

Report



Archaeological Monitoring and Recording Report: NLWA Northern Access

Report By: Andrew Brown MSc BA (Hons) ACIfA
Issued by: Diarmuid O'Seaneachain PhD BA MCIfA
Date: September 2020
Submitted to: Galldris
Prepared by:
RSK ADAS Limited
11D Park House
Milton Park
Abingdon
OX14 4RS
Tel. no: 01235 355638



Contents

Summary	1
Acknowledgements	3
1 Introduction.....	4
<i>Project Background.....</i>	<i>4</i>
2 Site Location, Description of the Groundworks and Geology.....	5
<i>Site location.....</i>	<i>5</i>
<i>Description of the Groundworks</i>	<i>5</i>
<i>Geology.....</i>	<i>5</i>
3 Objectives.....	6
<i>Aims and Scope</i>	<i>6</i>
4 Copyright	6
5 Archaeological and Historical Context	7
<i>Introduction.....</i>	<i>7</i>
6 Methodology	9
<i>Introduction.....</i>	<i>9</i>
<i>Artefacts, Human Remains and Environmental Sampling</i>	<i>9</i>
<i>Post-Excavation Analysis.....</i>	<i>9</i>
<i>Archives and Deposition.....</i>	<i>9</i>
<i>ADAS Project Team</i>	<i>10</i>
7 Results.....	10
8 Discussion and Conclusions	14
9 References	16
<i>Online Resources.....</i>	<i>17</i>
Appendix A: Context Descriptions.....	i
Appendix B: Artefacts Report (Andrew Brown)	vi
<i>Introduction.....</i>	<i>vi</i>

<i>POTTERY</i>	<i>vi</i>
<i>OTHER FINDS</i>	<i>vi</i>
<i>POTENTIAL AND FURTHER RECOMMENDATIONS</i>	<i>vi</i>
REFERENCES.....	vii
Appendix C: Oasis Report Form	viii
Appendix D: Desk-Based Geoarchaeological Deposit Model	x
Plates	xi

List of Plates

Plate 1: General view of the Northern Access, looking north-east.

Plate 2: Working shot of Trial Pit 1, looking south-west.

Plate 3: North-east facing section of Trial Pit 4, looking south-west.

Plate 4: Oblique view of north-east facing section of Trial Pit 5, looking south.

Plate 5: North-east facing section of Trial Pit 6, looking south-west.

Plate 6: North-east facing section of Trial Pit 7, looking south-west.

Plate 7: North-east facing section of Trial Pit 4, looking south-west.

List of Figures

Figure 1: Map showing location of the Northern Access Area and Laydown Areas East and West

Figure 2: Location of the Trial Pits

Figure 3: North-east Facing Section of Trial Pit 4

Figure 4: North-east Facing section of Trial Pit 5


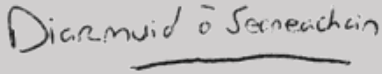
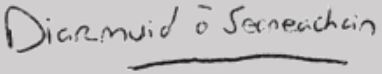
Figure 5: North-east Facing section of Trial Pit 6

Figure 6: North-east Facing section of Trial Pit 7

Figure 7: North-east Facing Section of Trial Pit 9

Quality Assurance

ADAS Contract Code	ADAS Project Code	Document No.	Date Issued	
1050730	ART69105-371	02 (01)	23.09.2020	
NGR	Site Code	Planning Permission Ref.	Monument Consent Ref.	OASIS Reference No.
TQ 36104 92434	ECA19	N/A (Development Consent Order)	N/A	adasuklt1-400027

Author	Technical Reviewer	Approved
 Andrew Brown	 Diarmuid O'Seaneachain BA PhD MCifA	 Diarmuid O'Seaneachain BA PhD MCifA



Disclaimer

RSK ADAS Ltd (ADAS) has prepared this report for the sole use of the client, showing reasonable skill and care, for the intended purposes as stated in the agreement under which this work was completed. The report may not be relied upon by any other party without the express agreement of the client and ADAS. No other warranty, expressed or implied, is made as to the professional advice included in this report.

Where any data supplied by the client or from other sources have been used, it has been assumed that the information is correct. No responsibility can be accepted by ADAS for inaccuracies in the data supplied by any other party. The conclusions and recommendations in this report are based on the assumption that all relevant information has been supplied by those bodies from whom it was requested.

No part of this report may be copied or duplicated without the express permission of ADAS and the party for whom it was prepared.

Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work.

This work has been undertaken in accordance with the quality management system of RSK ADAS Ltd.

Revision History

Revision	Date	Amendment
01	18.09.2020	Inclusion of Desk-Based Geoarchaeological Deposit Model (Young, 2020)



Summary

In December 2019, ADAS carried out an archaeological watching brief for Galldris (henceforth referred to as 'the Client') on fifteen geotechnical trial pits along the Northern Access Area for the North London Heat and Power Project (NLHPP) North London Waster Authority (NLWA) Northern Access Area (Figure 1).

The Northern Access forms part of a wider scheme which is being constructed to serve the wider North London Heat and Power Project. The wider application North London Heat and Power site extends over 22 hectares and comprises the existing waste management site known as the Edmonton EcoPark, part of Ardra Road, land around the existing water pumping station at Ardra Road, Deephams Farm Road, part of Lee Park Way and land to the west of the River Lee Navigation, and land to the north of Advent Way and east of the River Lee Navigation (ADAS 2019c).

The results indicate that there is a low potential for significant archaeological remains to survive along the Northern Access Area. The monitoring of the trial pits indicate that significant truncation of the Site has previously occurred down to the alluvial sequence. The observed stratigraphic sequences observed in the fifteen trial pits are similar to the sequences observed during previous archaeological monitoring and recording of groundworks at the Edmonton EcoPark Laydown Area East earlier in 2019 (ADAS 2019).

Artefacts recovered in-situ from the alluvium exposed during the archaeological monitoring were all likely deposited during the Post-medieval to Modern period. The pottery assemblage recorded from the trial pits at the Northern Access Site indicate that alluvial deposits at this location have a very low potential for containing significant palaeoenvironmental remains.

A general stratigraphic sequence was observed across the entirety of the Northern Access. This sequence consisted of Modern made ground sealing an alluvial sequence, which in turn overlay natural gravels.

The Desk-Based Geoarchaeological Deposit Model (Young, 2020) produced for the Site has revealed a sequence of Late Devensian Lea Valley Gravel, overlain by Holocene alluvial sediments (including a localised peat deposit), capped by modern Made Ground.

Overlying the gravel in one archaeological trial pit in the southern part of the Site was a deposit of mineral-rich peat. Peat was not recorded within the remainder of the interventions across the Site, indicating that the peat is confined to the south in the area of TP1. Elsewhere across the Site, the Holocene alluvium is variously silty, clayey and in places gravelly, and derived from either low to moderate energy fluvial activity (sandy/gravelly material) or at a distance from any active channels (silty or clayey material) on the floodplain of the River Lea. The alluvium is described as organic in two interventions, indicative of other localised transitions towards semi-terrestrial conditions on the floodplain.

In terms of archaeological potential, the deposit model (Young, 2020) indicates that the gravel surface rises towards the north, with the gravel surface in the northern area of the NLHHP site around 1.0 m higher than in the south. These results indicate that the NLHHP site would at some point in the earlier Prehistoric period have been at the interface between the floodplain and the higher, drier ground to the north. As such, the Prehistoric archaeological potential of the NLHHP site is considered to be higher in the north.

Acknowledgements

This archaeological watching brief was commissioned by Galldris. Thanks are due in this regard. Fieldwork was carried out by Andrew Brown. The report and supporting illustrations were prepared by Andrew Brown and quality checked by Diarmuid O Seaneachain. The archive was compiled by Andrew Brown.

1 Introduction

Project Background

- 1.1 In December 2019, ADAS carried out an archaeological watching brief for Galldris (henceforth referred to as ‘the Client’) on fifteen geotechnical trial pits along the Northern Access Area for the North London Heat and Power Project (NLHPP) North London Waste Authority (NLWA) Northern Access Area (Figure 1).
- 1.2 The Northern Access forms part of a wider scheme which is being constructed to serve the wider North London Heat and Power Project. The wider application North London Heat and Power site extends over 22 hectares and comprises the existing waste management site known as the Edmonton EcoPark, part of Ardra Road, land around the existing water pumping station at Ardra Road, Deephams Farm Road, part of Lee Park Way and land to the west of the River Lee Navigation, and land to the north of Advent Way and east of the River Lee Navigation (ADAS, 2019c).
- 1.3 The groundworks were subject to Schedule 2 of the Development Consent Order (DCO) for the North London Waste Authority North London Heat and Power Project. The Environmental Commitments and Mitigation Schedule produced for this scheme outlined an archaeological commitment to prepare a Written Scheme of Investigation and carry out an archaeological watching brief (Arup, 2016).
- 1.4 The objective of the watching brief was to record all archaeological remains exposed during the intrusive groundworks.
- 1.5 RSK ADAS Ltd were instructed to prepare an archaeological written scheme of investigation (WSI) by Galldris to support groundworks they were carrying out for the Northern Access along Deephams Farm Road in conjunction with the wider proposed Edmonton Eco Park development. The WSI detailed how ADAS would carry out the required archaeological works and record any archaeological remains during the monitoring of the groundworks (ADAS, 2019).
- 1.6 The fieldwork followed the *Standard and guidance for an archaeological watching brief* (ClfA, 2020), *the Management of Archaeological Projects 2* (English Heritage, 1991) and the *Management of Research Projects in the Historic Environment (MORPHE): Project Manager’s Guide* (Historic England, 2015) and the ADAS Technical Manual (ADAS, 2019).
- 1.7 The fieldwork also followed the Historic England and Greater London Archaeological Advisory Service (GLAAS) Guidelines for Archaeological Projects in Greater London and the North London Heat and Power Project: Overarching Archaeological Written Scheme of Investigation (Arup, 2020).

- 1.8 In carrying out this work the Client complied with the commitments outlined in the DCO and the general archaeological requirements in the CoCP for the North London Heat and Power Project.

2 Site Location, Description of the Groundworks and Geology

Site location

- 2.1 The North London Waste Authority has proposed the development of the Edmonton Eco Park as part of the North London Heat and Power Project. The proposed development is located to the east of Edmonton in the London Borough of Enfield, centred on National Grid Reference TQ 35760 92670 (Figure 1).
- 2.2 The Site is centred on National Grid Reference TQ 35627 92992 and encompasses an area measuring approximately 1,500 square metres. It is situated off Deephams Farm Road in Edmonton. A number of warehouses are located to the east and west of the Site. The Site lies at a height of 11.0 m Above Ordnance Datum (AOD).

Description of the Groundworks

- 2.3 The programme of groundworks on the Site comprised the excavation of fifteen geo-technical Trial Pits prior to the creation of a new access road. The soil stabilisation groundworks and piling required to establish the new access road, along with the re-alignment of services under the road, would truncate and remove any existing deposits down to the depth of impact. The Northern Access will serve the main construction work of the proposed Edmonton Eco Park development as part of the wider NLHPP.

Geology

- 2.4 The underlying bedrock geology is recorded as London Clay Formation – Clay, Silt and Sand. This is overlain by superficial deposits of Clay, Silt and Sand. Alluvial deposits of clay, silt, sand and gravels are also recorded as superficial on the Site (BGS, 2020).
- 2.5 A ground investigation was conducted of the Northern Access in 2018. This comprised the excavation of boreholes and trial pits. The results of the single borehole (BH707) and five trial pits (1-5) within the access road and verge indicated made ground deposits from ground level to 1.8 m below ground level. The made ground was recorded to overlay 1.7 m alluvial deposits which in turn overlay Kempton Park Gravel members (Ground Technology, 2018).

3 Objectives

Aims and Scope

3.1 The primary aims of the wider North London Heat and Power Project are:

- to identify how Palaeo-environmental and landscape evolution (Theme 1), settlement pattern and boundaries (Theme 2) and the use and management of the Lea Valley River Channels (Theme 3) influenced human history and the development of London as a world city (Arup, 2020); and
- to test and refine the pre-determination deposit model recovering palaeo-environmental sequences where possible.

The specific aims of the Northern Access phase of work were:

- To ensure that the commitments outlined in the Construction Code of Practice (CoCP) regarding Archaeology (section 6) are met
- To identify and record any unknown buried archaeological deposits, artefacts or palaeoenvironmental remains exposed during ground works deeper than 1 m across the Area
- To inform a strategy to avoid or mitigate the impacts of the proposed development on any surviving archaeological remains and palaeoenvironmental remains identified.
- To integrate the archaeological mitigation carried out during this stage of construction work with all subsequent stages
- To ensure that the fieldwork took place within, and will contribute to the research objectives contained within the Lea Valley Mapping Project (Corcoran *et al*, 2011). It will also contribute to the goals contained within the overall Research Framework for London Archaeology as set out in the Historic England and Greater London Archaeological Advisory Service (GLAAS) Guidelines for Archaeological Projects in Greater London (GLAAS, 2015).
- To report the results as appropriate.

4 Copyright

4.1 This report may contain material that is not the copyright of RSK ADAS Ltd. or is the intellectual property of third parties that we are able to include for limited reproduction under the terms of our own copyright licences. Copyright itself for such material is not transferable by RSK ADAS Ltd.

and you are reminded that you remain bound by the terms and conditions of the Copyright, Designs and Patents Act 1988 with regard to copying and dissemination of this report.

5 Archaeological and Historical Context

Introduction

- 5.1 The archaeological background was detailed in Written Scheme of Investigation (ADAS, 2019a). A search of available online Historic Environment Record (HER) and Historic England datasets was conducted which assessed the historic environment potential within a 500 m Study Area around the Northern Access Area. The results of this assessment are summarised below.

Summary of Archaeological and Historic Background

- 5.2 An archaeological desk-based assessment was commissioned by the North London Waste Authority in connection with the proposed North London Heat and Power Project (Arup, 2015).
- 5.3 The desk-based assessment sourced information from Historic England (English Heritage at the time of writing), the Greater London HER (Historic Environment Record), online historical resources and the Archaeological Data Service (ADS). These sources recorded no World Heritage Sites, Scheduled Monuments, Grade I, II* or II Listed Buildings, Conservation Areas, Designated Wrecks, Designated Battlefields or Registered Parks and Gardens within 500 m of the Site (Arup, 2015; ADAS, 2019a).
- 5.4 No non-designated heritage assets were recorded on the Site itself. In the wider landscape the desk-based assessment identified a total of five non-designated heritage assets within 500 m of the Site. These were for findspots from the Bronze Age, Roman and Medieval periods (Arup, 2015).
- 5.5 A search of available online data recorded a previous trial trenching scheme (MLO75925) which was carried out to the east of the site at the Deepham Sewage Works. No archaeological remains were identified. However, palaeoenvironmental deposits in the form of peat and waterlogged remains were identified (Heritage Gateway, 2020).
- 5.6 Archaeological monitoring was carried out on the Laydown Area East phase of the scheme in 2017 and 2018. This monitoring indicated a low potential for significant archaeological features and deposits to survive across Laydown Area East and along the northern boundary of Laydown Area West. The monitored areas indicated that significant truncation of this part of the Site had previously occurred down to the alluvial sequence observed across the Site. The artefacts recovered in-situ during the monitoring were all likely deposited during the Post-medieval to Modern period. Residual material including a single sherd of Roman pottery and fragmented

Medieval tile was also recovered. Two timber posts recovered during the monitoring in the alluvium were interpreted as Post-medieval in date (ADAS, 2019b).

- 5.7 The results of geo-archaeological fieldwork carried out as part of the Laydown Area East Phase of work revealed a sequence of Late Devensian gravel, overlain by Holocene alluvial sediments (including sporadic Peat and Tufa deposits), capped by modern Made Ground (ADAS, 2019b).
- 5.8 A subsequent phase of archaeological and geo-archaeological fieldwork carried out on the Laydown Area West phase indicated there was a low potential for significant archaeological features and deposits to survive at that location. The monitoring evidence indicated that there had been significant truncation to the alluvial sequence at that part of the scheme. Artefacts recovered from the made ground and alluvial deposits encountered during the Trial Pit indicated a 19th or 20th century date for these layers down to the depth of impact of the groundworks for this phase (ADAS, 2020d).

Historic Mapping and Aerial Photography Analysis

- 5.9 The desk-based assessment analysed ten historic Ordnance Survey maps and one historic aerial photograph, ranging from the late 19th century through to the early 21st century (Arup, 2015). Of particular interest is the sinuous course of the River Lea, which is visible running through the Site on historic maps until at least 1938. By the time the historic aerial photograph was taken from between 1945 and 1950, the river had been diverted to the west with the River Lea Navigation and to the east with the River Lea Diversion. The natural course of the Lea has been infilled (Arup, 2015).

Summary of Potential

- 5.10 The desk-based assessment concluded that the main scheme has a low potential for prehistoric to Medieval activity and a moderate potential for modern activity. It concluded that there was a high potential for palaeo-environmental deposits to survive in the main scheme under the made ground (Arup, 2015).
- 5.11 The conclusions of the desk-based assessment and the previous ground investigation work undertaken in 2018 (Ground Technology, 2018), along with a more recent search of online sources indicate that there is a low potential for buried archaeological remains of Prehistoric and Romano-British date to be present under the made ground on the Northern Access route.
- 5.12 The Northern Access Site is located within Landscape Zone 3 of the existing deposit model which has been developed for the whole Site (Arup, 2020). This Landscape zone has the highest palaeo-environmental potential across the Site as a whole.

6 Methodology

Introduction

- 6.1 The fieldwork followed the methodology set out in the WSI produced for the archaeological monitoring of groundworks within the Site (ADAS, 2019a). An archaeologist was present during all intrusive groundworks for the trial pits to identify any evidence of archaeology or deposits of palaeoenvironmental potential (Figure 2).
- 6.2 Where archaeological deposits were encountered written, graphic and photographic records were compiled in accordance with the Chartered Institute for Archaeologists *Standard and guidance for an archaeological watching brief* (CIfA, 2020).
- 6.3 The written, graphic and photographic records compiled during the course of the archaeological monitoring form part of the overall record for the Laydown Area phase of the NLHPP. As such, the records for the Site will be integrated with the records from the Laydown Area East and Laydown Area West phases of works.

Artefacts, Human Remains and Environmental Sampling

- 6.4 No archaeological features or deposits of palaeoenvironmental potential were identified and recorded during the watching brief and no environmental sampling was carried out.
- 6.5 A very small assemblage of 19th century pottery sherds were recovered from Trial Pits 4, 5, 6, 7, and 9. This has a very limited potential to contribute further to an understanding of the site beyond what has already been recorded in terms of the range of types and their chronology.
- 6.6 Given the very small quantities involved, and the provenance (deposit of modern chronological date), retention of this assemblage for long-term curation is not recommended.
- 6.7 No human remains were encountered during the watching brief.

Post-Excavation Analysis

- 6.8 The results of the monitoring were used to inform specialist desk-based geoarchaeological analysis of the wider NLWA site and to update the deposit model (Young, 2020).

Archives and Deposition

- 6.9 The archive is currently held by ADAS at their offices in Milton Park. A paper archive will be deposited with *the Museum of London (MoL)* within six months of the final publication report for the NLHPP scheme under an accession number which will be issued upon deposition. A summary of information from the Northern Access phase of the scheme, set out within Appendix C, will be

entered onto the OASIS database of archaeological projects in Britain. An OASIS form has been provisionally completed and will be submitted at the time of completion.

ADAS Project Team

- 6.10 Fieldwork was carried out by Andrew Brown. The report was written by Andrew Brown. The illustrations were prepared by Andrew Brown. The archive was compiled and prepared for deposition by Andrew Brown. The project was managed for ADAS by Diarmuid O Seaneachain.

