluster of houses on yard 18. I therefore suggest that the cemetery was connected to yard 18, which lies 130 m to the south-west. A relation to the Late Iron Age enclosed settlement at Oss-Schalkskamp also is possible, but that is situated farther away: 360 m north-west of the cemetery.

It is not clear how large the cemetery originally was. Some of the ditches were fragmentary, and in the Medieval period cart tracks were formed in this area (fig. 4.27). They may have eroded original monuments with low mounds. In any case, they appear to avoid the large circular 'causewayed' monument R201 (feature 683.42). This implies that the monument was

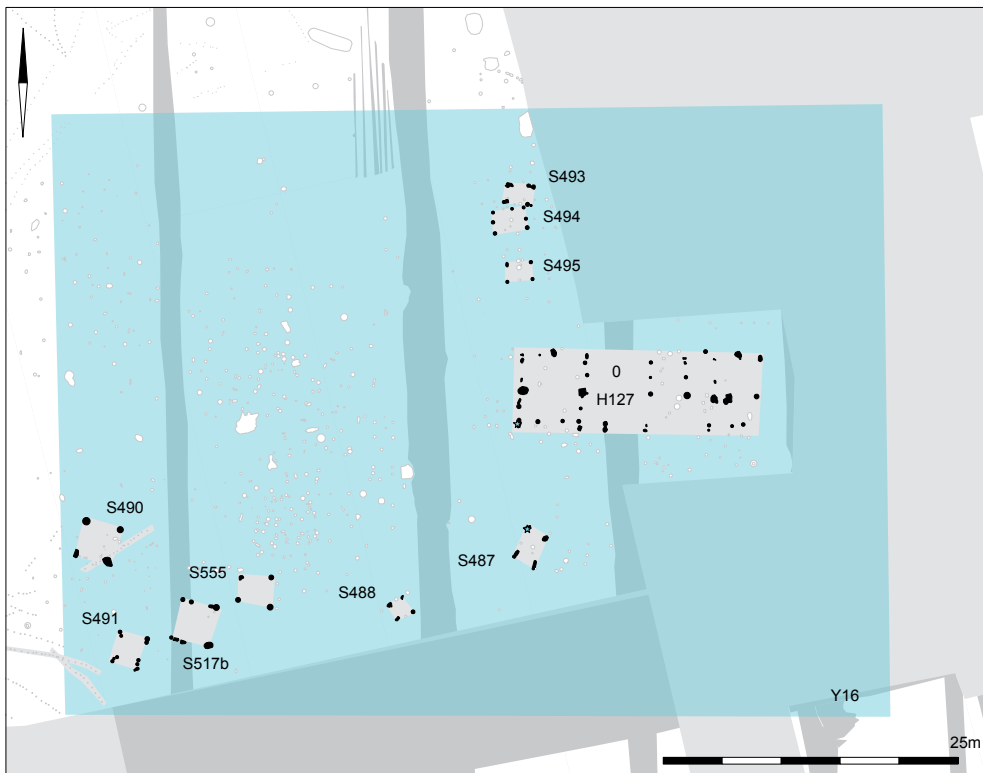


Figure 4.22 Middle Iron Age yard Y16 in the Mikkeldonk quarter. Drawing H. Fokkens.

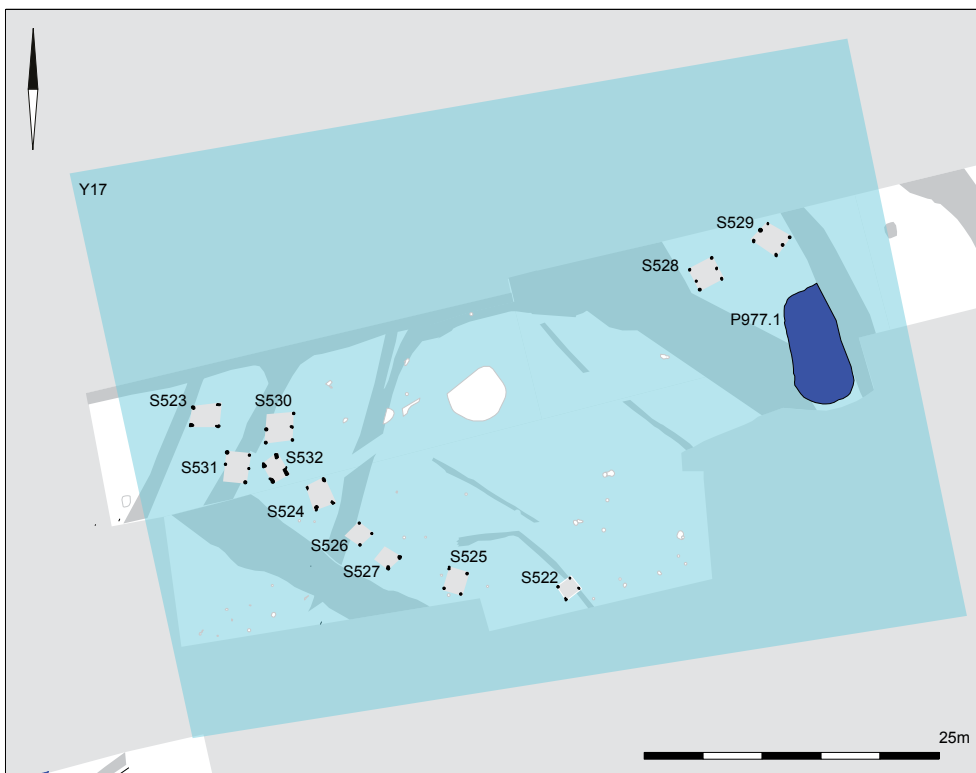


Figure 4.23 Middle Iron Age yard Y16 in the Mikkeldonk quarter. Drawing H. Fokkens.

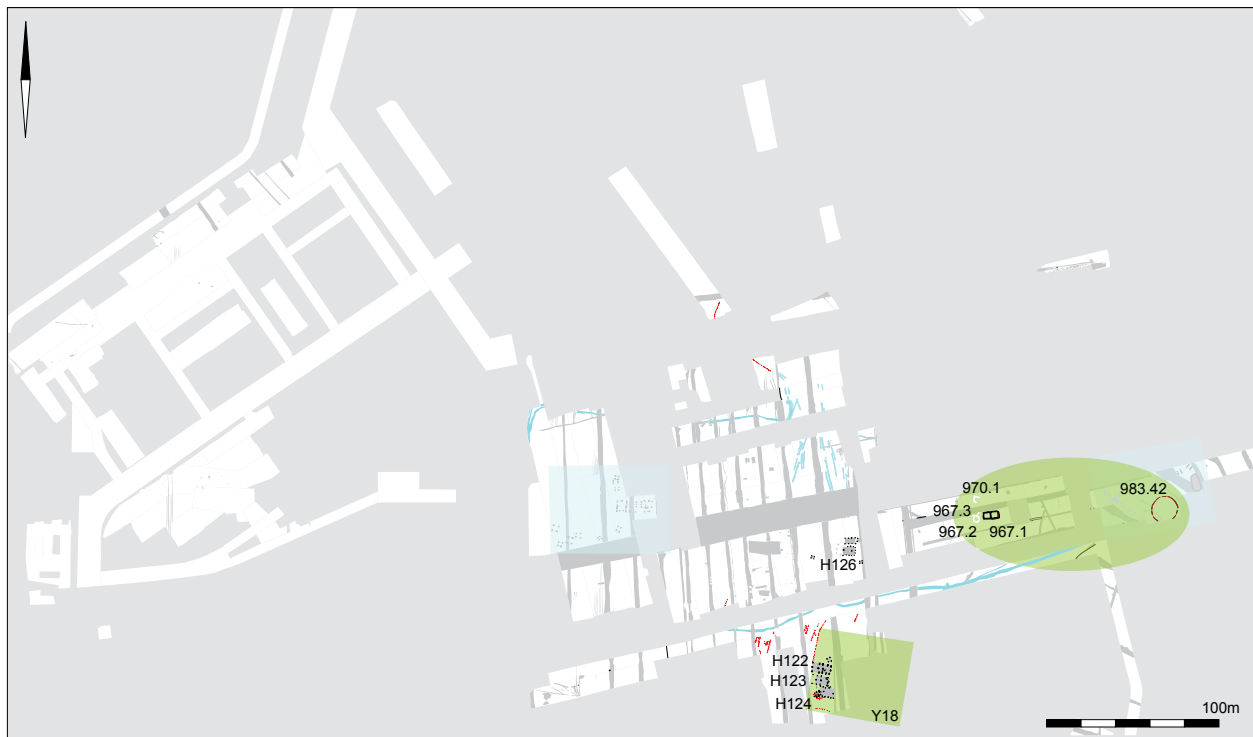


Figure 4.24 Late Iron Age yard 18 and cemetery in the Mikkeltonk quarter (indicated in green against the background of earlier yards (in light blue). Drawing H. Fokkens.

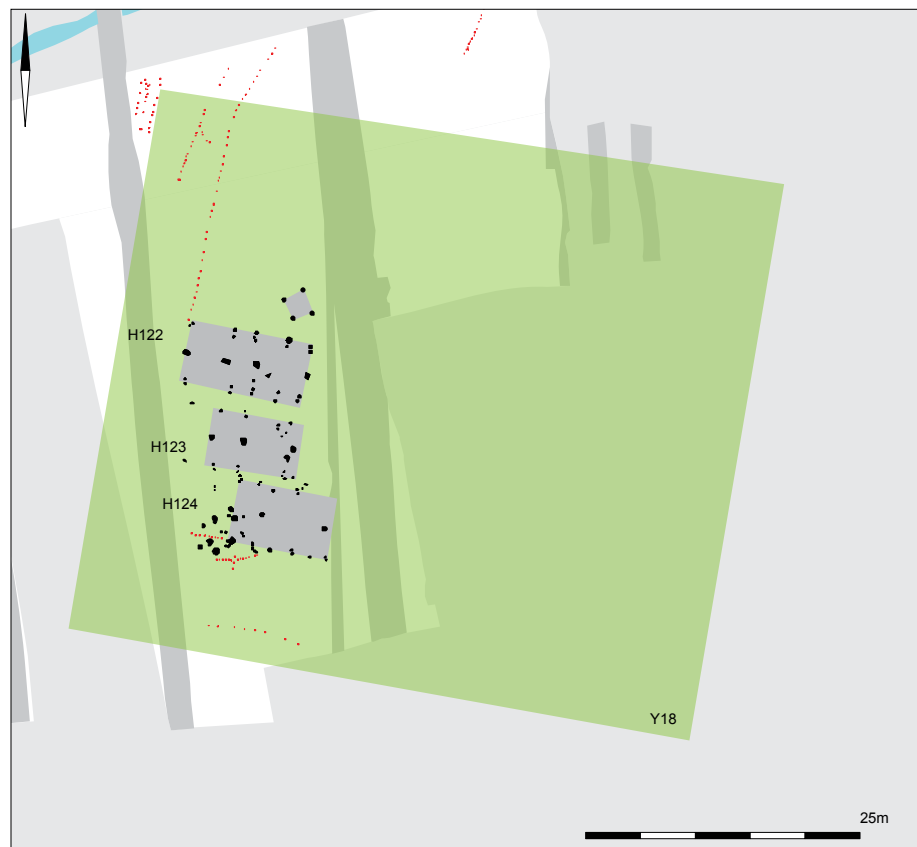


Figure 4.25 Late Iron Age yard Y18 in the Mikkeltonk quarter. Drawing H. Fokkens.

still visible and respected in the period that these cart tracks developed, probably the Late Medieval period. Also in Oss-Schalkskamp (cf. section 5.8) we see that especially the Late Roman ditch system was still visible in the 13<sup>th</sup> Century AD sand formed a 'guideline' in the re-reclamation of the land.

Though the large enclosed Roman settlement of Westerveld was situated to the south of the Mikkeldonk area, only a few Roman period remains have been found in this area (fig. 4.26). The few pits and one well known from the Roman period probably represent locations where water was extracted near or in fields.



Figure 4.26  
Late Iron Age  
cemetery in  
the Mikkeldonk  
quarter.  
Drawing  
H. Fokkens.

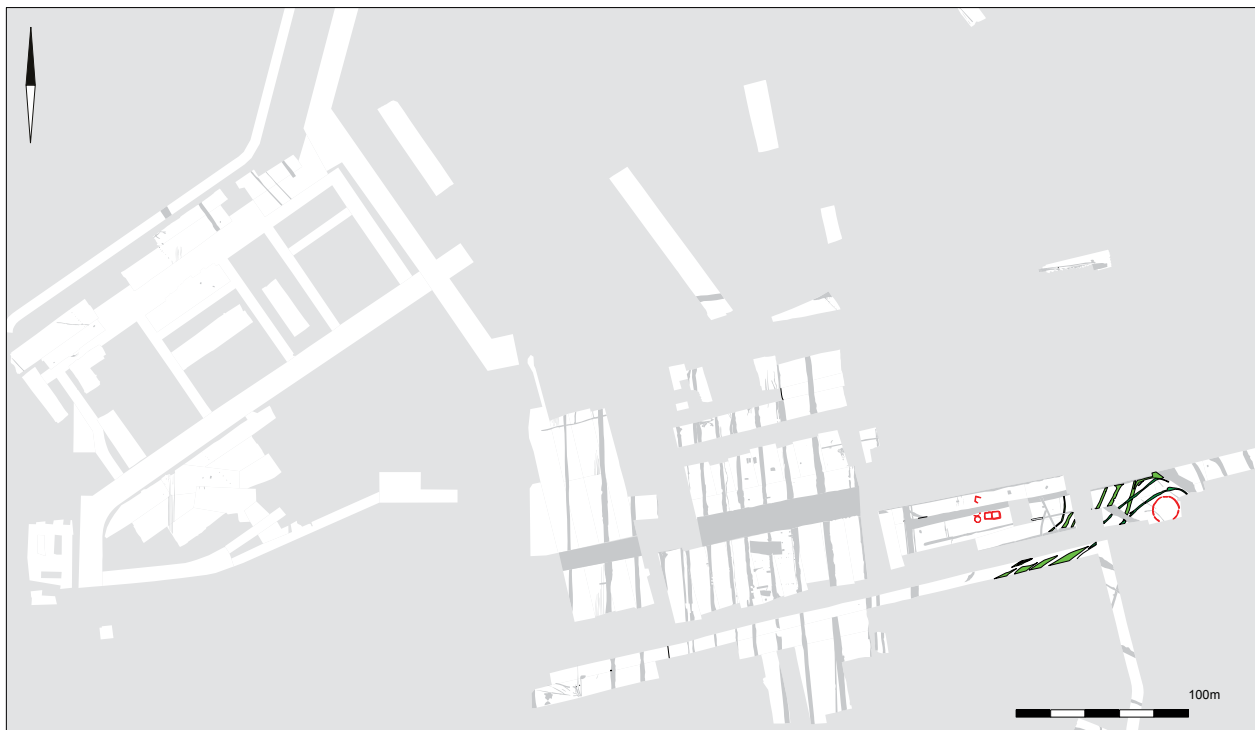


Figure 4.27 (Late?) Medieval cart tracks avoiding the Late Iron Age or Early Roman burial mound R201. Drawing H. Fokkens.

## NOTES

1. For a discussion of this phenomenon cf. chapter 3; Fokkens and Arnoldussen 2008.
2. Also just north of it a few structures are present (including MD126) that may or may not represent another Late Iron Age yard. In section 13.2.3 I explain that structure MD126 and the other structures around it (fig. 13.5) are un-datable. If they existed, and we know that at least the two granaries did, they possibly date to the Late Iron Age. But it must be stressed that this is not much more than a wild guess based on gut-feeling, and therefore I will not discuss the structures in more detail (cf. section 11.2.3).
3. Schinkel and Wesselingh used the Ussen numbers (R201 ff.). We have kept to the feature numbers instead, but the R-numbers are noted here as well.

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## 5. Excavations in the Schalkskamp district (1990 – 1992)

H. Fokkens

### 5.1 SHORT HISTORY OF RESEARCH

During the campaign of 1989, we had almost reached the eastern limits of the Mikkeldonk district. Though we worked hard in the summer of 1989, the pace of the construction work had overtaken our excavations, and part of the area was already out of reach. However, about 10 ha was left untouched. Apart from a few small observations by local archaeologists, we had very little information on this part of the area, so we decided that we would excavate a few test trenches in order to survey these 10 ha. Time was short because the contractor, Stienstra Brabant BV, had set the date of construction in this area on 1 August, 1990. That meant that the area west of the existing main road, the John F. Kennedybaan, had to be researched before that time. In winter of 1989 we made plans for the excavation. Funding was obtained from the Province of North-Brabant.

In the summer of 1990 we surveyed the whole area with test trenches, but we only discovered features in the eastern part (fig. 5.1). Actually, the first trench (12 x 100 m) excavated that summer already yielded 500 features of the Roman Period and the Iron Age. Eventually, the results of the 1990 excavation were beyond expectation. Another Roman Period site was found, enclosed by a ditch, just like at Oss-Westerveld (Wesselingh 2000), and was probably even attached to Westerveld

Figure 5.1 Survey of all trenches in the Schalkskamp quarter excavated in 1990 (red), 1991 (blue) and 1992 (green). Drawing H. Fokkens.



by a ditch. But there was also an enclosed Iron Age predecessor. This was the first Iron Age settlement enclosure we had discovered in Oss.

In 1990, the main road from Oss to the north, the John F. Kennedybaan, constituted the eastern border of the excavation area (fig. 5.1). But all features and ditches continued further to the east, and we expected them to continue to the east of the road. Since that area would not be developed into a housing estate until 1995, this gave us a good opportunity to work there in advance of building operations. We discussed the possibility of research with the officials of the Municipality of Oss in the fall of 1990. They were very cooperative and from that moment onwards we were able to work in areas that were owned by the municipality and destined for

the development of houses. So in 1991 and 1992 we were able to continue excavation of the Schalkskamp settlement, which lies on the western side of the John F. Kennedybaan. Since the Leiden Archaeology fieldschool was organised elsewhere (Geleen-Janskamperveld), we only had a small workforce in those two years (fig. 5.2B).

Overall, a total of 13 houses, 29 outbuildings, 48 pits and wells, 31 ditches and palisades, and 3 graves were discovered in the three successive summer campaigns (fig. 5.3). The Schalkskamp district comprises features and finds from the Bronze Age, Iron Age, Early Roman Period, Middle Ages and Modern Period. A selection of features is described in Chapter 12. These features, structures, and finds are used to reconstruct the habitation history of the



Figure 5.2 A few impressions of the Schalkskamp excavations: A: Henk den Brok and G. Smits; B: from left to right Jacqueline Vlug, Natasja Moses, Sjaak Mooren, J. Albert Schenk, Frances Borghaus, Zita van der Beek, Gerrit van Duuren, Rini van Ballegooien, P. Haane, H. Fokkens, Jos van Weerden; C: G. Smits and J. Roymans; D: Kelly Fennema; E: Gerrit van Duuren, Natasja Moses, Dieke Wesselingh. Photos H. Fokkens.

Schalkskamp area in the present chapter. The oldest features date to the end of the Early Bronze Age, an elusive phase in Dutch archaeology in terms of settlement archaeology. In later periods, habitation returns periodically to the area, but there is no continuous settlement. The longest period of abandonment appears to be after the Late Roman and Early Medieval period until the Late Middle Ages.

## 5.2 PITS AND WELLS OF THE EARLY BRONZE AGE – MIDDLE BRONZE AGE: THE FIRST SIGNS OF HABITATION IN THE SCHALKSKAMP AREA

We have very little evidence to reconstruct the landscape around 2000 BCE in the Oss area. Since there are very few signs of habitation from that period, we assume that most settlements were situated more to the north, near to the river Meuse. We know a few early pottery complexes from that



Figure 5.3 plan of all features in the Schalkskamp quarter. Drawing S. van As.

region. Settlements from the Early Bronze Age and the Middle Bronze Age A are virtually unknown in the Netherlands, despite claims to the contrary (Fokkens *et al.* 2016). We generally find only pits with Barbed Wire pottery, but house plans have not been archaeologically identified. Just like in the Mikkeldonk district, also in Oss-Schalkskamp a cluster of pits is dated to the transition phase between the Early and Middle Bronze Age (c. 1800 BCE). The features are mainly pits and wells, and some post-pits (cf. section 14.4.1). The find material from these features was scarce, but one large pit contained a Barbed Wire Beaker sherd (fig. 14.39; feature 1029.5), while an adjacent pit contained one Middle Bronze Age A Hilversum sherd (1029.12). Much to our surprise, the latter proved to be a well lined with small oak planks (fig. 14.31). We radiocarbon dated one of the planks and a pole from the well with Barbed Wire Beaker sherds, and both confirmed the dates suggested by the pottery typology: 1881-1749 cal BC for the pit with Barbed Wire Beaker pottery, and 1868-1847 cal BC (3.8%) or

1775-1666 cal BC (91.6%) for the Middle Bronze Age A oak planks from the well.

In theory, the well with oak planks could be a hundred years younger than the well with Barbed Wire Beaker sherds in it, but the fact that they are so near each other, suggests that they were (almost) contemporary. If we take the overlap between both dates with the highest probability as a point of departure (1881-1749 cal BC/ 1775-1666 cal BC), then both pits could have been dug around 1775-1749 cal BC. So, both pits probably testify to habitation at the end of the Early Bronze Age or the start of the Middle Bronze Age. All of these large pits were open for a while, probably even after their abandonment, but the finds indicate that they were filled-in already during the Early Bronze Age or the Middle Bronze Age A.

It is not clear whether the other pits in the immediate vicinity that also contained Bronze Age pottery date to the same period. The problem is that Middle Bronze Age pottery does not allow for relative dating (Fokkens 2005). Moreover, undecorated



Figure 5.4 Early Middle Bronze Age features in the Schalkskamp quarter. Drawing H. Fokkens.



pottery can date to the earlier phases just as well as to the later. One other feature (1029.14) contained a decorated sherd, a fingertip impressed cordon just below the rim. These occur throughout the Bronze Age, but are more frequent in the earlier periods. This is at least our experience in Oss, where none of the Middle Bronze Age B features yielded cordon decorated sherds. So, I suggest that at least this feature also dates to the period between 1775 and 1749 cal BC.

If we look at the features that can be assigned broadly to the Bronze Age, it is clear that the eastern part of Oss-Schalkskamp has the highest density of features (fig. 5.4). The five wells and many other pits suggest the presence of one or more farm yards in the vicinity, but we have found no evidence of the farms proper. Structure 140 (cf. section 14.2.3) was first interpreted as a possible house plan, but discarded because it was too irregular and had no elements that could be visualized as a proper roof-bearing structure.

In theory, the other pits that can be attributed to the Bronze Age could date to the Middle Bronze Age B, but there are not so many. Thus, I assume that after 1700 BCE habitation shifted to other locations away from the excavated area.

### 5.3 THE LATE BRONZE AGE – EARLY IRON AGE

The Schalkskamp area must have been largely unoccupied during most of the Middle Bronze Age. Clearly defined Late Bronze Age complexes are lacking as well. One well in the central part (1005.437) yielded a small complex of sherds that could be dated either to the Late Bronze Age or Early Iron Age. Also, a small complex of wells (1027.52, 1027.51) in the north-east is assumed to date to the Late Bronze Age or the beginning of the Early Iron Age (fig. 5.5; cf. section 14.4.2). The wells were abandoned and filled-up slowly, but probably were filled in completely by the end of the Early Iron Age, around 550 BCE at the latest.



Figure 5.5 Early Iron Age features in the Schalkskamp quarter. Drawing H. Fokkens.



Figure 5.6 Late Iron Age features in the Schalkskamp quarter dated to phase I (275-225 cal BC). Drawing H. Fokkens.

#### 5.4 THE MIDDLE IRON AGE

Habitation remains from the Middle Iron Age are entirely absent. Since we excavated the entire area, we can be fairly sure that there was no settlement from this period. Still, Middle Iron Age features are not too far away. Structures and find complexes from this period were found in the Mettegeupel district (chapter 6), which were only c. 300 – 400 m away to the east, and also in the Mikkeldonk area, 300 m further to the west. It is possible that Oss-Schalkskamp was used as arable land in this period, but this is not recognizable in the archaeological data.

#### 5.5 LATE IRON AGE SETTLEMENT: ABANDONMENT OR DISASTER?

As it seems, the area was not settled again for 300 years, until c. 250 BCE. Around that time a period of concentrated settlement began, enclosed by a ditch system. This period of settlement probably lasted some 125 years, from c. 250 to 125 BCE. Around 125 BCE we think that a temporary end came to the habitation,

possibly by a natural disaster or man-made destruction, like a raid.

The start of this long period of habitation (c. 250-125 BCE) is represented by a well (995.400). This is a large wickerwork well surrounded by a structure, which dates to phase I at the beginning of the Late Iron Age (fig. 5.6; 275-225 BCE; cf. section 14.4.5). This does not mean that in the 300 years since the previous period of occupation the area was abandoned. We have no indications that the landscape became forested again, or otherwise turned to 'wasteland', at least in functional terms. Although supporting evidence is lacking, we assume that the area remained in use for grazing and agriculture. There are no indications that the settled landscape of the Bronze Age or the Early Iron Age was still visible in terms of open pits or standing remains. In fact, that would be highly unlikely. Through oral history or through toponyms, people may still have had 'memories', but probably in the form of stories about a distant and vague past (Vansina 1985).





Figure 5.7 shows the developed phase of the Schalkskamp settlement, which possibly began shortly after the initial stage depicted in figure 5.6. The nearest Late Iron Age house plan SK143, was found c. 30 m to the west (fig. 5.7). The type (Oss 5) suggests a Late Iron Age date, but later than phase I (cf. chapter 3). It is very well possible that a house from this period was located further to the east, underneath the John F. Kennedybaan. An area of c. 200 m wide has remained unexcavated here.

The enclosed area is interpreted as a settlement enclosure. Ditch F141 is interpreted as an entrance construction with a drove way or road of about 30 m in length, which is bordered by ditches and possibly by hedges. The western part of the ditch system continued outside the excavation limits, but the northern part lies inaccessibly underneath Roman period ditches. The eastern part is clearly visible for more than 130 m. The enclosed area must have measured at least 2.0 ha, but probably more. On the western side of the area, the enclosure ditch was quite substantial, originally over 1 m deep and 3 m wide (cf. section 14.5.1).

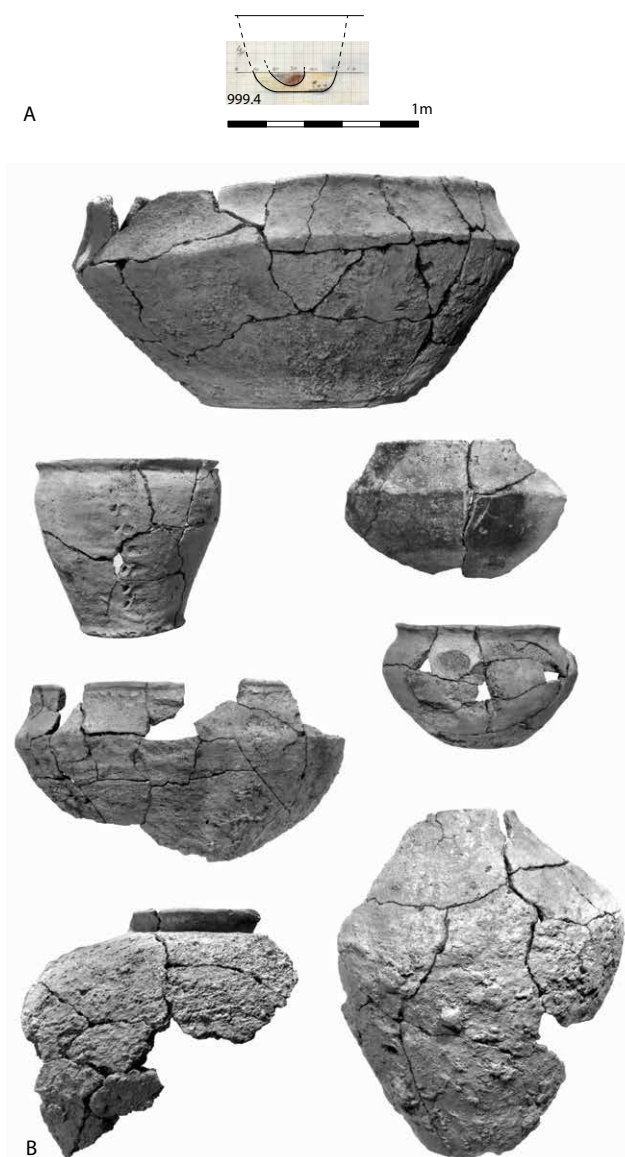


Figure 5.8 Deposition of pots dating to phase J-K of the Iron Age in feature 999.4 near house SK136 in the Schalkskamp quarter. Drawing H. Fokkens.

It is not completely clear which farms were enclosed by this system. The most likely candidates are houses SK137 and SK143, which are both type 5 houses that typologically can be dated in phase K-L (cf. chapter 3; fig. 5.7). However, none of these houses yielded pottery assemblages to support that date. During our analysis, house SK136 also was proposed as a likely candidate, but houses of this type (type 6) are generally younger: it might be a successor, rather than from the Late Iron

Age. Given their proximity, the contemporaneity of SK137 and SK143 is not a realistic option within the model that I use, and one must succeed the other.

The number and distribution of granaries indicated on the plan of this period (fig. 5.7) gives a few indications for another yard, since none of these granaries is well dated. There is room for another yard on the east side (Y3), but following that scenario the farm belonging to that yard would be located underneath the John F. Kennedybaan and hence un-excavated. For that reason I have indeed projected a farm here. During our analysis, we thought an entrance system to a type 4 house was visible in this area (SK142), but we have discarded it because there was not enough supporting evidence (cf. section 14.2.3.).

Though we do not know very much about the period that this ditch system was in use, or even its function, we know much more about its abandonment. In the 2<sup>nd</sup> century BCE, many features within the ditch system were filled in, as were the ditches themselves. There was even a shallow ditch (1005.198; cf. section 14.4.4; fig. 14.63) that was completely paved with potsherds from this period. This one feature yielded a complex of 1144 potsherds. There was also a deposit of seven complete pots found in a narrow pit (999.4; fig. 5.8) within the perimeters of house SK136. The pots were probably not related to that house, but to the one subsequently built there. It therefore appears that the 2<sup>nd</sup> century habitation ended with destruction, as well as the discarding and deposition of pottery. This material may originate from one of the farmsteads.

In addition to pottery, sling pellets, loom weights and La Tène glass bracelets were discarded in the ditches. A deposit of over 200 sling pellets was placed where the ditch bends towards the northern part (feature 1007.70). Several other sling pellets were found spread over F144, while this ditch also yielded vast amounts of pottery from the end of phase J or the beginning of period K (c. 200-100 BCE). A forge was located in the ditch after it was abandoned. A piece of charcoal in it was <sup>14</sup>C-dated and also gave a date in the 2<sup>nd</sup> century BCE (212-88 cal BC; cf. section 14.4.3). Most features have in common that they were abandoned and partially filled-up naturally before being backfilled.

One might ask about the people who deposited these large quantities of material in ditches and features: were they the people who left, or maybe even were expelled and murdered, or were they the next group of inhabitants? This question is of course not easy to answer, but there are some indications that there was more to these depositions than a simple

relocation of farm yards and the subsequent abandonment of the old farm. One hint about the people who deposited this material comes from the fact that we found so many sling pellets and also a cache of them in the corner of the enclosure ditch. Another is the fact that a small burial monument was erected within the enclosure: this certainly was not a normal custom, even though it was not unique. Thirdly, there are only a few deposits from this particular period, and finally we know from other sources, that the surface was still full of potsherds a century later.

The sling pellets may indicate defensive action, for instance against a raid. Though the enclosure ditches are not classified as defensive structures, in case of raids they would be logical places to stand and fight because they formed a barrier. The burial monument (indicated as R206; fig. 5.7) was small, being only 5 m in diameter. It consisted of a circular ditch around a cremation burial of a person at least 18 years old (cf. section 14.6). Whether there also was a mound on the monument is difficult to say as nothing was left. Since this monument was built over again (probably) less than 100 years later (see below), we think that originally there may have been only a very low mound, or none at all. Of course, this burial may not be related to a second century raiding event at all. Yet it is strange that we find a single burial from that period in a settlement. Generally the dead were buried in small cemeteries somewhere outside or near the settlement proper, like in Oss-Mikkeldonk (chapter 4), or in Oss-Ussen (Van der Sanden 1998). The burial mound cannot be dated to the Roman Period, because in that period it was cross-cut by a settlement enclosure ditch (Wesselingh 2000, 175-177). If we assume for a moment that such a burial may have related to a raid, and the possible killing of people, this would imply that there also were some survivors: the dead do not bury themselves. This may also be concluded from pottery deposits like the deposit of seven burned pots in feature 999.4, and possibly also the 'burial' of pot sherds in ditch F165. For the latter, I have little other explanations beyond that it was dug especially for the discarding of pottery. Potsherds were neatly laid out on the bottom of this shallow ditch.

But not all pottery was 'buried' after 'the event'. We know this because of the data that resulted from the excavation of house SK134. On the basis of ceramic typology we dated this house initially to phase J/K of the Late Iron Age. This was very strange because the house type (8) so far had never been dated to the Late Iron Age, only to the Roman Period. When the dendro-chronological date of the central posts of the house

became known, this solved our problem: the house was indeed built in the Roman Period, probably in 17 AD. This means that the pottery in its wall trenches must have been laying around for a century before it became embedded in the posts of the farm that was built on the same spot. In the context of what was discussed above, this sequence becomes understandable. The 2<sup>nd</sup> century BCE farmstead that was present in this area was abandoned, maybe even destroyed, and vast amounts of pottery and other objects must have been laying on the surface. This suggests that the enclosed settlement that existed in Phase I and J probably came to an abrupt end between 175 and 125 BCE, possibly even as a result of a raid and subsequent destruction. There are no clear signs of burning. The remains were left on the surface, and despite the presence of some isolated deposits of material, the site may have remained unoccupied until the beginning of the Roman Period.

That does not mean that the land was unused, because we know that the abandoned enclosure ditch was later used for producing iron in a smithing hearth (feature 1006.34; Brusgaard *et al.* 2015; cf. section 14.4.3). From its location, it is clear that the smithing hearth was placed in the then dry and abandoned ditch, which was filled already with potsherds and other debris. Apart from that, the smithing also produced some 20 kilos of iron slag, which was lying around in the ditch. This is why we know that the ditch was still open at that time. Although we found no evidence for the smith's tools (e.g. an anvil, a heat shield, or bellows), we are able to reconstruct the activity area based on the forging debris and associated features. The smithing hearth was a large, probably unlined hollow, positioned on a naturally filled up layer of the ditch. The presence of hammerscale in the hearth suggests that hammering took place alongside the hearth, or that this material was discarded in the hearth from the clearing out of the forging area. Interestingly, the hearth was most likely multi-purpose. By people whose house were located outside the excavated area, the large hearth was used for all craft needs, including iron working, bronze working (albeit on a smaller scale), and possibly the occasional pottery production.

When was the Late Iron Age enclosure ditch filled-up then? A clear date is impossible to give, but there is an indication because the western end of house SK139 lies above ditch F144. That ditch must have been filled-up by then, or just before, possibly in phase L, in the last decades before the beginning of our era.

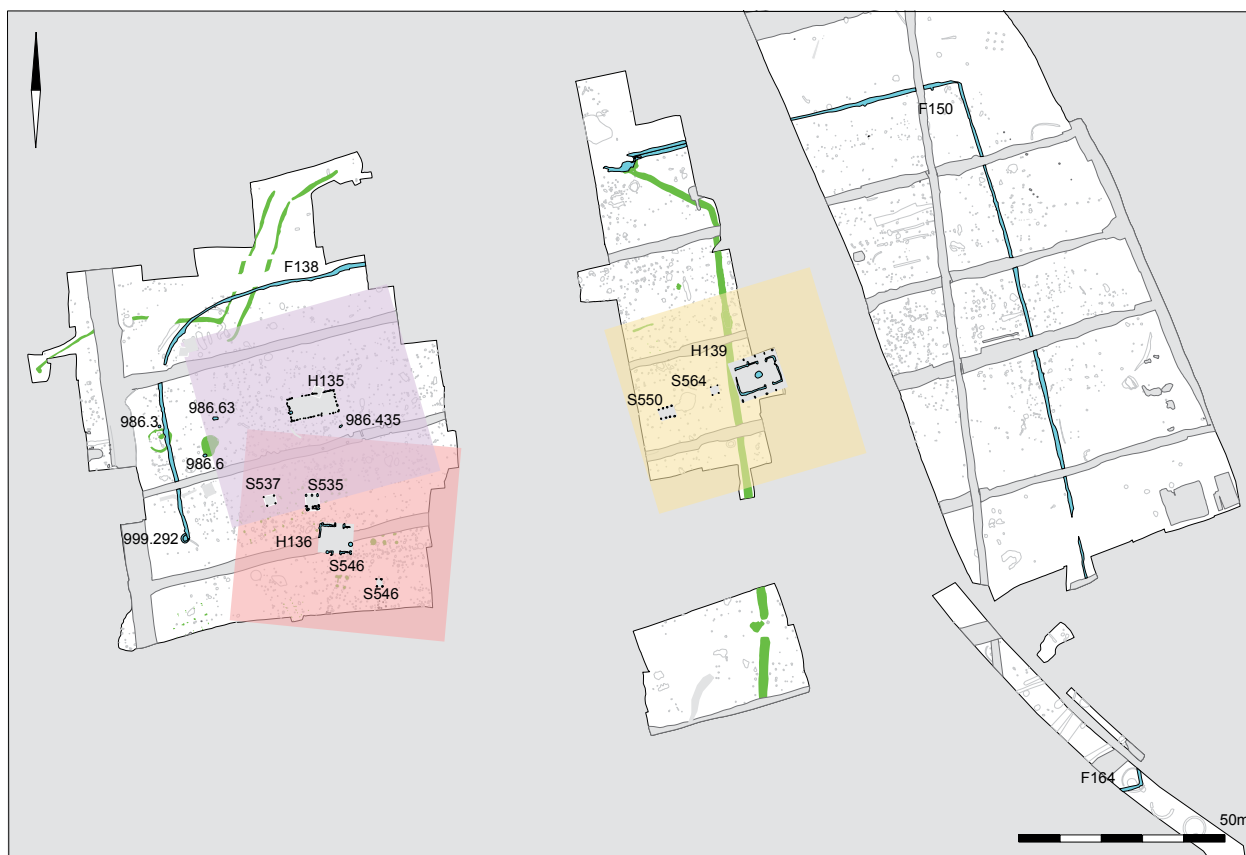


Figure 5.9 Structures and features in the Schalkskamp quarter dating to the Late Iron Age between 75 BCE and 17 AD. Drawing H. Fokkens.

### 5.6 THE TRANSITION FROM THE IRON AGE TO THE EARLY ROMAN PERIOD

The structures and features dating to the Roman Period (fig. 5.9, 5.10) were discussed quite extensively by Wesselingh (2000). Her research was supported by the analysis of pottery complexes by the ceramics specialist Van Enckevort. The following paragraphs are to a large extent based on Wesselingh's work, though I deviate from it on a few points.

The distribution of features and structures dating to the end of the Late Iron Age or the start of the Early Roman Period (phase L), shows that habitation extended to the east of the limits of the previous Late Iron Age enclosure (fig. 5.9). House SK139 was built almost on top of the Late Iron Age enclosure ditch, implying that the ditch was completely filled-in at that time. A new ditch system (F138, F150, and F164) was laid out roughly along the same orientation of its Late Iron Age predecessor. Yet from the location and the trajectory of this system it is clear that little

to nothing was visible or remembered of the old settlement enclosure. Only the general location of the previous settlement was re-used again. Moreover, the new ditches also cross-cut the Late Iron Age burial monument that was present here. Given the fact that burial monuments generally were respected in later periods, this may mean that the monument was not very visible, and that the new inhabitants had no memories of or consideration for their predecessors. In our view this means that the later people here were not related to the previous inhabitants, not even in a distant manner. The new habitation phase was not a simple continuation of the previous episode. There was a real gap in between the periods.

The new ditches were relatively shallow and narrow, and must have been in use only for a short period of time. As a ditch they are not more than a demarcation of the settled area. Only if they were accompanied by hedges could they have formed a physical barrier. It is presumable that the enclosure was

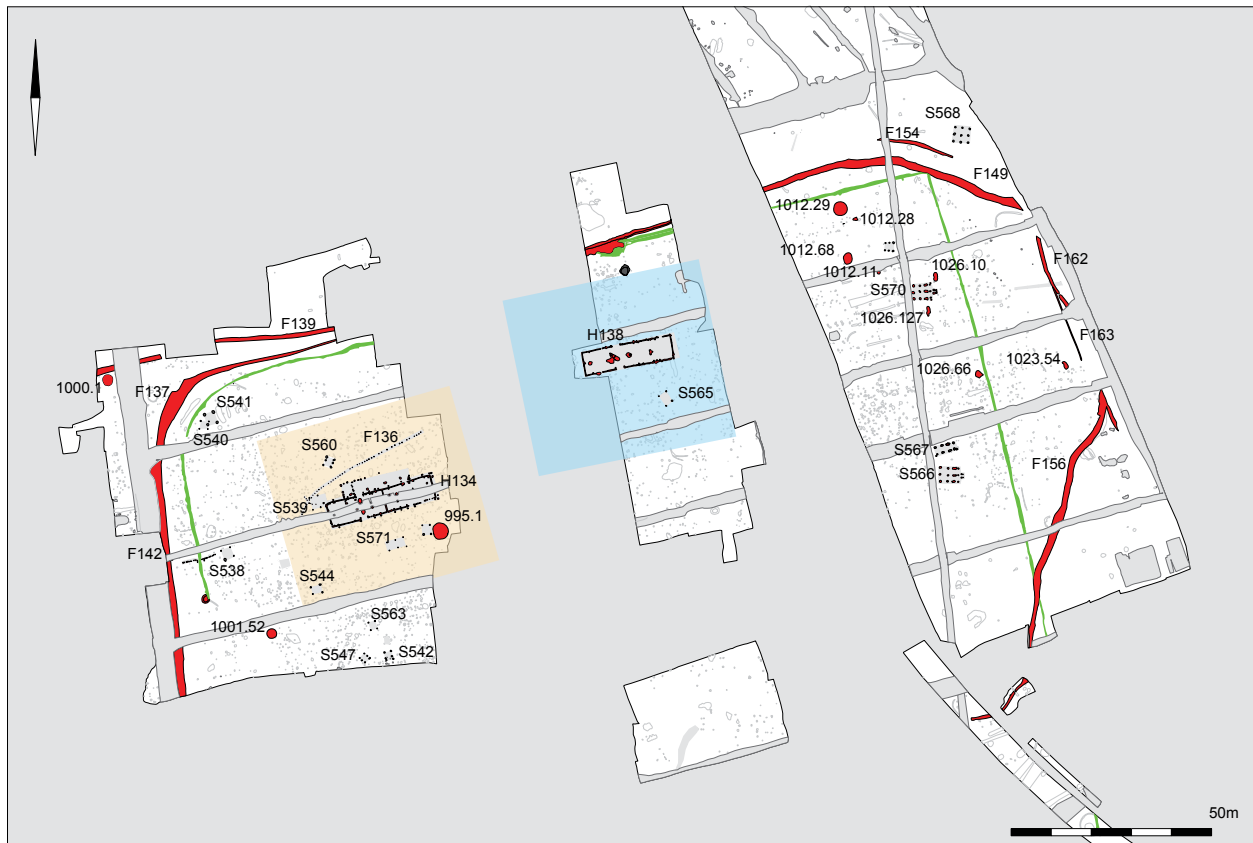


Figure 5.10 Structures and features in the Schalkskamp quarter dating to the Early Roman Period between 17 AD and 50 AD. Late Medieval ditches (black). Drawing H. Fokkens.

laid-out in phase L, or perhaps at the end of phase K, around 75 BCE. The entire system must have enclosed an area of at least 2.8 ha (fig. 5.9). The houses that were situated inside this enclosure were SK139, SK136 and SK135; all of the houses were type 6. They are so small that they possibly do not even classify as farms, and it is difficult to imagine livestock and people fitting in structures with maximum dimensions of 10 m long and 5 m wide. Since it is almost impossible that SK135 and SK 134 were contemporaneous, SK135 must have been dismantled before 17 AD, when SK134 was built. This pinpoints the episode under discussion between 75 and 0 BCE, or up to 17 AD. SK134 then would be the immediate successor to SK135.

The position of SK136 remains a bit problematic. In chapter 12, we discuss the difficulties in dating this house, and if we look at its plan (fig. 5.9), it is clear that its orientation is different from that of SK135 and SK139. Its orientation is more in line with the older outbuildings that belonged to phase J/K, but it

is also younger than outbuilding S543 of that period. Therefore, house SK136 probably is the earliest house in this final episode of habitation in the Late Iron Age, and probably was then replaced by SK135.

### 5.7 THE EARLY ROMAN PERIOD

In 17 AD, the trees were felled that were used to support the roof of the farm SK134. This is a type 9 house that – like type 8 – derives much of its structural stability from very deeply set central posts (cf. chapter 3). SK134 and SK138 possibly were contemporary farms within a new and more irregular enclosure than the enclosure from phase L (fig. 5.10). Based on the pottery, SK138 was dated to phase M (0-75 ACE), like SK134. The well next to the SK 134, feature 995.1 (Wesselingh 2000 cites this well as P607), was dated to phase M as well (cf. section 14.4.5; Wesselingh 2000, 177: table 54). This seems to suggest that both houses were contemporary and were built shortly after the start of our era. A little problematic





Figure 5.11 Late Medieval ditches (black) following the Roman ditch system in the Schalkskamp quarter. Drawing H. Fokkens.

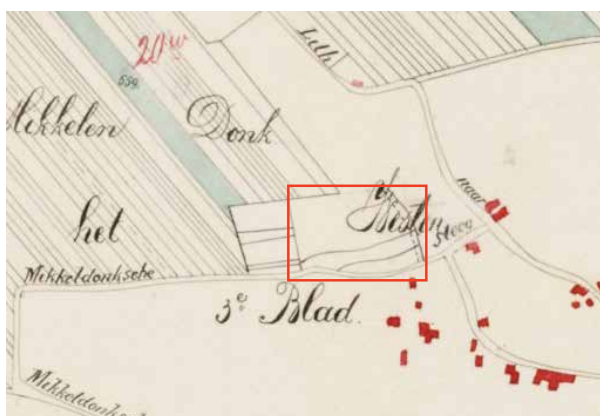


Figure 5.12 Cadastre map of 1811 (left) and 1879 showing the parcelling of the Schalkskamp area oriented in the same directions as the Roman period ditch system. Source: [www.watwaswaar.nl](http://www.watwaswaar.nl), now part of: Beeldbank van de Rijksdienst voor het Cultureel Erfgoed [www.beeldbank.cultureelerfgoed.nl](http://www.beeldbank.cultureelerfgoed.nl)).



is SK144, which was not recognised in the field, but during post-excavation analysis. The only aspect that registers this as a house, is a row of central posts. The wall posts are much less clear. If it is a true house, it should be the successor to SK135 and the predecessor of SK134. Yet, there is hardly any temporal room left for a phase in between SK 135 and SK134. This leads to the conclusion that SK144 may be only a row of heavy posts to the north of SK134 with another function than supporting the roof of a house. This is the reason that we have left SK144 out of the plan in Figure 5.10.

This small settlement was surrounded by a ditch system, like in the previous episode. On the eastern side this enclosure ditch has a much more irregular trajectory than its predecessor, which once more demonstrates the open and not very structural character of these Roman Period ditches. According to Wesselingh (2000, 180-181), the system was re-dug already after some 20 years, and was abandoned around 50 AD.

Three very similar granaries lie close to the eastern boundaries of the new enclosure and they belong to this episode of habitation (fig. 5.10; cf. section 14.3.7). S566, S567, and S570 are outbuildings constructed on a base of nine posts. In all cases, several other posts reinforced the structures, and S566 and S570 even had small post configurations that can be interpreted as ‘steps’ for accessing the outbuilding. S567 was largely intersected by a modern ditch, but is presumed to be a similar type. S566 and S567 probably were each other’s successors, implying that two of these large granaries were possibly contemporaneous. The nine-post outbuilding in the north-east (S568) is probably of the same period, but is situated outside the enclosure ditch. It is intersected by the Late Medieval ditch F159.

The features, structures, and finds demonstrate that the Roman Period Schalkskamp settlement was a small hamlet of two farms that existed from the 1<sup>st</sup> century BCE until the 1<sup>st</sup> century AD, possibly some 100 years. We think that one farm easily could last that long if it was well built (cf. chapter 3). The area was abandoned around 50 AD and was not used as for habitation again until the Medieval Period, as far as we know. Ditches were left open and the post-built structures decayed on the spot. Where did the inhabitants go? This question can of course not be answered, but we can interpret the developments at Oss-Schalkskamp in close relation to the nearby enclosed settlement of Westerveld that was inhabited in the same period, but lasted longer. For a further discussion of Oss-Schalkskamp in a wider context in this period, we refer to Wesselingh (2000) and to chapter 11.

## 5.8 THE LATE MIDDLE AGES RE-USE OF THE SETTLEMENT AREA

In the Late Medieval Period, when the area was reclaimed in the 13<sup>th</sup> or 14<sup>th</sup> century AD after a long period of disuse, the Roman Period features possibly were still visible. This is evidenced by the observation that the Late Medieval ditch system appears to follow the Roman Period enclosure ditch quite closely (fig. 5.11). In our view this implies that the Roman Period ditches were still visible, and may be even filled in with the soil from the newly dug ditch.

On the first cadastre maps of 1811 and 1879 (fig. 5.12), this same pattern is still visible. The maps show a square area of fields, bordered by trees, which is the very place of the Roman Period settlement. This is situated at the northern end of the reclaimed area of Oss. North of this area there are low lying grasslands that have been parcelled by ditches, but they are not part of the arable fields.

Figure 5.13 16th Century cup, probably with the weapon of Gelre-Gulik. Photo J. Paupit; document provided by R. van Oosten.



### 5.9 AN ANECDOTE ABOUT THE EARLY MODERN PERIOD

Other archaeological data from the Late Middle Ages and early Modern Period were recovered from the south-eastern part of the Schalkskamp district (excavation trench 1009). Several small ring ditches were found here, marking an area arranged for the keeping of grain-stacks. The ring ditches are presumed to keep mice from the hay or grain stacks, and upturned pots often were used to capture the mice. Other examples are known from Oss-Brabantstraat (De Leeuwe 2011, 75), Oss-Horzak (Jansen *in prep.*), and Kerk-Avezaath (Verhoeven and Brinkkemper 2001, 412-413). At the latter, complete pots were occasionally found in the ditches. The pots in Avezaath even preserved the skeletal remains of mice. One of the ring ditches in Oss-Schalkskamp also yielded the bottom of an early 16<sup>th</sup> century pot. The top of the pot was missing, probably due to ploughing or other post-depositional processes. However, the decoration on the wall of the pot remained largely visible. It depicts the paws of an animal, attached to the pot as if it were its body, and holding a coat of arms in front of the pot (fig. 5.13).

The pot was identified as a bear-beaker, due to the three toes of the paws. This typical pot and its method of production can be dated between 1500-1575 AD. The coat of arms was only partly visible, and it depicts the hind legs of two heraldic lions, which is the coat of arms of Gelre-Gulik (often Guelders and Jülich, or Juliers). Based on the pottery type and context, the pot can be dated to the first half of the 16<sup>th</sup> century (personal comment dr. Roos van Oosten). It is therefore likely that the pot ended up in Oss during 16<sup>th</sup> century raids on Oss, perhaps under the rule of Maarten van Rossum, Marshall of Gelre. The heraldic sign is not that of the local area, but in fact of the area's sworn enemy. The joke we have 'read' in this context and the find, is that the enemy beaker was only fit for catching mice. Every person seeing this probably would have understood the joke.

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## 6. Excavations in the Mettegeupel district (1993-1995)

H. Fokkens

### 6.1 BACKGROUND

Previous to our fieldwork, little was known regarding the Mettegeupel area, which lies to the east of Schalkskamp. Earlier field surveys, carried out by local archaeologists had revealed only a few finds of Iron Age pottery in this area. In the centre of the area, one of the local archaeologists, Gerard Smits, had found some fragments of La Tène bracelets. We had only two years to investigate an area of about 14 ha before construction would begin in Oss-Mettegeupel. Nowadays that would be no problem, given the obligation of the contractor to pay for such work under the terms of the Malta Convention. But in the early 1990s we had meagre financial means, and all work had to be done by unpaid students. In terms of capacity, we generally could only excavate as much as 1 ha a year.

The strategy for the Mettegeupel research was adapted from the 'landscape' approach that we had adopted in the early 1990s. Since the 1980s the emphasis of archaeological research had shifted from a predominantly site-oriented approach to an archaeology of the cultural landscape. Our research objects became about more than just the site itself. We wanted to know how they were related to each other and 'what' happened in between. We also wanted to excavate open spaces. This meant a change of strategy, and the excavations in the Mettegeupel district was our first test-case.

#### 6.1.1 *The French method*

In order to be able to carry out the new landscape approach, a systematic prospective survey was carried out to assess the archaeological values in the larger part of the Mettegeupel area. This method uses relatively narrow trenches and was inspired by the French '*methode sondage à cinq pourcent*', which had been successful in surveying enormous areas in the Lorraine and the Compiègne region among others. We were introduced to this method during a seminar in Paris organised by Marc Talon (AFAN) and Vincent Blouet, then working in Metz. A field trip to Metz showed us how this worked in practice (Fokkens 1996; Fokkens 2007). The *methode Lorraine*, as it was also called, involves excavating parallel and alternating survey trenches of only 1.5 m wide, 20 m long and with a distance of 20 m in between the trenches (fig 6.1A and B). This approach can survey 5% of an area, and one gets a very reliable sketch of the archaeological traces present. This method allows archaeologists to make well founded choices in selecting areas to excavate (and why), while equally offering good insight into the distribution of features over the whole landscape.

In 1993 we planned to apply this method for the first time to survey the research area in the Mettegeupel district. The idea was to use a sample pattern of trenches just like they did in France, only we would excavate a trench every 10 m instead of every 20 m (fig. 6.1B), then we would leave a 10 m space before excavating a

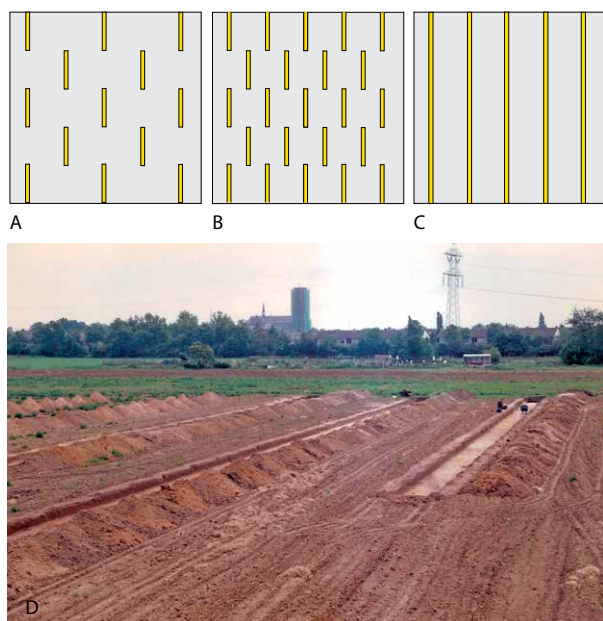


Figure 6.1 A: The *méthode Lorraine à 5%*; B: the Dutch application, 10% coverage; C: the Leiden method, 10% coverage; D: the method applied in the field. Based on: Fokkens 2007, 65; photo H. Fokkens.

trench. We would proceed in a “stitched grid line” until reaching the end of the parcel, and could achieve a higher sample-rate than they used in France. The next grid line, situated 10 m to the east of the first line, would have an alternating pattern in contrast to the first grid line. Starting with 10 m of open space, the first trench was excavated from the same Y-value at which the first trench of the first grid line ended, resulting in the intended overall grid pattern (fig. 6.1B).

We started excavating with these clear ideas and methods in the summer of 1993. But, after the first hour, we needed to adjust our method. The operator of the hydraulic digger had a 1.5 m wide bucket, and the problem was that we worked in grassland. It took so much time and energy for the operator to end a trench and then to dig a new one 10 m apart, that he thought it would be much easier to just continue digging. As this only would improve the quality of our observations and made measuring much easier, we agreed. This meant that instead of establishing a new measuring grid in every 20 m trench, we could use the trenches as long gridlines (fig. 6.1C). Another advantage was that it was much easier to maintain the right excavation level in these long trenches with the machine’s help, so the overall quality of the excavation

data improved. What also made the method efficient is the fact that one person could easily clean the freshly excavated surface and indicate any features in front of the digging machine. We also introduced digitisation with aid of an infrared theodolite, as a fast and adequate method for this type of operation, especially since there were not so many features.

The method was faster than we initially thought: the machine would excavate between 400 and 500 m of trenches per day, removing c. 60 cm topsoil. In two weeks we had surveyed samples of approximately 6 ha of the entire research area (fig. 6.2). Such prospective trenches expand the possibilities of archaeological and landscape research over field survey and/ or hand auguring (or coring), because peripheral areas with low densities of features are very difficult to discover without test trenches. In the trenches, features were not necessarily excavated, but after documentation they were left for later research. This way, ditch systems (e.g. field boundaries) can be traced and followed over long distances, small cemeteries and sanctuaries can be discovered, and the dispersed settlement pattern of the prehistoric period can be investigated. Of course these trench surveys have only an indicative function. On the basis of these results, locations of preferably more than 1 ha were chosen for excavation, including *sites*, and areas outside the settlements and cemeteries.

Digging of prospective trenches is, in my opinion, the best strategy for identifying archaeological traces of the cultural landscapes of the past. This method enables the exploration of off-site areas, sites that are unevenly distributed across the landscape, or those that are hard to detect by coring, since they likely lack dense concentrations of finds. Coring is useful for detecting sites in hidden Holocene wetlands and for establishing soil conditions, but it can never be used to obtain conclusive evidence of the absence of sites. This must always be determined by digging survey trenches, which is therefore advocated as the best method to start with (Fokkens 2007).

#### 6.1.2 Phase 2: excavation

Because only a few finds were known from this area prior to our research, we expected that it had not been inhabited densely. However, when the survey of long shallow trenches was finished, a completely different picture appeared. Indeed, the comparatively low lying north-west area contained no features at all, neither did the area to the south (fig. 6.3). Both regions had only a shallow ditch system, which dated



Figure 6.2 Plan of the excavation trenches against the background of the modern Mettegeupeel quarter. Most of the roads were not there yet when we excavated. In 1995 only Gulden Huis, Kasteel and Bourgondiestraat were present. Red: dark red: survey trenches phase 1 1993; light red: excavation 1993; green: excavation 1994; blue: excavation 1995. Drawing H. Fokkens, S. van As.

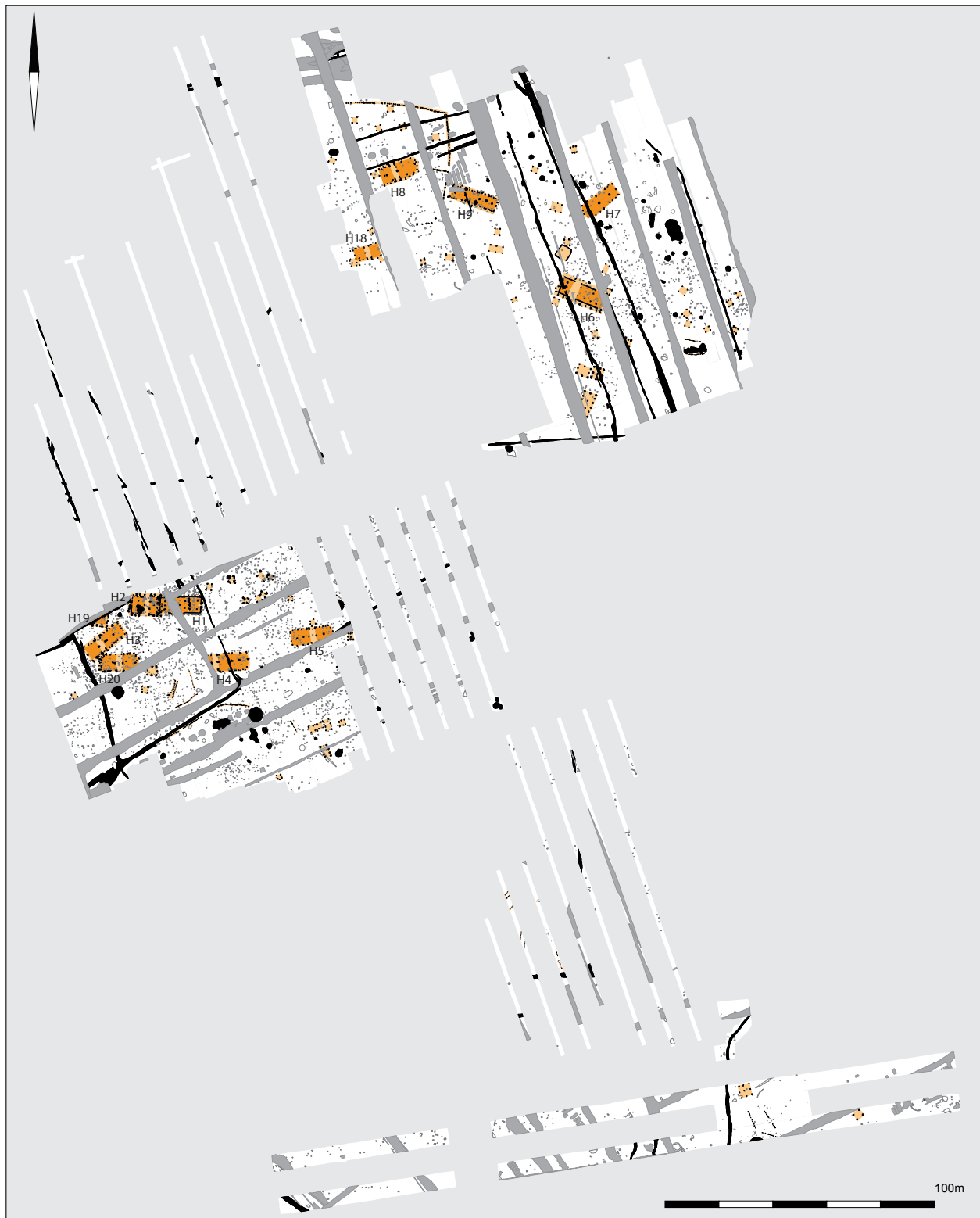


Figure 6.3 Plan of all features in the Mettegeupel quarter. Drawing S. van As.



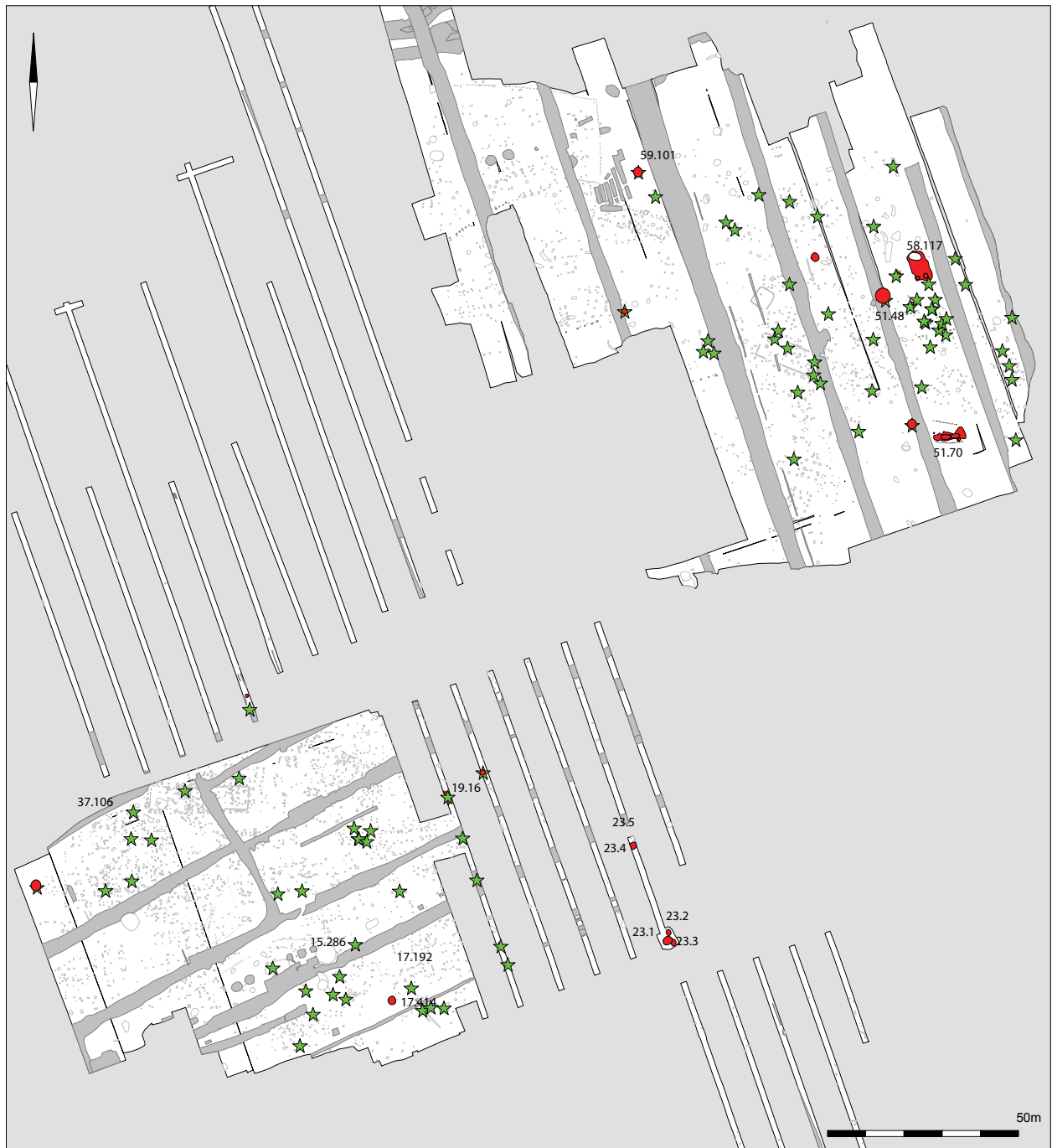


Figure 6.4 Bronze Age features in the Mettegeupel quarter. Red: larger Bronze Age features. Green: all features with pottery dating to the Bronze Age. Red circles indicate wells and watering holes. Drawing S. van As.

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		800	A	750	725	B	675	650	C	600	575	D	525	500	E	475	450	F	G	H	300	275	I	250	225	J	175	150	125	K	75	50	25	0	
Yard	House																																		
Y1	MG1																																		
	MG2																																		
Y2	MG6																																		
Y3	MG9																																		
	MG18																																		
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	MG5																																		
	15,347																																		
Y6	MG7																																		
	MG8																																		
Y7	MG3																																		

Figure 6.5 Periodisation of yards and farms in the Mettegeupel quarter. Drawing H. Fokkens.

from the Late Iron Age or the Roman Period. In the western part of the area, however, concentrations of features dating to the Bronze and Iron Age were found, as were ditch systems of the Iron Age and Roman Period. Clearly the trenches were too narrow to prove whether house plans or other structures were present or not.

Eventually it was decided to excavate an area as large as possible in the available time in the north-western area in order to study the nature and meaning of the features. In 1994 we used a different strategy. We did not have enough time to dig test trenches first, so we started with one 10 m wide trench (trench 52; fig. 6.2) in an area where some roads already had been laid out for the new district. When it became clear that this area was densely inhabited, we decided to excavate as much as possible. In the last trenches in 1994 (trench 63), we discovered an interesting farmyard from the Middle Iron Age, but by then our excavation time had run out. In 1995, however, part of that area was still untouched by construction. That accounts for the trenches with high trench numbers (82 and 85) in the north. These latter group of trenches were excavated while we were working at Oss-Almstein and in the south of Oss-Mettegeupel near the Bourgondiëstraat (fig. 6.2). The total area that we excavated at Oss-Mettegeupel was about 3 ha.

## 6.2 DIACHRONIC DEVELOPMENT OF THE CULTURAL LANDSCAPE

The survey and the two large excavation seasons left us with a mass of data that gave an impression of an

area that was settled from the Middle Bronze Age onwards. This does not imply that we have found settlement remains from all periods between the Bronze Age and the Roman Period. There are in fact large gaps. But though we may not have definitive settlement structures from all periods, the area was probably used at all times. I will try to discuss these ebbs and flows of habitation in the following paragraphs, focussing on when habitation started, how the area was left after abandonment, and how new settlement phases connected to older ones. Fokkens (1996) already discussed some of the results of the Mettegeupel research, but these were based on a preliminary reading of the data. In the present chapter we will re-analyse all of the data. In the final paragraph of this chapter we will compare the results of our recent analyses with the preliminary publication.

### 6.2.1 Pits and wells from the Middle Bronze Age

The first occupation phase in the Mettegeupel district dates to the Middle Bronze Age. We do not know how the landscape looked like in that particular period, but since the general area had already been settled in the Late Neolithic and the Early Bronze Age, we assume that it was to a large extent an open landscape, bordering the lower lying river area. The river proper was not very far away: only some 1.5 km further to the north.

Like in Oss-Mikkeldonk and Oss-Schalkskamp, we found several clusters of pits and wells with pottery complexes dating to the Middle Bronze Age, between c. 1500 and 1200 BCE (fig. 6.4). The most distinct and



Figure 6.6 Early Iron Age features (yard 1 and 2) in the Mettegeupel quarter (650-500 BC). Drawing S. van As.

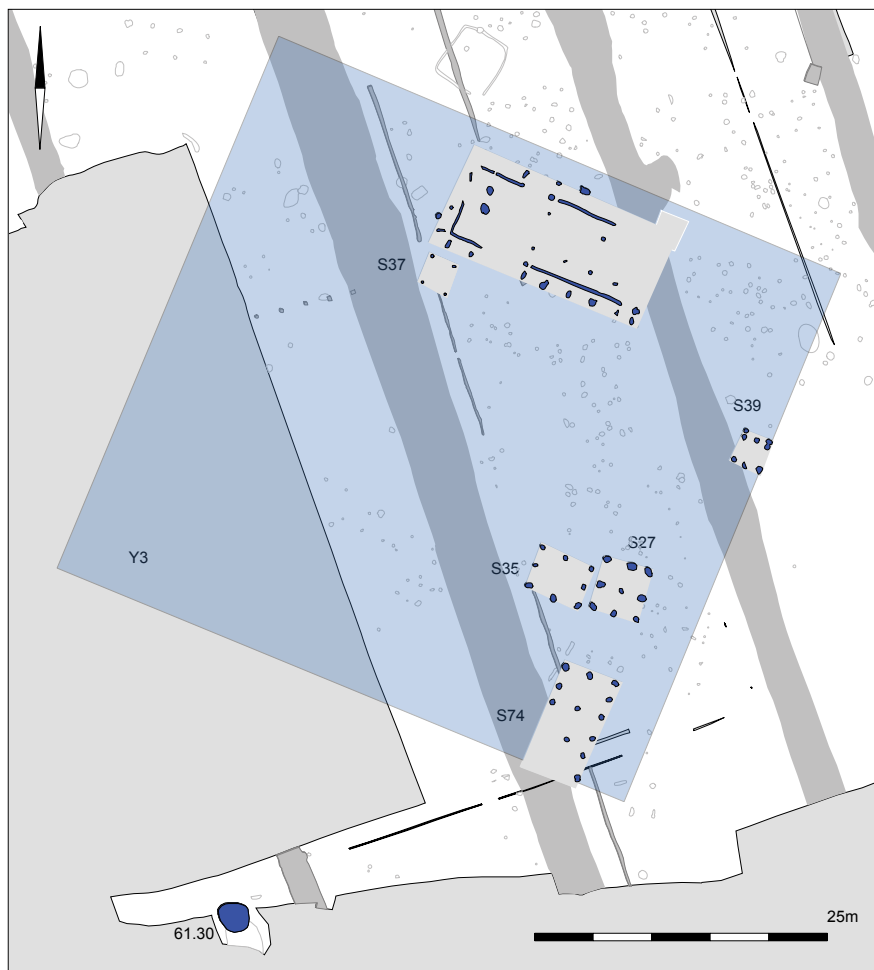


Figure 6.7 Early Iron Age yard around farm MG6 in the Mettegeupel quarter. Drawing H. Fokkens.

largest group of Bronze Age pits (20 in total) was found in the north-eastern part of Oss-Mettegeupel. The cluster consisted of seven large pits with three possible wells and watering holes, and twelve other deep pits (fig. 6.4: red circles). Two large features (58.117 and 51.70) were wide enough for a person to walk so as to get to the water. A fence protected pit 51.70 against animals (cf. section 15.4.1). Most of the larger Bronze Age features contained a considerable amount of pottery, indicating that they were back-filled at some point in the Bronze Age. They probably remained visible as depressions in the landscape, and some features, like feature 58.117 was re-used in the Early Iron Age. This is indicated by a complex of Iron Age pottery sherds found in one of the pits that had been dug later.

The distribution of smaller pits with Bronze Age material (fig. 6.4: green stars) shows that at least the north-western cluster of large pits and wells were not

isolated features. The overall distribution indicates substantial settlement activities. Most probably they were related to one or two farms, but we have found nothing that could be interpreted as such. Most pits and wells were situated at some distance of farms in the Mikkeldonk district, and it is quite possible that the farm associated with these digging activities was situated in the un-excavated south-eastern part of the area. The area probably was not settled in the Late Bronze Age, but was re-used during the Iron Age, as indicated by the Iron Age pit that intersects feature 58.117.

#### *6.2.2 Two farmyards in the Early Iron Age 650-500 BCE*

The Iron Age sequence is complex, since the dating of different houses is not always clear. Figure 6.5 summarises the data described in more detail below. Probably a few hundred years after the previous



Figure 6.8 Three contemporaneous yards 3, 4 and 5) from the second half of the Middle Iron Age in the Mettegeupel quarter. Drawing H. Fokkens.

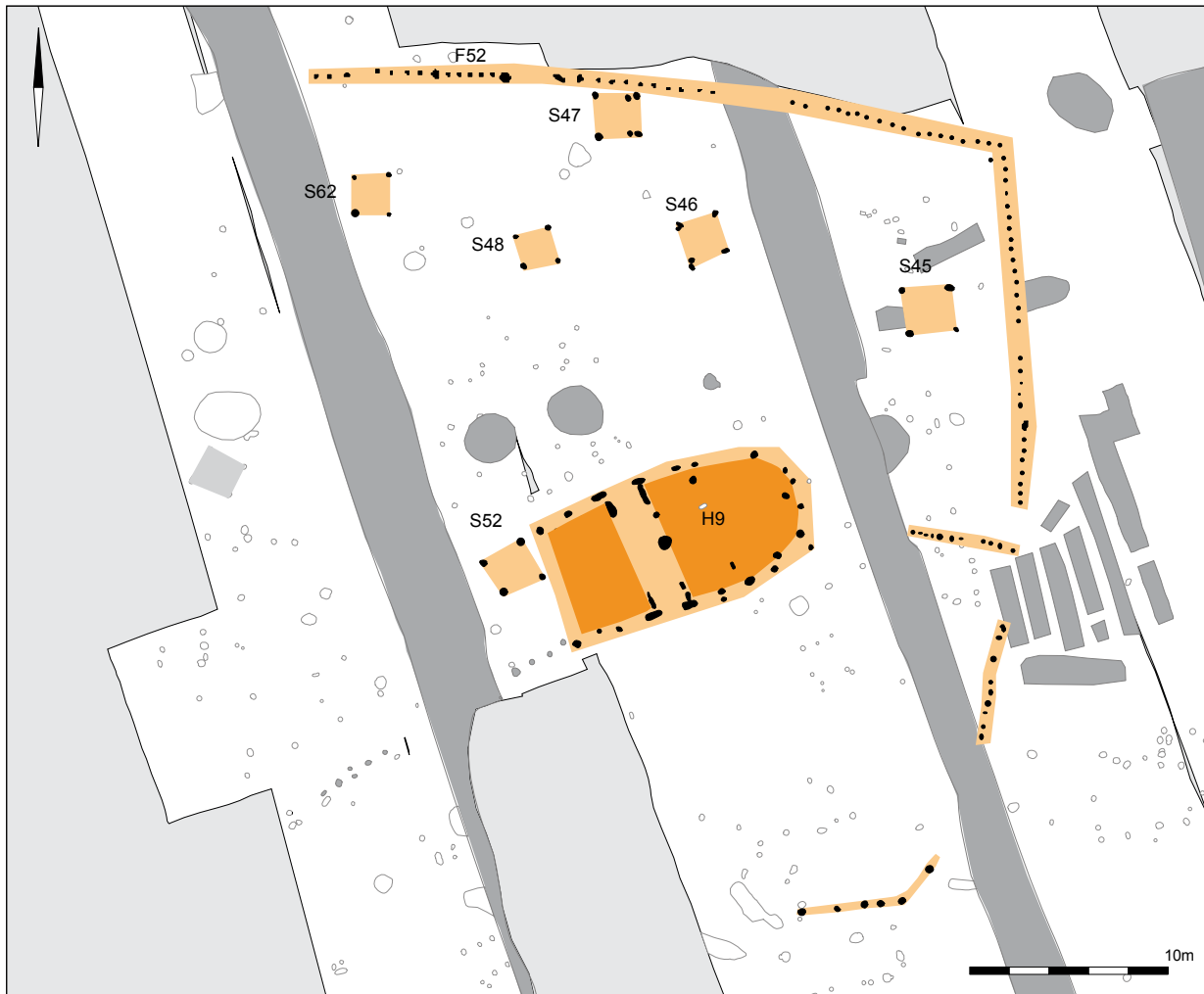


Figure 6.9 Yard 3 around palisaded house MG9 of the Middle Iron Age in the Mettegeupel quarter. Drawing H. Fokkens.

episode of occupation, two farmsteads were present in the excavated area in the Early Iron Age. MG2 (yard 1) was built in the south-western part of the area, and MG6 (yard 2) lay in the north-east (fig. 6.6). Well 35.70 has two tree trunks in it indicating two consecutive phases of use, and analysis of the wood offered a date for MG1 on yard 1 in phase C or D of the Early Iron Age (650-500 BCE; cf. section 15.4.3). For MG6 we have no absolute date, but both farms in principle could have existed contemporaneously.

Curiously, MG2 was replaced after some time by MG1 on almost the same spot (yard 1) and on the same orientation. The dimensions are almost identical as well. The plans somewhat overlap, but none of the actual features (postholes) intersect. It is uncertain

which of the two houses was built first, but we think MG2 was the oldest (cf. section 15.4.3). An extension of either one of both houses is not likely due to the differences in construction techniques and the overlapping short walls. As the plans overlap, we assume that one house replaced the other.

Only two other structures could be dated to the Early Iron Age in the vicinity of MG1 and MG2: granary S1 and well 35.70 (fig. 6.6). However, a cluster of outbuildings was found approximately 75 m to the south-east of MG1 and MG2. The finds from these granaries are all too small to offer a specific date, but at least granary S9 might possibly date to the Early Iron Age (cf. section 15.3.5). A date for the cluster of outbuildings remains highly uncertain. This cluster is peculiar:



seven granaries were placed closely against each other on a similar orientation and with similar characteristics. It is clear that several granaries were successive to others since their plans overlap. Therefore, these granaries probably represent a long period of use.

The second farmstead of this period is farm MG6 (fig. 6.6; fig. 6.7). Whether yards 1A-1B and 2 were contemporary with each other is difficult to say, but it is possible. All houses are of the same type (2) that was only in use during the Early Iron Age. South of MG6 is a cluster of outbuildings in the same orientation as MG6 that appear to demarcate the limits of its yard (fig. 6.7). Though none of these outbuildings produced convincing dating material, S74 is of a type that we so far only have been able to attribute to the Early Iron Age. Therefore, we assume that this cluster is part of the farmyard around house MG6.

### 6.2.3 Three farmyards in the Middle Iron Age 400-250 BCE

When the two farms were abandoned around 500 BCE, people may have moved to another spot outside the excavated area. We lack evidence for habitation in the next 100 years, at least in terms of pottery dating to phases E or F (fig. 6.5). The area became inhabited again in the Middle Iron Age, probably after an interval of what might have been several generations. Probably three yards (3, 4, and 5) were more or less contemporary with each other between c. 400 and 250 BCE (fig. 6.5, fig. 6.8). Interestingly, habitation continued in more or less the same areas as in the Early Iron Age. The best dated house for this episode is MG9 (yard 3), which was dated to phase G-H of the Middle Iron Age (375 – 250 BC). Probably two other farmsteads in the south existed more or less at the same time: subsequent farms MG19 and MG20 on yard 4 and MG 4 and MG5 on yard 5 (fig. 6.8). Both yards were used possibly for 150 years (fig. 6.5).

The yard around MG9 was enclosed by a palisade (fig. 6.9). The palisade consisted of 20 cm thick posts that were set up 50 cm apart from each other. It had a wide entrance in the east, with a part of the palisade leading up towards the house. If there was a western part, it was not visible anymore. No finds were recovered from the palisade's features, therefore the correlation with house MG9 is only based on spatial relations. This phenomenon is quite rare for this period, and certainly unique in the Oss-region. Although the term palisade gives the impression that we are dealing with a defensive system, we think that was not the case. Probably we are dealing with

a heavy fence, and yes, of course this could have had a defensive function as well, but that may have been not its primary function. The fact that the western and southern parts are missing shows that there at least the posts were not dug in very deep.

A number of granaries were found within the enclosed area (fig. 6.9). The granaries had an orientation similar to MG9, and were situated to the north of the house. In short, we seem to have a clearly defined farmyard with most elements considered necessary to define it as a farmstead: a farmhouse, outbuildings, and a perimeter fence. Pits and wells are missing on this yard, but given the experiences in Oss-Mikkeldonk (cf. chapter 4), that is not to be expected, as these often were located just outside the yards. The only pit that may have been contemporary was found about 30 m to the south of the yard. This large feature (63.185) yielded a complex of sherds that could be dated to phase F or G, so it could also antedate this yard.

A much more complex situation is present in the south-west (fig. 6.8). Just like in the Almstein district, there are four farms of type Oss-Ussen 4 that were rebuilt on slightly different locations. They probably represent two contemporaneous farmyards (yard 4 and 5). The dating model (fig. 6.5) shows all possibilities for dating, but also the complexity of the picture: only a few houses have a date that is restricted to a few decades. In this model, the best dated house is MG3 with a *terminus ante quem* dated to phase J, which marks the next episode of Iron Age habitation (fig. 6.11). MG3 is located in the small space between MG19 and MG 20, therefore the latter two houses must be older. The orientation of houses MG4, MG 5, MG 19, and MG 20 is quite similarly east-west, while house MG3 has a completely different orientation. We assume that some time elapsed between the abandonment of the MG4-5-18-20 cluster (yards 4 and 5) and the building of MG3 on yard 7. Since pottery from yards 4 and 5 shows that they were in use from phase G until I (MG5, MG19), we suggest that yard 6 and 7 developed at the beginning of the Late Iron Age (phase I/J).

With respect to the succession between the row of type 4 houses on yard 4 and 5, their relative position gives some helpful clues. MG4 may have co-existed with MG19, but it is too close to MG20 to have been contemporaneous with it. MG20 may have co-existed with MG5. We propose two contemporaneous farms that were physically close together; they were built probably a little after 400 BCE and lasted for about 150 years until 250 BCE. That implies a lifetime of about 50-75 years for each farm.

Table 6.1 shows additional information about the dating of this cluster of features, based on a rather large number of pits with material from the same period. There is one large well in the vicinity, well 15.347, which dates to phase H. Wood from the wall lining in the deepest and oldest part of the pit was radiocarbon-dated, and confirms a date roughly between 400 and 205 BCE (cf. section 15.4.2). The well may have been used for a considerable period of time, judging by the layered filling in the pit. A large complex of 1345 sherds, 75% of which was burnt, marks the filling-up of the well. The large find complex also includes a grinding stone, animal bones, stones, a spindle whorl, and some metal slags. It appears that it was used as a dump for material from the abandoned house or houses. Also, a number of other large pits and watering holes without clear dates is attributed to this phase of habitation on the basis of geographical proximity (fig. 6.8).

House MG5 is a special case since one of the central posts (feature 18.A) contained large amounts of burnt ceramics and loam. Situated half a meter from 18.A was another feature (pit 18.B) that contained 306 fragments of briquetage pottery. Combined with the large amount burnt material in well 14.347, we might hypothesize that the settlement episode we are now discussing came to an end because house MG5 burnt down. But we could just as well be dealing with a ceremonial abandonment deposit, known from several other houses of this period (Van den Broeke 2002). This also goes for a deposition in the central post of house MG19 (feature 37.144; fig. 6.8). The post itself must have been removed before the ceramic finds were carefully placed upside-down over a possible food deposit (cattle bone).

On the plan of the Middle Iron Age episode, we have indicated also a burial monument (54.100), which comprises a square peripheral ditch with an opening in its southern side (fig. 6.10). A burial was not found, however, so we can only assume that it was a monument at this time. The only clue for a date is given by the fact that the ditch is intersected by a four-post granary (S28). The postholes from this granary yielded only two probable Iron Age sherds. Square ditches in this context can be dated from the start of the Middle Iron Age to the Roman Period (Roymans 1995, Van der Sanden 1998).

The burial monument was found several meters to the north of the Early Iron Age house MG6. Since the orientation of both these features appears to be quite similar this gives the impression that MG6 and the monument were contemporary. Such a correlation

is, however, highly unlikely on typological grounds. House MG6 is supposed to date to the Early Iron Age, and such a date is unlikely for the square monument. It is difficult to attach a meaning to such a single monument. There is one small cremation deposit in Oss-Mettegeupel (cf. section 15.6), but it is far from this monument. So, we have to assume that 54.100 represents only a single burial monument related to one of the farms of the Middle Iron Age period.

#### 6.2.4 Two farmyards of the Late Iron Age 225-75 BCE

We discussed above the date of house MG3 (phase J of the Late Iron Age). Two other houses date also to the Late Iron Age, although we do not know exactly to which phase (fig. 6.5; fig. 6.11). The orientation of MG3 (yard 7) and MG7 (yard 6) is identical; we think that these houses may have been contemporaneous. Both are also of the same type, Oss-Ussen 5. Both plans lay 250 m apart. A few granaries possibly can be associated with these two yards, but no wells or deep pits.

In our chronological model, house MG8 is the latest in this sequence, though there is no direct evidence to support this suggestion. Its proximity to MG7 precludes contemporaneity with that house, and its orientation is completely different from MG7. Admittedly, that is not a very good argument, but it adds to the suggestion that we are dealing with a different phase of habitation.

Both yards appear to have been separated by a long ditch orientated east-west (F44-F45; fig. 6.11). Only test trenches in the western part contained sections of this ditch, it seems to continue over more than 200 m. The feature is assumed to date to the

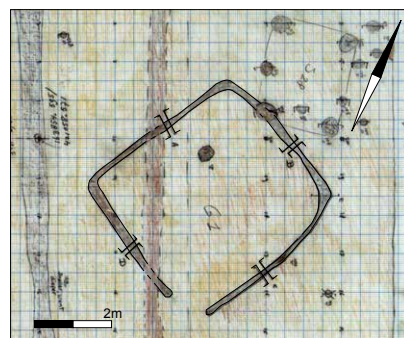


Figure 6.10 Section of the field drawing of grave 54.100 in the Mettegeupel quarter. Field drawing D. Schiltmans and B. van Veen.

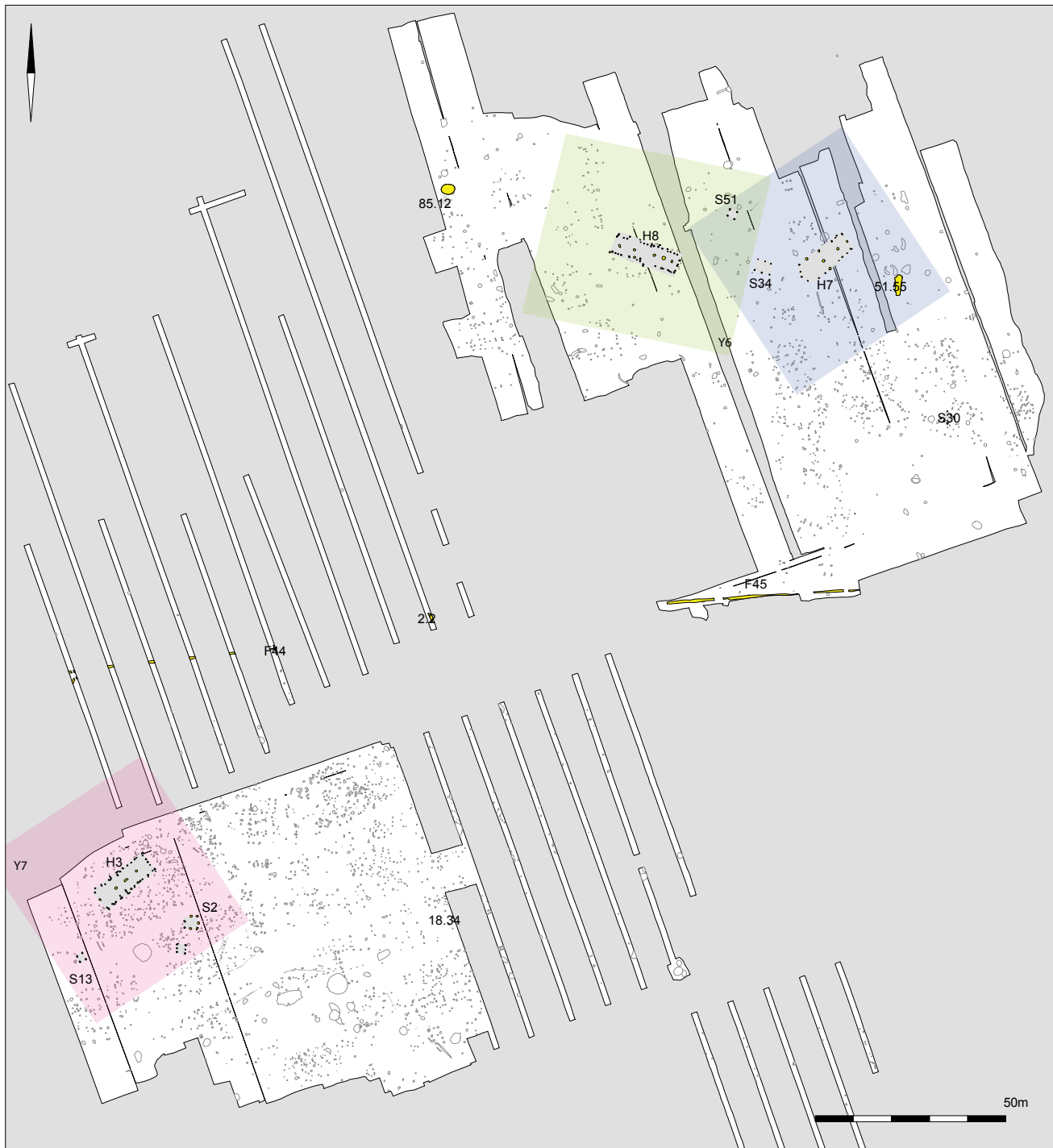


Figure 6.11 Yards 6 and 7 of the Late Iron Age in the Mettegeupel quarter. Drawing H. Fokkens.

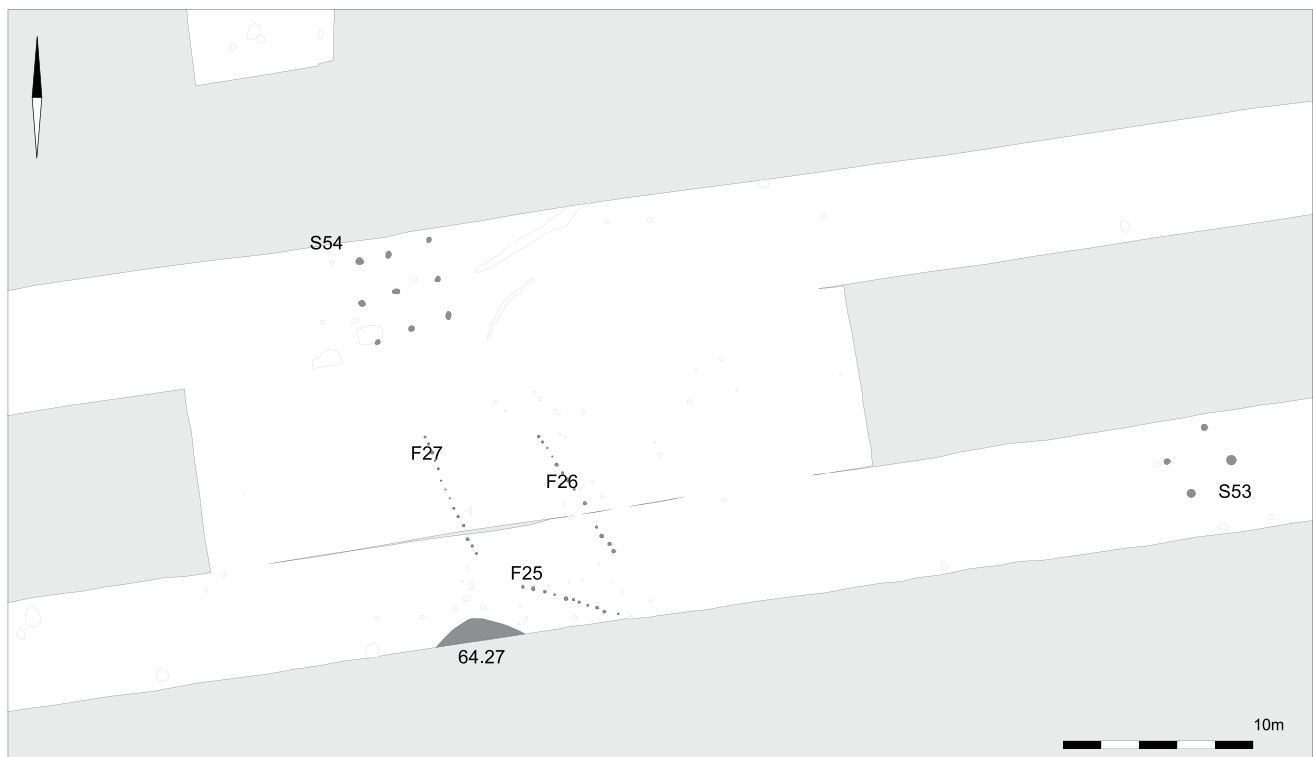


Figure 6.12 Features in the southwest of Mettegeupel (Bourgondiëstraat). Drawing H. Fokkens.

Late Iron Age, but this dating remains questionable since it lacks finds. However, it is intersected by an Early Roman ditch. The straight east-west pattern can be compared with similar Late Iron Age ditch systems in Oss-Almstein (F43; chapter 7), and Oss-Horzak, where the ditch system also had an east-west orientation. This suggests that people started to structure the landscape in more visible ways, at least in archaeological terms. Similar activities also became visible in the Mikkeldonk and Schalkskamp districts at this time.

#### 6.2.5 An Iron Age cluster near De Bourgondiëstraat

The most southern part of Oss-Mettegeupel so far has been left out of the discussion because it only contained almost un-datable structures. Yet, the complex was in itself interesting: a deep pit or well surrounded by fences, and two granaries (fig. 6.12). Pit 64.27 probably was a well, but only part of it was excavated due to the spatial limitations of the research area. The small complex of 27 sherds of pottery roughly dates from the Middle or Late Iron Age (Van der Beek 1996, 25).

Three short post alignments (F25, F26, F27; all about 7 m in length) were found a few meters to the north of the pit. Due to their similar characteristics and orientations, it is assumed that the three alignments were contemporary. F25 seems to have been placed 'around' the north-eastern side of the pit, while F26 and F27 form a path leading away from F25 towards the north. This combination of pits and fences reminds one of the situation often encountered in the Mikkeldonk district (chapter 4).

Following the fences to the north, we come across the plan of a nine-post granary (S54), placed in a similar orientation. Nothing was found to back up the assumption that the granary is contemporary with the previously mentioned features. Our test trenches north of these features have yielded very little features that could be attributed to settlement. Therefore, we propose that the settlement or farmyard with which these structures are associated to be present a little further to the south.

Even though the Bourgondiëstraat data are not spectacular, they demonstrate that there are clusters of settlement traces in this part of the Mettegeupel area.



Figure 6.13 Parcelling ditches of the Roman Period in the Mettegeupel quarter. Drawing S. van As, J. Porck, H. Fokkens.

### 6.2.6 Structuring the rural landscape: Roman Period parcels

The Late Iron Age settlement in Oss-Mettegeupel likely was abandoned c. 75 BCE, when house MG8 went out of use. After that no settlement was rebuilt here, but it is clear this area was not unused or deserted. Parallel ditches, some 15 m apart, seem to mark arable fields bordered by small parcelling ditches (fig. 6.13). There is also a parcel of land surrounded by a square ditch of almost exactly 50 x 50 m, with fences on both sides of the ditch (fig. 15.35). These features offer a considerable contrast with the previous occupation phases. The settlement areas of the past seem to have been ignored. They were transformed into arable land, probably somewhere in the first century AD, though the actual date is not clear at all. The system could be younger as well.

As the entire area to the west and to the east was investigated, we can be quite certain that the only other settlement in the neighbourhood was located at least 300 m further to the west: the Schalkskamp settlement. The orientation of the Mettegeupel parcelling system appears to be almost the same as the orientation of the 1<sup>st</sup> century enclosure ditch around the Schalkskamp settlement (cf. chapter 5). Therefore, we assume that the two areas were associated and that the features we excavated in Oss-Mettegeupel comprise the arable land of the Schalkskamp settlement.

There is, however, one indication that the area was also used later on. A Late Roman well (feature

20.34; 216 – 390 cal AD fig. 6.13) exists in the centre of the research area, and represents a late feature for this period of habitation. The absence of find material and the fill of the well suggest that it was situated in an agricultural area and/or was reasonably close to the settlement. So, in theory, the parcels of arable land could belong to that Late Roman period as well, though there are no obvious connections to settlements that were still in use in that period.

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## 7. Excavations in the Almstein district (1995)

H. Fokkens

### 7.1 INTRODUCTION

During the spring of 1995 the area around what is now called the Almstein district of Oss was being prepared as construction site. The construction workers immediately began building several residential blocks north of the road named Almstein (fig. 7.1). Local archaeologist Piet Haane detected prehistoric remains at the construction sites, and rescued some complexes of pottery sherds from the Middle and Late Iron Age. It was clear that traces of a settlement area were present, but the construction activities were already in full progress, so the building site could not be investigated anymore. But these finds provided the reason to investigate the adjacent area to the south of the building site. The western limit was set by the Bourgondiëstraat, and the eastern limit by a large parcel of land that was owned by a private company. The area that we excavated was owned by the municipality of Oss. There was only a small building on it (south-east of trench 83) and a large tree (between the east end of trench 84 and the north of trench 69). During two summer months in 1995 an excavation was carried out here (fig. 7.1). We started with a trench following the fence of the inaccessible eastern area (67), in which we detected three house plans and a number of prehistoric ditches (figs. 7.1; 7.2). The next trench (68) was oriented west-east over the length of the terrain and showed a similarly dense habitation pattern. Trench 69, in the southern part of

Figure 7.1 Plan of the trenches in the Almstein quarter plotted on the topographical background.  
H. Fokkens, S. van As.



the research area was completely empty, just like trench 70, which was quite surprising to us. But there we encountered a relatively large Iron Age ditch (F43). Relatively soon the picture was ‘clear’

to us, and determined our strategy. We decided to excavate as much of the settlement traces as possible, the ‘empty’ area in the south, and the entire Iron Age ditch, in order to determine whether we had really



Figure 7.2 Photographic impression of the Almstein excavations. A: the first trench (67) seen from the south. On the left side the Almstein road and the fence around the building activities; B: granary S67 in trench 75 with Richard Jansen as a scale; field school with PhD-student Daan Raemaekers as coach (now prof. of Archaeology at Groningen University); D: one of the top finds: an almost complete pot from ditch D53 (cf. Fig. 5. 18G); from left to right: Eugene Ball, Richard Jansen, Natasja de Bruin, Karianne Winthagen; E: dinner at the farm that was our base camp (dr. Hans Kamermans standing); F: site supervisor Zita van der Beek (right) on an evening survey with local archaeologist G. Smits at one of his favourite sites ‘de Hoge Morgen’. H. Fokkens.

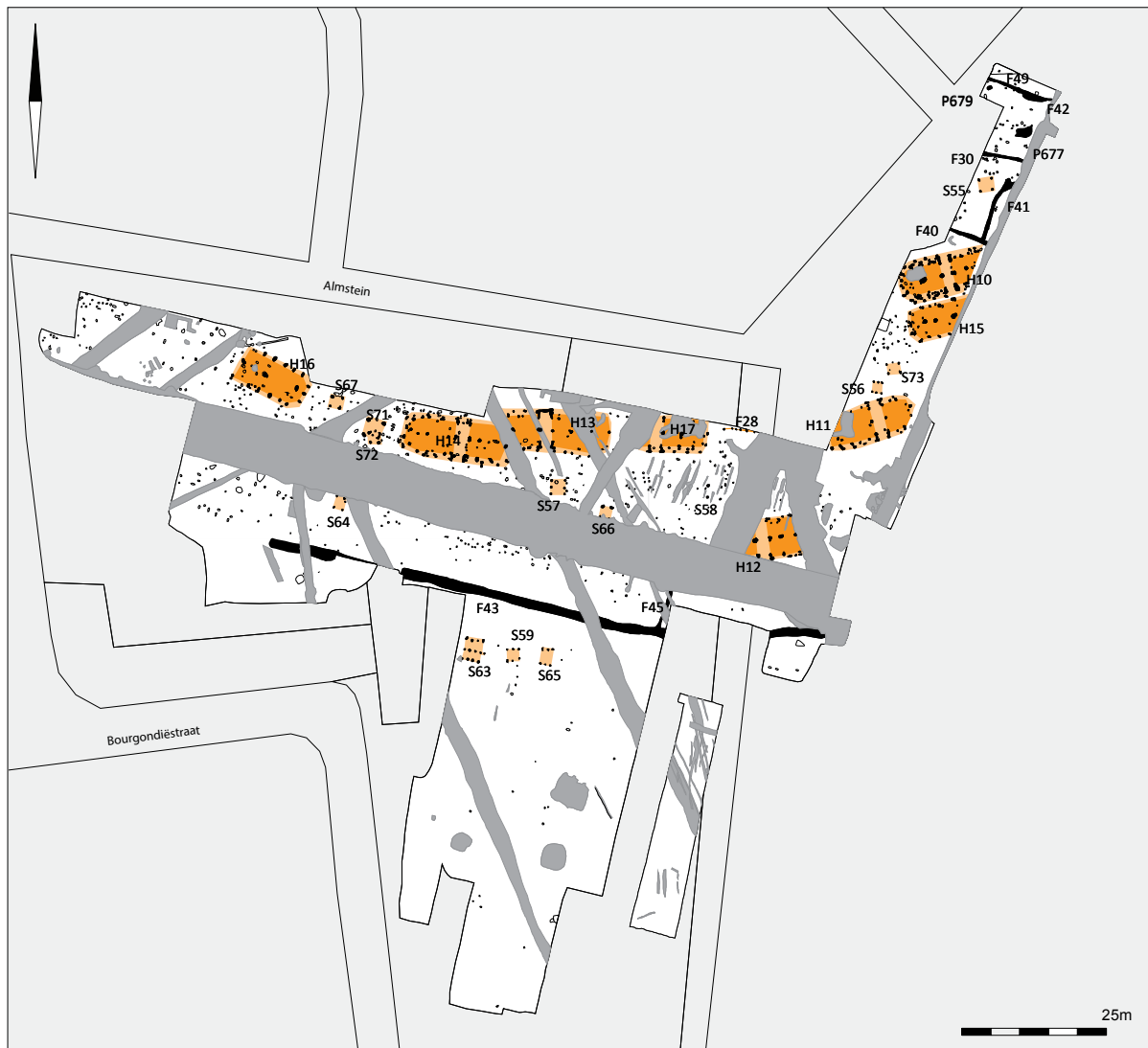


Figure 7.3 Plan of all features and structures in the Almstein quarter. S. van As, H. Fokkens.

reached the limits of settlement here. So far, we had not discovered any Iron Age settlement limits in Oss. Settlement traces always were attributed to dispersed ‘wandering’ farmsteads (cf. Schinkel 1998). Here we seemed to have a different situation.

The fieldwork was co-ordinated by Harry Fokkens, but he had to divide his attention between Oss-Almstein and the ongoing Mettegeupel excavations. Zita van der Beek was responsible for the daily work in the field at Almstein (fig. 7.2F), while David Fontijn was conducting some work in Mettegeupel district (cf. Chapter 6). During the fieldwork period there was, as usual, a field school of students from Leiden University

(fig. 7.2C). Financial support was provided by the province of North-Brabant, the municipality of Oss, and Leiden University.

Oss-Almstein is located near Oss-Mettegeupel, but still a few hundred meters from the remainder of the Mettegeupel excavations. Moreover, the Almstein excavation exposed what seemed to have been a separate cluster of settlement features. This is the reason why we discuss these results in a separate chapter. Quite extraordinary for the Oss region, Almstein yielded settlement remains of only two periods of the Iron Age. First was a rather limited episode of the Early Iron Age, and next came a very intensive period of habitation at



Figure 7.4 Three Early Iron Age granaries. S. van As, H. Fokkens.

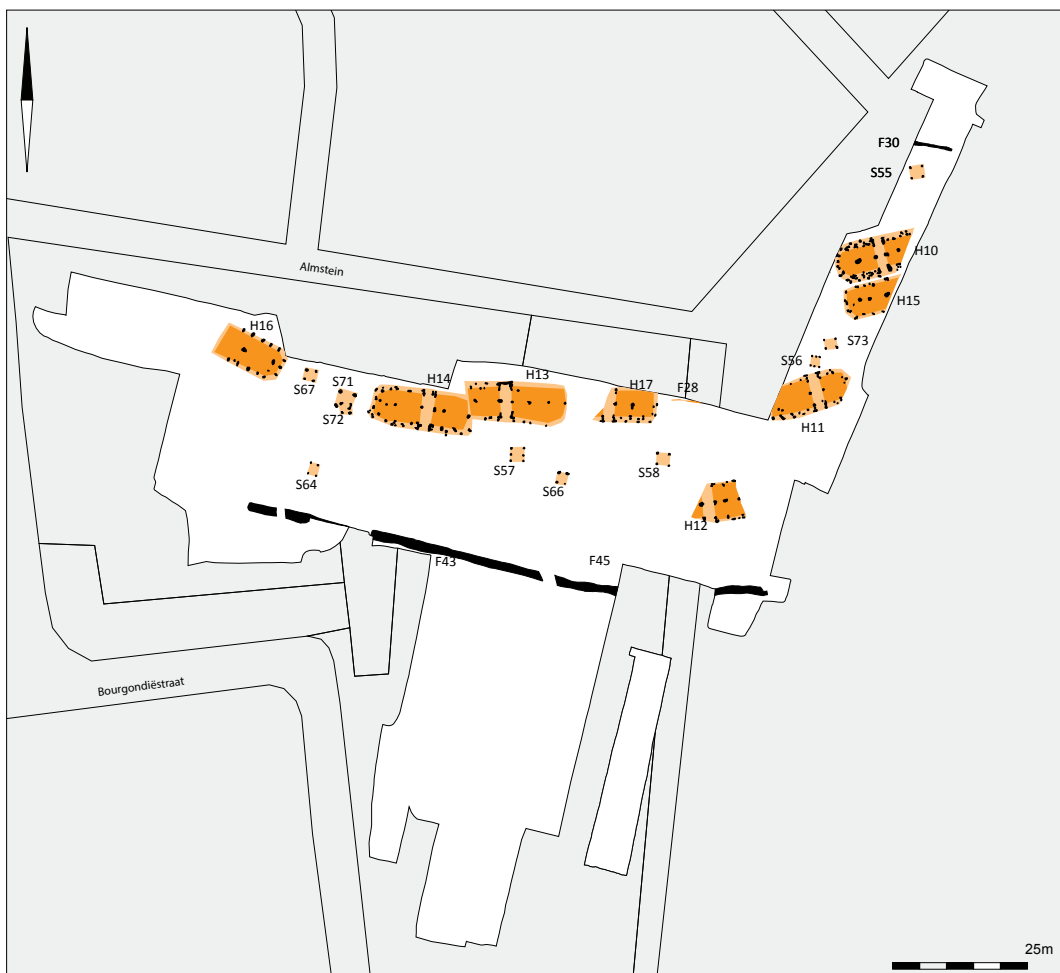


Figure 7.5 Plan of the Almstein settlement from the Middle to Late Iron Age. S. van As, H. Fokkens.



the transition between the Middle and the Late Iron Age. Figure 7.3 shows the dense cluster of Middle – Late Iron Age house plans north of a large east-west oriented ditch (F43) from the same period. South of that ditch we identified three granaries, which date to the Early Iron Age.

## 7.2 THREE GRANARIES FROM THE EARLY OR MIDDLE IRON AGE

The earliest features found in Oss-Almstein date from the transition period of the Early Iron Age to the Middle Iron Age (phase D – E; 575-450 BCE). An area with a low density of features contained three granaries: two six-posters (S59 and S65), and one twelve-poster (S63) (fig. 7.4; cf. section 16.3). The problem remains as to identify where this group of structures belongs. We do not know very much about the cultural landscape in this area before this period of habitation, but we assume it was largely open terrain. We have little evidence from the Middle or Late Bronze Age in this area. From the Mettegeupel excavations we know that pits and wells from the Middle Bronze Age testify to farming settlements in the area some 500 m further to the north. In the Early Iron Age there was intensive habitation in Oss-Mettegeupel, with at least three different house phases (section 6.2.2). It is very well possible that the three granaries were connected to this settlement activity some 500 m further to the north. If so, these structures were possibly located in fields as (temporary?) storage for harvested grain. Excavations in 2017 just to the east of the cluster of granaries showed that an Early Iron Age farm was situated some 200 m to the north-east. The Almstein cluster of features remains more or less isolated.

There are no signs of rebuilding or of repairs, so we assume that these features represent one use phase of a maximum of 40 years. After that, the structures were dismantled and abandoned, but not in a single quick episode. Relatively large quantities of pottery and loam were deposited in the holes left after extraction of the posts of S63: they were filled with settlement debris, some 9.5 kg of material. If this granary really stood in an open field, then the composition of this fill is remarkable. It must have taken special effort to fill these holes, so some kind of intentionality can be deduced from this deposit. The post pits of the other two structures were devoid of finds, so the same procedure was not repeated there. It is therefore not entirely certain whether the three granaries were contemporaneous. Given the fact that they seem to be situated close together in an area that was otherwise

empty of features strongly suggests contemporaneity or succession.

After the abandonment of these structures, there was a period of at least 100 years of no building activities in this particular area. We can only guess at how the area was in use in this period. Arable or grazing land seems the most probable. There are no indications that after 100 years the remains of these granaries were still visible or that their location was still known. A positive connection with the next phase of habitation seems unlikely.

## 7.3 A SETTLEMENT OF THE MIDDLE TO THE LATE IRON AGE

In phase H of the Middle Iron Age (c. 335 – 250 BCE) the area was re-occupied as a settlement area. This next phase contains eight house plans, as well as ten granaries and a ditch system (fig. 7.5). The eight house plans of Oss-Almstein were all situated at very short distances from each other (fig. 7.5). They all have the same building structure, referred to as Oss-type 4 (or *Haps* house), even though there is quite some variation in the way the walls were structured. One would like to know how many houses were contemporaneous, what was the phasing of the settlement, was it enclosed by a ditch, and many other aspects of this settlement. However, the resolution of our available dates is quite poor. There are no <sup>14</sup>C-dates and the pottery generally is restricted to a few sherds that do not provide more clear dates (fig 7.6).

We know that three houses date to phases H or I, and that one dates to phases I or J, but the date is less clear for the other houses. Another piece that has to fit the chronological puzzle is the end date of ditch F43, which occurred in phase J at the earliest. So, it may have existed also in phase I. Adding this all up, I suggest that the settlement most probably existed in phases H, I, and J of the Late Iron Age, between 325 and 125 BCE.

There is one other line of reasoning to find out how the settlement developed. The first argument is that houses that are too close together or those with overlapping plans could not have co-existed. The second, more indirect argument, is that if farmyards overlap, the farms in their centre could not have co-existed (fig. 7.7). This is a more difficult argument to negate, because we have no direct evidence for the size of an individual farmyard. Based on some of the Oss evidence (for instance at Oss-Mettegeupel, house MG8; fig. 16.34), I assume that a yard is about square, 50 x 50 m in size with the farm in its centre. If we plot yards of that size on the Almstein farms, some things become

more clear (fig. 7.7). Based on the stratigraphy, houses ALM10 and ALM15, and ALM13 and ALM14 could not have existed at the same time. It is thus more likely that ALM 13 and ALM 14 replaced the earlier houses. Based on the overlap between the yards, several other houses probably cannot have existed at the same time.

The orientation of the houses may provide us with chronological information as well, assuming that houses with the same orientation either were built in response to each other (*i.e.* were contemporary), or in succession. Figure 7.6 and Figure 7.7 seem to give the same picture. Houses ALM10, ALM15, and ALM11 have the same orientation and they are close together as well. House ALM12 fits that orientation, though not exactly. Also, houses 17, 14 and 15 have a comparable orientation. House 14 has an orientation that is closest to the western part of ditch F43. House 16 has a different orientation, so it also appears to be an outlier. We seem thus to have two groups of houses, 10-15-11 and 13-14-17, with 12 in the middle and 16 as an outlier. In terms of orientation and yard overlapping ALM16 could have co-existed with almost any of the other farms (fig. 7.6; Fig. 7.7A), but given its dating that seems to be not the case.

Adding all this together, I arrive at the following phases for the Almstein settlement. Assuming that there were – at least in the excavated area – two contemporary farms, phase 1 starts with houses 10 and 13, probably around 325 BCE (fig. 7.6; fig. 7.7B). It is probable that ditch F43 had not yet been dug at that time. I assume a house life of about 50 years, but this could be longer. Around 275 BCE, ALM10 is replaced by ALM15 and ALM13 by ALM17 (fig. 7.6; fig. 7.7C). ALM14 could only have been built after 225 BCE, making it the latest house in the western cluster, in the third phase. I assume that that is contemporaneous with house ALM11 (fig. 7.6; Fig. 7.7D). This third phase lasted from about 225-175 BCE. House 16 probably represents the last phase of the settlement. By then, ditch F43 probably had already been filled in. The position of house 12 is difficult to fit within this framework. It could have co-existed with all other houses, but not with the houses of the older phase. Therefore, I have placed it with ALM16 in the last phase (fig. 7.6, fig. 7.7E). The last phase probably ended well before the beginning of the last century BCE.

The function of F43 in this settlement is difficult to assess. The ditch is substantial, but also open-ended: it is deep, but does not really enclose anything. On the other hand, it seems to delineate the southern limits of the settlement. Having said that, it probably was not

itself the real boundary. In our reconstruction (fig. 7.7), the empty zone to the south of the houses already existed before the ditch was dug. So it rather reaffirms the boundary than determines it. In this Middle-Late Iron Age period many more settlements are bounded by ditch systems (*e.g.* Gerritsen 2003).

With respect to the way each farm was abandoned, it is clear for almost all of the farms that they were dismantled after abandonment. Only the post pits of house 13 are not conclusive in this respect (*cf.* section 16.2).

### 7.3.1 Granaries

Ten granaries were found in the vicinity of the houses. The find complexes are too small or scarce to give accurate dates, so I could not fit them in the scheme of the houses. Therefore, they have been attributed to house phases based on their location within the farmyard, and the similarity of their orientations to the house plans from different phases (fig. 7.6). So the attribution to separate phases in Fig. 7.7 is only provisional. There is no direct evidence to support our reconstruction.

### 7.3.2 Pits and wells

Almstein lacks large pits and wells, at least in the excavated area. It is very well possible that they were present further to the north. The observations that Piet Haane made when Oss-Almstein was under construction do not give us any new insights in this respect. Both at Oss and Ussen we were used to lots of wells and deep pits. However, in comparison to the Early and Middle Iron Age, these sites also contained only a few Late Iron Age wells (Schinkel 1998, 250).

Periods	MIA					LIA								Rom			
Phases	G		H			I		J				K			L		
	375	350	325	300	275	250	225	200	175	150	125	100	75	50	25	0	orientation
Alm11																	251
Alm10																	256
Alm15																	256
Alm12																	263
Alm13																	270
Alm17																	270
F43 east																	270
Alm14																	278
F43 west																	284
Alm16																	297

Figure 7.6 Phasing of the Almstein settlement. H. Fokkens.



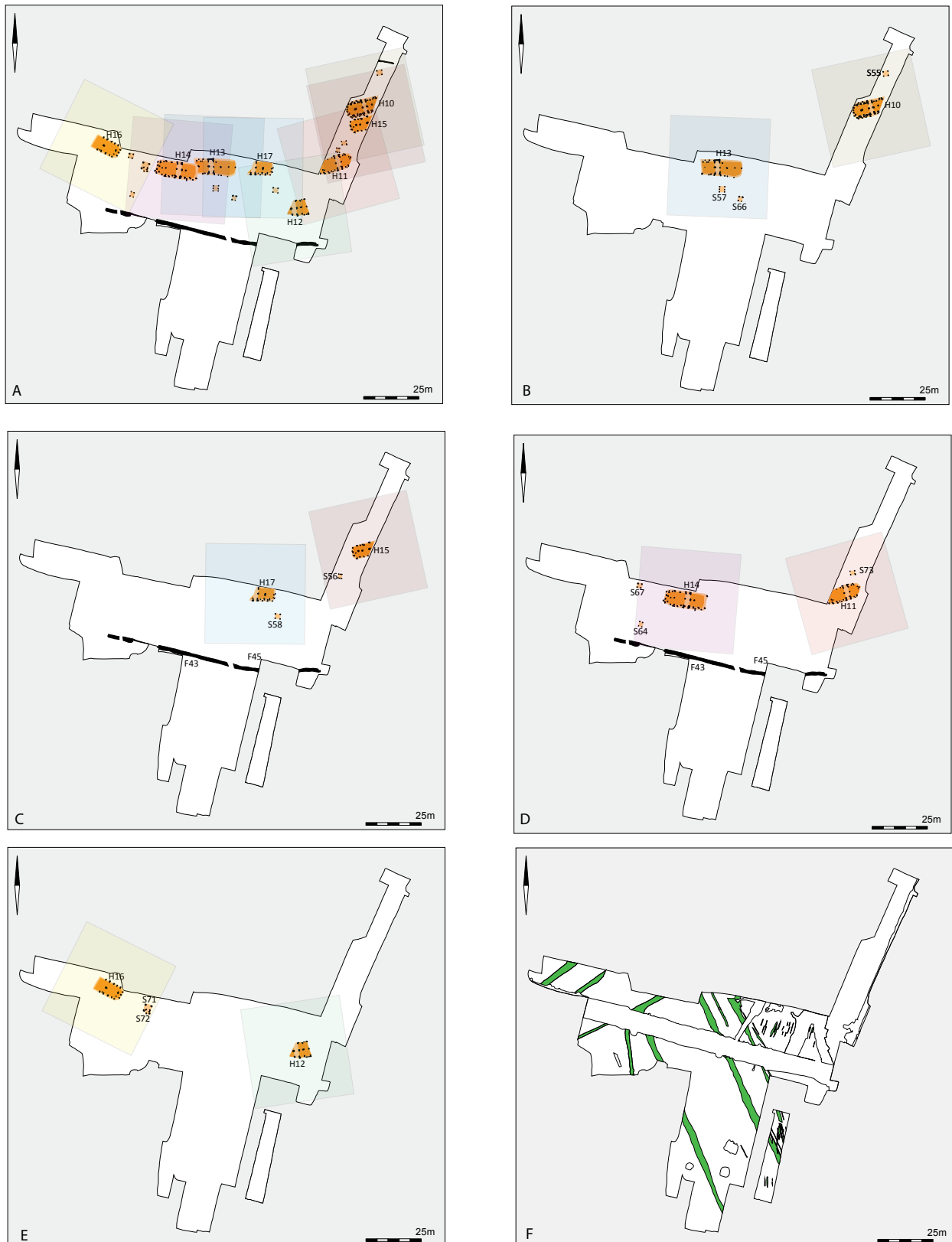


Figure 7.7 Phasing of the settlement at Oss-Almstein. A: All houses with projected farmyards of 50x50m; B phase 1: 325-275 cal BC; C: phase 2: 275-225 cal BC; D: phase 3: 225-175 cal BC; E: phase 4: 175-125 cal BC; F: Late Medieval and Early Modern ditches and cart tracks. H. Fokkens.

#### 7.4 THE ROMAN PERIOD

The area investigated by the Almstein excavation was abandoned as a habitation area at the end of the Late Iron Age. It is, however, not correct to say that the area was unused thereafter. Just like in the Mettegeupel district, the area was probably used as arable land. The ditches in the northeast (F41, F40, F49) may be interpreted as parcelling ditches (cf. fig. 7.3). Since the 2<sup>nd</sup> century AD, the area probably was gradually abandoned. We have no other evidence for habitation in this period apart from one well in the Mettegeupel area.

#### 7.5 THE MIDDLE AGES AND MODERN PERIOD

In the Middle Ages the area was re-inhabited again. From the Schalkskamp and Horzak excavations we know that the Roman Period landscape was still visible in some places (*e.g.* ditches) and was used to align the Medieval settlements. From this period we have found no remains in Oss-Almstein. Only cart tracks and ditches testify to the use of this area in the Late Medieval and Early Modern Period (fig. 7.7F). We do not know from which period exactly because that was not part of our research plan.

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## 8. Vegetation and crops in Oss-North

C.C. Bakels

This chapter deals with plant remains retrieved during the excavation of the traces left by the Bronze, Iron and Roman Age farming societies in Oss-North. Its two parts are not related except for the fact that the questions posed are tackled by using archaeobotanical methods. Section 8.1 discusses the vegetation on the farm yards, section 8.2 concerns the crops grown by the farmers.

### 8.1 OSS-NORTH AND THE VEGETATION ON THE YARDS OF ITS BRONZE, IRON AGE AND EARLY ROMAN AGE FARMS.

The presence of wells and other deep pits offered the opportunity to study water-logged plant remains. One research question concerned the nature of the vegetation represented by these remains. The second was whether the various periods show any difference. And during the research a third question turned up, connected with a taphonomical aspect, *i.e.* how much information is lost when waterlogged conditions disappear.

During the excavations samples were taken from a large number of wells and likely pits. When a clear layering was seen, every layer was sampled, but this was not often the case. Sample sizes ranged from 2 to 5 liters of fill. The sediments were sealed in plastic bags and transported to the archaeobotanical laboratory of the Faculty of Archaeology, Leiden University, where they were sieved with the aid of gently running tap water. The finest mesh used was 0.25 mm. The residues were sorted when in wet condition and the plant matter, mainly seeds and fruits, picked out, identified and stored wet. In total 23 Bronze Age, 14 Iron Age and 4 Roman Period wells were analysed, represented by 31, 25 and 8 samples respectively.

One well (MG35.70) was sampled for pollen analysis and this offered the opportunity to assess whether pollen provides a vegetation reconstruction comparable to that provided by macro-remains. Pollen was retrieved in the usual way by treating the sediment with KOH, HCl, specific gravity separation (*s.g.* 2.0) and acetolysis.

#### 8.1.1 *The vegetation on the yards*

The number of remains varied per sample. Some were rich and some poor in remains, whilst still others revealed only carbonized seeds and fruits. The results of thirteen samples are shown in table 8.1. They come from three clusters of wells and pits and are truly representative of the material retrieved from the Oss-North features. Cluster 1 and 2 are situated in Oss-Mettegeupel and cluster 3 in Oss-Schalkskamp. They were chosen because they contain well-dated material from different phases of occupation and may shed light on possible differences in the vegetation of one and the same spot over time.

During the analysis in the laboratory it was already noted that the collection of seeds and fruits was always remarkably the same. The set of plants recalled a certain class of plant community *i.e.* the *Bidentetia tripartita* Tüxen, Lohmeyer et Preising in Tüxen 1950. Although it is not proven that this modern phytosoci-

feature	cluster 1				cluster 2				cluster 3				
	MG 51.28	MG 50.64	MG 15.347	MG 18.34	MG 51.48	MG 52.74	MG 50.64	MG 51.55	SK 1027.51	SK 1027.51	SK 1021.8	SK 1012.68	SK 1012.29
date	MBA/LBA	MIA	MIA	LIA	MBA	MBA	IA	LIA	EIA	EIA	IA	LIA/RP	ERP
sample number		vlak 3	B		2 ch. layer			D	E	F		C	
sample size, liters	3	?	2	3	2	2	2	4	2	2	5	2	4
	all carbonized				all carbonized				all carbonized				
<b>character species class</b>													
Ranunculus sceleratus	1	-	-	-	-	-	-	-	1	+	-	-	-
Rorippa (islandica)/palustris	-	-	-	-	-	-	1	-	7	+++	-	-	-
<b>differentiating species class</b>													
Persicaria maculosa	++	1	-	-	-	-	-	-	-	-	-	-	-
Persicaria maculosa/minus	-	-	9	-	-	1	224	-	-	-	-	-	-
<b>character species association</b>													
Persicaria hydropiper	++++	8	22	-	-	-	217	-	7	+	4	6	393
Bidens tripartita	-	-	-	-	-	1	-	-	-	18	-	-	7
Bidens sp.	3	-	-	-	-	-	44	-	2	-	-	-	-
Persicaria minus	-	-	-	-	-	-	-	-	-	-	-	-	28
Persicaria lapathifolia	+++++	6	36	1*	-	1* + 8	516	9*	8	++	100	68	1* + 174
Persicaria sp.	-	-	-	1*	-	-	-	-	-	-	-	-	-
Atriplex (patula)/prostrata	+	2	-	-	-	19	24	-	-	-	-	1	8
Chenopodium ficifolium	+++	-	-	1*	-	-	760	-	-	+	-	-	-
<b>differentiating species association</b>													
Glyceria fluitans	+++	20	-	-	-	-	-	-	-	+++	-	-	64
Chenopodium album	+++	16	52	-	-	154	8	-	5	+++	17	27	24
Capsella bursa-pastoris	-	-	-	-	-	-	-	-	-	+	-	-	-
Solanum nigrum	+	-	-	-	-	5	64	-	17	+++	-	28	20
<b>differentiating species subassociation</b>													
Sonchus asper	-	1	-	-	-	10	33	-	1	1	-	1	6
Stellaria aquatica	cf +++	-	-	-	-	-	-	-	-	-	-	-	-
Chenopodium polyspermum	-	-	1	-	-	8	-	-	1	-	-	-	-
<b>Phragmitetea</b>													
Lycopus europaeus	1	-	-	-	-	1	288	-	1	+	-	1	16
Alisma sp.	-	-	-	-	-	-	-	-	1	-	-	1	-
Glyceria sp.	-	1	-	-	-	-	112	-	9	-	-	-	-
Schoenoplectus lacustris s.s.	-	-	-	-	-	1	-	-	-	-	-	-	-



[illegible]



feature	cluster 1				cluster 2				cluster 3				
	MG 51.28	MG 50.64	MG 15.347	MG 18.34	MG 51.48	MG 52.74	MG 50.64	MG 51.55	SK 1027.51	SK 1027.51	SK 1021.8	SK 1012.68	SK 1012.29
date	MBA/ LBA	MIA	MIA	LIA	MBA	MBA	IA	LIA	EIA	EIA	IA	LIA/RP	ERP
sample number		vlak 3	B		2 ch. layer			D	E	F		C	
sample size, liters	3	?	2	3	2	2	2	4	2	2	5	2	4
Rumex acetosella	-	-	1	-	-	62	-	1*	-	-	33	-	-
Rumex sp.	+	-	-	1*	1*	-	-	-	-	1	-	3	26
Sagina sp.	-	1	-	-	-	-	-	-	-	-	-	-	-
Isolepis setacea	-	6	10	-	-	-	-	-	-	-	8	4	-
Trifolium sp.	-	-	-	-	-	-	-	-	-	-	1	-	-
Urtica urens	-	-	-	-	-	8	-	-	1	-	-	-	-
Vicia sp.	-	-	-	1*	-	-	-	-	-	-	-	-	-
Viola sp.	-	-	-	-	-	-	-	-	-	-	-	-	1
water flea	-	-	-	-	-	-	++	-	++	++++	-	+	++++
Sclerotia	-	-	-	-	-	-	-	-	-	-	-	-	1
* = carbonized													
+ = some, ++ = some tenths													
++++ = hundreds													
+++++ = thousands													

Table 8.1 Plant remains retrieved from three clusters of wells; taxa according to results of present-day relevées of the *Bidentetea tripartitae*. Cf = resembles.

ological class may be applied to a past situation, it is tempting to do so. Table 8.1 offers the result.<sup>1</sup> The taxa are sorted following a Dutch table in which the species found in hundreds of plots, so-called relevées, covered by members of the *Bidentetea* were compiled (Weeda, van 't Neer and Schaminée 1998, p. 176-177). If a type of seed found in a well represents two species a choice was made and the non-chosen species put between brackets.

In this version of phytosociology the highest unit is the class, followed by the order, the alliance, the association and the subassociation. Each of these units has its faithful species, which occur almost exclusively there and define the unit. These species are called character species. Next to character species differentiating species are recognised. Such species

define their unit too, but are also found in quite different phytosociological classes. And, of course, not every plant growing in a plot belongs to the class dominant there. In the Dutch reference table for the *Bidentetea* mentioned before species characteristis of the classes *Phragmitetea*, *Plantaginetea majoris*, *Stellarietea mediae* and *Artemisetea vulgaris* are mentioned as well. Moreover, quite a number of species do not fit any scheme and are listed as 'others'. As the *Bidentetea* comprise only one order and one alliance these theoretical units don't play a role in the table. Only class, association and subassociation are mentioned.

In Table 8.1 plant names mentioned in the Dutch reference table, but not found in the wells and pits entered, are omitted. Members of the *Artemisetea*

Oss MG Bronze Age			Oss MG Bronze Age		
N samples	2	10	N samples	2	10
N features	2	5	N features	2	5
	wet	carb.		wet	carb.
<b>Crop plants</b>					
Avena sp.	-	+	Juncus sp.	+	-
Hordeum vulgare	-	+	Lamium sp.	+	-
Triticum dicocum	-	+	Linaria vulgaris	+	-
Triticum dicocum spikelet basis	+	+	Lycopus europaeus	+	-
Cerealia indet.	-	+	Mentha aquatica/arvensis	+	-
Linum usitatissimum	+	-	Myosotis sp.	+	-
Linum usitatissimum capsule frag.	+	-	Persicaria hydropiper	+	-
Vicia faba	-	+	Persicaria lapathifolia	+	+
<b>Trees and shrubs</b>			Persicaria maculosa	+	-
Rubus fruticosus	+	-	Persicaria maculosa/minor	+	-
<b>Wild herbs</b>			Plantago major	+	-
Aethusa cynapium	+	-	Poa sp.	+	-
Agrostis sp.	+	-	Poaceae small seeds	+	-
Alopecurus geniculatus	+	-	Polygonum aviculare	+	-
Anagallis arvensis	+	-	Potentilla anserina	+	-
Atriplex patula/prostrata	+	-	Potentilla sp.	+	-
Bidens tripartita	+	-	Ranunculus repens-type	+	-
Bidens sp.	+	-	Ranunculus sardous	+	-
Carex sp.	+	-	Ranunculus sceleratus	+	-
Chenopodium album	+	+	Rumex acetosella	+	-
Chenopodium ficifolium	+	-	Rumex sp.	+	+
Chenopodium polyspermum	+	-	Schoenoplectus lacustris s.s.	+	-
Conium maculatum	+	-	Solanum nigrum	+	-
Corrigiola littoralis	+	-	Sonchus asper	+	-
Daucus carota	+	-	Spergula arvensis	+	-
Eleocharis palustris	+	+	Stachys cf arvensis	+	-
Euphorbia helioscopia	+	-	Stellaria cf aquatica	+	-
Fallopia convolvulus	+	+	Stellaria media	+	-
Galeopsis bifida/speciosa/tetrahit	+	-	Thlaspi arvense	+	-
Galium sp.	-	+	Urtica dioica	+	-
Glyceria fluitans	+	-	Urtica urens	+	-

Table 8.2a Comparison of the presence of taxa, waterlogged versus carbonized, in Bronze Age Mettegeupel.

Oss SK Iron Age			Oss SK Iron Age		
N samples	4	8	N samples	4	8
N features	3	8	N features	3	8
	wet	carb.		wet	carb.
<b>Crop plants</b>					
Avena sp.			Euphrasia sp./Odontites sp.	+	-
Hordeum vulgare	-	+	Fallopia convolvulus	+	+
Hordeum vulgare internodium	-	+	Galium palustre	+	-
Triticum dicoccum	-	+	Glyceria fluitans	+	-
Triticum dicoccum spikelet basis	-	+	Glyceria sp.	+	-
Triticum spelta	-	+	Juncus sp.	+	-
Triticum spelta spikelet basis	-	+	Lotus sp./Trifolium sp.	-	+
Triticum spikelet basis	-	+	Lycopus europaeus	+	-
Panicum miliaceum	+	+	Mentha aquatica/arvensis	+	-
Camelina sativa	-	+	Montia fontana	+	-
Linum usitatissimum	+	-	Persicaria hydropiper	+	+
Linum usitatissimum capsule frag.	+	-	Persicaria lapathifolia	+	+
Vicia faba	-	+	Persicaria minor	+	-
Vicia faba funiculus	-	+	Plantago lanceolata	+	+
<b>Trees and shrubs</b>			Plantago major	+	-
Alnus glutinosa	+	-	Poa sp.	+	+
Frangula alnus	+	-	Poaceae	-	+
Rosa sp.	+	-	Polygonum aviculare	+	-
Rubus fruticosus	+	-	Potentilla anserina	+	-
Sambucus nigra	+	-	Potentilla erecta-type	+	-
<b>Wild herbs</b>			Prunella vulgaris	+	+
Alisma sp.	+	-	Ranunculus flammula	+	-
Anagallis arvensis	+	-	Ranunculus repens-type	+	-
Atriplex patula/prostrata	+	-	Ranunculus sceleratus	+	-
Bidens tripartita	+	-	Raphanus raphanistrum	+	-
Bidens sp.	+	-	Rhinanthus sp.	+	-
Callitriche sp.	+	-	Rorippa islandica/palustris	+	-
Calluna vulgaris	+	-	Rumex acetosella	+	+
Capsella bursa-pastoris	+	-	Rumex sp.	+	+
Carex sp.	+	-	Scirpus setaceus	+	-
Cerastium sp.	+	-	Solanum dulcamara	+	-
Chenopodium album	+	+	Solanum nigrum	+	+
Chenopodium ficifolium	+	+	Sonchus asper	+	-
Chenopodium polyspermum	+	-	Spergula arvensis	+	+
Cirsium arvense-type	+	-	Stachys arvensis	+	-
Corrigiola littoralis	+	-	Stellaria media	+	-
Daucus carota	+	-	Trifolium repens flower	+	-
Digitaria ischaemum	+	-	Trifolium sp.	+	+
Echinochloa crus-galli	+	+	Urtica dioica	+	-
Eleocharis palustris	+	+	Urtica urens	+	-
			Vicia sp.	-	+

Table 8.2b Comparison of the presence of taxa, waterlogged versus carbonized, in Iron Age Schalkskamp.

*vulgaris* were not found. Where the Dutch reference table ends a horizontal line is drawn. But the Oss-North features revealed other species and these are put below this line. As quite a number of them are characteristic of the *Stellarietetea mediae* these are put apart.

The Oss-North finds fit well into the official Dutch *Bidentetetea tripartitae* list. The largest number of seeds and fruits has found a place there. But the set is enriched by addition of seeds and fruits belonging to the *Stellarietetea mediae*. What does this mean?

The *Bidentetetea tripartitae* class stands for a pioneer vegetation on a terrain that is very wet in winter time and falls never completely dry, not even in summer (fig. 8.1). Its soil is rich in nutrients, especially nitrogen, which under the wet circumstances is mainly ammonia. On wet sandy soils the class indicates pollution by animal dung. This is an environment which may be expected around watering places for livestock (Weeda, van 't Neer and Schaminée 1998).

The class *Stellarietetea mediae* belongs to recently disturbed mineral soils, *i.e.* fields and gardens, but also terrain with recent construction activity. Other components of the seed and fruit assemblage are provided by the *Phragmitetea* and *Plantaginetea majoris* which respectively represent pioneers in marshy areas and trodden areas in an environment moderately rich or rich in nutrients.

