Written Scheme of Investigation for Terrestrial Archaeological Mitigation

Thurrock Flexible Generation Plant

Application document number A8.11a – Revised following HE and ECC comment

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Contents

1 INTRODUCTION

1.1 Purpose of this Document

1.1.1 This Written Scheme of Investigation (WSI) has been prepared as part of the application by Thurrock Power Ltd ('the Applicant') for a Development Consent Order (DCO), that has been submitted to the Secretary of State (the SoS) for Business, Energy and Industrial Strategy (BEIS), under section 37 of the Planning Act 2008 (as amended) (the PA 2008), in respect of the proposed development scheme (the Application).

1.1.2 This WSI sets out an overarching mitigation strategy for the intrusive and non-intrusive recording of known and potential terrestrial archaeological remains, to be undertaken during pre-construction, construction, operational and decommissioning phases of the proposed development scheme, as required.

1.1.3 The terrestrial archaeological fieldwork will be undertaken in line with a requirement of the DCO stating that this WSI will be complied with (i.e. by condition of any consent granted by the SoS).

1.1.4 A detailed Method Statement (project design), each with specific aims, will be required for each phase of work. No groundworks of any kind shall commence until the completion of the archaeological mitigation strategy within that parcel has been signed off by the Historic Environment Advisor (HEA) to Thurrock Council (in consultation with Historic England (HE), where appropriate).

1.2 Method Statements

1.2.1 The archaeological fieldwork will be undertaken in phases and in accordance with the phased construction of the Application.

1.2.2 A detailed Method Statement will be produced ahead of each stage of archaeological work to be compliant with this WSI, and to be approved in advance by the HEA to Thurrock Council (in consultation with HE, as appropriate), on behalf of Thurrock Council.

1.2.3 Each focussed Method Statement will specify, in a detail project design, the techniques to be used, recording systems, finds sampling (for archaeological, geoarchaeological and environmental deposits), scientific analyses, health and safety, report publication and archive deposition that will be required for each stage of the archaeological works. A report for each stage of archaeological work will be produced, which will satisfy the WSI/method statement for that phase of work and also determine whether further work is required. In the case of mitigation excavation, should they be required, a post-excavation assessment will be produced in accordance with an agreed updated project design setting out the requirements for analysis, publication and dissemination of results.

1.2.4 Method Statements will be initially provided to the Applicant for comment. On receipt of comments from the Applicant and any updates required are addressed, each Method Statement will be submitted to the HEA, in their role as archaeological advisor to Thurrock Council, and HE (where appropriate) for approval, allowing a minimum of 10 working days for the HEA and HE to comment.

1.2.5 No archaeological works will commence until each Method Statement has been approved by the HEA. The Method Statement will include provision for the HEA and HE to monitor, with a minimum of 10 days' notice of work commencing. Specialist advice will be sought from the Historic England Regional Science Advisor (HE RSA) if required. .

1.2.6 Each phase of archaeological evaluation work will produce an interim archaeological report which will satisfy the method statement for that phase of work and determine whether further work is required, and support the production of a mitigation strategy for appropriate follow-on work. A draft copy of each interim report will be submitted to the HEA to Thurrock Council (and HE if appropriate) for comment and scrutiny on behalf of Thurrock Council. The HEA will provide comments within 15 working days of receipt. Following agreement, each finalised report will be submitted to Thurrock Council.

1.2.7 If further mitigation works are required, the interim report will inform the production of a next-stage mitigation strategy, comprising an additional Method Statement (project design) submitted to the HEA for approval. Following completion of any further stages of mitigation works, each stage will be followed by a report and updated project design to integrate into an overall post-excavation report and final publication.

1.2.8 Following satisfactory completion of all archaeological works across the Application, a post-excavation assessment (PXA) will be required along with an updated project design for analysis and reporting, working to a timetable to be agreed with the HEA to Thurrock Council and HE. A detailed Method Statement for the PXA will need to be agreed in writing by Thurrock Council, following advice from the HEA. This work will assess the potential of the site archive to contribute significantly to archaeological knowledge, and will determine the nature of the final report, how it will be disseminated, and the resources required. Consequently, for consistency, the archaeological contractor will remain the same throughout the duration of the project (see section 7.1). Following the PXA an overarching report on the archaeology of the scheme will be prepared. The report will include details of any further analysis and/or research that may be required prior to the publication of the results, in the context of the Regional Research Framework (East Anglian Archaeology, Occasional Papers 3, 8 and 24) . The report will include proposals for the appropriate level and nature of publication based on the significance of the results of all archaeological works to that date and will present a Method Statement with a timetable, for any additional analysis, dissemination and archive deposition, in accordance with the principles of the *Management of Research Projects in the Historic Environment* (MoRPHE, HE 2015). The final report will be submitted to the HEA to Thurrock Council and HE for approval within 20 working days of receipt.

1.2.9 Archaeological monitoring and mitigation of any works associated with the development below the Mean High Water Springs (MHWS) within the Thames Estuary is set out in a separate Marine and Intertidal WSI (A8 11.b).

1.2.10 This WSI sets out the methodologies and standards that will be employed by the Applicant and their Retained Archaeological Contractor (RAC) to implement the mitigation strategy in format and content.

1.2.11 This document includes the framework for a programme of archaeological trial trenching, excavation, and monitoring. These measures cover all potential

mitigation measures that may be required as part of the Thurrock FGP project. It has been prepared in accordance with all relevant guidelines.

1.2.12 This WSI conforms to current best practice and to the guidance outlined in MoRPHE, and the Chartered Institute for Archaeologists' (CIfA) *Standard and guidance for an archaeological watching brief*, *Standard and guidance for archaeological excavation, Standard and guidance for field evaluation, Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives, Standard and guidance for the collection, documentation, conservation and research of archaeological materials* as applicable. Further guidance is also contained in *Identifying and Protecting Palaeolithic Remains: Archaeological Guidance for Planning Authorities and Developers* (Historic England 1998), *Managing Lithic Scatters: Archaeological Guidance for Planning Authorities and Developers* (Historic England 2000), *Military Aircraft Crash Sites: Guidance on their Significance and Future Management* (Historic England 2002), and *Ships and Boats: Prehistory to Present – Designation Selection Guide* (Historic England 2012). Other extensive technical guidance will also be adhered to, as appropriate, and as stipulated within each detailed Method Statement for each stage of works.

1.3 Mitigation Measures

1.3.1 Following consultation with HE and the HEA to Thurrock Council it is proposed that the impact from the proposed development on the terrestrial archaeological interest at the site should be investigated and recorded by a staged programme of intrusive archaeological work in accordance with this WSI, following DCO consent, with work to be undertaken pre-commencement and where relevant, during construction, operation and decommissioning phases.

1.3.2 Stage 1 non-intrusive geophysical survey work of areas impacted by the Application (Zones A, C, D, E, F and G), where such areas are surveyable, have been completed used magnetometry, as advised and undertaken by a specialist contractor (Wessex Archaeology). The results have been incorporated into an updated baseline and significance of effect assessment as set out in the Historic Environment Supplemental Report (RPS, December 2020).

1.3.3 The programme of archaeological works is anticipated to comprise the following:

- Pre-construction trial trench evaluation of all Zones (bar Zone B, Zone E, Zone H, Zone I and Zone J) to an agreed percentage of the total area (c.4% plus 1% contingency). Locations of trenches are to be agreed in advance with the Historic Environment Advisor to Thurrock Council (in consultation with Historic England if appropriate) and having secured appropriate s.38 consents (unless Common Land exchange has already taken place) (Stage 2). An indicative draft trench plan is included as Figure 1 which is open to negotiation with the HEA;
- Pre-construction foreshore/intertidal recording and evaluation (Stage 2);
- Archaeological monitoring and mitigation of works associated with the dredging activities associated with the construction of the causeway (Stage 2);

- Additional geoarchaeological site investigation and/or monitoring works, and analysis/deposit modelling of the results (Stage 2);
- Any marine geotechnical site investigation works (boreholes and riverbed samples), which are to be reviewed by specialist geoarchaeologists, with the results of these investigations to be linked to the results of the ongoing terrestrial geoarchaeological monitoring and deposit-modelling works (Stage 2).
- Additional archaeological fieldwork, including mitigation excavation, as appropriate, following the results of Stage 2 works, undertaken in accordance with the phased construction plan for the development (Stage 3).
- Post-excavation analysis of each set of archaeological works (Stage 3).
- Publication of results (in formats to be agreed) (Stage 4).

1.3.4 Stage 3 post-excavation work will be completed on each piece of work as it progresses so that any results feed back into the objectives of the project generally. At the end of the Stage 2 and Stage 3 fieldwork these and the grey literature reports produced throughout the programme will then feed into the production of an appropriate Stage 4 publication.

1.3.5 On completion of all archaeological works across the Site, Stage 4 will comprise an overarching report which will synthesise the results of the various investigations, and will set out any further post-excavation analysis that may be required prior to the publication of the results in an appropriate, publicly-accessible format (journal or monograph). The extent, scope and format of this report will be agreed in advance with all stakeholders.

1.4 Scheme description

1.4.1 Thurrock Power proposes to develop a flexible generation plant on land north of Tilbury Substation in Thurrock. The flexible generation plant will provide up to 600 megawatts (MW) of electrical generation capacity on a fast response basis, together with up to 150 MW of battery storage capacity.

1.4.2 Thurrock Power is a subsidiary of Statera Energy Limited, a private British company that develops, builds and operates flexible electricity generating plant in the UK.

1.4.3 Statera Energy was established with the aim of delivering increased flexibility for the UK electricity system to assist in the transition to a low carbon economy in the expectation that renewable energy sources, such as solar and wind, will become the dominant form of generation of the future.

1.4.4 Thurrock Power will be a fully integrated developer, owner, and operator of the proposed Thurrock Flexible Generation Plant.

1.5 Site Description

1.5.1 The proposed development site is located on land south west of Station Road near Tilbury, Essex. The British National Grid coordinates are TQ662766 and the nearest existing postcode is RM18 8UL. It is within the administrative area of Thurrock Borough Council and lies in the Thurrock Green Belt.

1.5.2 The application boundary and location of the proposed development are shown in the Location and Order Limits Plans, application document A2.1.

1.5.3 The main development site currently comprises open, flat fields crossed by drainage ditches and three overhead power lines with steel lattice electricity pylons. It is immediately to the north of the existing Tilbury Substation and site of the decommissioned Tilbury B coal fired power station, with the River Thames further to the south. To the north is a section of the London, Tilbury and Southend Railway known as the Tilbury Loop, used mainly for commuter passenger services between central/east London and locations in Essex.

1.6 The Proposed Development

1.6.1 In overview, the proposed development comprises the construction and operation of:

- reciprocating gas engines with rated electrical output totalling 600 MW;
- batteries with rated electrical output of 150 MW and storage capacity of up to 600 MWh;
- gas and electricity connections;
- creation of temporary and permanent private access routes for construction haul and access in operation, including a causeway for barge deliveries; and
- designation of exchange Common Land and habitat creation or enhancement for protected species translocation and biodiversity gain.

1.6.2 The proposed development will be designed to operate for up to 35 years, after which time ongoing operation and market conditions will be reviewed. If it is not appropriate to continue operating after that time, one or both generating and storage elements of the development (gas engines or batteries) will be decommissioned.