7 Results

- 7.1 This section provides an overview of the monitoring results; detailed summaries of the recorded contexts are to be found in Appendix A.
- 7.2 The groundworks lasted for a total of three days from the 20th to 22nd December 2019. Overall, the weather was overcast with heavy rain showers.
- 7.3 The overall scheme comprised archaeological monitoring of fifteen geotechnical trial pits in an area measuring approximately 1,500 square metres centred on National Grid Reference TQ 35627 92992.

Trial Pit 1

- 7.4 The top of Trial Pit 1 was recorded at 11.07 m AOD (Above Ordnance Datum).
- 7.5 The stratigraphic sequence observed in Trial Pit 1 was approximately 0.20 m of made ground consisting of light orange brown gravel and brick fragments (1001) to c.10.87 m AOD overlying 0.80 m of mixed/mottled dark greyish brown black silty clay (1002) down to c.10 m AOD (c. 0.80 m thick). Below this was a lens approximately 0.45 m thick of very dark black organic layer/lens (1003) which was visible only at the southern end of the trial pit. This lens measured approximately 1.30 m in length down to approximately 9.55 m AOD. Below this lens was 1.14 m of very dark blue clay/ alluvium (1004) at 9.05 m AOD to the base of the trial pit at 7.91 m AOD.
- 7.6 No archaeologically significant features, deposits or artefacts were observed in or recovered from Trial Pit 1.

Trial Pit 2

- 7.7 The top of Trial Pit 2 was recorded at 11.30 m AOD.
- 7.8 The stratigraphic sequence observed in Trial Pit 2 was approximately 0.85 m of made ground (2001) down to a depth of 10.45 m AOD. Below this made ground was approximately 0.46 m of mixed dark greyish-brown re-deposited clay (2002) to a depth of 9.99 m AOD which sealed 1.98 m of dark blue clay alluvium (2003) to the base of the trial pit recorded at 8.01 m AOD.

7.9 No archaeologically significant features, deposits or artefacts were observed in or recovered from Trial Pit 2.

Trial Pit 3

7.10 The top of Trial Pit 3 was recorded at 11.36 m AOD.

7.11 The stratigraphic sequence observed in Trial Pit 3 was approximately 0.30 m of made ground (3001) to a depth of 11.06 m AOD overlying 0.51 m of mixed dark greyish-brown redeposited clay (3002) to a depth of 10.55 m AOD. This redeposited clay in turn overlay 0.70 m of mixed dark grey-brown clay silt alluvium (3003) down to a depth of 9.85 m AOD. The redeposited clay sealed 2.07 m of dark blue clay alluvium (3004) to the base of the trial pit recorded at 7.78 m AOD.

7.12 No archaeologically significant features, deposits or artefacts were observed in or recovered from Trial Pit 3.

Trial Pit 4

7.13 The top of Trial Pit 4 was recorded at 11.05 m AOD.

7.14 The observed stratigraphic sequence was 0.29 m of made ground (4001) to a depth of 10.94 m AOD which sealed 0.68 m of mixed mid-greyish brown black silty clay (4002) to a depth of 10.37 m AOD. Below this layer was 1.41 m of very dark brown black silt (4003) recorded to a depth of 8.96 m AOD. This silt overlay 0.97 m of dark blue clay alluvium (4004) which was recorded to the base of the trial pit at a depth of 7.99 m AOD.

7.15 Modern Victorian ceramics sherds were present throughout layer (4003).

Trial Pit 5

7.16 The top of Trial Pit 5 was recorded at 11.31 m AOD.

7.17 The observed stratigraphic sequence was 0.37 m of made ground (5001) to a depth of 10.94 m AOD which sealed 0.51 m of missed mid-greyish brown black silty clay (5002) recorded to a depth of 10.43 m AOD. Below this layer was 0.51 m of very dark brown black silt (5003) to a depth of 10.43 m AOD which sealed 1.40 m of dark blue clay alluvium (5004) which was recorded down to the base of the trial pit at 9.45 m AOD.

7.18 Modern Victorian ceramic sherds were observed throughout layer (5003).

Trial Pit 6

7.19 The top of Trial Pit 6 was recorded at 11.32 m AOD.

7.20 The observed stratigraphic sequence was 0.25 m of made ground (6001) recorded to a depth of 11.07 m AOD which overlay 0.40 m of mixed dark greyish brown redeposited clay with brick fragments present (6002) recorded to a depth of 10.67 m AOD. This sealed approximately 1 m of

dark greyish brown clay silt alluvium (6003) recorded to a depth of 9.67 m AOD. This deposit overlay 1.37 m of very dark blue clay alluvium (6004) which was recorded to the base of the trial pit at 8.30 m AOD.

7.21 Modern Victorian ceramic sherds were observed throughout layer (6003).

Trial Pit 7

7.22 The top of Trial Pit 7 was recorded at 11.35 m AOD.

7.23 The stratigraphic sequence was 0.39 m of made ground of light orange brown gravel and brick fragments (7001) recorded to a depth of 10.96 m AOD. This overlay 0.30 m of mixed dark greyish brown redeposited clay with brick fragments present (7002) recorded to a depth of 10.66 m AOD which in turn sealed 0.56 m of dark greyish brown clay silt alluvium (7003) recorded to a depth of 10.10 m AOD. Below this brown alluvium was 1.67 m of very dark blue clay alluvium (7004) which was recorded to the base of the trial pit at 8.43 m AOD.

7.24 Modern Victorian ceramic sherds were observed throughout layer (7003).

Trial Pit 8

7.25 The top of Trial Pit 8 was recorded at 11.32 m AOD.

7.26 The stratigraphic sequence observed was 0.30 m of made ground comprising light orange-brown gravel and brick fragments (8001) recorded to a depth of 11.02 m AOD, overlying 0.26 m of mixed dark greyish-brown redeposited clay with brick fragments (8002) recorded to a depth of 10.76 m AOD. Below these made ground layers was 0.96 m of dark greyish-brown clay silt alluvium (8003) to a depth of 9.80 m AOD which overlay 1.25 m of very dark blue clay alluvium (8004) which was recorded to the base of the trial pit at 8.55 m AOD.

7.27 No archaeological features, deposits or artefacts were observed or recovered from this trial pit.

Trial Pit 9

7.28 The top of Trial Pit 9 was recorded at 11.33 m AOD.

7.29 The stratigraphic sequence observed was 0.21 m of made ground consisting of light orange brown gravel with brick fragments throughout (9001) which was recorded to a depth of 11.11 m AOD. This overlay 0.40 m of mixed dark greyish-brown redeposited clay with brick fragments throughout (9002) recorded to a depth of 10.71 m AOD. This sealed 0.74 m of dark greyish-brown clay silt alluvium (9003) which was recorded to a depth of 9.97 m AOD. This in turn overlay 1.44 m of very dark blue clay alluvium (9004) recorded to the base of the trial pit at 8.53 m AOD.

7.30 Modern Victorian ceramic sherds were recorded within layer (9003).

Trial Pit 10

- 7.31 The top of trial Pit 10 was recorded at 11.24 m AOD.
- 7.32 The observed stratigraphic sequence was 0.65 m of made ground of light orange-brown gravel with frequent brick fragments present (10/001) recorded to a depth of 10.59 m AOD. This layer sealed 0.90 m of dark greyish-brown clay silt alluvium (10/002) recorded to a depth of 9.69 m AOD. This in turn overlay 1.21 m of very dark blue clay alluvium (10/0023) which was recorded to the base of the trial pit at 8.48 m AOD.
- 7.33 No archaeological features, deposits or artefacts were observed or recovered within the trial pit.

Trial Pit 11

- 7.34 The top of Trial Pit 11 was recorded at 11.14 m AOD.
- 7.35 The stratigraphic sequence was 0.38 m of made ground consisting of light orange-brown gravel with frequent brick fragments present throughout (11/001) to a depth of 10.76 m AOD, overlying 0.87 m of dark greyish brown clay silt alluvium (11/002) to a depth of 9.89 m AOD. Below this was 1.52 m of very dark blue clay alluvium (11/003) which was recorded to the base of the trial pit at 8.37 m AOD.
- 7.36 No archaeological features, deposits or artefacts were recorded or recovered from the trial pit.

Trial Pit 12

- 7.37 The top of Trial Pit 12 was recorded at 11.14 m AOD.
- 7.38 The observed stratigraphic sequence was 0.41 m of made ground consisting of light orange-brown gravel with frequent brick fragments (12/001) present recorded to a depth of 10.73 m AOD overlying 0.66 m of dark greyish brown clay silt alluvium (12/002) to a depth of 10.07 m AOD. This sealed 1.71 m of very dark blue clay alluvium (12/003) which was recorded to the base of the trial pit at 8.36 m AOD.
- 7.39 No archaeological features or artefacts were observed or recovered from the trial pit.

Trial Pit 13

- 7.40 The top of Trial Pit 13 was recorded at 11.04 m AOD.
- 7.41 The observed stratigraphic sequence within Trial Pit 13 was 0.35 m of made ground of light orange-brown gravel and brick fragments (13/001) to a depth of 10.69 m AOD overlying 0.35 m of mixed dark greyish brown clay with brick fragments (13/002) to a depth of 10.34 m AOD. These layers sealed 0.75 m of dark greyish brown clay silt alluvium (13/003) to a depth of 9.59 m AOD. This in turn overlay 1.27 m of very dark blue clay alluvium (13/004) which was recorded to the base of the trial pit at 8.32 m AOD.

7.42 No archaeological features, deposits or artefacts were observed or recovered during the monitoring of the trial pit.

Trial Pit 14

7.43 The top of Trial Pit 14 was recorded at 11.13 m AOD.

7.44 The observed stratigraphic sequence for Trial Pit 14 was 0.20 m of tarmac and made ground (14/001) to a depth of 10.93 m AOD overlying 0.24 m of brick fragments and concrete rubble (14/002) to a depth of 10.69 m AOD. This overlay 0.45 m of mixed dark greyish brown silt alluvium (14/003) which was recorded to a depth of 10.24 m AOD. Below this layer was 0.82 m of dark grey silt (14/004) which was recorded to a depth of 9.42 m AOD. This in turn overlay 1.02 m of very dark blue clay alluvium (14/005) which was recorded to the base of the trial pit at 8.40 m AOD.

7.45 A broken modern plastic 'Exit' sign was observed within layer (14/003), no other archaeological deposits, features or artefacts were observed in the trial pit.

Trial Pit 15

7.46 The top of Trial Pit 15 was recorded at 11.29 m AOD.

7.47 The observed stratigraphic sequence within Trial Pit 15 was 0.26 m of made ground (15/001) to a depth of 10.03 m AOD overlying 1.5 m of dark blue grey clay alluvium (15/002) to the base of the trial pit at a depth of 8.53 m AOD.

7.48 No archaeological features, deposits or artefacts were observed or recovered from Trial Pit 15.

8 Discussion and Conclusions

8.1 The results indicate that there is a low potential for significant archaeological remains to survive along the Northern Access Area. The monitoring of the trial pits indicate that significant truncation of the Site has previously occurred down to the alluvial sequence. The observed stratigraphic sequences observed in the fifteen trial pits are similar to the sequences observed during previous archaeological monitoring and recording of groundworks at the Edmonton EcoPark Laydown Area East earlier in 2019 (ADAS, 2019).

8.2 Artefacts recovered in-situ from the alluvium exposed during the archaeological monitoring were all likely deposited during the Post-medieval to Modern period. The pottery assemblage recorded from the trial pits at the Northern Access Site indicate that alluvial deposits at this location have a very low potential for containing significant palaeoenvironmental remains.

- 8.3 A general stratigraphic sequence was observed across the entirety of the Northern Access. This sequence consisted of Modern made ground sealing an alluvial sequence, which in turn overlay natural gravels.
- 8.4 The Desk-Based Geoarchaeological Deposit Model (Young, 2020) produced for the Site has revealed a sequence of Late Devensian Lea Valley Gravel, overlain by Holocene alluvial sediments (including a localised peat deposit), capped by modern Made Ground. Although slightly lower in the southern half of the site, these levels are generally consistent with Landscape Zone 4.4 (Corcoran *et al.*, 2011), where the gravel surface is described as lying at levels between *circa* 8.0 and 9.0 m AOD.
- 7.1 Overlying the gravel in one archaeological trial pit in the southern part of the Site was a deposit of mineral-rich peat, present at between 9.52 and 9.97m OD and described as a black organic layer or lens. Peat was not recorded within the remainder of the interventions across the Site, indicating that the peat is confined to the south in the area of TP1. Elsewhere across the Site, the Holocene alluvium is variously silty, clayey and in places gravelly, and derived from either low to moderate energy fluvial activity (sandy/gravelly material) or at a distance from any active channels (silty or clayey material) on the floodplain of the River Lea. The alluvium is described as organic in two interventions, indicative of other localised transitions towards semi-terrestrial conditions on the floodplain.
- 7.2 In terms of archaeological potential, the deposit model (Young, 2020) indicates that the gravel surface rises towards the north, with the gravel surface in the northern area of the NLHHP site around 1.0 m higher than in the south. These results indicate that the NLHHP site would at some point in the earlier Prehistoric period have been at the interface between the floodplain and the higher, drier ground to the north. As such, the Prehistoric archaeological potential of the NLHHP site is considered to be higher in the north.

9 References

ADAS (2020) *Archaeological Monitoring and Recording Report: Edmonton EcoPark, Laydown Area West*. ADAS Unpublished Report.

ADAS (2019) *Archaeological Standards Manual*. Internal ADAS Document.

ADAS (2019a) *Written Scheme of Investigation for Archaeological monitoring and Recording: Edmonton EcoPark Laydown Area East*. Unpublished ADAS Written Scheme of Investigation.

ADAS (2019b) *Archaeological Monitoring and Recording Report: Edmonton EcoPark Laydown Area East*. Unpublished Client Report.

ADAS (2019c) *Written Scheme of Investigation for Archaeological Monitoring and Recording NLHPP NWLA Northern Access*. Unpublished WSI.

Arup (2015) *North London Heat and Power Project Archaeological Desk-Based Assessment*.

Arup (2016a) *North London Heat and Power Project: Environmental Commitments and Mitigation Schedule*. Client document AD06.03

Arup (2016b) *North London Heat and Power project: Construction Code of Practice*. Client document AD05.12

Arup (2020) *Overarching archaeological Written Scheme of Investigation (OA-WSI)*. Client document 263185-00

Batchelor C R (2019) *Edmonton EcoPark Laydown Area East, Lower Hill Lane, Advent way, London Borough of Enfield Geoarchaeological Fieldwork & Deposit Model Report*. QUEST Unpublished Report Project Number 020/19

Blinkhorn P, Franklin J and Koonce A (2019) *Edmonton EcoPark, Laydown Area East Pottery, Glass & CBM Assessment*. Headland Archaeology Unpublished Report Project Code ADAS19.

Brown, D.H (2007) *Archaeological Archives: A guide to best practice in creation, compilation, transfer and curation*, Archaeological Archives Forum, Available at

http://archaeologydataservice.ac.uk/archiveDS/archiveDownload?t=arch-799-1/dissemination/pdf/AArchives_v2.pdf [accessed February 2020].

CIfA (2020) *Standard and Guidance for an archaeological watching brief*. Available at https://www.archaeologists.net/sites/default/files/CIfAS%26GWatchingbrief_3.pdf [accessed July 2020]

Corcoran, J, Halsey, Spurr, G, Burton, Emily and Jamieson, D (eds.) 2011 *Mapping Past Landscapes in the Lower Lea Valley: A geoarchaeological study of the Quaternary sequence*. Museum of London Archaeology Monograph Series 55.

English Heritage, 1991, *The Management of Archaeological Projects 2*

English Heritage, 2006, *The Management of Research Projects in the Historic Environment (MORPHE): Project Manager's Guide*.

Ground Technology (2018) *Edmonton EcoPark Phase 2 – Deephams Farm Road*. Unpublished Client Report Number GTS-18-063

Harrison Group Environmental Limited (2017) *Edmonton EcoPark Laydown Area Ground Investigation Report*. Ground Investigation Factual Report

MOLA (2015) North London Heat and Power Project Edmonton Eco Park *Geoarchaeological Deposit Model*. Museum of London Archaeology

Museums & Galleries Commission, 1992. *Standards in the Museum Care of Archaeological Collections*, Museums, Libraries and Archives Council, Available at:

<https://collectionstrust.org.uk/resource/standards-in-the-museum-care-of-archaeological-collections/>

[accessed February 2020].

National Library of Scotland (2020) *OS County Series: Surrey Map 1872*. Available at:

<https://maps.nls.uk/view/102347451> [accessed February 2020]

UKIC, 1990. *Guidelines for the Preparation of Excavation Archives for Long-term Storage*. United Kingdom Chartered Institute for Conservation Archaeology Section

Young D (2019) *NLWA Laydown Area East, Lower Hall Lane, Advent Way, London: A review of the geotechnical borehole and test pit records*. QUEST Unpublished Report Project Number 020/19.

Young D (2020) *North London Waste Authority (NLWA) Northern Access Area & Laydown Area West, London Borough of Enfield: Desk-Bases Geoarchaeological Deposit Model*. QUEST Unpublished Report Project Number 020/19.

