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Document 3.1 – ES Volume 2

Appendix 13.1: WKN Desk Based Heritage Assessment

Wheelabrator Kemsley (K3 Generating Station) and Wheelabrator Kemsley North (WKN) Waste to Energy Facility DCO

September 2019 -Submission Version **PINS ref: EN010083**

WHEELABRATOR KEMSLEY NORTH WASTE-TO-ENERGY PLANT

DESK-BASED BASELINE HERITAGE ASSESSMENT

Date: November 2018, Revised July 2019

Our Ref: JAC23569

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SUMMARY

RPS Planning and Development was commissioned to produce a baseline heritage assessment in connection with the construction of Wheelabrator Kemsley Generating Station (K3) and a new waste-to-energy plant on adjacent land, Wheelabrator Kemsley North (hereafter 'WKN Proposed Development').

This study has revealed that there are no statutorily designated sites (e.g. Scheduled Monuments, Listed Buildings) within the DCO boundary.

The closest designated asset is Castle Rough, a Scheduled Monument (HER number TQ96NW10, List 1013368). The Scheduled Monument is located some 470m south of the proposal site. It is low lying and not visible from any distance away. The closest Listed Building to the proposed development is the Grade II Great Grovehurst Farmhouse (List 1057685), located some 1.3km west of the DCO boundary. The closest Listed Building to the main body of the DCO boundary is the Grade II Little Murston Farmhouse (List 1061035), located some 1.4km southeast of the DCO boundary.

No heritage assets are recorded within DCO boundary. It is considered that the WKN Proposed Development is located within a landscape that has high potential to contain remains of all dates. However, the WKN Site itself lies in an area that is likely to have been within the intertidal zone or marsh throughout history and hence is unlikely to have seen intensive activity. Furthermore, the nature of the 20th and 21st century land-use within the WKN Site and the associated ground disturbance suggest that the potential for the survival of previously unidentified sub-surface archaeological remains of national importance, or of sufficient importance to warrant preservation in situ, is unlikely. It is likely that any archaeological deposits within the proposed construction footprint, have been damaged, possibly removed, and that the potential for the survival of significant, coherent archaeological remains is low.

1 INTRODUCTION

Background

1.1 RPS Planning and Development was commissioned to produce a baseline heritage assessment in support of an application to the Secretary of State for a Development Consent Order (DCO) for the construction of Wheelabrator Kemsley Generating Station (hereafter referred to as 'K3') and a new waste-to-energy plant on adjacent land, Wheelabrator Kemsley North (hereafter 'WKN'). An assessment of the effects of K3 was presented in the 2010 ES pursuant to its Town and Country Planning Permission (See ES Chapter 2 for more detail). A copy of the 2010 ES (as amended) is available as Document 3.3 submitted with this application. The practical effect of the K3 Proposed Development has no potential to affect heritage assets and hence this assessment relates primarily to the WKN Proposed Development.

Site Description

1.2 The DCO boundary takes in the following work areas (Appendix 6):

Works No.
1 – Construction and operation of an onshore generating station with a generating capacity of 75MW and permissible waste throughput of 657,000tpa (the K3 Proposed Development)
1A - Installation of grid connection for Work No 1
1B- Installation of steam connection for Work No 1
1C- Alteration of existing private access road to construct, use and maintain Work No 1
1D- Creation of a temporary construction compound and laydown area for the construction of Work No 1
1E- Construction and operation of a surface water outfall for Work No 1
2- Construction and operation of a waste-to-energy facility capable of processing 390,000 tonnes of waste per annum, with a generating capacity of up to 42MW (the WKN Proposed Development)
3- Installation of a grid connection WKN Proposed Development
4- Alteration of existing private access road to construct, use and maintain Work No 2
5- Temporary construction or alteration of existing private haul road for the construction of Work No 2
6- Creation of a temporary construction compound and laydown area for the construction of Work No 2
7- Construction and operation of a new surface water outfall for Work No 2

1.3 At the time of writing, construction of the consented K3 plant was in progress and the access roads that fall within the DCO boundary have been constructed. The K3 Proposed Development will not affect the built form of the consented K3 scheme once it is constructed, and therefore is likely to have no impact on any heritage assets.