1.6.3 For descriptive purposes, land within the order limits has been divided into zones, labelled as follows.

Zone A

1.6.4 The 'main development site' immediately north of Tilbury Substation, within which the principal buildings or structures of the proposed development will be constructed. The gas engines, batteries, electrical switchgear (customer substations), runoff attenuation, control room and staff parking will be within zone A. This zone also includes land reserved for Carbon Capture Readiness (CCR).

Zone B

1.6.5 This is the existing National Grid Tilbury Substation. The proposed development will connect to the 275 kV circuit at this substation via underground cables crossing from zone A into zone B.

Zone C

1.6.6 Zone C is a corridor of land south of the railway line in which a permanent access road and underground gas pipeline will be constructed, between Station Road (which is at the north-eastern edge of this zone) and the main development in zone

A. The route of the access road and gas pipeline within this corridor will be defined following detailed design. Up to two hectares of zone C may also be used for laydown or temporary construction compounds, if required.

Zone D

1.6.7 Zone D comprises sections of agricultural fields within which the gas pipeline and National Grid gas connection compound (AGI) will be constructed. The existing NTS 'Feeder 18' high pressure pipeline crosses zone D3.

Zone E

1.6.8 This zone north of the railway, currently agricultural land, is the area in which exchange Common Land will be provided together with a new footbridge connection to Fort Road. A route for access from zone F2 to zone E, across the south of Parsonage Common, is provided for use during work to establish the Common Land and footbridge. No groundworks are proposed in this area.

Zone F

1.6.9 Zone F, currently agricultural land in the main with some existing scrub, will be used for habitat creation or enhancement to mitigate for the permanent loss of habitat within zone A and other areas of the proposed development. It is divided into four sub-zones (F1-4) to accommodate the habitat types proposed. Access routes for establishing and maintaining the habitat creation areas are provided from Cooper Shaw Road.

Zone G

1.6.10 This zone includes all of the infrastructure required for delivery of AILs via roll-on roll-off barge and transport to the main development site (zone A). It includes the construction and operation of a permanent causeway on the foreshore of the River Thames, the dredging of a berthing pocket to enable barges to access the causeway, a local modification to the existing sea defences, and a haul road from the causeway to zone A. The proposed haul road will comprise part of the existing private highway infrastructure on RWE's former Tilbury B Power Station site and a new section of purpose-built road to connect to zone A. For part of the haul road route, two options are being considered; flexibility to determine the preferred option prior to construction is required due to recent ground disturbance in this area.

Zone H

1.6.11 Zone H comprises an existing private road through the former Tilbury B Power Station site and a re-aligned private road, as consented for the Tilbury2 development, which will provide the primary access route for construction traffic (with the exception of AILs delivered via barge) from the new section of A1089 public highway being constructed for Tilbury2.

Zone I

1.6.12 This section of public highway at Station Road is subject to a Traffic Regulation Order restricting access by vehicles >7.5t in weight, which will be suspended temporarily to allow HGV traffic access for construction of the gas connection compound in zone D3.

Zone J

1.6.13 A temporary public right of way will be created, if necessary, in this zone along the existing road (where there is an existing marked recreational route). The temporary footpath would provide a diversionary route for Footpath 200 to Station Road if it is necessary for the existing footpath where it crosses zone D1 to be stopped up temporarily during gas pipeline construction.

2 ARCHAEOLOGICAL BACKGROUND

2.1 Current baseline

2.1.1 A detailed description of the historic environment baseline is presented within The Environmental Statement (application document A6) at Volume 6, Appendix 7.1: Historic Environment Desk-Based Assessment, which should be read in conjunction with this WSI. The results of the Stage 1 site-wide geophysical surveys should also be read (Wessex Archaeology 2017; Wessex Archaeology 2020) and the Historic Environment Supplemental Report (RPS, December 2020).

2.1.2 There is considerable evidence from known sites and finds, as well as cropmarks shown on aerial photographs, to suggest extensive activity in the Study Area throughout the prehistoric period, with multi-period sites suggesting almost continuous occupation from early prehistory. However, the main focus of settlement seems to have been the higher ground nearby at Mucking, and also at Gun Hill/West Tilbury, Linford, East Tilbury and Orsett/Chadwell St Mary. The Site is bisected from these settlements and the higher ground by part of the London, Tilbury and Southend Railway known as the Tilbury Loop, used mainly for commuter passenger services between central/east London and locations in Essex.

2.1.3 The Site lies within a historic landscape which is characterised as low-lying drained marshland, with small areas of rough grazing land, largely held as common but with some former dispersed farmsteads and small, irregular fields indicating piecemeal enclosure, divided by reed-filled ditches. There are few hedgerows in the flat landscape, but where they do exist species usually include hawthorn, oak, elm, and occasionally elder, blackthorn, and dog rose. Tree cover is sparse on the drained marshland and is mainly restricted to the planting associated with the industrial developments, including the sewage works, edges of settlements and hawthorn scrub and small trees either side of the railway line. Scrub and small trees also, intermittently, line roads and paths. There has been significant boundary loss within the Site and its surrounds, resulting in a more open landscape and areas of grazed and cultivated marsh and common. However, the patterns of historic drainage channels remain extant and legible and there is considerable time-depth, but with diminished legibility.

2.1.4 The main development site (Zone A) currently comprises open, flat fields crossed by drainage ditches and three overhead power lines with steel lattice electricity pylons. It is immediately to the north of the existing Tilbury Substation and site of the decommissioned Tilbury B coal fired power station, with the River Thames further to the south. Geophysical survey within Zone A has identified possible archaeological features in this area, and a large channel (possibly dating to the Bronze Age) was recorded in a geoarchaeological assessment (Quest 2019).

2.1.5 Detailed figures showing the chronological spread of sites and monuments, and historic mapping, are contained within Volume 6, Appendix 7.1: Historic Environment Desk-Based Assessment.

Designated heritage assets

2.1.6 In terms of relevant designated heritage assets, no World Heritage Sites, Scheduled Monuments, Historic Battlefields, Registered Parks and Gardens, Protected Military Remains or Historic Wrecks lie within the Site itself.

2.1.7 Designated assets within a wider 5km buffer of the Site, taken from the centre of Zone A, comprise 11 Scheduled Monuments, 206 listed buildings (three Grade I, 16 Grade II* and 187 Grade II), one Registered Park and Garden and a number of Conservation Areas. Two Conservation Areas (West Tilbury Parts 1 and 2, and East Tilbury) are located on the north side of the River: the remainder are largely to the south within Gravesham District, and most are clustered to form the historic core of the town.

2.1.8 Three sites within the 5km Wider Study Area are also recorded on Historic England's Heritage at Risk register. These comprise the East Tilbury Conservation Area; and the Scheduled Monuments at Coalhouse Fort and Cliffe Fort.

Prehistoric

2.1.9 The Site lies c.1.25km to the south of the geological and topographical boundary of the East Tilbury Marshes Gravel (Gibbard 1985) and borehole sequences have confirmed the presence of a thick sequence of intercalated alluvial and peat deposits overlying sands and gravels of the Shepperton Gravel between c. -11m OD and -17m OD (Quest 2019). The peat deposits have been shown to provide significant palaeoenvironmental information considered to be of a national or international importance providing detail of environmental and landscape change during the prehistoric periods (Quest 2013).

2.1.10 From the beginning of the Holocene, the River Thames underwent a gradual transition from a braided river system to a single meandering channel and the chalk and gravel was progressively buried under deep alluvial deposits as a result of relative sea rise. During the course of the Holocene, further periods of stabilisation of the valley floor and changes in sea level are indicated in the Tilbury area by peat horizons.

2.1.11 No Palaeolithic archaeological features have thus far been recorded in the Study Area: at present, the EHER contains only records of findspots relating to material of this date. None are recorded within the Site itself. The considered potential for Palaeolithic material to be found within the Study Area is recorded geospatially in the EHER, and is documented as 'Low'.

2.1.12 In some areas where deep gravel deposits have been recorded, peat accumulation dating to the Mesolithic period has been identified underlying the alluvial sedimentation. Some findspots of Mesolithic material are recorded within the Study Area, but none within the Site itself.

2.1.13 However, a partial skeleton was found in 1883 within peat at c.10m below ground level (bgl) at the Tilbury Docks site (Spurrell, 1889), c.3km to the west-southwest of Zone A. More recent analysis (Schulting, 2013) has revealed the skeleton to be of Late Mesolithic date (8015–7860 cal BP): the Late Mesolithic is a period for which human skeletal finds are very rare in Britain, and such a find highlights the presence of human habitation, and the potential utilisation of the floodplain not far from the Thurrock FGP site, during this period.

2.1.14 Although evidence of prehistoric archaeology is limited in the Lower Thames Valley, the palaeoenvironmental record indicates woodland clearance, cultivation and animal husbandry was taking place which suggests the presence of prehistoric farming settlements close-by. The area is likely to have been marsh/swamp for much of the Mesolithic and Neolithic, periods which saw extensive use of coastal and estuarine zones for subsistence. The estuarine silts are likely to preserve any features present from these periods, such as fish traps, if they are present.

2.1.15 An ancient ridgeway route running between Chelmsford and Horndon-on-the Hill in Essex, and Higham in Kent, is presumed to have crossed the Thames at East Tilbury, to the east of the proposed development site at a point where the Thames narrows, and is likely to have been a well-known routeway which had been in use throughout the prehistoric period, as nomadic hunter-gatherers gradually began to settle more permanently in the landscape during the later prehistoric period.

2.1.16 The area surrounding East Tilbury and Lindford is recorded in the EHER as a prehistoric ritual landscape, and there are various areas of cropmarks and known sites and finds from the Neolithic and Bronze Age recorded throughout the Study Area. Archaeological evaluation by trenching and excavation has revealed occupation from the Neolithic, as well as late Bronze Age ditches belonging to superimposed field systems and limited Roman features.

2.1.17 At Gun Hill, c.1.2km to the north-northwest of Zone A, evidence suggests a field system may have been created by the late Bronze Age which continued in use into the Iron Age, whilst at Mill House Farm, West Tilbury, a variety of cropmarks were identified comprising ring ditches, curvilinear features, a trackway, enclosures, and pits dated to the Bronze Age, suggesting an established settlement site on the higher ground above the floodplain, c.2km due north the Thurrock FGP Site. It is likely that the people who were actively using and managing the land within Zone A and the West Tilbury Marshes were living at this location in West Tilbury, and another encampment may well have existed at East Tilbury. A Bronze Age channel ditch was also identified within Zone A during the SI works in BH1 in October 2019.

2.1.18 The earliest salt production in Britain using the industrial ceramic known as briquetage is now firmly dated to the Middle Bronze Age and its use extends to the early Roman period. When found at Gun Hill, the briquetage at Gun Hill was the earliest record of such material in Essex.

2.1.19 It is likely that the marshland area surrounding the proposed Development Site, from the foreshore at East Tilbury Marshes and Coalhouse Fort in the east, across and round to Tilbury, with its extensive saltmarsh and tidal floodplain, was actively managed for grazing and subsistence, and that the first industry in the area, that of salt production, would have been actively taking place as the landscape was reclaimed and managed and its resources exploited for both salt and animal grazing.