Online Resources

British Geological Survey (BGS), Geology of Britain Viewer, 2020. Available at:

<http://www.bgs.ac.uk/discoveringGeology/geologyOfBritain/viewer.html> [accessed February 2020]

Heritage Gateway, 2020. *Heritage Gateway: Search*. Available at:

<http://www.heritagegateway.org.uk/Gateway/Results.aspx> [accessed February 2020]

Appendix A: Context Descriptions

Trial Pit 1

No.	Type	Description	Length (m)	Width (m)	Thickness (m)
1001	Layer	Made Ground	5	0.90	0.20
1002	Layer	Dar Grey/ black silty clay	5	0.90	0.90
1003	Layer	Black organic layer/lens	5	0.90	0.45
1004	Layer	Dark blue black alluvial clay	5	0.90	2.18

Trial Pit 2

No.	Type	Description	Length (m)	Width (m)	Thickness (m)
2001	Layer	made ground	5	0.90	0.85
2002	Layer	mixed dark greyish brown re-deposited clay	5	0.90	0.46
2003	layer	dark blue clay alluvium	5	0.90	1.98

Trial Pit 3

No.	Type	Description	Length (m)	Width (m)	Thickness (m)
3001	Layer	made ground	5	0.90	0.30
3002	Layer	mixed dark greyish brown redeposited clay	5	0.90	0.51
3003	Layer	mixed dark grey brown clay silt alluvium	5	0.90	0.70
3004	Layer	dark blue clay alluvium	5	0.90	2.07

Trial Pit 4

No.	Type	Description	Length (m)	Width (m)	Thickness (m)
4001	Layer	made ground	5	0.90	0.29
4002	Layer	mixed mid-greyish brown black silty clay	5	0.90	0.68
4003	Layer	very dark brown black silt	5	0.90	1.41
4004	Layer	dark blue clay alluvium	5	0.90	0.97

Trial Pit 5

No.	Type	Description	Length (m)	Width (m)	Thickness (m)
5001	Layer	made ground	5	0.90	0.37
5002	Layer	mixed mid-greyish brown black silty clay	5	0.90	0.51
5003	Layer	very dark brown black silt	5	0.90	0.51
5004	Layer	dark blue clay alluvium	5	0.90	1.40

Trial Pit 6

No.	Type	Description	Length (m)	Width (m)	Thickness (m)
6001	Layer	made ground	5	0.90	0.25
6002	Layer	mixed dark greyish brown redeposited clay with brick fragments present	5	0.90	0.40
6003	Layer	dark greyish brown clay silt alluvium	5	0.90	1
6004	Layer	very dark blue clay alluvium	5	0.90	1.37

Trial Pit 7

No.	Type	Description	Length (m)	Width (m)	Thickness (m)
7001	Layer	made ground	5	0.90	0.39
7002	Layer	mixed dark greyish brown redeposited clay with brick fragments present	5	0.90	0.30
7003	Layer	dark greyish brown clay silt alluvium	5	0.90	0.56
7004	Layer	very dark blue clay alluvium	5	0.90	1.67

Trial Pit 8

No.	Type	Description	Length (m)	Width (m)	Thickness (m)
8001	Layer	made ground comprising light orange brown gravel and brick fragments	5	0.90	0.30
8002	Layer	mixed dark greyish brown redeposited clay with brick fragments	5	0.90	0.26
8003	Layer	dark greyish brown clay silt alluvium	5	0.90	0.96
8004	Layer	dark blue clay alluvium	5	0.90	1.25

Trial Pit 9

No.	Type	Description	Length (m)	Width (m)	Thickness (m)
9001	Layer	made ground consisting of light orange brown gravel with brick fragments throughout	5	0.90	0.21
9002	Layer	of mixed dark greyish brown redeposited clay with brick fragments throughout	5	0.90	0.40
9003	Layer	dark greyish brown clay silt alluvium	5	0.90	0.74

9004	Layer	very dark blue clay alluvium	5	0.90	1.44
------	-------	------------------------------	---	------	------

Trial Pit 10

No.	Type	Description	Length (m)	Width (m)	Thickness (m)
10/001	Layer	made ground of light orange brown gravel with frequent brick fragments	5	0.90	0.65
10/002	Layer	dark greyish brown clay silt alluvium	5	0.90	0.90
10/003	Layer	very dark blue clay alluvium	5	0.90	1.21

Trial Pit 11

No.	Type	Description	Length (m)	Width (m)	Thickness (m)
11/001	Layer	made ground consisting of light orange brown gravel with frequent brick fragments	5	0.90	0.38
11/002	Layer	dark greyish brown clay silt alluvium	5	0.90	0.87
11/003	Layer	very dark blue clay alluvium	5	0.90	1.52

Trial Pit 12

No.	Type	Description	Length (m)	Width (m)	Thickness (m)
12/001	Layer	made ground consisting of light orange brown gravel with frequent brick fragments	5	0.90	0.41
12/002	Layer	dark greyish brown clay silt alluvium	5	0.90	0.66
12/003	Layer	very dark blue clay alluvium	5	0.90	1.71

Trial Pit 13

No.	Type	Description	Length (m)	Width (m)	Thickness (m)
13/001	Layer	made ground of light orange brown gravel and brick fragments	5	0.90	0.35
13/002	Layer	mixed dark greyish brown clay with brick fragments	5	0.90	0.35
13/003	Layer	dark greyish brown clay silt alluvium	5	0.90	0.75
13/004	Layer	very dark blue clay alluvium	5	0.90	1.27

Trial Pit 14

No.	Type	Description	Length (m)	Width (m)	Thickness (m)
14/001	Layer	tarmac and made ground	5	0.90	0.20
14/002	Layer	brick fragments and concrete rubble	5	0.90	0.24
14/003	Layer	mixed dark greyish brown silt alluvium	5	0.90	0.45
14/004	Layer	dark grey silt	5	0.90	0.82
14/005	Layer	very dark blue clay alluvium	5	0.90	1.02

Trial Pit 15

No.	Type	Description	Length (m)	Width (m)	Thickness (m)
15/001	Layer	made ground	5	0.90	0.26
15/002	Layer	dark blue grey clay alluvium	5	0.90	1.50

Appendix B: Artefacts Report (Andrew Brown)

Introduction

A very small quantity of finds was recovered during the watching brief, deriving entirely retrieved from a single dark greyish-brown clay silt alluvium layer observed consistently in all the test pits monitored. Finds comprised 19th century or modern pottery sherds and glass. Finds are listed by material type in **Table 1**.

Table 1: All finds by context

Context	Material Type	Number	Weight (g)	Description
4003	Pottery	2	43	Refined Whiteware
5003	Pottery	1	30	Refined Whiteware
6003	Pottery	1	10	Refined Whiteware
7003	Pottery	1	50	Refined Whiteware
7003	Glass	1	10	Bottle- 20th Century
9003	Pottery	3	73	Two sherds Refined Whiteware; One body sherd 19 th century Stoneware jar

POTTERY

The Modern pottery numbered 8 sherds in total and was entirely retrieved from a single dark greyish-brown clay silt alluvium layer (4003, 5003, 6003, 7003 and 9003) observed consistently in all the test pits monitored. The pottery consisted primarily of a mixture of tablewares and utilitarian storage vessels dating from the 19th century onwards.

OTHER FINDS

Other finds comprised a piece of modern (19th/20th century) bottle glass.

POTENTIAL AND FURTHER RECOMMENDATIONS

This is a very small assemblage, which has a correspondingly limited potential to contribute further to an understanding of the site beyond what has already been recorded in terms of the range of types and their chronology.

Data has been collected to an appropriate archive level, and no further analysis or publication is warranted.

Given the very small quantities involved, and the provenance (deposit of modern chronological date), retention of this assemblage for long-term curation is not recommended.

REFERENCES

Blinkhorn P, Franklin J, Koonce A 2019. *Edmonton EcoPark, Laydon Area East: Pottery, Glass and CBM Assessment*. Headland Archaeology

CIfA 2008. *Standards and Guidance for the collection, documentation, conservation and research of archaeological materials*. Chartered Institute for Archaeologists

Leahy K & Geake H (ed) 2019 *Pottery Recording Guide*. Portable Antiquities Scheme

University of Cambridge (2020). Available at: http://www.meldrethhistory.org.uk/documents/pottery_identification_guide.pdf [accessed February 2020]

West Yorkshire Archaeology Advisory Service (2020). Available at: <https://www.wyjs.org.uk/media/1295/beginner-guide-to-pottery.pdf> [accessed February 2020]

Worcestershire Ceramics (2020). Available at: www.worcestershireceramics.org/fabrics/ [accessed February 2020]

Appendix C: Oasis Report Form

OASIS ID: adasuklt1-400027

Project details

Project name	NHLPP NWLA Northern Access
Short description of the project	The Northern Access forms part of a wider scheme which is being constructed to serve the wider North London Heat and Power Project. The results indicate that there is a low potential for significant archaeological remains to survive along the Northern Access area. The monitoring of the trial pits indicate that significant truncation of the Site has previously occurred down to the alluvial sequence. The observed stratigraphic sequences observed in the fifteen trial pits are similar to the sequences observed during previous archaeological monitoring and recording of groundworks at the Edmonton EcoPark Laydown Area East earlier in 2019. Artefacts recovered in-situ from the alluvium exposed during the archaeological monitoring were all likely deposited during the Post-medieval to Modern period. The pottery assemblage recorded from the trial pits at the Northern Access Site indicate that alluvial deposits at this location have a very low potential for containing significant palaeoenvironmental remains. The Desk-Based Geoarchaeological Deposit Model produced for the Site has revealed a sequence of Late Devensian Lea Valley Gravel, overlain by Holocene alluvial sediments (including a localised peat deposit), capped by modern Made Ground.
Project dates	Start: 01-12-2019 End: 31-12-2019
Previous/future work	Not known / Not known
Type of project	Field evaluation
Current Land use	Transport and Utilities 1 - Highways and road transport
Significant Finds	POTTERY Post Medieval
Methods & techniques	""Targeted Trenches"" ""Test Pits""
Development type	Pipelines/cables (e.g. gas, electric, telephone, TV cable, water, sewage, drainage etc.)
Prompt	Planning condition
Position in the planning process	Not known / Not recorded

Project location

Country	England
Site location	GREATER LONDON ENFIELD ENFIELD NLWA Northern Access Route
Postcode	N18 3AT
Lat/Long Datum (other)	TQ 35627 92992
Height OD / Depth	Min: 11m Max: 11m

Project creators

Name of Organisation	RSK ADAS Ltd
Project design originator	Diarmuid O Seaneachain

Project director/manager Andrew Brown

Project supervisor Andrew Brown

Project archives

Physical Archive recipient Museum of London

Physical Contents "Ceramics"

Digital Media available "GIS"

Paper Media available "Photograph"

Entered by Peter Vellet (Francesca.Ward@adas.co.uk)

Entered on 23 September 2020

Appendix D: Desk-Based Geoarchaeological Deposit Model



NORTH LONDON WASTE AUTHORITY (NLWA) NORTHERN ACCESS AREA & LAYDOWN AREA WEST, LONDON BOROUGH OF ENFIELD

Desk-Based Geoarchaeological Deposit Model

NGR: TQ 35640 93025 / TQ 35955 92470

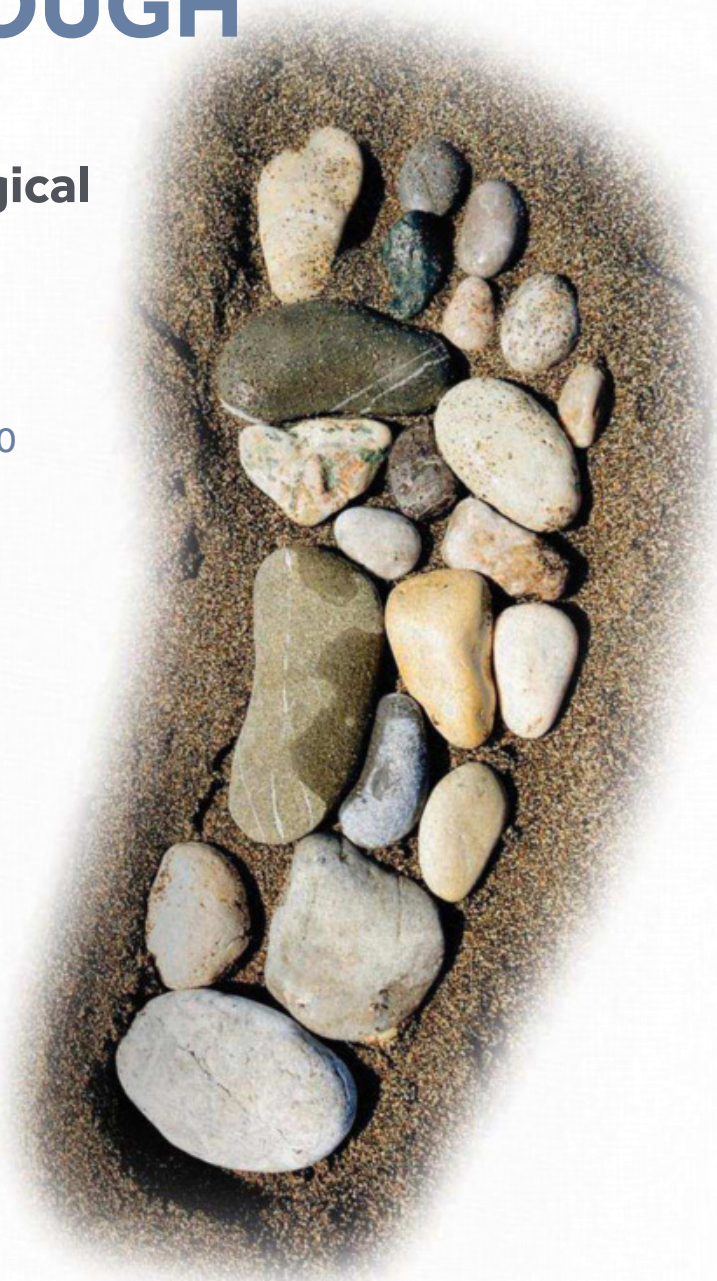
Date: 7th September 2020

Written by: Dr D.S. Young

QUEST, School of Archaeology, Geography
and Environmental Science, Whiteknights,
University of Reading, RG6 6AB

Tel: 0118 378 7360 / 8941

Email: d.s.young@reading.ac.uk
<http://www.reading.ac.uk/quest>



DOCUMENT HISTORY

REVISION	DATE	PREPARED BY	SIGNED	APPROVED BY	SIGNED	REASON FOR ISSUE
v2	07/09/20	D.S. Young		C.R. Batchelor		Minor amendments
v1	04/09/20	D.S. Young		C.R. Batchelor		First edition

CONTENTS

1.	NON-TECHNICAL SUMMARY	3
2.	INTRODUCTION.....	4
2.1	Site context	4
2.2	Palaeoenvironmental and archaeological significance	5
2.3	Aims and objectives	6
3.	METHODS.....	9
3.1	Deposit modelling.....	9
4.	RESULTS & INTERPRETATION OF THE GEOARCHAEOLOGICAL DEPOSIT MODELLING ...	11
4.1	London Clay	11
4.2	Lea Valley Gravel.....	11
4.3	Peat.....	12
4.4	Alluvium	12
4.5	Made Ground	13
5.	DISCUSSION & CONCLUSIONS	21
6.	REFERENCES	24
7.	APPENDIX 1: DEPOSIT MODEL DATA.....	25

1. NON-TECHNICAL SUMMARY

A programme of desk-based geoarchaeological deposit modelling was undertaken at the NLWA Northern Access Area & Laydown Area West sites in order to (1) to clarify the nature of the sub-surface stratigraphy; (2) to clarify the nature, depth, extent and possible date of any alluvium and organic/peat or tufa deposits; (3) to review the archaeological and palaeoenvironmental potential of the site; and (4) to make recommendations for any further geoarchaeological or palaeoenvironmental investigations. The new deposit model integrates data from a new archaeological watching brief and geotechnical investigation at the Northern Access Area site (ADAS, 2020a) and Edmonton EcoPark Laydown Area West (ADAS, 2020b), and the existing deposit model from Edmonton EcoPark Laydown Area East (Batchelor *et al.*, 2019).

The results of the deposit modelling have revealed a sequence of Late Devensian Lea Valley Gravel, overlain by Holocene alluvial sediments (including a localised peat deposit), capped by modern Made Ground. The Gravel surface here rises northwards from levels between ca. 7-8m OD in the southern half of the site, to between ca. 8.2 and 8.7m OD in the northern half. Although slightly lower in the southern half of the site, these levels are generally consistent with Corcoran *et al.*'s (2011) Landscape Zone 4.4, where the Gravel surface is described as lying at levels between ca. 8 and 9m OD. Overlying the Gravel in one archaeological trial pit in the southern part of the site was a unit of mineral-rich peat, present at between 9.52 and 9.97m OD and described as a black organic layer or lens. Peat was not recorded within the remainder of the interventions across the site; although only nine of the 25 interventions recorded the full Holocene alluvial sequence, these are relatively well distributed, and indicate that the peat is confined to the south in the area of TP1. This peat deposit is present at a higher elevation than has generally been recorded elsewhere in this area of the River Lea floodplain, where it is often recorded at levels below around 8.5m OD. On the basis of the higher elevation and unknown age of the peat deposit at the site, further investigation of these sediments is required in order to confirm its palaeoenvironmental potential, including its character and age.

In terms of archaeological potential, the deposit models presented here indicate that the Gravel surface rises toward the north, with the Gravel surface in the northern area of the site around 1m higher than in the south. Although not as high as the Gravel island underlying the north-western part of the Stonehill Business Park site (see Young, 2014), the deposit model indicates that the site would at some time during the earlier prehistoric period have been at the interface between the floodplain and the higher, drier ground to the north. As such, the prehistoric archaeological potential of the site is considered to be higher in the north. However, no archaeological deposits or features were identified however during the watching brief undertaken by ADAS (2020a).

2. INTRODUCTION

2.1 Site context

This report summarises the findings arising out of the desk-based geoarchaeological deposit modelling undertaken by Quaternary Scientific (University of Reading) in connection with the proposed redevelopment of land at the North London Waste Authority (NLWA) Northern Access Area & Laydown Area West, London Borough of Enfield (National Grid Reference (NGR): centred on TQ 35640 93025/; Figures 1 & 2). Quaternary Scientific were commissioned by RSK ADAS Ltd (ADAS) to undertake the geoarchaeological investigations. The deposit models presented here update those of previous investigations associated with the Edmonton EcoPark Laydown Area East site (Batchelor *et al.*, 2019), integrating data from a new archaeological watching brief on geotechnical test pits at the Northern Access Area (ADAS, 2020a) and an archaeological trench at Laydown Area West (ADAS, 2020b). Both sites form part of a wider scheme which is being constructed to serve the wider North London Heat and Power Project (NLHPP). The wider site extends over 22 hectares and comprises the existing waste management site known as the Edmonton EcoPark, part of Ardra Road, land around the existing water pumping station at Ardra Road, Deephams Farm Road, part of Lee Park Way and land to the west of the River Lee Navigation, and land to the north of Advent Way and east of the River Lee Navigation (ADAS, 2020a).

The site lies towards the western margin of the historic floodplain of the River Lea, lying in the lower valley of this river and ca. 750m to the west of its modern course; the canalised River Lea Navigation lies 500m to the east of the site. The site is bordered to the west by the Salmon's Brook, a (heavily modified) minor tributary of the River Lea. The mouth of the River Lea (known as Bow Creek), at its confluence with the Thames, lies ca. 10km to the south. The British Geological Survey (1:50,000 Sheet 257 Romford 1996) shows the site underlain by Alluvium, described here as 'Clay, Silt, Sand and Gravel', overlying London Clay bedrock. The Alluvium here is in most cases underlain by the Lea Valley Gravel of Gibbard (1994), equivalent to the Late Devensian Shepperton Gravel of the Thames.

The site lies within the area that has been investigated in the Lea Valley Mapping Project (Corcoran *et al.*, 2011). In this project the Lea Valley has been divided into Landscape Zones characterised by their Holocene landscape history based largely on sedimentary evidence derived from borehole records. The present site lies within Landscape Zone (LZ) 4.4 (see Figure 1), just to the north of its boundary with LZ 4.5. Here, Corcoran *et al.* (2011) describe the Lea Valley Gravel surface as lying at about 8-9m OD, although they point out that a slightly higher 'low terrace', following the alignment of Meridian Way, may exist on the western side of the floodplain. Exposures of Lea Valley Arctic Beds (organic deposits within the Lea Valley Gravel) have been recorded on this low terrace (see Corcoran *et al.*, 2011). The areas of relatively low Gravel surface in LZs 4.4 and 4.5 are described by Corcoran *et al.* (2011) as having the 'potential to preserve fine-grained deposits dating to the Late Pleistocene and Early Holocene', including Mesolithic peat horizons. Peat deposits are described as 'most common across a 1km area in LZ4.5 at the boundary with LZ4.4', 'at depths of a maximum of 2m'.

The site is located close to other sites of geoarchaeological investigation located within LZ 4.5 to the south, including 4 Advent Way (Young, 2020), Unit F, Angel Works (Young & Batchelor, 2020),

Laydown Area East (Batchelor *et al.*, 2019), Stonehill Business Park (Young, 2014), Edmonton EcoPark (MoLA, 2015) and Advent Way (Green *et al.*, 2006) (see Figure 1). At the Laydown Area East site the gravel surface was recorded at levels between ca. 7 and 9m OD, similar to those at Stonehill Business site; here, levels of between 6.7 and 7.0m OD were recorded in the east and west, rising to between 9 and 10m OD towards the north and south (see Young, 2014). These levels were slightly higher than at Advent Way to the west, where it lay at between ca. 6 and 7m OD (see Green *et al.*, 2006). Further west, the Gravel surface was recorded at a level of 8.5m OD at the Unit F, Angel Works site (Young, 2020); here, the overlying deposits were considered to represent substantially reworked (by natural processes) Enfield Silt to a level of 10m OD.

