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FISH ISLAND, NEPTUNE WHARF, LONDON BOROUGH OF TOWER HAMLETS

Updated Report on the Geoarchaeological Assessment and Radiocarbon Dating

NGR: TQ 3713 8422

Site Code: MIE16

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1. NON-TECHNICAL SUMMARY

A program of geoarchaeological fieldwork, deposit modelling and radiocarbon dating was carried out by Quaternary Scientific (University of Reading) in connection with the proposed development of land at Fish Island, Neptune Wharf, London Borough of Tower Hamlets. The work was commissioned by CgMs Consulting. The aims of the investigation were: (1) to clarify the composition, nature and distribution of the sediments beneath the site; (2) to evaluate the potential of these sediments for providing information on the environmental history of the site, and evidence of human activity.

In order to carry out the work, a program of fieldwork was instigated incorporating: (1) the monitoring and sampling of selected geotechnical site investigations, and (2) the retrieval of two targeted geoarchaeological boreholes. The resultant records were combined with those from existing archaeological/geoarchaeological/geotechnical investigations for deposit modelling purposes (35 records in total). The depth, thickness and nature of each major sedimentary unit was extracted and entered into geological modelling software, from which a series of topographic surface and thickness maps were produced. It was recommended in the initial report that a program of radiocarbon dating was carried out on two sequences from the site, MLM-WS103 and MLM-WS115, and that if the age of the Peat horizon is significantly different to that at the 79-85 Monier Road or Omega Works Phase III sites a program of assessment and analysis is carried out.

The arrangement of the deposits is largely consistent with those recorded during the larger Lea Valley (Corcoran et al., 2011) and Olympic Park (Powell, 2012) modelling exercises. The results of the current investigation demonstrate a sequence of River Terrace Gravels (the Lower Lea Gravel), overlain by floodplain deposits of peat, organic-rich and tufa sediments, and inorganic alluvium (silts and clays). However, the peat, organic-rich and tufa sediments appear to be located towards the western end of the site, and are recorded in the same area beneath adjacent sites 79-85 Monier Road (Batchelor et al., 2016) and Omega Works Phase III (Spurr, 2005, 2006). In addition, these deposits did not accumulate at the same time: at 79-85 Monier Road, the deposits are dated from the early Neolithic to Medieval period, whilst at Omega Works Phase III they were dated from the early to middle Mesolithic. At the Fish Island, Neptune Wharf site, the peat horizon was radiocarbon dated to the early Mesolithic to early/middle Neolithic, the base of the peat *at least* 300 years older (but potentially significantly more) than that at the Omega Works Phase III site.

Peat, organic-rich and tufa sediments have the potential to contain significant information on the past landscape and evidence of human activities, through the assessment/analysis of palaeoenvironmental ecofact remains (e.g. pollen, plant macrofossils and insects) and radiocarbon dating. It is therefore recommended that a program of environmental archaeological assessment is carried out, and that the results be integrated with forthcoming results from neighbouring sites in order to produce a short publication.

2. INTRODUCTION

2.1 Site context

This report summarises the findings arising out of the fieldwork, deposit modelling and radiocarbon undertaken by Quaternary Scientific (University of Reading) in connection with the proposed development of land at Fish Island, Neptune Wharf, London Borough of Tower Hamlets (site code: MIE16; NGR centred on: TQ 3713 8422; Figures 1 & 2). Quaternary Scientific were commissioned by CgMs Consulting to undertake the geoarchaeological investigations. The site is in the lower valley of the River Lea, approximately 4km from its confluence with the River Thames. The site is on the western side of the floodplain *ca.* 100m from the present-day River Lea Navigation; one of a number of waterways that flow southwards along the River Lea floodplain in this area. The Hertford Union Canal which joins the River Lea Navigation runs parallel to the site approximately 100m to the north. The British Geological Survey (http://mapapps.bgs.ac.uk/geologyofbritain/ home.html) shows the site underlain by Lambeth Group bedrock overlain by Alluvium, described as comprising clay, peat, sand, silt and clay. In fact, the alluvial deposits of the Lower Thames and its tributaries are almost everywhere underlain by Late Devensian Late Glacial Gravels (in the Thames valley, the Shepperton Gravel of Gibbard, 1985, 1994; in the Lea valley, the Lea Valley Gravel of Gibbard, 1994), and this gravel is widely recorded in boreholes in the vicinity of the site.

The site lies within the area investigated as part of the Lea Valley Mapping Project (Corcoran *et al.,* 2011). In this project the Lea Valley has been divided into Landscape Zones characterised by their Quaternary landscape history, based largely on sedimentary evidence derived from borehole records. The Fish Island, Neptune Wharf site is located in 'Map 2: the Bow Back Rivers' within Landscape Zone LZ 2.1 (Terrain 1; Figure 1) which is described as containing the deposits of the valley floor. Within this zone the surface of the Lea Valley Gravel undulates, lying at around 2.0-2.5m OD in the north and close to 0m OD in the south. Deeper gravel surfaces are recorded in places, indicting the course of the main channel, and the confluence with tributaries. More specifically, the site is projected as being located on the western side of Landscape Zone LZ 2.1. Here, a deep area of tributary or braided channel activity is identified, which dissects the low terrace (LZ 2.2), creating a mosaic of high and low gravel surfaces. The channel is thought to be of late Pleistocene or early Holocene age and of potential palaeoenvironmental significance. Finally, the site is mapped within 100m of the high terrace (LZ 2.4) to the west and north; the northern island being the result of erosion by the aforementioned channel (Corcoran *et al.*, 2011). Subsequent modelling carried out in the vicinity of the Fish Island, Neptune Wharf site, (Powell., 2012) as part of the Olympic Park archaeological investigations indicates similar features in the gravel surface topography to those recognised by Corcoran *et al.*,

The site lies within the area investigated as part of the Lea Valley Mapping Project (Corcoran *et al.,* 2011). In this project the Lea Valley has been divided into Landscape Zones characterised by their Quaternary landscape history, based largely on sedimentary evidence derived from borehole records. The 79-85 Monier Road site is located in 'Map 2: the Bow Back Rivers' within Landscape Zone LZ 2.1 (Terrain 1; Figure 1) which is described as containing the deposits of the valley floor.

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The sediments overlying the gravels across LZ 2.1 typically consist of silty clays up to 3m in thickness, and representative of a range of different depositional environments that date from the late Glacial to late Holocene. Of note however, is the sporadic presence of peat across the zone. Peat is widely recorded across the floodplain of the Thames and its tributaries, but in the few locations where it is recorded in LZ 2.1, it tends to be located towards the edge of the floodplain and is relatively thin (<1m). This includes the two western most boreholes represented in LZ 2.1, Transect 2 (Figure 1), which are located on the Omega Works Phase III site (Spurr, 2005, 2006; Figure 2); here, the peat has been radiocarbon dated from the middle to late Mesolithic period (ca. 9000 to 7000 cal BP). More recently, peat and/or organic-rich deposits have also been recorded on the neighbouring 79-85 Monier Road (site code: MOI16; Batchelor, 2016, Batchelor et al., 2016); here the peat is dated from the early Neolithic to the Medieval period (*ca*. 6000-1000 cal BP). Thus the existing data indicate that the peat and organic-rich deposits did not form contemporaneously, despite the short distance between the two sequences.

2.2 Palaeoenvironmental and archaeological significance

The existing records therefore indicate considerable variation in the height of the Lea Valley Gravel surface, and the type, thickness and age of the subsequent Holocene 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 Lea Valley 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 represent periods of changing hydrological conditions. Thus by studying the sub-surface stratigraphy across the site in greater detail, it will be possible to build an understanding of the former landscapes and environmental changes that took place across space and time.

Organic-rich sediments (in particular Peat) also 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. Therefore, due to the dominantly inorganic nature of the deposits of Landscape Zone LZ 2.1, any peat or organic-rich sediments present beneath the Fish Island, Neptune Wharf site should be regarded as potentially significant.

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). However, the archaeological potential of the site is considered to be low, as concluded on the neighbouring 79-85 Monier Road site as part of the archaeological and geoarchaeological desk-based assessments (CgMs, 2016; Batchelor & Young, 2016). Although Upper Palaeolithic people may have visited the area, evidence for such activity is rarely found in open-air sites in south-east England (Corcoran *et al*., 2011), and thus the potential to record remains within the river terrace gravels is considered low. Later prehistoric archaeological remains have not previously been recorded in the deposits of LZ 2.1, and in the nearby area generally, although such environments would have been rich in food resources (such as fish and fowl), and the marginal river environment provides greater potential for the preservation of archaeological remains, even if only ephemeral in nature (Corcoran et al., 2011).

