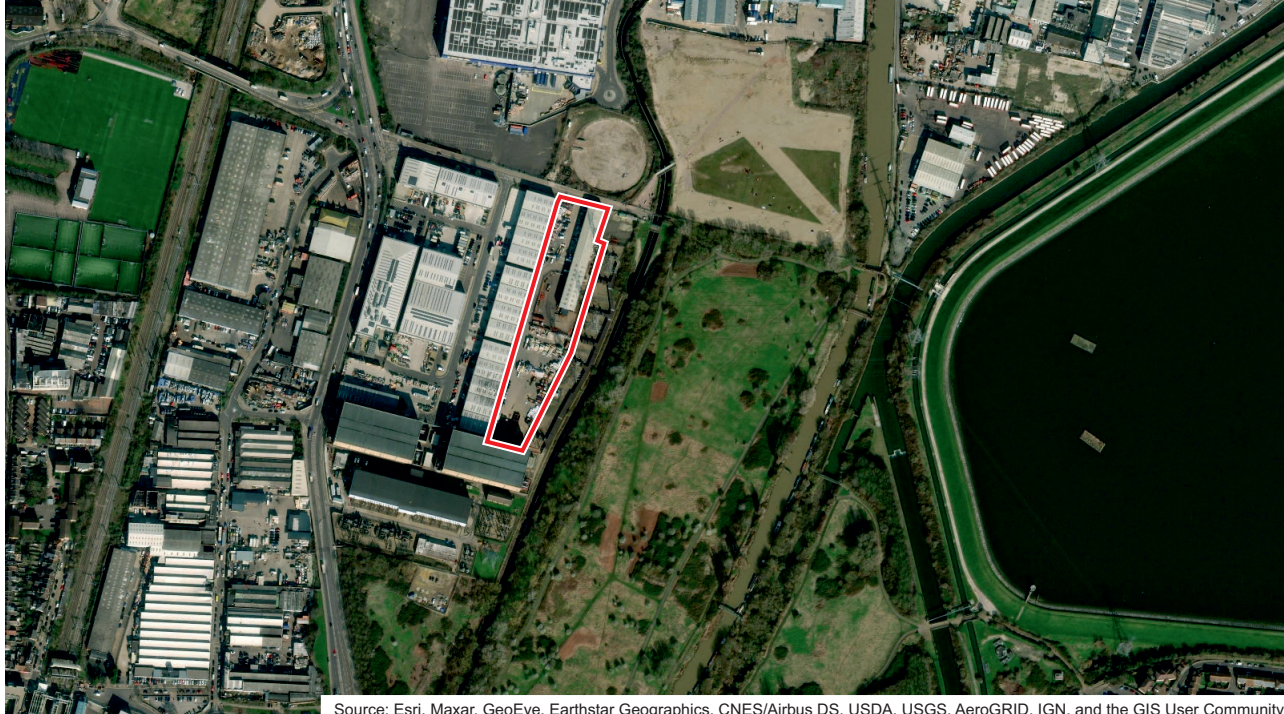




Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

NORTH LONDON REINFORCEMENT PROJECT

Leeside Road, Tottenham

London N17 0SG

London Borough of Haringey

Geoarchaeological deposit model

June 2024



**North London
Reinforcement Project
Leeside Road
Tottenham
London N17**

London Borough of Haringey

Geoarchaeological Deposit Model

National Grid Reference: 535377, 191429

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Summary

This report presents the results of a geoarchaeological desk-based assessment (deposit model) carried out by Museum of London Archaeology (MOLA) on the North London Reinforcement Project (NLRP) site, Leaside Road, Tottenham N17 in the London Borough of Haringey, NGR 535377, 191429. The report was commissioned by AtkinsRéalis from MOLA on behalf of the client, National Grid.

The report presents the results of a geoarchaeological examination of geotechnical borehole logs taken across the site and provided by the client. By modelling the buried stratigraphy and preliminarily reconstructing the evolving landscape of the site, deposits of likely archaeological and palaeoenvironmental potential are assessed. The site is located within the Tier 3 Lea Valley Archaeological Priority Area, due to the potential for palaeoenvironmental and organic remains.

Early Holocene landscape modelling of the underlying Pleistocene gravel strata indicated that the site was situated between at least two ancient river channels in the Lea Valley, in an area of undulating topography where smaller river channels probably crossed and converged. The early Holocene surface varied between 5.20m and 7m above ordnance datum (AOD). Within the Pleistocene gravels, of note is one borehole which recorded a deposit of black, peaty, sandy clay. This deposit may belong to the Arctic Beds, or rafts of botanical remains dating to the late Pleistocene, and consequently is of great palaeoenvironmental interest.

Overlying the Pleistocene gravels were Holocene deposits reaching 2.20m thick on average. Organic deposits at the base of the Holocene sequence dating to the Mesolithic are typical for this part of the Lea Valley (Corcoran et al 2011), but within the site organic deposits were only recorded in two boreholes. This may be the result of late Holocene fluvial activity eroding away the earlier deposits including what were probably widespread peats. Where present, organic deposits such as peat have a high potential for preserving localised palaeoenvironmental remains and organic material suitable for radiocarbon dating as well as organic artefacts.

Overall, however, the Holocene deposits were found to consist of silts and clays. It is likely that these deposits represent overbank flood deposits which increased after the Lea became increasingly impeded during later prehistoric and historic periods as estuarine conditions impacted the Lower Thames and consequently, the Lower Lea. Although these deposits have good potential for palaeoenvironmental proxy indicators, the quality of these remains may be reduced by fluvial transport and seasonal cycles of flooding, drying and desiccation.

Artefactually, the site has moderate potential for archaeological remains from all periods although particularly from the later Holocene. Several prehistoric sites and historic remains are recorded in this area of the Lea Valley in association with waterside activity and structures including, significantly, the early medieval crannog-type timber structure discovered at the IKEA site c. 50m to the north of the site (Goodburn et al 2024).

During the medieval period the site was probably marshland which was gradually reclaimed for agricultural purposes. The site appears to have remained undeveloped until the industrialisation of the Lea Valley in the 20th century when an average of 2.5m of made ground was put down to raise and level the natural topography. Modern industrial activity appears to have also led to hydrocarbon contamination across the site, as recorded in a number of boreholes. Given its modern nature, the made ground is considered of no archaeological or palaeoenvironmental potential or significance.

The site has been provisionally divided into two landscape zones with marginally differing archaeological and palaeoenvironmental potential. Landscape zone 1 is defined by areas where generally the made ground exceeds 3m thickness, the thickness of the Holocene deposits is below average, and the early Holocene surface is higher. Landscape zone 2 is defined by areas where generally the made ground deposits are less thick than 3m, the Holocene deposits are thicker than average, and the early Holocene surface is lower. Landscape zone 1 has a slightly higher archaeological and palaeoenvironmental potential than zone 2, although overall the zones are of a similar level of potential.

The planned demolition of buildings within the site to slab level is not anticipated to impact deposits of archaeological and palaeoenvironmental potential as this will not exceed the depth of the made ground. A further phase of geotechnical ground investigation is planned, and a geoarchaeological watching brief is recommended on these works. Additionally, as the site lies across the Lea Valley Tier 3 Archaeological Priority Area, which is recorded as containing river valley deposits with high prehistoric and palaeoenvironmental potential, the further ground investigation work should include geoarchaeological purposive boreholes, both to better understand the depositional history and floodplain development in this part of the Lea Valley and inform any further archaeological investigations (particularly in areas where deposits of archaeological significance are to be removed). The scope of mitigation will need to be decided in consultation with the client and GLAAS once the design proposals are finalised.

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Glossary

<i>Alluvium</i>	Sediment laid down by a river. Can range from sands and gravels deposited by fast flowing water to clays that settle out of suspension during overbank flooding. Other deposits found on a valley floor (e.g. peat) are usually included in the term alluvium.
<i>Bronze Age</i>	2,000 – 600 BC
<i>Built heritage</i>	Upstanding structure of historic interest.
<i>Early medieval</i>	AD 410 – 1066. Also referred to as the Saxon period.
<i>Evaluation (archaeological)</i>	A limited programme of non-intrusive and/or intrusive fieldwork which determines the presence or absence of archaeological features, structures, deposits, artefacts or ecofacts within a specified area.
<i>Excavation (archaeological)</i>	A programme of controlled, intrusive fieldwork with defined research objectives which examines, records and interprets archaeological remains, retrieves artefacts, ecofacts and other remains within a specified area. The records made and objects gathered are studied and the results published in detail appropriate to the project design.
<i>Geotechnical</i>	Ground investigation for engineering purposes, typically boreholes and/or trial/test pits, to determine the nature of the subsurface deposits. Archaeological monitoring of geotechnical works can be a cost-effective means of carrying out two required investigations at the same time.
<i>Heritage asset</i>	A building, monument, site, place, area or landscape positively identified as having a degree of significance meriting consideration in planning decisions. Heritage assets are the valued components of the historic environment. They include designated heritage assets and assets identified by the local planning authority (including local listing).
<i>Historic environment assessment</i>	A written document whose purpose is to determine, as far as is reasonably possible from existing records and site inspection, the nature and significance of heritage assets within a specified area. Also known as a 'heritage statement' or 'statement of significance'.
<i>Historic Environment Record (HER)</i>	Archaeological database held and maintained by the County authority. In some counties this is named the HER (Historic Environment Record), where the built heritage data has been incorporated.
<i>Holocene</i>	The current geological epoch (during which a warm interglacial climate has existed) which started c 11,500 years ago when the glaciers of the most recent ice age began to retreat, characterised initially by the spread of forests. Also referred to as the 'Postglacial' and (in Britain) as the 'Flandrian'.
<i>Iron Age</i>	600 BC – AD 43
<i>Later medieval</i>	AD 1066 – 1500
<i>Made Ground</i>	Artificial deposit. An archaeologist would differentiate between modern made ground, containing identifiably modern inclusion such as concrete (but not brick or tile), and undated made ground, which may potentially contain deposits of archaeological interest.
<i>Mesolithic</i>	12,000 – 4,000 BC
<i>Neolithic</i>	4,000 – 2,000 BC
<i>Palaeolithic</i>	800,000 – 12,000 BC
<i>Palaeoenvironment</i>	The environment at a particular time in the past. Palaeo-environmental remains include visible organic material such as timber, wood or seeds, and microscopic fossils such as pollen which provide information on the nature of the landscape and climate, and the context for human activity.
<i>Peat</i>	A build-up of organic material in waterlogged areas, producing marshes, fens, mires, blanket and raised bogs. Accumulation is due to inhibited decay in anaerobic conditions.
<i>Pleistocene</i>	The geological epoch before the Holocene (the current geological epoch), including a series of ice ages punctuated by warmer periods, with the advance and retreat of ice sheets.
<i>Post-medieval</i>	AD 1500 – present
<i>Preservation by record</i>	Archaeological mitigation strategy where archaeological remains are fully excavated and recorded archaeologically and the results published. For remains of lesser significance, preservation by record might comprise an archaeological watching brief.
<i>Preservation in situ</i>	Archaeological mitigation strategy where nationally important (whether Scheduled or not) archaeological remains are preserved <i>in situ</i> for future generations, typically through modifications to design proposals to avoid damage or destruction of such remains.
<i>Residual</i>	When used to describe archaeological artefacts, this means not <i>in situ</i> , i.e. Found outside the context in which it was originally deposited.
<i>Roman</i>	AD 43 – 410
<i>Site</i>	The area of proposed development
<i>Study area</i>	Defined area surrounding the proposed development in which archaeological data is collected and analysed in order to set the site into its archaeological and historical context.
<i>Stratigraphy</i>	A term used to define a sequence of visually distinct horizontal layers (strata), one above another, which form the material remains of past cultures.
<i>Truncate</i>	Partially or wholly remove. In archaeological terms remains may have been truncated by previous construction activity.
<i>Watching brief (archaeological)</i>	An archaeological watching brief is 'a formal programme of observation and investigation conducted during any operation carried out for non-archaeological reasons.'