2.1.20 Settlement and funerary/ritual evidence within the Study Area continues from the Neolithic and Bronze Age into the Iron Age, with several sites seeing continued and expanded activity. There are as yet no recorded Iron Age sites or finds within the Development Site, although adjacent to Zone D, at East Tilbury Place, part of a sub-rectangular enclosure was recorded, some of which had already been destroyed by gravel extraction. The enclosure ditch was c.1.5m wide and approximately 0.75m deep: pits outside the enclosure were excavated and

contained 'soft red undecorated pottery', charcoal and animal bones dating to the Iron Age period.

2.1.21 The evidence from the multi-phase site at Gun Hill at West Tilbury suggest that the first major period of settlement was in the Early to Middle Iron Age, although earlier activity is recorded through ephemeral finds of Palaeolithic, Mesolithic, Neolithic and Bronze Age date.

2.1.22 Originally thought to be a Neolithic henge (it eventually proved to be a Late Bronze Age ringwork), the nationally significant site at Mucking, c.4km to the north-northeast of Zone A, contains remains dating from the Neolithic to the Middle Ages – a period of some 3,000 years – and the Bronze Age and Anglo-Saxon features are particularly notable. The story of the site at Mucking begins with a succession of Early Neolithic, Grooved Ware, and Beaker-attributed occupations. Eight earlier Bronze Age barrows were found, plus a Middle Bronze Age field system with an accompanying settlement. It was, though, with the establishment of its two ringworks during the Late Bronze Age that the fortified site, whose economy was fuelled by metalworking and salt production, begins to look different from other parts of the landscape, not least because of the continuous high density of occupation that stretches from the beginning of the first millennium BC through to the early Anglo-Saxon period.

2.1.23 It is likely from the evidence within the Study Area that the process of salt production most likely began at Tilbury Marshes during the Bronze Age, but this industrial process was certainly an established part of Iron Age life in the area, with domestic settlement focused on the higher ground, but with the low level marshlands being managed for salt production.

2.1.24 The settlement evidence within the Study Area is likely to have been satellite activity to the main fortified settlement at Mucking.

Roman/Romano-British

2.1.25 Recorded sites of Roman date are widespread across the Study Area, and some material is recorded within the Site itself, on the foreshore and on the landward side of the Mean High Water mark in and around Zone G. The wider area would have been heavily Romanised and it is likely that extraction of gravel, chalk and clay continued during the Roman period. The Roman settlers significantly expanded the industry of salt production which had begun much earlier in the later prehistoric period, leading to the creation of 'red hills' and salterns – remains of salt-making activity of prehistoric and/ or Roman date.

2.1.26 To the south of Zone A an extensive area of Roman settlement is recorded in the area immediately adjacent to the proposed causeway and jetty (Zone G). Below the present high tide level, the area measuring c.1.1km long and c.0.3km wide (as recorded in the EHER) comprises the remains of an extensive settlement, associated with much 1st and 2nd century AD pottery, and may represent a landing–place for traffic from Kent or elsewhere. These features are highly significant, with the potential for high quality survival of organic material in the protective riverine silts. If the site was a landing point for goods, then there is potential for damaged, lost or abandoned maritime craft and features to be preserved within the riverbed sediments in the immediate area.

2.1.27 At Coal Road, east of Low Street Lane, c.1.3km to the northeast of Zone A, the bank of an old gravel pit produced small quantities of Romano-British pot dating to the 2nd century. Approximately 500m to the northeast, to the west of East Tilbury, a field system was recorded which comprised of a complex of field boundaries dating from the Roman period in close proximity to a late Bronze Age settlement. The presence of a number of pits and postholes in this area, combined with pottery evidence hints at the existence of a Romano-British settlement in the vicinity.

2.1.28 At East Tilbury, near to Coalhouse Fort, a substantial Roman building would appear to have existed in the area of St Catherine's Church, where the walls reportedly contain some Roman and later bricks. The EHER notes that it was reported in the 18th century that gravel-digging near the church often uncovered tessellated pavement, and it is likely that a high-status building was located in the vicinity.

2.1.29 The line of a Roman Road follows what is now Princess Margaret Road, which overlies the earlier prehistoric Ridgeway route: a corresponding road apparently approached the north Kent coast at Higham, where burial evidence has been found. Roman remains have also been recorded at Tilbury Fort to the southwest of Zone A, with finds including Samian ware and fibulae.

2.1.30 There was clearly a large Roman/Romano-British presence within the Study Area, involving salt production and a likely landing-stage/trading post, as suggested by the extensive area of settlement and ceramics found on the foreshore to the east of Zone G, which also extended inland with field systems, settlements and burials, including the establishment of new encampments and the re-purposing of earlier ones.

Saxon and Medieval

2.1.31 The nationally significant site at Mucking, c.4km north-northeast of the Site, had been abandoned by the Romano-British during the 4th century and there was a gap before the Saxon occupation of the site began in the early 5th century. This was among the earliest Anglo-Saxon settlements in England. The Anglo-Saxon settlement gradually moved north over the course of two hundred years after its establishment, and during or after the 8th century, the settlement was either abandoned, or drifted beyond the area that was excavated, with the area previously occupied by the Anglo-Saxon settlement becoming part of a Saxo-Norman field system.

2.1.32 As was the case during the Bronze Age, where satellite settlements and activity occurred in the Study Area away from the main settlement at Mucking, so too during the Saxon period there were satellite settlements within the landscape surrounding the Site, most of which revolved around the foundation of early Christian churches. Small villages became established around the churches, which then grew into the historic settlements at East Tilbury (around St Catherine's Church); West Tilbury (around St James' Church); and at Chadwell St Mary (around St Mary's Church).

2.1.33 St Catherine's Church at East Tilbury may relate to Bede's earliest Christian site at 'Tilberg': the site has the potential to be an early Saxon settlement/religious site as it lies on the ancient highway from the East Tilbury ferry to Mucking and beyond. Moreover, within an arable field close to the church, heavily worked by a metal detecting group, the EHER has recorded that more than 20 early Saxon sceattas have been found, plus a range of 14th to 17th century metal objects.

2.1.34 The scheduled earthworks to the southwest of St James' Church at West Tilbury include a length of rampart with an internal ditch reputed to be the site of a Saxon hall – a high-status residence. In c.628 Tilbury was recorded as the location of Bishop Cedda's palace and the scheduled earthworks may indeed be the remnants of an early ecclesiastical site at this location and the original manor.

2.1.35 During the medieval period, the early Christian chapels and religious sites often became the foci for expanding settlements which also aggregated around earlier manors, themselves established during the Saxon period, such as those at West Tilbury, East Tilbury and Chadwell St Mary. The proposed development site was in the agrarian hinterland of these Saxon and expanding medieval settlements.

2.1.36 The historic settlement most closely associated with the Site is West Tilbury, which is situated at the edge of an escarpment immediately overlooking the marshes, and the hamlet around Low Street, which together form Parts 1 and 2 of the West Tilbury Conservation Area. The Low Street hamlet developed around the second West Tilbury manor of Condovers, created in the 15th century, and Walnut Tree Cottage (Grade II listed) was the manor farm.

2.1.37 Evidence from West and East Tilbury Marshes and also Mucking Marsh suggests that the land was improved and used for grazing during the medieval period: the landscape is characterised by a rectilinear pattern of fields divided by drainage ditches with a medieval sea wall surviving on the eastern edge of Mucking Marsh, and a surviving counter wall and ditch at West and East Tilbury Marshes. The current footpath linking Tilbury Fort with Coalhouse Fort largely follows the line of the medieval sea wall and ditch, and part of the Zone G haulage road lies adjacent to the counter wall, which survives as a tall grassy bank.

2.1.38 In the Medieval period West Tilbury was a small settlement very closely related to agriculture. Much evidence of this past has been retained in the present landscape, including a complete example of a Medieval 'open field' system in the area of The Great Common Field bounded by Rectory Road, Turnpike Lane, Blue Anchor Lane and Muckingford Road. Much Medieval 'common land' upon which farmers had common rights to graze animals still remains in the vicinity of West Tilbury, including Parsonage Common and Walton Common, parts of which fall within the proposed development site.

2.1.39 The historic dispersed and polyfocal settlement pattern largely survives at West Tilbury, where the Grade II* listed former parish Church of St James (now redundant and repurposed as a family home) includes 11th century fabric. The church tower and the trees around the churchyard are an important silhouette and landmark from all directions. West Tilbury Hall (Grade II) is the manor of the village. It was built in the 16th century in a prominent hilltop position on the site of the previous 'Domesday Manor', and a Medieval market and fair, both dating from the 14th century, were held at West Tilbury on the area that is now The Green.

2.1.40 The moated site recorded at St Chad's Well may also be the remnants of a medieval manor, although it has also been suggested that St Chad's Well may have been a Holy Well of Roman date, and located on a Roman road or trackway leading northwards from the estuary and the known settlement site on the foreshore in the area of Zone G.

2.1.41 The EHER also records a medieval road and causeway located on the redan outwork of what eventually became first, a blockhouse at Tilbury during the Tudor period, and later the Tilbury Fort. The road most probably connected with the ferry houses on the Essex side of the river, which were associated with boats crossing the Thames from Gravesend, with the medieval road and causeway thereby linking Gravesend with West Tilbury. Medieval Gravesend was an important and wealthy town, derived from its position on the Thames: in the 14th century Richard II granted to the watermen of Gravesend and their successors the sole right to ferry passengers to London. This right, which was successively confirmed by later monarchs, was the beginning of the long ferry, and gave great impetus to the growth of Gravesend as a maritime centre and port.

Post-Medieval

2.1.42 The picture of settlement and activity in the wider area during the early Post-Medieval period was similar to that of the later medieval period and comprised mostly the continuation of the established medieval settlement, enclosure, agricultural practices and routeways through the landscape, with little expansion.

2.1.43 However, the wider area was significant in the defence of the River Thames from at least the reign of Henry VIII onwards, as it appears that it was during the Post-Medieval period that the first fortifications appear on the shorelines on both sides of the Lower Thames Estuary, including the scheduled monuments comprising Tilbury Fort and the early phases of the mainly 19th century Coalhouse Fort on the Essex side, and a blockhouse at Gravesend on the Kent side.

2.1.44 King Henry VIII ordered the building of a blockhouse at Tilbury in 1539 and also new marsh roads (Fort Road and Cooper Shaw Road) that cut across West Tilbury Green and other common land. The blockhouse at Tilbury was superseded by the far larger and more complex fort and battery seen today, which is pentagonal, double-moated star-plan, with arrowhead-shaped bastions projecting from four of the angles, designed by the chief engineer to Charles I, Sir Bernard de Gomme and succeeded the Henrican blockhouse in the late 17th century.

2.1.45 Gravesend Blockhouse located c.2.1km southwest of Zone A on the south bank of the River Thames was built in 1539 as part of a chain of coastal defences in response to the renewed threat of invasion. It was one of five artillery blockhouses built along this stretch of the River Thames to defend the approach to London and the dockyards at Woolwich and Deptford. The other blockhouses were located at Tilbury, Higham, Milton and East Tilbury. The Gravesend Blockhouse crossed its fire with Tilbury Blockhouse on the north bank of the river and guarded the ferry crossing between Gravesend and Tilbury.

2.1.46 The site of Coalhouse Wharf and the Coastguard Lookout is thought to be the location of the 1540 blockhouse at East Tilbury: a second blockhouse was built subsequently to the seaward side of the first, and by 1735 this was described as ‘inundated and ruined by the sea’.