In the western part of LZ 2.1 where remnants of the low terrace LZ 2.2 are present, Roman remains are well represented, particularly associated with the settlement at Old Ford and the conjectured Roman Road (Corcoran *et al*., 2011). The findings of the present geoarchaeological deposit modelling exercise are thus considered to support the conclusions reached during the archaeological desk-based assessment: 'It is likely that during this period the site lay on the edge of any settlement activity within the floodplain of the Lea tributary. The archaeological potential of the study site for evidence of Roman activity on the site is therefore also considered to be low. If present any remains are likely to reflect water management such as drainage ditches, timber revetments located at depth within the site' (CgMs Consulting, 2016).

2.3 Aims and objectives

Further records are required to enhance our understanding of the sub-surface stratigraphy of the Fish Island, Neptune Wharf site, and for any further assessment/analysis of the deposits (if necessary). Five significant research aims are thus proposed for the site as follows:

1. To clarify the nature of the sub-surface stratigraphy across the site;
2. To clarify the nature, depth, extent and date of any alluvium and peat deposits
3. To investigate whether the sequences contain any artefact or ecofact evidence for prehistoric or historic human activity

4. To investigate whether the sequences contain any evidence for natural and/or anthropogenic changes to the landscape (wetland and dryland)
5. To integrate the new geoarchaeological record with other recent work in the local area for publication in an academic journal

The content of this report achieves the first two of these aims and considers the potential of addressing aims 3 to 5 through laboratory-based assessment and analysis. The following objectives were carried out in order to address aims 1 & 2:

1. To monitor and/or retrieve borehole sequences from select locations across the site.
2. To utilise the stratigraphic data from the new and existing records to produce a deposit model of the major depositional units across the site.

This report also contains an addendum following up on the recommendations made during the initial geoarchaeological assessment report. It was recommended in this report that a program of radiocarbon dating is carried out on two sequences from the site, MLM-WS103 and MLM-WS115, for the reasons outlined in the Discussion section. It was further recommended that if the program of dating correlates with the ages of the peat from either 79-85 Monier Road or the Omega Works Phase III sites, no further work should be recommended. If different, a program of assessment and analysis should be carried out. In particular, the limited number and potential to uncover such sequences in this area of the Lea Valley (especially if they date to the Late Glacial / Early Holocene periods), and increased knowledge/understanding of the historic/prehistoric environment that they could provide, only increases the importance of undertaking such work (see Corcoran *et al.*, 2011).

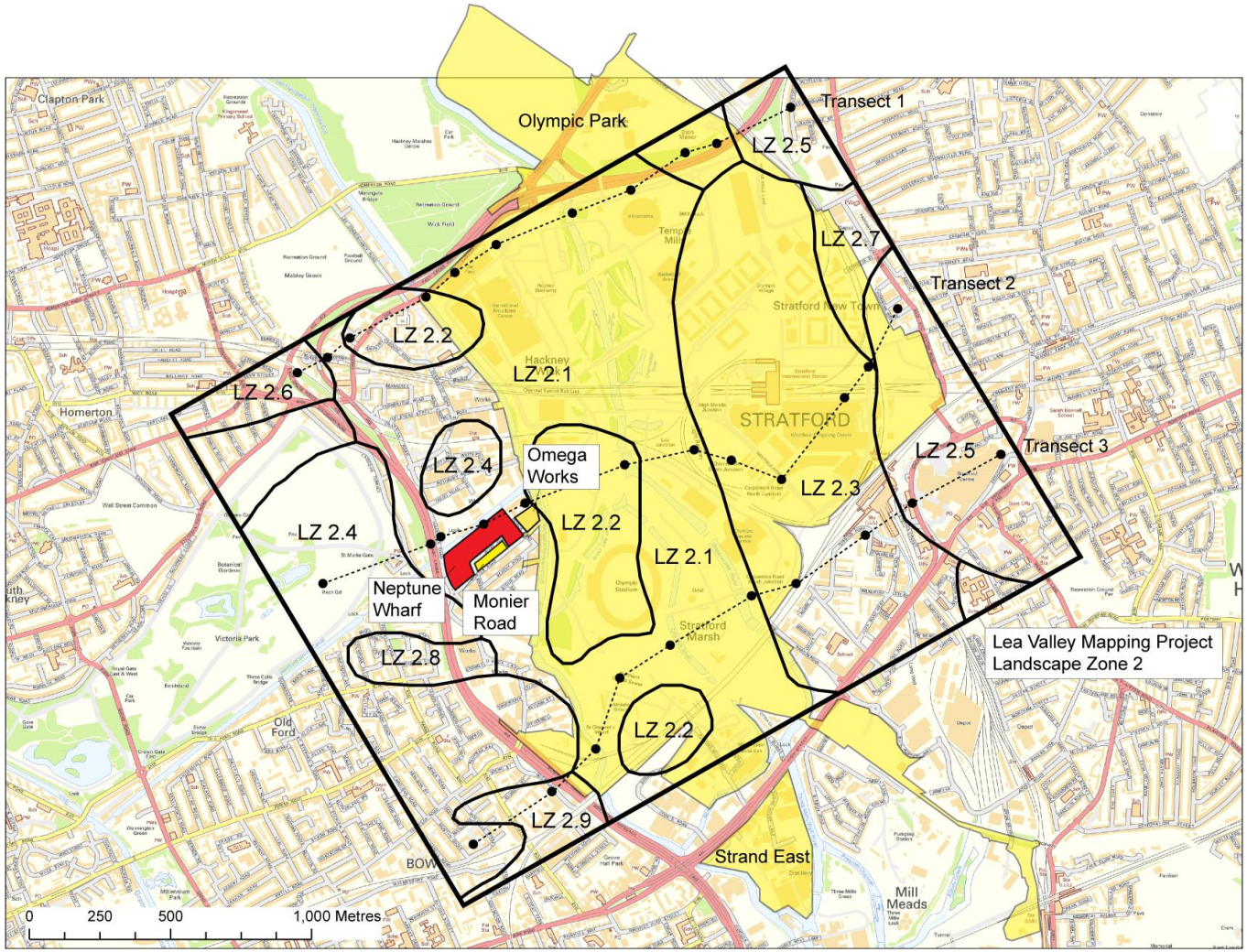

Figure 1: Location of Fish Island, Neptune Wharf, London Borough of Tower Hamlets and other local sites including: 79-85 Monier Road (Batchelor, 2016; Batchelor et al., 2016), Omega Works (Spurr, 2005, 2006), Strand East (Green & Batchelor, 2014) and the area encompassed by the Olympic Park (Powell, 2012). Also displayed are the interpreted Landscape Zones (LZ) of Map 2, investigated as part of the Lower Lea Valley Mapping Project (Corcoran *et al.*, 2011). *Contains Ordnance Survey data © Crown copyright and database right [2016]*.