All in all a picture is drawn of a terrain with very wet parts polluted by dung, heavily trodden areas and possibly gardens. If the plants of disturbed habitats represent field weeds, they would represent remnants of threshing waste lying around. The picture fits a farm yard with a well and/or watering place. The fact that the plant matter comes from the fill of wells and pits, which dates from after their use, does not alter the picture very much. It only adds the information that the fill dates from a short time after their abandonment. Or that, after this event, an identical situation persisted, with a new well.

This information brings the second question into focus. In the reconstruction the occupational phases are lumped. Of course, this is only permissible when they are comparable. Indeed, no difference whatever could be detected between Bronze Age, Iron Age and even Early Roman period wells and pits. The slight increase in weedy species noted for the Iron Age in nearby Oss-Ussen is not seen in Oss-North (Bakels 1998, p. 345).

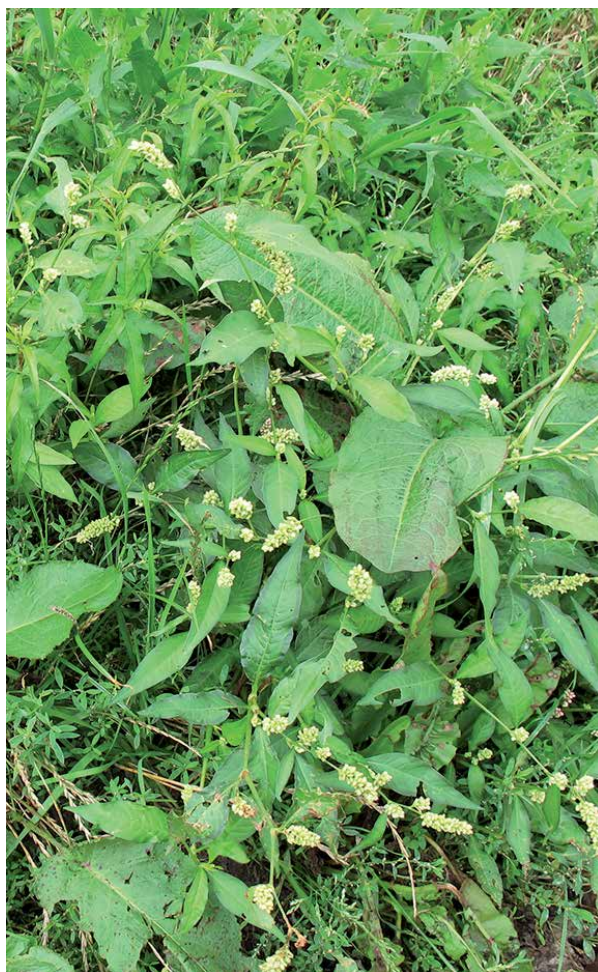


Figure 8.1 *Bidentetetea* vegetation with flowering *Persicaria lapathifolia* (pale persicaria), a common find in the Oss-North wells.

### 8.1.2 Taphonomy

The third question brought forward concerns the influence of taphonomy on the data set. Plant matter preserved by waterlogging will be only preserved if their environment is permanently wet. If, for instance, the water table lowers in a terrain with old, back-filled wells, the seeds and fruits in their fill will decay. First the thin-walled species and in the end the thick-walled species too. In Oss-North there are plenty of wells where almost exclusively members of the Polygonaceae and Chenopodiaceae families are found. The explanation is that their sturdy seed coats are the last to vanish. If all waterlogged remains are gone, only carbonized matter will remain to be found during excavation.

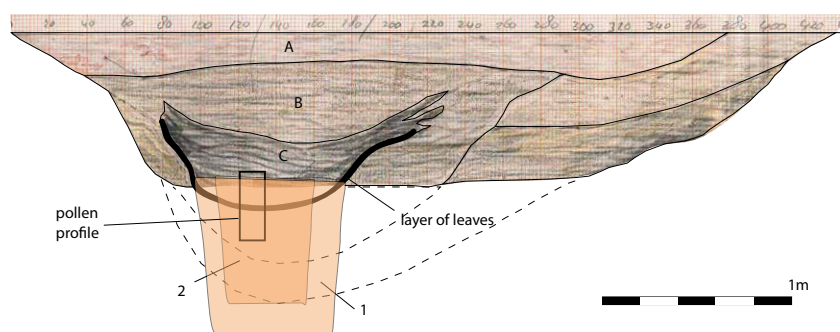


Figure 8.2 Well MG35.70 partly based on a field drawing and partly on a reconstruction after the measurements taken in the field. Indicated are phase 1 and phase 2, fill C, layer of leaves and the sample box for pollen. The photo shows the box in place. Drawing and photo H. Fokkens.



Tables 8.2a and 8.2b present two cases of the difference in number of waterlogged versus carbonized taxa: Bronze Age Mettegeupel and Iron Age Schalkskamp. The difference between the columns waterlogged (wet) and carbonized (dry) strikes the eye. The loss of information if only carbonized is preserved is great. It may be noted that the number of samples taken from dry fills is higher than that of samples taken from waterlogged fills and that the absence of taxa in the category 'carbonized' can therefore not be due to underrepresentation of the appropriate samples in the record. The question whether information on plants and vegetation is lost when waterlogged conditions disappear can be answered by a plain 'yes'.

### 8.1.3 Pollen versus seeds

Well MG35.70, dated to the Early Iron Age, was sampled for both pollen and macroremains. As a matter of fact MG35.70 represents not one well but two. A first well (1) is replaced by a second one (2) on exactly the same location (cf. chapter 15). A layer of oak leaves, *Quercus robur* leaves as far as could be

ascertained from the fragments, was found on top of the second phase. Table 8.3 presents on the one hand the seeds and fruits and on the other hand the pollen retrieved from this well. Seeds and fruits are given in numbers and pollen in percentages based on a tree pollen sum. This sum was chosen because the reconstruction of the vegetation on the yards on basis of macroremains did not give conclusive evidence of trees growing there. The danger of distortion of the percentages by local pollen production may therefore be negligible. Nevertheless, the layer of oak leaves may imply a local presence and oak may be overrepresented in the pollen record. Pollen samples were taken above and below this layer (L), that is from the fill of the construction pit/depression which contained the actual well and from the fill within the lining (fig. 8.2).

The table is arranged in an alphabetical way but such that, when according to this order pollen types are entered which encompass several species, the species belonging to these types and recognised in the seeds and fruit record, are following immediately after. For instance, *Chenopodiaceae* pollen is followed by *Atriplex* and *Chenopodium* species.

The assemblage of seeds and fruits is the same as that found in other wells (cf. table 8.1). Most of the herb species are present in the pollen record by matching pollen types. Some pollen types with a match missing in MG35.70 have one in other Oss-North wells and the absence of the appropriate macro-remains must be attributed to chance. Only *Artemisia*, *Dipsacus* and *Succisa* were not found elsewhere. *Artemisia* achenes (fruits) do not preserve readily, the absence of the other two remains unexplained.

Nevertheless, the pollen record is quite different from the fruits and seeds list. The most striking aspect is the dominance of trees, grasses (Poaceae), heather (Ericales, mainly *Calluna*) and ferns. The discrepancy in the share of grasses is easily explained by the



<b>Oss MG well 35.70</b>									
<b>sample</b>	<b>4</b>	<b>8</b>	<b>15</b>	<b>20</b>	<b>28</b>	<b>36</b>	<b>phase 1</b>	<b>phase 2</b>	<b>leaf layer</b>
	<b>L + 14cm</b>	<b>L + 10cm</b>	<b>L + 3cm</b>	<b>L - 2cm</b>	<b>L - 10cm</b>	<b>L - 18cm</b>		<b>layer C</b>	<b>L</b>
	<b>pollen</b>	<b>pollen</b>	<b>pollen</b>	<b>pollen</b>	<b>pollen</b>	<b>pollen</b>	<b>macro</b>	<b>macro</b>	<b>macro</b>
	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>			
pollen sum/sample size liters	350	531	354	459	364	483	2	2	2
<b>Cereals</b>									
Cerealia	0.5	0.2	1.7	0.4	1.6	2.3	-	-	-
Triticum dicoccum spikelet fork							-	1*	1*
Panicum miliaceum							2	4	1
<b>Trees and shrubs</b>									
Alnus	68.2	61.1	49.6	64.8	65.5	64.2	-	-	-
Betula	1.3	1.9	3.4	2.4	1.9	1.0	-	-	-
Corylus	12.4	14.5	20.9	14.2	10.2	9.3	-	-	-
Fagus	1.0	0.4	0.3	0.4	0.3	0.6	-	-	-
Fraxinus	0.5	0.0	0.3	0.2	0.3	0.2	-	-	-
Hedera	0.0	0.0	0.3	0.0	0.0	0.0	-	-	-
Humulus	0.4	0.0	0.0	0.0	0.0	0.0	-	-	-
Pinus	0.0	1.5	1.7	2.2	1.4	1.2	-	-	-
Quercus sp.	14.2	18.8	21.2	14.3	20.3	22.6	-	-	1
Quercus sp. bud							+	4	++
Quercus sp. cup							-	-	3
Quercus sp. leaf fragment							+	+	++
Rubus idaeus							2	-	-
Rubus fruticosus							-	1	-
Rubus sp.	0.2	0.2	0.0	0.0	0.0	0.0	-	-	4
Salix sp.	1.3	1.1	1.7	1.3	0.5	0.4	-	-	-
Salix sp. bud							-	2	16
Tilia	0.9	0.8	0.8	0.4	0.3	0.8	-	-	-
Ulmus	0.4	0.6	0.3	0.2	0.3	0.6	-	-	-
<b>Herbs minus ferns and mosses</b>									
Alisma sp.							-	-	1
Apiaceae	0.2	0.2	0.8	0.2	0.0	0.2	-	-	-
Artemisia	0.2	0.6	0.3	0.4	0.0	0.0	-	-	-
Asteraceae liguliflorae	0.9	0.4	0.3	0.7	0.0	0.8			
Sonchus asper							1	-	4
Sonchus sp.							-	2	-
Asteraceae tubuliflorae	0.9	0.6	1.4	0.7	0.3	1			
Bidens sp.							-	2	1
Chenopodiaceae	1.5	2.1	0.8	1.5	1.6	0.8			





<b>Oss MG well 35.70</b>									
<b>sample</b>	<b>4</b>	<b>8</b>	<b>15</b>	<b>20</b>	<b>28</b>	<b>36</b>	<b>phase 1</b>	<b>phase 2</b>	<b>leaf layer</b>
	<b>L + 14cm</b>	<b>L + 10cm</b>	<b>L + 3cm</b>	<b>L - 2cm</b>	<b>L - 10cm</b>	<b>L - 18cm</b>		<b>layer C</b>	
	<b>pollen</b>	<b>pollen</b>	<b>pollen</b>	<b>pollen</b>	<b>pollen</b>	<b>pollen</b>	<b>macro</b>	<b>macro</b>	<b>macro</b>
	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>			
Plantago lanceolata	1.3	0.4	0.6	0.7	0.0	1.0	-	-	-
Plantago major							11	16	16
Poaceae	47.3	54.8	55.1	51.9	58	53.8	-	-	16
Poaceae small seed							1	-	-
Polygonum aviculare	0.4	0.2	0.0	0.2	0.3	0.6	1	100	90
Potentilla sp.							-	1	-
Prunella vulgaris							1	-	-
Ranunculus sg Batrachium sp.	0.0	0.2	0.6	0.2	0.0	0.0	-	-	8
Ranunculus	0.2	0.0	0.0	0.2	0.0	0.2	-	-	-
Ranunculus flammula							-	-	1
Ranunculus repens-type							-	8	4
Rumex acetosa-type	5.0	5.0	3.0	3.0	5.0	5.0	-	-	-
Rumex acetosella							2	-	-
Rumex sp.							-	-	1
Solanum dulcamara	0.0	0.0	0.0	0.2	0.0	0.0	-	-	-
Solanum nigrum	0.9	0.0	1.1	0.7	1.4	0.6	9	671	70
Sparganium emersum-type	0.0	0.0	0.6	0.0	0.0	0.0	-	-	-
Spergula arvensis	0.2	0.0	0.0	0.0	0.0	0.2	1	-	-
Spergularia	0.0	0.0	0.0	0.0	0.3	0.0	-	-	-
Succisa	0.0	0.0	0.3	0.0	0.0	0.0	-	-	-
Trifolium	0.2	0.0	0.0	0.0	0.0	0.0	-	-	-
Urtica	0.4	0.0	0.0	0.2	0.3	0.2	-	-	-
Urtica dioica							-	1	1
Valeriana	0.0	0.0	0.3	0.0	0.3	0.0	-	-	-
<b>Ferns and mosses</b>									
Monoletae psilatae	35.8	28.6	27.4	28.1	23.1	20.5	-	-	-
Polypodium	0.2	0.0	0.0	0.0	0.5	0.0	-	-	-
Sphagnum	1.1	1.5	2.5	0.2	1.1	1.2	-	-	-
Anthoceros	0.0	0.2	0.0	0.0	0.0	0.2	-	-	-
Phaeoceros	0.2	0.2	0.0	0.0	0.0	0.0	-	-	-
* = carbonized									
+ = some, ++ = tens									

Table 8.3 Comparison of the macro-remains and pollen retrieved from well MG 35.70.

fact that grass seed does not always preserve well by waterlogging. The relatively large share of heather is with certainty due to the presence of heather flowers. Heather was obviously used by the inhabitants of the Oss-North settlements. Parts of small twigs with adhering flowers were regularly found. The dominance of ferns (*Monoletae psilatae*) may also be attributed to human use, although their leaves were not noticed in the fill of the well, but they may have decayed.

Remain the trees. Willow (*Salix*) left both pollen and buds, which may be attributed to the handling of willow twigs on the yard. Oak pollen may have been adhering to the leaves mentioned before, but as its share in all samples is more or less comparable, the leaves were probably not its main source. It is possible that one or several oak trees grew on or close to well MG35.70's yard. However, the share of macroremains, one unripe acorn and one acorn cup, is thus low, that this explanation is rather unlikely. Macroremains of oak are also scarce in other Oss-North wells. Presumably, most pollen came from farther away. The source of the leaves remains unclear, but a human activity cannot be excluded.

Pollen from other trees must have rained down from the air into the well. This pollen rain is dominated by alder (*Alnus*) and hazel (*Corylus*) derived from regional stands. In the case of alder the nearby valley of the Meuse may be thought of, where remnants of alder carr were still present, though vast stands were already gone as the result of deforestation (Bakels 2002). The large share of hazel may trace its origin back to the edge of woods still present in the dry parts of the landscape, where deforestation had made an important

impact on the vegetation (Bakels 2002; Van Beurden 2002). All other pollen of trees may have come from the same source, except, perhaps, pine (*Pinus*) pollen which may have had a more distant source.

#### 8.1.4 Vegetation on the yards: conclusions

The study of plant remains retrieved from the Oss-North wells was intended to provide us with a reconstruction of the vegetation on the farm yards. The plant matter is considered to be derived from a very local vegetation. In earlier publications other sources, such as remnants of hay cut elsewhere, were considered too (for instance Bakels 1998). The Oss-North material gave no hints for diverse sources of origin, pollen excepted.

The resulting picture is that of a yard with very wet and heavily polluted parts, much trodden areas and perhaps a garden. Trees seem to have been largely absent, but an occasional oak here and there cannot be excluded. The picture is the same for every phase of occupation, whether it be Bronze Age, Iron Age of the Early Roman period. This conclusion is not very surprising. Through the ages farm yards looked like that, except were the absence of trees is concerned. Historical yards usually boast some trees, if not for shade or as a wind break, then for their fruit. But trees, and especially fruit trees, seem to have been absent.

It is possible that the picture is biased by the provenance of the seeds and fruits which provide its basis. They are retrieved from wells and may represent only the immediate vicinity of those structures. In Oss-North wells tend to cluster in certain areas within settlements and the reconstruction may apply only to those parts. But a considerable number of wells is

Oss-North, Bronze Age				
Feature	MG51.48	SK1029.5	MD884.65	SK1001.105
Date	MBA	MBA A	MBA	MBA
Sample number	2 ch. layer		11032j	12383 B
Sample size, liters	2	2	2,5	2
Hordeum vulgare	2	-	-	-
Triticum dicoccum	-	-	1	-
Cerealia indet.	-	2	-	-
Panicum miliaceum	-	-	-	1

Table 8.4 Carbonized remains from the Bronze Age.

Oss-North, crop remains											
feature	MG35.70	MG35.70	MG35.70	MG51.55	MG1027.51	MG18.1	MG18.1	MG18.1	MG18.1	MG18.1	MG18.1
date	EIA	EIA	EIA	EIA	EIA	MIA	MIA	MIA	MIA	MIA	MIA
feature	well	well	well	well	well	well	well	well	well	well	well
sample number	35.70 1	37.70 1c	35.70 2	51.55d	1027.51f	fill	bottom a	bottom b	halfway c	top d	residue 1-7
sample size, liter	2	2	2	4	2	2.5 + (75)	2	2	2	2	?
<b>Cultivated</b>											
Avena sp.	-	-	-	-	-	-	1*	1*	-	-	13*
Avena sp. awn	-	-	-	-	-	-	-	-	-	-	-
Hordeum vulgare	-	-	-	37*	-	4* + (3*)	8*	5*	4*	15*	124*
Hordeum vulgare internodium	-	-	-	17*	-	-	1*	-	2*	-	2*
Hordeum sp. awn	-	-	-	-	-	-	-	-	-	-	-
Hordeum sp.	-	-	-	-	-	-	-	-	-	-	-
Triticum dicoccum	-	-	-	-	-	1* + (6*)	2*	3*	3*	3*	-
Triticum dicoccum spikelet basis	-	1*	1*	4*	2*	-	3*	-	1*	10*	-
Triticum spelta	-	-	-	-	-	-	-	-	-	-	30*
Triticum spelta spikelet basis	-	-	-	-	-	-	-	-	-	-	-
Triticum dicoccum/spelta	-	-	-	-	-	-	-	-	-	-	-
Triticum spikelet basis	-	-	-	-	-	11*	-	-	-	-	21*
Cerealia indet.	-	-	-	30*cf Hord	-	4*	7*	1*	4*	3*	112*
Panicum miliaceum	2	4	1	-	1* and ++	-	1*	-	-	-	-
Camelina sativa	-	-	-	-	-	-	-	-	-	-	-
Linum usitatissimum	-	-	-	-	-	-	-	-	-	-	1*
Linum usitatissimum capsule fragment	-	-	-	-	-	-	-	-	-	-	-
Vicia faba	-	-	-	-	-	1* + (34*)	-	-	-	-	6*
Vicia faba funiculus	-	-	-	-	-	-	-	-	-	-	-
<b>Gathered fruit</b>											
Rubus fruticosus	-	-	-	-	-	-	-	-	-	-	-
<b>Weeds (Stellarietea mediae)</b>											
Anagallis arvensis	-	-	-	-	-	-	-	-	-	-	-
Bromus secalinus-type	-	-	-	-	-	-	-	-	-	-	-
Chenopodium album	-	-	-	-	-	20*	15*	17*	-	2*	4*
Digitaria ischaemum	-	-	-	-	-	-	-	-	-	-	-
Digitaria sp./Echinochloa crus-galli	-	-	-	-	-	-	-	1*	-	2*	-
Digitaria sp./Setaria sp.	-	-	-	-	-	-	-	-	-	-	-
Echinochloa crus-galli	-	-	-	3*	-	-	-	-	-	-	-
Raphanus raphanistrum	-	-	-	-	-	-	-	-	-	-	-
Solanum nigrum	-	-	-	-	-	-	-	-	-	-	-
Spergula arvensis	-	-	-	-	-	-	-	-	-	-	-
Stellaria media	-	-	-	-	-	-	-	-	-	-	-
Vicia hirsuta	-	-	-	-	-	-	-	-	-	-	1*
Vicia hirsuta/tetrasperma	-	-	-	2*	-	-	-	-	-	-	7*

## Oss-North, crop remains

feature	MG35.70	MG35.70	MG35.70	MG51.55	MG1027.51	MG18.1	MG18.1	MG18.1	MG18.1	MG18.1	MG18.1
date	EIA	EIA	EIA	EIA	EIA	MIA	MIA	MIA	MIA	MIA	MIA
feature	well	well	well	well	well	well	well	well	well	well	well
sample number	35.70 1	37.70 1c	35.70 2	51.55d	1027.51f	fill	bottom a	bottom b	halfway c	top d	residue 1-7
sample size, liter	2	2	2	4	2	2.5 + (75)	2	2	2	2	?
<b>Weeds very common in fields</b>											
Persicaria lapathifolia	-	-	-	9*	-	1*	-	2*	-	-	11*
Persicaria maculosa	-	-	-	-	-	-	-	-	-	-	-
Polygonum aviculare	-	-	-	-	-	-	-	-	-	-	-
Rumex acetosella	-	-	-	1*	-	-	-	-	-	-	-
<b>Other wild herbs</b>											
Agrostis sp.	-	-	-	-	-	-	-	-	-	-	-
Capsella bursa-pastoris	-	-	-	-	-	-	-	-	-	-	-
Carex sp.	-	-	-	-	-	-	-	-	-	-	-
Chenopodium ficifolium	-	-	-	-	-	-	-	-	-	-	-
Chenopodium polyspermum	-	-	-	-	-	-	-	-	-	-	1*
Eleocharis palustris	-	-	-	-	-	-	1*	-	-	-	-
Euphrasia sp./ Odontites sp.	-	-	-	-	-	-	-	-	-	-	1*
Fallopia convolvulus	-	-	-	-	-	-	-	-	-	-	3*
Fallopia convolvulus/ Polygonum aviculare	-	-	-	-	-	-	-	-	-	-	-
Festuca sp./Lolium sp.	-	-	-	-	-	-	1*	-	-	-	-
Galium aparine	-	-	-	-	-	-	-	-	-	-	-
Galium mollugo/verum	-	-	-	-	-	-	-	-	-	-	-
Galium palustre	-	-	-	-	-	-	-	-	-	-	-
Galium spurium	-	-	-	-	-	-	-	-	-	-	-
Galium sp.	-	-	-	-	-	-	-	-	-	-	-
Juncus sp.	-	-	-	-	-	-	-	-	-	-	-
Lotus sp./Melilotus sp.	-	-	-	-	-	-	-	-	-	-	-
Lotus sp./Trifolium sp.	-	-	-	-	-	-	-	-	-	-	-
Persicaria hydropiper	-	-	-	-	-	-	-	-	-	-	-
Persicaria sp.	-	-	-	-	-	-	-	-	-	-	1*
Phleum sp./Poa annua	-	-	-	-	-	-	-	-	-	-	-
Plantago lanceolata	-	-	-	-	-	1*	-	-	-	-	-
Plantago major	-	-	-	-	-	-	-	-	-	-	-
Poa sp.	-	-	-	-	-	-	-	-	-	-	-
Poaceae small seed	-	-	-	-	-	-	-	-	-	-	-
Prunella vulgaris	-	-	-	-	-	-	-	-	-	-	-
Rumex sp.	-	-	-	-	-	-	-	-	-	-	-
Trifolium sp.	-	-	-	-	-	-	-	-	-	-	-
Vicia sp.	-	-	-	-	-	-	1*	-	-	-	-
* = carbonized											
+ = some, ++ = tens											

Table 8.5a Crop plants and weeds found in Iron Age contexts.

## Oss-North, crop remains

feature	MG18.34	MG53.85	MG53.85	MG53.85	MG53.85	MG53.85	MG53.85	SK997.15	SK999.4	MG50.64	MG52.64	SK1012.68
date	LIA	LIA	LIA	LIA	LIA	LIA	LIA	LIA	LIA	IA	IA	LIA/RP
feature	well	well	well	well	well	well	well	well	well	well	well	well
sample number	18.34	53.85ab	53.85a top	53.85b	53.85c	53.85cd	53.85d	997.15c1	999.4 a+b	50.64	52.74	1012.68c
sample size, liter	3		2	2	2	4	2	2	0.7	2	2	2
<b>Cultivated</b>												
Avena sp.	-	1*	-	-	-	-	-	-	-	-	1*	-
Avena sp. awn	-	-	-	-	-	-	-	-	-	-	-	-
Hordeum vulgare	2*	5*	1*	11*	1*	4*	1*	-	2*	-	3*	1*
Hordeum vulgare internodium	-	34*	-	21*	-	1*	1*	-	6*	-	-	1*
Hordeum sp. awn	-	3*	-	-	-	-	-	-	-	-	-	-
Hordeum sp.	-	-	-	-	-	-	-	-	-	-	-	-
Triticum dicoccum	-	2*	-	-	-	-	-	-	2*	-	1*	-
Triticum dicoccum spikelet basis	-	16 and 18*	-	1*	-	1*	2*	-	2*	-	90* and 1	-
Triticum spelta	-	-	-	-	-	-	-	-	-	-	-	-
Triticum spelta spikelet basis	-	-	-	-	-	-	-	-	1*	-	-	-
Triticum dicoccum/spelta	3*	-	-	-	-	-	-	-	-	-	-	-
Triticum spikelet basis	2*	-	-	-	-	-	-	-	3*	-	-	-
Cerealia indet.	3*	5*	-	-	-	-	1*	-	-	-	3*	-
Panicum miliaceum	-	3 and 1*	-	-	-	-	-	-	-	1	-	-
Camelina sativa	-	-	1*	3*	-	-	-	-	-	-	-	-
Linum usitatissimum	-	31	-	3*	cf 1*	-	-	24	-	-	1	-
Linum usitatissimum capsule fragment	-	9	-	7*	1*	-	1*	16	-	-	22	-
Vicia faba	-	-	-	1*	-	-	-	-	-	-	cf 1*	-
Vicia faba funiculus	-	-	-	-	-	-	-	-	-	-	-	-
<b>Gathered fruit</b>												
Rubus fruticosus	-	-	-	-	-	-	-	-	-	-	-	-
<b>Weeds (Stellarietea mediae)</b>												
Anagallis arvensis	-	-	-	cf 1*	-	-	-	-	-	-	-	-
Bromus secalinus-type	-	-	-	-	-	-	-	-	-	-	1*	-
Chenopodium album	-	3*	-	9*	1*	1*	1*	-	-	-	-	-
Digitaria ischaemum	-	-	-	4*	-	1*	1*	-	-	-	-	-
Digitaria sp./Echinochloa crus-galli	-	-	-	-	-	-	-	-	-	-	-	-
Digitaria sp./Setaria sp.	-	-	-	-	-	-	-	-	-	-	-	-
Echinochloa crus-galli	-	-	-	-	2*	-	1*	-	-	-	-	-
Raphanus raphanistrum	-	1*	1*	-	-	-	-	-	-	-	-	-
Solanum nigrum	-	-	-	-	-	-	-	-	1*	-	-	-
Spergula arvensis	1*	-	-	-	-	-	1*	-	-	-	-	-
Stellaria media	-	-	-	-	-	-	-	-	-	-	-	-
Vicia hirsuta	-	-	-	-	-	-	-	-	-	-	-	-
Vicia hirsuta/tetrasperma	-	-	1*	4*	-	2*	-	-	-	-	-	-



Oss-North, crop remains												
feature	MG18.34	MG53.85	MG53.85	MG53.85	MG53.85	MG53.85	MG53.85	SK997.15	SK999.4	MG50.64	MG52.64	SK1012.68
date	LIA	LIA	LIA	LIA	LIA	LIA	LIA	LIA	LIA	IA	IA	LIA/RP
feature	well	well	well	well	well	well	well	well	well	well	well	well
sample number	18.34	53.85ab	53.85a top	53.85b	53.85c	53.85cd	53.85d	997.15c1	999.4 a+b	50.64	52.74	1012.68c
sample size, liter	3		2	2	2	4	2	2	0.7	2	2	2
<b>Weeds very common in fields</b>												
Persicaria lapathifolia	1*	1*	2*	15*	-	4*	-	-	1*	-	1*	-
Persicaria maculosa	-	-	-	-	-	-	-	-	-	-	-	-
Polygonum aviculare	-	-	-	-	-	1*	-	-	-	-	-	-
Rumex acetosella	-	-	-	-	-	-	-	-	-	-	-	-
<b>Other wild herbs</b>												
Agrostis sp.	4*	-	-	-	-	-	-	-	-	-	-	-
Capsella bursa-pastoris	-	-	-	-	-	-	-	-	-	-	-	-
Carex sp.	-	-	1*	-	-	-	-	-	-	-	-	-
Chenopodium ficifolium	1*	1*	-	4*	-	-	-	-	-	-	-	-
Chenopodium polyspermum	-	-	-	-	-	-	-	-	-	-	-	-
Eleocharis palustris	-	2*	1*	4*	-	2*	2*	-	1*	-	-	-
Euphrasia sp./ Odontites sp.	-	-	-	-	-	-	-	-	-	-	-	-
Fallopia convolvulus	-	-	2*	-	-	-	-	-	-	-	-	-
Fallopia convolvulus/ Polygonum aviculare	4*	-	-	-	-	-	-	-	-	-	-	-
Festuca sp./Lolium sp.	-	-	-	-	-	-	-	-	-	-	-	-
Galium aparine	-	-	-	-	-	-	-	-	-	-	-	-
Galium mollugo/verum	-	-	-	-	-	-	-	-	-	-	-	-
Galium palustre	-	-	-	-	-	-	-	-	-	-	-	-
Galium spurium	-	-	-	2*	-	-	-	-	-	-	-	-
Galium sp.	-	-	-	-	-	-	-	-	-	-	-	-
Juncus sp.	-	-	-	-	-	-	-	-	-	-	-	-
Lotus sp./Melilotus sp.	4*	-	-	-	-	-	-	-	-	-	-	-
Lotus sp./Trifolium sp.	-	-	-	-	-	-	-	-	1*	-	-	-
Persicaria hydropiper	-	3*	-	3*	-	-	-	-	-	-	-	-
Persicaria sp.	1*	-	-	-	-	-	6*	-	-	-	-	-
Phleum sp./Poa annua	24*	-	-	-	-	-	-	-	-	-	-	-
Plantago lanceolata	-	-	-	-	-	-	-	-	-	-	-	-
Plantago major	-	-	-	-	-	-	-	-	-	-	-	-
Poa sp.	1*	-	-	-	-	-	-	-	-	-	-	-
Poaceae small seed	-	-	-	-	-	-	-	-	-	-	-	-
Prunella vulgaris	-	-	-	-	-	-	-	-	-	-	-	-
Rumex sp.	1*	-	-	-	-	1*	-	-	-	-	-	-
Trifolium sp.	-	1*	-	-	-	-	-	-	-	-	-	-
Vicia sp.	1*	-	-	-	-	-	-	-	-	-	-	-
* = carbonized												

Table 8.5b Crops and weeds found in Iron Age contexts, continued.

feature	MDH133	in H X	MG54	SKS562	SKS562	SKS562	SKS562	SKS562	SKS568	SKS568
date	IA	LIA	LIA	LIA	LIA	LIA	LIA	LIA	LIA	LIA
feature	p. hole	p. hole	p. hole	p. hole	p. hole	p. hole	p. hole	p. hole	p. hole	p. hole
sample number	970.12	995.147	12.105	1001.44	1001.45	1001.42	1001.46	1001.?	1001.39	1024.4'0
sample size, liter	4	2	2	2	2	2	2	1.5	0.5	2

[illegible]

## Oss-North, crop remains

feature	MDH133	in H X	MGS4	SKS562	SKS562	SKS562	SKS562	SKS562	SKS568	SKS568
date	IA	LIA	LIA	LIA	LIA	LIA	LIA	LIA	LIA	LIA
feature	p. hole	p. hole	p. hole	p. hole	p. hole	p. hole	p. hole	p. hole	p. hole	p. hole
sample number	970.12	995.147	12.105	1001.44	1001.45	1001.42	1001.46	1001.?	1001.39	1024.4'0
sample size, liter	4	2	2	2	2	2	2	1.5	0.5	2
<b>Weeds very common in fields</b>										
Persicaria lapathifolia	7*	2*	-	9*	12*	-	6*	-	-	-
Persicaria maculosa	cf 2*	-	-	-	-	-	-	-	-	-
Polygonum aviculare	-	-	-	-	-	-	-	-	-	-
Rumex acetosella	-	-	-	2*	-	-	-	-	-	-
<b>Other wild herbs</b>										
Agrostis sp.	-	-	-	-	-	-	-	-	-	-
Capsella bursa-pastoris	-	-	-	-	-	-	-	-	-	-
Carex sp.	-	-	-	1*	-	-	-	-	-	-
Chenopodium ficifolium	-	-	-	-	-	-	-	-	-	-
Chenopodium polyspermum	-	-	-	-	-	-	-	-	-	-
Eleocharis palustris	1*	1*	-	3*	4*	5*	-	-	-	-
Euphrasia sp./ Odontites sp.	-	-	-	-	-	-	-	-	-	-
Fallopia convolvulus	1*	-	-	-	-	-	-	-	-	-
Fallopia convolvulus/ Polygonum aviculare	-	-	-	-	2*	-	-	-	-	-
Festuca sp./Lolium sp.	-	-	-	-	-	-	-	-	-	-
Galium aparine	-	-	-	-	-	-	-	-	-	-
Galium mollugo/verum	-	-	-	-	-	-	-	-	-	-
Galium palustre	-	-	-	-	-	-	-	-	-	-
Galium spurium	-	-	-	-	-	-	-	-	-	-
Galium sp.	-	-	-	-	-	-	-	-	-	-
Juncus sp.	-	-	-	-	-	-	-	-	-	-
Lotus sp./Melilotus sp.	-	-	-	-	-	-	-	-	-	-
Lotus sp./Trifolium sp.	-	-	-	-	-	-	-	-	-	-
Persicaria hydropiper	-	-	-	2*	1*	2*	-	-	-	-
Persicaria sp.	-	-	-	-	-	-	-	-	-	-
Phleum sp./Poa annua	-	-	-	-	-	-	-	-	-	-
Plantago lanceolata	-	-	-	2*	2*	-	-	-	-	-
Plantago major	-	-	-	-	-	-	-	-	-	-
Poa sp.	-	-	-	1*	-	-	-	-	-	-
Poaceae small seed	-	-	-	-	-	-	-	-	4*	-
Prunella vulgaris	-	-	-	3*	-	-	-	-	-	-
Rumex sp.	-	-	-	3*	3*	-	-	-	-	-
Trifolium sp.	-	-	2*	2*	2*	-	-	-	-	-
Vicia sp.	-	-	-	1*	-	-	-	-	-	-
* = carbonized										

Table 8.5c: Crop plants and weeds found in Iron Age contexts, continued.

feature	near MGS45	MGS3	MGS5	MGS5	MGS5	MGS9	MGS15	MGS15	SK1021.8	SK1026.100
date	LIA	LIA	LIA	LIA	LIA	LIA	LIA	LIA	IA	IA/RP
feature	p. hole ?	p. hole	p. hole	p. hole	p. hole	p. hole	p. hole	p. hole	pit	pit
sample number	63.69	12.224	16.53	16.55	16.59	17.500	16.57	16.99	1021.8	1026.100
sample size, liter	2	3	3	3	3	1.5	2	3	5	4

[illegible]

Oss-North, crop remains										
feature	near MGS45	MGS3	MGS5	MGS5	MGS5	MGS9	MGS15	MGS15	SK1021.8	SK1026.100
date	LIA	LIA	LIA	LIA	LIA	LIA	LIA	LIA	IA	IA/RP
feature	p. hole ?	p. hole	p. hole	p. hole	p. hole	p. hole	p. hole	p. hole	pit	pit
sample number	63.69	12.224	16.53	16.55	16.59	17.500	16.57	16.99	1021.8	1026.100
sample size, liter	2	3	3	3	3	1.5	2	3	5	4
<b>Weeds very common in fields</b>										
Persicaria lapathifolia	-	-	1*	2*	-	1*	-	5*	-	3*
Persicaria maculosa	-	-	-	-	-	-	-	-	-	-
Polygonum aviculare	-	-	-	-	-	-	-	-	-	-
Rumex acetosella	-	-	-	-	-	-	-	-	-	39*
<b>Other wild herbs</b>										
Agrostis sp.	-	-	-	-	-	-	-	-	-	-
Capsella bursa-pastoris	-	-	-	-	-	-	-	-	-	1*
Carex sp.	-	-	-	-	-	-	-	-	-	1*
Chenopodium ficifolium	-	-	-	-	-	-	-	-	-	-
Chenopodium polyspermum	-	-	-	-	-	-	-	-	-	-
Eleocharis palustris	-	-	-	-	cf 4*	-	16*	-	-	6*
Euphrasia sp./ Odontites sp.	-	-	-	-	-	-	-	-	-	15*
Fallopia convolvulus	-	-	-	-	-	-	-	-	-	-
Fallopia convolvulus/ Polygonum aviculare	-	-	-	-	-	-	-	4*	-	-
Festuca sp./Lolium sp.	-	-	-	-	-	-	-	-	-	1*
Galium aparine	-	-	-	-	1*	-	-	-	-	-
Galium mollugo/verum	-	-	-	-	-	-	-	-	-	1*
Galium palustre	-	-	-	-	-	-	-	-	-	4*
Galium spurium	-	-	-	-	-	-	-	1*	-	-
Galium sp.	-	-	-	-	-	-	-	-	-	2*
Juncus sp.	-	-	-	-	-	-	-	4*	-	-
Lotus sp./Melilotus sp.	-	-	-	-	-	-	-	-	-	-
Lotus sp./Trifolium sp.	-	-	-	-	-	-	-	-	-	-
Persicaria hydropiper	-	-	-	-	-	-	-	-	-	-
Persicaria sp.	-	-	-	-	-	-	-	-	-	-
Phleum sp./Poa annua	-	-	-	-	-	-	-	-	-	-
Plantago lanceolata	-	-	-	-	-	-	-	-	-	2*
Plantago major	-	-	-	-	-	-	-	4*	-	1*
Poa sp.	-	-	-	-	-	-	-	-	-	-
Poaceae small seed	-	-	-	-	-	-	-	-	-	2*
Prunella vulgaris	-	-	-	-	-	-	-	-	-	-
Rumex sp.	-	-	-	-	-	-	-	-	-	9*
Trifolium sp.	-	-	1*	-	-	-	-	-	-	2*
Vicia sp.	-	-	-	-	-	-	-	-	-	1*
* = carbonized										

Table 8.5d Crop plants and weeds found in Iron Age contexts, continued.

lying more dispersed and the argument is therefore not very strong.

Previously it was mentioned that pollen form an exception where the very local provenance of the data is concerned. The conclusion of the comparison of pollen on the one hand and seeds and fruits on the other must be that pollen seems to provide more insight into the vegetation of the wider surroundings of the settlements. It is well known that pollen travels farther than seeds and also that pollen comes down with rain showers. This is possibly the external source of the non-yard information.

Last, but not least, waterlogged conditions are essential for the reconstruction of the vegetation in and around farms. When these are lost, most of the information is lost too.

## 8.2 THE CROPS OF THE OSS-NORTH FARMERS DURING THE BRONZE AGE AND IRON AGE

Most of the features excavated at Oss-North are interpreted as the remnants of farms whose inhabitants would have kept livestock and grown crops. Their crops are the subject of this section.

Crop remains were retrieved by sieving samples from the fill of postholes, wells, pits and ditches. Sieving took place under running tap water with the aid of a series of sieves with mesh widths up till 0.25 mm. Hundreds of samples were taken, but in the end only 152 samples originating from 79 features were sorted and analysed. During the writing of the final archaeological report it turned out that 22 samples out of 20 features could not be provided with a reliable date and are therefore not considered anymore. Eight samples out of 4 features were attributed to the Roman period. The remaining samples were suitable for the study presented here.

The results are presented in tables 8.4 and 8.5. Although a relatively large number of wells with waterlogged material were studied most remains of cultivated plants are carbonized. Except for one spikelet fork of emmer wheat (*Triticum dicoccum*) only broomcorn millet (*Panicum miliaceum*) and linseed/flax (*Linum usitatissimum*) were encountered as preserved by waterlogging. This result agrees with the general observation that cereals like wheat and barley, and pulses, are better preserved by charring, whilst oil seeds like linseed are better preserved in wet circumstances. Millet may be preserved in both ways, because its glumes survive by waterlogging, but its complete seeds by charring. The second oil seed, gold-of-pleasure (*Camelina sativa*), which might have been preserved

by waterlogging as well, is, surprisingly, only found carbonized.

A second point is that postholes provided meagre results, as many of them revealed no remains at all. The postholes of some Iron Age granaries are the exception. All in all wells were the best source for information on crop plants, even when carbonized.

### 8.2.1 Bronze Age

Out of 25 Bronze Age features, 23 of them being wells providing 33 samples, only 6 remains of cultivated plants were retrieved, all of them carbonized (table 8.4). They belong to three kinds of cereal: hulled multirowed barley (*Hordeum vulgare*), emmer wheat and millet. The finds are too few in number to justify any other remark than that obviously three kinds of crop plants were known.

### 8.2.2 Iron Age

The results concerning the Iron Age were better (table 8.5a, b, c, d). Hulled multirowed barley, emmer wheat, spelt wheat (*Triticum spelta*), millet, gold-of-pleasure, linseed and horsebean (*Vicia faba* var. *minor*), and presumably oats (*Avena* sp.) too, are the crops noted, though the last mentioned may also represent wild oat as the chaff remains which allow oat identifications are missing from the records. The plants encountered with the highest frequency are hulled barley (in 30 samples out of 43), emmer wheat (in 17 samples) and millet (in 15 samples). Frequency (ubiquity) is considered to reflect the relative importance of a product, provided the ways of processing are more or less comparable as is the case with cereals. The more such a product is present, the greater the chance that it ends up in the general waste filling the features in a settlement. Thus, if frequency truly reflects their relative importance, hulled barley, emmer wheat and broomcorn millet were the main cereal crops handled in the settlement. Spelt wheat, with a frequency of 2, and oats (if a crop), with a frequency of 6, were obviously not very popular. Non-cereal crops are subject to other kinds of processing and leave less waste to be encountered afterwards. Therefore they are not as readily detected as cereals, especially hulled cereals. Seen in that light the non-cereal crops linseed/flax and horsebean are remarkably often found with frequencies of respectively 8 and 9. Gold-of-pleasure was encountered in four samples.

Awns of barley and oats, capsule fragments of flax and *funiculi* of horsebean are signs that those crops at least were cultivated by the Oss-North farmers.



Imported crops are generally cleaned or semi-cleaned and lack those parts. Awns break off before transport; the brittle capsules of flax are left behind. The *funiculus* is the tiny stalk which connects the bean to the pod. If not eaten fresh (freshly shelled), beans are shelled and dried before storage and eventual transport, in which process the *funiculi* tear loose and are lost. Hulled wheats like emmer and spelt are stored and transported with their spikelet bases attached, and the presence of spikelet forks is therefore no reliable indication of local cultivation, but local cultivation cannot be excluded.

Remains of actually stored products are absent. No concentrations of cultivated plants were found. Some granaries had postholes containing carbonized crop remains in their fill, but as these remains represent a mixture of all kinds of crop they provide no clue as to what was stored inside. They look like ordinary waste from threshing and winnowing, burnt, and ending scattered on the yards near the granaries, near the numbers MGS5, MGS15 and MDS562 for instance (table 8.5). The same kind of waste is present in the fill of two postholes belonging to houses and in many of the wells.

As threshing waste commonly contains remains of field weeds, reaped together with the crops, such weeds may be expected to be present amongst the carbonized wild plants retrieved from the same samples which revealed the carbonized crop remains (table 8.5). Ten of the species found there are typical of the phytosociological class *Stellarietetea mediae* (Tüxen, Lohmeyer and Preising in Tüxen 1950), the class of plants growing on recently disturbed soils, especially, but not exclusively, fields. And eight of these ten are characteristic for its order *Sperguletalia arvensis* (Hüppe et Hofmeister 1990), describing the weed flora of fields on sandy and loamy soils which are poor in nutrients and rather acid (Haveman *et al.* 1998). Four others are, when not characteristic, still very common in such fields. Many of the remaining species may grow there too.

Only a few plants must have had a different source of which *Eleocharis palustris* is the most conspicuous. Present in 15 of the 43 samples the plant comes in frequency only after *Persicaria lapathifolia* (21) and before *Chenopodium album* (14). *Eleocharis palustris* is a plant of wet environments and grows readily in wet ditches or on other wet terrain. It grows there, amongst others, together with *Galium palustre*, *Juncus* species and many members of the *Bidentetetea tripartitae* discussed in chapter 8.1, which

includes, for instance, *Persicaria lapathifolia* and *Chenopodium album* as well. The farm yards included such localities and it is therefore no surprise that *Eleocharis* is present in the finds. Yards may have been cleaned from time to time and weeds destroyed by burning them. But it is also possible that the fields were dissected by ditches, as boundaries or for better drainage after heavy rain. As both the vegetation of fields (*Stellarietetea mediae*) and wet patches near wells (*Bidentetetea tripartitae*) are pioneers on disturbed soil, they readily show an overlap. It is therefore difficult to say whether the carbonized seeds and fruits found in the samples are truly representatives of the weed flora of the fields. Part of them will be, but drawing a line between field weeds and other weedy plants is impossible.

This difficulty robs us also of the possibility to answer the question whether the crops were spring- or autumn-sown. Millet, gold-of-pleasure, linseed/ flax and horsebean are summer crops. Barley and oats are commonly spring-sown as well. Spelt wheat is a winter crop, whilst emmer wheat occur in both winter and summer varieties (Körber-Grohne 1987). Nevertheless, except for the *Bromus* species, all possible field weeds are weeds of summer crops (Sissingh 1950). This would imply that either winter crops were not grown, or the plants enumerated in table 8.5 have nothing to do with crops. It would also imply that a product like spelt wheat was imported. But this is hardly believable. Somehow, the information provided by the plant remains is not sufficiently precise. As most of the samples are dated in the late Iron Age (LIA) it is also not possible to ascertain whether the weed flora was subject to change in the course of time or remained the same.

### 8.2.3 Discussion

The fact that hardly any crop remains were retrieved from Bronze Age features asks for comment. Several explanations offer themselves. The first is that the Oss-North farmers were more oriented towards the raising of livestock, whereas their crop cultivation activities were of limited character. The second possibility is that they processed their crops elsewhere, thereby leaving no waste of crop processing to be burnt in the yards. The third is that the lack of remains is a matter of taphonomy.

To find an answer contemporaneous settlements will be looked at.<sup>2</sup> The Oss-North farms are situated on the border between two kinds of landscape. To the north there is the wide valley of the rivers Meuse and

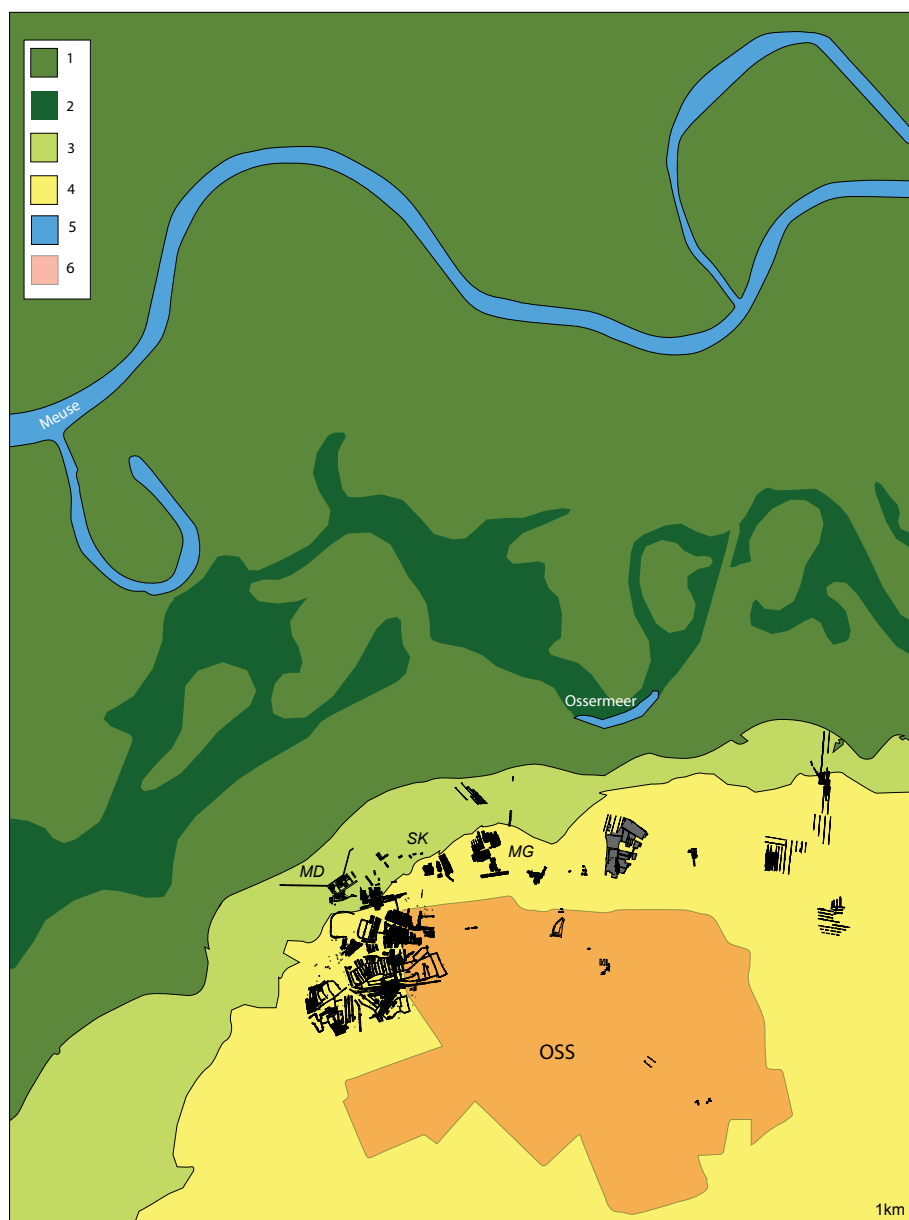


Figure 8.3 The location of the settlements on the edge of the wide valley of the river Meuse. Legend: 1: river valley; 2: old river courses (until the Roman period); 3: coversand with a thin clay cover; 4: coversand area; 5: present river courses and water; 6: built-up area (Oss). In black excavated areas. MD=Mikkeldonk, SK=Schalkskamp; MG=Mettegeupel. Drawing H. Fokkens, source: Bodemkaart van Nederland 1:50.000.

Rhine with their branches. Its river loams are dissected by relatively higher and sandier stream ridges and crevasse splay deposits. South of Oss lie the Pleistocene coversands of Brabant, dissected here and there by small rivulets. The Oss-North settlements were founded on the edge of these sands facing the wide valley (fig. 8.3). Both the higher terrain in the valley and the coversands were inhabited during the Bronze Age and several of these settlements were investigated archaeobotanically.

In the case of the river valley four sites, or clusters of sites, have to be mentioned: Rump Eigenblok, Tiel-Medel, Meteren-De Bogen and Heumen-Noord (Brinkkemper *et al.* 2002; Bakels 2005; Hänninen and Van Haaster 2002; Van Beurden 2003). None of the authors complains of a lack of crop plant remains. The worst result was obtained in Tiel-Medel where only three out of eight Bronze Age wells contained plants remains at all, but this result is still much better than that obtained at Oss-North. In Rump-Eigenblok

and Meteren-De Bogen the finds were even rich in specimens. The species found in the valley sites are hulled barley, emmer wheat, bread wheat (*Triticum aestivum*), broomcorn millet and possibly oats, but as the parts of the chaff which might identify the oats as cultivated are absent, the oat grains may belong to wild oat (*Avena fatua*). The presence of barley chaff indicates that this cereal was cultivated locally. On the basis of the weeds it should have been a summer crop.

Ard marks detected at Rump-Eigenblok present another witness of local crop cultivation. As mentioned before, macroremains of wheat cannot give clues regarding local production, but as pollen analysis of the ard marks revealed both barley and wheat pollen, and even more wheat than barley, it may be presumed that wheat was produced locally too. The ard marks contained also oat pollen, but as remarked above, these may have been shed by wild oat. Millet is not readily detectable through its pollen, but it is presumed that this cereal was grown as well.

An indirect proof of another kind of crop was detected at Tiel-Medel, namely flax dodder (*Cuscuta epilinum*). This plant is parasitic on, exclusively, flax, but flax itself was not found. All in all, the Bronze Age farmers in the river valley seem to have produced crops and this not on a negligible scale.

Turning to the Pleistocene coversands, the authors reporting on the site Reusel-Kruisstraat complain of badly preserved remains in the only (Late) Bronze Age pit they had to analyse. They found one grain of barley (*Hordeum* sp.) and some emmer wheat (Van der Meer 2009). In Weert-Kampershoeck two possible Bronze Age (or Middle Iron Age) pits contained nothing at all (Van der Linden and Van Beurden 2009). But other sites in this region gave better results. Over a hundred remains of hulled barley, emmer wheat and broomcorn millet were found in a Late Bronze context at Helden-Schrames (van der Meer 2008). And in a site nearer to Oss, Breda-Ekkersrijt, seven out of eight samples contained abundantly cereal remains (Van Haaster 2009). The species in question are hulled barley, emmer wheat and broomcorn millet. Numerous remains of barley chaff indicate local production and for the other species local production is assumed as well.

Comparison of the results and their interpretation connected with the river valley communities on the one hand and the sandy region on the other learns that there are hardly differences. The only point to be made is that the farmers in the valley grew bread wheat. Their soils may have been better suited to this rather demanding crop. But the main crops at both

sides of Oss-North were hulled barley, emmer wheat and millet. Pulses were not found up till now and the indications of oil plant production are very weak. The three main cereals are exactly those present in the scanty remains from Oss-North. As the people farming north and south of Oss are supposed to have grown their own crops it is hardly feasible that the Oss-North farmers should have farmed differently.

Remains the factor taphonomy. Even carbonized seeds and fruits can vanish from the records by disintegration, although this process has hardly been subject to serious investigations. Some work has been done on preservation in calcareous soils (Braadbaart

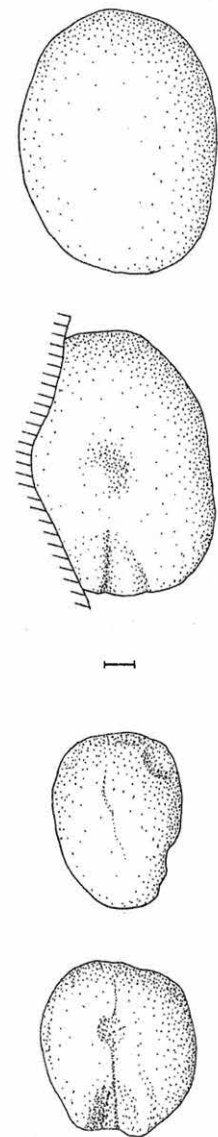


Figure 8.4 Horsebeans (*Vicia faba* var. *minor*) from Oss, above two views of an imprint, below two views of a (shrunk) carbonized specimen. Scale bar 1 mm. Drawing W.J. Kuijper.

*et al.* 2009), but the Oss soils are not of their number. In two of the sandy soil sites the investigators complained of bad preservation or of finding nothing at all. Nevertheless, other sites did give good results. As a matter of fact, there is at present not enough knowledge on the behaviour of carbonized seeds in different kinds of soil. Therefore, the scarcity of the finds at Oss-North remains enigmatic.

From the Early Iron Age onwards the features do reveal cultivated plants. The results resemble those obtained at nearby Oss-Ussen (Bakels 1998) except for two species, which are missing in the Oss-North records: opium poppy (*Papaver somniferum* var. *setigerum*) and rape seed (*Brassica rapa*). The status of rape seed as cultivated is still open to debate. It may be a weed. But poppy was surely cultivated at that time. Its seeds were found in other Iron Age sites within the region, for instance in a well at Valkenswaard-Zeelbergsche Akkers (Van Haaster 2001).

The fact that hulled barley, emmer wheat and millet were the most important cereals at Oss-North tallies with the findings in comparable sites. All three are very well suited to the soils poor in nutrients and rather acid as indicated by the possible weeds described earlier. Spelt wheat was everywhere less popular, though in several sites, Oss-Ussen for instance, of slightly more importance than in Oss-North. Bread wheat is almost absent in the records, even in Meuse-Rhine valley sites. One single grain in Goirle-Huzarenwei on sand and one single grain in Geldermalsen (Meteren)-Lage Blok in the valley are the only representatives of this cereal (Van Haaster 2005; 1998).

Linseed is rather common in Iron Age settlements, especially when waterlogged conditions are met with, but horsebean is not. In the surroundings of Oss-North and still further beyond, horsebean is only reported from Oss-Ussen, Breda (two sites) and Boxmeer (Bakels 1998; Gouw and Kooistra 2006; Buurman 1986) and it is never numerous. Single seeds are the rule. Even in Oss-North the pulse is not present in large numbers. The 35 specimens in sample MG18.1 were retrieved from 77.5 liters of fill ! Nevertheless, the region Oss is remarkable for its horsebeans. In Oss-Ussen even its imprints in pottery were found. By accident horsebeans have become incorporated in potter's clay. They burned away during firing of pots but left imprints. Three of these were noted. The silicon rubber positives made of them shows that even their hilums are still visible (fig. 8.4). They measure 9.7 x 7.5 x 7.5 mm, 8.2 x 6.0 x ? mm (both Middle Iron Age) and 10.3 x 7.0 x c. 6.2 mm (Late Iron Age) and are with that larger

than carbonized specimens, such as those found in Oss-North MG18.1 with dimensions 6.3 (8.4-5.0) x 5.2 (7.2-4.1) x 4.6 (6.4-3.7) mm (N=10). The dimensions of the imprints must reflect the true size when fresh or freshly dried; the carbonized beans have shrunk during charring. The plant does not thrive well on dry sandy soils. It needs constant moisture. It may be that the situation of the Oss settlements, namely on the edge of the sandy region, was especially suited for horsebean growing.

Gold-of-pleasure was very common in the Iron Age. In Oss-North the seeds of this oilplant were not numerous, but what this does mean is not very clear.

### 8.2.4 Conclusion

The Bronze Age features revealed the presence of hulled barley, emmer wheat and broomcorn millet, but the information on crops stops at that. The scarce remains do not allow any other conclusion. Excavations in contemporaneous sites, whether north of Oss in the wide river valley, or south of Oss on the sandy soils of Brabant, showed that the farmers of the period did practise crop cultivation. Why appropriate remains were almost absent on the Oss-North farms is left unexplained.

The Iron Age features offered better results. Farmers grew at least seven or eight crop plants, of which the horsebean (Celtic bean) deserves special mentioning as this pulse's regular presence on the Oss sites is remarkable in comparison with other sites in a wide region around this place. Possibly the situation of Oss on the edge of the sandy plateau bordering a river valley was especially suited to horsebean growing.

The field weeds show that in general crops were grown on soils with a low pH and poor in nutrients. Other information on crop production and crop processing could not be obtained from the data available.

### ACKNOWLEDGMENTS

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### NOTES

1. This text was written before the presentation of the method proposed by Schepers *et al.* (2013) and therefore that method was not regarded here.
2. As the text was written in 2011 later publications are not considered here.

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# 9. The animal bones of Mettegeupel, Mikkeldonk, and Schalkskamp

J. van Dijk<sup>1</sup> and I.M.M. van der Jagt<sup>2</sup>

## 9.1 INTRODUCTION

Only few features in the Oss region yielded archaeozoological material. Organic material was only preserved in deep pits and wells in which the ground water table was high. This means that the sample is very limited and only representative for very general developments. For this reason, the contents of the individual features will be briefly discussed. On the basis of these data, only a few general remarks will be possible. The bones derive from several pits and wells dating to the Bronze Age, the Iron Age, and the Roman Period. The results of the study are presented per site and per structure (*e.g.* pit, well) and are discussed by period.

## 9.2 METHODS

Most of the animal remains were retrieved by hand. In addition, some structures (*e.g.* those containing cremated human remains) were sieved. Almost all of the animal remains derive from mammals. Only one fish bone was found, which unfortunately could not be identified to the species level. During the identification of the mammal bones, as much information as possible was recorded. For every bone fragment, data were noted relating to: species, skeletal element, age at slaughter, sex, fragmentation, measurements, and specific characteristics such as marks of chopping, cutting, sawing, gnawing, and burning. The data were stored in a database that was designed according to the Laboratory Protocol Archeozoölogie by Lauwerier 1997. Chop and cut marks are recorded using Lauwerier 1988.

Bone fragments that could not be assigned to an individual species were classified according to animal size. Horses, cattle and deer were classified as large sized mammals (LM). Sheep, goats, pigs and dogs were classified as medium sized mammals (MM). Apart from the number of fragments, the weight of the mammal bones has been recorded. Weight measurements provide a useful tool that can help to estimate meat weight based on the weight of the bones. Several skeletal and dental methods of assessing age have been used. One is based on the sequence of epiphyseal fusion of different bones in the skeleton, following the method of Habermehl, and the other is based on the sequence of tooth eruption and wear, following the methods of Grant and Hambleton (Habermehl 1975; Grant 1982; Hambleton 1999).<sup>3</sup> Determination of the age of horses can be obtained by using the crown height measurements of teeth (Levine 1982). No diagnostic features were present to differentiate between the faunal remains of sheep and goat. The remains were simply recorded as sheep/goat. Hence, it is uncertain whether both species were present or only one of them.

Site	Number	Weight (g)
Oss-Mettegeupel	148	108,7
Oss-Mikkeldonk	512	6.211,3
Oss-Schalkskamp	660	1.121,7
Total	1.320	7.441,7

Table 9.1 Number and weight of the animal bones recovered in features from the Mettegeupel, Mikkeldonk and Schalkskamp quarters.

Table 9.2 Fragmentation rates of the mammal bones (excluding human remains).

Fragmentation	Mettegeupel		Mikkeldonk		Schalkskamp	
	Number	%	Number	%	Number	%
0-10% complete	65	100,0	210	83,0	192	95,5
10-25% complete	-	-	19	7,5	5	2,5
25-50% complete	-	-	9	3,6	-	-
50-75% complete	-	-	13	5,1	2	1,0
75-100% Complete	-	-	2	0,8	2	1,0
Subtotal	65	100,0	253	100,0	201	100,0
Dental fragments	83		259		181	
Total	148		512		382	

### 9.3 PRESERVATION

The animal bones generally are poorly preserved. In some instances, only very small splinters of bone remained. These finds were only weighed because counting the individual small pieces of bone is time consuming and does not add much information. Conversely, in some cases the dental pieces that could in theory belong to one teeth or molar were counted separately. Therefore, the number of fragments cannot be used as a reliable indicator of the species ratio. Moreover, because of the poor preservation of the bones, the application of other quantification techniques, such as the Minimum Number of Individuals (MNI), would not have provided reliable information either. Therefore, the following statements based on the number of fragments must be assessed critically.

### 9.4 GENERAL RESULTS

For all three sites Oss-Mettegeupel, Oss-Mikkeldonk and Oss-Schalkskamp, a total number of 1.320 animal bones was analysed (table 9.1). The disintegration of teeth and molars is a result of the poor preservation conditions. Consequently, a large part of the animal remains consisted of dental remains. All the identified remains at Oss-Mettegeupel consist of teeth, 84% of the Mikkeldonk material come from dental remains, and dental remains comprise 83% of the Schalkskamp assemblage. At Oss-Almstein no bones were recovered.

Earlier archaeozoological studies of Oss-Ussen concluded that the sandy soil with low water content is responsible for the poor preservation conditions for bone material. In Oss-Ussen, 74% of the identified bones consisted of dental remains (Lauwerier and IJzereef 1998, 350). Also in Oss-Ussen only bones from below the groundwater level (e.g. in wells or pits) were preserved to some extent. Poor preservation conditions have an effect on the degree of fragmentation of the bones as well. In Oss-Mettegeupel, all of the bone fragments represent only one tenth of the original complete bone weight (table 9.2). In Oss-Mikkeldonk, 83% of the bones represent only one tenth of a complete bone; in Oss-Schalkskamp this percentage is 96%.

### 9.5 RESULTS PER SITE

The results are rather poor, and constitute no basis for generalisations. Nevertheless, the results will be described briefly since it is the only available data.

#### 9.5.1 Oss-Mettegeupel

Four Bronze Age pits and three pits and a well dating to the Iron Age yielded 148 animal remains (table 9.3). Structure MG 51.48 is a pit that contained fragments of ceramics dating to the Middle and Late Bronze Age. The bones cannot be specified to the species level, but some of the fragments of a long bone can

		Cattle			Large mammal			Medium mammal			Mammal		
		Unburnt	Burnt	Weight	Unburnt	Burnt	Weight	Unburnt	Burnt	Weight	Unburnt	Burnt	Weight
		nr.	nr.	gr.	nr.	nr.	gr.	nr.	nr.	gr.	nr.	nr.	gr.
MG 51.48	MBA		-	-	3	-	9,4	1	1	1,7	30	11	25,2
MG 51.72	MBA	16	-	9,4	-	-	-	-	-	-	-	-	-
MG 37.106	MBA	23	-	11,5	-	-	-	-	-	-	8	-	1,2
MG 50.59	MBA	-	-	-	2	-	10,2	-	-	-	1	-	1,2
MG 18.1	MIA	-	-	-	-	-	-	-	1	1,7	2	12	11,1
MG 18.34	MIA	-	-	-	-	-	-	1	-	2,6	7	-	1
MG 15.497	MIA	16	-	4,6	-	-	-	-	-	-	8	-	3,6
MG 35.70	MIA	4		13,4	-	1	0,9	-	-	-	-	-	-

Table 9.3 Bones of large mammals recovered from wells and deep pits in the Mettegeupel quarter.

Structure	MD 890.3		MD 898.7		MD 901.1		MD 935.1		MD 945.1	
	Unburnt	Weight	Unburnt	Weight	Unburnt	Weight	Burnt	Weight	Unburnt	Weight
Species	nr.	gr.	nr.	gr.	nr.	gr.	nr.	gr.	nr.	gr.
Cattle	79	39.4	31	17.0	21	8.9	-	-	8	10.7
Mammal, unidentified	-	-	-	-	-	-	1	0,3	-	-
Total	79	39.4	31	17.0	21	8.9	1	0,3	8	10.7

Table 9.4 Bronze Age animal bones from the Mikkeldonk quarter.

be assigned to large and medium sized mammals. The bones from structure MG 51.72 consist of cattle dental fragments from the upper jaw. Structure MG 37.106 contained fragments of Bronze Age ceramics. Only dental fragments of cattle were found, including molars from the upper jaw. Structure MG 50.59 was intersected by a Roman palisade ditch. Based on ceramic remains, this feature is dated to the Bronze age. This structure contained no more than two unspecified bone fragments. A large amount of Late Iron Age (phase H or I) ceramics derived from structure MG 18.1. The feature was probably filled in a single occasion. None of the bone fragments can be identified to the species level. One fragment belongs to a medium sized mammal. Structure MG 18.34 can be dated to the Iron Age (phase H). Again, the bone fragments from this structure cannot be specified; a fragment of a shoulder blade can be assigned to a medium sized animal. The animal remains from structure MG 15.497 (Middle Iron Age, phase G/H) consist solely of cattle dental fragments, of which at least one is identified as a mandibular molar. Structure MG 35.70 is a well that was lined with two hollowed-out tree trunks. The

well contains ceramics dating to the Middle Iron Age. Apart from a non-specified fragment of a large sized mammal, the animal bones consist of dental fragments. A (first or second) molar from a cattle mandible comes from an animal which was killed between 8 and 30 months of age.

#### 9.5.2 Oss-Mikkeldonk

The number of bones from Oss-Mikkeldonk was much larger than from Oss-Mettegeupel, and they mainly derived from two Iron Age pits. Bronze Age pits and wells contained much less preserved material. A small amount of unidentifiable burnt bone fragments (382.5 g) has been excluded because it is not clear to which period it dates. The remaining 512 fragments derive from two wells and three pits dating to the Bronze Age and two Iron Age pits (tables 9.4 and 9.5). Especially the Iron Age pit MD 977.1 contained a large amount of bones.

Most pits or wells contained only cattle dental fragments (MD 890.3, MD 898.7, MD 901.1 and MD 945.1). Only one unburnt bone fragment was recovered from MD 935.1, but it could not be identified (table 9.4).

Structure	MD 966.2			MD 977.1	
	Unburnt	Burnt	Weight	Unburnt	Weight
Species	nr.	nr.	gr.	nr.	gr.
Cattle	35	-	99.5	76	1779.0
Horse	-	-	-	15	1435.8
Sheep/Goat	-	-	-	9	98.8
Pig	-	-	-	10	141.3
Red deer	-	-	-	18	144.8
Deer	-	-	-	4	12.5
Large mammal (unidentified)	2	-	64.0	31	492.1
Medium mammal (unidentified)	-	-	-	5	10.0
Unidentified mammal	-	1	1245.0	166	229.7
Total	37	1	1408.5	334	4344.0

Table 9.5 Late Iron Age bones from the Mikkeldonk quarter.



Figure 9.1 The proximal part of the metatarsal of the hind leg of a sheep/goat is sharpened into a point. A hole was made into the distal articulation end. The function of the object is unclear. Photo I. van der Jagt.

Feature MG 966.2 was overlain by cart-tracks dating to the Middle Iron Age. These tracks had sunk into the fill of the pit, which apparently was a depression in the road at the time. The pit contained Iron Age ceramics. Several bone fragments of large sized mammals were found together with cattle dental fragments from maxillary and mandibular teeth (table 9.5). Two premolars from the pit were unworn and represent bovines younger than three years old when slaughtered. None of the bone fragments show marks of cutting, chopping, or gnawing.

The largest pit (MD 977.1) of the Mikkeldonk site yielded a large amount of bone fragments. The ceramics date to the Middle Iron Age (phase E or F). The peaty substance of the pit indicates it was left open for a long time and then filled with settlement waste, including the remains of metal production and bone material. The animal remains derive from cattle, horse,

sheep/goat, pig and red deer (table 9.5). A large part of the thoracic vertebrae and rib fragments assigned to large sized mammals possibly belonged to cattle. In addition to the skeletal elements of the torso, elements of all cattle body parts are present. This includes fragments of horn cores and phalanges.

It is assumed that the separate age indications from pit MD 977.1 represents separate individuals. Cattle from every age group were slaughtered: during the first year, between the ages of 2-3 years old, and as (old) adults. Horse elements represent the head, the front, and the hind leg. The postcranial ageing data only points towards animals that died at an age of 2 years or older. Three mandibles provide information about the horse's age at death. One mandible consists only of loose molars (association 3). This animal reached an age of 8-11 years. The presence of a canine in the second mandible indicates that it belonged to a stallion. The animal died at an age of 6-9 years old. The third mandible shows very worn molars, and therefore belongs to an animal over 20 years of age.

Parts of the head, the fore and hind leg of sheep/goats were found. One of the bones of the hind leg is worked (fig. 9.1). The proximal part of the metatarsal is sharpened into a point, on the edges a light polish is visible, and the diaphysis shows a chop mark. A hole was made into the distal articulation end. The function of the object is unclear. Trace wear analysis might be able to shed some light on this. Based on the teeth wear

Species	Processing		Other		Gnawing
	Chop	Cut	Hole	Saw	Dog
	Number	Number	Number	Number	Number
Cattle	1	3	1	-	3
Red deer	-	-	-	1	-
Sheep/Goat	-	1	-	-	-
Large mammal (unidentified)	1	1	-	-	-
Total	4	6	1	1	3

Table 9.6 Oss-Mikkeldonk: Marks on the animal bones (MD 977.1).

stages of two mandibles, the animals were slaughtered at an age of 3-4 years and 4-6 years old respectively. A postcranial element indicates the presence of a lamb of 3-4 months old.

All pig remains derive from the head. Apart from some dental fragments, two mandibles are present. They indicate that one animal was slaughtered in its first year of life, and the other one around two years of age.

Red deer is represented by fragments of a skull, a mandible, and some dental fragments. It is possible that all fragments come from one individual. Some fragments of antler cannot be ascribed to a species but they are probably red deer as well. One of the antler fragments was sawn off beneath the pedicle.

A fragment of a bovine shoulder blade shows a chop mark (table 9.6). It seems as if a hole is present in the flat part of another shoulder blade fragment, but unfortunately the rest of the shoulder blade is missing. A rib of a large sized mammal also shows a chop mark. Cut marks are present on the pelvis, tibia and humerus of cattle, and on a humerus of sheep/goat. A rib of a large sized mammal also shows a cut mark. At least three cattle bones indicate gnawing by dogs.

### 9.5.3 Oss-Schalkskamp

At this site, a total of 277 animal remains derive from four wells (table 9.7). The other 383 remains, both human and animal, were found in a cremation burial.

Structure SK 986.2 is a circular ditch with a diameter of five meters. In the centre of this ditch was a small pit containing cremated human remains (feature SK 986.3). Fragments of cremated human bones were also found in the ditch. The cremated remains include fragments of the skull, the spine, the ribs, and some long bones. In addition to the human remains, burnt animal remains of (probably) sheep/goat and fish were found both in the pit and in the

ditch. The fish fragment cannot be identified to the species level. The fragments of sheep/goat represent the fore and the hind leg. The postcranial remains indicate the presence of an animal that reached at least the age of 3.5 years. Possibly, all of these remains derive from one individual. A humerus of a (probable) sheep/goat shows a cut on the distal end. Another cut mark is visible on the rib of a medium sized mammal.

Remains of cattle, sheep/goat, pig, and dog were found in a well (P604) dating to the Late Iron Age. Most of the cattle remains consisted of teeth fragments. The other fragments represent the foot, and the lower part of the fore and hind leg. Sheep/goats and pigs are represented by no more than a few dental fragments. The pig tooth belongs to an animal slaughtered at about the age of two. A dog is represented by a mandible fragment.

The animal remains from well SK 995.1 date to the middle of the Roman period and consist of cattle dental fragments and a burnt caudal (tail) vertebra of sheep/goat. Other bone fragments from the well cannot be specified.

Well SK 1000.1 contained cattle teeth. One of the molars belonged to an animal that was killed at an age of about three years old. The teeth of the cattle from well SK 1001.52 date to the Late Iron Age and Roman Period. The bone fragments of Oss-Schalkskamp show no chopping or gnawing marks.

## 9.6 DISCUSSION

All of the animal remains that date to the Bronze Age which have been identified to the species level belong to cattle. Most of the remains are dental fragments, and yield no information with regards to the age of death. The remains of medium sized mammals could derive from sheep, goat, pig, roe deer, or dog.

The relatively large collection of bones from pit MD 977.1 dates to the Middle to Late Iron Age and contains the remains of meat supplying animals, such as cattle, sheep/goat and pig. Bones of horse were also found. The bones of red deer are the only indications of the possible consumption of wild mammals. The animal remains shed no light on the consumption of birds or fish. It is not clear whether the lack of bird and fish remains is a result of their small part in the diet or the poor preservation conditions.

With regard to the horse remains in pit MD 977.1, it is debated whether horse meat was consumed in this period (Lauwerier and IJzereef 1998, 351). The horse bones do not show signs of consumption in terms of butchery marks. The degree to which the bones are fragmented could indicate the consumption of horse meat. Cattle is comparable in size to a horse and if horse was also used as a meat supplier, it is expected that the bones of both species would be fragmented in a similar way. However, the horse bones are less

fragmented (table 9.8). Although this comparison is not fully reliable because only a small amount of horse bones were found, this means that there are no indications of horse meat consumption. Two horses died between the age of 6 – 11 years old. A third horse reached the age of at least 20. Horses can be trained at the age of 3 and they can be fully exploited at the age of 6. Two out of three animals were in the prime of their life at the moment of death. The third animal was really old and probably could not be used as a working horse anymore, if that was its function at any time during life. In fact, there are no indications whether they were used for riding or working purposes.

Cattle can be used as draught animals. It is imaginable that a good pair of draught oxen was used as long as possible. For this reason, especially older animals are thought to be used as draught animals. The small amount of age information does not indicate a possible emphasis on one particular product in stockbreeding. Cattle was slaughtered in every age group and they

Structure	SK 986.2 and 986.3		SK 986.8			SK 995.1			SK 1000.1		SK 1001.52		SK 1007.42	
	Burnt	Weight	Unburnt	Burnt	Weight	Unburnt	Burnt	Weight	Unburnt	Weight	Unburnt	Weight	Burnt	Weight
Species	Number	gr.	nr.	nr.	gr.	nr.	nr.	gr.	nr.	gr.	nr.	gr.	nr.	gr.
Human	277	279,4	-	-	-	-	-	-	-	-	-	-	-	-
Cattle	-	-	43	-	92,8	26	-	5,8	18	22,9	9	3,8	-	-
Sheep/ Goat	13	14,0	4	-	2,6	-	1	0,3	-	-	-	-	-	-
Pig	-	-	1	-	2,1	-	-	-	-	-	-	-	-	-
Dog	-	-	1	-	11,5	-	-	-	-	-	-	-	-	-
Large mammal	-	-	22	-	14,7	-	-	-	-	-	-	-	-	-
Medium mammal	34	14,6	1	1	2,6	-	1	2,0	-	-	-	-	-	-
Mammal	58	474,1	139	2	173,1	-	7	3,9	-	-	-	-	1	1,4
Total mammals	105	502,7	211	3	299,4	26	9	12,0	18	22,9	9	3,8	1	1,4
Fish, unidenti- fied	1	0,1	-	-	-	-	-	-	-	-	-	-	-	-
Total	383	782,2	211	3	299,4	26	9	12,0	18	22,9	9	3,8	1	1,4

Table 9.7 Late Iron Age/Roman Period animal bones from the Schalkskamp quarter.

were probably used for all purposes: to supply milk, manure, offspring, traction, and finally meat.

It is not possible to present an age distribution for the sheep/goats. The remains of a young lamb of 3-4 months old are present, but so are two older animals, aged 3-4 years old and 4-6 years old. These older sheep could have been used as wool supplier. The presence of spindle whorls and loom weights at all sites are an extra indication for the use of fleece. Sheep/goats were also used for the production of milk, manure, offspring, and meat. One of the sheep/goat bones was made into an object whose function is uncertain.

Pigs were kept for their meat and were usually slaughtered at an early age. Although not much ageing

data is available, it shows that the pigs from Oss are no exception: they were killed at an age of 1 to 2 years old.

Red deer is represented by cranial and dental fragments and they possibly represent one animal. The antler fragments can be from red deer as well. It is possible that the antlers were collected, however the cranial fragments indicate that red deer could be hunted as well. The small amount of wild animals implies that their meat did not play an important role as a source of food.

## 9.7 COMPARISON

In earlier archaeozoological studies of animal remains of Oss-Ussen, data was published about the Bronze Age, the Iron Age, and the Roman Period (Lauwerier and IJzereef 1998, 351). The Bronze Age in Oss-Ussen is represented by three dental fragments, so it is actually just as poor as the present data from Oss-Mettegeupel and Oss-Mikkeldonk.

A comparison of bone assemblages of the Middle or Late Iron Age and the Late Iron Age or Roman Period between Oss-Ussen and Oss-Mettegeupel and Oss-Mikkeldonk shows that cattle, sheep/goats, and pigs were present at all sites (table 9.9). At Oss-Mettegeupel and Oss-Mikkeldonk no dogs were present during the Iron Age, and at Oss-Schalkskamp no horse remains were found dating to the Late Iron Age or Roman Period. Wild animals, or to be more precise red deer, were present at all sites, although only in small

Fragmentation	Cattle		Horse	
	Number	%	Number	%
0-10%	6	23,1	1	11,1
10-25%	11	42,3	2	22,2
25-50%	3	11,5	1	11,1
50-75%	6	23,1	5	55,6
Total	26	100,0	9	100,0

Table 9.8 Fragmentation of cattle and horse bones (excluding dental fragments) in pit MD 977.1 in the Mikkeldonk quarter.

Species	Iron Age		Late Iron Age / Roman Period	
	Oss-Mettegeupel Mikkeldonk	Oss-Ussen	Oss-Schalkskamp	Oss-Ussen
	number	number	number	number
Cattle	131	288	96	542
Horse	15	111	-	184
Sheep/Goat	9	11	5	25
Pig	10	31	1	36
Dog	-	2	1	13
Red deer	18	-	-	-
Deer	4	4	-	1
Large mammal (unidentified)	34	396	22	675
Medium mammal (unidentified)	7	136	3	65
Unidentified mammal	196	42	149	40
Total	424	1021	277	1581

Table 9.9 Comparison of the bone assemblages of several sites in Oss.



numbers. The eighteen bone fragments from Oss-Mettegeupel and Oss-Mikkeldonk could belong to one red deer skull.

Like Oss-Mettegeupel, Oss-Mikkeldonk and Oss-Schalkskamp, there is little reliable evidence for the age at slaughter of the animals at Oss-Ussen. Nevertheless, Lauwerier and IJzereef sketched a picture of the husbandry of these sites during the Iron Age and the Roman Period (Lauwerier and IJzereef 1998, 352). The same interpretation can be applied to the sites of Oss-Mettegeupel, Oss-Mikkeldonk and Oss-Schalkskamp because no evidence was found to the contrary. Their picture shows that cattle were probably used in food production in two ways: directly by means of supplying milk and meat, and indirectly by supplying manure and traction for agricultural production. Some cattle were slaughtered at a younger age, presumably for their meat. Sheep/goats were probably used for the production of milk, wool and meat; pigs were primarily meat suppliers. Every now and then the meat of red deer was consumed. There is little indication for the consumption of fish and fowl, but the preservation circumstances are very poor, so conclusions are impossible in this respect. In Oss-Ussen some bird bones were found and one fish bone was found at Oss-Schalkskamp.

## NOTES

1. Archeoplan-Eco, Delft.
2. Determination of the bone material. Present affiliation: Cultural Heritage Agency of the Netherlands, Amersfoort.
3. This method was developed to be used on mandibles but because of the low number of ageing data, here it has been applied to the upper jaw as well (Hambleton 1999).

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## 10. Glass, metal, stone, clay, and wooden objects from Oss-Noord

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### 10.1 INTRODUCTION

Thousands of finds have been recorded from the excavations at Oss-Mikkeldonk, Oss-Schalkskamp, Oss-Mettegeupel, and Oss-Almstein. It is impossible to discuss each of these in detail. We have chosen to give overviews in the catalogue (tables). Special finds will be discussed in the relevant context as well in the catalogue. A few categories, however, deserve more coherent attention. One of those is the category of La Tène glass ornaments or jewellery. We also will discuss briefly metal finds, sling pellets, metal working debris, loom weights and spindle whorls, and stone objects.

### 10.2 THE LA TÈNE GLASS JEWELLERY FROM OSS-NOORD

The prehistoric glass from Oss-Noord originates from the sites Oss-Schalkskamp, Oss-Mettegeupel and Oss-Almstein (table 10.1). A total of 38 pieces was collected from the three sites as well as a number of glass splinters apparently originating from a single piece. A number of fragments could be refitted, resulting in a maximum number of 33 artefacts. Finds that could be refitted will be treated as one, since the broken pieces that are related were found in a single context. Nineteen fragments were found in Oss-Schalkskamp, eight in Oss-Almstein.<sup>2</sup> A further four fragments were found in Oss-Mettegeupel. While the provenance of the remaining two pieces is somewhat unsure, they are definitely from Oss-Noord. The last mentioned pieces are surface finds found by local amateur archaeologist Piet Haane. All other fragments were collected during excavations by the Faculty of Archaeology. All are fragments of so called La Tène arm or finger rings. They were

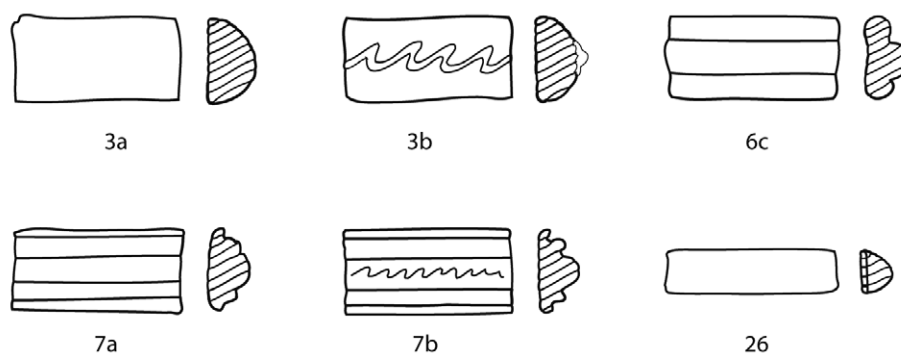


Figure 10.1 Arm ring types found in Oss-Noord (modified after Venclová 1990, Pl. 11). Drawing P. van de Geer.

Site	Trench	Feature	Colour	Ribs	Decoration	Type	Length (mm)	Width (mm)	Nr. of pieces	Context
SK	995	1	blue	5	-	7a	10	8+	1	-
SK	999	rec.	blue	1	-	3a	42	8	1	near H136
SK	1000	1	blue	1	yellow / narrow zigzag	3b	75	7	1	well
SK	1005	418	purple	1	yellow / narrow zigzag	3b	42	6	1	S550
SK	1006	77	purple	1	yellow / narrow zigzag	3b	32	9	1	-
SK	1006	23 B3	blue	-	-	7?	12	7+	1	F144
SK	1006	23b	purple	1	yellow	3b	70	9	1	F144
SK	1006	34.3.a	colourless	1	yellow / narrow zigzag	3b	44	7	1	F144
SK	1006	34.1.b	blue	1	yellow	3b	76	7	1	F144
SK	1007	70E	purple	1	yellow	3b	21	8	1	F144
SK	1007	70H	blue	1	-	3a	25	7	2	F144
SK	1007	70H	unknown	1	yellow?	3b	-	-	7	F144
SK	1007	70	purple	1	yellow	3b	86	7-okt	1	F144
SK	1007	70i	blue	1	-	3a	98	7	2	F144
SK	1007	37	blue	3	-	6c	25	12	1	F144
SK	1010	4A	purple	1	yellow	3b	41	8	1	F144
SK	1012	68	purple	1	yellow / narrow zigzag	3b	25	6	1	1012,68
SK	1018	21	purple	5	yellow on mid. rib	7b	35	13	1	F156
SK	886	-	blue	5	-	7a	-	-	1	H135
MG	14	106	purple hue	1	yellow foil (2-3 mm)	26	20	7	1	-
MG	64	aavl	blue	-	-	7?	14	11+	1	-
MG	85	12A	blue	5	-	7a	36	16	1	-
MG	-	-	blue	1	yellow	3b	50	7	1	-
ALM	75	116	blauw	5	-	7a	43	nov-13	1	H14
ALM	76	31B	paars	1	yellow zigzag	3b	23	7	1	F42
ALM	80	5	blauw	1	-	3a	34	8	1	-
ALM	80	1	blauw	1	-	3a	54	5	1	F43
ALM	80	1	blauw	5	-	7a	21	12	1	F43
ALM	81	1B	blauw	1	-	3a	25	6	1	F43
ALM	81	1B	blauw	5	-	7a	21	nov-13	1	F43
ALM	81	1B	blauw	-	yellow	-	-	-	-	F43
Surface find	-	-	colourless	5	yellow foil (7 mm)	7a	20	13	1	-
Surface find	-	-	purple	1	-	3a	37	9	1	-

Table 10.1 List of La Tène glass artefacts from Oss-Noord with main characteristics and context.

once part of seamlessly created glass rings made of translucent, usually coloured, glass.

La Tène arm rings originated in Central Europe in the core area of the La Tène culture. They circulated in the Rhine-Meuse River Area from the second half of the 3<sup>rd</sup> century BCE until they disappeared from the archaeological record in the beginning of the 1<sup>st</sup> century AD (Roymans and Verniers 2009). In the research area, they are most often made of blue or purple glass. Colourless glass is also common, while brown and green glass is very rare. In general, arm rings have a wide range of plastic decoration types. However, the decoration is generally limited within the Lower Rhine area to a varying number of longitudinal ribs. Sometimes a yellow or white glass paste is laid on top of one or more ribs for additional decoration. Colourless arm rings were sometimes also decorated with a thin ‘foil’ of yellow glass paste on the inside, which gives them a golden appearance on the outside. Arm rings of the 1-ribbed or D-shaped type are, together with those of the 5-ribbed type, the most common in the Lower Rhine Area. Arm rings with two, three, or four ribs are found less often. Arm rings with seven ribs form a special category; excluding rare examples, such rings have only been found in this region thus far.

The arm rings are generally classified according to the typology that was developed by. Haevernick (1960), using arm rings from all over Europe. This typology divides the arm rings into a number of groups and is mostly based on the number of ribs and further decoration. An alternative typology was proposed by Gebhard (1989), based on the glass arm

rings found on the oppidum of Manching in Bavaria, Germany. Gebhard’s typology builds on the one by Haevernick but further differentiates on the variations within groups and also takes colour into account. Haevernick’s typology will be used here, for it is the simplest and easiest to use, and will suffice for the relatively small number of arm rings found in Oss-Noord (fig. 10.1; table 10.1).

We only discuss La Tène glass here because Roman period glass is virtually absent in Oss-North. Only two incomplete glass beads have been found, both in parcelling ditches in the Mettegeupel area.

### 10.2.1 Appearance and typology

The colours of the 33 artefacts from Oss-Noord can, with two exceptions, be divided into the usual main groups: blue, purple, and colourless (fig. 10.2). One artefact, which is of a special kind (see below), is nearly colourless but has a slight purple hue. It is in sharp contrast with the other purple fragments that are made of a deep purple glass. At first sight, these sometimes even appear to be black. The glass that this object was made of apparently failed to decolourize completely (cf. Haevernick 1960; Schäfer 2010). A fragment (or rather complete arm ring) of unknown colour was published by Fokkens (1993), but has since been lost. With over half of the artefacts made of blue glass, and nearly a third made of purple glass, the distribution seen here is in line with finds from the Maaskant region (van de Geer 2009) and wider Lower Rhine area (Verniers 2006).

Nearly 94% of all artefacts are of either type 3 or 7 (fig. 10.3) which is similar to what is observed for

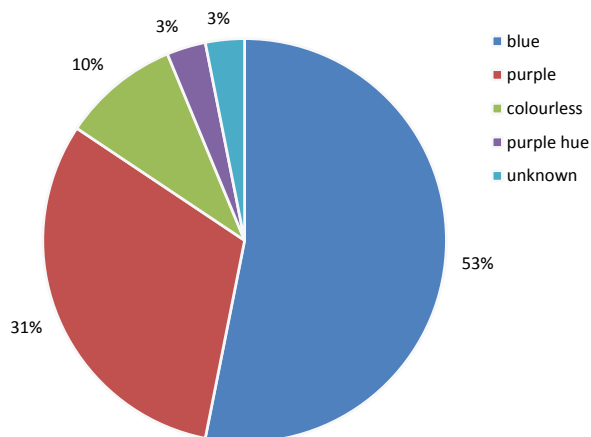


Figure 10.2 Colour distribution of the La Tène glass from Oss-Noord (n=32). Drawing P. van de Geer.

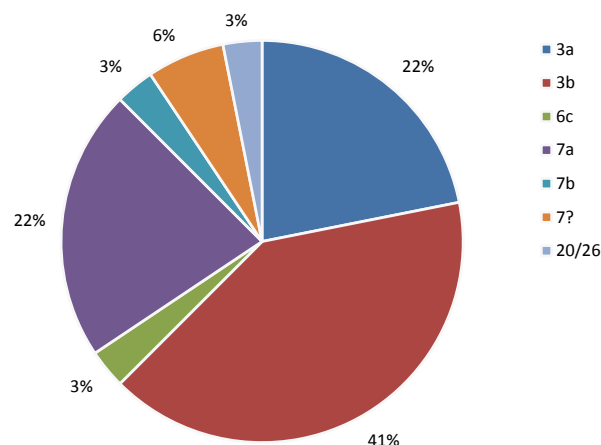


Figure 10.3 Relative quantity of arm ring types (typology Haevernick 1960) from Oss-Noord. Drawing P. van de Geer.

the Maaskant region (van de Geer 2009) as well as the Lower Rhine area (Roymans and Verniers 2009). However, the high number of arm rings of type 3b stands out. There were nearly twice as many arm rings of type 3b compared to those of type 3a. Type 3 arm rings have a single rib or D-shaped cross section. Type 3b arm rings are of a similar design but are further decorated with yellow, sometimes white, opaque glass paste, which is applied to the outside of the arm ring, usually in a wavy line pattern. Those of type 3a are undecorated.<sup>3</sup> Arm rings of type 3a are quite common across Europe but those of type 3b are typical for the Lower Rhine and Meuse area. There is a strong concentration of type 3b arm rings in this area with only two minor concentrations in the Rhine-Main area: in Hesse and in the area of the French-Swiss-German border (Deiters 2008). The circulation of purple arm rings of this type is even more restricted. They are found in large numbers in the Dutch Lower Rhine and Meuse area but are much less common in the neighbouring areas (Deiters 2008). Considering that the concentration of finds in this area, it is likely that these arm rings were produced here. However, a workshop or production centre has yet to be located (Venclová 1990; Deiters 2008; Roymans and Verniers 2009). Most arm rings of type 3a from Oss-Noord are blue, while the majority of the arm rings of type 3b are purple (fig. 10.3). The colourless fragment from Oss-Schalkskamp is of a rare variety that is also thought to have been made in the Lower Rhine area (Wagner 2006). Thus far only one similar piece is known to have been found outside this area, at the oppidum of Stradonice in the Czech Republic (Venclová 1990).

A single piece of type 6c was found in Oss-Schalkskamp. It is a blue fragment with three equally sized ribs with no further decoration. Arm rings of this type are rather rare. Just under 20 of them were found in the Lower Rhine area with 6 of them from the Maaskant area surrounding Oss-Schalkskamp; a few blue fragments were found from nearby Oijen, Neerloon, and Lith (Van de Geer 2009; Roymans and Verniers 2009). Across Europe their distribution shows a rather diffuse pattern with most of the finds originating from Western and Central Europe (Venclová 1990). There are also two slight concentrations in the northern Upper Rhine area and around the oppidum of Oberleiserberg in Lower Austria (Wagner 2006).

Ten arm ring fragments of the more common type 7 were found in Oss-Noord. They are pieces of 5-ribbed arm rings that exist in an undecorated (type 7a) and decorated form (type 7b). Most (n=7) of the fragments

are of the undecorated kind, and all except one are blue. One of the blue arm rings has a small section that only has four ribs (MG80.1). One piece is made of colourless glass and has a 7 mm wide strip of opaque yellow glass 'foil' applied to the inside of the glass, which more or less covers the width of the three central ribs. The yellow glass is completely integrated into the body of the arm ring itself, resulting in a smooth surface on the inside of the arm ring. When light is reflected off its surface, the yellow opaque glass on the inside gives a golden appearance to the outside of the arm ring. Arm rings of type 7a are found all over the distribution area of La Tène glass. There is, however, a significant concentration of blue type 7a arm rings in the Lower Rhine area (Wagner 2006). The colourless ones with yellow glass on the inside also have a significant presence in the Lower Rhine area, but are found in larger concentrations in the area around Bern (Switzerland), as well as at the oppidum of Manching (Wagner 2006).

Only one piece of type 7b was recovered from Oss-North (SK1018.21). It is made of purple glass and has a line of yellow opaque glass applied to the central rib in a wavy line pattern. The fragment looks as if it was bent sometime after it was broken, probably intentionally, in an attempt to recycle the object (see below). This type of arm ring is common in Western and Central Europe with low concentrations in the Dutch/Belgian area and in the Upper Main area of Germany (Venclová 1990; Wagner 2006). What is interesting about this fragment is its purple colour. Blue fragments of this type are found throughout its distribution area. However, purple fragments of type 7b seem to be nearly exclusive to the Dutch Lower Rhine area. Examples from outside this area seem to be confined to: a piece with white decoration from Rees in Nordrhein-Westfalen, Germany, and two pieces with opaque yellow glass decoration: one from Sluderno in Bolzano, Italy and one from Etzersdorf in Niederösterreich, Austria (Venclová 1990; Karwowski 2004). In contrast, close to a hundred fragments are recorded from the Dutch Lower Rhine area (Verniers 2006; Van de Geer 2009). In the Lower Rhine area, purple fragments of type 7b arm rings are in fact slightly more common than blue ones, while in the Maaskant region they occur 2.5 times more often (Van de Geer 2009, App. D; Verniers 2006, fig 7.3). This high frequency of occurrence suggests that this type of arm ring was locally made somewhere in the Lower Rhine area, or more accurately in the Maaskant region.

Based on the form and size of their ribs a further two finds are most likely also from a type 7 arm ring, but are too fragmented to be certain. Both pieces are made of blue glass and show no signs of further decoration. The first piece from Oss-Schalkskamp only has two ribs remaining besides part of the base of a third. Only two ribs remain from the second piece from Oss-Mettegeupel.

The last remaining fragment is somewhat harder to classify. It is a small fragment with a width of 7 mm, a thickness between 5 and 6 mm and a remaining length of about 20 mm. It is nearly colourless, but has a slight purple hue. A narrow strip of opaque yellow glass of 2-3 mm was applied to the centre of the inside of the ring. This fragment is likely part of a finger ring. Finger rings are not very common, especially within the Lower Rhine area. Typologically, it fits into group 26 as defined by Karwowski (2004), type 1.2.1 according to the typology of Zepezauer (1993), or group Ig in the typology of Gebhard (1989). According to Haevernicks typology, used here for the arm rings, this fragment would be classified as a ring bead (German: *ringperle*) of group 20 (Haevernicks 1960). This particular ring is different from most other ring beads because its eye has a much larger diameter and it is therefore interpreted as a finger ring. This interpretation is not only theoretical as there is at least one documented case of a buried individual with a finger ring found around one of the fingers of the left hand (Gebhard 1989).

### 10.2.2 Chronology

As stated in the introduction, La Tène glass arm rings circulated in our region since the second half of the 3<sup>rd</sup> century BCE until the very early part of the 1<sup>st</sup> century AD. This covers the La Tène periods C and D. While the circulation of glass arm rings in the rest of Europe reached its peak during LT C (260-125 BCE), in the Lower Rhine area the predominant period for the circulation of La Tène glass was more likely LT D (125-15 BCE). This is based on the large number of finds of a D-shaped form and the popularity of the colour purple (Roymans and Van Rooijen 1993). A number of regional chronologies have been developed over the past years, mainly based on the large La Tène cemeteries of central Europe. However, a sound chronology for the Lower Rhine area has yet to be developed.

In the region being discussed, there is a shift to smaller and less (archaeologically) visible cemeteries from the Middle Iron Age onwards (Hessing and Kooi 2005). For this reason, not many Late Iron Age ceme-

teries are known in the region. Therefore, most known finds of La Tène glass are surface finds, and few finds come from secure contexts. Only a few arm rings are thus properly dated using either typological methods or radiocarbon dating.

The arm rings of type 3a and 3b start to appear during the LT C2 period (around 175 BC), but they are particularly popular during LT D (Venclová 1990; Roymans and Verniers 2009). The arm rings of type 3a might be of a somewhat earlier date than the ones of type 3b, as the majority of them are blue while the majority of the ones of type 3b are purple. Although the colour purple was already present during LT C2, purple-coloured arm rings are more typical of the LT D period (Venclová 1990, Roymans and Verniers 2009).

Thus far, no arm rings of type 6c have been independently dated from the Lower Rhine area. Fragments from Austria are dated to LT C1b-C2 (c. 200-125 BC) on stylistic grounds (Karwowski 2004). One further piece from Manching dates to the same period (Gebhard 1989). Considering the small number of this type of arm ring that have been found in the Lower Rhine area, this piece is probably imported and could therefore be dated to roughly the same period.

According to most sources, arm rings of type 7a and 7b were introduced during LT C2, possibly LT C1, while their circulation also extends into LT D (Peddemors 1975, Venclová 1990). A well dated example from Itteren-Emmaus 1 in Limburg, The Netherlands, proves that they did in fact already exist during the earlier LT C1 period (Van de Geer 2011). Colourless arm rings with yellow foil were introduced during LT C2 (Venclová 1990; Karwowski 2004), so the colourless fragment is definitely not older than that.

The finger ring from Oss-Mettegeupel can be compared to the larger colourless arm rings with yellow foil. They are similar both in their appearance and composition (Gebhard 1989). In Austria, finger rings of group 26 are typologically dated to LT C2, possibly extending into LT D. Taking into account the fact that colourless arm rings are also common during LT D, this fragment cannot be dated more accurately than LT C2-D at present.

### 10.2.3 Archaeological context

#### 10.2.3.1 Schalkskamp

Nine out of the nineteen fragments from the Schalkskamp settlement were found in ditch F144, and a further three fragments came from associated

features (fig. 10.4). This ditch is dated to phase K of the Late Iron Age and represents a phase of 'levelling' of the previous settlement period (cf. chapter 14.5.1). A fragment of a blue type 3b arm ring was recovered from a pit or posthole (feature 1006.77) right next to ditch F144.

Three pieces can be related to house plans. One was documented by Wesselingh (2000) from house SK135, but has since been lost. Another piece is actually from a modern ditch, but was found at the exact location where it intersects house SK136. The third piece comes from a posthole (feature SK 1007.37) that is spatially correlated with an Iron Age house plan (H136) and a nearby Iron Age ditch F144. Other fragments that are from notable features are a fragment from feature 1005.418 that is part of granary S550, and fragments found in wells SK1000.1 and SK1012.58 (cf. fig. 10.4). The latter is definitely from the Late Iron Age (phase K/L), while the former is of an uncertain date. The remaining two pieces from Oss-Schalkskamp were found in an Early Roman Period context, both in ditches.

#### 10.2.3.2 *Mettegeupel*

The finger ring found in Oss-Mettegeupel is from trench 14, feature MG 14.106. An additional fragment from MG 85.12A is from a well of Iron Age date. Two pieces were found in Roman period parcelling ditches.

#### 10.2.3.3 *Almstein*

Most arm ring fragments from Oss-Almstein came from the settlement enclosing ditch F43, which dated to the Late Iron Age phases J-K. One fragment was found in a recently backfilled ditch intersecting the enclosure, and was probably also originally from ditch F43 (cf. fig. 16.11). The last remaining piece from this site was found in ditch F42, dated to the Early Roman Period (cf. fig. 16.12).

#### 10.2.4 *Use, reuse and deposition*

The presence of La Tène glass jewellery must have been a very common phenomenon during the Late Iron Age, especially in the form of glass arm rings. Estimates of the numbers produced run into the hundreds of thousands (Roymans and Verniers 2009). They are regularly found in Late Iron Age settlements, usually together with other household refuse. This suggests that there were plenty of arm rings in circulation, that they were quite common, and that they were not only reserved for a small elite group. This

is demonstrated by the fact that they are often found in close association with house plans, as was earlier indicated by Roymans and Verniers (2009). The same distribution patterns can also be seen in the settlement sites of Oss-Noord (fig. 10.5 and 10.6).

In the Lower Rhine Area, and to a lesser extent in the rest of Europe, the use of La Tène glass jewellery is closely linked to women, although there are the odd exceptions (Hiddink 2008; Van de Geer 2011). Whether by individual choice, or through an expression of local taste and fashion, it has been suggested that the different types and colours of the arm rings reflect the cultural identity of their owners (Roymans and Verniers 2009). The validity of this theory is supported by the different distribution patterns of the different types of arm rings, which was already shown by Haevernick (1960).

Even though glass arm rings were quite numerous and most women probably possessed at least one of them, they were most definitely valued and not always readily discarded. A decent number of arm rings were reworked into smaller hangers or beads after being broken. An even greater number of fragments show signs of (an attempt at) reworking. For Oss-Noord this holds true for at least three fragments. One purple and one blue fragment from Oss-Schalkskamp (1005.418 and 1006.34.1.b) both were reheated and bent into hangers with a diameter of 12-16 and 20-25 mm respectively (fig. 10.4). Find 1018.21 from Oss-Schalkskamp also shows some indications of reworking as it has been slightly bent.

#### 10.2.5 *Conclusion*

The general picture that emerges from the assemblage of La Tène glass from Oss-Noord is that of a very limited range of forms and colours. This fits very well with the typological patterns of its micro-region and the wider region of the Lower Rhine area. On the one hand, a number of very typical forms are present: purple arm rings of type 3b, blue arm rings of type 7a, and purple arm rings of type 7b. These arm rings represent types that were probably locally sourced from production centres somewhere in the Lower Rhine area. On the other hand, there are a few solitary fragments that represent arm rings of somewhat more exotic types: a colourless arm ring fragment of type 3b, a blue one of type 6c, and a nearly colourless, but slightly purple, fragment of a probable finger ring of type 26. These would likely all have come from Central or Eastern European production centres.





Figure 10.4 Several of the glass jewellery found at Oss-Mettegeupel and Oss-Schalkskamp. For details see table 10.1. Photos J. Pauptit.



Figure 10.5 Distribution of loom weights, spindle whorls and glass objects in the Mettegeupel quarter. Drawing H. Fokkens.

Dating the glass objects is difficult because of the lack of a solid local chronological framework. In general, the objects from Oss-Noord can be ascribed to the Late Iron Age, which is the entire period in which La Tène glass circulated. There does seem to be a slight focal point towards the period after c. 175 BC, as most fragments could be dated to LT C2 and onwards. However, the significant group of 6 arm ring fragments of type 7a might represent an earlier horizon and possibly could date to the beginning of the Late Iron age.

This is also supported by a lack of purple glass, which is more typical of LT C2 and afterwards. Furthermore, the three fragments from Oss-Almstein are from a ditch (F43) and a house plan (H14), both of which have their beginnings in phase J. Overall, the expected age of the La Tène glass fragments agrees with the independently established ages of their contexts, but does not contribute to refining these. Inversely, some of these well dated closed contexts can help to build a local chronological framework for La Tène glass.



Figure 10.6 Distribution of loom weights, spindle whorls and glass objects in the Almstein quarter. Drawing H. Fokkens.

### 10.3 METAL AND METAL PRODUCTION REMAINS

The amount of metal objects at all four sites is minimal. In total about twelve objects have been found (table 10.2). An important reason for the limited appearance of metal objects comes from the dating of the different sites. Only the Schalkskamp site has Late Iron Age and Roman period habitation, and the other sites lack features of this period. In general, metal objects are rare in settlement contexts in The Netherlands. Especially iron objects deteriorate quickly in sandy soils. Finally, metal detectors were not consequent-

ly used during the Mikkeldonk, Mettegeupel and Schalkskamp excavations.

Some of the bronze objects were already discussed by Schinkel (1998) and by Wesselingh (2000) since most finds discussed here were discovered in the Mikkeldonk and Schalkskamp settlements. Most common are fibulae of different types, all dating to the Late Iron Age and Roman period. From the Oss-Ussen area we know of several fibulae, but in the Oss-North area just one was found, just to the north of the Ussen district. It is a bronze Middle La Tène wire fibulae that



Figure 10.7 Iron socketed axe found in a small pit in the Schalkskamp settlement no. 12264. Photo J. Pauptit.

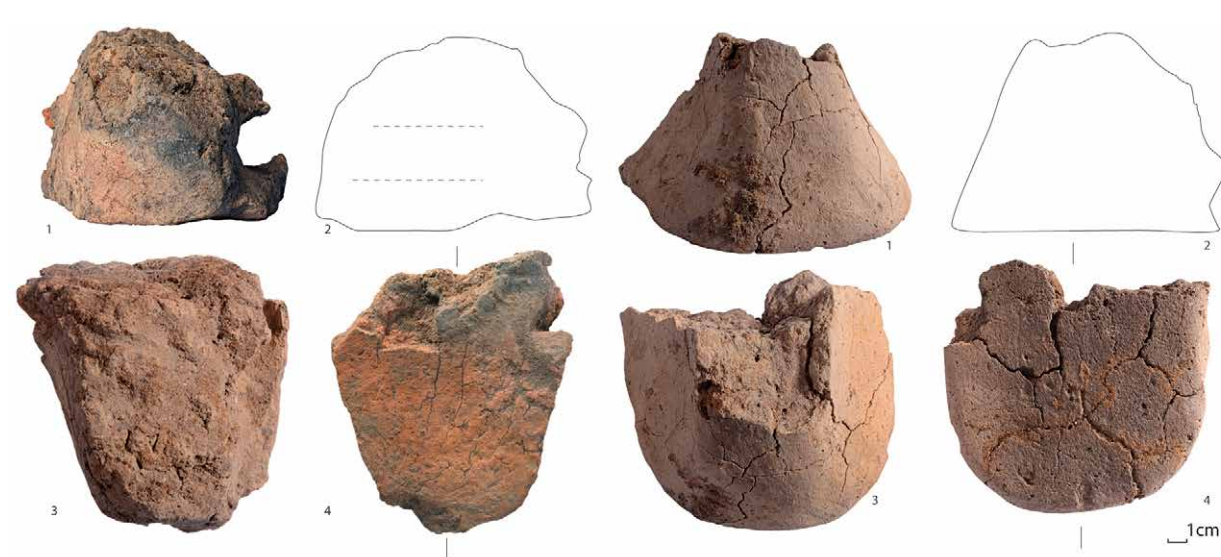


Figure 10.8 Iron Age 'irons': tuyère supports found near a forging hearth 1006.34 in a dry ditch around the Iron Age Schalkskamp settlement. Photo J. van Donkersgoed.



Figure 10.9 Iron slag found in and near forging hearth SK 1006.34. Photo J. van Donkersgoed.

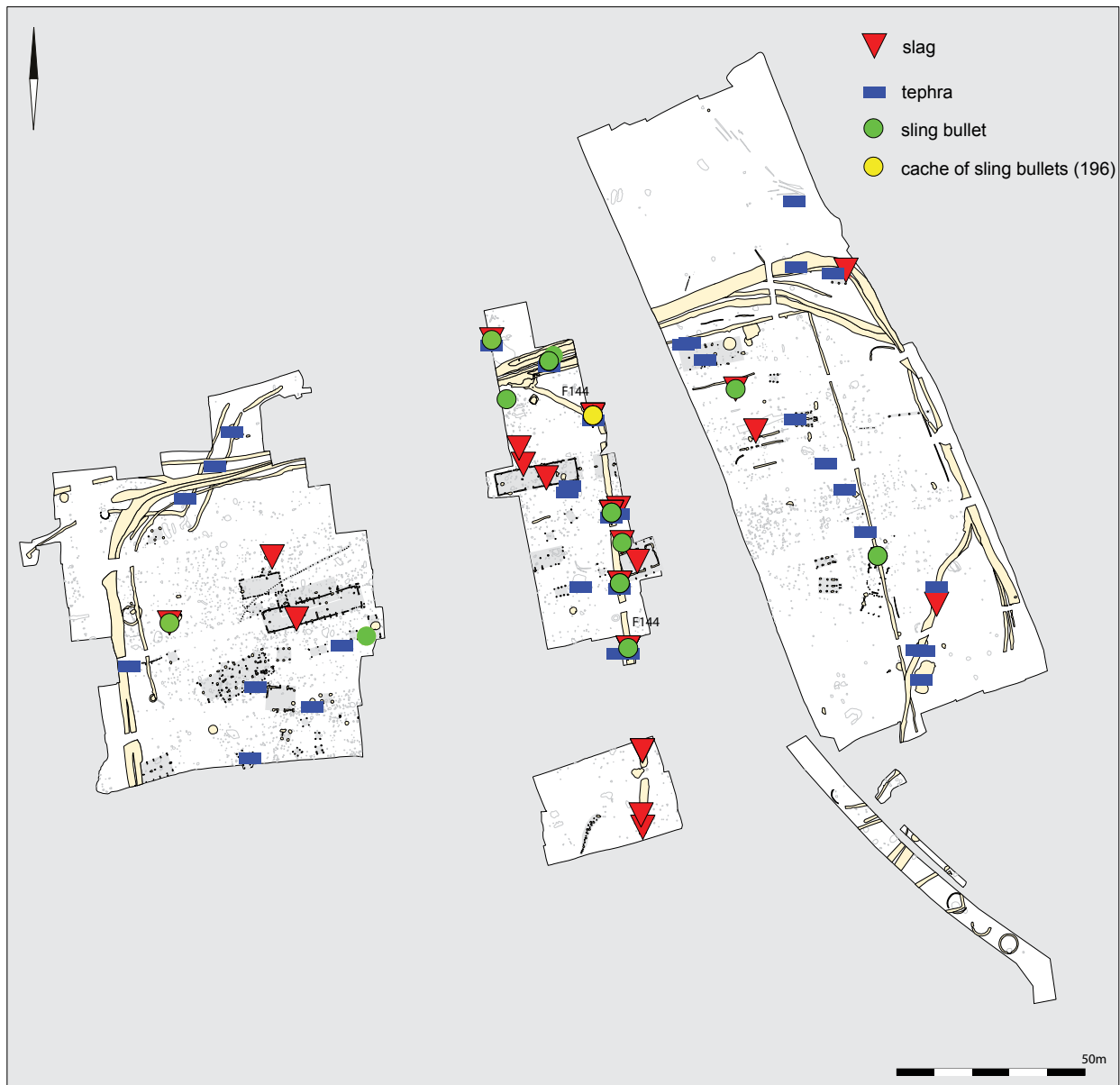


Figure 10.10 Distribution of slag, tephra and sling bullets in the Schalkskamp quarter. Drawing H. Fokkens.

was found in one of the central posts of MD123 in the Mikkeldonk district (MD883.37; Schinkel 1998, 141). Most likely it can be interpreted as an abandonment or building offering. An anecdote related to its discovery in one of the central posts pits deserves mention here. In 1986, two students (Erik Jungerius and Arthur Sloos) had the task to section this post pit. However, they went at this task rather boldly with a shovel. The excavation director, Fokkens, told them to be more

careful because such pits might contain precious finds. Minutes later they discovered the fibula, which they believed had been inserted in the pit by Fokkens to tease them.

In the Schalkskamp settlement, nine metal objects were found. Most of these have been discussed and illustrated by Wesselingh (2000). A special find was a forged iron socketed axe (fig. 10.7; number 12264), which was found in a small pit that contained no



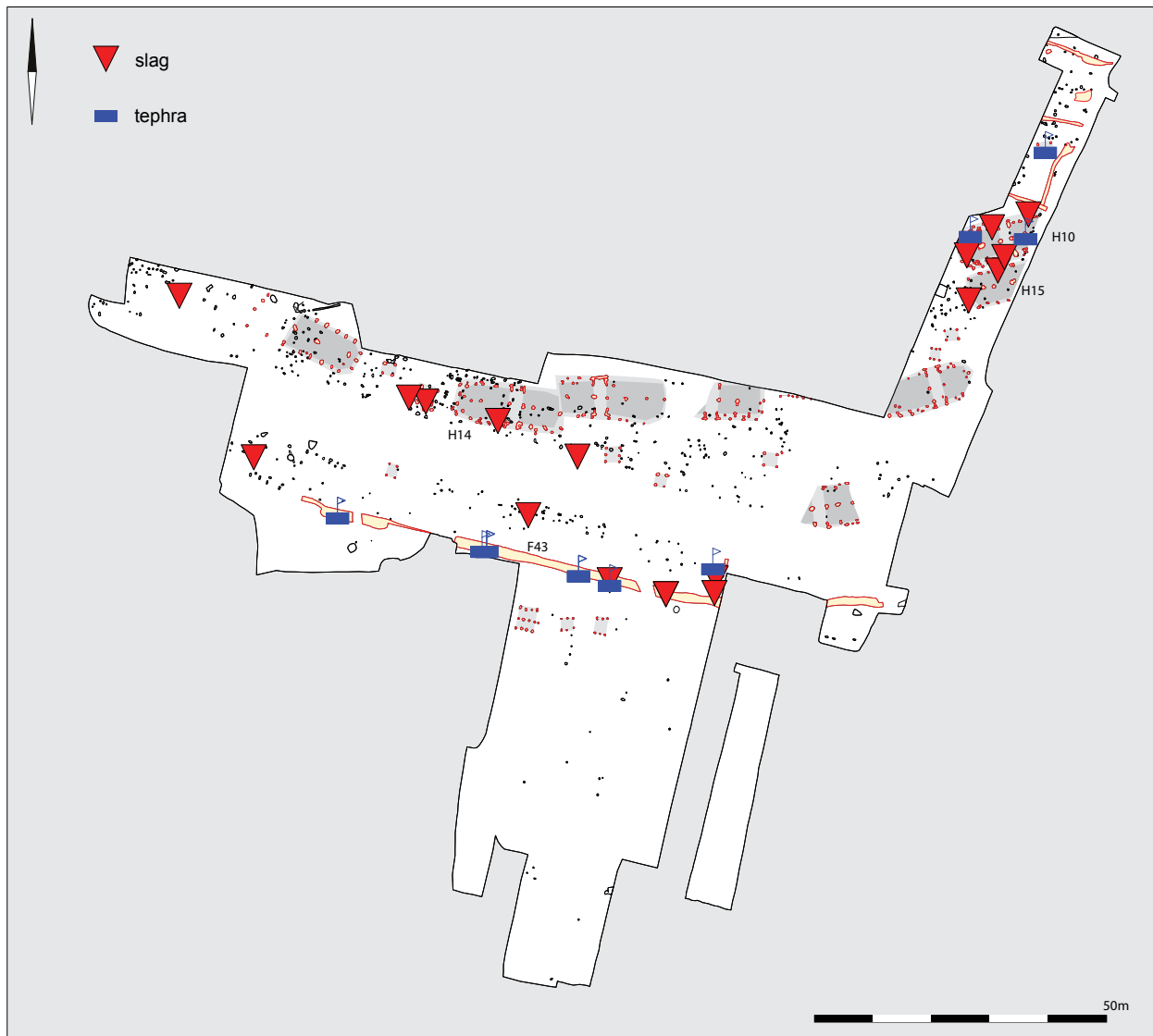


Figure 10.11 Distribution of slag, tephra and sling bullets in the Almstein quarter. Drawing H. Fokkens.

other finds and was not part of a structure. The axe was not recognised during excavation because it was just a heavy lump of sand and iron encrusted into an unrecognizable object. The axe only was discovered when the late R. Meijer (then Rijksdienst voor het Oudheidkundig Bodemonderzoek) cut the lump in half, due to the lack of an X-ray machine. Both halves were glued together again after the object was photographed and cleaned. This type of axe was commonly in use around the start of the 1<sup>st</sup> century AD.

Metal working and production debris (e.g. slag, tuyere supports; figs. 10.8, 10.9, 10.12, 10.15) have been

found in the fill of several pits and ditches. So far no systematic analysis of these remains has been made because they often were not recognised. Examples of such objects are the baked clay tuyère supports that were recognised as such only recently (Brusgaard *et al.* 2015). Schinkel had published at least one of these as an unknown object. These support were nick-named 'irons' because they had the shape of a modern clothes iron (fig. 10.7).

Several of these were found in the vicinity of a forging hearth that had been constructed in a dry and already filled in ditch, which surrounded



Figure 10.12 Distribution of slag, tephra and sling bullets in the Mettegeupel area. Drawing H. Fokkens.





Figure 10.13 Distribution of slag, tephra and sling bullets in the Mikkeldonk quarter. Drawing H. Fokkens.



Figure 10.14 A cache of 196 sling-bullets was found in ditch F144 in the Schalkskamp quarter. Photo J. Paupit.

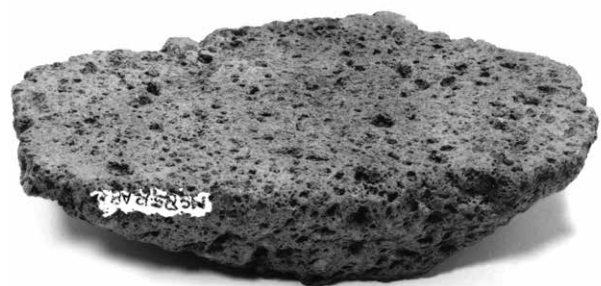


Figure 10.15 Tephra saddle quern from pit MG 85.12 in the Mettegeupel quarter. Photo J. Paupit.

the Iron Age phase of the Schalkskamp settlement (F144; fig. 10.10; cf. section 13.4.3). Apart from these tuyère supports, about 20 kilos of metal slag was found (fig. 10.9), including hammerslag (Brusgaard *et al.* 2015). This indicates that the hearth was used to produce iron. The same ditch yielded enormous amounts of pottery, sling pellets, glass jewellery, loom weights, spindle whorls, and other objects,

indicating that the ditch contained the dumped or buried remains of a house or houses (cf. fig. 10.10). Slag was also found in abundance at the Almstein settlement, especially in the post pits of houses ALM10 and ALM15, but also of house ALM14 and the adjacent granary. Several pieces were also found in settlement ditch F43, to the south of the Almstein settlement.



Figure 10.16 Distribution of loom weights, spindle whorls and glass in the Schalkskamp settlement. Drawing H. Fokkens.

#### 10.4 SLING BULLETS

Sling bullets are well known projectiles from the Late Iron Age (fig. 10.14). They are found all over Europe in Late Iron Age and in Roman period contexts. In the latter period they were made often from lead. Julius Caesar even describes the practice when he describes how the Nervii and allies attacking the winter camp of Cicero slung ‘*ferentes fulsili ex argilla glandis fundis*’ (Caesar Bell. Gall. 5.43.1) ‘red-hot bullets of softened clay’ on to the huts. In Oss, we have occasionally found sling bullets in diverse features. In Oss-Ussen, Schinkel described the occurrence of quite a few sling bullets (138) in features of and around the Late Iron Age house H81. He suggests that these are evidence that the house was attacked (Schinkel 1998, 136). Curiously, hardly any sling bullets were found in Oss-Mikkeldonk, Oss-Mettegeupel, or Oss-Almstein (fig. 10.11 and 10.12). But in general, Late Iron Age remains were scarce in those areas.

A different image was obtained from the Late Iron Age enclosed settlement of Oss-Schalkskamp. Here, a large amount of sling bullets was retrieved from many features, but especially from ditch F144. The north-eastern corner of this ditch contained a cache of 196 bullets (fig. 10.13), and the adjacent sections of that ditch contained many more. In total, ditch F144 had 222 sling bullets. Together with large quantities of pottery, 166 (fragments) of loom weights, several spindle whorls, and other objects, it seems that an entire house or settlement inventory was dumped into that ditch, possibly after an attack (cf. chapter 6, 13).

#### 10.5 STONE AND FLINT OBJECTS

Many features contained lumps of stone, yet only a limited number of these could be interpreted as (fragments of) utilitarian objects including querns, rubbing stones, hammer stones, and grinding stones. The majority of the querns were made of tephra, found in the German Eifel region (fig. 10.10, 10.11, 10.12). Tephra was used for (saddle) querns in the Iron Age and (round) millstones in the Roman period (Van Heeringen 1985). Only a few of the finds were preserved well enough to determine the quern’s original shape (fig. 10.15). The distribution maps show that they occur almost everywhere in the research area in substantial numbers. In the Mikkeldonk district, where sling bullets, loom weights and spindle whorls are virtually absent, slag and tephra are widely spread. Concentration can be found around the Late Iron Age houses MD122, MD123 and MD124, and around the Middle Iron Age house MD127. A cluster of finds, also of slag, was discovered in a large pit (997.1) filled with settlement debris in the eastern part of Oss-Mikkeldonk.

We have collected numerous pieces of flint, but these were seldom worked: in all only two arrowheads have been found, but not in a contemporaneous context: one even came from a well that was <sup>14</sup>C dated to the Roman period (962.20; cf. 13.4.9).

#### 10.6 LOOM WEIGHTS AND SPINDLE WHORLS

Objects associated with weaving and the spinning of textiles have been found dispersed in all settlements, generally concentrated around a few houses. In the Mettegeupel area these are concentrated in the



Figure 10.17 A selection of triangular perforated loom weights from Oss-North. Photo R. Jansen.

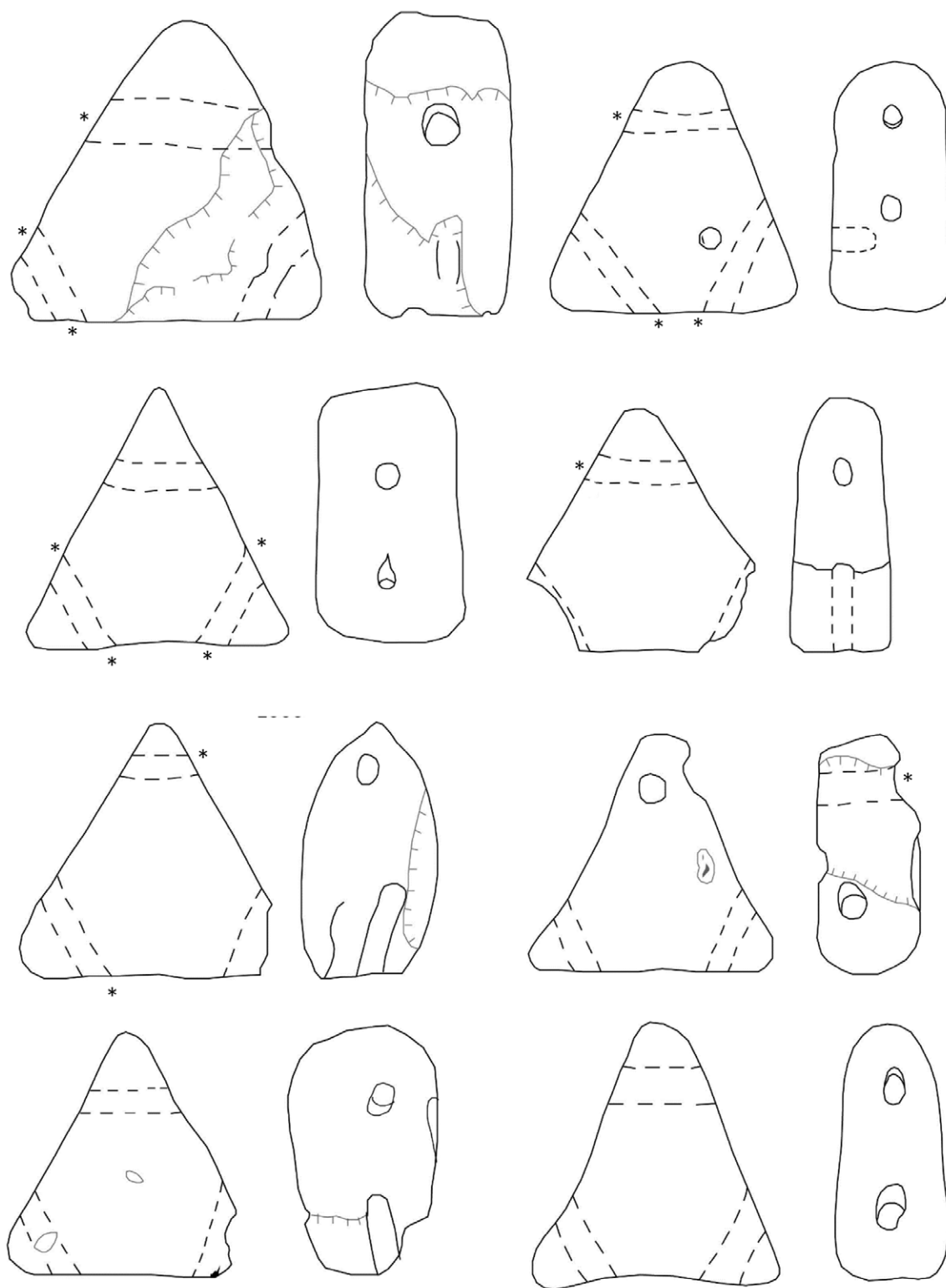


Figure 10.18 Selection of loom weights from ditch F144. Drawing D. van der Linden.

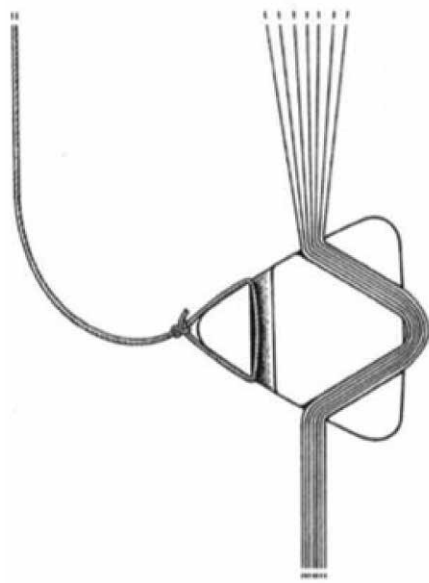


Figure 10.19 Reconstruction drawing of the use of a triangular loom weight. From C. Wilhelmi (1977, 182; based on Loewe 1971, 35).

western part of the settlement, namely in and around early Iron Age houses MG1 and MG2 (cf. fig. 10.5). A few specimens were found also in Oss-Almstein in and around several of the houses (cf. fig. 10.6). In the Schalkskamp area most of the loom weights and several spindle whorls were found in ditch F144 together with settlement debris. Some were also found around house MG1ALM143 and the Iron Age house ALM136. Spindle whorls were sometimes associated with the same kind of features.

The Late Iron Age settlement ditch F144 contained a vast amount of clay objects, including 189 (fragments of) loom weights (fig. 10.16). As indicated above, this ditch probably contained the remains of one or more houses.

Some remarks can be made about these loom weights. The early types have a conical shape with a hole at the top, which can be dated to the Early and Middle Iron Age. Triangular loom weights with three perforations date to the Middle and Late Iron Age (Van den Broeke 1987, 38). Virtually all loom weights found in Oss-North were of the triangular type with three perforations (fig. 10.17, 10.18). A great deal of debate revolves around the exact function of these triangular weights with three perforations. Several of the conical

shaped weights have been found in rows, suggesting that they indeed functioned to hold strands of the warp underneath a standing loom. Experimental archaeology has confirmed this as well (e.g. Mårtensson 2009; Van der Linden 2017). About 5-30 warp threads are optimal to pull through the holes of these weights (Mårtensson *et al.* 2009, 393). They are then fastened with a knot, and the weights then hang in a static position. Even though the threads could be unknotted and the weight moved down the warp threads, these looms are generally reconstructed with a static top beam. This means that the weft could be only as large as the loom itself.

Alternatively, the top beam could turn, enabling the weave to be rolled up and to extend beyond the size limits of the loom. With this reconstruction, the weights have to be shifted every time a finished piece is rolled around the top beam. The triangular loom weights have been interpreted as part of a loom with a rotating top beam (fig. 10.19: Loewe 1971, cited by Wilhelmi 1977; research Van der Linden 2017).

Van der Linden (2017) recently studied triangular loom weights from several Dutch sites. The conclusion of her MA thesis was that virtually no new studies have been devoted to triangular loom weights since Wilhelmi Loewe's studies in 1977. Loewe's interpretation still holds in our opinion. That implies that the use of triangular loom weights would enable the weaver to create long weaves more easily than with triangular warp weights.

## NOTES

1. Author of the La Tène glass section.
2. The splinters found in Almstein are counted as one artefact here but will not be discussed any further.
3. Because the arm rings quite often were not decorated across their entire length it will always remain unclear if fragments of type 3a truly are from an undecorated arm ring or if they are merely undecorated sections of an otherwise decorated arm ring.

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# 11. Oss-North: the second decade of excavations at Oss; a synthesis

H. Fokkens

## 11.1 OBJECTIVES

Fourty years of excavation at Oss have passed. After an early start at Oss-IJsselstraat (Wesselingh 1993; fig. 11.1), work in the 1970's mainly occurred at Oss-Ussen. That project was closed in 1984 (Fokkens 1998; Wesselingh 2000). After that, Oss-North was excavated between 1985 and 1996, as is reported in this book. From 1997 we continued in Oss-Horzak, until 2014 (Van As and Fokkens 2015).

To the north and north-west of the town of Oss we have by now researched an area of about 6 x 3 km. Not all of that area was excavated, but we have a fair idea of habitation developments here since 2000 BCE. The settlements discussed in this book are presently situated just beyond the flood plain, c. 5 km south of the river Meuse. But in the Neolithic, the Bronze and Iron Age, river channels were closer (Berendsen and Stouthamer 2001). In the Roman Period the easternmost sites, like Oss-Mettgeupel and Oss-Horzak, were situated less than a kilometre from the river (fig. 11.1; 11.2).

For our distribution maps we have used the palaeogeographic maps published by Vos and De Vries (2013). A problem with these maps, however, is that their reconstruction of especially the peat distribution absolutely does not fit our archaeological data. In figure 11.1 we have reproduced the map for the period 1500 BCE as it was published in 2013 in a slightly simplified version with respect to legend units and colours. Figure 11.2 shows a detail of three versions of the map, of 1500 BCE, 500 BCE, and 100 AD. According to these palaeogeographic maps, all of our sites were covered by peat in all periods. But in none of our excavations, not even at the most northern ones at Oss-Frankenbeemdweg and Oss-Oijensche Hut (Jansen *et al.* 2002) have we ever found peat. For that reason, we have reconstructed all of our sites (insets in fig. 11.2) in a peat-less sand landscape, which border the river valley with crevasse deposits, residual river channels, Pleistocene river dunes, and river levees.

In this synthesis we aim to reflect on the general trends of habitation, on developments through time, and also on the ways in which the past may have structured prehistoric societies (Bradley 2002). This has been a theme in Oss since we discovered that several wells were re-used again in later periods; in many occasions especially Early Iron Age features seem to refer to older structures or features (cf. Fokkens 1991; 2005). Therefore, we gave extra attention to the aspect of abandonment in our analyses. This also enabled us to critically discuss issues like 'continuity'. It turned out that discontinuity, or should we say 'settlement dynamics', is far more common than continuity.

In the following sections, we first discuss all the available data about Oss-North and combine them with the Ussen and Horzak data. This allows us to offer a coherent diachronic analysis, starting from the Late Neolithic through to the Roman

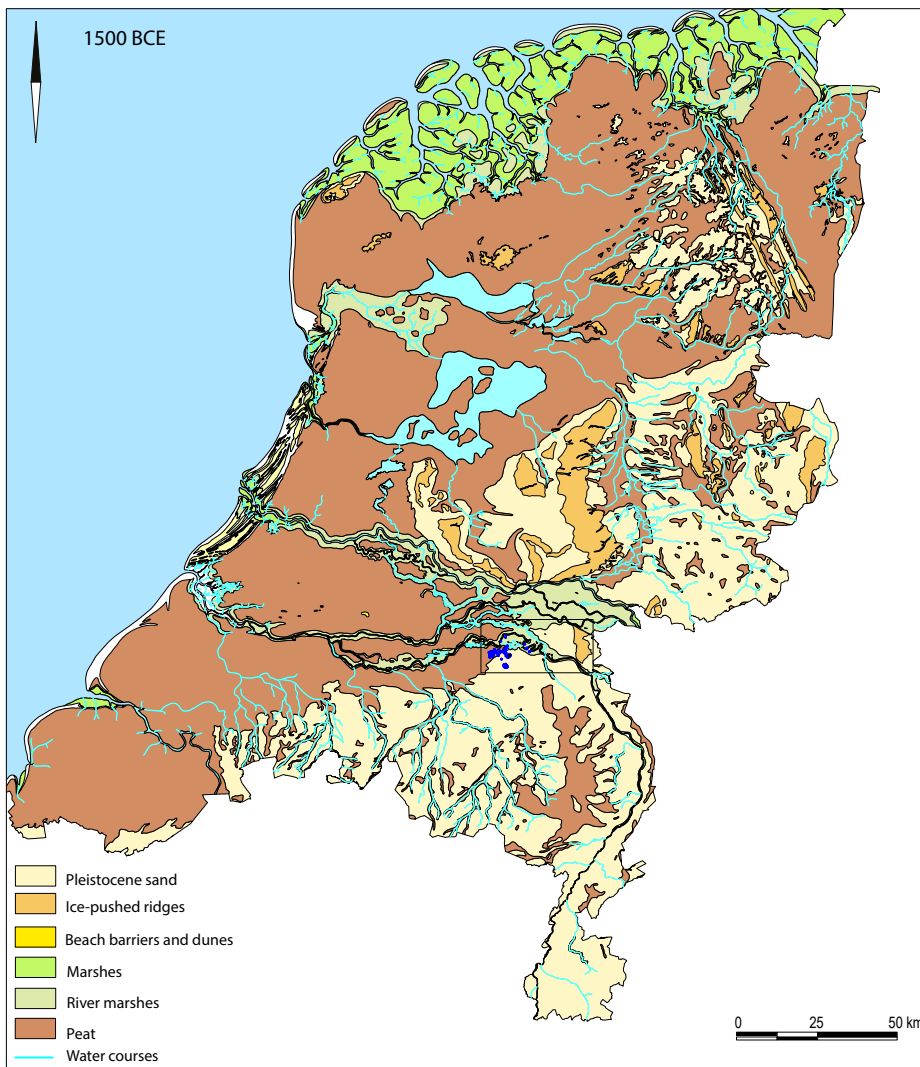


Figure 11.1  
Palaeogeographic map  
of 1500 BCE according to  
Vos and De Vries (2013).  
We have reduced the  
number of legend units  
and changed the colours  
to a lighter pattern in order  
to accommodate a better  
visibility of sites in the  
following distribution maps.  
After Vos and De Vries 2013.

Period, and in some cases even to the Middle Ages. Whenever possible we will draw more recent research done elsewhere in the Netherlands into the discussion.