Tufa deposits, often associated with peat, are described by Corcoran *et al.* (2011) as common at the edges of the floodplain mixed with gravel. Thin peat and tufaceous deposits were recorded on the eastern part of the Laydown Area East site at levels between ca. 7.2 and 8.0m OD, whilst up to 3m of these deposits are recorded at Advent Way site, dating from the Late Devensian to Bronze Age period (Green *et al.*, 2006). A horizon of peat between 0.15 and 0.45m thick was recorded at Stonehill Business Park, present at levels between 8.65 and 6.32m OD and confined to the central area of that site within the area of lower Gravel surfaces associated with the possible northeast-southwest aligned palaeochannel (Young, 2014).

2.2 Palaeoenvironmental and archaeological significance

The existing records from the site and the wider area indicate some variation in the height of the underlying gravel, and the type, thickness and potential age of the subsequent Holocene alluvial deposits (including peat and tufaceous deposits) within the vicinity of the site. Such variations are significant as they represent different environmental conditions that would have existed in a given location. For example: (1) the varying surface of the gravel may represent the location of former channels and bars; (2) the presence of peat represents former terrestrial or semi-terrestrial land-surfaces, and (3) the alluvium represents periods of channel activity or changing hydrological conditions. Thus by studying the sub-surface stratigraphy across the site and wider area in more detail, it will be possible to build our understanding of the former landscapes and environmental changes that took place across space and time.

Organic-rich sediments (in particular peat) have high potential to provide a detailed reconstruction of past environments on both the wetland and dryland. In particular, they provide the potential to increase knowledge and understanding of the interactions between hydrology, human activity, vegetation succession and climate. Significant vegetation changes include the Mesolithic/Neolithic decline of elm woodland, the Neolithic colonisation and decline of yew woodland; the Late Neolithic/Early Bronze Age growth of elm on peat, and the general decline of wetland and dryland woodland during the Bronze Age. Such investigations are carried out through the assessment/analysis of palaeoecological remains (e.g. pollen, plant macrofossils & insects) and radiocarbon dating. Very close to the present site (within ca. 40m to the south), investigations carried out at Advent Way (Green *et al.*, 2006) revealed thick deposits of marl, peat and tufa dating to the early Holocene (early Mesolithic) and the transition from cold climatic conditions of the Late Devensian to fully temperate conditions of the early Holocene.

Finally, areas of high gravel topography, soils and peat represent potential areas that might have been utilised or even occupied by prehistoric people, evidence of which may be preserved in the archaeological (e.g. features and structures) and palaeoenvironmental record (e.g. changes in vegetation composition).

2.3 Aims and objectives

A programme of desk-based deposit modelling was undertaken in order to enhance our understanding of the sub-surface stratigraphy at the NLWA Northern Access Area & Laydown Area West sites, and to update the previous models associated with geoarchaeological and archaeological investigations at Laydown Area East (Batchelor *et al.*, 2019). Three significant research aims relevant to the geoarchaeological investigations are outlined here:

1. To clarify the nature of the sub-surface stratigraphy across the site;
2. To clarify the nature, depth and extent of any alluvium and organic/peat or tufa deposits;
3. To review the archaeological and palaeoenvironmental potential of the site.

In order to address these aims, the following objectives were undertaken:

1. To review the results of a new archaeological watching brief at the site (see Figure 2);
2. To use the stratigraphic data from the new locations, and existing records to produce a deposit model of the major depositional units across the site;
3. To prepare a report which summarises the results of the desk-based geoarchaeological deposit modelling and reviews the archaeological and palaeoenvironmental potential of the site, making recommendations for any further investigations.

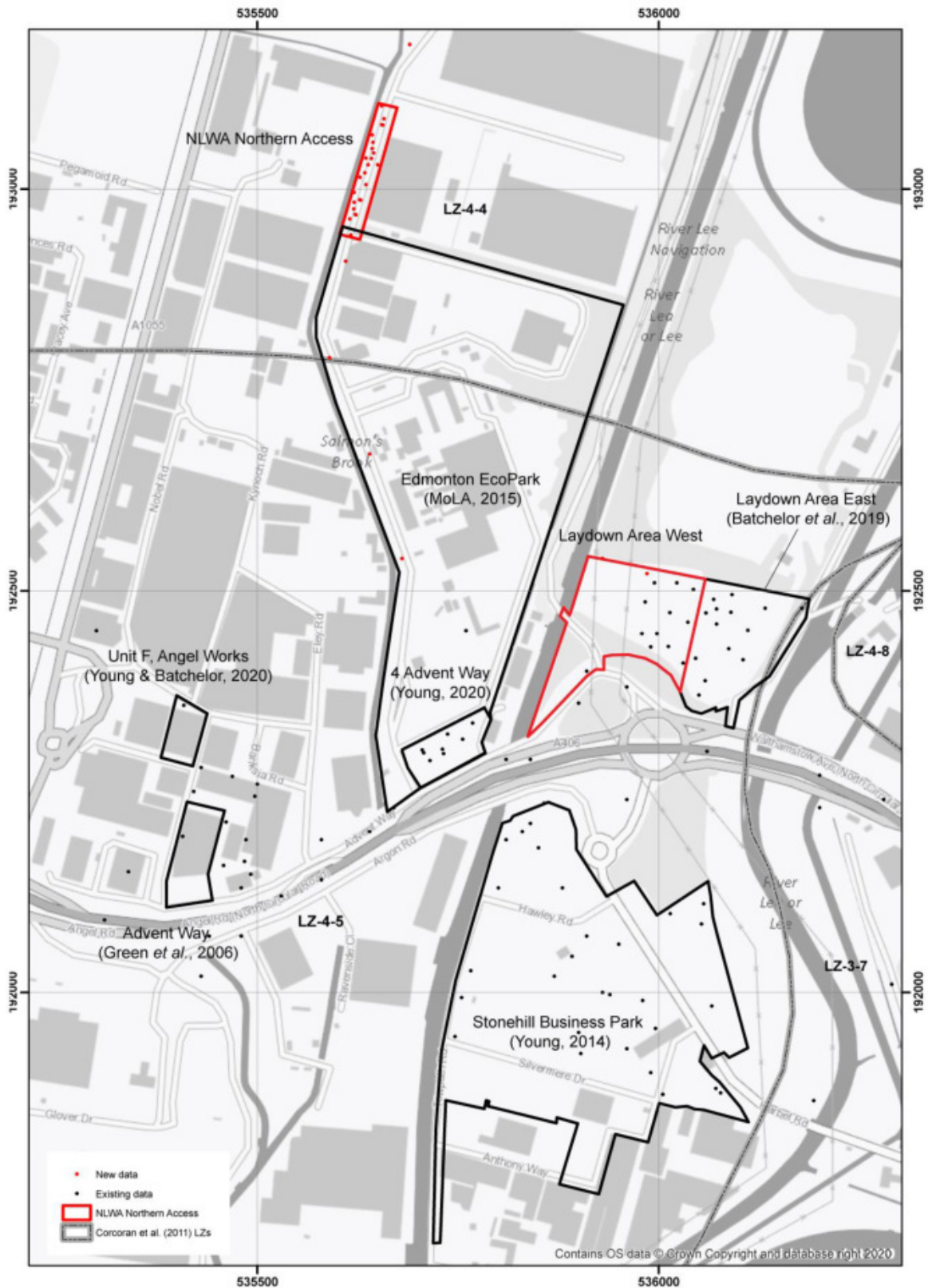


Figure 1: Location of the North London Waste Authority (NLWA) Northern Access Area, London Borough of Enfield, and other nearby sites of georarchaeological investigation discussed in the text.

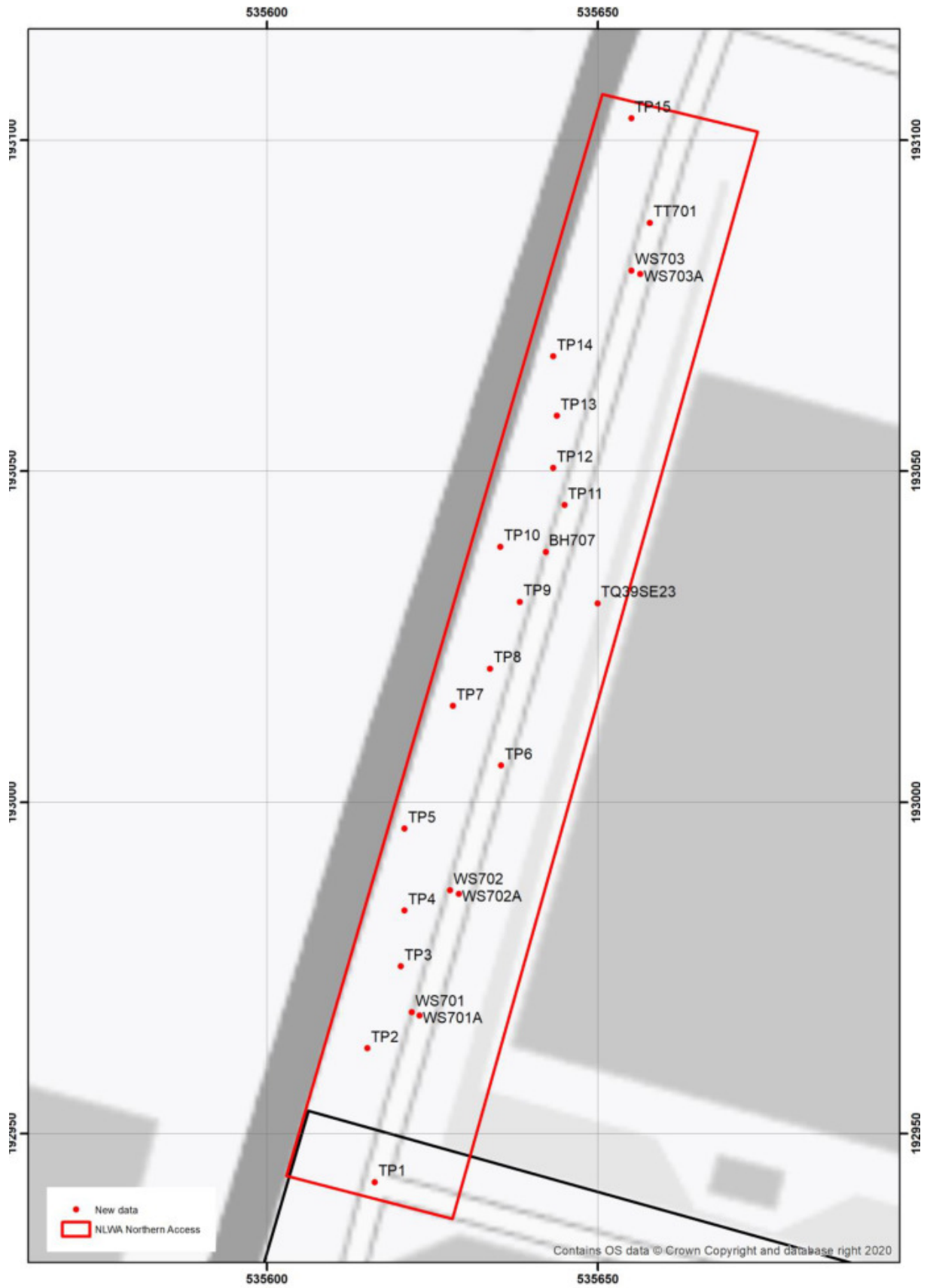


Figure 2: Location of the new interventions at the North London Waste Authority (NLWA) Northern Access Area, London Borough of Enfield.

3. METHODS

3.1 Deposit modelling

The deposit model was based on a review of 15 new archaeological test pits undertaken at the site by ADAS, eight new geotechnical interventions and eight British Geological Survey (BGS) archive boreholes (see Table 1). These data were combined with 122 borehole and test-pit records from the wider area (see Figure 1 and Appendix 1), incorporating data from 4 Advent Way (Young, 2020), Unit F, Angel Works (Young, 2020), Advent Way (Green *et al.*, 2006), Edmonton EcoPark (Batchelor *et al.*, 2019), Stonehill Business Park (Young, 2014) and 52 BGS archive boreholes (<http://mapapps2.bgs.ac.uk/geoindex/home.html>). The borehole data from the MoLA (2015) investigation were not included in the deposit model as these logs were not available at the time of writing.

Deposit modelling was undertaken following the guidelines in Historic England (2020). The deposit modelling was undertaken using RockWorks 16 geological utilities software and ArcMap 10.4. The term 'deposit modelling' describes any method used to depict the sub-surface arrangement of geological deposits, but particularly the use of computer software to create contoured maps or three dimensional representations of contacts between stratigraphic units. The first requirement is to classify the recorded borehole sequences into uniformly identifiable stratigraphic units. At the present site, the sedimentary units were classified into five groupings: (1) Bedrock, (2) Gravel, (3) Peat, (4) Alluvium, and (5) Made Ground. Models of surface height (using an inverse-distance weighted (IDW) algorithm) were generated for the Gravel (Figure 3), Peat (Figure 4) and Alluvium (Figure 6), with thickness models for the Peat (Figure 5), combined alluvial units (Figure 7) and Made Ground (Figure 8). A two-dimensional stratigraphic profile was generated for selected sequences across the site and the wider area along a southwest-northeast transect (Figure 9). A deposit model of the wider Gravel surface (using a 100m cut-off filter) is shown in Figure 10.

How effectively Rockworks portrays the relief features of stratigraphic contacts or the thickness of sediment bodies depends on the number of data points (boreholes/test pits) per unit area, and the extent to which these points are evenly distributed across the area of interest. The portrayal is also affected by the significance assigned to these data points, in terms of the extent of the area around the point to which the data are deemed to apply. This can be predetermined for each data set, and in the present case the value chosen for each data point (borehole) is equivalent to an area of 50m radius for all models (the 'cut-off filter') with the exception of the model of the wider Gravel surface, to which a 100m cut-off is applied in order to aid interpretation of the main topographic features. The new interventions are relatively well distributed over the site, and confidence in the model here can be considered to be high; in terms of the wider model, reliability improves towards the core area of boreholes where mutually supportive data are likely to be available from several adjacent data points. Reliability is also affected by the quality of the stratigraphic records, which in turn are affected by the nature of the sediments and/or their post-depositional disturbance during previous stages of land-use on the site. Finally, because of the 'smoothing' effect of the modelling procedure, the modelled levels of stratigraphic contacts may differ slightly from the levels recorded in borehole logs.

Table 1: Spatial data for the new archaeological test pits at the North London Waste Authority (NLWA) Northern Access Area, and the new archaeological trench at Laydown Area West, London Borough of Enfield.

Name	Easting	Northing	Elevation (m OD)	Total depth (m)
TP1	535616.35	192942.61	11.07	3.73
TP2	535615.23	192962.83	11.30	3.29
TP3	535620.29	192975.19	11.36	3.58
TP4	535620.85	192983.61	11.05	3.35
TP5	535620.85	192995.97	11.31	2.79
TP6	535635.45	193005.51	11.32	3.02
TP7	535628.15	193014.50	11.35	2.92
TP8	535633.76	193020.12	11.32	2.77
TP9	535638.26	193030.23	11.33	2.79
TP10	535635.33	193038.53	11.24	2.76
TP11	535645.00	193044.83	11.14	2.77
TP12	535643.31	193050.44	11.14	2.78
TP13	535643.87	193058.31	11.04	2.72
TP14	535643.31	193067.29	11.13	2.73
TP15	535655.11	193103.24	11.29	1.76
BH707	535642.20	193037.77	11.72	25.00
WS701	535621.97	192968.25	11.69	4.80
WS701A	535623.09	192967.79	11.70	4.80
WS702	535627.70	192986.65	11.72	4.50
WS702A	535629.03	192986.14	11.74	4.00
WS703	535655.12	193080.25	11.41	3.80
WS703A	535656.43	193079.72	11.42	4.90
TT701	535657.91	193087.45	11.39	1.50
Trench 23	535985.13	192521.09	9.84	2.00

4. RESULTS & INTERPRETATION OF THE GEOARCHAEOLOGICAL DEPOSIT MODELLING

The results of the desk-based geoarchaeological deposit modelling are shown in Figures 3 to 9, with surface elevation and thickness models for the main stratigraphic units shown in Figures 3 to 8 and a two-dimensional stratigraphic profile across the site and the wider area shown in Figure 9. A deposit model for the Gravel surface in the wider area is shown in Figure 10. The full sequence of sediments at the NLWA Northern Access Area site includes:

Made Ground (widely present)

Alluvium (widely present; in places described as organic)

Peat (recorded in one test pit)

Gravel (Lea Valley Gravel)

Bedrock (London Clay)

4.1 London Clay

The surface of the London Clay bedrock was reached in one of the new geotechnical boreholes (BH707) at a level of 5.52m OD; two existing BGS archive boreholes within or close to the site show the bedrock surface at 4.36 (TQ39SE24) and 4.60m OD (TQ39SE23). To the north of the site, the bedrock surface is recorded at 4.85m OD in borehole TQ39SE22, whilst to the south it falls to 3.9m OD in TQ39SE25.

4.2 Lea Valley Gravel

The bedrock at the site is overlain by a unit of sandy gravel, interpreted here as the Lea Valley Gravel of Gibbard (1985), deposited during the Late Devensian (10-15,000 years before present (BP)) within a high energy braided river environment. The Gravel was not reached in any of the new archaeological watching brief test pits, but it was recorded in seven of the new geotechnical boreholes and in two BGS archive boreholes within or close to the Northern Access Area site. The Gravel surface here is recorded at levels between 6.99 (WS701) and 8.72 m OD (WS703A); in general it rises northwards (see Figure 3) from levels between 6.99 and 7.94m OD in the southern half of the site, to between 8.22 and 8.72m OD in the northern half. Just to the south of the site in TQ39SE24 the gravel surface is recorded at 8.01m OD, whilst further north in TQ39SE22 it rises to 9.72m OD. The Gravel surface was not reached in the new archaeological trench at Laydown Area West, but the existing model for Laydown Area East shows that it lies at similar levels to the south of the Northern Access Area, at between ca. 7 and 8.5m OD.

The Gravel surfaces recorded here are similar to those described during investigations not far from the present site. The lower Gravel surfaces towards the south are similar to those at Advent Way (Green *et al.*, 2006), towards the southwest (see Figure 10), where it was recorded at levels between ca. 6 and 7m OD. Elsewhere, similarly low Gravel surfaces are recorded just to the south of the Laydown Area East site at 6.5m OD in TQ39SE120, on the eastern part of the Stonehill Business Park site between 6.7 and 7.0m OD (e.g. SHQBH2, SHQBH4) and on the Advent Way site at 6m OD (Green *et al.*, 2006). The higher levels in the northern area of the site consistent with those recorded

at sites to the southeast, including much of Laydown Area East (Batchelor *et al.*, 2019), where the surface of the Gravel was recorded at levels between 7.14 and 9.2m OD, and the north-western part of Stonehill Business Park (Young, 2014).

4.3 Peat

A relatively thin, mineral-rich peat unit was recorded in one archaeological test pit in the far south of the site (TP1) at between 9.52 and 9.97m OD (Figure 4), described as a black organic layer/lens during the archaeological watching brief. Peat was not recorded within the remainder of the interventions across the site. Although only nine of the 25 interventions recorded the full alluvial sequence, these are relatively well distributed across the site, and indicate that the peat is confined to the southern part of the site in the area of TP1. This peat unit is indicative of a localised transition towards semi-terrestrial (marshy) conditions on the floodplain, supporting the growth of sedge fen/reed swamp and/or woodland communities.

