

Bijlage 33 - Micromorphology

Technical Report

Micromorphological study

Wijnegem Jan-Vlemincktoeren

(prov. Antwerpen)

Author: Pierre Legrand

Projectcode: 2021F344

Projectcode	2021F344
Company:	Monument Vandekerckhove nv
Approval number:	OE/ERK/Archeoloog/2015/00031
Location:	Wijnegem Jan-Vlemincktoeren
Actors:	Bart Bartholomieux (project manager, archaeologist), Pierre Legrand (geologist, micromorphologist)
Contact:	info@monument.be; T: +32 51 31 60 80

0. Summary

0. Summary	2
1. Introduction	3
2. Material en methods.....	3
3. Localisation of the thin section.....	3
3.1. WUBE22 – Profile 5 Layer MB-31	3
4. Results	4
4.1. WUBE22 – Profile 5 Layers MB-31	4
4.1.1. Observations.....	4
4.1.1.1. Macroscopy.....	4
4.1.1.2. Microscopy.....	5
4.1.2. Interpretation.....	6
4.1.2.1. Layer MB.....	Fout! Bladwijzer niet gedefinieerd.
4.1.2.2. Layer 31.....	Fout! Bladwijzer niet gedefinieerd.
5. Localisation of the thin section.....	Fout! Bladwijzer niet gedefinieerd.
5.1. WUBE22 – Profile 5 Layer 31-26	Fout! Bladwijzer niet gedefinieerd.
6. Results	Fout! Bladwijzer niet gedefinieerd.
6.1. WUBE22 – Profile 5 Layers MB-31	Fout! Bladwijzer niet gedefinieerd.
6.1.1. Observations.....	Fout! Bladwijzer niet gedefinieerd.
6.1.1.1. Macroscopy.....	Fout! Bladwijzer niet gedefinieerd.
6.1.1.2. Microscopy.....	Fout! Bladwijzer niet gedefinieerd.
6.1.2. Interpretation.....	Fout! Bladwijzer niet gedefinieerd.
6.1.2.1. Layer 31.....	Fout! Bladwijzer niet gedefinieerd.
6.1.2.2. Layer 26.....	Fout! Bladwijzer niet gedefinieerd.
7. Conclusions.....	8
8. Bibliography	8

1. Introduction

This report consists of the observation and interpretation of one thin section by the hand of a micromorphological study. The samples were taken during the archaeological excavation at Wijnegem, Jan-Vlemincktoeren, Belgium in 2021. The studied sample comes from one profile: profile 4. The thin sections consists of layers 55-C (INVnr 3).

The goal of this micromorphological study is to identify the anthropogenic features within the layering of coupe 4 layer 55 and the start of anthropogenic driven layering within the shallow excavation.

2. Material en methods

During fieldwork, series of block samples were taken according to the methodology developed by Devos (Devos, in press). The blocks were then conserved in a stable environment and prepared for shipping. After air-drying, the sampleblocks were impregnated and shaped to a 60 mm by 90 mm, 30 µm thick thin section in the laboratory for Mineralogy and Petrography of Ghent University. The preparation of the samples in thin section followed the principles and methodology developed by Murphy (Murphy, 1986).

The following observations were made under plain polarised light (PPL) and under crossed polarised light (XPL) with oblique incident light with a petrological microscope. The magnifications used for this study were 4x, 40x and 400x.

The description and interpretation of the thin section is based on the publications of Stoops in 2003 and Nicosia & Stoops in 2017.

3. Localisation of the thin section

3.1. WIJA21 – Profile 4 Layer C-55

The observed thin section is coming from profile 4 (cfr. Figure 1, **Fout! Verwijzingsbron niet gevonden.**). This thin section was taken at the interface of two layers: C and L55. Layer C is characterized by a light grey color with a sandloamy to sandy texture. Traces of oxido-reduction due to the effect of groundwater were also observed within this layer. Layer 55 is characterized by a light greyish brown sandy loam with traces of charcoal and brick within the matrix. The limit between the two layers is diffused.