1.4 The WKN Site (NGR TQ 921 667) is located immediately north of the permitted K3 and immediately to the east of the Kemsley Paper Mill, to the east of Kemsley, a residential suburb in the north of Sittingbourne in Kent. The WKN Site is currently being used by WTI as a laydown and parking area for the construction of the adjacent K3. The WKN Site has been cleared of vegetation and laid to concrete or hardcore with a perimeter fence.

1.5 To the east of the WKN Site lies the Swale Estuary with the Isle of Sheppey beyond. Immediately to the north of the site lie the Kemsley Marshes beyond which lies the Kemsley Paper Mill effluent treatment works and a jetty operated by Knauf for the import of gypsum by barge.

1.6 The solid geology of the DCO boundary consists of London Clay (BGS 1:1,250 1996). This is overlain by alluvium comprising clay, silt, sand and peat (BGS 1:50,000 1975), with Head deposits to the west of the WKN Site and beach and tidal flat deposits of clay, sand and silt to the east (http://mapapps.bgs.ac.uk/geologyofbritain/home.html).

Aims

1.7 The aims of this study are:

- to assess the likelihood of the WKN Site to contain archaeological remains and to provide an indication of what, if any, further work may be required with regard to archaeology; and
- to assess the significance of undesignated and designated heritage assets and to determine, what, if any effect the proposed development may have on that significance.

Project Archive

1.8 The project archive is held by RPS at the time of writing.

1.9 This report has been written for and on behalf of RPS by Richard Conolly, MA(Hons), MCIfA.

2 METHODOLOGY

2.1 During this assessment, Health and Safety considerations were paramount, relevant legislation and guidance were complied with and appropriate health and safety measures adopted at all times.

2.2 The desk assessment comprised, in the first instance, consultation with the Kent County Archaeology Advisory Service and their Historic Environment Record (HER). Data from the National Record of the Historic Environment (NRHE) was obtained from Historic England, as was data on Scheduled Monuments, registered parks and gardens and registered battlefields. A review of relevant documentary and archival material held in libraries and archives was undertaken. An iterative approach was adopted during this process to determine the scope of the above consultations/searches.

2.3 A site visit was undertaken in October 2017 to establish the presence of above ground archaeology, whether or not previously recorded and to verify the settings of the heritage assets surrounding the DCO boundary. The assessment has conformed to the relevant legislation and guidance, including:

- *National Planning Policy Framework* (NPPF) Department of Communities and Local Government (DCLG) (March 2012);
- *Overarching Energy National Policy Statement* (NPS EN-1); Department of Energy and Climate Change (DECC) (2011a);
- *Renewable Energy Infrastructure National Policy Statement* (NPS EN-3); Department of Energy and Climate Change (DECC) (2011b);
- *Renewable Energy Infrastructure National Policy Statement* (NPS EN-5); Department of Energy and Climate Change (DECC) (2011c);
- *Code of Conduct* Chartered Institute for Archaeologists (2014);
- *Standard and Guidance for Historic Environment Desk Based Assessment* Chartered Institute for Archaeologists (2014); and
- *Historic Environment Good Practice in Planning Note 3: The Setting of Heritage Assets* Historic England (2015)

2.4 On the basis of recent experience with similar developments, this assessment focuses on a study area of up to 1km around the DCO boundary with respect to below ground archaeology and 3km with respect to the settings of heritage assets, while taking into consideration evidence from a wider area if appropriate. Within this report, archaeological periods are defined as follows:

- Prehistoric [comprising Lower Palaeolithic (pre 30,000 BC), Upper Palaeolithic (30,000 - 10,000BC), Mesolithic (10,000 - 3,500BC), Neolithic (3,500 - 2,000BC), Bronze Age (2,000 - 700BC) and Iron Age (700BC - AD43)];
- Roman (AD43 - AD410);

- Medieval (AD450 - AD1540);
- Post Medieval (AD1540 to 1901); and
- Modern (1901 onwards).

3 PLANNING CONTEXT

3.1 Legislative frameworks provide protection to the historic environment while planning policy guidance provides advice concerning how the historic environment should be addressed within the planning process.

3.2 Listed Buildings are protected under the provisions 54(i) of the Town and Country Planning Act (1971), as amended by the Planning (Listed Buildings and Conservation Areas) Act (1990) which empowers the Secretary of State for the Department of Culture, Media and Sport (DCMS) to maintain a list of built structures of historic or architectural significance.