Localised peat units have been recorded during geoarchaeological investigations elsewhere in this area of the Lower Lea floodplain; at Laydown Area East/Laydown Area West, a relatively thin complex of Peat and Tufa was recorded in a geoarchaeological borehole measuring 0.32m in thickness (Batchelor *et al.*, 2019). Distinct Peat horizons were also recorded in BGS archive boreholes TQ39SE41 and TQ39SE117, each measuring around 0.6m in thickness, whilst pockets or lenses of peat were also recorded in the lowermost part of the Alluvium in various geotechnical and archaeological watching brief logs (Batchelor *et al.*, 2019). Across the wider area, thin peat units are sporadically recorded in borehole records at the Stonehill Business Park site (e.g. TQ39SE114, TQ39SE112, TQ39SE109, SHCP3, TQ39SE358 and TQ39SE360; see Young, 2014). At 4 Advent Way (Young, 2020) a unit described as 'peat with bands of clay' was recorded in three geotechnical boreholes, directly overlying the Gravel in thicknesses of between 0.5 and 1.2m and to levels of between 8.95 and 9.92m OD. Elsewhere, Thicker Peat units and substantial horizons of Tufa are more commonly recorded further east however, including at the Advent Way site where they were between 1 and 2m in thickness (see Figure 5). At Advent Way, radiocarbon dating indicated that the peat deposits dated to between ca. 11,500 and 4000 cal BP, equating to the beginning of the Mesolithic to Bronze Age (or early to middle Holocene) (Green *et al.*, 2006).

4.4 Alluvium

A unit described as a clayey silt, gravelly silt or gravelly clay was recorded in all 24 of the interventions within the area of the site, the surface of which was recorded at levels between 8.14 (WS702A) and 11.06m OD (TP3) (see Figure 6). The surface of the Alluvium was recorded at 8.84m OD in Trench 23 (Laydown Area West). This unit is interpreted as Holocene Alluvium associated with the floodplain of the River Lea, derived from either low to moderate energy fluvial activity (sandy/gravelly material) or at a distance from any active channels (silty or clayey material). The alluvium is generally mineral rich, and often coarse-grained (in places gravelly). However, in WS701A it is described as 'organic clay with pockets of peat', and as an organic clay in WS703. These organic units are again indicative of localised transitions towards semi-terrestrial conditions, perhaps infilling floodplain hollows or forming in shallow backwaters.

The thickness of the alluvial sequence in the area of the site, based on those interventions which recorded the entire alluvial sequence, is shown in Figure 7. The Alluvium in these records is between 0.2 (WS702A) and 2.5m (WS701) thick.

4.5 Made Ground

A unit of modern Made Ground caps the alluvial sequence, in highly variable thicknesses of between 0.2 (TP1) and 3.6m (WS702A) (Figure 8).

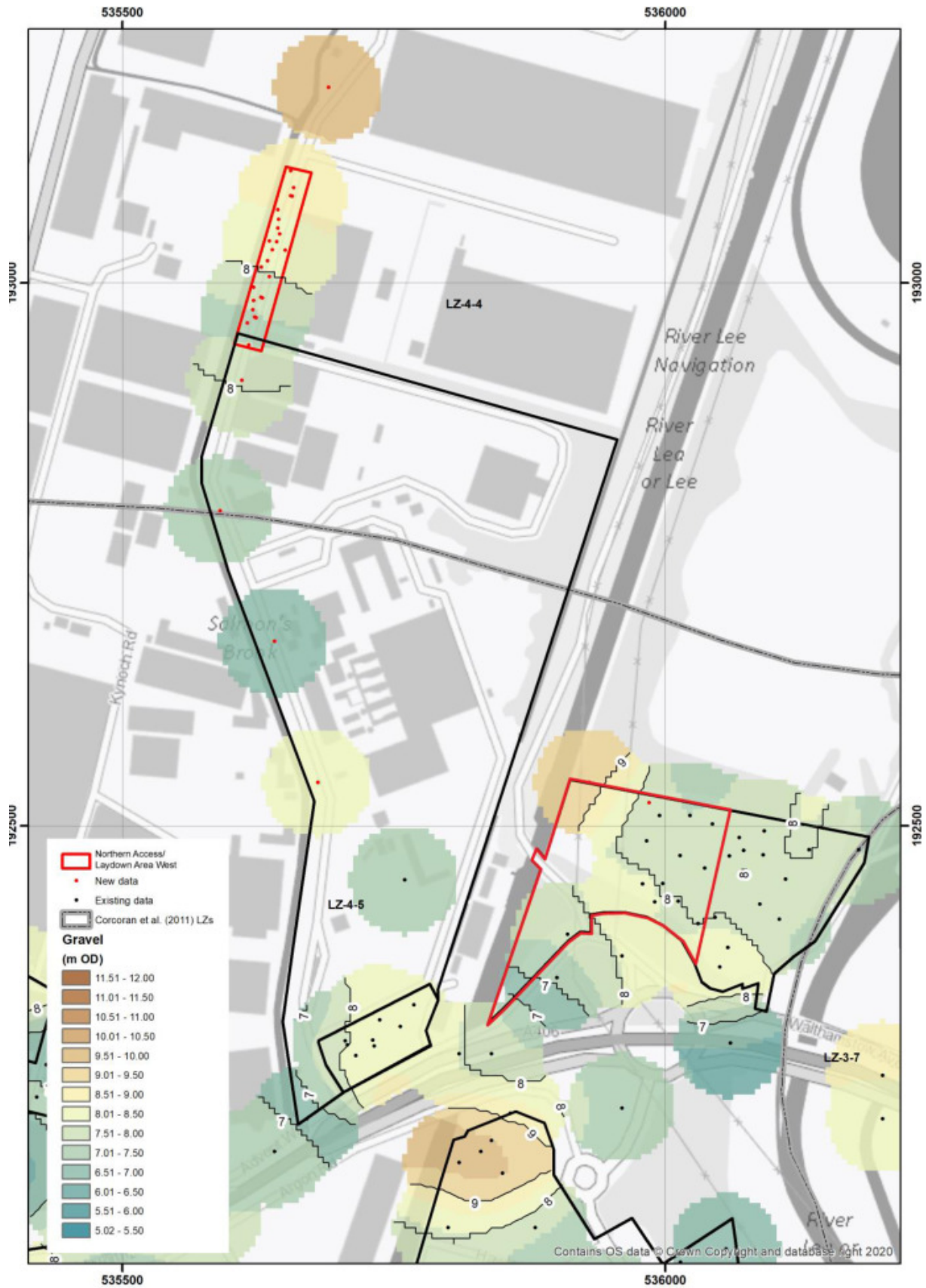


Figure 3: Surface of the Gravel (m OD)

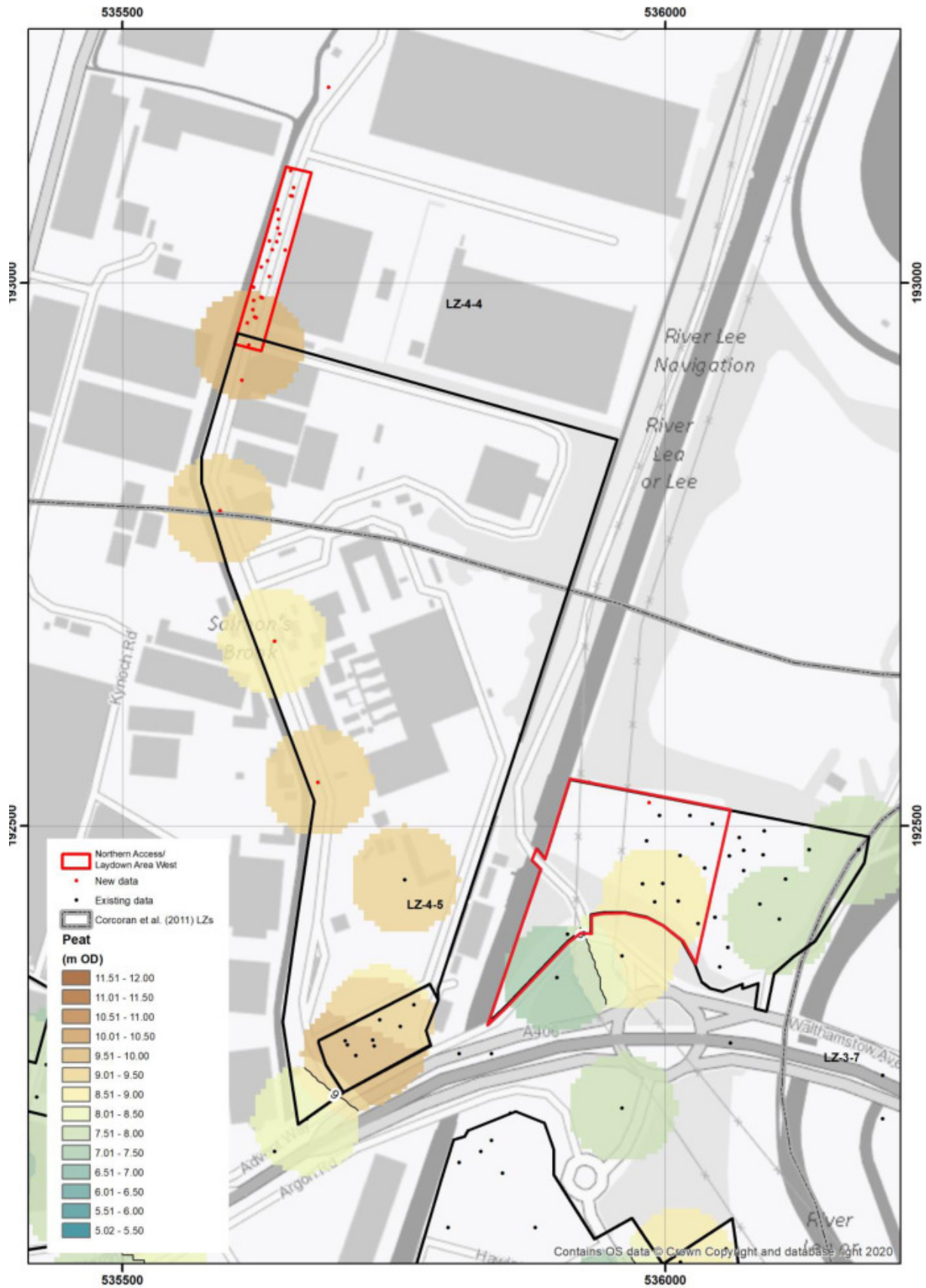


Figure 4: Surface of the Peat (m OD)

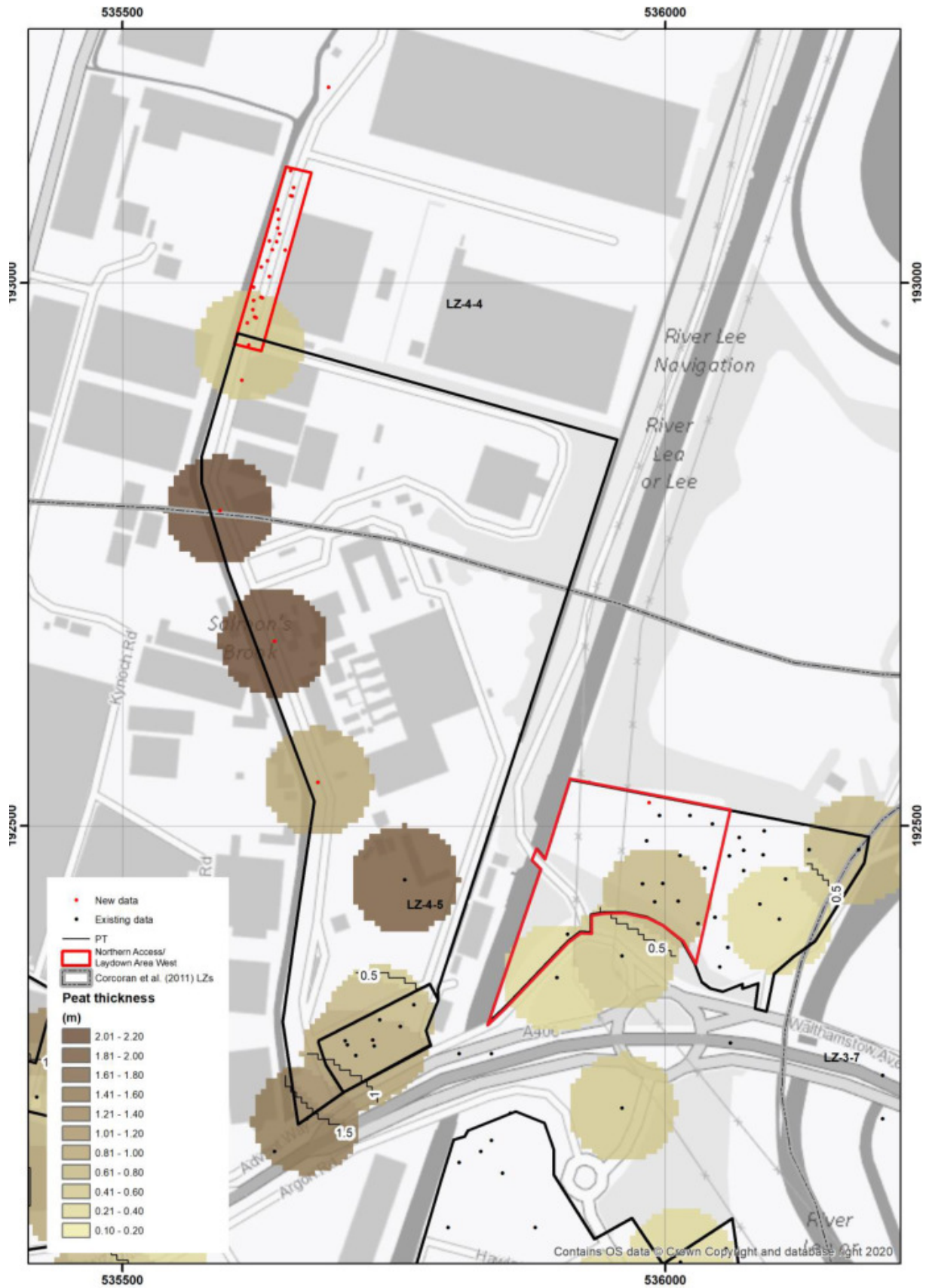


Figure 5: Thickness of the Peat (m)

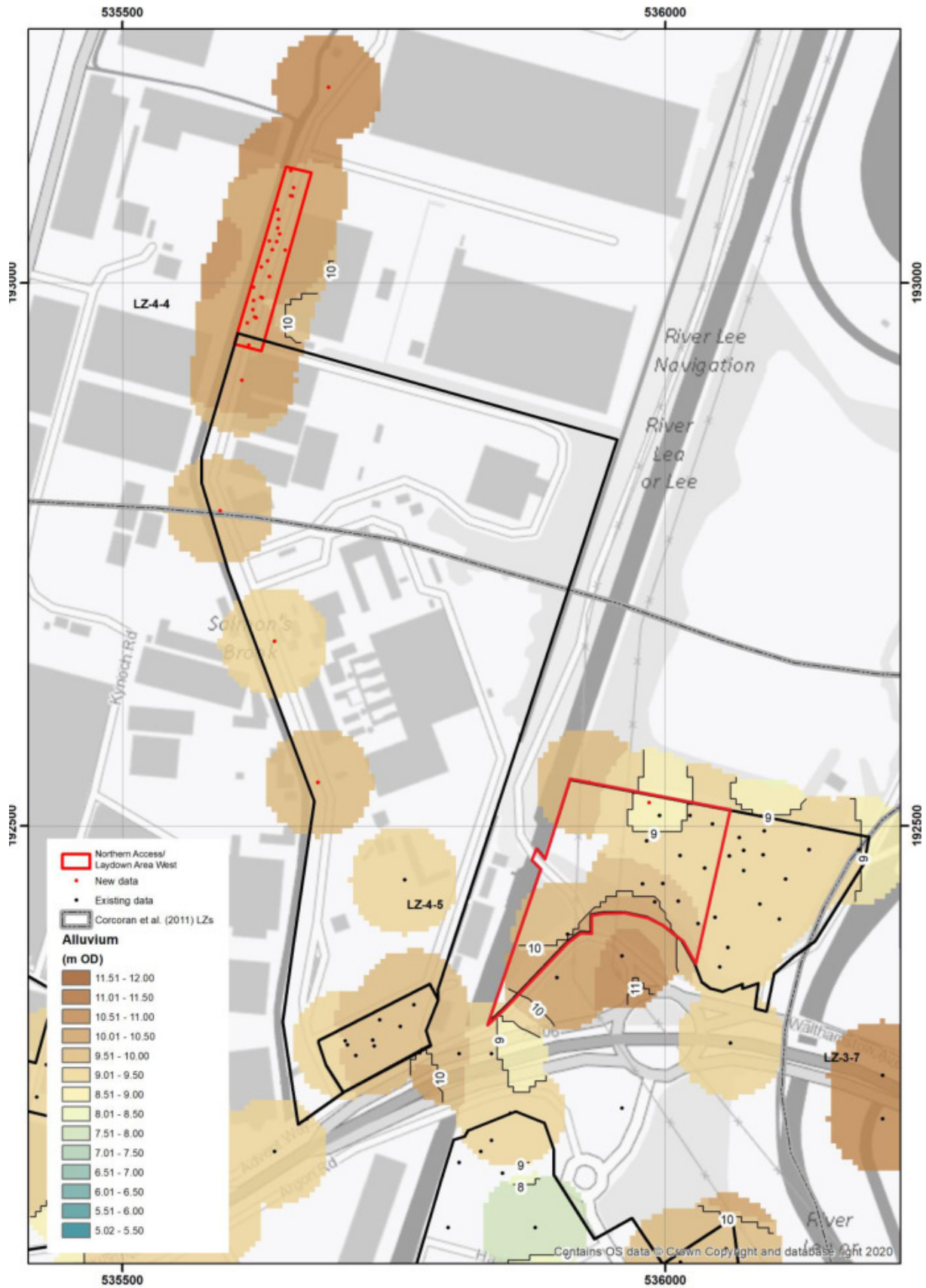


Figure 6: Surface of the Alluvium (m OD)