2.1.47 West Tilbury also has a well-chronicled association with Elizabeth I and her address to the troops at the time of the Armada in August 1588, at their camp at Gun Hill.

2.1.48 Within an area surrounded by Zone G of the Site, ‘Wick House’ is recorded from documentary sources as a Post-Medieval site c.100m southeast of the 400kv

substation at Tilbury Power Station, but this has not been identified on the ground, and the area is now much disturbed. It may once have been a small farmstead.

18th and 19th centuries

2.1.49 As noted in its Conservation Area appraisal, the timber-framed buildings and oldest plan forms at West Tilbury date from the medieval period, but the present external appearance of many of these earlier original buildings owe their external surface character from the later agriculturally prosperous 18th and 19th centuries, including the later use of render or re-facing in brick, the raising of roofs and the alteration of doors, porches and windows which hide a wealth of earlier historic details. The settlement prospered and grew, but with little physical change to its size. The majority of the Grade II listed buildings within the Conservation Area at West Tilbury are of late 18th or early 19th century date and cluster around The Green.

2.1.50 The River Thames, providing easy access to London, became heavily defended during the Post-Medieval period and later, with modernisations to Tilbury Fort, and the construction of New Tavern Fort at Gravesend (a scheduled monument, and Grade II* listed), with the fort at Gravesend designed and built to provide cross fire with Tilbury Fort on the north side of the river.

2.1.51 The first phase of the present Coalhouse Fort scheduled monument was begun in 1799 but was disarmed and abandoned after the Battle of Waterloo, and was enlarged and replaced in 1847-55 by a more complex structure. Following recommendations made by the Royal Commission on the Defence of the UK in 1860 the fort of the 1850s was then superseded by the present buildings between 1861-74.

2.1.52 Cliffe Fort, also a scheduled monument, is located c.4km east of Zone A, on the southeast side of the Thames in Kent, and lies due east of Coalhouse Fort as a pair defending The Lower Hope at a bend in the Thames leading into Gravesend Reach. The Fort was constructed during the 1860s as part of the River Thames' coastal defence system.

2.1.53 Shornmead Fort is located c.3.2 km southeast of Zone A, on the south side of the Thames in Kent, c.2km around the foreshore to the southwest of Cliffe Fort and was built with the intention to cross its fire with Coalhouse and Cliffe Forts in defending this part of the River.

2.1.54 By 1854, the London Tilbury and Southend Railway had been constructed. The railway line divides the application Site and bisects the historic settlements to the north from the ancient marshland commons and managed landscape to the south. The railway provided access to the landing stage at Tilbury for passenger liners, which was replaced in 1924 by the present structure, comprising Riverside Station and floating landing stage, which is Grade II* listed, located c.2km southwest of Zone A and to the west of Tilbury Fort. There was also a station at Low Street.

2.1.55 The construction of the railway severed some of the historic routeways linking the settlements and higher ground to the farmland marshes, and altered some field patterns as the fields were bisected.

Early 20th century

2.1.56 At the end of the 19th century, there had been little socio-economic change since the medieval period within the immediate area of the Site, which had remained largely rural and agricultural in nature. However, to the west, Tilbury Docks were opened in 1886 to alleviate congestion in the main London docks in the East End, and began the process of the gradual modern industrialisation of this part of the Thames.

2.1.57 At the same time, the construction of the railway and development of the Docks led to the beginnings of the creation of the modern urban town of Tilbury on the Chadwell Marshes to the west of the Site, to house the workers.

2.1.58 At East Tilbury, c.1.5 km northeast of Zone A, a purpose-built industrial village was developed between the 1930s and the 1960s for the British Bata Shoe Company Ltd as one of a number of satellites or colonies that the parent organisation, the Bata Shoe Company, based in Zlin, near what is now the eastern border of the Czech Republic, was constructing around the world in the 1930s. The East Tilbury Conservation area now covers the site and surroundings, and some of the houses and buildings within are also Grade II listed. Both the layout and design of the pre-war factory, housing and community facilities were devised by the parent company and the settlement combines Garden City planning and Modernist architecture. Its character has subsequently been diluted by a large private residential development of the 1970s and piecemeal change to the company buildings and is on the Heritage at Risk register.

2.1.59 During the First World War anti-aircraft guns at Tilbury Fort brought down a German airship, whilst to the north at Orsett there was a military airfield, which operated as a landing ground from 1916 to 1919 during the early days of military aviation.

World War II

2.1.60 A number of defensive features of Second World War date have been recorded both within the application Site and in its vicinity. During WWII there was the development of a wide range of defensive measures to meet the much greater threat of invasion and attack from the air, and included anti-aircraft batteries, gun emplacements (spigot mortars), road barriers and anti-landing ditches, particularly within locations considered vulnerable to attack, such as Lower Thames Estuary. The low-lying topography of Essex, particularly along the coast, presented many such vulnerable locations, and many fields were criss-crossed with ditches to prevent their use by enemy aircraft.

2.1.61 During the course of the Second World War, military features appeared in the English landscape on an unprecedented scale, but their impact was largely ephemeral, as the majority of features were removed at the end of hostilities. The appearance of cropmarks of medieval and earlier sites on both NMP mapping and Lidar data also indicates that these anti-invasion defences probably had little impact on earlier archaeological features beyond the ditches.

2.1.62 At both Mucking Marsh and West and East Tilbury Marshes, there are spreads of anti-glider ditches recorded from aerial photos, although none of those recorded within the Site are now visible.

Post-War (Modern) to present

2.1.63 In the 1940s, with the expansion of urban Tilbury, a sewage works was built to the south of the town, immediately adjacent and to the east of Tilbury Fort.

2.1.64 Tilbury 'A' Power Station was constructed to the southwest of the Site and adjacent to the sewage works between 1949 and 1957. Tilbury 'B' was constructed adjacent to Tilbury 'A' during the 1960s. At this time the jetty was lengthened to the east and its original coal-handling cranes were replaced. By the 1970s works buildings and an electricity sub-station had been constructed and a number of overhead power lines crossed the wider area.

2.1.65 The two Tilbury Power Stations, A and B, were built on made ground previously reclaimed from marsh and their construction obliterated the only historic farmstead in the zone – Marsh Farm. Tilbury 'A' was partly demolished in 1999, whilst Tilbury 'B' was converted to biomass in 2011. The jetty was enlarged in 2004. Following the closure of the Power Station, a programme of demolition has commenced across the remainder of 'A' and 'B' and relatively few structures now remain.

2.1.66 The former Tilbury Power Station site is currently being redeveloped to create a new port terminal, Tilbury2, comprising modifications and enlargements to the existing jetty and other marine works, as well as warehousing, other buildings and structures, and a new railway provision with improved road bridge.

2.1.67 At the time of writing, site investigation works are being undertaken to the east of Zone A on the East Tilbury Marshes as part of a plan for a Lower Thames Crossing to be put forward by Highways England as a DCO application in 2020/2021.

3 AIMS AND OBJECTIVES

3.1 Aims

3.1.1 The specific aim of this WSI is to set out the baseline resource for the known and potential archaeological assets within the site, and the mitigation strategies proposed to address the impacts identified.

3.1.2 The general aims of the archaeological mitigation programme are as follows:

- To determine the location, extent, date, character, condition, significance and quality of the archaeological remains within the area of mitigation;
- To seek to clarify the nature and extent of existing disturbance and intrusions, and hence assess the degree of archaeological survival of buried deposits and any surviving structures of archaeological significance;
- To inform the scope and nature of any further archaeological work that may be required or the formation of a mitigation strategy and/or management strategy;
- To mitigate (offset) the loss of the archaeological remains within the areas of significant archaeological potential;
- To preserve the archaeological evidence contained within the site by record, and to attempt a reconstruction of the history and use of the site;
- To record all archaeological remains encountered in detail;
- To assess the artefactual and environmental potential of the archaeological deposits encountered;
- To assess the archaeological features in line with relevant research agendas;
- To consider the site within its local, regional and national context as appropriate;
- To produce a site archive for deposition with an appropriate museum, and to provide information for accession to the Essex HER, to ensure the long-term survival of the excavated data;
- Publication and dissemination of results to stakeholders at all levels, as appropriate.

3.2 Objectives

3.2.1 The objectives of this WSI are as follows:

- to assess the extent, nature and significance of the archaeological deposits and understand the impact of the development;
- to fulfil the requirements of the Archaeological Curators (HEA to Thurrock Council and HE) in respect of archaeological evaluation and mitigation of works associated with the construction activities associated with the project;

- to mitigate the impact of these works at the Thurrock FGP site via appropriate and recognised strategies;
- to propose measures for mitigating effects upon any archaeological material that may be encountered during the operations associated with the scheme;
- to ensure that any further geophysical and geotechnical investigations associated with the project are subject to archaeological input and review with subsequent recording and sampling if necessary; and
- to establish the reporting, publication, conservation and archiving requirements for the archaeological works undertaken in the course of the scheme.

3.2.2 Site specific objectives will be set out clearly in the separate Method Statements produced for each phase of archaeological work.

3.2.3 Opportunities for public engagement and outreach will be explored in consultation with the LPA's archaeological advisor(s) during the course of fieldwork and post-excavation assessment.

3.3 Research Framework

3.3.1 The programme of archaeological investigation will be conducted within the general research parameters and objectives defined by 'Research and Archaeology Revisited: a revised framework for the East of England' (compiled by M. Medlycott; 2011) and the earlier Archaeological Research Frameworks edited by Glazebrook (1997) and Brown and Glazebrook (2000).

3.3.2 The Regional Research Framework site for the East of England is now live and can be accessed at https://researchframeworks.org/eoe/

4 MITIGATION MEASURES

4.1 Non-intrusive (Stage 1)

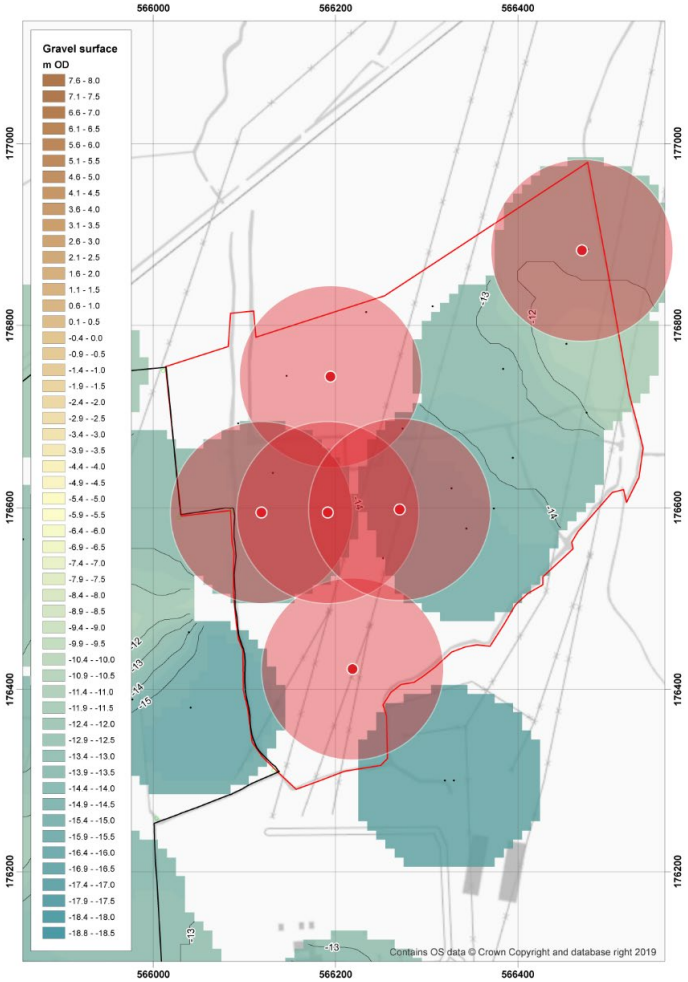
4.1.1 Non-intrusive geophysical survey has been undertaken pre-determination across the consented area using detailed gradiometer (magnetometry) survey. The results of these non-intrusive works will inform the need for, and scope of, further Stage 2 trial trench field evaluation, and also further geoarchaeological analysis and deposit-modelling.