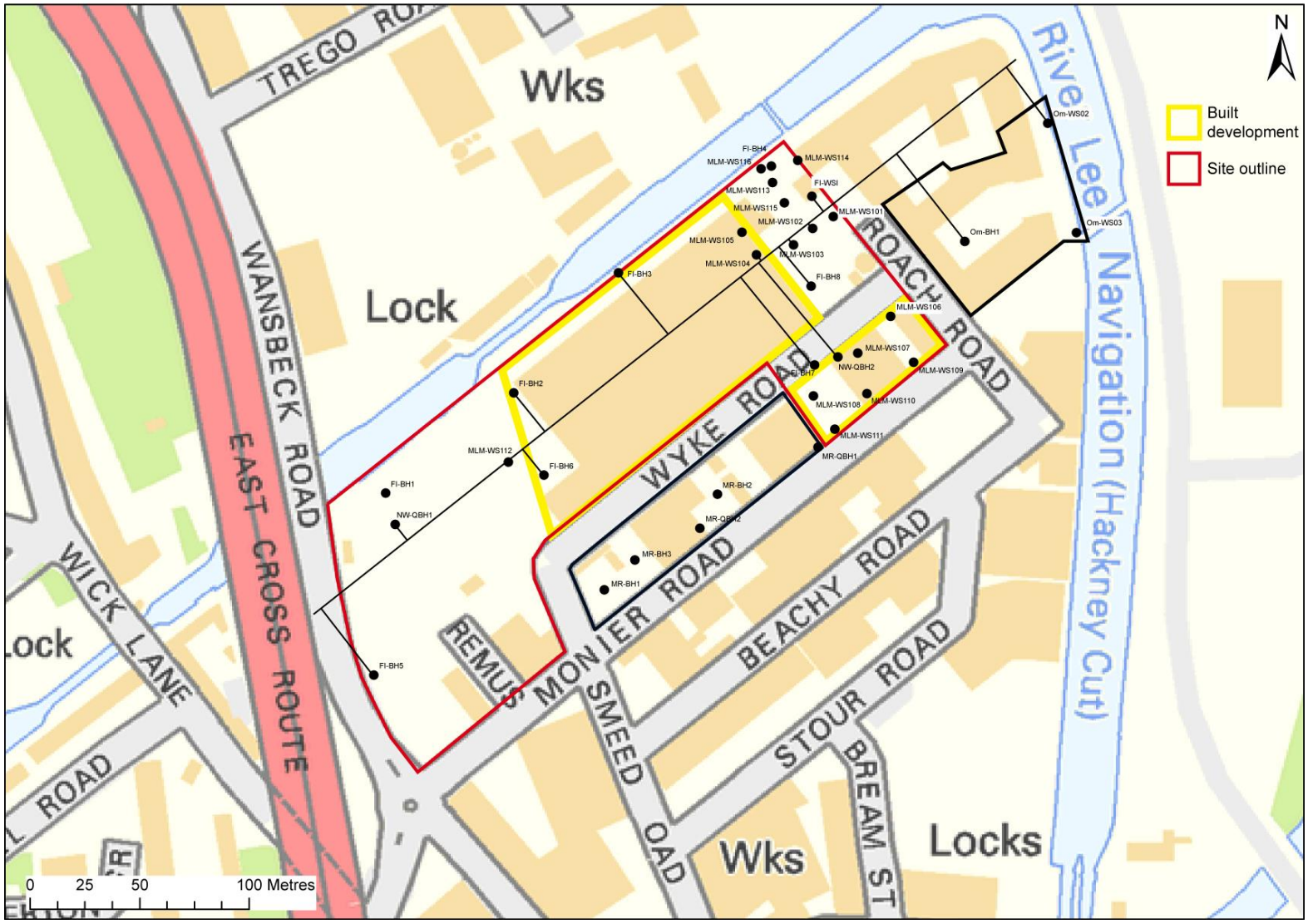

Figure 2: Location of the geotechnical and geoarchaeological boreholes at the 79-85 Monier Road site, London Borough of Tower Hamlets, showing the southwest-northeast transect shown in Figure 3. ***Contains Ordnance Survey data © Crown copyright and database right [2016].***

3. METHODS

3.1 Field investigations

Two geoarchaeological boreholes (boreholes NW-QBH1 & QBH2) were put down at the site in November 2015 (Figure 2) by Quaternary Scientific. The borehole core samples were recovered using an Eijkelkamp window sampler and gouge set using an Atlas Copco TT 2-stroke percussion engine. In addition, five geotechnical window sample locations were monitored and retrieved in May 2016 (NW-MLM103, 105, 109, 111 & 115). The window samples were put down by MLM using a Comacchio Rig. Both coring techniques provide a suitable method for the recovery of continuous, undisturbed core samples and provides sub-samples suitable for not only sedimentary and microfossil assessment and analysis, but also macrofossil analysis. The new and historic borehole locations were obtained with reference to site maps and recent topographic surveys (Table 1).

3.2 Lithostratigraphic description

Laboratory-based lithostratigraphic descriptions of all samples was carried out using standard procedures for recording unconsolidated sediment and peat, noting the physical properties (colour), composition (gravel, sand, clay, silt and organic matter) and inclusions (e.g. artefacts). The procedure involved: (1) cleaning the samples with a spatula or scalpel blade and distilled water to remove surface contaminants; (2) recording the physical properties, most notably colour; (3) recording the composition e.g. gravel, fine sand, silt and clay; (4) recording the degree of peat humification, and (5) recording the unit boundaries e.g. sharp or diffuse. The results are displayed in Tables 2 to 8.

3.3 Deposit modelling

The deposit model was based on a review of 35 borehole records, incorporating records from the site, 79-85 Monier Road and Omega Works Phase III (Figure 2; Table 1). Sedimentary units from the boreholes were classified into four groupings: (1) Gravel, (2) Peat; (3) Alluvium and (4) Made Ground. The classified data for groups 1-4 were then input into a database with the RockWorks geological utilities software. Models of surface height were generated for the Gravel and Alluvium (Figures 4 and 5). Thickness of the Alluvium and Made Ground (Figures 6 and 7) were also modelled. No thickness model was generated for the Peat, since this was only recorded in sporadic boreholes. Because the boreholes are not uniformly distributed over the area of investigation, the reliability of the models generated using RockWorks is variable. In general, reliability improves from outlying areas where the models are largely supported by scattered archival records towards the core area of commissioned boreholes. 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 and section drawings. As a consequence of this the modelling procedure has been manually adjusted so that only those areas for which sufficient stratigraphic data is present will be modelled. In order to achieve this, a maximum distance cut-off filter equivalent to a 50m radius around each record is applied to all deposit models. In addition, it is important to recognise that multiple sets of boreholes are represented, put down at different times and recorded using different descriptive terms and subject to differing technical constraints in terms of recorded detail including the exact levels of the stratigraphic boundaries.

3.4 Radiocarbon dating

A total of three sub-samples were extracted for radiocarbon dating: towards the base of the peat in boreholes MLM-WS103 and MLM-WS115 (0.27 to 0.25 and 0.11 to 0.09m OD respectively) and towards the top of the peat in MLM-WS115 (0.56 to 0.54m OD). The dates from the top and base of the peat in MLM-WS115 were carried out on unidentified twig wood (<2-3 years old); in the absence of dateable macrofossils from the base of the peat in MLM-WS103, the radiocarbon determinations were carried out on unidentified plant material and the alkali-insoluble sediment fraction (the humins; a class of organic compounds that are insoluble in water) from a bulk peat sample. The samples were submitted for radiocarbon dating to Beta Analytic INC, Radiocarbon Dating Laboratory, Florida, USA. The results have been calibrated using OxCal v4.0.1 Bronk Ramsey (1995, 2001 and 2007) and the IntCal13 atmospheric curve (Reimer *et al.*, 2013). The results are displayed in Tables 9 and 10.

4. RESULTS AND INTERPRETATION OF THE LITHOSTRATIGRAPHIC DESCRIPTIONS, DEPOSIT MODELLING AND RADIOCARBON DATING

A summary of the geotechnical data is shown in Table 1. The results of the deposit modelling are displayed in Figures 3 to 7; Figure 3 is a 2-dimensional southwest-northeast transect, Figures 4 to 7 are surface elevation and thickness models for each of the main stratigraphic units. The results of the deposit modelling indicate that the number and spread of the logs is sufficient to permit modelling with a high level of reliability across the entire area under investigation.

The full sequence of sediments recorded in the boreholes comprises:

Made Ground
Alluvium – widely present
Peat, organic-rich & tufa sediments – sporadically present
Gravel (Lower Lea Gravel)

4.1 Lower Lea Gravel

The Lower Lea Gravel was present in all the boreholes that penetrated to the bottom of the Holocene sequence. It was deposited during the Late Glacial (15,000 to 10,000 years before present) and comprises the sands and gravels of a high-energy braided river system which, while it was active would have been characterised by longitudinal gravel bars and intervening low-water channels in which finer-grained sediments might have been deposited. Such a relief pattern would have been present on the valley floor at the beginning of the Holocene when a lower-energy fluvial regime was being established.

The Lower Lea Valley Gravel rests on a Lambeth Group bedrock surface that slopes downwards from east (-1.9m OD; FI-BH7) to west (-4.25m OD; FI-BH5) across the site (Figures 2 & 3). This is consistent with the findings of Corcoran *et al* (2011) which indicated that the Gravels infilled a deep trough in the bedrock to this approximate depth on the western side of Landscape Zone LZ 2.1.

The sand and gravel deposits range between *ca.* 2.5 and 4.5m in thickness; no lenses of fine grained sediments with palaeoenvironmental potential are recorded.

The surface of the Gravel (Figure 4) is relatively even across the 79-85 Monier Road and Fish Island, Neptune Wharf sites generally varies between -1 and +1m OD. In one record (FI-BH1), a higher surface of +1.85m OD is recorded. This may be anomalous as it is recorded adjacent to geoarchaeologically monitored borehole NW-QBH1 which records the same surface at -1m OD. Nevertheless, the general surface heights are consistent with those recorded by Corcoran et al (2011) in the nearby boreholes of Transect 2 (Figure 2).

4.2 Peat, organic-rich & tufa sediments

Peat is recorded in six of the 25 geotechnical boreholes and one of the two geoarchaeological boreholes at the Fish Island, Neptune Wharf site. In all cases the peat is recorded resting directly on the underlying gravel, and in a further three of the five boreholes examined in detail in the laboratory, richly organic silts and sands incorporating tufa debris and mollusc remains occurred in this position in the sediment sequence. All of the boreholes in which peat or richly organic silts and sands were recorded lie at the NE end of the Fish Island, Neptune Wharf site, but even in this area the presence of organic horizons is patchy, with 12 boreholes in which no significant organic material was recorded. Where peat is present it suggests a transition from active channel processes towards semi-terrestrial (marshy) conditions supporting the growth of sedge fen/reed swamp and/or woodland communities. The patchy extent and generally thin nature of the peat and other organic horizons at the Fish Island, Neptune Wharf site corresponds with the findings of Corcoran *et al* (2011) for the wider area in which the site lies.