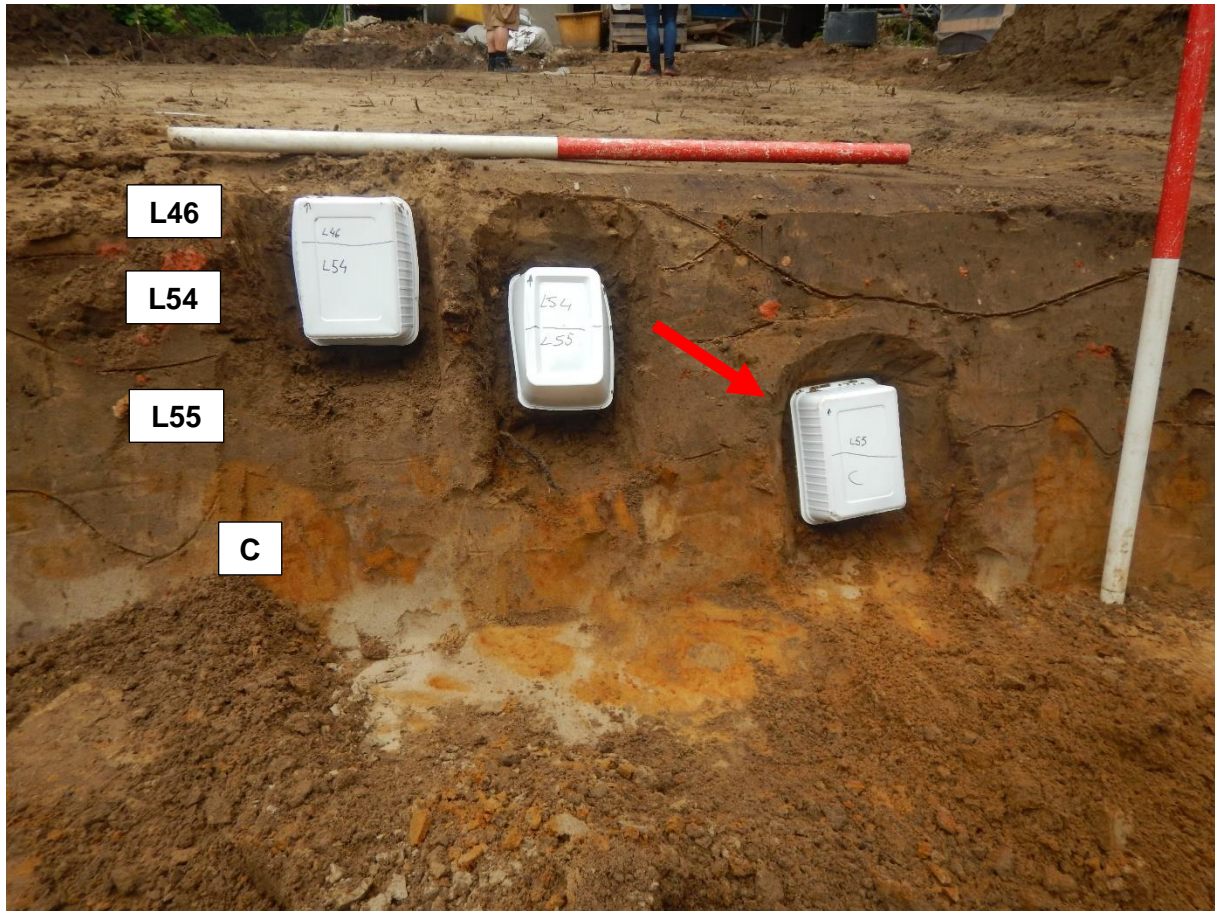


Figure 1: Profile 4 with localisation of studied sampling area (red arrow). The other two samples were not studied. (© Monument Vandekerckhove, 2021).

4. Results

4.1. WIJA21 – Profile 4 Layers C-55

4.1.1. Observations

4.1.1.1. Macroscopy

The macroscopical analyse of the thin section (Figure 2) is homogenous with little to no stratification or layering observed. The thin section shows a vertical black exogen concentration in the middle of the thin section. Spread within the thin section are red millimetric exogen elements. Different cracks within the sediment were observed. These cracks show no

particular orientation or distribution. It is clear that only layer 55 was collected for this micromorphological analysis.



Figure 2: Thin section of profile 4 – layers MB-55.