1 Introduction

1.1 Site background

- 1.1.1 The North London Reinforcement Project (NLRP) site is located in the London Borough of Haringey. The site is located within a trading estate and is bordered by Leaside Road to the north. To the east of the trading estate is the Pymmes Brook and Tottenham Marshes. The centre of the site lies at NGR 535377, 191429. The site is located in the valley of the River Lea, a major tributary of the River Thames, which is canalised in this area. The Pymmes Brook is a culverted tributary of the River Lea.

1.2 Site status

- 1.2.1 There are no scheduled monuments, listed buildings, local listed buildings, battlefields, world heritage sites or registered parks and gardens within the proposed development site. The site lies within the Lea Valley Tier 3 Archaeological Priority Area (APA), which is recorded as containing river valley deposits with high prehistoric and palaeoenvironmental potential (Oxford Archaeology 2021). The position of the site within the Lea Valley also suggests that there is potential for medieval and post-medieval remains.

1.3 Origin and scope of the report

- 1.3.1 This report has been commissioned from Museum of London Archaeology (MOLA) by AtkinsRéalis on behalf of the client, National Grid. A desk-based geoarchaeological assessment, or deposit model, has been recommended in order to determine the archaeological and palaeoenvironmental potential of the site.
- 1.3.2 A geoarchaeological deposit model provides information about the archaeological resource by examining existing geotechnical data relating to the site. The results are used to assess the potential of the deposits preserved on the site for the survival of archaeology and palaeoenvironmental remains.
- 1.3.3 A geoarchaeological deposit model can be particularly useful when dealing with prehistoric floodplain archaeology (Howard and Macklin 1999), as in such areas archaeological deposits and ancient land surfaces are likely to be deeply buried below historic alluvium. The alluvium generally precludes the discovery of stray finds, which can give an indication of the existence and nature of the buried archaeological resource even when none has been formally excavated, when the archaeology is close to the surface. Geoarchaeological assessment of the subsurface stratigraphy can, however, produce a model that can be used to help predict where archaeological and/or palaeoenvironmental remains are likely to be found.

- 1.3.4 A geoarchaeological assessment is also of value when only a low level of cultural remains is likely to be preserved in the alluvium on the site, but there is likely to be good potential for the reconstruction of the prehistoric and historic landscape inhabited by people in the past from soils, sediments and ecological inclusions. In these cases the assessment can help predict where palaeoenvironmental deposits with the potential for reconstructing past landscapes and indirect evidence of human activity are likely to exist. Such data, providing information about past environments, is increasingly required by Historic England in order to better understand the distribution of archaeological sites and the activities of people in the past (English Heritage 2011 & Historic England 2015).
- 1.3.5 Note: within the limitations imposed by dealing with historical material, maps and geotechnical data the information in this document is, to the best knowledge of the author and MOLA, correct at the time of writing. Further archaeological investigation, more information about the nature of the present buildings, and/or more detailed proposals for redevelopment may require changes to all or parts of the document.

1.4 Aims and objectives

- 1.4.1 The geoarchaeological deposit model of the NLRP site will look in detail at the sequence and distribution of sub-surface deposits across the area by examination of geotechnical data and by consideration of landscape position and geological setting. By interpreting the environments, landscape features and depositional / post-depositional processes likely to be represented by the site stratigraphy and by reference to archaeology (and palaeoenvironmental evidence) preserved in similar deposits / landscape positions in the locality, information will be gained about the potential archaeological resource on the site.
- 1.4.2 The aim of the modelling exercise is to provide information about the palaeoenvironmental context and topography of the site in order to identify areas of higher and lower archaeological potential. The model will draw on geotechnical data to create transects through the buried deposit sequence in order to understand how the environment and archaeology of the site has changed and developed over time. This will be complemented with topographic plots illustrating the surface of the early Holocene landscape, and isopach maps showing the thickness of made ground and Holocene deposits across the site. The early Holocene landscape represents the topography over which the archaeological and palaeoenvironmental deposits of interest have accumulated since the last glacial period.

2 Methodology

2.1 Data collection

- 2.1.1 In order to understand the context of the deposits existing on the site, information has been examined from:
- Geotechnical data describing the characteristics of the bedrock, soils and substrate in the area, supplied by the client (Atkins 2023; WorleyParsons 2013; RSK 2005)
 - Additional geotechnical borehole data obtained from the British Geological Survey GeoIndex database (BGS 2024)
 - Data from previous archaeological and palaeoenvironmental work undertaken in the wider area, retrieved from the MOLA geoarchaeological database
- 2.1.2 In total, 17 data points were available within the site boundary, and 199 data points were available within 500m of the centre of the site.

2.2 Deposit model construction

- 2.2.1 In order to create the deposit model the data was entered into a digital (RockWorks) database.
- 2.2.2 Each lithological unit (gravel, sand, silt etc.) was given a unique colour and pattern allowing cross correlation of the different sediment and soil types across the site. By examining the relationship of the lithological units both horizontally and vertically in a series of working transects, correlations can be made between soils and sediments, and associations grouped together on a site wide basis (Figs 5 and 6).
- 2.2.3 The grouping of these deposits is based on the lithological descriptions, which define distinct depositional environments, coupled with a wider understanding of the Lea floodplain sequence gained from previous archaeological and geoarchaeological investigations undertaken in the surrounding area. Thus a sequence of stratigraphic units (facies), representing certain depositional environments, and/or landforms can be reconstructed both laterally and through time for the site.
- 2.2.4 The RockWorks data was used in ArcGIS to create a model of the early Holocene surface (Figs 3 and 4), which plots the surface topography of the Pleistocene deposits across the site and wider area. This gives an approximation of the topography of the site as it existed at the beginning of the Holocene epoch, i.e. the early Mesolithic, c. 10,000 years before present (BP). The development of the Holocene floodplain is likely to have been influenced by the gravel topography inherited from the Pleistocene. This surface would have dictated the course of later channels, with gravel high points forming areas of dry land within the wetlands, and lower lying areas forming the main threads of later channels. The model was created with elevation data interpolated using the 'topo to raster' spatial analyst tool in ArcGIS, with a 0.5m contour.
- 2.2.5 The geotechnical data was also used in RockWorks to create isopach maps which show the thickness of made ground deposits and Holocene deposits, with a 0.25m contour (Figs 7 and 8). This provides a visualisation of the vertical extent of these deposits which informs the assessment of archaeological and palaeoenvironmental potential.

2.3 Reliability of the model

- 2.3.1 The available data is considered to be a good representation of the deposits across

the site. The data points used to create the transects, deposit elevation models and isopach maps are indicated on the figures.

- 2.3.2 Of the 17 data points within the site boundary, 10 record the full sequence of Holocene deposits to the level of the Pleistocene deposits, and a further 7 record the full sequence to the level of the bedrock London Clay.

2.4 Preparation of the report

- 2.4.1 The geoarchaeological background of the area is summarised in section 3. The results of the deposit model are discussed in section 4, in terms of the evolving Quaternary landscape of the site. The results were compared to what is already known about the geoarchaeological of the area as summarised in section 3. As a result of the better understanding of the past landscape of the site itself, afforded by the deposit model, assessment have been made regarding the archaeological and palaeoenvironmental potential of the site in section 5. Based on the inferred impact of the proposed development on the archaeological resource, recommendations for further archaeological investigation are suggested in section 6.

3 Geoarchaeological background

3.1 Introduction

- 3.1.1 In this section the landscape evolution and associated archaeology of the NLRP site area of the Lea Valley is summarised. It forms the necessary background to interpret the deposit model produced for the site and to assess the potential of the alluvial sequence. The deposits which are likely to occur on the site, with associated archaeology, are described in chronological order from the oldest to the most recent. Dates in BP refer to before present, i.e. before 1950, and are given as calibrated radiocarbon dates in this section and throughout the report. For the purposes of this report 'Lea' refers generally to the natural course of the river where it exists, and 'Lee' to the canalised sections of the river such as the Lee Navigation.