The results of the radiocarbon dating of the base of the Peat indicate that accumulation began at 10,160 to 9,790 cal BP in borehole MLM-WS115 (0.11 to 0.09m OD; early Mesolithic). In borehole MLM-WS103, the radiocarbon dates for the humin (alkali insoluble) and plant remains from a bulk peat sample (0.27 to 0.25m OD) returned ages of 11,240 to 11,100 cal BP and 10,660 to 10,400 cal BP respectively. Although these ages are not statistically consistent (the difference in their ages reflecting the complexities of dating different fractions of organic sediment), they are both indicative of an early Mesolithic age for the beginning of peat accumulation. In MLM-WS115 the top of the Peat was radiocarbon dated to 5,890 to 5,650 cal BP, indicating that peat cessation occurred during the early to middle Neolithic period. Whether peat formation continued uninterrupted throughout the Mesolithic and Neolithic periods is unknown.

4.3 Alluvium

The Alluvium rests directly on the Gravel or Peat and was recorded in all boreholes across both the Fish Island, Neptune Wharf site and the neighbouring 79-85 Monier Road site. The deposits of the Alluvium are described as predominantly silty or clayey and occasionally organic-rich (e.g. MR-BH3) or with sporadic bands of peat (e.g. FI-BH2, FI-BH4 and FI-BH5). The surface of the Alluvium (Figure 5) is highly variable, resting between 2.5m and 6m OD and ranges in thickness from 1m to 5m, but is mainly between 2m and 3m (Figure 6).

The sediments of the Alluvium are indicative of deposition within low energy fluvial and/or semi-aquatic conditions during the Holocene. The high mineral content of the sediments may reflect increased sediment loads resulting from intensification of agricultural land use from the later prehistoric period onward, combined with the effects of rising sea level.

4.5 Made Ground

Between 0.5 and 6m of Made Ground caps the Holocene alluvial sequence (Figure 7).

Table 1: Borehole attributes for those records used in the deposit model, 79-85 Monier Road, London Borough of Tower Hamlets.

Name	Easting	Northing	Elevation (m OD)	Top of Alluvium (m bgl)	Top of Peat (m bgl)	Top of Lower Lea Gravel (m bgl)	Top of London Clay (m bgl)
Gearchaeological boreholes from 79-85 Monier Road							
MR-QBH1	537233	184197	5.60	1.25	4.40	4.94	-
MR-QBH2	537179	184160	5.45	1.20	3.75	5.23	-
Geotechnical boreholes from 79-85 Monier Road							
MR-BH1	537135.33	184131.85	6.55	2.10	-	6.30	9.90
MR-BH2	537186.95	184175.48	6.60	0.50	-	5.50	10.00
MR-BH3	537149.28	184145.49	6.40	3.90	-	6.50	9.00
Geoarchaeological boreholes from Fish Island, Neptune Wharf							
NW-QBH1	537039.76	184161.68	6.27	4.00		6.98	-
NW-QBH2	537242.02	184238.25	6.65	3.80	6.77	6.88	-
Geotechnical boreholes from Fish Island, Neptune Wharf							
FI-BH1	537035.26	184176.01	8.15	5.30	-	6.30	12.00
FI-BH2	537093.81	184221.87	7.60	3.70	-	*6.50*	10.50
FI-BH3	537141.71	184276.73	6.65	2.80	-	60	9.60
FI-BH4	537211.72	184325.46	7.30	4.40	-	7.30	9.60
FI-BH5	537029.93	184092.90	7.75	5.80	-	7.60	12.00
FI-BH6	537107.73	184184.20	7.55	4.70	-	7.00	10.70
FI-BH7	537231.38	184234.56	6.50	4.50	-	6.10	8.40
FI-BH8	537229.74	184270.59	7.60	5.60	-	7.70	10.60
FI-WSI	537230.15	184311.54	7.10	4.30	-	6.55	-
MLM-WS101	537240.0	184302.3	6.75	4.50	-	-	-
MLM-WS102	537230.6	184296.9	7.15	5.10	6.60	-	-
MLM-WS103	537221.7	184289.5	7.34	4.00	6.86	7.10	-
MLM-WS104	537204.9	184284.8	7.71	5.90	6.15	-	-
MLM-WS105	537198.1	184295.2	7.68	4.00	-	-	-
MLM-WS106	537266.2	184256.8	6.64	4.00	5.50	5.85	-
MLM-WS107	537251.1	184240.0	6.75	4.10	-	7.00	-
MLM-WS108	537230.9	184220.4	6.65	4.10	-	6.70	-
MLM-WS109	537276.7	184235.8	6.65	4.20	-	6.00	-
MLM-WS110	537255.4	184221.4	6.65	3.95	5.90	6.15	-
MLM-WS111	537240.6	184205.2	6.65	3.70	-	5.68	-
MLM-WS112	537091.5	184190.2	6.65	4.00	-	-	-
MLM-WS113	537212.1	184317.9	7.32	-	-	-	-
MLM-WS114	537223.7	184328.0	7.09	-	-	-	-
MLM-WS115	537217.6	184308.6	7.26	6.00	6.61	-	-
MLM-WS116	537206.9	184324.2	7.34	3.80	-	-	-
Geoarchaeological boreholes from Omega Works Phase III							
OM-BH1	537300	184291	7.05	4.20	5.95	6.60	-
OM-WS02	537338	184345	7.22	3.90	6.10	6.70	-
OM-WS03	537351	184295	7.27	2.40	-	4.80	-

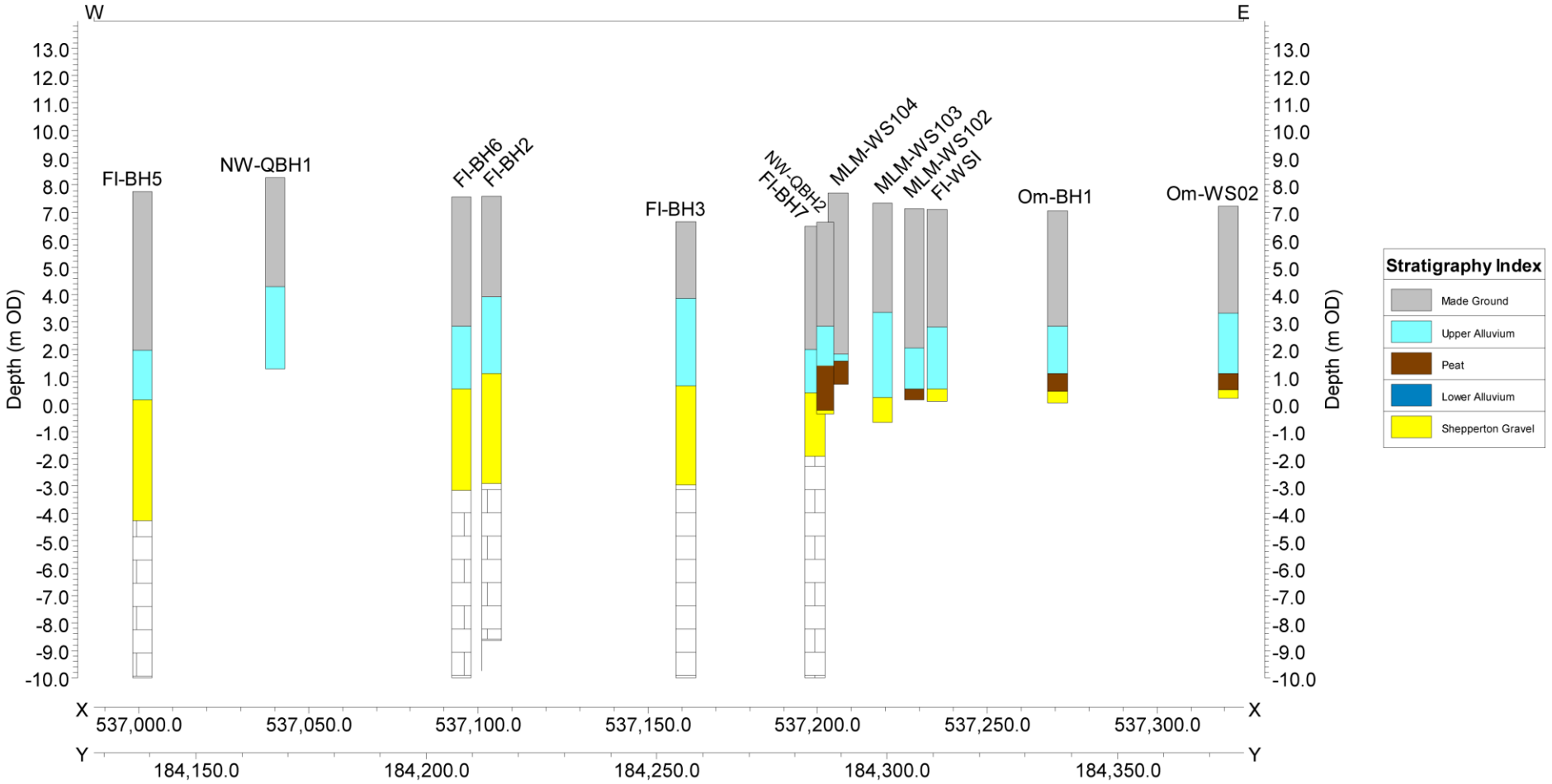

Figure 3: South-west to north-east borehole transect across the Fish Island, Neptune Wharf site.