## 11.2 SETTLEMENT DYNAMICS

### 11.2.1. *The Late Neolithic and the Early Bronze Age*

We do not have a great deal of evidence for Neolithic habitation in Oss-North. The same can be said in Oss-Ussen, south of Oss-North. The only Late Neolithic and Early Bronze Age finds in that area were situated just south of Oss-Mikkeldonk. They consisted of isolated ‘stray’ finds: two fragments of Vlaardingen axes and a Bell Beaker arrowhead (Schinkel 1998, 28). None of these were found in their primary contexts but were found in younger wells and pits. In the Oss-North

excavations there was in fact only one find from this period identified in a primary context: a small pit in the north of the Mikkeldonk area contained a fragment of a maritime Bell Beaker (cf. fig. 13.38; fig. 11.3). Early Bronze Age features are unknown from the excavated areas, apart from a single Barbed Wire Beaker from Oss-Horzak (Jansen and Smits 2014).

More to the north, however, in the Maaskant proper, many more sites are known (fig. 11.3). Especially the amateur archaeologists Piet Haane and Gerard Smits have found several complexes to the north of our excavations (Jansen and Smits 2014). We would expect also contemporary barrows, but these have not been found so far. The nearest barrow group was situated in Oss-Zevenbergen, some 6.5 km to the south-west of Oss-Mikkeldonk (Fokkens and Jansen 2004).

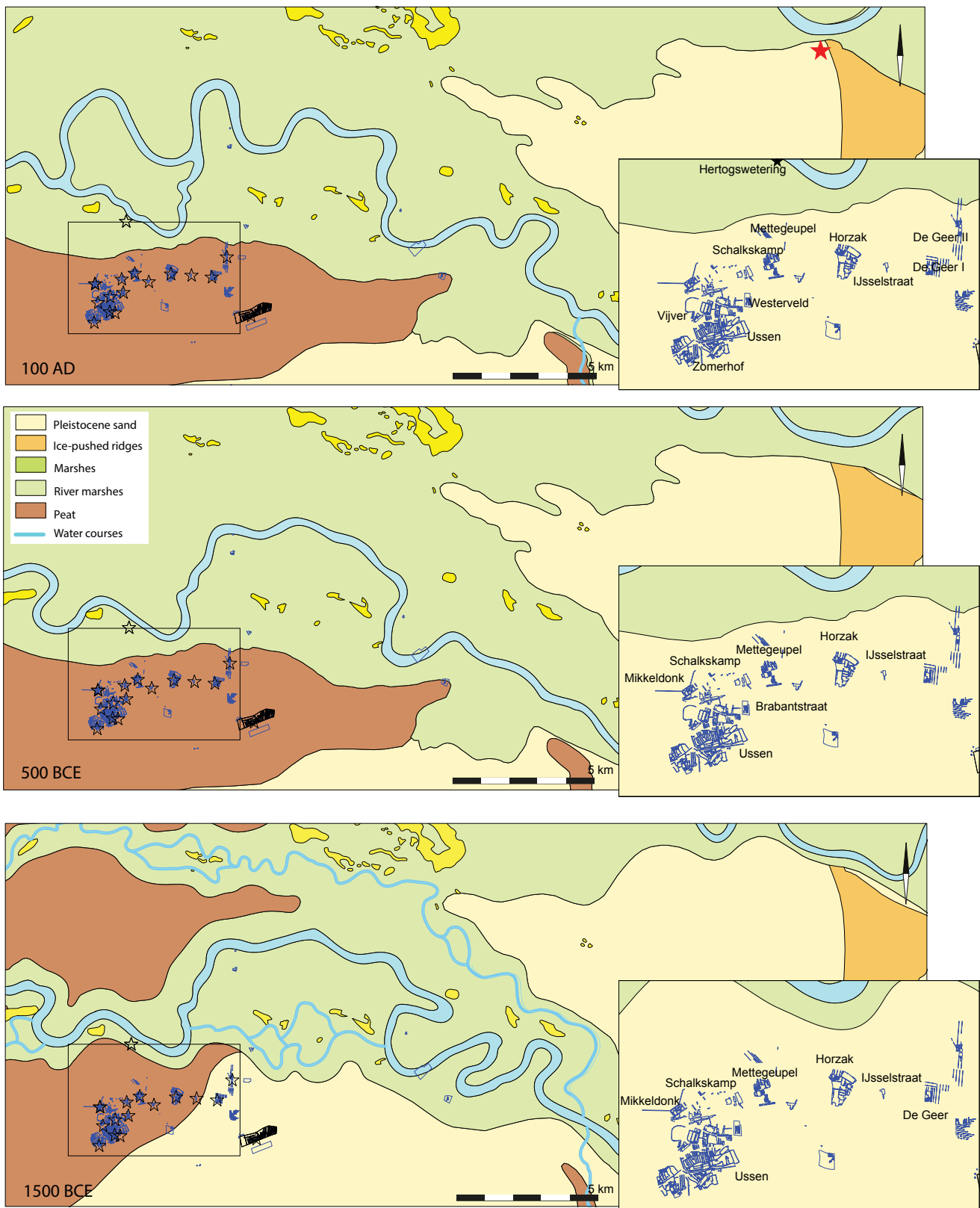


Figure 11.2 Palaeogeographic maps of 1500 BCE, 500 BCE and 100 AD according to Vos and De Vries (2013). The inset maps to the right show the maps corrected for the absence of peat in the excavation areas. After Vos and De Vries 2013.

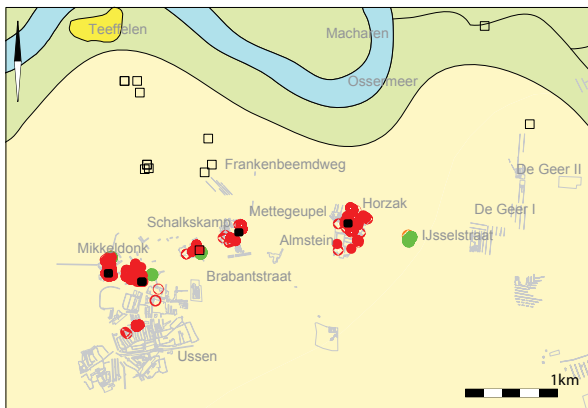


Figure 11.3 Finds from the Late Neolithic and the Early Bronze Age (green) and the Middle Bronze Age B (red) in the Maaskant area; open squares indicate survey finds as registered in ARCHIS (May 2016). Drawing H. Fokkens.

We suspect that in the Late Neolithic, Vlaardingen and Bell Beaker groups were living not far away, a bit further to the north. Recent research at Haren, for instance, showed that the river dunes near the Meuse were inhabited by groups of people who probably had arable land there. While they grazed their herds in the flood plains, they exploited the Meuse valley at the same time through fishing, fowling, and hunting (Knippenberg 2014).

This picture is in line with more recent analyses of Late Neolithic and Early Bronze Age habitation in The Netherlands (Fokkens *et al.* 2016). It appears that, contrary to what we previously assumed, Late Prehistoric farming communities still chose settlement locations that enabled them to exploit the environment to the full extent of possibilities. Bone spectra and remains of fish traps and fish weirs, show that hunting, fowling, and fishing were still very much an element of daily life, even throughout the Bronze Age (Fokkens *et al.* 2016; Van Amerongen 2015). We might speak of an *extended farming economy*. This is one of the explanations for why we found minimal remains of Bronze Age settlements in the excavated area. These locations were profusely used in the Iron Age and Roman period, but in the Bronze Age people lived further to the north, closer to the river Meuse. Many of these sites were covered with peat and clay deposits in later periods. This is one of the reasons that we have so few settlements from these periods. If we find them, they emerge in locations where we do not expect farmsteads because – from an optimal farming point of view – it

was maybe not the optimal location. Moreover, these are generally not the locations where modern towns like Oss choose to expand their housing estates.

This situation still seems to have persisted into the Middle and Late Bronze Age, but changed when the Early Iron Age started. From then on we find farming settlements in all conceivable environments: in peat areas, in the salt marshes, on the Pleistocene sandy soils (cf. Van den Broeke 2005, 482). All of these different ecological zones contain abundant evidence for farming, while hunting and fishing are less visible. It looks like farming really had become the main source of existence by then (Van Wijngaarden-Bakker and Brinkkemper 2005).

In The Netherlands, the Early Bronze Age starts at end of the Bell Beaker period. The Barbed Wire Beaker culture is the first Bronze Age culture group recognised, even though the Late Neolithic traditions continue almost unchanged. There is some discussion about the timespan of Barbed Wire Beakers, since in the southern Netherlands they seem to have been replaced by Early Hilversum pottery between 1800 and 1700 BCE (Fokkens *et al.* 2016, 287). In this discussion, a complex of wells in the Schalkskamp area is interesting. There we found a cluster of features (1029.12, 1029.3, 1029.5; section 14.4.1) that had a radio-carbon date between 1772 and 1748 cal BC. One of these (feature 1029.12) was a plank-lined well, in fact the oldest such well that is known from The Netherlands. These features contained both Early Hilversum and Barbed Wire Beaker pottery.

Just like Early Hilversum pottery, Barbed Wire Beaker pottery is very scarce in settlement (and burial) context anywhere. The Oss data show that this is not the result of the archaeological visibility of features: when present, they are easily/highly recognisable. They just do not contain much material. Nor do we have many real settlement structures from this period. The Early Bronze Age and the Middle Bronze Age A periods are evasive in the archaeological settlement record of the Low Countries (Fokkens *et al.* 2016).

### 11.2.2 The Middle Bronze Age

Before we started to work in Oss-North, around 1985, the Bronze Age was an uncharted period in the southern Netherlands. Apart from a claimed Bronze Age plan in Nijnsel (Hulst 1973), there were no Bronze Age houses known from the southern Pleistocene soils. Houses were known from the Holocene river area near Zijderveld and Dodewaard (Theunissen 1999), but the data were minimal. The reason we started in

Oss in 1986 was our discovery of Middle Bronze Age wells, and we hoped to find settlements dating to that period. We did indeed find settlement remains from this period, but in another way than we had projected: Middle Bronze Age farms turned out to be more evasive than we had hoped. Looking back, we were extremely lucky to find the first clear plan (MD125) already in the first year (1986). In 1987 we discovered the second (MD130), but that was also the last. After that we discovered many clearly identifiable wells and pits that dated to all phases of the Middle Bronze Age (Middle Bronze Age A to Middle Bronze Age B), but no house plans. Moreover, MD125 and MD130 are probably rather late in the Middle Bronze Age (chapter 13). Therefore, houses dating to the period of say 2300 – 1300 BCE are completely lacking, even though we have discovered several pits and wells from this period. These features cluster in such a manner that a farmstead could be expected in the immediate vicinity, but that was never found.

From the previous section, it is clear that there were only a few very dispersed pits that dated to the Early Bronze Age, and the same goes for the first part of the Middle Bronze Age. Three clusters of pits and wells can be dated early, but only one Hilversum-type sherd was found in the entire Oss-North region. The other wells were only datable because we could get <sup>14</sup>C dates. No pottery or other finds were found. This may to some extent explain why this period is so evasive to us: the features yield little pottery, and habitation is dispersed and low in density. But another part of the explanation is probably also to be found in the location of settlements of this period. Like Late Neolithic and Early Bronze Age settlements, Middle Bronze Age A settlements may have been located in areas where we do not discover them easily: areas that are now relatively low, and sometimes covered with younger sediments. In municipal development plans, these areas are the last to be built upon. For example, Early Hilversum pottery (Middle Bronze Age A), was found due north of the area excavated by us, nearer to the river Meuse (fig. 11.3).

Settlement remains from the Middle Bronze Age B, the period roughly between 1600 and 1100 BCE, are in abundance in Oss-North (fig. 11.3). This follows from the many features that contain undecorated Bronze Age pottery, generally attributed to the Middle Bronze Age B period. The pottery gives little typological clues as to when exactly they date within the Middle Bronze Age B. The <sup>14</sup>C dates however, show ‘regular’ habitation throughout the Middle Bronze Age in Oss-North. That

goes for Oss-Mikkeldonk, Oss-Schalkskamp, Oss-Mettegeupel, Oss-Horzak, and Oss-De Geer. Probably we can interpret this as the intermittent use of the area. People kept returning to previously inhabited places, but sometimes with decades or centuries in between such visits.

The two farmsteads that we excavated may belong to the last part of the Middle Bronze Age or even to the Late Bronze Age (chapters 4, 13). The farmsteads are in the Mikkeldonk area, and appear to have been situated in a small cluster, about 300 m apart from each other. The density of Bronze Age features in Oss-Mikkeldonk appears to be high in comparison to Oss-Mettegeupel and Oss-Horzak. More to the south, in Oss-Ussen, Bronze Age features were almost absent (cf. Schinkel 1998). Possibly two or three barrows were located in the north of Ussen, but the evidence is very minimal (Van der Sanden 1998). Therefore, it appears that we reached the southernmost limit of the Bronze Age habitation in Oss-North, at least in this part of the Maaskant area. The distribution of amateur finds and of the excavated features (fig. 11.3) shows that more pottery from this period was found in the area between Oss-North and the river Meuse. This may indicate that the locational preferences had not changed very much since the Late Neolithic and the Early Bronze Age. Apparently, the possibility to exploit both the higher grounds for arable farming and the lower areas for grazing, fishing, fowling and hunting made these locations a good choice to place farmsteads.

This combination of exploitation possibilities is also present in the river area (Theunissen 1999; Arnoldussen 2008), in West-Frisia (Van Zijverden 2017), in Hattumerbroek (Hamburg *et al.* 2011) and at other sites that we know. From the West Frisian settlements we know that, even if agriculture and animal husbandry constituted the core of their economy, Bronze Age farmers also fished and hunted still quite a bit (Van Amerongen 2015). The distribution of Bronze Age settlement remains in Oss may demonstrate the same preferences. This should not be seen as an absolute model, predicting settlement *only* in such areas, but in our view it is clear that settlement location was not merely determined by the presence of the best soils for farming.

We have no information either about the presence or the constitution of arable land. We might expect the presence of Celtic fields, but there really are no indications to support that. At Oss-Ussen, Schinkel hypothesised about the presence of Celtic fields (Schinkel 1998, 179-181), but could not substantiate it. This

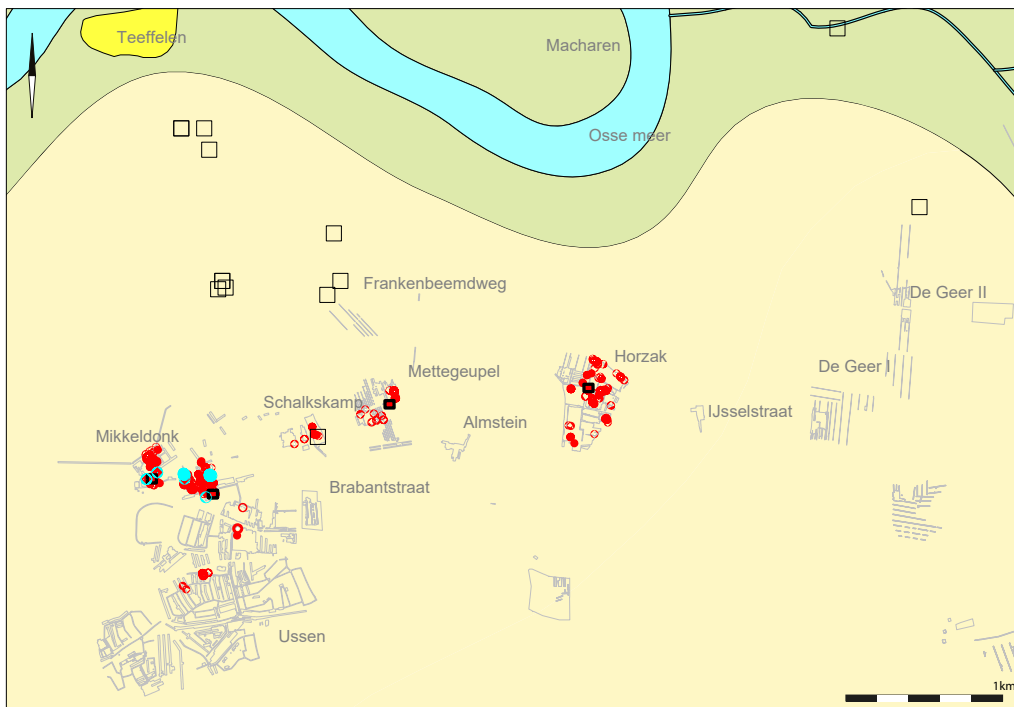


Figure 11.4 Distribution of features from the Middle Bronze Age B and the first half of the Late Bronze Age (red dots) in relation to Late Bronze Age features (light blue dots) in the Maaskant area; open squares indicate survey finds as registered in ARCHIS (May 2016). Drawing H. Fokkens.

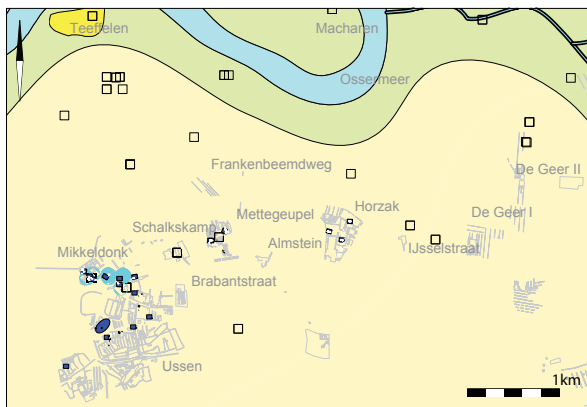


Figure 11.5 Distribution of features from the Late Bronze Age (light blue dots) in relation to Early Iron Age features (dark blue squares) in the Maaskant area. Oval features in the Ussen area represent possible graves from the period; open squares indicate survey finds as registered in ARCHIS (May 2016). Drawing H. Fokkens.

interpretation was based on the idea that in the Iron Age houses could be situated in Celtic field plots that were not in use at that moment (Harsema 1992). In the meantime it has become clear that the Hijken data, on which Schinkel's model was based, actually do not support that model (Arnoldussen and de Vries 2014).

One might expect bronzes to have been part of the find complexes as well, but these are notoriously absent. That the rarity of bronze is typical for Bronze Age settlements in the Netherlands. This does not automatically mean that they were very precious or non-existent. From hoards, mainly found in rivers and other wet environments (Fontijn 2002), we know that bronzes were part of the cultural complex, and also existed in considerable abundance. They just did not end up in settlement contexts or in barrows.

### 11.2.3 The Late Bronze Age

The Late Bronze Age appears to be almost absent in Oss-North, but is also missing in Oss-Ussen (fig. 11.4). Only in Oss-Mikkeldonk have we found a few wells dating to that period (cf. chapter 4). We only know this because of  $^{14}\text{C}$ -dates, but find material is lacking. One might expect typical pottery forms that we know from contemporary urnfields (cf. Verwers 1972) or from settlement complexes (Ball and Eimermans 2002), but such material is absent. Only in Oss-Horzak one small complex was found. Settlements from this period are elusive at other places as well, even though many urnfields are known, indicating that people had not left the region. Urnfields are absent in Oss-North and Oss-Ussen as well. Therefore, we think that absence of habitation in the late Bronze Age is not just a problem

of archaeological visibility; there really appears to have been a period of very little habitation in this area. This implies that the change in house plans that takes place in the Late Bronze Age (chapter 3) is not visible in Oss either. Settlements become visible again in the Early Iron Age. From 800 BCE onwards we know many house plans and settlements.

### 11.2.3 *The Early Iron Age (800-500 BCE)?*

In the Early Iron Age, the settlement system appears to have changed. Not only do the limits of habitation extend a few hundred meters further to south from the Middle Bronze Age habitation 'limits', we find also many clearly recognizable plans. Instead of two or three, we now know of at least ten clear plans from all of the excavated areas (fig. 11.5). Early Iron Age plans have been found also at Oss-Horzak, east of Oss-Mettegeupel.

Most of these Early Iron Age houses date to the second half of the Early Iron Age, phase C and D. Phase A and B are only present probably in Oss-Mikkeldonk. We still appear to have a system of dispersed farms situated a few hundred meters from each other. There are no indications for hamlets. There is little evidence for a replacement of farms on the same yard like was much more customary in West Frisia (Roessingh 2014; 2018). In Oss-Mettegeupel and Oss-Horzak, we have found Early Iron Age house plans that were rebuilt on almost the same spot. This indicates at least 50 – 60 years of continuous habitation, depending on how long one estimates the 'life'-cycle of one house.

The excavated farms may represent between 4 to 6 contemporaneous farmsteads within an area of 4 km<sup>2</sup>: two in the Mikkeldonk-Ussen districts, one in Oss-Mettegeupel, and one in Oss-Horzak. That is a community of about 25 to 50 people if we count one household as family of eight persons. For a community of that size one might expect one or maybe two urnfields (cf. Kooi 1979; Fokkens 1997). There is actually one cluster of Early Iron Age burials in Oss-Ussen (fig. 11.5), but that is too small to represent the whole community. The Ascadi and Nemeskeri formula (1970, 65)<sup>1</sup> calculates that we might expect about 30 graves for a period of 150 years and a community of 40 people ( $30 * 40 / 150$ ). One would expect at least one another cemetery in the Oss-Horzak district. Perhaps an urnfield was situated in the unexcavated area further to the north.

However, the Almstein and Schalkskamp districts contained no Early Iron Age features or houses. This indicates that the settlement pattern was characterised

by dispersed groups of one or two farms, sometimes a kilometre apart. On the other hand, a cluster of three granaries at Oss-Almstein demonstrates that the area in between these farms was not just 'barren' or unused. If these small clusters of farms exploited one Celtic field complex, we would expect there to be complexes of not more than a few hectares of arable land around each clusters.

### 11.2.4 *The Middle Iron Age (500-250 BCE)*

To a large extent, the settlement nodules that existed in the Early Iron Age continued to exist in the Middle Iron Age (fig. 11.6). The areas that were not settled in the Early Iron Age remained empty in the next period. This seems to indicate continuity, but if we look at the phasing in more detail it becomes clear that the first half of the Middle Iron Age shows very little datable features (fig. 11.7).<sup>2</sup> Pottery datable to Phase E-F appears to be present only in the south-east of the Mikkeldonk area. Schinkel has indicated this as cluster X (Schinkel 1998, fig. 95, 102). At Ussen, Schinkel distinguished three clusters of settlement in phase E-F, of which only his cluster XI showed possible houses (fig. 11.7). Apart from that there is also a large watering pit surrounded by fences in Oss-Horzak.

In 2008-2010 new information was added by excavations at Oss-Brabantstraat, just 200 m north-east of Oss-Ussen (Oss-Westerveld), and 350 m south of Oss-Schalkskamp (De Leeuwe 2011). Here, the excavated area (1 ha) contained several houses and granaries from the Middle and Late Iron Age. In addition, a (ritual) structure from the Late Iron Age and Roman Period was excavated (section 11.3.2). At Brabantstraat, a well was found with pottery that typologically could be attributed to phase E. A dendro-chronological date of  $446 \pm 7$  years BC corroborated the typological date (De Leeuwe 2011, 31). Also found was a Haps-type house, which dated to phase F of the Middle Iron Age (fig. 11.8). The Brabantstraat cluster of features most probably explains the very large pit in the south-east of Oss-Mikkeldonk.

The four clusters of features with pottery from phase E and F now appear to have been the only ones in Oss-Ussen and Oss-North. But apart from MD127 and House 1 at Brabantstraat, houses are absent. We also know of a few graves from this period in the Ussen area (Van der Sanden 1998, 311; fig. 11.7).

This means that farmsteads were less visible or more restricted than in the previous period. Maybe it is no co-incidence that this is the very period in which the Early Iron Age type 2 houses develop into the



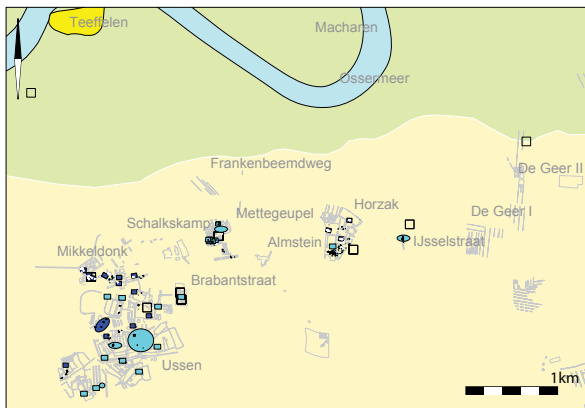


Figure 11.6 Distribution of features from the Early Iron Age (dark blue squares) in relation to Middle Iron Age features (light blue squares) in the Maaskant area. Larger round and oval zones indicate small cemeteries from the period; open squares indicate survey finds as registered in ARCHIS (May 2016). Drawing H. Fokkens.

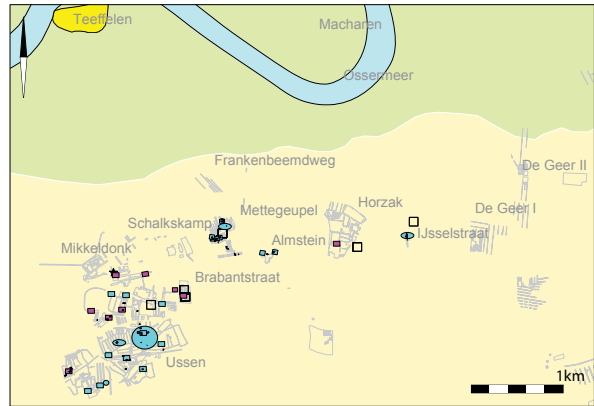


Figure 11.7 Distribution of features from the Middle Iron Age phase E-F (purple squares) in relation to Middle Iron Age features of phase G and H (light blue squares) in the Maaskant area. Larger round and oval zones indicate small cemeteries from the period; houses are indicated as small black squares; open squares indicate survey finds as registered in ARCHIS (May 2016). Drawing H. Fokkens.

‘typical’ Middle Iron Age house of Oss-Ussen type 4, the Haps-type house (chapter 3). It has been suggested that poor archaeological visibility occurs more often when one tradition in house building is followed by another tradition (Fokkens 2008). For instance Early Bronze Age and Late Bronze Age houses are almost ‘invisible’ as well: they both also mark major changes in the structure of plans. This applies not only to the south but to all of The Netherlands and adjacent regions. In these instances the change in construction tradition may coincide with or signal a more fundamental change in economy or social conditions of living.

In Phase G-H (375-250 BCE) several settlement clusters are visible again (fig. 11.9). The most dense clusters of features appear in the Mettegeupel – Almstein area. Probably several contemporaneous farmsteads were situated here for some period of time, maybe up to 150 years, between 350 and 250 BCE (chapter 6 and 7). Also at Brabantstraat, a yard with a house that was rebuilt two times was discovered (De Leeuwe 2011, 54). In Oss-Ussen, Schinkel proposed that there were three clusters of settlement features, all including house plans (Schinkel 1998, 102). In Oss-North and Oss-Ussen that would imply the presence of some 6 – 10 contemporary farms, with a community of 40 to 70 people. That is a slight increase with respect to the Early Iron Age. We have of course not discovered every house from these periods, so the absolute number is probably higher.

Nevertheless, we can at least compare the data from the excavated areas.

Only very few burials have been found so far, so many must still be present. To give an estimate using the formula of Ascadi and Nemeskeri (1970, 65): with a population of 40-90 people we expect about 200-450 graves over a period of 150 years. Only the Ussen district contained some burials. In Oss-North proper only one isolated grave was found in Oss-Mettegeupel. A small cemetery was present further to the east, at Oss-IJsselstraat (fig. 11.7).

#### 11.2.5 The Late Iron Age (250-0 BCE)

The Late Iron Age is amply represented in almost all regions except in the Mikkeldonk area (fig. 11.9). In the pottery typology of Van den Broeke (2012), the Late Iron Age is spanned by phase I (275-225 BCE), phase J (225-150 BCE), and phase K (150-50 BCE). Phase L marks the change to the Roman Period (50-0 BCE). Most features span phases J and K, so it is hard to distinguish sub-phases. Phase I only spans a short period of 50 years in Van den Broeke’s scheme, and is therefore difficult to detect. This phase was absent in Ussen but also not very well represented in other complexes in excavations to the south of Oss (Van den Broeke 2012, 150; Schinkel 1998, 113-114). Oss-Almstein is unique in that respect, because there are a few complexes dated to that phase here. These complexes were not found in wells or other deep pits, however. The Almstein ditch was closed in the

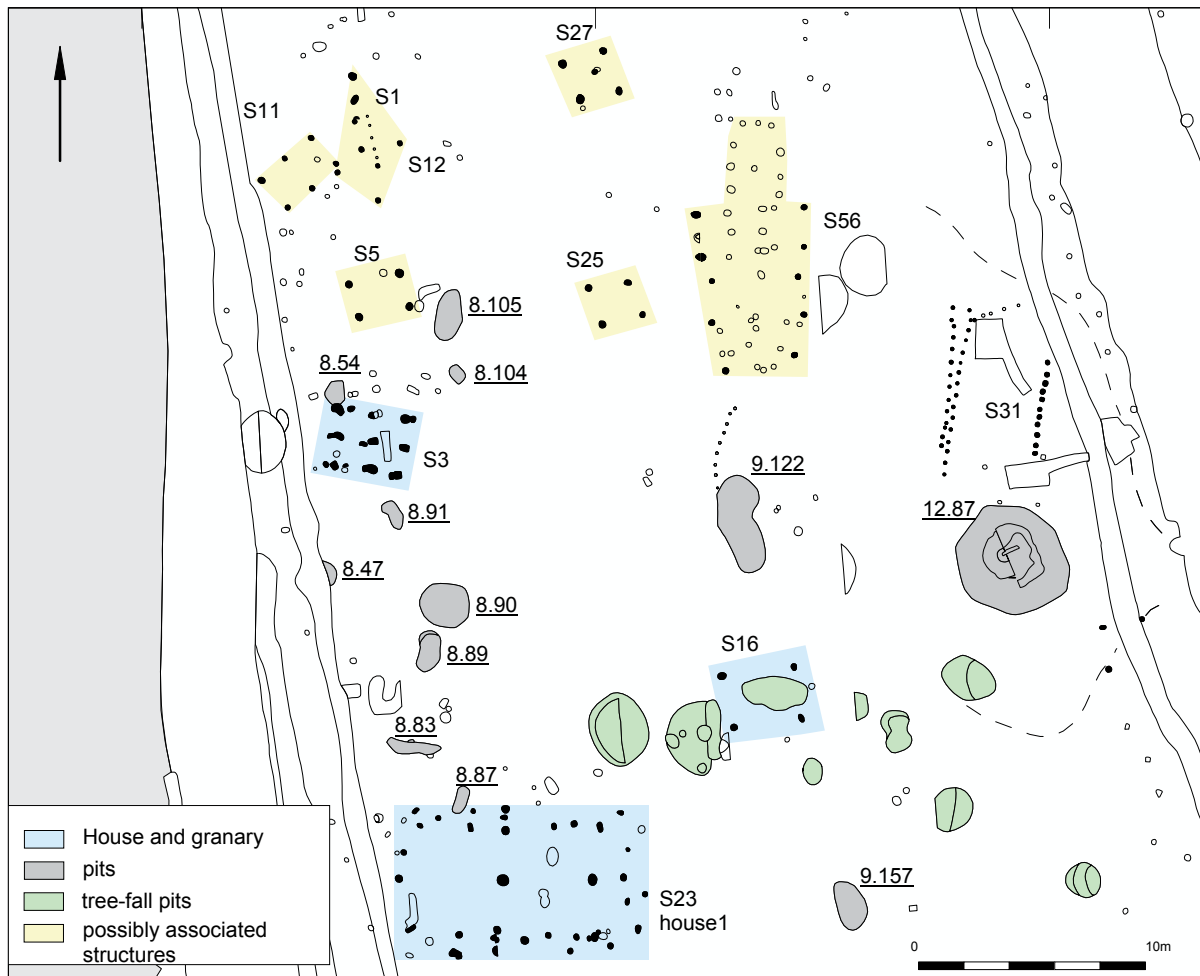


Figure 11.8 One of the two phase Early Middle Iron Age (phase F) houses excavated at Oss-Brabantstraat (after De Leeuwe 2011, 41).

subsequent phase, so it also did not contain any phase I pottery. The low visibility of the beginning of the Late Iron Age may therefore be due to the fact that fewer deep pits and wells were dug in this period.

According to Schinkel (1998, 115-122), Late Iron Age farmyards in Oss-Ussen cluster more than in the previous period. His maps show that indeed farms tend to be rebuilt several times in almost the same location. The Almstein model comes to mind here, but Oss-Schalkskamp shows the same (loose) settlement structure. Farms were not rebuilt along the same orientation and they overlap (cf. Schinkel 1998, fig. 105), so there is not a clear sequence or structure visible in the location preference of farm yards. This is visible also in Oss-Brabantstraat, where two houses were rebuilt in the same area, but on different orientations (De Leeuwe

2011). In the Late Iron Age settlements become enclosed by settlement ditches more often. In Oss-Horzak and Oss-Almstein we encountered ditch segments that appear to form a longer line of ditches. Oss-Mikkeldonk also has ditches from this period. At Oss-Brabantstraat they appear to be absent (De Leeuwe 2011).

The ditch systems seem to indicate a rather open and short-lived arrangement. They were relatively shallow and may have contained water only after heavy rains. The Horzak ditch system was filled-up and invisible at the start of the Roman Period, as was the Schalkskamp system. The latter ditch system was reused for a forge. This seems to indicate that the original function of the ditch was not relevant or useful for structuring new forms of settlement. Soon after, all features at Brabantstraat seem to have been filled-in in

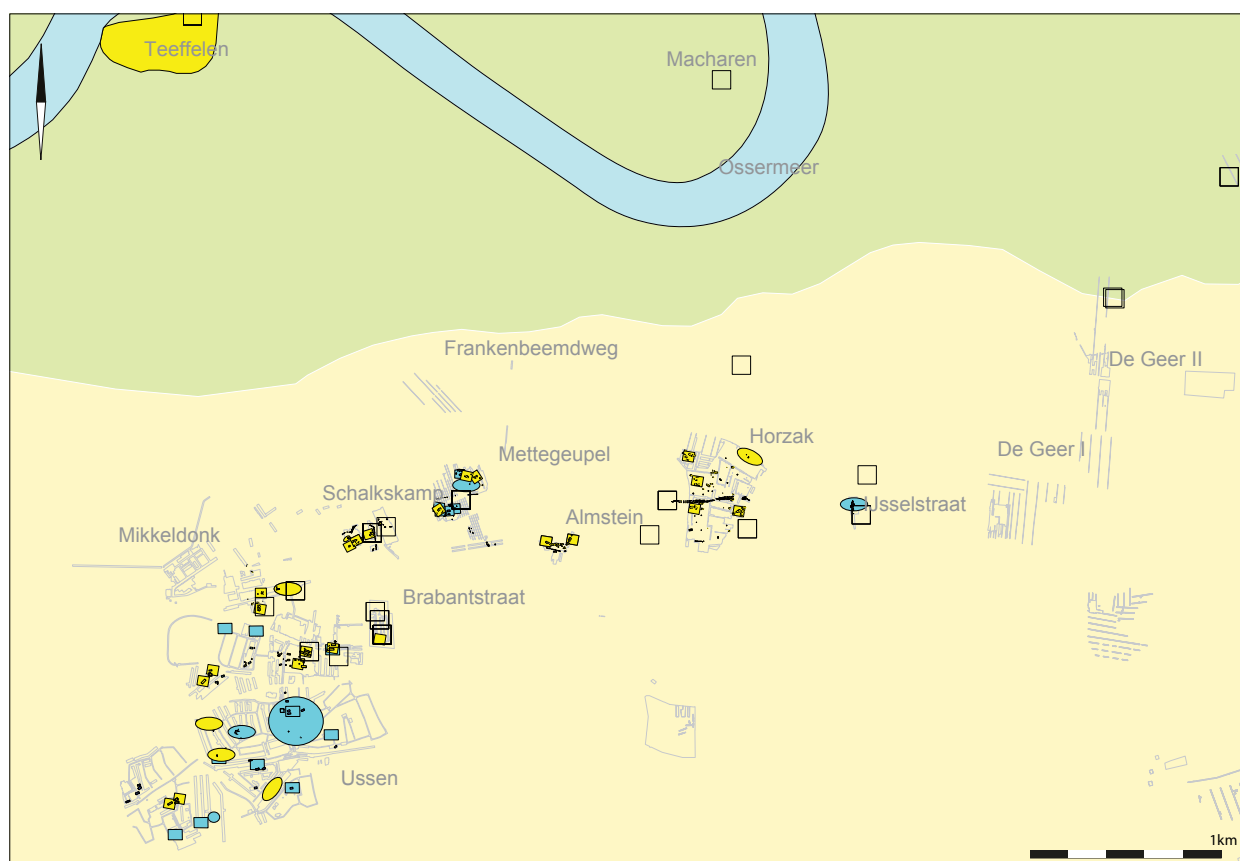


Figure 11.9 Distribution of features from the Middle Iron Age phase (light blue squares) in relation to Late Iron Age features (yellow squares) in the Maaskant area. Larger round and oval zones indicate small cemeteries from these periods; open squares indicate survey finds as registered in ARCHIS (May 2016). Drawing H. Fokkens.

this area. Like in Oss-Horzak, new farms were built on top of the Late Iron Age ditch system. Since there are no irregularities in the house plans, we must assume that the ditch was really closed already for some time. The soil had settled and apparently left no depression.

A few small Late Iron Age cemeteries are known from the Maaskant area. Van der Sanden has described the three small Ussen-clusters in some detail (Van der Sanden 1998), while Wesselingh also has discussed one of the cemeteries (Wesselingh 2000, 187). Most of the monuments are rather inconspicuous ring ditches containing a cremation burial without any additional finds. This is one of the reasons that the burials are hard to date. An additional cluster was discovered in Oss-Mikkeldonk (sections 4.3.6; 13.6) dating to the 2<sup>nd</sup> century BCE. It appears that small cemeteries were the norm, probably related to local farms or clusters of farms. Some of these developed into larger cemeter-

ies in the Roman period. Those probably had a more central character, and were situated between settlements. A good example comes from the Roman period cemetery at Ussen, which developed around a small cluster of about six graves from the Late Iron Age that existed between the Zomerhof and Westerveld settlements (Wesselingh 2000, 186; fig. 11.10).

#### 11.2.6. The Roman Period (0-250 AD)

The Roman period has already been discussed by Wesselingh in great detail (Wesselingh 2000). However, since then we have excavated the extensive settlement at Oss-Horzak, so many more data have come available.<sup>3</sup> Figure 11.10 demonstrates that to some extent, showing the developments from the Late Iron Age to the Roman period. The image demonstrates that clustering of farmsteads occurred in the Roman period to a much greater degree than before, and a hierarchy

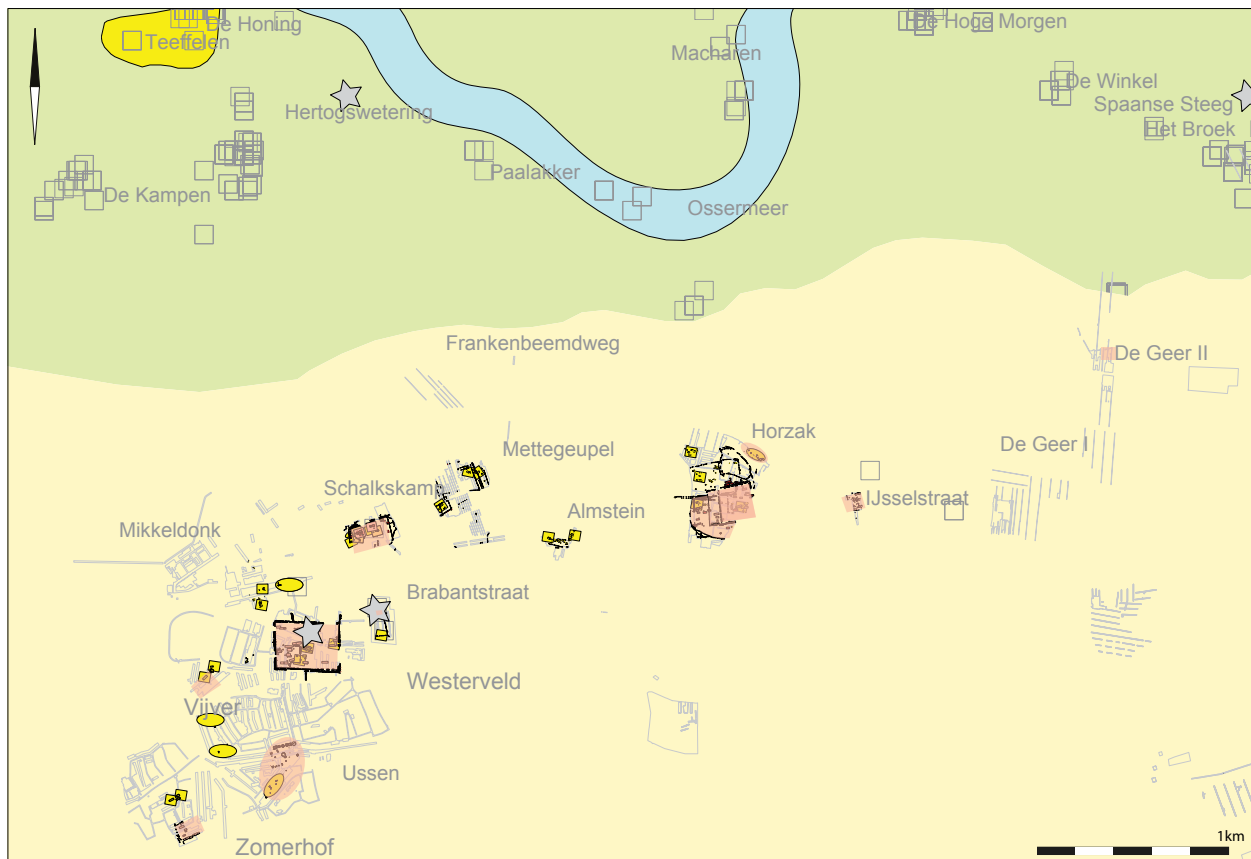


Figure 11.10 Distribution of features from the Late Iron Age (yellow) in relation to Roman period features (orange) in the Maaskant area. Larger oval zones indicate cemeteries from these periods; open squares indicate survey finds as registered in ARCHIS (May 2016); stars indicate cult places. Drawing H. Fokkens.

of settlements developed (Jansen and Fokkens 2010). Isolated farmsteads are present as well, like at Oss-Vijver in Oss-Ussen, or possibly at Oss-IJsselstraat, Oss-Zaltbommelseweg and Oss-De Geer. However, enclosed settlements like Oss-Zomerhof, Oss-Westerveld, Oss-Schalkskamp, and Oss-Horzak are common in the southern part of The Netherlands (cf. Hiddink 2005, 2014; Vos 2009).

#### 11.2.6.1 Enclosures

The enclosures of the Oss-sites probably were not defensive. The Zomerhof and Horzak phase 2 enclosures consisted of single ditches, with the Oss-Westerveld and Oss-Horzak phase 3 enclosures comprising sets of parallel ditches. Both the single and parallel ditches were relatively shallow and would have contained no water (60 cm deep: Wesselingh 2000, 123). They were about a meter wide, sometimes a little wider.

At Oss-Westerveld and Oss-Horzak the ditches lay about 4-5 m apart from each other (fig. 11.11; 11.12). In theory a hedge or wall could have stood in between, but there is no evidence for that. The ditches at Westerveld were probably re-excavated at least one time (Wesselingh 2000, 123), just as in Oss-Horzak, where the three phases also differ in size (fig. 11. 11).

The first phase of the Horzak enclosure is a rather irregular 'open' enclosure that probably also encompassed arable land or areas in which livestock could be corralled. The 'corral' in the northern part is 100 x 190 m in size, and is empty of settlement features. Also the area to the west of that is empty (fig. 11.10B). The total enclosure is about 450 x 290 m in size. We think that we have excavated nearly all of it: only the south-eastern corner is missing. This enclosure was laid-out in the 1<sup>st</sup> century AD, probably in the pre-Flavian period. After that, in the first half of the



Figure 11.11  
Four phases  
of the Horzak  
settlement,  
excavated  
between 1997  
and 2009.  
A: Middle and  
Late Iron Age  
features including  
a parallel ditch  
system; B phase  
1 of the roman  
period settlement  
(0-100AD);  
C: phase 2 of the  
Roman period  
settlement  
(100-150 AD);  
D: phase 3 of the  
Roman period  
settlement  
(150-225 AD).  
Drawing  
H. Fokkens.

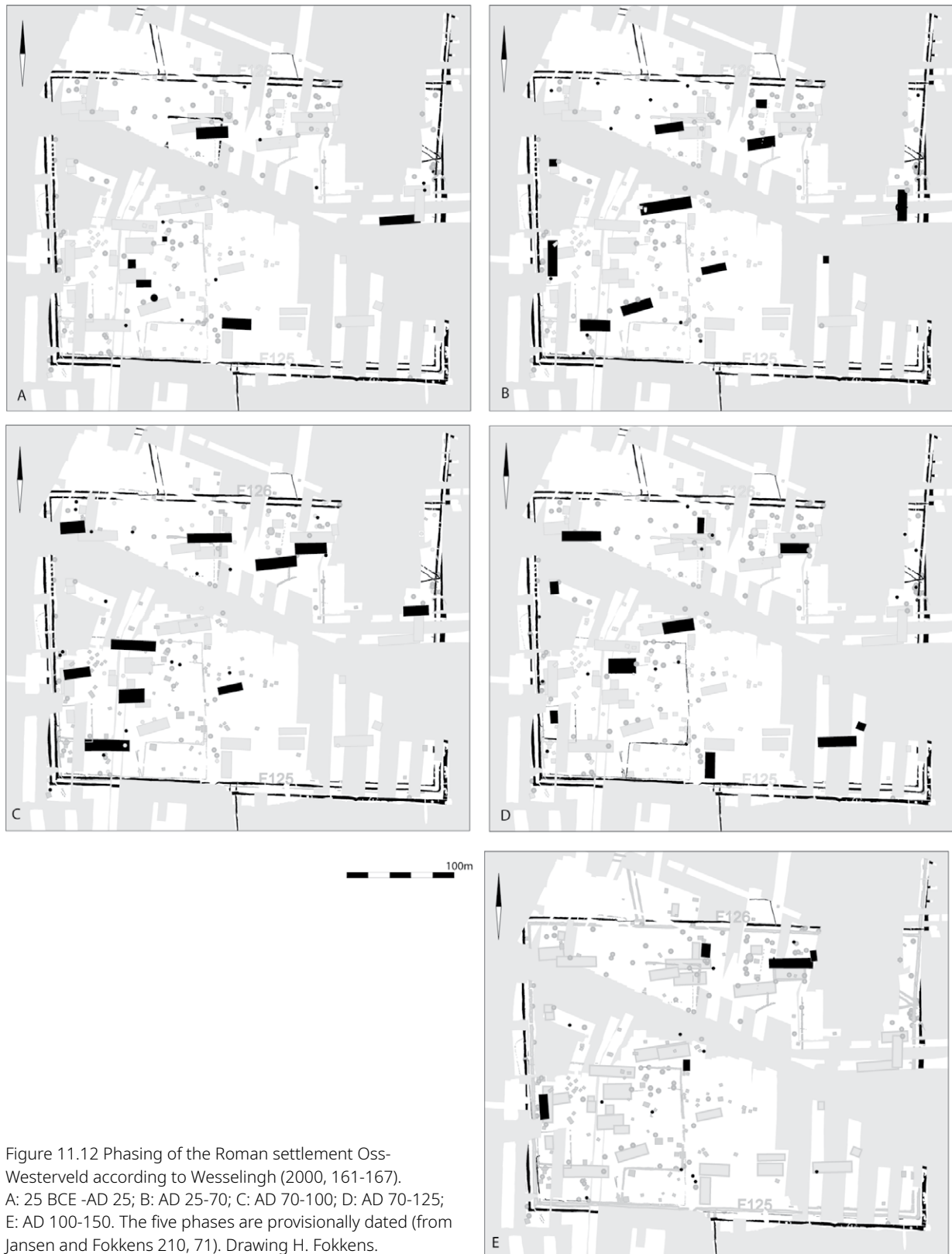


Figure 11.12 Phasing of the Roman settlement Oss-Westerveld according to Wesselingh (2000, 161-167). A: 25 BCE -AD 25; B: AD 25-70; C: AD 70-100; D: AD 70-125; E: AD 100-150. The five phases are provisionally dated (from Jansen and Fokkens 210, 71). Drawing H. Fokkens.

Late Iron Age										Roman Period									
I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
250	225	200	175	150	125	100	75	50	25	0	-25	-50	-75	-100	-125	-150	-175	-200	
Schalkskamp: this volume chapter 5																			
							3												
								2											
Westerveld: Wesselingh 2000, 160																			
							4												
									9-11										
										8-9									
											5-6								
																1			
Zomerhof: Wesselingh 2000, 69																			
										3									
											3								
																3			
Vijver: Wesselingh Wesselingh 2000, 44																			
									1										
Horzak: this volume chapter 11																			
								5-6											
										4									
																2			
IJsselstraat: Wesselingh 1996; 2000, 191																			
																2			
Zaltbommelseweg: Wesselingh 2000, 191																			
								1											

Figure 11.13 Estimates of the numbers of yards in the Late Iron Age and the Roman period. Drawing H. Fokkens.

2<sup>nd</sup> century AD (or slightly earlier) phase 2 of the enclosure was laid out. This phase also had an associated 'empty' enclosure to the north, measuring 100 x 67 m. The orientation of the houses has not changed compared to the previous period, but it is clear that a new, more organised layout was conceptualised for the enclosure. It cross-cuts the plans of earlier houses, but maintains the orientation of the previous settlement organisation. Phase 3 of Oss-Horzak was laid-out in the second half of the 2<sup>nd</sup> century AD (fig. 11.10D). It clearly is defined by the phase 2 enclosure, but was shifted 50 m to the west; it avoided the farm that previously had its own entrance in the south-west. It encloses a roughly square area of 165 x 175 m. The size of the phase 3 enclosure was probably roughly the same, though we lack evidence on the east side.

The Westerveld enclosure was considerably larger than the two Horzak enclosures, and covered an area of 320 x 260 m. It was also laid-out earlier than the square phase 2 and 3 enclosures at Oss-Horzak. If we look at the evidence for contemporary houses, it appears that there were more houses in Westerveld (fig. 11.12). Wesselingh has made a detailed calculation of the numbers of houses per period, based on typological dating evidence for the (imported) pottery for Westerveld (2000, 116; fig. 11.13). Such calculations are not (yet) possible for Oss-Horzak, but a rough calculation shows figures that are in accordance with the Westerveld data. If we apply the same life span of a house (about 25-30 years) as Wesselingh does (Wesselingh 2000, 100), then the number of houses calculated for each phase is indeed less than at Westerveld. Given the size differences in the two sites, this is to be expected (fig. 11.11).<sup>4</sup> These data coincide reasonably well with the evidence from cemeteries (section 12.6.3).

#### 11.2.6.2 Entrances and roads

Figure 11.14 shows that entrances to all enclosures are comparable. Although there seem to be two kinds, both consist of two parallel ditches and may have a comparable function. One type was first encountered in the Late Iron Age enclosure ditch F141 at Oss-Schalkskamp (type Schalkskamp; fig. 11.14D; section 14.5; fig. 14.39). It is characteristic for the ditches to run parallel to the actual enclosure ditch, creating a kind of 'cattle drove' leading up to the actual entrance. Those stretches of parallel ditches can be quite long, and are 30 – 40 m in length both in Oss-Schalkskamp and in Oss-Horzak phase 2. Both the Zomerhof and Schalkskamp entrances appear to funnel into the settlement, which in our opinion demonstrates that bringing in livestock was one of the main functions of this type of entrance.

The other type can be seen best in Oss-Horzak phase 3 (type Horzak), but was also present in Westerveld (fig. 11.14C and D). It consists also of parallel ditches that are 4-5 m apart, but these enter the settlement almost at a perpendicular angle. The ditches run perfectly straight and parallel to each other. They may have functioned primarily to mark roads or routes, both for livestock and for carts and horses; the Oss-Horzak type may be primarily for horses. That interpretation would also fit the parallel Late Iron Age ditches that we have excavated at several points between Oss-Horzak and Oss-Mettegeupel (fig. 11.13A). We have been able to follow some of these over several hundred meters, and apparently



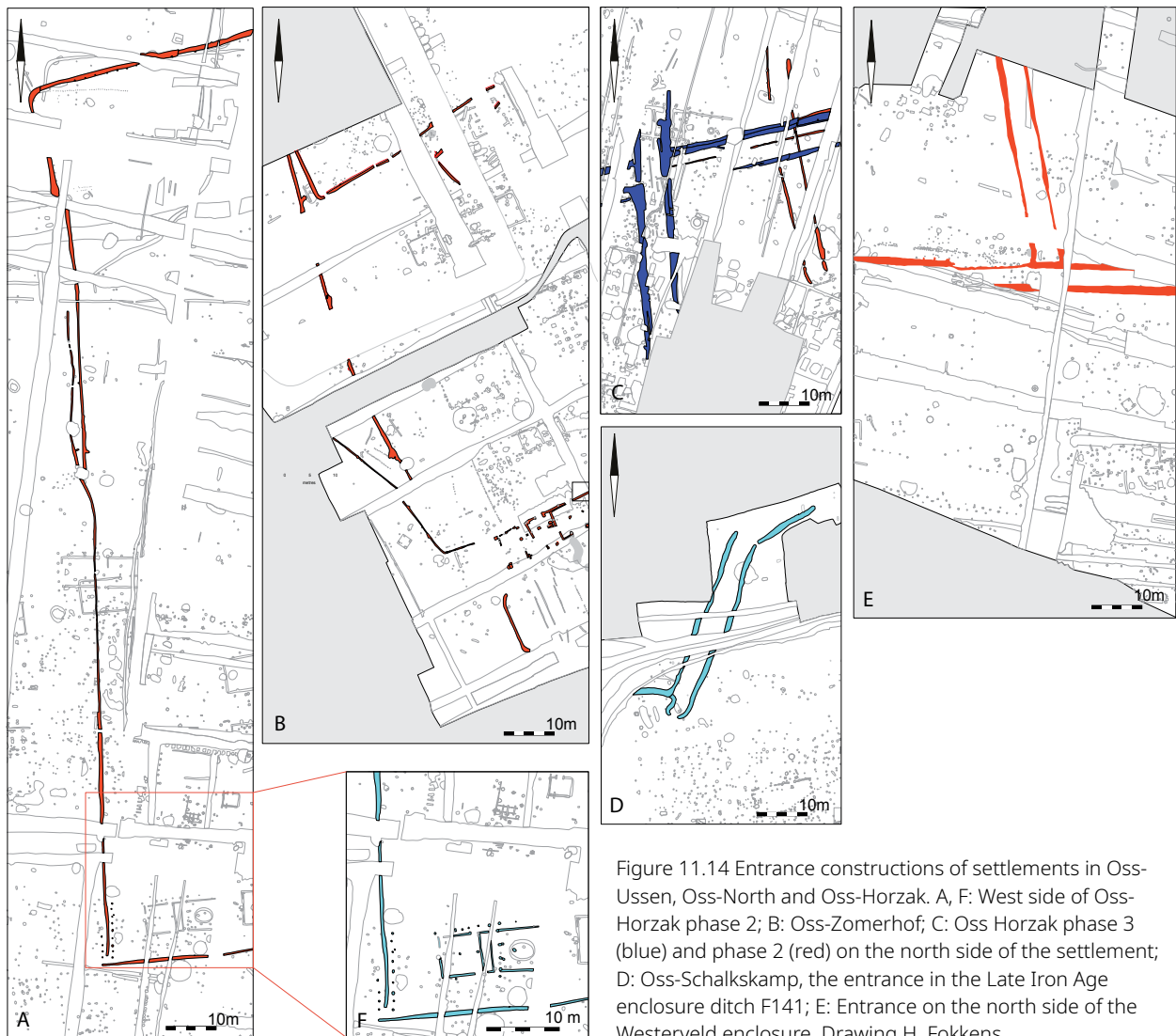


Figure 11.14 Entrance constructions of settlements in Oss-Ussen, Oss-North and Oss-Horzak. A, F: West side of Oss-Horzak phase 2; B: Oss-Zomerhof; C: Oss-Horzak phase 3 (blue) and phase 2 (red) on the north side of the settlement; D: Oss-Schalkskamp, the entrance in the Late Iron Age enclosure ditch F141; E: Entrance on the north side of the Westerveld enclosure. Drawing H. Fokkens.

they were not associated with the settlement traces on either side of the ditches (Van As and Fokkens 2015).

Where these roads and routes lead is not clear of course, but there are some indications. Figure 11.10 shows that the ditches departing the Westerveld settlement are at least oriented towards the Schalkskamp settlement and towards the cemetery in the south. The Horzak 'road' in phase 2 lines up with the 'corral' to the north, and to the cemetery as well. The fact that they become invisible after a few dozen meters from the settlement enclosures demonstrates, in our view, that we are not dealing with proper roads. They channelled and structured the entrance of both livestock

and people to a settlement, but they do not really connect places in a structured way.

There is a third kind of entrance as well, which shows a more or less individual access to the settlement. At the south-west corner of Oss-Horzak phase 2, for instance, a farm that was rebuilt once during its existence, apparently had its own entry bordered by a kind of palisade or post alignment (fig. 11.14F). In the south-west corner of Zomerhof was a similar situation, with one entrance connecting also directly to a farm. This farm was rebuilt at least two times on almost the same spot, indicating at least 75 years of continuity on this yard.

		Real number of graves	Estimated number of graves	Population estimate based on estimate of graves	Number of farms based on estimate of graves	Archaeologically calculated number of farms	Population based on estimate of farms
<i>Westerveld</i>	LIA	8	28	17	2	1	6
	25-70 AD	10	34	23	3	10	60
	40-120 AD	38	131	49	7	8	48
	90-150 AD	22	76	38	5	8	48
	120-180 AD	23	79	59	8	4	24
	150-240 AD	15	52	17	2	1	6
<i>Horzak</i>	100-200 AD	23	69	21	3	3	18

Table 11.1 Population estimates based on the cemeteries and estimated farmsteads at Oss-Westerveld and Oss-Horzak.

### 11.2.6.3 Cemeteries

Two Roman period cemeteries were discovered in the Oss-region: one south of Oss-Westerveld, the other just 1500 m away from it in Oss-Horzak. When calculations were made about the size of the population that buried their dead in these cemeteries, it is quite clear that there must have been many more cemeteries because they represent relatively small communities (table 11.1). The Horzak cemetery had 27 Roman period graves, which all dated to the second half of the 2<sup>nd</sup> century AD or possibly from 125-200 AD (Jansen and Fokkens 2002, 333; Bruineberg 2004). Originally, the cemetery may have had 150 graves over a time span of 100 years. Using the Ascadi and Nemeskeri formula (1970), that number of deceased individuals would suggest a living population of about 21 people, or about three farmsteads with seven inhabitants each. That is indeed the number of farmsteads we have calculated for the 2<sup>nd</sup> century AD on the basis of archaeological data (table 11.1). There is therefore a good chance that the cemetery belongs to phase 3 of the enclosed Horzak settlement.

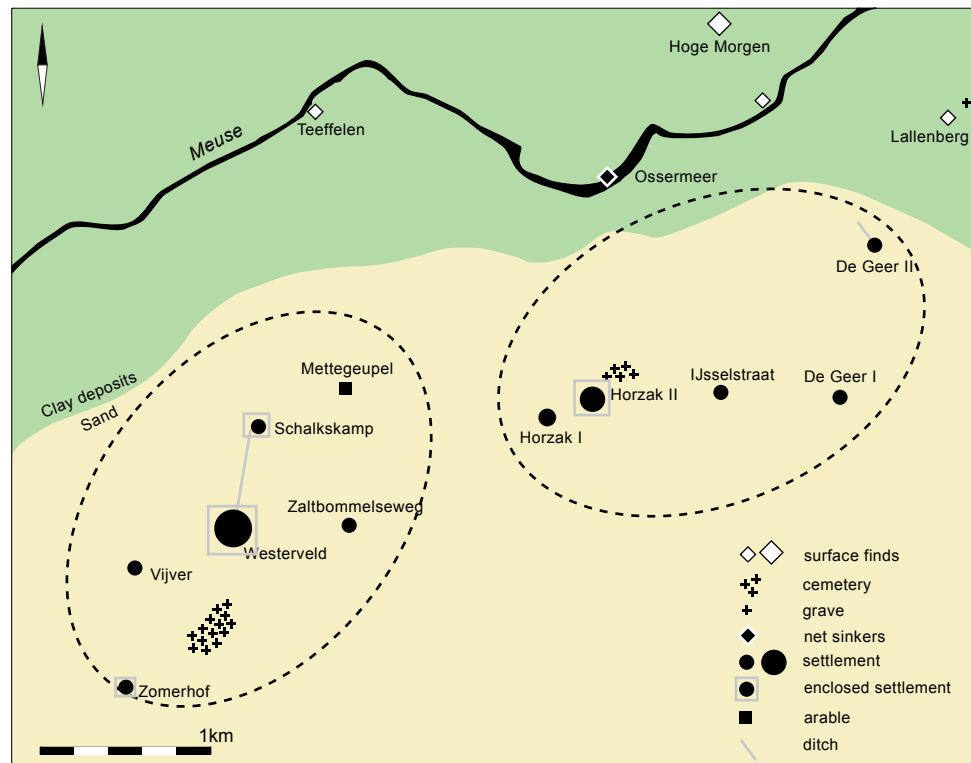
There must have been several other cemeteries in the neighbourhood. The Late Iron Age and Early Roman period burials have to be somewhere as well. We also lack burial data for the Schalkskamp, Zomerhof and Vijver settlements, if we assume that the large cemetery south of Westerveld was predominantly used by the inhabitants of Westerveld (Wesselingh 2000, 183 ff.). Here c. 250 graves were found, south of a row of six 'rich' graves.

### 11.2.6.4 Settlement 'system' and developments through time

We do not think that Oss-Horzak and Oss-Westerveld were part of the same 'community' (fig. 11.15). Both settlements have a comparable rectangular enclosure, and are of a comparable size. They are about 2 km apart, and the area in between the settlement clusters appears to have been empty of settlement, but not unused. At Oss-Mettegeupel and Oss-Almstein we found no Roman period settlement remains (*e.g.* houses or wells), but we did find parcelling ditches. These appear to have enclosed long strips of land that at one point also was fenced off (*cf.* sections 15.5; 6.2.6; 7.5).

When discussing developments through time, it is clear that habitation completely stopped in the 1<sup>st</sup> century BCE at some locations, while in others it continued in a modified way. At Oss-Horzak, for instance, the loose settlement structure develops into a square (planned) layout with several entrances. In the 2<sup>nd</sup> century AD, that exact layout and size was maintained, even if it shifted slightly to the east (fig. 11.16B). At Westerveld there probably was one important house, identified as a 'porticus house'. There were many signs of the Romanisation of the inhabitants: Roman pottery, exotic food (use of coriander), a wine cask, bronze horse equipment, bronze keys (Wesselingh 2000, chapter 4.7). There was no similar building at Oss-Horzak or at Oss-Zomerhof. Rich graves were absent from the Horzak cemetery and from the north part of the Ussen cemetery (Bruineberg 2004; Jansen and Fokkens 2004; Helsing 2000, 161). Large horrea, like at Oss-Westerveld

Figure 11.15 Settlement clusters in the Maaskant region around Oss-Westerveld and Oss-Horzak as published by Jansen and Fokkens (2010, 75).



(Wesselingh 2000, chapter 4.3), were absent in Oss-Horzak, Oss-Zomerhof, Oss-Vijver, Oss-IJsselstraat, and Oss-De Geer.

In a synthetic paper, Jansen and Fokkens (2010) have discussed the developments at Oss within the framework of the wider region. We have argued that several things changed in the Oss area after the Batavian revolt in 70 AD. One was the development of the porticus house, and the other was the change in the layout of settlements, like at Oss-Horzak. Parts of the following discussion come from the doctoral thesis of Vos (2009), which appeared shortly after we had finished the manuscript of the 2010 paper.

To a large extent, the settlement models for the Maaskant area are connected by the discussion about the porticus house. Oss-Ussen house 78 is one of the focal points in this debate, since that house was interpreted as having a tiled roof (Van der Sanden 1987, 64-65).<sup>5</sup> Slofstra (1991) discussed this type of house in a hierarchical economic model: since it did not develop into a stone building, the porticus house was seen as a kind of failed, or not-yet, 'proto-villa'. His view was influenced by the excavation of Hoogeloon-Kerkakkers, a site that in the 2<sup>nd</sup> century AD developed into a villa complex with a stone building. However, Roymans

and Derks (1994) argued that it was not a failed villa, but instead that the Batavians had a different outlook on martiality and the role of cattle, and did not strive to build stone buildings. An interesting view was also put forward by Vos (2009, 243 ff.). Vos stated that the stone-built villa hardly was the model for Batavian farmers, because there were only a few stone-built villas in the region; most were built only later, in the second half of the 2<sup>nd</sup> century AD. Porticus houses appear to have been built from the Flavian period onwards (Vos 2009, table 6.9). Vos therefore thinks that the frame of reference for the porticus houses was the Roman military camp. Here, the porticus was a normal type of structure, both for the soldiers' barracks and for the buildings of higher staff in the army. He also proposes that the porticus can be interpreted as a style of building introduced by veterans who returned to their homes after their service in the auxiliary troops. Whether they also had gained Roman citizenship after 25 years of service is still a matter of debate (Vos 2009, 249-250).

Even though many Batavian men served in the army, it is clear that a return to their home areas has not resulted in the porticus becoming a major element of the 2<sup>nd</sup> century rural settlement. It

remained an exceptional kind of structure, but Vos argues that it is a typical Batavian ‘invention’, that does not occur in the area of the Tungri (southern Netherlands in general) or of the Cananefates in

the western Netherlands (Vos 2009, 247). Other veteran farms, as Vos calls them, were discovered at Nistelrode-Zwarte Molen (Jansen 2007) some 10 km south of Oss-Westerveld. Other examples probably



Figure 11.16 Roman period settlements in the Maaskant area in the period AD 0-75 (A) and AD 75-250 (B). Drawing H. Fokkens.

exist also in the river area just south of the Roman period Meuse, like at Macharen-De Hoge Morgen (cf. fig. 11.10 for location; fig. 11.17).

If we look at the Oss region from this perspective, it seems clear that a veteran farm only developed in Oss-Westerveld (two phases). Since the settlement at Oss-Horzak closely resembles the Oss-Westerveld settlement in shape and layout, one cannot state that rectangular enclosures are restricted to settlements with a porticus house. Neither was this the case at, for instance, Wijk-bij Duurstede: there were enclosures (Vos 2009) at the settlements with a porticus house (Wijk-bij Duurstede-De Horden) and without one (Wijk-bij Duurstede-De Geer).

Although Oss-Horzak had a more ‘organic’ origin to the settlement, it is interesting that this changed in the rectangular phase 2, which appears to have no connection to the previous layout (fig. 11.16). This implies some kind of central planning, which in turn suggests that a form of authority within the local community was able to dictate such a change. From then on some three or four farms develop within the enclosure. Such numbers also have been cited for settlements like Wijk-bij Duurstede-De Horden (Vos 2009, 259), Hoogeloon-Kerkakkers (Hiddink 2014), and Nederweert-Rosveld (Hiddink 2005).

How about site hierarchy then? Was there a hierarchy at all? We can fairly assume that there was. The sites with a porticus house appear to have had other functions as well. Oss-Westerveld is the only site that has horrea as well. Also in the Kromme-Rijn area, horrea occur only in association with veteran farms (Vos 2009, table 6.11). Vos argues that the veterans may have had this kind of structuring function, both in terms of authority well as in an economic function as organisers of surplus-production for the market and taxes (Vos 2009, 259). In his view, horses and cattle may have been an important surplus product both for the Maaskant and the Kromme-Rijn area. The dominance of horse bones in the Oss-Ussen sites was already noted by earlier researchers (Lauwerier 1998). Possibly such ‘corrals’ as those proposed at Oss-Horzak were places used for horse breeding (or possibly even training) for military purposes. Also at Tiel-Passewaaij the conclusion of the excavators was that the relatively large number of horse bones or predominantly older horses was a sign of horse breeding (Groot 2008, 180). Undoubtedly the Batavian area was heavily taxed after the Batavian revolt, so apart from recruits for the army, also horses and cattle may have been part of the taxes that were

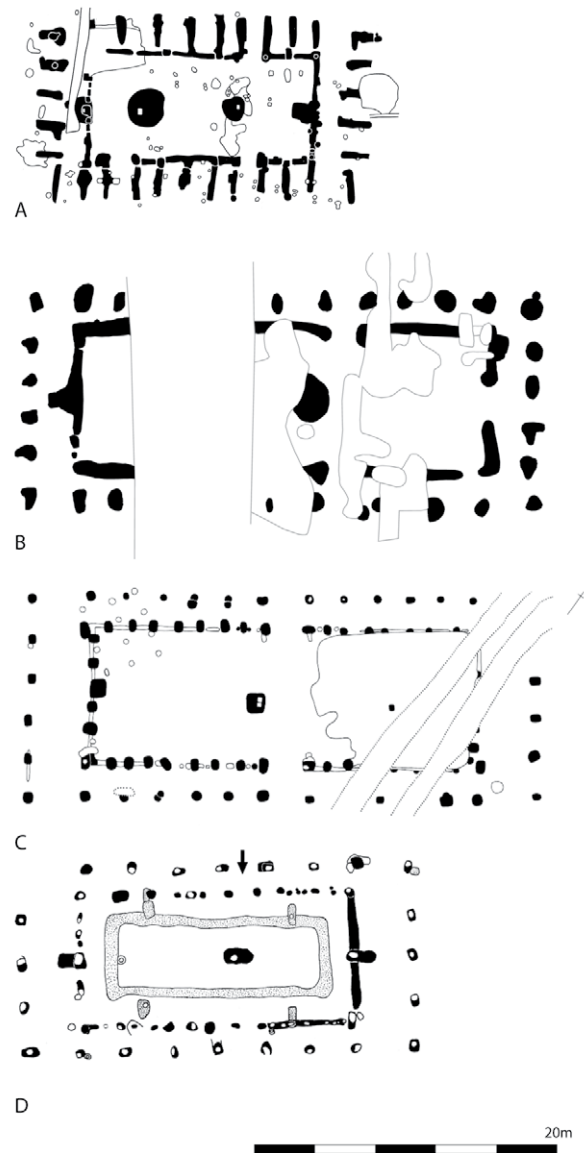


Figure 11.17 Porticus houses from different locations in the civitas Batavorum. A: Oss-Westerveld H78 (Wesselingh 2000, 83); B: Nistelrode-Zwarte Molen (Jansen 2008; C: Druten-Klepperheide; (Hulst 1978) D: Wijk bij Duurstede (Vos 2009). Drawing H. Fokkens.

imposed on the Batavians. According to Vos (2009, 259), veterans could have played a leading and structuring role as mediators in this process. It is highly likely that this accounts for the changes in settlement structure in the last part of the 1<sup>st</sup> century BC, even altering the layout of fields in areas like Oss-Mettegeupel.

	Ussen	Oss North Mikkeldonk	Oss North Schalkskamp	Oss North Mettegeupel	Oss North Almstein	Horzak
	33 ha	7.2 ha	2.2 ha	2.8 ha	0.8 ha	14 ha
1500-1100 BC	0	2	1	1	0	0
1100-800 BC	0	1	0	0	0	1
800-500 BC	2	1	1	1	1	1
500-250 BC	3	1	0	2	0	1
250-50 BC	6	1	2	2	2	3
50 BC- 70 AD	14	0	2	0	1	5
70-200 AD	12	0	0	0	0	4

Table 11.2 Table of numbers of yards and house plans in Oss-Ussen, Oss-North, and Oss-Horzak.

### 11.3 THEMES OF SUPRA-LOCAL INTEREST

#### 11.3.1 The 'wandering farmstead' model

In his dissertation about Oss-Ussen, Schinkel presented what he called the 'wandering farmstead' model. It suggested that after their life cycle had ended, farms generally were not rebuilt on the same yard, but somewhere else. At the time, when Schinkel was still working on his dissertation, we (Fokkens) discussed this often with him. We decided that the *wandering farmstead* was a correct term to use, if it characterises the system whereby one particular farm yard was re-used multiple times by building a new farm on the same spot. This practice appears not to have begun until the Late Iron Age and the Roman period. Gerritsen (2003, 264) connects this to different tenure structures. In his view, there was an increasing pressure on productive land and the necessity to manure it in the Early and Middle Iron Age. In the Late Iron Age and the Roman period, these factors caused land to be transferred from collective ownership by local 'urnfield' communities to individual family units. Subsequently, this resulted in land being inherited and in farmsteads remaining in the same place over generations. Broadly speaking this probably is what did happen, even if it is clear that rebuilding a house on the same yard certainly was not an exception in older periods. For example, at Bovenkarspel-Het Valkje in the Middle Bronze Age, up to five house phases were rebuilt at almost the exact same spot (Roessingh 2018). That would imply about 150 years of continuous habitation, probably spanning more than five or six generations.

Yet, even if wandering farmsteads occurred elsewhere, it was not the norm at Oss. For the Middle Bronze Age, for instance, we can see only a short

period of habitation, possibly two contemporaneous farms in most of the area (table 11.2). Habitation then again moves to other places for a while. In the Bronze and Iron Age, local communities probably comprised only a small number of dispersed farms (table 11.2). These were the stable homes for one or possibly two generations of farmers, but then they moved elsewhere. Maybe not far away, but in any case out of sight of the excavated area. Interestingly, the abandoned yards were often resettled after several generations of non-occupation. This may mean that even if the yards in their physical form were not continuously settled, the places became 'persistent' (Schlanger 1992). They were somehow 'remembered' through story-telling or other forms of maintenance of collective memory. This pattern of episodic habitation repeats itself though the Iron Age. Only in the Late Iron Age and the Roman Period do we see the continuous habitation of certain areas and a contemporary increase in population numbers (fig. 11.17).

The population numbers are difficult to estimate. Combining a few areas (fig. 11.18), it is clear that the numbers are low for most of the prehistoric period. Numbers rise in the Late Iron Age and peak in the Early Roman period, especially in Oss-Ussen (Westerveld; see table 11.1). We are dealing with only a few families in the entire Oss-North. This implies that in order to reproduce themselves they must have been part of larger communities in the region.

#### 11.3.2 Ritual structures and sanctuaries

At Oss-Ussen, several structures were interpreted as ritual structures or 'cult places'. In general the examples for such structures are Iron Age 'Viereckschanzen', and ritual structures like those

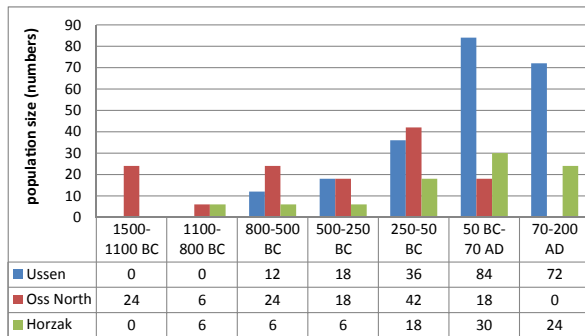


Figure 11.18 Estimated population sizes based on the estimated numbers of yards per region. Drawing H. Fokkens.

known at Gournay-sur-Arronde (Brunaux *et al.* 1985). At Oss-Ussen the oldest ritual structures were associated with burials (Van der Sanden 1998); the Late Iron Age-Roman period structure was placed within the Westerveld enclosure, and not associated with burial. Slofstra and Van der Sanden (1987) consider the latter to be an ‘open air’ sanctuary, or ‘rural cult place’, as opposed to the temples that are also known from the Late Iron Age and Roman period. The structure from Hoogeloon-Kerkakkers and Oss-Westerveld, and especially their reconstruction, became role models for the interpretation of this type of rural cult place. However, Hiddink (2014) has re-analysed and critically discussed the Hoogeloon ‘sanctuary’ recently. In principle, he opposes the interpretation of the Hoogeloon structure as a sanctuary, but there is little to prove the opposite, and a number of observations remain difficult to explain (Hiddink 2014, 260). The structure could also be a ritual structure around a Middle or Late Iron Age burial, like at Oss-Ussen (R 26; fig. 11.19).

It is difficult to decide what these structures actually meant, or what their alternative function was. Nevertheless, we opt for a function in the sphere of ritual in relation to ancestor worship. For the Oss-Ussen (R26) and Hoogeloon-Kerkakkers structures, this interpretation was already suggested (Van der Sanden 1998; Slofstra and Van der Sanden 1987). The reason was that especially the Oss structures R26 and R26a appear to have been related to (older) burial monuments (Van der Sanden 1998, 326). At Hoogeloon there was no burial, but it is also possible that it could have been removed by later disturbances. Hiddink has dated a few fragments of cremation from the area, but these yielded no date that could refer to an older burial (Hiddink 2014, 257). Yet, his suggestion that the Hoogeloon structure was a burial (-related) monument is not so strange. Like

the structures R25, R26 and R49 (fig 11.19A, E), the Hoogeloon structure is square and has a comparable size. The Late Iron Age or Early Roman structure from Oss-Westerveld (R 57) is almost four times as big. The Oss-Brabantstraat enclosure also is larger.

The Oss-Brabantstraat enclosure (fig. 11.19D) is most probably a sanctuary. It was positioned just 200 m to the east of the Oss-Westerveld settlement and probably was erected around the same time as R57 in Oss-Westerveld (in phase L, between 50 BCE and 50 AD). This is contemporary with both the Westerveld and Schalkskamp settlements. Its orientation is not at all the same as the Westerveld monument R57, however, but rather is much more similar to the Schalkskamp enclosure ditches. Whether this really has a correlation, is impossible to tell. What is true, is that the Brabantstraat monument went out of use at the same time that the Schalkskamp settlement ended.

On the basis of finds of wood and of the sections of the ditches, De Leeuwe (2011) has reconstructed a plank ‘fence’ placed in the ditches, which created a secluded area within the structure (fig. 11.20). Probably there were two phases, the first less elaborate than the second. Within this area, fourteen Roman coins were found, which probably were deposited as a hoard in the 1<sup>st</sup> century AD. They were found in the topsoil, but probably were part of one hoard (De Leeuwe 2011, 118). De Leeuwe states that these might have been related to phase 2 of the monument.

In the first half of the 1<sup>st</sup> century AD, probably at the same time that the Schalkskamp settlement was deserted, the Oss-Brabantstraat sanctuary went out of use. We know this because the sanctuary was overlain by a 2<sup>nd</sup> century AD ditch system (phase 3) of parcelling ditches. These were similar kind to the Mettegeupel parcelling ditches. Interestingly, they seem to ignore the older sanctuary completely, even though there is an obvious bundle of ditches overlaying the south-east corner of the older monument. In this respect they fit in the pattern described earlier, of a new ‘order’ in the second half of the 1<sup>st</sup> century AD. Just as the settlement lay-out at Oss-Horzak ignored the previous lay-out, the past appeared ‘forgotten’ also at Brabantstraat. This indicates a different attitude to older (ancestral) monuments than we have seen from prehistoric periods. Maybe this is yet another sign (see Gerritsen 2001) that in the Late Iron Age collective land tenure associated with ancestral ‘ownership’ changed into family or individual-based tenure and ownership. Rebuilding of farms on the same yard seems to indicate this. In line with that development, ritual monuments like those



at Oss-Brabantstraat and Oss-Westerveld might have been much more family or individual related than Middle Iron Age monuments. This change of focus from communal to individual ritual practices might explain why they lost their meaning when a family or an individual moved to another place or died: the land then could be used for a different function.

The collective aspect of cult places was transferred possibly to other places, like Oss-Oijensche

Hut, Kessel, Empel, and Haren-Spaanse Steeg (Jansen *et al.* 2002; for location cf. fig. 11.10). These sites were located near the river Meuse and yielded several bronze and iron objects, including many weapons and bones. The Empel site had a temple as well and was used for dedications by veterans of the Roman army. Yet, it had developed in the Iron Age (Roymans and Derks 1994), like the one at Oss-Oijensche Hut.

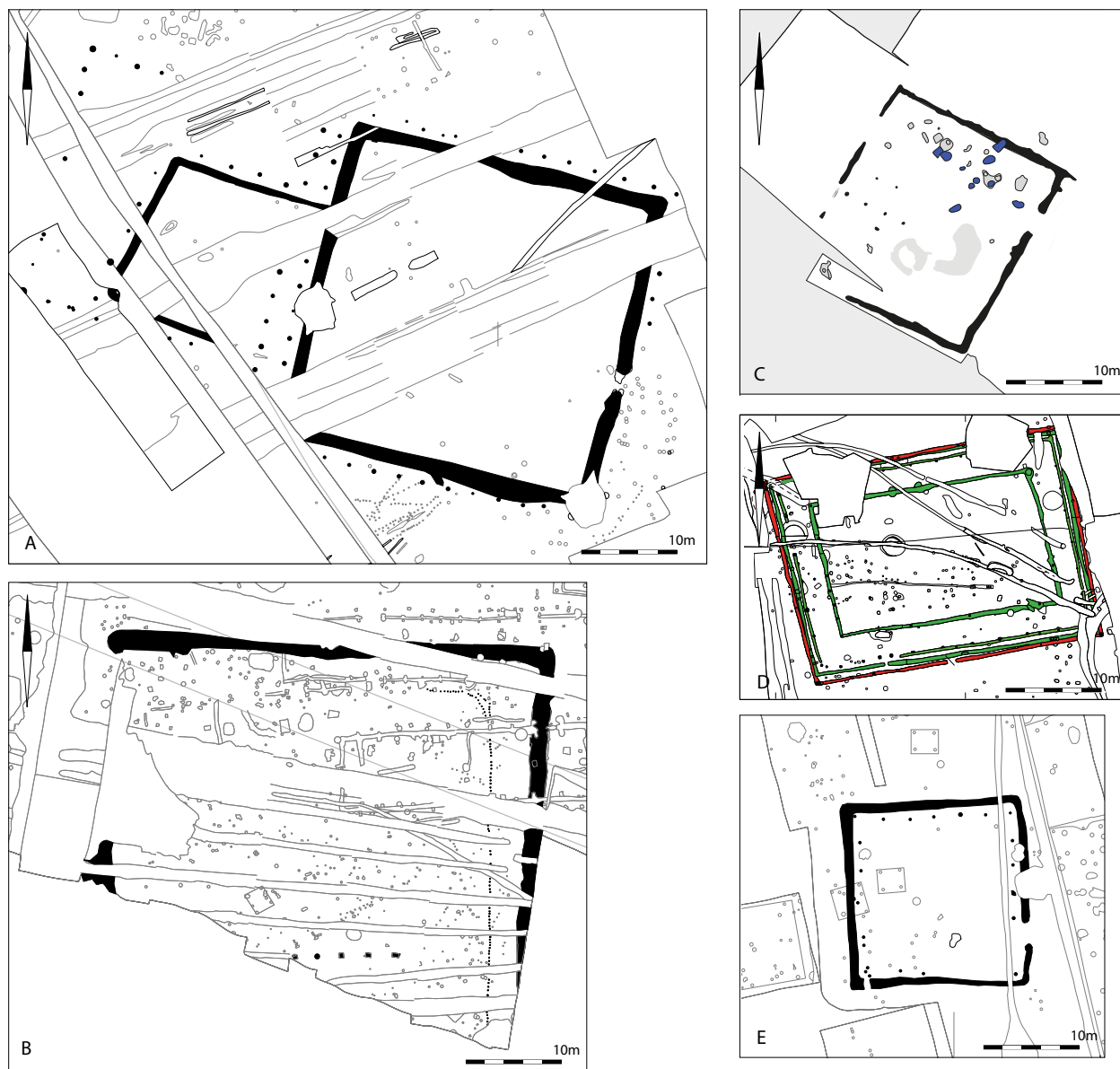


Figure 11.19 Monumental structures from Oss-Ussen (A: R26a and b; B: R57; E: R49), Hoogeloon-Kerkakkers (C: after Hiddink 2014, 249) and Oss-Brabantstraat (D: after De Leeuwe 2011, 53). Drawing H. Fokkens.

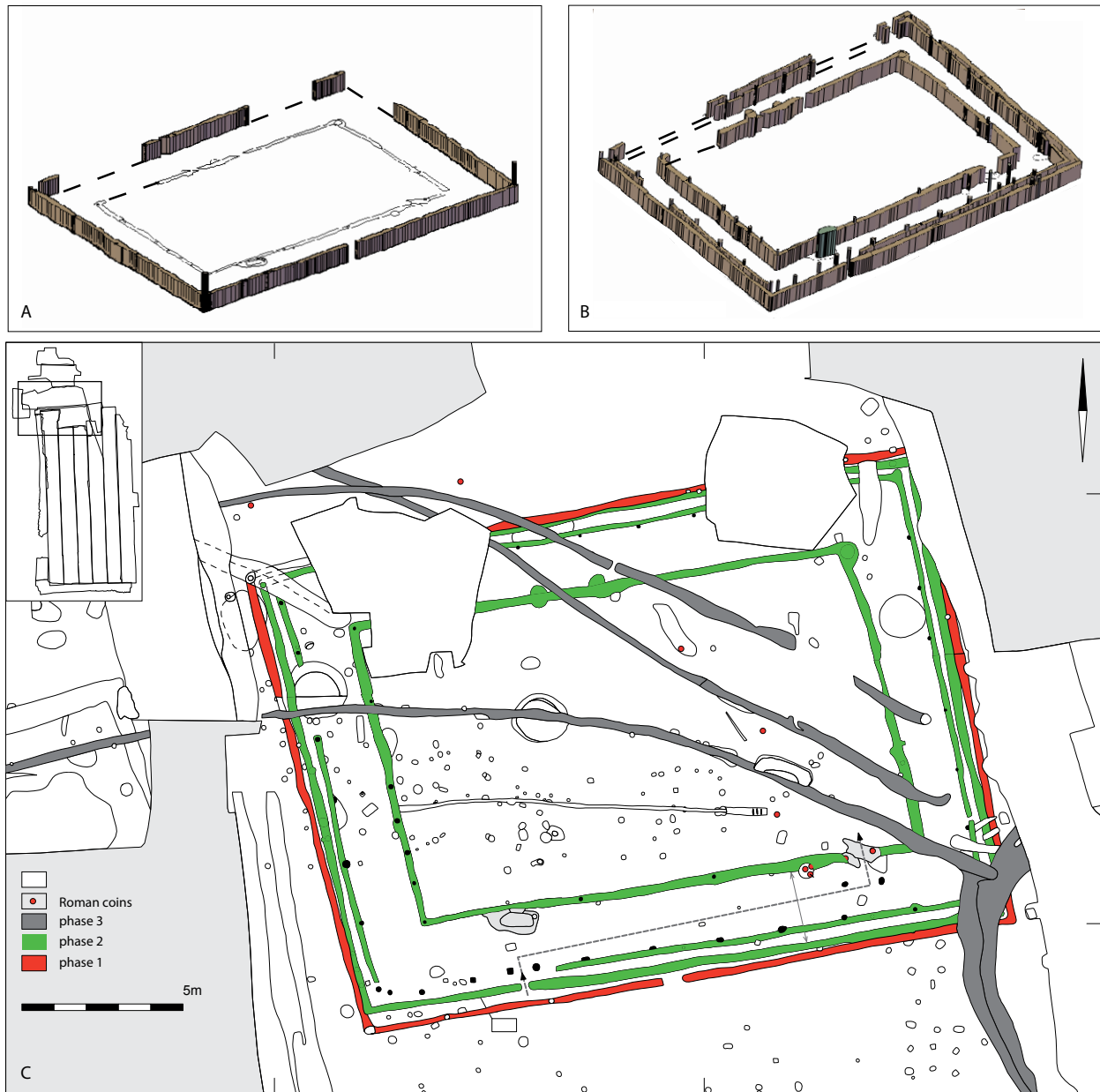


Figure 11.20 Cult place from Oss-Brabantstraat. After De Leeuwe 2011, 53.

### 11.3.3 Local communities and the organisation of the landscape<sup>6</sup>

When The Universities of Amsterdam (Roymans, Theuws) and Leiden (Fokkens) started the NWO-multiple project 'Settlement and landscape in the Meuse-Demer-Scheldt region' in 1996, we had long discussions about the concept of 'settlement'. Previous research discussed included: Roberts' 'Settlement and

landscape' (Roberts 1996), Tuan's 'Space and place' (Tuan 1977), different articles by Waterbolk (collected in Gerritsen 2003, 121). Additional sources of inspiration were Cohen's 'The symbolic construction of community' (Cohen 1985), Ingold's work on territoriality and landscape (1986; 1993), and Daniel de Coppet's phenomenal '.....land owns people' (De Coppet 1985). These influences are especially visible in the dissertation of

Gerritsen (2001), but also Wesselingh (2000) who were both initiators of that discussion.<sup>7</sup> The problem was that we were using 'settlement' to indicate dispersed farmsteads that probably 'wandered' to different locations every generation. Yet, this concept did not describe the social community behind this geographical concept (Fokkens 1998, 3). We decided that we needed a 'social' concept, and one that avoided modern geographical notions (Fokkens 1996; Gerritsen 2001, chapter 4). This became the concept of 'local community'.

Gerritsen discussed the concept of local communities in great detail and also gave it the content that we had intended: a concept that described the social processes behind settlement and landscape in the Meuse-Demer-Scheldt region in the Bronze and Iron Age. The basic idea, as defined by Gerritsen (2003, 113) is: *'A sense of community is about collective and shared identities, and a powerful element in the construction of shared identity can be feelings of belonging to a locality. This suggests that the landscape in which a local community is situated consists of places that are meaningful for the identity of that community. Thus a reciprocal and historically grounded relationship is present between community and landscape.'* Especially the idea that 'land owns people' (De Coppet 1986) has been influential in how we conceptualised the project. We wanted to emphasise the ways in which communities related to their ancestors, how they related to the past and elements from the past, and how the past and ancestors were embedded in their cosmologies. This is visible in the title of the edited volume that Theuws and Roymans produced as one of the results of the *Settlement and landscape* project: 'Land and Ancestors' (Theuws and Roymans 1999), but also in Fokkens' contribution to the 1998 'Settlement and landscape' conference in Århus (Fokkens 1999).

One of the methods of trying to identify the 'indigenous conceptualisation of ... the landscape' (Gerritsen 2003, 117), is to analyse the way they organised the landscape, and also the way in which they related to prior settlement and burial. This was one of the driving factors behind continued research in what we called micro-regions (Fokkens 2006; Roymans 2006): by analysing changes over time in these micro-regions, we would be able to detect major changes in the organisation of the landscape. This would '... Reflect changes in the perception of the landscape and people's ideological relationship with the landscape.' (Gerritsen 2003, 117, referring here also specifically to the work of Parker Pearson 1993).

In the first part of this chapter, we have described the diachronic developments in the micro-region of

Oss-North, and we have incorporated the micro-regions of Oss-Ussen and Oss-Horzak. The question is, has continued research in this micro-region brought us what we hoped for (Fokkens 1996)? Were we able to identify the indigenous conceptualisation of the landscape through the way it was organised? There is no clear answer to these questions. Yes, we were able to see how landscapes became organised in different ways through time. Gerritsen already had described and interpreted these to a large extent (Gerritsen 2003, chapter 6). In his view, we witnessed the following developments, which are to some extent also applicable to the Oss data, especially those of Oss-Ussen.

Habitation in the Middle Bronze Age is characterised by low population densities. Dispersed farmsteads of single byre-houses with small outbuildings dominate the settlement pattern. These farmsteads are regularly relocated. Land is extensively used, therefore there is no necessity for a highly structured territorial organisation. Barrows, symbolising the ancestors, were constitutive elements of the 'mythical geography' of the landscape, but these are not seen as stable burial locations (Gerritsen 2003, 239).

Interestingly, Gerritsen (2003, 240) discusses the gradual opening up of the landscape and the increase of previously settled 'named places' as an important element in the constitution of the land: the history of occupation became more and more visible and was something people interacted with. This is indeed something we could observe in Oss as well, especially in Oss-Mikkeldonk. There, a Middle or Late Bronze Age house site was reused again in the Early Iron Age. At Oss-Mikkeldonk Bronze Age wells and pits were re-used frequently in the Early Iron Age, even after several generations of disuse. This implies that these places were at least 'named' or even remained visible. That certainly must have been the case with houses MD128 and its successor MD131, which was built probably more than 100 years later on exactly the same spot, but with a slightly different orientation. These characteristics were especially features of the Early Iron Age. Such forms of reuse are not restricted to settlements but also to burial mounds, with the famous Hallstatt burial of Oss as a good example (Fokkens and Jansen 2004; Fokkens 2012). Settlements from the Middle Iron Age show less awareness of previous periods.

In this respect it is important to mention that in all excavated locations we have seen repeatedly that yards were abandoned and pits and wells were left open. A good example is well MG35.70 next to the rebuilt house MG2. Here, an existing well was re-used

later, and after being abandoned, was left open and filled up with a thick layer of leaves (Bakels, chapter 8). After a while it was filled up completely, and became incorporated in a later farmyard. We have not been able to find clear patterns in these abandoned pits and wells because the dating evidence is too fragmentary. But it is clear that farmyards were abandoned and re-used regularly (cf. data in part 2 of this book).

Gerritsen (2003, 239) does not see the Bronze Age barrow as a stable burial location, but in his view the role of the cemetery changes in the urnfield period (in the Late Bronze Age and the Early Iron Age). He also proposed that in the Bronze Age the demarcation of the social boundaries of a local group were confirmed only occasionally when a new barrow was erected (for a small part of the population); in the urnfield period this demarcation happened every time someone died (Gerritsen 2003, 241). However, as we have found very few burials either from the Bronze Age or from the urnfield period, we cannot confirm or reject Gerritsen's model at present. It is clear that both Bronze and Iron Age graves were located outside of our excavation borders. Only Oss-Ussen contained a cemetery from the Middle Iron Age, and (possibly) a few dispersed older graves. If there was an Early Iron Age urnfield, this still has not been located. Possibly it was situated to the north of the study area, nearer to the river Meuse. Such an urnfield could be only of a modest size, like the urnfield around the Hallstatt burial of Oss.

In Gerritsen's model (2003, 242), despite the genesis of permanent (Celtic) field complexes, house sites are still 'mobile': stable yards that were in use over several generations did not develop in the Late Bronze Age or the Early Iron Age. In his view, this mobility is related to the establishment and dissolution of the households living in the farms: he envisions a start, adaptation, and end of the house to be closely connected to the household and its development over time (Gerritsen 2003, chapter 3). This is a very attractive model indeed, and even if it is difficult to substantiate, there is no reason to refute it either. In Oss a house was rebuilt on nearly the same spot only in two locations, but in all other instances house sites were restricted to only one period of use. This implies that Schinkel's wandering farmstead model is still valid for the Oss region, and that people nearly always built farms in a different spot every generation, or after about 40 years. This can be used as an indication that land tenure or 'yard-ownership' only developed later, probably from the Late Iron Age onwards. Then we see enclosed settlements developing, like at Oss-Almstein and Oss-Schalkskamp.

The number of Early Iron Age houses is certainly much higher than Bronze Age houses, which led Gerritsen (2003) and Roymans and Kortlang (1999) to propose a considerable population increase. In earlier papers, Fokkens (*e.g.* 1997) has interpreted the larger number of Early Iron Age houses compared to the earlier Bronze Age houses as the result of a change in social structure. According to Fokkens, Middle Bronze Age houses frequently were inhabited by extended families, while Early Iron Age farms were much smaller, and probably the home of single families. A Bronze Age house is hypothesised to have been succeeded by several Early Iron Age houses: for instance one for every married son in the family. The basis for such a change could be a change in heritage rights. This implies that the house indeed was connected to a family, and its eldest occupant (the builder?) probably also held rights over land and other resources (Fokkens 1993; Gerritsen 2003, 244). Even if we do not see status differences enacted in urnfields or settlements, these differences were present in society. For instance, they became apparent in the chiefly cemetery at Oss-Zevenbergen, with at least two very rich Early Hallstatt C burials (Fokkens and Jansen 2004; Fontijn *et al.* 2013; Verschoof-Van der Vaart 2017). A similarly rich burial was also found in the nearby urnfield of Slabroekse Heide (Jansen and Van der Vaart-Verschoof 2017). In both instances we are dealing with relatively small urnfields, used by a small community of maybe only three or four households. That is the normal size of most urnfields. Such a cemetery, with only a few dozen burials should be expected at Oss-Mikkeldonk and probably also at Oss-Mettegeupel and Oss-Horzak. In these places, two or three houses may have constituted a small local community, probably even with a few more dispersed farms, together using one cemetery and the same complex of arable land (Celtic field).

We do not have evidence for much differences in habitation through time until the beginning of the Late Iron Age. In the Almstein settlement around 250 BCE, a number of Haps-type houses were rebuilt in the same area as older houses; here we seem to have a good example of this development. But it is also clear that this is not a development that irrevocably led to a permanently structured and tenured landscape. Like at Oss-Schalkskamp, Oss-Westerveld, Oss-Ussen, and Oss-Horzak the structure of settlements appears to have been rather 'loose'. Only in the second half of the 1<sup>st</sup> century AD did ditched enclosures appear to get a more organised structure, even if that lasted only a few generations. In the late 2<sup>nd</sup> and early 3<sup>rd</sup> century AD the area witnessed only a few inhabited pockets.

## NOTES

1.  $P = k + ((D \cdot e) / t) : 40 - 90 = k + (x / 30) / 150$ .
2. In terms of typological dating there is a problem with phase G (Van den Broeke 2012, 27). Van den Broeke only knows one clear complex, located in the centre of the Ussen district. Phase G fills the 'typological gap' between F and H (Van den Broeke 2012, 27), so in theory it is possible that F and H are closer to one another than has been suggested at present. This may to some extent explain the gap in habitation that we indicated in the first sentence of this paragraph.
3. Wesselingh (2000, 191-192) distinguished the sites Horzak I and Horzak II. Horzak I, however, is not an excavated site, but a collection of finds and observations made by local archaeologists. In 1997 we started a survey and test trenches in the area north of 'Horzak I', which eventually developed into a large scale excavation of the entire 12 ha area. We indicate the excavated area as 'Horzak', not as 'Horzak II'. The excavations finished in 2014. The last two campaigns were published (Van As and Fokkens 2015), but the first 10 years are still being studied. I have drawn here from the GIS analyses that already have been made and from draft texts.
4. Also Hiddink, in his most recent discussion of the Hoogeloon-Kerkakkers sites arrives at about 30 years per house (Hiddink 2014, 133).
5. Wesselingh (2000, 78) is not sure that it really had a tiled roof. Vos (2009, 242) sincerely doubts it. In his view the material found is far too meagre and too heterogeneous to have constituted a tiled roof.
6. The title of this section refers to Gerritsen 2003, chapter 4.
7. Strictly speaking, Wesselingh was not a member of the 'Settlement and landscape' team but she, and other PhD's working in Leiden and Amsterdam at this time were often part of our monthly discussions. She presented her ideas in that discussion. The Settlement and landscape team consisted of: Zita van der Beek (PhD), David Fontijn (PhD), Antoinette Huijbers (PhD), Fokke Gerritsen (PhD), Henk Hiddink (PD), Sabine Karg (PD), Liesbeth van Beurden (PD), Nico Roymans (PI), Frans Theuws (PI) and Harry Fokkens (PI).

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## PART 2: Description



# 12. Introduction to the catalogue

H. Fokkens

## 12.1 INTRODUCTION

The Oss-North excavations covered a considerable part of the newly built quarters in the city of Oss. They yielded a large number of archaeological features and structures. In the catalogue presented in chapter 12 – 16, a selection of structures and features is described in some detail. The present chapter introduces methods and ideas behind descriptions and interpretation.

The catalogue was compiled by several people. First a number of students worked on the data, making preliminary find determinations, finds drawings, feature maps, etc. Much of this work was done during material culture courses of the European Prehistory group. Several students also paved the way to this final report by producing MA and BA theses on parts of excavations.<sup>1</sup> Many student assistants worked on the task of structuring and organising data: Zita van der Beek started out organising all documentation, followed by Richard Jansen who then organised the photos taken in the field. Luc Amkreutz, Mirjam Bruineberg, Maikel Kuijpers, Carolien Fokke and Erik van Wieren all worked on structuring and ordering the data.

Erik van Wieren had a very important role because he digitised all field documentation of pits and wells, and prepared also other feature drawings. In 2009 Richard Jansen applied for an NWO Odyssee grant to give the final push to the publication. Frank Stevens was hired to do that job, but in the end it took much longer than his appointment lasted to finish. Part of this was due to the complexity and the sheer mass of data. Moreover, it turned out that the catalogue compiled by Stevens required many amendments in terms of content and language. Here it became painfully clear how important it is that the original excavator assists the interpretation. It took Van As and Fokkens over a year to rewrite the text and prepare the images, which subsequently were edited by Joanne Porck (Geodesigns). This catalogue therefore is the result of the combined efforts of many people. It was eventually finished in 2014.

## 12.2 STRUCTURE OF THE DATA PRESENTATION

With such a large amount of archaeological data, it is important to present the features in an orderly fashion. Here it is necessary to realise what the goal of the description is. In this study we have followed the description structure offered by Hiddink (*e.g.* 2005) and Schinkel (1998). One of our research goals is to find out how the cultural landscape developed and how new elements reacted to or were associated with older features. Therefore, it was important to discuss how structures were abandoned, how features were filled in. This aspect has been given much attention in the catalogue.

Different styles of presentation were used. We did this partly for practical reasons, partly also because several generations of technicians have worked on

images. Especially this had its effect on the depth diagrams of houses and outbuildings. For Mikkeldonk we were able to get these drawn as they were excavated. But for Schalkskamp, Mettegeupel and Almstein that was too much work. Here we stuck to computer-generated depth diagrams. But in the end we found this so unsatisfactory that we added scans of the section drawings of the most important features. For the Mikkeldonk quarter, the plan and section are to the same scale (1:200), but for the other sites we kept to the present standard of presenting the vertical on a scale of 1:100 and the plan on a scale of 1:200.

### 12.3 DESCRIPTIVE ELEMENTS

It is impossible to discuss all of the thousands of features that were excavated in the second decade of archaeological research in Oss. We had to make choices, so we used a number of criteria for the selection process. In the first place we described all clusters of features that were interpreted as a former structure, be it a house, farm, granary or other building or monumental structure like a grave or ritual structure. In the second place we described clusters of pits or wells that appeared to belong together. Individual pits were only described if they illustrated unique aspects and if they could be dated. Individual features that could not be dated in general have not been described.

The descriptive style that we use is derived from Hiddink (*e.g.* Hiddink 2005), though we have not copied it entirely. For us the most important descriptive elements are *excavation*, *construction details*, *abandonment* and *chronology/dating*. Under the heading of *excavation*, we discuss how the structure was recognised, how it was excavated. We try to relate to all aspects that tell the reader how we arrived at the interpretation that we present. *Construction details* are only discussed with respect to elements that are out of the ordinary in relation to the standard types. In principle we try to describe as little as possible. Where necessary, tables summarise all basic measurements, these are not repeated in the text.

*Abandonment* is an important aspect of the description, a topic first introduced by Hiddink, but also a core element of the first version of the National Research Agenda (NOaA 1.0: Gerritsen, Jongste and Theunissen 2005). The question that we asked is: which indications were observed to interpret the way a feature went out of use? Wells and pits, for instance, are sometimes backfilled immediately after use, but sometimes they are left open for a long time. In the latter case that

may tell something about the way a farmyard was abandoned. Abandonment is not only an important means of interpreting structure or settlement ending; it tells us also something about the start of new habitation. If we know how features were abandoned, and what was still visible after many years, that may tell us how people in later phases of habitation may have reacted to or ignored signs of previous habitation. Ultimately that helps us to understand the cultural dynamics behind the settlement remains that we excavate.

*Finds and dating* are discussed in order to be able to attribute a feature or structure to particular phases of Prehistory. With respect to pottery of the Middle Bronze Age we have very little means of discriminating between different phases in the period between c. 1500 and 1100 cal BC (see Fokkens 2005). In contrast, in particular for Oss, the relative chronology of the Iron Age is well established through the dissertation of Van den Broeke (2012) about the Oss-Ussen excavations. Van den Broeke actually typologically dated most of the assemblages excavated in Oss-North. For the calibration of radiocarbon dates we have used either the Oxcal or Calib programmes, both being based on IntCal 13. However, not that many samples have been dated. One of the reasons is that for the Iron Age the pottery typology was more precise, another that not much wood or charcoal could be obtained. In the 1980s accelerator dating was still very expensive, so we could not afford to date small samples.

#### 12.3.1 Small pits and postholes or post pipes

Small pits, generally indicated as postholes, were the most numerous features. Often their original function and dating remained a mystery to us. In this report only smaller pits that were part of structures or unique pits in terms of fill of finds have been reproduced. In the field they were all drawn on a scale of 1:10 (section) and have been reproduced on a scale of 1:100 or 1:200 in this book. Concerning terminology, we make a distinction between *paalgat* and *paalkuil*: post hole and post pit. The former is a hole the exact size and form of the post that was in it. The latter is a pit in which a post was placed and then backfilled (fig. 12.1). Though in field jargon almost everything is indicated as a post hole, in actual practice these are almost without exception post pits.

Posts with a homogenous fill are difficult to interpret in terms of abandonment. Layered fills are generally interpreted as a natural fill. Fills with many different inclusions, often with finds, are interpreted

as backfilled. Often there is a combination of a layered deposit in the lower ranges and a homogenous, find-rich deposit in the top. We then conclude that the feature was backfilled after a period of abandonment. Some examples have been reproduced in figure 12.1.

### 12.3.2 Large pits

Features like wells and large pits are numerous in Oss. These were generally excavated while leaving a central profile standing of 20 cm wide (fig. 12.2). We would shovel-clean on both sides of the profile, taking off thin spits with a shovel while keeping changes in appearance under control. Every 10 cm or so, the horizontal and the

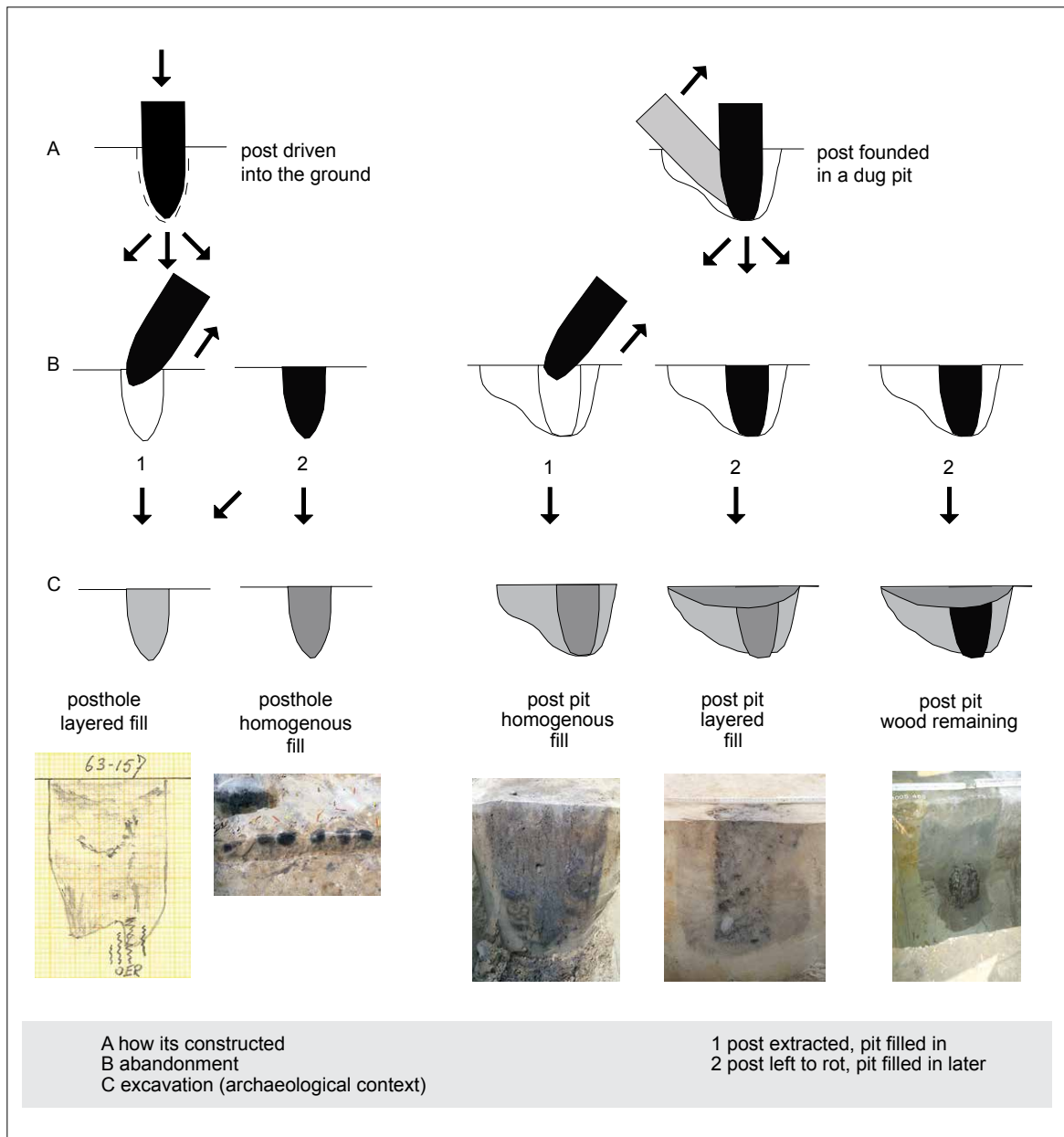


Figure 12.1 Diagram of possible ways in which posts are placed and abandoned, and their manifestation in the archaeological record. After Fokkens and Jansen 2005; Van Oosten 2012.





Figure 12.2 Excavation of a large well under ideal conditions: A: Early Bronze Age well 1029.12 after excavation of the top 50 cm leaving a 20 cm wide section dam. After the first 40 cm no ground water is visible; B: the first ground water becomes visible even several decimetres underneath the preservation level: very good documentation possible; C: After the first excavation stage the surroundings of the actual well have been cleared with a hydraulic digger in order to prepare for the 'wet stage' revealing the entire lining; D: extraction of the lining, often in very dirty conditions (from left to right Barbara Speleers, Harry Fokkens, Christo Thanos). H. Fokkens (A, B, C).

vertical would be drawn. The vertical section was constantly supplemented by drawing of the section because due to ground water it generally was impossible to draw the entire section in the second stage of excavation.

The second stage of excavation of a large pit or well was reached when the excavation level reached the groundwater table. That would fluctuate within and between years. Sometimes the water table would be high due to longer periods of rain, in which case we had to enter the second stage of excavation earlier. Reaching the ground water meant that from that moment onwards documentation could only become rudimentary because the sections generally collapsed

within 15 minutes. We would get the hydraulic digger to dig a deep hole in front of the feature to keep away the ground water and then tried to excavate and document as fast as possible. Since often wooden linings were visible at the lowest levels, these were documented and taken out of the ground to be described and sampled.

In our presentation of these large features, we have presented a plan (scale 1:200) and generally scans of the section drawings, supplemented by photographs. Finds are, whenever relevant, presented and discussed in the context of the features. For a discussion of separate classes of objects, we refer to chapter 10 of this volume.

### 12.3.3 Houses

In the field we tried to recognise structures as much as possible and excavate their separate features in coherence. Whenever possible they were photographed in their entirety, but often we were forced logistically to excavated sections of structures in different ‘blocs’. That made photography difficult. Leaving features half sectioned overnight, for instance, was not an option because after our ‘business hours’ people from the neighbourhood would come into the trenches, walk their dogs, or even drive through them with cross-bikes. So whatever we sectioned would generally have to be drawn and photographed the same day. With the exception of a few examples, all structures were recognised in the field and treated as such. If structures were discovered on the drawing board, we have always gone back to the original field drawings to check colour, fill, *etcetera* of separate features. House structures in our view need to be regular and understandable in structural terms, otherwise they cannot have been houses. This is in some contrast with the present-day practice of commercial archaeology, in which there is a tendency to add suggestive lines, and crosses for missing features (cf. Fokkens *et al.* 2016, chapter 5). We never added crosses in drawings. Whenever we were uncertain, we discussed that.

We have chosen to present the inner structure of houses by adding an extra colour, leaving entrance spaces open instead of indicating them with arrows. The outer limits and projected eaves are indicated by lighter colours. We have refrained from adding structural elements like beams or rafters because they often are too suggestive. For a discussion of structural elements we refer to the relevant section in chapter 3.

The present-day standard in Dutch Archaeology is to present a plan and section drawings. The plan in general is on a scale of 1:200, the sections are done on a scale of 1:100 because otherwise they are too small. The idea behind this combination is that the sections, especially the depth and size of posts, reveal the house structure. But the preparation of sections is cumbersome and if you want to present them as drawn in the field, that takes quite an effort. For the Mikkeldonk quarter, we have presented our plans with sections as drawn, but for the other sites that simply proved too much work. Generating depth diagrams is quite simple when the depths of the posts are present in a database underlying Mapinfo or ArcGIS. Whatever method one chooses, however, this way important information is lacking, namely the information about

genesis and abandonment of the post pit. However, that information was generally present in the original section drawings, which is why we have published selected post pits to illustrate fill and abandonment of most of the houses and granaries of the Schalkskamp, Mettegeupel and Almstein quarters.

With hindsight, we think that the publication of the sections as just depth diagrams is in general a waste of time (and therefore of money). Scientifically it does not add anything when one realises that the uprights always have been dug in to support the posts during the building phase (chapter 3). Rather than presenting the sections as a standard procedure, like is nowadays rule in Dutch Archaeology, we can save an enormous amount of time (and money) to restrict that to special cases or to discuss dubious structures.

### 12.3.4 Outbuildings

In general, every yard had one or a few granaries. They have often been rebuilt on the same spot. We have given that aspect of rebuilding some preference in our selection of structures. Given the fact that hundreds of granaries have been recognised, we have decided that not every granary could be described. Schinkel has already published a large number (Schinkel 1998), while Wesselingh has discussed the Roman variant, the larger *horrea* (Wesselingh 2000). For a general discussion of the typology we refer to chapter 8 of this volume.

Like houses, most granaries were recognised already during excavation and have been analysed in the field. In a few instances they were also reconstructed from the field drawings. In those instances, we have been very critical because as is the case with houses: granaries too are often archaeological constructs rather than past realities. Especially in a cluster of features four posters are easily ‘recognised’. We have only reconstructed configurations of postholes as granaries of which the post holes were relatively deep (a consistent feature, cf. chapter 3) and had the same colour and fill.

Granaries have been presented in clusters. These clusters are not contemporaneous features per se, but descriptive clusters. They are presented in plan (scale 1:200), often as a scan of the field drawing, and by sections (scale 1:200). We have chosen not to publish only depth diagrams, but where possible the original section drawings, or line drawings of these sections. The reason is that we use the scans also for discussing genesis and abandonment of the features.

### 12.3.5 Graves

Not that many graves have been encountered during the Oss-North excavations. There were a few dispersed Bronze and Iron Age cremation graves and a small Late Iron Age cemetery. All cremations have been collected 'in bloc' and were sieved in laboratory circumstances. Ditches surrounding graves were divided into sections and finds collected accordingly. We have always been aware of the possibility of stakes or posts set in ditches around graves, and have sectioned the ditches in such a way that it would be possible to see whether or not that had been the case.

### 12.3.6 Ditches

Almost all ditches have been excavated completely in sections (for find distribution). We distinguished between two types of ditches: dry and wet ones. In our descriptions we have tried to analyse for which purpose ditches were used, whether they carried water at some times, and how they were filled in.

We have decided only in very exceptional cases that a ditch was *re-used*. In Dutch archaeological practice different fills are often related to different phases of *use*. But in reality different fills often related to different stages in 'post-depositional' development. Many ditches will first show a slow fill-up with organic matter and wind-blown sand (cf. fig. 14.41). Often the last fill-phase shows iron formation around roots of reeds that indicate a long phase of stand-still. These bands are still 'ditch-shaped' but they are not to be interpreted as a phase of re-use! At some point in time these ditches are often backfilled and levelled. Most archaeological finds derive from that event of backfilling a ditch. In our view, re-use only occurs when a backfilled ditch is dug out again, generally not in the exact same place. There are only very few instances where that can be established in Oss-North.

### 12.3.7 Fences

In this catalogue we have discussed fences mainly in a contextual manner, not as individual features. In particular in the Mikkeldonk quarter they are numerous; they became visible outside farmyards, very often near wells. Fences are presented in this catalogue only in plan. The actual size of the stakes driven into the ground is too small to reproduce and hardly is relevant to support the evidence. In the field we have treated them as structures and sectioned rows of stakes in coherence.

### 12.3.8 Finds

In this report most finds have only been published in the context of features. There were only few objects that required separate treatment. By far the majority of finds consists of pottery fragments. But there are also fragments of daub, spindle whorls, clay weights (for weaving), clay sling stones, glass bracelets, metal *fibulae* and a few other metal finds (chapter 10). Stone objects were not in abundance, the most common objects are grinding stones, often made of tephra. In the tables of finds stone in general has not been mentioned because we collected all natural stone and flint. Only artefacts are mentioned in those lists.

We have only drawn a small selection of finds and of pottery: only when they could be of interest for general discussion, when they were unique, or in other ways informative. We have listed all available data with find numbers in tables and in plan in the context of the structures to which they belong. This approach is different from earlier work on Oss (Schinkel 1998, Wesselingh 2000), in which finds could not be linked to individual features.

For the dating of pottery, we depend on the extensive publication of the Oss pottery published by Van den Broeke (2012). Most determinations of the material published here were in fact carried out by Van den Broeke. Bronze Age material was determined by Fokkens.

## 12.4 NOTE ON MAPINFO AS A PUBLICATION TOOL

Although in the beginning of the Oss-North excavations all plans were digitised in AutoCAD, in later years these were all converted to Mapinfo. The present-day commercial practice in the Netherlands is that everyone uses this as a major tool for analysis and publication. In everyday practice all images are quick grab from lay-out windows, generally with a geo-referenced framework around it. Both Stevens and Van As, the main producers of images, worked this way. But for a proper publication, we needed Adobe Illustrator images, and that is where problems arose. Mapinfo does strange things when it creates a pdf-file from a lay-out window, while other exchange formats of Mapinfo are not useable in sync with Adobe Illustrator. So the use of Mapinfo made the creation of images easy, but the editing process was cumbersome and elaborate. For the catalogue (chapters 13-16), Stijn van As constructed all images in Mapinfo and converted them to Adobe Illustrator files. Fokkens edited and restructured them, and Joanne Porck did the final lay-out and the last round of image editing.

## 12.5 NOTE ON DRAWINGS AND TECHNICIANS

All field drawings were originally made on poly-ethylene drawing films. In the first years this was an orange film, in later years a blue one. This difference will be noticeable in the scans. We used HB-pencils (0.5 or 0.7 mm) and all field drawings were hand-coloured. In principle so were section drawings, unless we had too little time. During the last year of the Mettegeupel and Almstein excavations (1995) we used computer designed graph paper and prepared structure forms to document features. This was a great help in structuring field documentation. But as scans these appear to be less readable. This is why especially the Almstein documentation of sections is different in this catalogue.

In the captions to figures we have given credit to the students who made the drawings. In principle by far the greater part of these drawings was discussed in the field with the fieldwork leader or the people who were in charge of the work in a trench. Plans of a trench were always discussed and checked by the fieldwork leader (Fokkens in general, in 1995 also Fontijn and Van der Beek).

## 12.6 NOTE ON NUMBERING

During excavation we have given features often temporary numbers related to the particular quarter in which we excavated. During the post-excavation analysis these numbers were converted into the final structure numbers. Until 1992 the original Ussen numbering was continued. After 1993, in the Mikkeldonk and Almstein excavations we were so far from Ussen that we decided that these were new excavation units and we restarted the numbering. Whenever we want to discriminate between the two types, the Oss-Ussen structures are preceded by OU, Mikkeldonk structures by MK, Schalkskamp structures by SK and the Mettegeupel-Almstein structures by MG.

## 12.7 STRUCTURE OF THE CATALOGUE

Due to the structuring of this book, it was only natural to present the structures in the catalogue according to the sites they were found in, rather than as a complete chronological sequence of all structures from Oss-North in one large chapter. The catalogue starts with the oldest excavations at Oss-Mikkeldonk (chapter 13). The structures from the Schalkskamp, Mettegeupel and Almstein excavations are discussed in

chapters 14, 15 and 16. There is no chronological order in the way structures are discussed. For chronology and phasing we refer to chapters 4, 5, 6 and 7.

## NOTES

1. Zita van der Beek, Richard Jansen, Esther Mietes, Dimitri Schiltmans, Daphne van der Linden.

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# 13. Features in the Mikkeldonk quarter

S. van As and H. Fokkens

## 13.1 INTRODUCTION

The Mikkeldonk quarter was excavated between 1986 and 1989. In all c. 6.8 ha has been stripped of its topsoil (fig. 13.1). Technically speaking the excavations were very close to the earlier Ussen excavations, we decided therefore to treat the Mikkeldonk excavations as an extension of that earlier work. Although we started to number the first trenches nos. 1, 2 and 3, immediately after the 1986 season they were re-labelled 881, 882 and 883. The first house plan that we recognised in trench 883 became house MD123. The same applies to the granaries, which were indicated with an S + number (S for spieker = granary). The first granary in Mikkeldonk was given number S475, as in Ussen already 474 granaries had been excavated.

Fences and ditches are all indicated with F + number. The sequence in Oss-Mikkeldonk starts with F100 and continues to F114. There is a gap from F115 to F164. The reason for this is that certain parts of the Mikkeldonk excavations were already incorporated in Schinkel's thesis (F100-F114). The numbers F115-F164 are located outside our research area (cf. Schinkel 1998).

In Ussen the pits were all given separate numbers (P1-P503). These numbers were allocated during the post-excavation research. Since already in the field we gave all features a unique number, consisting of the trench number and a serial number, it was not necessary to allocate an additional number during post-excavation research. An extra number also would have made administration more difficult and complex. So feature MD1029.12 is easily located in the paper documentation of the site as feature 12 in trench 1029 of the Mikkeldonk (MD) quarter.

We decided not to discuss every feature (pit, well, fence, house, *etcetera*) as a separate item in the list of features, as was done for instance in the Ussen-publication (Schinkel 1998). As much as possible we discuss features in relation to each other. Individual features are described only as separate phenomena if their characteristics require a separate discussion.

## 13.2 HOUSES

Twelve house plans were documented in the Mikkeldonk quarter (fig. 13.1). All houses were recognised and documented in the field. They range in age from the Middle Bronze Age to the Late Iron Age. Roman Period houses were not present in this area. The general characteristics of the houses are recorded in table 13.1.

### 13.2.1 A cluster of Iron Age houses: MD122, MD123 and MD124

Houses 122-124 form a cluster of houses in the southern part of the excavated area. We suspect these farms to represent one farmyard that was in place about 150-200 years, while the main building was rebuilt twice. The houses themselves cannot be dated more precisely than in the Late Iron Age, meaning anywhere in the period between 250 and 0 cal BC. However, there is an indication that the sequence

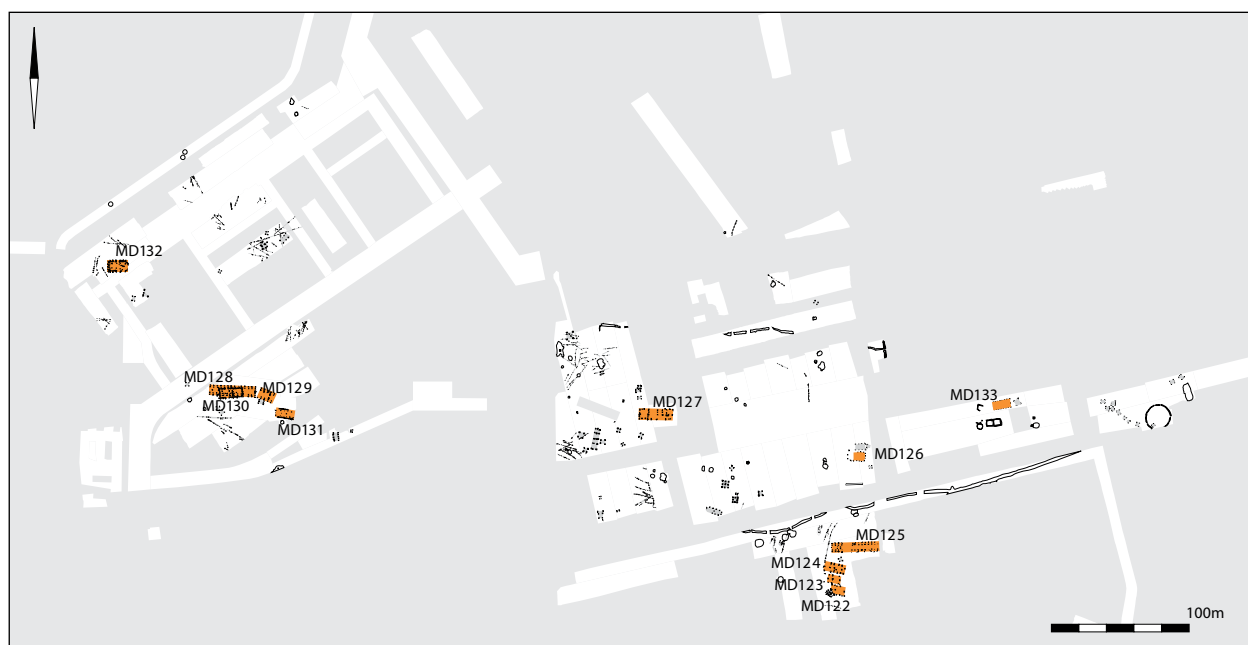


Figure 13.1 Location of the house structures in the Mikkeldonk quarter discussed in the catalogue. Drawing S. van As.

House	Type	Width (m)	Length (m)	Area (m <sup>2</sup> )	Date
MD122	5A	5,2	8,4	43,7	LIA
MD123	5A	4,5	8,9	40,1	IA A-L
MD124	5A	4,4	12,6	55,4	LIA K-L
MD125	1	4.4 -4.8	28 />	95,2	MBA
MD126	-	5,5	7,7	42,3	?
MD127	4B?	5	19,9	99,5	LIA
MD128	1	4	27,6	110,4	MBA
MD129	1	3,8	8,8	33,4	MBA
MD130	2	5,4	13,9	75,1	EIA
MD131	2	3,3	11,4	37,6	LBA-EIA
MD132	2	5,7	11,8	67,3	LBA-EIA
MD133	IIB	4,4	10,3	45,3	EIA

Table 13.1 Characteristics of excavated house plans in the Mikkeldonk quarter.

starts around 200 cal BC. A *terminus post quem* is provided by a cluster of three granaries overlaying the southwestern end of house MD122: S475, S477 and S476 (fig. 13.2). The south-eastern post of granary S477 (803.4b) intersects with the entrance posts of MD122. This feature contained several potsherds, which Van den Broeke dated to phase K (150-75 cal BC). Since

there is no indication that the entrance posts to MD122 were still present when S477 was constructed, we think that the remnants of MD122 had already long disappeared or been removed. How long that was, is difficult to say, but probably at least 10 to 15 years, long enough for the soil to settle in the filled-in post pits of MD122. The granaries could be contemporaneous with



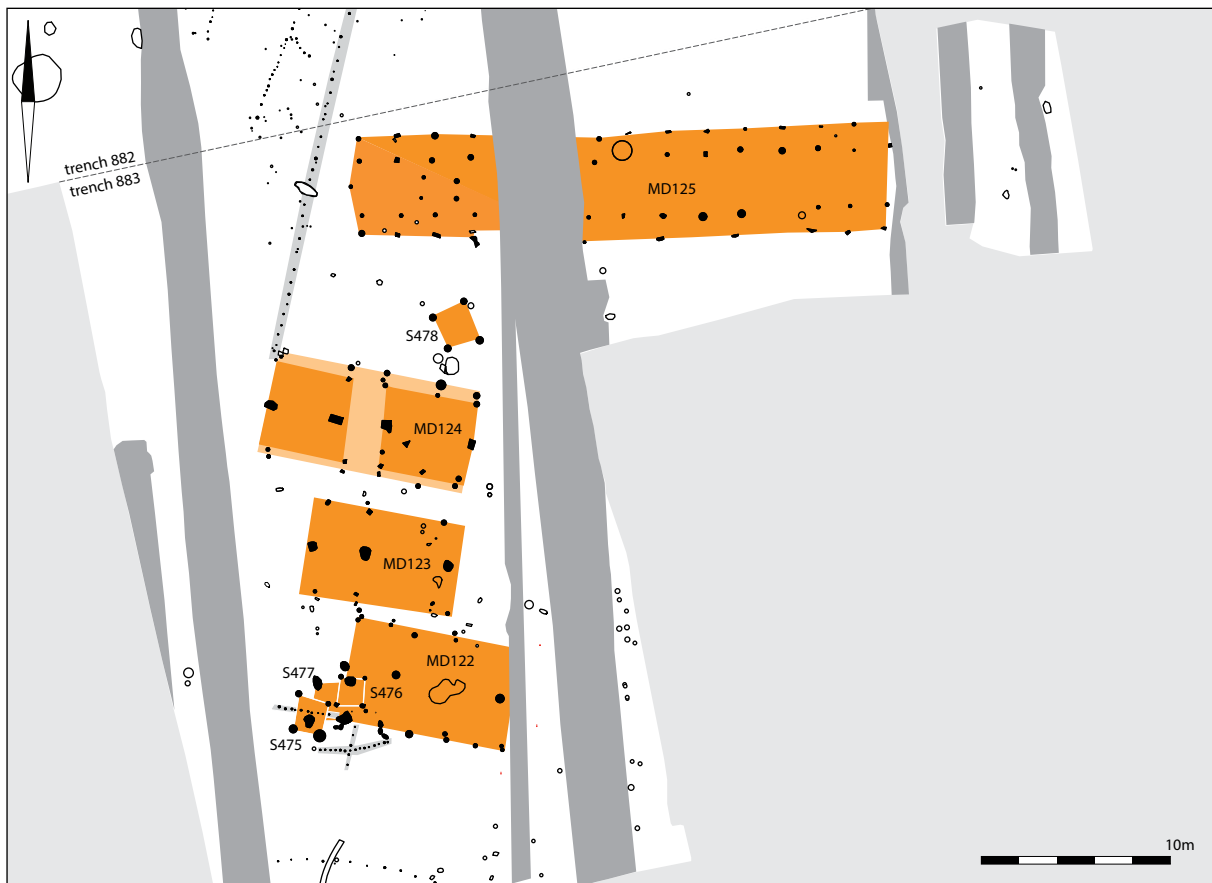


Figure 13.2 The cluster of Late Iron Age houses MD122, MD123, MD124, MD125 and contemporary features. Drawing M. Oberendorf, W. Laan.

MD123, which means that MD123 also dates to phase K. House MD122 may be slightly older, dating to the beginning of phase K, or to phase J, roughly between 200 and 100 cal BC. If we take 50 years as an estimate for house life, we suggest that MD123 and the cluster of granaries was built between 150 and 100 cal BC, and MD124 after that. The total lifespan of this farmyard would then be about 150-200 years, between 200 and 0 cal BC.

#### *House MD122*

House MD122 was excavated in the initial campaign of 1986. Due to the close proximity of house MD123, it was hard to determine which post pits belonged to either of these houses, especially since at that time we had little experience in recognising houses of this type. As the north side of this house overlaps with the south side of house MD123, the former is not clearly visible. Of all three houses in this section

(MD122, MD123, and MD124) the wall posts were very light and ephemeral anyway. House MD122 has been published also by Schinkel (fig. 13.3; Schinkel 1998, fig 256). In that drawing the eastern end of the house is cut off by a modern ditch. That must be due to a drawing error, the actual ditch was located 1.5 m further east of house MD122 than was published by Schinkel (1998, fig. 256; fig. 13.2).

*Construction details:* at the west and east side posts that ought to belong to the house appear to be lacking. This might be due to poor conservation conditions. The house is two-aisled and originally had four central posts supporting a cross-beam (Schinkel 1998, 123). One of the central posts was probably dug away when later a pit was dug in its place. The walls are atypical for type 5 with respect to the fact that not all posts occur in pairs, but only every other post. Still the construction was probably the same: a plank wall kept upright by posts.

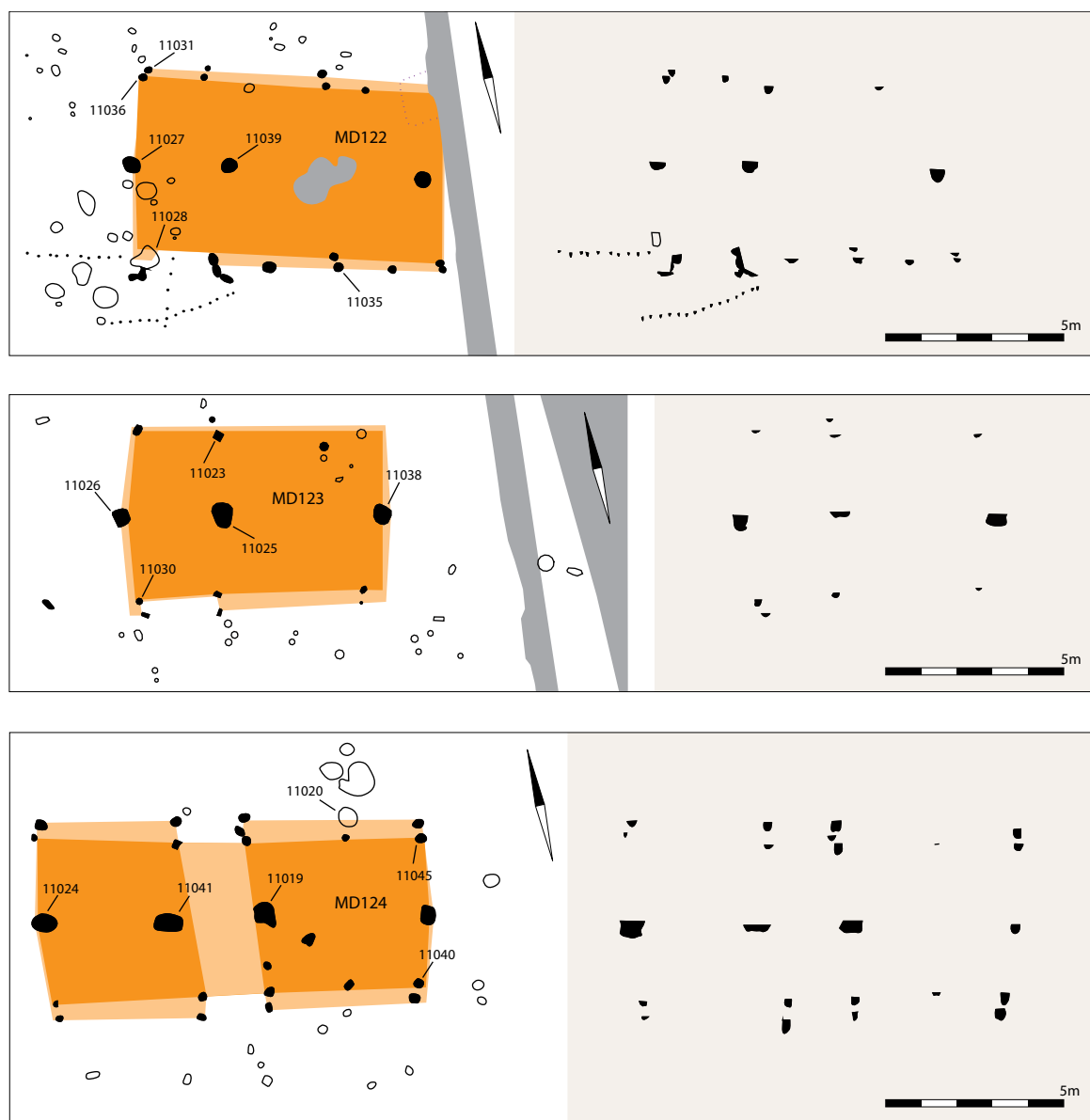


Figure 13.3 Details of houses MD122, MD123 and MD124. Drawing M. Oberendorf, W. Laan.

Two small fences appear to lead to the entrance (F103). These could be interpreted as a drove-way type of fence into the building. There is also a slight possibility that the connection of the fence to the entrance is accidental since there are also younger granaries situated in this very area.

**Abandonment:** After its disappearance, house MD122 was succeeded by at least one house on the same yard (MD123). Granary S477 intersects with the southwestern end of MD122, indicating that the

house had completely disappeared when MD123 was built.

**Finds and dating:** The features yielded 14 Iron Age handmade pottery sherds (table 13.2) and a few small fragments of a tephra millstone, probably parts of a grinding stone. This complex roughly dates to the LIA. The finds in a post pit intersecting the house (find number 11028, granary S477) also date to the LIA, probably phase K (150-75 cal BC). House MD122 predates this granary: LIA, probably phase I-J.