4.1.2 Additional Stage 1 geophysical survey including techniques such as GPR (ground penetrating radar) may be appropriate in selected locations, to be undertaken post-consent and pre-commencement, to be agreed in discussions with the HEA to Thurrock Council (and HE where relevant).

4.2 Geoarchaeological analysis (Stage 2)

4.2.1 The geoarchaeological analysis and deposit model produced following site investigation works in October 2019 (Quest 2019) has recommended additional boreholes to answer questions raised during previous works, and to complete the deposit model as well as collect material for further work.

4.2.2 The proposed locations are within Zone A and shown in red below.



4.2.3 It is proposed that six boreholes be put down across Zone A to: (1) better understand the channel on the western side of the site, (2) provide greater coverage across the site for deposit modelling purposes, and (3) obtain sequences that could be used for further off-site work.

4.2.4 It is also proposed to obtain borehole records from the Lower Thames Crossing investigations, when available in due course, in order to complete a broader deposit model for this stretch of the Thames (not limited to the area of development for Thurrock Flexible Generation Plant) encompassing the Tilbury2 site, the Thurrock Flexible Generation Plant main development site and the Lower Thames Crossing site. It is known that the LTC project has taken a number of boreholes in a linear arrangement running parallel and to the south of the railway line within Thurrock FGP Zone C which will inform the creation of a geoarchaeological deposit model for this part of the site.

4.2.5 Additional boreholes for the retrieval of geoarchaeological and palaeoenvironmental information will be needed in the consented area that lays outside of the area covered by the LTC deposit model, where groundworks are proposed for the consented scheme and where these groundworks may disturb deposits of geoarchaeological potential. This is expected to only be potentially relevant in a small area of Zone C along the narrowed-down pipeline route.

4.2.6 A detailed Method Statement and sampling methodology will be produced in advance of any Stage 2 Geoarchaeological Analysis, as set out in **Section 1.2**.

4.3 Field Evaluation (Stage 2)

4.3.1 The total number of trenches to be excavated will be determined as further information (e.g. detailed construction methodology; geophysical survey results) becomes available.

4.3.2 In line with Essex County Council (ECC) standard requirements the trenching will comprise a 4% sample of the development footprint (e.g. where the proposals have the potential to impact on sub-surface archaeological remains). A contingency of a further 1% sample will be held in reserve and will only be used if appropriate following consultation with the HEA to Thurrock Council. In addition there may be requirement to target a higher number of trenches within the proposed building footprints to ensure they are appropriately evaluated.

4.3.3 The results of the evaluation will provide the basis for considering further mitigation measures.

4.3.4 A detailed Method Statement will be produced by the appointed archaeological contractor in advance of any Stage 2 Field Evaluation, as set out in **Section 1.2**, and will be based on this WSI which will be agreed with the HEA to Thurrock. .

Evaluation techniques

4.3.5 Following any breaking out and removal of any concrete slabs, trenches should be opened by mechanical excavator, with removal of all undifferentiated topsoil down to the first significant archaeological horizon or top of the natural sequence whichever comes first. Any requirement to excavate beyond the top of the natural sequence will be agreed in advance between the Applicant, their appointed Archaeological Contractor(s) and the HEA to Thurrock Council, and defined in the

task specific method statement. The machine should remove a level spit of no more than 0.25m depth moving along the length of the trench. Successive spits may be similarly removed until the first significant archaeological horizon is reached. That level should be cleaned in plan using a wide blade, ditching bucket or similar, with no teeth. If the machine has to re-enter the trench care should be taken to ensure that it does not damage underlying remains, particularly in soft conditions. The machine must not be used to cut arbitrary trial trenches down to natural deposits, without regard to the archaeological stratification and leaving a section record only. All machine work must be under archaeological supervision from an appropriately qualified and experienced contractor and should cease immediately if significant evidence is revealed.

4.3.6 The machine used should be powerful enough for a clean job of work and able to mound spoil neatly, a safe distance from trench edges. Mini garden excavators or bulldozers are not suitable.

4.3.7 Initially examination of all archaeological deposits should be by hand with cleaning, examination and recording both in plan and section. The objective is to define remains rather than totally remove them. Full excavation should be confined to the least significant remains (e.g. dumped layers) which may allow underlying stratigraphy and features to be exposed and recorded. Within significant levels partial excavation, half-sectioning, the recovery of dating evidence, sampling and the cleaning and recording of structures is preferable to full excavation. Depending on the stratigraphy revealed sieving and flotation of fills (at the appropriate mesh level) should be undertaken to recover small flint flakes/metalwork (i.e. a control sample of artefacts).

4.3.8 Archaeological excavation may require work by pick and shovel or occasionally further use of the machine. Such techniques are only appropriate for the removal of homogeneous or low-grade deposits which may give a ‘window’ into underlying levels. They must not be used on complex stratigraphy and the deposits to be removed must have been properly recorded first. Casual “mattock testing” of features of uncertain archaeological value must not be undertaken without the prior approval of the HEA to Thurrock Council. The depth and nature of all colluvial or other masking deposits must be established across the site.

4.3.9 Particular care should be taken not to damage any areas containing significant remains which might merit preservation in situ. Such evidence would normally include deep or complex stratification settlement evidence and structures. The HEA to Thurrock Council (and HE where appropriate) must be informed immediately if remains likely to be of national significance are encountered. Such areas should be protected and not left open to the weather, or other forms of deterioration whilst investigation will not be at the expense of any structures, features or finds which might reasonably be considered to merit preservation, it is important that a sufficient sample is studied.

4.3.10 In the event of discovery of any human remains (articulated or disarticulated, cremated or unburnt), a Ministry of Justice Licence will be obtained prior to any further disturbance (including where remains are to be left in situ). Initially the remains will be left in situ, covered and protected, pending discussions with the HEA to Thurrock Council regarding the need for and appropriateness of their excavation/removal or sampling as part of the works. Where deemed appropriate,

the human remains will be fully recorded, excavated and removed from the Site in compliance with the Ministry of Justice Licence.

4.3.11 Metal detector searches should take place at all stages of the evaluation.

4.3.12 Topsoil, subsoil and archaeological deposits are to be kept separate during the evaluation to allow sequential backfilling

Access and Safety

4.3.13 Reasonable access to the site is to be arranged for representatives of the Local Planning Authority, HE and the HEA to Thurrock Council who may wish to make site inspections to ensure that the archaeological investigations are progressing satisfactorily.

4.3.14 All relevant health and safety regulations must be followed. A general health and safety policy must be provided by the Archaeological Contractor engaged by the Applicant or their representatives and a detailed risk assessment and management strategy for this site prepared. In particular the machine should be kept away from unsupported trench edges and public access routes should be supervised and controlled. Barriers, hoardings and warning notices should be installed as appropriate. Safety helmets are to be used by all personnel as necessary. The Archaeological Contractor will provide appropriate toilet and washing facilities for site staff.

4.3.15 No personnel are to work in deep unsupported excavations. Trenches deeper than 1.2m will have to be stepped or battered back.

4.3.16 Where there is reason to believe from previous uses that the ground may be contaminated, the Archaeological Contractor must include arrangements for pollution sampling and testing before any site work takes place. A search for public utility or other services will also be undertaken by the Archaeological Contractor prior to commencement.

4.3.17 The archaeological organisation must be satisfied that the applicant or developer has provided all information reasonably obtainable on contamination and the location of live services before any site work takes place.

4.3.18 All archaeological trenches should be backfilled upon completion, for safety reasons, unless RPS has given written instructions to the contrary.

Recording systems

4.3.19 The recording system must be fully compatible with that most widely used elsewhere in the County. Context sheets should include all relevant stratigraphic relationships and for complex stratigraphy a separate matrix diagram should be employed. This matrix should be fully checked during the course of the evaluation. If there is any doubt over recording techniques the guidance of the Historic Environment Advisor to Thurrock Council will be sought.

4.3.20 The site archive will be so organised as to be compatible with other archaeological archives produced in the County. Individual descriptions of all archaeological strata and features excavated or exposed will be entered onto prepared pro-forma recording sheets. Sample recording sheets, sample registers, finds recording

sheets, access catalogues, and photo record cards will also be used. This requirement for archival compatibility extends to the use of computerised database.

4.3.21 A site location plan comprising a general plan (e.g. OS 1:1250) showing the investigation area and development site in relation to the surrounding locality and street pattern will be provided.

4.3.22 This will be supplemented by trench plans at 1:500, which will show the location of the areas investigated in relationship to the investigation area, OS grid and site grid (if any). The locations of the OS benchmarks used and site TBMs will also be identified.

4.3.23 Archaeological plans; some record of the full extent in plan of all archaeological deposits must be made. All significant deposits that significantly affect the interpretation of the site and relate to the evaluation objectives should be formally planned in relation to the trench and OS grid and be at a scale of 1:10 or 1:20. Single context planning is required on deeply stratified sites.

4.3.24 Sections containing significant deposits, including half sections, should be drawn as appropriate. Upon completion of the trench at least one long section is to be drawn, including a profile of the top of natural deposits (extrapolated from cut features etc. if the test pit has not been fully excavated). In addition to the excavation of man-made deposits some assessment of “naturally deposited” levels will be necessary, especially when these are organically preserved and laid down within archaeological timescales. Sections should have the location of samples marked.

4.3.25 All archaeological plans and sections should be on drawing film at a scale of 1:10 or 1:20 and should include context numbers and OD spot heights for all principal strata and features.

4.3.26 A full photographic record will be made using digital cameras equipped with an image sensor of not less than 10 megapixels. This will record both the detail and the general context of the principal features and the site as a whole. Digital images will be subject to managed quality control and curation processes which will embed appropriate metadata within the image and ensure long term accessibility of the image set. Photographs will also be taken of all areas, including access routes, to provide a record of conditions prior to and on completion of the excavation. In addition, high resolution digital photogrammetry should be employed to create an accurate record of the investigations and to allow ‘virtual’ public access to the excavations and onsite discoveries.

4.3.27 A Harris Matrix stratification diagram should be compiled and fully checked during the course of the excavations.

Finds and samples

4.3.28 The strategy for sampling archaeological and environmental deposits and structures (which can include soils, timbers, animal bone and human burials) will be developed in ongoing consultation with the Historic Environment Advisor to Thurrock Council and the Historic England Scientific Advisor during fieldwork. Once developed a separate detailed WSI setting out the agreed sampling strategy can be produced if required.