4.1.1.2. Microscopy

Layer 55				Relative occurrence
1	Structures and patterns	Voids	Complex packing voids, planes (random, random)	
		Microstructures	Single grain, angular blocky	
		Distribution pattern	Random	
		Basic orientation pattern	-	
		Referred distribution pattern	Random	
		Related distribution	Coarse monic	
2	Optical Soil mineralogy	Minerals	Quartz	++++
			Glauconite	++
			Fe-oxyde	+
			Amphibole	+

			Micca	+
3	Organic residue	Root		+
		Wood (Phloem)		+
		Amorphous organic material		++
4	Anthropogenic element	Brick		+
		Charcoal		++
5	Fine minerals	Randomly oriented clustered dusty clay coating around grains, mostly upper part of the thin section		+
6	Components	Inorganic residues of organic origins	-	-
7	Pedofeatures	Fe-intercalation in nodules between the grains		+

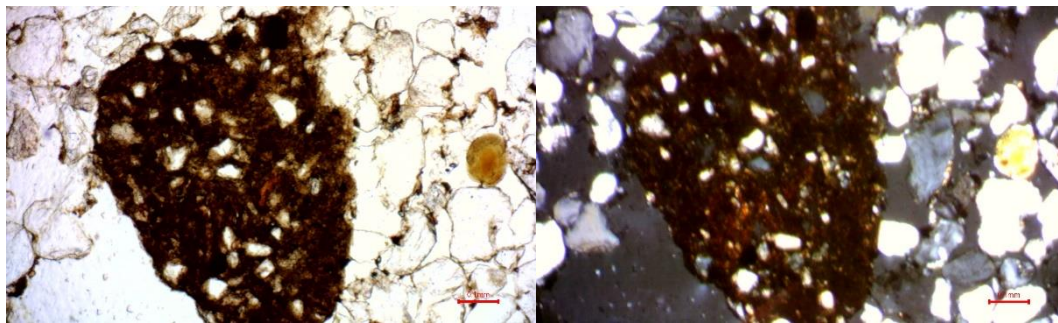


Figure 4: Brick fragment in PPL (left) and XPL (right)

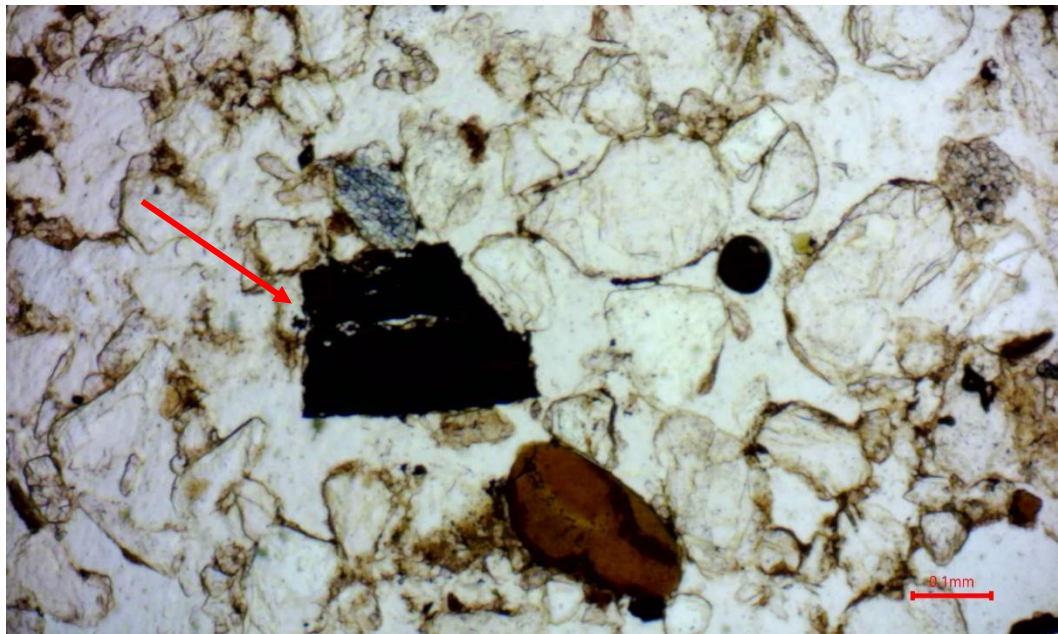


Figure 5: Charcoal fragment in PPL.