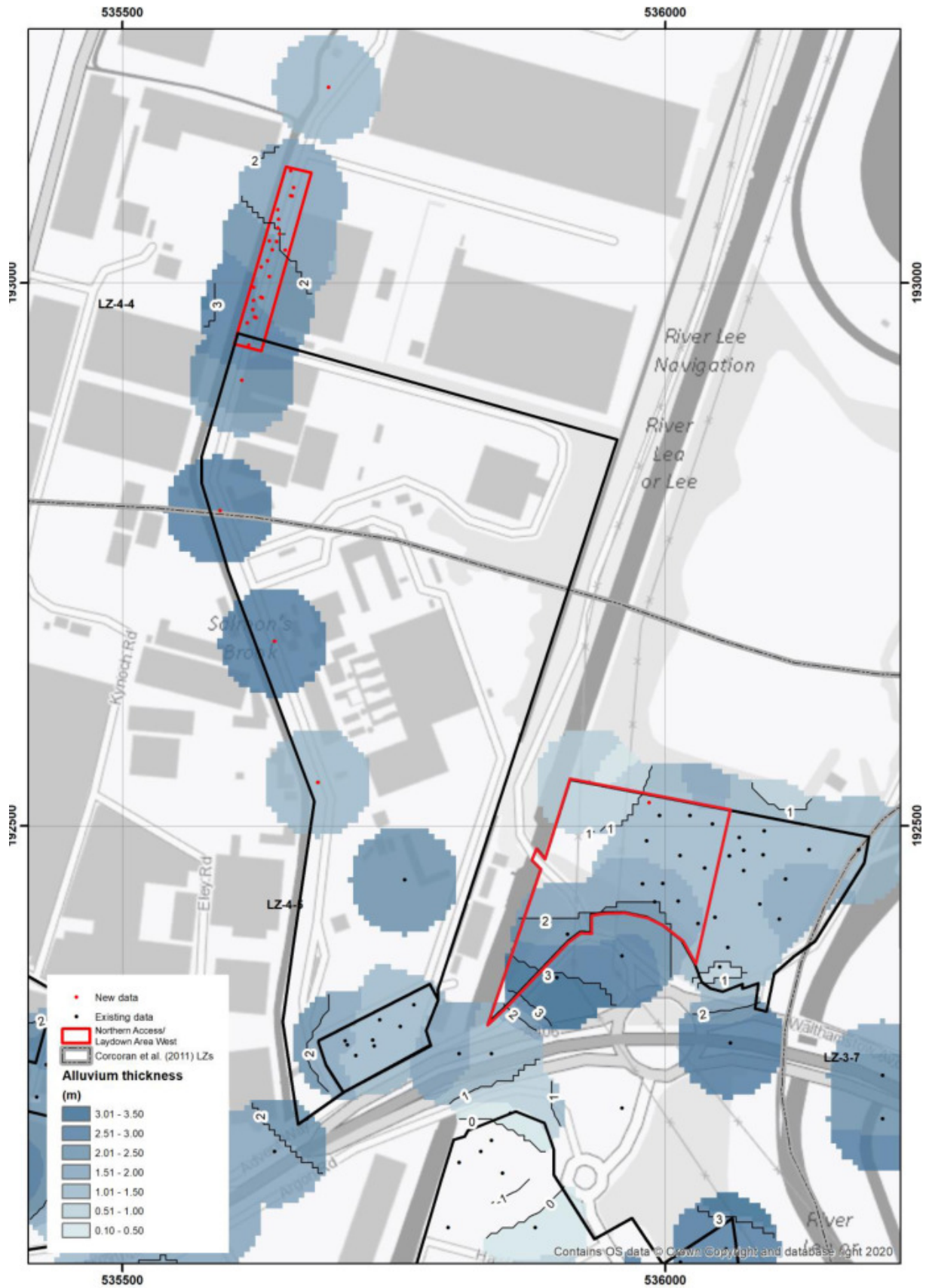


Figure 7: Thickness of the combined alluvial units (m)

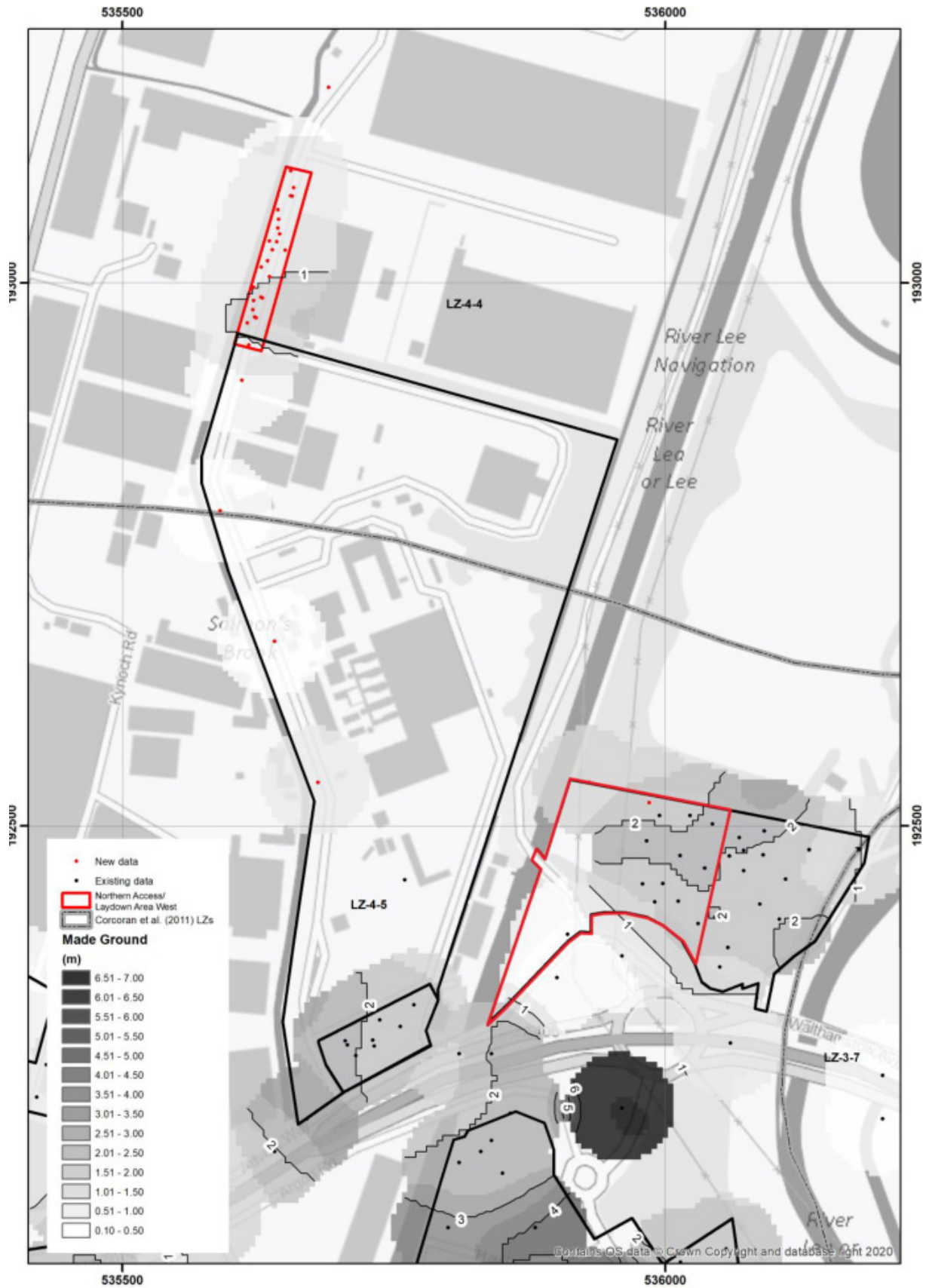


Figure 8: Thickness of the Made Ground (m)

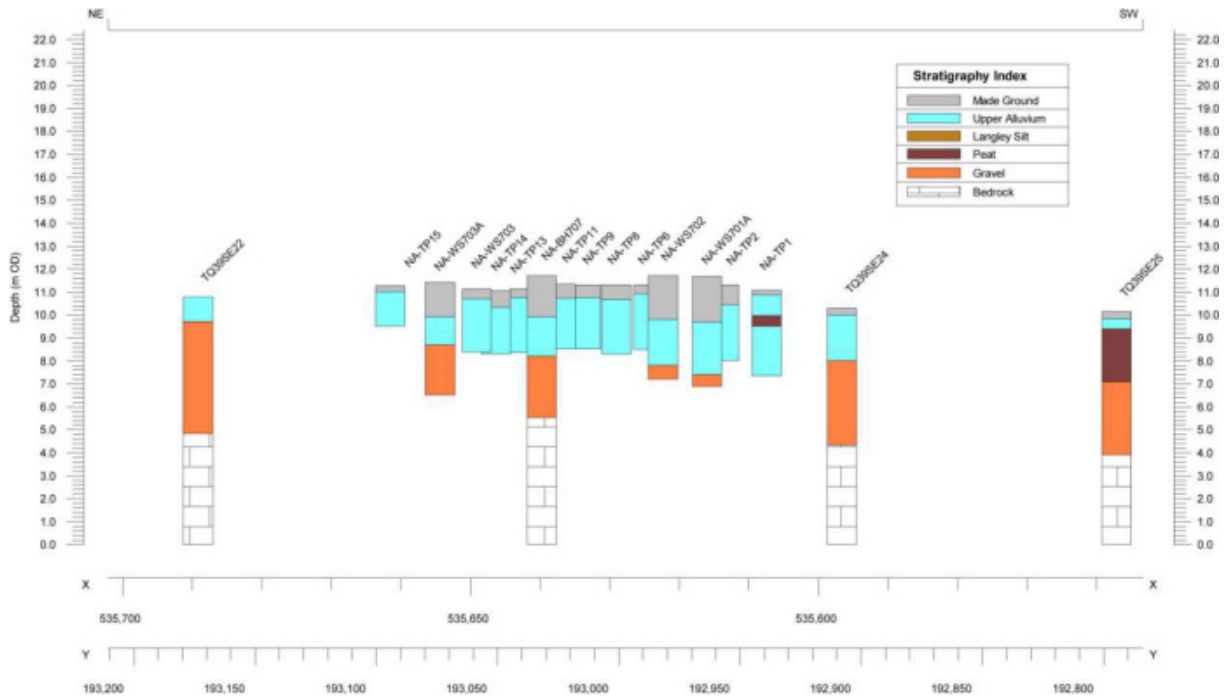


Figure 9: Southwest to northeast transect of selected sequences across the site and the wider area

5. DISCUSSION & CONCLUSIONS

The aims of the desk-based geoarchaeological deposit modelling at the NLWA Northern Access Area & Laydown Area West sites were (1) to clarify the nature of the sub-surface stratigraphy; (2) to clarify the nature, depth, extent and possible date of any alluvium and organic/peat or tufa deposits; (3) to review the archaeological and palaeoenvironmental potential of the site; and (4) to make recommendations for any further geoarchaeological or palaeoenvironmental investigations. In order to achieve these aims, a programme of desk-based geoarchaeological deposit modelling was undertaken, integrating data from a new archaeological watching brief and geotechnical investigation at the Northern Access Area site (ADAS, 2020a) and Edmonton EcoPark Laydown Area West (ADAS, 2020b), and the existing deposit model from Edmonton EcoPark Laydown Area East (Batchelor *et al.*, 2019).

The results of the deposit modelling have revealed a sequence of Late Devensian Lea Valley Gravel, overlain by Holocene alluvial sediments (including a localised peat deposit), capped by modern Made Ground. The Gravel surface here is recorded at levels between 6.99 and 8.72 m OD, rising northwards from levels between ca. 7-8m OD in the southern half of the Northern Access Area site, to between ca. 8.2 and 8.7m OD in the northern half. Although slightly lower in the southern half of the site, these levels are generally consistent with Corcoran *et al.*'s (2011) Landscape Zone 4.4, where the Gravel surface is described as lying at levels between ca. 8 and 9m OD. The Gravel surface was not reached in the new archaeological trench at Laydown Area West, but the existing model for Laydown Area East shows that it lies at similar levels to the south of the Northern Access Area, at between ca. 7 and 8.5m OD.

Overlying the Gravel in one archaeological trial pit in the southern part of the site was a unit of mineral-rich peat, present at between 9.52 and 9.97m OD and described as a black organic layer or lens. Peat was not recorded within the remainder of the interventions across the site; although only nine of the 25 interventions recorded the full Holocene alluvial sequence, these are relatively well distributed across the site, and indicate that the peat is confined to the south in the area of TP1. Elsewhere across the site, the Holocene alluvium is variously silty, clayey and in places gravelly, and derived from either low to moderate energy fluvial activity (sandy/gravelly material) or at a distance from any active channels (silty or clayey material) on the floodplain of the River Lea. The alluvium is described as organic in two interventions, indicative of other localised transitions towards semi-terrestrial conditions on the floodplain.

The peat deposit at the present site is present at a higher elevation than has generally been recorded elsewhere in this area of the River Lea floodplain, where it is often recorded at levels below around 8.5m OD; however, 'peat with bands of clay' was recorded at similar levels at 4 Advent Way (Young, 2020; 8.95-9.92m OD). Given their elevation, it is possible that these deposits of a significantly later date than those at Advent Way (Green *et al.*, 2006), where radiocarbon dating indicated they date to between ca. 11,500 and 4000 cal BP, equating to the beginning of the Mesolithic to Bronze Age (or early to middle Holocene). On the basis of the higher elevation and unknown age of the peat deposit

at the site, further investigation of these sediments is required in order to confirm its palaeoenvironmental potential, including its character and age.

In terms of archaeological potential, the deposit models presented here indicate that the Gravel surface rises toward the north, with the Gravel surface in the northern area of the site around 1m higher than in the south. Although not as high as the Gravel island underlying the north-western part of the Stonehill Business Park site (see Young, 2014), the deposit model indicates that the site would at some time during the earlier prehistoric period have been at the interface between the floodplain and the higher, drier ground to the north. As such, the prehistoric archaeological potential of the site is considered to be higher in the north. However, no archaeological deposits or features were identified however during the watching brief undertaken by ADAS (2020a).

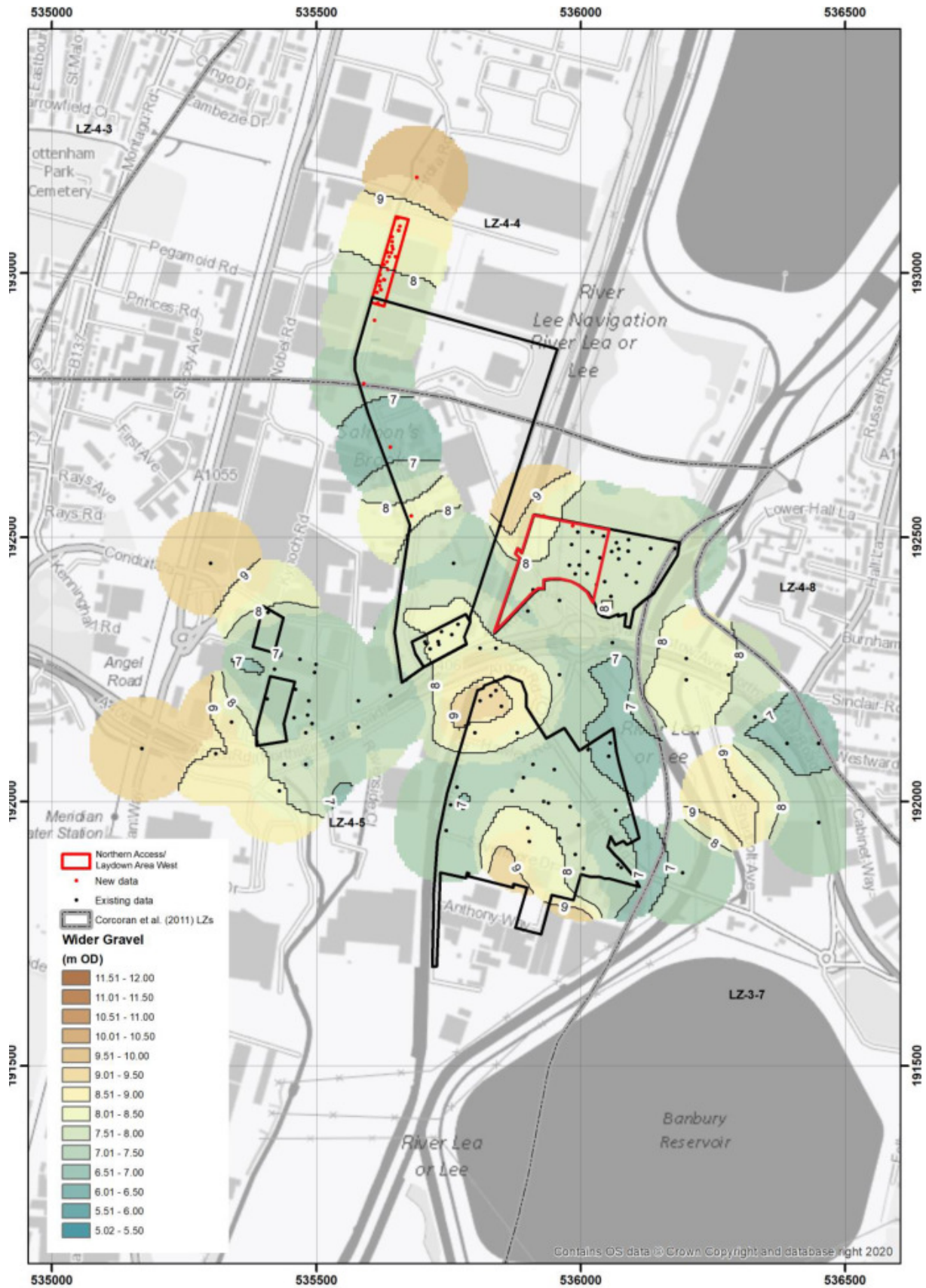


Figure 10: Surface of the Gravel (m OD) in the wider area of the site

6. REFERENCES

ADAS (2020a) Archaeological Monitoring and Recording Report: NLWA Northern Access. *RSK ADS Ltd Unpublished Report, February 2020.*

ADAS (2020b) Archaeological Monitoring and Recording Report: Edmonton EcoPark, Laydown Area West. *RSK ADS Ltd Unpublished Report, July 2020.*

Batchelor, C.R., Young, D.S. & Lincoln, P. (2019) Edmonton Ecopark Laydown Area East, Lower Hill Lane, Advent Way, London Borough of Enfield Geoarchaeological Fieldwork & Deposit Model Report. *Quaternary Scientific (QUEST) Unpublished Report July 2019; Project Number 020/19.*

Corcoran, J., Halsey, C., Spurr, G., Burton, E. and Jamieson, D. (2011) *Mapping past landscapes in the lower Lea valley: A geoarchaeological study of the Quaternary sequence.* Museum of London Archaeology, MOLA Monograph 55.

Gibbard, P.L. (1985) *Pleistocene History of the Middle Thames Valley.* Cambridge University Press, Cambridge.

Gibbard, P.L. (1994) *Pleistocene History of the Lower Thames Valley.* Cambridge University Press, Cambridge.

Historic England (2020) *Deposit Modelling and Archaeology. Guidance for Mapping Buried Deposits.* Swindon. Historic England.

Trøels-Smith, J. (1955) Karakterisering af løse jordarter (Characterisation of unconsolidated sediments), *Danm. Geol. Unders.*, Ser IV 3, 73.

Young, D.S. (2019) *NWLA Laydown Area East, Lower Hall Lane, Advent Way, London: a review of the geotechnical borehole and test pit records.* Quaternary Scientific (QUEST) Unpublished Report March 2019; Project Number 020/19.

Young, D.S. (2014) *Stonehill Business Park, Harbert Road, Enfield (Site Code: SBP14): geoarchaeological fieldwork and deposit model report.* Quaternary Scientific (QUEST) Unpublished Report October 2014; Project Number 196/14.