3.2 Timescales

- 3.2.1 Human activity in Britain has taken place during the period of geological time known as the Quaternary, which spans the last 2.5 million years and is characterised by the climatic oscillations known as 'the Ice Ages'.
- 3.2.2 The Quaternary is subdivided into the:
- | | |
|--------------|--|
| Pleistocene: | 2.5 million – 10,000 BP (years before the present) |
| Holocene: | 10,000 BP – present |
- 3.2.3 Although hominins are known to have existed in other parts of the world from the beginning of the Quaternary, if not earlier, the earliest evidence for human activity yet found in Britain has been dated to the latter part of the Quaternary, about 800,000 years ago (Parfit et al 2010).
- 3.2.4 The archaeological timescale, charting the development of human activity in Britain through time, is as follows:
- | | |
|--|---------------------|
| <i>Prehistoric</i> | |
| Palaeolithic (ancestral humans: hominins): | 800,000 – 10,000 BP |
| Mesolithic (hunter gatherer foragers): | 10,000BP – 4,000 BC |
| Neolithic (the earliest farmers): | 4,000–2,000 BC |
| Bronze Age (first use of metal, more complex societies): | 2,000–800 BC |
| Iron Age (agricultural intensification; political elites): | 800 BC–AD 43 |
| <i>Historic</i> | |
| Roman: | AD 43–410 |
| Saxon / early–medieval: | AD 410–1066 |
| Medieval: | AD 1066–1485 |
| Post–medieval: | AD 1485–present |
- 3.2.5 The location of the site, on the floodplain of the Lea, implies that only deposits dating from the late Pleistocene will be present, as it was during this period that the present floodplain was carved out. Consequently the background section focuses mainly on the Holocene and the late glacial (Devensian) period.

3.3 Site location and topography

- 3.3.1 The site lies on the western bank of the River Lea, which is the largest tributary of the River Thames. BGS mapping shows that the site is positioned on a broad swathe of alluvial deposits accumulated within the floodplain (BGS 2024). In general, the deposit sequence within the floodplain consists of the basal floodplain gravels overlain by a series of minerogenic sands and silt/clays interstratified with peat deposits. Ground

levels average 10.48m above (A) OD across the data points.

3.4 Pre-Quaternary geology

- 3.4.1 The outcrop pattern of the rocks in the Greater London area is closely related to the geological structure, which is dominated by the London Basin, a gentle synclinal fold, with its axis aligned west to east. The older rocks outcrop on the edge of the syncline: the Cretaceous Chalk of the Chilterns in the north and the North Downs forming the southern rim of the London Basin. Younger geological strata, Tertiary sands and clays, infill the centre of the syncline, which is followed, for the most part, by the Thames.
- 3.4.2 Underlying the site the pre-Quaternary deposits consist of the Eocene London Clay Formation which is predominately made up of bioturbated or poorly laminated, blue-grey or grey-brown, slightly calcareous, silty to very silty clay (BGS 2024). The bedrock pre-dates the evolution of hominin groups and has no archaeological potential in itself, although its characteristics often determined the nature of succeeding environments and the landscapes occupied and exploited by communities in the past. On the floodplain of the Lea however the impact of the bedrock is reduced, as it is mantled by Quaternary deposits which, in general, mask its characteristics and contours.

3.5 Quaternary deposits

Pleistocene deposits

- 3.5.1 During the Pleistocene successive cold and warm periods caused alternating downcutting and aggradational cycles to take place which, together with a gradual background tectonic uplift, has led to a sequence of progressively younger Quaternary deposits down the valley sides of the Thames. These deposits, mainly gravels, form a series of terraces which represent former floodplains which were subsequently left high and dry as the river cut down to lower levels (Gibbard 1994; Bridgland 1994).
- 3.5.2 The wider Thames terraces form the basis of the terraces of the River Lea, which formed concurrently to the development of the Thames terraces. The terraces of the Lea have acquired their own nomenclature (Gibbard 1994). The present floodplain of the Lea represents the most recent stage in this sequence, and was created as the river cut down from a former floodplain represented by the Leyton Gravel, which is equivalent to the Kempton Park Gravel of the Thames sequence. This occurred as a result of the low sea level and large influx of glacial meltwater which occurred after the last glacial maximum c. 18,000 BP. The river subsequently deposited coarse grained sediments (sands and gravels) across the valley floor, known as the Lea Valley Gravel and equivalent to the Shepperton Gravel of the Lower Thames sequence. These deposits underlie the alluvium in the present floodplain across the site (Gibbard 1994; Corcoran *et al* 2011).
- 3.5.3 The gravel was deposited in a network of braided, ephemeral channels at a time when the Thames and Lea had similar characteristics to those rivers flowing in arctic regions today. Within the river threads, sand and gravel bars accumulated, forming an irregular surface topography. This gravel aggradation is thought to have ceased by 15,000 BP in the Thames and its tributaries (Sidell *et al* 2000). It has been suggested that the cessation of gravel sedimentation may be a result of river competence exceeding sediment supply (Collins *et al* 1996), or because the sediment supply was reduced by the stabilising effect of the dense vegetation which took hold during the Windermere/Allerød interstadial (Rose 1995).
- 3.5.4 Blanketing the river terrace across the higher ground in the valley is the Enfield Silt,

also referred to as brickearth, which comprises windblown silts deposited under cold climate, periglacial conditions between 28ka and 15ka years ago (although often later modified by post depositional processes) (Gibbard 1994; Corcoran *et al* 2011).

- 3.5.5 During the Upper Palaeolithic (c. 40,000-10,000 BC), after the last glacial maximum, and in particular after around 13,000 BC, episodes of climate warming took place. It is at these times that this part of England was occupied. However, subsequent erosion has removed many of the land surfaces on which Palaeolithic activity took place, and consequently most Palaeolithic finds are located outside the context in which they were originally deposited. Sporadic Palaeolithic finds are known from the area, for example at Angel Road, Cooks Ferry and Upper Edmonton (CgMs 2019).

The low terrace and 'Arctic Bed' deposits

- 3.5.6 Along this part of the lower Lea Valley there is a distinct low gravel terrace feature arising on the western side of the floodplain most notably occurring in the area of Meridian Way, just to the north of the site (Corcoran *et al* 2011). This low terrace feature, which lay adjacent to the floodplain lying at approximately 7m above ordnance datum (AOD), would have stayed dry during the early Holocene (the Mesolithic) allowing soil development and areas for past human activity / resource exploitation.
- 3.5.7 Within the low terrace, organic deposits known as the Lea Valley Arctic Beds are known to occur. The Arctic Beds reflect a late Pleistocene environment of treeless steppe–tundra which is now manifest as rafts of vegetation and sediment which were probably incorporated in the gravels as frozen blocks scoured out and deposited by fast flowing meltwaters. The Arctic Beds were first recorded by Warren (1912) at Picketts Lock, Ponders End and exposed in sections at Deepham's Sewage works, 2km to the north of the site, during excavations in the mid-20th century (Hayward 1956) and more recently during a watching brief undertaken by Oxford Archaeology at the same site in 2011 (Oxford Archaeology 2012). There, rafts of gravelly, buff to black sandy clay c. 1m long and 0.3m thick were observed at c 6m AOD at the base of the gravels containing cold climate insect and plant remains and dated to 21,880 +/- 40 BP (Hayward 1956). In contrast, two distinct Arctic bed deposits were located within the gravels some 6.5m below ground level in 2011 and were dated to 16ka BP and 12ka BP, much later than previous deposits and post-dating the glacial maximum (18,000 BP; Oxford Archaeology 2012). These have been therefore classified as 'sub-Arctic Beds' and are indicative of the complexity of the stratigraphy in this part of the Lea Valley.

Prehistoric deposits

- 3.5.8 In tandem with the general model for the landscape evolution for the Lower Thames floodplain area following the deposition of the floodplain gravels and before the impact of rising relative sea level (RSL), a period of landscape stability existed in the early Mesolithic, when wetland developed in low lying areas of the floodplain and soils on the higher ground and interfluvies (Bates and Whittaker 2004; Stafford *et al* 2012).
- 3.5.9 In contrast with the Thames however, where evidence of the Mesolithic environment is rare because of subsequent erosion, widespread peat deposits survive in the Lea Valley dating from the early Holocene (Mesolithic) such as at the IKEA site to the north where the onset of the peats were dated to 9370-9240 BC (MoLAS 2007) and known to exist through to the Neolithic/Bronze Age periods (MoLAS 2007; Oxford Archaeology 2012; MOLA 2023).
- 3.5.10 During the Mesolithic, the floodplain was becoming more organic with humic muds and peats extending across the valley floor, infilling former pools and abandoned river channels (Corcoran *et al* 2011). The pollen records from other sites tend to show local variations along the Lea, in comparison to the general impression of pollen records in southeast England, but in general the pollen describes a landscape dominated by

grass. On the higher, drier ground and interfluvies, isolated woodlands of birch, followed by pine and then oak and hazel were present, later becoming thick strands of deciduous forest (MoLAS 2006, 2007).

- 3.5.11 The Mesolithic hunter-gatherer communities of the early Holocene (c. 10,000-4,000 BC) inhabited a largely wooded environment. The valley of the River Lea would have been favoured for providing a predictable source of freshwater, and food from hunting, fishing and fowling, as well as a means of transport and communication (Corcoran *et al* 2011). Evidence of human activity from this period is largely characterised by flint scatters, rather than structural remains.
- 3.5.12 At Meridian Point, Glover Drive, immediately to the north of the site, a thin alluvial deposit sealing Enfield Silt and peats produced 120 struck flints and 1.08kg of burnt flint of Mesolithic and later date (MoLAS 1996). The assemblage included two microliths dating to 8,300-7,800 cal BC. Other local prehistoric remains include a small quantity of pottery sherds dated to the Neolithic, and struck and burnt flint dating to the Mesolithic, Neolithic and Bronze Age in association with ditches, postholes and a large palaeochannel at Montagu Road, c.1km to the northwest of the site (PCA 1999).
- 3.5.13 Evidence of land management including clearance in the area during the Mesolithic has been inferred through the remains of charcoal, and variations or gaps in the pollen records at the Omega III and IKEA sites (MoLAS 2006, 2007).
- 3.5.14 Deposits of tufa, representing springs seeping onto the valley floor, are frequently associated with peat deposits in the Lea Valley, often occurring at the edges of the floodplain and mixing with gravel. In Britain, tufa probably formed in wooded wetlands under the humid climate of the Mesolithic, as noted at the IKEA site (AOC Archaeology 2006; MoLAS 2007). These calcareous deposits can effectively fossilise plants, and provide an alternative palaeoenvironmental resource, as imprints of plants and molluscs can be recorded (Evans *et al* 1983).