Find number	Trench	Feature	Structure	Material	Number	Date
11027	883	21	MD122	cer	6	-
11031	883	31	MD122	cer	1	-
11034	883	22	MD122	cer	4	-
11035	883	16	MD122	tephra	4	-
11036	883	30	MD122	cer	3	-
11028	883	4	S477	cer	22	LIA-K
11023	883	40	MD123	cer	4	-
11025	883	37	MD123	cer	52	LIA
11025	883	37	MD123	tephra	-	-
11025	883	37	MD123	fibula	1	LT-D
11026	883	38	MD123	cer	14	-
11038	883	36	MD123	cer	9	-
11039	883	33	MD123	cer	1	-
11019	883	54	MD124	cer	1	-
11020	883	67	MD124	cer	1	-
11022	883	71	MD124	cer	2	-
11024	883	52	MD124	cer	25	-
11040	883	51	MD124	cer	1	-
11041	883	53	MD124	cer	1	-

Table 13.2 Finds from houses MD122, MD123 and MD124.

### House MD123

House MD123: for excavation details see MD122

*Construction details:* The length of the house within the walls is difficult to determine because both short ends are not well defined. Schinkel considered the last two posts on the western end possible ends of the house (Schinkel 1998, 116, fig. 257). There is really no way to tell. In that case the outside length is maximally c. 9.50 m. It is a two-aisled house with alternating single and double outer posts (fig. 13.3). No entrances are visible.

*Abandonment:* The three central pots pits contained many sherds and one even a fibula (MD883.37). These post pits were fairly shallow without signs of a post pipe. The number of sherds and the fibula may indicate that the posts were removed and the remaining pit intentionally filled with debris. One might interpret this as a closing deposit of the house life (cf. Gerritsen 2003; Van den Broeke 2002; Van Hoof 2002).

*Finds and dating:* The features yielded 80 handmade sherds, roughly dating to the LIA

(table 13.2). One central post (883.37) had, besides 52 sherds, one bronze *fibula* (find number 11025, dated to LT-D) and small fragments of a tephra millstone. The house type and finds suggest a date in the LIA, probably phase I-J (cf. MD122).

### House MD124

House MD124: for excavation details see house MD122. On the northwest side of the house a fence joins the house (F114) that could be followed over a distance of 38 metres. Actually it was the other way around. In the adjoining trench we found the fence and followed it until we arrived at the posts of house MD124 (cf. chapter 3).

*Construction details:* MD124 was a two-aisled house. Four central posts were recognised, placed at a distance of 3-4.5 m from each other (fig. 13.2). The eastern end is not very clear. Judging by the two small possible wall posts, its roof end has been reconstructed two metres east of the most eastern central beam. The walls were made of smaller and larger posts which

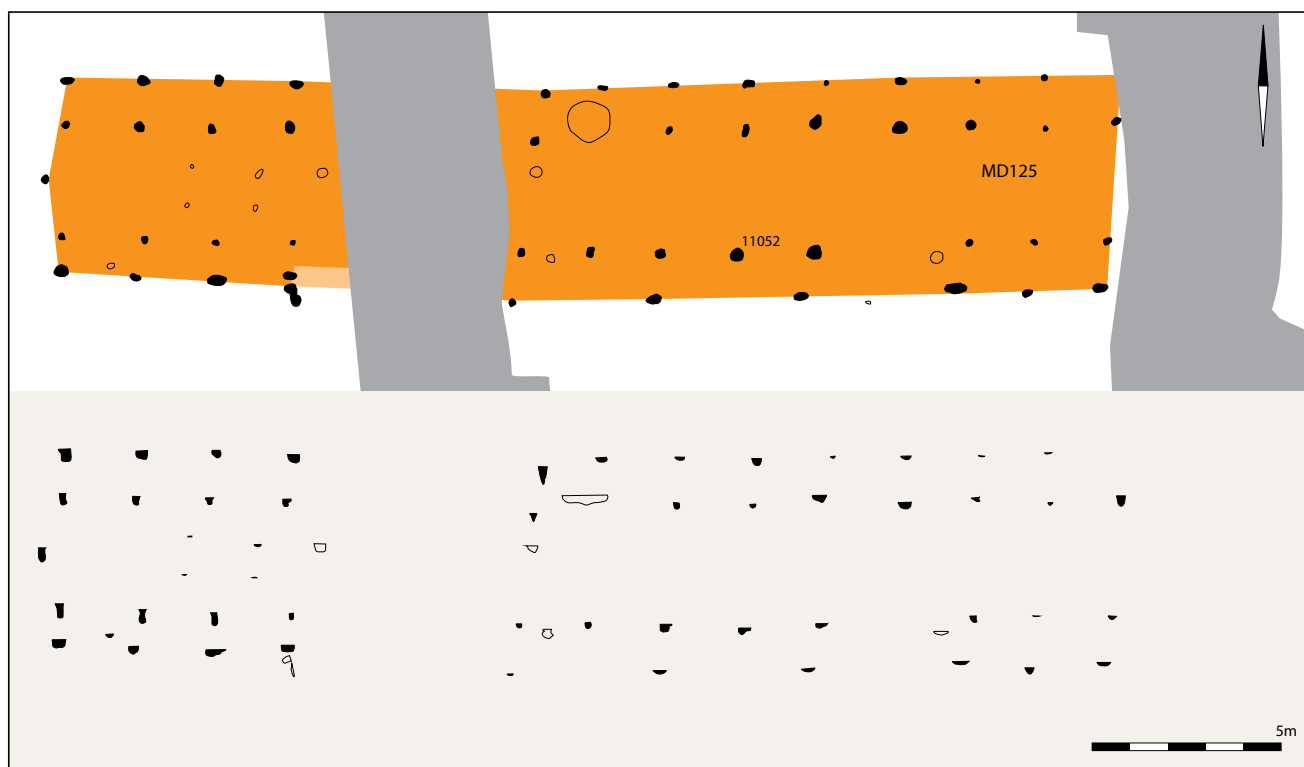


Figure 13.4 Bronze Age house MD125. Drawing M. Oberendorf, W. Laan.

Find number	Trench	Feature	Structure	Material	Number	Date
11052	883	170	MD125	cer	5	-

Table 13.3 Finds from house MD125.

indicate a possible plank-wall structure. Entrances are to be expected in the south and north walls, but they are not visible.

*Abandonment:* The eastern-most central beam contained a fair number of sherds (11024).

*Finds and dating:* The features yielded 31 sherds (table 13.2). The finds suggest a date in the Late Iron Age. A more precise dating is impossible. Since MD124 probably is the youngest of the series of houses, a date somewhere in phase K (150-75 BC) is probable. Granary S477 (and 475, 476) may be contemporaneous with MD124.

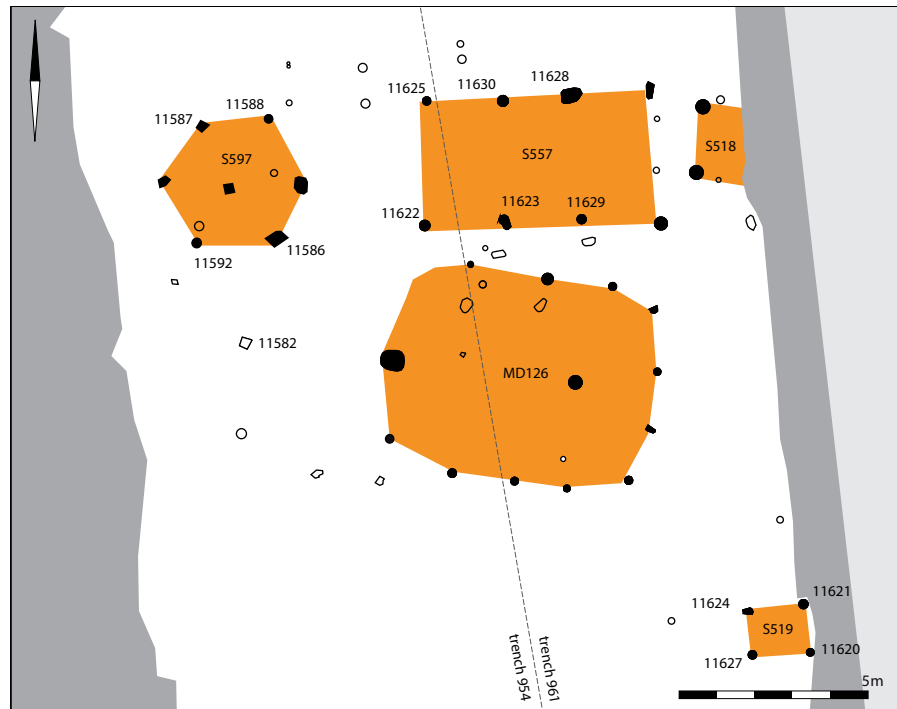
### 13.2.2 Bronze Age house MD125

House MD125 was excavated in 1986, and already published in 1987 and 1991 (Vasbinder and Fokkens 1987; Fokkens 1991). Initially only the western part was excavated. As this was truncated by a modern

ditch near the limits of the area that could be excavated, we did not explore the eastern side at first (cf. chapter 3.1.1). Only when it became clear that this type was not yet known did we go back into the field and extended the trench as far as possible. Whether the house is complete on its east side could not be asserted due to disturbance by a modern ditch.

*Construction details:* This house is the type-identifier of type Oss. It was in fact the first true Bronze Age house recognised in the southern Netherlands. The roof-plates are supposed to have rested on the wall posts. The rafters may have had little overhang forming relatively short eaves. The roof probably was of the gable type, there is no constructional indication of a hipped roof. A single offset post on the south side possibly marks an entrance, which would have been east of the offset post. Unfortunately, a modern age ditch intersects the house plan here (fig. 13.4). On the

Figure 13.5 Cluster of features around structure MD126.  
Drawing M. Oberendorf, W. Laan.



west side a few of the wall posts were clearly visible as planks which had been driven into the ground (883.91; 883.95; 883.88; 883.75; 883.76).

There are no indications for an internal division, but there is a shallow four-post configuration visible in the west part of the house. This feature is not common in Bronze Age house plans of the Pleistocene uplands, but is a frequent feature in West-Frisian Bronze Age farms (Roessingh 2018). Even though the structure of the West-Frisian farms is much different, a similar function as support of a loft might be suggested.

*Abandonment:* De wall posts of the west side of the house have a curious shape in section. They show wider bottom and top parts than the central part. This is typical of posts that have been levered out of the ground. This indicates that the house was dismantled before being abandoned.

*Finds and dating:* In one post pit a sherd tempered with stone grit was found (table 13.3). This type of sherd is typical of Bronze Age ware in the region.

### 13.2.3 Structure MD126

Structure MD126 was excavated in 1989 and has been the subject of much discussion. In trench 954 first a possible six- or seven-post haystack was recovered (S597; fig. 13.5). Then in the adjacent trench 961 a few structures were recognised: S517, S519, S557 and

MD126. Whether MD126 really can be classified as a house or outbuilding will remain a matter of debate. We present the data here as they are, but we are not at all sure that this can be classified as a house. There is one post 'missing' and there is no parallel. The associated 'haystack' (S597) certainly is not a normal feature in prehistoric Oss. The strange square forms of a few post pits suggest a possible young date for this structure, if it really is a structure. One of these post pits, however (11586) contained a Bronze Age potsherd. S519 and S518 are typical granaries with post pits of considerable depth, but without any finds. S518 was partly destroyed by a modern ditch. S557 is 3.2 x 6.0 m in size. There are no other examples of 8-post outbuildings in Oss.

*Abandonment:* no clear indications.

*Finds and dating:* No finds have been recovered from MD126, so there is no date possible.

### 13.2.4 Middle Iron Age house MD127

MD127 was excavated in 1987. The western part was recognised in trench 890, which constituted the eastern limit of what we could excavate that year. We decided to cover up this part of the house for a while until we had finished excavating all other features in this trench of 116 m long and 10 m wide. When finally we obtained permission to extend the excavation into

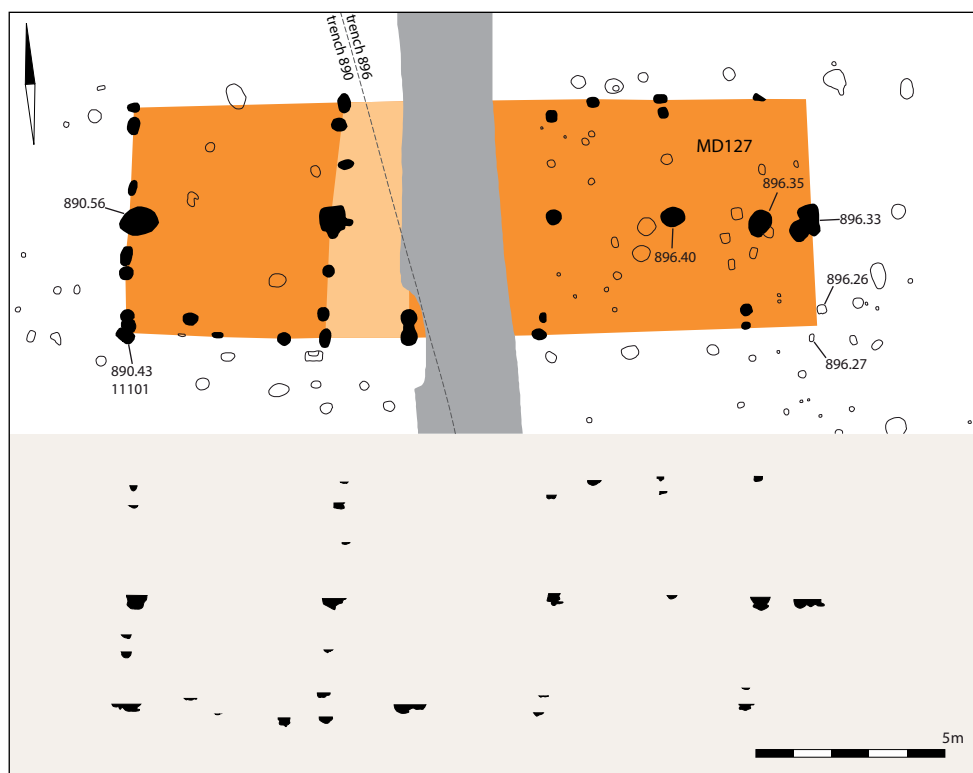


Figure 13.6 House MD127 dating to the Middle Iron Age, c. 450-325 cal BC. Drawing M. Oberendorf, W. Laan.

the adjacent meadow, four weeks later, we excavated also the eastern half (trench 896). We surface cleaned the old trench and the new trench together and marked and numbered all features with small yellow gardening labels. In the evening of 10 June a passer-by dug out one of the central post pits (11103; post 890.56) and one of the wall posts (890.43: 11101) which contained many sherds and pieces of burnt bone. As the trench was a favourite place to walk the dog in the evening, we suspect that the 'robbers' were just people from the neighbourhood who did not know what they were doing. It had already been clear from the beginning that some of the post pits contained much pottery and we had collected some of it already. The theft was problematic because it had been clear to us that these post pits included also burnt bone, which suggested that this assemblage constituted some kind of abandonment deposit (see below).

**Construction:** The house was interpreted as a type Oss 4A house. It has five central posts (a total length of 17.8 m; fig. 13.6). The structure is not very clear, the wall posts were shallow and have disappeared in most places. On the southern side an entrance appears to have been present, marked by extra posts supporting the roof. A sub-recent ditch, however, disturbs this

part. We extracted the two east posts of the entrance on the south side from underneath this ditch, but on the north side they had disappeared. We suspect that two entrances opposite each other have been present. The east side of the house is unclear. Features 896.40, 896.35 and 896.33 have the same fill and colour and therefore were considered part of the house, 896.33 forming the east end. We also have considered the possibility that 896.35 constituted the original end of the house and that 896.35, together with 896.26 and 896.27 constituted an extension. But this remains all very unclear. The section west of the entrances possibly was separated from the eastern part by a wall. This western part could have been the living area.

**Abandonment:** Some of the central posts and wall posts contained sherds and burnt bone (table 13.4). Already in the lower part of the medieval plaggen-soil were these features recognised because of the presence of burnt bone and ceramic fragments. Van den Broeke has described similar finds in different contexts (Van den Broeke 2002). Most of these are dated to the Early Iron Age or the later part of the Middle Iron Age. Given the probable date of complex 11103 in phases F or G (c. 450-325 cal BC; Van den Broeke 2012, 36; table 13.4), also this complex has to be dated in the Middle Iron

Find number	Trench	Feature	Structure	Material	Number	Date
11101	890	43	MD127	cer	48	IA
11101	890	43	MD127	bone	3	-
11104	890	33	MD127	cer	1	-
11103	890	56	MD127	cer	53	MIA F/G
11103a	890	56	MD127	cer	3	IA
11106	890	56	MD127	cer	6	IA
11106	890	52	MD127	bone	1	-
11145	896	35	MD127	cer	2	MBA
11148	896	44	MD127	cer	2	-
11149	896	57	MD127	cer	1	IA
11151	890	51	MD127	cer	1	MBA
11161	896	32	MD127	cer	1	IA
11162	896	33	MD127	cer	1	IA
11166	896	62	MD127	cer	1	-
11167	896	40	MD127	bone	1	-
11202	890	40	MD127	cer	1	MBA
11206	890	62	MD127	cer	1	MBA
11209	890	34	MD127	cer	1	IA

Table 13.4 Finds from house MD127.

Age. Van den Broeke discusses a number of patterns. His conclusion is that these complexes generally were carefully selected. Often many large pot fragments are present, not all of them sintered, as well as burnt bone, but very little charcoal. The fact that one or two post pits (generally including a central post) of a house were chosen for deposition, suggests a deposit related to abandonment of a house, and not merely of rubbish discarded in a derelict house (Van den Broeke 2002, 57). In Oss there are other examples of this practice, notably of house H5 in Mettegeupel (chapter 15; Van den Broeke 2002: appendix). But it is certainly not a practice that was executed at the abandonment of every house, so we have to classify this as a ritual that was kept for special, but recurring occasions.

*Finds and dating:* Middle Iron Age, phases F or G (450-325 cal BC).

### 13.2.5 A cluster of Bronze and Iron Age houses MD128, MD129, MD130 and MD131

In the winter of 1987-88, under atrocious conditions (snow and cold; cf. chapter 4) a cluster of house plans

was excavated. We were told that the winter excavations were necessary because in summer there would be no time to work here anymore. First in trench 917a Peter Deunhouwer recognised a possible house (MD131). The trench was extended (917b) and in the northern end we recognised a large outbuilding (S511) next to part of another structure (MD129; fig. 13.7). Large soil dumps and pools of rainwater made it impossible to excavate a very large trench, so the dump of 917b was first moved to a side after which trench 917c could be excavated. Given these difficulties, an amazingly clear picture emerged of an Iron Age house overlaying an older Bronze Age house, which was carefully documented by Peter Deunhouwer and Ide Stoeperker. The Bronze Age post pits could be distinguished quite clearly from the Early Iron Age ones because they were smaller and had a darker colour. In the summer of 1988 the area proved to be still available for excavation, and we returned to this spot and excavated also the surroundings of these houses. The excavations of this part of the Mikkeldonk quarter were preliminary published by Fokkens (1991).





Figure 13.7 The cluster of Bronze and Iron Age houses in trench 917: House: MD128, MD129, MD130 and MD131. S. van As, W. Laan.

### House MD128

House MD128 is orientated west-east. The house is three-aisled and very regularly structured (fig. 13.8). The distance between the pairs of wall and roof-bearing posts is 2.1 m, which is in close accordance with what Arnoldussen (2008, 221) has established as being typical of Bronze Age plans. In the southern post row one set of posts is missing, which may be due to post-depositional changes. There was a vague soil coloration in this area and it is just east of the later Iron Age farm. Given the excavation circumstances, very light coloured features may have been missed, especially since also these posts were on the boundary between two trenches. Entrances are not visibly present; neither are stall partitions. Initially phosphate samples were taken at two levels in the entire excavation trench, also outside the house. However, given the Early Iron Age occupation in the very same area, we have not analysed the samples: they probably

would have just shown a clutter of un-interpretable signals at the expense of high costs for an analysis. In the western end we have indicated a post in the centre as part of the construction. This could have been a support of the gable roof.

The position of features 917.254 and 917.255 (11373; fig. 13.8B, C) in the plan is a bit difficult to explain in terms of house construction. The feature had a rather vague outline, but in section it appeared to consist of two deeper pits with a rather sharp outline (fig. 13.8B). A large amount of charcoal was present in the pit. These pits could have played a role in roof support, however the feature is situated in a place where an entrance might be expected. In that respect it may be significant that it extends beyond the projected wall of the house. A copy of the field drawing (fig. 13.8C) shows that it was central to a 'dirty' area (indicated as '*vuile grond*'), meaning that the soil was darker than the surrounding soil due to charcoal or organic material. This could

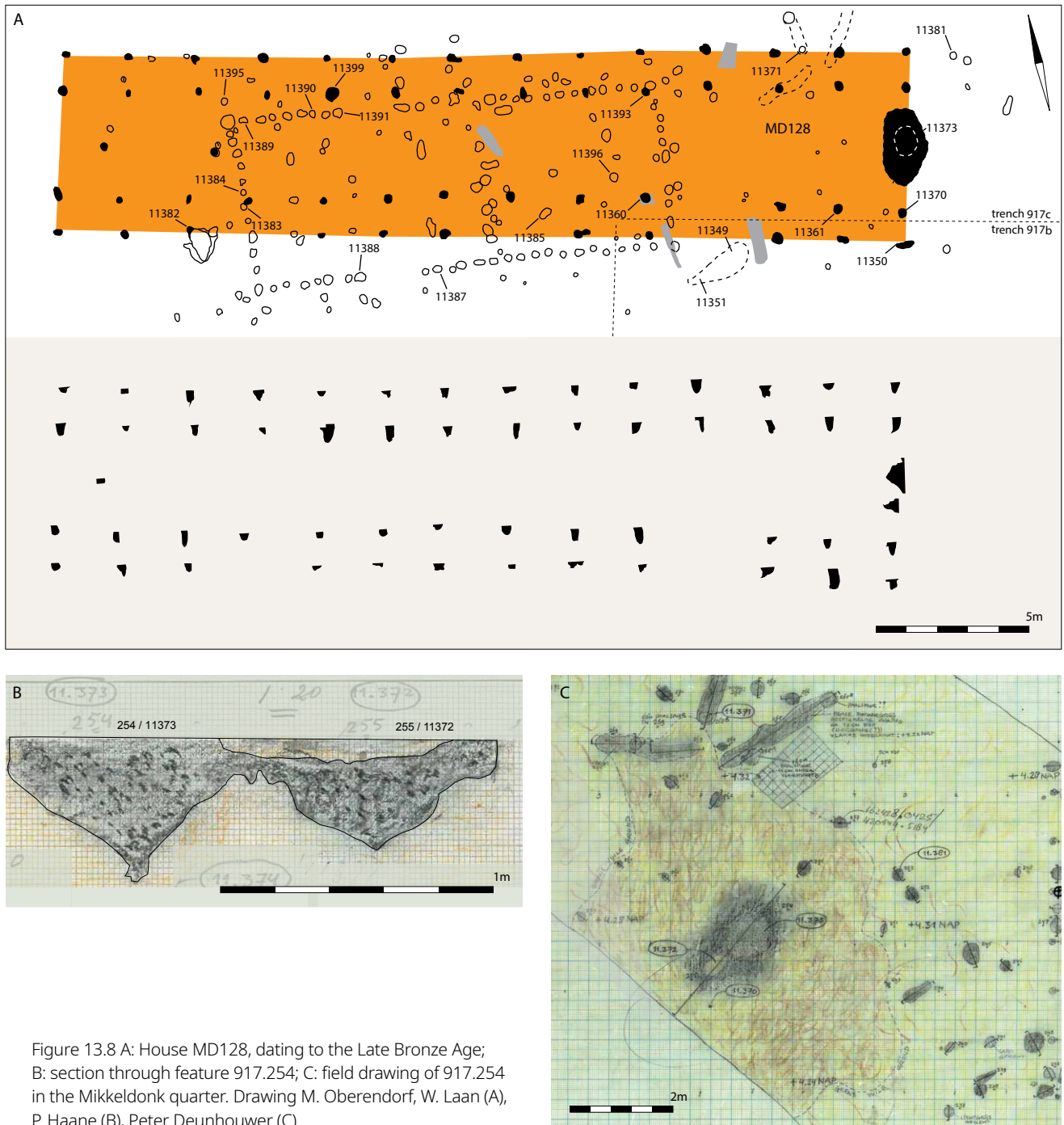


Figure 13.8 A: House MD128, dating to the Late Bronze Age; B: section through feature 917.254; C: field drawing of 917.254 in the Mikkeldonk quarter. Drawing M. Oberendorf, W. Laan (A), P. Haane (B), Peter Deunhouwer (C).

be indicative of a stable area in this house, or of the remains of a fire. Technically feature 917.254 could also be younger than MD128 and MD129, but we think it was more or less contemporaneous because of its position relative to the two houses and the  $^{14}\text{C}$ -date (cf. below).

*Abandonment:* No indications for abandonment. The post pits had a homogenous dark colour and were rather clear in form. There are no indications that the posts were taken out of the post pits, therefore we

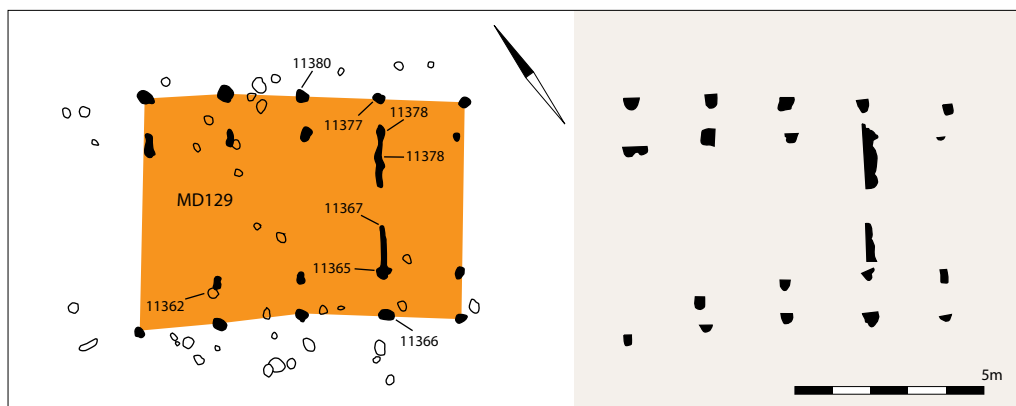


Figure 13.9 MD129, a house, barn or stall dating to the Late Bronze Age in the Mikkeldonk quarter. Drawing M. Oberendorf, W. Laan.

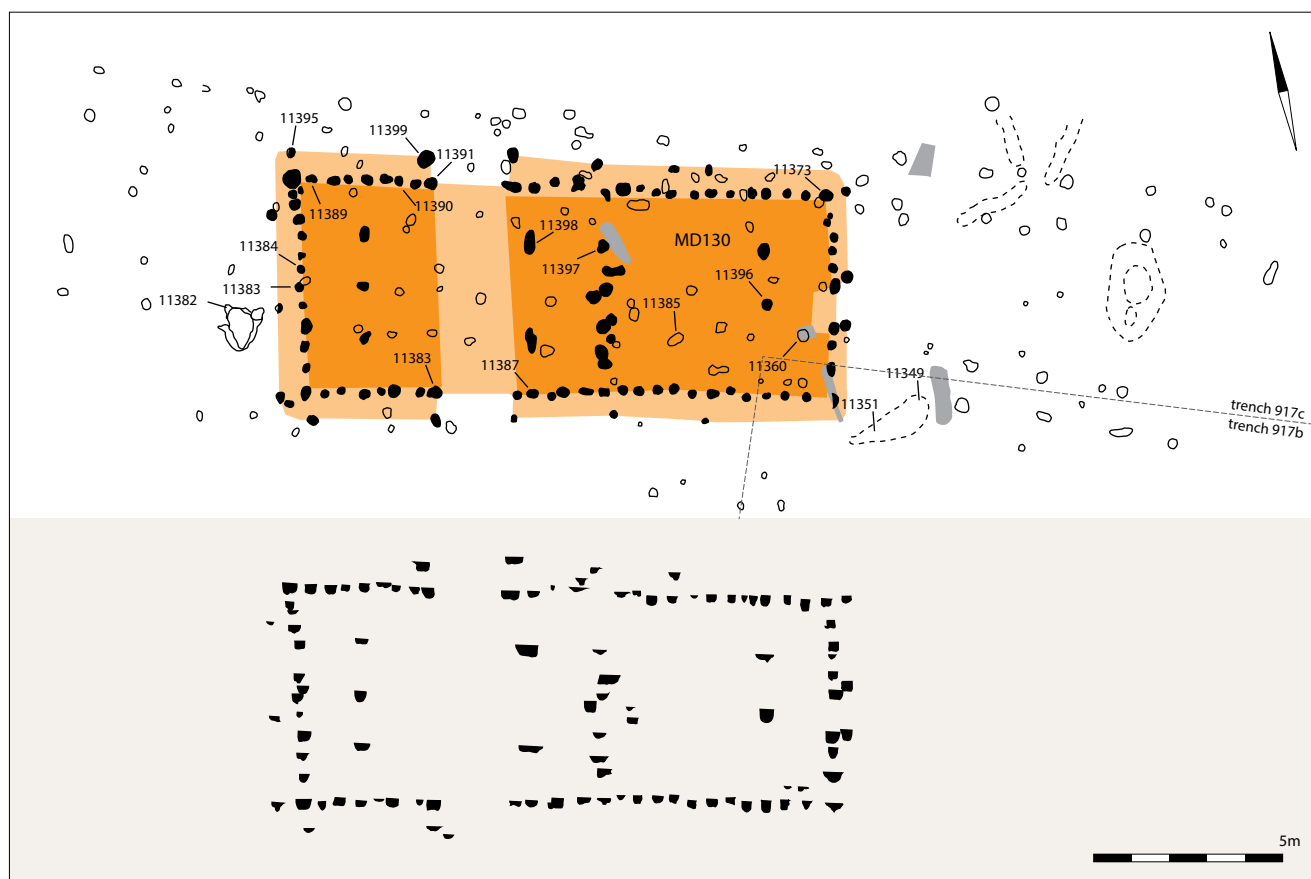


Figure 13.10 House MD130, dating to the Early Iron Age or Late Bronze Age. Drawing M. Oberendorf, W. Laan.

assume the house was left standing after abandonment and decayed slowly.

*Finds and dating:* Charcoal in pit 917.254 was dated to 1214-1001 cal BC, or the Late Bronze Age.<sup>1</sup> Few potsherds were found, all dating to the Bronze Age as well (table 13.5).

#### *House MD129*

House MD129 is situated directly east of MD128 (fig. 13.7), but strangely enough placed at an angle to it. The fact that the southern post of one of the trusses is missing is probably due to the fact that this was situated on the very boundary between trenches

Find number	Trench	Feature	Structure	Material	Number	Date
11350	917	196	MD128	cer	1	-
11360	917	60	MD128	cer	1	-
11361	917	116	MD128	cer	1	MBA
11382	917	323	MD128	cer	3	MBA
11393	917	411	MD128	cer	1	indet
11399	917	387	MD128	cer	1	indet
11362	917	151	MD129	cer	1	MBA
11365	917	190	MD129	cer	1	MBA
11366	917	193	MD129	cer	2	MBA
11367	917	216	MD129	cer	2	MBA
11377	917	222	MD129	cer	1	-
11378	917	222	MD129	bone	2	-
11379	917	223	MD129	cer	1	-
11380	917	227	MD129	cer	1	MBA
11369	917	392	MD130	cer	1	IA
11383	917	369	MD130	cer	1	BA
11384	917	370	MD130	cer	1	BA
11387	917	353	MD130	cer	1	-
11388	917	355	MD130	cer	1	BA
11389	917	379	MD130	cer	1	BA
11390	917	385	MD130	cer	4	BA
11391	917	388	MD130	cer	1	BA
11395	917	378b	MD130	cer	1	BA
11397	917	434	MD130	cer	1	IA
11398	917	450	MD130	cer	1	BA
11399	917	387	MD130	cer	2	BA
11316	917	52	MD131	cer	1	BA
11321	917	37	MD131	cer	1	-
11322	917	15	MD131	cer	1	-

Table 13.5 Finds from houses MD128, MD129, MD130 and MD131.

917b and 917c (fig. 13.7). It therefore may have stayed unnoticed under dump-wash.

*Construction details:* House MD129 is a shorter version of a type Oss 1A house. The structure is identical to that of MD128, and it almost looks like both buildings were made in one go. MD129 could also be a (later?) addition to MD128, but place and size suggest that both buildings were in use at the same

time. Entrances are not visible. The easternmost part of the structure appears to have been divided from the western part by a partition (fig. 13.9). Although they resemble stall partitions, these normally would not be located in the central aisle, so it is doubtful whether it actually is a stall partition. The length is approximately 9 metres, the width varies between 6.3 and 6.8 metres. The eastern end is the narrowest. Though we have

indicated MD129 as a house, there is in fact no reason why it could not have been a barn or a stable.

*Abandonment:* no specific indications for abandonment.

*Finds and dating:* Late Bronze Age (see MD128 and table 13.5).

### House MD130

House MD130 is of type Oss 2. In this type the load of the roof beams rests on the portals and on the walls. Therefore the wall is well visible (fig. 13.10). The overhanging part of the saddle roof is only supported by small posts. Three entrances are identified. Two are positioned opposite each other in the long sides of the house. They divide the farm building into a western and eastern half, of which the eastern part generally is indicated as the stable area. In MD130 the western part is relatively small (3.6 m). A dividing wall appears to be present east of the entrances, separating the eastern

part of c. 6 m long from the somewhat larger western part (8 m). In the eastern short wall another entrance is present.

*Abandonment:* No indications for abandonment.

*Finds and dating:* A date in the Late Bronze Age or Early Iron Age is most probable. Although the majority of sherds has stone grit and is therefore classified as Bronze Age (table 13.5), they are all very small and rounded. So they could have been surface material that accidentally ended up in the pits. There are also a few Iron Age sherds, also in surrounding features. One nearby Bronze Age well (905.10) was actually re-used in the Early Iron Age (cf. section 13.4.4).

### House MD131

House MD131 is situated southeast of MD128 and MD129. It was the first house to be discovered in this area due to the shallow house ditches.

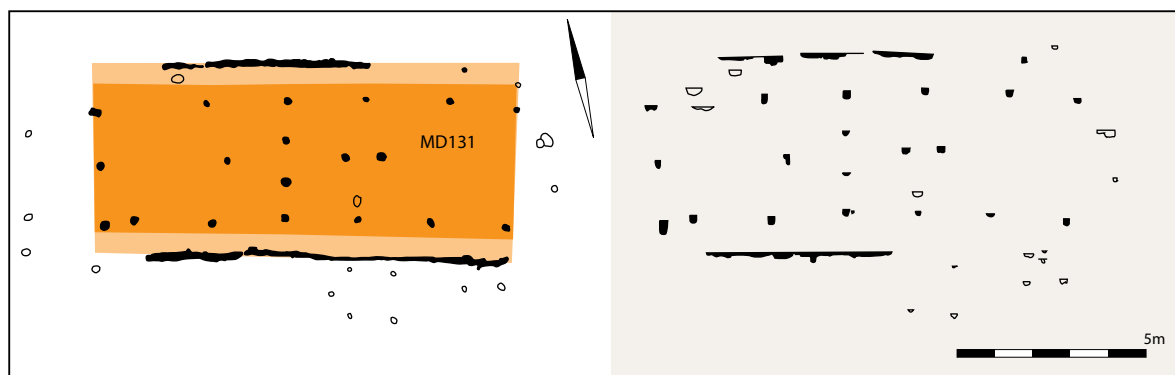


Figure 13.11 House MD131, possibly dating to the Early Iron Age or Late Bronze Age. Drawing M. Oberendorf, W. Laan.

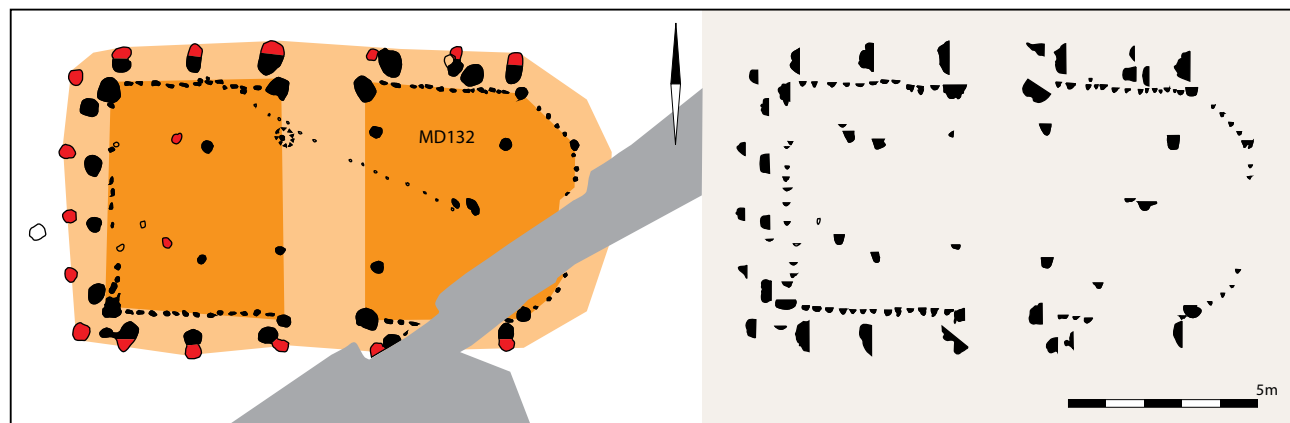


Figure 13.12 House MD132, dating to the Early Iron Age. In red the renewal phase of the roof is indicated. Drawing M. Oberendorf, W. Laan.

*Construction details:* MD131 was interpreted as a house of type Oss 2A (Fokkens 1991) because the main burden of the roof probably was supported by the wall posts (fig. 13.11). The surrounding ‘ditch’ is shallow, and is interpreted as an eaves-drip gully or a bedding trench for additional roof support. With respect to the size of the posts, the structure seems to have been light. MD131 has a relatively small size: c. 10 m long and 3 m wide (between the walls).

*Abandonment:* A layered fill with organic lumps can be observed in most post pits belonging to this house. This can be indicative of an intentional fill after having extracted the beams from the post pits. We therefore think the building was dismantled after abandonment.

*Finds and dating:* typologically MD131 should date to the Late Bronze Age or Early Iron Age. The few finds that have been retrieved are a Middle Bronze Age sherd and material that was too small to determine (table 13.5). Like in the post pits of MD130, these could be remains of older occupation. The pit directly to the south of the house (917.90: 11319; fig. 13.7) was a well and contained a wooden lining that was dated to the third or fourth century AD (cf. section 13.4.4). This implies that it represents Roman habitation in the region, even though it contained several small Bronze Age sherds in the top fill.

### 13.2.6 House MD132 and associated features

The survey of road trenches in the winter of 1987-1988 had shown features in this region. In the summer of 1988, when we were working on the area surrounding houses MD 128 – MD131, the plot for a new house was excavated in the vicinity (fig. 13.13). In that small trench we discovered granaries S508 and S507. We decided to excavate the immediate surroundings because such granaries generally are located on a farmyard. Immediately north of the house plot we discovered house MD131 (figs. 13.12, 13.13). In trying to recover the entire plan we nearly cut the electricity mains cable that recently had been dug in and was not yet officially registered. Luckily the driver of our digger knew this and realised the

danger. This is the reason why the south-eastern part of the plan is missing.

*Construction details:* house MD132 was the type-identifier for Oss 3A, but with hindsight there is no reason why this could not be classified as a type 2 house (cf. chapter 3.2.2.3). The structural principles are the same: the roof is carried by portals and supported outside the wall by a wall plate resting on substantial (short) posts. Yet, MD132 is unique because it has a straight edge on the west side and a rounded end on the east side. On the west side the roof probably continued almost to the ground, while on the east side the roof does not seem to have been supported that much. Two entrances opposite each other divide the house almost in half, leaving an area of 4.25 x 5.40 m in the west and of 5.00 x 5.40 m in the east. The walls are



Figure 13.13 House MD132 during excavation. In the background the excavated house plots that triggered excavation of this area. Photo H. Fokkens.

Find number	Trench	Feature	Structure	Material	Number	Date
11551	943	33	MD131	cer	2	IA
11552	943	10	MD131	cer	1	IA
11554	943	53	MD131	cer	1	MBA

Table 13.6 Finds from house MD132.



clearly visible as rows of stakes that probably present the standing parts of wattle-and-daub walls. The western portal of the house may have been replaced or supported with an extra portal once. In fact, the entire roof seems to have been replaced because the outer posts all have been rejuvenated.

*Abandonment:* There are no indications of how the house was abandoned. Post pipes were not visible, so there is a possibility that the posts were removed. One row of stakes transects the house diagonally (F293), indication that the house at some point had become invisible and became part of arable fields.



Figure 13.14 House MD133, probably dating to the Early iron Age. Drawing and photos M. Oberendorf (A), H. Fokkens (B – H).



Find number	Trench	Feature	Structure	Material	Number	Date
11715	970	2	MD133	cer	2	IA
11716	970	3	MD133	cer	3	IA
11717	970	4	MD133	cer	1	IA
11717	970	4	MD133	cer	4	IA
11718	970	5	MD133	cer	1	IA
11724	970	11	MD133	cer	1	IA
11725	970	12	MD133	cer	3	IA
11726	970	13	MD133	cer	2	IA
11727	970	14	MD133	cer	1	IA
11729	970	16	MD133	cer	4	IA
11729	970	16	MD133	tephra	14	IA
11731	970	18	MD133	stone	3	IA
11734	970	21	MD133	cer	6	IA
11735	970	22	MD133	cer, loam	14	IA
11736	970	23	MD133	cer	2	IA
11737	970	24A	MD133	cer	2	IA
11738	970	25	MD133	tephra	2	IA

Table 13.7 Finds from structure MD133.

*Finds and dating:* typical of houses from this period is that there are hardly any finds. One Middle Bronze Age sherd has been retrieved from a post pit, but also a few Iron Age sherds (table 13.6). Most of it is small and rounded and probably had been lying around before it entered the post pit. A well in the direct vicinity of the house (940.1, c. 45 m south) is dated to the Early Iron Age (phases A or B) on the basis of pottery. We assume that this is also the date of the house, somewhere in the eighth or seventh century cal BC.

### 13.2.7 Structure MD133

MD133 was excavated in 1989. In trench 967 we had discovered a Late Iron Age cemetery, so we expected in trench 970, directly north of 967, another part of that cemetery. Instead we found MD133, S533 (and one disturbed burial monument). The post pits were clearly visible and relatively large (fig. 13.14) and deep, about 50 cm or more in section and 50-80 cm deep.

*Construction details:* whether MD133 really is a house or a large granary is still open to debate. Schinkel describes this type of building as a granary of type IIB (cf. Schinkel 1998, 258, 305). By then he knew already of our structure H133 in trench 970. Schinkel

refers to an exact copy in Echt-Mariahoop, published by Willems (1983, 234-238) as a house. Van Hoof (2007, 257) has discussed house MD133 in the context of the excavations at Geleen-Janskamperveld, where an exact parallel was found. The Geleen example was not only paralleled in the actual structure, but also in the fact that it was accompanied by a large nine-post and a smaller 4-post granary (Van Hoof 2007, 267). In Oss MD133 was accompanied by granary 533: not exactly lined-up with MD133, but very close and with no other buildings in the vicinity (fig. 13.14A). Ivan Hoof proposed to call Oss IIB type the Geleen-Echt type, and proposes that – given the association with smaller granaries, it should be considered a house or farm (Van Hoof 2007, 266). Yet, even though he seeks support in discussion of a wider European context for his idea, MD133 might provide also reasons to think different.

Given the size of these structures, the identification as a house is not very strange. However, no-one has yet considered the posts and post-pits in more detail. The structure of the MD133 post pits do in fact suggest an above-ground structure like a granary. That is: with a raised floor. There are in all 24 posts

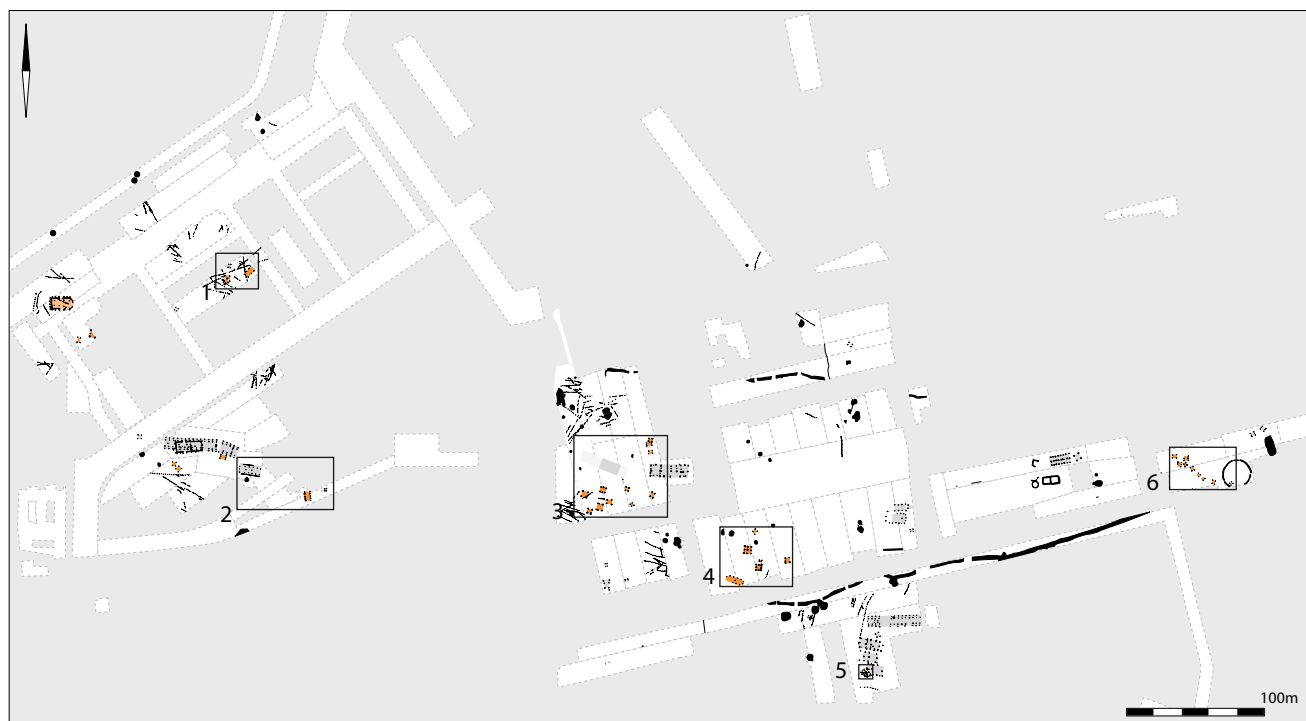


Figure 13.15 Location of granaries and clusters of granaries in the Mikkeldonk quarter discussed in the catalogue. Drawing S. van As.

that have been dug in to a depth between 50 and 80 cm below the present surface. That implies a depth of c. 100 cm – 130 cm below the original surface. The post pits were clearly dug a bit larger than the posts themselves. From the sections it is clear that the post pits were substantial (30-40 cm) and had a flat bottom. The posts rested on the bottom of the post pits, like features MD970.2 and MD970.4 for instance show (see fig. 13.14B, C). Such heavy posts are not normal for houses, since even central roof-bearing posts are less thick and were not dug in as deep. A reason for this difference can lie in the construction. If the posts were connected by cross-beams above ground, like in portals, the construction gets its rigidity from the beams and strictly speaking posts need not be dug in. But if no portals and cross-beams are used, like in granaries, posts need to be dug in to stand upright. This is the case with four- and six-post granaries which also have been dug in because above-ground connecting beams were lacking or gave less rigidity.

*Abandonment:* There are no signs of removal of the posts, which would have been very difficult anyway given the size of the posts and the depth to which they were dug in. Since the post pipes are in

several of the post pits clearly visible (fig. 13.14B, C), we think they decayed in place. This indicates that the building was left standing when it was abandoned.

*Chronology:* The finds cannot date this house more specifically than Iron Age (table 13.7), but is probably Early Iron Age due to similar types found throughout the south of the Netherlands (Van Hoof 2007). Pieces of charcoal, tephrite and stone have also been collected.

### 13.3 GRANARIES AND OUTBUILDINGS

We have recognised 55 granaries in the Mikkeldonk quarter (fig. 13.15). Most of these could not be dated directly. The most frequent type is the four-post granary (table 13.8). We have decided not to describe all granaries in detail, but discuss only the ones that in one way or the other deviate from the normal pattern, as well as clusters of granaries that play a role in the discussion of the chronology or settlement structure. There is a gap in the numbering because of two phases of publication. The first phase was published by Schinkel (1998), his numbers S479-486 were located outside the Mikkeldonk quarter and are therefore not listed here.

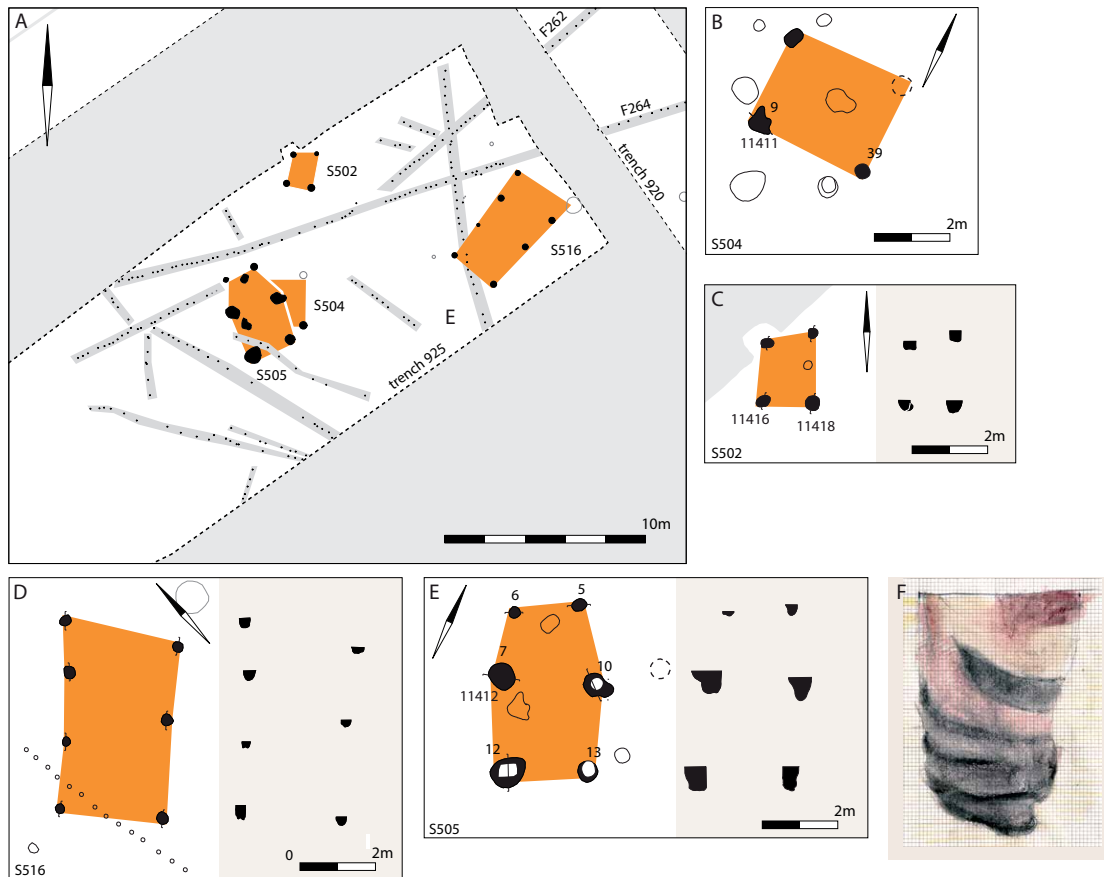


Figure 13.16 Cluster 1 of structures in trench 925 in the Mikkeldonk quarter (A); B: S504; C: S516; D: S502; E: S505; F: 925.13. Drawing J. Porck (A), E. van Wieren (B – E), J. de Graaff (F).

### 13.3.1 Cluster 1: S502, S504, S505 and S516

Trench 925 was excavated because in one of the road lines surveyed earlier, a set of fences was recognised. These fences (F264 and F262; fig. 13.16) continued in trench 925, though on the first level we saw no fences at all. The soil was violet grey in colour and only three posts of S55 were visible. Normally we would recognise any features directly underneath the medieval plaggen soil, but here we had to excavate a second level (10 cm lower) before a complex configuration of fences became visible and also S504, S502 and S516. On the basis of a sherd in S502 we have tentatively dated these granaries to the Early Iron Age (table 13.9), which means that they may have been contemporaneous with one of the houses MD130, MD131 or MD132. The dating, however, is not very certain.

They appear to be situated near a crossroads of fences, which gives the impression that at least S502 on

the one hand and S504-S505 on the other were located on different farmyards or in the vicinity of different farms. Actually, there is no indication of a farm very close by, but a farm could easily have been present in the un-excavated area. The distance to either house MD130, MD131 or MD132 is too large (90-100 m) to be interpreted as a structure on one of these yards. But this cluster of granaries could very well be lying a bit outside the farms in arable land.

It is impossible to tell which of the granaries were contemporaneous. At least S505 (fig. 13.16E) and S504 (fig. 13.16B) must have been each other's successors. Some of the post pits of both structures were already visible in a higher level. The northeast post of S505 was seen in the field, but has not been documented. The posts that were part of this granary were only recognised when S505 was being excavated, which accounts for the fact that sections have not been

Structure	Type	Date	Width x	Length in m	Area in m <sup>2</sup>
S475	IA	LIA	1,8	1,7	3,1
S476	IA	LIA	1,5	1,3	2
S477	IA	LIA-K	2,1	1,8	3,8
S478	IA	LIA-J-L	2	2	4
S487	IA	IA (phase F-G)	2,3	1,7	3,9
S488	IB	IA (phase F-G)	1,6	1,4	2,2
S489	IA	IA	2	1,7	3,4
S490	IA	IA (phase F-G)	2,9	2,9	8,4
S491	IA	IA (phase F-G)	2,6	2,3	6
S492	IB	IA (phase F-G)	2	1,6	3,2
S493	IA	IA (phase F-G)	1,5	2,3	3,5
S494	IB	IA (phase F-G)	1,8	2,7	3,9
S495	IA	IA (phase F-G)	1,5	2,1	3,2
S496	IA	EMA-LMA	4	3,9	15,6
S497	IIC	IA (phase D-E)	3,1	2,8	8,7
S498	IA	-	1,2	1	1,2
S499	IA	-	2,1	1,9	4
S500	IA	-	2,4	2,1	5
S502	IA	-	1,7	1,3	2,2
S503	IA	-	1,4	1,4	2
S504	IA	-	2,5	3,1	7,8
S505	IB	-	4,4	2,5	11
S506	IA	-	2,4	2,4	5,8
S507	IB	IA (phase A-D)	3,8	2,9	11
S508	IA	IA (phase A-D)	2,7	1,7	4,6
S509	IA	IA (phase A-D)	2	1,9	3,8
S510	ID	IA (phase A)	4,9	3	14,7
S511	IC	-	2,1	3,1	6,5
S512	IA	-	1,3	1,7	2,2
S513	IIA	-	3,8	3,7	14,1
S514	IA	-	1,3	0,7	0,9
S515	IA	-	1,5	0,6	0,9
S516	ID	-	5	2,8	14
S517a	IA	IA (phase F-G)	?	?	?
S517b	IA	IA (pahse F-G)		??	?
S518	IA	-	1,8		
S519	IA	-	1,2	1,5	1,8
S520	IA	IA (phase A-L)	2,7	2,3	6,2

Structure	Type	Date	Width x	Length in m	Area in m <sup>2</sup>
S521	IA	-	2	1,7	3,4
S522	IA	-	1,3	1,2	1,6
S523	IA	IA (phase J-L)	1,7	2,2	3,7
S524	IA	IA (phase J-L)	2	1,5	3
S525	IA	IA (phase J-L)	1,8	1,6	2,9
S526	IA	-	1,3	1,4	1,8
S527	IA	-	1,4		
S528	IC	IA (phase J-L)	2	2,1	4,2
S529	IC	IA (phase J-L)	1,9	2,2	4,2
S530	IB	-	2,3	2,3	5,3
S531	IB	IA (phase A-L)	2,4	2	4,8
S532	IA	-	1,7	1,3	2,2
S533	IA	-	3	2,7	8,1
S551	IA	-	2,2	1,4	3,1
S552	IA	-	2,2	2,6	5,7
S555	IA	-	1,4	0,9	1,3
S556	IB	-	5,2	3,2	16,6
S557	ID	-	6	3,4	20,4

Table 13.8 Survey of all graneries in the Mikkeldonk quarter.

Find number	Trench	Feature	Structure	Material	Number	Date
11416	925	24	S502	cer	1	LB/EIA?

Table 13.9 Finds from granaries in the cluster 1 in the Mikkeldonk quarter.

drawn. S505 had large and deep post pits (60 cm deep; fig. 13.16E, F). The fill of the pits was layered (organic bands) indicating removal of the original post rather than decay *in situ*. The two smaller and shallower post pits on the north side have been interpreted as a kind of step or platform in front of the granary. There are more examples of this type of structure (Schalkskamp). S502 can be dated to the Early Iron Age on the basis of a polished sherd in feature 925.24 (11416).

It is doubtful whether S516 is a structure at all. We have reconstructed it as a granary but it is rather irregular, and does not fit the normal pattern. The post pits were all similar, but different from the post pits of the other granaries. A larger pit with the same fill (925.14) contained a cow's tooth and a piece of flint (flake) (11414). The structure as a whole might be older than S505 and S504. Since these pits were the only

features in this area, and since they appear to form a rectangular configuration, we have interpreted them as a structure. This however is open to discussion.

### 13.3.2 Cluster 2: granaries S510 and S498 south of house MD131

Roughly 25 m southeast of Early Iron Age house MD131 lay two outbuildings, probably from the same period (fig. 13.17). They are presented here because especially S510 is interesting (fig. 13.17B). This type of shed, rather than granary, probably shows only roof-bearing posts, while the wall remains invisible. Actually we do not know whether there was a wall at all. It could have been an open shed for carts, tools etc. S510 is 4.92 m long and 3 m wide, which is much too large for a granary. The central pole is probably a constructive element as well. From the Early Iron

Find number	Trench	Feature	Structure	Material	Number	Date
11304	906	5	S510	cer	1	-
11312	906	5	S510	cer	1	IA
11305	906	8	S510	cer	1	IA

Table 13.10 Finds from graneries in cluster 2 in the Mikkeldonk quarter.



Figure 13.17 Cluster 2: granaries S510 and S498 south of house MD131. Drawing J. Porck (A), E. van Wieren (B, C).

Age settlements of Den Dungen, Lieshout and St. Oedenrode we know of a similar buildings (Hiddink 2005, 104; Van Hoof 2007, 255). Van Hoof (2007, 254) proposes to call this type of granary Oss IID. On the south side of S510 there is a rather large, very shallow feature, more like a trampled zone. The finds are not decisive, only small sherds have been found (table 13.10). Also the features outside the structure yielded no datable finds. On the basis of structural similarity with other finds in the southern

Netherlands, and the vicinity of MD131, we suggest it is an Early Iron Age structure.

### 13.3.3 Cluster 3: S487, S488, S489, S490, S491, S493, S494, S495, S517a, S517b and S552

North and west of house MD127 a large number of out-buildings (granaries) has been recognised (fig. 13.18). We do not know whether they are all contemporaneous with MD127, but they are at least close enough to have been part of the same yard. The orientation of



Figure 13.18 Cluster 3: granaries in trenches 896-901 in the Mikkeldonk quarter. Drawing S. van As.

all buildings is more or less the same, and matches the orientation of the house. If they are all contemporaneous with MD127, they can be dated to the Middle Iron Age phases F or G, that is c. 450-325 cal BC. It is also possible that the cluster to the southwest of MD127 belonged to a different yard, but then the farm with which they were associated has not been found. This is not very likely since we have excavated most of the surrounding area. It is possible that, further to the west, a house plan remains to be excavated.

North of house MD127 there is a cluster of three granaries, S493, S494 and S495 (figs. 13.18A, 13.19). S493 has been rebuilt once (fig. 13.19B, E). We have documented this in detail here because the sequence is clearly visible in the sections of the post pits. The first phase of this granary is represented by features 890.132, 890.142, 890.146 and 890.143. Features 890.142 and 890.143 showed up as one feature, but later two

phases were clearly recognised. They should have been indicated with separate feature numbers in the field. In all pits it is clear that the first phase was dug in less deep and has a different fill than the posts of the second phase. The fill of the first phase is homogenous brown-grey. The second phase in contrast has clear post pipes, is deeper, and the post pipes contain charcoal and iron concretions. This is best visible in feature 890.136, which apparently was part of the structure, possibly an extra support.

Judging by the fills, it seems clear that the posts of the first phase were removed and the pits filled in with the same kind of soil. This must have compacted somewhat before the second phase was dug in, because we can see a relatively sharp delimitation of the second phase. That would not have happened if the post pits of the first phase were still open or were filled in shortly before. We suggest therefore that at least



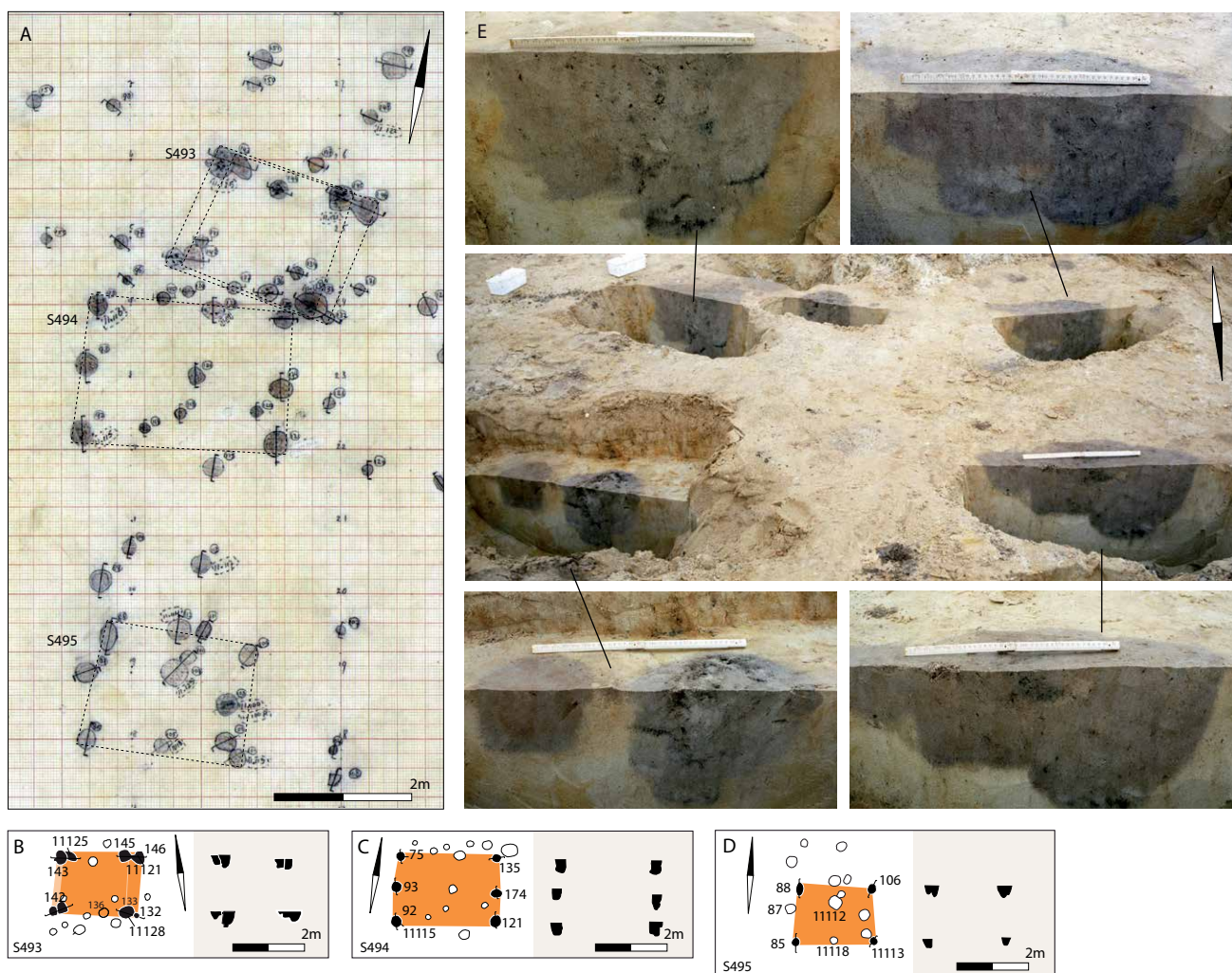


Figure 13.19 Cluster 3A: S493 (B), S494 (C) and S495 (D). A: part of the original field drawing with contour lines added in the Mikkeldonk quarter. E: S493 during excavation. The photo is taken from the north, looking south. Drawings and photo J. Schreurs (A), E. van Wieren (B, C, D), H. Fokkens (E).

a couple of months passed before the second phase was dug in. But because both granaries are of equal size and on the exact same spot, we suggest that it was replaced within a year. The posts of the second phase decayed in situ because the post pipes are clearly visible and show no signs of removal. This probably implies that the yard was abandoned after S493 went out of use.

The relation between S493 with S494 and S495 is not very clear. S494 and S493 cannot have been contemporaneous because they are too close to each other. Moreover, the orientation is different. S494 (fig. 13.19C) and S495 (fig. 13.19D) may have been each other's

successors; however this is difficult to establish. The fact that these granaries are located in the same small area without other structures in the immediate vicinity suggests that we are dealing with part of a farmyard that had the same function for a considerable time. If all phases follow each other, and one phase lasted c. 20 years, at least 80 years of use life are represented.

Just southeast of house MD127 lay three dispersed granaries with different orientations (S487, S488, S489: figs. 13.18B; 13.20) S487 may have been rebuilt once on the same spot. The post pits are relatively shallow. It looks like the whole granary has moved to the north when it was rebuilt (fig. 13.20A). Its northwest



Figure 13.20 Cluster 3B in the Mikkeldonk quarter: granaries S487, S488, S489. Drawing S. van As (A), E. van Wieren B, C, D).

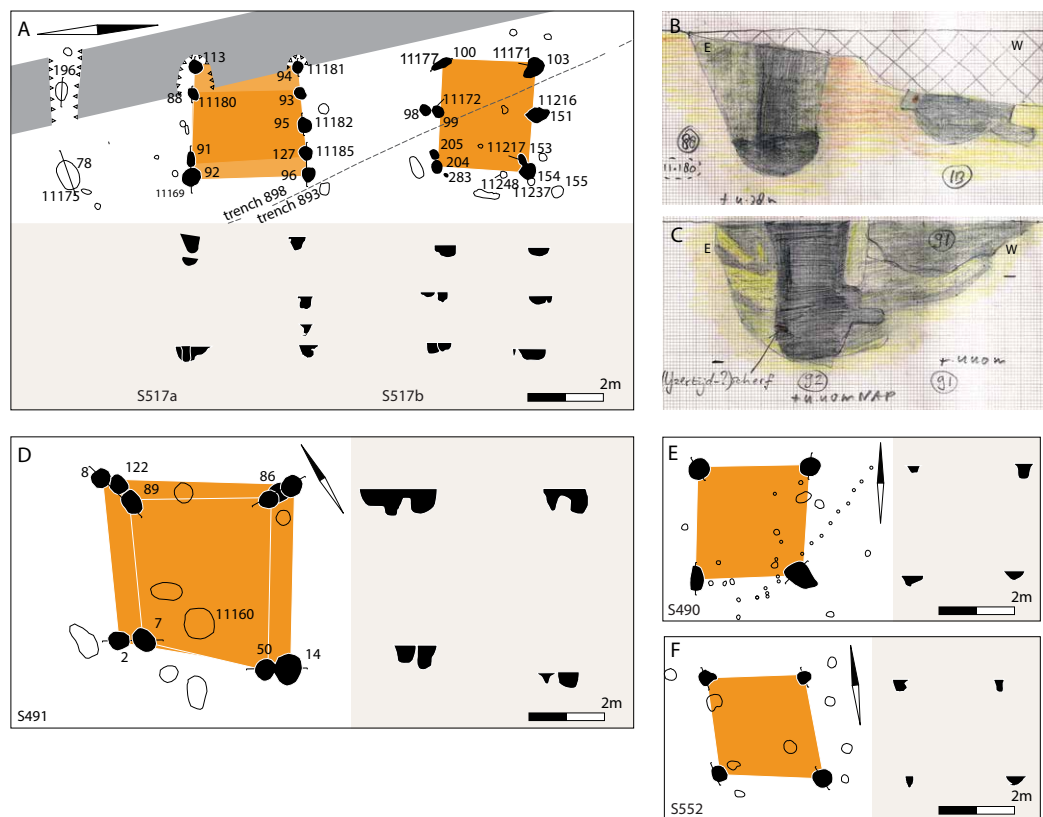


Figure 13.21 Cluster 3C in the Mikkeldonk quarter: A: granaries S517a and b. B: details of 898.88 and 898.113; C: details of 898.92 and 898.91; D: S491; E: S490; F: S552. Drawings H. Fokkens (A, D, E, F), F. Timmermans (B, C).

Find number	Trench	Feature	Structure	Material	Number	Date
11169	898	92	S517a	cer	1	IA
11171	893	103	S517b	cer	1	IA
11172	898	55	S517	cer	5	IA
11181	898	94	S517a	cer	1	(E)IA
11182	898	95	S517a	cer	2	MB and IA
11183	898	96	S517a	cer	1	Indet
11185	898	127	S517a	cer	1	BA/IA
11216	893	151	S517b	cer	4	IA
11217	893	153	S517b	cer	2	IA
11108	890	12	S487	cer	2	IA
11109a	890	175	S487	cer	9	MIA
11112	890	8	S487	cer	1	IA
11240	895	56	S489	cer	12	IA
11256	895	53	S489	cer	1	IA
11259	895	89	S489	cer	1	MB
11254	895	62	S488	cer	4	IA
11253	895	63	S488	cer	1	IA
11255	895	65	S488	cer	1	MBA/IA
11121	890	145	S493	cer	7	1MBA/6IA
11125	890	143	S493	cer	3	IA
11128	890	133	S493	cer	1	IA
11113	890	101	S495	cer	1	IA
11118	890	105	S495	cer	1	IA taq

Table 13.11 Finds from the graneries in cluster 3 in the Mikkeldonk quarter.

post (890.175) was dug into an older feature (890.66). This was interpreted as a natural pit caused by a tree that had fallen over. On the basis of a relatively large amount of pottery, this older feature was dated to the Middle Bronze Age. The post pit of the structure itself contained also much pottery (table 13.11), but this dates to the later part of the Middle Iron Age. It is possible therefore that it was contemporaneous with MD127, which is also dated to the second half of the Middle Iron Age (phase F-G).

S488 is a four-post granary with two extra supports. These are shallower and smaller than the pits for the corner posts. The pits for the corner posts have a layered fill (esp. 985.63), the others have a more or less homogeneous fill. Probably the posts were removed and the pits were filled in afterwards. There are no

indications for rebuilding. On the basis of the pottery sherds this granary can be dated to the Iron Age, but no specific period can be indicated.

S489 at first sight appears to be a one phase structure with very large posts. In section, however, it is clear for all four posts that they represent two phases of one granary. So S489 was rebuilt almost on the same spot, partly in the same pits. The situation here appears to be different from, for instance, S493 that was replaced after the pits of the first phase had been back-filled and left lying for a few months. The post pits contain Iron Age sherds, but no precise date can be given.

The southeast cluster consists of five structures with more or less the same orientation (S490, S491, S517, S552: figs. 13.18C; 13.21). The post pits were

much alike. S489 might also belong to the same group. In the field, S517 was indicated as one structure, but an interpretation as two structures which are exactly in line with each other seems to be more probable (fig. 13.21A). The southernmost row of pits (indicated in white) was rather shallow, and in that respect not comparable to the posts of the row directly north of it. This is why in the end we have decided that this southern row of posts does not belong to the structure. That leaves us with a probable configuration of two granaries, one with nine posts (S517a), one with six posts (S517b). S517a was partly retrieved from under a modern disturbance (fig. 13.21A). The outermost post pits are relatively deep (45 cm below the excavation level), the post pits next to it more shallow (30 cm). The extra post pit in the northern row is also rather deep (898.95) and seems to have been integrated in the structure. We suggest that S517a is a four-post granary that has been rebuilt. The outermost posts represent that last and largest phase. Indicative of rebuilding is the section of post pits 898.91 and 898.92, which clearly shows how 890.92 was dug into 895.91 (fig. 13.21B). As in 898.92 also a clear post pipe was visible (fig. 13.21C), we think that the second phase of structure was left standing after abandonment and the posts decayed in situ. The pits contained a relatively large number of finds, many of them dating to the Bronze Age. But since these sherds were small and rounded, and since we know that there was indeed a Bronze Age farmstead in the same space, that should not surprise us. Since there are also a number of Iron Age sherds present, one of them possibly early, a date in the Early Iron Age could be possible. A later date, more in line with the Middle Iron Age date of MD127, some 20 m to the east, is very well possible.

S517b was also rebuilt once. Even though the post pits are shallow it is clear that there are two phases present. Possibly S517a and S517b were contemporaneous buildings.

The south-easternmost granary, S491 (fig. 13.21D), was rebuilt at least twice on the exact same spot. It is a small granary which was probably replaced once and enlarged a bit later. All post pits were about 30 cm wide and 20 cm deep. The fill was compact and homogenous, dark in colour with iron concretions. No post pipes were visible. We think that the posts were removed and the pits filled in straight after. It is impossible to tell something about the total lifespan of the two granaries, but we suggest at least 40 – 60 years if use life depended only on wood decay.

S490 is rather large, c. 3 x 3 m (fig. 13.21E). The post pits are 20-40 cm deep, and have a layered fill, indicating removal of the posts. There are no dating elements. S552 is smaller and slightly differently orientated. The post pits are still c. 30 cm deep and have a homogenous fill. No post pipes are visible. No finds have been recovered.

#### 13.3.4 Cluster 4: S497, S513, S514, S520 and B13

In trenches 894, 935, 952 and 955 a cluster of five outbuildings of a different character was present (fig. 13.22A). Three of these are most certainly contemporaneous (S513, S497, S514), while the others may be from a different date. B13 may be older than the others, but that is uncertain.

S513 and S497 are two large granaries with heavy posts. S513 is c. 4 x 4 m, S497 c. 3 x 3.3 m (fig. 13.22F and G). Their orientation is exactly the same. S514 is a very small structure of only 1.5 x 1 m, which may have been an annexe of some kind (fig. 13.22D). S513 had large, asymmetrical post pits (40-50 cm wide, 30-40 cm deep). The fill was homogenous, no post pipes were visible. We therefore assume that the posts were removed and the pits back-filled when the structure was abandoned. The same applies to S497, though in that case we see some repairs, for instance of post 935.6. In the case of S497, we have a rare example of a granary that is well datable (table 13.12). All post pits contain a relatively large amount of ceramics, which enabled Van den Broeke to establish a date in phase B of the Early Iron Age. That means that the ceramics date to c. 725-625 cal BC (Van den Broeke 2012, 36). This does not necessarily date the granary in the same period, but since we have not much evidence for other traces of habitation from this period, we think that the pottery indeed dates the structure. There are a few pits northwest of S513 that also contained Iron Age pottery, but in those cases a more precise date is not possible. The large pit or well (feature 935.16) directly northwest of S513 dates to the Middle Bronze Age.

In our view this implies that at least S513, S514 and S497 date to the first half of the Early Iron Age. This is interesting because no other features from the same period have been found here. These granaries therefore were situated outside a farmyard, possibly on arable land. There are more examples, for instance at Schalkskamp and Almstein (cf. chapter 14 and 16). Some pits may have been dug in the vicinity, which would then imply that we might be dealing with a specialised activity area outside a farmyard.



Figure 13.22 Cluster 4 in the Mikkeldonk quarter: A: location of the granaries; B: S520; C: S497; D: S514; E: B13; F: S513. Drawing S. van As (A), E. van Wieren B – F).

Structure B13 is somewhat of an enigma (fig. 13.22E). Features of structure B13 were initially found in trench 894 (1986), but no structure was recognised in this trench. Only when the connecting trench 955 was opened did we realise that there was a structure. The problem was that a modern ditch transects this structure. Although we tried to carefully remove the modern ditch fill, the conservation below it was poor. Only one more post pit (or what was left of it) could be secured, the west end of the structure therefore remains unclear. Its initial field interpretation as a storage building is maintained.

B13 appears to have a single central post and a single row of outer (roof-supporting) post. Parallels for this type of structure are not known. Our interpretation is that this structure is a barn of some kind. Its orientation is almost west-east. The walls are single rows of thick posts. The ends of the walls seem to be curved inwards, as is the case in many houses in West-Frisia and in the River Area (Roessingh 2018; Arnoldussen 2008). Based on the curved nature of the short ends of the structure it may have had a hipped roof. The entrances will have been located on (one of) the short ends of the structure on the south-eastern side, with a possible north-western counterpart.



Find number	Trench	Feature	Structure	Material	Number	Date
11524	935	158	S513	cer	1	IA
11511	935	1	S497	cer	7	EIA-B
11450	935	2	S497	cer	11	IA
11512	935	3	S497	cer	7	IA
11451	935	4	S497	cer	6	IA
11513	935	5	S497	cer	1	IA
11452	935	6	S497	cer	22	EIA-B
11453	935	7	S497	cer	10	IA
11495	935	8	S497	cer	17	IA
11562	952	20	S520	cer	3	IA
11565	952	23	S520	cer	1	IA

Table 13.12 Finds from cluster 4: S497, S513, S514, S520 and B13 in the Mikkeldonk quarter.

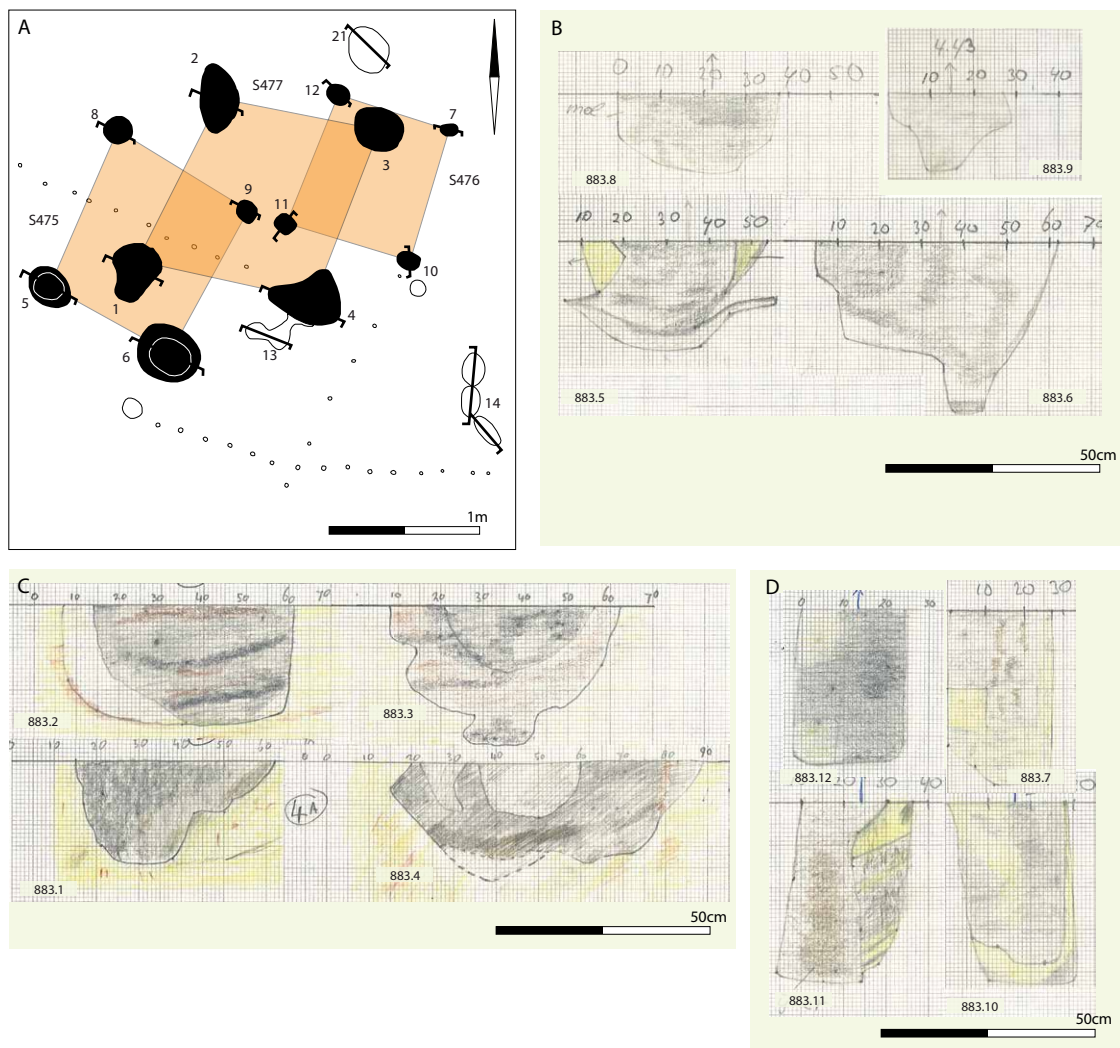


Figure 13.23 Cluster 5 in the Mikkeldonk quarter: A: overview; B: detail; B: S475; C: S477; D: S476;. Drawings S. van As (A), B. Steffens (B), R. van Willigen (C, E), E. Jungerius/A. Spieksma (D).

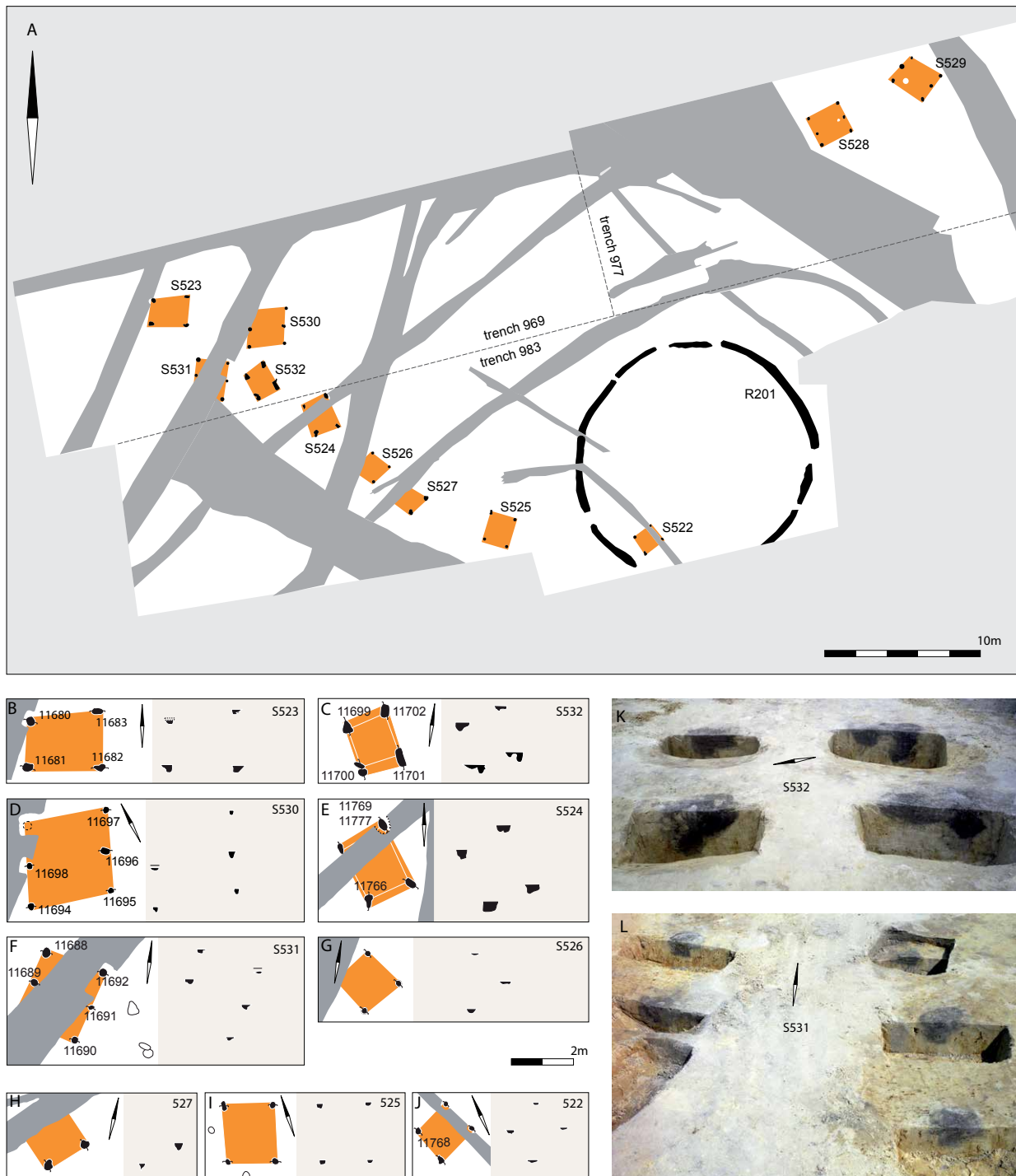


Figure 13.24 Cluster 6 in the Mikkeldonk quarter: A: location of the structures; B – J: S522, S523, S524, S525, S526, S527, S528, S529, S530, S531 and S532; K: S532; L: S531. Drawings and photos J. Porck (A), E. van Wieren (B-J), H. Fokkens (K, L).



Find number	Trench	Feature	Structure	Material	Number	Date
11768	983	12	S522	cer	1	IA
11766	983	41	S524	cer	16	-
11796	983	47	S524	cer	2	IA
11694B	969	19	S530	cer	1	-

Table 13.13 Finds from cluster 6: S522, S523, S524, S525, S526, S527, S528, S529, S530, S531 and S532 in the Mikkeldonk quarter

The dating of this structure is unsure. The thickness of the posts and the colour of the fill were comparable to those of Bronze Age houses 125 and 128, but finds are absent. Because of its location in this cluster, we have therefore rated this structure as dating to the Early Iron Age.

### 13.3.5 Cluster 5: S475, S476 and S477

Cluster 5 (fig. 13.23) is probably closely related to one of the houses MD 122, MD123 or MD124 (cf. fig. 13.2). The exact sequence is not clear. We know that the south-eastern post of granary S477 (803.4) intersects with the entrance posts of MD122 (883.13). In section 13.2.1 the dating of MD122 was set to phase K (150-75 cal BC). Since there is no indication that the entrance posts to MD122 were still present when S477 was constructed, we think that the remnants of MD122 had already long disappeared or been removed. The granaries could be contemporaneous with MD123, possibly built between 150 and 100 cal BC (cf. section 13.2.1). Only in 883.4 finds pottery was found, but that probably is due to intersection with older post pit 883.13.

### 13.3.6 Cluster 6: S522, S523, S524, S525, S526, S527, S528, S529, S530, S531 and S532

In trenches 983 and 969 a cluster of at least nine granaries was excavated, more or less orientated in a northwest-southeast row (fig. 13.24A). It is possible that this row extends outside the limits of the trenches. Some 30 m further to the northeast two six-post granaries were situated (S528 and S529). We consider these to belong to another yard, because the distance is too large, and the orientation different from the present cluster.

Possibly two granaries were rebuilt on the same spot, S532 and S524 (fig. 13.24I and G). The others show in general a homogenous fill with no signs of post extraction. They are all more or less of the same dimensions and of type 1A or 1B. The structures are difficult to date since dating evidence is lacking. There is some

indirect evidence, however. The position of S522 in relation to (burial) monument 983.42 is of importance here. The line of argument here is complex. It starts with the configuration of medieval ditches and cart ruts that seem to avoid the place of monument 983.42 and appear to bend around it (indicated in grey in fig. 13.24A). This suggests that this still was a substantial monument at the time these cart ruts and ditches originated. Though there are very few positive indications, we suggest that this monument dates to the Late Iron Age (see section 13.6.1). S522 became visible underneath monument 983.42. Since there were no indications that the post pits of S522 were shallower than S525, for instance, we assume that S522 had already decayed when 983.42 was built. Therefore we assume a date for S522 in the Middle or Late Iron Age. This probably dates the whole cluster to that period. If they are associated with the large feature (11745-11770) that lies just east of this cluster, their date might even be somewhere in the early part of the Middle Iron Age (phases E or F; table 13.13).

## 13.4 PITS AND WELLS

In Oss-Mikkeldonk a large number of features was found that was indicated as a pit or a well. In this catalogue, they are described in clusters (fig. 13.25). This does not necessarily mean that they are related. The clusters are constructed on the basis of spatial association of the features. Within clusters only features are described that are datable, or relevant because of special characteristics, or association with other features or structures.

### 13.4.1 Cluster 1: pits and wells in trench 928

In the north-western part of Oss-Mikkeldonk a cluster of large pits was found that probably all date to the early part of the Middle Bronze Age (MBA: 1775-1600 cal BC; cf. below; fig. 13.26).

These pits were originally all 200 cm in diameter or even larger, the largest being over 400 cm in diameter (928.1). Only a few pits (928.1, 928.7 and 928.18) were

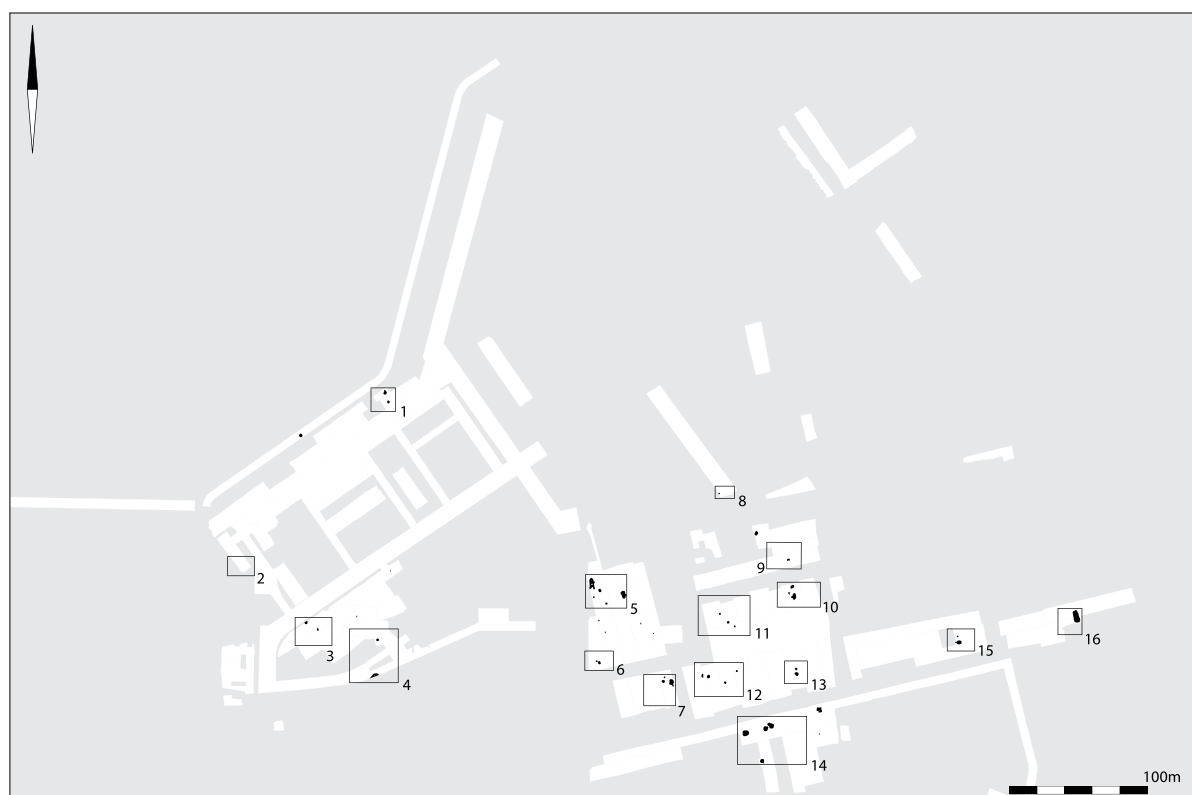


Figure 13.25 Clusters of wells and pits recognised in the Mikkeldonk quarter. Drawing S. van As.

deep enough to have reached the groundwater table at c. 120 cm below the prehistoric surface. The other pits (928.3, 928.4 and 928.15) were between 60 and 100 cm deep and had neatly rounded sections and rather steep slopes (cf. below). This seems to exclude an interpretation as pits for watering animals. Such pits – theoretically – would show a shallow profile and many hoof prints in the bottom part. Since they do not, they may represent an activity in the sphere of production rather than animal husbandry. But we have found no clues regarding the kind of activity that was carried out here.

#### *Features 928.1, 928.15 and 928.19*

Features 928.1, 928.15 and 928.19 are connected to each other, yet seem to present different phases of pit-digging (fig. 13.26A, E). Pit 928.15 apparently was dug first. It had a layered fill, indicating that it took some time to fill up (fig. 13.26F). 928.1 was dug last, it was originally over 100 cm deep. A dark humic fill in the lower part may indicate that originally this pit was used as a well. A lining was not found, but may have

been extracted. The pit seemed to have a secondary fill, possibly after a renewal phase. This fill consisted of homogenous material, less mixed and organic than the bottom part of the fill (fig. 13.26G).

*Abandonment:* Feature 928.1 may have been filled in at once, possibly after the lining had been removed. By that time 928.15 and 928.19 had already been filled up for some time. Otherwise the intersections of the separate pits would not have been as clearly recognisable as they are now.

*Finds and dating:* Finds are absent, but by association with the pits nearby we date these features to the Middle Bronze Age. Only one pit (928.1) contained two small Bronze Age potsherds (table 13.14), the others did not contain any finds except for a wooden pole. This rough pole (fig. 13.26C) was made from a 25 to 30 year old elm tree (det. C. Vermeeren). One end had been worked into a blunt point with the aid of an axe (bronze) (fig. 13.26C). According to the  $^{14}\text{C}$  date it was cut from a tree between 1775 and 1606 cal BC. Its function in relation to the pit in which it was found is not clear. It was found upright in the bottom of pit



928.18 (fig. 13.26B). We do not know the exact circumstances under which the pole was found, because during the period of excavation the groundwater was rather high and the pit filled with water before it could be documented properly. We even were too late to take a proper photograph.

#### *Feature 928.4*

Feature 928.4 measured 200 x 225 cm, and was c. 80 cm below the excavation level. The lower part of the fill was dark and contained organic material (fig. 13.26H) and in the past probably had just reached the groundwater table. A wooden lining may have been present, but in that case it had already been removed during the Bronze Age. Feature 928.3 was less deep but had a similar fill (fig. 13.26J).

*Abandonment:* feature 928.4 showed a layered fill alternating between organic and sandy layers (fig. 13.26H). This indicates that it was left open after abandonment and was filled in slowly by wind and weather.

*Finds and dating:* The four tiny pieces of pottery found in 928.3 (table 13.14) were too small to determine. On the basis of association we suggest a date in the early Middle Bronze Age.

#### *Feature 928.7*

Feature 928.7 was just over 100 cm below the excavation level (fig. 13.26I). Because of the high groundwater table in 1988, this pit proved difficult to excavate. In the fill we saw no indication of water related sediments, no humic deposits were present. The pit therefore cannot be interpreted as a well. There is no indication of other uses.

*Abandonment:* The fill showed a vague layered structure following the contours of the pit (fig. 13.26I). Therefore we suggest that this pit was left open after abandonment and filled in gradually.

*Finds and dating:* No finds were recovered. On the basis of association we suggest a date in the early Middle Bronze Age.

#### *Feature 928.18*

Feature 928.18 had a diameter of 200 cm, and was relatively shallow: 75 cm deep. It was intersected by a sub-recent ditch (fig. 13.26A). Since the groundwater table was very high at the time of excavation, the observations that could be done on the sections were minimal. We had to take out the last part of the section with the mechanical digger. Two sections were drawn (fig. 13.26B). The first was not very informative. The second section drawing showed a dark peaty fill, which could have constituted the inner fill of a well, consisting of rotted organic material. A worked wooden alder post was found standing upright in the lower part of the pit (11553a; fig. 13.26C). But the fill also contained a lot of branches, some worked, and alder roots (11553b). The pole and the branches may have been part of a construction in this pit or well, but that remains a tentative interpretation. In fact we do not know how this feature was abandoned.

*Finds and dating:* Two pieces of wood were radiocarbon dated: The worked pole (11553A) appeared to date in the Middle Bronze Age A.<sup>2</sup> From the bottom of the same pit we collected alder roots (11553B), pieces of about 5 cm in diameter. We suspected that they might be younger because they were roots, and we decided to have them dated as well. Indeed they appeared to be about 700 years younger, between 1004 and 901 cal BC.<sup>3</sup> That probably means that in the 10th century cal BC an alder tree grew on a pit that had been back-filled already seven centuries earlier. This is a phenomenon that we have encountered more often: alder roots are frequently found in deep pits or wells. We have dated them a few times and discovered that they are generally much younger than the finds suggest. Apparently old wells and pits formed a disturbance of the subsoil where the water table was easily reached, hence they were attractive for trees like alder. Alder trees in their turn may have served as indicators for good places to dig wells, as there are several examples of places where old wells,

Find number	Trench	Feature	Structure	Material	Number	Date
11420	928	1	pit	cer	3	MBA
11438	928	3	pit	cer	4	MBA
11553a	928	18	pit	worked alder		3420 ± 20 BP
11553b	928	18	pit	alder roots		2795 ± 25 BP

Table 13.14 Finds from cluster 1: pits and wells in trench 928 in the Mikkeldonk quarter.



obviously back-filled already more than a hundred years earlier, had been re-used.

#### 13.4.2 Cluster 2: feature 940.1

Feature 940.1 was during excavation indicated as a well (fig. 13.27). The reason it is discussed, is that it was located just south of Early Iron Age house MD132 and in a zone with many fences. Abandonment: Probably these have become visible because of the depression that was left after the feature had been abandoned. The feature was 70 cm below the excavation level, but showed no signs of a construction. On the bottom, which was fairly sharply delimited, a thin loamy layer was present. With hindsight, the sharp contours of the bottom do in fact contradict the interpretation as a well. The top part of the well was layered, suggesting a natural fill after abandonment.

*Findings and dating:* 17 sherds were found (940.1; find number 11526), six of them roughened. The complex is probably datable to the Early Iron Age, Phase A or B, which would be in line with the date of house MD132 some 45 m further north.

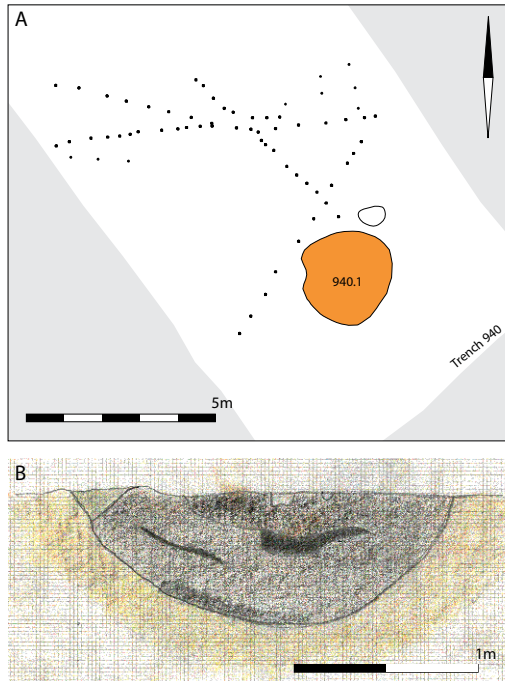


Figure 13.27 Cluster 2 of pits and wells in trench 940 in the Mikkeldonk quarter. Drawings S. van As (A); P. Ploegaert (B).

#### 13.4.3 Cluster 3: two pits in trench 930

Just southwest of Middle Bronze Age house MD128 and Early Iron Age house MD130 two large pits were found (fig. 13.28). They were singled out for discussion because the finds indicate a date at the end of the Late Bronze Age or the beginning of the Early Iron Age. This may date house MD130.

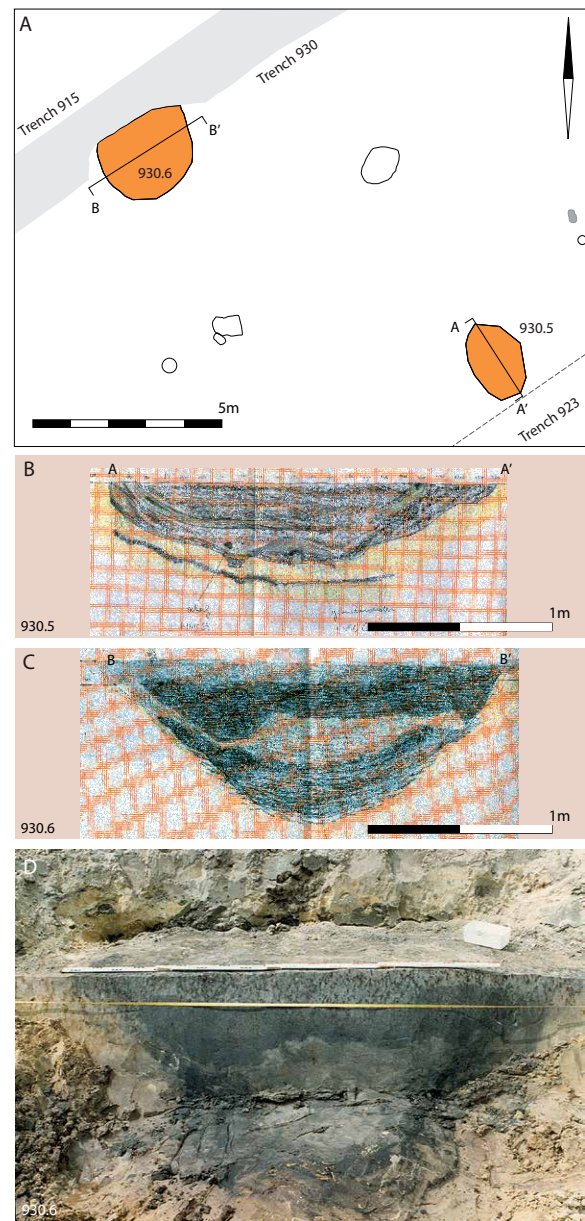


Figure 13.28 Cluster 3: pits and wells in trench 930 in the Mikkeldonk quarter. Drawings S. van As (A); E. Huybers (B, C); H. Fokkens (D).

Find number	Trench	Feature	Material	Number	Date
11455A	930	5	cer	10	MBA
11455B	930	5	cer	1	MBA
11454	930	6	cer	2	MBA

Table 13.15 Finds from cluster 3: two pits in trench 930 in the Mikkeldonk quarter.

### *Feature 930.5*

Feature 930.5 (fig. 13.28B) is situated approximately 10 metres southwest of the house. It is a deep pit, which shows washed-out humic deposits below the base of the feature. In section the feature is bowl shaped, there are no indications that it contained a lining. What the exact function of this pit was remains unclear. Sandy layers in the fill are indicative of Aeolian deposits and of a slow fill after abandonment.

*Finds and dating:* Ten sherds were collected (table 13.15) One large rim fragment was decorated with a fingertip impressed cordon. Pottery like this used to be called “Drakenstein” pottery (Glasbergen 1957; Fokkens 2005). However, this type of pot is still in use in the Late Bronze Age and Early Iron Age. Desittere called it Grob-Keramiek. Its tempering with grog may indicate that it indeed has to be dated in the Late Bronze or Early Iron Age. Some of the sherds are tempered with stone grit, but for the Early Iron Age (phase C) that is certainly not exceptional (Van den Broeke 2012, 136). Therefore a date in the Late Bronze or Early Iron Age is suggested.

### *Feature 930.6*

Feature 930.6 (fig. 13.28C, D) lies approximately 10 metres west of house MD128 and house MD130. It could only be excavated partly because there was a live electrical cable close by. Though a lining is absent, the feature was interpreted as a well.

*Abandonment:* The lamination of humic deposits alternating with a sandy layer indicates that the pit was left open after abandonment and filled up in a natural way. In the initial humic fill one seed of Water pepper (*Polygonum hydropiper*) was found, indicative of wet depressions.

*Finds and dating:* Two decorated sherds were collected with nail impressions below the rim and a raised cordon appliqué just below the rim. They were tempered with grog, therefore the complex was dated to the Late Bronze or Early Iron Age period.

### *13.4.4 Cluster 4: pits and wells in trench 905, 907 and 917*

#### *Feature 905.10*

Feature 905.10 was only partly excavated because it was situated in a road trench that could not be excavated further (fig. 13.29). Therefore, the southern part of the feature was left unexcavated. In the northeast quadrant of the feature a hollowed-out tree-trunk was found on the bottom of the pit, and a drawing was made of the horizontal of that situation. This was done in the afternoon of Friday 22 Oct 1987. The trunk was then removed from the soil with the aid of a mechanical excavator. There was no time left to draw the section of the dam. When Fokkens came to visit the site on 26 Oct, he saw the trunk and noted the close resemblance to the trunk of 901.1, excavated a few months earlier 180 m further east. This trunk too was 26 cm in diameter (inside), 82 cm long and worked in the exact same way. Therefore, a sample was taken for <sup>14</sup>C dating from a section of the trunk. This sample indeed (though still much to our surprise) yielded an almost identical date (1391-1131 cal BC).<sup>4</sup> In our view this combination of observations proves that both wells were cut from the same tree, worked by the same crew and placed at the same time but in wells 180 m apart. Both wells were not dug on the same yard, so the implication is that we have at least two contemporaneous yards here.

*Abandonment:* When the section of the road trench was subsequently cleaned and sketched (fig. 11.29) we noted that there was a dark humic fill with twigs somewhat higher than the original lining and with pottery (dark and shiny) that did not match the normal stone gritted Bronze Age ware found in the northern half of the feature. Well According to the field notes, Fokkens suspected it to be Late Bronze Age (or Early Iron Age), and decided to take a sample of the twigs (11300F). Indeed, they provided a date in the Early Iron Age (789-549 cal BC).<sup>5</sup> This implies that the well was left open after abandonment, and that the pond-like depression was back-filled a few hundred years later.

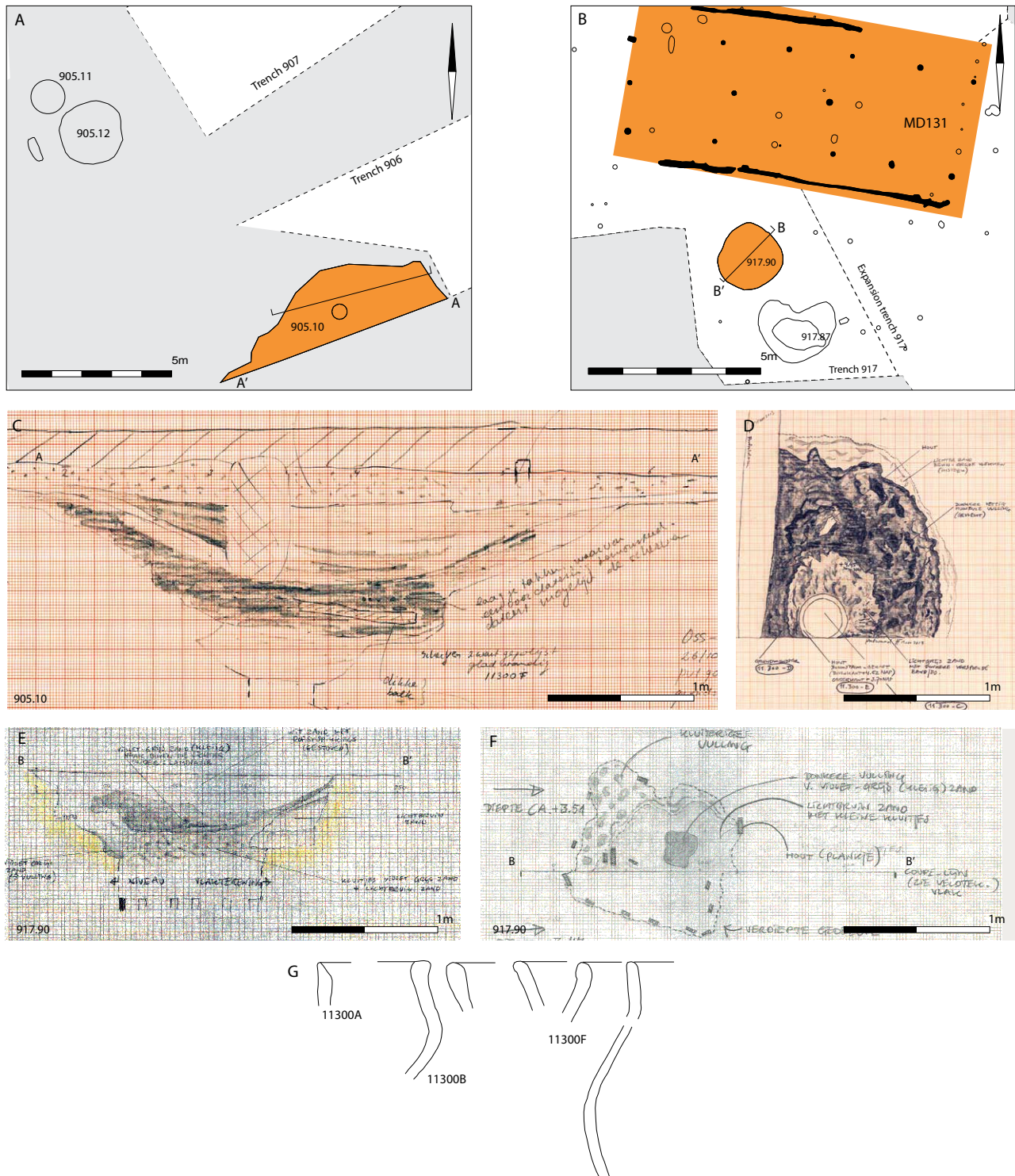


Figure 13.29 Cluster 4: pits and wells in trench 905, 907 and 917 in the Mikkeldonk quarter. A: well 905.10; B: pit 917.90; C: first section through 905.10; D: second section through 905.10; E: section through 917.90; F: plan of the structure in 917.90; G: profile drawing of pottery scale 1:3. Drawings S. van As (A, B), H. Fokkens (C, G); P. Deunhouwer (D, E, F).



Find number	Trench	Feature	Material	Number	Date
11300A	905	10	cer	10	MBA
11300E	905	10	wood		3020 ± 30 BP
11300B	905	10	cer	22	MBA/LBA
11300F	905	10	cer	10	EIA
11300F	905	10	twigs		2520 ± 20 BP
11301	905	11	cer	2	MBA
11302	907	12	cer	1	MBA
11319	917	90	cer	9	MBA
11319	917	90	wood		1740 ± 20 BP

Table 13.16 Finds from cluster 4: pits and wells in trenches 905, 907 and 917 in the Mikkeldonk quarter.



Figure 13.30 Cluster 5: pits and wells in trenches 898 and 902 in the Mikkeldonk quarter. Drawing S. van As.



Figure 13.31 A: field drawing of MD898.1; B: section trough the water pit half finished; C: Corrie Bakels (left), Liesbeth Theunissen (middle) and Annette Vasbinder (right) taking samples; D: P. Haane (left) and J. Deebe. Drawings and photos L. Theunissen (A); H. Fokkens (B, C, D).

***Findings and dating:*** A small complex of sherds was found (table 13.16). The Early Iron Age sherds were thin-walled, black, and polished, rims were generally just rounded (fig. 13.29). In find number 11300B the sherds were thicker, but still smoothed. Two small potsherds with stone grit indicated a possibly Middle – Late Bronze Age date.

#### ***Feature 917.90***

Feature 917.90 first appeared irregular in shape, but at 60-70 cm below the surface the remains of a 100 cm square construction was found. The construction consisted of planks 5 x 2 cm set approximately

20 cm apart. The corners were made of broad planks (10 x 2 cm) with a spade-like pointed end (field notes 1-12-1987; find. No. 11319B); no drawings were made; the wood has not been preserved (fig. 13.29B, C, E). The well was located near house MD131 which probably dates to the Early Iron Age, but wells of this type are generally dated much younger. The well appears to have been left open after abandonment and it may have been back-filled at a later moment (the dark top fill with a bowl-like shape fig. 13.29C). The top most part was filled with very fine white sand, interpreted as drift sand.

*Finds and dating:* Nine rounded Bronze Age sherds were recovered from the top dark layer, 30 cm below the surface according to the field notes (30-11-1987; table 13.16). However, remains of the wooden lining were radiocarbon dated to 242-378 cal AD.<sup>6</sup> This implies that the pit was dug in the late Roman period, in fact a period from which we have little or no traces of habitation. We assume that it was back-filled sometime after abandonment and that the rounded Bronze Age sherds in that fill had been lying around for some 1500 years. That is very well possible since this well was dug on the yard of an abandoned Bronze Age farm, MD128.

#### 13.4.5 Cluster 5: pits and wells in trench 898 and 902

Some of the largest features encountered in the Mikkeldonk excavations were pit 898.1 and pit 902.1 (fig. 13.30). Both proved to be wells, but only in 898.1 did we actually find a wooden lining. South of 898.1 four large pits were present, but none of these were real wells. Although the cluster of wells and pits appears to be related to each other, dating evidence suggests that this is only partly true. The pottery found in 902.1 points at a Middle Bronze Age date, while 898.1 has a <sup>14</sup>C-date in the Late Bronze Age. Therefore a few hundred years may have passed between the digging of these pits and wells. A detailed description is given below.

##### Feature 898.1

With dimensions of approximately 10 x 4.25 m feature 898.1 was the largest in the Mikkeldonk area, and even the largest in all of Oss. 898.1 is irregularly shaped and its fill was pitch black and showed no differentiation. It looked like solid mud black from perished organic matter, a reason why we suspected this to be a watering place for animals. It appeared to be surrounded by a fence of small stakes (fig. 13.31A). However, this observation was already met with some scepticism during the excavation because there were simply too many 'stake holes' around this feature. Given the interpretation as a watering hole, these holes may be better interpreted as hoof impressions.

From the start we suspected 898.1 to contain one or more wells but it was impossible to tell where constructions might be found. We planned a section in one of the widest parts, which showed a 2 m wide feature with steep sides. Though the section drawing is not very revealing, a Polaroid photograph shows that

the fill was a mix of sandy and humic deposits. The top part was more homogenous (fig. 13.31B). The east end of the pit proved to have been rather shallow, more like a trampled zone.

Only when we enlarged the area south of the section, did we find the well proper. It had a diameter of roughly 100 cm (figs. 13.31A, 13.32A). It still contained the remains of a wooden lining. The lining consisted – surprisingly enough – of 17 short *alnus* stakes (c. 50 cm long) that had been worked to pointed ends (fig. 13.32B, C). Most of them had been split in half, and still contained the original top end and the bark. The stakes were hammered into the soil forming a rough circle. Originally this prohibited the lower part of the pit from caving in because of rising groundwater. At the same time the lining also allowed groundwater to well up from the soil.

Considering the large size of feature 898.1, the large shallow trampled zone, the irregular outline and possible hoof imprints visible around it, we suggest that this a genuine example of a watering hole for animals. This interpretation is often proposed for deep pits without a lining, but they generally lack the trample zone that was present in this case. Maybe we can even turn the argument around: if this is what one should expect around a watering hole for cattle and sheep, there are many others that have been assigned that function, but do not share the same features. Perhaps they should be interpreted differently.

*Abandonment:* Considering the dark homogenous fill in the top, this pit appears to have been filled in at once, probably in the Late Bronze Age.

*Finds and dating:* One of the stakes (C13) was <sup>14</sup>C-dated to a date of 921-831 cal BC.<sup>7</sup> That places this feature at the end of the Late Bronze Age. This is a period of which we have very little other features in Oss. The potsherds that were found date to the MBA (table 13.17).

##### Feature 898.4

Feature 898.4 was on excavation documented as a well, but with hindsight there is little evidence for that interpretation. The pit was relatively shallow (66 cm below the excavation level) and with dimensions of 240 x 200 cm not very large. The bottom probably did not reach the groundwater (in the Bronze Age). There were no signs of a wooden lining either. The west side shows a layered deposit of organic and sandy layers (fig. 13.33). This is indicative of slow infilling under the influence of variable water





Figure 13.32 A: The split poles that formed the lining of the well in MD898.1 in situ; B: the poles taken out of the soil; C: all 17 poles. The largest of the poles (12) was 50 cm long. Photos H. Fokkens (A, B); J. Pauptit (C).

Find number	Trench	Feature	Material	Number	Date
11159	898	1	cer	1	MBA
11164	898	1	cer	2	MBA
11277	898	1	C13 wood	5	2740 +/- 20 BP
11277	898	1D	wood	1	MBA
11272	898	5	902.1	19	MBA
11273	898	7A	cer	17	EIA
11279	902	1	cer	626	MBA

Table 13.17 Finds from cluster 5: pits and wells in trenches 898 and 902 in the Mikkeldonk quarter.

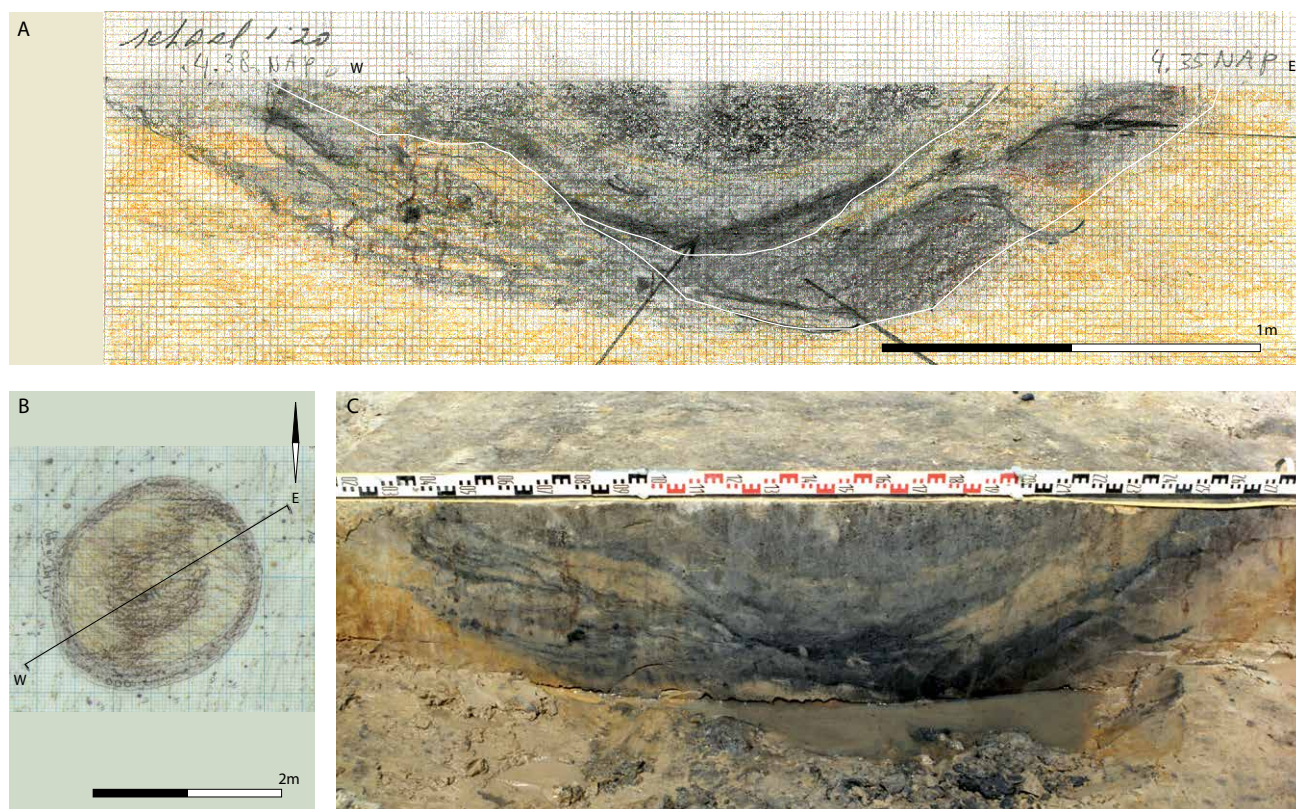


Figure 13.33 Pit MD898.4. A: section drawing; B: surface drawing; C: photo of the section. Drawings and photo P. Haane (A); L. Theunissen (B); H. Fokkens (C).

levels. At a certain time the pit seems to have been (partly) dug out again, and also gradually filled in after use.

**Finds and dating:** The pit contained a fair number of sherds, all tempered with stone grit (Middle Bronze Age; table 13.17), therefore the final fill in probably occurred in that period. A very small flint flake was collected from this layer.

#### *Feature 898.5*

Feature 898.5 measured 280 x 240 cm and was 122 cm deep. The sides were rather steep and smooth (fig. 13.34A). No indication of a wooden lining was found. The lowermost part of the pit contained organic matter and was layered, indicative of fill in wet conditions. Moreover, the sides of the pit seem to have caved in and caused sandy layers on the



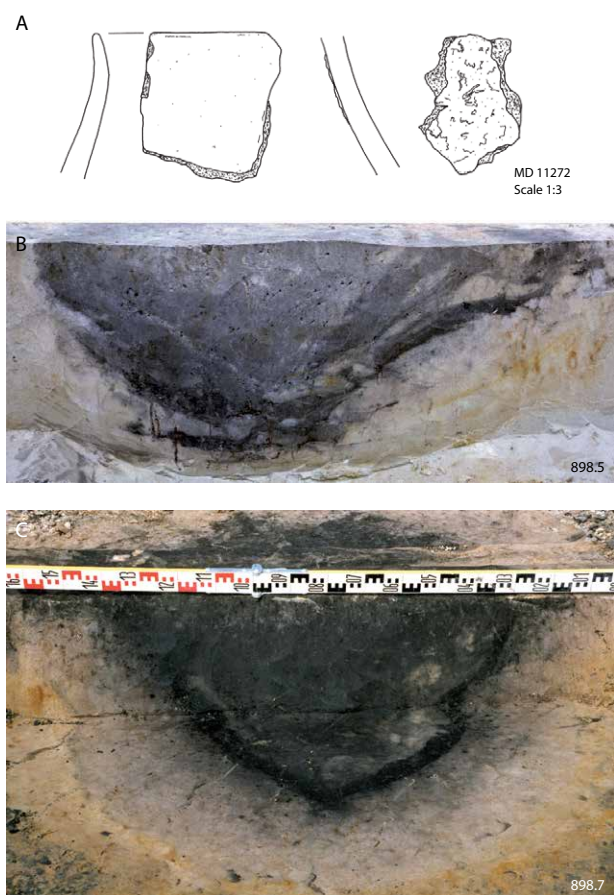


Figure 13.34 A: finds from 898.5; B: Pit 898.5 in section; C: 898.7 in section. Drawing and photos H. Fokkens (B, C); A. Louwen (A).

bottom. The lower part of the pit could represent only a few seasons of water fluctuation, freezing and thawing. The central fill is less layered, and the pitch black colour shows that still a lot of organic material is present.

*Finds and dating:* a few sherds were smitten, two had stone grit and one grog as temper (fig. 13.34B). This combination indicates a dating in the Early Iron Age (phase A/B).

#### Feature 898.7

Feature 898.7 measured 160 x 200 cm and was 62 cm deep. On the surface three concentric rings were visible, corresponding to different fills (fig. 13.34C). The middle fill was approximately 10 cm thick and contained very dark organic material. The round shape in the surface and the bowl-shape in the section make it a perfectly symmetrical feature. The peaty fill

in the base indicates a fairly long phase during which the pit was open.

*Finds and dating:* The pit yielded 17 pieces of ceramics which were all coarsely tempered with sand and gravel. This dates this feature in the Middle Bronze Age. Fragments of animal teeth were recovered as well.

#### Feature 902.1

Feature 902.1 was very large (3.5 x 6.0 m), irregularly shaped and contained three somewhat circular features within the fill (fig. 13.35A). Three sections were drawn because we wanted to section all circular features (fig. 13.35B, C and D). Initially a northern and a southern section were removed, leaving most of the feature intact. Subsequently the eastern and the western sections were removed leaving a profile dam in the centre. The circular features proved to be relatively shallow and did not correspond to structures below the surface. It was possible to see different phases of digging, but a clear sequence was not visible. Nevertheless, it was clear that this was a feature that had been in use for quite a while and that parts of it had filled up in a natural way, e.g. the southern part (fig. 13.35D, E).

*Finds and dating* (table 13.17): Potsherds were found in all layers and throughout the feature. Although they were collected per layer as separate lots, no difference in dating is detectable: they all date to the Bronze Age (fig. 13.35F). This assemblage is interesting though. Given the different forms present and the relatively thin walls, a date at the end of the Middle Bronze Age or the beginning of the Late Bronze Age would be possible. One rim fragment showed nail imprints, all fragments were tempered with stone grit. Two samples were radiocarbon dated. One sample was taken from the layered fill of the southern half of the well (11279d; fig. 13.35D), the other sample was taken from the bottom of the central feature (11279f; fig. 13.35C).<sup>8</sup> They suggest a date in the Middle Bronze Age or the beginning of the Late Bronze Age, between 1376 and 1126 cal BC. The entire feature apparently has been used and filled up in that period.

#### 13.4.6 Cluster 6: two wells in trench 901

##### Feature 901.1

Feature 901.1 was one of the first examples of a well with a completely hollowed out tree as lining (fig. 13.36). Also, the top part of the trunk was completely intact.





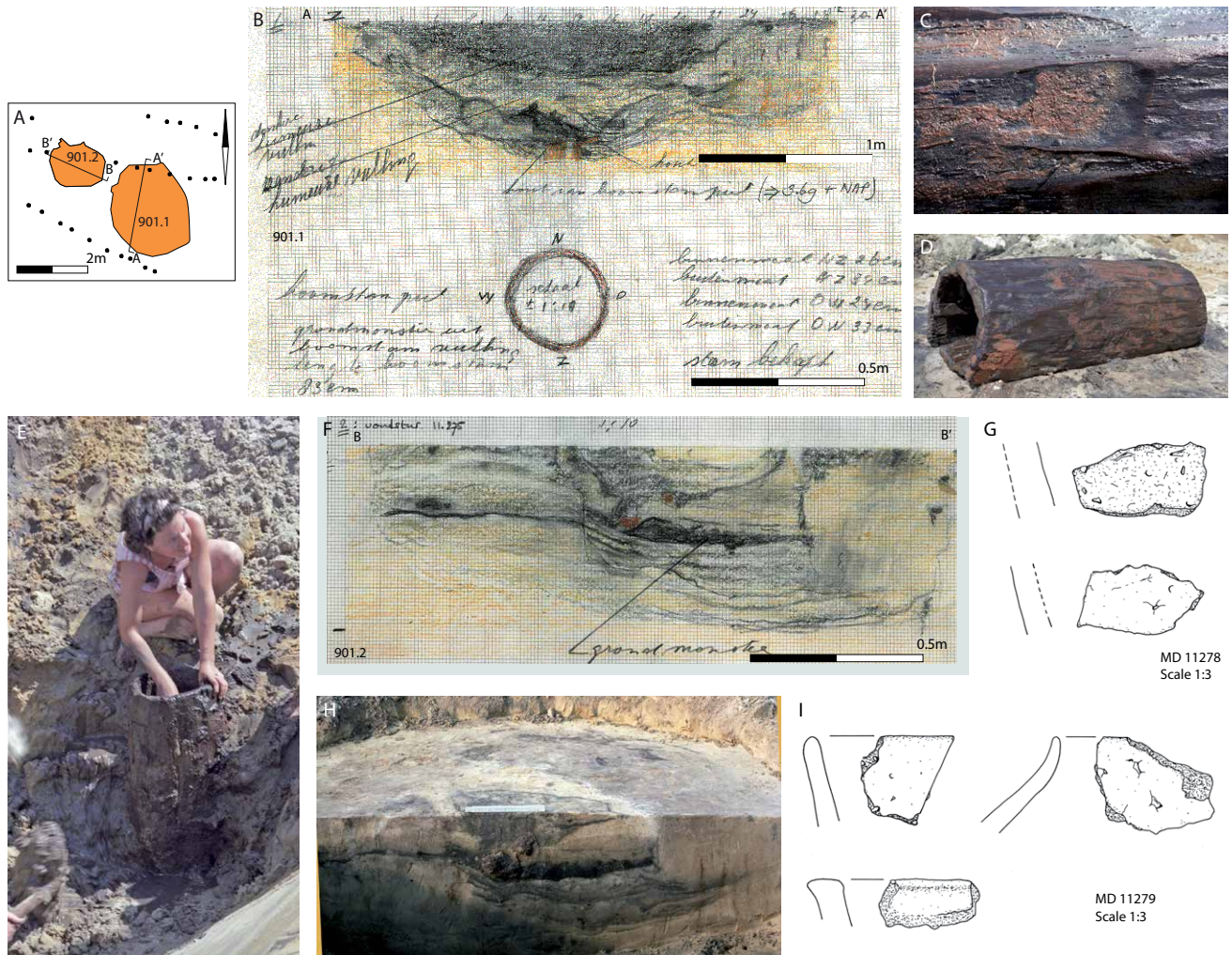


Figure 13.36 Cluster 6: pits and wells in trench 901. A: field drawing; B: section drawing of 901.1; C: close-up of the axe marks of a bronze axe; D: hollowed-out tree trunk as a lining of 901.1; E: Annette Vasbinder excavating the lining of 901.1; F: section of the 901.2; H: photo of 901.2 in section, G: finds from 901.1 (11278); I: finds from 901.2 (11279). Drawings and photos J. Porck (A), P. Haane (B, F), H. Fokkens (C, D, E, H), A. Louwen (G, I).

Find number	Trench	Feature	Material	Number	Date
11278	901	1	cer	23	MBA
11278	901	1	bone	1	MBA
11278B	901	1	wood	-	3025 ± 35 BP
11275	901	2	cer	4	MBA

Table 13.18 Finds from cluster 6: pits and wells in trench 901 in the Mikkeldonk quarter.



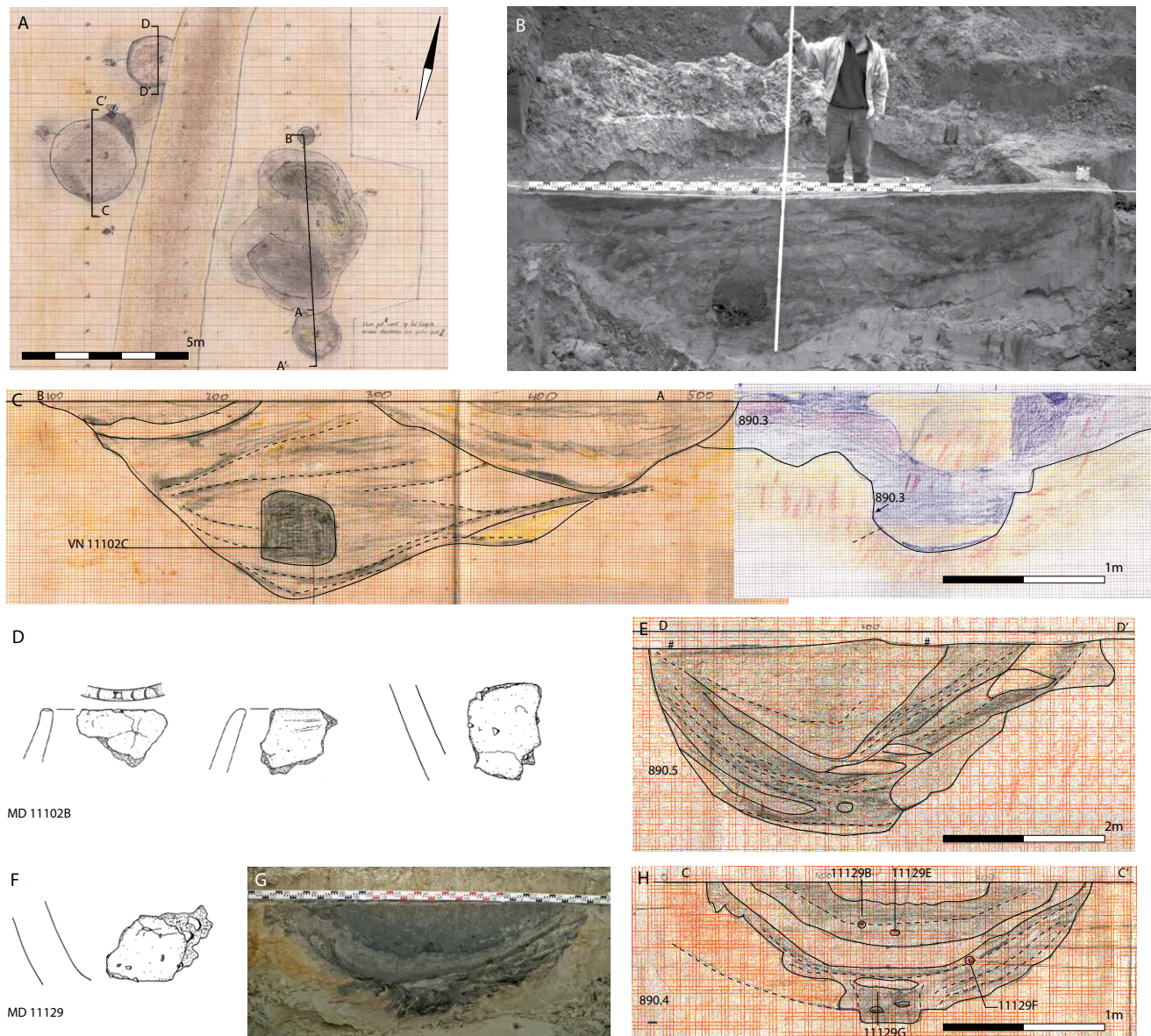


Figure 13.37 Cluster 7: pits and wells in trench 890. A: plan; B: section of 890.3 in the field. Hans Oude Rengerink holds the measuring rod, C: section of 890.2 and 890.2 with accentuating lines added; D: finds from 890.3 (11102B) scale 1:3; E, 890.4 in section with accentuating lines added; F: finds from 890.4 (11129) scale 1:3; G: 890.4 during excavation; H: 890.4 in section with accentuating lines added. Drawings and photos J. Schreurs (A), W. van Noppen (C left, E, H), T. Alberts (C right), H. Fokkens (B, G), A. Louwen (D, F).

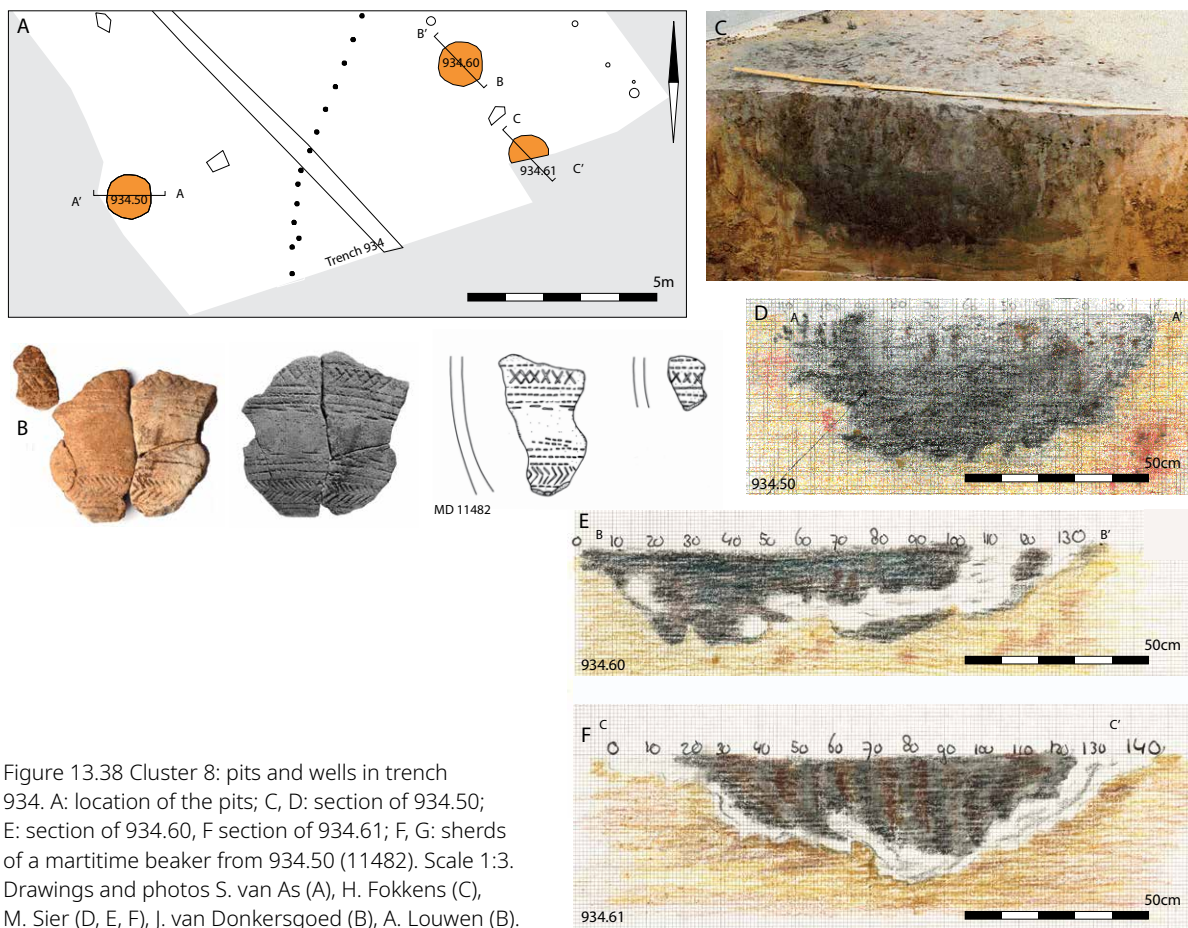
**Finds and dating:** Sherds were recovered from all layers, all dating to the Bronze Age (table 13.18).