Young, D.S. and Batchelor, C.R. (2020) Unit F, Angel Works, Advent Way, Edmonton, London Borough of Enfield Geoarchaeological Fieldwork & Deposit Model Report. *Quaternary Scientific (QUEST) Unpublished Report July 2020; Project Number 070/20.*

Young, D.S. (2020) *Lea Valley Heat Network, 4 Advent Way, London Borough of Enfield Desk-Based Geoarchaeological Deposit Model.* *Quaternary Scientific (QUEST) Unpublished Report August 2020; Project Number 061/20.*

7. APPENDIX 1: DEPOSIT MODEL DATA

Name	Easting	Northing	Elevation (m OD)	Total depth (m)
<i>4 Advent Way (Young, 2020)</i>				
BH1	535755.94	192315.13	11.00	30.45
BH2	535705.32	192301.73	10.70	25.45
TP1	535707.30	192298.04	10.64	3.30
TP2	535730.56	192302.50	11.10	2.00
TP3	535768.29	192335.14	11.04	2.00
WS1	535715.12	192288.28	11.54	5.45
WS2	535731.83	192297.00	11.72	5.45
WS3	535737.08	192321.25	10.95	5.45
<i>Data from Unit F, Angel Works (Young, 2020)</i>				
UF-BH1	535408.76	192357.16	10.50	2.20
<i>Data from Advent Way (Green et al., 2006)</i>				
AW-BH1	535430.00	192280.00	9.74	8.00
AW-BH2	535486.00	192190.00	9.81	8.00
AW-BH3	535407.00	192194.00	9.90	6.00
AW-WS1	535469.00	192269.00	9.78	4.00
AW-WS10	535492.00	192147.00	9.91	5.00
AW-WS2	535421.00	192250.00	9.77	5.00
AW-WS3	535500.00	192259.00	9.89	3.00
AW-WS5	535497.00	192244.00	9.78	5.00
AW-WS7	535461.00	192212.00	9.87	5.00
AW-WS8	535458.00	192158.00	9.91	5.00
AW-WS9	535484.00	192163.00	9.94	5.00
<i>Data from Edmonton EcoPark (Young, 2019)</i>				
NWLA-BH1	536086.82	192427.75	10.69	15.00
NWLA-BH2	536043.18	192501.68	11.16	15.00
NWLA-BH3	536011.89	192430.51	11.14	15.00
NWLA-BH4	535982.82	192486.01	10.96	15.50
NWLA-QBH1	536068.03	192489.22	10.92	4.00
NWLA-QBH2	536104.95	192413.82	10.20	3.00
NWLA-TP1	536110.72	192450.73	10.85	3.50
NWLA-TP10	535997.71	192446.66	11.11	3.80
NWLA-TP11	535979.03	192446.54	11.06	3.80
NWLA-TP12	536013.58	192472.61	11.16	3.80
NWLA-TP13	536022.50	192509.56	10.77	3.80
NWLA-TP14	535994.42	192509.56	10.77	3.80
NWLA-TP15	536057.60	192387.91	10.59	3.60
NWLA-TP2	536132.22	192478.04	11.12	3.80
NWLA-TP3	536090.98	192495.05	11.23	3.80
NWLA-TP4	536089.95	192473.10	10.97	3.70
NWLA-TP5	536072.08	192458.48	10.95	3.20
NWLA-TP6	536045.63	192415.62	10.90	3.80

NWLA-TP7	536058.81	192472.23	10.97	3.80
NWLA-TP8	536072.01	192477.10	10.99	3.30
NWLA-TP9	536036.30	192460.92	11.14	3.80
<i>Data from Stonehill Business Park (Young, 2014)</i>				
SHBH2	535746.00	191945.00	10.80	6.00
SHBH2A	535892.00	192045.00	11.30	5.00
SHBH3	535903.00	191924.00	12.30	6.50
SHBH4	536053.00	192085.00	11.50	7.70
SHCP3	536014.00	192098.00	11.50	5.00
SHCP4	536066.00	191983.00	11.50	5.00
SHG7	535766.00	192027.00	10.80	3.15
SHG8	536005.00	191873.00	12.50	3.00
SHQBH2	536055.98	192110.37	11.63	5.00
SHQBH3	535857.23	192235.35	11.21	4.00
SHQBH4	536070.74	191880.36	10.47	4.00
SHQBH5	535754.43	191993.47	10.76	4.00
SHWSGA	536077.00	191875.00	10.50	5.00
SHWSGB	535996.00	191955.00	12.30	5.00
SHWSGC	535939.00	191997.00	12.20	5.00
TP1	536110.72	192450.73	10.85	3.50
TP10	535997.71	192446.66	11.11	3.80
TP11	535979.03	192446.54	11.06	3.80
TP12	536013.58	192472.61	11.16	3.80
TP13	536022.50	192509.56	10.77	3.80
TP14	535994.42	192509.56	10.77	3.80
TP15	536057.60	192387.91	10.59	3.60
TP2	536132.22	192478.04	11.12	3.80
TP3	536090.98	192495.05	11.23	3.80
TP4	536089.95	192473.10	10.97	3.70
TP6	536045.63	192415.62	10.90	3.80
TP7	536058.81	192472.23	10.97	3.80
TP8	536072.01	192477.10	10.99	3.30
TP9	536036.30	192460.92	11.14	3.80
<i>BGS archive boreholes</i>				
TQ39SE25	535590.00	192790.00	10.15	10.62
TQ39SE24	535610.00	192910.00	10.30	11.07
TQ39SE26	535640.00	192670.00	9.91	10.11
TQ39SE23	535650.00	193030.00	10.70	11.81
TQ39SE27	535680.00	192540.00	10.30	10.46
TQ39SE22	535690.00	193180.00	10.79	12.24
TQ39SE65	535930.00	192540.00	11.03	6.10
TQ39SE66	535930.00	192540.00	10.70	6.10
TQ39SE101	535580.00	192140.00	10.58	25.00
TQ39SE102	535580.00	192190.00	10.35	10.00
TQ39SE103	535640.00	192200.00	10.77	10.00

TQ39SE104	535670.00	192230.00	11.20	25.00
TQ39SE106	535810.00	192290.00	10.98	30.00
TQ39SE108	535840.00	192290.00	11.15	10.00
TQ39SE109	535960.00	192240.00	14.59	7.50
TQ39SE112	535900.00	192360.00	10.60	4.50
TQ39SE113	535910.00	192400.00	10.11	4.00
TQ39SE114	535960.00	192380.00	11.52	4.50
TQ39SE117	535990.00	192430.00	11.59	4.20
TQ39SE118	536030.00	192410.00	10.74	4.50
TQ39SE120	536060.00	192300.00	10.20	30.00
TQ39SE124	536200.00	192270.00	11.18	25.00
TQ39SE125	536200.00	192230.00	11.25	21.50
TQ39SE126	536280.00	192240.00	11.25	10.00
TQ39SE128	536330.00	192160.00	9.39	25.30
TQ39SE129	536390.00	192110.00	11.00	10.00
TQ39SE130	536450.00	192110.00	11.59	9.00
TQ39SE148	536193.00	191865.00	9.96	25.00
TQ39SE149	536450.00	191960.00	9.51	10.00
TQ39SE153	536290.00	192010.00	10.15	1.00
TQ39SE217	535430.00	192020.00	12.19	137.46
TQ39SE231	535300.00	192450.00	11.00	81.00
TQ39SE26	535640.00	192670.00	9.91	10.11
TQ39SE27	535680.00	192540.00	10.30	10.46
TQ39SE28	535760.00	192450.00	9.31	9.17
TQ39SE357	535910.00	192070.00	11.40	10.00
TQ39SE358	535950.00	192060.00	12.28	10.00
TQ39SE359	535870.00	192020.00	11.25	10.00
TQ39SE360	535930.00	192000.00	12.26	10.00
TQ39SE361	535980.00	191990.00	12.53	10.00
TQ39SE362	535900.00	191950.00	12.30	10.00
TQ39SE363	535960.00	191930.00	12.34	10.00
TQ39SE364	535990.00	191900.00	12.56	10.00
TQ39SE41	536178.00	192478.00	9.81	30.48
TQ39SE465	535800.00	192130.00	11.28	12.37
TQ39SE466	535480.00	192130.00	11.61	12.19
TQ39SE467	535880.00	192130.00	12.16	10.00
TQ39SE469	535850.00	192180.00	12.89	12.37
TQ39SE470	535840.00	192210.00	13.41	18.28
TQ39SE471	535830.00	192200.00	13.14	12.19
TQ39SE472	535810.00	192190.00	12.77	18.28
TQ39SE65	535930.00	192540.00	11.03	4.27
TQ39SE66	535930.00	192540.00	10.70	6.10
TQ39SE90	536050.00	192370.00	10.00	93.00
TQ39SE93	535340.00	192150.00	11.26	10.00
TQ39SE94	535170.00	192100.00	11.45	15.00

TQ39SE96	535310.00	192090.00	10.03	22.50
TQ39SE97	535440.00	192070.00	11.30	10.00
TQ39SE98	535480.00	192070.00	10.88	10.00
TQ39SE99	535530.00	192120.00	10.48	10.00

Plates



Plate 1: General view of the Northern Access, looking north-east



Plate 2: Working shot of Trial Pit 1, looking south-west.



Plate 3: North-east facing section of Trial Pit 4, looking south-west



Plate 4: Oblique view of north-east facing section of Trial Pit 5, looking south.

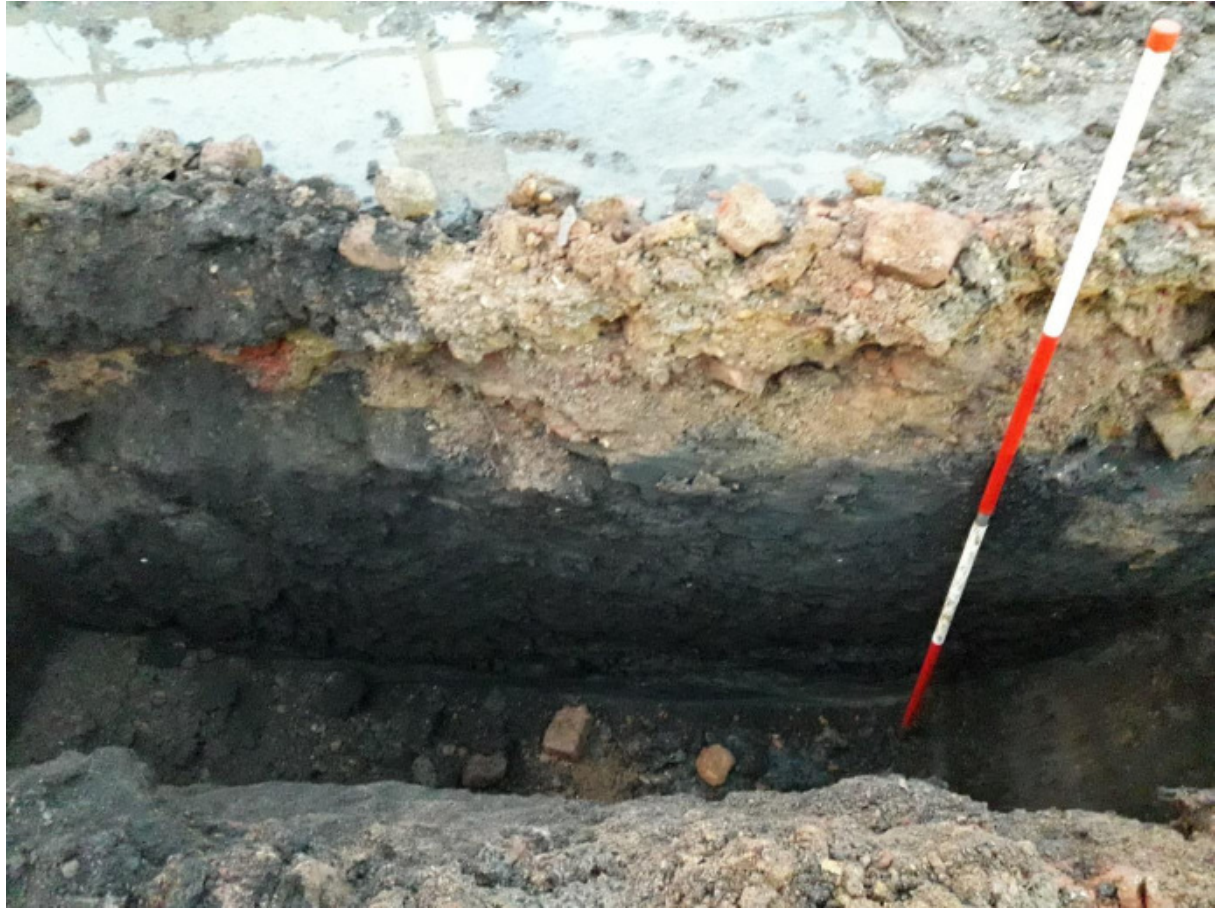


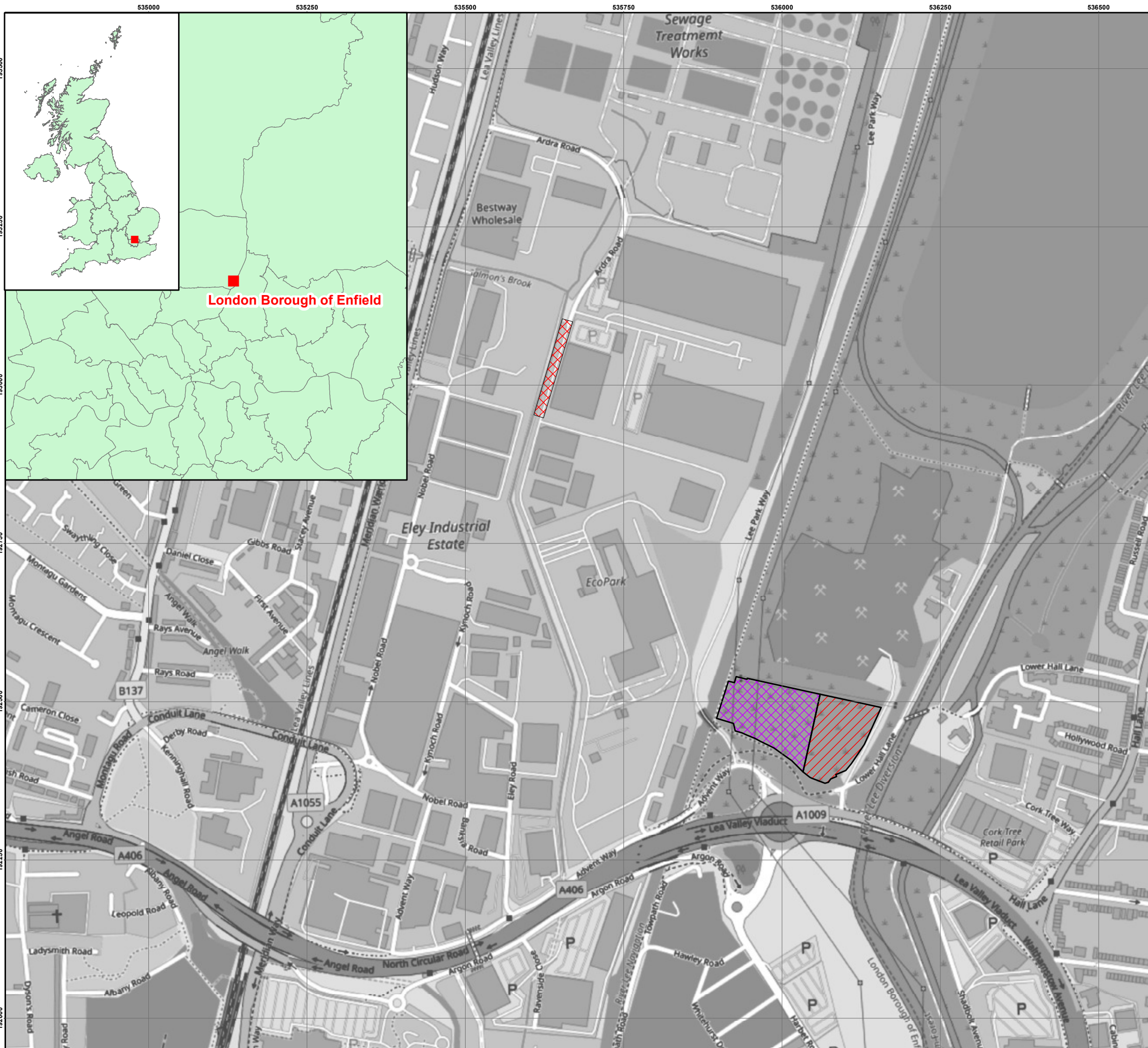
Plate 5: North-east facing section of Trial Pit 6, looking south-west.



Plate 6: North-east facing section of Trial Pit 7, looking south-west.



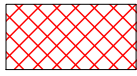
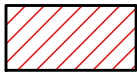
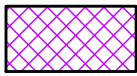
Plate 7: North-east facing section of Trial Pit 9, looking south-west.



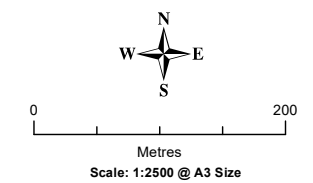
Galdris

NLWA Northern Access

Figure 1: Map showing location of the Northern Access Area and Laydown Areas East and West

-  Northern Access
-  Laydown Area East
-  Laydown Area West

Drawn by: Peter Vellet Date: 18.01.2019
 Verified By: Diarmuid O Seaneachain Date: 18.01.2019



This map is reproduced from Ordnance Survey material with the permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationery Office
 © OpenStreetMap contributors licence CC BY-SA February 2020

For reference purposes only. No further copies may be made

RSK ADAS Ltd,
 11d Park House,
 Milton Park,
 Abingdon
 OX14 4RS





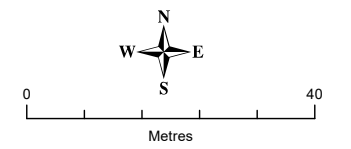
Galdris

NLWA Northern Access

Figure 2: Location of Trial Pits

-  Site Boundary
-  Trial Pits


Drawn by: Andrew Brown Date: 13.02.2020
 Verified By: Diarmuid O'Seaneachain Date: 13.02.2020



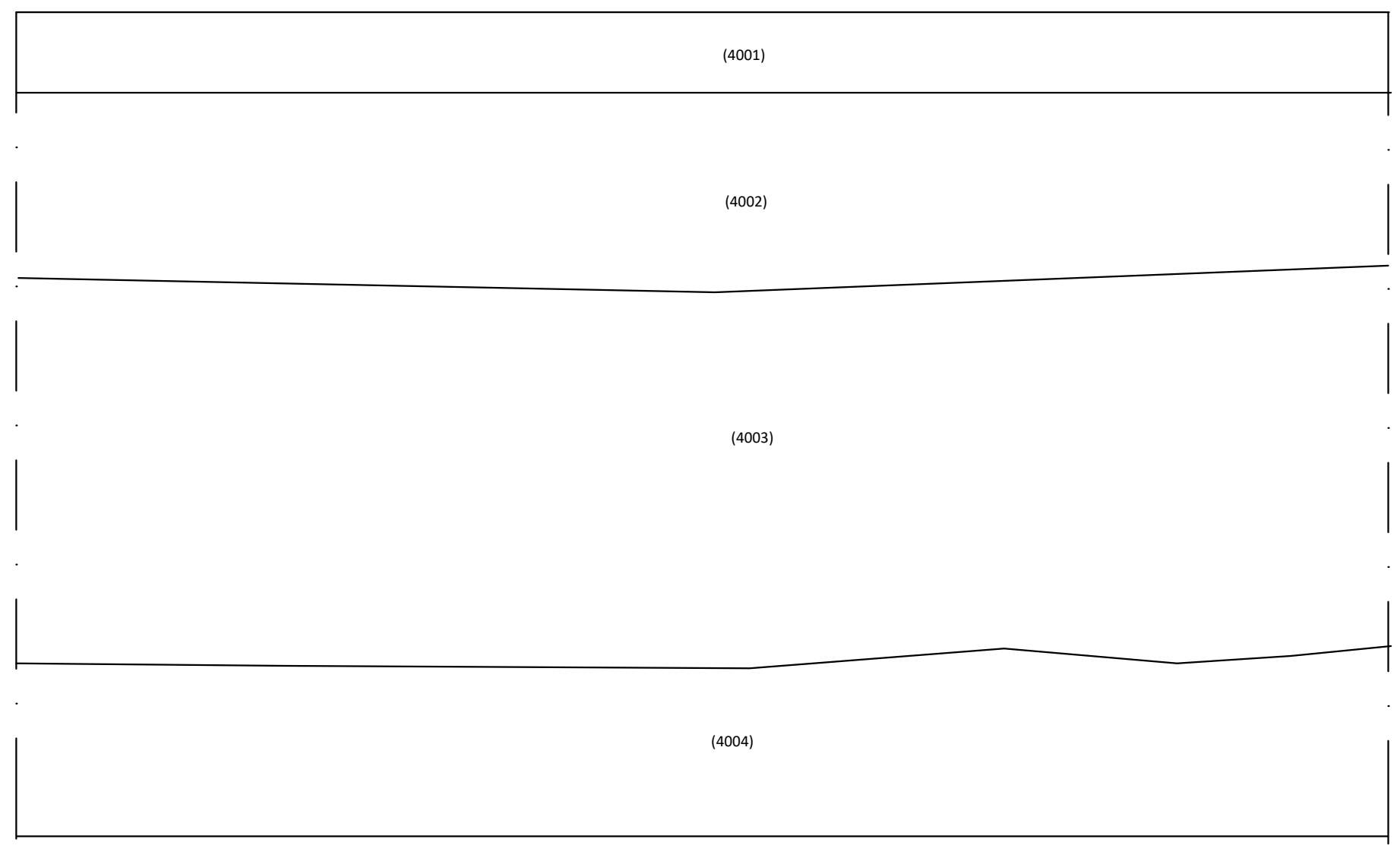
Scale: 1:600 @ A3 Size
 This map is reproduced from Ordnance Survey material with the permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationery Office
 © OpenStreetMap contributors licence CC BY-SA February 2020.
 For reference purposes only. No further copies may be made