Later prehistoric / early historic minerogenic deposits

- 3.5.15 Relative sea level rise during the later prehistoric and historic periods led to the encroachment of estuarine conditions further upstream in the Lower Thames, and into the Lower Lea. Beyond the limits of estuarine advance, including the area of the site, the consequence was impeded drainage and increased flooding, as the river flow became ponded back with widespread deposits of silt and clay alluvium developing. At the IKEA site, the cessation of peat accumulation and the onset of alluviation is dated to the Roman period (MoLAS 2007). It is likely that in several parts of this section of the Lea Valley, the meandering River Lea and its branches eroded the earlier peats (Corcoran *et al* 2011).
- 3.5.16 It is likely that the area of the site was farmland and marshland up to and throughout the Roman period (Corcoran *et al* 2011). During the Roman period, the Lea was an important transport route linking London, the major commercial and administrative centre, with other areas to the north. It is likely that communities continued to exploit the rich wetland resources throughout this period, and the higher ground to the east and west of the site was probably farmland. Roman settlements are known on the higher ground on both sides of the Lea Valley, at Old Ford, Stratford, and Leyton (Corcoran *et al* 2011).
- 3.5.17 Early medieval occupation is known in the area, most notably a crannog-type feature excavated at the IKEA site c. 50m to the north of the application site (AOC Archaeology 2006). This structure was built of logs and stakes with a brushwood cover and was dated by dendrochronology to shortly after AD 472 (Goodburn *et al* 2024). Associated finds of carved objects and bones indicated occupation.
- 3.5.18 Quaternary scientists and geographers are interested in the alluvial sequence for the information it provides on the pattern of local relative sea level rise and its implications

for Holocene sea level fluctuations and climate change at a wider scale (e.g. Long *et al* 2000). Archaeologically, the significance of the interbedded peats and clays within the floodplain lies in the information they provide about past fluctuations in environment and the changing landscape available for exploitation and habitation by humans. The waterlogged condition of these deposits also preserves evidence for historic activity, which rarely survives on dry land sites, e.g. timber structures, wooden artefacts, wattle, and matting, such as at the IKEA site.

Later medieval and post-medieval deposits and archaeology

- 3.5.19 During the later medieval period the Lea became utilised more fully, with tidal mills and large manorial complexes (Corcoran *et al* 2011). The site would have still been open land, prone to flooding, with settlement located on the higher ground at the sides of the valley, beyond the site boundary.
- 3.5.20 Piecemeal reclamation of the marshland, with construction of flood defences and improved drainage, may have begun during the late medieval period and continued into post-medieval period. The reclaimed marshland would have been a valuable economic asset, providing improved pasture or arable land (Corcoran *et al* 2011).
- 3.5.21 In 1766 an Act of Parliament allowed the construction of the present River Lee Navigation, and subsequently the Pymmes Brook, a tributary of the Lea which currently runs along the eastern side of the site, was widened and canalised (Victoria County History 1976). Full canalisation of the watercourses in the area followed severe flooding in the 1880s.
- 3.5.22 Post-medieval archaeology has been found to exist within the upper part of the alluvium or the lower part of the made ground deposits, for example as recorded in the investigations associated with the Olympic site (Powell 2012).
- 3.5.23 Historic OS mapping (see CgMs 2019) shows that the site remained undeveloped until the 20th century, when it became occupied by industrial buildings. Industrial activity along the River Lea grew substantially in the 20th century and in some areas intrusive construction has completely removed the alluvial stratigraphy, e.g. at Banbury Reservoir c. 300m to the east of the site.

4 Geoarchaeological deposit model

4.1 Introduction

- 4.1.1 The geoarchaeological deposit model characterises the site in terms of four facies: the London Clay, the Pleistocene deposits, the Holocene deposits, and the made ground. The sediments have been grouped into facies (or groups of sedimentary units that reflect similar environments of deposition) to facilitate the interpretation of the deposits across the floodplain (Figs 5 and 6).

4.2 Site wide deposits

Facies 1: London Clay

- 4.2.1 The lowermost deposit recorded within the site records is stiff, fissured clays belonging to the London Clay Formation (Figs 5 and 6).
- 4.2.2 This bedrock deposit was formed during the Eocene, prior to the evolution of humans, and therefore has no archaeological or palaeoenvironmental potential in itself.
- 4.2.3 The surface of the London Clay Formation across the site is highly consistent, varying in elevation by only 0.85m (Figs 5 and 6). It appears not to have had a significant influence on the later topography of the site, which is defined by the Pleistocene deposits.

Table 1: Facies 1 depths and elevation within the site.

Facies 1	Surface depth (mbgl)	Surface elevation (mAOD)
Average	6.31	4.26
Maximum	6.55	4.75
Minimum	5.70	4.02

Facies 2: Pleistocene deposits

- 4.2.4 The Pleistocene deposits recorded within the site are comprised mostly of sands and gravels belonging to the Lea Valley Gravel Member, equivalent to the Shepperton Gravel of the Lower Thames sequence (Gibbard 1994; BGS 2024).
- 4.2.5 The Lea Valley Gravels were deposited in a network of braided, ephemeral channels, and the development of sand and gravel bars created an undulating topography throughout the valley. This undulating topography subsequently defined the landscape at the beginning of the Holocene when gravel aggradation had ceased due to climatic amelioration. As such, the plots of the early Holocene surface with relation to the site itself and within this area of the Lea Valley as a whole (Figs 3 and 4) provides a starting point from which the development of the landscape and environment of the site throughout the Holocene can be understood. It also highlights geomorphological features.
- 4.2.6 The modelling of the early Holocene surface in the wider area of the site suggests the presence of two main channel threads of the late glacial River Lea, to the west and east of the site aligned on a north to south axis (Figs 3 and 4). The channel route to the east of the site follows a similar route to the modern, canalised Pymmes Brook and maybe therefore related to the former Pymmes Brook channel (Figs 2, 3 and 4). In general however, the site appears to have been located on the eastern bank of a major late glacial channel thread of the Lea to the west, in an area where smaller channels may have crossed and converged between sand and gravel bars (Figs 5 and 6).

- 4.2.7 Early Holocene topographic high points, reaching a maximum of 7.03m AOD (NGET13_WS12-08 and WS12-02; Figs 5 and 6) contrast with low points such as in NGET13_BH12-06 where the early Holocene surface is at 5.20m AOD (Figs 5 and 6), the latter indicating the location of channel routes originating from the Late Pleistocene braided river system.
- 4.2.8 Of note is a deposit of peaty, dark grey to black slightly sandy clay recorded within the Pleistocene gravels, between 4.54m and 4.34m AOD in NGET13_BH11 (Fig 5). This deposit may belong to the Arctic Beds or rafts of vegetation and sediment known to have become incorporated into the Pleistocene gravels in this area of the Lea. At Deepham's Sewage Works, Arctic Bed deposits have been variously radiocarbon dated to 21ka, 16ka and 12ka BP (Hayward 1956; Oxford Archaeology 2012). The area of site has been identified as having good potential for the survival of Arctic Beds due to the lack of substantial modern truncation (Corcoran *et al* 2011; Oxford Archaeology 2021).
- 4.2.9 The areas of higher ground around 7m AOD which fringe the lower lying channel areas and may represent fragmented low terrace survival, would have remained dry at least throughout the Mesolithic, and would have provided attractive locations for hunter-gatherer communities seeking to exploit the rich resources of the low lying channel areas (Corcoran *et al* 2011). Mesolithic remains consisting of flint scatters, antlers and animal bones have been found in the local area, for example at the IKEA site, in a specific area of that site which lies c. 200m to the north of the application site (AOC Archaeology 2006). Such remains may survive within the site, particularly where the early Holocene surface is sealed by peat and organic deposits such as NGET13_BH11 and BH12 (Fig 5), which suggest the underlying land surface has not been entirely eroded by out by subsequent fluvial action.

Table 2: Facies 2 depths and elevation within the site.

Facies 2	Thickness (m)	Surface depth (mbgl)	Surface elevation (mAOD)
Average	1.74	4.51	5.99
Maximum	2.25	5.50	7.03
Minimum	1.05	3.40	5.20

Facies 3: Holocene deposits

- 4.2.10 The Holocene deposits within the site predominantly consisted of silts and clays, with occasional peat and organic sediment, which were found to be 2.20m thick on average (Fig 8). This thickness varied substantially between 0.30m in NGET13_BH11 to 3.70m in NGET13_WS12-06 (Figs 5, 6 and 8), with this variation largely due to the varying extent of made ground, in relation to the level at which the Holocene deposits began to accumulate above the Pleistocene gravels.
- 4.2.11 As fluvial energy had declined by the onset of the Holocene period, i.e. the early Mesolithic, peats would have accumulated in redundant channels and subsequently throughout the valley floor as the area became progressively waterlogged (Corcoran *et al* 2011). However, within the site peats and organic sediments were largely absent from the sequence, appearing only in NGET13_BH11 around 6.5m AOD and BH12 around 6m AOD in the central area of the site (Fig 5). The absence of peats within the site is probably the result of erosion by the meandering channels of the River Lea in the later prehistoric and historic periods, as recorded elsewhere in the valley (MoLAS 2007; Corcoran *et al* 2011).
- 4.2.12 Peat, in particular, provides good conditions for the survival of palaeoenvironmental remains (and organic artefacts), such as pollen, and organic material suitable for radiocarbon dating, which can provide a chronostratigraphic framework to the sequence.
- 4.2.13 At 4 Advent Way, c. 750m to the north of the site, peat between 6.85m and 7.80m

AOD was dated to between the Early and Late Mesolithic (8767-8563 and 4330-4057 cal BC) overlain by alluvial clay (MOLA 2023). The pollen profile showed an open grass-sedge fen environment with herb taxa, and birch, pine, elm and hazel woodland in the vicinity. This open environment was found to persist into the Neolithic with an increasingly wooded environment featuring oak, hazel, elm and lime (MOLA 2023). Similarly, palaeoenvironmental assessment at Enfield Lock characterised the Mesolithic environment as consisting of pools of standing water fringed with reeds and sedges, with pine forests on the higher ground persisting until around 8,000 BP (Chambers *et al* 1996).