**Abandonment:** Because all finds date to the Bronze Age, we assume that the process of filling, including the

last stage which may have been done by people rather than nature, was finished in the Bronze Age, probably between 1396 and 1131 cal BC,<sup>10</sup> at the end of the Middle Bronze Age B. See also the description of feature 905.10.

Find number	Trench	Feature	Material	Number	Date
11102	890	3	cer	33	MBA
11102A	890	3	cer	19	MBA
11102B	890	3	cer	15	MBA
11102B	890	3	fragm. grinding stone	1	MBA
11102	890	3	wood		3025 ± 35 BP
11129	890	4	cer	5	MBA
11129A	890	4	cer	23	MBA
11129B	890	4	cer	1	MBA
11129C	890	4	cer	9	MBA
11129D	890	4	cer	9	MBA
11129E	890	4	cer	1	MBA
11129F	890	4	cer	2	MBA
11129G	890	4	cer	2	MBA
11130	890	5	cer	21	MBA

Table 13.19 Finds from cluster 7: pits and wells in trench 890 in the Mikkeldonk quarter.





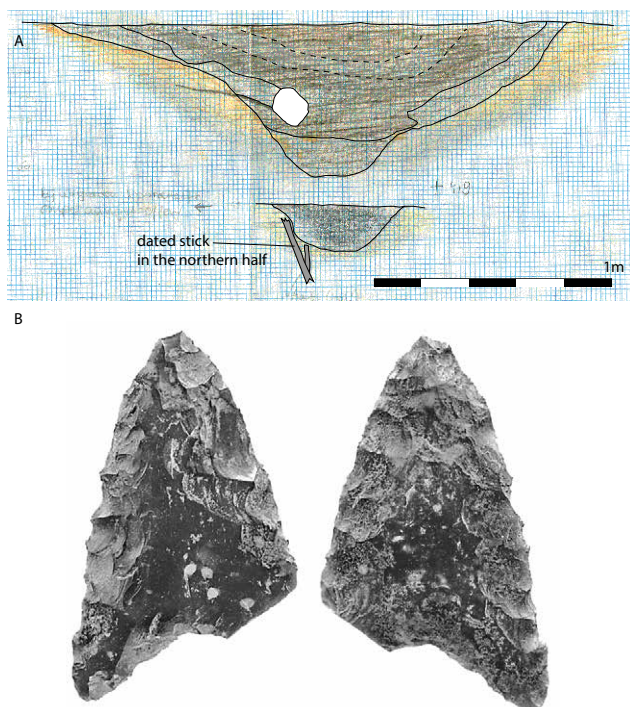


Figure 13.39 Cluster 9: well 962.20 in trench 962. A: section drawing; C: fragment of a Bronze Age arrow head (11657; scale 1:1). Drawing and photo R. van Genabeek (A); J. Pauptit (B).

#### *Feature 901.2*

Feature 901.2 is much more difficult to interpret. It shows a layered fill in the lower parts, but the upper part appears to have been filled in with sods or even 'clean' sand (fig. 13.36). It also contained Bronze Age sherds, so the impression is that both features were somehow related.

#### *13.4.7 Cluster 7: pits and wells in trench 890*

A cluster of three large features was found in trench 890 (fig. 13.37). The two adjoining features 890.2 and 890.3 are interpreted as possible wells. In 890.2 neither a lining nor finds were present in the feature. The pit is shaped at its base in a manner that indicates that a lining could have been present.

#### *Feature 890.3*

Feature 890.3 was a well of which the original lining had been removed. The dark organic and clay-like fill of the original tree-trunk was left in the pit, a little above the base of the feature (fig. 13.37B,C).

*Abandonment:* There are no indications that the well had been left open. Sometime after the filling up, an other large pit was dug in (fig. 13.37C right side). All pits appear to have been filled in after use.

*Finds and dating:* A total of 67 sherds dating to the Middle Bronze Age was found in well 890.3, and also a fragment of a grinding stone (table 13.19). Wood of the youngest phase was carbon-dated to 1425-1054 cal BC (Middle Bronze Age B – Late Bronze Age).<sup>11</sup>

#### *Features 890.4 and 890.5*

Features 890.4 and 890.5 could have been wells, but they are less substantial in size than 890.3. The fill is also different as it is layered and showing a (partly) natural fill. Organic material at its base reveals that the feature will have been open for a while, during which organic material sedimented at its base. Fragments of branches indicate that a lining could have been present.

*Finds and dating:* relatively large numbers of Bronze Age sherds were found in the upper part of 890.4 and 890.5 (table 13.19).

#### *13.4.8 Cluster 8: A cluster of pits in trench 934*

Feature 934.50 lies north of the area where most activity is found in Mikkeldonk (fig. 13.38A). In the area we encountered a number of pits, but only relatively shallow ones (fig. 13.38C, D, E). Their structure and fill is comparable, but only 934.50 yielded finds. We suggest that all three pits had a comparable function and all date to the same period. There is no indication of the function of these pits, and there are no other settlements features nearby as far as we know.

*Finds and dating:* In pit 934.50 three bell beaker sherds were found on the bottom of the pit. The sherds fit together, and appear to be parts of the same maritime bell beaker (fig. 13.38B). A date between 2500 and 2300 cal BC for this type of vessel is presently accepted (cf. Beckerman 2013, 40).

#### *13.4.9 Cluster 9: Feature 962.20*

Feature 962.20 was irregularly shaped on the surface. In the profile it showed a roughly V-shaped form (fig. 13.39). When we discovered a flint arrowhead, a Bronze Age dating was suspected. A sample was taken from a wooden stake stuck in the bottom. Throughout the entire fill, layers of more and less dense organic material have been observed. There is no positive indication that this feature actually was a well, though it was certainly deep enough.

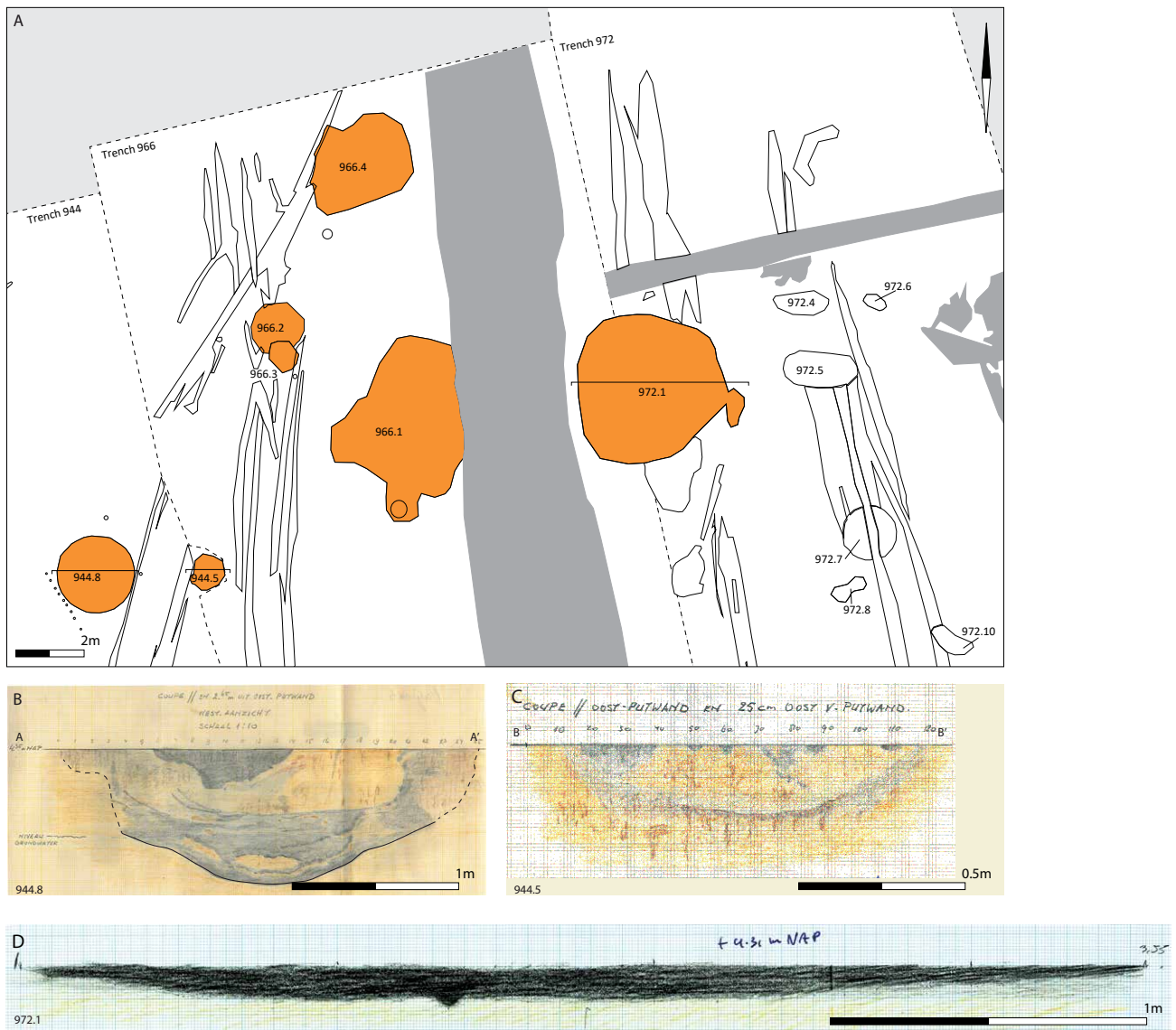


Figure 13.40 Cluster 10: pits and well in trenches 966 and 972; A: plan, B: 944.8; C: 944.5. S. van As (A), G. van Alphen (B, C).

**Abandonment:** Lumps of material suggest infilling of the feature not long after abandonment, though there was some lamination in the bottom section indicating a more gradual fill.

**Findings and dating:** A Bronze Age flint arrowhead (fig. 13.39) suggested a date in the early part of the Middle Bronze Age. However, the radiocarbon date from the wood fragment proved to date the feature in the Late Roman Period or the start of the Early Middle Ages (the Merovingian Period) between 396 and 535 cal AD.<sup>12</sup>

#### 13.4.10 Cluster 10: pits and wells in trenches 944-966-972

In trenches 966, 944 and 972 a number of large features was encountered, including a set of cart-tracks that had sunk into the subsoil in this area (fig. 13.40A). Since the tracks transect some features, but are cut themselves by others, they can be dated to the Middle Iron Age. Apparently the soil was soggy in this particular region, possibly due to the filled-in well 966.1 dating to the Late Bronze Age and re-excavated in the

Early Iron Age. We describe here 966.1 in some detail, and a few other pits only in passing.

#### *Feature 972.1*

Feature 972.1 has the same size as feature 966.1 some 3 m further west. It therefore is suspected to be of comparable age, either Late Bronze Age or Early Iron Age. It was very shallow (20 cm deep) and had a very flat bottom (fig. 13.40D). Its function remains unclear. On the field drawing it appears to transect the cart-tracks, which means that these are older than feature 972.1.

*Finds and dating:* Feature 972.1 yielded 15 sherds (11709) dating to the Iron Age, eight of these were roughened (table 13.20).

Features 944.5 and 944.8 seem to be associated with this cluster, but certainly were no wells.

#### *Feature 966.1*

Feature 966.1 is a large irregularly shaped feature of which from the beginning it was suspected that it contained more than one pit. Two sections were removed leaving a profile dam in the centre of the feature (fig. 13.41A). It turned out that it was a well with two phases of use. The best visible phase we called 1A, but phase 1B is the oldest phase (fig. 13.41E). It contained a hollowed-out tree-trunk which was left in situ (fig. 13.41E, C, F, G). It is unclear what type of wood was used for this lining. A sample of the lining (11662F) was dated between c. 1260 and 1116 cal BC<sup>13</sup>, that is the first part of the Late Bronze Age. A slightly layered fill seems to indicate that the first phase of the well was left open after abandonment and filled in gradually. Apparently it had been filled in completely when it was re-excavated later for phase 1A. This follows from the fact that the pit dug for well 1A is

clearly visible in the fill of 1B. That is only possible if well 1B already had been filled in.

As expected, the second phase 1A was dug in a considerable time later. The bottom of this well no longer had a lining, but the remains thereof, consisting of several pieces of wood, roots and branches, were in the lower part of the fill. On top of that a very peaty layer had formed, suggesting that the well, after having been dismantled, had been left open for a considerable length of time. The layered fill also demonstrated this. A <sup>14</sup>C date of wood on the bottom of well 1B (11662G) gave a date in the Early Iron Age, most probably between 778 and 543 cal BC.<sup>14</sup> That is a few hundred years after the first well was dug.

*Finds and dating:* The few sherds found in the wells are in line with the <sup>14</sup>C dates (table 13.20). Two Bronze Age sherds were recovered from phase 1B (MBA) and 17 Iron Age sherds from phase 1A (EIA).

#### *Feature 966.2*

Feature 966.2 has a bowl shape in the profile. It has a layered fill, showing that it probably lay open for some time. This feature is important because it transects the cart-tracks that overly the older wells and therefore it helps to date them (fig. 13.41A, D). Feature 966.3 was only shallow and is younger than 966.2 (fig. 13.40H).

*Finds and dating:* Four bone fragments were collected from this feature (table 13.20).

#### *Feature 966.4*

Feature 966.4 was irregularly shaped. It was about 250 cm in diameter and it had a layered fill. The lower part consisted of sandy layers mixed with organic patches and layers. The top fill was dark and homogeneous. In the bottom a split bole was standing up, slightly tilted (fig. 13.41H, I). The discoloration around

Find number	Trench	Feature	Material	Number	Date
11555A	944	8	cer	1	IA
11555B	944	8	bone	1	-
11662	966	1	cer	2	BA
11662F	966	1		wood	2965±20 BP
11662H	966	1	cer	17	EIA
11662G	966	1		wood	2505±20 BP
11671A	966	2	bone	4	-
11709	972	1	cer	15	IA

Table 13.20 Finds from cluster 10: pits and wells in trenches 944, 966 and 972 in the Mikkeldonk quarter.



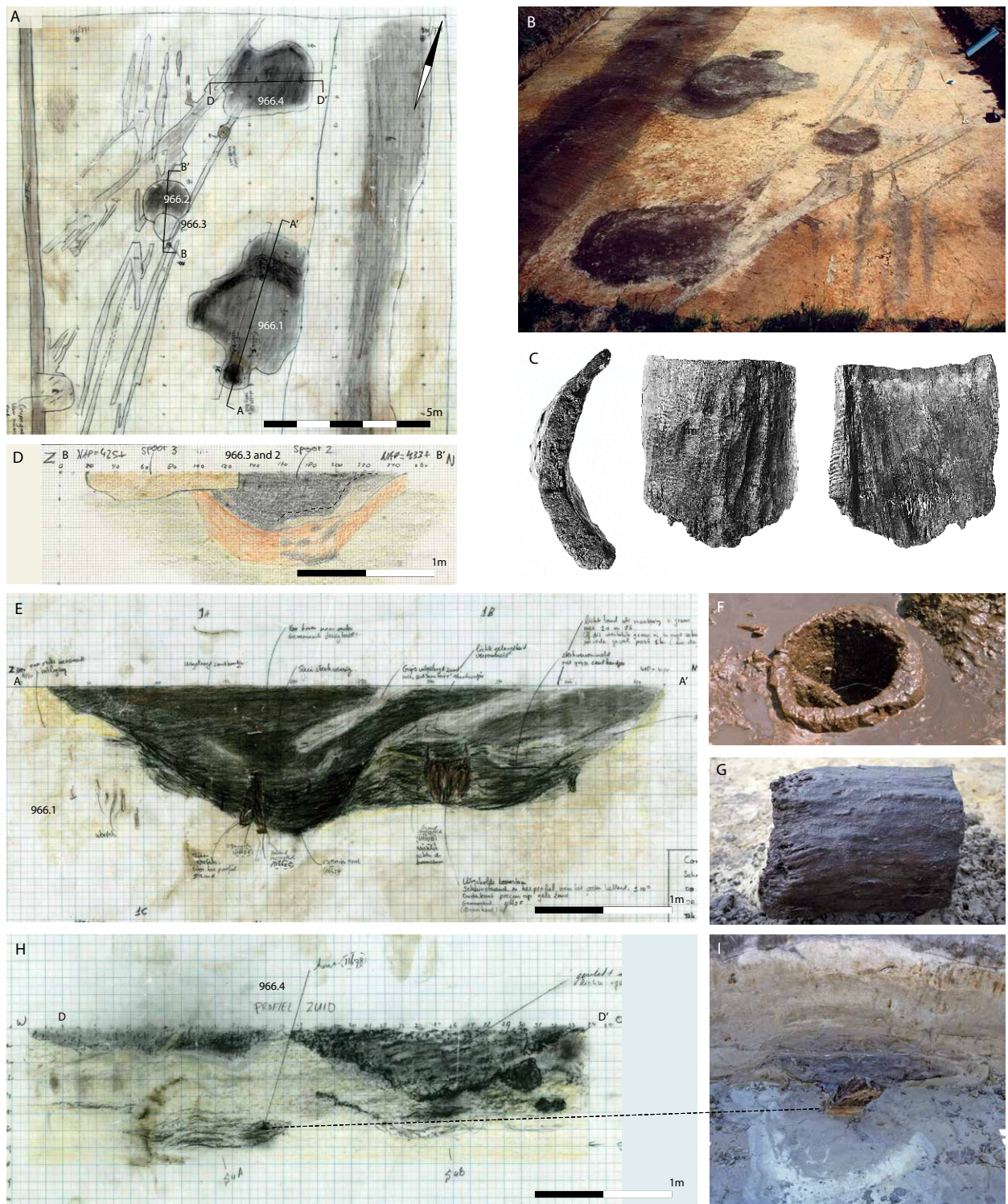


Figure 13.41 Cluster 10: pits and well in trenches 966 and 972; B: trench 966 during excavation; C, F, G: tree trunk lining from 966.1; D: section drawing of 966.3 and 966.2; E: section drawing of 966.1; H: section drawing of 966.4; I: large pole sticking in the bottom of 966.4. E. Peters (A), H. Fokkens (B, F, G, I), H. Oude Rengerink (D, E, H), J. Pauptit (C).

it suggests that this was the remains of the lining of a well that had been removed. For some reason this pole was then stuck into the ground. No finds were recovered and the pole was not dated. By association we date this feature to the Late Bronze Age or the Late Iron Age.

#### *13.4.11 Cluster 11: pits and wells in trenches 946, 958 and 963*

Cluster 15 is a cluster of three pits with a dark layered fill. Their function is unclear, they certainly were not used as wells. We have selected these pits for description because they all contained Bronze Age find-material. Pit 946.1 was also carbon-14 dated.

##### *Feature 946.1*

Feature 946.1 appeared to have a lining of sods. Whether this was true, is difficult to say. The section drawing (fig. 13.42B, C) is not very clear in this respect. The fill was layered and was a mix of dark organic material and wind-blown layers. This suggests a natural fill. When we took out the eastern half of the pit, a wooden beam was discovered. It was 130 cm in length and had its pointed end protruding from the profile wall. After the section was drawn, the other end was found embedded in the natural soil. Its function remained unclear. It is improbable that this post was part of a lining of a well. No traces of cutting were found besides the worked pointed end. Several other deep pits suggested to have been a well have been found with a large pole sticking out. Elsewhere it is suggested that these poles were either part of a construction (rail) to climb in and out the pit, or were used to remove the original lining (a hollowed-out tree-trunk).

*Finds and dating:* 4 sherds were found which were dated to the Bronze Age (table 13.21). The wooden

beam was radiocarbon dated indicating a date in the Middle Bronze Age B between 1496 and 1397 cal BC.<sup>15</sup> The sherds could not be dated with any kind of accuracy other than the 'Middle Bronze Age'.

##### *Feature 958.21*

Feature 958.21 was oval in shape and had a dark brown fill in the horizontal (fig. 13.42C). The section shows that the lowermost fill probably is the result of soil wash in an open exposed state. The original feature is a shallow pit with a relatively deeper central part. The fill contains organic material and is layered. The upper central section has a fairly homogenous fill, indicative of an anthropogenic fill. This fill contained finds and a small amount of charcoal.

*Finds and dating:* Six non-roughened coarsely tempered Bronze Age sherds.

##### *Feature 963.3*

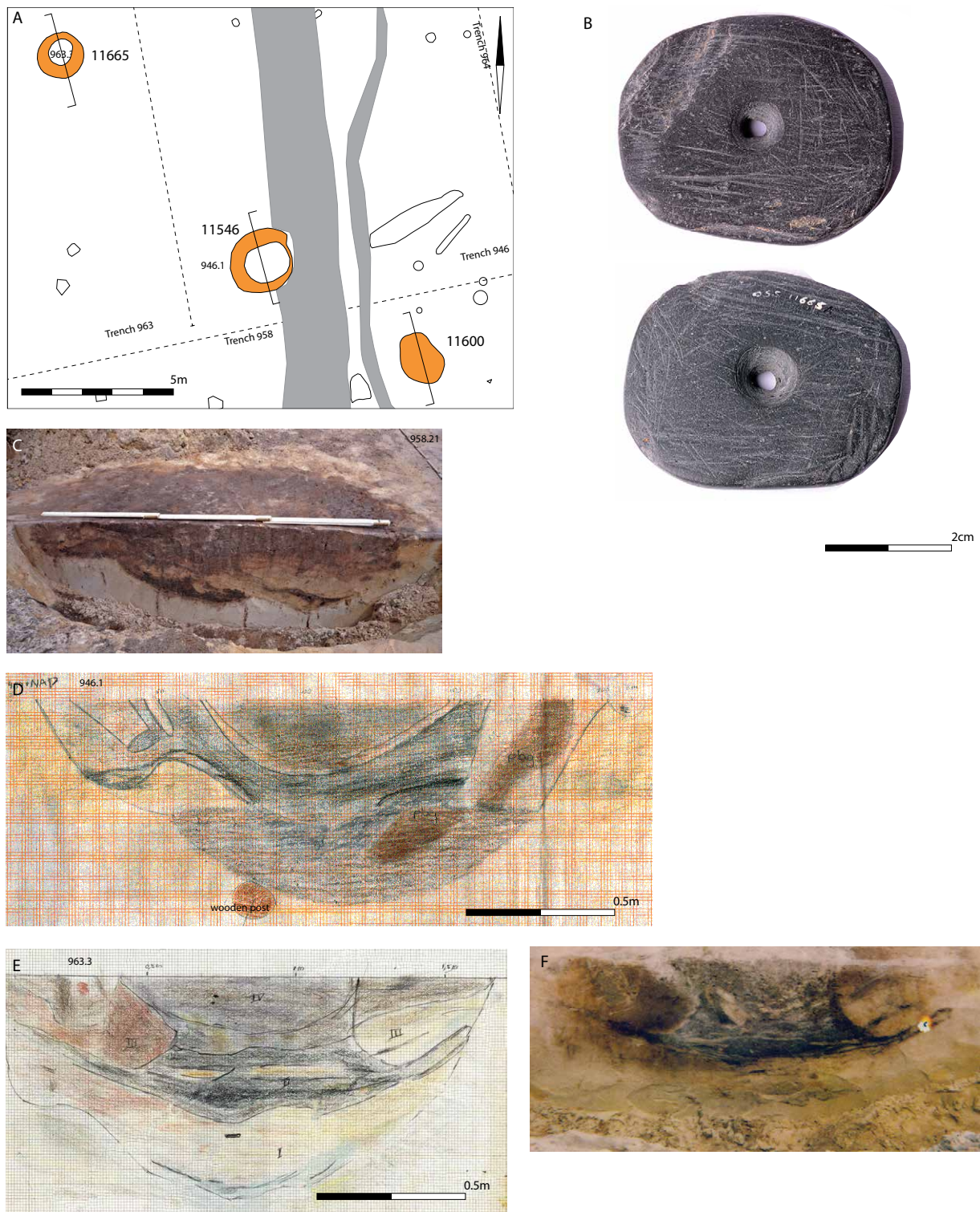
Feature 963.3 had a circular shape, with a brownish outer fill and black and white central fill (fig. 13.42E). The section seems to indicate that the feature remained open and that it gradually filled with organic material and plants after which sand was pushed from the edges into the fill, potentially to prop up an object which was centrally placed. The initial fill shows signs of trampled soil. The sherds were collected from the oldest, initial fill.

*Finds and dating:* Seven stone tempered Bronze Age sherds were found in the deepest part of the pit (table 13.21). A curious object was a round, flat perforated stone (quartzite) of 4 cm in diameter (11665; fig. 13.42B). It is scratched all over, artificially rounded and has a V-shaped perforation. We assume it was an ornament of some kind, but we know of no other examples that could prove that hypothesis.

Find number	Trench	Feature	Material	Number	Date
11546C	946	1	cer	4	BA
11546	946	1	wood		3155±20 BP
11548	946	7	bone	3	-
11600B	958	21	cer	6	MBA
11664	963	1	cer	3	MBA
11663	963	2	cer	1	BA
11665	963	3	cer	7	MBA

Table 13.21 Finds from cluster 11: pits and wells in trenches 946, 958 and 963 in the Mikkeldonk quarter.





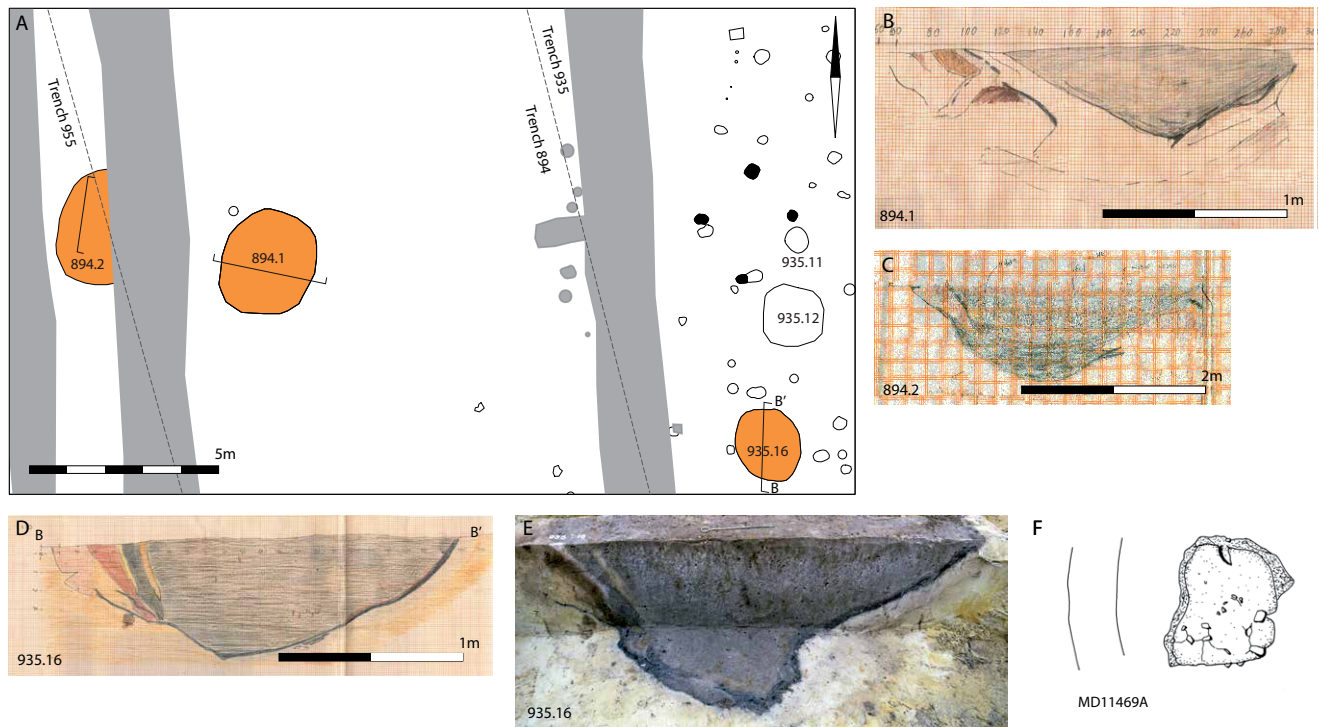


Figure 13.43 Cluster 12: pits and wells in trenches 894, 935 and 955. A: location of the pits; B: section of 935.16; C: section of 894.1; D, E: section of 894.2; F: Bronze Age sherd from 935.16 (11469A) scale 1:3. Drawings and photo S. van As (A), E. Huybers (B, C, E), H. Fokkens (B), A. Louwen (F).

Find number	Trench	Feature	Material	Number	Date
11469C	935	16	cer	1	MBA
11469A	935	16	cer	16	MBA
11469B	935	16	cer	56	MBA
11514	936	1	cer	29	MBA
11514C	936	1	cer	2	MBA
11515	936	2	cer	23	MBA

Table 13.22 Finds from cluster 12: pits and wells in trenches 935 and 936 in the Mikkeldonk quarter.

#### 13.4.12 Cluster 12: pits and wells in trenches 894, 935 and 955

Features 935.16, 894.1 and 894.2 are discussed here because they are very consistent in appearance, indicating a similar process of infilling (fig. 13.43). They all show a very dark humic deposit on the bottom. Since this layer covers the entire bottom and the sides, it appears to be related to the period of use rather than abandonment. These three features all show a steep west side with a thin layered fill. The central part is ho-

mogenous, indicating instant fill in. This indicates that the pits were back-filled, probably rather fast after use.

*Finds and dating:* Feature 935.16 contained 73 coarsely tempered sherds dated to the Middle Bronze Age (table 13.22).

#### 13.4.13 Cluster 13: pits in trench 936

Cluster 13 consists of two large features that were lying close together and probably were contemporaneous (fig. 13.44). One of these is overbuilt by a



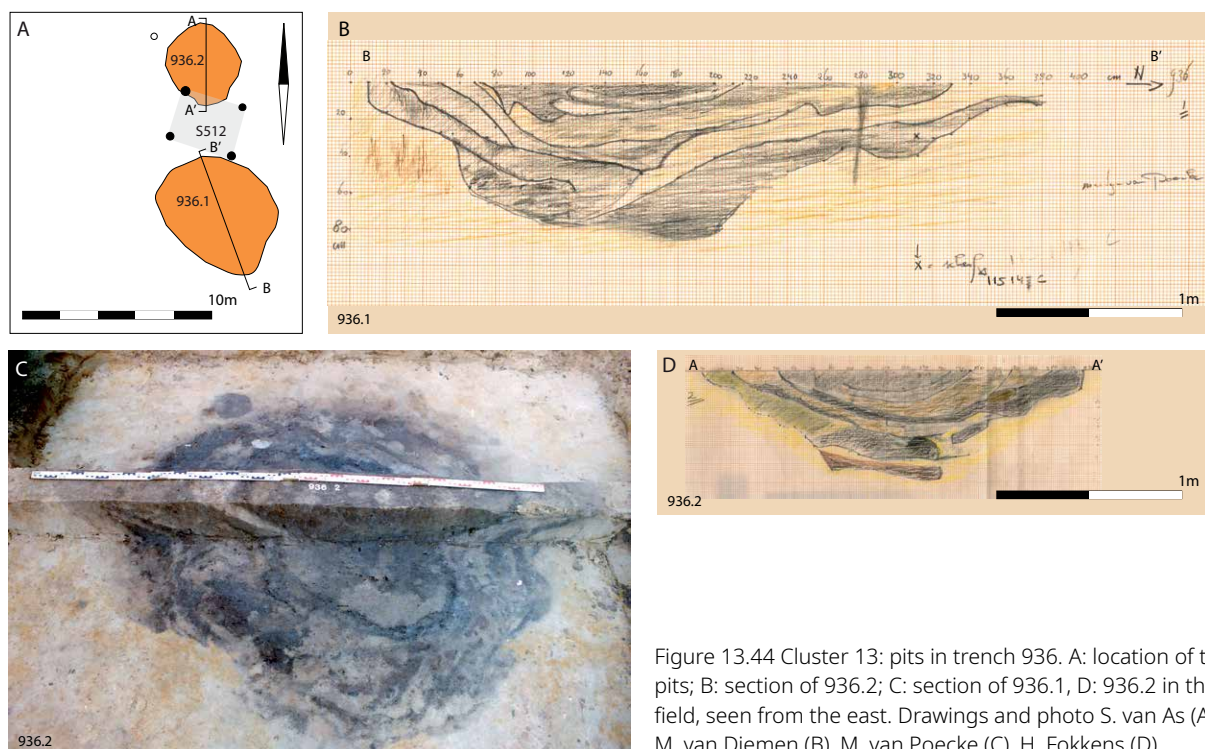


Figure 13.44 Cluster 13: pits in trench 936. A: location of the pits; B: section of 936.2; C: section of 936.1; D: 936.2 in the field, seen from the east. Drawings and photo S. van As (A), M. van Diemen (B), M. van Poecke (C), H. Fokkens (D).

four-post granary (S512). Since the northwest post of this granary was clearly visible in feature 936.2, it indicates that the feature by then had already been filled, and probably was invisible. Both large pits (936.2 and 936.1) had a layered fill, indicating slow fill in after abandonment. The depth indicates that they may have functioned to collect water, though a lining is absent.

*Finds and dating:* a fair number of sherds were found, tempered with stone grit (table 13.22). One of these is smitten, therefore a date in the Early Iron Age is likely.

#### 13.4.14 Cluster 14: pits and wells in trenches 882, 884 and the 'sewer trench' (1976)

When trench 882 was excavated, we were aware that it was directly south of a trench that had been excavated in 1976 for the construction of the new main sewer in this area. Joost Assendorp, a student at Leiden University at the time, was sent to Oss to document as many features as possible, with the help of local archaeologists of the *Heemkundekring Maasland*. In this trench they encountered dispersed features, but also four deep pits or wells. Three of these contained hollowed-out tree-trunks as a lining for a well. They also contained Bronze Age pottery. In fact, these were the finds that triggered the start

of new research for Bronze Age settlement features in the area (cf. chapter 4). We therefore knew that 882.40 and 882.38 were very close to R21 and that 882.39 was part of R21 as well (fig.13.45). This can be read from the day notes and it guided our strategy for deciding on the horizontal stratigraphy of these features. Features R19 and R20 were located some 35 m to the east, directly above a Bronze Age house (MD124) which was later discovered. This complex was published in detail by Vasbinder and Fokkens (1987). The description will not be repeated here.

#### R 21, R22, 890.38 and 890.40

About features R 21, R22, 890.38 and 890.40 we know relatively little. Of R21 and R22 it is only known that these features contained two hollowed-out tree-trunks, indicated as R21A and R21B. R21A was still in place in the bottom of the well. R21B lay on its side in the fill of the pit, probably in secondary position after having been removed. R22 contained a large fragment of a Bronze Age pot. R21- R22 now appears to have been connected to 882.40. Feature 882.40 did not contain a lining and was relatively shallow. The fill was homogenous black and contained many Iron Age potsherds. The function is therefore difficult to determine. A section drawing of this well has been lost.



Figure 13.45  
Cluster 14: pits  
and wells in  
trenches 882 and  
884. Drawing  
S. van As.

*Finds and dating:* Feature 882.39 was indicated as part of R21-R22 (indicated by Schinkel as P436) dating to the Bronze Age. This fits the observation that feature 882.40 intersects with 882.39 because 882.39 contained some 75 potsherds (table 13.23), all dated to the Early Iron Age, phase B.

#### *Feature 882.38*

Feature 882.38 was c. 4 m in diameter and 90 cm deep. It had a layered fill, indicating a natural fill after abandonment. The well lining consisted of a hollowed-out tree-trunk of 40 cm in diameter. The tree-trunk was removed, but disintegrated directly after excavation. As this was one of the first wells that were excavated



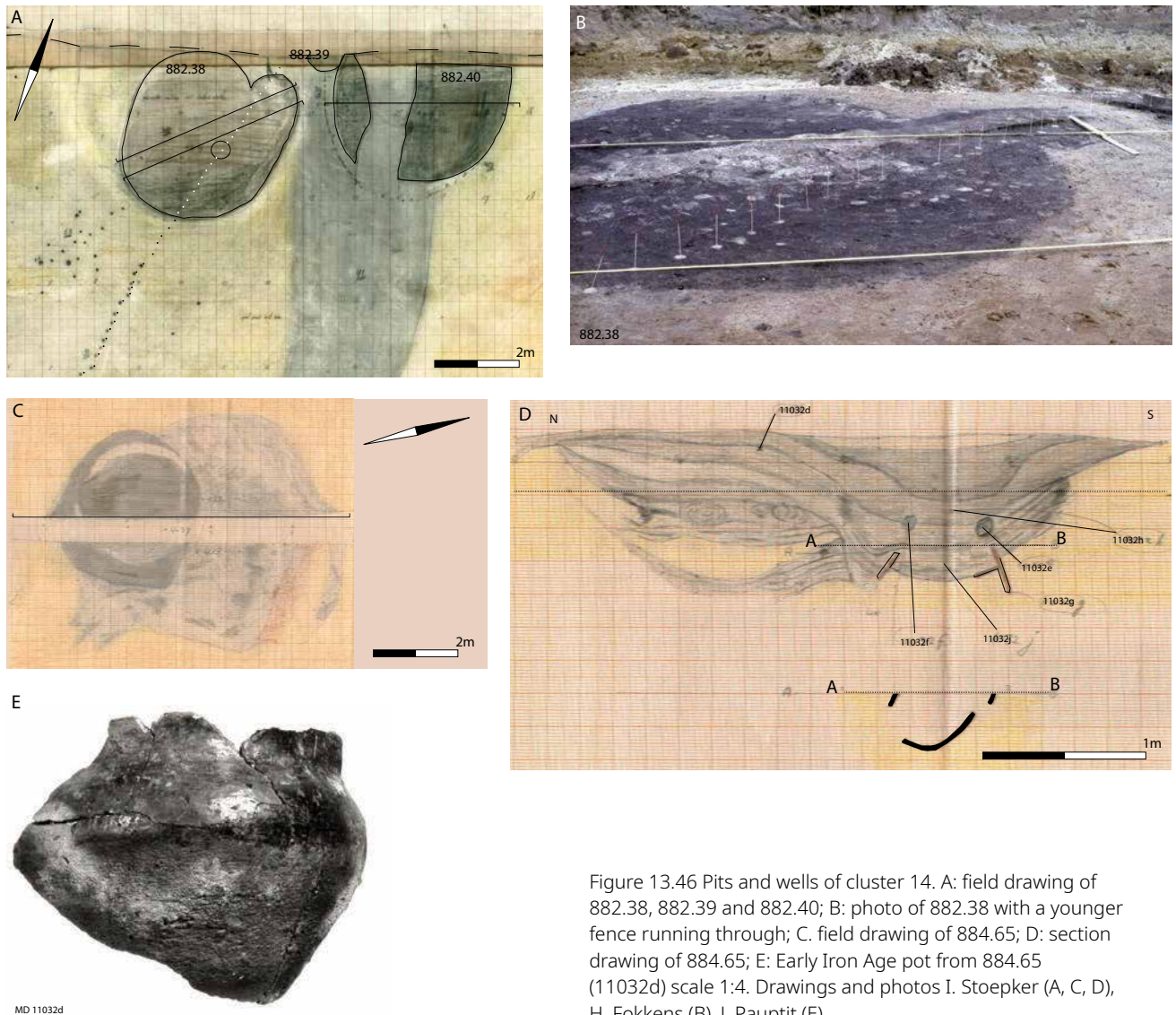


Figure 13.46 Pits and wells of cluster 14. A: field drawing of 882.38, 882.39 and 882.40; B: photo of 882.38 with a younger fence running through; C: field drawing of 884.65; D: section drawing of 884.65; E: Early Iron Age pot from 884.65 (11032d) scale 1:4. Drawings and photos I. Stoepker (A, C, D), H. Fokkens (B), J. Pauptit (E).

by a team that had not participated in the Ussen-excavations, many things went wrong. We tried to keep up with the groundwater table by pumping out water with a hand pump, but unfortunately that did not work. The section was drawn, as photographs of the drawing in progress show, but that drawing is missing. Therefore a section drawing could not be presented.

**Finds and dating:** The lowermost fill of the pit contained a few Bronze Age sherds (table 13.23). In the top an Iron Age sherd was found, but the day notes state that this could have entered the pit after infilling. A *terminus ante quem* is provided by the fences in this area (fig. 13.46). They connect with Iron Age farms MD122, MD123 and MD124 and therefore can be dated

to the late Iron Age (cf. section 13.2.1). We suggest for 882.38 a Bronze Age date because of the Bronze Age sherds in the lower part of the fill.

#### **Features 882.34, 882.36, 882.37, 882.42, 882.31**

Features 882.34, 882.36, 882.37, 882.42, 882.31 were large features, but they have all been identified as pits caused by fallen trees. Apparently a storm has felled a number of trees here, though it is not clear precisely in which period of Prehistory. Feature 882.31 had a layered fill. It was 56 cm deep and about 150 cm wide. Some roots were found in the centre. Its function and dating is not clear.

Find number	Trench	Feature	Material	Number	Date
11420	928	1	cer	3	MBA
		R19	cer	4	MBA
		R20	cer	4	MBA
		R21/R22	cer	1	MBA
11011	882	40	cer	75	EIA-B
11032	884	65	cer	24	LBA-EIA
11032D	884	65	cer	1	EIA
11032G	884	65	wood		2680±25 BP

Table 13.23 Finds from luster 14: pits and wells in trenches 882, 884 and the ‘sewer trench’ (1976) in the Mikkeldonk quarter.

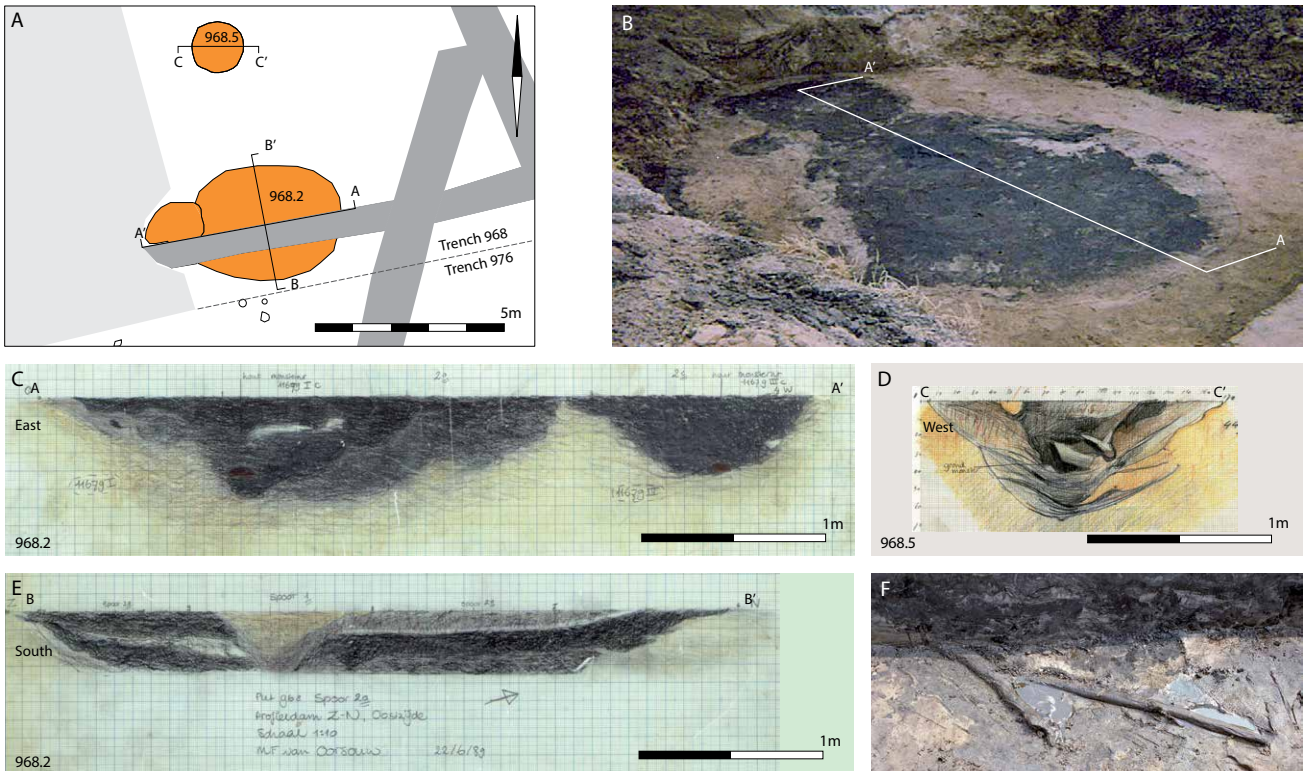


Figure 13.47 Cluster 15: pits and wells in trench 968. A: location of the features; B: photo of 968.2 seen from the east; C: E-W section of 968.2; D: N-S section of 968.2; D: section of 968.5; D: large branch found on the bottom of 968.2. Drawings and photo S. van As (A); M. F. van Oorsouw (C, E), H. Fokkens (B, F), R. Kok (D).

**Feature 884.65**

Feature 884.65 was over 4 m wide and 1 m deep. Already on the surface two phases could be recognised, with the southernmost part constituting the youngest phase. In the section this observation was confirmed. It appears that a first phase had its

deepest part on the south side of the pit. Though no lining was present any more, we assume that it originally had been present. The pit showed a gradual layered fill, but also with a lot of branches and organic material on top of a sandy layer (fig. 13.46C; left side of the image). This indicates a fast fill in



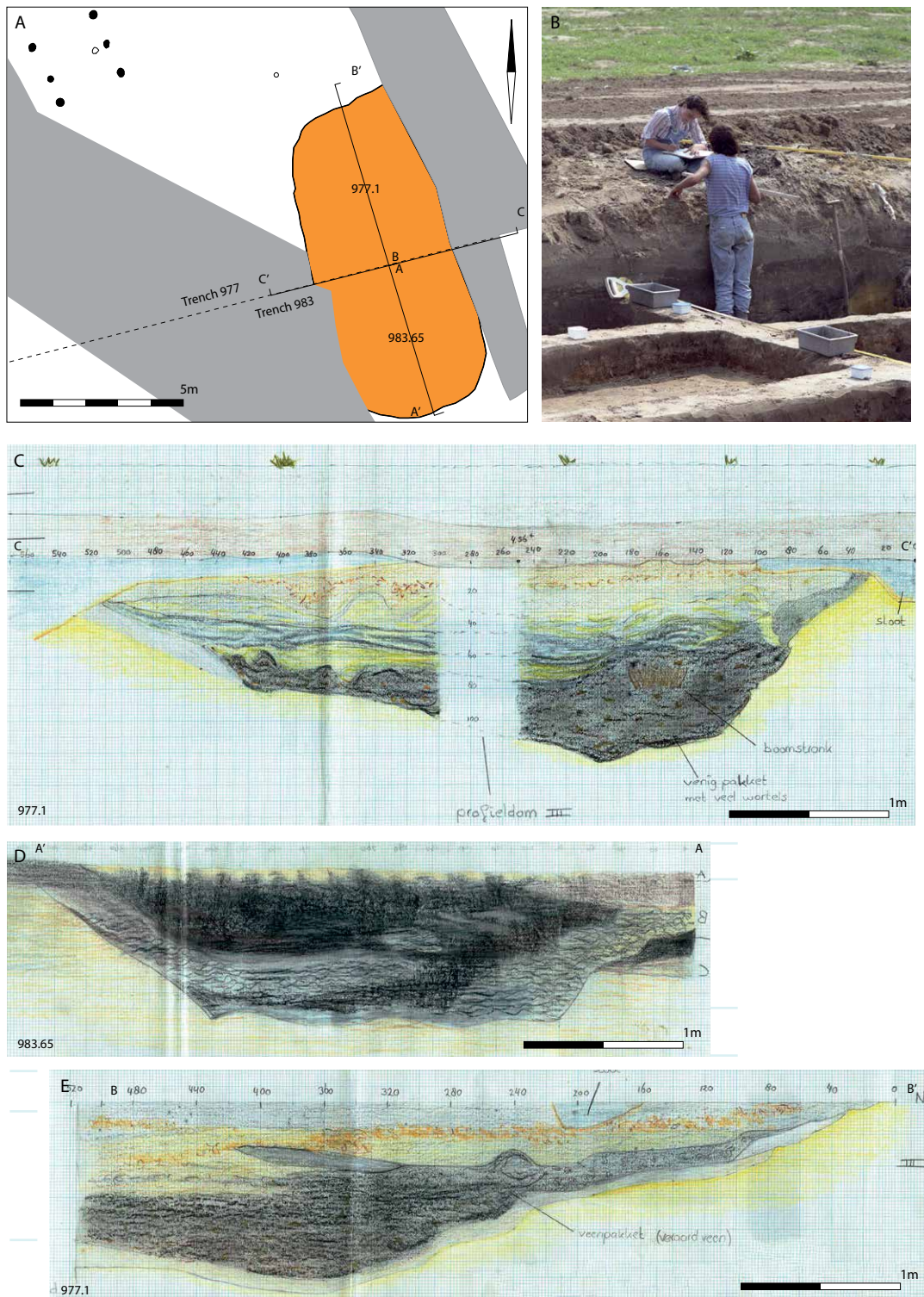


Figure 13.48 Cluster 16: a large well in trenches 977 and 983. A: location; B: Monique van den Dries and Huub Scholte Lubberink drawing the sections, C: N-S section; D: E-W section; E: E-W section in the field. Drawings and photo S. van As (A), M.H. van den Dries (C, D, E), H. Fokkens (B).

after a period of lying open, probably while it was out of use.

The second well was dug eccentrically in the primary feature (fig. 13.46D). This second well contained a variety of branches and stakes which show structural coherence. Above the remnants of the lining an excavation level was documented which shows a clear circular positioning of worked branches. In the base of the upper fill two almost complete pots were found (figs. 13.46E: 11032D, and E) which typologically date to the Early Iron Age, phase A (determination P.W. van den Broeke). This seems to indicate that the well was in use during the end of the Middle Bronze Age, then was abandoned and filled in. In the Early Iron Age a new well was dug, and that phase of use came to a close by placing a pot at the centre of the pit before filling the pit.

*Finds and dating:* In total, 25 fragments of pottery were found in different layers (table 13.23). The pottery that was found in the first phase layers dates to the Bronze Age. It was rather thin-walled, so a date in the Late Bronze Age or the end of the Middle Bronze Age is most probable. In the fill of the second phase a complete Early Iron Age pot was found (phase A1, 800-700 cal BC), indicating that this pot was placed there much later. The revetment of the second phase of use was dated to 895-802 cal BC,<sup>16</sup> which is in line with the typological date. This indicates that at the very end of the Late Bronze Age this well was re-used and that probably at the end of that period of use a pot was placed in the well (cf. Van den Broeke 2012, 343, plate 1.3).

#### 13.4.15 Cluster 15: pits and wells in trench 968

Features 968.2 and 968.5 were located close to each other (fig. 13.47). Feature 968.2 appears to have been a deep pit or well, while feature 968.5 is less substantial. Feature 968.2 is interesting because it yielded a very

early date (Middle Bronze Age A). The pit had a very dark humic fill, but it was very mixed and clearly the result of being back-filled (fig. 13.47B, C, E). If a lining was present, it had been removed before the pit was filled in. A large part of an unworked oak tree had been deposited on the bottom of the pit (fig. 13.47D). This forked tree dated to the Middle Bronze Age A (cf. below). So we suggest the pit was abandoned and filled in during this period.

*Finds and dating:* Two Bronze Age pot sherds were found. The oak tree was dated to 1742-1621 cal BC, or the Middle Bronze Age A<sup>17</sup> (fig. 13.47C). The pit was intersected by an Iron Age ditch (indicated as a light grey-brown feature in fig. 13.47A and E).

#### 13.4.16 Cluster 16: A large well in trenches 977 and 983

In trench 977 a large pit was uncovered (c. 5 x 6 m) and excavated in a complex manner because of the size of the feature (fig. 13.48A). In the adjacent trench 983 the second half was just as large, so the entire feature measured about 11 x 5 m. This feature was initially only visible in excavation trench 977. Artefacts were collected in segments, but they showed no differentiation in dating. Neither did the stratigraphy point to a complex fill process. Especially the mid-section shows a layered fill of alternating sandy and humic deposits. The whole package shows signs of trampling. On the west side a lining probably had been present, but now only a tree stump and several other parts of posts and beams had been deposited here. The top part of the pit showed a more homogenous fill, probably dating to the Middle Ages. The pit cannot have been more than a shallow depression by then, filled in by a medieval plaggen soil. The ceramics associated with this feature date to phase E or F of the Iron Age (between 500 and 400 cal BC). The peaty substance in the pit shows that it

Find number	Trench	Feature	Material	Number	Date
11770/11745	983/970	65-1	cer	1404	MIA
11770/11745	983/970	65-1	loam	32	-
11770/11745	983/970	65-1	spindle whorls	2	-
11770/11745	983/970	65-1	iron slag	19	-
11770/11745	983/970	65-1	stone	157	-
11770/11745	983/970	65-1	bone	152	-
11770/11745	983/970	65-1	tephra	75	-

Table 13.24 Finds from large pit feature 983.65 / 970.1 in the Mikkeldonk quarter.

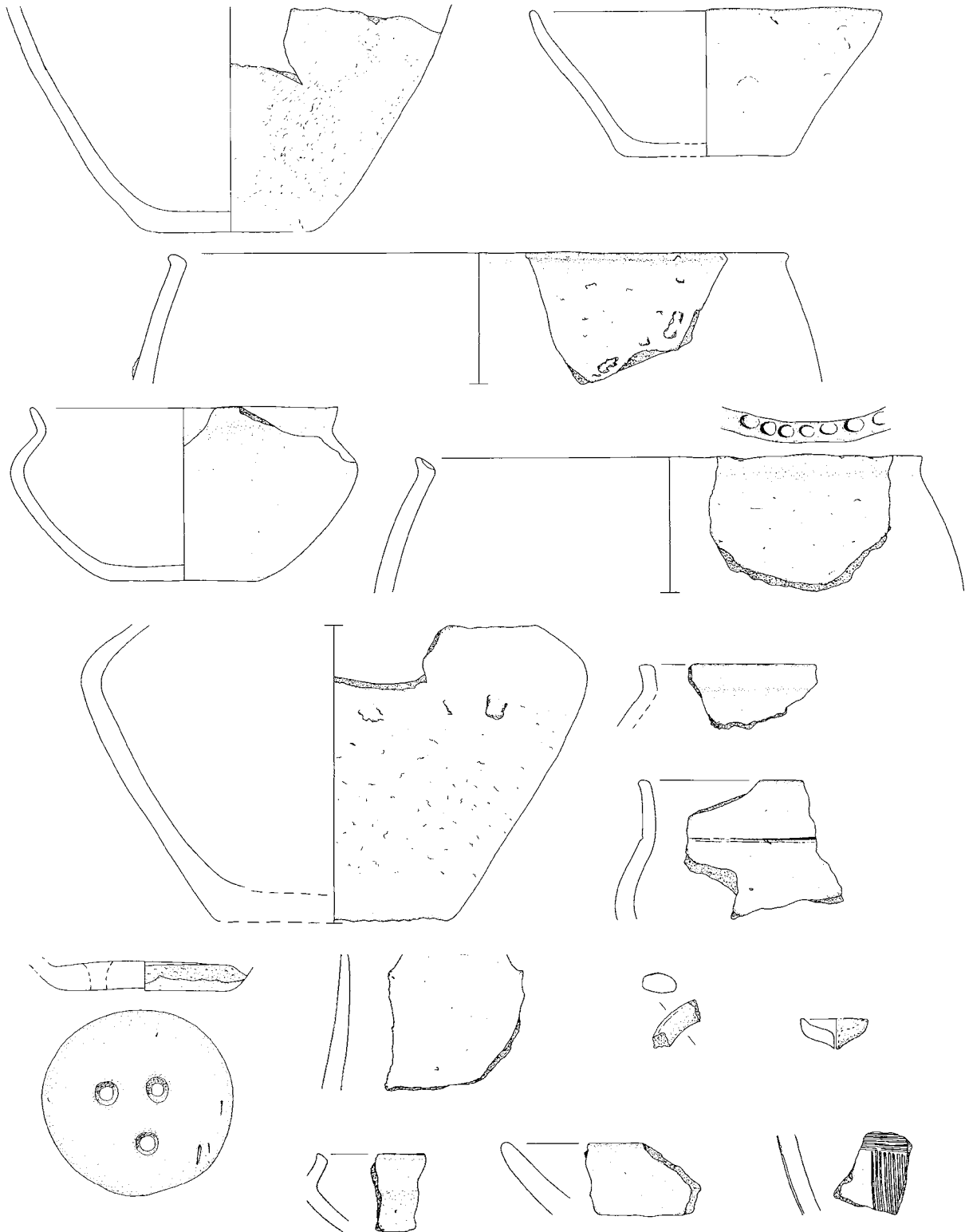


Figure 13.49 A selection of pottery from well 977.1/983.65 dating to the Middle Iron Age. Scale 1:3. Drawing A. Louwen.

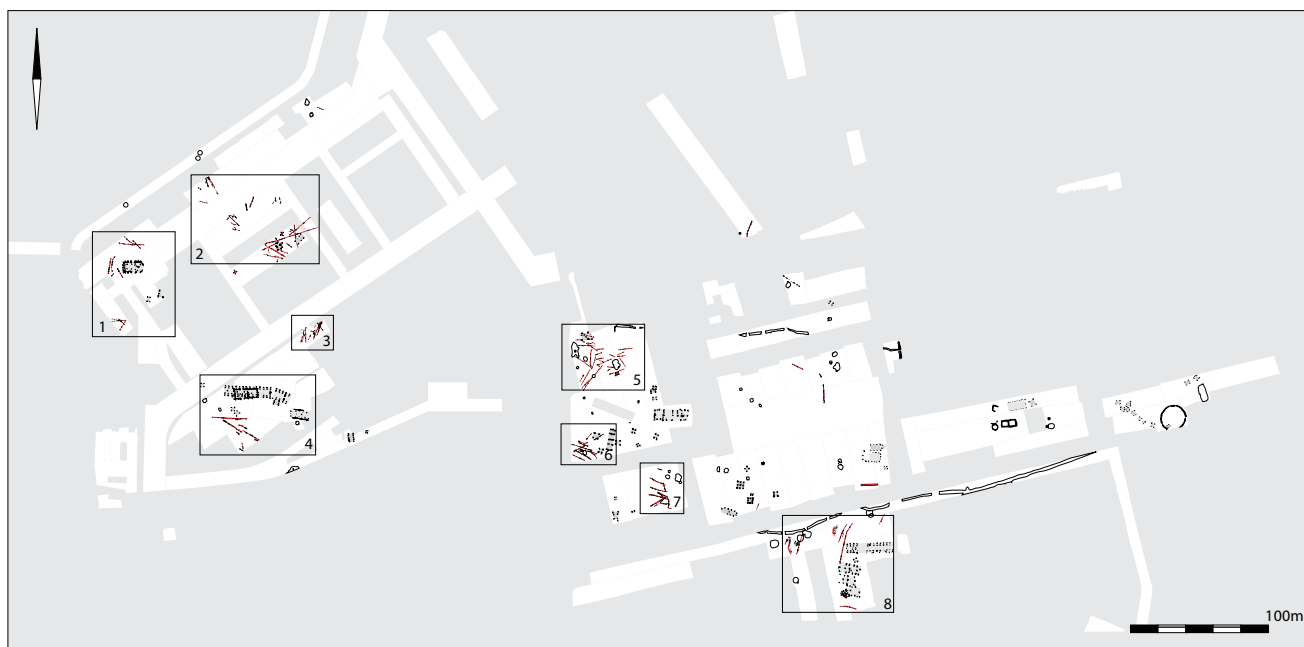


Figure 13.50 Location of clusters of fences. Drawing H. Fokkens, S. van As.

remained open for a long time and material had been deposited here on purpose. Our hypothesis is that this was a watering hole, probably with a lining on the west side, possibly consisting of rough posts and poles, not unlike watering hole 898.

*Finds and dating:* A total of 1442 sherds (fig. 13.49) were retrieved from features 977.1 and 983.65 along with 33 pieces of loam, 2 spindle whorls, 19 pieces of iron slag, 78 pieces of basaltic lava (querns). The complex as a whole dates to the Middle Iron Age (phase E/F) (table 13.24).

### 13.5 FENCES, DITCHES AND CART-TRACKS

In chapter 4 we have already explained that Mikkeldonk was the first area where we consciously started to look for fences since we had the template of the Zijdeveld excavations in mind (Theunissen 1999). The Ussen-excavations had yielded only very few fences (cf. Schinkel 1998), but in Oss-North we encountered several. It is very difficult to decide which period they date to, but in the following some suggestions are made. These are mainly based on association with other features, or on absence of association, or on relative chronology. Apart from fences – in fact rows of stakes – we also encountered a few ditches and a cluster of prehistoric cart-tracks.

#### 13.5.1 Fences

In the Mikkeldonk area we have distinguished seven clusters of fences (fig. 13.50), some of them associated with deep pits or wells, others with farmsteads. Looking at the overviews (figs. 13.51, 13.52 and 13.53) it appears that the fences roughly demarcate areas with dense clusters of features (clusters 1, 2, 3, 4) or deep pits and wells (clusters 5, 6, 7). Inside the fences we found post pits and shallow pits, outside the fences these are absent. Here we found only wells or watering pits. Therefore we suggest that the fences, at least in the Mikkeldonk area, delimited farmsteads of both the Middle Bronze Age and of the Early Iron Age. This is discussed in more detail below.

#### Cluster 1

Cluster 1 is situated in the northwest, around house MD132 (fig. 13.51). The rows of stakes running west-east and north-south seem to demarcate a yard around MD132 measuring 50 m x >25 m. That means that in that area the rows running north-east and west-east can be dated to the Early Iron Age. There is a concentration demarcating well 940.1 dating to the same period. It appears that this well was situated just outside the yard and boxed in by fences, possibly to safeguard it from animals trying to get in.



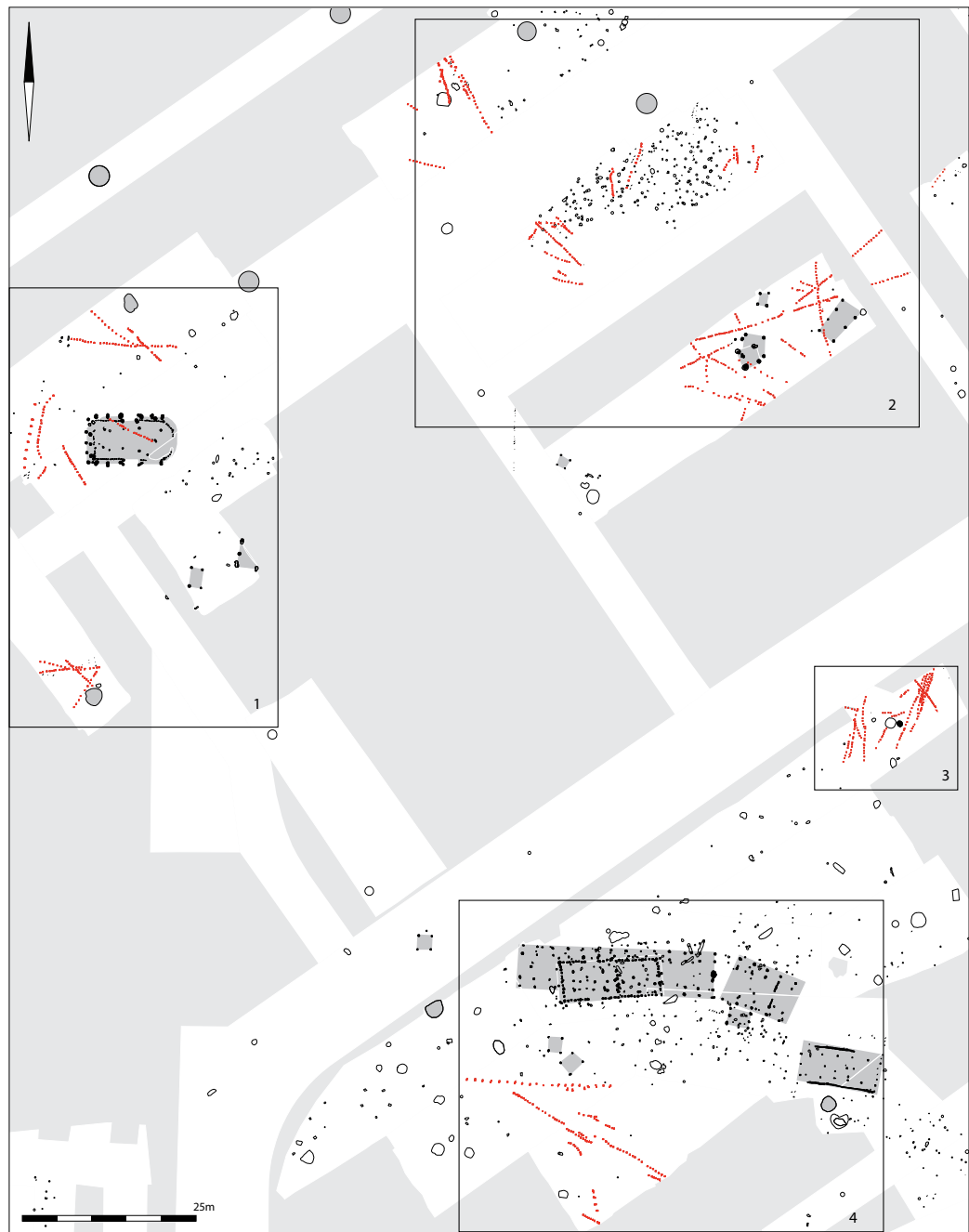


Figure 13.51  
Cluster 1 – 4 of  
fences in the  
Mikkeldonk  
quarter. Drawing  
S. van As,  
H. Fokkens.

There are also rows of stakes oriented north-west-southeast that transect the house and the other fences. From the fact that some of the stakes intersect the wall of MD132, and were still equally well visible as the other stakes within the house (cf. figs. 13.12,

13.13) we deduce that this fence was erected later than the house. Probably considerable time (decades?) had passed since the house was abandoned because there is no indication of differences in depth, meaning that the ground was level.



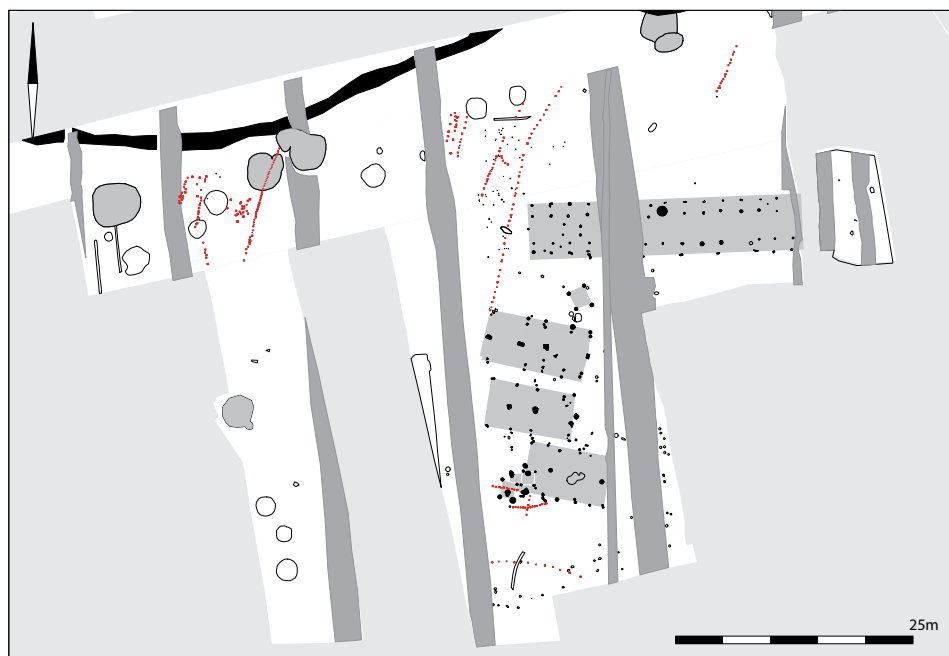
Figure 13.52 Cluster 3 – 7 of fences in the Mikkeldonk quarter. Drawing S. van As, H. Fokkens.

### *Cluster 2*

Cluster 2 shows a set of stake rows with two major directions: northwest-southeast and southwest-northeast. They seem to demarcate a very dense cluster of features, mostly post pits (fig. 13.51). Such features are lacking west of the fences, therefore we think that they delimit a farmyard located somewhere in the centre of cluster 2. We have not been able to isolate a ground plan of a farm. It could still be hidden in the cluster of features or under the unexcavated areas. The dating of these features is difficult. A cluster of large pits and wells just north of cluster 2 (cf. fig. 13.27)

dates to the Middle Bronze Age A. All other wells are also of Bronze Age date. The granaries are younger, they probably date to the Early Iron Age (cf. 2.3.1). Also some of the pits in the group of features in the centre of cluster 2 have an Iron Age date, for instance 921.170 and 921.48, both with a few larger sherds. Others contained very small stone-gritted sherds, indicating a Bronze Age date. Their small size, however, may indicate that these had been lying on the surface for a long time before they became embedded in the fill of those features. Therefore we tentatively date the complex to the Early Iron Age.

Figure 13.53 Cluster 8 of fences in the Mikkeldonk quarter. Drawing S. van As, H. Fokkens.



This probably is also true for cluster 3. This cluster has in general a north-south orientation and is not clearly connected to the other clusters.

#### *Cluster 4*

Cluster 4 is only small, but significant. The northernmost fence in this cluster is of type 2 (chapter 3), a double row of stakes closely set together, and running parallel to Middle Bronze Age house MD128 (fig. 13.51). Since this type is generally attributed to the Bronze Age (Theunissen 1999; chapter 3) we suggest that this fence is the southern demarcation of the yard that belongs to MD128. The distance to the house is c. 15 m. This interpretation is supported by the fact that no features were found south of the fence, while there are many north of it. The series of single stake rows with a northwest-southeast orientation just south of the double row seems to be connected to the system as they connect to the double row. Moreover they also demarcate a featureless zone. However, a later date and association with Early Iron Age houses MD131 or MD130, for instance, cannot be excluded.

#### *Cluster 5*

Cluster 5 (fig. 13.52) demarcates an area with a few large pits from the Middle and the Late Bronze Age. The largest well (898.1; fig. 13.30) probably was a place

for watering animals, which may explain the complex arrangement of fences there. Some kind of directing animals to and fro such a spot is to be expected. The large granary in cluster 5 probably is of a later date. One might suggest that the fences became visible here because it originally may have been a muddy and soggy area, but we have found no indications for that. Moreover, the rows seem to have been placed in an area that was more or less level, so before or in association with the pits and well. Given the fact that drinking-water wells probably would need some protection because they easily could be trampled and defiled, fences around them would be logical. This is in probably also the reason for the fences in clusters 6 and 7.

#### *Cluster 6*

Cluster 6 lies west of a dense group of features (fig. 13.52), many of which have Bronze Age ceramics in them. We were not able to recognise a building here, even though we put a lot of effort in. The fences seem to cluster around well 901.1 which dates to the later part of the Middle Bronze Age. This well was abandoned and left open after use, so it is possible that some of the fences also were part of a system that was abandoned and left to decay. Since only Bronze Age pottery was found in the upper layers, we think the well was filled up when Middle Iron Age house MD127



Figure 13.54 Location of ditches (black) and cart tracks (red) in the Mikkeldonk quarter. Drawing S. van As, H. Fokkens.

was built some 600 years later. In theory the fences also may be associated with that farm, but one of the granaries appears to contradict that suggestion.

#### *Cluster 7*

Cluster 7 also appears to be associated with Bronze Age wells and pits (fig. 13.52). All pits in cluster 7 date to the Middle Bronze Age. The fences here were mostly of Theunissen type 2 (cf. fig. 3.16). In trench 890, the first trench in the 1987 season, they were not documented, probably because that trench was excavated just a bit deeper. Again, these fences are situated south of a dense cluster of features, but they are not associated with features themselves, other than wells and deep pits.

#### *Cluster 8*

Cluster 8 is a group of parallel fences in the southern part of Mikkeldonk (fig. 13.53). They run almost all parallel northeast-southwest. One of these fences intersects with Bronze Age well 882.38. The stakes are very

clearly visible here (cf. fig. 13.46B) and show absolutely no indication that there was a depression. The well therefore was already filled in for a long time and the soil had settled. Moreover, one of these fences connects to house MD124, so we think the entire system here dates to the Late Iron Age. It is not clear how they relate to F299 because that ditch was documented in a part of the excavation that was excavated much deeper during a watching brief in 1977.

#### *13.5.2 Ditches*

Especially in the eastern part of the Mikkeldonk quarter two ditch systems were discovered that both have an east-west orientation (fig. 13.54). Their dates are difficult to establish, however, since they yielded only very few potsherds or other dating material.

#### *F298*

F298 is situated in the north. It is only a shallow ditch, 20-30 cm deep, and about 60-80 cm wide. The trajectory is rather 'wavy', but generally east-west. In trenches

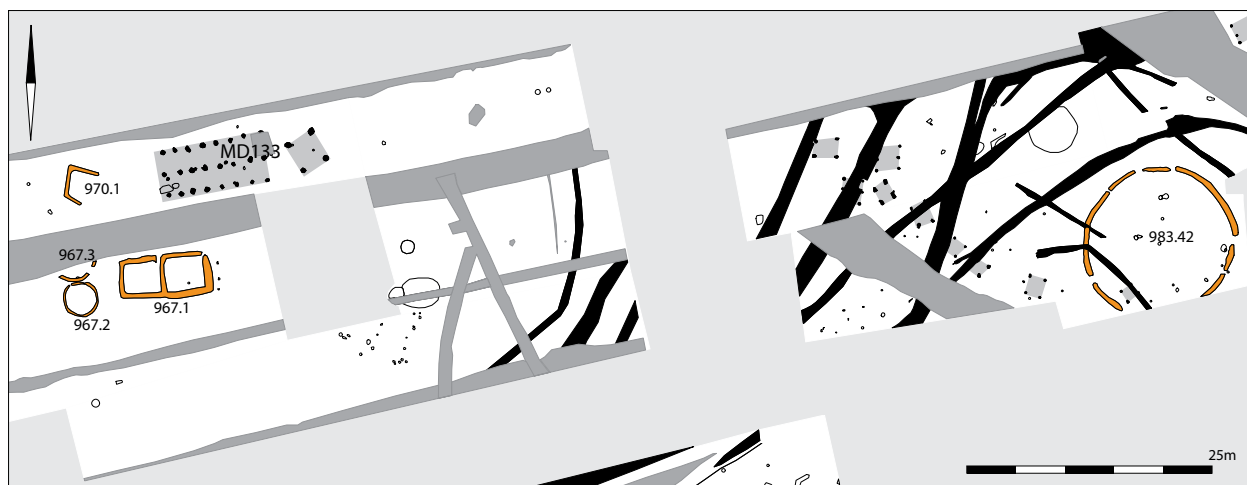


Figure 13.55 A small Late Iron Age cemetery in the Mikkeldonk quarter. Drawing S. van As.

890, 904, 902, 898 several ditches are present of approximately the same dimensions, but also intersecting each other. In trench 981 as well different ditches converge while intersecting. It is unclear what they originally enclosed or delimited.

*Finds and dating:* dating is almost impossible because finds are lacking. Only in trench 962, where we excavated a long segment of this ditch, could a horizontal stratigraphy be established. The ditch appears to be intersected by feature 962.8 which contained three Iron Age potsherds. That would imply that the entire ditch dates to the Iron Age. However, given the not very clear observations at the time, and the rather difficult interpretable field and section drawing, this remains a disputable conclusion.

#### F299

F299, the southernmost ditch, was observed during site preparation work of the Mikkeldonk area in 1977. This was only a survey and not a proper excavation. Therefore no sections were made or finds collected. In the eastern trenches some finds were collected, showing that we are indeed dealing with Iron Age ditches, though it is impossible to decide which period of the Iron Age. The cart tracks bending around barrow 983.42 (F302) overlay this ditch system.

#### F301

F301: Cart-tracks from the Iron Age

Large 'bundles' of cart-tracks were observed in the central part of the Mikkeldonk area, very near ditch

F298. The tracks represent a route in a north-south direction. In this case, tracks manifest as features where carts sank in far enough to leave marks in the subsoil. The 'bundles' are often visible in pairs, with an approximate space of 1.7 to 2 m between them, marking the width of the wheel axis. The reason that they are visible in this particular area is possibly due to the large number of older filled-in wells here that may have wetted the zones.

*Finds and dating:* the tracks are well recorded and intersected by Iron Age pits and wells 966.2, 966.3, 972.1, 972.4 and 972.5, which date the tracks in the Iron Age (cf. fig. 13.40). The tracks intersect wells 966.4 and 972.7 that are both not dated due to lack of finds. However, they are associated with an older phase of water extraction in this area, like well 966.1, which was open in the Late Bronze Age and Early Iron Age. We can therefore state that the cart tracks originated after the Early Iron Age.

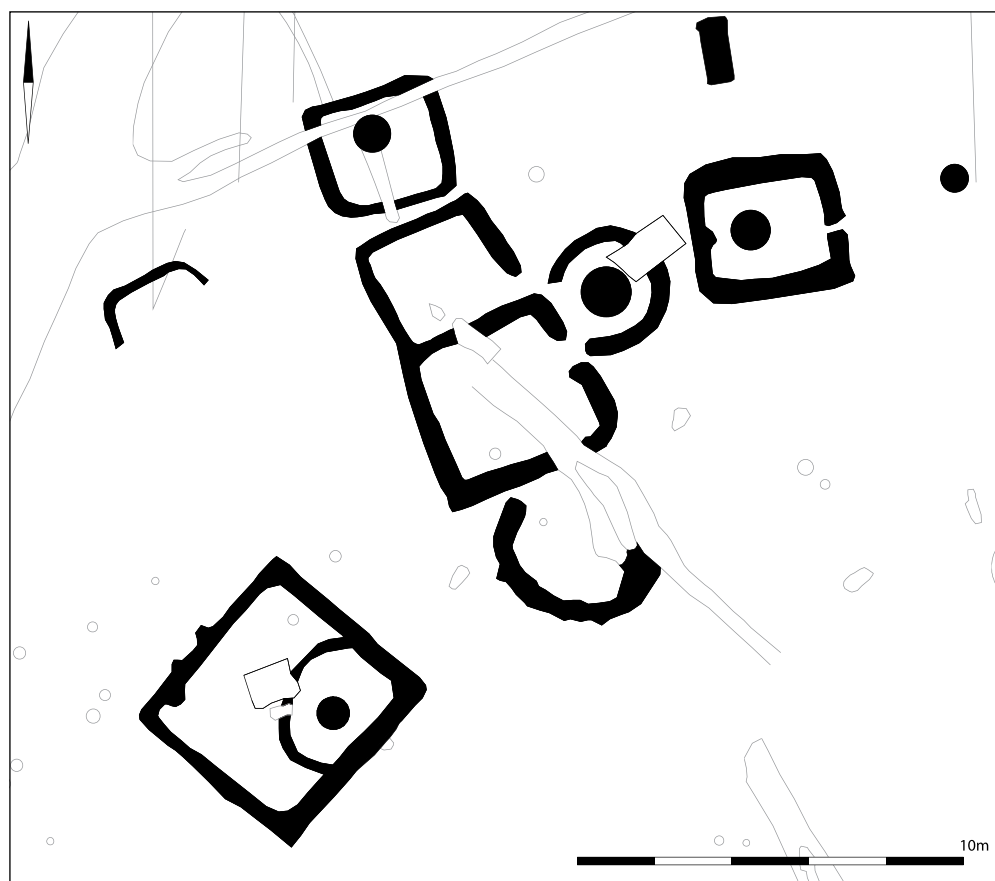
### 13.6 FUNERARY STRUCTURES

In the north-western part of Mikkeldonk a small cemetery was discovered (fig. 13.55). It consisted of a cluster of only five monuments, two rectangular and three round ones. Four of them were situated close together (967.1, 966.2 1, 967.3 and 970.1), the fifth monument was located 90 m further west (983.42). There are no monuments to the west, south or east, but the northern limit is unknown since that lies outside our excavation limits. Yet we have the impression that it is only a small cemetery. Several of these clusters of monuments were also encountered





Figure 13.57 A small part of the Late Iron Age cemetery of Oss-Ussen. Drawing S. van As.



in Ussen (Van der Sanden 1998, 75, 76). These were part of a larger ritual area, but the overview shows that there too we were dealing with a few very small clusters of only 4-10 monuments close together. Van der Sanden was still not sure whether that was the case (2008, 75), but the small cluster in Mikkeldonk may be a point in case. In Ussen the Roman Period cemetery developed a bit further north, but we have no indication that that is also the case in Mikkeldonk. The only monument that possibly is of Roman date is the large round monument to the west of the cluster (983.42). Like in Oss-Ussen, the small cluster dates to the late Iron Age, probably between 200 and 50 cal BC (phase J/K; cf. below). That implies the small cemetery is contemporaneous with the three houses MD122, MD123 and MD124 just 120 m southwest of this cluster. Though it is impossible to prove, it is very tempting to link the two and see this cemetery as a short-lived burial ground for the three house generations that MD122-MD124 possibly represent (cf. section 13.2.1).

### 13.6.1. A small Late Iron Age cemetery

Burial monument 967.1 is a 'double' square monument measuring 3.7 x 3.0 (western half) and 3.4 x 4 m (eastern half) (fig. 13.56). The orientation is approximately east-west. Generally square monuments are disconnected, but sometimes they cluster. There is a comparable monument in Oss-Ussen (fig. 13.57). That cluster has a different orientation, suggesting that orientation of the burials was not guided by overall cultural values or cosmology. This also applies to the entrances. These are generally placed in the centre, but can also be in the corner of the monument. Most people will indeed argue that these are entrances, but if we try to reconstruct this monument, it becomes clear that there hardly is an entrance. The opening is 30 cm in the excavated surface, but if we realise that at least 40 cm of topsoil is gone, the original opening may have been very small or non-existent. These openings rather may represent the beginning or end of the digging of the ditch, and apparently people did not want to really

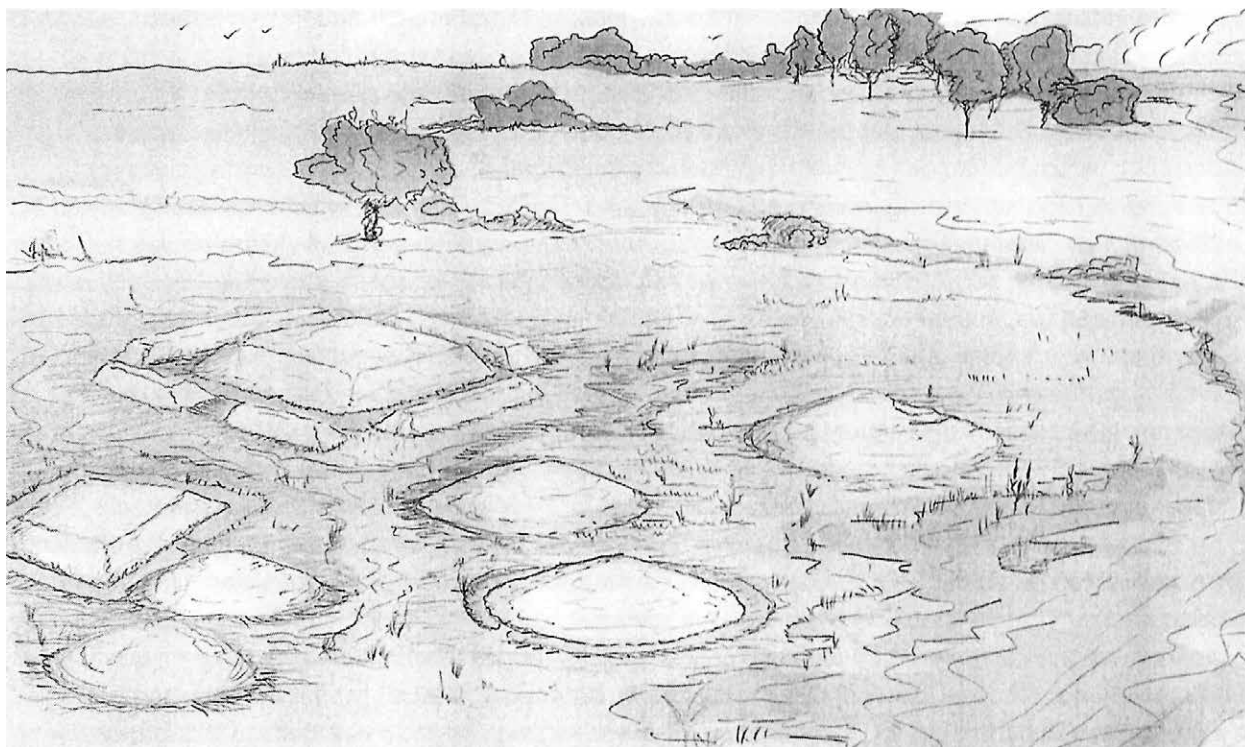


Figure 13.58 A reconstruction drawing of the Late Iron Age and Early Roman Period cemetery of IJsselstein. Drawing L. van der Feijst (from Verniers 2012: fig. 14.1).

connect the beginning and the end, but an actual entrance may not have been the goal (see below).

The two monuments are attached to each other, but we have no indication of sequence. The relevant section does not show differences in the fill. This indicates that the ditches were open at the same time and have been filled in again at the same moment. Neither of the two monuments contained a clearly defined burial or cremation deposit, but many sections of the ditches contained bits and pieces of cremated bone (table 13.25). We therefore assume that the cremation deposit was laid down at the surface and later became distributed over the ditches when these were filled in. Pot sherds were found in different sections of the ditches as well, but there was no clear concentration. During excavation the ditches were divided into 22 sections (fig. 13.56A), of each of which sections and length-sections were drawn. A few sections were sieved, all others excavated with trowels.

The ditch fills show two phases of infill. The lowermost layer contains a mixed dark fill with small patches of yellow. This probably represents a layered

mix of topsoil and subsoil from the period of digging that has rolled back into the ditch. Then there seems to have been a period of stabilisation, followed by a rather homogenous fill. This part indicates the final fill of the ditch.

*Finds and dating:* Find number 11656 was divided into numbers 11656 A through Z, related to separate ditch sections. In all 61 sherds, some charcoal, fragments of basalt lava and small fragments of cremation remains have been recovered from various sections of the monuments (table 13.25). The finds may not represent the actual building of the monument, because they could have entered the ditches when these were filled in. Still there is no indication that they were younger than Late Iron Age. Where there is an opening in the ditch of the westernmost monument (section 21, fig. 13.56A) a small charcoal deposit was found. That yielded a probable date between 203 and 53 cal BC.<sup>18</sup> That date confers very well with the dates of similar small cemeteries in Oss-Ussen. We have used this date range for the other three neighbouring monuments as well, though these yielded no datable material.

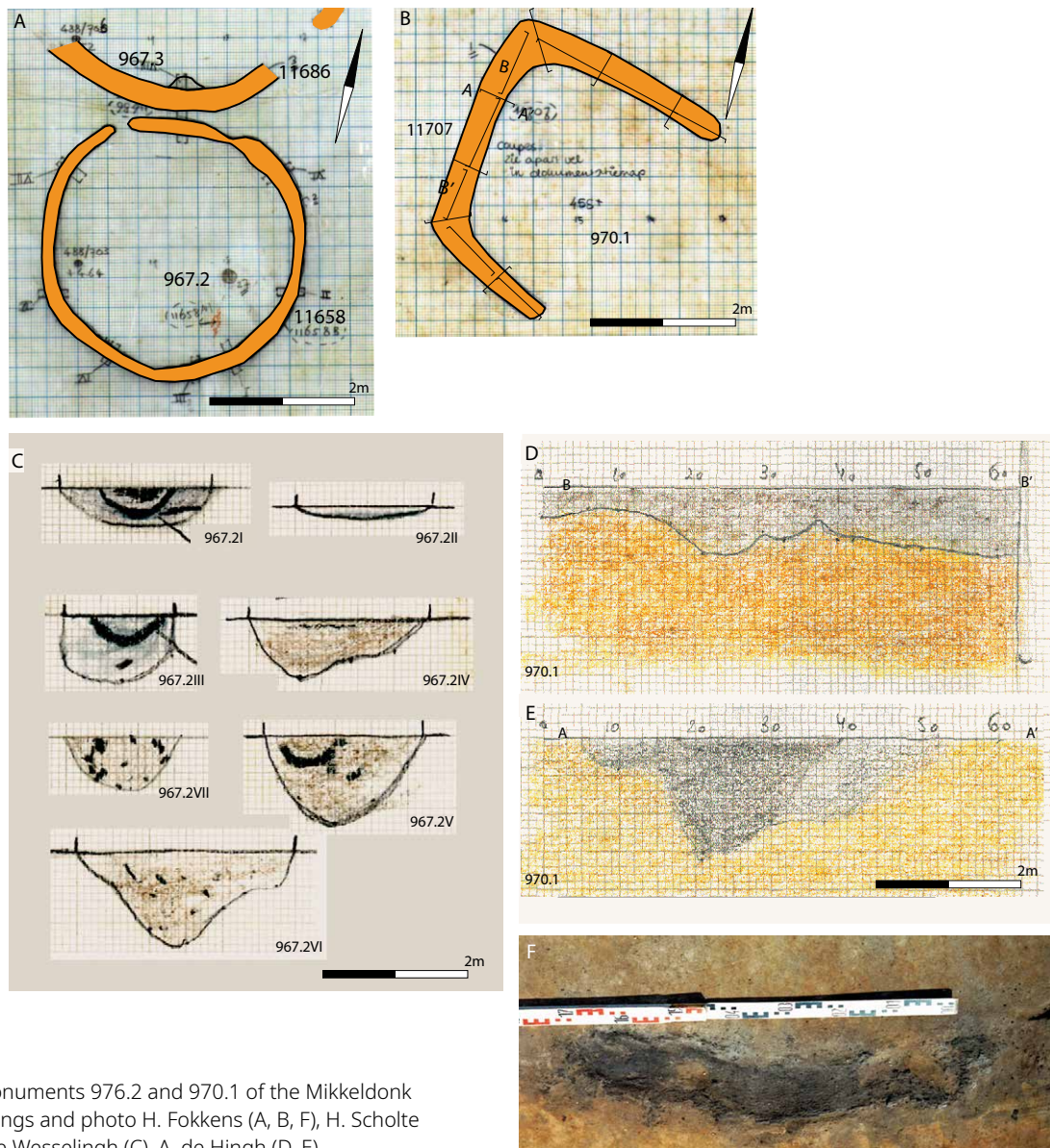


Figure 13.59 Monuments 967.2 and 970.1 of the Mikkeldonk cemetery. Drawings and photo H. Fokkens (A, B, F), H. Scholte Lubberink, Dieke Wesselingh (C), A. de Hingh (D, E).

**Reconstruction:** If we reconstruct the monuments at the original level, a different kind of monument appears (fig. 13.56B). If we extend the form of the ditch upwards, starting from the assumption that about 40 cm of topsoil has been lost, the original ditch may have been about 120 cm wide and 70 cm deep. Given a total length of about 11 m (only for the western annexe), we are talking about c. 4.7 m<sup>3</sup> soil coming from that ditch. The formula for calculation of the volume of soil coming from the ditch is  $V = (0,5E_w \cdot E_d \cdot L)$  or half of the estimated width x the estimated depth x the length.

The soil from the ditches could have been used to form a barrow in the area enclosed by them. At IJsselstein (Verniers 2012) the actual barrows were still partly preserved, showing how this may be visualised (Verniers 2012: fig. 14.1, reproduced here as fig. 13.58). Interestingly, the square monuments in that cemetery had also square truncated pyramidal barrows inside. In one example the ditch was also partly placed outside the enclosed area as a low bank. Also at Apeldoorn-Echoput the top of the mound was flattened rather than round (Van der Linde and Fontijn 2011, 64; Doorenbosch 2011, 120). If we assume that this volume



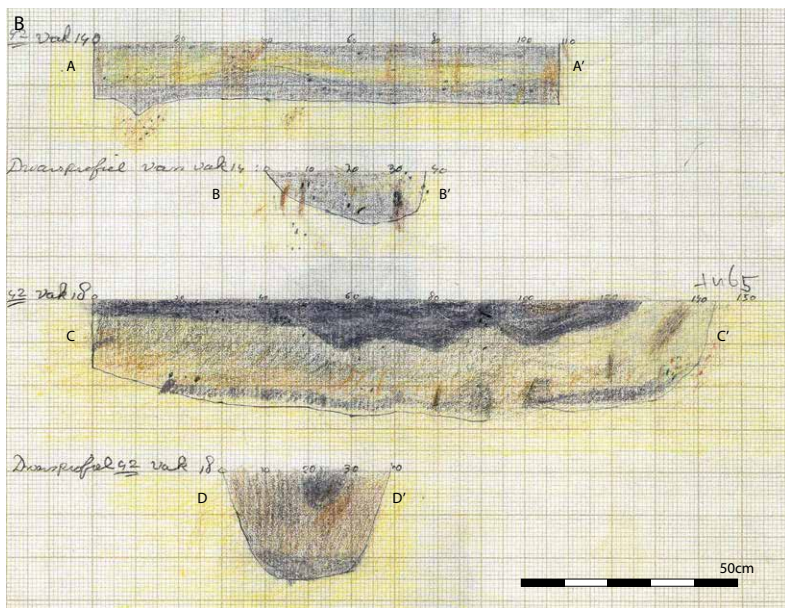
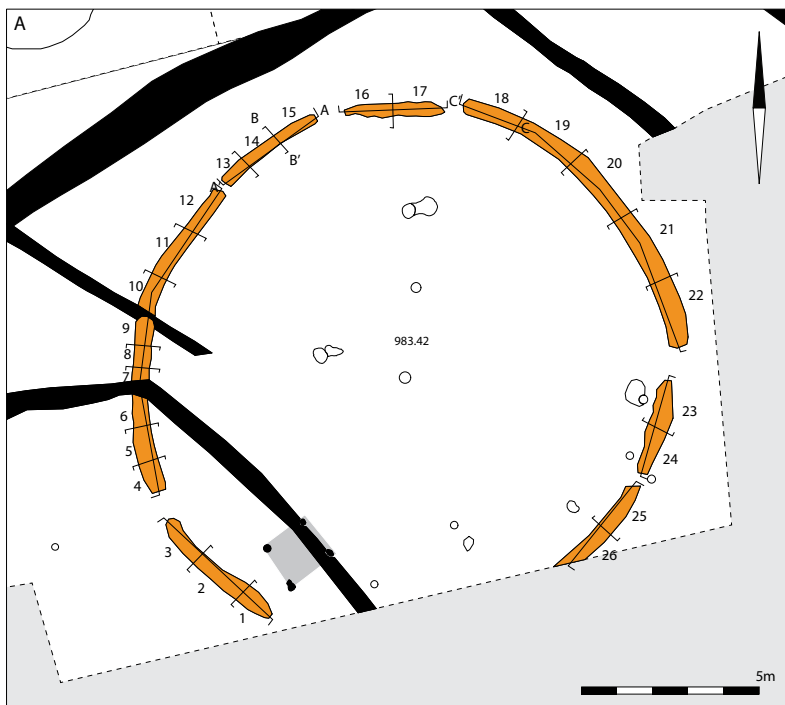


Figure 13.60 Monument 963.42 of the Mikkeldonk cemetery. Drawings and photo S. van As (A), M. van Diemen (B), H. Fokkens (C).



Figure 13.61 Monument 963.42 of the Mikkeldonk cemetery during excavation. A: view of the entire monument ; B: ditches during excavation and documentation; C: the 'causeway' of photo A in section, demonstrating that it is a real causeway. Photos H. Fokkens.

of soil was used to raise a barrow inside the ditch, and assuming the barrow had the form of a globe segment, we can calculate the height by inputting the  $V$  in the following formula for the volume of a globe segment:  $V = 1/6\pi h(3r_1^2 + h^2)$  (cf. Doorenbosch 2011, 120). In the western part of monument 967.1 the height of the barrow then was approximately 1.00 m, allowing for some distance (10-20 cm) from the edge to prevent soil from immediately falling into the ditch again.

A cremation could either have been placed underneath that barrow, or in the top, or both. From the fact that cremation remains and charcoal were found in several sections of the ditches, we may possibly conclude that these are the remains of cremations that were originally placed in the top of the barrows. This seems to have been the custom in the Roman Period as well, for instance at the small cemetery at IJsselstein (Verniers 2012, 120). But also in the Late Iron Age barrows of Apeldoorn-Echoput

(secondary) cremation deposits were placed in the top of the barrow (Van der Linde and Fontijn 2011, 45). The reason for this interpretation is that cremation remains placed on the old surface underneath the barrow hardly could have entered the lower parts of the ditches. They are more likely the remains of cremation deposits eroded from the top, or entering the ditch when the barrows were levelled.

#### *Burial monument 967.2*

Burial monument 967.2 was visible as a shallow circular ditch with a diameter of 3.6 m. It was excavated in eight segments producing lateral and length profiles. The ditch is rather shallow, the remnants being only 5 to 10 cm deep. In several sections of the ditch we have observed charred wood, apparently large beams, lying on the bottom of the ditch (fig. 13.59B). We assume that these were remnants from the pyre. We have of course tried to take samples for  $^{14}\text{C}$ -dating, but the material

Find number	Trench	Feature	Unit	Material	Number	Date
11656	967	1	A	cremation specs		
11656	967	1	B	cer	11	IA
11656	967	1	C	cer	2	IA
11656	967	1	E	cer	6	IA
11656	967	1	G	cer	5	IA
11656	967	1	G	tephra	3	IA
11656	967	1	H	cer	2	IA
11656	967	1	J	cer	6	IA
11656	967	1	K	cer	3	IA
11656	967	1	L	cer	11	IA
11656	967	1	N	cer	2	IA
11656	967	1	O	cer	10	IA
11656	967	1	O	tephra	1	IA
11656	967	1	Q	cer	1	IA
11656	967	1	R	cer	1	IA
11656	967	1	S	cer	5	IA
11656	967	1	X	cer	3	IA
11656	967	1	Z	cer	2	-
11656	967	1	V	charcoal		2120±25 BP
11658	967	2	A	cremation		-
11707	970	1	C	cer	2	-
11707	970	1	E	cer	1	IA
11707	970	1	E	tephra	1	IA
11765	983	42	A1A	cer	1	-
11765	983	42	A3	cer	7	-
11765	983	42	A5	cer	1	-
11765	983	42	A21	cer	1	-
11765	983	42	A24	cer	1	-
11765	983	42	A25	cer	1	-
11765	983	42	B	cer	1	IA
11765	983	42	C	cer	1	IA
11765	983	42	D	cer	2	-
11251	895	41		cer	2	MBA?
11251	895	41		charcoal		2970±35 BP
11251	895	41		cremation	6	LBA?

Table 13.25 Finds from graves in the Mikkeldonk quarter.



was pure powder and had no substance. Nowadays that would have been used to collect samples for an AMS-date, but in 1989 that was still very expensive. Since we already had collected a good sample from monument 967.1, we considered an AMS-date unnecessary. There is a narrow opening of 25 cm in the northern section of the circular ditch.

*Finds and dating:* Apart from charcoal powder, the ditch has yielded only a few fragments of cremation (11658). We assume that the monument has the same date as monument 967.1, namely Late Iron Age.

### *Burial monument 967.3*

Burial monument 967.3 was only partly preserved (fig. 13.59A). By far the largest part was disturbed by a modern ditch. Originally it would have measured about 4.7 m in diameter. In section VIII (fig. 13.60B) the ditches of 967.3 and 967.2 meet, but the stratigraphic relation remains unclear.

*Finds and dating:* a few fragments of cremation were found (table 13.25; 11686). Direct dating was not possible, but we think this monument dates to the Late Iron Age.

### *Burial monument 970.1*

Burial monument 970.1 is an incomplete rectangular grave monument (fig. 13.59C). The eastern end is missing. The remaining ditch is rather shallow, mostly 5-10 cm deep. It was excavated in eight segments.

*Finds and dating:* a few small fragments of cremation remains were found, 3 potsherds, and a fragment of a tephra millstone (table 13.25). As for the other monuments, we suggest a date in the Late Iron Age.

### *Burial monument 983.42*

Burial monument 983.42 consists of a circular ditch with a diameter of 15 m (figs. 13.60, 13.61). Curiously it has seven sections divided by about 30 cm wide 'causeways'. The ditch presently still has a width between 50 and 60 cm, but originally that may have been about 100 cm. Like in the other barrows no central grave was found. This may mean that also in this monument the dead person or cremation was placed on the surface, or in the top of the barrow that we assume was present inside the ditches. The fill of the ditches was layered, indicating a slow process of infilling. Although there was no barrow visible anymore, a barrow may have been still present in medieval times. This we deduct from the fact that medieval cart tracks and ditches bend around the monument (fig. 13.54). This we interpret as an indi-

cation that at least in that period the barrow was still there and that it was substantial. At some point in time the mound must have been removed, which is probably anywhere between 1200-1800 cal AD. On the land register maps of 1810-1832 cal AD it is not visible.

*Finds and dating:* A total of 16 rough sherds were found in the ditches. We do not know of any parallels for this type of large segmented ditched monuments in the Late Iron Age or Roman Period. However, a good example of a comparable Late Iron Age barrow with a peripheral ditch is one of the Apeldoorn-Echoput barrows mentioned above. With 18 m in diameter it is slightly larger, but not much. Apeldoorn is located north of the river delta in the Central Netherlands, but we see no reason why that parallel could not be used. Therefore a date in the Late Iron Age is in our view perfectly well possible. An older date would technically be possible as well, but since one of a series of probably Middle or Late Iron Age granaries is present within the ring ditch, this possibility is ruled out.

### *Cremation pit 895.41*

Cremation pit 895.41 is a strange phenomenon. It was a round pit with a clear shape in section (fig. 13.62). The sides of the pit were dug in straight. Originally it may have been a pit of c. 70 cm deep and 60 cm wide, in the excavation it was still 50 cm in diameter and 32 cm deep. This feature is not listed as a burial monument, but the fill contained charcoal particles and cremation remains. The entire fill was therefore sieved. The cremation remains were determined to be human. The fill was homogenous and appears to be the result of a single action.

*Finds and dating:* 2 potsherds tempered with stone grit, some charcoal and 6 fragments of cremated bone were recovered. The charcoal was <sup>14</sup>C-dated to the period 1284-1054 cal BC.<sup>19</sup> This means that we are dealing with a burial deposit from the transition from the late Bronze Age to the Early Iron Age. The cremation remains and the charcoal are interpreted as an intentional deposit of the remains of a pyre and a burnt body, so we are actually dealing with a grave. Interestingly this is the only Bronze Age burial in all of Oss-North, Oss-Ussen and Oss-Horzak. We would have expected barrows for the earlier period or an urnfield for the late Bronze Age and the Early Iron Age, but cemeteries from this period are absent in this region. They probably were located more to the north. Only this pit demonstrates that burial deposits from this period do exist in the area.

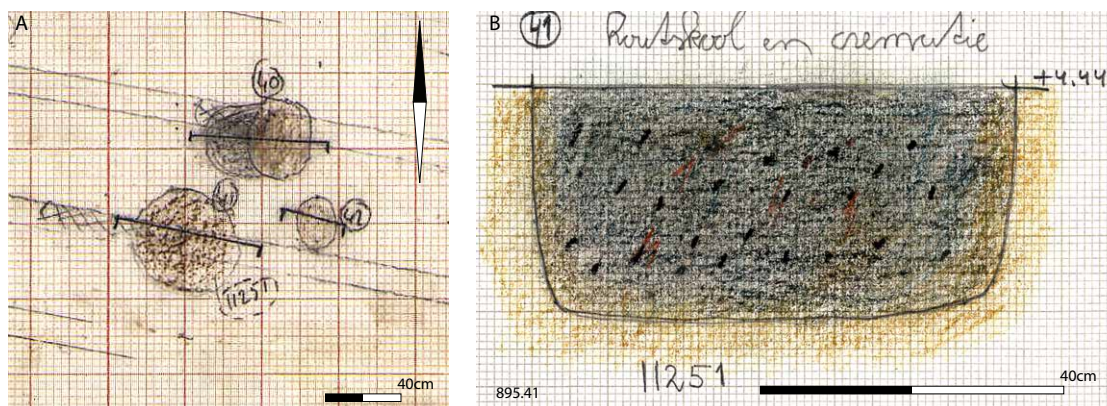


Figure 13.62 Pit with a cremation deposit 895.41 in the central part of the Mikkeldonk quarter. Drawings and photo H. Fokkens (A), H. Scholte Lubberink (B).

## NOTES

- Chapter 13. GrN. 16659: 2905 $\pm$ 35, calibrated to 1214-1001 cal BC with a certainty of 95.4% (intCal 13)
- Sample 11553A calibrated with IntCal 13: GrN 16661: 3420 $\pm$ 20: 1858-1660 cal BC (95.4%), of which 99.6% is situated in the 1770-1660 cal BC range, (0.4%: 1858-1855 cal BC).
- Sample 11553B calibrated with IntCal 13: GrN 16662: 2795 $\pm$ 20: 1004-901 cal BC (95.4%).
- Sample 11300 calibrated with IntCal 13: GrN 16734: 3020 $\pm$ 30: 1391-1131 cal BC (95.4%), of which 76.8% is situated in the 1322-1191 cal BC range, (19.7%: 1391-1337 cal BC; 1.5%: 1176-1163 cal BC; 2%: 1143-1131 cal BC).
- Sample 11300F calibrated with IntCal 13: GrN 16735: 2520 $\pm$ 20: 789-549 cal BC (95.4%), of which 52.3% is situated in the 646-549 cal BC range, (31.8%: 789-739 cal BC; 15.8%: 687-664 cal BC).
- Sample 11319 calibrated with IntCal 13: GrN 16736: 1740 $\pm$ 20: 242-378 cal AD (95.4%), of which 97% is situated in the 242-353 cal AD range, (3%: 367-378 cal AD).
- Sample 11277 calibrated with IntCal 13: GrN 16657: 2740 $\pm$ 20: 921-831 cal BC (95.4%).
- Sample 11279d calibrated with IntCal 13: GrN 16732: 3025 $\pm$ 35: 1396-1131 cal BC (95.4%), of which 96.1% is situated in the 1396-1191 cal BC range (1.7%: 1177-1163 cal BC; 2.2%: 1143-1131 cal BC).
- Sample 11279F calibrated with IntCal 13: GrN 16733: 3000 $\pm$ 30: 1376-1126 cal BC (95.4%), of which 93.8% is situated in the 1303-1126 cal BC range (6.2%: 1376-1348 cal BC).
- The oak trunk was preserved with PEG by the museum. Because it was so narrow, the curator thought it had shrunk, and added some 20 cm when they exhibited the find. The present-day reconstruction in the National Museum of Antiquities therefore is wider than the original find.
- Sample 11278B calibrated with IntCal 13: GrN 16658: 3025 $\pm$ 35: 1396-1131 cal BC (95.4%), of which 96.1% is situated in the 1396-1191 cal BC range (1.7%: 1177-1163 cal BC; 2.2%: 1143-1131 cal BC).
- Sample 11102 calibrated with IntCal 13: GrN 16655: 3020 $\pm$ 70: 1425-1054 cal BC (95.4%).
- Sample 11657 calibrated with IntCal 13: GrN 16902: 1610 $\pm$ 20: 396-535 cal AD (95.4%), of which 44.6% is situated in the 485-535 cal AD range (43.3%: 396-439 cal AD; 12%: 442-472 cal AD).
- Sample 11662F calibrated with IntCal 13: GrN 16903: 2965 $\pm$ 20: 1259-1117 cal BC (95.4%), of which 95.9% is situated in the 1235-1117 cal BC range (4.1%: 1259-1243 cal BC).
- Sample 11662G calibrated with IntCal 13: GrN 16904: 2505 $\pm$ 20: 778-543 cal BC (95.4%), of which 61.1% is situated in the 651-543 cal BC range (21.9%: 778-730 cal BC; 17%: 692-659 cal BC).
- Sample 11546 calibrated with IntCal 13: GrN 16660: 3155 $\pm$ 20 BP: 1496-1397 cal BC (95.4%), of which 83.7% is situated in the 1463-1397 cal BC range (11.7%: 1496-1472 cal BC).
- Sample 11032 calibrated with IntCal 13: GrN 16012: 2680 $\pm$ 25 BP: 895-802 cal BC (95.4%), of

which 82.2% is situated in the 860-802 cal BC range (17.8%: 895-864 cal BC).

18. Sample 11679 calibrated with IntCal 13: GrN 16905: 3380±25 BP: 1742-1621 cal BC (95.4%), of which 79.1% is situated in the 1700-1621 cal BC range (20.9%: 1742-1709 cal BC).
19. Sample 11656 calibrated with IntCal 13: GrN 16901: 2120±25 BP: 334-53 cal BC (95.4%), of which 99.4% is situated in the 203-53 cal BC range (0.6%: 334-330 cal BC).
20. Sample 11251 calibrated with IntCal 13: GrN 16656: 2970±35 BP: 1284-1054 cal BC (95.4%).

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# 14. Features in the Schalkskamp quarter

S. van As and H. Fokkens

## 14.1 INTRODUCTION

The Schalkskamp quarter was excavated in three parts, during three consecutive summer campaigns (1990-1992) west and east of the J.F. Kenndybaan. The plan of all features in the Schalkskamp quarter (fig. 14.1) shows that the northern, eastern and western parts of enclosing ditch systems were excavated. Within the enclosure ditches, several houses were found with a similar orientation. Other settlement structures and features were outbuildings like granaries, pits, wells and rows of posts. In all three possible burial deposits were excavated, one within a peripheral ditch.

Several houses and ditch systems date to the Roman Period. This was interpreted as an enclosed settlement and became known as *the* Schalkskamp settlement. As such it was published by Dieke Wesselingh in her dissertation on Roman Period settlements in Oss-Ussen (Wesselingh 2000: chapter 5). We will discuss the Roman Period data here again, for the sake of completeness, but in less detail. Most attention will be devoted to the older features in the Schalkskamp district since these were not yet discussed by Wesselingh.

The numbering of the structures in the Schalkskamp area continues from the Ussen and Mikkeldonk excavations, so the first house plan in the Schalkskamp quarter has number SK134. The same was done with the granaries: from S534 to S572. There is a gap between granary S550 and S560, as these granaries were already assigned to outbuildings in the Mikkeldonk quarter. Fences and ditches are all indicated with F-numbers. The sequence in Oss-Schalkskamp starts with F136 and continues to F166.

With respect to the numbering of pits and wells we decided to deviate from earlier publications. Wesselingh (2000) continued the numbering devised by earlier excavators because in the older Ussen excavations features had no unique number yet. But after 1986 all features were given a unique number (cf. chapter 12.6) so allocating an additional number during post-excavation research was not necessary any longer. An extra number made administration more difficult and complex. The numbering for pits (P600-P635) as used by Wesselingh (2000, 176), cannot directly be connected to numbers given in the field and are not indicated on field drawings. For instance: on field drawings P607 and P608 of the Wesselingh numbering are indicated as 995.1 and 995.400 (cf. fig. 14.22). This means they were feature 1 and feature 400 in trench 995. These are also the numbers of finds and all other documentation. We have decided to stick to these original field indications as much as possible, but when necessary we will of course also refer to the P-numbers of Wesselingh.

## 14.2 HOUSES

Ten house plans were found in Schalkskamp. Eight houses were already well known. Most houses from the Roman Period are already discussed in the dissertation of Wesselingh (2000), and are only reproduced here. Two house plans (SK141,



Figure 14.1 Plan of all features and structures in the Schalkskamp quarter. Five areas are indicated with clusters of houses described in the text. Drawing S. van As.

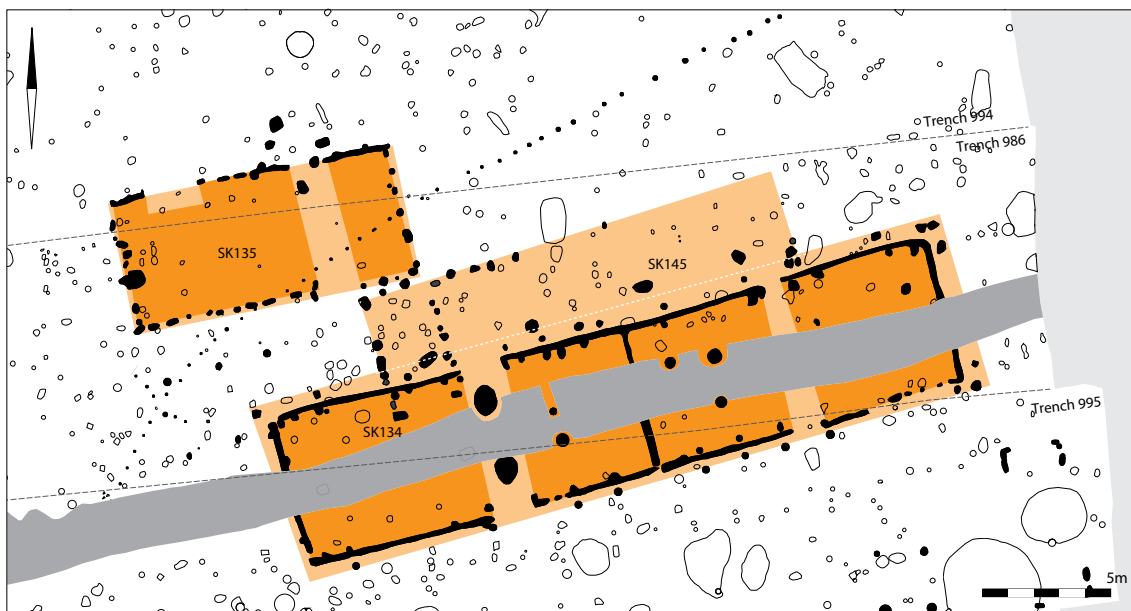


Figure 14.2  
Cluster 1:  
houses H134,  
H135 and  
H145. Drawing  
S. van As.



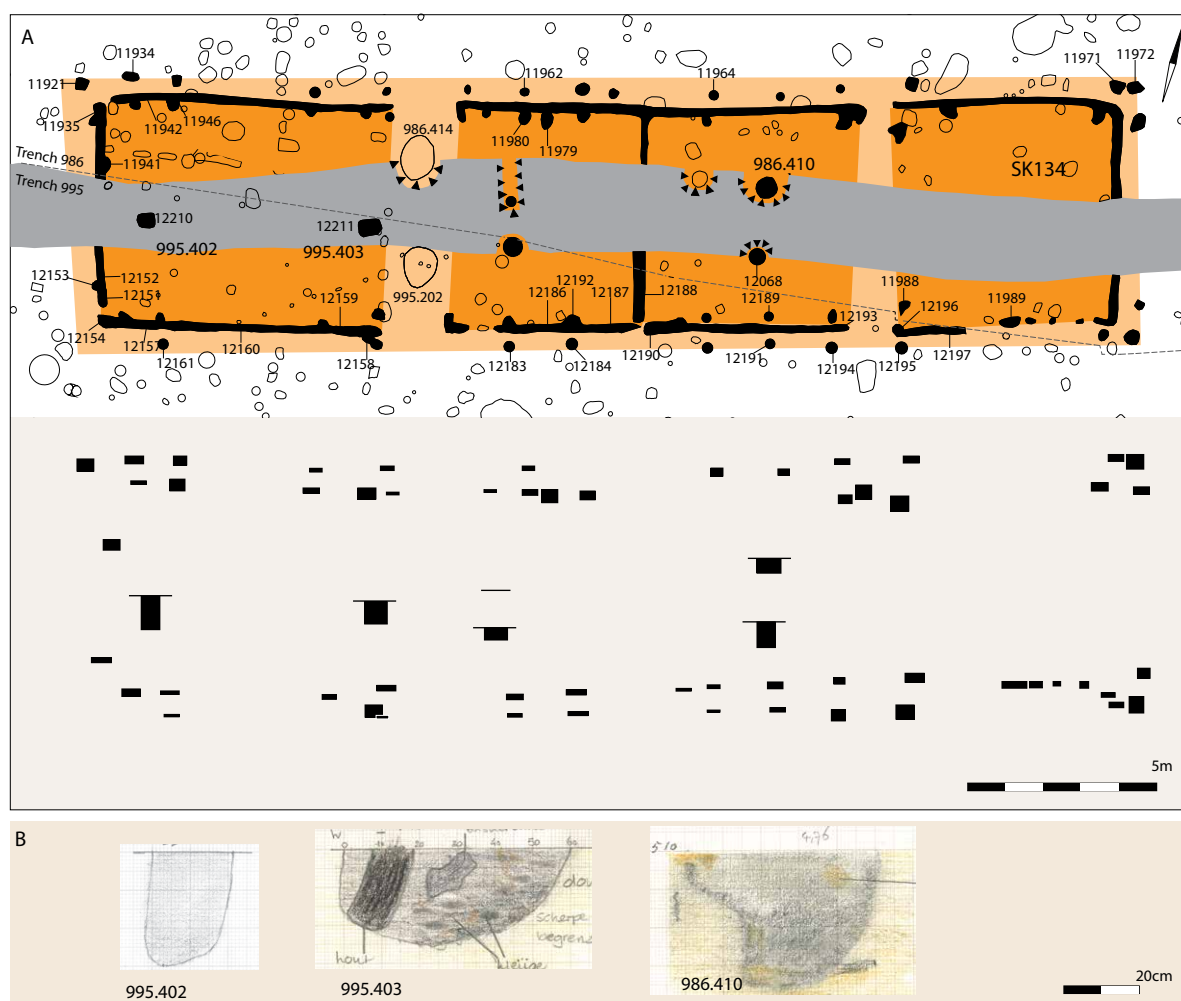


Figure 14.3 House SK134. Field drawings of some of the central posts. Drawing S. van As; J.-Albert Schenk (995.402), P. Haane (995.403), M.F. van Oorsouw (986.510).

House	Type	Length (m)	Width (m)	Area (m <sup>2</sup> )	Date
SK134	9B	26,5	5,8	153,7	ERP Ia (AD 17±5)
SK135	6A?	10,9	5,1	55,6	LIA/ERP
SK136	7A?	7,5	5,7	42,8	LIA (phase J-K)
SK137	5A	8.5 or >	4,6	39.1 or >	LIA
SK138	8B	22,4	5,5	123,2	ERP (phase M)
SK139	8?	9,8	5,9	57,8	LIA (J-K)
SK141	4A/B	10 or >	5,3	53 or >	IA
SK142	4A/B	8.9 or >	4.5 or >	40 or >	IA
SK143	5A	20 or >	5,4	108	IA
SK144	?	10 or >	5.8 or >	58 or >	LIA/ERP (K/L)

Table 14.1 List of houses in the Schalkskamp quarter.

SK144) were not recognised in the field because they were either difficult to recognise, only partly preserved, or doubtful. One structure was earlier published as a possible house (SK140), but is no longer considered a house. Still, the configuration of the features belonging to these house plans remains curious enough to describe the constructions as detailed as possible. The general characteristics of all houses are presented in table 14.1.

#### 14.2.1 Cluster 1 of houses SK134, SK135 and SK144

Houses SK134, SK135 and SK144 are situated in a large cluster of features with a high density of post pits (fig. 14.2). SK144 was discovered on the drawing table because it was overbuilt by SK134. SK144 probably represents the initial habitation phase of the yard. It is assumed that all three buildings represent consecutive phases of habitation on the same yard, where SK135 probably is the oldest. Granary S560 is situated in the direct vicinity of the cluster, and has a corresponding orientation with the house plans. It is therefore presumed that the granary stood on the same yard. S560 cannot have coexisted with SK134, since it seems to intersect SK134. A row of small posts, probably a fence (F136) crossed straight through SK135. As this did not show any signs of change in visibility inside or outside the house, we assume that it is younger than the house.

#### House SK134

House SK134 was disturbed by a recent ditch, splitting the plan in half lengthways (fig. 14.3).<sup>1</sup> The plan was excavated in two trenches (995 and 986). Still, the house was immediately recognised, due to its typical and distinctive bedding trenches. SK134 intersected another structure, which therefore was hard to recognise (SK144). SK134 itself was intersected by granary S560 in the north-western corner. We recovered almost all central posts from under the recent ditch that splits the plan in half. They still contained oak posts, which could be used for tree-ring dating.

*Construction details:* Disturbance of the plan by a modern ditch across the centre may have obscured several central posts. The walls were founded in a bedding trench, supported by small posts against the wall. Some outer posts were still visible. Two sets of entrances, set opposite each other in the long walls, separate the two-aisled parts from the three-aisled part. Possible entrances in the short walls are concealed by the recent ditch, but are not expected with such house plans. A remarkable feature is a small

trench that divides the three-aisled part, and therefore the whole plan, in half. It is not clear whether or not there was an opening in this partition. Typologically this house has an Oss-type 9B plan, but it deviates in several ways from the standard set by Schinkel (1998). Usually the combined two-three-two-aisled layout is associated with extremely long house plans, ranging from 36 to 42.3 m. SK134 is ‘only’ 28.3 m long. The three-aisled sections of the 9A houses in Ussen (for example SK105 in Oss-Ussen, Schinkel 1998, 201) are presumed to have had cattle stalls. These cannot be seen in the plan of SK134 in Schalkskamp. If the three-aisled section is interpreted as a byre, the questions remain why that was separated in the centre.

In the western part are two pits situated just inside the house, next to the entrances. They were similar in location, size, shape and fill. Both pits were no deeper than approximately 10 cm. They contained some pottery and a lot of charcoal. An interpretation as hearth pits seems possible, but is difficult to support because of the location so close to the entrances.

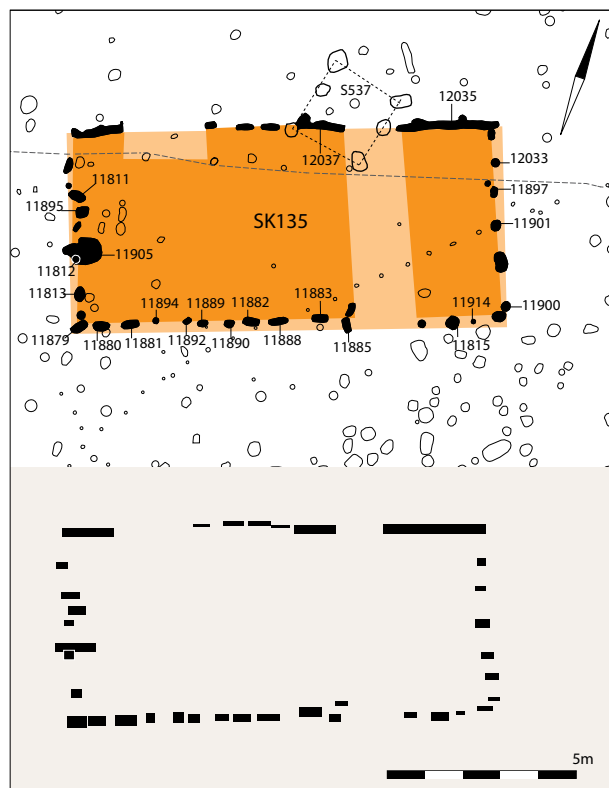


Figure 14.4 House SK135. Drawing S. van As.

Find number	Trench	Feature	Material	Number
11921	986	406	cer	2
11934	986	408	cer	1
11935	986	481	cer	2
11941	986	498	cer	4
11942	986	270	cer	6
11946	986	483	cer	2
11971	986	338	cer	2
11972	986	337	cer	1
11979	986	488	cer	3
11980	986	487	cer	1
11988	986	303	cer	2
11989	986	328	cer	2
12068	986	511	cer	3
12151	995	201 b	cer	3
12152	995	201 a	cer	2
12153	995	205	cer	1
12154	995	201 c	cer	3
12157	995	201 d	cer	5
12157	995	201d	bone	1
12158	995	216 b	cer	3
12159	995	201 f	cer	7
12160	995	201	cer	20
12161	995	263	cer	3
12183	995	244	cer	1
12184	995	241	cer	3
12186	995	201 h	cer	14
12187	995	201 i	cer	6
12188	995	201 j	cer	10
12189	995	233	cer	3
12190	995	210 L	cer	30
12191	995	234	cer	3
12192	995	220	cer	4
12193	995	201 m	cer	1
12194	995	232	cer	1
12195	995	228	cer	3
12196	995	225	cer	1
12197	995	201 n	cer	10
12210	995	404	cer	2
12211	995	403	tephra	15

Table 14.2 Finds from house SK134.

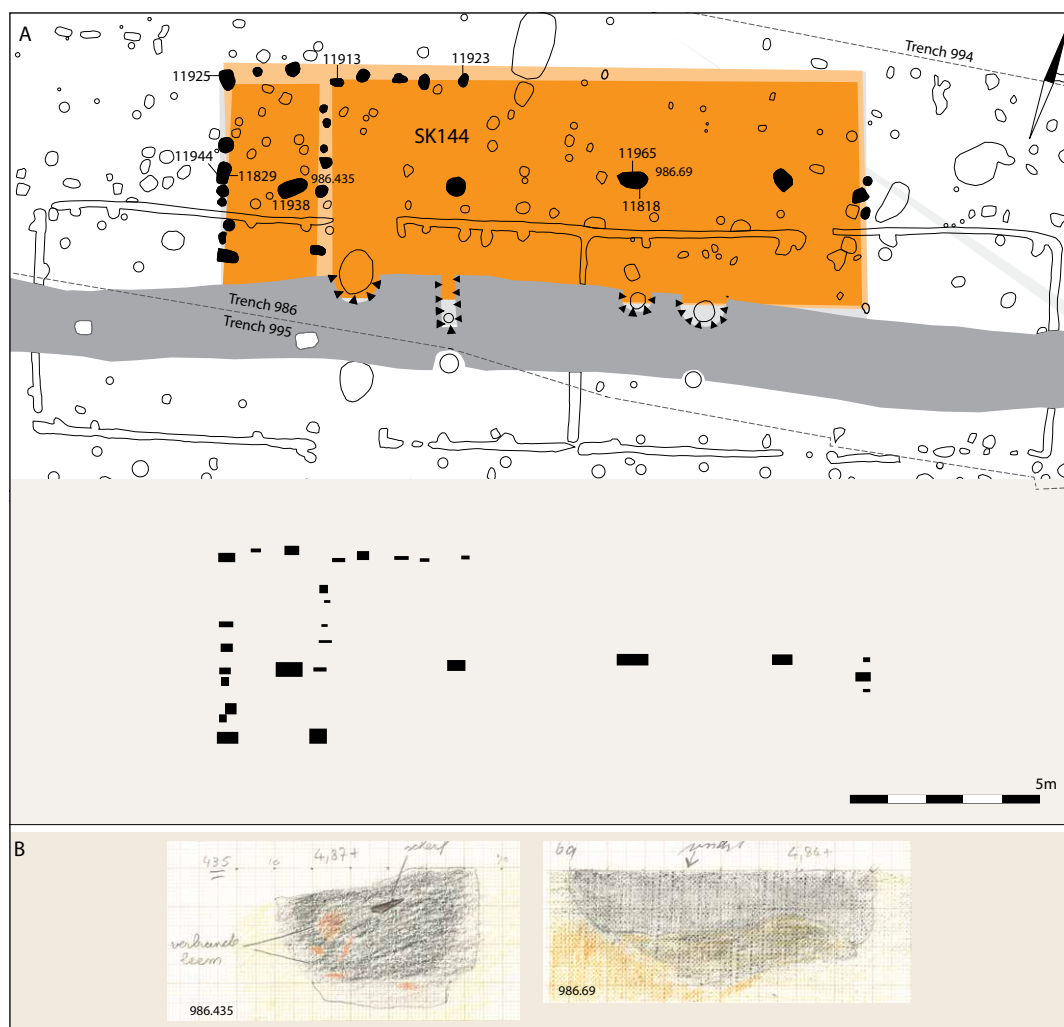


Figure 14.5  
House SK144.  
Drawings  
S. van As (A),  
P. Ploegaert  
(986.435)  
P. Haane  
(986.69).

Moreover, these pits were originally at least 40 cm deep, deeper than a hearth need be.

*Abandonment:* One post pit (995.403; fig. 14.3) still had the remains of a post in its fill. It is very likely that more posts were left when the structure was abandoned and the remains left standing.

*Finds and dating:* 285 pot fragments derived from SK134 (table 14.2). The assemblage includes some briquettage ware. Other finds consisted of a tephra millstone, a fragment of a triangular clay loom weight, and a small fragment of calcinated bone. The find complex appeared to date the plan to the Late Iron Age phase K/L, c. 150-0 cal BC according to the analysis by P. van den Broeke. However, dendrochronological research of the wooden remains of the western central roof-support posts yielded an absolute date of AD 17 ± 5. This probably implies that the material found in the

wall trenches does not belong to the habitation phase proper, but was already lying around as a result of earlier habitation (Wesselingh 2000, 173).

### House SK135

House SK135 was excavated in two trenches. The northern wall was excavated in trench 994, but the largest part of the house was found in trench 986 (fig. 14.4).<sup>2</sup> The house is intersected by granary S539.

*Construction details:* House SK135 is a one-aisled house plan. The walls are marked by a single row of posts, and in some places fragments of a foundation trench are present. Possibly the complete wall originally consisted of a foundation trench, like the north-easter part of the house suggests. In that case, SK135 could be classified as a type 6 (cf. section 3.2.2.6). Two entrances were found on both sides of the long walls.

Find number	Trench	Feature	Material	Number	Date
11811	986	65	cer	4	IA
11811	986	65	loom weight	3	IA
11812	986	66b	cer	2	IA
11812	986	66b	bone	1	-
11813	986	67	cer	4	IA
11815	986	68	cer	3	IA
11879	986	184a	cer	6	IA
11880	986	185	cer	3	IA
11881	986	191	cer	1	IA
11882	986	202	cer	4	IA
11883	986	210	cer	4	IA
11885	986	211	cer	4	IA
11888	986	203	cer	4	IA
11889	986	200	cer	2	IA
11890	986	201	cer	1	IA
11892	986	194	cer	3	IA
11894	986	192	cer	3	IA
11897	986	240	cer	4	IA
11900	986	233	cer	3	IA
11901	986	239	cer	2	IA
11905	986	66a	cer	1	IA
11914	986	231	cer	1	IA
12033	994	127	cer	2	IA
12037	994	144	cer	18	LIA/ERP

Table 14.3 Finds from house SK135.

*Abandonment:* No indications.

*Finds and dating:* The complex of pottery sherds, consisting of 109 fragments (table 14.3), can be dated to the Late Iron Age or the Early Roman Period. Other finds include a nearly complete triangular clay loom weight, a small piece of calcinated bone, and a fragment of a blue glass *La Tène* bracelet (cf. table 10.1).

#### *House SK144*

House SK144 was discovered on the drawing table during post-excavation research. Especially the row of heavy central posts triggered the interpretation as a house plan. Moreover, the physical characteristics of wall posts and the orientation of remains of the

walls strongly resemble the adjacent house plans. If this really was a house, it is badly preserved. There is no taphonomic reason why the northern wall posts of SK144 would be missing. The southern half, however, was probably partly obscured by SK134 and a modern ditch. The present outline (fig. 14.5) therefore is an estimate.

*Construction details:* The house seemed to have had one row of central posts, dividing the house into two aisles. The wall posts were single posts, placed close to each other, like the nearby house SK135. A compartment seemed to have been arranged in the western part of the construction, delimited by an extra row of posts. Other examples such as an extra ‘room’ in the west have also been found in the Oss-Horzak settlement.

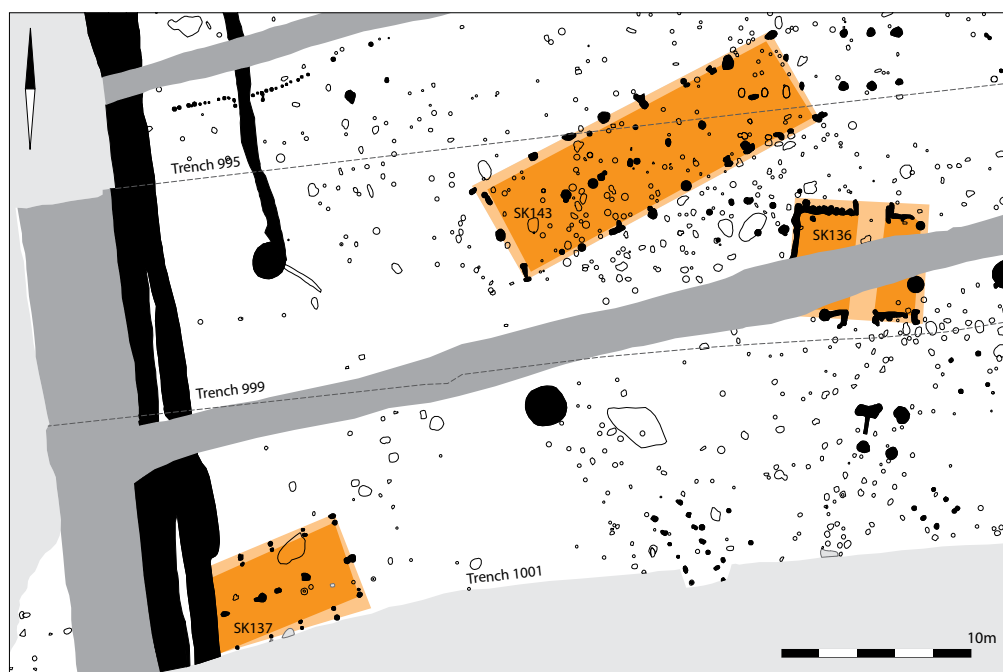


Figure 14.6 Cluster 2: Houses SK136, SK137 and SK143. Drawing S. van As.

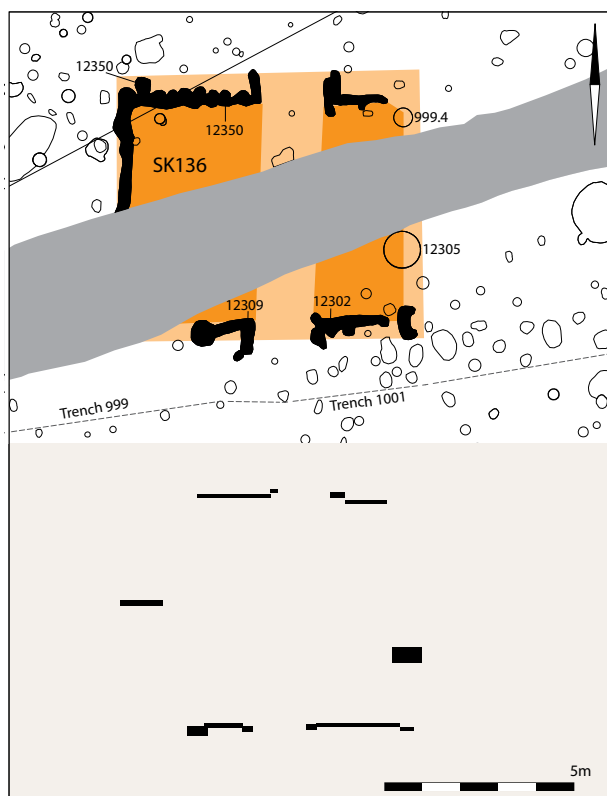


Figure 14.7 House SK136. Drawing S. van As.

Entrances could not be recognised. It was not possible to determine a possible roof type. Its place in the Oss typology also remains unclear. Given its incomplete state we refrain from further speculations.

*Abandonment:* The central posts showed a fill that must have been deposited after the dismantlement of the posts. For example: Feature 986.435 has particles of loam and sherds throughout the entire fill, while feature 986.69 had clearly lumps of yellow sand in the fill: the posts were taken out and the holes were filled in (fig. 14.5B). This indicates that the yard was still in use after dismantlement and supports the theory that the house represents a phase of habitation that precedes SK134.

*Finds and dating:* The post pits yielded a small complex of 36 sherds that provided no clear dating (table 14.4). Based on its intersection by house SK134 ( $AD\ 17 \pm 5$ ), the house plan presumably dates to the end of the Late Iron Age and/or start of the Early Roman Period, and was a predecessor of SK134.