Figure 4: Top of the Lea Valley Gravel (m OD) (site outline in red). ***Contains Ordnance Survey data © Crown copyright and database right [2016].***

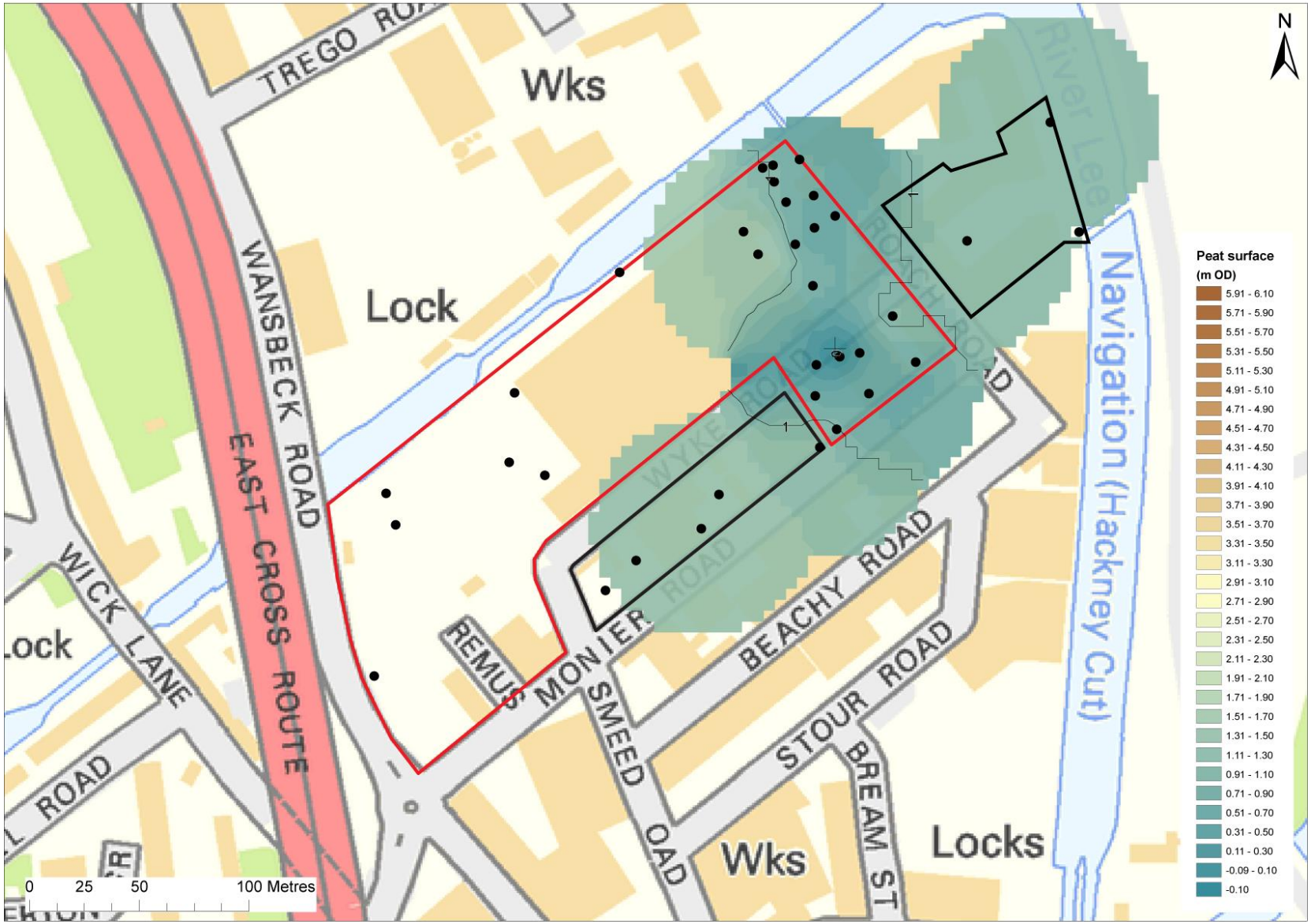

Figure 5: Top of the Peat (m OD) (site outline in red). ***Contains Ordnance Survey data © Crown copyright and database right [2016].***

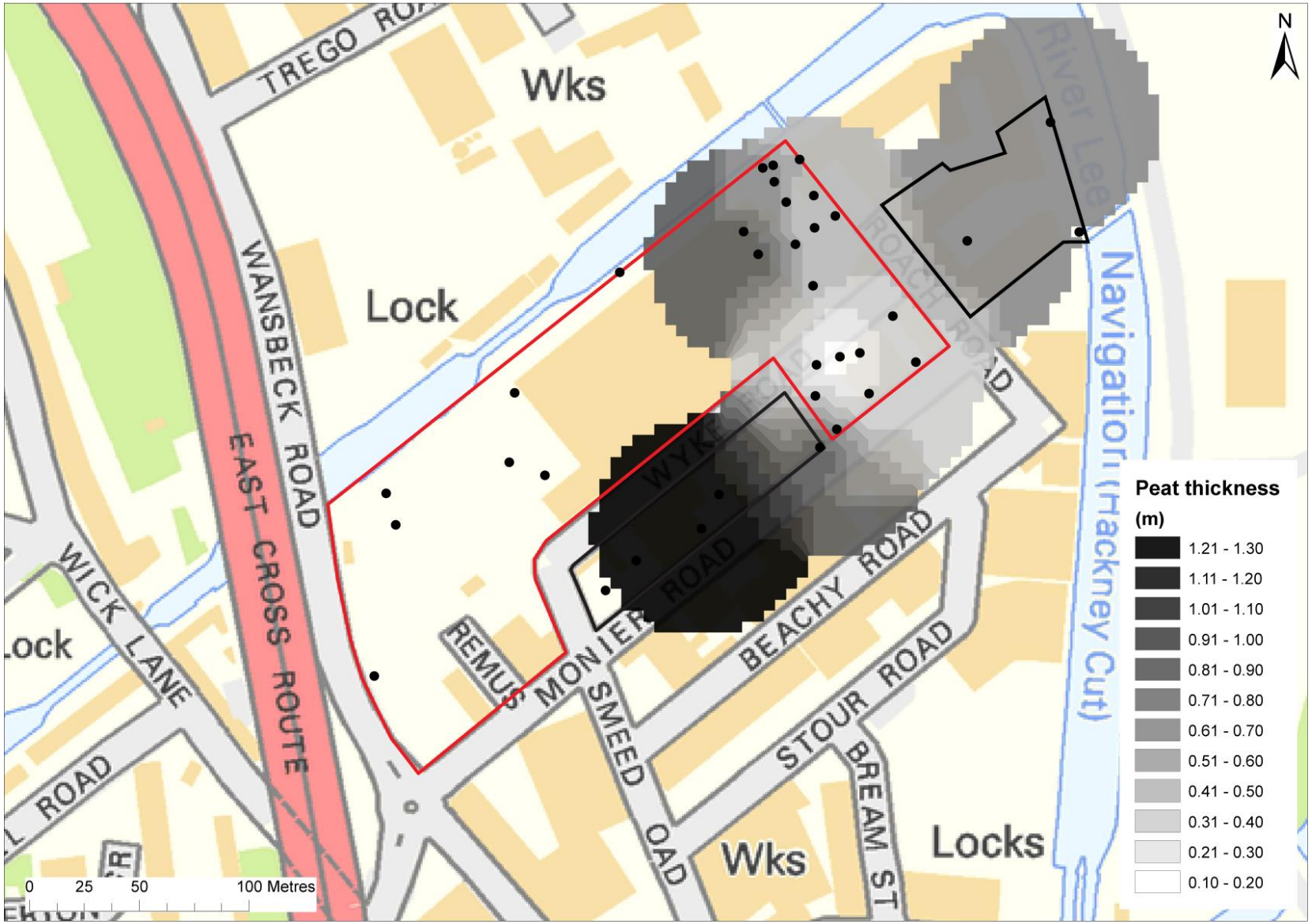

Figure 6: Thickness of Peat (m) (site outline in red). ***Contains Ordnance Survey data © Crown copyright and database right [2016].***

Figure 7: Top of the Alluvium (m OD) (site outline in red). ***Contains Ordnance Survey data © Crown copyright and database right [2016].***

Figure 8: Thickness of Alluvium (m) (site outline in red). ***Contains Ordnance Survey data © Crown copyright and database right [2016].***

Figure 9: Thickness of Made Ground (m) (site outline in red). ***Contains Ordnance Survey data © Crown copyright and database right [2016].***

Table 2: Lithostratigraphic description of borehole NW-QBH1, Fish Island, Neptune Wharf, London Borough of Tower Hamlets