- 4.2.14 At the IKEA site, c. 50m to north of the site, a sequence of deposits including peat and organic sediment between 6.95 and 7.44m AOD, similar elevations to the Holocene deposits within the application site (Figs 5 and 6), produced a date range of 9370 BC to AD 350. The pollen profile suggested a typical postglacial vegetation succession throughout the Mesolithic, with birch woodland on the higher ground areas giving way to pine, and then hazel expansion (MoLAS 2007). The profile was dominated by grasses and herbs, indicating an open environment, with some wetland taxa. There was also evidence of possible Mesolithic land clearance through the persistent presence of charcoal in the sequence. In the Late Bronze Age and Roman period deposits, the pollen record showed the continual dominance of open grass environments with hazel scrub. Other similar vegetational profiles to those at 4 Advent Way, Enfield Lock and the IKEA site have been recorded in this section of the Lea Valley (e.g. MoLAS 2006; Corcoran *et al* 2011), and similar results would be expected from the deposits within the application site.
- 4.2.15 The silt and clay alluvium, which dominates the Holocene sequence within the site, represent overbank flooding which became more frequent as the Lea became ponded back as a result of the knock-on effects of estuarine expansion in the Lower Thames and Lower Lea (Corcoran *et al* 2011). This alluvium blanketed the area, submerging the undulating topography of the early Holocene, and meandering channels probably eroded earlier organic deposits, which only appear to survive in NGET13_BH11 and BH12 (Fig 5).
- 4.2.16 The silts and clays of facies 3 have a high potential for the survival of palaeoenvironmental proxy indicators such as pollen and diatoms which can be used to reconstruct environmental change at the site. However, the quality of this data could be restricted, as in this upstream environment the seasonal cycle of flooding and drying out of the floodplain would have exposed the sediments to weathering and bioturbation, potentially degrading the palaeoenvironmental remains (Cocoran *et al* 2011). The palaeoenvironmental potential of these deposits therefore may be better where they occur within the deeper hollows formed by the late glacial channel threads.
- 4.2.17 The Holocene peats and alluvium have the potential to seal and contain archaeological remains. Most notably, at the IKEA site immediately to the north, a crannog-like timber structure was discovered, built shortly after AD 472 according to dendrochronology (AOC Archaeology 2006; Goodburn *et al* 2024). This structure included a brushwood platform that was situated at around 8m AOD, and associated stakes which penetrated the underlying deposits. This is a similar elevation to the alluvial deposits recorded within the site, although they are frequently truncated to levels below 8m AOD by the overlying made ground (Figs 5 and 6), and no such evidence was identified in any of the geotechnical interventions.
- 4.2.18 Importantly, the geotechnical investigations have identified substantial hydrocarbon contamination (by observation and odour) within the Holocene strata at several locations across the site and even within the fine grained minerogenic deposits in the gravels (NGET13_BH11). This is not anticipated to have a negative effect on the archaeological and palaeoenvironmental potential of these deposits other than in terms of radiocarbon dating.

Table 3: Facies 3 depths and elevation within the site.

Facies 3	Thickness (m)	Surface depth (mbgl)	Surface elevation (mAOD)
Average	2.20	2.26	8.22
Maximum	3.70	4.20	9.35
Minimum	0.30	1.20	6.22

Facies 4: Made ground

- 4.2.19 The made ground across the site averages c. 2.50m in thickness, varying between a minimum of 1.20m in NGET13_WS12-06 (Fig 6) and a maximum of 4.20m in NGET13_BH12 (Fig 5). Both of these boreholes are located in the centre of the site, demonstrating how variable the extent of the made ground is in the central and southern portions of the site. In the northern part of the site, isopach mapping indicates the made ground thickness is more consistently thinner although still substantial, between 1.5m and 2.5m thick (Fig 7).
- 4.2.20 The made ground has severely truncated the Holocene deposits in some areas of the site, for example in the centre around NGET13_BH11 and BH12 (Fig 5). This relationship again can be seen in the isopach maps, where the areas of thickest made ground correlate to the areas of thinnest Holocene deposits, and vice versa (Figs 7 and 8).
- 4.2.21 The made ground deposits are varied, but are typically dominated by sand and gravel mixed with bricks, concrete, metal and other anthropogenic material. The made ground probably dates to the industrial development of the site in the 20th century, prior to which it was undeveloped land. The deposits recorded during the geotechnical investigations feature heavy hydrocarbon contamination, which originates from the previous industrial works within the area.

Table 4: Facies 4 depths and elevation within the site.

Facies 4	Thickness (m)	Modern ground level (mAOD)
Average	2.51	10.48
Maximum	4.20	10.82
Minimum	1.20	10.15

5 Archaeological potential and significance

- 5.1.1 The geoarchaeological assessment of the subsurface stratigraphy has produced a deposit model which can be used to help predict where archaeological remains might be found and where palaeoenvironmental deposits with potential for the reconstruction of past landscapes and human activity are likely to exist.
- 5.1.2 Although the deposit model is a useful method of generating a preliminary characterisation of the buried stratigraphy within the site and the associated archaeological and palaeoenvironmental potential, it should not be taken as a definitive statement on the nature of past environments and human activity within the site. The deposit model is intended only to act as a working tool in assisting the identification of areas of archaeological interest.
- 5.1.3 The site lies within the Tier 3 Lea Valley Archaeological Priority Area, designated due to the high potential for organic remains and palaeoenvironmental evidence, which is discussed below with specific reference to the site.
- 5.1.4 The bedrock London Clay deposits of facies 1 are of no archaeological or palaeoenvironmental potential, and appear not to have had a strong influence on the Quaternary topography.
- 5.1.5 The Lea Valley Gravels of facies 2, with the exception of the organic fine grained material in NGET13_BH11, are considered of low archaeological potential and significance across the bulk of the site. Palaeolithic material such as worked flint or animal bone may be present within the gravels but these artefacts are likely to be abraded and removed from their original context of deposition. The coarse Pleistocene deposits are also largely unsuitable for the preservation of palaeoenvironmental remains.
- 5.1.6 Within NGET13_BH11 however, a thin deposit of peaty, grey to black coloured slightly sandy clay was recorded within the Pleistocene gravels (Fig 5). This deposit might belong to the Arctic Beds, known to occur rarely throughout this part of the Lea Valley. These deposits have the potential to produce important palaeoenvironmental data relating to late Pleistocene environments (e.g. Hayward 1956; Oxford Archaeology 2010, 2012).
- 5.1.7 The Holocene deposits of facies 3 are dominated by silts and clays which probably represent overbank flooding which increased as the Lea became ponded back as the result of rising sea level and estuarine expansion in the Lower Thames. These fine grained minerogenic sediments have good potential to contain palaeoenvironmental proxy indicators which can provide information about the local vegetation and aquatic environments. However, in this upstream area of the Lea Valley the seasonal cycle of flooding and drying may have had a negative impact on the integrity of the palaeoenvironmental indicators, particularly in the upper layers. These deposits have a low to moderate archaeological potential, as remains such as fish traps and boats may be preserved within the strata (Corcoran *et al* 2011).
- 5.1.8 In contrast, peat and organic sediments belonging to facies 3, present in two boreholes in the centre of the site (Fig 5), are of high palaeoenvironmental potential as they are likely to preserve palaeoenvironmental proxy indicators and organic material suitable for archaeobotanical assessment and radiocarbon dating (English Heritage 2011; Historic England 2015; e.g. Corcoran *et al* 2011). These deposits sit directly above the Pleistocene deposits, and analysis of similar peats in the wider area (e.g. MoLAS 2007) suggests accumulation occurred during the Mesolithic. Mesolithic peats would be of particular palaeoenvironmental interest and significant as they can assist in informing study of the earliest Holocene environments within the Lea when people returned to Britain following the cessation of the Ice Ages and particularly as these deposits are not commonly retrieved from the Thames (Corcoran *et al* 2011).

- 5.1.9 There is also a moderate potential for the preservation of archaeological remains within the Holocene strata. Flint scatters and other sporadic prehistoric finds are known throughout the area in association with the Holocene sequence (Corcoran *et al* 2011). Additionally, there is a low to moderate potential for the survival of fish traps, boats and jetties dating from historic periods. Approximately 50m to the north of the site at the IKEA site, an unusual and highly significant early medieval timber-built crannog-type feature was discovered, with a brushwood platform at around 8m AOD (AOC Archaeology 2006; Goodburn *et al* 2024).
- 5.1.10 Across the site, the made ground averages 2.50m in thickness. The made ground deposits were considered primarily 20th century and were typically dominated by sand and gravel mixed with bricks, concrete, metal and other anthropogenic material. The deposits recorded during the geotechnical investigations feature heavy hydrocarbon contamination, which originates from the previous industrial works within the area. As such they are considered of no archaeological or palaeoenvironmental potential or significance.
- 5.1.11 The geotechnical boreholes indicate that hydrocarbon contamination is widespread across the site, affecting all deposits down to the level of the London Clay. This substantial contamination would not be expected to impact the preservation and significance of archaeological or palaeoenvironmental remains (with the exception of radiocarbon dating), although it would present practical, health and safety concerns for any future investigations.

5.2 Landscape zones

- 5.2.1 The assessment of the character and potential of the deposits identified across the application site has led to the identification of two separate landscape zones (LZs). These have been delineated based on several trends, including the thickness of the Holocene deposits and overlying made ground, and the depth of the Pleistocene deposits. The landscape zones are illustrated in Fig 9 and their character and potential are outlined in the table below.
- 5.2.2 To summarise, the two landscape zones are:
- LZ1: this zone is present in the southern and central parts of the site and includes approximately a third of the site area in total. Within this zone, the made ground exceeds 3m in thickness, the Holocene deposits do not exceed c. 2m in thickness, and the early Holocene topography represents areas of higher ground across the valley floor.
 - LZ2: this zone is present in the northern and southern parts of the site and includes approximately two thirds of the site area in total. Within this zone, the made ground is less than 3m in thickness, and the Holocene deposits are typically greater than 2m in thickness. It includes areas of low lying early Holocene topography.

Table 5: Character and potential of landscape zones within the site.