#### 14.2.2 Cluster 2: Houses SK136, SK137 and SK143

The house plans of SK136, SK137 and SK143 are all only partly or poorly preserved. House 136 is largely intersected by a recent ditch (fig. 14.6), therefore its eastern short wall and the inner structure is unclear. House SK137 is intersected by a Roman Period ditch on the western side. SK143 was only recognised on



Find number	Trench	Feature	Material	Number	Date
11811	986	65	cer	4	IA
11811	986	65	loom weight	3	IA
11812	986	66b	cer	2	IA
11812	986	66b	bone	1	-
11813	986	67	cer	4	IA
11815	986	68	cer	3	IA
11879	986	184a	cer	6	IA
11880	986	185	cer	3	IA
11881	986	191	cer	1	IA
11882	986	202	cer	4	IA
11883	986	210	cer	4	IA
11885	986	211	cer	4	IA
11888	986	203	cer	4	IA
11889	986	200	cer	2	IA
11890	986	201	cer	1	IA
11892	986	194	cer	3	IA
11894	986	192	cer	3	IA
11897	986	240	cer	4	IA
11900	986	233	cer	3	IA
11901	986	239	cer	2	IA
11905	986	66a	cer	1	IA
11914	986	231	cer	1	IA
12033	994	127	cer	2	IA
12037	994	144	cer	18	LIA/ERP

Table 14.4 Finds from house SK144.

the drawing table while analysing the high density of features in the western part of Schalkskamp. Since this part of Schalkskamp was excavated under pressure of time, it is understandable that house plans were overlooked in the myriad of features.

### *House SK136*

House SK136 is largely intersected by a sub-recent ditch (fig. 14.7). When this structure was uncovered, it was initially interpreted as a possible sanctuary due to its small size. In support of that hypothesis was the large number of complete pots found stacked in pit 999.4 (cf. fig. 5.8), thought to be indicative of a hoard. Since we think that house SK136 was younger, It is not likely that 999.4 was associated with SK136. It

is possible, but there are no arguments either pro or contra such a hypothesis.

*Construction details:* When the full dimensions of the structure were revealed, the interpretation changed from a ritual structure to a regular house. Because the house plan is intersected by a recent ditch it could not be determined whether central roof-supporting beams were present. The walls were set in a bedding trench of which only 10 cm remained. Several posts were set deeper than the foundation trench. The eastern short wall is not visible. The bedding trench could have been lost here, since the visible ditches of the western part were only very shallow. Therefore the house may have been longer. The roof type remains unclear due to the poor state of preservation of the

Find number	Trench	Feature	Material	Number	Date
12300	999	58	cer	3	LIA/ERP
12302	999	62	cer	4	LIA/ERP
12305	999	70 a	cer	47	LIA/ERP
12350	999	245a	cer	1	LIA/ERP
12269	999	4	cer	190	LIA/ERP

Table 14.5 finds from house SK136.

Find number	Trench	Feature	Material	Number	Date
12359	1001	23	cer	8	LIA/ERP
12360	1001	33	cer	2	LIA/ERP
12361	1001	32	cer	1	LIA/ERP
12373	1001	17	cer	2	LIA/ERP
12374	1001	18	cer	1	LIA/ERP
12375	1001	24	cer	11	LIA/ERP
12376	1001	26	cer	3	LIA/ERP

Table 14.6 Finds from house SK137

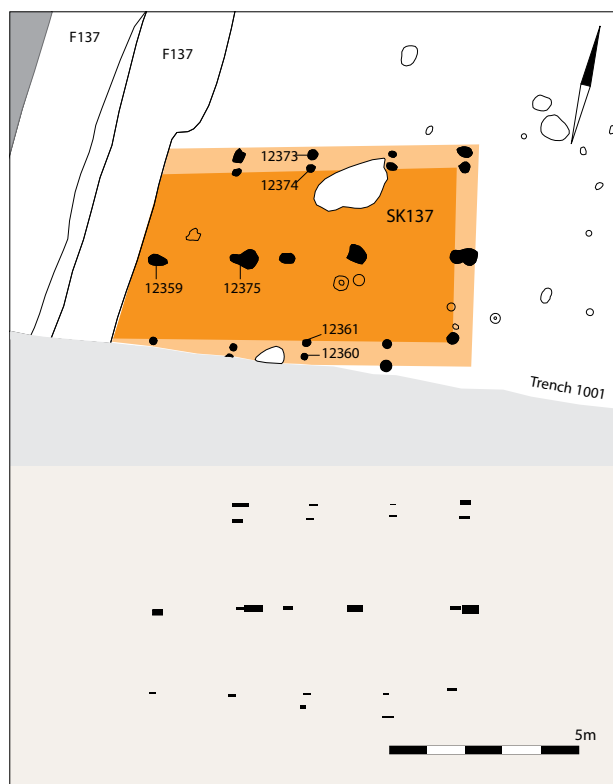


Figure 14.8 House SK137. Drawing S. van As.

house plan, and lack of visible central post pits. There are two entrances opposite each other in the northern and southern long walls. The entrances are visible as openings in the bedding trenches with supporting posts placed on the outsides of the wall. Although there are many uncertainties on how the house was constructed, the plan was classified as a possible type 6 house.

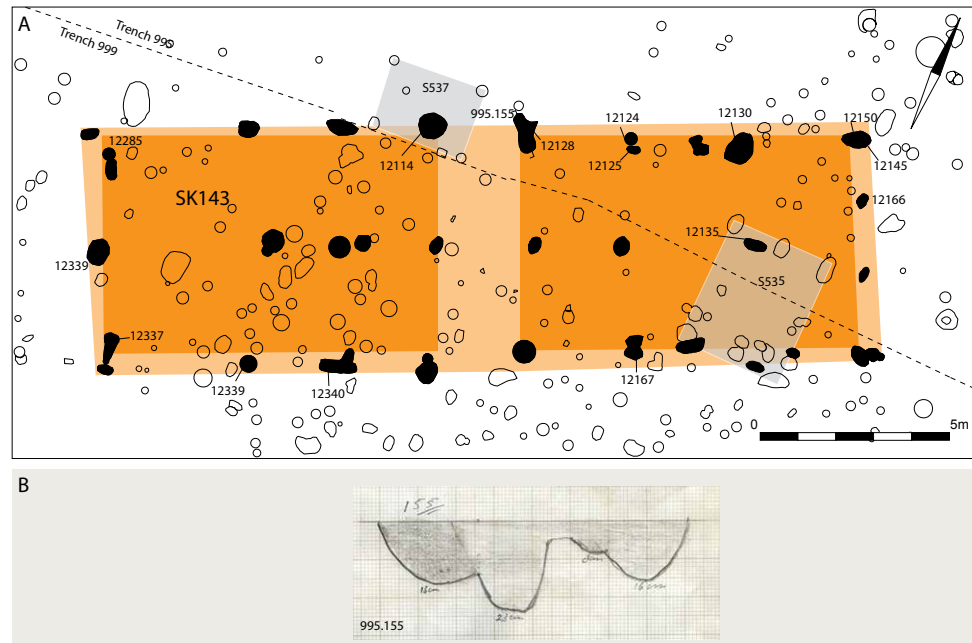
*Abandonment:* No indications.

*Finds and dating:* Typologically, house SK136 can be classified as a type 6 house, which would place it in the very end of the Late Iron Age or the beginning in the Roman Period (cf. chapter 3). For a while we have thought that a date was provided by feature 999.4 in the northeaster part of the house, because that had a complex of sherds dating to phase J-K of the Late Iron Age. 190 Sherds of prehistoric pottery were found, making up seven nearly complete pots (fig. 5.8). However, it is not probable that this feature actually belongs to the house. It is not placed in a position that suggests a structural relation to the house; the complex probably is older than the house (table 14.5).

#### *House SK137*

House SK137 is typologically characterised as a type 5A house, generally dating to the Late Iron Age (fig. 14.8).

Figure 14.9 House SK143. The field drawings lacked data for most of the posts in the centre of the swarm because of time pressure during the excavation. Therefore, sections are left out. Drawings S. van As (A), J.A. Schenk (B).



Part of the plan is intersected by a Roman ditch and a recent ditch. It has a single row of large post pits comprising the central roof-supporting structure, dividing the house into two aisles. The wall posts are placed in pairs. The short walls were not preserved. But these are often absent in the archaeological record of the shorter type 5A houses (cf. Schinkel 1998, 194).

*Abandonment:* No indications.

*Finds and dating:* The post pits contained a small complex of handmade pottery, probably dating to the Late Iron Age or start of the Early Roman Period (table 14.6). The complex had not enough sherds for an accurate dating. Most type 5A houses in Ussen date to the Late Iron Age. Considering the house type, the handmade sherds and the fact that the house predates the Roman settlement-ditch, a date from the Late Iron Age is plausible.

### House SK143

House SK143 was recognised in a 'swarm' of post pits present in trenches 995 and 999 (fig. 14.9) during post-excavation analysis. Granaries S537 and S535 were built on the same location, but it is not clear whether they were older or younger than SK143. The biggest problem in the analysis of the features of the house plan was the poor state of recording. This trench was excavated on one of the last days of the campaign. We had to choose between not excavating at all or opening an extra trench and documenting features

only in the horizontal. We knew that afterwards everything would be lost, so we chose the last option. Therefore no feature numbers were assigned to a large cluster of post pits in excavation trench 999, almost no section drawings were made, and only of some of the posts was the depth below the surface noted. Four of the central posts and various wall posts could therefore not be investigated in detail.

*Construction details:* SK143 is a two-aisled house plan with one row of central posts. Seven posts can be described as possible central posts, and several posts were placed close to these central features, presumably as reinforcement of the roof-bearing construction. Wall posts were recognised on both long sides, mostly along each side of a central post. Several of these features were recognised as double wall posts, but there is no structural consistency in that respect. The drawings of the horizontal surface suggest that some features, especially the central posts, still had a visible post pipe. The plan resembles the type 5A houses. It is not clear where the entrances were, which is often hard to detect anyway in type 5A house plans. A central post seems to have stood in the western short wall, which could indicate that the house had a saddle roof on this side. Most wall features are rather large, possibly is due to the removal of the posts when the house was abandoned. The eastern part of the house seems to have been straight, with no central post found in the short wall. This indicates a hipped roof on that side.

Find number	Trench	Feature	Material	Number	Date
12285	999	45	cer	1	IA
12114	995	147	cer	8	IA
12128	995	155	cer	1	IA
12124	995	165	cer	2	IA
12125	995	166	cer	1	IA
12130	995	173	cer	5	IA
12145	995	191	cer	3	IA
12150	995	191	cer	1	IA
12166	995	278	cer	5	IA
12167	995	278	cer	1	IA
12337	999	190	cer	4	IA
12339	999	201	cer	1	IA
12340	999	213	cer	3	IA

Table 14.7 Finds from house SK143.

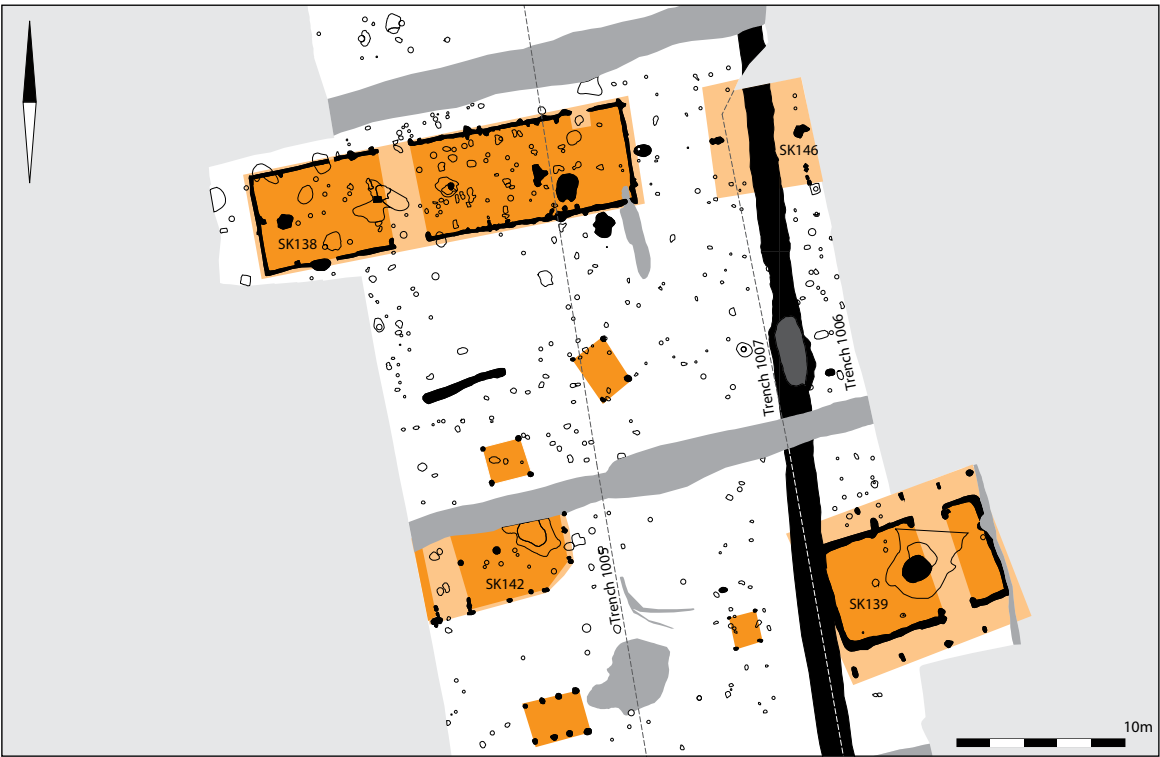


Figure 14.10 Cluster 3: houses SK138, SK139 and SK142. Drawing S. van As.

*Abandonment:* Most posts seem to have been dismantled. Feature 995.155 (fig. 14.9) is a perfect example of a feature interpreted as the remains of double placed posts that were removed by digging them out. A wide cut was visible, yet the line of the feature hinted at where two posts had been standing. The same was true for feature 995.191. The core of the post pits seemed to have been visible in the feature's surface. A section showed that the posts were removed. The cores of post

pits were also visible in two central posts. Excavation data of these two posts was missing. The house was most likely completely removed after it fell into disuse.

*Finds and dating:* The complex of finds, a small number of potsherds, can roughly be dated to the Iron Age (table 14.7). Most two-aisled type 5A houses can most frequently be dated to the Late Iron Age. The finds, typology and its orientation correlating with



Figure 14.11  
House SK138:  
plan and  
sections of a  
few central  
posts (A, B).  
S. van As (A);  
Drawings  
and photo  
L. Theunissen  
(1008.10),  
P. Haane  
(1005.468),  
H. Fokkens  
(photo),  
J. A. Schenk  
(1007.100).



SK137, suggest a date from the Late Iron Age. This is, however, just an assumption.

### *Discarded structure*

A possible house that was recognised during post-excavation analysis, eventually was discarded because

it was just too fragmented (fig. 14.10). It had the exact same location as SK143, but lacked clear central posts. A large number of post pits was documented around house SK143, and selecting a few as a possible house was easy, but in the end we considered this structure unsatisfactory and too irregular to properly support a well-structured roof.

### *14.2.3 Cluster 3: houses SK138, SK139 and SK142*

In the central part of Schalkskamp three plans were excavated during the campaign of 1991 (fig. 14.11). The dating of these houses ranges from the last century cal BC (SK142, SK139) to the first half of the first century AD (SK138).

#### *House SK138*

House SK138 was excavated in three trenches: 1005, 1007 and 1008 (fig. 14.11). Trench 1008 was opened up as an extension to trench 1005 in order to retrieve the

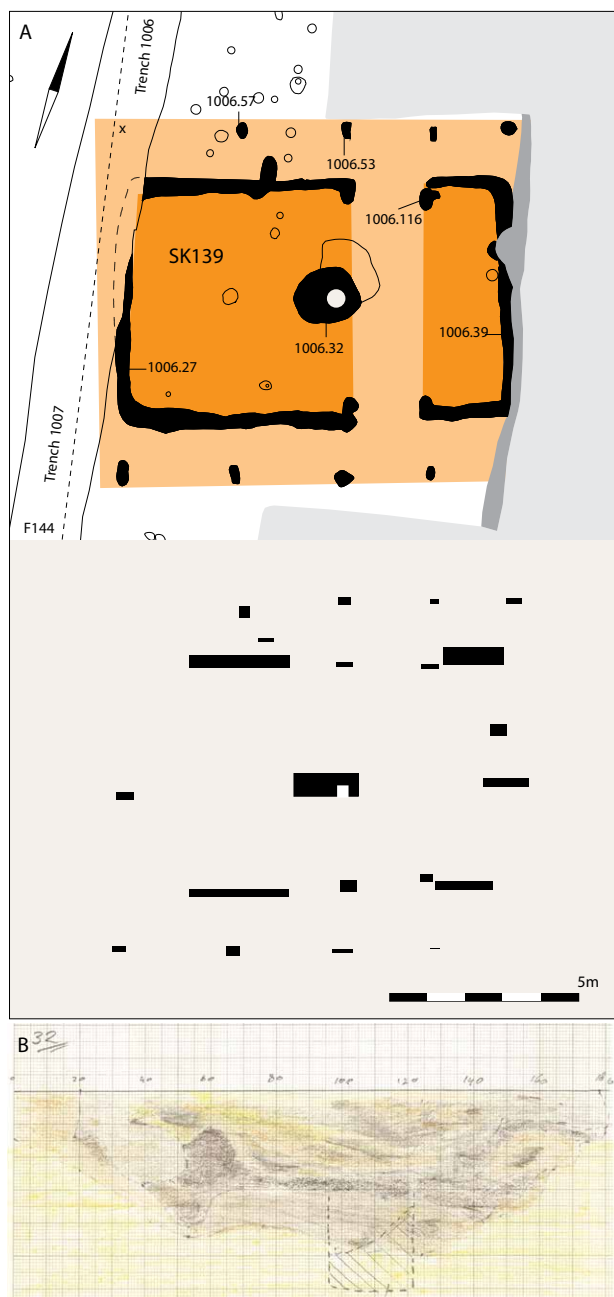


Figure 14.12 House SK139. Drawings S. van As (A), J. A. Schenk (B).

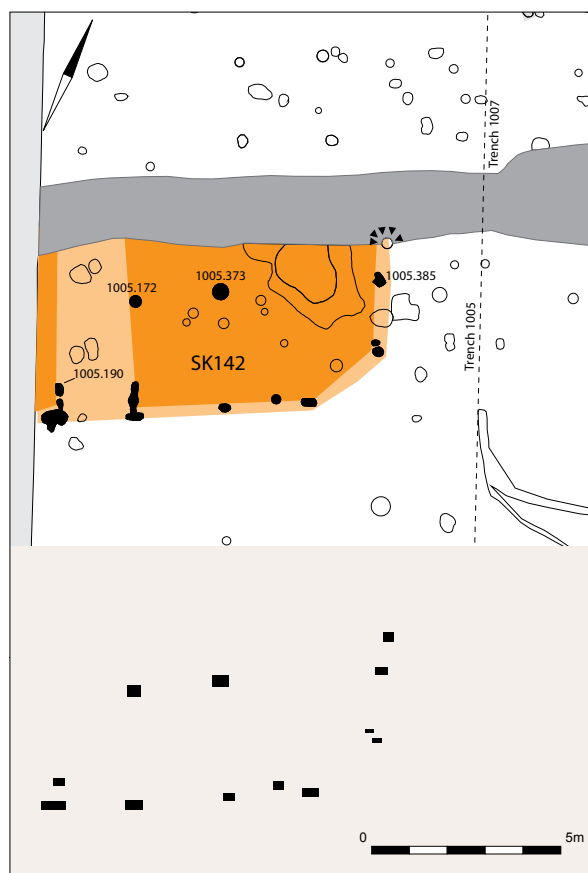


Figure 14.13 House SK142. Drawing S. van As, H. Fokkens.



whole plan. So trenches 1005 and 1008 were open at the same time. House SK138 was published earlier by Wesselingh (2000, 173).

*Construction details:* SK138 had five central posts, dividing the plan into two aisles. The most eastern central post was placed just outside the eastern short wall, indicating that the house had a gable roof on the eastern side. A post pit (however smaller than its counterpart) against the western short wall suggests the same on this side. The walls were bedded in a trench. The plan completely lacks outer posts. In the bedding trenches they were not visible either, though we have sectioned these lengthwise. Considering all characteristics, the house can be determined as an Oss-type 8B house, which was common in the Roman Period. Apart from the usual entrances opposite each other in the central part of the long walls, a third entrance may have been situated in the northern long wall on the east side, c. 2 m from the corner.

*Abandonment:* Four out of five central roof-supporting beams contained the remains of wooden posts (cf. fig. 14.12B, C, D, E). The oak remnants did not provide enough tree rings for a dendrochronological dating. Since the central beams were still in place, it is

possible that this house was abandoned while it was still (partly) standing. This may mean that the entire yard was abandoned when the house was left. On the other hand, the post pit has a very homogenous fill, even though water movement may have caused colour to disappear (fig. 14.12D). The very large features (shallow) around the posts may indicate that an attempt had been made to extract the posts, obviously without success.

*Finds and dating:* The 120 pottery fragments derived from the features of SK138 were all identified as fragments of locally produced ware as opposed to imported ware (table 14.8). This complex dates to phase M, the Early Roman Period (AD 0-50; Wesselingh 2000, 173). The house is likely to be the latest of the three houses from this cluster, being the only one that clearly dates to the Early Roman Period. Moreover, since it seems to have been abandoned without dismantling, the entire yard may have gone out of use in that period.

#### *House SK139*

House SK139 was almost entirely situated in trench 1006 (fig. 14.13). When we discovered the western half,

Trench	Feature	Material	Number	Date
1005	82	cer	6	ERP M
1005	84	cer	3	ERP M
1005	91	cer	4	ERP M
1005	107	cer	4	ERP M
1005	291	cer	1	ERP M
1005	467	cer	13	ERP M
1005	467	stone	6	ERP M
1005	468	cer	2	ERP M
1007	46	cer	18	ERP M
1007	59	cer	3	ERP M
1007	100	cer	3	ERP M
1007	191	cer	9	ERP M
1008	2	cer	3	ERP M
1008	3	cer	23	ERP M
1008	5	cer	6	ERP M
1008	21	cer	9	ERP M
1008	25	cer	5	ERP M

Table 14.8 Finds from house SK 138.1.

we extended trench 1006 on the east side (the very limit of our possibilities for excavation). We found the eastern short side, but only just. The western short wall is obscured by ditch F144, a Late Iron Age ditch of phase K (cf. section 14.5.1). We studied the intersection of F144 and the bedding trench of SK139 in much detail, but it never became very clear which came first. No contrast between the bedding trench and the larger ditch was visible due to homogenisation of the features by site formation processes. In the day notes is stated that one section suggested, be it rather vaguely, that the house intersected the ditch. Re-analysing the field data, we have not been able to either corroborate or refute this observation on the basis of section drawings.

*Construction details:* One central post was recognised, which was particularly large and deep dividing the building into two aisles. The walls were founded in a bedding trench. Outer posts were placed about 1 m outside the wall. Entrances were clearly recognisable in both long walls in the eastern part of the building. Additional supporting entrance posts were placed with both entrances inside the house, in order to reinforce a sturdy entrance construction. Both short walls were only partly visible, but neither of these walls seemed to have had a central post, meaning that the house probably had a hipped roof.

Its place in the house typology is difficult to assess. Because of the posts outside the walls the plan strongly resembles type 8C houses, which generally date to the Early Roman Period (cf. chapter 3). However, these houses generally are much longer and have central posts in the short sides. It also resembles the type 6 houses. These do not have posts outside the walls in general, but we know of several examples with only one central post. Therefore we think SK136 should be classified as a type 6 house, with a possible date

starting in the last decennia before the beginning of the Christian era.

*Abandonment:* The outline of a post was still visible in the central post pit (fig. 14.13B). The fills of the other post pits were homogenous. This means that the building was abandoned, and perhaps only partly dismantled.

*Finds and dating:* A small complex of not diagnostic finds was found in the post pits (table 14.9). Given the fact that this house is probably a type 8 house, we think it should indeed be younger than ditch F144, and probably dates to phase L or M.

#### *House SK142*

Structure SK142 was not recognised during fieldwork. The reason that we are considering this now is that the structure has the typical configuration of a set of entrance posts (fig. 14.14). One might find several features that could be placed on the outline but we could find no real pattern, so we have our doubts whether this really was a house.

*Abandonment:* All assigned posts were filled with homogenous grey sediment. One central post (feature 1005.373) had a darker core, on the spot where the actual post must have been. The form of this fill indicated that the post was removed when the house was abandoned. This indicates that the house was (at least partly) dismantled.

*Finds and dating:* Only one sherd was found, no date can be attached to the structure.

#### *Structure SK140*

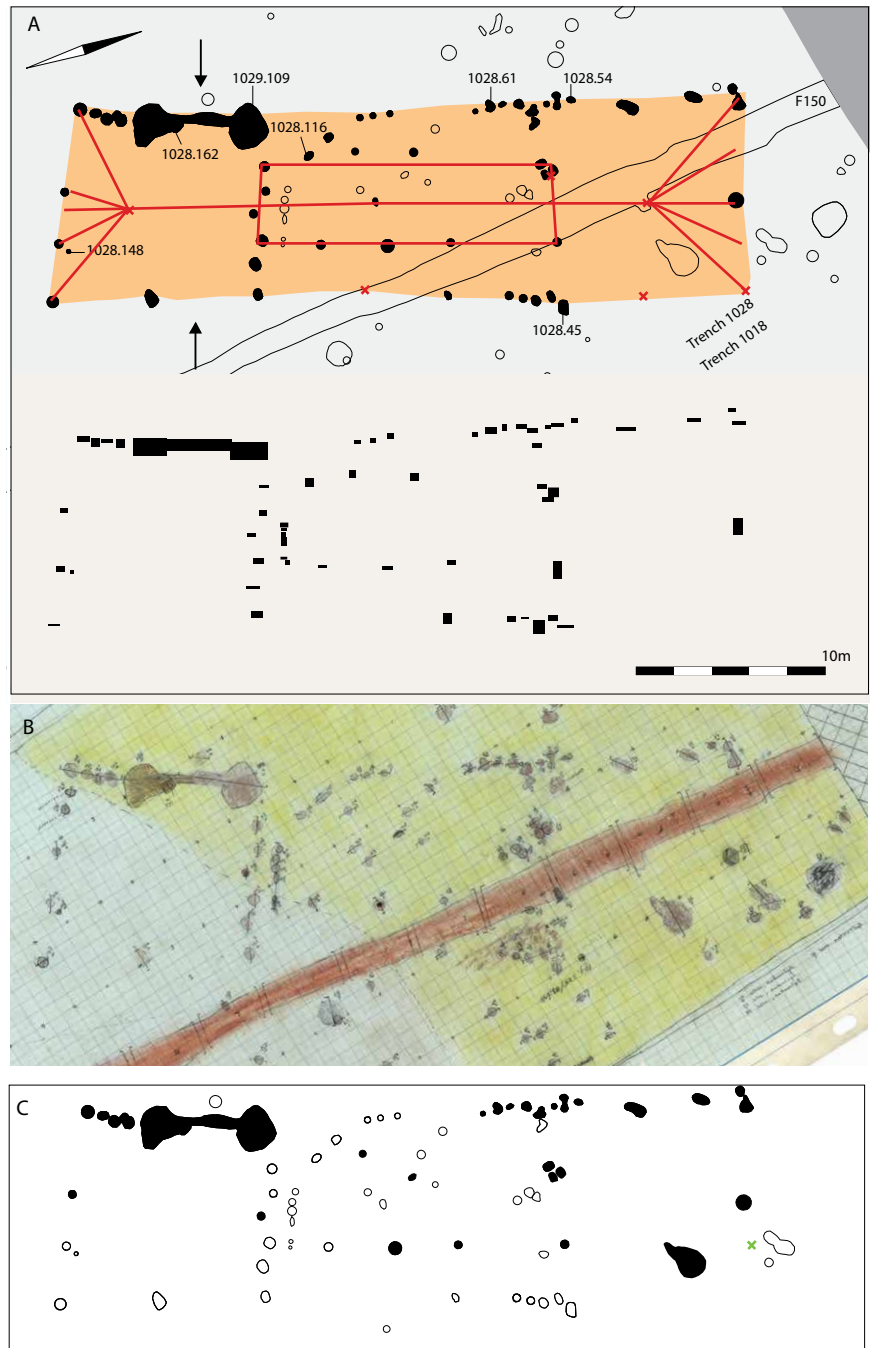
Structure SK140 probably was not a structure at all. It was situated in the close vicinity of a cluster of pits dated to the transition between the Early Bronze Age and the Middle Bronze Age A (1029.12, 1029.5; cf. section 14.4.1). A number of features contained

Trench	Feature	Material	Number	Date
1006	27	cer	30	ERP L/M
1006	27	metal slag	1	ERP L/M
1006	32	cer	2	ERP L/M
1006	39	cer	5	ERP L/M
1006	39	metal slag	3	ERP L/M
1006	53	cer	1	ERP L/M
1006	116	cer	1	ERP L/M

Table 14.9 Finds from house SK139 in the Schalkskamp quarter.

pottery sherds that could belong to the same period. In earlier publications (Fokkens 1992; Jansen and Fokkens 1999, 64), we have suggested that this cluster of features could be indicated as a farmyard, and that it possibly contained a structure of the same period (fig. 14.15A). However, a real structure, like a clear set of roof posts or consistent wall structure

lacks. Therefore, we think it is dangerous to describe this structure as a ‘house’ or even a ‘structure’. The problem with houses from this period, however, is that if one follows the existing literature, ‘anything goes’ seems to describe house structures from this period best. Houses from this period used to be virtually absent in the Netherlands. For a long time



only a much disputed house in Molenaarsgraaf was recognised (Louwe Kooijmans 1974), and then there is also the Noordwijk house (Jongste, Meijlink and Van de Velde 2002; Fokkens 2002, 130). That house has a very irregular structure, but is still a convincing two-aisled plan. After the onset of commercial archaeology in the Netherlands, however, the number of claimed houses increased most dramatically; which cannot be said of their credibility! In the most recent overview of house plans in the Netherlands (Lange *et al.* 2014) several ‘structures’ were presented as houses that totally lack any structure (cf. Fokkens *et al.* 2016 for comments). ‘Structure’ is added by drawing in missing posts and

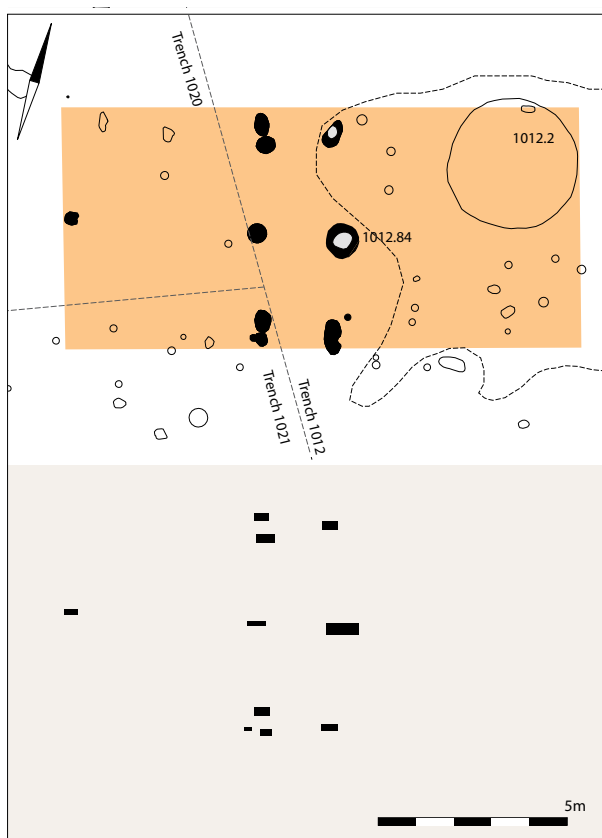


Figure 14.15 Structure SK141. Drawing S. van As.

structure lines, but the basis remains: anything goes that suits the author. We think that self-criticism is lacking in this respect. If in SK140 a few ‘missing’ post pits and some structure lines are added, credibility seems to rise (fig. 14.15B). But that is only an illusion of course: much of it is wishful thinking and archaeological fabrication: we have added elements that were not there. More (self-)criticism is obviously required here. The general problem with these constructions is that people ‘recognise’ structures on a 1:500 scale overview with a minimum or no consideration of the form, size and fill. If – in the case of SK140 – those aspects are incorporated in the discussion, a careful analysis of the field drawing (fig. 14.15B, C) shows that many of the features in fact have different fills and forms. In an area that was used about two thousand years, that means that we cannot *assume* contemporaneity. Only few of these features actually have a comparable fill (fig. 14.15C). Apart from that, the central aisle of the proposed plan is weak and inconsistent; it does not continue in the southern end. An east wall is lacking almost completely, even though the smallest features are visible in this region. That implies that a lack of features here cannot be attributed to post-depositional decay or excavation bias, even though the structure is intersected by a narrow Roman Period ditch (F150).

Summing it all up, we do not consider SK140 to have been a house or a structure. This does not negate the fact that these features may hide a structure that we do not yet recognise, and that the features in this area are related to an Early Bronze Age or Middle Bronze Age A farmyard.

#### Structure SK141

Structure SK141 is another example of a plan that has evoked some discussion in our research group. Looking at the digitised map of all features in Mapinfo, the features indicated in black were interpreted as a possible entrance structure with two roof-bearing posts. So it is tentative to construct a house around it. But here too consideration of the field drawings reveals that there is no reason why on the west side

Trench	Feature	Material	Number	Date
1012	84	cer	1	IA
1012	84	sling stone	1	IA
1021	8	cer	7	IA

Table 14.10 Finds from structure SK14.

posts could be missing. On the east side a younger well, and a dark brown ground colour around it (indicated by a punctuated line in fig. 14.16), may have affected the visibility of earlier features.

*Finds and dating:* The find complex is too small for dating. Only feature 1021.8 contained a few finds (table 14.10), while 1012.84 contained a sling pellet. This suggests a date in the Iron Age.

### 14.3 OUTBUILDINGS

The Schalkskamp excavations revealed 29 small outbuildings, most of which were interpreted as granaries (table 14.11). Most of the granaries could not be dated specifically, due to the lack of datable find complexes. We have decided not to describe all granaries in detail but to discuss only those that in one way or the other deviate from the normal pattern, or play a role in the

discussion of the chronology or settlement structure. Arbitrarily we have distinguished five clusters: four clusters in the western part of Schalkskamp (fig. 14.16), and one in the eastern part.

#### 14.3.1 Cluster 1: outbuildings S548 and S562

A cluster of two outbuildings is located in the south-western part of Schalkskamp just 25 m east of house SK137 (figs. 14.18, 14.17). Both structures are very close, only 50 cm apart, and share the same orientation. S548 consisted of four posts, all c. 20 cm deep, S562 consisted of two parallel rows of at least seven posts per row. The posts were placed at a distance of c. 0.8 m from each other. The space between the third and fourth post, on both sides, seemed larger (c. 1 m). This means that the possibility cannot be excluded that we are dealing with two outbuildings of six posts

Figure 14.16 Location of five clusters of outbuildings in the western part of Schalkskamp. Drawing S. van As, H. Fokkens.



Structure	Type	Date	Length (m)	Width (m)	Area (m <sup>2</sup> )
S534	1B	-	3.4	3.2	10.9
S535	1B	-	2.6	3.2	8.3
S536	1A	-	2.3	1.8	4.1
S537	1A	-	2.4	1.7	4.1
S538	1A	-	2.3	2.3	5.3
S539	1B	-	2.0	1.8	3.6
S540	1A	-	2.8	2.4	6.7
S541	1A	-	2.2	2.0	4.4
S542	1B	-	2.0	1.8	3.6
S543	1A	LIA (phase J-L)	1.8	1.8	3.2
S544	1A	-	2.1	2.0	4.2
S545	1A	IA	2.4	2.0	4.8
S546	1A	LIA	1.6	1.2	1.9
S547	1B	-	1.8	1.6	2.8
S548	1A	-	2.2	1.8	4.0
S549	1A	LIA (phase J-L)	2.8	1.7	4.8
S550	ID	LIA	3.2	2.5	8.0
S560	1B	-	4.0	3.0	12.0
S561	1A?	LIA (phase I)	6.2	2.2	13.6
S562	ID	LIA	5.6	1.8	10.1
S563	1A	-	2.0	1.6	3.2
S564	1B	-	2.0	1.4	2.8
S565	1A	LIA/ ERP	3.0	2.2	6.6
S566	2A	LIA/ ERP	4.6	3.8	17.5
S567	1B	LIA/ ERP	5.0	≤1.6	8.0
S568	2A	-	3.6	3.6	13.0
S569	1B	-	2.4	2.0	4.8
S570	2A	LIA/ ERP	4.0	3.4	13.6
S571	1B	-	5.0	2.5	12.5
S572	1A	LIA	2.2	2.2	4.8

Table 14.11 Characteristics of outbuildings in the Schalkskamp quarter.

Find number	Trench	Feature	Structure	Material	Number	Date
12403	1001	98	S548	cer	1	IA
12389	1001	96	S548	cer	3	IA

Table 14.12 Finds from cluster 1 of outbuildings in the Schalkskamp quarter.



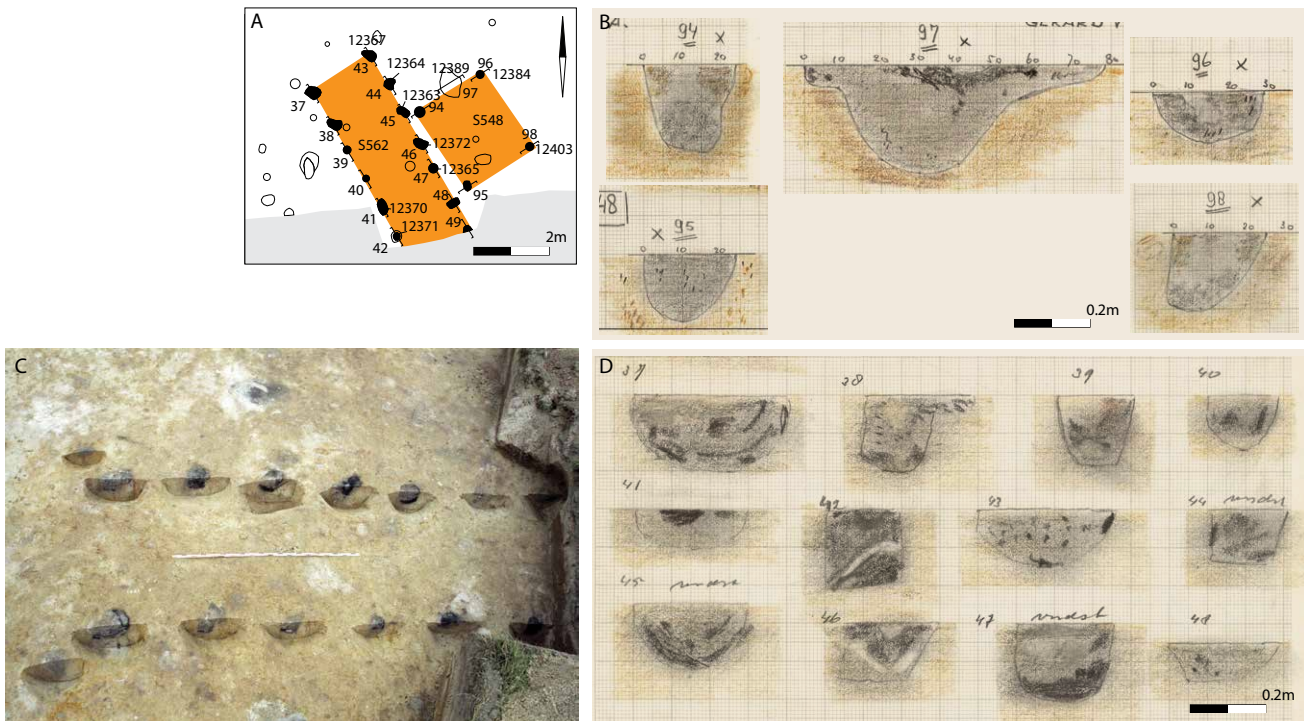


Figure 14.17 Cluster 1 of outbuildings. A: general view; B: section drawings of S548; C: S562 in the field, seen from the south; D: section drawings of S562. Drawings and photo S. van As (A), G. van Alphen (B), H. Fokkens (C), P. Haane (D).

placed in one line. Since the southwestern end could not entirely be excavated, it is not clear whether S562 may have been longer, or whether it ends with the 1001.42-1001.48 pair of features. The heterogeneous fills of the features of granary S548 and S562 indicate that both granaries were completely dismantled after the period of use (fig. 14.17B). S548 is a normal granary in terms of size. It is not certain whether 1001.97 belongs to it in terms of construction, but the identical filling seems to indicate simultaneous fill in of the features.

Finds from S548 (table 14.12) cannot be dated precisely, but suggest a date in the Iron Age. Given their proximity to house SK137 and a comparable orientation, we suggest that these granaries were part of the same farmyard and date to the Late Iron Age.

#### 14.3.2 Cluster 2: outbuildings S542, S545, S546, S547, S549, S563

Southeast of Late Iron Age house SK136 (cf. section 14.2.2) a cluster of six granaries was recognised (figs. 14.16, 14.18). Though orientation and structure are different, they may relate to SK136. Two of them

stand out because of the relatively large size of their post pits and are therefore studied here in more detail.

#### S545

S545 consisted of four posts, one of which (1001.54) had a small ditch attached (1001.58) which gave the impression of a shallow bedding trench (fig. 14.18E). The drawings of the sections are not very informative. The peculiar shape of 1001.54 suggests a repair of some kind. The post pits had depths of 25-50 cm, measured from the surface of the excavation trench. All post pits showed signs of a fill in after removal of the post. The drawing of 1001.54 would suggest a post shadow, but this is probably due to accidental iron formation. The finds could be dated to the Iron Age (table 14.13).

#### S546

Granary S546 had five posts: an extra post supported the northwest end of the structure (1001.65) placed close against the corner post (fig. 14.18B). The features were 20-30 cm deep. The fills were quite homogeneous, making it hard to determine whether it was abandoned or dismantled. Feature 1001.68 contained

a pot in the top fill, probably indicating a deliberate deposition. The top part was missing due to later ploughing. Pottery deposits were also made in S543 and in pit 998.78. The pot had fingernail imprints and can possibly be dated to the Late Iron Age. The lack of other finds makes a date based on this find complex uncertain.

### S549

Granary S549 had four large posts with a depth of 19-35 cm (fig. 14.18G). The pits were wide and had a layered fill, indicating that this structure was removed and the posts were dug up and possibly re-used elsewhere. The original location of a post was still partly visible in the section of feature 999.104. Feature

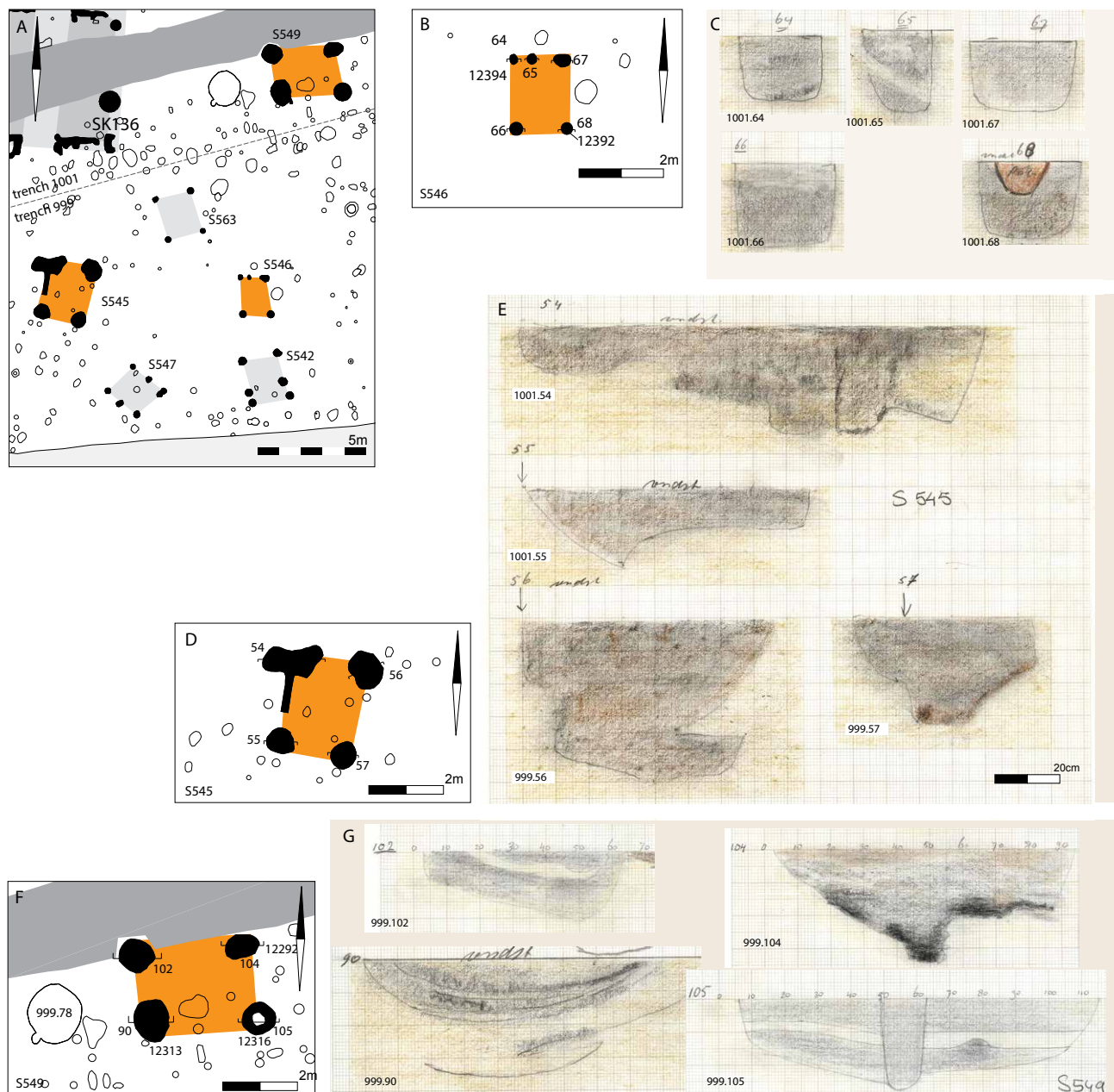


Figure 14.18 Cluster 2 of outbuildings. A: general view; B, C: plan and sections of S546; D, E: plan and sections of S545; F, G: plan and sections of S549. Drawings S. van As, B. Steffens (A, B, D, F), P. Haane (E), H. Fokkens (E), M. van Poecke (G).



Find number	Trench	Feature	Structure	Material	Number	Date
12356	999	275	S535	cer	1	IA
12405	1001	81	S542	cer	3	IA
12399	1001	54	S545	cer	18	IA
12404	1001	55	S545	cer	3	IA
12388	1001	56	S545	cer	11	IA
12391	1001	57	S545	cer	3	IA
12394	1001	64	S546	cer	1	IA
12386	1001	68	S546	cer	7	LIA
12313	999	90	S549	cer	8	LIA J-K
12292	999	104	S549	cer	10	LIA J-K
12318	999	105	S549	cer	12	LIA J-K

Table 14.13 Finds from cluster 2 of outbuildings in the Schalkskamp quarter.

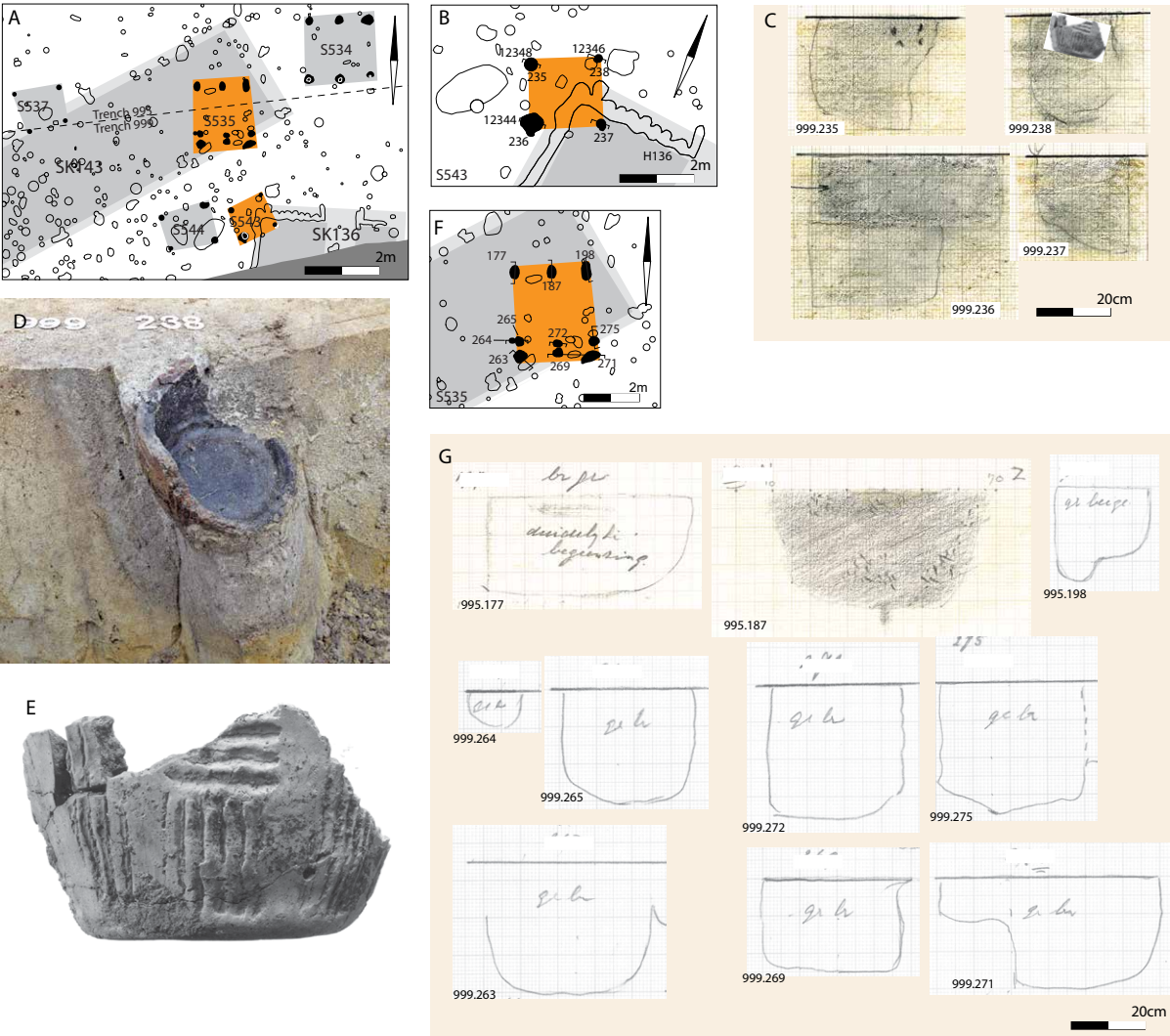


Figure 14.19 Cluster 3 of outbuildings. A: general view; B, C: plan and sections of S543; D, E: photos of feature 999.238; F, G: plan and sections of S535. Drawings and photos S. van As, B. Steffens (A, B, F), P. Haane (C, G), H. Fokkens (D), J. Paupitit (E).

999.105 was the only post pit in which the outline of a post was still visible as a dark grey homogenous fill. This probably was a younger post dug into the filled-in post pit. The find complex of S549 dates to phase J-K of the Late Iron Age (table 14.13).

14.3.3 Cluster 3: outbuildings S534, S535, S537, S543, S544

Granary S543 in trench 999 had a slight northwest – southeast orientation. The main reason for selecting

this granary for detailed description is the fact that it probably pre-dates house SK136 and that there was a ceramic deposit in one of the post pits (999.238). The post pits still had a depth of 26-40 cm (fig. 14.19). The sections of the post pits depict mostly homogenous fills. Feature 999.236 was the only feature with two different fills; moreover the pot deposition in 999.238 indicates that the granary had been dismantled on abandonment. The deposited pot has a typical ‘Kalenderberg’ decoration (fig. 14.19D, E). The entire

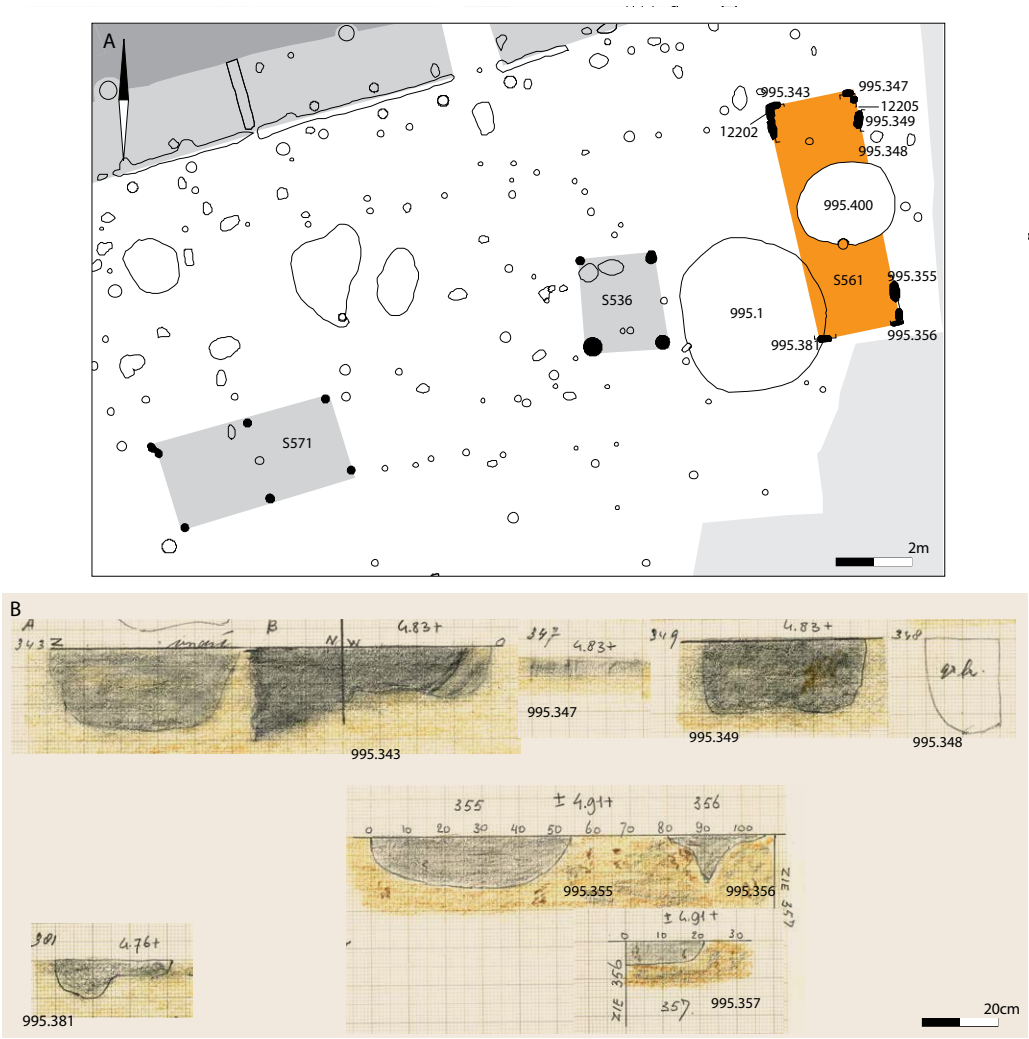


Figure 14.20 Cluster 4 of outbuildings. A: overview; B: section drawings. Drawings S. van As (A), P. Haane (995.343, 995.347, 995.349, 995.348, 995.381), G. van Alphen (995.355, 995.356, 995.357).

Find number	Trench	Feature	Structure	Material	Number	Date
12344	999	236	S543	Cer	7	LIA
12346	999	238	S543	Cer	2	LIA

Table 14.14 Finds from cluster 3 of outbuildings in the Schalkskamp quarter.

complex of the pot and several sherds can be dated to phases J, K or L in the Late Iron Age (table 14.14).

#### 14.3.4 Cluster 4: outbuildings S536, S561, S571

Three granaries were assigned to cluster 4 (fig. 14.20). The cluster is situated around houses SK134 and SK135. All granaries assigned to cluster 3 have approximately the same orientation as these houses. None of the granaries yielded enough determinable potsherds for accurate dating.

#### S561

Granary S561 was intersected by well 995.1 which dates to the Early Roman Period. Feature 995.381 was found underneath the edge of 995.5. Therefore S561 dates probably to the Late Iron Age. It might be associated with well 995.400, but that is almost impossible to substantiate. The plan either intersects with well 995.400 or is intersected by it.

*Construction details:* S561 does not look like an ordinary granary. The corner posts were positioned against each other, and they were square planks or beams. This indicates a sturdy, yet possibly open

construction. The configuration of these posts seemed a bit too odd for a granary, and far too long. Their orientation around 995.400 therefore may not be coincidental. Perhaps the features represent a construction correlating with the use of well 995.400. No post pipes are visible. We therefore assume that the structure was dismantled after abandonment.

*Finds and dating:* The construction could not be dated on the basis of finds. The intersection by well 995.1 implies that it predates the Early Roman Period. Its orientation around 995.400 strongly suggests a date from the Late Iron Age. The construction was probably a roof construction over the well.

#### 14.3.5 Cluster 5: outbuilding S539

S539 is discussed here because it intersects house SK135, providing a *terminus ante quem* for that house. S539 consisted of six posts. Two rows of three posts were placed on the longest sides of the granary. The southern posts were placed at a larger distance (120 cm) from the other posts (a distance of 80 cm). The sections showed homogenous fills, but the form of the features indicates that the posts were dug out (fig. 14.21). Finds were nearly absent (2 sherds). Based on the intersection by SK135, dating to the late Iron Age or the Early Roman Period, S539 dates to the later Roman Period (second half of the first or second century cal AD).

#### 14.3.6 Cluster 6: outbuildings S550, S564, S565, S572

In the central part of Schalkskamp four outbuildings were recognised in the direct vicinity of houses SK139 and SK142 (fig. 14.22). Three outbuildings had a similar east-northeast – west-southwest orientation as the two houses. Only S565 was orientated differently. This granary, however, is dubious anyway. The placement of the posts deviates a bit from the regular scheme, which makes it questionable. It was recognised in a ‘swarm’ of post pits in different trenches. The features did not have the same fill. We reproduce S565 in plan here because it was ‘recognised’ and discussed in the field, but we may have to remove it from the list.

#### S564 and S572

Granaries S564 and S572 are less disputed. The features of S564 had a depth varying from 5–20 cm. S572 was based on four corner posts also having a depth varying between 5 and 10 cm, measured from the plane of the excavation trench. This indicates that only the bottom of the post pits was left.

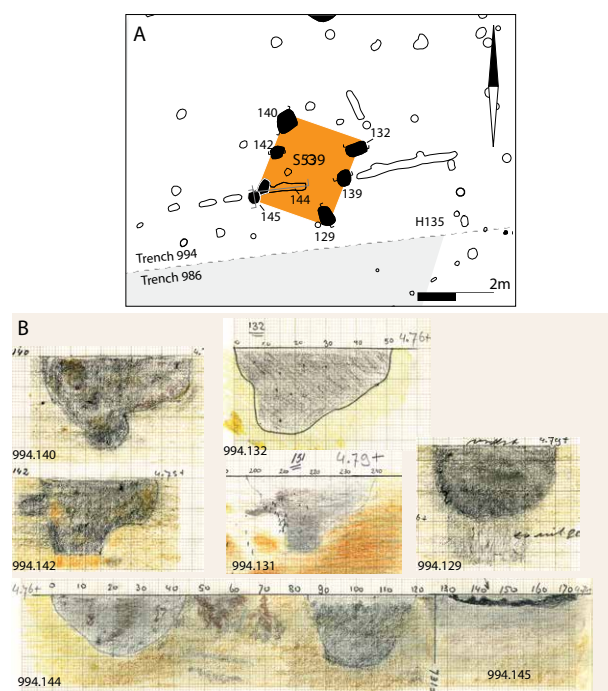


Figure 14.21 Cluster 5: granary S539. A: general view; B: sections. Drawings S. van As (A), P. Haane (994.140, 994.132, 994.142, 994.129), M. van Poecke (994.131), G. van Alphen (994.144, 994.145).



Figure 14.22 Granaries in the central and eastern part of the Schalkskamp district: cluster 6 and 7. Drawing S. van As.

Granary S550 is the only outbuilding in this cluster with more than four posts. The construction details, way of abandonment, find complex and correlating dating of this granary are separately discussed later in this paragraph.

None of the features of the other granaries showed any indication of how the structures came to an end. And only S565 and S572 had small find complexes (table 14.16). Despite its shallow post pits, granary S572 still yielded seven sherds of Iron Age pottery. Two sherds were decorated with nail imprints on the wall, which is common in the Early and Late Iron Age. In context with the other Schalkskamp features and structures, a date from the Late Iron Age is most likely. The date is only an assumption, since the find complex is still too small for accurate dating.

#### S550

Granary S550 was found about 6 m south of house SK142 (fig. 14.23). Both structures had a similar fill, therefore we suggest that they were contemporaneous. The granary consisted of eight posts, placed in two rows from east to west. The posts were placed at a distance of c. 1 m. The features had a depth varying

between 25 and 40 cm, measured from the plane of the excavation trench. Sections of the post pits showed in all cases a fill in which lumps were visible. This indicates the removal of the posts and immediate fill after abandonment.

*Finds and dating:* A fragment of a glass La Tène bracelet was found in feature 1005.418 (cf. fig. 10.4; table 14.15). The fragment was determined as a type 3b bracelet with a single rib. Its colour was purple and the bracelet was decorated with a yellow glass-paste in 'zigzag' form. The curious aspect of this fragment is that it was secondarily used. After it had been broken, it was secondarily heated and bent into a small circle so it could be used as bead (cf. chapter 10). The bracelet suggestively dates to the Late Iron Age. There are, however, La Tène bracelets known in the context of Early Roman Period complexes. The situation of the granary near Iron Age house SK142, Late Iron Age ditch F165 (phase J/K) and Late Iron Age ditch F144 (phase J/K) makes a date in the Late Iron Age most likely. This is emphasised by a small complex of nine pottery sherds, determined as Iron Age pottery. Although the complex is too small for accurate dating, the pottery sherds combined with La Tène glass suggest a date from the Late Iron Age.

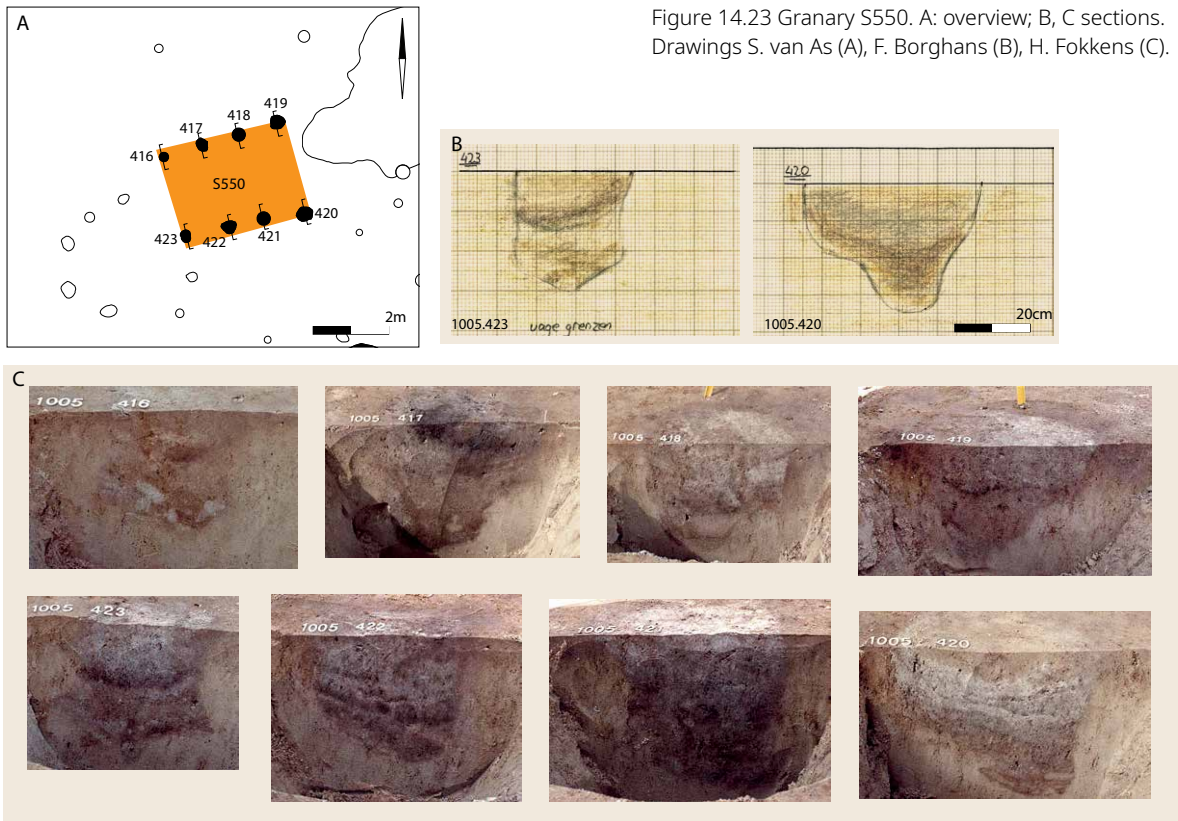


14.3.7 Cluster 7: outbuildings S566, S567, S568, S569, S570

The last group of outbuildings consists of five granaries situated in the eastern part of Schalkskamp (fig. 14.22). Four of them are nine-post structures, two with a small ‘step’ attached (S566 and S570). One of these was intersected by the peripheral ditches of the Roman Period settlement (S568) and may date to a much older period.

S566 and S570

S566 and S570 were lying about 50 m apart but they are almost identical in size and structure (figs. 14.24, 14.25). They appear to be nine-post structures, but with an addition on the eastern end. They both have a set of extra posts in addition to the nine of the basal construction, and then a small four-to six-post annexe. The three eastern posts of the main construction



Trench	Feature	Structure	Material	Number	Date
1007	26	S565	cer	4	IA
1005	192	S572	cer	3	IA
1005	195	S572	cer	1	IA
1005	196	S572	cer	3	IA
1005	417	S550	cer	7	IA
1005	417	S550	loam fragments	2	IA
1005	418	S550	cer	1	IA
1005	418	S550	La Tène glass	1	LIA
1005	419	S550	cer	1	IA

Table 14.15 Finds from cluster 6 of outbuildings in the Schalkskamp quarter.

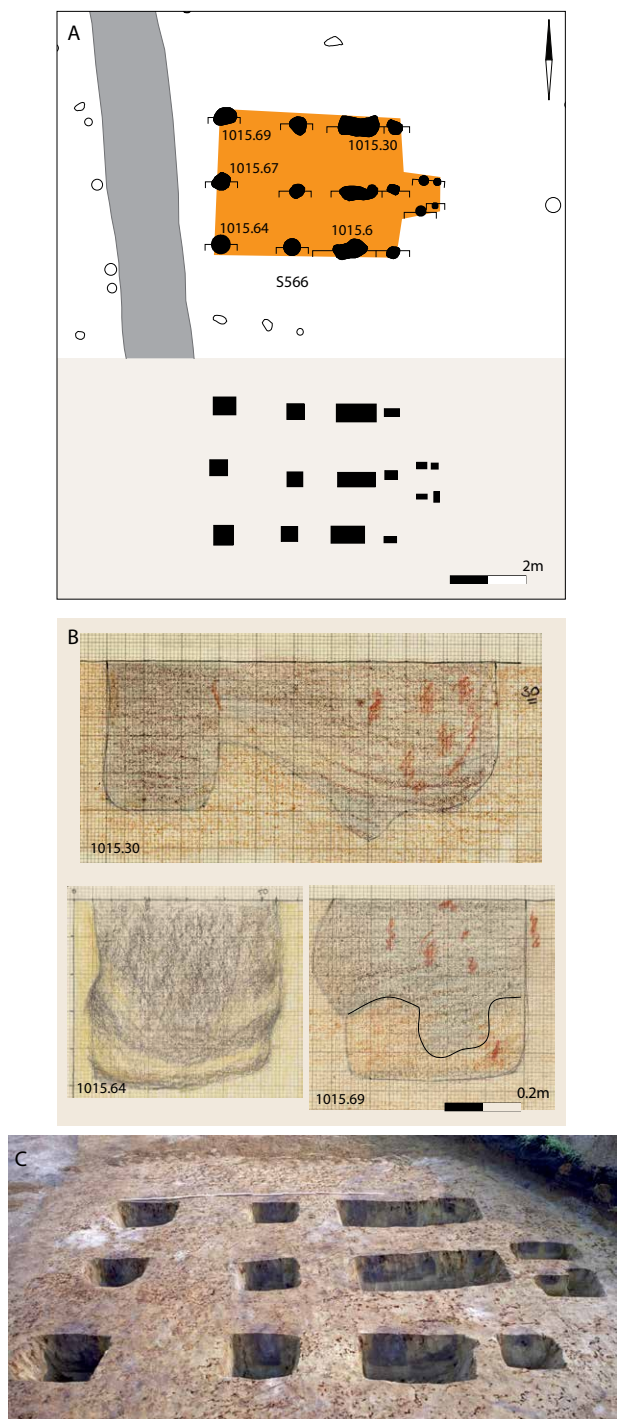


Figure 14.24 Granary S566. Overview; B: sections. Drawings S. van As, B. Steffens (A). H. Fokkens (C). R. Kneepkens (B).

appear to have been replaced: the deeper eastern parts clearly held posts, but the poles were removed and the features were (partly) filled in with soil, while the western part of the features was intersected by a newer post pit. A post pipe was still visible in the fills of features 1015.30 and 1015.6 (fig. 14.24). Curiously this kind of configuration was present in both out-buildings (figs. 14.24, 14.25). A small annexe, consisting of four features placed closely to each other, was interpreted as step or small staircase. The three smaller posts along the eastern wall might have supported this 'step', and possibly the entrance of what might have been the access to a storage room.

**Abandonment:** Several features of S566 show a clear 'post-shadow', indicating that the post was abandoned and left to decay in the post pit. Other features of S566 showed heterogeneous fills with fragments of soil that ended up in the post pit after removal of the post, indicating that several posts were probably good enough for re-use in a different construction. Most of the post pits of S570 show signs of a post, an indication that the structure was left standing after abandonment.

**Finds and dating:** The pottery found in the out-buildings does not provide a clear basis for dating (table 14.16). The complex either dates to the Iron Age or the Early Roman Period (1st century cal AD).

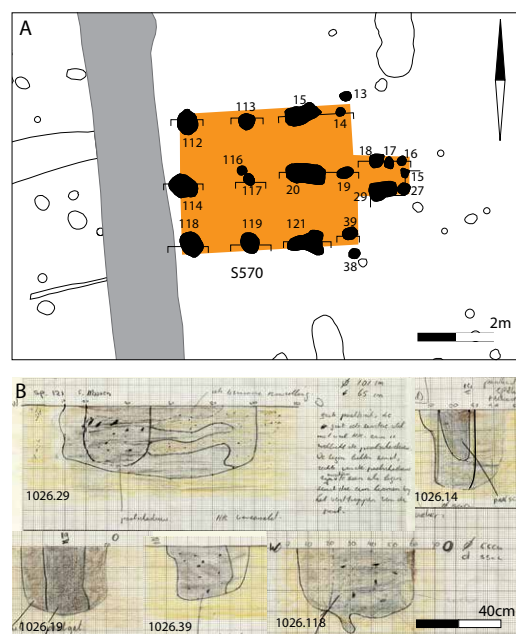


Figure 14.25 Granary S570. A: overview; B: the structure during excavation; C: section drawings. Drawings S. van As, B. Steffens (A), S. Mooren (B).

Wesselingh (2000, 173-174) dated this outbuilding to the Roman Period. A small number of sherds was also found in the post pits. Nine of these were determined as fragments of Iron Age pottery. The small complex cannot be used as an accurate dating method. The sherds roughly date to the Iron Age, but an Early Roman Period cannot be excluded.

### S567

S567 was located close to S566. The orientation differs from granary S566 (fig. 14.22; 14.26). Although the granary was initially interpreted as a small six-post granary, it seems more likely now to assume that it was a larger nine-post structure not unlike S566 and S570. The configuration of larger posts on the east side with smaller post pits next to it, seems to indicate this. Even half of a 'step' may be present on the east side. The fills of the post pits indicate the removal of the posts when the granary was abandoned. Only one clear post-shadow was observed in the section of feature 1015.20, but this feature concerned only the

bottom part of a post, which made it impossible to conclude the way of abandonment for this particular feature. Considering its location near S566 and perhaps even similar construction details, the granary might be a predecessor of S566.

*Finds and dating:* Two fragments of handmade pottery were found in feature 1015.20 (table 14.16). The sherds were roughly dated to the Iron Age.

### S568

Granary S568 was situated in the northeaster part of Schalkskamp. The northern post pits were intersected by a Roman Period ditch (fig. 14.27). S568 is a nine-post granary with post pits of 30-40 cm deep below the plane of the excavation trench. The posts were placed at a regular mutual distance of 1.8 m from each other. All nine features showed heterogeneous fills (fig. 14.27C). The posts were no longer visible, indicating that all posts were removed after the granary was no longer used. A clear indication of dismantlement was provided by feature 1024.41, which was filled with

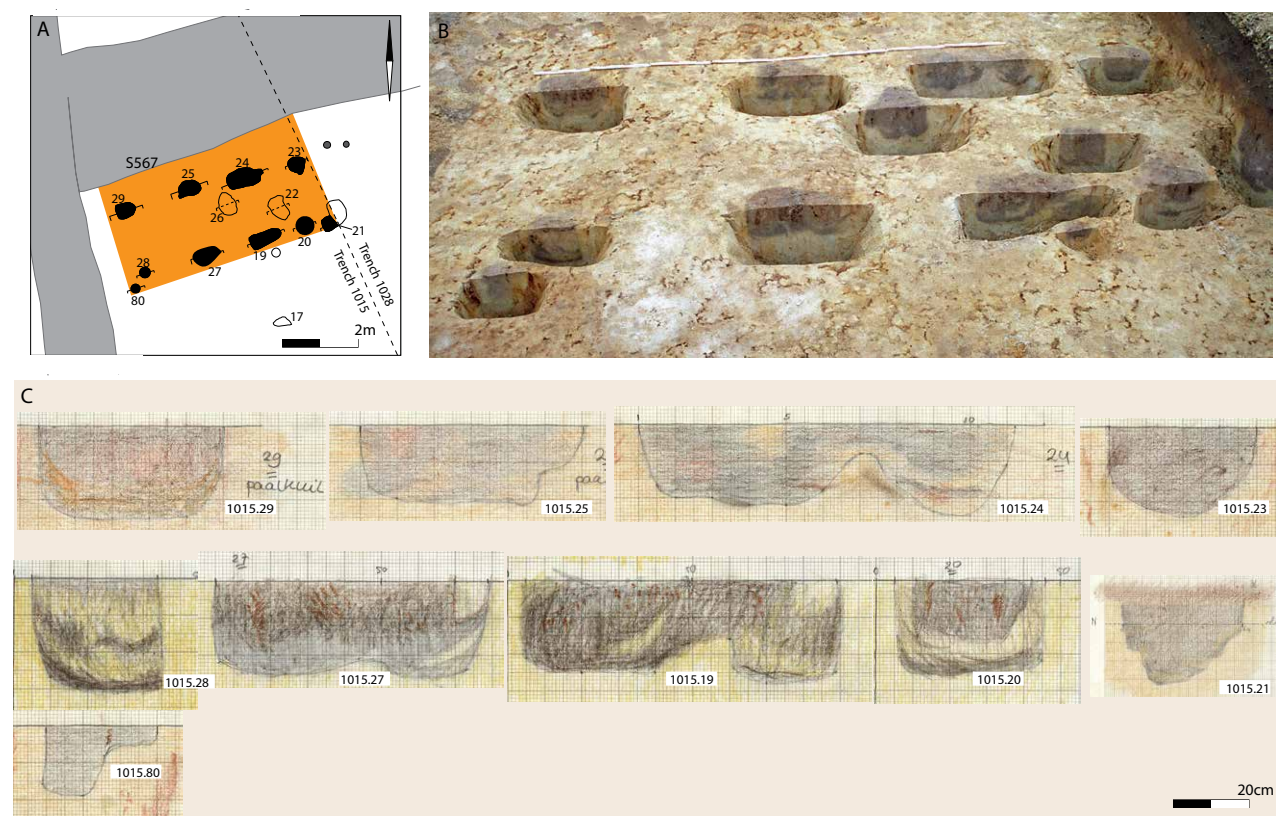


Figure 14.26 Granary S567. A: Overview; B: section drawings. Drawings and photo S. van As, B. Steffens (A), H. Fokkens (B), R. Kneepkens (1015.19, 1015.20, 1015.27, 1015.28), Lisette (1015.80, 1015.29, 1015.25, 1015.24, 1015.23), T. Vernimmen (1015.21).



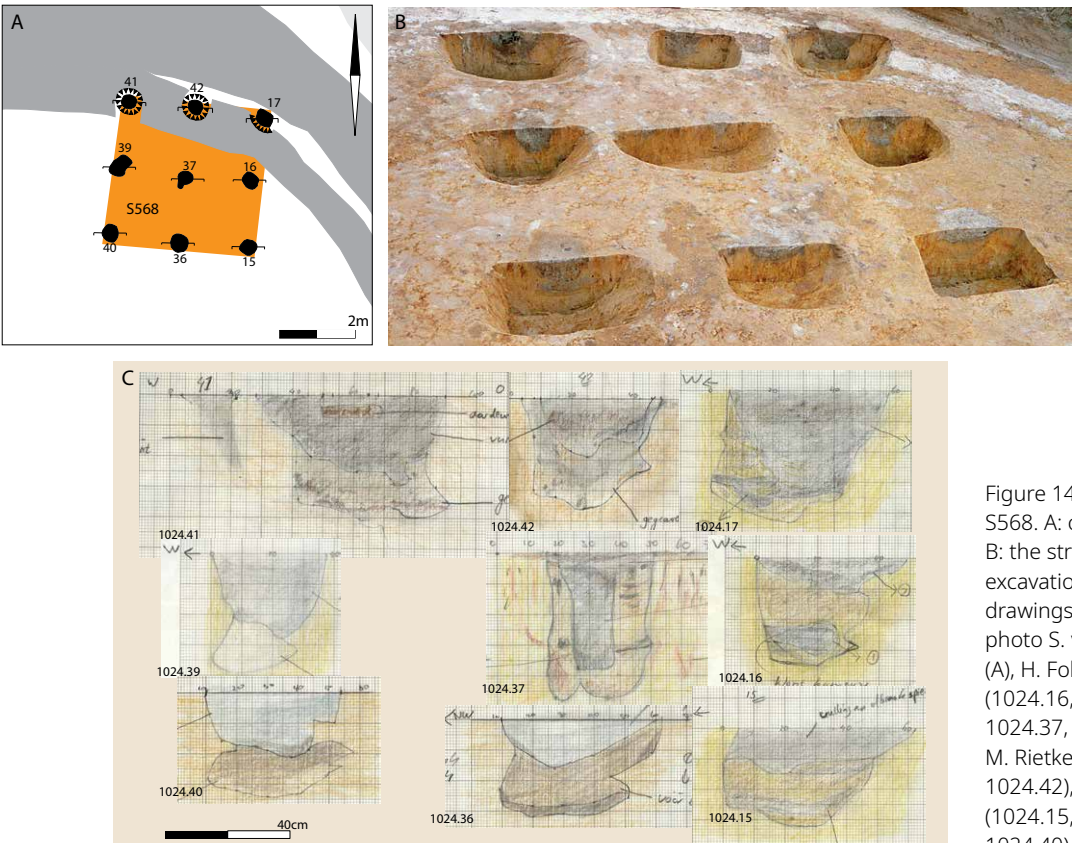


Figure 14.27 Granary S568. A: overview; B: the structure during excavation; C: section drawings. Drawings and photo S. van As, B. Steffens (A), H. Fokkens (B), O. Duit (1024.16, 1024.17, 1024.37, 1024.39), M. Rietkerk (1024.41, 1024.42), M. Gerretsen (1024.15, 1024.36, 1024.40).

Trench	Feature	Structure	Material	Number	Date
1015	6	S566	cer	1	LIA/ERP
1015	67	S566	cer	1	LIA/ERP
1026	15	S570	cer	2	LIA/ERP
1026	118	S570	cer	1	LIA/ERP
1026	118	S570	loam	-	-
1026	119	S570	cer	6	LIA/ERP
1026	121	S570	burnt bone	-	-
1015	20	S567	cer	2	LIA/ERP
1015	29	S567	cer	1	LIA/ERP
1024	36	S568	cer	2	LIA/ERP
1024	41	S568	cer	1	LIA
1024	41	S568	briquettage pottery	1	LIA
1024	41	S568	loam	-	-
1026	93	S569	cer	1	LIA/ERP
1026	98	S569	cer	3	LIA/ERP

Table 14.16 Finds from cluster 7 of outbuildings in the Schalkskamp quarter.

a large amount of loam. This must have been deposited after the post was removed.

*Finds and dating:* the pottery was not very typical. A fragment of a salt container (imported from the coastal regions) and a large quantity of burned clay or loam were found in feature 1024.41 (cf. table 14.16). A date is suggested in the Late Iron Age, given the intersection by a Roman Period settlement ditch.

### S569

Granary S569 was located 10 m from granary S570 and had a similar east-western orientation. The posts were placed at a distance of 1 m from each other. The features had a depth of c. 12-20 cm, measured from the surface of the excavation trench (fig. 14.28). An extra feature in the north-western corner indicates a reinforcement or repair: a smaller seventh post (1026.97) was placed close to feature 1026.214 as addition to the row of posts on the northern side of the granary.

*Abandonment:* In all cases, only the lowest 12 to 20 cm of the posts was visible, making it hard to interpret the way of abandonment. Yet, the form of most features was quite sharp, sometimes the exact shape of a post could be discerned. In two cases (features 97 and 98), the vague outline of ‘post-shadows’ were visible. These characteristics give the impression that the posts were not removed but left to decay *in situ* after abandonment.

*Finds and dating:* Although the find complex is too small for accurate dating (table 14.16), one of the sherds was decorated with comb-impressed lines, a feature most prominent in the Late Iron Age and the Roman Period. We suggest the granary is part of the Early Roman habitation on the spot.

### 14.3.8 Medieval haystacks

Apart from the prehistoric and Roman Period outbuildings, a small cluster of circular ditches was found in the south of the Schalkskamp district (trench 1009). We have interpreted these as the remnants of haystacks (*hooimijt* in Dutch) from the Late Middle Ages and Early Modern Period (fig. 14.29).

Excavation trench 1009 was in fact a road trench that had been excavated without supervision of archaeologists. We cleaned the features and documented them all in one day. Actually this was the first time ever (1992) that we did not make a regular field drawing, but used only a total station to record the measurements. Late Medieval pottery sherds were collected from these ditches and from other features in the surroundings.

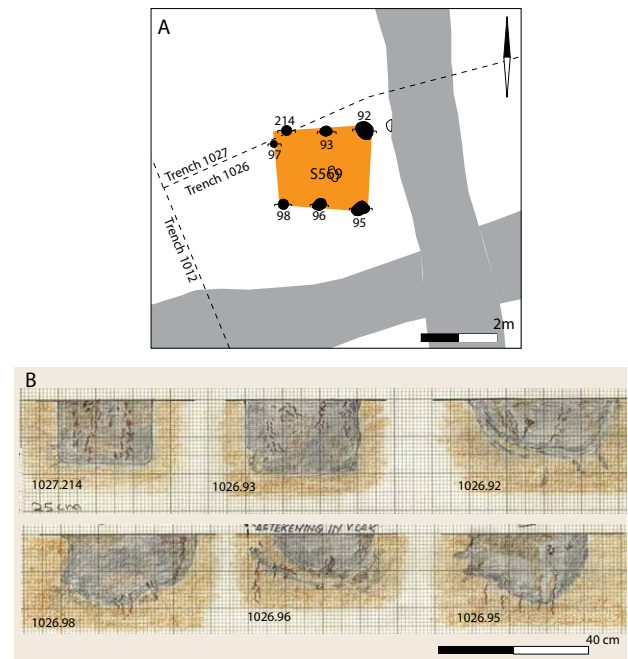


Figure 14.28 Granary S569. A: overview; B: the structure during excavation; C: section drawings. Drawings S. van As, B. Steffens (A), P. Haane (B).

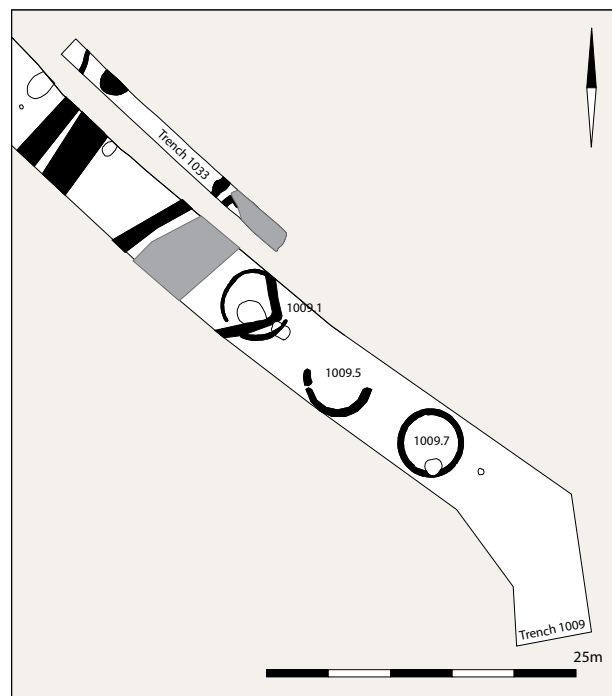


Figure 14.29 A: Haystack ditches in excavation trench 1009; B: 15th century beaker with the seal of the Duke of Gelre. Drawing S. van As, H. Fokkens.



Figure 14.30 Overview of large pits and wells in the Schalkskamp district and with the three clusters described in the text indicated. Legend: 1: Bronze Age, 2: Early Iron Age, 3: Late Iron Age, 4: Late iron Age or Early Roman Period, 5: Early Roman Period. Drawing S. van As, H. Fokkens.

The four haystacks had similar circular ditches, with depths varying between 10 and 15 cm and a diameter of 4-5 m. All had dark-brown homogenous fills, contrasting very sharply with the yellow cover sand on the plane of the excavation trench. It is presumed that such ditches (which were probably deeper at the time) were used to keep mice and other small animals from eating the contents of the stack. Pots were often dug into the ditches as mousetraps. Excavations from Kerk-Avezaath had similar constructions with mice skeletons preserved in the pot

(Esser and Van Dijk 2001, 412-413). Feature 1009.5 had a similar construction: a pot was embedded in the trench.

*Abandonment:* No indications.

*Finds and dating:* feature 1009.5 contained an extraordinary fragment of a stoneware beaker with the markings of the Duke of Gelre-Gullik (cf. fig 5.13). This places the beaker most probably in the first half of the 16th century AD. Two other features (1009.6 and 1009.18) also yielded a few sherds from probably the same period.



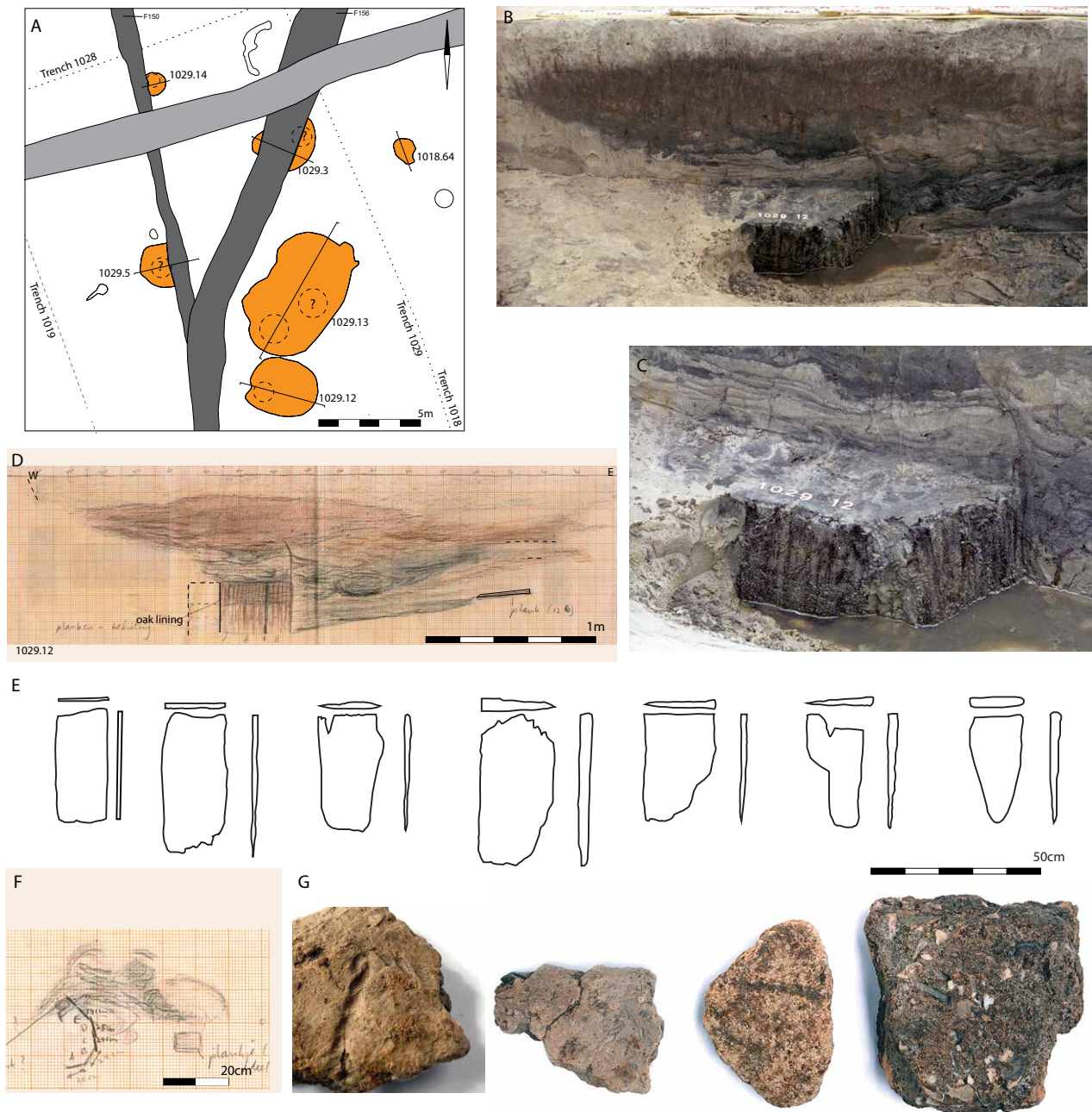


Figure 14.31 Cluster 1 of Bronze Age features in the southeastern part of Schalkskamp. A: overview of cluster 1; B: Feature 1029.12 in the field; C: close-up of the planks; D: section drawing; E: the oak planks extracted from the southern half of the well; F: position. Drawings and photos S. van As (A), H. Fokkens (B, C, D, E, F), J. van Donkersgoed (G).

#### 14.4 PITS AND WELLS

About sixty larger features, indicated as pits or wells, were excavated in the Schalkskamp district (fig. 14.30). A selection was made of all these features on the basis of date, coherence or unique features. These

are described here as six separate clusters of pits and wells. Quite a few large features appeared to date to the Bronze Age, which is surprising as no real house structures from that period were detected.

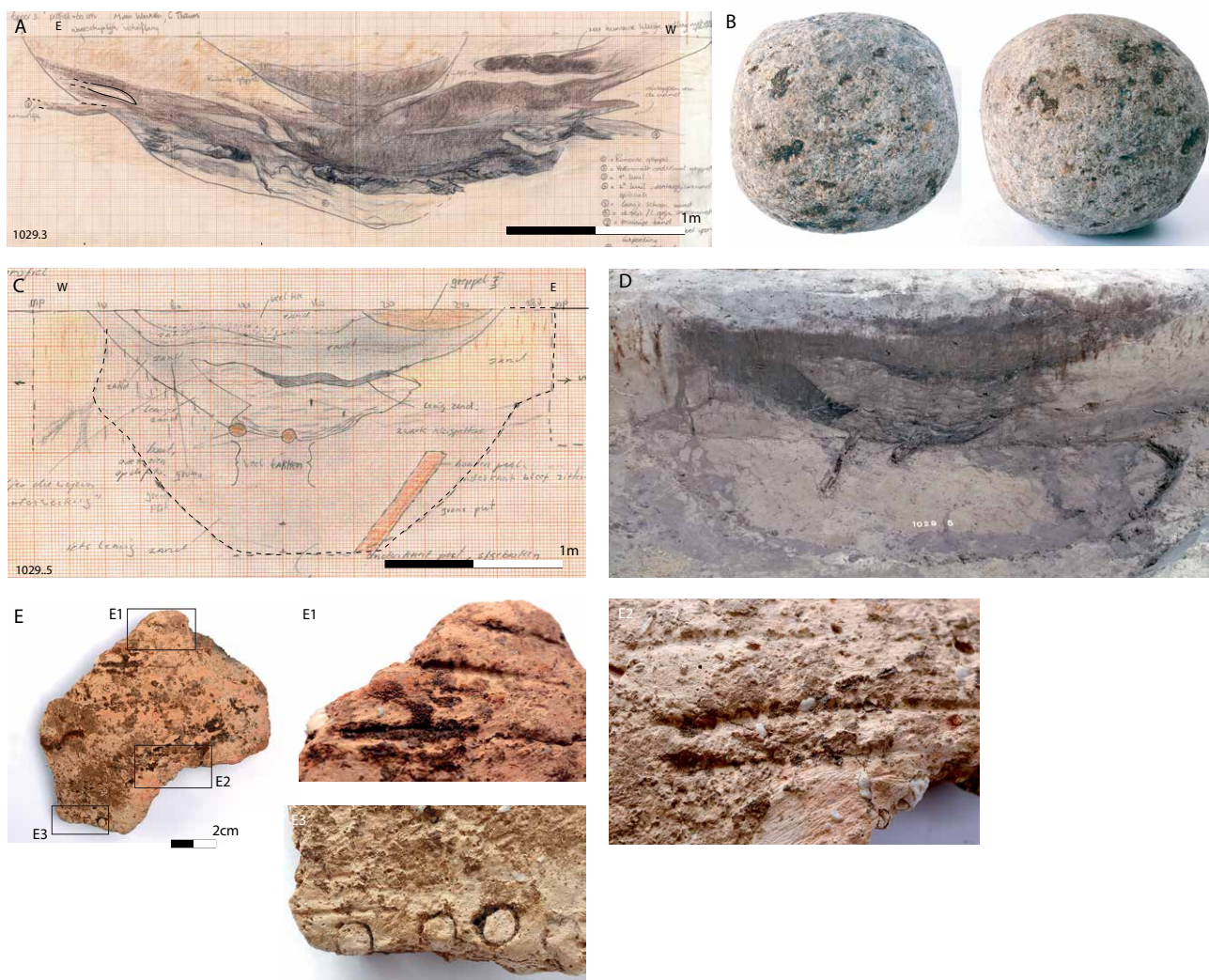


Figure 14.32 Features 1029.3 and 1029.5. A: section drawing of 1029.3, B: hammer stone from the fill of 1029.5; C, D: feature 1029.5 in section; E: sherd decorated with barbed-wire beaker stamps and (bird) bone or reed impressions. Drawings and photos M. van Waveren/C. Thanos (A), J. Pauptit (B), H. Fokkens (D), J. van Donkersgoed (D, E).

#### 14.4.1 Cluster 1: Bronze Age pits and wells in the southeast

A cluster of seven similar features with find complexes dating to the Bronze Age was found in the south-eastern part of Schalkskamp (fig. 14.31). Only feature 1018.64 contained no finds, but its fill was comparable to that of the other pits. At least two of the wells (1029.12 and 1029.5) date to the end of the Early Bronze Age or the beginning of the Middle Bronze Age B. This implies that this is one of the oldest clusters of features in the Oss region. The most important wells of this cluster are discussed in more detail.

#### Feature 1029.12

Feature 1029.12 on the surface visible as a round shape. The section showed an irregular profile with a steeper western part and a shallow eastern part. The lining of a well was situated in the deepest south-western part of the pit (fig. 14.31B, D). We visualise this type of well as a deep pit with a wooden lining in the central part on the bottom of the pit. People walked into the pit in order to take water from the wood-lined area in the centre. The lining was only there to prevent the sides of the trench from caving in, as always happens in this kind of light sandy soil. The top of the lining was found at



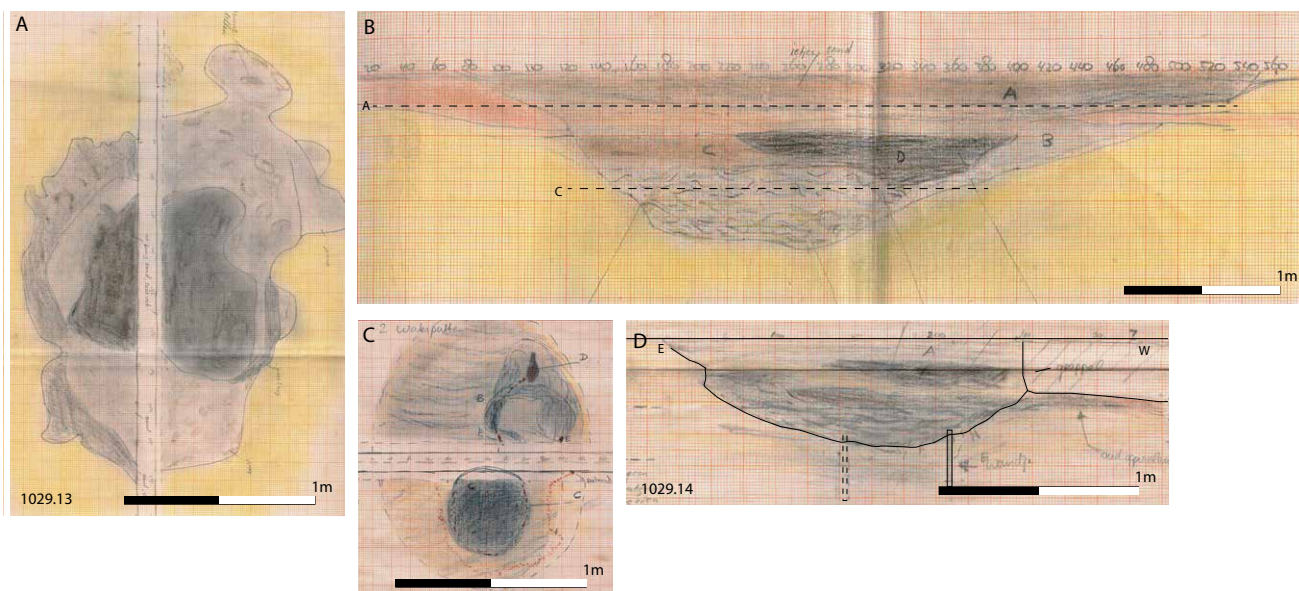


Figure 14.33 Features MD1029.13 and MD1029.14. A: drawing of 1029.13 of the horizontal at level; B: section drawing of 1029.13. The levels on which A and C are drawn are indicated; C: plan of 1029.13 at level C when two linings became visible; D: section drawing of 1029.14. Drawings S. Mooren (A), H. Gons (B), W. van Zijverden (C, D).

65 cm below the surface of the excavation trench. This implies the well originally was at least one metre deep. It was probably constructed of twelve to fourteen oak planks of about 20-25 cm wide, 40 cm long, and about 2-5 cm thick, seven of which were retrieved (fig. 14.31E). One plank was found lying on the bottom of the pit (fig. 14.31F). The northern half of the pit collapsed before we could retrieve the wood or draw the section. Therefore only half of the well has been drawn.

The planks were cut out of a c. 50 year old oak tree (determination by C. Vermeeren) and were placed in a circle, overlapping each other (fig. 14.31F). An organic and layered fill, on top and on the side of the lining, demonstrates that the well and the pit filled up gradually by sedimentation. The top 45 cm of the feature was more homogenous and contained sherds of Bronze Age A pottery. This complex indicates that the pit was filled up in the Middle Bronze Age A at the latest.

*Finds and dating:* 17 sherds of prehistoric pottery, including a fragment of *Hilversum* pottery with cord impression were retrieved (table 14.17; fig. 14.31G). The wooden lining was dated and in principle this confirmed the typological date of the pottery, with respect to the fact that the lining appears to have been placed in the Early Bronze Age, just before *Hilversum*

pottery was introduced. Radiocarbon dating of one of the oak planks gave a probable date between 1772 and 1664 cal BC<sup>3</sup> which is indeed in the Middle Bronze Age A. Given the overlap with the date of feature 1029.5 (cf. below) we suggest a date between 1772 and 1748 cal BC.

### Feature 1029.3

Feature 1029.3 was interpreted as a well, though no lining was present. The lining may have been removed. Indicative of this was the large grey layer underneath the layered fill (fig. 14.32A). A long wooden pole was stuck in the bottom that may have been used to loosen the lining, possibly a hollowed-out tree, from the subsoil. The pit then was filled with some branches and loose material, after which it probably remained open for a while.

*Finds and dating:* A date from the Bronze Age (probably Middle Bronze Age) is based on the few pot sherds (table 14.17) and its location in the cluster of features.

### Feature 1029.5

Feature 1029.5 had no lining, but was interpreted as a well of which the lining was removed. The only indication of a well was a stake with a charred end that had been driven into the ground at an angle of

Trench	Feature	Material	Number	Date
1029	12	Cer	17	MBAA
1029	12	Bone	4	-
1029	3 and 2	Cer	7	IA
1029	3 and 2	Bone	-	-
1029	5	Cer	53	EBA
1029	5	Flint	2	EBA
1029	5	hammer stone	1	EBA
1029	13	Cer	5	MBAA
1029	13	Bone	11	-
1029	14	Cer	23	MBA

Table 14.17 Finds from cluster 1 of pits and wells in the Schalkskamp quarter.

about 30°. Such stakes do occur more often in association with wells. At 70 cm below the top branches were present without structural integrity. Probably they were part of the backfill, but they also may have been part of a lining. The layered and dark loamy fills (figs. 14.32C, D) seem to represent a stage of slow filling up. This implies that the pit was left open for some time after having been abandoned. The lower part of the pit could not be excavated due to the rising groundwater.

*Finds and dating:* The feature yielded 53 sherds of which one was decorated with a barbed wire stamp (fig. 14.32E; table 14.17). It also yielded a small cubic hammer stone (used for flint working probably) (fig. 14.32B) and 2 small flint flakes. It is worth noting that – though we have been on the alert for flint and flint working tools – these were about the only flint objects found in Oss. A radiocarbon dating was taken from the charred edge of the post which had been found embedded in the bottom of the first layer of sediment in the pit. The sample yields a date between 1882 and 1748 cal BC, which is in line with the typological date of Barbed Wire Beaker pottery.<sup>4</sup> Based on the assumption that this cluster of wells is more or less contemporaneous, we suggest a date between 1772 and 1748 cal BC (cf. above).

#### *Feature 1029.13*

Feature 1029.13 is the largest feature in the cluster: it was over 6 m in length. During excavation we documented several planes (fig. 14.33A, C). At 70 cm below the surface it became clear that we were dealing with a well that had been filled in again and was later re-ex-

cavated for re-use. The pit excavated to place the first well had largely been destroyed by the digging of the second. The wood had almost completely decayed, only small fragments remained. Of the second structure nothing remained either apart from dark round stains (fig. 14.33C).

*Finds and dating:* Few fragments of pottery were found, two of which indicate a Bronze Age date. We suggest this pit dates to the Middle Bronze Age A, based on association with the other pits.

#### *Feature 1029.14*

Feature 1029.14 was intersected by Roman Period ditch F150 on the western side (fig. 14.33D). The deepest part contained a wooden lining of braided twigs and a fill rich in organic matter. The pit was naturally filled with humic deposits up to approximately 20 cm under the surface of the excavation trench. The grey homogeneous top fill contained most sherds, indicating that the pit was eventually filled in by hand.

*Finds and dating:* the pot sherds suggest a Bronze Age date (table 14.17).

#### *14.4.2 Cluster 2: features 1027.51, 1027.52, 1012.29 and 1012.68*

Large features 1027.51 and 1027.52 probably were associated. Well 1027.51 contained two hollowed-out tree-trunks, 1027.52 was less substantial and had no wooden lining. Well 1027.51 was intersected by Early Roman Period settlement ditch F150. The ditch showed no anomalies at this point, suggesting that the well long before had filled up and the fill had settled and compacted.

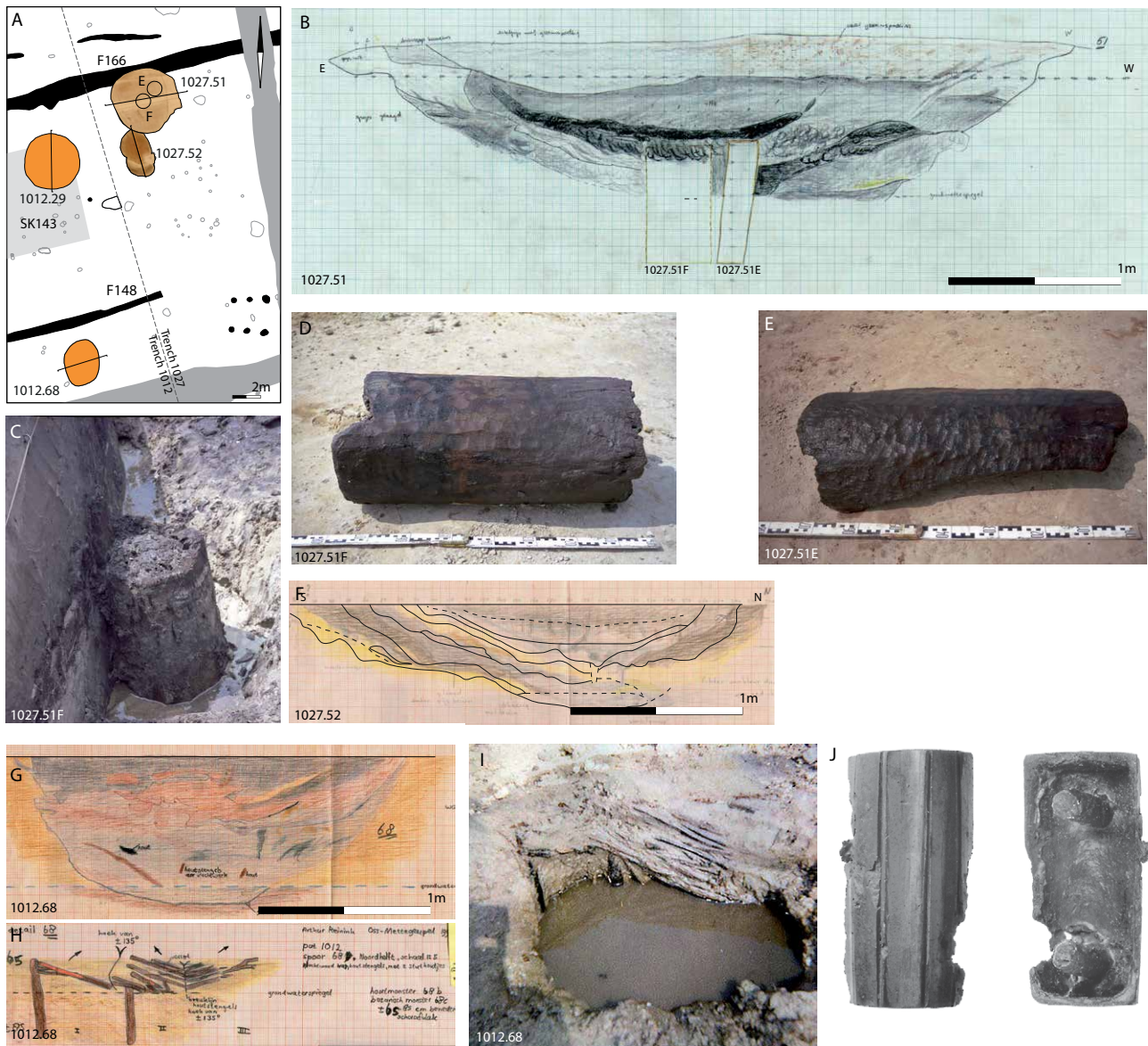


Figure 14.34 Features 1027.51 and 1027.52. A: overview; B: section drawing of 1027.51; C: hollowed-out tree trunk 1127.51F in section; D, E both tree-trunks after extraction from the well; F: section drawing of 1027.52; G, H: section of well 1012.68; J: well 1012.68. Drawings and photos A. Reinink (G, H), C. Thanos (B), B. Speleers (F), H. Fokkens (C, D, E), J. Pauptit (J).

### Feature 1027.51 and 1027.52

Feature 1027.51 was a well. The pit held two wooden linings, made of hollowed-out tree-trunks. One was placed in the centre of the pit (1027.51F; fig. 14.34A, C, D) and one in the eastern part of the pit (1027.51E; fig. 14.34A, E). The section drawing (fig. 14.34B) shows very well how both linings relate to each other. Tree-trunk 1027.51E was the oldest lining. The pit had a natural fill on the bottom and then possibly was

hand-filled to some extent. Lining 1027.51F appears to have been placed in the still present depression associated with 1027.51E. Tree-trunk 1027.51E was 78 cm long, with an outside diameter of 35 cm and inside 26 cm. Well 1027.51F was 70 cm long, with an outside diameter of 31 cm, inside 26 cm. Both trunks showed axe marks all over the outside, showing that the bark and the sapwood had been removed. Both were determined as oak trees (det. C. Vermeeren).

Trench	Feature	Material	Number	Date
1027	51	cer	151	EIA
1027	51	bone	42	-
1012	68	cer	91	ERP
1012	68	bronze fitting	1	ERP
1012	68	sling bullet	1	ERP
1012	68	La Tène glass	1	ERP
1012	29	cer	5	ERP?

Table 14.18 Finds from cluster 2 of pits and wells in the Schalkskamp quarter.

Feature 1027.52, partly intersected by 1027.51, had no lining and was less deep than 1027.51 (fig. 14.34F). The deepest fill was a natural sediment of humic deposits. The pit eventually closed up, resulting in a homogenous light sandy fill.

*Finds and dating:* Nothing was found in 1027.52. Well 1027.51 contained 151 sherds of pottery dating to the Early Iron Age (table 14.18). The two tree-trunks of 1027.51 were both dated: trunk 51E yielded a date of  $2470 \pm 15$  BP, trunk 51F of  $2530 \pm 20$  BP.<sup>5</sup> Hence in carbon dates E is a bit younger than F, but calibration shows that this can be explained by the wiggles in this trajectory. If we take an average of both wells of  $2492 \pm 12$  BP (calculated by Calib 7.0.2), then the most probable date is between 650 and 544 cal BC (67%), but older dates are possible as well (691-660 cal BC (15.8%) or 766-731 cal BC (16.8%)). In conclusion, both wells date to phase B-C of the Early Iron Age.

#### *Feature: 1012.29*

Feature 1012.29 was a large round feature in the vicinity of structure SK141 (fig 14.34A). The feature was recognised during fieldwork, however detailed drawings and data of the lining are missing, because the well collapsed before the documentation had finished. The daily report stated that the lining was a hollowed-out tree-trunk. Four wooden beams, with lengths varying from 5 to 115 cm, were placed horizontally on top of the trunk. The longest beam was partly charred. They may have been part of planking around the well. The humic bottom fill indicates that the pit was open for a while and eventually closed up.

*Finds and dating:* The pit probably dated to the Early Roman Period. The pottery did not yield more information.

#### *Feature: 1012.68*

Feature 1012.68 is a large round feature interpreted as a well. It contained a wooden lining of braided twigs (fig. 14.34G, H, I). The lining was found subsided on the bottom of the well, but still with some structural integrity. The well gradually closed up, resulting in a layered humic sediment.

*Finds and dating:* Finds in this well were extraordinary. Apart from a large number of potsherds, a sling bullet, iron slag and a fragment of a La Tène glass arm ring (cf. fig. 10.4), a bronze belt or bridle fitting was found (table 14.18; fig. 14.34J). The object shows traces of silver or tin plating and dates to the first half of the 1st century AD (Wesselingh 2000, 179).

#### *14.4.3 Cluster 3: 1006.34*

Feature 1006.34 is a very special feature indeed because it is in the only location where we have actual evidence of iron production.<sup>6</sup> Although at several occasions we have found production waste in the shape of slag, the smith fires proper have not been found, not in Oss, and not anywhere else either. For that reason a separate article was written about this feature (Brusgaard *et al.* 2015). Here we only summarise the data, using the description of the article.

Feature 1006.34 is an oval-shaped feature (fig. 14.35), 380 cm long and 160 cm wide, embedded in a dry ditch dated to the Late Iron Age (1006.23). From the very beginning it was clear that we were dealing with an oven-like structure or fire place. Iron slag was recovered all around this feature, as well as hundreds of potsherds (table 14.19). For the description we cite from Brusgaard *et al.* 2015, 356) 'The feature was excavated in four segments (1-4), and finds were recorded in three levels. It consists of a red, sandy layer covered by a thick layer of charcoal. The bottom



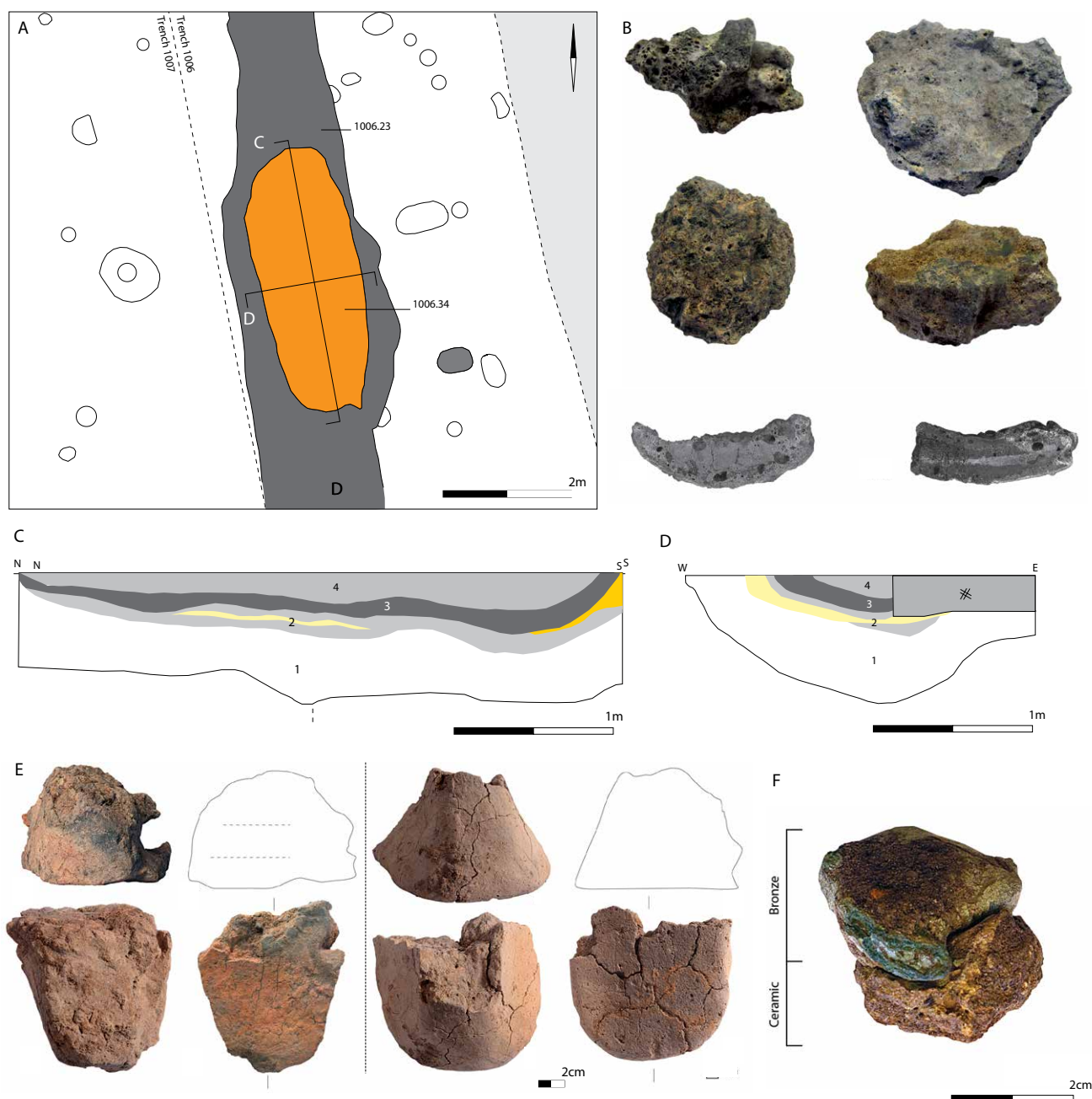


Figure 14.35 Smithing hearth 1006.34. A: plan; B: a selection of slag; C, D: sections of feature 1006.34; legend: 1) filled-in Iron Age ditch 1006.23, 2) hearth with a sandy layer, 3) layer of charcoal, 4) later fill; E: two tuyere supports; F: fragment of a crucible with bronze. Drawings and photos S. van As (A, C, D); J. van Donkersgoed (B, E, F.); adapted from Brusgaard *et al.* 2015.

sandy layer may have acquired its red colour due to the heat effects of the (forging) activities (Young 2012). The charcoal layer appears to be the remains of the fuel bed of the smithing hearth. The red sandy layer

is not 'just' burnt substrate, but differs from the surrounding matrix. Therefore we think it was laid out underneath the charcoal bed and hence we consider it part of the hearth structure. The position of the hearth

Trench	Feature	Material	Number	Date
1006	34	cer	1105	LIA-K
1006	34	metal slag	43	-
1006	34	bronze	1	-
1006	34	loom weight	1	-
1006	34	ceramic slag	155	-
1006	34	sling bullet	1	-
1006	34	tephra	32	-
1006	34	tuyère fragments	9	LIA-K
1006	34	La Tène glass	2	LIA-K
1006	34	bone	15	-
1006	34	crucible	2	119

Table 14.19 Finds from smithying heart 1006.34 in the Schalkskamp quarter.

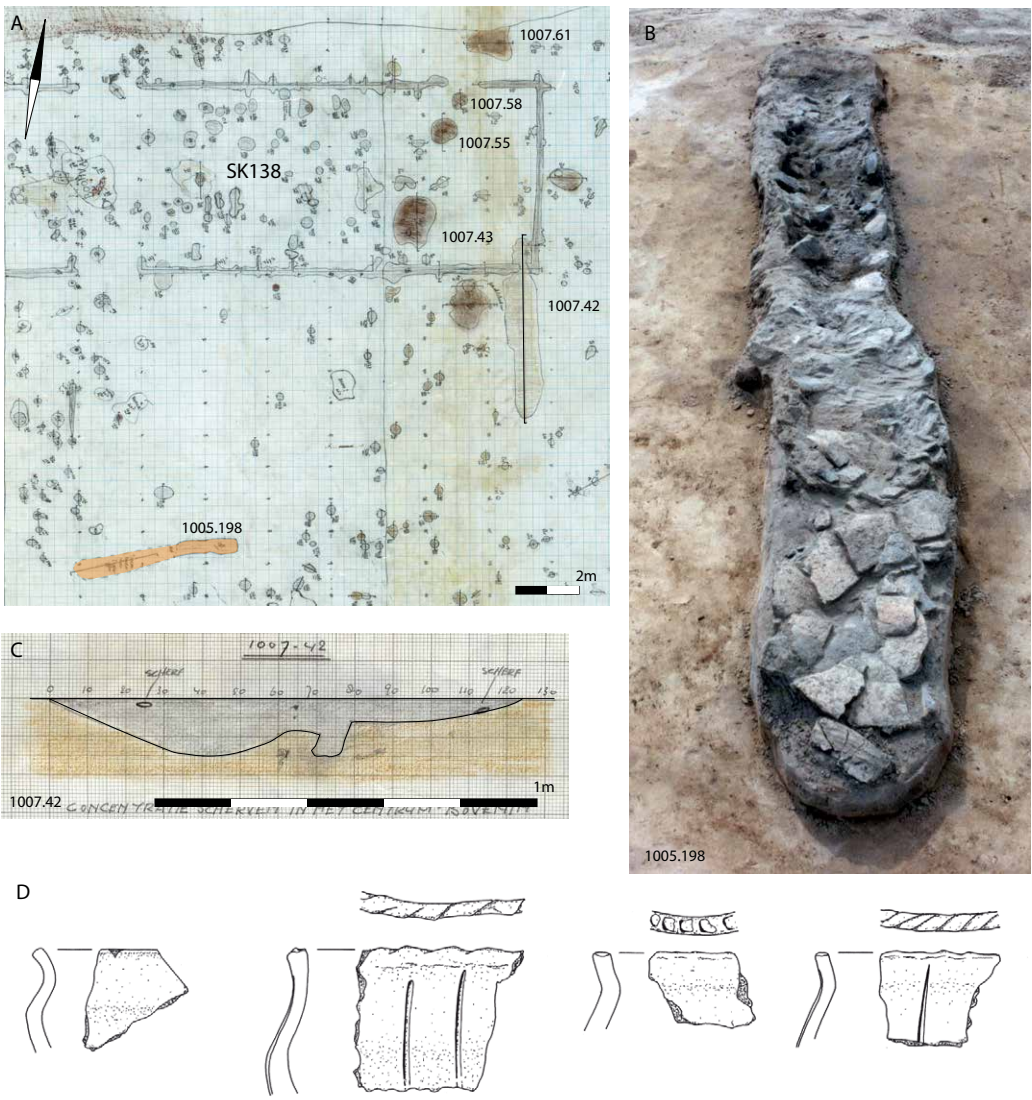


Figure 14.36 Cluster of features around house SK138. A: detail of the field drawing; B: impression of 1005.198; C: section of 1005.42; D: some of the potsherds from 1005.198. Drawings and photo M. F. van Oorsouw (A), H. Fokkens (B), G. van Alphen (C), A. Louwen (D).

Trench	Feature	Material	Number	Date
1007	42	cer	72	LIA-J/K
1007	42	bone	1	-
1005	198	cer	1144	LIA
1005	198	loam	1	-
1005	198	metal slag	1	-

Table 14.20 Finds from cluster 4 of pits and wells in the Schalkskamp quarter.

in the ditch indicates that the constructors made use of a natural hollow in the dry ditch to position their hearth, rather than digging a pit. Sometime after use, the ditch in which the hearth was located was filled in. The location of the slag and associated artefacts relatively close to the hearth suggests that the ditch filled up fast with few disturbances.’

The find evidence definitely indicates that feature 1006.34 was a smithing hearth used for secondary smithing (Brusgaard *et al.* 2015, 352). Indications are the presence of numerous complete smithing slags (212 in this feature and the immediate vicinity; fig. 14.35), hammer slag and tuyere supports. Secondary smithing is the process in which the bloom is converted into iron bars by heating and hammering. The slag produced by this process is typically hammer slag and the larger slags found in feature 1006.34 (Brusgaard *et al.* 2015, 352). Also a fragment was found of a crucible with bronze in it. So the hearth was not only used for forging iron, but also bronze (fig. 14.35F).

*Finds and dating:* among the finds we count hundreds of potsherds, smithing slag, hammer slag, fragments of tuyere supports (fig. 14.35; table 14.19). <sup>14</sup>C analysis of the charcoal dated the feature to the Late Iron Age, probably between 213 and 87 cal BC.<sup>7</sup> According to the calibration curve a date in the fourth century cal BC is also possible, but given the pottery data this is unlikely (GrN 21506: 2140 ± 30). The large complex of pottery sherds was dated to phase K of the Late Iron Age. This coincides with ditch F144.

#### 14.4.4 Cluster 4: 1007.42 and 1005.198

##### *Feature 1007.42*

Feature 1007.42 is a bowl-shaped shallow pit, close to the southern wall of house SK138. Close to it, situated partly inside SK138, were similar pits 1007.43, 1007.55, 1007.58 and 1007.61. The colours of these pits are comparable, therefore we think that they are contemporaneous (fig. 14.36A). Especially 1007.42 yielded a

complex of sherds well datable to the Late Iron Age (phase J/K (table 14.20). A post pit (1007.42a; fig. 14.36C) was present in the northern part of the pit, but this might have been placed in a later period.

*Finds and dating:* 72 fragments of pottery date the feature to Iron Age phase J/K.

##### *Feature 1005.198*

Feature 1005.198 was located 16 m south of SK138 (fig. 14.36A). It was filled with a large number of sherds, as though it was paved. The remainder of the ditch seemed to have had a black-grey fill, with small fragments of charcoal. The sherds seemed to have been well placed, instead of a casual deposition of waste. It is hard to assign a specific function to the relatively narrow ditch. The size seems to be in contrast with the large number of finds (1144 sherds).

*Finds and dating:* A total of 1144 sherds of prehistoric pottery and several sherds of briquetage pottery were found. The complex dates to phase K of the Late Iron Age. The feature is contemporaneous with pit 1006.34, settlement ditch F144, and perhaps with house SK142 and granaries S572, S550, S564 and S565. These structures are located within 20 m of 1005.198 and all date to phase K or at least the Late Iron Age. The metal slag found in this feature may be another indication of contemporaneity with smithing hearth 1006.34.

#### 14.4.5 Cluster 5: 995.1 and 995.400

Features 995.1 and 995.400 are both situated just south of house SK134. They are both intersecting with out-buildings that probably belong to that house: S561 and S536. SK134 was built in the very beginning of the first century AD (cf. section 14.2.1).

##### *Feature 995.400*

*Feature 995.400* was a well, in plan about 4 m in diameter. The feature was found within the area of a



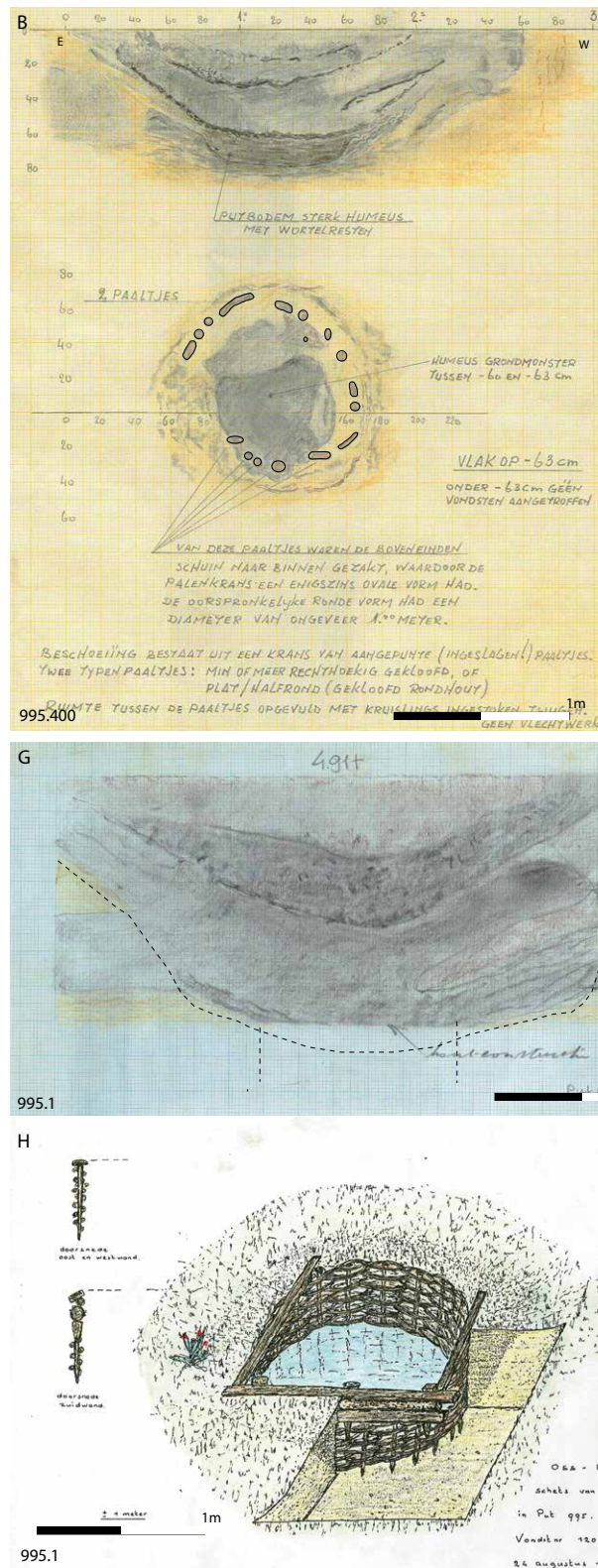


Figure 14.37 Cluster 5: features 995.1 and 995.400.

A: location of both features; B: drawing of section and plan at lower level; C: 995.400 under excavation; D: posts and planks that constituted the lining; E: lining of 995.1; F: position of the lining in plan; G: section drawing; H: reconstruction drawing. Drawings and photos M. F. van Oorsouw (A), G. van Alphen (B), H. Fokkens (C, D, E), P. Haane (G, F), G. Smits (H).

rectangular structure measuring 6.3 m x 2.3 m (S561; fig. 14.37A-D). It is not entirely clear whether the well and small construction were contemporaneous, but we think they were. S561 was described separately in the granary and outbuilding section. Pit 995.400 revealed a lining of braided twigs and vertically placed stakes. The deepest fills within this lining had humic deposits. Small humic deposits were found all the way up to quite a high level (-10 cm from the surface of the excavation trench). This indicates that the pit was open for a long while, and filled up gradually.

*Findings and dating:* the large complex of pottery sherds is typologically well datable to phase I of the Late Iron Age (275/250-225/200 cal BC; table 14.21), therefore ante-dates house SK134 by about two hundred years. It must have been closed and invisible when the house was built.

#### *Feature 995.1*

Feature 995.1 is a feature 3 m in diameter. It clearly was a well, with a construction of several wooden planks positioned in a square on top of a lining with braided twigs and vertically placed stakes (fig. 14.37E-H). The well gradually filled with a humic sediment and eventually closed up.

*Findings and dating:* The finds make a dating possible in phase M of the Roman Period which is contemporaneous with house SK134 (table 14.21; Wesselingh 2000, 177: table 54 well P607). This was one of the two wells in Schalkskamp that contained wheel-thrown pottery.

#### *14.4.6 Cluster 6: 997.15 and 997.1*

In the very north of the Schalkskamp quarter two pits need mentioning. One pit (997.15) because it provides a *terminus post quem* for settlement ditch F141 (feature

997.4; fig. 34.38A; cf. 14.5.1), the other (997.1) because it may be connected to iron production.

#### *Feature 997.1*

Feature 997.1 is a rectangular pit with rounded corners, measuring 120 x 50 cm (fig. 14.38B, C). It was very shallow, only 5 cm deep. The pit was completely filled with lumps of charcoal, although no signs of burning were visible underneath the pit. Therefore, we concluded that the pit was dug to contain the charcoal, but was not the place where the charcoal was produced. Since 997.1 is situated only 100 m west of smithing hearth 1007.34, there could be a relation between the two features.

#### *Feature 997.15*

Feature 997.15 was a deep pit, probably a well, but the groundwater table was just too high to allow documentation of the lower part (fig. 14.38C). Settlement ditch F141 (997.4) was shallow here, but clearly cutting into the fill of 997.15. The dark fill indicated on the plan is not charcoal, but just a very dark humic fill.

### 14.5 DITCHES AND FENCES

In the Schalkskamp quarter there were only a few fences, but several complex systems of ditches (fig. 14.39). None of the five ‘fences’ (or post alignments) could be dated direct. The ditches of Schalkskamp were easier to interpret: they represent several enclosing ditches around settled areas. The oldest can be dated to the Late Iron Age, and therefore represents one of the oldest enclosed settlements in the region. The ditch systems in the adjacent Mikkeldonk quarter were all linear ditches, but at Schalkskamp they appear to demarcate or enclose a settled area.

Find number	Trench	Feature	Material	Number	Date
12200	995	1	cer	407	ERP-M
12200	995	1	sling bullet	3	-
12200	995	1	loam	20	-
12200	995	1	La Tène glass	1	LIA
12203	995	400	cer	411	LIA-I
12203	995	400	loom weight	1	-
12203	995	400	metal	1	-
12203	995	400	bone	1	-

Table 14.21 Finds from cluster 5 of pits and wells in the Schalkskamp quarter.



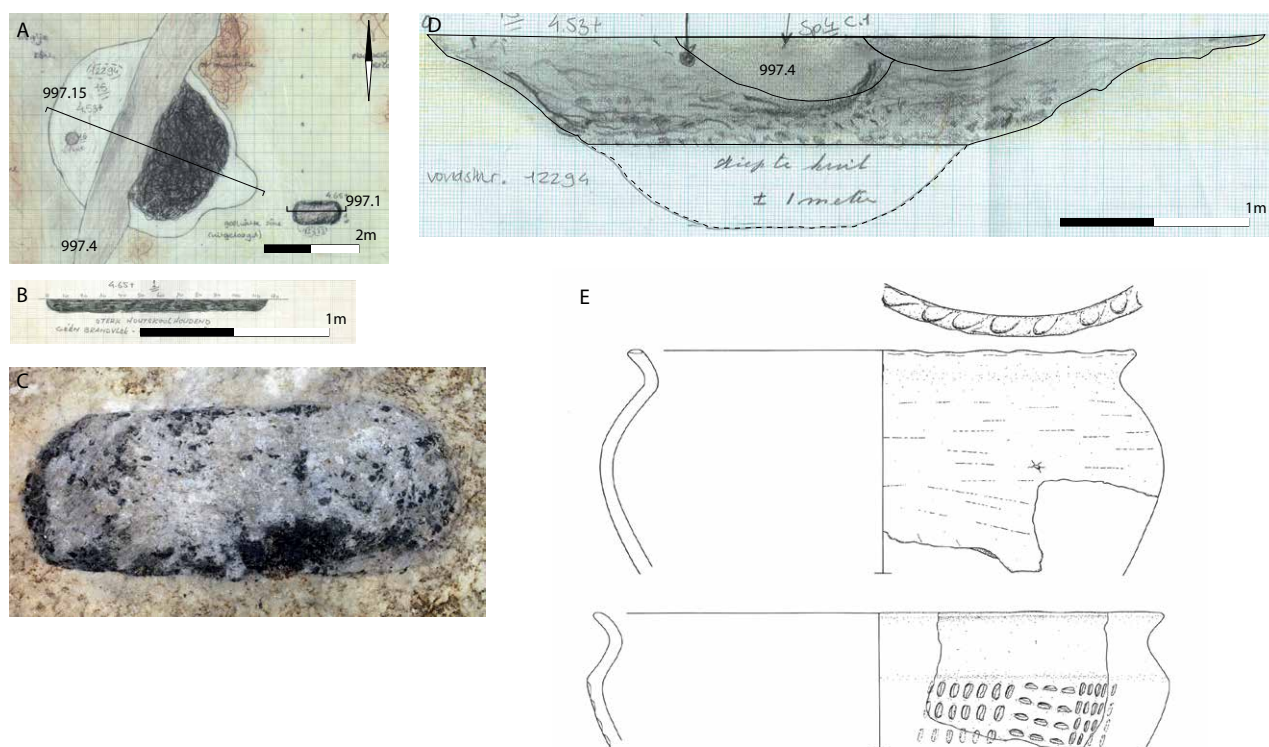


Figure 14.38 Features 997.15 and 997.1. Drawings and photo D. Wesselingh (A), G. van Alphen (B); P. Haane (D), H. Fokkens (C), A. Louwen (E).

More or less the same area is also enclosed by a ditch system in the Roman Period, indicating continuity in that respect.

Since these ditch systems are spread out over different parts of the excavation, were excavated in different years and often were obscured by medieval ditches, the exact connections between the various ditches are not always clear. However, on the basis of sections and the scarce finds it can be concluded that the enclosure has at least three phases of use. All date, probably, not later than the first century AD. One of these enclosing ditches may even have been connected to the ditched enclosure around the Westerveld settlement (Fokkens 1991, 131).

Since the settlement ditches run across the entire Schalkskamp research area, forming a very complex whole with several feature numbers assigned to every enclosing ditch. What is evident from the list of all ditches is that virtually none of these is really substantial and that virtually none actually reached the groundwater table. So in general ditches were dry ditches, demarcating certain areas rather than

protecting or defending them. Only in combination with hedges may they have formed more substantial barriers.