RSK ADAS Ltd,
 11d Park House,
 Milton Park,
 Abingdon
 OX14 4RS



11.05 m OD  NW

SE 



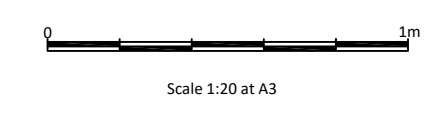
Section 1: North-east facing section of Trial Pit 4

Galldris

NLWA Northern access


Figure 3: Representative Section of Trial Pit 4

Drawn by: Andrew Brown Date: 13.02.2020
Checked by: Diarmuid O Seaneachain Date: 13.02.2020

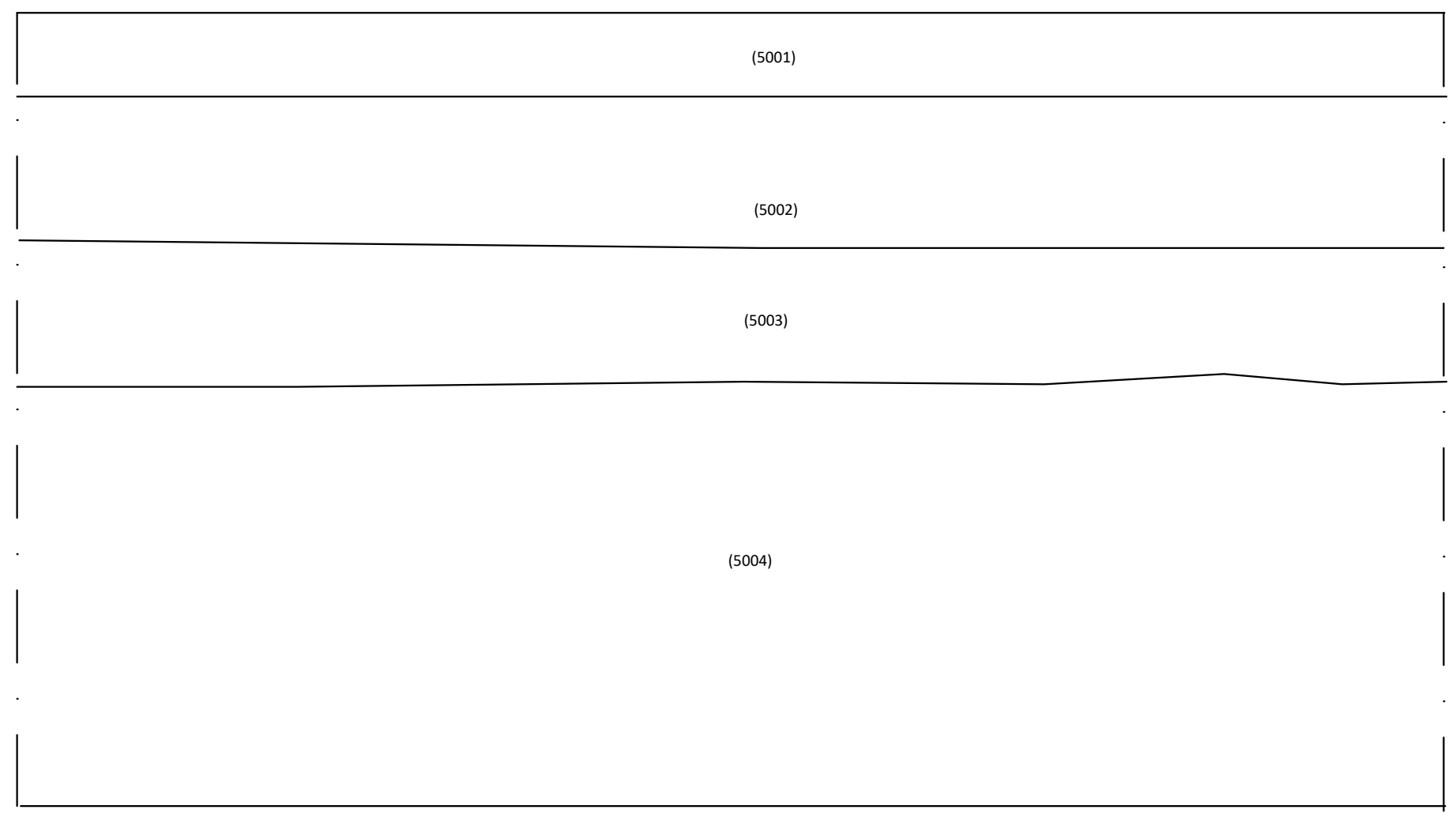


RSK ADAS Ltd,
11d Park House,
Milton Park
Abingdon,
OX14 4RS



11.31 m OD  NW

SE 



Section 1: North-east facing section of Trial Pit 5

Galldris

NLWA Northern access

Figure 4: Representative Section of Trial Pit 5

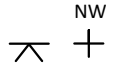
Drawn by: Andrew Brown Date: 13.02.2020
Checked by: Diarmuid O Seaneachain Date: 13.02.2020



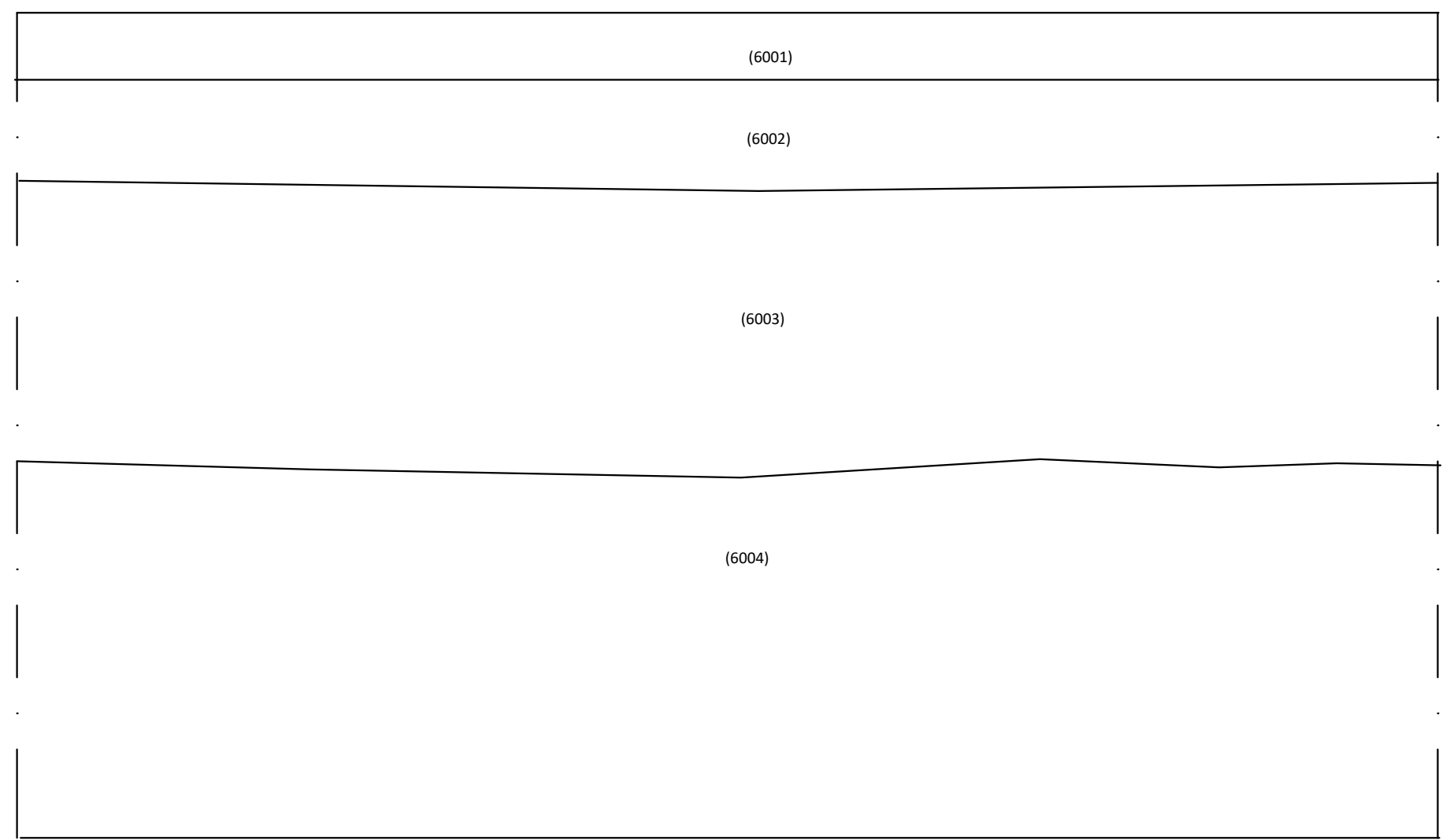
Scale 1:20 at A3

RSK ADAS Ltd,
11d Park House,
Milton Park
Abingdon,
OX14 4RS



11.32 m OD  NW

SE 



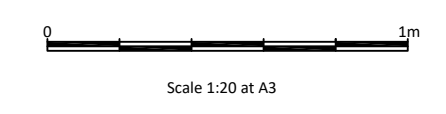
Section 1: North-east facing section of Trial Pit 6

Galldris

NLWA Northern access


Figure 5: Representative Section of Trial Pit 6

Drawn by: Andrew Brown Date: 13.02.2020
Checked by: Diarmuid O Seaneachain Date: 13.02.2020

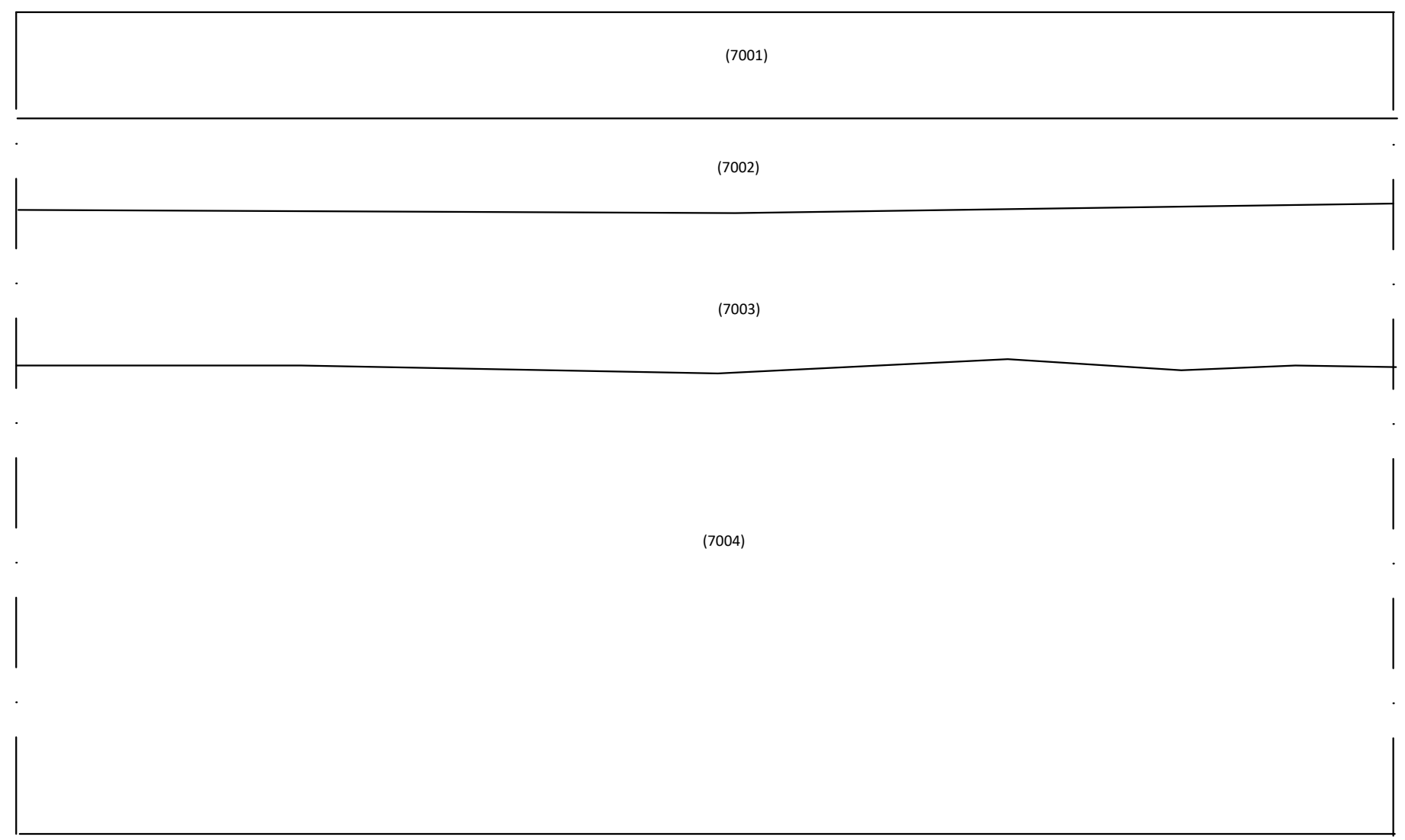


RSK ADAS Ltd,
11d Park House,
Milton Park
Abingdon,
OX14 4RS



11.35 m OD  NW

SE 



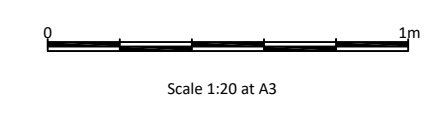
Section 1: North-east facing section of Trial Pit 7

Galldris

NLWA Northern access


Figure 6: Representative Section of Trial Pit 7

Drawn by: Andrew Brown Date: 13.02.2020
Checked by: Diarmuid O Seaneachain Date: 13.02.2020

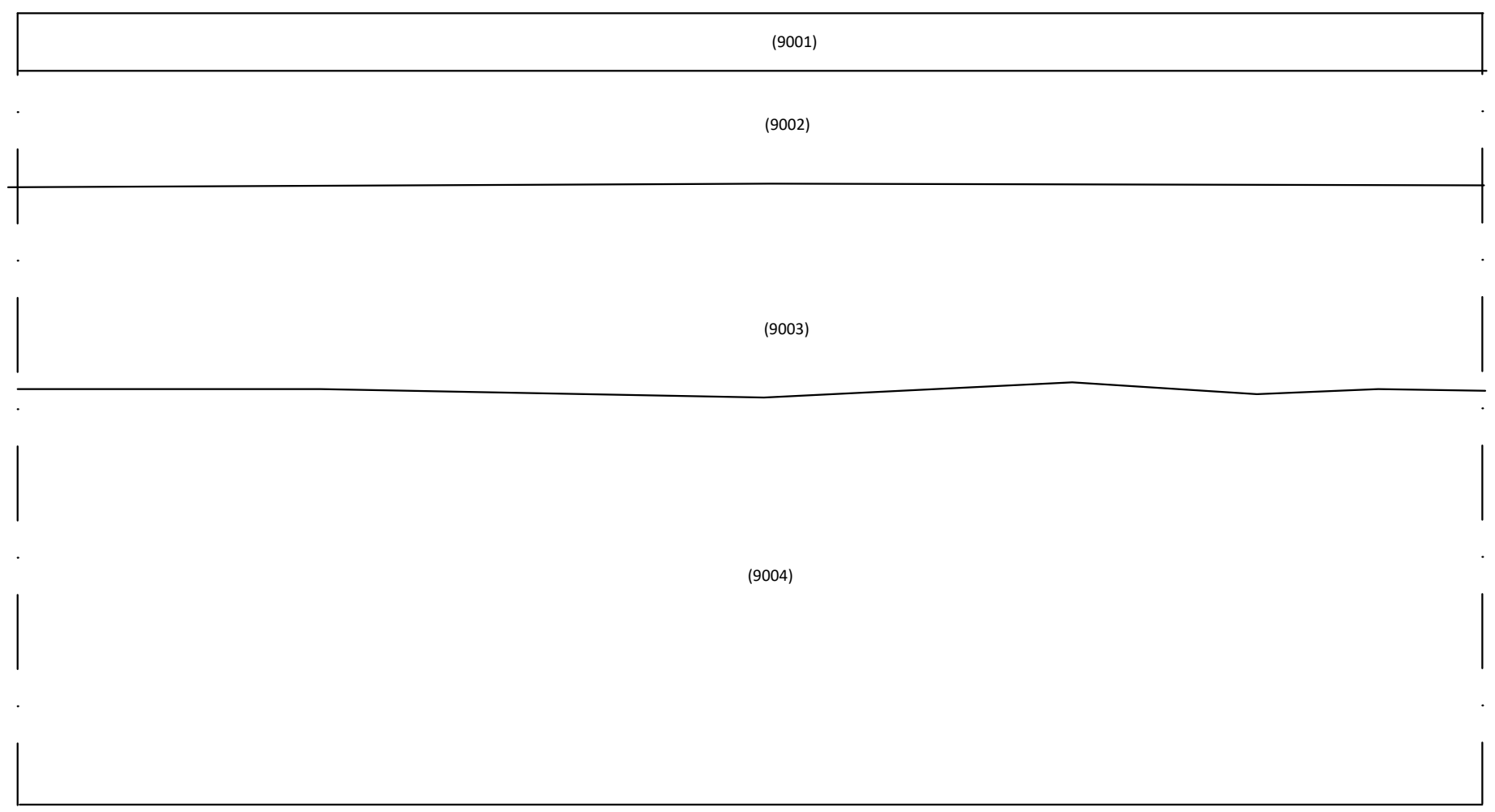


RSK ADAS Ltd,
11d Park House,
Milton Park
Abingdon,
OX14 4RS



11.33 m OD  NW

SE 



Section 1: North-east facing section of Trial Pit 9

Galldris

NLWA Northern access

Figure 7: Representative Section of Trial Pit 9

Drawn by: Andrew Brown Date: 13.02.2020
Checked by: Diarmuid O Seaneachain Date: 13.02.2020



Scale 1:20 at A3

RSK ADAS Ltd,
11d Park House,
Milton Park
Abingdon,
OX14 4RS