Landscape Zone	Character of zone	Archaeological / palaeoenvironmental potential
1	LZ1 is defined by the areas where the made ground deposits are thicker, generally exceeding 3m in depth below the modern ground level. This zone also includes areas where the thickness of the Holocene deposits (facies 3) is below average (less than 2m), which is directly correlated to the extent of the overlying thick made ground. Furthermore, due to the higher elevation of the Pleistocene deposits in LZ1, it was probably subject to inundation later in the Holocene.	This zone has a moderate archaeological potential. As the zone includes areas within the site of higher early Holocene topography, it is likely that these areas were less exposed to flooding, and would have remained drier for longer in the prehistoric period. Therefore, it is more likely that archaeological remains, such as flint scatters or cut features, survive in this landscape zone. However, the general lack of peat and organic sediment suggests that the zone may have been exposed to later Holocene erosion which could have removed or truncated archaeological horizons at the surface of the Pleistocene deposits. LZ1 includes the only two boreholes within the site, NGET13_BH11 and BH12, which recorded peat and organic clay. As a result, the palaeoenvironmental potential of LZ1 is considered higher than LZ2 and may also yield organic material suitable for radiocarbon dating, although contamination through hydrocarbons, if present, will prevent dating these deposits. The Pleistocene gravel strata of facies 2 may also withhold Arctic Bed strata in this zone as well as indicated by the logs of NGET13_BH11. The alluvial silts and clays of facies 3 have a high potential for the preservation of palaeoenvironmental proxy indicators, although the quality of these remains may be restricted due to seasonal patterns of flooding and drying.
2	LZ2 is defined by the areas where the made ground deposits are less than 3m thick. It also includes areas where the Holocene deposits are generally thicker than average, and the early Holocene surface is lower in elevation indicative of channel routes. The greater thickness of Holocene deposits in this zone is probably directly related to the made ground being less thick in LZ2.	This zone has a low to moderate archaeological potential as these channel routes were probably subjected to erosion later in the Holocene given the complete lack of peat or organic sediment in this zone. If this is the case, the erosion will probably have removed earlier archaeological remains. As a consequence, this zone is also considered to have moderate palaeoenvironmental potential. As only inorganic alluvial silts and clays are recorded in this zone they have less potential for in situ and well preserved palaeoenvironmental proxy indicators such as pollen, diatoms and ostracods. The Holocene sequences are however more substantial in LZ2, suggesting greater potential for artefactual remains perhaps relating to water side structures of the later prehistoric and historic (Roman and later) periods.

6 Recommendations

- 6.1.1 The planned demolition of buildings at the site to slab level is not anticipated to impact the deposits of palaeoenvironmental or archaeological potential, as it will not exceed the depth of the made ground and can be carried out. A further phase of geotechnical ground investigation is planned, and a geoarchaeological watching brief on those works is recommended. As part of the further ground investigation targeted geoarchaeological boreholes should be carried out, both to better understand the depositional history and floodplain development in this part of the Lea Valley Tier 3 Archaeological Priority Area and inform any further archaeological investigations, particularly in areas where deposits of archaeological significance are to be removed (e.g. through construction of basements and piling).
- 6.1.2 Any core samples retained from a geoarchaeological borehole survey can be examined off site to ascertain the potential of the sediments to contain palaeoenvironmental proxy indicators that can be used to reconstruct past environments, including possible Arctic Bed deposits within the gravel strata. These data would have the potential to contribute to the regional research framework objectives, particularly the TL1 and TL2 framework objectives relating to how geomorphology, ecology and hydrology has influenced human activity (Museum of London 2002).
- 6.1.3 The scope of any potential further works should account for the apparently substantial hydrocarbon contamination across the site however, though the strata of archaeological and palaeoenvironmental potential should not be particularly impacted, this does present practical implications (e.g. health hazards).
- 6.1.4 Any decision about further archaeological works lies with the Local Planning Authority and GLAAS.

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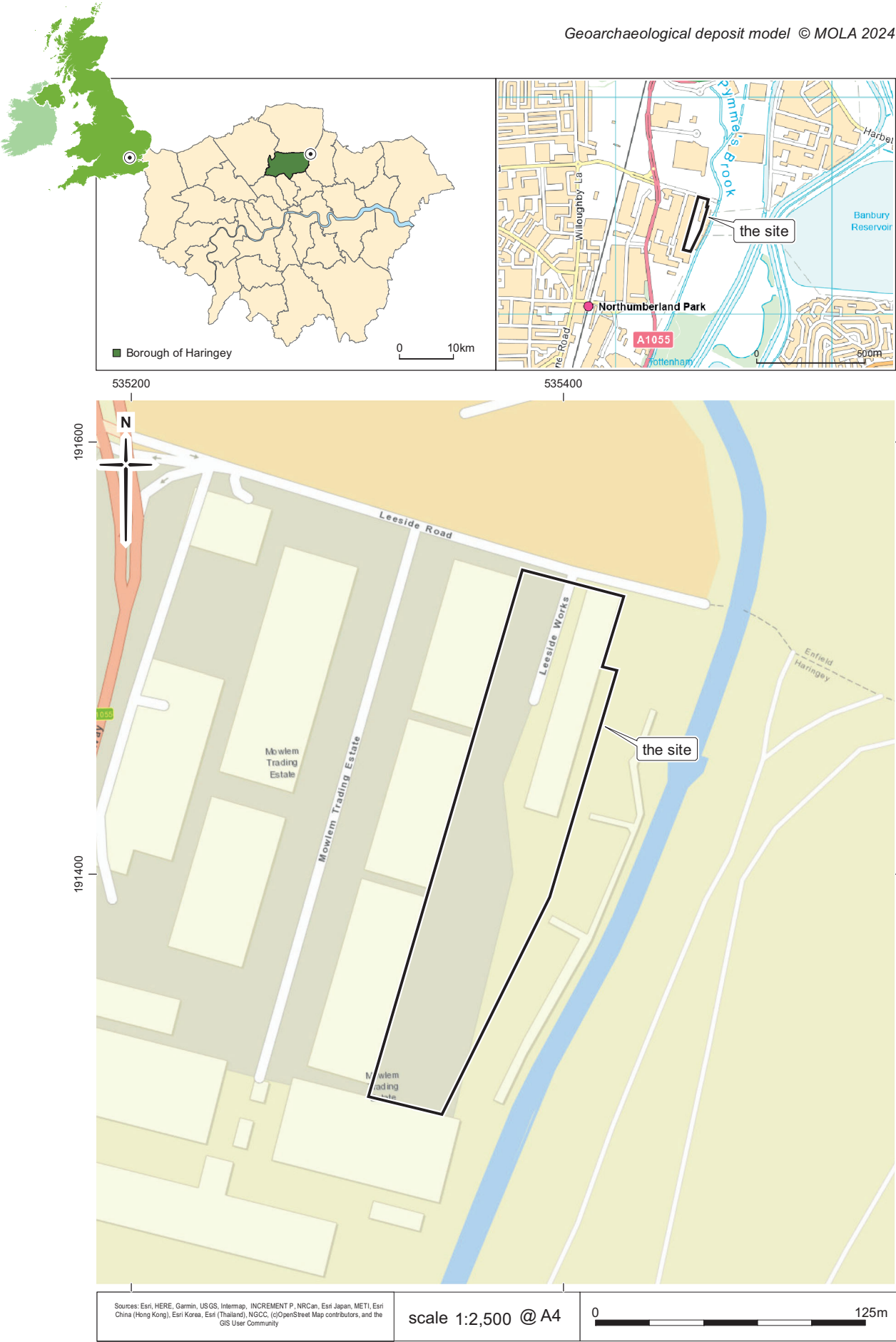
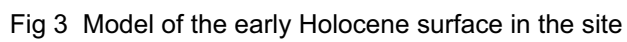