#### 14.5.1 Late Iron Age settlement ditches

The first settlement ditches (F141 and F144) emerged in the Late Iron Age (figs. 14.40, 14.41). These ditch systems are physically disconnected since they were intersected by ditch systems from the Roman Period and the Middle Ages. F141 and F144 show comparable fills though: they both filled up in a natural way and they are – judging by the pottery typology – roughly contemporary. Therefore we suggest that they are part of the same Late Iron Age ditch system demarcating the settled area from that period (cf. fig. 14.39). Taken together, both ditches appear to enclose an area of which we then only have the northern and eastern boundary. Features and structures from the Late Iron Age (houses, granaries, pits, and wells) were found within the area of these ditches, therefore we assume they enclosed a few (probably not more than two) Late iron Age farmsteads, or an area of approximately 200 x 200 m.



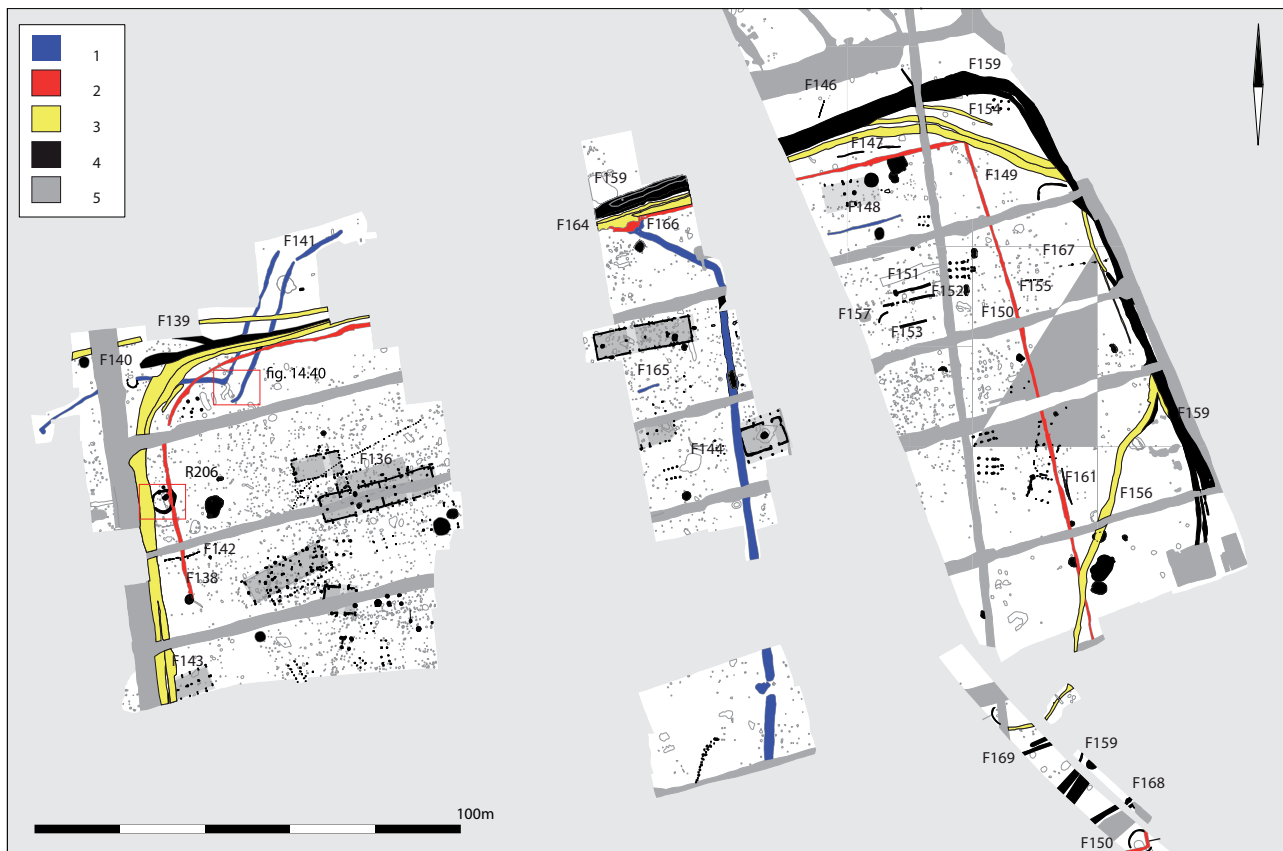


Figure 14.39 Ditches and fences in the Schalkskamp quarter. Legend: 1 Late Iron Age, 2 Late Iron Age – Early Roman period I, 3 Early Roman Period II, 4 Late Medieval period, 5 Modern.

### *Ditch F141*

Ditch F141 partly consists of two parallel ditches in the north-western part of Schalkskamp, intersected by ditches from the Early Roman Period (F138 and F143) and the Middle Ages (F140; fig. 14.40). The overlapping ditches were interpreted as entrance shaped in such manner that it could function as a drove for livestock. The distance between the ditches was a little over 3 m. They were about 40 cm deep, meaning that originally they had a depth of about 80-90 cm. The present width was about 80-90 cm, and this may have been just over a metre in the Late Iron Age. The extension that was indicated in the drawing as 996.7 (fig. 14.40A) we have later interpreted as part of the tree fall or similar disturbance that was visible in the middle of the 'entrance'. It does not show up in the photograph either (fig. 14.40B).

Several sections of both ditches proved that the features were mainly U-shaped (fig. 14.40C, D). Thin humic layers were sometimes observed in the bottom of the ditches, indicating sedimentation by water. The

sections show one rejuvenation level, but in general the ditches were filled in naturally, the last phase showing a dark organic layer indicating a long period of stagnation without much accumulation of material. Both at the northeaster end and at the southwestern end the ditch appears to end. The problem is that we also reached the limits of the area that could be excavated, so it remains unclear whether the ditches continue or not. On the eastern side we found another ditch (F144) of the same period, which may have been connected to the same system (cf. fig. 14.39).

*Finds and dating:* The ditch was intersected by features from the Early Roman Period. The complex of prehistoric pottery sherds dates to phase J/K of the Late Iron Age. Small splintered fragments of a red glass bead were found in the southern end of the eastern entrance ditch. On the west side, at the very location of the sharp bend, a pottery deposit of a large number of sherds was found (table 14.22). This could indicate a deliberate deposit at the end of the period of use.

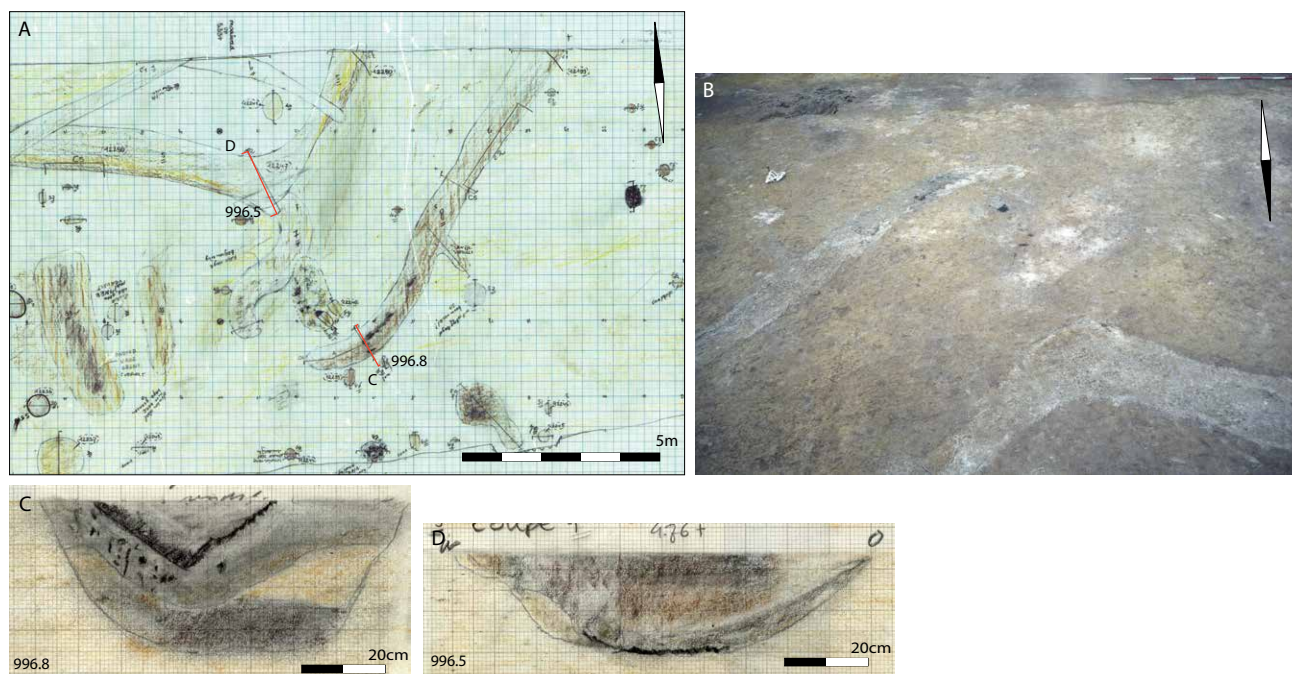


Figure 14.40 Late Iron Age ditch system F141. A: plan, the section drawings C and D are indicated in the plan; F: 996.8 (left) and 996.5 (right) as seen in the field. The photo is taken facing south. Drawings and photo H. Fokkens, (A, B), P. Haane (C, D).

Find number	Structure	Trench	Feature	Material	Number	Date
12247	F141	996	5	cer	237	LIA-J/K
12295	F141	997	4	cer	3	IA
12199A	F141	996	8	La Tène glass	1	LIA-J/K
12238	F141	996	1	metal	1	IA
12250	F141	996	5	cer	2	IA
12253	F141	996	92	bone	26	-
12378	F141	1003	1	cer	34	LIA-J/K

Table 14.22 Finds from ditch F141 in the Schalkskamp quarter.

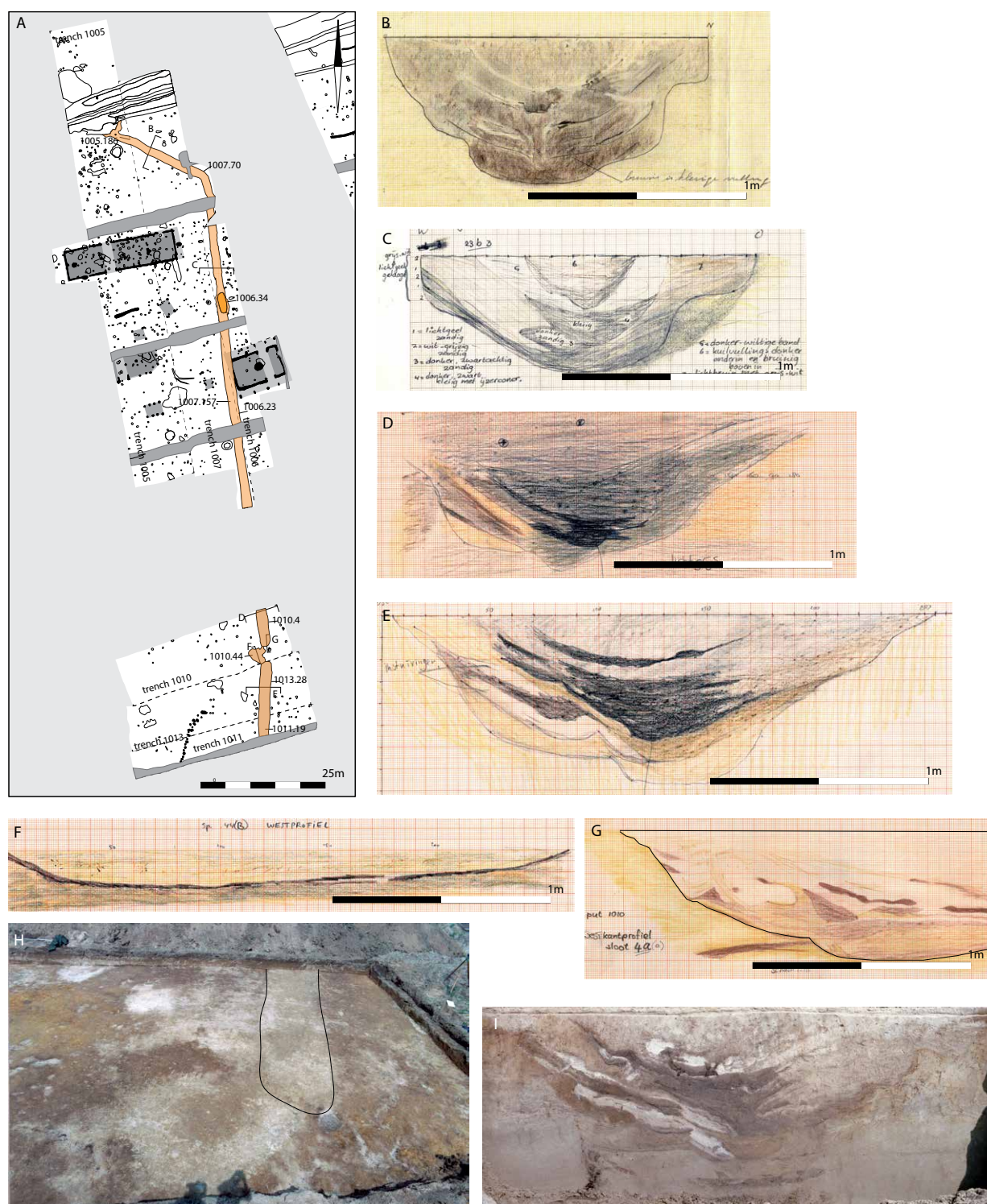
### Ditch F144

Ditch F144 is a long ditch running north-south. In the south it was 250 cm wide and about 70 cm deep, so originally it must have been more than a metre deep and 3 metres wide (fig. 14.41D, E). That is much more substantial than F141. The northern part of the ditch is cut off by ditches from the Early Roman Period. Here the ditch was narrower and less deep (fig 14.41B, C), more like F141. The ditch showed a fine lamination. Invariably the west side showed layers of white bleached drift sand alternating with humic deposits (fig. 14.41I). These could be clayey as well, indicating

long periods of stagnating water. The fine lamination nearly to the top shows that the ditch filled up in a natural way over a long period of time. That it was gradually abandoned and that it basically was a dry ditch is also attested by the smithing hearth that was located somewhere in the middle of the ditch (1006.34; cf. fig. 14.35).

In trench 1010 there was a clear 5 m wide opening in the ditch (fig. 14.41 F, G). From the section of this part (fig. 14.41G) it is clear that the ditch indeed was broken by a dam. Strangely enough this dam was 'blocked' by feature 1010.44, a large shallow pit or





maybe more a stained soil. We have very little to go on for an interpretation of this configuration. Probably it is an entrance to the settlement area west of the ditch.

*Finds and dating:* F144 extended in several trenches: 1005, 1006 and 1007. It was excavated in its entirety, but in different sections and find numbers. When we excavated trench 1006 we discovered that as feature 1006.23 ditch F144 contained lots of finds and what we called 'an oven' (1006.34). We decided that we would excavate the ditch in sections of 5 m and that we would draw a section every five meter. Have discovered the enormous richness in finds, we decided that in trench 1007 we would excavate in smaller sections of 1 m, even though we knew that for a final analysis the resolution of the distribution would be determined by the larger sections in trench 1006. The reason that in trench 1007 the ditch received two feature numbers (1007.70 and 1007.157) is that in this trench the two parts of F144 were not connected.

In figure 14.42 we have depicted some of the distributions that were presented in table 14.23. Large quantities of potsherds were found in the ditch (fig 14.40A). The complex could be dated to the 2nd century BC, or the end of phase J and the beginning of phase K of the Late Iron Age. It is clear that most of the finds concentrated around and north of the smithing hearth 1006.34. Table 14.23, however, shows that this image is a bit biased by the larger collection units in feature 1006.23. Loom weight were distributed evenly over the entire ditch in low numbers, with a peak in hearth 1006.34 (fig. 14.42B). The latter is probably also caused because several of what we now have recognised as tuyere supports (see fig. 14.35) were registered as loom weights. This should not surprise us since we have only made the identification years after the excavation and after careful refitting. As they are hand-formed lumps of loam with holes in it, nearly everyone would identify them as loam weights.

Interestingly in the northern end, in the very bend of the ditch (1007.70), a cache of 196 sling bullets was found. In the adjacent sections of the ditch a several more, in all 220 (table 14.23). It is quite clear that at some point someone put this heap of bullets in the abandoned ditch. We can only guess at the meaning. It is easy to think in terms of defence or attack, but how and why and against what is at this point impossible to say. All in all, ditch F144 contained a very large amount of settlement debris of all kinds, including spindle whorls, bone fragments, loam and a tephra millstone.

#### *14.5.2 Settlement ditches from the Early Roman Period*

In the Early Roman Period, or probably at the end of the Late Iron Age, the existing settlement ditches F141 and F144 were closed and filled in. Sometime later a new ditch system was dug in approximately the same place, but having shifted further east than its Late Iron Age predecessor. The area enclosed by F138, F150 and F166 (fig. 14.39: red phase 1) now became c. 200 x 225 m. These settlement ditches partly intersect the previously discussed ditch system from the Late Iron Age (F141 and F144). In the next phase, a century later, the system is laid out again, this time a little larger still, and in the east slightly more irregular (fig. 14.39: yellow phase 2).

It took quite a bit of research work in the post-excavation phase (Van As) to reconstruct this sequence. Documentation and interpretation of these ditches took place over a period of three years in many different trenches. Moreover, especially the northern part was hidden underneath a medieval ditch system that more or less followed the Roman Period one. The many sections were analysed by Van As and partly redrawn to enhance the originals.

#### *Phase 1*

The first phase of the enclosing ditch system in the Early Roman Period comprised F138, F166 and F150 (fig. 14.39 red phase). The ditch intersected burial monument R206 in the western part of Schalkskamp, as well as the Late Iron Age ditch system (F141-F144), but was intersected by a later phase of the Roman Period ditch systems (F156) in the eastern part (excavation trench 1029). The ditches were shallow (25 cm), and mostly U-shaped. The ditch was a metre wide in most areas but in the west even narrower.

Near the end in the west was a 10 m lone palisade or fence, perpendicular to the ditch (F142; fig. 14.39 yellow phase). At first sight, F142 seemed to have been intersected by ditch F138. But two extra posts were placed just outside the ditch on both sides, in the exact same orientation. Therefore F142 has been interpreted as part of the ditch system. The row consisted of at least 21 post pits that stood about 25-50 cm apart: 10 to the west and 11 to the eastern side of ditch F138. Its function is not clear.

Whereas the eastern half of the ditch is fairly clearly visible in its entire trajectory, on the west side it disappears in trench 999. This may be due to taphonomic processes, since the ditch was very shallow in this area, probably due to erosion of

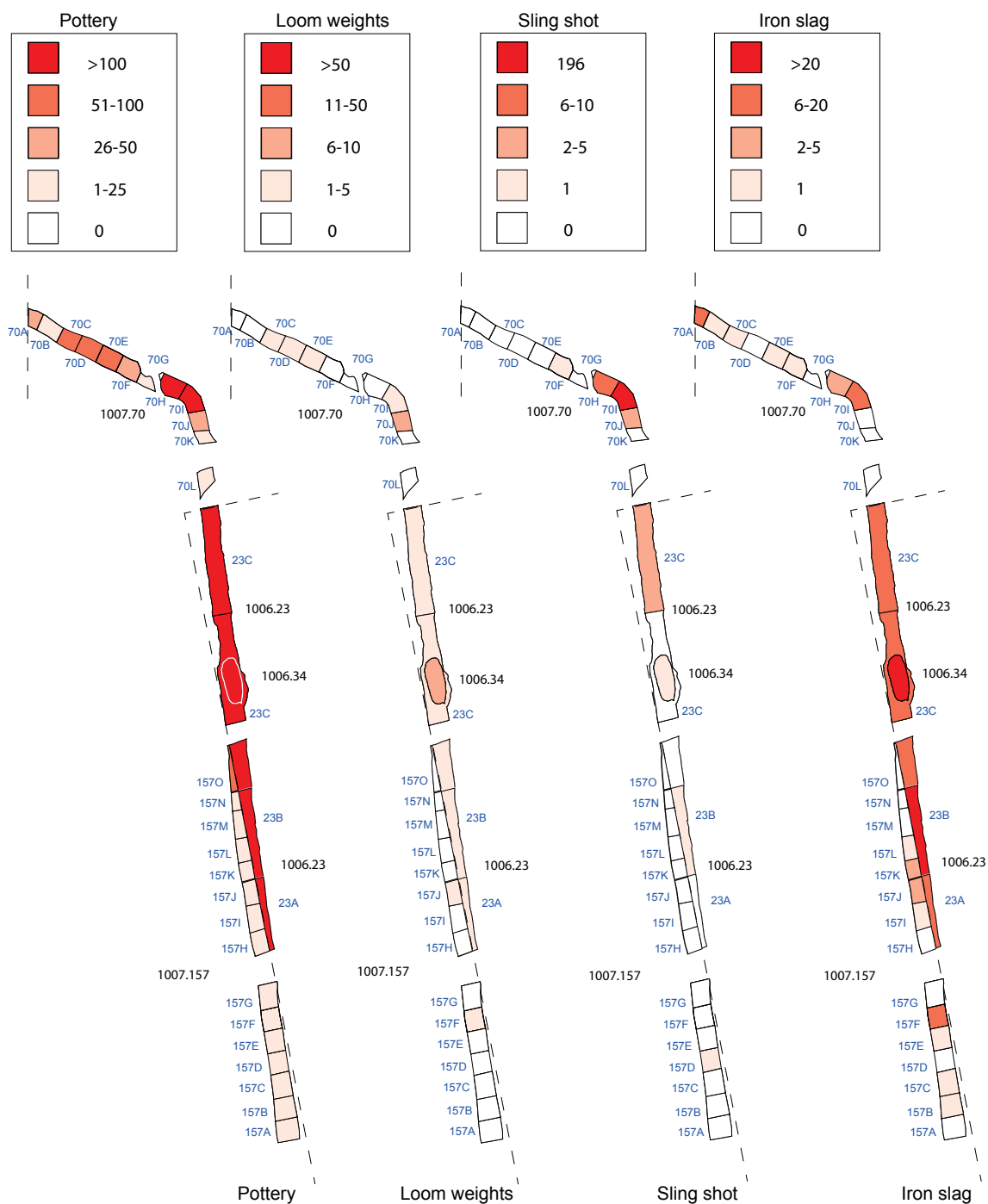


Figure 14.42 Distribution of different find categories in F144. Drawing H. Fokkens.

Trench	Feature	Pottery	Loam	Loom weight	Sling shot	Spindle whirl	Tephra	Bone	Slag
1007	70a	37	-	-	-	-	-	1	6
1007	70b	17	-	-	-	-	-	2	1
1007	70c	76	1	1	-	-	-	4	1
1007	70d	61	-	1	-	1	-	57	-
Total		191	1	2	0	1	0	64	8
1007	70e	64	3	1	-	-	-	12	1
1007	70f	27	-	-	1	-	-	28	1
1007	70g	14	-	-	-	-	-	-	-
1007	70h	125	-	-	7	-	-	14	5
Total		230	3	1	8	0	0	54	7
1007	70i	165	3	3	196	-	-	31	7
1007	70j	40	6	4	10	-	-	-	-
1007	70k	24	-	63	-	-	-	-	-
1007	70l	20	-	-	-	-	-	1	-
Total		249	9	70	206	0	0	32	7
1006	23c	879	2	75	3	1	2	18	63
1006	34a	153	4	-	-	-	-	-	6
1006	34b	248	1	-	-	-	16	1	13
1006	34c	82	-	1	1	-	-	1	-
1006	34d	139	-	-	-	-	-	-	18
Total		1501	7	76	4	1	18	20	100
1006	23a	79	3	9	-	-	-	-	2
1007	157h	18	1	-	-	-	1	-	-
1007	157i	12	-	-	-	-	-	-	1
1007	157j	14	-	3	-	-	-	-	3
1007	157k	14	-	-	-	-	1	-	2
1007	157l	22	-	-	-	-	3	-	1
1007	157m	12	-	-	-	-	-	-	-
Total		171	4	12	0	0	5	0	9
1006	23b	309	1	6	1	1	-	5	95
1007	157n	5	-	-	-	-	-	-	-
1007	157o	83	-	-	-	-	-	-	30
total		397	1	6	1	1	0	5	125



Trench	Feature	Pottery	Loam	Loom weight	Sling shot	Spindle whirl	Tephra	Bone	Slag
1007	157a	16	-	1	-	-	1	-	
1007	157b	5	-	-	-	-	4	-	2
1007	157c	15	-	-	-	1	2	-	4
1007	157d	29	-	-	1	-	-	-	
1007	157e	10	-	1	-	-	-	-	1
1007	157f	22	2	-	-	1	-	-	2
1007	157g	29	-	7	-	-	4	-	9
Total		126	2	9	1	2	11	0	18
Total F144		2865	27	176	220	5	34	##	274

Table 14.23 Finds from ditch F144 in the Schalkskamp quarter.

the toil soil. The northwest corner appears to be rounded, whereas the northeast and southeast corners are at right angles.

*Finds and dating:* The ditch system lacked determinable finds. It is clear that it is younger than F141 (Late Iron Age, phase K). Based on the intersection by other ditches from the Early Roman Period, the system of F138, F150 and F166 must date to the very start of the Early Roman Period or the last decades of the Late Iron Age (phase L).

### Phase 2

The second phase consists of several ditch sections, labelled F143, F139, F164, F149, F154 and F156 (fig. 14.39). It is presumed that the entire ditch system enclosed an inhabited area. The ditches seem to split in the north-western part, where one part wanders westward. A split is also visible in the south-eastern part of the enclosure. No entrances were found, but the southern part of the system was not recovered due to the limits of the research area. The same holds true for two large areas in the northern part of the ditch. The system shows at least two phases, demonstrated by a recutting of the ditch in most of its trajectory.

The irregular form of the ditch system is also noticeable in the feature's sections. The first phase is bowl-shaped, about 100 cm wide and 40 cm deep (fig. 14.39). Originally it was probably 150 cm wide and 100 m deep. In the second phase the ditch was wider, at least 200 cm, but not deeper. The ditch seemed also to have been moved a bit in some

places after the first phase of use (hence the split in the ditches' length in the southwestern part and the south-eastern part). The deepest fill often had a layered fill, proving that the ditch sometimes held water, but this must have been rainwater, not groundwater.

*Finds and dating:* This ditch yielded a small complex of sherds, small amounts of a tephra millstone, animal bone and unmodified rock and flint. The complex could roughly be dated to the first century AD on the basis of a small fragment of *Terra Sigillata* and a fragment of grey ware in ditch F156; Wesselingh 2000, 177). The ditch system intersects Early Roman Period ditch F150 in two locations: at the northeast corner and in the southeast. Based on the intersections, the finds and the character of the settlement features within the enclosed area, it is concluded that the enclosure could not be dated later than the first century AD.

### 14.6 FUNERARY STRUCTURES

Three funerary structures were found in Schalkskamp (fig. 14.43). R206 was already discussed by Wesselingh (2000), R208 is a possible burial monument, a circular ditch without a grave. R207 was situated in the very northeast of the excavation and appears to have been the only Middle Bronze Age burial in all of Oss so far.

#### *Grave R206*

Grave R206 consisted of a circular ditch and a pit with a burial (features 986.2 and 986.3). The circular ditch was intersected by settlement ditches F138 and F137.

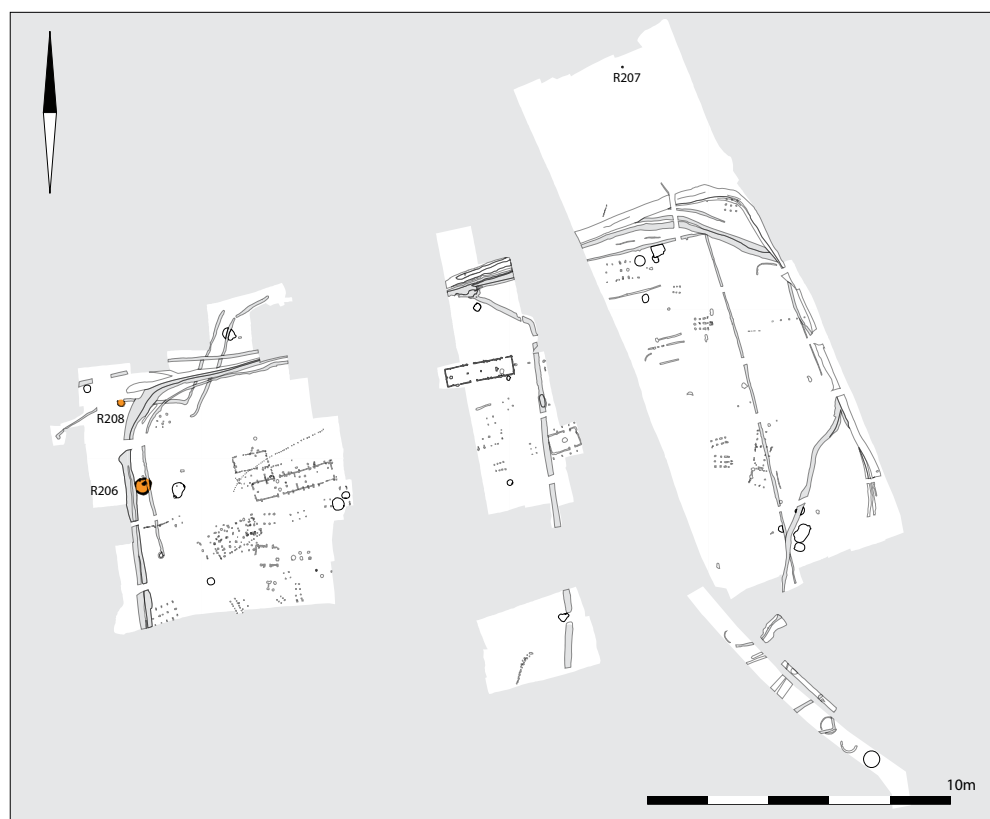


Figure 14.43  
Distribution of the  
three dispersed  
graves in the  
Schalkskamp quarter  
R206, R207, R208.  
Drawing S. van As.

The grave was surrounded by a circular ditch with a diameter of c. 5 m. The width of the peripheral ditch was approximately 50 cm and had a depth of about 20 cm (fig. 14.44A-E). The grave pit looks substantial (180 x 100 cm) on the plan (fig. 14.44A) but this is largely due to a soil discoloration around the actual grave pit. The pit is 35 cm wide and 20 cm deep and is situated off-centre. Wesselingh (200, 175) describes the grave as follows: “It consisted of an urn containing cremated bones. The bones were found to be those of one individual, at least older than 18. Mixed with the human remains were the calcinated bones of an animal, possibly a sheep. More faunal remains, which could not be determined, were found in the circular ditch”.

*Finds and dating:* The date of this grave is problematic: the vessel cannot be dated more precisely than the Late Iron Age or Roman Period. Exactly on the dividing line between the circular ditch of the burial monument and one of the ditches intersecting the circular ditch, a bronze wire-brooch was found, but this cannot be dated very sharply either. For the grave, a date in the later Iron Age seems most probable. A date in the Early Roman Period is possible, but less likely: the grave monument

would then have been destroyed by the digging of the enclosure ditch in the Early Roman Period, shortly after it was constructed (Wesselingh 2000, 177).

#### *Grave R207*

Grave R207 appears to have been an isolated grave. The grave is listed as feature 1014.32, and was situated in the far northeast of the excavated area. The feature was recognised as ‘grave’ after fieldwork, when the finds were investigated more closely. In the field the dark charcoal-stained fill was recognised as special, and sampled for dating, but the cremated bones were not immediately determined as human. Only 10 cm of the shallow pit remained (fig. 14.44G, H), with a diameter of approximately 65 cm. The pit was mainly filled with charcoal. When the contents were sieved, they revealed two fragments of burned bone. The fragments were too small for certain determination, however, the fractured parts of the bone seemed to reveal a bone structure which is distinctive for human remains (determination by Simone Lemmers). The pit also contained 14 sherds of a single pot. The pottery was secondarily burned,

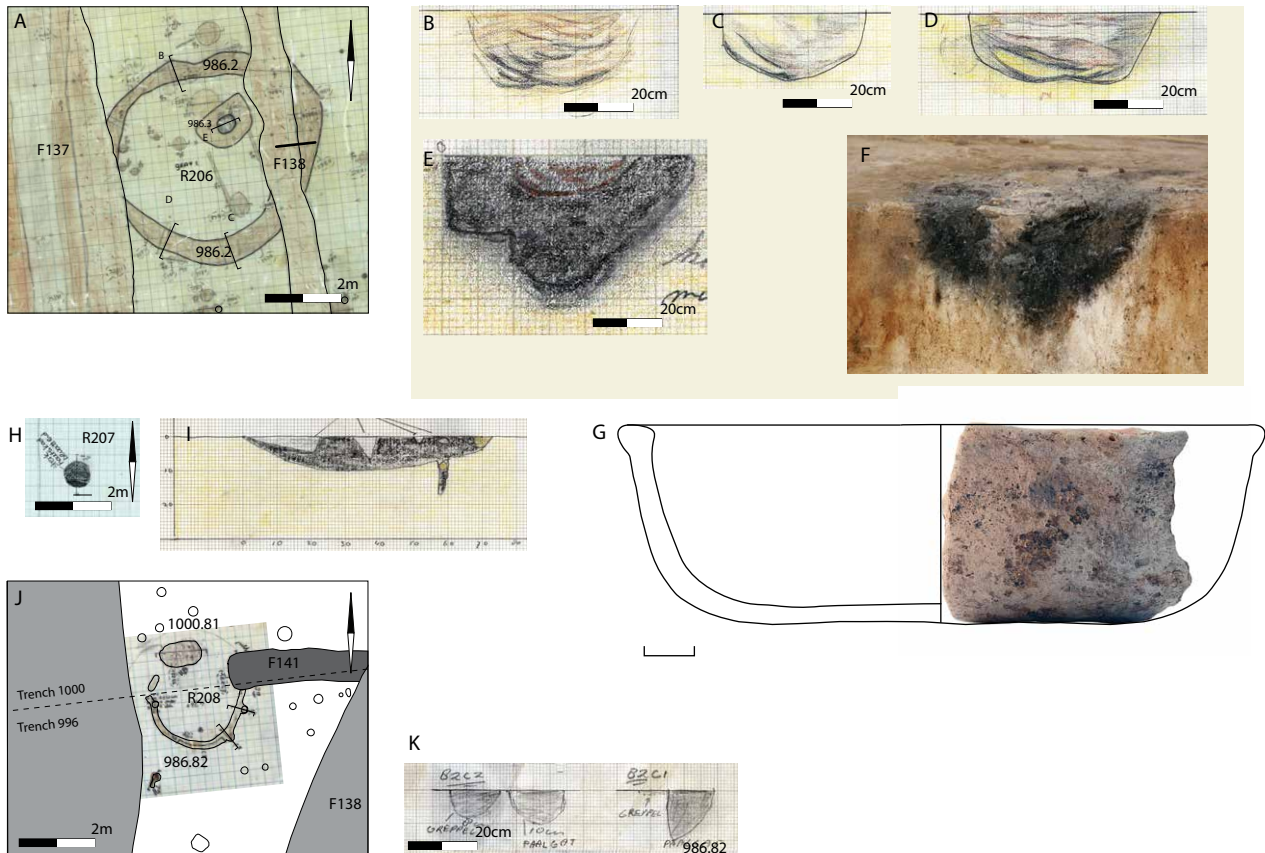


Figure 14.44 A-G: grave R206, H-I: grave R207, J-K: grave R208. A: detail of the field drawing of R206 (feature 986.2); B-F: sections of the ditch; H: pottery from the grave; H: detail of the field drawing of R207 (1014.32); I: section of 1014.32; plan of R208; K: section of 986.82. Drawings and photo D. Wesselingh (A, B, C, D, J, K), H. Fokkens (F), A. Louwen (G), R. Kok (H, I).

yet the sherds still fitted. It is an open dish or bowl, with a slight 'S'-profile, which is described by Van den Broeke (2012, 53) as type 13 in the Oss-Ussen typochronology (fig. 14.44H). The rim must have had a diameter of about 26 cm, which fits in with the description of this specific type. Its quite large section measurements and short height (approximately 5 cm) indicated that it probably was a dish. It had a smooth wall surface, which is a common feature with the type of pottery. This type of pottery was in use in the Oss area roughly from the second half of the Middle Iron Age to the Late Iron Age. Although it is not used much after the first half of the Late Iron Age, it occurs incidentally in the end of the Late Iron Age and locally even until phase N of the Early Roman Period (Van den Broeke 2012, 53). But the type was repeatedly found in the rare cremation graves from the Middle

Iron Age (phase G-H) (Van den Broeke 2006, afb. 3:1; Van den Broeke 2012, 53).

#### Grave R208

Grave R208 consists of a small circular ditch (feature 996.82) of about 2.8 m in diameter (fig. 14.44I). It is situated about 25 m north of R206. A central burial was absent. The feature was partly intersected by Late Iron Age ditch F141. Due to the poor preservation of the feature and the absence of a grave, the classification of 'grave monument' is debatable. The ditch was only 20-25 cm wide and it had almost disappeared: the southern part was 6 cm deep, while the northern part was largely missing. Four post pits were recognised in the ditch. R208 must date to the Late Iron Age (phase J at the latest) or earlier, based on the intersection by Late Iron Age ditch F141 (phase K).

## NOTES

1. The description of H134 was largely based on Wesselingh 2000, 173.
2. The description of H135 was largely based on Wesselingh 2000, 173.
3. GrN 19669: 3425  $\pm$  20 BP calibrated with IntCal 13: 1862-1851 cal BC (2.0%), 1772-1664 cal BC (93.4%)
4. GrN 19666: 3485  $\pm$  20 BP calibrated with IntCal 13: 1882-1748 cal BC (95.4%)
5. Trunk 1027.51E GrN 19664: 2470  $\pm$  15 BP; trunk 1027.51F GrN 19665: 2530  $\pm$  20 BP.
6. Published in Brusgaard *et al.* 2016.
7. GrN 21506: 2140 $\pm$ 30 calibrated with intcal13.14c: Two Sigma Ranges: 353 – 295 cal BC (0.202689%); 229 – 219 cal BC (0.014688%); 213 – 87 cal BC (0.748387%); 78-56 cal BC (0.034236%).

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# 15. Features in the Mettegeupel quarter

S. van As and H. Fokkens

## 15.1 INTRODUCTION

The Mettegeupel quarter was extensively prospected with small, parallel test trenches, before three locations were largely excavated between 1993 and 1995. The location of the larger excavations was determined by the results of these test-trenches (Fokkens 2007; see also chapter 6). Since the excavations took place in a 'new' area, c. 250 m east of Schalkskamp, we decided not to continue the numbering system of trenches and features that was started with the Ussen excavations. Not only the trenches, but also all different types of structures therefore start with number 1. The individual structures of *Oss-Mettegeupel*, consisting of a considerable number of structures, pits, wells, ditches and a few graves are discussed in this catalogue. All houses are described here and a selection is made of granaries, pits, wells and ditches/palisades based on the presence of (special) find materials or the uniqueness of the construction.

## 15.2 HOUSES

A total of eleven houses is documented in the Mettegeupel quarter (table 15.1). Numbers MG10-MG17 are not part of the Mettegeupel excavations, because these plans were found in the nearby excavation of Oss-Almstein (1995).

### *House MG1*

House: MG1 and MG2 are two houses exactly in line with each other. It is very difficult to decide which one was first (fig. 15.2). Since house MG1 was complete at the western end, while MG2 was less visible at the eastern end, we suggest that MG1 overlays MG2. However, no intersection of individual features was recorded. The features of MG1 had a distinctive brown fill that contrasted with MG2.

The excavation history of both houses is complex. Both houses are orientated east-west, but the trenches were orientated northwest-southeast since the parceling of the land dictated that. Both houses were first excavated in two test trenches, but then not recognised as houses. In trench 15 we recognised house MG1 and we then tried to excavate the entire house at once.

*Construction details:* House 1 is an Oss type 2A plan, in which the load of the roof beams rests on the portals and on the walls. Therefore the wall is well visible. The overhanging part of the saddle roof is only supported by small posts. Three entrances are identified. Two are positioned opposite each other in the long sides of the house. The trenches may have contained sleepers for wattle-work panels. A small entrance was found in the eastern short wall, like in Mikkeldonk MG130. In fact, MG1 is in all respects a copy of Mikkeldonk MG130 (fig. 13.10), though it is a metre longer. The expected entrances in the long walls are probably disturbed by the modern ditch. The western short end consists of a line of small posts, probably part of a wattle-work wall. Seven larger posts outside the wall supported the overhanging saddle roof on

house	Type	length (m)	width (m)	area (m <sup>2</sup> )	date
MG1	2b	15.2	6	91.2	EIA A-D
MG2	3a	10 or >	6	60 or >	EIA A-D
MG3	4?	15.5	5	77.5	LIA-J
MG4	4a	13.6	6.5	88.4	MIA/LIA E-L
MG5	4(b?)	15.7	5	78.5	MIA E-H
MG6	7b	17	6.1	103.7	LIA/RP I-N
MG7	4-May	14.5	5.5	79.8	IA
MG8	4/5?	17.1	4.7	80.4	LIA I-L
MG9	4a	16.7	5.5	91.9	MIA G-H
MG18	4?	8 or >	4.5	36 or >	IA
MG19	-	5.4 or >	3.8 or >	20.5 or >	MIA
MG20	4a	13.2	5.5	72.6	MIA/LIA

Table 15.1 Characteristics of houses in the Mettegeupel quarter.

this end. Like in Mikkeldonk MG130, an internal wall was probably present in the eastern part of the house.

*Abandonment:* There are no clear indications to assess how the house was abandoned. Not post shadows were visible, the fills were rather homogeneous (fig. 15.02C), the pits contained several pot sherds, therefore we suggest the posts were removed and the pits filled-in with debris.

*Finds and dating:* The features yielded 55 potsherds (table 15.2), suggesting a date in the Iron Age. Similar house types occurred during the Early Iron Age. We suggest, given the detailed likeness to plan Mikkeldonk MG130, that both houses are contemporaneous.

### House MG2

House MG2 is excavated in two trenches, 13 and 37. While excavating trench 37 it became evident that the excavation level of trench 13 was a bit deeper than in trench 37. Therefore the shallow wall posts do not continue in the eastern part of the house plan.

*Construction details:* House 2 is a type 3A house. In this type the weight of the roof is born by posts and roof-plates outside the walls. Only the western short wall was visible. The roof was supported by relatively heavy outer posts set far apart. As was the case with house MG132 in the Mikkeldonk quarter, these posts were replaced, which probably indicates that the entire roof was replaced. The outer posts in this case were clearly intersecting the posts that were nearest to the wall. Like in MG1 and in Mikkeldonk MG132

the wall was visible as a row of thin stakes, indicating a wattle-work wall. As is customary in this type, entrances were situated in the centre of the northern and southern long walls. MG2 is in fact an exact copy of Mikkeldonk MG132 (fig. 13.13), with exactly the same structure and length. Therefore we suggest that the eastern end was rounded rather than straight.

*Abandonment:* No indications.

*Finds and dating:* Three inner and three outer posts yielded 19 sherds in total, suggesting a date in the Early Iron Age (table 15.2). The sequence of both houses MG1 and MG2 is not clear. We have suggested that MG1 was the younger house. Both plans may have succeeded each other without much time in between. So continuous use of this yard of about 80-100 years is possible (assuming a lifespan of 40-50 years for each building).

### House MG3

House MG3 is documented in three different trenches (12, 35 and 38). The structure was first recognised in trench 35 and then combined with the features of trench 12 (fig. 15.3). In that narrow survey trench we had not recognised the plan. The structure continued in trench 38 where the western end was found. Directly to the west of the plan was a ditch from the Roman Period. No features belonging to house MG3 were found west of that ditch.

*Construction details:* The house is two aisled with three, possibly four central posts. The distance



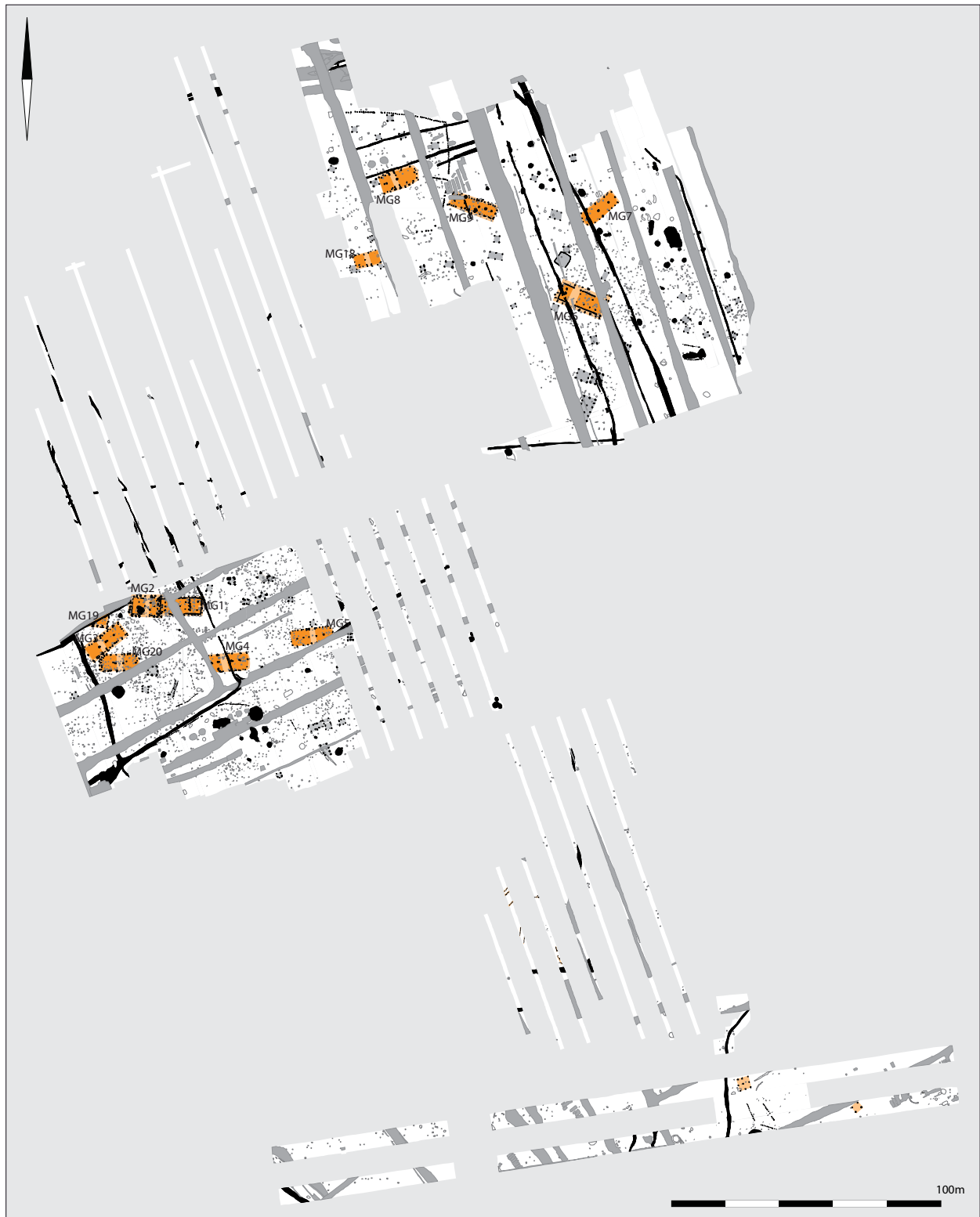


Figure 15.1 Plan of all features and recognized structures in Mettegeupel. Drawing S. van As.

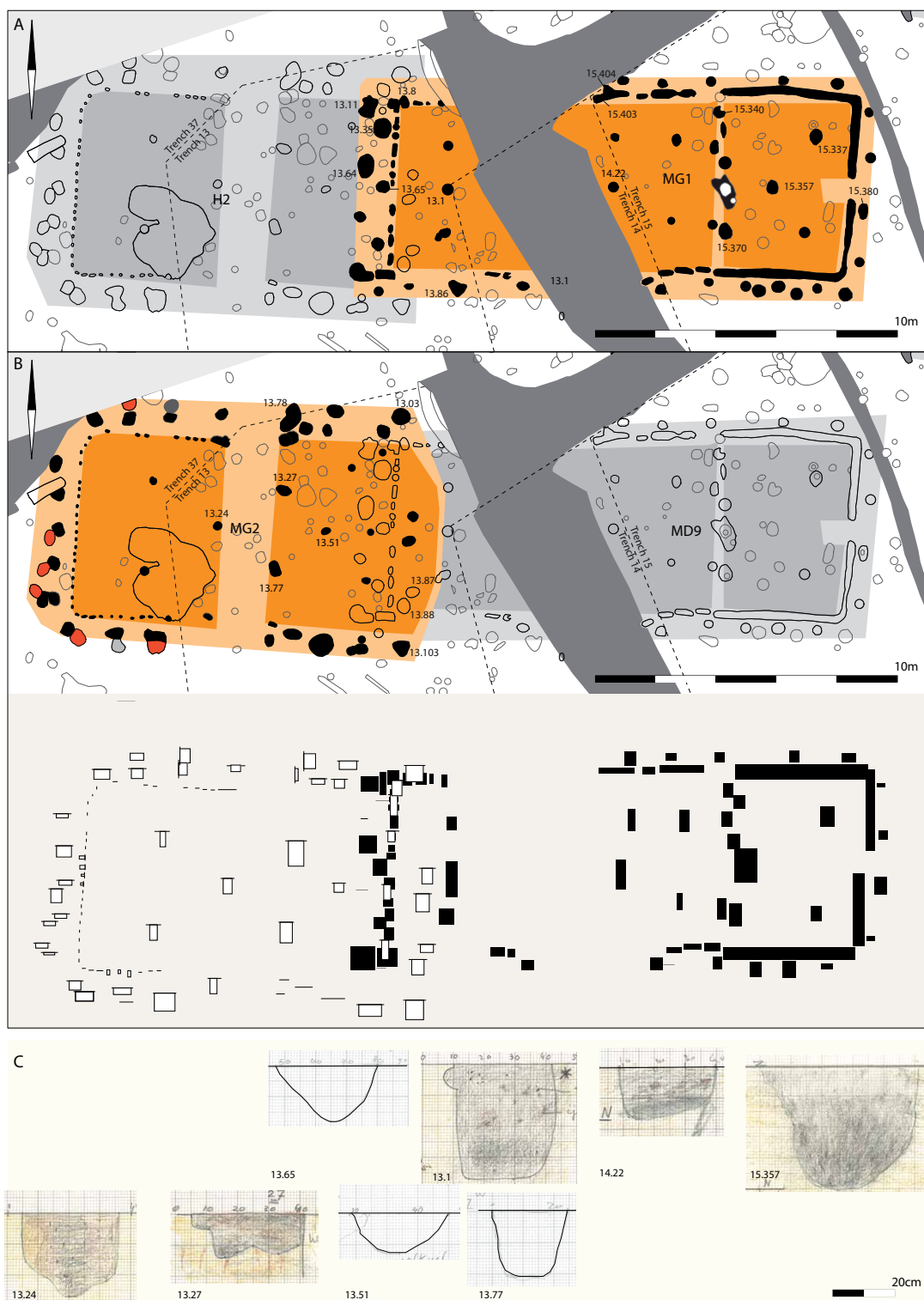


Figure 15.2  
 A: house MG1;  
 B: MG2 and  
 the schematic  
 sections of both  
 houses. The  
 horizontal scale is  
 1:200, the vertical  
 scale 1:100; C: the  
 field drawings  
 of the central  
 posts. The red  
 post pits (B) mark  
 possible post  
 replacements.  
 Drawings S. van  
 As (A); H. Aalders  
 (13.65), X. van Dijk  
 (13.1), A. Blote  
 (14.22), P. Haane  
 (15.357), W. van  
 Zijverden (13.24),  
 M. C. Schallig  
 (13.27), M. van  
 Poecke (13.51,  
 13.77).

Structure	Trench	Feature	Material	Number
H1	13	8	cer	2
H1	13	11	cer	1
H1	13	64	cer	5
H1	13	64	loom weight	1
H1	13	65	cer	1
H1	13	86	bone	1
H1	13	92	cer	2
H1	13	97	cer	2
H1	14	25	cer	1
H1	15	337	cer	2
H1	15	357	cer	4
H1	15	380	cer	16
H1	15	380	loam	1
H1	15	402	cer	1
H1	15	403	cer	1
H1	15	404	cer	2
H1	15	340	cer	2
H1	15	370	cer	9
H2	13	3	cer	1
H2	13	24	cer	3
H2	13	51	cer	2
H2	13	87	cer	1
H2	13	88	cer	2
H2	13	103	cer	1
H2	37	78	cer	9

Table 15.2 Finds from House MG1 and MG2.

between the central posts is c. 2.5 m, except for the western part where it is 4.5 m. One central post was replaced (35.103). Two smaller inner posts next to the eastern short end might also have supported the hipped roof construction. Two entrances almost opposite each other are present in both long walls, dividing the house into two parts. Porches, constructed by a few posts placed close to each other, were set inside the house. Based on these characteristics the house can best be described as an Oss type 4. Two subtypes are distinguished with either staggered wall and outer posts set far apart (type 4a) or with wall and outer posts arranged in pairs (type 4b) (Schinkel

1998, 193). Here, however, only the inner wall posts were recognised. The row of stakes in the southwestern corner of the house is probably younger than the house.

*Abandonment:* No indications.

*Finds and dating:* 144 sherds were found in the features of MG3 (table 15.3). Most of the sherds were found in several centrally placed posts. Nail imprints and *Kalenderberg*-decoration and a fragment of briquetage pottery suggest a date in the (second half of the) Late Iron Age. The entire complex can be dated to phase J of the Late Iron Age (225/200-150/125 cal BP) (determination P. van den Broeke; Van den Broeke 2012, 36).

**House MG4**

House MG4 was discovered in trenches 15 and 16. The plan is intersected by younger ditches, one of which dates from the Roman Period.

*Construction details:* The house is not very well preserved and the central roof-bearing posts are off-set from the centre by about 40 cm. The two-aisled construction of the house and the presence of (some

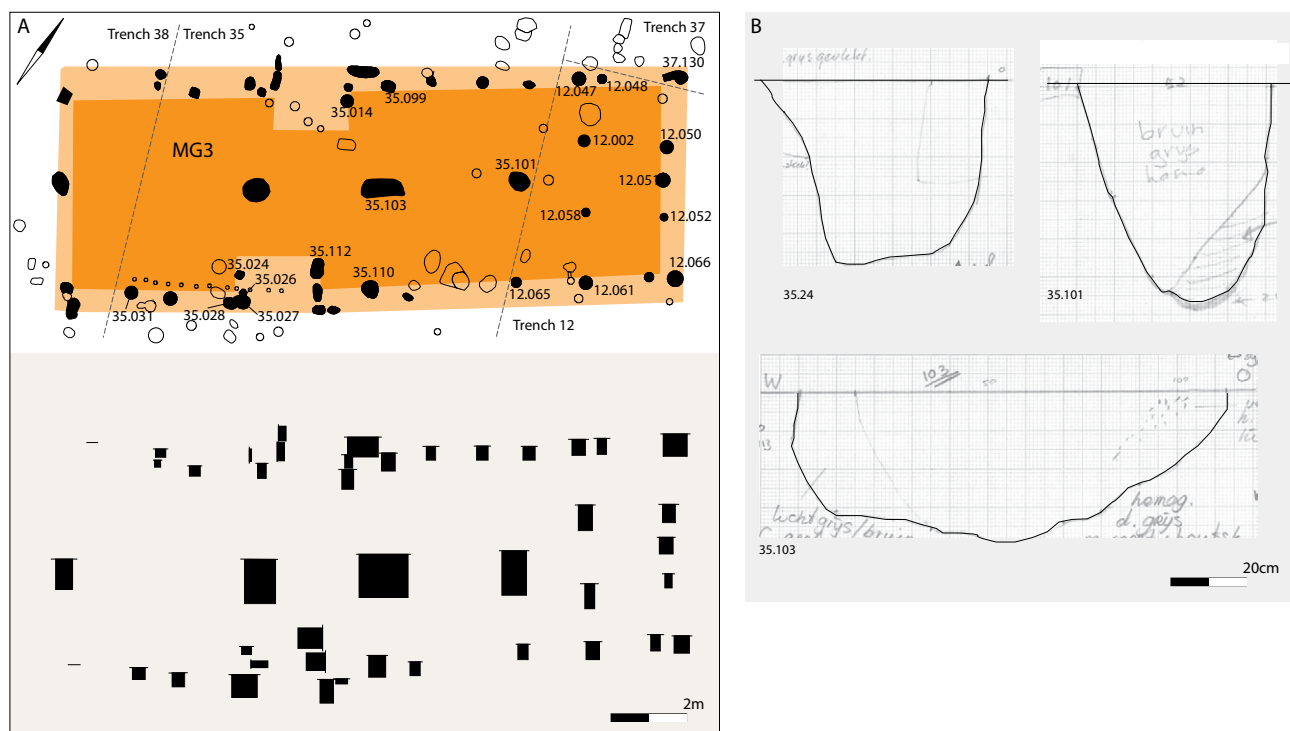


Figure 15.3 A: house MG3, the horizontal scale is 1:200, the vertical scale 1:100; B: sections of the central posts. Drawings S. van As.

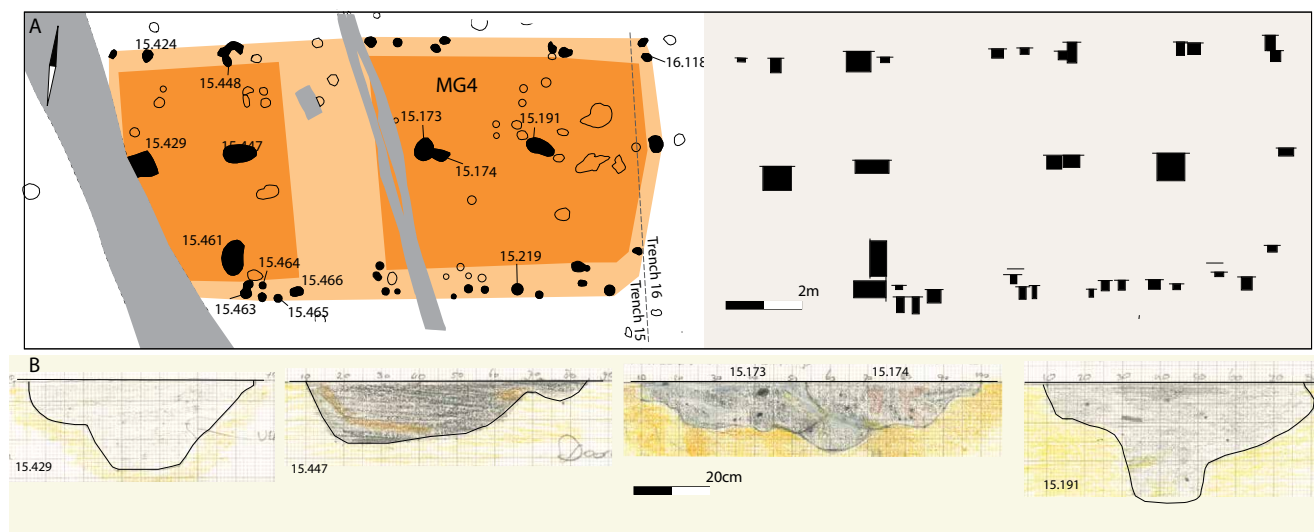


Figure 15.4 A: house MG4, the horizontal scale is 1:200, the vertical scale 1:100; B: sections of the central posts. Drawings S. van As; R. Mosterd (15.429), E. Asberg (15.447), E. Van M. (15.173, 15.174), D. Olthof (15.191).

of the) outer and/or wall posts is indicative of an Oss type-4 plan. One of the central posts was replaced (15.173-174; fig. 15.4D). The small number of recorded wall and/or outer posts is placed quite irregularly, making it impossible to reconstruct the walls properly. In an earlier reconstruction of the house the southern wall was situated more to the south, making the distance between both walls and the central axis different (Mietes 1998; Fokkens 1996). In the present reconstruction the house is divided lengthwise in sections with a same width, making the plan more reliable. No clear entrances were observed but can be suspected where two larger outer posts are in line with one of the central posts. All in all this house is not a very reliable example of the kind.

*Abandonment:* No indications.

*Finds and dating:* Based on the small find complex (53 sherds; table 15.4) and the house typology, the

house can be dated to the Late Iron Age phase K or L (type Oss-Ussen 4 or 5).

#### *House MG5*

House H5 is excavated in two trenches (17 and 18). The south-eastern corner of the plan is disturbed by a modern ditch on the southwest side.

*Construction details:* H5 is an Oss-type 4 building. The house had five central posts, resulting in a two-aisled internal structure (fig. 15.5). The recorded wall and/or outer posts are placed quite irregularly. In most cases there is one wall or outer post, in a few cases they are paired. The eastern wall appeared to be rounded, the western wall is straight. Two entrances seem to have been present in the long walls. The entrances are recognisable by posts close to each other and placed somewhat inwards of the house. Generally the eastern part of the house is larger than the western part, but here the situation seems to be reversed.

Structure	Trench	Feature	Material	Number
H3	12	47	cer	13
H3	12	48	cer	1
H3	12	50	cer	3
H3	12	51	cer	13
H3	12	52	cer	17
H3	12	58	cer	8
H3	12	61	cer	3
H3	12	65	cer	7
H3	12	66	cer	7
H3	35	14	cer	3
H3	35	24	cer	14
H3	35	26	cer	3
H3	35	27	cer	1
H3	35	28	cer	2
H3	35	31	cer	4
H3	35	99	cer	3
H3	35	101	cer	10
H3	35	103	cer	22
H3	35	110	cer	4
H3	35	112	cer	1
H3	37	130	cer	3

Table 15.3 Finds from House MG3.

Structure	Trench	Feature	Material	Number
H4	15	173	cer	7
H4	15	174	cer	3
H4	15	191	cer	7
H4	15	219	cer	12
H4	15	424	cer	2
H4	15	429	cer	11
H4	15	447	cer	6
H4	15	448	cer	3
H4	15	461	cer	13
H4	15	463	cer	2
H4	15	464	cer	1
H4	15	465	cer	2
H4	15	466	cer	3
H4	16	118	cer	1

Table 15.4 Finds from House MG4.

Structure	Trench	Feature	Material	Number
H5	17	271	cer	4
H5	17	306	cer	2
H5	18	17	cer	2
H5	18	18A	cer	141
H5	18	18A	loam	?
H5	18	18A	worked stone	?
H5	18	122	cer	1
H5	18	126	cer	2
H5	18	204	cer	2
H5	18	208	cer	1
H5	18	208	loam	1

Table 15.5 Finds from House MG5.

*Abandonment:* The central features 18.18A and B contained 3.3 kg of sherds, 1.8 kg loam and 890 g fragments of a mortar of quartzite sandstone (table 15.5). The total volume of the complex is unknown because part of the feature was 'excavated' by unknown persons (Mietes 1998). Most of the pottery colours red to grey because of overheating. Similar finds are known from other Iron Age house plans and contexts, like granaries found in Oss, and also outside Oss (Van

den Broeke 2002). Van den Broeke discussed a number of patterns. His conclusion is that these complexes generally contained carefully selected material like (many) large (sintered) pot fragments and sometimes also burnt bone and very little charcoal. The fact that one or two post pits (generally including a central post) of a house were chosen for deposition, suggests a deposit related to the abandonment of a house, and not merely of rubbish discarded in a derelict house (Van



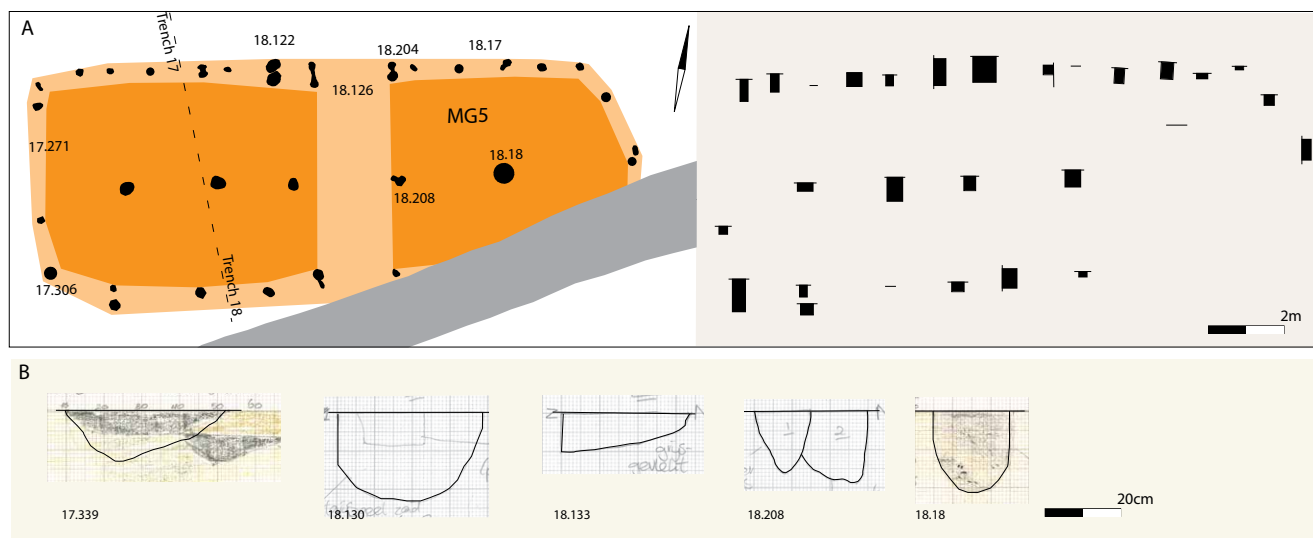


Figure 15.5 A: house MG5. The horizontal scale is 1:200, the vertical scale 1:100; B: sections of the central posts. Of post 17.339 the top-part was displaced by ploughing. In the section we have corrected this with a line. Drawings S. van As; H. Aalders (17.339), E. van Rossenberg (18.130, 18.133, 18.208), M. C. Schallig (18.18).

den Broeke 2002, 57). Other examples of this practice in Oss, dated to the Iron Age, are MG127 in Mikkeldonk (chapter 13), MG24 in Oss-Horzak (Jansen *in prep.*) and two granaries respectively found in Oss-Almstein and -Zaltbommelseweg (Van den Broeke 2002 appendix). Compared with the known number of Iron Age houses in Oss, it is certainly not a practice that was used regularly. We have to classify this as a ritual that was kept for special, but recurring occasions.

*Finds and dating:* The complex of sherds of 18A and B is dated to the Middle or Late Iron Age, phase H-I (Van den Broeke 2002, appendix; table 15.5). The few other finds do not give another date.

### House MG6

House MG6 is excavated in three different trenches (54, 56, 57). The Roman Period ditch F43 intersected the house in the southwestern corner (fig. 15.6). The north-eastern corner is disturbed by a modern ditch. The house plan is clearly distinguishable due to the presence of a bedding trench and the regularity of the outer and inner posts. Only in the northern part are some outer posts absent. We tried to recover the southern roof-bearing post in the west end from under the Roman Period ditch, but it had been completely removed by that ditch.

*Construction details:* We had some discussion about the type of house this plan can be attributed to.

In the end we decided that it best could be indicated as a type 2A house. An alternative could be a type 9B, but that generally has a two-aisled section on the west end. And this house has not. This implies that MG6 probably is an Early Iron Age house, which would be in line with the almost complete absence of potsherds. This is a feature of most Early Iron Age houses we have excavated. The house had a relatively small three-aisled part on the western side (4 x 6 m) with an extra roof support in the centre. It had a larger three-aisled part on the eastern side (5 x 6 m). The outer posts were placed at a regular interval outside the wall. Several post pits suggest the replacement of posts for repair or reinforcement of the structure. Two wide entrances were placed in both long walls. The entrances measured c. 2.2 m, which is wider than normal. The western side might have had a hipped roof, based on one central post at a distance of c. 1.5 m inwards of the short wall.

*Abandonment:* No indications.

*Finds and dating:* A few sherds were dated to the Bronze Age, and probably were 'intrusive' (table 15.6). There are indeed Bronze Age features with pottery situated inside the eastern end of the house. Based on the house typology, this house dates to the Early Iron Age. In the close surroundings of the house, several large granaries (S27, S35, S37, S38, S39, S40, S74) and a possible grave monument

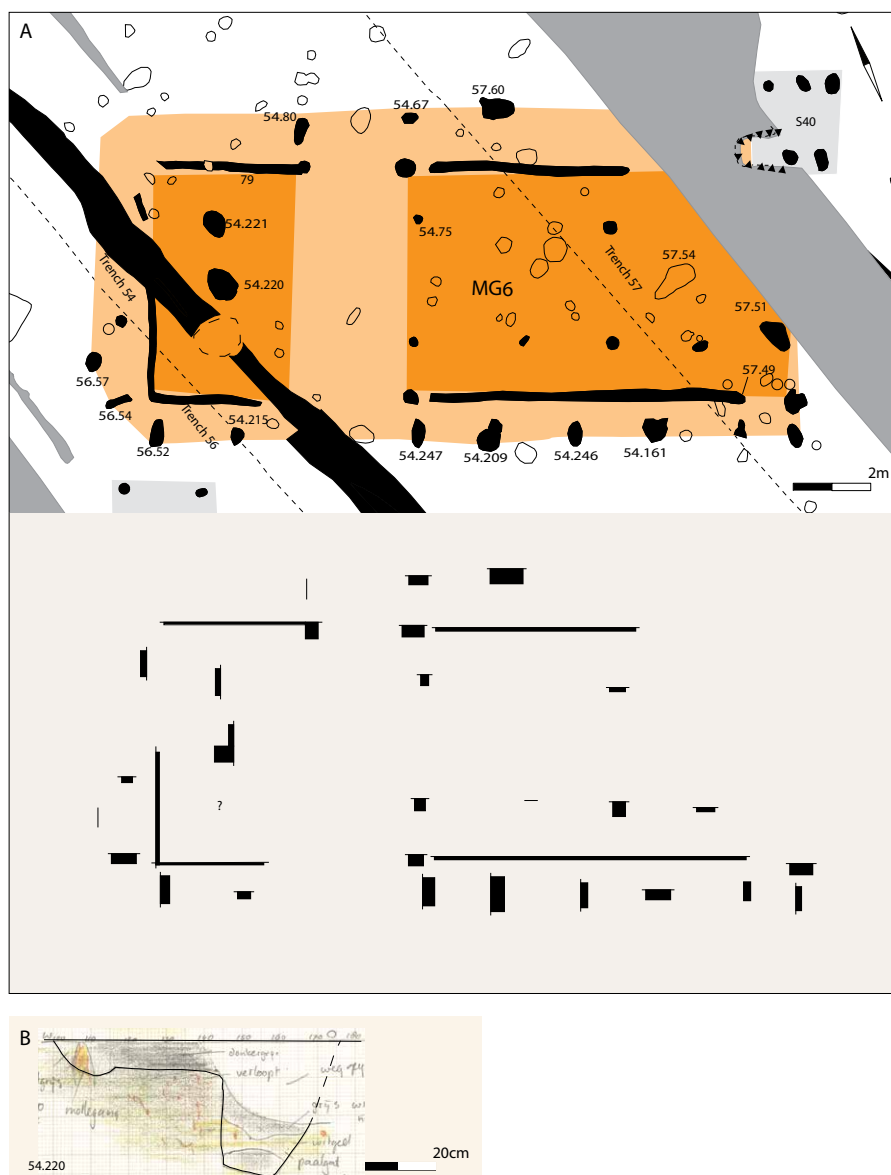


Figure 15.6 A: house MG6. The horizontal scale is 1:200, the vertical scale 1:100; B: section of central post 54.220. Drawings S. van As; Boris (54.220).

were found (cf. 15.6). None of these has a clear date, though S74 has the best parallels in the Early Iron Age as well.

#### House MG7

House MG7 was excavated in three different trenches (S7, S2 and S5). The western part is intersected by Roman Period ditch F42. It is a two-aisled structure with four central posts (fig. 15.7). The easternmost post is probably placed in the short eastern wall where the plan looks more narrowed. Based on this the plan resembles an Oss-type 4 or 5. Because the small number of heavy outer posts

does not fit into one of these types, the typology is uncertain. Only the eastern part slightly resembles an Oss-type 4B house. The wall posts were probably in general not deeply founded and therefore absent in the plan. No entrances could be identified either. The eastern wall is straight and includes a central post, the western wall is rounded without a central post, suggesting that the building could have had a saddle roof on one side and a hipped construction on the other.

Although the plan does not seem to fit the Oss-typology entirely, the house plan closely resembles an Oss type 4 house.

Structure	Trench	Feature	Material	Number
H6	54	75	cer	1
H6	54	79	cer	1
H6	56	61	cer	23

Table 15.6 Finds from House MG6.

*Abandonment:* The two central posts 55.116 and 57.104 contained small complexes of relatively large Iron Age sherds (table 15.7). This indicates that the posts were removed before the sherds ended up in the post pits. There are no further indications as to how this house was abandoned.

*Finds and dating:* Based on the small complex of pottery sherds, MG7 can be dated to the Iron Age.

### House MG8

House MG8 is excavated in two trenches (59 and 63). After it was discovered in trench 59, the connecting part was revealed in trench 63. The north-western part is intersected by recent activities in the soil (fig. 15.8).

*Construction details:* The two-aisled house had a central axis of five central, large posts. The house can be characterised as an Oss-type 4 or 5 house. The differences between these two types are minor and characteristic elements of both types are missing in house MG7.

Both short ends of the structure are straight and therefore a hipped roof would probably have been constructed on this house. No entrances are visible in the long walls and therefore a division of the house is difficult to establish. Missing wall posts can be explained through disturbance by large pits from a younger period in these areas.

*Abandonment:* Some post pits indicated that posts of the house were dismantled. One of the central posts (59.87) contained over 700 g of pottery. It is very likely that the pottery was deposited after the post was removed.

*Finds and dating:* Based on the complex of finds, MG8 can be dated to the Late Iron Age (table 15.8).

### House MG9

House MG9 is the most northern house in the Mettegeupel quarter. It can be described as a typical two-aisled Oss-type 4A house (*Haps*-type; fig. 15.9). Three central posts were recognised. Two of these are placed close to each other, possibly because of a repair. The western wall is not preserved. No central

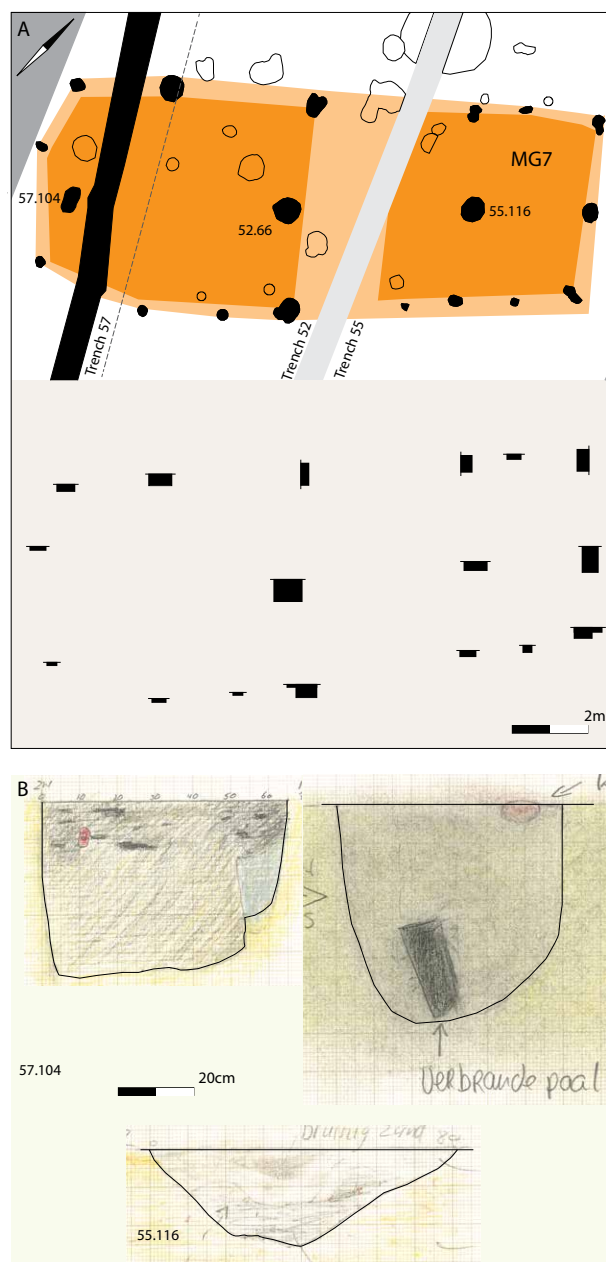


Figure 15.7 A: house MG7. The horizontal scale is 1:200, the vertical scale 1:100. B: sections of the central posts. Drawings S. van As; Y. van Groenendael (57.104), E. Ball (52.66), R. Mostert (55.116).

Structure	Trench	Feature	Material	Number
H7	52	66	cer	1
H7	55	116	cer	13
H7	57	104	cer	30
H7	57	104	loam	?

Table 15.7 Finds from house MG7.

Structure	Trench	Feature	Material	Number
H8	59	75	cer	1
H8	59	77	cer	1
H8	59	83	cer	4
H8	59	86	cer	1
H8	59	87	cer	45
H8	59	89	cer	1
H8	59	100	cer	7
H8	59	112	loam	24
H8	59	113	cer	2
H8	63	38	cer	10
H8	63	38	bone	5
H8	63	117	cer	1
H8	63	120	cer	3

Table 15.8 Finds from house MG8.

Structure	Trench	Feature	Material	Number
H9	63	218	cer	1
H9	63	311	cer	1
H9	63	311	loom weight	-
H9	63	432	cer	1
H9	63	439	cer	4
H9	63	444	cer	3
H9	63	444	bone	2
H9	63	449	cer	1

Table 15.9 Finds from house MG9.

posts were recognised in the short wall, so the house probably had a hipped roof.

The plan had staggered wall and outer posts. The clearly visible entrances were located in the centre of both long walls. The porches were set inside the house with the entrances in line with one of the central posts.

*Abandonment:* A loom weight was found in an outer post pit, indicating that at least a part of the house must have been dismantled after its period of use.

*Finds and dating:* The small find complex roughly dates to the Iron Age (table 15.9). Most of the type 4A houses can be dated to the Middle Iron Age and the first phases of the Late Iron Age.

### House MG18

House MG18 was recognised in the field because of the post pits in the southern long wall, which were indicative of an entrance (fig. 15.10). The excavation trench was expanded to the west in order to locate more

features belonging to this supposed structure. Several post pits were recognised as such, but in the end the house plan remained dubious.

*Construction details:* Several arrangements of post pits could be interpreted as the walls and two central posts. The short walls were not preserved. Presuming these features are part of the plan, the house must have been a two-aisled construction. The entrance is recognisable in the southern long wall, suggesting an entrance construction built inwards. The entrance posts had two counterparts in the northern long wall, which might represent a second entrance. Since no short walls were found, nothing can be said about the roof construction. In summary, if this really is a house, which remains doubtful, it is not a very well preserved one.

*Abandonment:* No indications.

*Finds and dating:* The seven sherds can be roughly dated to the Iron Age (table 15.10).

### House MG19

House MG19 is rather fragmented, if it really was a house. The plan was not recognised during fieldwork. The largest part of the plan is intersected by a recent ditch (fig. 15.11).

*Construction details:* The posts are placed in large (paired) post pits. The size of the post pits closely resembles posts of houses MG1 and MG2, lying close by. The configuration of three posts in the southern wall indicates the construction of an entrance. One central support post was found (partly intersected by a (sub-)recent ditch). This feature yielded an almost complete pot with comb-impressions on the wall, which could be interpreted as a house offering.

*Abandonment:* The features had a homogenous fill and no clear signs to interpret their abandonment. Feature 35.86 seemed to have been a post-pit in which you could still see where the post was placed. Because of the almost complete pot found in central post pit 37.144, we think that the house was dismantled when it was abandoned. A pot was deposited in the post pit, meaning that the post must have been removed before the deposition was made. The find can be interpreted as an abandonment ritual.

*Finds and dating:* The pot from the central post pit (37.144: table 15.11) suggests a date in the last phase of the Middle Iron Age (phase H: 350-250 cal BC; determination Van den Broeke cited by Mietes 1998, 108).

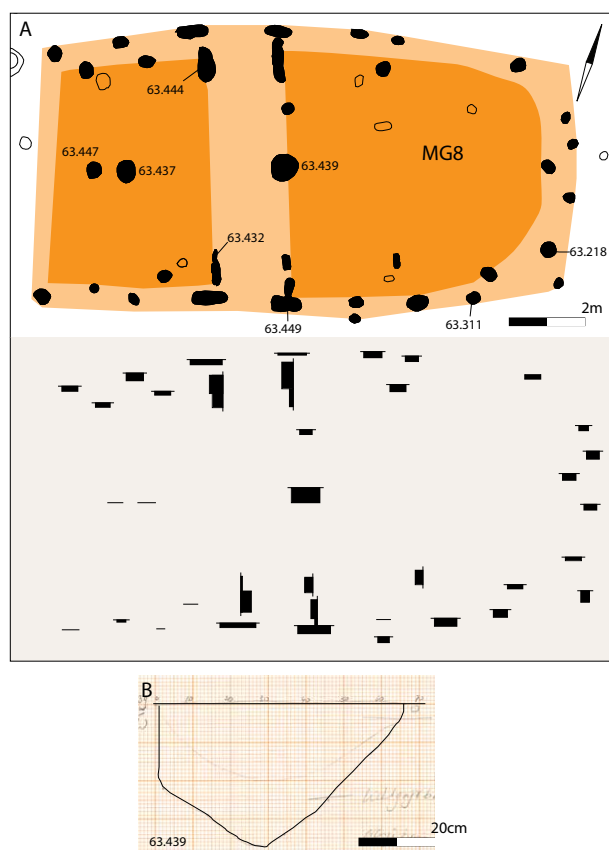


Figure 15.8 A: house MG8. The horizontal scale is 1:200, the vertical scale 1:100. B: sections of a central post. Drawings S. van As; Y. Keijser (63.439).

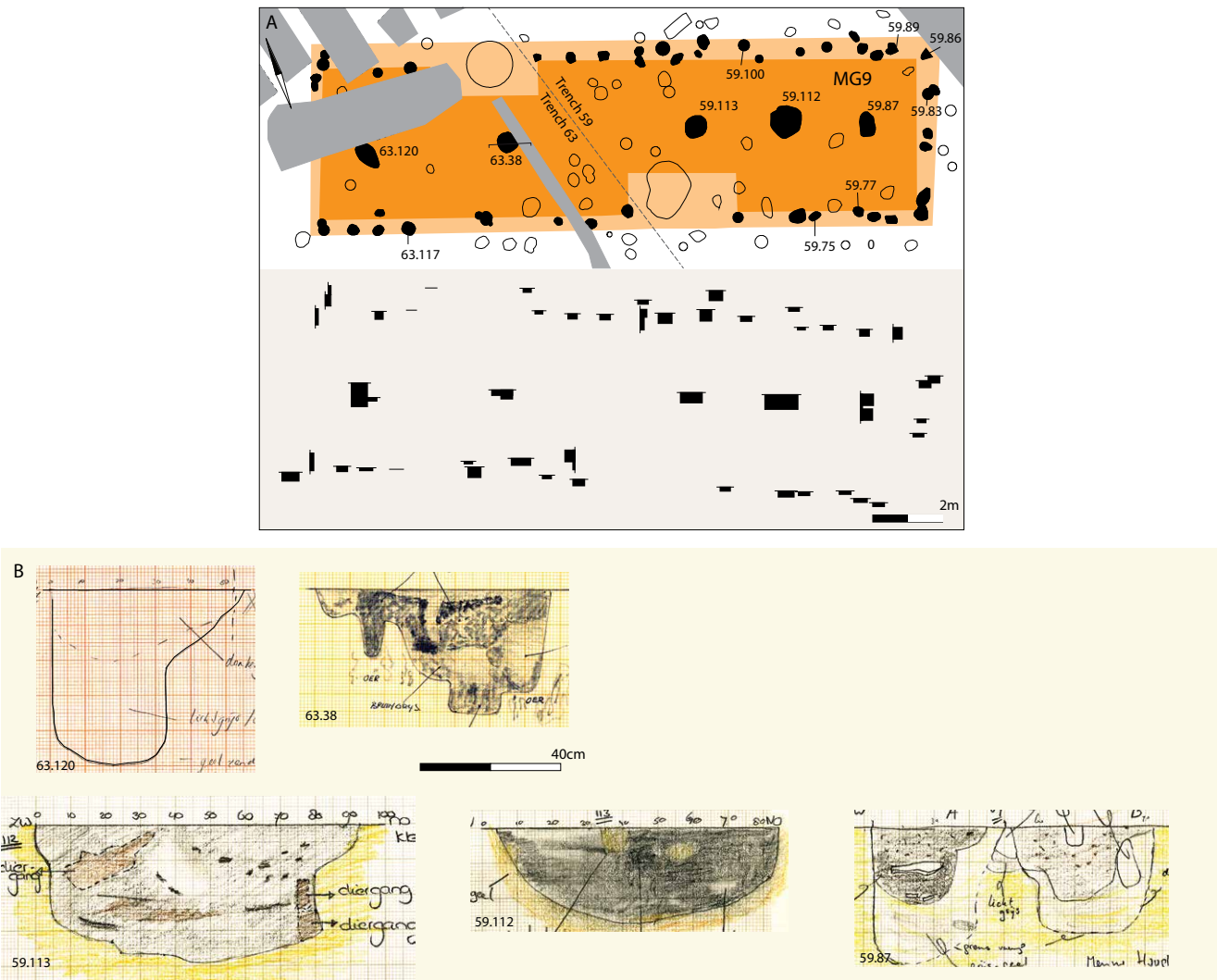


Figure 15.9 A: house MG9. The horizontal scale is 1:200, the vertical scale 1:100. B: sections of the central posts. Drawings S. van As; M. Hoogland (B).

Structure	Trench	Feature	Material	Number
H18	85	48	cer	4
H18	85	48	bone	2
H18	85	49	cer	3

Table 15.10 Finds from house MG18.



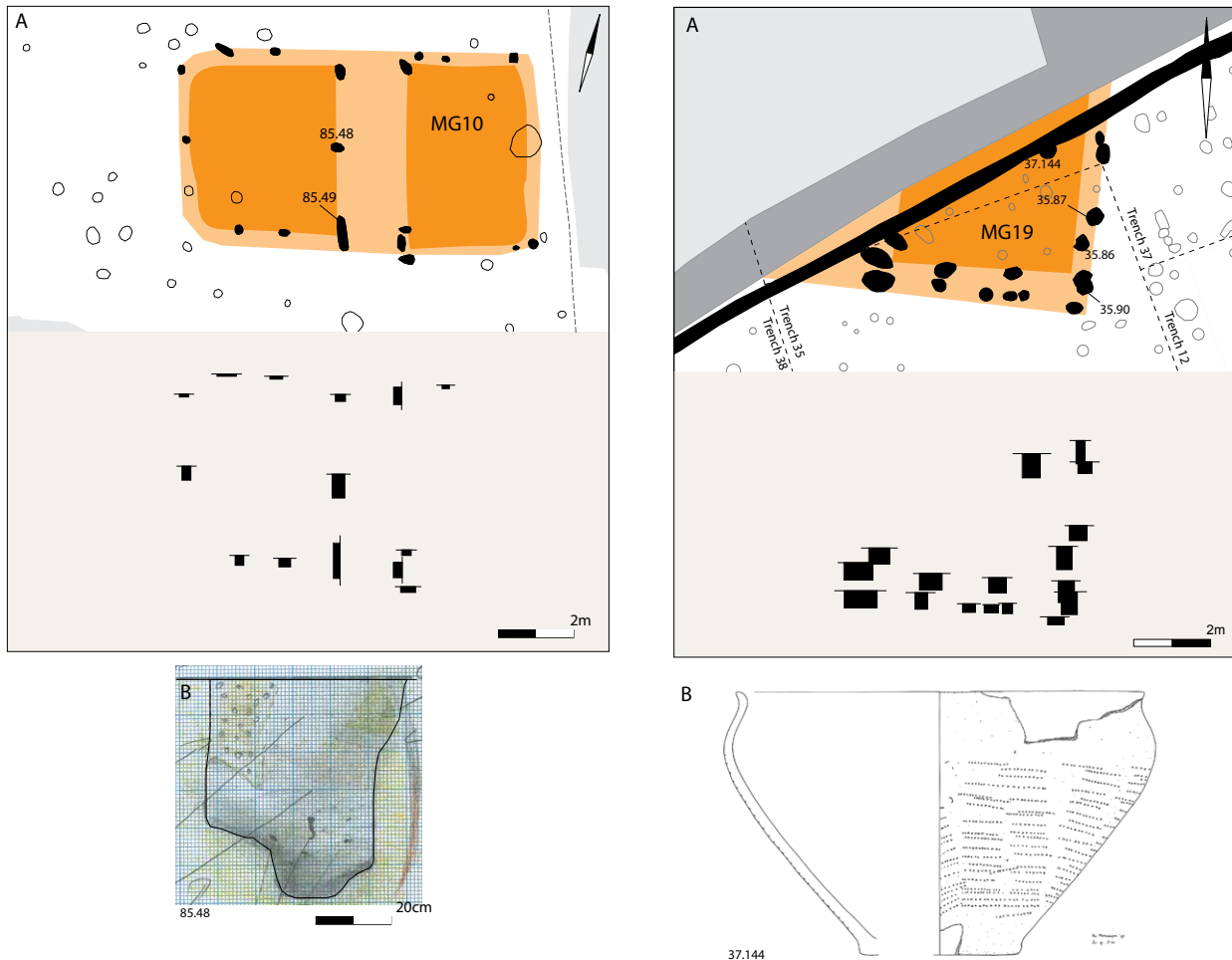


Figure 15.10 A: house MG18. The horizontal scale is 1:200, the vertical scale 1:100. B: section of the central post. Drawings S. van As; E. Ball (85.48).

### House MG20

House MG20 was discovered while studying the field drawings. The plan was hidden in a large cluster of features, in the vicinity of MG1, MG2, MG3, MG4 and H5 in the western part of Mettegeupel. The plan is recognised by several similar orientations of post rows, which turned out to be walls and central posts. Four posts were earlier interpreted as a granary (dark grey in fig. 15.12) that was rebuilt once. We now think that these posts belong to MG20 rather than to four-post granary F45.

**Construction details:** MG20 had at least two central posts, but more if we count the four in the centre. No central posts stood in the short walls, indicating that the house had a hipped roof. The house had a rounded eastern short wall, and a slightly straighter



Figure 15.11 A: house MG19. The horizontal scale is 1:200, the vertical scale 1:100. Pottery from the last phase of the Middle Iron Age (phase H). Drawings and photo S. van As (A), A. Louwen (37.144), H. Fokkens (C).

Structure	Trench	Feature	Material	Number
H19	35	87	cer	2
H19	35	90	cer	4
H19	37	144	cer*	21
H19	37	144	bone	1

\* Including complete pot

Table 15.11 Finds from house MG19.



Figure 15.12 A house MG20. The horizontal scale is 1:200, the vertical scale 1:100. B: section of the central posts. Drawings S. van As, I. Pereira (35.127), W. van Zijverden (12.14).

western wall. The plan had wall posts, and somewhat irregularly placed outer posts. These characteristics are typical of the Oss type 4A (or *Haps*-type) houses. The long walls were quite unclear at the spots where the entrances were expected: halfway the walls of the long sides, opposite each other. The visible wall posts however seem to have a large space placed between them, which creates two hypothetical entrances of about 2.2 m.

**Abandonment:** The features of MG20 gave no indication on how the house was abandoned.

**Finds and dating:** The sherds lacked decoration, and the presence of barrel-shaped pottery may place the complex in phase G-J of the Middle to Late Iron Age (table 15.12). One sherd from the Middle Bronze Age was found, but could be interpreted as 'intrusive'.

### 15.3 GRANARIES AND OUTBUILDINGS

We recognised a total of 60 granaries (table 15.13; fig. 15.13) in the Mettegeupel quarter. We decided not to describe all granaries in detail, but to discuss only clusters of granaries that play a role in the discussion of the chronology and settlement structure, and individual granaries with interesting construction details or, in one way or the other, deviate from the normal patterns. Clusters have been determined by either spatial and/or interpretative correlations. If notable, the descriptions include also the repair of the granaries or traces of reinforcement of the granary. The granaries of Mettegeupel are divided into eight clusters, which are discussed in this section.

#### 15.3.1 Cluster 1: S45, S46, S47, S48, S52, S62, S68

All granaries of cluster 1 lie directly north of MG9 and within fence F4 (fig. 15.14), which is presumed to be the limit of the farmyard (see chapter 6). The granaries of cluster 1 are all four-post structures. Two corner posts of both S46 and S47 have been replaced, indicating a lengthening of the lifespan of the granary. Many

structure	trench	feature	material	number
H20	35	224	cer	5
H20	35	40	cer	1
H20	35	41	cer	1
H20	35	42	cer	2
H20	35	198	cer	20
H20	35	214	cer	1
H20	35	150	cer	2
H20	35	67	cer	3
H20	12	101	cer	2
H20	12	157	cer	2
H20	12	152	cer	1
H20	12	76	cer	4
H20	12	75	cer	5
H20	12	74	cer	4
H20	12	11	cer	4

Table 15.12 Finds from house MG20.

features showed a homogenous fill, indicating quick fill after removal of the posts.

*Finds and dating:* None of the features ascribed to the granary plans contained any finds. The only indication for dating is in fact the association with house MG9 and fence F4. Therefore they probably date to the end of the Middle Iron Age or the Late Iron Age.

### 15.3.2 Cluster 2: S26, S29, S30, S36, S41, S42

Four four-post and two six-post granaries lie in the south-eastern corner of the excavated area, between two clusters of pits of the Middle Bronze Age. S26 was intersected by a Roman Period ditch F41, the southwest corner post is absent. The plans of the granaries are clearly recognisable and already indicated on the field drawings. The structures do not have a consistent orientation and there seems to be no connection to one of the houses, though they could be part of an unexcavated house east of this cluster.

The posts of S29, S42 and especially S41 are deep, the posts of S36 are relatively shallow and elongated (fig. 15.15C). The form of features 15.18 and 15.13 suggests that these two corner posts have been replaced or repaired. The fills of these features are homogenous, so we suggest these posts were extracted when the granary was abandoned.

This was different in the six-post granary S30. The structure measures 2.25 by 2.25 m, and in four post-pits clear post pipes were visible (fig. 15.15B). The posts of S30 all contained sherds, in total 109 (table 15.14). Part of these were secondarily burned, some of them charred. The number of sherds and the dispersion over all post pits indicate that the sherds can only have been deposited after the abandonment of the structure. A considerable number of the sherds from S30 is decorated with either multiple finger- or nail impressions or grooves. One bottom sherd has a foot ring. The complex can be dated to the Late Iron Age phase I-J (determination Peter van den Broeke, in: Mietes 1998). The other features only contain small amounts of Iron Age pottery. One post pit of S36 contained a Bronze Age sherd. Because the sherds were small and rounded they can be seen as intrusive. Since we know that there were indeed two large Bronze Age pit clusters in the same area, that should not surprise us.

### 15.3.3 Cluster 3: S27, S35, S37, S38, S39, S40, B1/S

Four-, six- and eight- or nine-post granaries lie around MG6. S27 is intersected by Roman Period ditch F43 and S39 is intersected by Roman Period ditch F44 (fig. 15.16). S40 overlaps with the northeast corner of MG6. All granaries have the same orientation as house

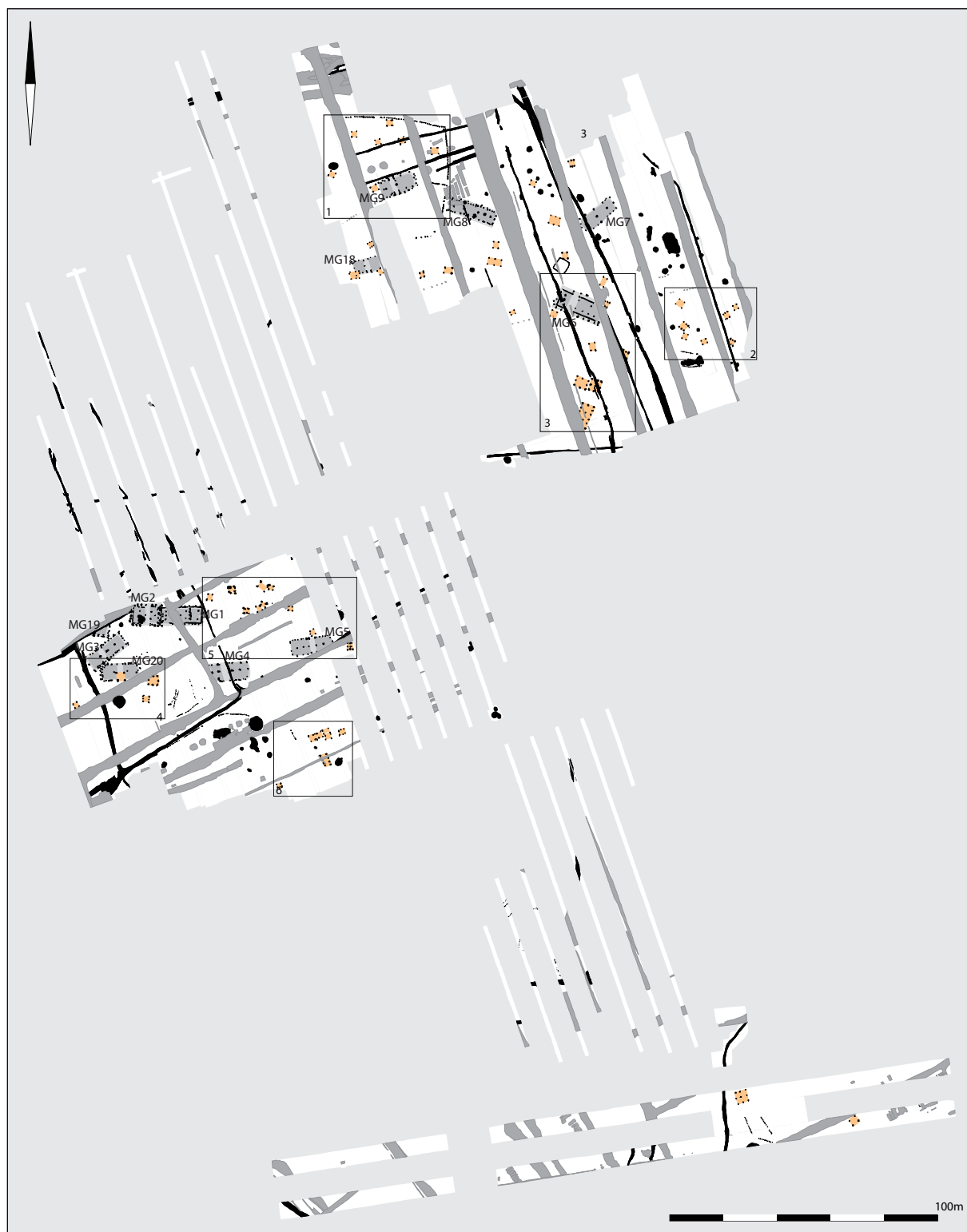


Figure 15.13 Granary clusters in the Mettegeupel quarter. Drawing S. van As, H. Fokkens.

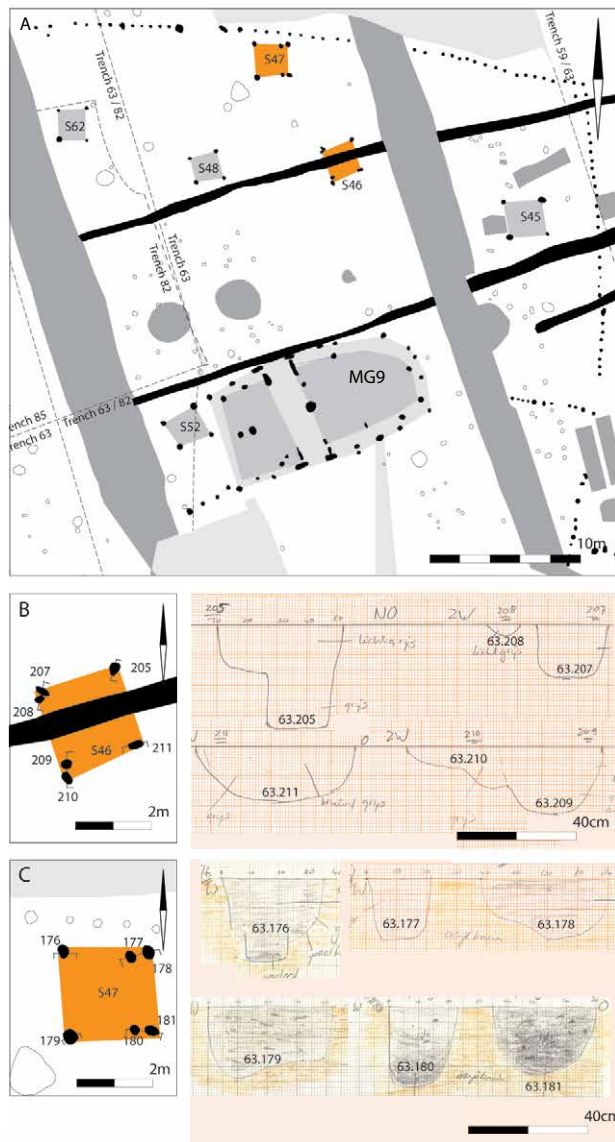


Figure 15.14 Cluster 1 of granaries and outbuildings; A: plan of all structures; B: S46; C: S47; D: section drawings. Drawings S. van As (A, B, C), Y. Keijzers (D).

MG6, which suggests contemporaneity. We discuss here especially S27 and S35 which have nine and eight posts respectively. S74 is a special structure, probably a large shed (cf. discussion below). Apart from granary S27 the number of finds is minimal (table 15.15). Features of S33 and S38 contain respectively 1 and 3 (small) sherds of Iron Age pottery. Post pits of S38 and S39 contained both one Middle Bronze Age sherd. Because the sherds were small and rounded they can be seen as intrusive.

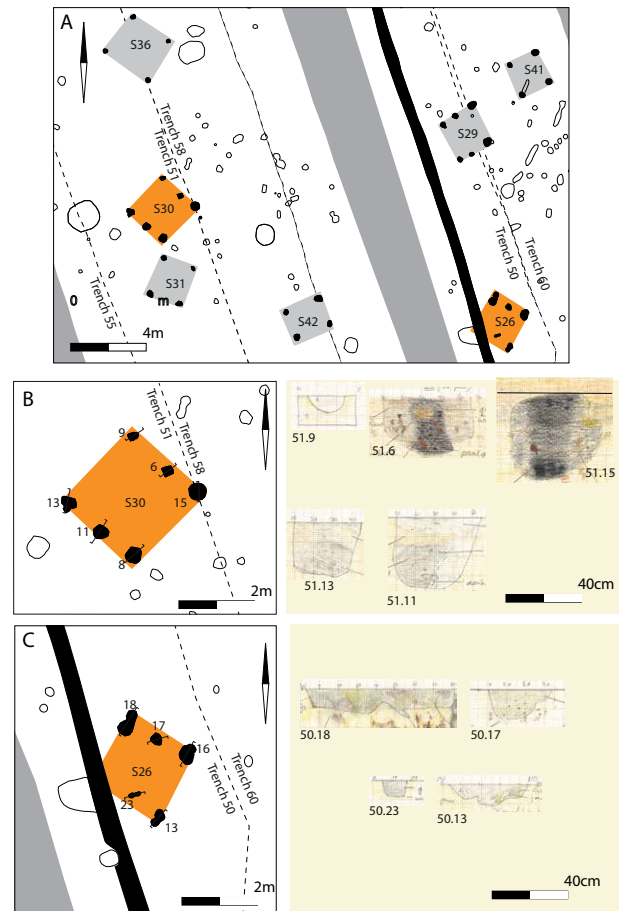


Figure 15.15 Cluster 2 of granaries and outbuildings; A: plan of all structures; B: S30; C: S26. Drawings S. van As (A, B, C), M. Rietbergen (51.15, 51.6), B. van der Veen (51.9), L. van Hofwegen (51.11, 51.13), A.M. Visser (50.18), X. van Dijk (50.17), Z. van der Beek (50.23), E. Hollander (50.13).

### S27

Granary S27 has a nine-post floor plan and measures 4.2 x 3.7 m (fig. 15.16B). The post pits are 40-50 cm deep and generally have a homogenous fill. This indicates that the posts were removed after abandonment. Moreover, several features contained a considerable number of sherds that must have ended up in the post pits after the removal of the posts. Several of the sherds in feature 54.153 belonged to one pot. The strong S-profile, smoothened surface and faceted rim is characteristic of the Early Iron Age or the beginning of the Middle Iron Age.

Structure	Type	Date	Length (m)	Width (m)	Area (m <sup>2</sup> )
S5	1A	MIA/LIA	2.2	1.8	4.0
S7	1A	MIA/LIA	2.3	2.1	4.8
S8	1A	MIA/LIA	2.2	1.8	4.0
S10	1A	IA	2.4	2.2	5.3
S12	1A	IA	2.4	2.3	5.5
S13	1A	LIA	1.9	1.7	3.2
S15	1A	MIA/LIA	2.2	1.9	4.2
S16	1A	MIA/LIA	1.7	1.6	2.7
S17	1A	MIA/LIA	1.9	1.6	3.0
S18	1A	MIA/LIA	3.1	2.0	6.2
S19	1A	MIA/LIA	1.6	1.4	2.2
S20	1A	IA	2.3	2.3	5.3
S21	1A	MIA/LIA	1.5	1.2	1.8
S22	1A	IA	1.9	1.6	3.0
S24	1A	-	1.6	1.4	2.2
S26	1A	IA	2.0	1.8	3.6
S28	1A	IA	2.4	1.7	4.1
S31	1A	-	2.1	1.6	3.4
S33	1A	IA?	2.9	2.1	6.1
S36	1A	-	2.7	2.4	6.5
S37	1A	-	2.4	2.0	4.8
S38	1A	IA	3.2	1.6	5.1
S41	1A	IA	1.7	1.6	2.7
S42	1A	-	1.9	1.5	2.9
S43	1A	-	2.3	1.9	4.4
S45	1A	-	3.3	2.6	8.6
S46	1A	-	2.1	2.1	4.4
S48	1A	-	1.9	1.9	3.6
S49	1A	-	1.8	1.0	1.8
S50	1A	-	1.8	1.5	2.7
S51	1A	-	2.0	2.0	4.0
S52	1A	-	2.3	2.2	5.1
S53	1A	-	2.8	2.2	6.2
S60	1A	IA	2.0	1.3	2.6
S62	1A	-	1.9	1.9	3.6
S68	1A	-	2.1	1.9	4.0
S69	1A	-	2.9	2.1	6.1
S3	1B	-	4.3	3.0	12.9



Structure	Type	Date	Length (m)	Width (m)	Area (m <sup>2</sup> )
S4	1B	LIA	2.4	2.3	5.5
S6	1B	IA	2.3	1.8	4.1
S11	1B	EIA?	3.2	1.8	5.8
S23	1B	IA	2.1	1.6	3.4
S30	1B	LIA (phase I-J)	2.4	2.2	5.3
S32	1B	IA	2.2	2.1	4.6
S34	1B	-	4.1	2.9	11.9
S39	1B	-	2.3	2.1	4.8
S40	1B	IA	2.0	1.7	3.4
S44	1B	-	4.8	2.2	10.6
S47	1B	-	2.3	2.2	5.1
S61	1B	IA	1.7	1.6	2.7
S70	1B	-	3.1	2.6	8.1
S29	1B	IA	2.1	1.9	4.0
S1	1C	EIA	3.0	2.9	8.7
S9	1D	MIA/LIA	4.2	2.5	10.5
S2	2A	LIA	3.7	3.4	12.6
S25	2A	MIA/LIA	2.5	1.9	4.8
S27	2A	MIA E-F	4.2	3.7	15.5
S35	2A	-	4.5	3.5	15.8
S54	2A	-	4.2	3.8	16.0
S74	2B	IA?	8.7	4.5	39.2

Table 15.13 Granaries and outbuildings in the Mettegeupel quarter.

Trench	Feature	Structure	Material	Number	Date
50	17	S26	cer	1	IA
50	18	S26	cer	2	-
51	15	S30	cer	11	-
51	9	S30	cer	0	-
51	6	S30	cer	22	LIA
51	8	S30	cer	22	-
51	11	S30	cer	35	-
51	13	S30	cer	6	MBA

Table 15.14 Finds from granaries of cluster 2, S26 and S31 in the Mettegeupel quarter.

Trench	Feature	Structure	Material	Number	Date
54	142	S27	cer	3	-
54	144	S27	tephra	1	IA
54	144	S27	cer	1	IA
54	147	S27	cer	3	-
54	152	S27	cer	1	LIA
54	153	S27	cer	20	IA
54	156	S27	cer	1	-
54	145	S35	cer	2	-
56	3	S35	cer	1	-

Table 15.15 Finds from granaries of cluster 3, S27, S35, S74 in the Mettegeupel quarter.

### S35

Granary S35 is in many respects comparable, but has an eight-post floor plan. It measures 4.5 x 3.5 m. The posts are 50 cm deep or even deeper and the posts appear to have been removed after abandonment. Only two small Iron Age sherds and one Middle Bronze Age sherd have been found in all post pits. Based on their orientation, small distance and comparable size, S27 and S35 must have been each other's successors. Dating is problematic, but given the association with MG6, we suggest a date in the Early or Middle Iron Age, based on the typology of the house.

### S74

Outbuilding S74 was discovered in the very corner of trench 56 and indicated as a twelve-post structure. But additional posts found in test trench 53 and the adjacent trench 61 suggest a larger structure (fig. 15.16D). A large part is lost due to a modern ditch.

Structure S74 is interpreted as a shed or barn. It shows three rows of roof-bearing posts, while the wall remains invisible. Actually we do not know whether there was in fact a wall. It could have been an open shed. S74 is 15.8 m long and 4 – 4.5 m wide. The building is comparable to MG133 in the Mikkeldonk district (cf. par. 13.2.7; fig. 13.14). The features of this structure yielded no finds, but the similarity to MG133 and other comparable structures suggests a date in the Early Iron Age. That would be in line with the suggested date of house MG6.

### 15.3.4 Cluster 4: S5, S6, S7, S8, S15, S16, S17, S18, S19, S21, S22, S25

Just northwest of house H5 a cluster of four- and six-posts granaries was found. We discuss here only the ones that have been rebuilt S16, S5-S3 S6 and a nine-post granary (S25). Two sets of granaries are built nearly on the same spot (S18-S19 and S7-S8) (fig. 15.17A). The plans of the granaries all were already recognised in the field.

### S6

Granary S6 was replaced once (fig. 15.17B). The posts probably were removed in the end because the post pits had a homogenous fill. Technically this type of post pit could also have been the result of erecting a very long post, but the size of the post pit indicates a moderate post, moreover, feature 15.86 shows that this was not the case. So we interpret these features as a replacement of posts and a small shift of the structure.

### S16 and S17

Granaries S16 and S17 were also two granaries rebuilt at the same location (fig. 15.17C). This was done directly after each other, since the north-western post of S16 was placed in the same post pit as the north-western post of S17, only slightly more eastward. It was not possible to state if the posts were dismantled, based on the fills and forms of most features. The only clearly dismantled post pit was feature 16.68 (granary S16). The irregular form and yellow sand inclusions indicated collapse of the feature after the post was removed. So, at least S16 was dismantled. Perhaps S17 was built straight after demolition of S16. It is even possible that parts of the old construction were re-used.

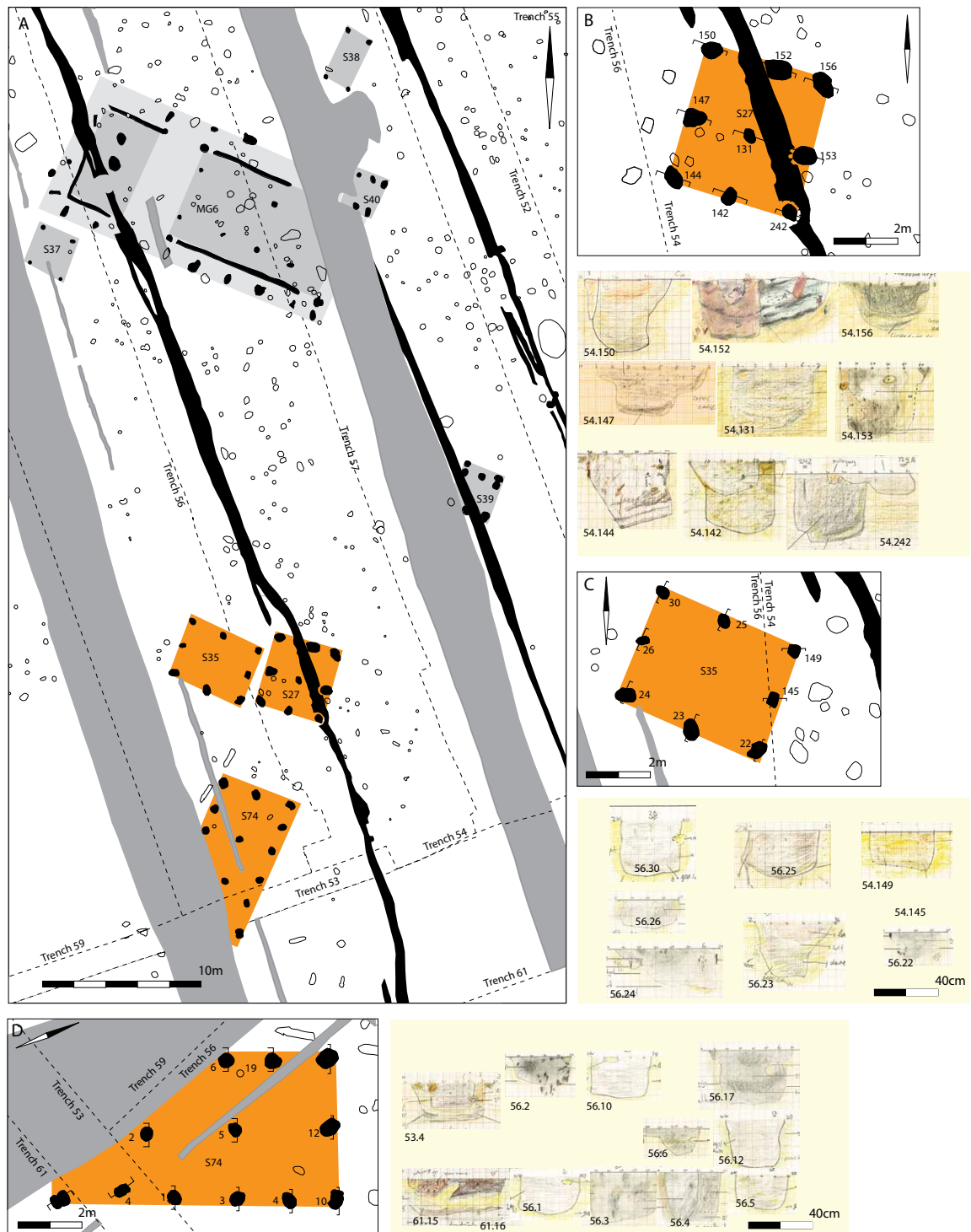


Figure 15.16 Cluster 3 of granaries and outbuildings; A: plan of all structures; B: S27; C: S35; D: S74. Drawings S. van As (A, B, C), section drawings by various students under supervision of D. Fontijn.

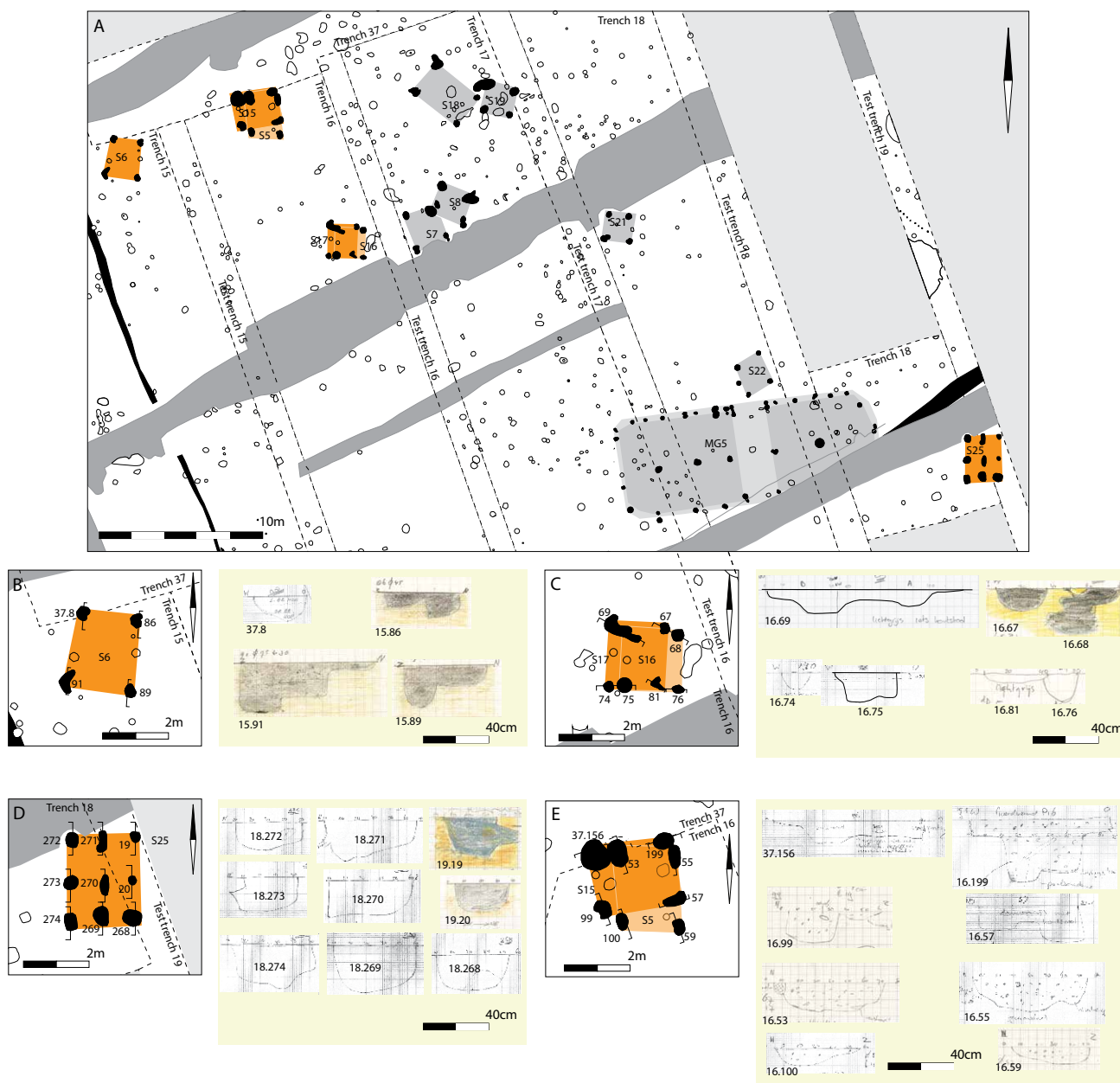


Figure 15.17 Cluster 4 of granaries and outbuildings; A: plan of all structures; B: S6; C: S164; D: S25; E: S15/S5. Drawings S. van As (A, B, C, D). Section drawings by various students under supervision of D. Fontijn.

### S25

Granary S25 is a nine-post structure with very wide post pits (60 cm wide). The fills were homogenous, suggesting the posts were removed at abandonment. S25 appears to have the same orientation as MG5 and could have been related to that house (fig. 15.17A, D). Finds from the granary were few (table 15.16) and inconclusive.

### S5 and S15

Granaries S5 and S15 are completely overlapping (fig. 15.17E). It is not clear which of the two was built first. The fills of all features show tiny lumps of charcoal and many potsherds. This indicates that the posts were removed after abandonment or even burnt. The posts were rather widely apart and

Trench	Feature	Structure	Material	Number	Date
16	55	S5	cer	6	MIA-G
16	1	S5	cer	2	MIA-G
16	53	S5	cer	45	MIA-G
15	89	S6	cer	6	IA
15	91	S6	cer	7	IA
		S8	cer	18	MIA G-J
16	57	S15	cer	5	MIA G-J
16	99	S15	cer	7	MIA G-J
	156	S15	cer	19	MIA G-J
16	67	S16	cer	3	MIA G-J
16	69	S16	cer	6	MIA G-J
16	74	S16	cer	4	MIA G-J
16	81	S16	cer	6	MIA G-J
16	68	S17	cer	1	MIA G-J
16	75	S17	cer	2	MIA G-J
16	76	S17	cer	4	MIA G-J
		S18	cer	21	MIA G-J
		S19	cer	13	MIA G-J
19	19	S25	cer	1	IA
18	274	S25	cer	1	IA
18	273	S25	cer	1	IA
18	269	S25	cer	1	IA

Table 15.16 Finds from granaries of cluster 4, S5, S6, S17, S19, S25 in the Mettegeupel quarter.

irregularly placed. It is very well possible that S15 was replaced because the features are large and show a deeper section at one end (e.g. 37.199 and 16.57, 16.99).

*Finds and dating:* Several features yielded potsherds, almost all datable in Middle Iron Age phase G-J (table 15.16). It is impossible to say something about relative chronology. It is unlikely that these granaries are associated with house MG1 or MG2 because these were much older. House MG5 probably dates to phases H or I, and house MG20 to phase G-J as well. House MG7 has no clear date. Most probably (given the distance to the actual houses) these granaries are associated with MG5, possibly MG7. The features of the two overlapping granaries S5 and S15 contained charred botanical remains. Based on the minimum number of grains and other

cultivated crops compared to chaff and weed seeds the remains are probably the result of the burning of waste as part of harvest processing (Bakels chapter 8; table 8.5).

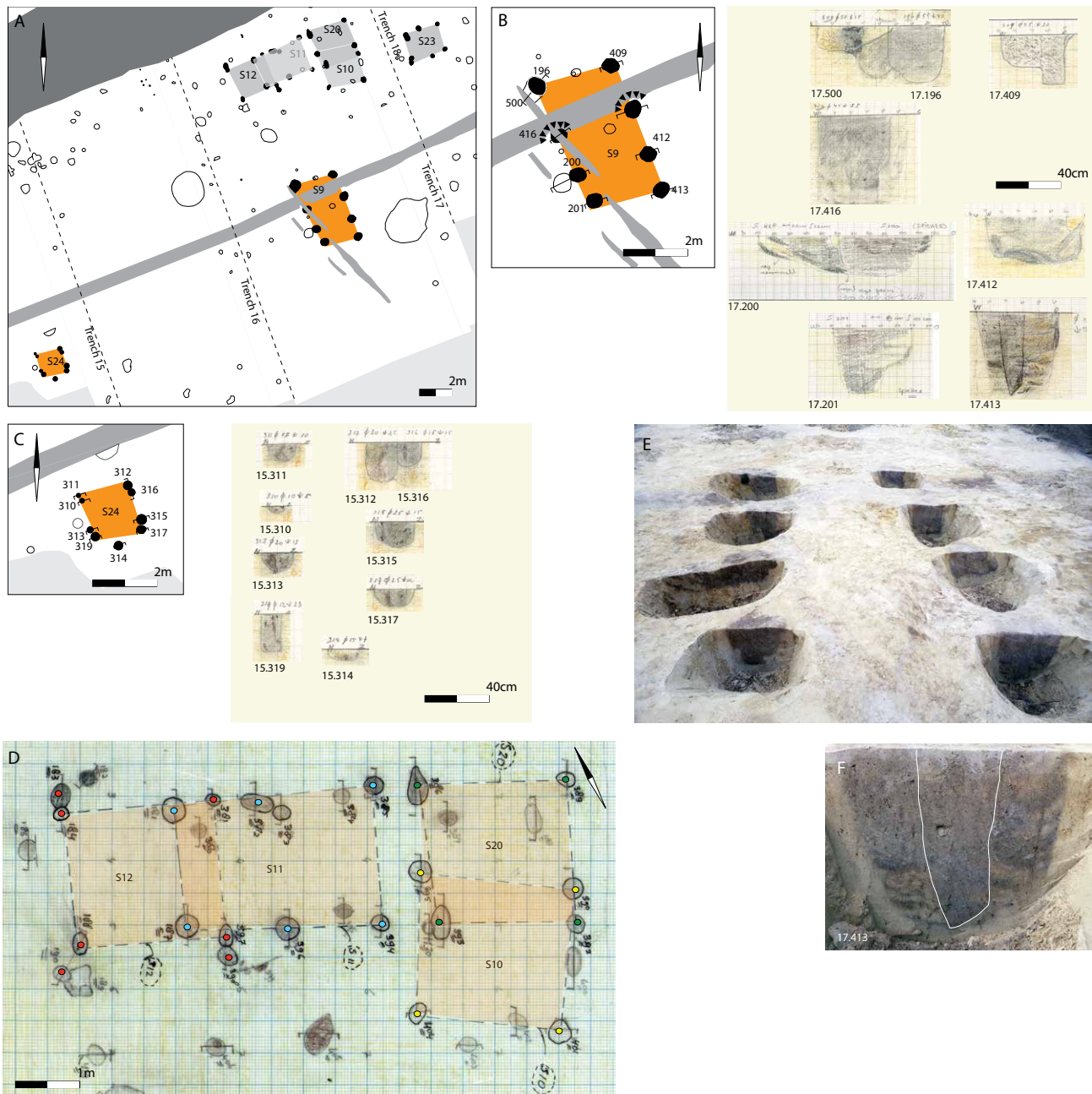
#### 15.3.5 Cluster 5: S9, S10, S11, S12, S20, S23, S24

Cluster 5 consisted of seven granaries which were all placed in the same southwest-northeast orientation. Granaries S10, S11, S12 and S20, and in fact also S23 were clustered close to each other, partly intersecting one another (fig. 15.18A). Granaries S11 and S12 consisted of a structure with four posts (S12), and a granary with six posts (S11; Fig 15.18D). The structures intersect each other. It is not clear which one is the oldest. Granary S12 has signs of repair or reinforcement in its north-western and south-eastern corner. Granaries S10 and S20 are two four-post

granaries that also overlap, but here too it is not clear which one is the oldest. S23 was a six-post granary, the post pits on the west side suggest repair of the posts or reinforcement of the structure.

### S9

Granary S9 is a structure with eight posts. One post pit still had a post shadow visible with the backfill of the post pit as a layered fill (fig. 15.18B, 17.413). It is





therefore clear that this structure was left standing when it was abandoned.

#### S24

Of granary S24, every post was replaced. Only the section drawing of 15.312 and 15.316 show stratigraphy: 55.312 intersects with 15.316 (fig. 15.18C). This probably means that the first phase consists of features 15.316, 15.317, 15.319 and 15.310, while the second phase consists of the other four posts. The whole structure thus shifted slightly to the northwest.

*Finds and dating:* The granaries yielded small complexes of sherds (table 15.17). Most of the sherds can only be roughly dated to the Iron Age, probably after the Early Iron Age (based on the determination of the finds from S11 and S12 by Van den Broeke; Mietes 1998, 93). Nothing was found in context to the features of granary S24. Due to spatial relations and the corresponding orientation, the granary is presumed to date to the Iron Age. Granary S9 was the only granary that could also have a possible date from the Early Iron Age (personal comment by Van den Broeke; Mietes 1998, 64). The whole complex is therefore thought to date to the Early Iron Age and

was possibly associated with houses MG1 and MG2. This cluster was in that case probably located just outside the farmyard because the distance to the farm is 30 m.

#### 15.3.6 Cluster 6: S1, S2, S3, S4, S13

Cluster 6 is located in the western part of Mettegeupel, in close vicinity of MG1, MG2, MG3 and MG4 (cf. fig. 15.13). S1 was recognised in the field as a granary, but only during post-excavation analysis did we discover that it was intersecting with a house (MG20). S2 is an eight-post structure, S3 and S4 are six-posters and S13 a four-poster.

#### S1

Granary S1 consisted of four large post pits (50 cm in diameter) with a fill that showed lumps of soil. The structure is rather large for a four-poster: almost 3 x 3 m. The 'lumpy' fill indicates that the posts were eventually removed and that the pit filled up quickly (fig. 15.19B). Feature 35.149 intersects a post of house MG20 (35.150), which implies S1 is younger than house MG20 (fig. 15.19C). Unfortunately the section drawing had the wrong angle, so the section does not corroborate that observation.

Trench	Feature	Structure	Material	Number	Date
17	196	S9	cer	1	EIA?
17	201	S9	cer	3	EIA?
17	409	S9	cer	5	EIA?
17	412	S9	cer	5	EIA?
17	413	S9	cer	9	EIA?
17	416	S9	cer	2	EIA?
17	404	S10	cer	4	-
17	372	S11	cer	1	-
17	396	S11	cer	4	IA
17	188	S12	slag	1	-
17	188	S12	cer	1	-
17	19	S12	slag	0	-
17	387	S12	1, 5	2	IA
17	388	S12	cer	2	-
17	386	S20	cer	2	-
17	393	S20	cer	2	-

Table 15.17 Botanical remains from granary S5 and S15 in the Mettegeupel quarter.

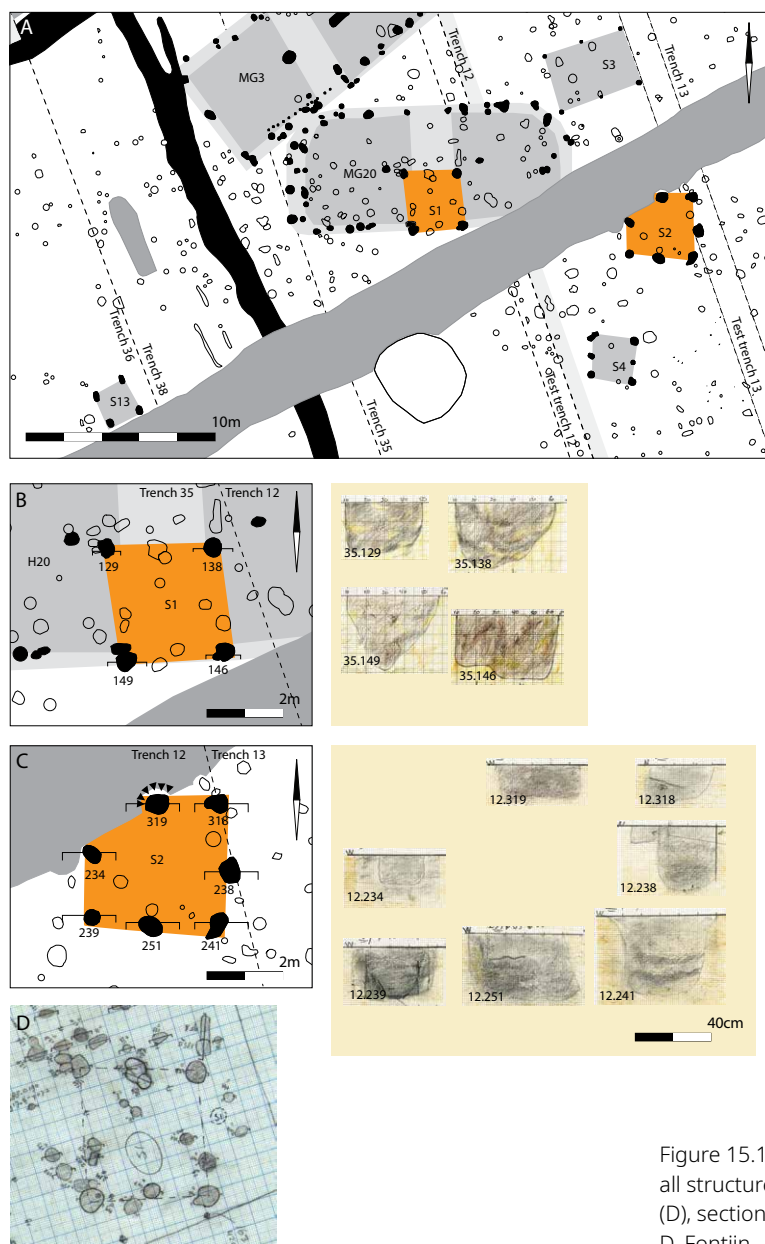


Figure 15.19 Cluster 6 of granaries and outbuildings; A: plan of all structures; B: S1; C: S2. Drawings S. van As (A, B, C), H. Fokkens (D), section drawings by various students under supervision of D. Fontijn.

## S2

Granary S2 consisted of eight posts (fig. 15.19C). The structure is large, 3.6 x 3.6 m, and in that sense comparable to S1, which also has nearly the same orientation. The fills of the features of granary S2 indicate that (at least some) features lay open for a while, after removal of the posts. For instance features 12.241 and 12.239 showed layered fills in the deeper parts (fig. 15.19C).

The post pits of the other granaries gave some indication of how they were left after abandonment:

S3 was probably left standing, so the yard was abandoned. The features of granary S13 showed the exact spots where the posts stood in their holes. However, layered fills and depressions in the top fills of the features indicate that the posts were eventually removed. S4 probably was dismantled after abandonment.

*Finds and dating:* The few finds from granary S1 probably dated to the Early Iron Age. Granary S3 yielded no finds. The pottery complexes from granaries

Trench	Feature	Structure	Material	Number	Date
35	146	S1	1, 5	1	EIA
35	149	S1	slag	0	IA
12	241	S2	cer	43	LIA
12	318	S2	cer	1	LIA
12	106	S4	cer	7	-
12	109	S4	cer	9	-
12	097	S4	cer	20	IA
12	099	S4	cer	8	IA
36	017	S13	cer	2	IA
36	018	S13	cer	7	-
36	024	S13	cer	5	IA
36	025	S13	cer	2	-

Table 15.18 Finds from granaries of cluster 5, S9, S24 in the Mettegeupel quarter.

S2, S4 and S13 indicate a date in the Late Iron Age (Mietes 1998; determination P.W. van den Broeke; table 15.18).

#### 15.4 PITS AND WELLS

In the Mettegeupel quarter about 75 large pits and wells were found (fig. 15.20). Many of these date to the Bronze Age, especially in cluster 1, although no house plans from that period were found. But they seem to indicate farmyards or activity areas at least. A selection of the most important pits and wells will be discussed in more detail in this section. This selection is based on the complex of finds, significance of the construction or location near other datable features.

##### 15.4.1 Cluster 1 of pits and wells

Cluster 1 is large group of pits and wells in the northeast of Mettegeupel (fig. 15.21). Two large pits may have had a function as 'drinking pools for livestock' (58.117 and 51.70), the others were wells or at least deep pits. So, most features held water, and the largest part of features within the cluster indicate a zone which correlates with the activity of extracting water. Based on the (mostly small) complexes of potsherds, and in one case a radiocarbon date, the features in this cluster can be dated to the Middle Bronze Age. The area lost its function nearing the end of the Bronze Age, but was (perhaps sporadically) re-used during the Iron Age, as the drinking pools prove.

##### Features 51.70, 51.71, 51.72

The complex of pits 51.70, 51.71 and 51.72 is difficult to interpret. There was a deep pit in the centre (51.72) and two rows of stakes border this area on both sides (fig. 15.22A). 51.71 was relatively shallow and had a flat bottom. The dark area that was indicated as feature 51.71 is in fact a dark charcoal-rich layer in the pit (fig. 15.21E). The area surrounding the features was leached (white colour). The fences on both sides may have acted as a fence to keep livestock out. If pit 51.72 was a well, no lining was present (fig. 15.22B, C). The pit was rather steep and it had a very dark fill (charcoal and organic matter). Directly to the southeast of 51.71 was a smaller, but deep pit, possibly a pit for a large post (fig. 15.22D). It had a diameter of about 50 cm. The deepest fill consisted of layers rich in organic matter alternated with small layers of clayey sand. This was covered by a small charcoal rich layer, just beneath a homogenous grey fill. The pit yielded no finds, and its particular function in the context of the drinking pool remains unclear.

*Finds and dating:* features 51.71 and 51.72 contained several fragments of Middle Bronze Age pottery, and some fragments of animal bone (table 15.19).