3.3 Scheduled Monuments are protected through the Ancient Monuments and Archaeological Areas Act (1979), which had been updated in the National Heritage Act (1983). Scheduled Monuments are maintained on a list held by the Secretary of State for DCMS. Any alterations or works to a Scheduled Monument (including archaeological investigation) requires Scheduled Monument consent (SMC).

3.4 The National Planning Policy Framework (NPPF) (Department of Communities and Local Government, June 2019) provides guidance to planning authorities regarding the protection of heritage assets within the planning process. The NPPF deals with all types of heritage in a single document. It takes an integrated approach to the historic environment and heritage assets, moving beyond a distinction between buildings, landscapes and archaeological remains.

3.5 A heritage asset is defined in the NPPF as 'a building, monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest'. Heritage assets include designated heritage assets and assets identified by the local planning authority (including local listing).

3.6 'Setting of a heritage asset' is defined in the NPPF as 'the surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance or may be neutral.'

3.7 In July 2011 the Secretary of State for Energy and Climate Change designated the six National Policy Statements for Energy (NPSs) under the Planning Act 2008. These NPSs set out national policy against which proposals for major energy schemes will be assessed and determined by the Infrastructure Planning Commission (IPC) and its successor bodies.

3.8 The NPSs which are relevant to the application for the proposed development are the:

- *Overarching National Policy Statement for Energy* (NPS EN-1);
- *Overarching Energy National Policy Statement* (NPS EN-1); Department of Energy and Climate Change (DECC) (2011a);
- *Renewable Energy Infrastructure National Policy Statement* (NPS EN-3); Department of Energy and Climate Change (DECC) (2011b); and

- *Renewable Energy Infrastructure National Policy Statement* (NPS EN-5); Department of Energy and Climate Change (DECC) (2011c);

3.9 NPS EN-1 responds to the guidance provided in the NPPF in that it requires applicants to describe the significance of heritage assets affected by a proposed development and the contribution of their setting to that significance (NPS EN-1: 5.8.8). The applicant also has to ensure that the extent of the impact of the proposed development on the significance of any heritage assets affected can be adequately understood from the application documents

3.10 NPS EN-1 advises that harmful impacts on the significance of heritage assets should be weighed against the public benefit of the proposed development, also that where a development may affect the setting of a heritage asset the IPC and its successor bodies should treat more favourably applications that preserve those elements of the setting that make a positive contribution to the significance of the asset.

3.11 NPS EN1 at paragraph 5.5.8 notes that applicants should provide a description of the significance of the heritage assets affected by the proposed development and the contribution of their setting to that significance. The level of detail should be proportionate to the importance of the heritage assets and no more than is sufficient to understand the potential impact of the proposal on the significance of the heritage asset

3.12 NPS EN1 at paragraph 5.5.8 goes on to note that as a minimum the applicant should have consulted the relevant Historic Environment Record (or, where the development is in English or Welsh waters, EH or Cadw) and assessed the heritage assets themselves using expertise where necessary according to the proposed development's impact

3.13 NPS EN1 at paragraph 5.8.9 notes that where a development site includes, or the available evidence suggests it has the potential to include, heritage assets with an archaeological interest, the applicant should carry out an appropriate DBA and, where such desk-based research is insufficient to properly assess the interest, a field evaluation

3.14 NPS EN1 at paragraph 5.8.9 goes on to note that where proposed development will affect the setting of a heritage asset, representative visualisations may be necessary to explain the impact

3.15 NPS EN3 does not provide specific guidance on potential impacts on the historic environment resulting from the development of biomass and waste combustion.

3.16 NPS EN-5 does not provide specific guidance on potential impacts on the historic environment resulting from the development of electricity network infrastructure. NPS EN-5 notes, however, at section 2.2.6 that developers will be influenced by Schedule 9 to the Electricity Act 1989, which places a duty on all transmission and distribution licence holders, in formulating proposals for new electricity networks infrastructure, to have regard to the desirability of protecting sites, buildings and objects of architectural, historic or archaeological interest.

Kent County Council

3.17 The Kent Minerals and Waste Local Plan 2013 – 2030 was adopted in July 2016. Policy DM5 is concerned with Heritage assets:

"Proposals for minerals and waste developments will be required to ensure that Kent's heritage assets and their settings, including locally listed heritage assets, registered historic parks and gardens, Listed Buildings, Conservation Areas, World Heritage Sites, Scheduled Ancient Monuments, archaeological sites and features and defined heritage coastline,(110) are conserved in a manner appropriate to their significance. Proposals should result in no unacceptable adverse impact on Kent's historic environment and, wherever possible, opportunities must be sought to maintain or enhance historic assets affected by the proposals. Minerals and/or waste proposals that would have an impact on a heritage asset will not be granted planning permission unless it can be demonstrated that there is an overriding need for development and any impacts can be mitigated or compensated for, such that there is a net planning benefit."