Depth (m OD)	Depth (m bgl)	Description	Stratigraphic group
6.27 to -0.26	0 to 6.53	Made Ground	MADE GROUND
-0.26 to -0.66	6.53 to 6.93	Gley 1 4/5GY; As2, Ag2; Dark greenish grey silty clay with tufa nodules at 6.87m bgl; sharp contact into:	ALLUVIUM
-0.66 to -0.71	6.93 to 6.98	10YR 5/3; Ga4, Ag+; Brown sand with traces of silt and an organic-rich horizon at 6.97m bgl; diffuse contact into:	
-0.71 to -0.73	6.98 to 7.00	10YR 4/1; Gg3, Ga1; Dark grey sandy gravel.	LOWER LEA GRAVEL

Table 3: Lithostratigraphic description of borehole NW-QBH2, Fish Island, Neptune Wharf, London Borough of Tower Hamlets

Depth (m OD)	Depth (m bgl)	Description	Stratigraphic group
6.65 to 2.65	0 to 4.00	Made Ground	MADE GROUND
2.65 to 1.85	4.00 to 4.80	Gley 2 4/10G; As2, Ag2; Dark greenish grey silty clay with frequent root hollows, worm holes & iron staining; diffuse contact into:	ALLUVIUM
1.85 to 1.03	4.80 to 5.62	Gley 2 4/10G; Ag2, As2; Dark Greenish grey silty clay with occasional Mollusca fragments; diffuse contact into:	
1.03 to 0.96	5.62 to 5.69	Gley 2 2.5/10G; Ag2, As2; Greenish black silty clay with traces of detrital plant remains; diffuse contact into:	
0.96 to 0.84	5.69 to 5.81	Gley 2 4/10G; Ag2, As2; Dark Greenish grey silty clay with occasional Mollusca fragments; diffuse contact into:	
0.84 to 0.82	5.81 to 5.83	2.5Y 4/2; Ag2, Lc/Ld2; Dark greyish brown silt and tufaceous material; sharp contact into:	
0.82 to 0.50	5.83 to 6.15	10YR 2/1; Ag2, As1, Sh1; Black organic-rich clayey silt; diffuse contact into:	
0.50 to -0.01	6.15 to 6.66	2.5Y 3/1; Ag2, As1, Dh1; Very dark grey clayey silt with detrital plant remains and traces of sand; sharp contact into:	
-0.01 to -0.23	6.66 to 6.88	10YR 2/1; Sh3, Ag1; Humo 3-4; Black well humified unidentifiable peat with clay; sharp contact into:	PEAT
-0.23 to -0.35	6.88 to 7.00	10YR 4/1; Gg3, Ga1; Dark grey sandy gravel.	LOWER LEA GRAVEL

Table 4: Lithostratigraphic description of borehole MLM-WS103, Fish Island, Neptune Wharf, London Borough of Tower Hamlets

Depth (m OD)	Depth (m bgl)	Description	Stratigraphic group
7.34 to 3.34	0 to 4.00	Made Ground	MADE GROUND
3.34 to 2.34	4.00 to 5.00	Black oxidising to 10YR 4/2 dark greyish brown; moderately sorted silty clay with sub-angular flint clasts (up to 30mm) in upper 0.2m; massive; scattered detrital herbaceous plant remains; scattered mollusc remains; scattered particles of brick; abundant particles of coal; weak to moderate	ALLUVIUM

		acid reaction. *Core is broken into six separate pieces with void at 4.40-4.67.*	
2.34 to 2.30	5.00 to 5.04	VOID	
2.30 to 1.92	5.04 to 5.42	5Y 3/1 very dark grey; with scattered brown staining; very well sorted clayey silt; massive; scattered detrital herbaceous plant remains; no acid reaction.	
1.92 to 1.82	5.42 to 5.52	VOID	
1.82 to 1.34	5.52 to 6.00	As above; some black staining; scattered small (<2mm) particles of tufa at 5.64-5.84	
1.34 to 1.31	6.07 to 6.10	VOID	
1.31 to 0.63	6.17 to 6.71	10Y 3/1 very dark greenish grey; very well sorted clayey silt; massive; scattered detrital herbaceous plant remains; no acid reaction; gradual transition to:	
0.63 to 0.56	6.71 to 6.78	Black; very well sorted silt; massive becoming weakly laminated near base; common detrital herbaceous plant remains; no acid reaction; well-marked transition to:	
0.56 to 0.48	6.78 to 6.86	Black; very well sorted peaty silt; laminated; abundant detrital herbaceous plant remains; pieces of wood (up to 20mm); no acid reaction; gradual transition to:	
0.48 to 0.27	6.86 to 7.07	Black; slightly silty peat; laminated; no acid reaction; very sharp contact with:	
0.27 to 0.24	7.07 to 7.10	10YR 3/2 very dark greyish brown (speckled); well sorted tufa sand; scattered detrital herbaceous plant remains; strong acid reaction.	
0.24 to 0.14	7.10 to 7.20	5Y 2.5/1 black to 5Y 3/1 very dark grey; poorly sorted slightly clayey sandy gravel of sub-angular and well-rounded flint clasts (up to 40mm) and one clast of peat scattered detrital herbaceous plant remains.	LOWER LEA GRAVEL

Blue text = geoarchaeological description; Black text = geotechnical description

Table 5: Lithostratigraphic description of borehole MLM-WS106, Fish Island, Neptune Wharf, London Borough of Tower Hamlets

Depth (m OD)	Depth (m bgl)	Description	Stratigraphic group
7.68 to 3.68	0 to 4.00	Made Ground	MADE GROUND
3.68 to 3.28	4.00 to 4.40	Firm dark grey mottled brown organic silty clay, with abundant black decayed plant fragments and rare fine to medium flint gravel.	ALLUVIUM
3.28 to 2.68	4.40 to 5.00	Soft light bluish grey mottled beige silty clay, with rare decayed rootlets and black plant fragments.	
2.68 to 2.62	5.00 to 5.06	SPOIL	
2.62 to 2.38	5.06 to 5.30	10Y 3/1 very dark greenish grey; very well sorted silt with small (<2mm) particles of tufa; massive; occasional root remains; scattered detrital herbaceous plant remains; no acid reaction; well-marked transition to:	
2.38 to 2.08	5.30 to 5.60	10YR 5/2 greyish brown / 10YR 3/1	

		very dark grey/ black; well sorted silty fine sand becoming coarser downward; sub-horizontal bedding defined by colour and texture; occasional root remains; scattered detrital herbaceous plant remains; finely divided mollusc shell debris; strong acid reaction; well-marked transition to:	
2.08 to 1.67	5.60 to 6.01	10Y 5/1 greenish grey, speckled; well sorted slightly silty coarse sand with sand-size tufa particles; scattered detrital herbaceous plant remains; small (up to 5mm) pieces of wood; mollusc shell debris and complete shells, becoming more common downward; strong acid reaction.	
1.67 to 0.48	6.01 to 7.20	Light grey slightly calcareous silty fine to medium sand, with rare fine to medium sub-angular to sub-rounded chalk and flint gravel.	

Blue text = geoarchaeological description; Black text = geotechnical description

Table 6: Lithostratigraphic description of borehole MLM-WS109, Fish Island, Neptune Wharf, London Borough of Tower Hamlets

Depth (m OD)	Depth (m bgl)	Description	Stratigraphic group
6.65 to 2.45	0 to 4.20	Made Ground	MADE GROUND
2.45 to 1.73	4.20 to 4.92	10Y4/1 very dark greenish grey with scattered rusty mottles; very well sorted silty clay; massive; root channels with root remains; common detrital herbaceous plant remains; no acid reaction	ALLUVIUM
1.73 to 1.65	4.92 to 5.00	5GY2.5/1 greenish black; very well sorted fine sandy silt; weakly laminated; root channels with root remains; common detrital herbaceous plant remains; no acid reaction.	
1.65 to 1.49	5.00 to 5.16	VOID	
1.49 to 1.11	5.16 to 5.54	10YR3/1 very dark grey; very well sorted peaty silty clay/clayey silt; massive; occasional roots; abundant detrital herbaceous plant remains; faunal burrows; very scattered finely divided mollusc shell debris, single operculum; insect remains; weak acid reaction; well-marked transition to:	
1.11 to 1.02	5.54 to 5.63	10YR3/1 very dark grey (lighter than Unit 3); very well sorted silt; massive (less compact than Unit 3); occasional roots; common detrital herbaceous plant remains; scattered finely divided mollusc shell debris (less than overlying unit); no acid reaction; well-marked transition to:	
1.02 to 0.65	5.63 to 6.00	10YR3/1 very dark grey; moderately sorted slightly gritty silty clay; massive; occasional roots; common detrital herbaceous plant remains (less than Unit 3); common mollusc remains, shell debris and complete shells; strong acid reaction.	

0.65 to 0.19	6.00 to 6.46	*Broken core and loose gravel*	LOWER LEA GRAVEL
0.19 to -0.21	6.46 to 6.86	2.5Y3/1 very dark grey; moderately sorted sandy gravel of sub-angular and well-rounded flint (up to 40mm); no acid reaction; well-marked transition to:	
-0.21 to -0.65	6.86 to 7.30	2.5Y3/1 very dark grey; well sorted sandy gravel, matrix free in places; common root hairs in voids, matted in places; no acid reaction.	