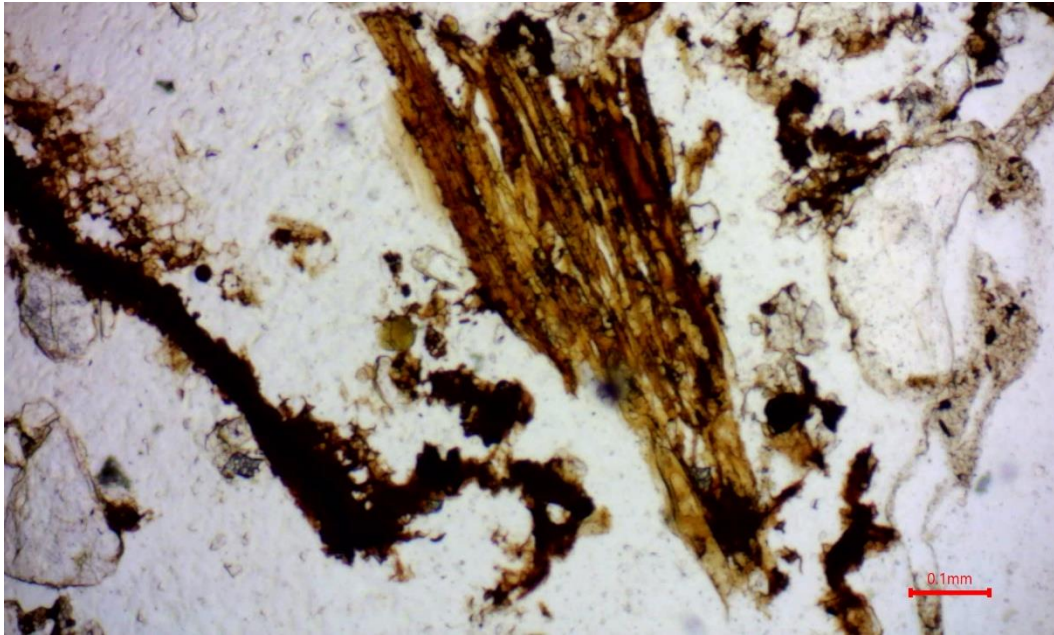


Figure 6: Undecayed organic fragment (Phloem) within the former path of a root.

4.1.2. Interpretation

From the analysis of the studied thin section it is clear that the sampled sediments belong to an anthropogenic affected layer with presence of brick and charcoal spread throughout the whole thin section. The microscopic and macroscopic analysis suggests that only layer 55 was sampled. Layer C is the natural soil.

Layer 55 was originally made up of natural glauconitic sands of marine origin. These sands are typical of the local Quaternary deposits.

The sediments were then reworked by anthropogenic activity with the spreading and mixing of ashes within the sandy matrix as soil improvement for agricultural practices. These layers were then in a later phase reworked and dumped in the local depression. This is suggested by the presence of brick fragments within the sediment matrix. After their deposition, the sediments were enriched, recently in organic material (as suggested by the presence of amorphous organic material). The presence of roots with preserved organic tissues suggests that during this last phase vegetation began to develop atop of these sediments that were part of the near topsoil.

5. Conclusions

The analysis of the thin section from profile 4 shows anthropogenic reworked sediments that can be linked with groundworks for agricultural purpose. The presence of bricks suggests anthropogenic reworking of the sediment for the filling of the small depression encountered in profile 4. During a last recent phase, the sediments were enriched in slightly decayed amorphous organic material with the development of a near top soil with vegetation atop.

6. Bibliography

- Devos, Y. (Ed.), in press. Manuel d'échantillonnage pour les sciences naturelles (géoarchéologie, archéozoologie et archéobotanique) au sein et aux abords des sites archéologiques en Région de Bruxelles-Capitale. Bruxelles.
- Murphy, C.P., 1986. Thin section preparation of soil and sediments. AB Academic Publishers, Berkhamsted.
- Nicosia C. & Stoops G., 2017. Archaeological Soil and Sediment Micromorphology. John Wiley & Sons Ltd. Pp. 476.
- Stoops G., 2003. Guidelines for Analysis and Description of Soil and Regolith Thin Sections. Soil Science Society of America, Inc., Madison, Wisconsin, USA. Pp.184.