##### Feature 50.64

Feature 50.64 was discovered only at a very late stage. We were digging away a modern ditch in order to find out whether an older ditch was still present

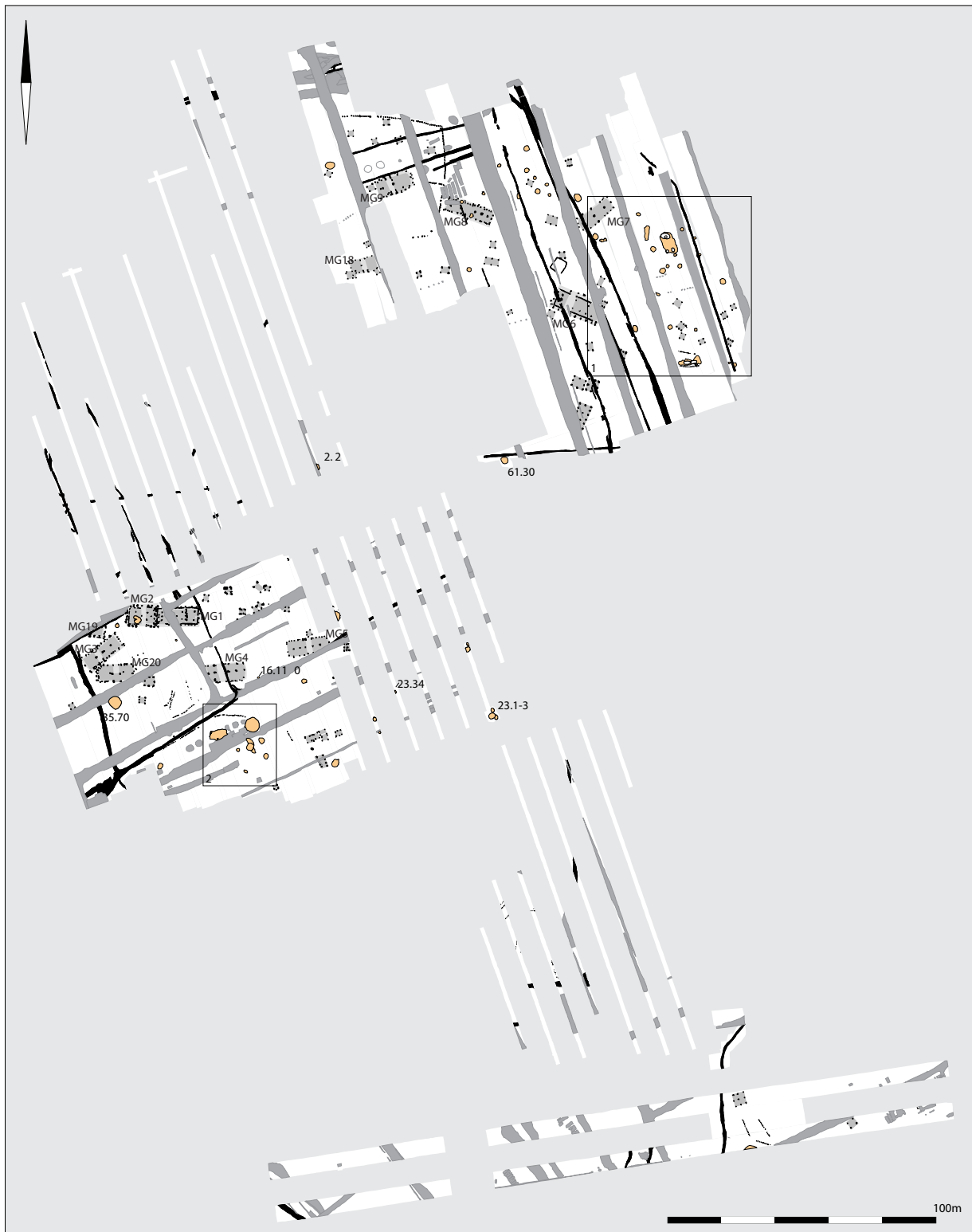


Figure 15.20 Clusters of pits and wells in the Mettegeupel quarter. Drawing S. van As, H. Fokkens.

Trench	Feature	Material	Number	Date
51	71	cer	1	MBA
51	71	bone	?	-
51	72	cer	8	MBA
51	72	bone	?	-
51	48	cer	754	MBA/LBA
51	48	bone	?	-
51	48	charcoal		3190 ± 30 BP
58	117	cer	17	EIA
58	154	cer	44	MBA
58	154	bone	?	-
58	155	cer	73	MBA
58	155	bone	?	-
58	156	cer	12	EIA
58	156	bone	?	-
51	55	cer	295	LIA K
52	74	cer	351	MIA/LIA
52	74	spindle whorl	1	-

Table 15.19 Finds from granaries of cluster 6, S1, S2 in the Mettegeupel quarter.

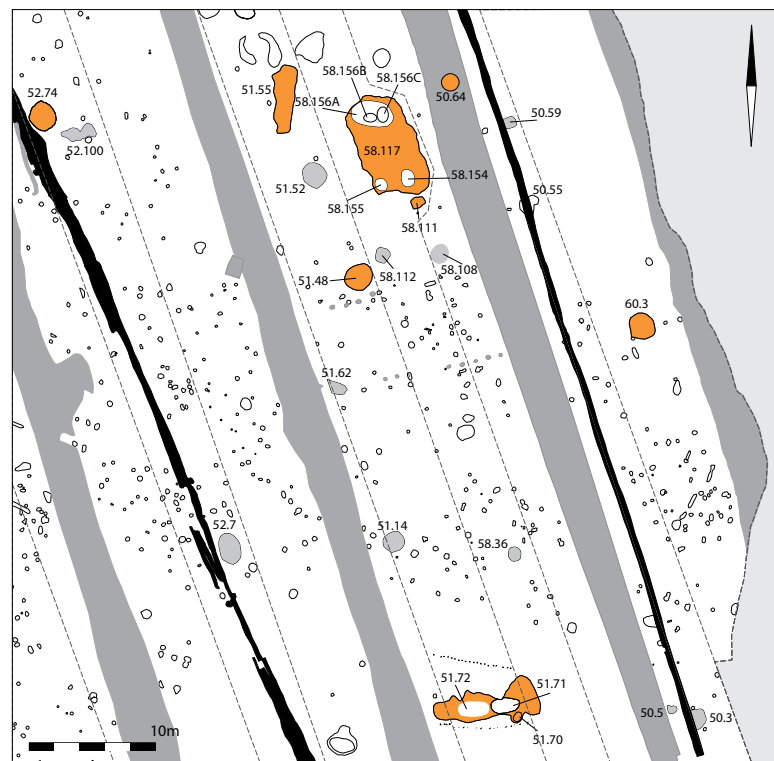


Figure 15.21 Detailed plan of cluster 1 in the northeast of the Mettegeupel district.  
Drawing S. van As.

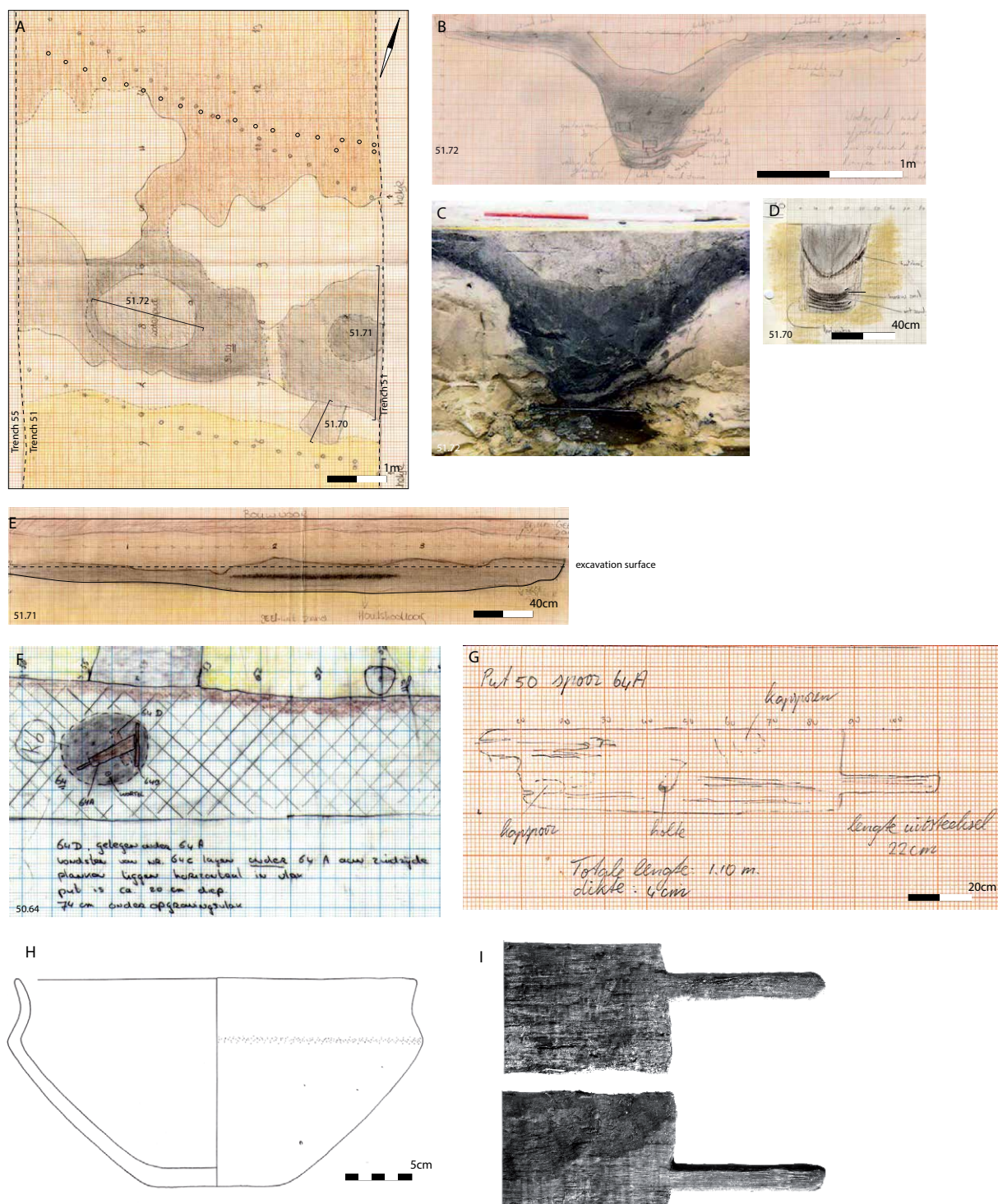


Figure 15.22 Feature 51.70-72. A: part of the field drawing; B: section drawing of 51.72; C: 51.72 in the field; D: section drawing of 51.70; E: section drawing of 51.71; F: Feature 50.64 drawing of the horizontal at 75 cm underneath the excavation surface; G: sketch drawing of the plank; H: pottery from the well; I: the 'handle' part of the plank in detail. Drawings and photos M. Ruig/M. Riethoven (A), F. Wijsenbeek (B), H. Fokkens (C), I.K. Weiner (D), Z. van der Beek (F); A. Visser (G), J. Pauptit (I), A. Louwen (H).



underneath that ditch. That is how we discovered the last remains of what probably had been a well. The drawing (15.22F) was made at 75 cm beneath the excavation level.

*Finds and dating:* Apart from pottery, we found a plank of 100 cm, worked on both sides and with a 'handle' of 22 cm. Because the 'handle' is not in the centre of the plank, it is doubtful whether this actually is a handle, even though we dubbed it 'the cricket bat'. The plank was made of an oak tree. One almost complete pot was found in this feature, but it is difficult to date to a particular period of the Iron Age.

### Feature 51.48

Feature 51.48 was located in an area with a high density cluster of Middle Bronze Age features. The pit was visible as a brown oval feature with a grey oval core (fig. 15.23A) with inclusions of charcoal particles. Bronze Age features (51.52, 51.48 and 58.108, 58.111, 58.112) in the vicinity and adjacent excavation trench have corresponding characteristics and material. The feature was c. 250 cm wide and 70 cm deep. It had a bowl-shaped form (fig. 15.23B). The bottom seemed to have been filled with sods, a layer of about 25 cm thick. A pointed pole was driven through the bottom of the pit. At

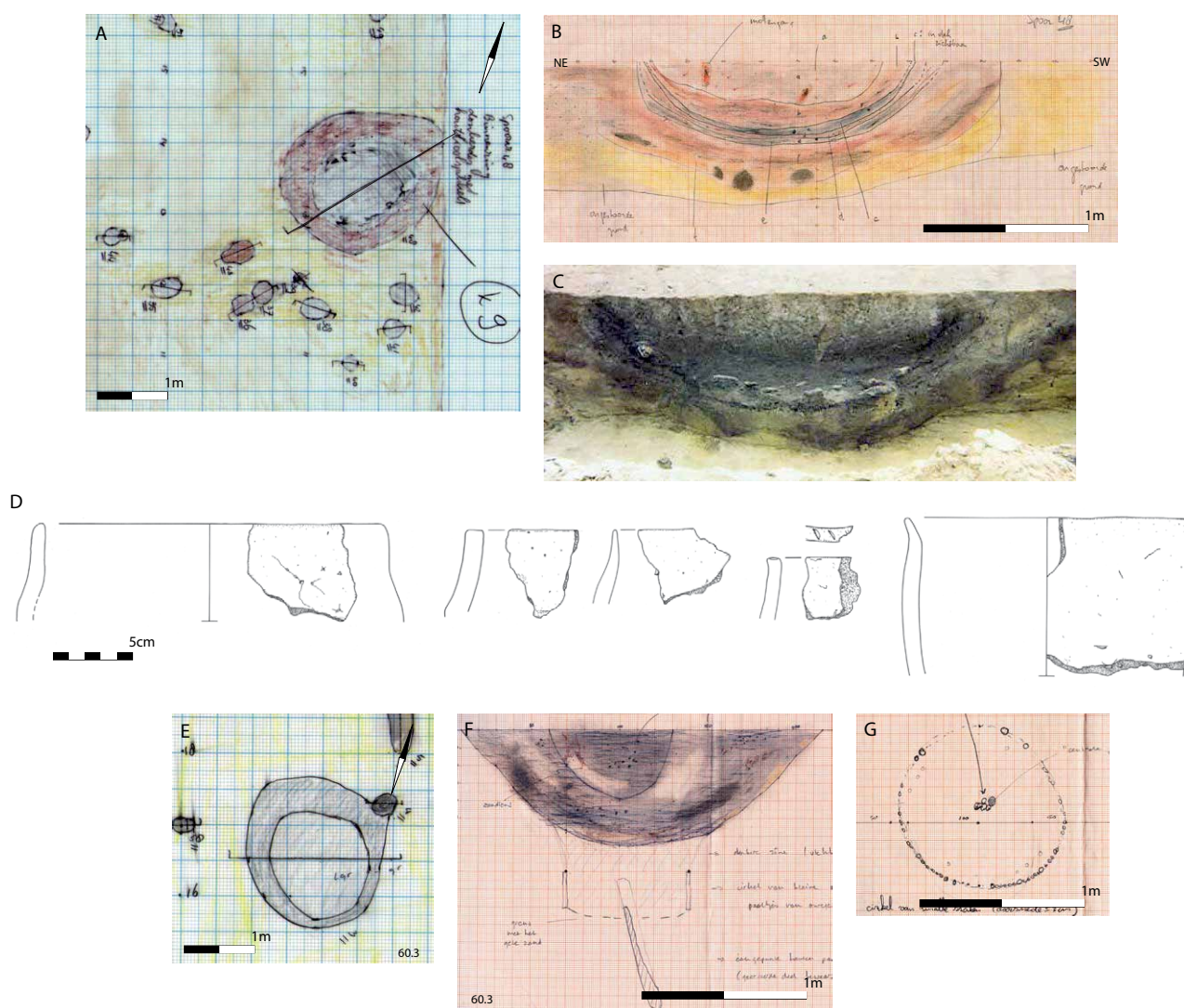


Figure 15.23 Feature 51.48. A: part of the field drawing; B section drawing; C: section in the field; D: finds from 51.48 scale 1:3. Drawings and photo X. van Dijk (A), F. Wijsenbeek (B), H. Fokkens (C), A. Louwen (D).

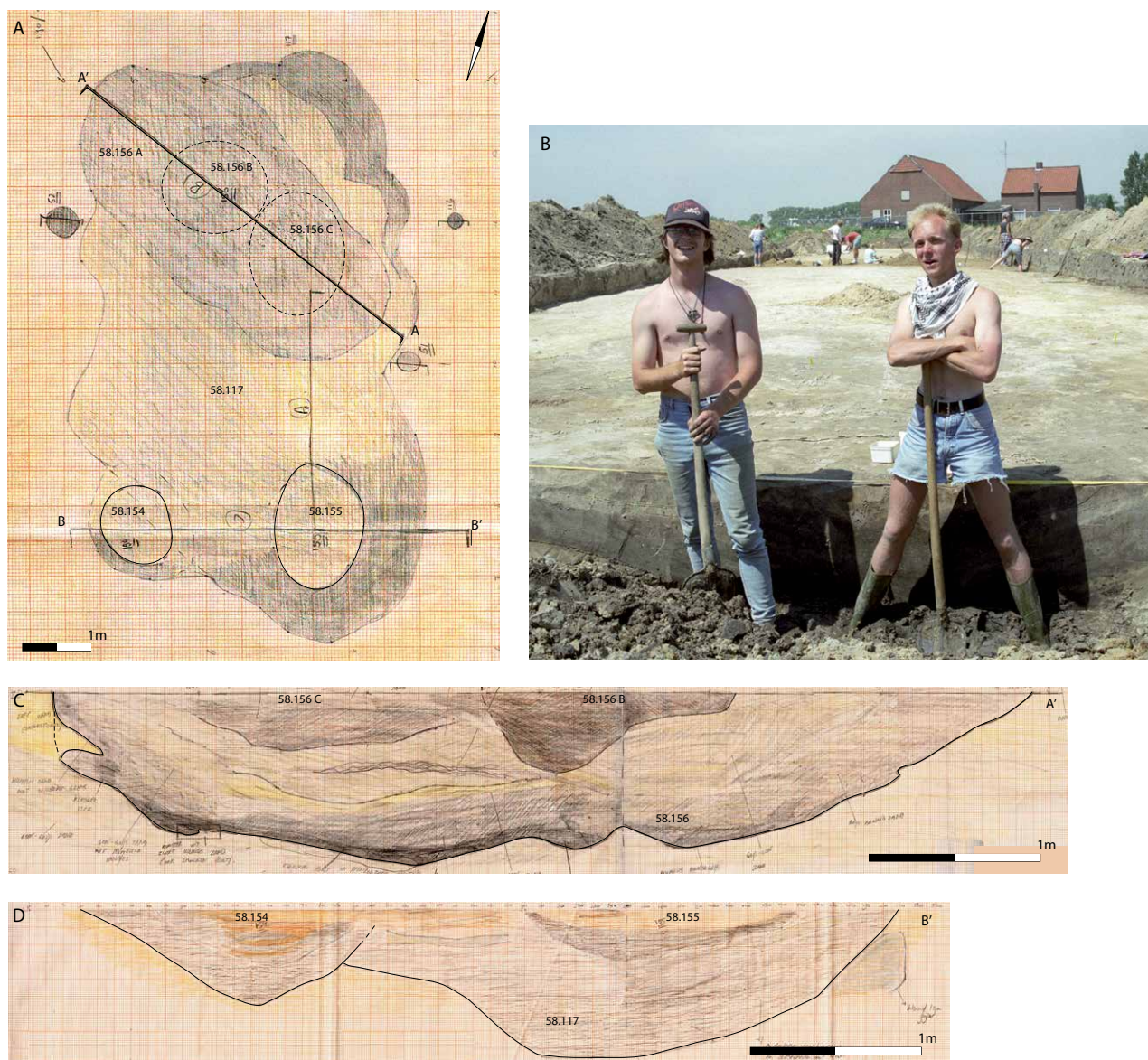


Figure 15.24 Features 58.117, 58.154-156. A: part of the field drawing; B: the proud excavators (Xavier van Dijk (l) and David Fontijn (r); Section of 58.156; D: section of 58.154-155. Drawings and photo X.van Dijk/L. van Hoof (A, B, C), H. Fokkens (B).

about 50 cm there was a lamination of charcoal and pottery in the pit. The layers were well defined and rather thin (5 cm). Whether this is a dump situation or an intentional deposit is unclear. Fact is that we found a large amount of ceramics, few animal bone fragments, and stones in these layers.

*Finds and dating:* 754 sherds of Bronze Age pottery (table 15.19) were found (fig. 15.23D). The rim-shapes suggested a rather late date in the Middle Bronze Age or in the Late Bronze Age. A radiocarbon sample

from charcoal in the bottom layer yielded a date of 1514-1412 cal BC, well in the Middle Bronze Age B.<sup>1</sup>

#### *Features 58.117, 58.154, 58.155 and 58.156*

Features 58.117, 58.154, 58.155 and 58.156 are in fact part of one large configuration. Initially it was interpreted as a natural depression or fen, with the number 58.117. But it turned out that 58.117 had been dug as one feature, while the other features are parts of the later fills (cf. fig. 15.24C). Its size (9



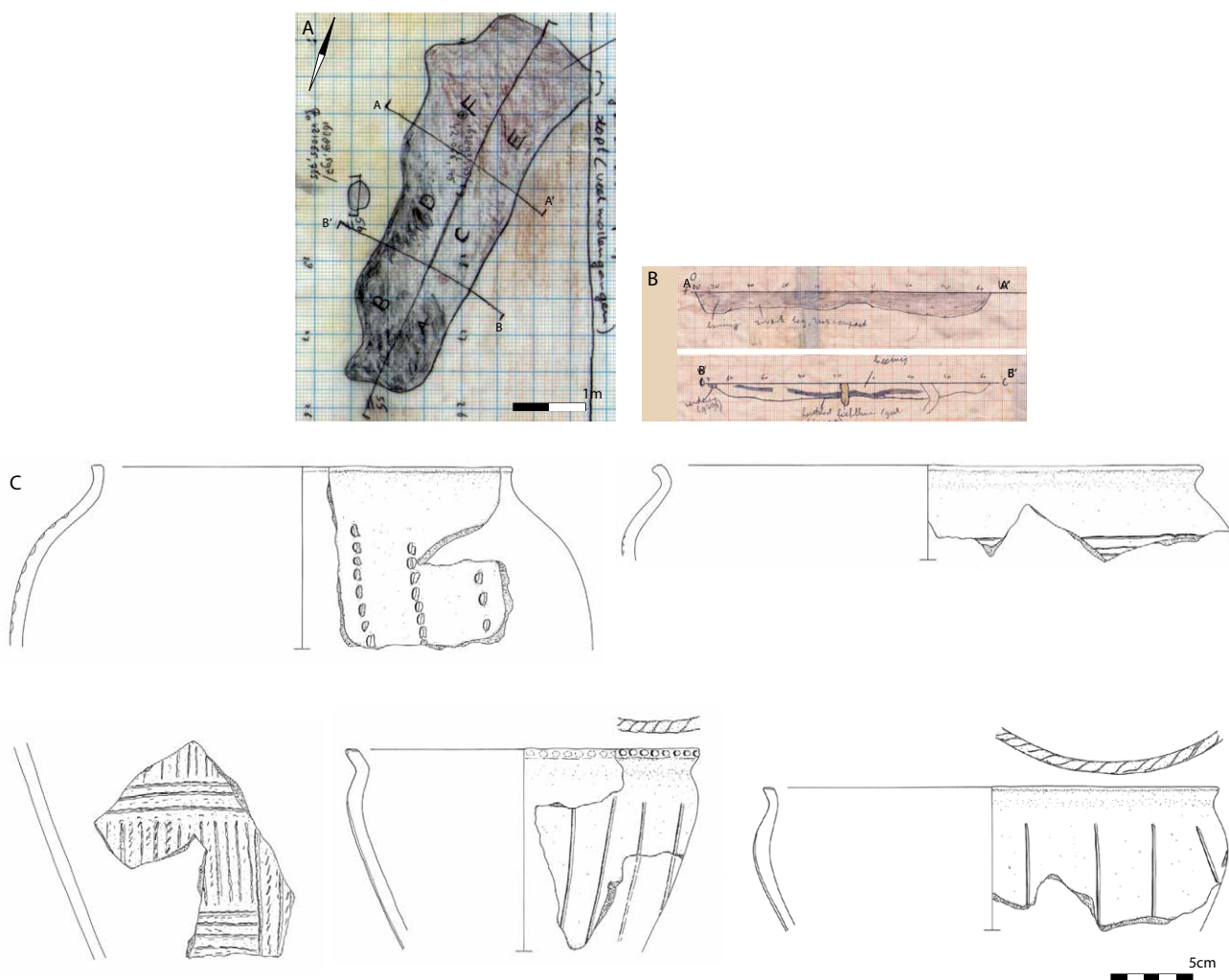


Figure 15.25 Feature 51.55. A: part of the field drawing; B section drawings; C pottery from feature 51.55 dating to phase K of the Late Iron Age. Scale 1:3. Drawings X. van Dijk (A, B), A. Louwen (C).

x 5 m), depth (1 m), and irregular form changed the interpretation into a large watering hole: a drinking pool for livestock. Feature 58.117 contained finds from the Middle Bronze Age and was seen as the first phase of use (the construction phase). Sedimentation (partly) filled up the pit before two smaller pits (58.154 and 58.155) were dug (fig. 15.24D). These pits gradually closed up again, and the spot was not used again until the Iron Age. By then, the spot must still have been recognisable as a depression in the landscape, and therefore a first choice location to dig a pit for water extraction. This time, a pit (51.156A) was dug in the northern part of 58.117. Wooden remains probably were remnants of the lining.

A dark humic fill suggests a possible lining and gradual fill after use. In the last phase the depression left by the well seems to have been backfilled at once, leaving two dark fills: 58.156B and 58.156C (fig. 15.24 C). According to the sherd typology this happened in the Early Iron Age.

*Finds and dating:* The features yielded several complexes of Middle Bronze Age sherds (58.154; 58.155; Table 15.19) and Iron Age sherds (58.117 and 58.156). The Iron Age sherds in 58.117, however, correlate with the activity of 58.156, and are found in a higher fill. The initial phase of 58.117 itself correlates to the oldest phase of use.

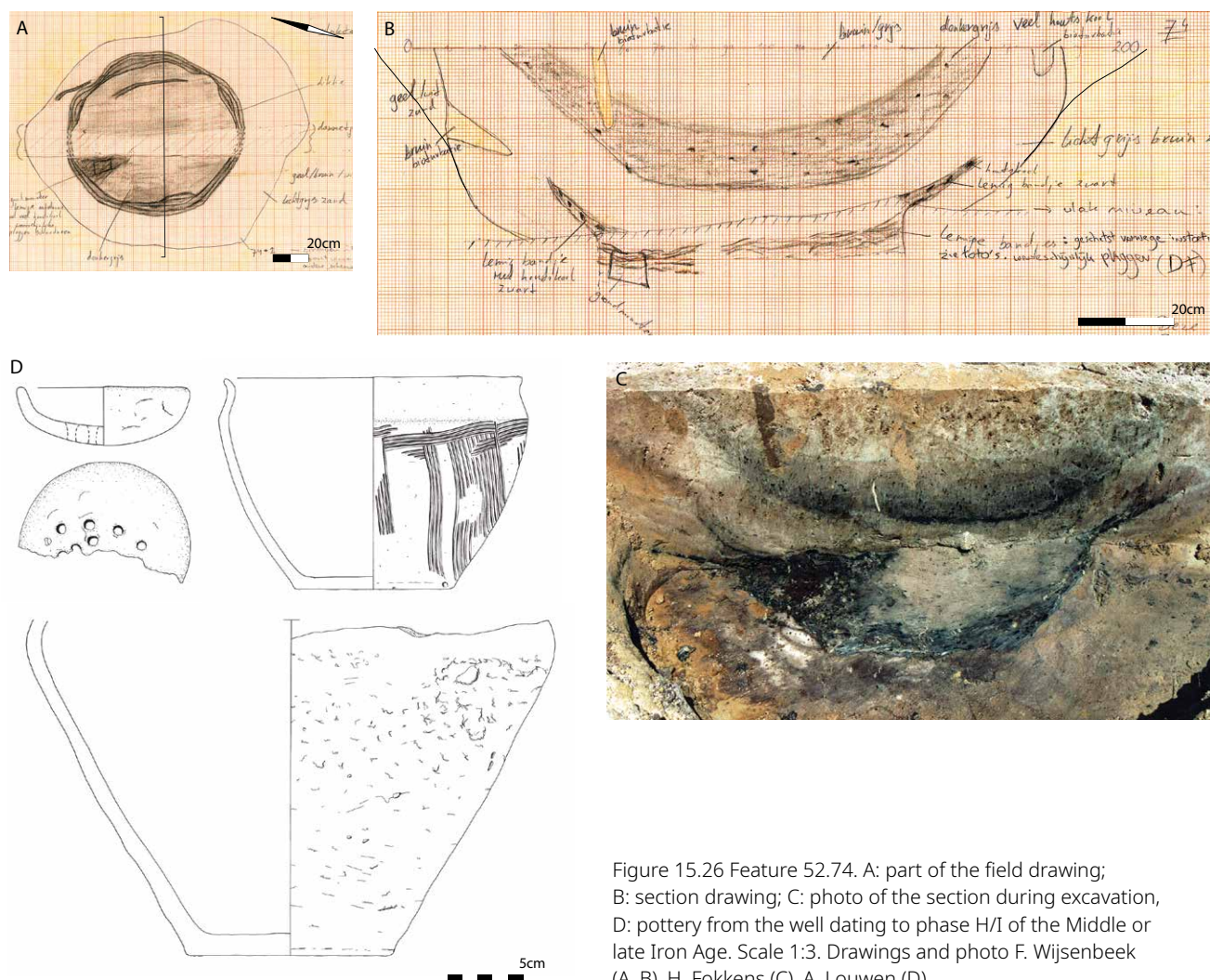


Figure 15.26 Feature 52.74. A: part of the field drawing; B: section drawing; C: photo of the section during excavation, D: pottery from the well dating to phase H/I of the Middle or late Iron Age. Scale 1:3. Drawings and photo F. Wijsenbeek (A, B), H. Fokkens (C), A. Louwen (D).

### Feature 51.55

Feature 51.55 is a long and irregularly shaped feature of c. 5 x 2 m. It was only 10-15 cm deep (fig. 15.25B). The feature was excavated in several segments. It had a compact homogenous brown fill and occasionally black organic inclusions. The deepest fills in the northern part contained a thick layer of charcoal. We have no clue about its interpretation.

*Finds and dating:* almost 4 kg of potsherds was found in feature 51.55 (table 15.19; fig. 15.25D). The complex dates to the Late Iron Age, phase K (c. 150/125-50/25 cal BC).

### Feature 52.74

Feature 52.74 is a deep pit or well with a rather steep profile F42 (fig. 15.26B). There are indications that

the sides were 'reinforced' with sods. The sods were covered with charcoal at some spots, which must have ended up in the pit while it was still open (see fig. 15.26C). After the initial phase of use, a layered fill indicates gradual sedimentation, probably after abandonment. A second phase of use is indicated by a 40 cm thick loamy layer with much charcoal and pottery (fig. 15.26B).

*Finds and dating:* The complex of potsherds dates to the Middle or Late Iron Age (table 15.19; fig. 15.26D) phase H-I: 350/325-225/200 cal BC). A curious object is a small perforated bowl of 7.5 cm wide. Such vessels often are discussed in the context of cheese making (strainers), but this is a very small object for that function. Apart from that also a spindle whorl was found.



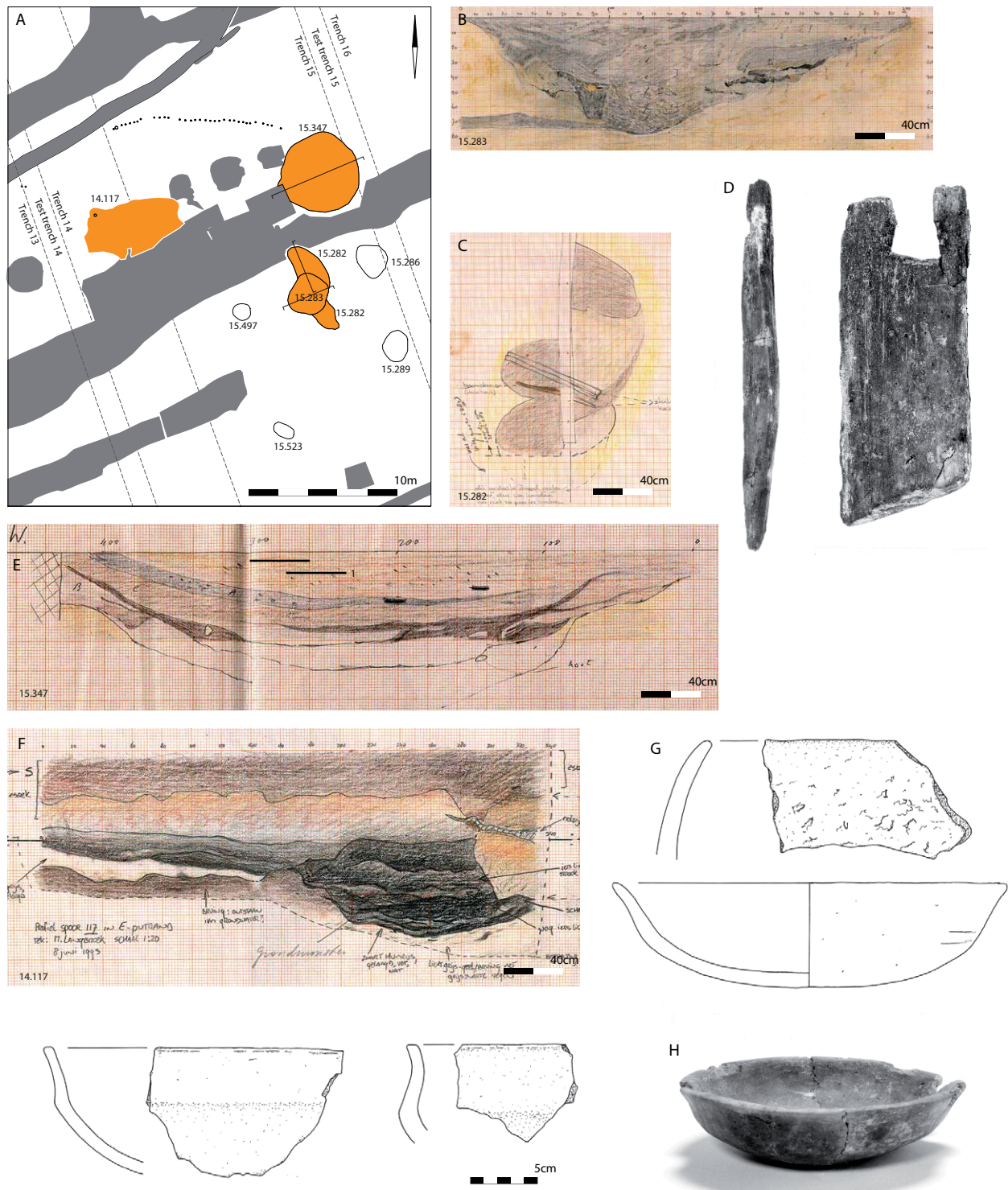


Figure 15.27 Cluster 2 of pits and wells, details of feature 15.347 and 15.282-283; A: plan all features; B: section drawing of 15.283; C: location of wooden plank (D); E: section of 15.347; F: section of 14.117; G: pottery from 15.347. Scale 1:3; H: photo of the bowl. Drawings and photos S. van As (A), R. Kok (B, E), H. Fokkens (C), M. Langbroek (F), J. Pauptit (D, H), A. Louwen (G).

#### 15.4.2 Cluster 2 of pits and wells

Cluster 2 is a dense group of pits and wells in the western part of the Mettegeupel quarter (fig. 15.27). Three of these could be dated to the Iron Age, while the others could not be dated. We describe here three large features that probably were associated: 15.347, 15.282/3 and 15.117.

#### Features 15.282 and 15.283

Features 15.282 and 15.283 represent in fact two phases of one large pit or well. Feature 15.282 is 7 m long and irregularly shaped. It is intersected by a round large pit (15.283) in the centre. The relation between the two features never became entirely clear. It is very well possible that 15.283 is a 'rejuvenation' of an older well. On the other hand, no clear indications of a well were discovered apart from the perfectly round deep pit. Part of our lack of understanding the relationship between both features is the excavation strategy in this case. Since 15.282 was not as clearly visible as 15.282, we thought that 15.282 was peripheral to 15.283. We positioned our section east-west over the centre of 15.283 because we expected that a lining would be located there (fig. 15.27B). Only some 40 cm below the excavation level did it become clear that 15.282 was not the periphery of 15.283, but in fact yet another well (fig. 15.27C). But by then that was difficult to document because the largest part of 282 was already dug away. The interpretation of feature 15.282 therefore remains unsure: the section as well as the field drawing show a very irregularly formed feature.

The bowl-shaped pit must have held water, since the deepest fills contained much organic matter and

had clayey layers. Fragments of wood were found in the bottom parts of the features, possibly the remains of a lining. Just beside the centre of the fill a wooden post was stuck at an angle into the soil (fig. 15.27C). Perhaps this represents some kind of construction or grip for getting in and out of the pit. The organics indicate that after it was abandoned, the well filled up naturally.

*Finds and dating:* One sherd was found in each feature (Table 15.20). Both sherds were tempered with grog, and are assumed to date to the Iron Age. Such a small complex is, however, no basis for dating of the features.

#### Feature 15.347

Feature 15.347 was partly intersected by modern features. The modern ditch to the south of the feature was dug away in order to uncover the remainder of 15.347 (fig. 15.27A). The feature was large (c. 550 cm in diameter). In the centre branches and parts of beams were found that were part of the original wattle-work lining. The deep parts of the pit filled with clayey layers rich in organic matter, indicating that the pit closed up gradually with sediments during a prolonged phase in which the feature was open and not maintained. The feature contained many finds (fig. 15.27G), most of which came from the top layers (fig. 15.27D), indicating that the derelict well had been filled in with soil containing lots of rubbish. Since the complex is rather large (1345 fragments) and most of it was secondarily burned, an intentional deposit is a possible explanation as well.

In the lower part of the well we discovered an ash plank with a square hole in it (fig. 15.27F). An ash pole of 85 cm long was lying next to the plank and

Trench	Feature	Material	Number	Date
15	282	cer	1	IA
15	283	cer	1	IA
15	347	cer	1345	MIA-H
15	347	loam	-	-
15	347	bone	-	-
15	347	tephra	-	-
15	347	spindle whorl	1	-
15	347	slag	-	-
15	347	wood ash pole		2260 ± 40 BP

Table 15.20 Finds from pits in cluster 1 in the Mettegeupel quarter.



would fit the hole. We therefore think that this is in fact a plank with a handhold placed in the well to enable climbing in and out of this pit-well. The wood was described by C. Vermeeren as *Fraxinus excelsior* (ash). According to Vermeeren, the pole was cut from a tree of at least 50 years old and over 12 cm thick. The plank measured 40 x 17 x 6 cm and was radially cut from a tree of over 100 years old. The plank and pole, and most of the pottery, was in the weekend recovered by a group of amateur archaeologists whom we had asked to do so. They also documented the digging according to our instructions. The work was carried out by Piet Haane, Gerrit van Duuren and Gerard Smits.

*Finds and dating:* 1345 fragments of pottery provided a typological clear date: phase H of the Middle Iron Age (determination P.W. van den Broeke; 350/325-275/250 cal BC; fig. 15.27E; table 15.20). Radiocarbon dating of wood from the ash pole confirmed the typological date: between 398-346 cal BC (34.8%) and 321-206 cal BC (60.6%).<sup>2</sup> Apart from large amounts of pottery the pit contained also 2 kg of metal slag, several animal bones, a spindle whorl, 90 grams of basalt lava, 22 stones and several fragments of loam. 75% of the ceramics had been burnt. This combination of finds, especially the combination with metal slag, recalls the smiting heart in Oss-Schalkskamp (cf. section 14.4.3). Therefore we think that the entire deposit probably is the remains of a small metal production site. Given the date, that deposit probably was associated with house H5 just north of the cluster.

#### *Feature 15.117*

Feature 15.117 was very large, 6 x 4 m (fig. 15.27E). We recorded a section in the eastern part of trench 14 (fig. 15.27 E). This shows that the actual centre was present just north of the modern ditch south of the feature. The very dark humic fill indicates a natural layered sedimentation. A lining was absent. The combination of a shallow pit with a deep pit next to it may indicate a pit used to water animals.

#### *15.4.3 Other pits and wells*

Outside these two clusters several large features were recorded. Some of these are documented here because they contained special finds or constructions. For their location see the overview in Figure 15.20.

#### *Feature 16.110*

Feature 16.110 was in fact a small feature of 35 cm wide and 30 cm deep (fig. 15.28A, B). This implies that the pit originally was about 70-90 cm deep and only 35-50 cm wide. The fill of the pit was dark-grey, almost black. Since the pit contained a fair amount of pottery (fig. 15.28C; Table 15.21), including some briquetage-pottery, this may be a deposit not unlike the deposit at Oss-Schalkskamp in an equally small pit (section 14.2.2.; SK pit 999.4). The date is probably comparable too: most likely the beginning of Late Iron Age (phase H/I).

#### *Feature 20.34*

Feature 20.34 was excavated only half. It was located in test trench 20. The pit was – for a well – rather small: about 1.5 m in diameter (fig. 15.29A, B). The deepest fill included a lining of six pointed planks, c. 50 cm long that formed an oval lining (fig. 15.29B, C, D). C. Vermeeren determined the wood as alder (*Alnus spec.*). On one of the planks the bark was still present. The fill of the well and deeper part of the pit is layered with clayey sedimentation alternated with sandy sediments (fills 5 and 3), indicating that the pit held water and largely filled naturally. From the section it is clear that the construction originally must have reached much higher, probably even to the ground surface. This explains the small dimensions of the pit and is indicative of a Roman date.

*Finds and dating:* five fragments of pottery were found, which did not allow for conclusive dating. However, one of the planks was radiocarbon dated and confirmed a Roman Period date, possibly between 205 – 325 cal AD.<sup>3</sup> That implies that this well belongs to the latest phase of habitation at Oss, since most habitation appears to have disappeared in the period between 225 and 250 cal AD (Wesselingh 2000, 199).

#### *Features 23.1, 23.2 and 23.3*

Features 23.1, 23.2 and 23.3 are in fact one large pit that has some extensions (fig. 15.30A). 23.1 was c. 200 cm in diameter. Since this feature lay partly outside the limits of the 150 cm wide test trench here, we extended the trench a bit. Both 23.2 and 23.3 were rather shallow (c. 10 cm deep), while 23.1 was about 60 cm deep (fig. 15.30B). A lining was not found and it is debatable whether this was a well, or rather a large pit. The fill appeared to be natural until halfway. The top part had been backfilled at once.

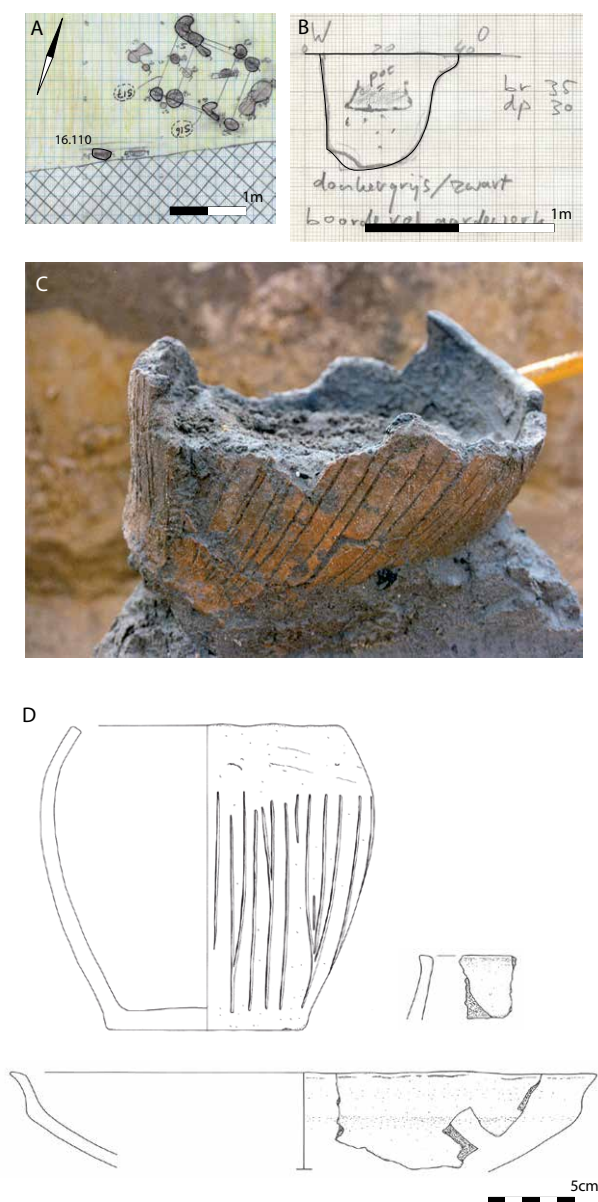


Figure 15.28 Feature 16.110. A: part of the field drawing; B: section drawing; C: pottery during excavation; D: pottery from feature 16.110. Scale 1:3. Drawings and photo N. Prangsmas (A, B), H. Fokkens (C), A. Louwen (D).

**Finds and dating (table 15.21):** The top fill contained 44 sherds from several Middle Bronze Age vessels (fig. 15.30C). Originally the amount of pottery must have been far larger, but this feature was ‘robbed’ or at least partly dug-up overnight, probably by passers-by. An interesting find – because it is so large – is a spindle whorl of 12 cm in diameter (fig. 15.30C).

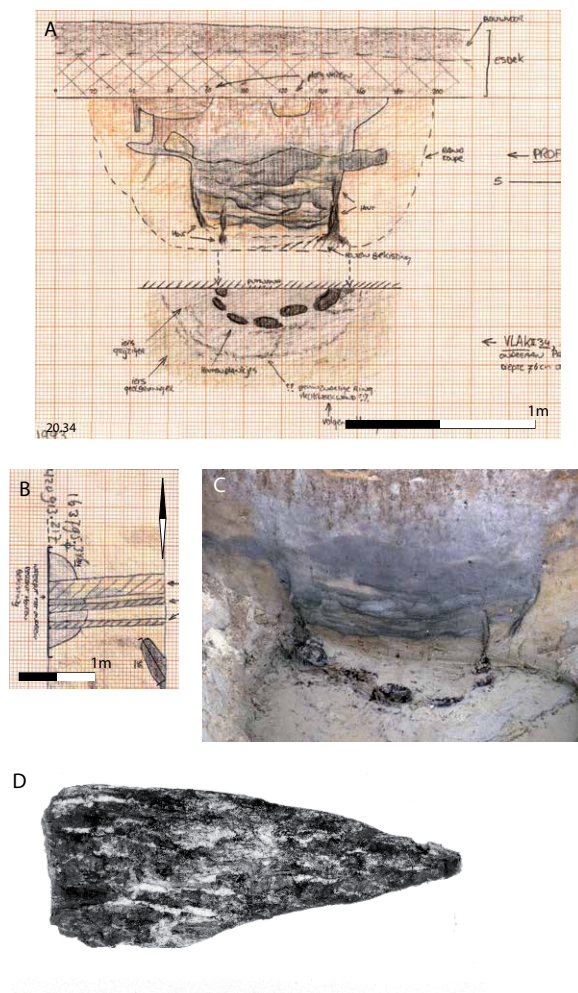


Figure 15.29 Feature 20.34. A: field drawing; B: section drawing and horizontal at lower level; C: the well during excavation; D: one of the plans (scale 1:8). Drawings and photos M. Langbroek (A, B), H. Fokkens (C), J. Paupit (D).

### Feature 35.70

Feature 35.70 was a large feature of c. 6 m in diameter. It showed up as one – undifferentiated feature in terms of surface colours. We excavated the southern half first, and soon it became clear that ‘the’ original lining, a hollowed-out tree-trunk was completely intact (fig. 15.31D, E). The section was drawn only partly, with the top part of the trunk (35.70.1) just visible (fig. 15.31B). In this section it became already clear that an older pit was present, but due to fast rising groundwater, we could not make another section to reveal that in a better way. And indeed, when we removed 35.70.1 immediately behind it,

Trench	Feature	Material	Number	Date
16	110	cer	31	LIA H/I
20	34	cer	5	-
20	34	plank		1750 ± 30 BP
35	70	cer	509	EIA C/D
35	70	bone	-	-
35	70.1	wood		2430±30 BP
35	70.2	wood		2460 ± 30 BP
61	30	cer	80	-
85	12	cer	518	-
85	12	glass	1	-
85	12	loam	-	-
85	12	bone	-	-

Table 15.21 Finds from pits in cluster 2 in the Mettegeupel quarter.

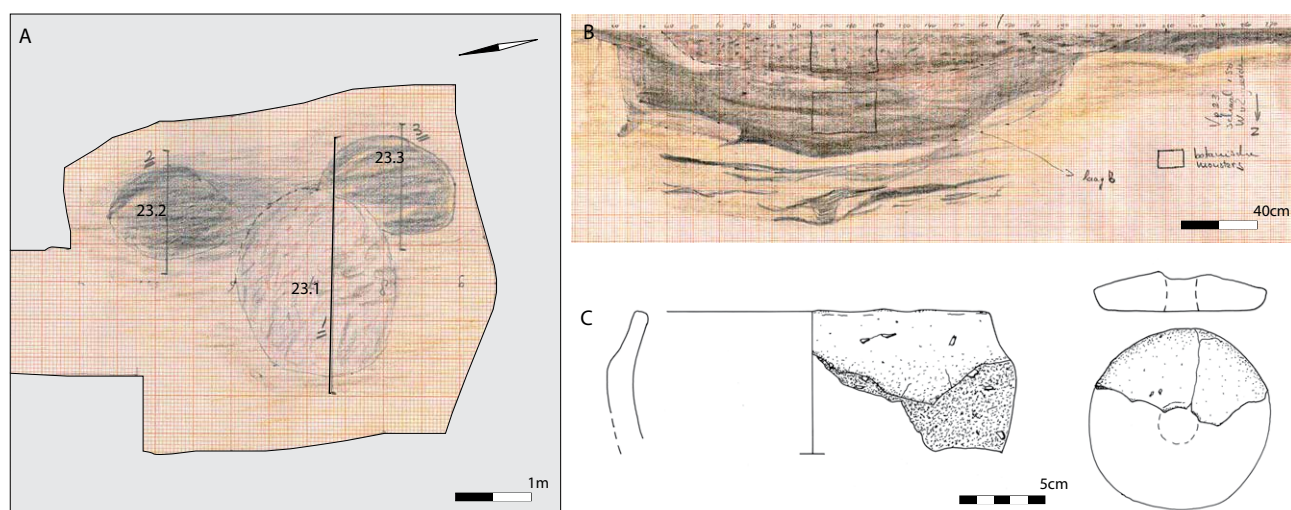


Figure 15.30 Features 23.1, 23.2 and 23.3. A: part of the field drawing; B: section drawing of 23.1; C: pottery from 23.1. Scale 1:3. Drawings H. Fokkens (A), F. Wijsenbeek (B), A. Louwen (C).

35.70.2 became visible (fig. 15.31C) which must have been the older well.

The most southern trunk (35.70.1) was placed at a depth of 80 cm. From the beginning it was clear that this well had been abandoned and left for several seasons or years before it was backfilled. This was evidenced by a layer of tree leaves 10-20 cm thick that covered the rims of the trunk and the lower part of the well (fig. 15.31B, E). These were mainly oak leaves, but in this layer also seeds of willow (*Salix* sp.) and

raspberry and blackberry (*Rubus idaeus*, *Rubus fruticosus*) were found. For a detailed analysis we refer to Bakels (chapter 8).

**Finds and dating:** A fair amount of pottery fragments was found (table 15.21) in the top layer, and some other artefacts and bones. The complex of potsherds could be dated to the Early Iron Age, phases C or D (650-500 cal BC). This is more or less in line with the radiocarbon dates of the tree-trunks. For 35.70.2, the oldest trunk, made out of an alder tree, the highest



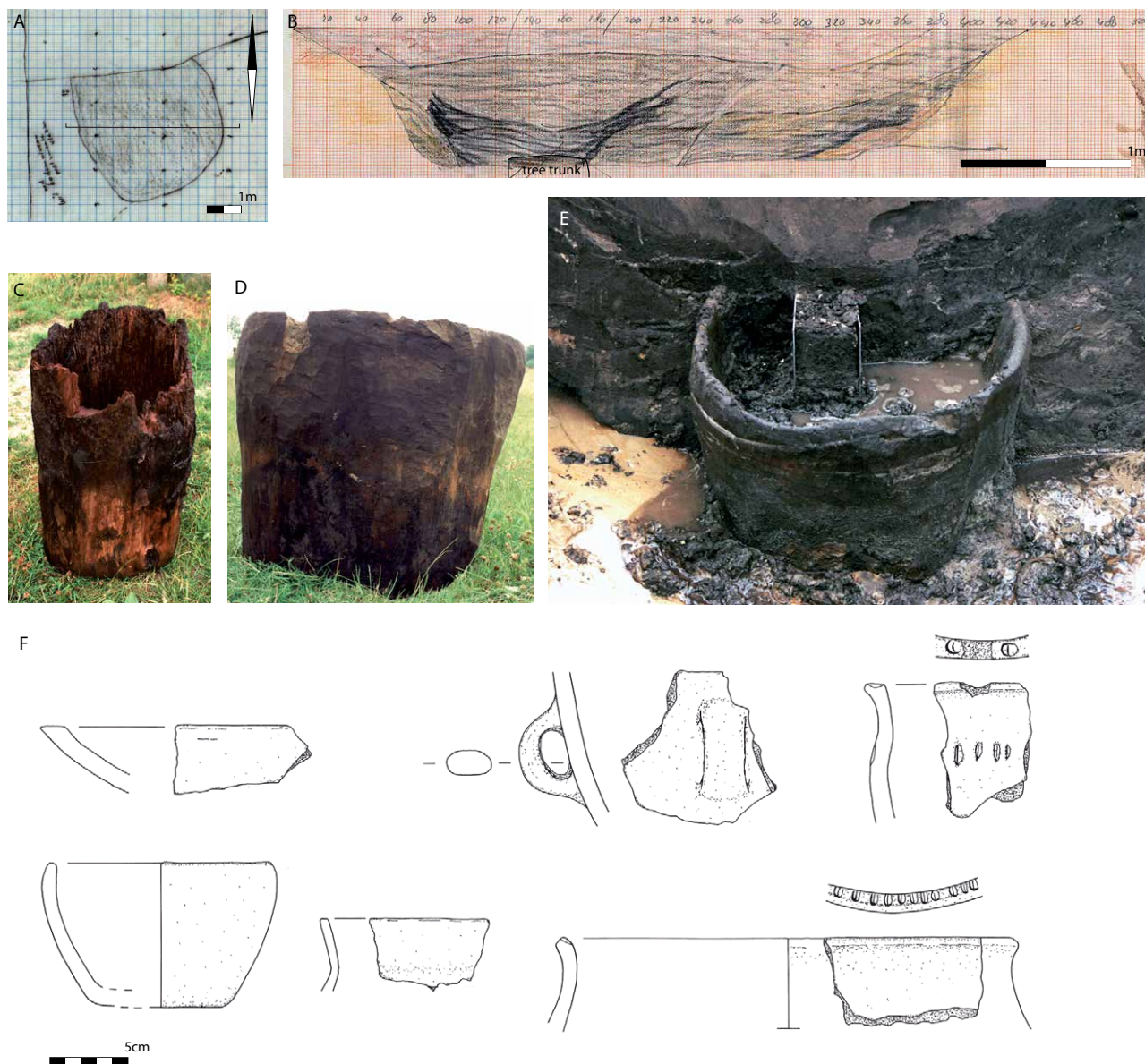


Figure 15.31 Feature 35.70. A: part of the field drawing; B: section drawing before the section was completely excavated; C: tree trunk from the oldest well; D: tree trunk from the youngest well; E: tree trunk from the youngest well in situ with a pollen sample still in place; F: pottery from the well dating to the Early Iron Age. Scale 1:3. Drawings and photos H. Fokkens (A, 36.127, C, D, E), W. van Zijverden (12.14), A. Louwen (F).

probability falls between 672 and 428 cal BC.<sup>4</sup> For trunk 35.70.1, only 30 years younger in 14C-dates, the highest probability is 571-405 cal BC.<sup>5</sup> Both trees were probably not placed long after each other, probably with a maximum of 100 years between them, probably less. The wells may be contemporaneous with houses MG1 and MG2.

#### *Feature 61.30*

**Feature 61.30** When following a Roman Period ditch system in a narrow trench (61) because we had reached the excavation limits, 61.30 was discovered. But it was situated largely outside the trench (fig. 15.32B). So we excavated just a bit more to reveal the entire feature. The section shows that the lining

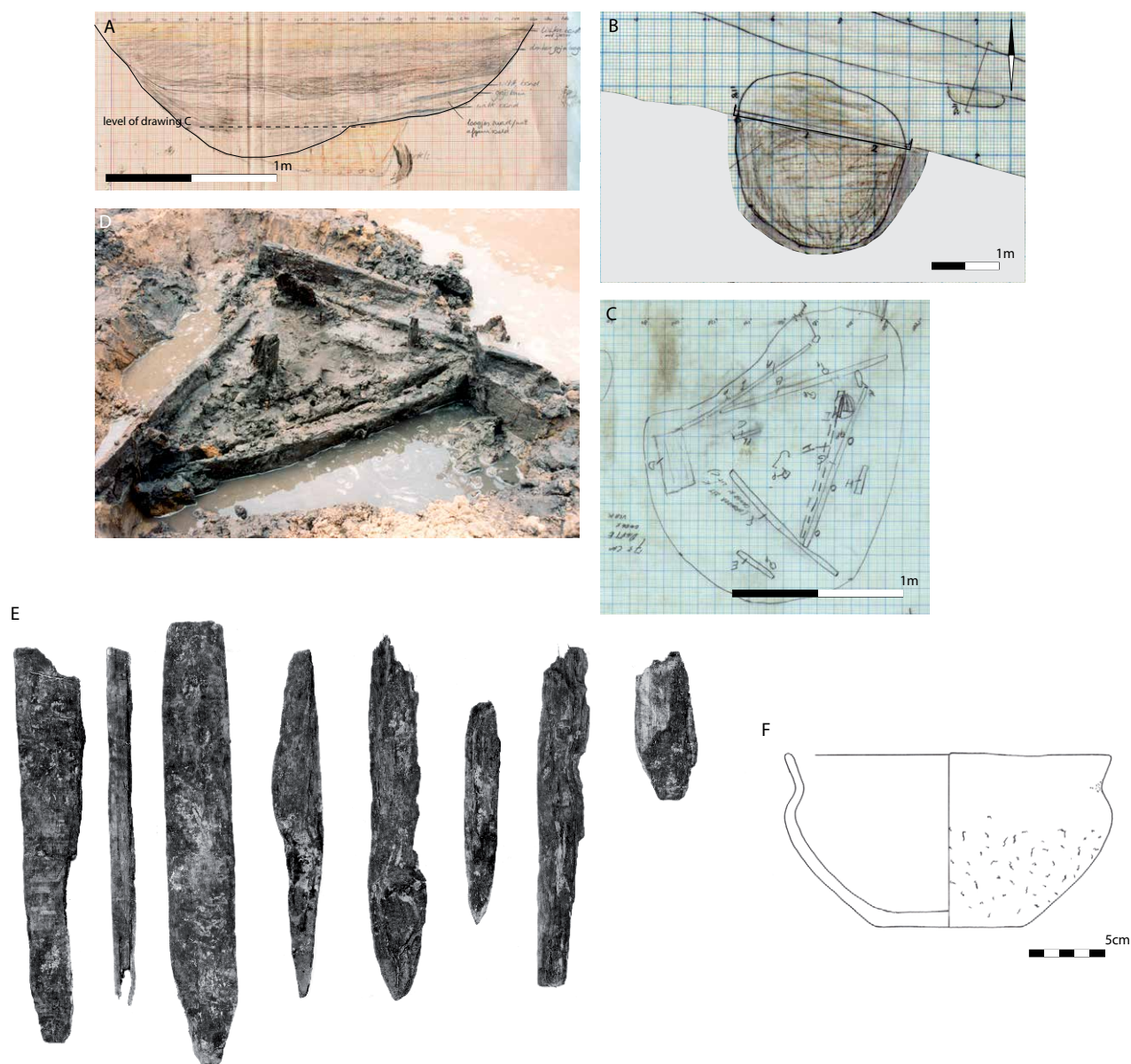


Figure 15.32 Feature 61.30. A section drawing; B: part of the field drawing; C: the construction at 70 cm below the surface; D: construction in the excavation; E a selection of upright stakes; F: Early Iron Age pot from the bottom layers. Scale 1:3. Drawings and photos, Y. Keijsers (A), D. Fontijn (B,C), H. Fokkens (D), J. Pauptit (E), A. Louwen (F).

became visible about 70 cm beneath the surface. The lining consisted of 13 planks which were set in a triangular shape. For Oss this is unique, actually. The planks were horizontally placed and held in place by stakes (fig. 15.32D, E, F). The deepest core fill, and the fill on top of the well were rich in organic matter, indicating that the well filled up gradually by sedi-

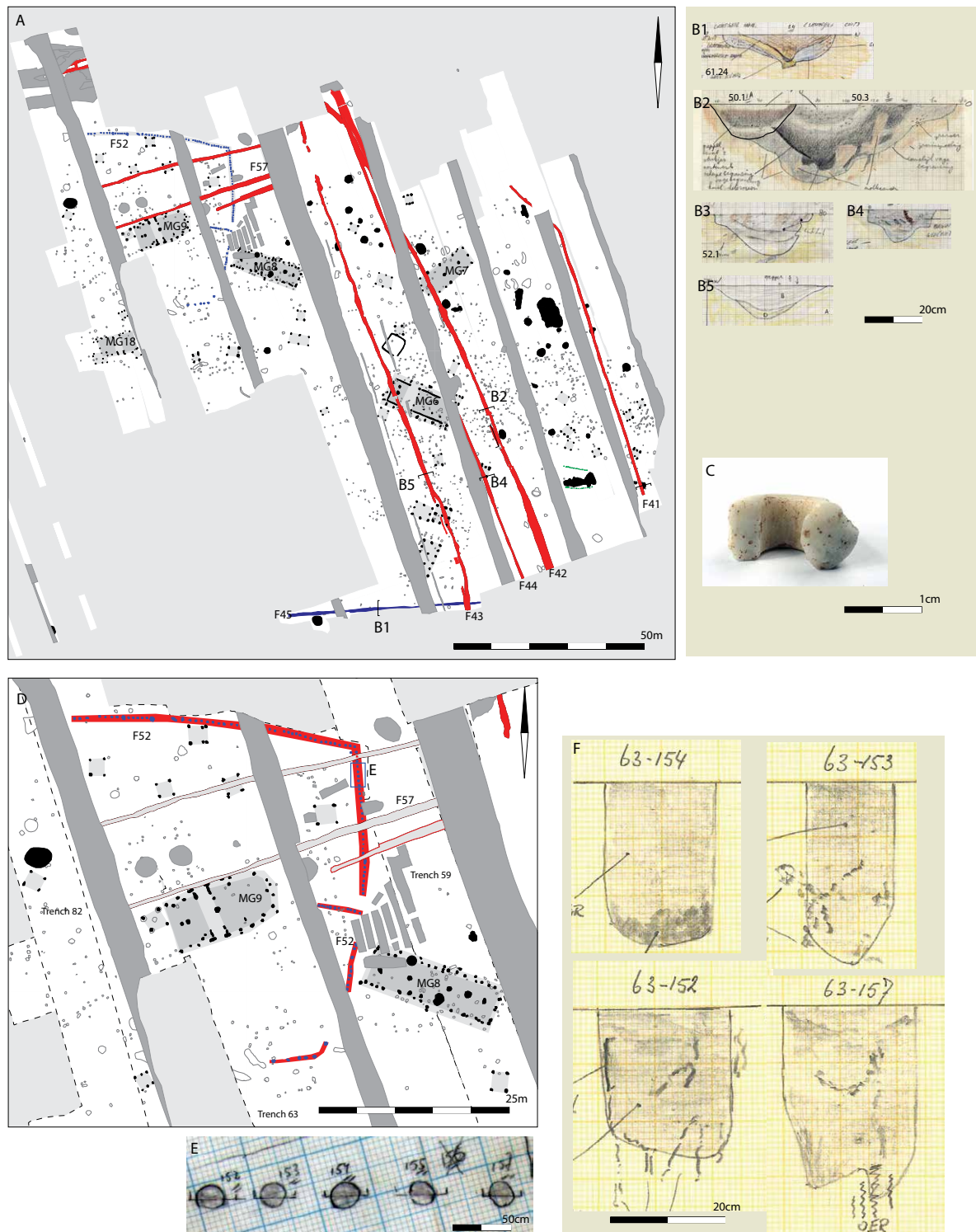
mentation. The top fills indicate that the well was still open for a while after its period of use, before it was eventually closed up.

*Finds and dating:* 80 fragments of pottery were found lying near the lining in the deepest part of the fill (fig. 15.32F). The complex dates to the Early Iron Age, phase B-D (725/700-500 cal BC).



Figure 15.33 Survey of all fences and ditches in the Mettegeupel quarter. Drawings S. van As.





## 15.5 DITCHES AND PALISADES

A total of 42 post alignments and ditches (apart from the Modern Period ones) were recognised in the Mettegeupel quarter, of which the most important ones are depicted in Figure 15.33. Most prominent of these features are the Roman Period ditch systems.

### 15.5.1 Ditches and fences in the north (cluster 1)

The northern part of the Mettegeupel quarter is 'dominated' by a series of parallel ditches from the Roman Period. Most are northwest-southeast orientated; a few run perpendicular to that. Apart from the Roman Period ditches there is also an older ditch (F45) and kind of palisade (F52).

#### *Ditch F45*

Iron Age ditch F45 runs through the centre of the Mettegeupel district, in an east-west direction. We have excavated small parts in test trenches in the west and a longer section in the east (see fig. 15.33). We could reconstruct its trajectory over a distance of more than 200 m (fig. 15.33). In some trenches, the ditch was quite shallow and thin, indicating that only the bottom part was preserved. In the best cases the trench reached a depth of 40 cm and had a width of approximately 1 m (fig. 15.34B). The deepest fills were dark grey, and occasionally had humic deposits, indicating that water stood in the ditch occasionally. Nevertheless, it must have been a dry ditch during most of its existence. The ditch was probably left open after abandonment because the fill showed some lamination in the lower parts. Eventually it was probably backfilled.

*Finds and dating:* Ditch F45 was completely void of finds. However, since it is intersected by Roman Period ditch F44, we think it is a Late Iron Age ditch.

#### *Ditches F41, F42, F43 and F44*

Ditches F41, F42, F43 and F44 are north-northwest – south-southeast orientated ditches in the north-eastern part of the Mettegeupel district. These are all shallow ditches of 40 cm deep in general and 100 cm wide at most (fig. 15.24C-F). They run all more or less straight. F41 and F42 eventually bend slightly westward in their northern sections. All ditches share the same single phased and shallow character. The sandy fills could be interpreted as 'laminated' in most sections of ditches F42 and F44, indicating that at least these ditches closed up gradually. F42 and F44 seem to intersect in the northern part of the trench, even though the intersection was not visible. Therefore the contemporaneity of F42 and F44 ditches remains uncertain.

F41, F42, F43 and F44 were probably part of a larger parcelling system in the Roman Period comprising also F53 (section 15.5.2), F54, F55, F56, F57 and F58. This does not necessarily mean that all ditches were contemporaneous. We suggest they demarcated arable land or grazing land because we have found no settlement traces of the Roman Period in the Mettegeupel district, with the exception of one very late well (20.34, see above).

*Finds and dating:* small amounts of wheel-thrown pottery from the Roman Period have been found among the pottery complexes of F41 and F42 (find nos. 50. 1 and 52. 1: table 15.22). A fragment of second century *Terra Nigra* was the best determinable. Other finds were two fragments of tephra and a Roman glass bead (fig. 15.34G).

#### *Palisade F52*

Palisade F52 is in fact a unique feature. In no other part of Oss do we have a comparable structure. We have called it a palisade because it consisted of posts placed at an average of approximately 40-50 cm from each other (fig. 15.34E). Each post is about 25 cm in diameter and still about 30 cm deep (fig. 15.34E). F52 can be traced over a length of 37 m in an east-western direction, and 20 m in a north-southern direction in excavation trenches 63 and 82. South of houses MG8 and MG9 it was no longer visible.

In the southern part there seems to have been an entrance, with a small row of posts placed perpendicular to the palisade. This small row points straight to house MG9. This suggested to us that this palisade is in fact the fence around the yard of MG9. There are, however, no finds to support contemporaneity. The sections seem to suggest that these are some of the few real examples of postholes, implying that pointed posts were hammered into the soil. After abandonment they possibly decayed in situ: there are no indications of wriggling them out, while the fills are more or less homogenous with some organic bands (fig. 15.35F)

### 15.5.2 Ditches and fences in the west (cluster 2)

Ditches F46, F47, F48, F49 and F50 constitute a more or less rectangular ditch system. The ditches enclose an area of 50 m x 50 m (fig. 15.35A). The whole is part of a larger complex of ditches that is interpreted as a Roman Period parcelling system. Extensions of the ditch system run in several directions from all four corners of the enclosure. Cross-sections showed a bowl-shaped form (fig. 15.35B, C). The ditch has an average width of 80 cm and a depth of 30 cm. The

Trench	Feature	Structure	Material	Number	Date
50	1	F41	cer	24	Rom
52	1	F42	cer	112	Rom
52	1	F42	tephra	2	-
52	1	F42	glass bead	1	Rom
57	101	F42	cer	3	-
54	129	F43	cer	1	-
57	3	F44	cer	33	LIA?

Table 15.22 Finds from pits outside cluster 1 and 2 in the Mettegeupel quarter.

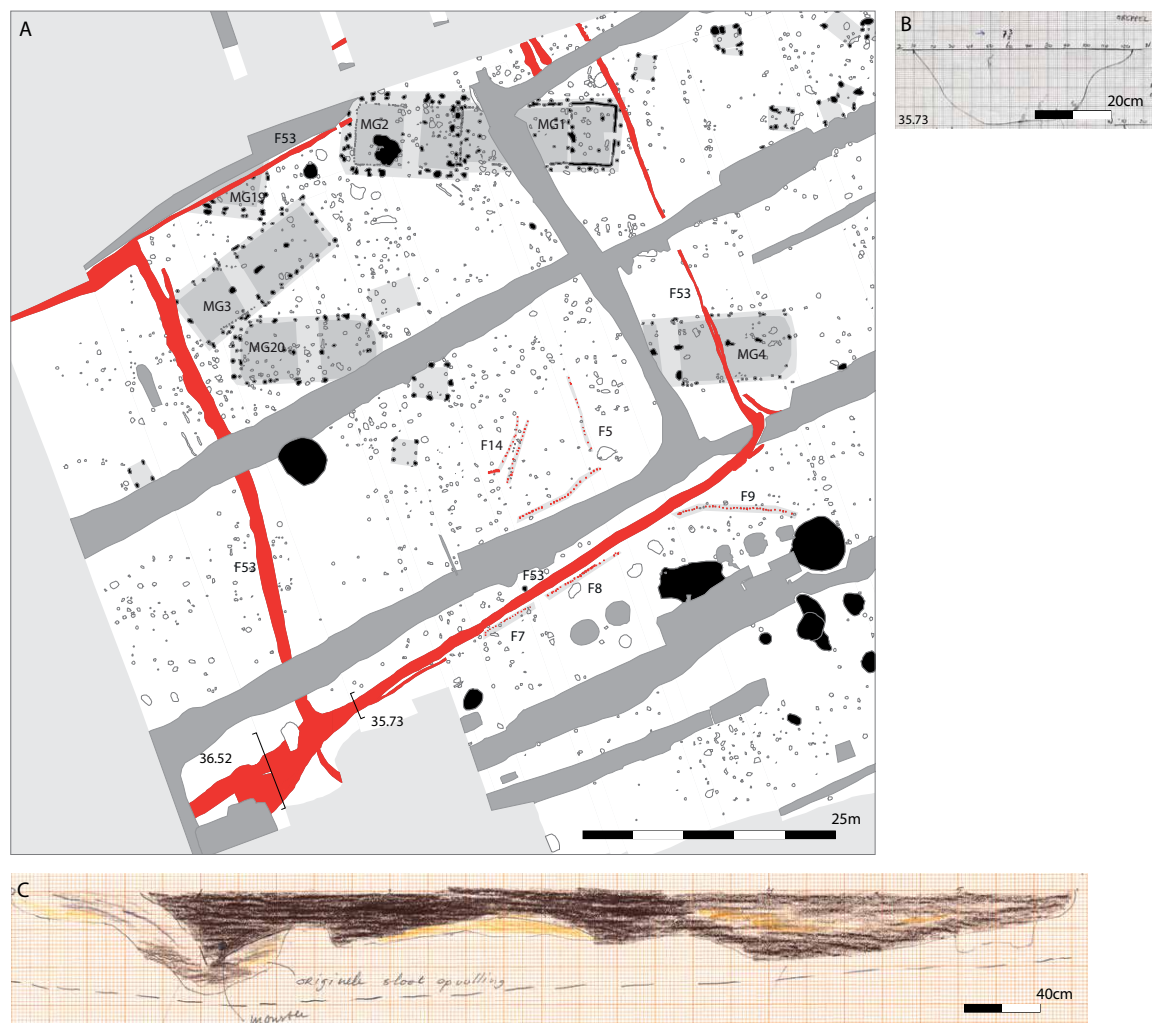


Figure 15.35 Survey of ditches and fences in the west. A: Plan; B: section of F53 (35.73); C: section through an area where ditches seem to meet (36.52). S. van As (A), H. Fokkens (B, C).

Trench	Feature	Structure	Material	Number	Date
15	1	F53	cer	152	LIA/ROM
15	1	F53	bone	-	-
15	1	F53	spindle whorl	1	-
15	1	F53	slag	1	-
15	106	F53	cer	35	LIA/ROM
15	106	F53	tephra	1	-
15	106	F53	glass	1	-

Table 15.23 Finds from cluster 1 of ditches in the Mettegeupel quarter.

measurements, however, deviate significantly in different parts of the trench: in some parts, like in the north, only 5 cm is left. The fill of the ditch was of grey sand. No layered fills and fills rich in organic matter were observed.

Associated with this enclosure appear to be fences F7, F8 and F9, and possibly also F15 and F5. These fences are all alignments of small post pits. The F7-F8-F9 alignment is very close to the southern ditch (F48) and is in the southwest sector of the ditch visible as a very narrow bedding trench. From this it is evident that F48 and F7-F9 are indeed one structure: a ditch with a fence next to it.

*Finds and dating:* The ditch system yielded in all 187 pottery fragments and some other finds like a fragment of a tephra millstone and a spindle whorl (table 15.23). Only one small sherd of grey ware indicates a date in the Roman Period. However, the presence of six Iron Age houses within the enclosed area, several contemporaneous granaries and pits could be the reason for contamination of the find complex. So, the best dating method is in fact the horizontal stratigraphy. The ditch system intersects houses MG3, MG4 and MG19. MG4 and MG19 date to the end of the Middle Iron Age or start of the Late Iron Age. MG3 could be dated halfway the Late Iron Age, so the ditch system must date from the end of the Late Iron Age or Roman Period. Based on its orientation with the other Roman Period ditches in the northeast of Mettegeupel, and its connections with the larger ditch systems of the Mettegeupel district found in the test trenches in the north-western part of the excavated area, the ditch system can be dated to the Roman Period.

## 15.6 FUNERARY STRUCTURES

In the Mettegeupel quarter two graves were found, only one of which was visible as a burial monument (54.100; fig. 15.36A).

### *Grave 54.100*

Grave 54.100 was visible as a square ditch enclosure of 445 x 480 cm (fig. 15.36). Although no central or other grave was preserved, we assume that this ditch was surrounding a burial monument. The ditch did not contain any remains, material or indications of its function or age. In the southern corner it had an opening. The width of the ditch varied between 15 and 25 cm and was about 10 cm deep.

*Finds and dating:* Granary S28 intersects the ditch, but we have no date for that structure. Finds are absent. Since it shares its orientation almost with house MG6 and associated granaries, they might be contemporaneous. However, MG6 and granaries probably date to the Early Iron Age, which would be a very early date for a square monument. A date in the Middle or Late Iron Age would be more likely. The grave can be seen as a single 'isolated' burial monument.

### *Grave 12.279*

Grave 12.279 was a shallow homogenous grey feature. Only when cremated bones were found, was it recognised as a possible grave. There is no peripheral structure or signs of a monument. The bowl-shaped pit has a depth of 14 cm and maximum width of 64 cm (fig. 15.36G, H).

*Finds and dating:* a fragment of pottery (indeterminable) was found, as well as 44 fragments of burned human bone (28 g; determination M. Hoogland, cited by Mietes 1998, 108).

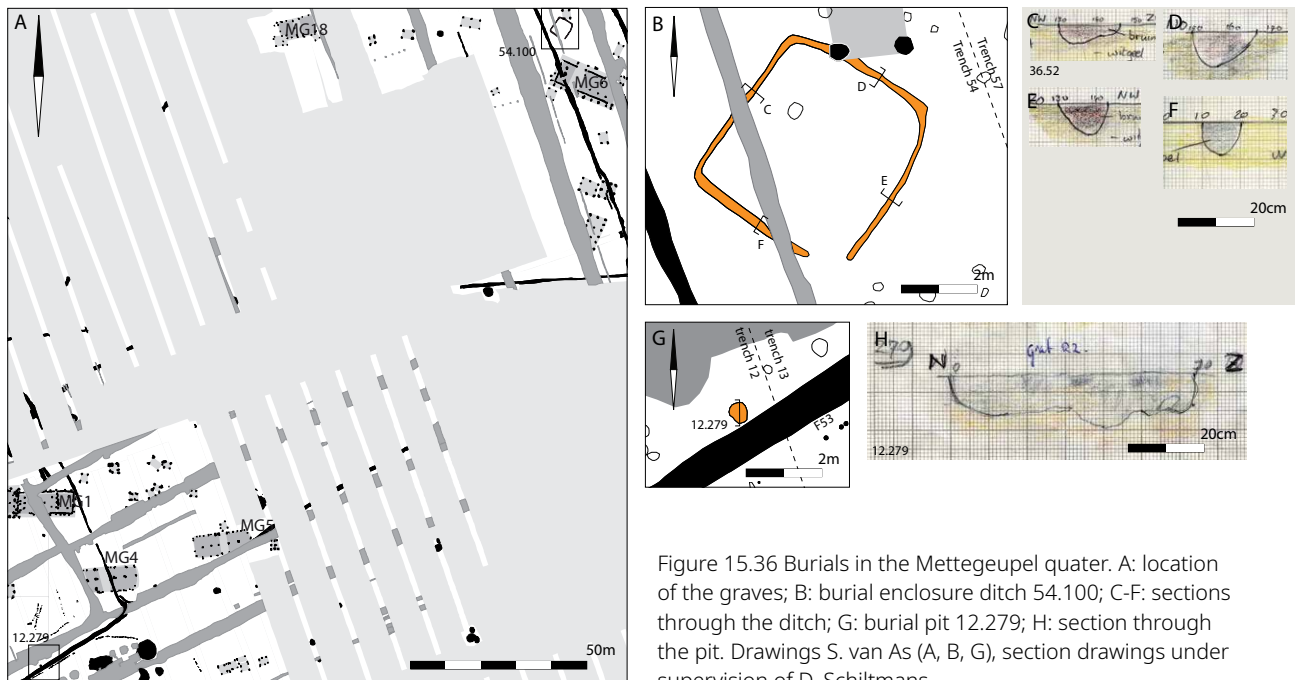


Figure 15.36 Burials in the Mettegeupel quarter. A: location of the graves; B: burial enclosure ditch 54.100; C-F: sections through the ditch; G: burial pit 12.279; H: section through the pit. Drawings S. van As (A, B, G), section drawings under supervision of D. Schiltmans.

#### NOTES

1. GrN 21512: 3190  $\pm$  30 BP calibrated with intcal 13: 1514-1412 cal BC (95.4%).
2. GrN. 21507: 2260  $\pm$  40 BP, calibrated with intcal 13 (2  $\sigma$ ): 399 – 344 cal BC (37%); 323-205 cal BC (63%).
3. GrN 21508: 1750  $\pm$  30 BP, calibrated with intcal 13 (2  $\sigma$ ): 224-384 cal AD (100%).
4. GrN 21510: 2460  $\pm$  30 calibration data set: intcal15.14c. 2 $\sigma$ : 758-678 cal BC (31%), 672-428 cal BC (69%), 418-416 (0.03%).
5. GrN 21509: 2430 $\pm$ 30. calibration data set: intcal15.14c. 2 $\sigma$ : 749-684 cal BC (0.20%), 667-639 cal BC (0.07%), 590-576 cal BC (0.01%), 571-405 cal BC (0.71%).

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# 16. Features in the Almstein quarter

S. van As and H. Fokkens

## 16.1 INTRODUCTION

Excavation at Oss-Almstein started in 1995 in an area where a few houses would be built. It was a relatively small area of about 175 x 150 m, of which we excavated about half. The site is located about 400 m southwest of the Mettegeupel excavations (cf. fig. 1.2). Most features and structures in this chapter were already discussed in a doctoral thesis (Van der Beek 1996) and we follow her discussion in large. Pits and wells are not discussed in this chapter because wells were absent. One large pit (67.22) was present, but it was shallow and only contained three Iron Age sherds that cannot be dated to any period in particular. The excavated area was largely determined by the presence of existing buildings to the west and a plot that we could not excavate on the northern side (fig. 16.1). It was a conscious decision to excavate the 'empty' area south of the ditch. The reason behind this was that we wanted to know whether there the settlement continued south of the ditch, since that seemed the only way to interpret its function. As we only found three older granaries here, we are now fairly sure that the ditch indeed was a settlement enclosure ditch.

## 16.2 HOUSES

In all we found eight houses in this relatively small area (fig. 16.1; table 16.1). The houses are mostly of the *Haps*-type, dating to the end of the Middle or the beginning of the Late Iron Age and were accompanied by smaller outbuildings which are interpreted as granaries. The houses were found relatively close to each other, all situated north of a ditch system, which we therefore interpret as an enclosure ditch.

### *House ALM10*

House ALM101 was excavated in two trenches: 67 and 76 (fig. 16.2). The short wall on the eastern side was never recorded as the house was intersected by a modern ditch. A large disturbance partly intersected the most western central post.

*Construction details:* ALM10 is an Oss type 4A (or type *Haps*) house with two aisles. At least four central posts were recognised. One central post must have been repaired (67.67) or had an additional supporting post. A fourth post pit was initially interpreted as hearth (67.222), but later revised as central post pit, secondarily used as fire place or even waste pit after the house was dismantled. The question is whether it is even possible to keep a hearth at this spot, considering the construction of the house. If the feature represents a hearth, and not a removed central post with burned depositions, then a distance of 5-7 m of the roof beam is unsupported by posts. This is the distance between the western short wall, and the first central post towards the eastern part of the house. In other words: no central post would support the roof from the central post next to the entrance to the short wall. Feature



67.222 was bowl-shaped and shallow. The deepest fill consisted of a layer of thick clay. The top fill (or core of the feature) contained burned loam. The same fill was observed in 67.222A, which is a small feature directly next to 67.222. This small pit contained lumps of clay, small fragments of burned bone and fragments of pottery.

We assume that the pit was filled up after the post was removed and the house was dismantled. Finds like burned loam and burned pottery could also indicate a meaningful deposition of material as part of an abandonment rite. Other examples of central post pits filled with pottery (with large parts secondarily heated) and sometimes loam in such a context are discussed by Van den Broeke (2002, 45-61). Several other examples are known from Almstein, in particular in houses ALM15, ALM17, and granary S63.

*Abandonment:* Some features have layered fills, for instance 67.68 (fig. 16.2). This indicates that the posts of the house were dismantled. Features like 67.19 contained large amounts of finds, which can only be realised if the post was removed. Yet, the clear dark-grey outline of a central post was still visible in the hole of feature 67.66 (fig. 16.2), which might be an indication of perished wood.

ALM10 was built on the same spot as ALM15, they are situated very close to each other and shared a similar orientation. Therefore we think that they represent a different phase of habitation within a single yard. Both houses date from Iron Age phases H and I.

*Finds and dating:* Based on pottery typology (analysis by Van den Broeke, cited by Van der Beek 1996), the house could be dated to the Middle – Late Iron Age, phase H – I (350/325-225/200 cal BC; table 16.2).

### House ALM11

House ALM11 was at the short ends rather disturbed by modern features. Moreover, on the west side the excavation limits were reached.

*Construction details:* On the basis of the entrance construction and the placing of the wall, the house can be determined as a *Haps-house* (Oss-type 4A). The walls consisted of post pits placed between 1-2 m from each other, supporting either planks or wicker-work (fig. 16.3). The roof-plates appear to have been supported by posts just outside the wall, which is best visible on the southern side of the house. Two entrances were placed opposite each other in the long walls, dividing the house into two parts. The eastern

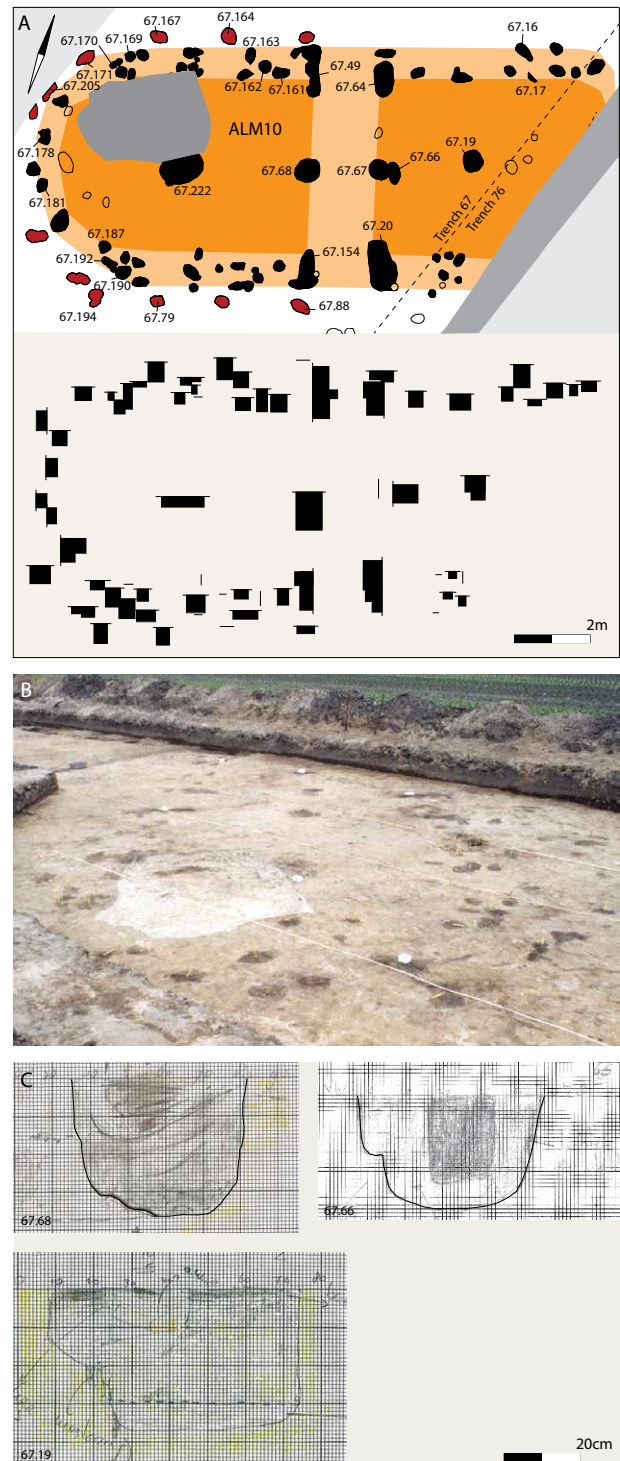


Figure 16.2 House ALM10.. A, C: plan and section drawings of major post pits; horizontal scale 1:200, vertical scale 1:100; B: photograph of ALM10 taken from the north. Drawings and photo S. van As (A); R. Rajmakers (67.68), G. Korf (67.66), A. Müller (67.19), H. Fokkens (B).

Structure	Trench	Feature	Material	Number
ALM10	67	154	bone	1
ALM10	67	222A	bone	15
ALM10	67	16	cer	2
ALM10	67	17	cer	1
ALM10	67	19	cer	73
ALM10	67	20	cer	23
ALM10	67	49	cer	38
ALM10	67	64	cer	18
ALM10	67	66	cer	6
ALM10	67	67	cer	73
ALM10	67	68	cer	18
ALM10	67	79	cer	2
ALM10	67	88	cer	1
ALM10	67	154	cer	18
ALM10	67	161	cer	6
ALM10	67	162	cer	21
ALM10	67	163	cer	18
ALM10	67	164	cer	2
ALM10	67	167	cer	4
ALM10	67	169	cer	7
ALM10	67	171	cer	15
ALM10	67	178	cer	14
ALM10	67	181	cer	5
ALM10	67	187	cer	2
ALM10	67	190	cer	11
ALM10	67	192	cer	1
ALM10	67	194	cer	3
ALM10	67	205	cer	1
ALM10	67	222	cer	33
ALM10	67	222A	cer	26
ALM10	67	49	loam	1
ALM10	67	222	loam	1
ALM10	67	64	slag	1
ALM10	67	19	tephra	1

Table 16.2 Finds from features associated with house ALM10.

Structure	Trench	Feature	Material	Number
ALM11	67	50	cer	1
ALM11	67	106	cer	1
ALM11	67	107	cer	2
ALM11	67	108	cer	1
ALM11	67	112	cer	5
ALM11	67	141	cer	3
ALM11	67	143	cer	1
ALM11	67	146	cer	1
ALM11	67	148	cer	4
ALM11	67	150	cer	2
ALM11	67	159	cer	1
ALM11	67	249	cer	1
ALM11	67	251	cer	5
ALM11	67	256	cer	1

Table 16.3 Finds from features associated with house ALM11.

section is somewhat smaller than the western part of the house.

*Abandonment:* The fill of the post-pits was heterogeneous with lumps of brown, grey and yellow soil. This indicates that the posts were removed and the house was dismantled.

*Finds and dating:* The plan yielded a small complex of pottery, possibly dating to the Late Iron Age (table 16.3; Van der Beek 1996; dating Van den Broeke).

### *House ALM12*

House ALM12 was recognised on the basis of features indicative of an entrance and a row of central posts. The western, eastern and southern sides were disturbed by recent ditches. It is clear, however, that they do not extend beyond the reach of these ditches, which is why we only have presented the central section (fig. 16.4).

*Construction details:* ALM12 is probably an Oss-type 4A (*Haps-*) house. Since both short sides were missing, it was not possible to determine a roof type. One entrance in the southern wall was clearly recognisable. The opposing entrance was not as clear, but only recognisable as a cluster of three post-pits, placed slightly inwards.

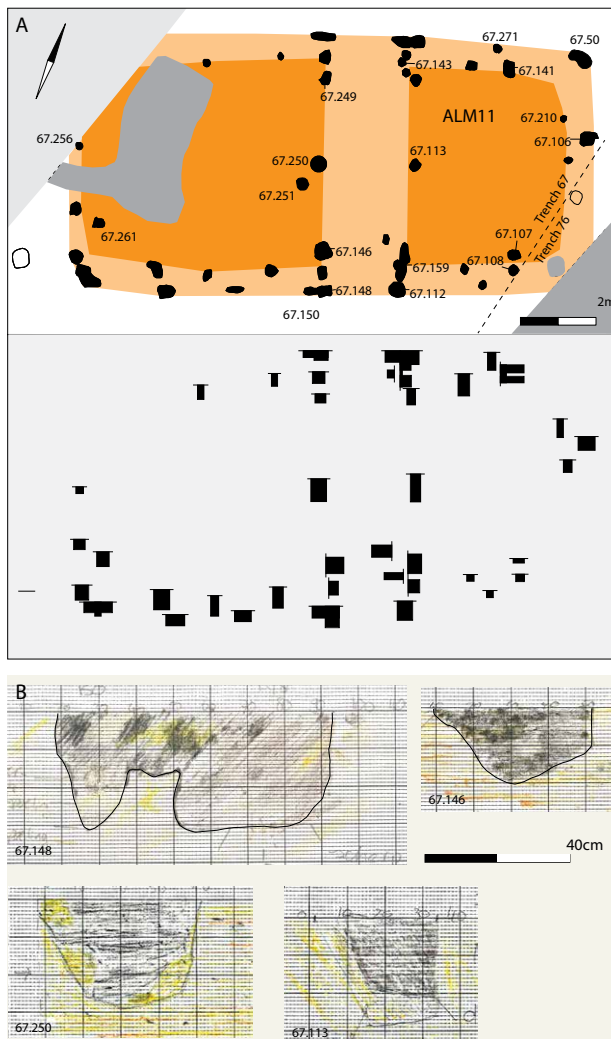


Figure 16.3 House ALM11. A, B: plan and section drawings of major post pits; horizontal scale 1:200, vertical scale 1:100; Drawings S. van As (A), K. Leijnse (67.148, 67.146, 67.250), N. de Bruin (67.113).

**Abandonment:** The central posts had a heterogeneous and layered fill. This indicates that the posts were removed and holes were left open or backfilled with mixed material.

**Finds and dating:** A small number of potsherds indicated a date in the (Late) Iron Age (table 16.4; Van der Beek 1996; dating P.W. van den Broeke).

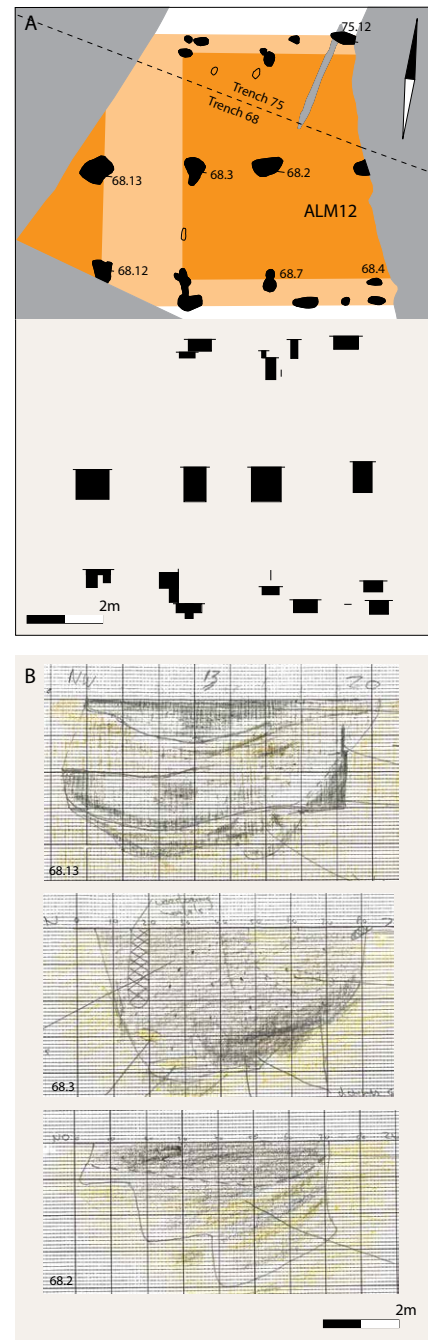


Figure 16.4 House ALM12. A, B: plan and section drawings of major post pits; horizontal scale 1:200, vertical scale 1:100; Drawings S. van As, (A), A. Müller (68.13), D. Schiltmans (68.3, 68.2)



House ALM13

House ALM13 is intersected by three modern ditches (fig. 16.5). It was excavated in two trenches (75 and 78). The house was situated very close to ALM14, but due to the disturbance of a modern ditch, no intersection of the house plans could be recognised. Missing central posts were brought to light by active searching under-

neath the modern ditches. Feature 75.13 (fig. 16.5) is a nice example.

*Construction details:* At least four central posts were clearly recognised. The characteristics entrance construction is indicative of an Oss-type 4A house. ALM13 probably had a hipped roof.

Structure	Trench	Feature	Material	Number
ALM12	68	3	cer	3
ALM12	68	12	cer	11
ALM12	68	13	cer	3
ALM12	75	12	cer	1

Table 16.4 Finds from features associated with house ALM12.

Structure	Trench	Feature	Material	Number
ALM13	75	82	cer	1
ALM13	75	126	cer	3
ALM13	78	10	cer	1
ALM13	78	12	cer	7
ALM13	78	12C	cer	6
ALM13	78	17	cer	4

Table 16.5 Finds from features associated with house ALM13.

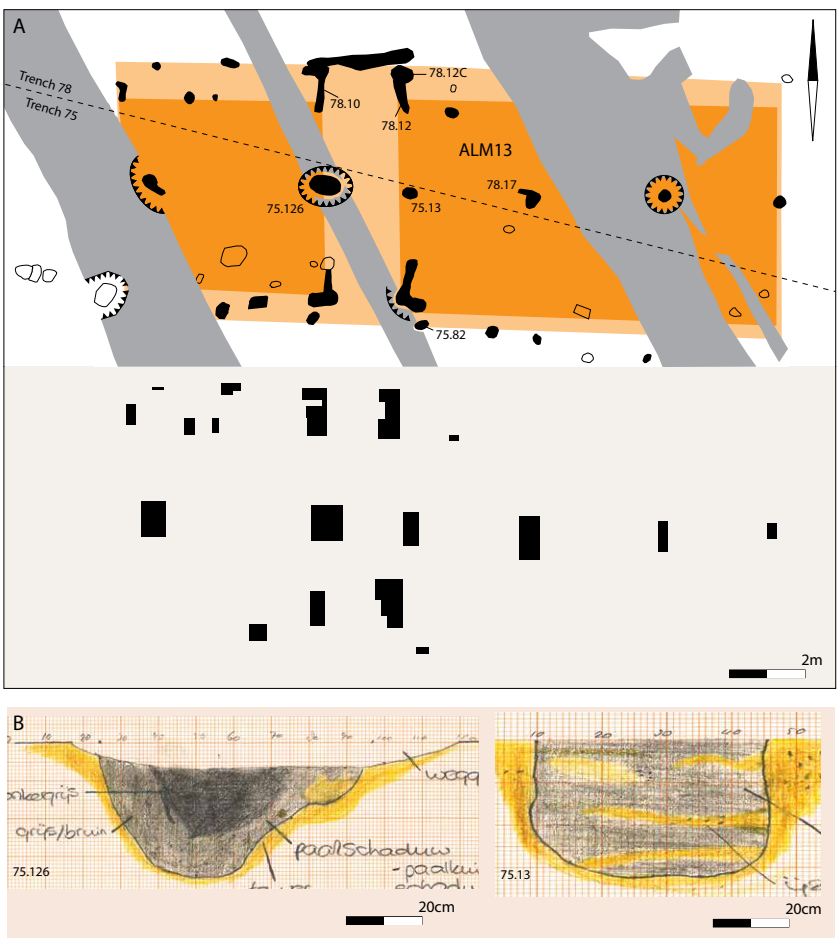


Figure 16.5 House ALM13. A, B: plan and section drawings of major post pits; horizontal scale 1:200, vertical scale 1:100; Drawings S. van As, H. Fokkens (A), M. Albertema (75.126, 78.13).

*Abandonment:* The fill of some post pits was evidently the result of the removal of a post. The fill of 78.13, for example, (fig. 16.5) is layered, indicating an anthropogenic fill after the post was removed. Central post 75.126 (Fig 16.5) still had the dark contours in the centre. This might be the post pipe, though it is rather large. That would mean that this post was left standing or that the lower part was left in the post pit.

*Finds and dating:* The complex of pottery sherds from ALM13 indicated a date in the Middle – Late Iron

Age, phase H – I (table 16.5; Van der Beek 1996; dating P.W. van den Broeke).

#### House ALM14

House ALM14 was excavated in two trenches. While constructing trench 75, the post-pits assigned to ALM14 were immediately recognised as a house. The southern wall of the house was already excavated in trench 68. Only the eastern part of the house was intersected by a modern ditch (fig. 16.6).



B

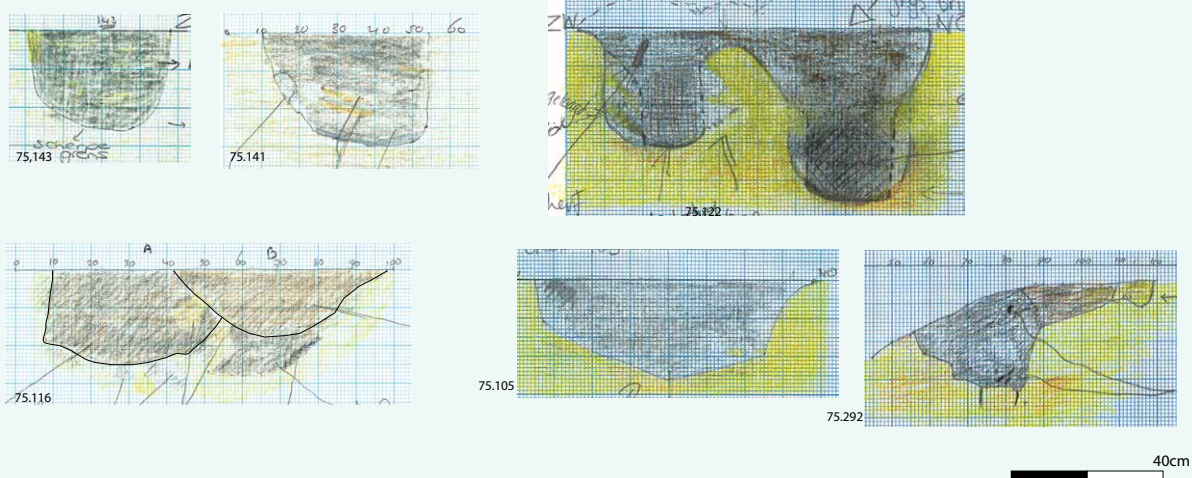


Figure 16.6 House ALM14. A, B: plan and section drawings of major post pits; horizontal scale 1:200, vertical scale 1:100; Drawings S. van As (A), M. Vellinga (75.116), W. van Zijverden (75.141), C. Mostert (75.143), E. Ball (75.105, 75.122), E. van Wieren (75.292).

Structure	Trench	Feature	Material	Number
ALM14	68	76	cer	11
ALM14	68	77	cer	3
ALM14	68	79	cer	9
ALM14	68	88	cer	1
ALM14	68	93	cer	1
ALM14	75	116A	cer	?
ALM14	75	122	cer	7
ALM14	75	139	cer	2
ALM14	75	141	cer	11
ALM14	75	142	cer	9
ALM14	75	143	cer	2
ALM14	75	147	cer	2
ALM14	75	148	cer	2
ALM14	75	149	cer	1
ALM14	75	151	cer	3
ALM14	75	193	cer	1
ALM14	75	292	cer	3
ALM14	75	299	cer	3

Table 16.6 Finds from features associated with house ALM14.

*Construction details:* Five central posts were recognised. The wall- and outer-posts were placed staggered, indicating an Oss-type 4A house. Considering the type 4A houses, this house probably had a hipped roof. This theory is supported by the western short wall, which was slightly rounded and did not have a central ridge-supporting post placed in it. Two entrances were clearly visible in the opposing long walls, naturally dividing the house into two segments. The entrance posts were constructed inwards.

*Abandonment:* The fills of the post pits were evidently the result of backfill after the removal of the posts. This means that the house was dismantled after abandonment.

*Finds and dating:* ALM14 yielded a complex of pottery and a fragment of a La Tène bracelet with five ribbons (cf. fig. 10.4), dating in the Late Iron Age phase J-K, and possibly L (table 16.6; Van der Beek 1996; dating P.W. van den Broeke).

### House ALM15

House ALM15 was only half preserved. The eastern side was hidden in a field that could not be excavated (fig. 16.7). We found the first half in trench 67, and decided to add the very narrow extra trench 76 in order to get as much as possible of house 10 as well. House ALM15 is located directly south of ALM10, there is only 2 m between the walls, which implies that they cannot be contemporaneous. But they could very well be each other's successor.

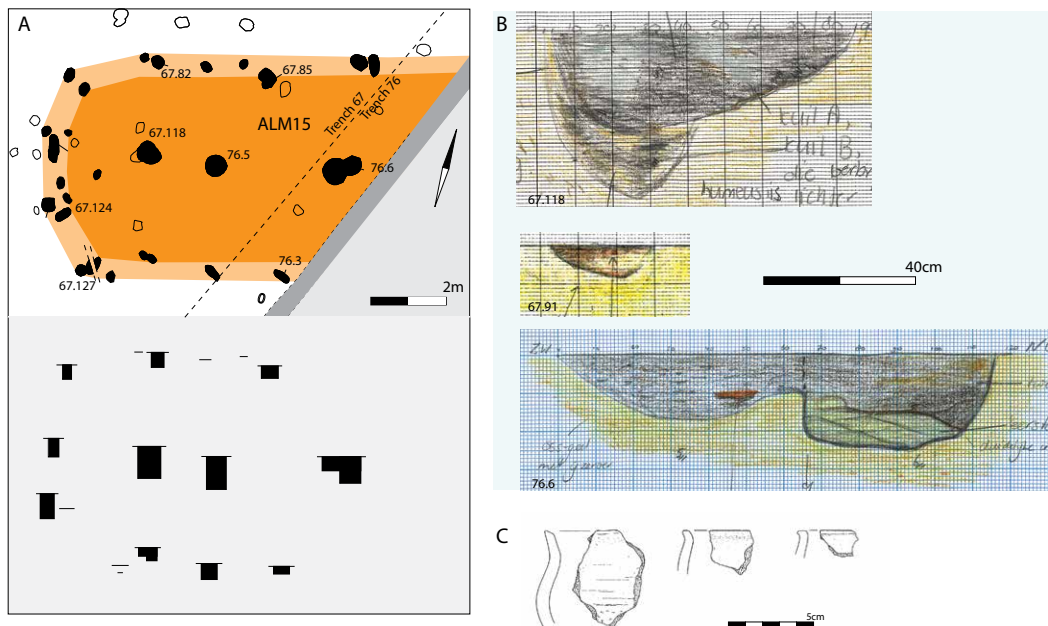


Figure 16.7  
House ALM15.  
A, B: plan  
and section  
drawings of  
major post pits;  
horizontal scale  
1:200, vertical  
scale 1:100;  
C: finds from  
feature 67.118.  
Drawings  
S. van As (A),  
E. Ball (67.91),  
Y. Keijsers (76.6),  
N. de Bruin  
(76.118).

**Construction details:** Three central posts were recognised. The most eastern central post was repaired or reinforced. The wall- and outer-posts were placed irregularly and staggered, which indicates a type 4A house (or *Haps*-type). Strangely enough, the entrances were not visible: generally they would be well recognisable.

**Abandonment:** One central post (67.118) was filled with small sherds of pottery (fig. 16.7). However, the post could have been replaced by another central post (67.91) which was placed 1.5 m to the east of 67.118 (Van den Broeke 2002, 53). No further indications of abandonment were observed.

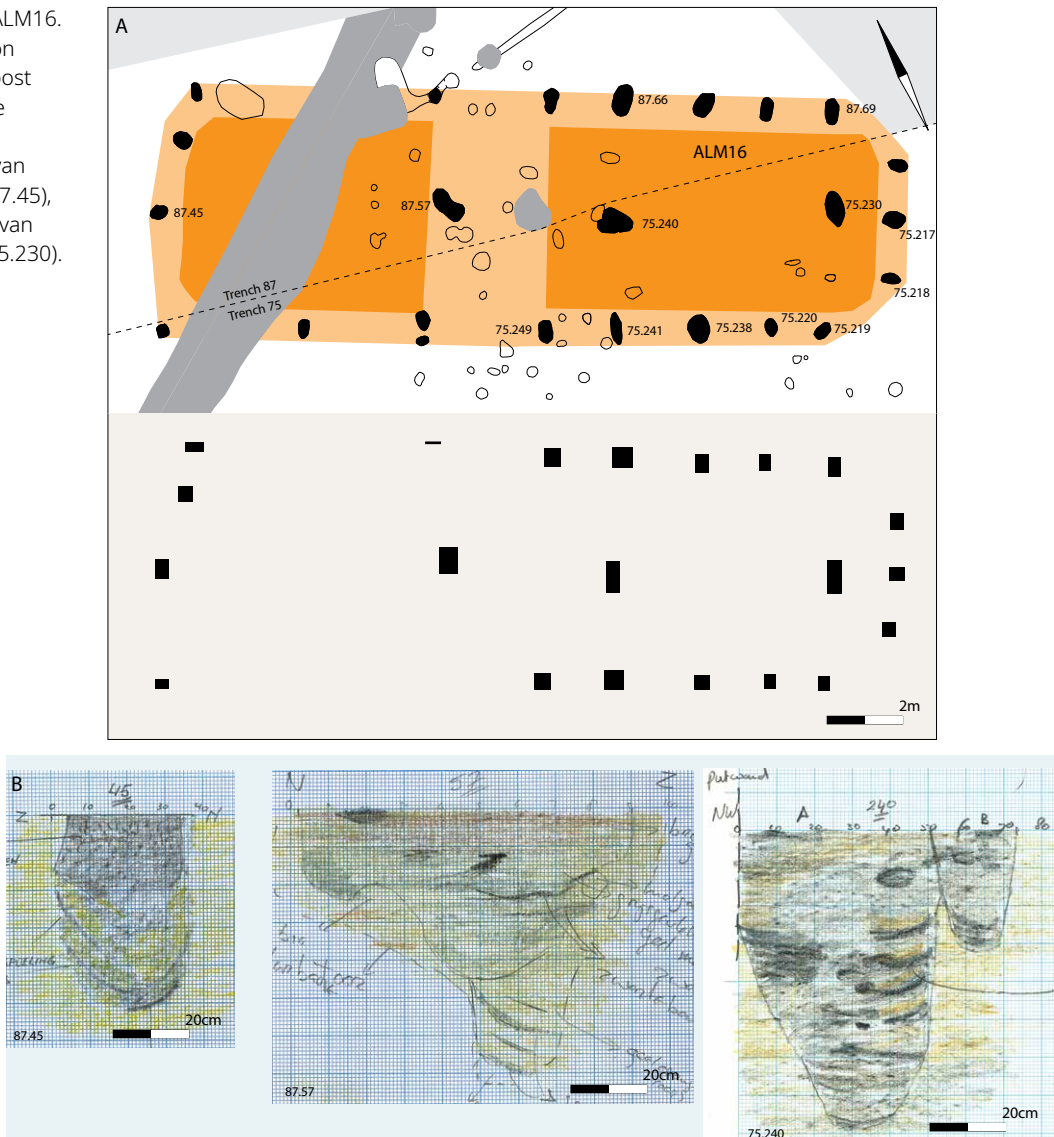
**Chronology:** ALM15 yielded a complex of pottery sherds dating to the Middle – Late Iron Age phase H-J (table 16.7; Van der Beek 1996; dating P.W. van den Broeke).

### House ALM16

House ALM16 became visible through the similarity in appearance of aligned post pits, especially the eastern half is very regularly structured. The western half is less clear, partly because it is intersected by a modern ditch. The house was excavated in two different trenches (75 and 86).

**Construction details:** Two central roof-bearing posts were recognised, a third may have been hidden under-

Figure 16.8 House ALM16. A, B: plan and section drawings of major post pits; horizontal scale 1:200, vertical scale 1:100; Drawings S. van As; G. van Alphen (87.45), A. Müller (87.57) W. van Zijverden (75.240, 75.230).



Structure	Trench	Feature	Material	Number
ALM15	67	82	cer	3
ALM15	67	85	cer	1
ALM15	67	118A	cer	199
ALM15	67	118B	cer	6
ALM15	67	124	cer	1
ALM15	67	127	cer	1
ALM15	76	3	cer	1
ALM15	76	6	cer	17

Table 16.7 Finds from features associated with house ALM15.

Structure	Trench	Feature	Material	Number
ALM16	75	217	cer	18
ALM16	75	218	cer	5
ALM16	75	219	cer	3
ALM16	75	220	cer	4
ALM16	75	230	cer	19
ALM16	75	238	cer	6
ALM16	75	240	cer	14
ALM16	75	241	cer	36
ALM16	75	249	cer	1
ALM16	87	57	cer	6
ALM16	87	66	cer	4
ALM16	87	69	cer	1

Table 16.8 Finds from features associated with house ALM16.

Structure	Trench	Feature	Material	Number
ALM17	75	60	cer	1
ALM17	78	21	cer	1
ALM17	78	27B	cer	2
ALM17	78	28	cer	1
ALM17	78	31	cer	1
ALM17	78	32	cer	2
ALM17	78	34	cer	107
ALM17	78	40	cer	1
ALM17	78	41	cer	15
ALM17	78	43	cer	1
ALM17	78	52	cer	1
ALM17	78	68	cer	6

Table 16.9 Finds from features associated with house ALM17.

neath the modern ditch on the west side. The building had two aisles. The outer posts are fairly large and placed between 1.3 m and 1.8 m from each other. Since no other wall posts are visible, one is inclined to think that the outer posts were standing in the wall. In that case we would have a house that fits none of the known Late Iron Age types. On the other hand, if we strip a regular type 4A house of its wall posts and characteristic entrance construction, a structure is left that fits ALM16 surprisingly well. Therefore we suggest that this is a type 4A house of which all wall and entrance posts for some reason were not dug in deep enough for us to see.

*Abandonment:* The fills of the post pits indicate that the posts were removed after abandonment (fig. 16.8).

*Finds and dating:* ALM16 yielded a complex of pottery dating to the Late Iron Age phase K-L (table 16.8; Van der Beek 1996; dating P.W. van den Broeke).

#### House ALM17

House ALM17 was badly disturbed by modern refuse pits and a modern ditch. It was again the entrance construction that gave this house away. Only the southern wall is fairly complete.

*Construction details:* Two central posts were still visible. The most eastern central post was possibly reinforced by or repaired with a smaller supporting post (fig. 16.9). The house was two aisled. The wall- and outer-posts were placed staggered, sometimes in pairs. The house can be determined as an Oss-type 4 house, possibly type 4B. One entrance was clearly recognised in the southern long wall.

*Abandonment:* Feature 78.34, the most eastern observed central post of ALM17, contained a large number of pottery sherds. The repair next to this central post (78.41) could not have been a replacement: the post must have been smaller in size, and was placed outside the line of the central beam. This implies reinforcing the larger central post for carrying the central beam and a possible cross-beam. Both contain a fair amount of sherds. These finds must have been deposited after the central post and its extra supporting post were removed. This indicates that the house was dismantled after abandonment. A large part of the pottery complex from central post 78.34 was secondarily heated, which may be indicative of an abandonment deposit.

*Finds and dating:* ALM17 yielded a pottery complex dating to the Late Iron Age phase I-J (table 16.9; Van der Beek 1996; dating P.W. van den Broeke).



### 16.3 GRANARIES

Thirteen granaries were found during the excavation of Oss-Almstein (table 16.10). Ten of these outbuildings were found distributed over the excavated area, near the Iron Age houses (fig. 16.1). None of these was in any way very special, none of them could be dated to a particular phase of the Iron Age. So we assume that they are contemporaneous with the houses and date to the Middle and Late Iron Age. Three granaries were

situated south of the settlement enclosure ditch. Those will be discussed here in more detail (fig. 16.10). The largest outbuilding (S63) of this cluster consisted of twelve posts. It had three rows (east to west) of at least four posts per row. The central row of posts consisted of five posts. The easternmost of these (81.10) was placed just outside the basic outline of the granary. This ‘extra’ post may have functioned as support on the eastern side of the structure, or as foundation for a step to enter the outbuilding. The other two granaries S59 and S65 were smaller and consisted of six posts. Both granaries had an east-west orientation, similar to S63, but not exactly the same.

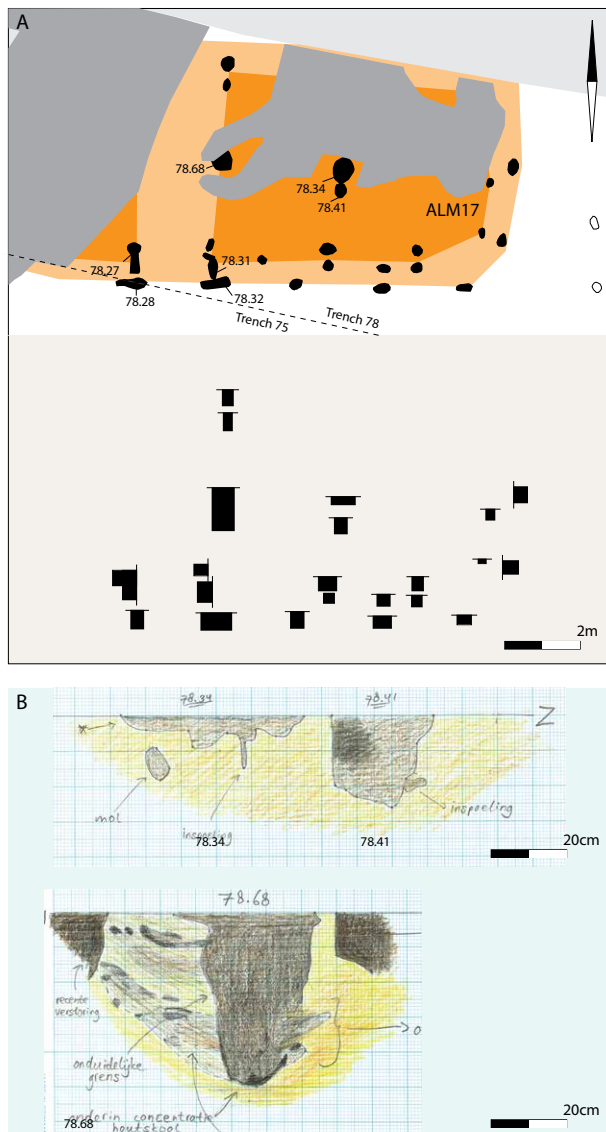


Figure 16.9 House ALM17. A, B: plan and section drawings of major post pits; horizontal scale 1:200, vertical scale 1:100; Drawings S. van As (A); Sascha (78.34/35)(78.68).

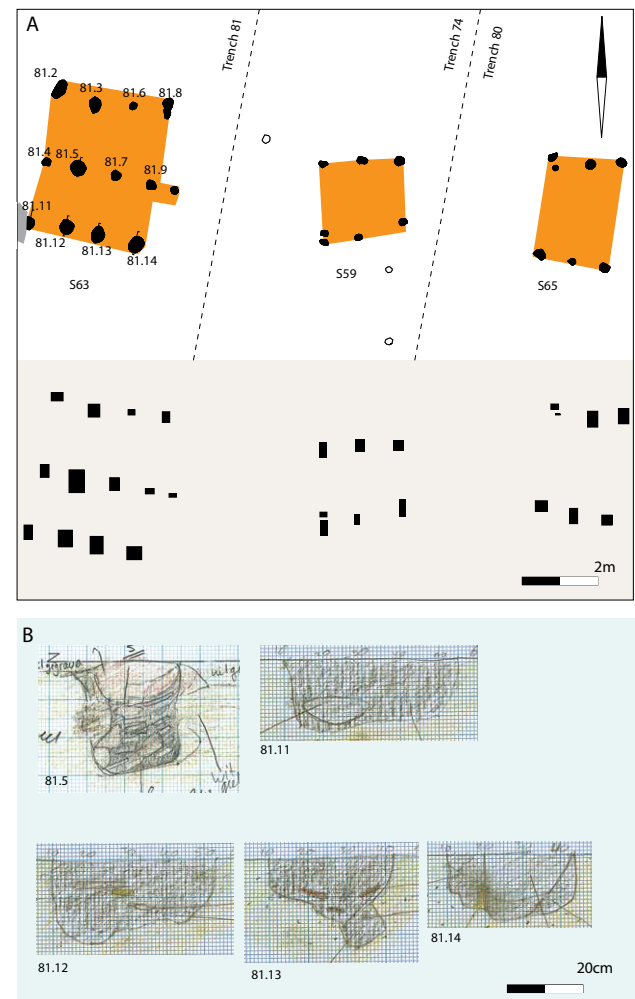


Figure 16.10 Cluster of granaries S63, S59 and S65. Horizontal scale 1:200, vertical scale 1:100 (A); B: section drawings of major post pits of S63. Drawings S. van As, B. Steffens; E. Ball (81.5), J. van Valkenburg (81.11, 81.12, 81.13, 81.14).

*Finds and dating:* Pottery retrieved from S63 dates that building to the end of the Early Iron Age, or the beginning of the Middle Iron Age phases D or E (determination P.W. van den Broeke; between 550-450 BC). The large complex of finds from S63 consisted strictly of pottery and burned loam with flattened sides (4.5 kg). The largest share of the find complex came from features 81.11, 81.12, 81.13 and 81.14 and 81.5 (table 16.11, fig. 16.10). The largest concentration of loam (2.2 kg) was found in post pit 81.14, in the central row, while the largest share of pottery was found in post pit 81.5 in the most southern row. The other three post pits of this row contained almost all other finds. The pottery from these three features is largely secondarily burned, however. The pottery must have been burned in complete state. It is curious that the pottery of feature 81.14, with the largest share of pottery, only had 4 pieces with traces of overheating (Van den Broeke 2002, 60).

The loam with flattened bottoms (and a triangular shape) is associated with metal production (tuyere support: see section 14.4.3). And burned pottery fits that picture as well, as we know from the Schalkskamp assemblage of forging hearth 1006.34. We therefore interpret this assemblage as the remains of a forging hearth. It must have been deposited in the post pits when the structure was dismantled. It could be just a dump, though a ritual aspect might have been involved.

## 16.4 DITCHES AND PALISADES

Ditches are an important aspect of the Almstein site (fig. 16.11), because the ditches seem to have been involved in the spatial arrangement of the settlement. F43-F45, the settlement enclosure ditch, is the most important of these. The other ditches in the north have a less clear function.

### 16.4.1 Ditches F43 and F45

#### *Ditch F43*

Ditch F43 has a west-northwest – east-southeast orientation and is situated south of all house plans. Since there is a large empty space south of ditch F43, we have interpreted it as a settlement enclosure ditch. It continues over some 100 m, ends in the west, and in the east is an eastward bend. The ditch was still 80 cm deep and 120-200 cm wide. The sides are steep; the lower 40 cm was layered and showed an alternation of organic and sandy layers (*e.g.* fig. 16.11B, C, D, E). There are also thin layers of wind-blown sand, which makes this ditch in all respects comparable to ditch F144 of the Schalkskamp settlement (12.5.1). After a long period of lying open, the ditch was probably backfilled because the top layer is more homogenous (see fig. 16.11C, D). This is the layer in which most finds were present.

The construction on the west side is curious. The ditch first seems to end, is visible only as a narrow

Structure	Date	Type	Width (m)	Length (m)	Area (m <sup>2</sup> )
S55	IA	IA	1.9	2.2	4.2
S56	IA	IC	1.8	1.6	2.9
S57	IA	IB	2.4	2.4	7.0
S58	IA	IA	2.3	2.1	4.7
S59	EIA/MIA?	IB	2.1	1.6	3.3
S63	EIA/MIA	IIB	3.8	2.9	10.9
S64	-	IA	2.0	1.5	3.0
S65	EIA/MIA?	IC	2.6	1.8	4.7
S66	IA	IC	1.9	1.6	2.9
S67	-	IA	1.9	1.7	3.2
S71	-	IA	2.7	2.7	7.3
S72	-	IA	1.8	1.6	2.9
S73	-	IA	1.6	2.1	3.4

Table 16.10 Characteristics of granaries in the Almstein quarter.

strip, then continues full size again. This occurs in trench 83, but is not the result of being very close to the edge of the trench. The terminal is clearly a terminal. We stress this in order to make clear that the discontinuation of this feature is not due to erosion or because the excavation plane was too deep. Figures 16.11 C and D demonstrate this quite well. Since there is no continuation west of the terminal, the enclosure should be classified as an open enclosure, not as a defensive structure.<sup>2</sup>

*Finds and dating:* The ditch yielded a large quantity of pottery, fragments of a tephra mill stone, some

Structure	Trench	Feature	Material	Number
S63	81	5	cer	63
S63	81	8	cer	4
S63	81	11	cer	31
S63	81	12	cer	11
S63	81	13	cer	8
S63	81	14	cer	190

Table 16.11 Finds from granary S63 in the Almstein quarter.

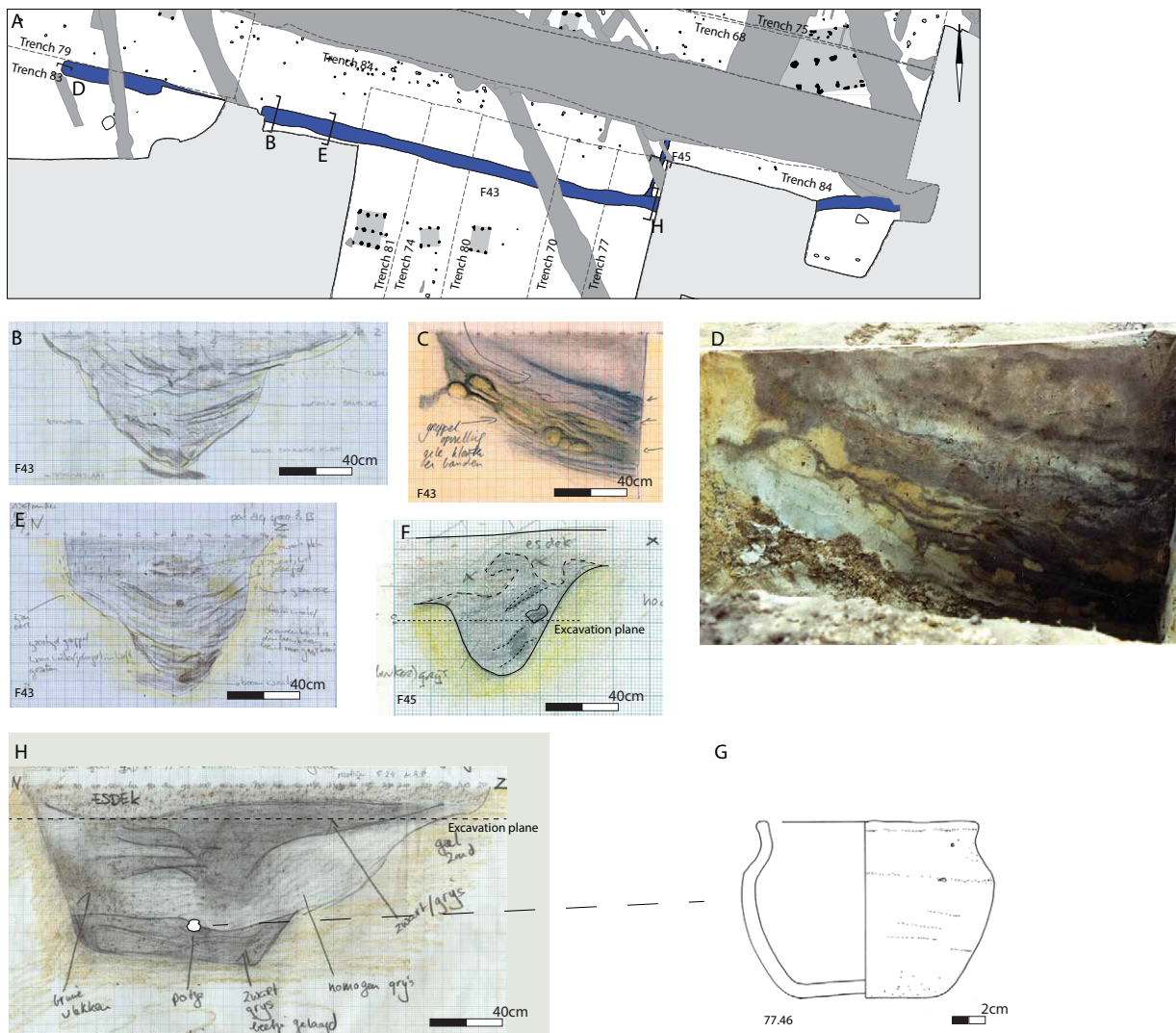


Figure 16.11 Ditches F43 and F45. A: the ditches in plan. B, C, E, F, H: drawings of selected sections; D: terminal in section C under excavation; G: pottery from F43, its location is indicated in section H. Drawings and photo S. van As, H. Fokkens (A), H. Fokkens (D), Eugene Ball (H), A. Louwen (G).

fragments of bone, stone and three fragments of La Tène bracelets (table 16.12). The complex can be dated to the Late Iron Age, phase J-K. It is possible, but not necessary, that the ditch ante-dates this complex. One complete pot was found at the intersection of F43 and F45 (fig. 16.11G, H). It was situated in the top of the natural fill underneath the backfill layer. Whether it was an intentional deposit or waste is impossible to say. The J-K date means that closing of the ditch was not contemporaneous with all houses. Possibly it was contemporaneous with ALM10, ALM13 and ALM17 (phase H-I) and was halfway during the development of the settlement. Given the steep slopes, we would not expect such a ditch to keep its V-shape very long, so the natural part of the fill may have formed rather quickly.

#### *Ditch F45*

Ditch F45 was oriented perpendicular to F43. It clearly ends in F43, so it must have been contemporaneous. The ditch was shallower (20 cm) and narrower (80 cm) than F43 (fig. 16.11F). It also had steep edges, resulting in a V-shaped form. The fill of the ditch was

interpreted as homogenous. F45 could be traced over a distance of almost 7 m and was then lost underneath a modern ditch. Since it did not continue on the other side of that ditch, it must have been less than 14 m long.

#### *16.4.2 Ditches F30, F40, F41 and F42*

In the northeast of Almstein, four prehistoric ditches were present. They are all rather shallow and narrow.

#### *Ditch F30*

Ditch F30 had a west-east orientation (fig. 16.12 A). A section in the western part of the ditch showed that the feature had a layered fill. This proves that F30 once contained water. The top fill of the ditch was formed by Aeolian sediment. This explains the fill of white sand with a fine texture. The same type of sediment was observed in ditch F43. The ditch could be traced over a length of 12 m. Its width varies between 24 cm in the east and 100 cm in the west. The ditch has a depth between 14 cm in the eastern side and 35 cm in the western side of the feature.

Structure	Trench	Feature	Material	Number
F43	70	4	cer	181
F43	70	4	slag	4
F43	70	4	loom weight	1
F43	70	4	bone	23
F43	74	10	cer	138
F43	74	10	tephra	3
F43	77	4	cer	39
F43	80	1	cer	219
F43	80	1	slag	2
F43	80	1	La Tène glass	2
F43	80	1	bone	1
F43	83	7	cer	392
F43	83	7	slag	2
F43	83	7	bone	1
F43	83	7	La Tène glass	1
F43	84	2	cer	233
F43	84	2	bone	35 (4)
F43	84	2a	cer	25
F45	77	3	cer	14

Table 16.12 Finds from ditches F43 and F45 in the Almstein quarter.

*Finds and dating:* The ditch yielded a complex of 50 sherds, roughly dating to the Iron Age.

#### *Ditch F40-F41*

Ditch F40-F41 has a west-northwest – east-southeast orientation and connects with F41 which is south-west-northeast orientated (fig. 16.12A). Both were shallow ditches, bowl shaped (10-20 cm) and 70-80 cm wide. They have the same characteristics as the Roman Period ditches in Mettegeupel that we have interpreted as parcelling ditches.

*Finds and dating:* Based on the complex of pottery sherds, the ditches can be dated to the Roman Period, probably the second half of the second century AD (table 16.13).

Structure	Trench	Feature	Material	Number
F30	67	35	cer	50
F40	67	60	cer	21
F41	67	155	cer	119
F41	76	21	cer	13
F41	76	21	metal	2
F42	76	31	cer	30

Table 16.13 finds from ditches F30, F40, F41 and F42 in the Almstein quarter.

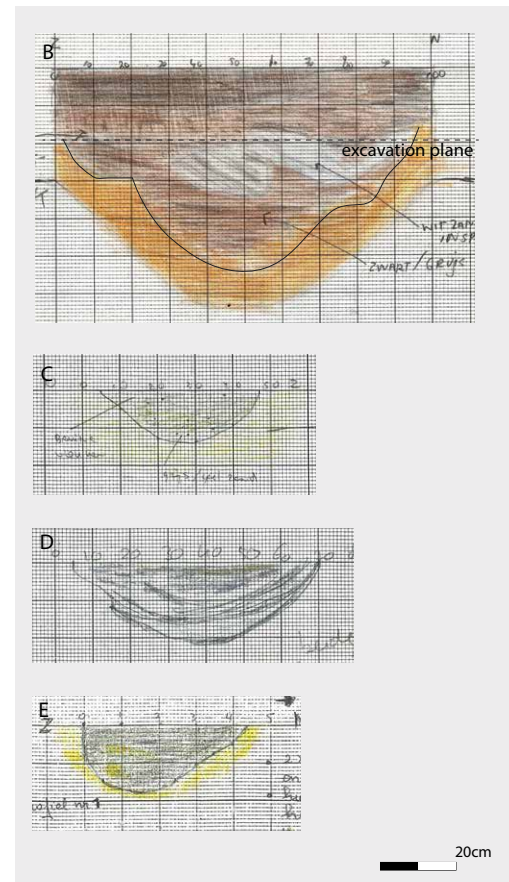
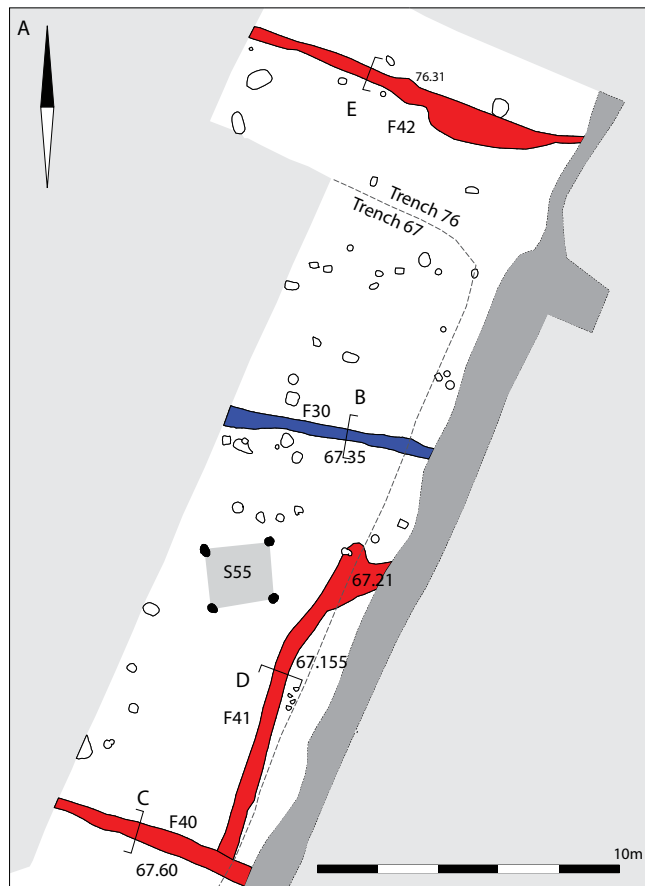


Figure 16.12 Ditches F30, F40, F41 and F42. A: the ditches in plan; B, C, D, E selection of section drawings. Drawings S. van (A), A. Geurds (B), A. M. Visser (C, D), L. Gerritzen (E).



*Ditch F42*

Ditch F42 was found in the northern part of the site. It had a west-northwest – east-southeast orientation. The ditch was shallow and had a homogenous fill (fig. 16.13E). Its depth varied between 7 and 18 cm, and the width between 32 and 44 cm.

*Finds and dating:* Based on several fragments (table 16.13) of smoothed pottery, and the absence of wheel-thrown pottery, the complex is tentatively dated to the Early Roman Period.

## NOTE

1. During excavation of house ALM10 writers David van Reybrouck (then still PhD student at Leiden University) and Dirk Jacobs were present. Together they wrote an article about the reconstruction of natural and social identities (Van Reybrouck and Jacobs 2009).
2. Excavation of the adjacent fields in 2017 revealed that the ditch continues at the east side also just some 10-20 m. There were no other ditches surrounding the settlement, therefore it was an open enclosure indeed.

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## THE OSS-NOORD PROJECT

After the first decade of large scale settlement research at Oss-Ussen (1974-1984), a second and a third decade followed (1986-2008). The present book is a report on the second decade of settlement excavations, all carried out under supervision of the first author. Started with a focus on the Bronze Age, the project developed into a large scale research of Iron Age and Roman Period settlements and cemeteries over a total area of about 13 ha. The ten campaigns of fieldwork functioned also as the fieldschool of the Faculty of Archaeology of Leiden University, so many of the archaeologists in Dutch Archaeology used their shovels and trowels for the first time in Oss. Due to its narrative style the book is not only meant for professional archaeologists but for everyone interested in Metal Ages and Roman Period in general and the local history of Oss specifically.

The book is divided in two parts. Part 1 describes the results of the excavations in a personal account of how research goals developed in relation to ever changing theoretical and practical circumstances. It presents a synthesis of different study areas with a focus on how the past may have influenced new phases of settlement. In this synthesis also the fieldwork of the first decade and to some extent the third decade of excavations at Oss (Horzak) are taken into account. Part 2 describes the primary data of the 1986-1995 excavations on which the analyses are based. Due to these mass of data, we have restricted ourselves to a (large) selection of features and structures that yielded information for the synthesis in part 1.