Blue text = geoarchaeological description; Black text = geotechnical description

Table 7: Lithostratigraphic description of borehole MLM-WS111, Fish Island, Neptune Wharf, London Borough of Tower Hamlets

Depth (m OD)	Depth (m bgl)	Description	Stratigraphic group
6.65 to 2.95	0 to 3.70	Made Ground	MADE GROUND
2.95 to 2.65	3.70 to 4.00	Firm dark grey organic silty clay, with abundant black decayed wood and plant fragments, and rare fine to coarse, sub-angular to subrounded flint gravel.	ALLUVIUM
2.65 to 2.26	4.00 to 4.39	5Y 4/1 dark grey; very well sorted silty clay/clayey silt with concentrations of tufa debris (clasts up to 15mm) 4.13-4.15, 4.20-4.24, 4.30-4.39; massive; occasional roots; common detrital herbaceous plant remains; scattered finely divided mollusc shell debris; weak to moderate acid reaction; gradual transition to:	
2.26 to 2.06	4.39 to 4.59	5Y 4/1 dark grey; continuation of above but without concentrations of tufa debris; scattered small (<3mm) particles of tufa; gradual transition to:	
2.06 to 1.60	4.59 to 5.05	5Y 4/1 dark grey; continuation of above but with tufa and mollusc shell debris scarce and decreasing downward.	
1.60 to 1.54	5.05 to 5.11	VOID	
1.54 to 1.07	5.11 to 5.58	Very dark greenish grey with bands of black at 5.28-5.29, 5.48-5.50; very well sorted silt; weakly developed lamination; occasional roots; scattered detrital herbaceous plant remains; piece of wood (30mm) at 5.55; no acid reaction; gradual transition to:	
1.07 to 0.97	5.58 to 5.68	10YR 3/2 very dark greyish brown; well sorted peaty sand; weakly developed lamination; abundant detrital herbaceous plant remains; no acid reaction; sharp contact with:	
0.97 to 0.76	5.68 to 5.89	10YR 3/1 very dark grey; poorly sorted slightly clayey sandy gravel of sub-angular and well-rounded flint clasts (up to 65mm); no acid reaction.	
0.76 to 0.45	5.89 to 6.20	Dark grey sandy GRAVEL, with rare charcoal fragments. Gravel is medium to coarse, sub-angular to rounded flint and marble, with rare cobble size fragments of flint.	LOWER LEA GRAVEL

Blue text = geoarchaeological description; Black text = geotechnical description

Table 8: Lithostratigraphic description of borehole MLM-WS115, Fish Island, Neptune Wharf, London Borough of Tower Hamlets

Depth (m OD)	Depth (m bgl)	Description	Stratigraphic group
7.26 to 1.26	0 to 6.20	Made Ground	MADE GROUND
1.26 to 1.00	6.20 to 6.26	VOID	ALLUVIUM
1.00 to 0.90	6.26 to 6.36	10Y3/1 very dark greenish grey; very well sorted clayey silt; massive; scattered detrital herbaceous plant remains; no acid reaction	
0.90 to 0.77	6.36 to 6.39	VOID	
0.77 to 0.65	6.39 to 6.61	10Y3/1 very dark greenish grey; very well sorted clayey silt; massive; scattered detrital herbaceous plant remains; no acid reaction; sharp contact with:	
0.65 to 0.09	6.61 to 7.17	Black; peat with some woody debris and silt rich layer at 6.65-6.68; no visible mineral content.	PEAT

Blue text = geoarchaeological description; Black text = geotechnical description

Table 9: Results of the radiocarbon dating of samples from borehole MLM-WS103, Fish Island, Neptune Wharf, London Borough of Tower Hamlets.

Laboratory code / Method	Material and location	Depth (m OD)	Uncalibrated radiocarbon years before present (BP)	Calibrated age BC/AD (BP) (2-sigma, 95.4% probability)	δ13C (‰)
BETA-443469	Humin (alkali insoluble) fraction of bulk organic sediment	0.27 to 0.25	9740 ± 40	9290 to 9150 cal BC (11,240 to 11,100 cal BP)	-29.0
BETA-443805	Unidentified plant remains from bulk organic sediment		9320 ± 40	8710 to 8450 cal BC (10,660 to 10,400 cal BP)	-28.8

Table 10: Table 9: Results of the radiocarbon dating of samples from borehole MLM-WS115, Fish Island, Neptune Wharf, London Borough of Tower Hamlets.

Laboratory code / Method	Material and location	Depth (m OD)	Uncalibrated radiocarbon years before present (BP)	Calibrated age BC/AD (BP) (2-sigma, 95.4% probability)	δ13C (‰)
BETA-443471	Twig wood; top of peat	0.56 to 0.54	5000 ± 30	3940 to 3700 cal BC (5,890 to 5,650 cal BP)	-29.6
BETA-443472	Twig wood, base of peat	0.11 to 0.09	8860 ± 30	8210 to 7840 cal BC (10,160 to 9,790 cal BP)	-28.1

5. DISCUSSION & CONCLUSIONS

A desk-based geoarchaeological exercise was instigated to: (1) clarify the nature of the sub-surface stratigraphy, in particular the presence and thickness of Alluvium and Peat across the site, and (2) to evaluate the potential of the sedimentary sequences for reconstructing the environmental history of the site and its environs. In order to address these aims, the stratigraphic data from the new and existing stratigraphic records was used to produce a deposit model of the major depositional units across the site; of particular relevance were the borehole records from the neighbouring 79-85 Monier Road (Batchelor & Young, 2016; Batchelor *et al.*, 2016) and Omega

Works Phase III sites (Spurr, 2005, 2006). This report also contains an addendum following on from the recommendations made during the initial geoarchaeological assessment report; it was recommended in this report that a program of radiocarbon dating was carried out on two sequences from the site, MLM-WS103 and MLM-WS115.

The results of the geoarchaeological fieldwork and deposit modelling have contributed to our understanding of the Holocene stratigraphic sequence in this area of the Lea Valley. Overlying the London Clay bedrock at the site is a sequence of Late Devensian Lea Valley Gravel, Holocene alluvial deposits and variable thicknesses of Made Ground. The site lies within Corcoran *et al.*'s (2011) Landscape Zone LZ 2.1 (Terrain 1; Figure 1) which is described as containing the deposits of the valley floor. More specifically, the site is mapped towards the western margins of LZ 2.1, where a deep area of channel activity has been identified, dissecting the neighbouring low terrace (LZ 2.2) a few hundred metres to the east. The high terrace (LZ 2.4) is mapped to the west and north; the northern island being the result of erosion by the aforementioned channel (Corcoran *et al*., 2011). These features have also been identified during modelling for the Olympic Park archaeological investigations (Powell., 2012).

The results of the current desk-based exercise concur with the findings made by Corcoran *et al*. (2011) and Powell (2012), enabling the model for the Lea Valley to be enhanced further. The results indicate the presence of a Late Pleistocene gravel aggradation (Lea Valley Gravel) infilling inequalities in the underlying bedrock surface to create a slightly uneven gravel surface at or slightly above OD. Towards the NE end of the site, organic sediments, including peat and richly organic sands and silts incorporating tufa debris and mollusc remains are patchily preserved resting directly on the gravel surface. Above these organic horizons, mineral-rich silty alluvium forms the upper part of the sediment sequence across the whole of the site. Similar Late Pleistocene-Holocene sediment sequences have been recorded at neighbouring sites at 79-85 Monier Road (Batchelor, 2016, Batchelor et al., 2016) and Omega Works Phase III (Spurr 2005, 2006).

Two radiocarbon dates have been obtained from peat recovered from borehole MR-QBH2 at the 79-85 Monier Road site. The lower sample yielded a date of 6180-5920 cal BP, and the upper sample a date of 1290-1080 cal BP. These dates are significantly different from dates obtained from organic material directly overlying gravel at a closely similar level recovered from borehole OM-WS02 at the Omega III site. Here the lower sample yielded a date of 9220-8750 cal BP and the upper sample 7270-7000 cal BP. At the present site, the results of the radiocarbon dating of the base of the peat indicate that accumulation began at 10,160-9,790 cal BP in borehole MLM-WS115, and between 11,240-11,100 and 10,660-10,400 cal BP in MLM-WS103 (early Mesolithic), more consistent with, but still significantly older (at least *ca*. 300 years, but potentially significantly more) than the peat at the Omega III site. In MLM-WS115 the top of the peat was radiocarbon dated to 5,890 to 5,650 cal BP (early to middle Neolithic).