4.3.29 A high priority should be given to dating any remains and so all artefacts and finds are to be retained. Consideration should also be given to the recovery of specialist samples for scientific analysis, particularly samples for absolute dating, structural materials and cultural/environmental evidence. Different sampling strategies may be employed according to established research targets and the perceived importance of the strata under investigation. Minimum levels of data acquisition should be defined according to the "information recovery levels" summarised by Carver (1987). The default data acquisition level for all pre-modern assemblages is level D. Close attention will be given to sampling for date, structure and environment.

4.3.30 A high priority will be given to the sampling of river and other anaerobic deposits (such as peat) where organic materials may be preserved. Column or core samples will be taken for specialist assessment, including, for example, pollen, plant macrofossils and molluscs, for absolute dating of sequences, and for micromorphology and sedimentology analyses.

4.3.31 Organic samples will be subject to appropriate specialist analysis. There may be a requirement to submit timbers to dendrochronological analysis and to process some samples to provide Radiocarbon dating. Other forms of specialist analysis may also be appropriate.

4.3.32 All identified finds and artefacts will be retained, although certain classes of building material can sometimes be discarded after recording if an appropriate sample is retained. No finds will, however, be discarded without the prior approval of the Historic Environment Advisor to Thurrock Council.

4.3.33 All finds and samples will be treated in a proper manner and to the standards of the UK Institute of Conservators Guidelines. All sampling will be undertaken in accordance with appropriate Historic England guidelines including *Environmental Archaeology* (2011), *Geoarchaeology: Using Earth Sciences to understand the archaeological record* (2015), *Animal Bones and Archaeology Guidelines for Best Practise* (2014) and *Dendrochronology* (1998). It may also be necessary to consult with the recent Historic England guidance '*Preserving Archaeological Remains*' (2016) and in particular Appendix 2 which provides approaches to be used in order to understand the preservation conditions on the site.

4.3.34 The detailed processing and assessment of finds and samples will be included in the detailed project design/s prepared following consent.

4.3.35 Finds and samples will be exposed, lifted, cleaned, conserved, marked, bagged and boxed in accordance with the guidelines set out in the UK Institute for Conservation "*Conservation Guideline No 2*". Appropriate guidelines set out in the Museums and Galleries Commissions "*Standards in the Museum Care of Archaeological Collections (1991)*" will also be followed.

4.3.36 All artefacts from the evaluation will, as a minimum, be washed, marked, counted, weighed and identified. However washing artefacts may remove evidence of archaeological value in some cases, such as when organic residues are discovered adhering to pottery vessels. Some artefacts may therefore need to be treated differently in order to preserve evidence that may be analysed at a later date.

4.3.37 Bulk environmental soil samples for plant macro fossils, small animal bones and other small artefacts will be taken from appropriately sealed and dateable

archaeological contexts. Sample sizes of 40l-60l should be collected or 100% of smaller features in line with Historic England's '*Environmental Archaeology*' (2011) guidance note.

4.3.38 Bulk environmental soil samples will be processed by flotation and scanned to assess the environmental potential of deposits.

4.3.39 In the event of discovery of any human remains (articulated or disarticulated, cremated or unburnt), a Ministry of Justice Licence will be obtained prior to any further disturbance (including where remains are to be left in situ). Initially the remains will be left in situ, covered and protected, pending discussions with the Historic Environment Advisor to Thurrock Council regarding the need for and appropriateness of their excavation/removal or sampling as part of the works. Where deemed appropriate, the human remains will be fully recorded, excavated and removed from the Site in compliance with the Ministry of Justice Licence.

4.3.40 Finds, discovered by the Archaeological Contractor, falling under the statutory definition of Treasure (as defined by the Treasure Act of 1996 and its revision of 2002) will be reported immediately to the relevant Coroner's Office, the Finds Liaison Officer (FLO) who is the designated treasure co-ordinator for Essex County Council, the landowner and the Historic Environment Advisor to Thurrock Council. A Treasure Receipt (obtainable from either the FLO or the DCMS website) must be completed and a report submitted to the Coroner's Office and the FLO within 14 days of understanding the find is Treasure. Failure to report within 14 days is a criminal offence. The Treasure Receipt and Report must include the date and circumstances of the discovery, the identity of the finder (put as unit/contractor) and (as exactly as possible) the location of the find.

4.3.41 The pottery specialist employed by the archaeological contractor will be familiar with local pottery types and with a record of publications in the region.

4.3.42 The spot dating of pottery will be employed, where appropriate, to inform the onsite evaluation methodology. Appropriate Specialists for the period will be used to assess the pottery.

4.4 Archaeological Excavation (Stages 3)

4.4.1 The results of each phase of archaeological evaluation will determine where further mitigation measures will be required in advance of or during construction. Mitigation might comprise a programme of excavation in advance of construction. With an appropriate evaluation programme there will also be the chance to preserve deposits in situ. In the majority of cases mitigation will be area excavation following trial trenching unless preservation is achievable. The detailed scope will be set out in separate task-specific method statements as discussed in **Section 1.2**.

4.4.2 The excavation area or areas will be set out using GNSS (Global Navigation Satellite Systems). Minor adjustments to the layout may be required to take account of any onsite constraints such as vegetation or located services. The locations of excavated areas will be tied in the Ordnance Survey (OS) National Grid and Ordnance Datum (OD) as defined by OSGM15 and OSTN15.

4.4.3 The excavation area or areas will be excavated using a suitable machine with a toothless bucket. Machine excavation will be under constant supervision and instruction of the monitoring archaeologist, and will proceed in level spits of approximately 50-200mm until either the archaeological horizon or the natural geology is exposed. Where necessary, the surface of archaeological deposits will be cleaned by hand.

4.4.4 A sample of the archaeological features and deposits identified will be hand excavated, sufficient to address the aims of the excavation. The following minimum sampling levels is proposed:

- 50% of all discrete archaeological features (e.g. pits, post holes)
- 50% of all structural features (e.g. ring ditches, roundhouse gullies, beam slots) including all terminals and feature intersections except if in situ built remains are revealed, where they will be cleaned and recorded pending the implementation of a detailed excavation and recording strategy (to be agreed with all parties);
- 50-100% of features and deposits associated with specific domestic and/or industrial activities (e.g. hearths, ovens, kilns). However, alternative excavation and sampling strategies will be needed if the features are going to be sampled using techniques such as archaeomagnetic dating, which samples in situ deposits of fired clay.
- 100% of all inhumation and cremation burials and other cremation-related deposits; and
- 10-20% of all linear features (e.g. ditches, gullies) including all terminals and feature intersections.

4.4.5 Spoil derived from both machine stripping and hand excavation will be visually scanned for the purposes of finds retrieval and where appropriate will also be metal detected by trained archaeologists. Metal detector checks will take place as soon as areas are stripped. Artefacts and other finds will be collected and bagged by context.

4.4.6 Accredited and experienced local metal detector operators will be utilised during excavation, subject to written agreement regarding disclosure, surrender and ownership of finds not falling under the Treasure Act 1996 (as amended by The Coroners and Justice Act 2009). These specialists will need to be listed in each method statement and approved in advance by the HEA.

Recording

4.4.7 A complete drawn record of excavated archaeological features and deposits will be made. This will include plans and sections, drawn to appropriate scales (generally 1:20 or 1:50 for plans, 1:10 for sections) and tied to the OS National Grid. The OD heights of all principal features will be calculated (as defined by OSGM15 and OSTN15) and the levels added to the drawings.

4.4.8 A full photographic record will be made using digital cameras equipped with an image sensor of not less than 10 megapixels. This will record both the detail and the general context of the principal features and the site as a whole. Digital images will be subject to managed quality control and curation processes which will embed appropriate metadata within the image and ensure long term accessibility of the

image set. Photographs will also be taken of all areas, including access routes, to provide a record of conditions prior to and on completion of the excavation. In addition, high resolution digital photogrammetry should be employed to create an accurate record of the investigations and to allow 'virtual' public access to the excavations and onsite discoveries.

Finds

4.4.9 All archaeological finds from excavated contexts will be retained, although those from features of modern date (19th century or later) may be recorded on site and not retained, depending on the research objectives of the project. Where appropriate, soil samples may be taken and sieved to aid in finds recovery. Any finds requiring conservation or specific storage conditions will be dealt with immediately in line with First Aid for Finds (Watkinson and Neal 1998).

4.4.10 All retained finds will, as a minimum, be washed, weighed, counted and identified. They will then be recorded to a level appropriate to the aims and objectives of the excavation. The report will include a table of finds by period and/or feature group. However washing artefacts may remove evidence of archaeological value in some cases, such as when organic residues are discovered adhering to pottery vessels. Some artefacts may therefore need to be treated differently in order to preserve evidence that may be analysed at a later date.

4.4.11 Metalwork from stratified contexts will be X-rayed and, along with other fragile and delicate materials, stored in a stable environment. The X-raying of objects and other conservation needs will be undertaken by the contractor's in-house conservation staff, or by another approved conservation centre.

4.4.12 Artefacts and other finds will be suitably bagged and boxed in accordance with the guidance given by the relevant museum and generally in accordance with the CIfA standards.

Human remains

4.4.13 Any human remains (articulated or disarticulated, cremated or unburnt) discovered, will be left in situ, covered and protected. A Ministry of Justice Licence will be obtained before any further excavation.

4.4.14 Excavation and post-excavation processing of human remains will be undertaken in line with current guidance documents (e.g., McKinley 2013) and CIfA standards (McKinley and Roberts 1993). Appropriate specialist guidance will be provided by an osteoarchaeologist, with site visits undertaken if required. The final deposition of human remains, following analysis, will be in accordance with the terms of the Ministry of Justice licence.

Treasure

4.4.15 The archaeological contractor will immediately notify the Applicant, RPS and the HEA to Thurrock Council on discovery of any material covered, or potentially covered, by the Treasure Act 1996 (as amended by The Coroners and Justice Act 2009). All information required by the Treasure Act (i.e., finder, location, material, date, associated items etc.) will be reported to the Coroner within 14 days.

Environmental sampling

4.4.16 All sampling will be undertaken following the archaeological contractor's sampling strategy specified in the method statement and the principles outlined in Historic England's guidance (English Heritage 2011 and Historic England 2015).

4.4.17 Depending on the size, complexity and duration of a site, the formulation of a site-specific sampling strategy will be considered at an early stage. Initially informed by prior works or predicted conditions, the strategy will be developed and adapted as the excavation continues, with support provided by specialist site visits and/or phone advice as appropriate. The aim of the strategy will be to effectively target both archaeological and landscape features in order to address the aims and objectives of the project, if appropriate with reference to local or regional research agendas.

4.4.18 Bulk environmental soil samples, for the recovery of plant macrofossils, wood charcoal, small animal bones and other small artefacts, will be taken as appropriate from well-sealed and dateable contexts or features. In general, features directly associated with particular activities (e.g., pits, latrines, cesspits, hearths, ovens, kilns, and corn driers) should be prioritised for sampling over features, such as ditches or postholes, which are likely to contain reworked and residual material. However, representative samples should be collected from across the site and from dated and undated features to inform the sampling strategy and the understanding the archaeological remains.