Fig 1 Site location



Fig 2 Borehole and transect locations



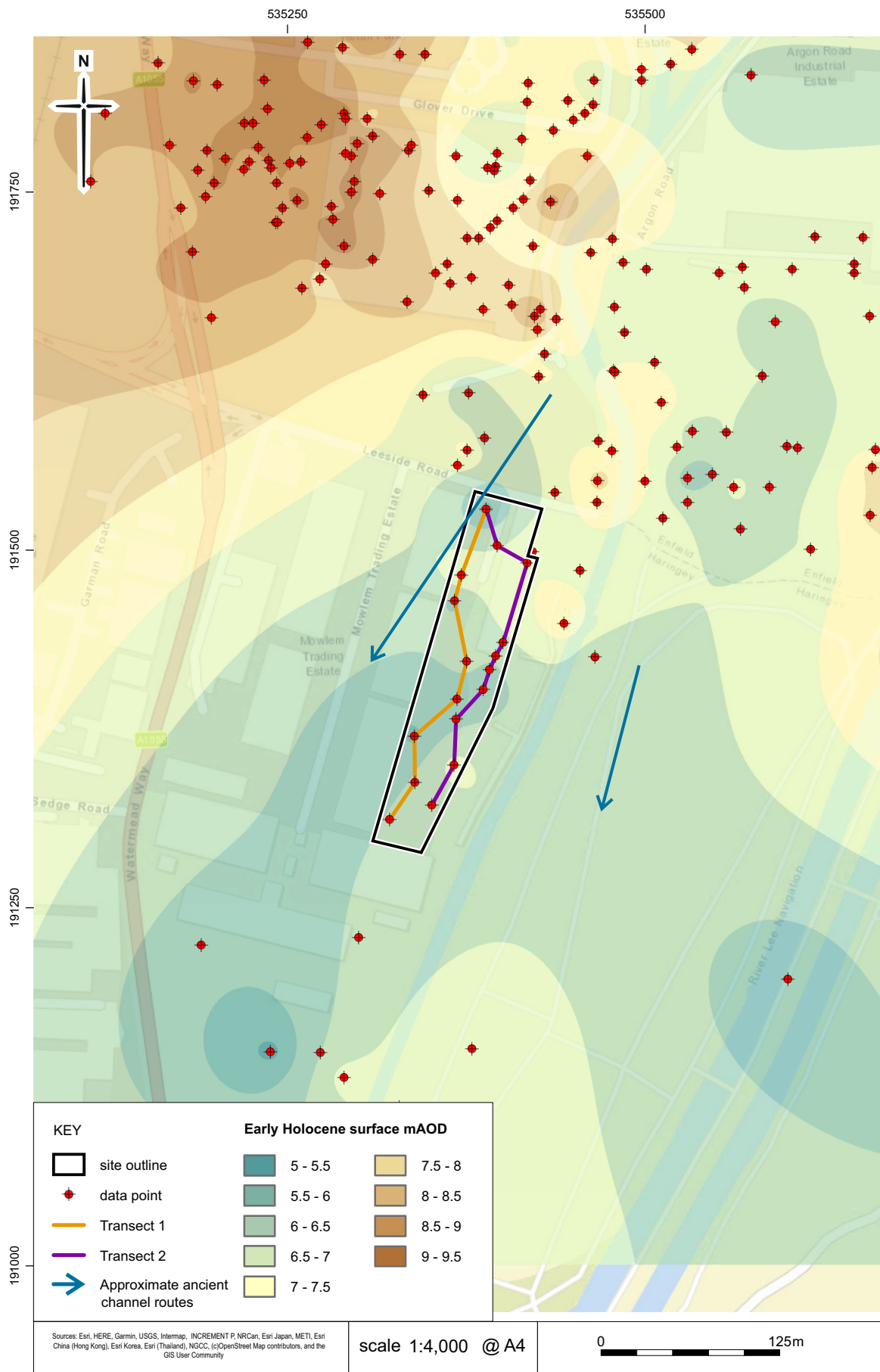


Fig 4 Model of the early Holocene surface in the wider area

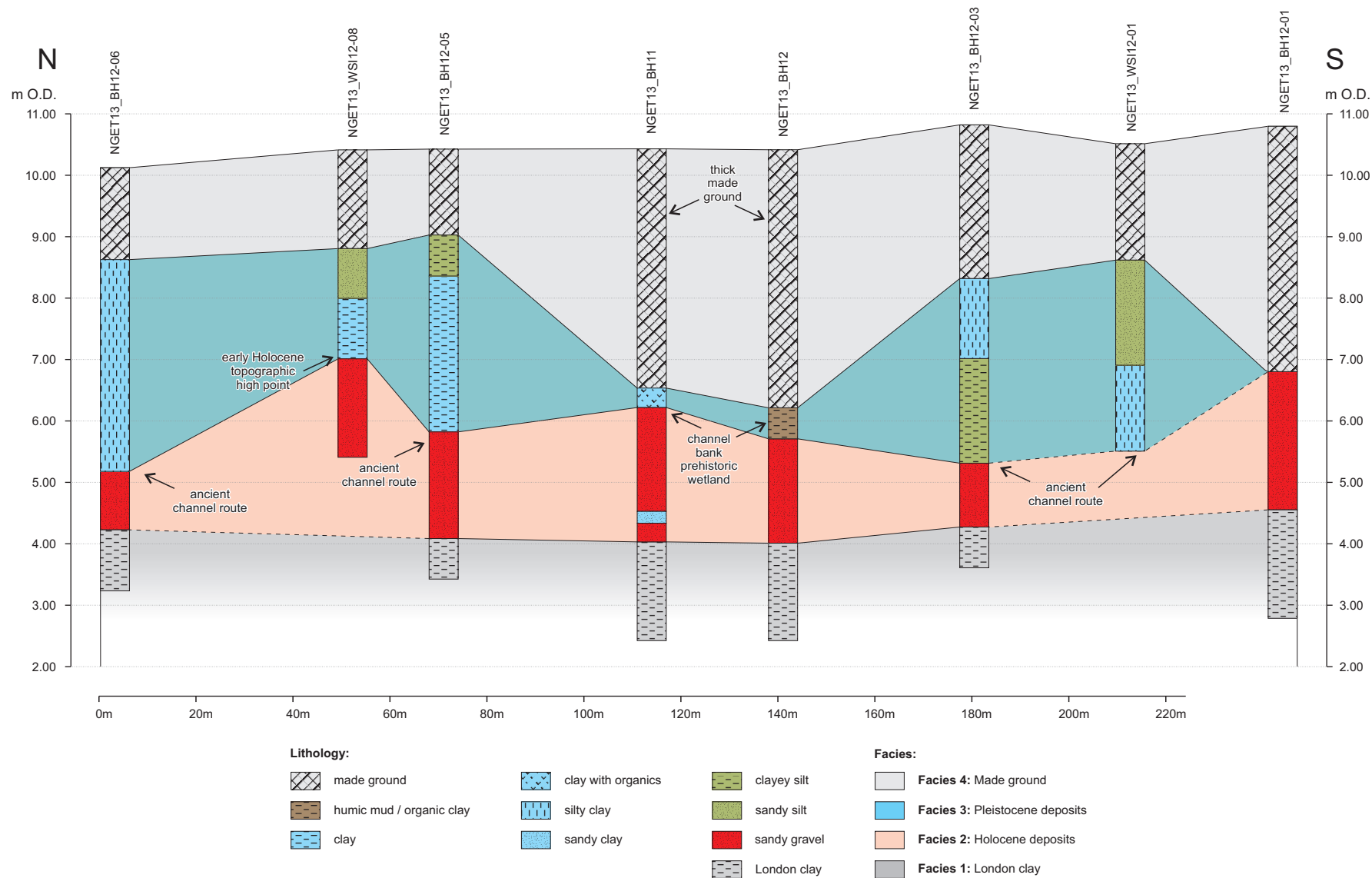


Fig 5 Transect 1, north to south (west side)

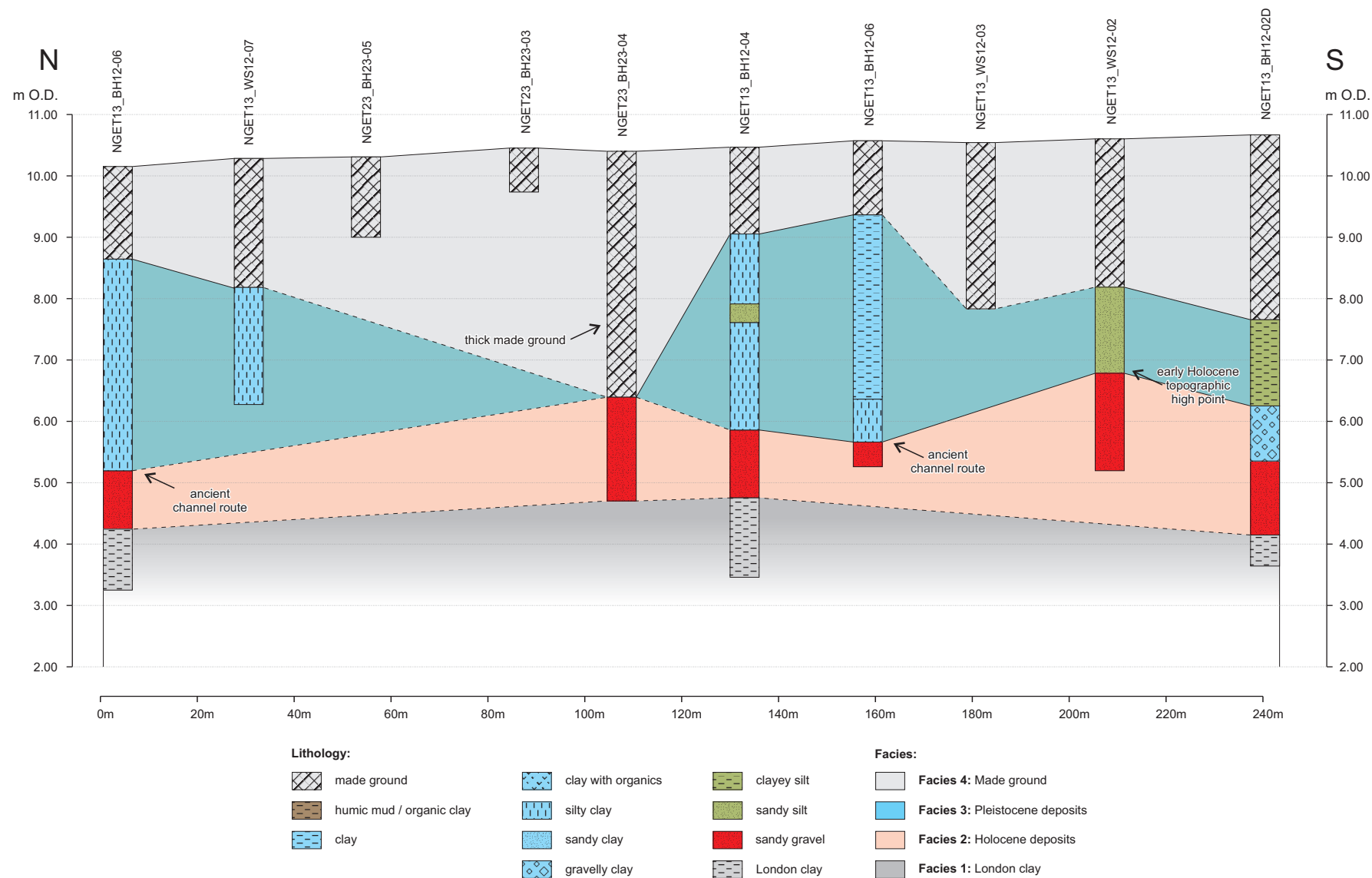


Fig 6 Transect 2, north to south (east side)