The substantial difference in the age of the organic sediments overlying the gravel surface at closely similar levels within this part of the LZ 2.1 Landscape Zone of Corcoran *et al* (2011)

suggests that this area was affected by active channel processes at least intermittently for much of the early and middle Holocene. As a result although semi-terrestrial conditions leading to peat accumulation were able to become established on more than one occasion, the evidence suggests that such conditions were interrupted by erosional episodes which left only patchy remnants of the organic horizons. However, due to the potential of organic-rich/peat sediments for palaeoenvironmental reconstruction (as outlined in sections 1.2 and 7), they should be regarded as significant; particularly bearing in mind the specific position of the site near to the higher drier environments of LZ 2.2 and 2.4.

6. RECOMMENDATIONS

Highly variable peat, organic-rich & tufa sediments have been recorded at the site. Such deposits represent potential areas that might have been utilised or even occupied by prehistoric and historic people, evidence of which may be preserved in the archaeological record (e.g. features and structures). Even in the absence of the archaeological remains, the sediments have the potential to contain a wealth of further information on the past landscape, through the assessment/analysis of palaeoenvironmental remains (e.g. pollen, plant macrofossils and insects) and radiocarbon dating. So called environmental archaeological or palaeoenvironmental investigations can identify the nature and timing of changes in the landscape, and the interaction of different processes (e.g. vegetation change, human activity, climate change, hydrological change) thereby increasing our knowledge and understanding of the site and nearby area. In the case of human activity, palaeoenvironmental evidence can include: (1) decreases in tree and shrub pollen suggestive of woodland clearance; (2) the presence of herbs indicative of disturbed ground, pastoral and/or arable agriculture; (3) charcoal/microcharcoal suggestive of anthropogenic or natural burning, and (4) insect taxa indicative of domesticated animals.

Such investigations have been carried out on both the neighbouring 79-85 Monier Road and Omega Works Phase III sites, demonstrating: (1) the significance and potential of these deposits for palaeoenvironmental work, and (2) that the peat, organic-rich & tufa deposits are highly variable in nature and date. Given that the Peat at the present site is significantly older than that at the 79-85 Monier Road and Omega Works Phase III sites, it is recommended that a program of environmental archaeological assessment is carried out, incorporating: (1) Organic matter determinations to aid identification of the sedimentary units; (2) Assessment of the palaeobotanical remains (pollen, waterlogged wood and seeds) to provide a provisional reconstruction of the vegetation history; and (3) Assessment of the diatoms to provide an indication of the palaeohydrology (e.g. marine, brackish or freshwater) of the site. Given the potential Late Glacial/early Holocene age of the peat horizon in MLM-WS103, the assessment of the pollen remains may help to clarify the age of peat accumulation at the site.

In particular, the new sequences provide a rare opportunity to provide a reconstruction for the Late Glacial / Early Holocene period in this area of the Lea Valley (especially those that date to the Late Glacial / Early Holocene periods), increasing our knowledge/understanding of the historic/prehistoric environment during this period. Corcoran et al. (2011) concur that this is an

important objective. The results of this work should be integrated with results from 79-85 Monier Road (Batchelor et al., 2016), Omega Works Phase III (Spurr, 2005, 2006) and recently instigated work at 35 Monier Road (Watson, pers. comm.) in order to produce a short publication, thus contributing to aim 5 as outlined in section 2.3.

7. REFERENCES

Batchelor, C.R. & Young, D.S. (2016) *79-85 Monier Road, London Borough of Tower Hamlets: Geoarchaeological Deposit Model Report*. Quaternary Scientific (QUEST) Unpublished Report April 2016; Project Number 032/16.

Batchelor, C.R. Green C.P. & Young, D.S. (2016) *79-85 Monier Road, London Borough of Tower Hamlets: Geoarchaeological & Palaeoenvironmental Assessment Report*. Quaternary Scientific (QUEST) Unpublished Report June 2016; Project Number 032/16.

Bronk Ramsey C. (1995) Radiocarbon Calibration and Analysis of Stratigraphy: The OxCal Program, *Radiocarbon* **37 (2)**, 425-430.

Bronk Ramsey C. (2001) Development of the Radiocarbon Program OxCal, *Radiocarbon* **43 (2a)**, 355-363.

Bronk Ramsey, C. (2007) Deposition models for chronological records. *Quaternary Science Reviews* (INTIMATE special issue; 27(1-2), 42-60.

CgMs Consulting (2013) Land at Fish Island, Neptune Wharf: Archaeological Desk Based Assessment. Unpublished CgMs Consulting Report.

CgMs Consulting (2016) 79-85 Monier Road, Hackney Wick, London, E3: Archaeological Desk Based Assessment. Unpublished CgMs Consulting Report.

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. (1985) *The Pleistocene History of the Lower Thames Valley*. Cambridge University Press, Cambridge.

Gibbard, P. (1994) *The Pleistocene history of the Lower Thames Valley*. Cambridge: Cambridge University Press.

Green, C.P. & Batchelor, C.R. (2014) *A report on the geoarchaeological deposit modelling on land at Strand East, London Borough of Newham*. Quaternary Scientific (QUEST) Unpublished Report November 2014; Project Number 221/14.

Powell, A.B (2012) *By River, Fields and Factories: the making of the lower Lea valley*. Wessex Archaeology Report No.29.

Reimer, P. J., Bard, E., Bayliss, A., Beck, J. W., Blackwell, P. G., Bronk Ramsey, C., Grootes, P. M., Guilderson, T. P., Haflidason, H., Hajdas, I., Hatte, C., Heaton, T. J., Hoffmann, D. L., Hogg, A. G., Hughen, K. A., Kaiser, K. F., Kromer, B., Manning, S. W., Niu, M., Reimer, R. W., Richards, D. A., Scott, E. M., Southon, J. R., Staff, R. A., Turney, C. S. M., & van der Plicht, J. (2013). IntCal13 and Marine13 Radiocarbon Age Calibration Curves 0-50,000 Years cal BP. *Radiocarbon*, **55**(4).

Spurr, G. (2005) Omega Works Phase III, Crown Wharf, Roach Road, London E3, London Borough of Tower Hamlets: A Geoarchaeological Watching Brief & Assessment Report. MoLAS Unpublished Report, August 2005.

Spurr, G. (2006) Omega Works Phase III, Crown Wharf, Roach Road, London E3, London Borough of Tower Hamlets: A Geoarchaeological Report. MoLAS Unpublished Report, August 2006.

8. APPENDIX 1: OASIS

OASIS ID: quaterna1-254828

Project details

Project name	Fish Island, Neptune Wharf, London Borough of Tower Hamlets
Short description of the project	A program of geoarchaeological fieldwork was instigated incorporating: (1) the monitoring and sampling of selected geotechnical site investigations, (2) the retrieval of two targeted geoarchaeological boreholes, and (3) radiocarbon dating of the peat horizon in selected boreholes. The resultant records were combined with those from existing archaeological/geoarchaeological/geotechnical investigations for deposit modelling purposes (35 records in total). The results of the current investigation demonstrate a sequence of River Terrace Gravels (the Lower Lea Gravel), overlain by floodplain deposits of peat, organic-rich and tufa sediments, and inorganic alluvium (silts and clays). The peat, organic-rich and tufa sediments appear to be located towards the western end of the site, and are recorded in the same area beneath adjacent sites. However, these deposits did not accumulate at the same time: at the Fish Island site the peat dated to the early Mesolithic to Middle Neolothic; elsewhere they dated from the early Neolithic to Medieval period, and early to middle Mesolithic respectively. A programme of environmental archaeological assessment was recommended.
Project dates	Start: 01-11-2015 End: 22-08-2016
Previous/future work	No / Yes
Any associated project reference codes	MIE16 - Sitecode
Type of project	Field evaluation
Site status	None
Monument type	PEAT Uncertain
Significant Finds	PEAT Uncertain

Project location

Country	England
Site location	GREATER LONDON TOWER HAMLETS BOW Fish Island, Neptune

	Wharf, London Borough of Tower Hamlets
Study area	25000 Square metres
Site coordinates	TQ 3713 8422 51.539702170833 -0.022427805086 51 32 22 N 000 01 20 W Point

Project creators

Name of Organisation	Quaternary Scientific (QUEST)
Project brief originator	Consultant
Project design originator	Dr C.R. Batchelor
Project director/manager	C.R. Batchelor
Project supervisor	C.R. Batchelor
Type of sponsor/funding body	Developer

Project archives

Physical Archive Exists?	No
Digital Archive Exists?	No
Paper Archive recipient	LAARC
Paper Media available	"Report"

Project bibliography 1

Publication type	Grey literature (unpublished document/manuscript)
Title	Fish Island, Neptune Wharf,, London Borough of Tower Hamlets: Geoarchaeological Deposit Model Report
Author(s)/Editor(s)	Batchelor, C.R.

Author(s)/Editor(s)	Green, C.P.
Author(s)/Editor(s)	Young, D.S.
Other bibliographic details	Quaternary Scientific (QUEST) Unpublished Report June 2016; Project Number 088/15
Date	2016
Issuer or publisher	Quaternary Scientific
Place of issue or publication	University of Reading
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Entered on	22 August 2016