4.4.19 If waterlogged or mineralised deposits are encountered, an environmental sampling strategy will be devised and agreed with the Historic Environment Advisor to Thurrock Council and the Historic England Regional Science Advisor. The archaeological contractor undertaking the work will have an appropriate specialist available to assess and guide excavation strategy on waterlogged deposits. Specialist advice will also be obtained from the HE scientific advisor.

4.4.20 Any samples will be of an appropriate size – typically 40 litres for the recovery of environmental evidence from dry contexts, and 10 litres from waterlogged deposits.

4.4.21 Following specialist advice, other sampling methods such as monolith, Kubiena or contiguous small bulk (column) samples may be employed to enable investigation of deposits with regard to microfossils (e.g., pollen, diatoms) and macrofossils (e.g., molluscs, insects), soil micromorphological or soil chemical analyses.

4.4.22 Bulk environmental soil samples will be processed by standard flotation methods and scanned to assess the environmental potential of deposits. The flot will be retained on a 0.25 mm mesh, with residues fractionated into 5.6/4 mm, 2 mm, 1 mm and 0.5 mm and dried if necessary. Coarse fraction (>5.6/4 mm) will be sorted, weighed and discarded, with any finds recovered given to the appropriate specialist. Finer residues will be retained until after any analyses, and discarded following final reporting (in accordance with the Selection policy, below).

4.4.23 In the case of samples from cremation-related deposits the flots will be retained on a 0.25 mm mesh, with residues fractionated into 4 mm, 2 mm and 1 mm. In the case of samples from inhumation deposits, the sample will be artefact sieved through 9.5 mm and 1 mm mesh sizes. The coarse fractions (9.5 mm) will be sorted with any finds recovered given to the appropriate specialist together with the finer residues.

4.4.24 Any waterlogged or mineralised samples will be processed by standard waterlogged flotation methods.

4.5 Additional archaeological monitoring: Construction

4.5.1 In rare cases archaeological monitoring will be required during construction. This is likely to only occur where deep excavations will uncover paleoenvironmental or geological sections which required recording or where there are widely spread features which cannot be preserved by a programme of strip map and record.

4.5.2 The archaeological monitoring will be undertaken by at least one archaeologist subject to the number of site operations being carried out at any one time. All mechanical excavation will, where possible, be undertaken using a toothless ditching bucket, and will be constantly monitored by the watching archaeologist.

4.5.3 The archaeologist may ask for the groundwork to be temporarily halted whilst investigations are carried out. If appropriate, areas of archaeological interest will be defined and suitably protected in advance of their investigation and recording. The HE advisor to Thurrock will be informed and a meeting will take place on site to define the most appropriate excavation or recording strategy.

4.5.4 Where necessary, the surface of archaeological deposits will be cleaned by hand. A sample of the archaeological features and deposits identified will be hand-excavated and recorded, sufficient to address the aims of the watching brief. Spoil derived from both machine stripping and hand-excavation will be visually scanned for the purposes of finds retrieval, and where appropriate will also be metal-detected by trained archaeologists. Artefacts and other finds will be collected and bagged by context.

Recording

4.5.5 A complete drawn record of excavated archaeological features and deposits will be made. This will include plans and sections, drawn to appropriate scales (generally 1:20 or 1:50 for plans, 1:10 for sections) and tied to the OS National Grid. The OD heights of all principal features will be calculated (as defined by OSGM15 and OSTN15) and the levels added to the drawings.

4.5.6 A full photographic record will be made using digital cameras equipped with an image sensor of not less than 10 megapixels. This will record both the detail and the general context of the principal features and the site as a whole. Digital images will be subject to managed quality control and curation processes which will embed appropriate metadata within the image and ensure long term accessibility of the image set. Photographs will also be taken of all areas, including access routes, to provide a record of conditions prior to and on completion of the excavation.

Finds

4.5.7 All archaeological finds from excavated contexts will be retained, although those from features of modern date (19th century or later) may be recorded on site and not retained, depending on the research objectives of the project. Where appropriate, soil samples may be taken and sieved to aid in finds recovery. Any finds requiring conservation or specific storage conditions will be dealt with immediately in line with First Aid for Finds (Watkinson and Neal 1998).

4.5.8 All retained finds will, as a minimum be washed All retained finds will, as a minimum, be washed, weighed, counted and identified. They will then be recorded to a level appropriate to the aims and objectives of the excavation. The report will include a table of finds by period and/or feature group. However washing artefacts may remove evidence of archaeological value in some cases, such as when organic residues are discovered adhering to pottery vessels. Some artefacts may therefore need to be treated differently in order to preserve evidence that may be analysed at a later date.

4.5.9 Metalwork from stratified contexts will be X-rayed and, along with other fragile and delicate materials, stored in a stable environment. The X-raying of objects and other conservation needs will be undertaken by the contractor's in-house conservation staff, or by another approved conservation centre.

4.5.10 Artefacts and other finds will be suitably bagged and boxed in accordance with the guidance given by the relevant museum and generally in accordance with the CIfA standards.

Human Remains

4.5.11 Any human remains (articulated or disarticulated, cremated or unburnt) discovered, will be left in situ, covered and protected. A Ministry of Justice Licence will be obtained before any further excavation.

4.5.12 Excavation and post-excavation processing of human remains will be undertaken in line with current guidance documents (e.g., McKinley 2013) and CIfA standards (McKinley and Roberts 1993). Appropriate specialist guidance will be provided by an osteoarchaeologist, with site visits undertaken if required. The final deposition of human remains, following analysis, will be in accordance with the terms of the Ministry of Justice licence.

Treasure

4.5.13 The archaeological contractor will immediately notify the Applicant, RPS and the HEA to Thurrock Council on discovery of any material covered, or potentially covered, by the Treasure Act 1996 (as amended by The Coroners and Justice Act 2009). All information required by the Treasure Act (i.e., finder, location, material, date, associated items etc.) will be reported to the Coroner within 14 days.

Environmental sampling

4.5.14 All sampling will be undertaken following the archaeological contractor's sampling strategy specified in the method statement and the principles outlined in Historic England's guidance (English Heritage 2011 and Historic England 2015).

4.5.15 Depending on the size, complexity and duration of a site, the formulation of a site-specific sampling strategy will be considered at an early stage. Initially informed by prior works or predicted conditions, the strategy will be developed and adapted as the excavation continues, with support provided by specialist site visits and/or phone advice as appropriate. The aim of the strategy will be to effectively target both archaeological and landscape features in order to address the aims and objectives of the project, if appropriate with reference to local or regional research agendas.

4.5.16 Bulk environmental soil samples, for the recovery of plant macrofossils, wood charcoal, small animal bones and other small artefacts, will be taken as appropriate from well-sealed and dateable contexts or features. In general, features directly associated with particular activities (e.g., pits, latrines, cesspits, hearths, ovens, kilns, and corn driers) should be prioritised for sampling over features, such as ditches or postholes, which are likely to contain reworked and residual material.

4.5.17 If waterlogged or mineralised deposits are encountered, an environmental sampling strategy will be devised and agreed with the Historic Environment Advisor to Thurrock Council and the Historic England Regional Science Advisor.

4.5.18 Any samples will be of an appropriate size – typically 40 litres for the recovery of environmental evidence from dry contexts, and 10 litres from waterlogged deposits.

4.5.19 Following specialist advice, other sampling methods such as monolith, Kubiena or contiguous small bulk (column) samples may be employed to enable investigation of deposits with regard to microfossils (e.g., pollen, diatoms) and macrofossils (e.g., molluscs, insects), soil micromorphological or soil chemical analyses.

4.5.20 Bulk environmental soil samples will be processed by standard flotation methods and scanned to assess the environmental potential of deposits. The flot will be retained on a 0.25 mm mesh, with residues fractionated into 5.6/4 mm, 2 mm, 1 mm and 0.5 mm and dried if necessary. Coarse fraction (>5.6/4 mm) will be sorted, weighed and discarded, with any finds recovered given to the appropriate specialist. Finer residues will be retained until after any analyses, and discarded following final reporting (in accordance with the Selection policy, below).

4.5.21 In the case of samples from cremation-related deposits the flots will be retained on a 0.25 mm mesh, with residues fractionated into 4 mm, 2 mm and 1 mm. In the case of samples from inhumation deposits, the sample will be artefact sieved through 9.5 mm and 1 mm mesh sizes. The coarse fractions (9.5 mm) will be sorted with any finds recovered given to the appropriate specialist together with the finer residues.

4.5.22 Any waterlogged or mineralised samples will be processed by standard waterlogged flotation methods.

4.6 Unexpected discoveries

4.6.1 There is the potential at any point during the construction, operational and decommissioning phases of the consented scheme for unexpected archaeological and geoarchaeological remains to be discovered during groundworks, even after extensive evaluation.

4.6.2 Should discoveries of significant archaeological and geoarchaeological remains be made, these may require additional time and resources to investigate and record, and would require a separate Method Statement to be approved by the HEA and HE, where appropriate.

4.6.3 In the first instance, the HEA and HE will be notified by the Applicant or their agent, and any groundworks in the area of the discovery will cease until an on-site (or virtual) monitoring meeting can be arranged and a contingency plan agreed with Thurrock Council.

5 REPORTING

5.1.1 A report on the results of each phase of archaeological work will be prepared, both in bound paper format with colour images, and also in electronic format as a PDF with a minimum file size of 300dpi.

5.1.2 The report should include as a minimum:

i. The Archaeological Contractor's site/finds code.

ii. Perceived archaeological potential of the site and vicinity from documentary sources – historic, cartographic, archaeological, HER, geographical, topographic and environmental.

iii. The aims and methods adopted in the course of the fieldwork.

iv. Illustrative material including maps, plans, sections, drawings and photographs as necessary: photographs should include images of work in progress together with any significant features revealed.

v. The nature, extent, date, condition and significance of the archaeological finds with specialist opinions, recommendations for further analysis and parallels from other sites if required.

vi. The anticipated degree of survival of archaeological deposits across the site, as affected by its present state and recent past (e.g. extent of quarrying).

5.1.3 Copies of the report will be sent to the Applicant and RPS for onward submission to the Historic Environment Advisor to Thurrock Council (and HE if appropriate) for approval on behalf of Thurrock Council. The Historic Environment Advisor to Thurrock Council (and HE if appropriate) will approve the report within 15 working days of receipt. Once approved a copy will be submitted to the EHER.

5.1.4 On completion of archaeological works across the Thurrock FGP site, and to a timetable agreed with the Historic Environment Advisor to Thurrock Council and HE, an overarching report on the archaeology of the scheme will be prepared. The report will include details of any further analysis that may be required prior to the publication of the results. The report will include proposals for publication in a suitable journal. The final report will be submitted to the Historic Environment Advisor to Thurrock Council and HE for approval within 20 days of receipt.

5.1.5 The EHER will receive a CD containing an archive version of the final approved report and a selection of site photographs that can be used (if required) for public engagement by the EHER.

5.1.6 Once the EHER is in receipt of the final overarching report an approval letter will be issued by the Historic Environment Advisor to Thurrock Council for onward submission to the local planning authority.

5.1.7 In addition, at the start of work (immediately before fieldwork commences) an OASIS online record http://ads.ahds.ac.uk/projects/oasis/ must be initiated and key fields completed on Details, Location and Creators Forms. All appropriate parts of the OASIS online form must be completed for submission to the HER. This should include an uploaded .pdf version of the entire report (a paper copy should also be included with the archive). A copy of the OASIS summary sheet in digital form

should be emailed to the Hon. Editor of the Essex Archaeology and History Journal (paul.gilman@me.com) for inclusion in the annual roundup of projects. Archaeological Reports produced as a result of this WSI will be submited as a PDF file to Historic England's NRHE (oasis@english-heritage.org.uk).