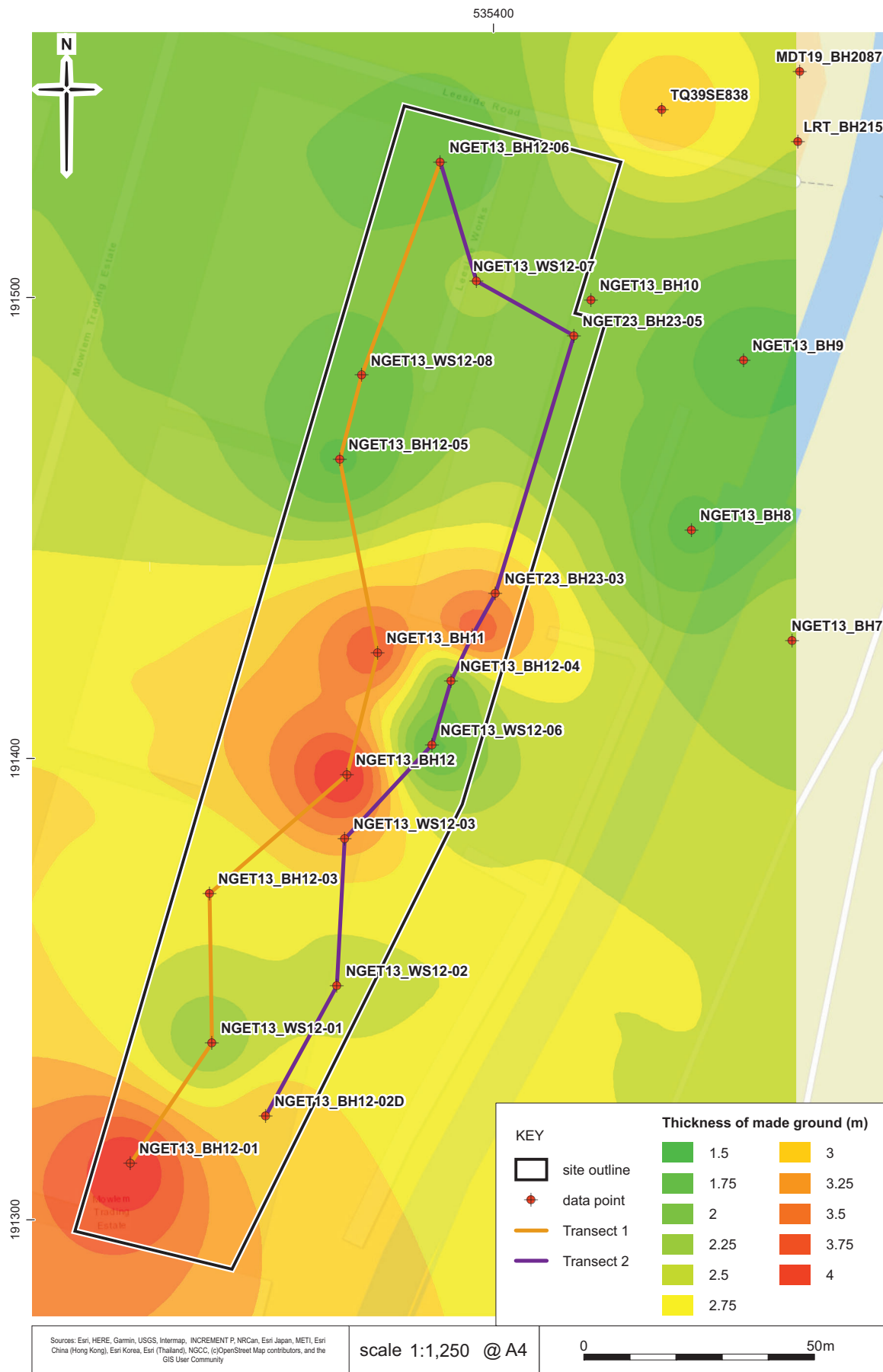


Fig 7 Isopach map of made ground thickness across the site

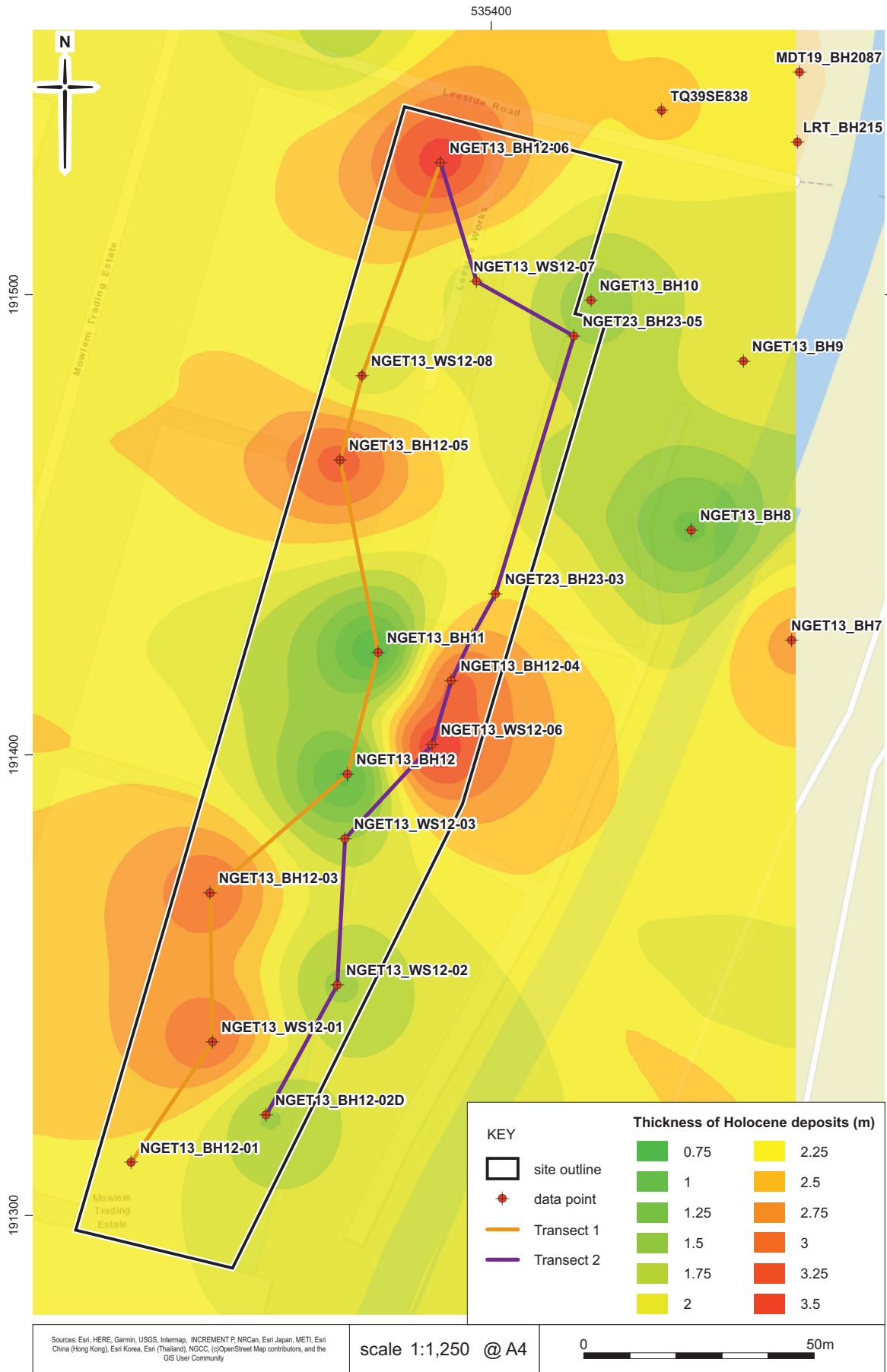


Fig 8 Isopach map of Holocene deposit thickness across the site

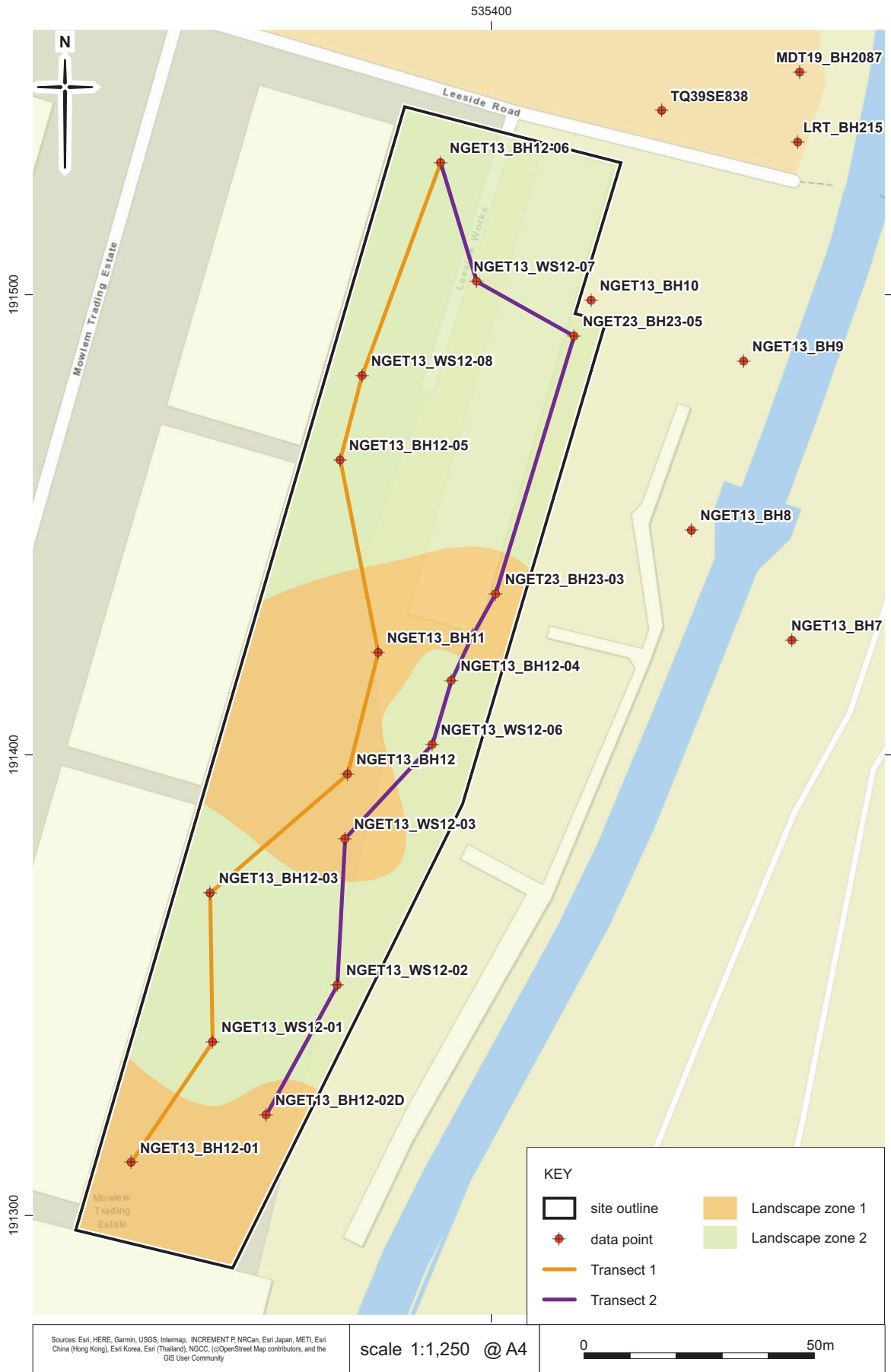


Fig 9 Landscape zones