5.1.8 Should significant archaeological finds and features of high public interest be discovered during the various Stages of work, there will be a commitment to community outreach activities to disseminate information and engage the wider public about the discoveries being made as works are progressing, where this is feasible. Such activities could include museum displays and on-site interpretation; internet blogs/vlogs; educational resources and teachers' packs; heritage open days; presentations to local schools and other interest groups. Opportunities for public engagement and outreach will be explored in consultation with the LPA's archaeological advisor(s) during the course of fieldwork and post-excavation assessment. Any outreach opportunities would be tailored to the nature and significance of the finds and the potential for public interest.

6 ARCHIVING

6.1.1 The integrity of the site archive should be maintained by the contractor until the close of the project. The archive of all records and finds must be prepared consistent with the principles set out in MoRPHE Project Planning Note 3 (2008).

6.1.2 It will include all materials recovered (or the comprehensive record of such materials) and all written, drawn and photographic records relating directly to the investigations undertaken. It will be quantified, ordered, indexed and internally consistent. It will also contain a site matrix, a site summary and brief written observations on the artefactual and environmental data.

6.1.3 United Kingdom Institute for Conservation guidelines for the preparation of excavation archives for long term storage (1990) will be followed. Arrangements for the curation of the site archive will be agreed in writing with the recipient Museum who will issue a museum acquisition number before site work commences. This is expected to be Thurrock Museum and an agreement in principle to take the complete archive has been sought. Details of such arrangements will be copied to the Historic Environment Advisor to Thurrock Council and the Local Planning Authority before site works commence.

6.1.4 The site archive is to be deposited as a single block at the close of the project with the appropriate museum within 3 months of completion. It will then become publicly accessible. The contractor will need to hold discussions with the museum curator prior to archaeological work commencing regarding the collection and discard policy relevant to the site, and to observe such requirements. If the museum is unable to accept the archive an alternative solution regarding the storage of the archive will be found. The Historic Environment Advisor to Thurrock Council will be advised once the relevant museum has been approached regarding this archive.

6.1.5 The digital archive generated by the project will be deposited with the Archaeology Data Service (ADS).

Transfer of Ownership

6.1.6 Arrangements for long-term storage and deposition of the archive, including all artefacts, with the exception of human remains and any objects covered by the Treasure Act 1996 (as amended by the Coroners and Justice Act 2009), will be agreed with the landowner and recipient museum prior to the commencement of fieldwork.

7 OTHER MATTERS

7.1 Archaeological Contractor

7.1.1 The Archaeological Contractor appointed to undertake the archaeological mitigation measures will be TBC for the onshore works. They will have a demonstrable track record of successfully undertaking large, complex archaeological projects of this nature, with specialist archaeological and geoarchaeological expertise. A list of the technical specialists will be submitted to Thurrock Council for approval.

7.1.2 The Geo-archaeological Contractor appointed to undertake the Terrestrial geo-archaeological mitigation measures will be QUEST.

7.1.3 These contractors have a proven track record in undertaking fieldwork on sites adjacent to the River Thames or equivalent, and the relevant geology.

7.1.4 The field team deployed by the Archaeological Contractors will include only full time professional archaeological staff.

7.1.5 The Archaeological Contractors are a body on the CIfA Register of Archaeological Organisations and will be consistent throughout the project.

7.2 Standards

7.2.1 RPS Group endorses the Code of Practise and the Code of Approved Practise for the Regulation of Contractual Arrangements in Field Archaeology of the Chartered Institute for Archaeologists.

7.2.2 All staff supplied by the archaeological contractor would be of a standard approved by Thurrock Power's archaeological consultants and be employed in line with the Chartered Institute for Archaeologist's Codes of Practise and be members of the Chartered Institute for Archaeologists.

7.2.3 Provision would be made for monitoring of all stages of the project by the client and the local planning authority and their representatives (including HE and the HE RSA, as appropriate).

7.3 Insurance, Health and Safety

7.3.1 The Archaeological Contractor will maintain both public liability and professional indemnity insurance to suitable levels of coverage. Full details of insurance cover can be supplied on request.

7.3.2 All work will be carried out to comply with the Health and Safety and Work etc Act 1974 and the Management of Health and Safety Regulations 1999.

References

Chartered Institute for Archaeologists Guidelines:

http://www.archaeologists.net/sites/default/files/node-files/code_conduct.pdf

http://www.archaeologists.net/sites/default/files/node-files/ifa_code_practice.pdf

National Guidance:

Department of Communities and Local Government *National Planning Policy Framework* 2012

Department of Energy and Climate Change *Overarching National Policy Statement for Energy 1 (EN-1)* 2011

Guidelines:

Historic England 2011 *Environmental Archaeology: A Guide to the Theory and Practise of Methods from Sampling and Recovery to Post Excavation*

Historic England 2015 *Geoarchaeology: Using Earth Sciences to Understand the Archaeological Record*

Historic England 2014 *Animal Bones and Archaeology: Guidelines for Best Practise*

Historic England 2016 *Preserving Archaeological Remains; Appendix 2 Preservation Assessment Techniques*

Historic England 1998 Dendrochronology

MAP2 Management of Archaeological Projects (Second Edition) 1991

MoRPHE Management of Research Projects in the Historic Environment The MoRPHE Project Managers' Guide 2009

MoRPHE Management of Research Projects in the Historic Environment PPN 3: Archaeological Excavation January 2008

Museums and Galleries Commissions *Standards in the Museum Care of Archaeological Collections* 1991

United Kingdom Institute for Conservation (UKIC) *Conservation Guideline No 2* (n/d)

United Kingdom Institute for Conservation (UKIC) *guidelines for the preparation of excavation archives for long term storage* 1990

Site Specific:

CgMs 2017 *Archaeological Statement Tilbury2 land at Former RWE Power Station, Tilbury, Essex*

CgMs 2017 *Archaeological Desk Based Assessment Tilbury2 Former RWE Power Station, Tilbury, Essex*

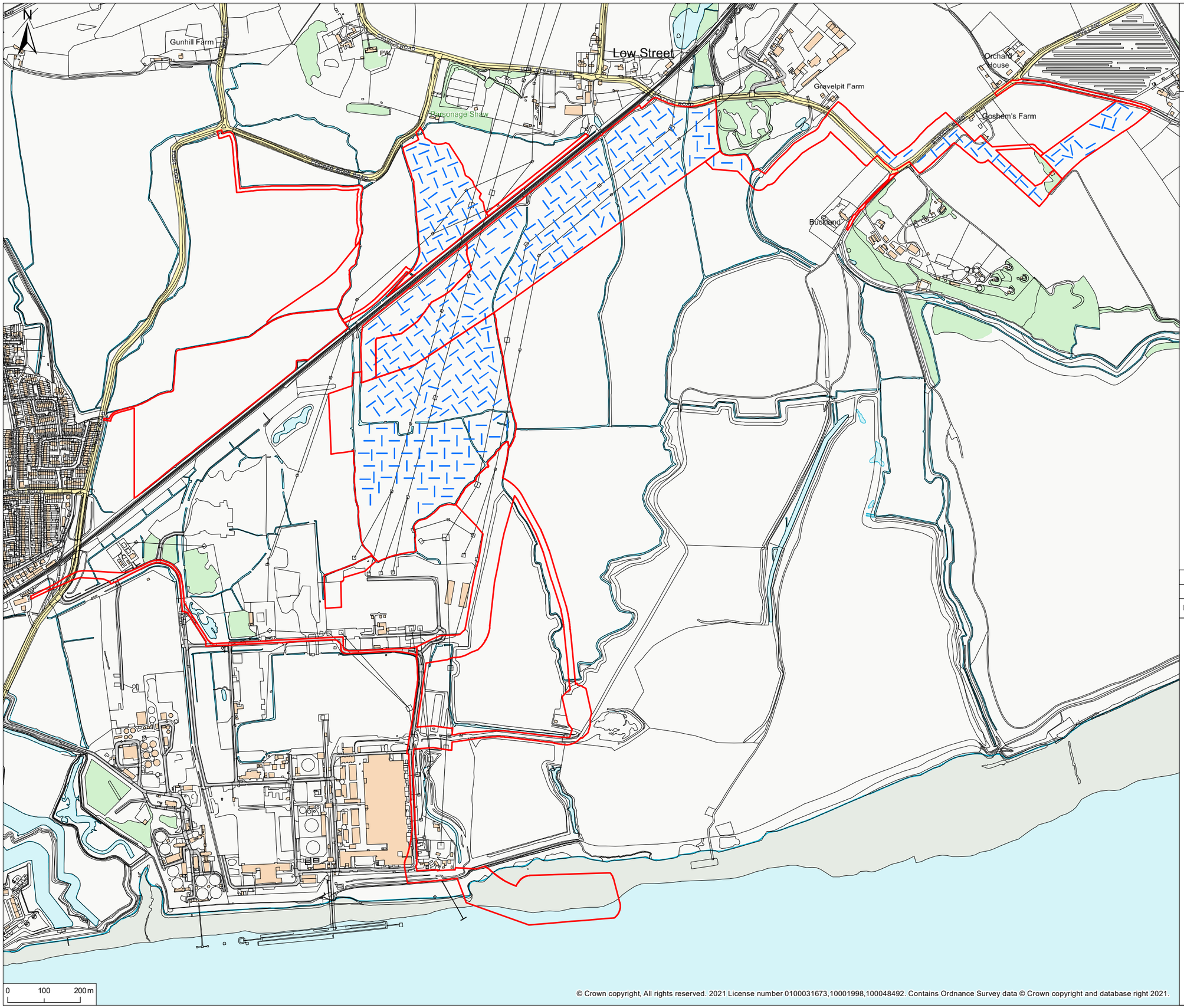
Quest 2017 *Tilbury2 Land at Former RWE Power Station, Tilbury Geo-archaeological fieldwork, Radiocarbon Dating and updated Deposit Model*

QUEST 2019. Thurrock FGP Geoarchaeological Deposit Model Report, ref 177/18

Wessex Archaeology. 2017. Land adjacent to Tilbury Substation, Tilbury, Essex. Detailed Gradiometer Survey Report

Wessex Archaeology. 2020. Thurrock FGP. Detailed Gradiometer Survey Report.

ASE 2017 *Archaeological Watching Brief Land at the Former RWE Power Station, Tilbury, Essex*



Notes
1. This drawing has been prepared in accordance with the scope of RPS's appointment with its client and is subject to the terms and conditions of that appointment. RPS accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided.
2. If received electronically it is the recipients responsibility to print to correct scale. Only written dimensions should be used.

Legend

- Zone boundary
- Proposed trench location (389 at 30m x 2m)

Rev	Description	By	CB	Date

MAKING COMPLEX EASY

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Client -

Project Thurrock Flexible Generation Plant

Title Proposed trench locations

Status	Drawn By	PM/Checked By
DRAFT	MS	NC
Project Number	**Scale @ A3**	**Date Created**
OXF10872	1:10,000	MAR 2021

Figure Number **1** Rev **-**

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