3.18 Policy DM6 specifically covers Historic Environment Assessment:

Proposals for minerals and waste development that are likely to affect important heritage assets will only be granted planning permission following:

1. preliminary historic environment assessment, including field archaeological investigation where appropriate, to determine the nature and significance of the heritage assets

2. appropriate provision has been secured for preservation in situ, and/or archaeological excavation and recording and/or other historic environment recording as appropriate, including post-excavation analysis and reporting, archive deposition and access, and interpretation of the results for the local community, in accordance with the significance of the finds

3. agreement of mitigation of the impacts on the significance of the heritage assets, including their fabric, their setting, their amenity value and arrangements for reinstatement.

4 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

Introduction

4.1 Figure 2 shows the designated assets within 3km of the DCO boundary. Figures 3 and 4 respectively show the HER and HEA data. Historic mapping is presented in Figures 5-12.

4.2 The report on the archaeological watching brief undertaken during geotechnical works ahead of the construction of K3 is reproduced at Appendix 1, with the report on trial trenching on the access road provided at Appendix 2. Historic Environment Record Entries are contained within Appendix 3, with records from the National Record of the Historic Environment at Appendix 4 and the geotechnical report for works in the WKN Site is presented in Appendix 5.

4.3 Recorded archaeological remains in the wider area range in date from the prehistoric to the post medieval period. The North Kent Rapid Coastal Zone Assessment Survey (RCZAS) undertaken by Wessex Archaeology (2000 & 2005) comprised desk assessment, including aerial photographic assessment and fieldwork, along much of the north Kent coast including the intertidal area of the DCO boundary.

Designated Heritage Assets

4.4 There are no designated heritage assets within the DCO boundary. The closest such asset is Castle Rough Medieval moated site (List 1013368), which is approximately 470m to the south.

4.5 There are no World Heritage Sites, Protected Wrecks, registered battlefields or registered parks and gardens located within 3km of the DCO boundary.

4.6 There are no Listed Buildings or Conservation Areas located within 1km of the DCO boundary.

4.7 There is one Scheduled Monument (Murston Old Church, Sittingbourne, List 1011768) and 13 Listed Buildings located between 1km and 2km of the DCO boundary. Of these, nine are listed at Grade II and two, the Church of the Holy Trinity (List 1061036) and the Church of all Saints (List 1069380), are listed at Grade I. The Listed Buildings are shown in Table 1, below.

Table 1: Listed Buildings located between 1 and 2km of the DCO boundary

List Entry Number	Name	Grade
1061036	Parish Church of the Holy Trinity	I
1069380	Church of All Saints	I
1031356	Meres Court, with Cottage Attached	II
1031364	66, North Street	II
1057685	Great Grovehurst Farmhouse	II
1061035	Little Murston Farmhouse	II

1061040	Bramblefield Farmhouse (Excluding Outbuildings)	II
1061047	Pheasant Farmhouse	II
1243080	Barn adjoining cattle shed, Kings Hill Farmhouse	II
1116219	Ivy Cottage	II
1258073	Kingshill Farmhouse	II
1343861	Pheasants Farmhouse	II
1390604	Traditional Agricultural Barn	II

4.8 There is one Scheduled Monument (World War II Heavy Anti-aircraft gunsite (TS2), 300m east of Chetney Cottages, List 1020389) and 57 Listed Buildings located between 2km and 3km of the DCO boundary. Of these, 54 are listed at Grade II, two, The Church of St Michael (List 1061030) and The Court House (List 1344240), are listed at Grade II* and one, the Church of St Giles (List 1322821) is listed at Grade I. Of the total, 37 Grade II Listed Buildings are located within the Milton Regis High Street Conservation Area. The Listed Buildings are shown in Table 2, below.

Table 2: Listed Buildings located between 2 and 3km of the DCO boundary

List Entry Number	**Name**	**Grade**
1322821	Church Of St Giles	I
1061030	Church Of St Michael	II*
1025893	Quinton Farmhouse	II
1061037	Murston House	II
1061041	Church Of All Saints	II
1061042	Bayford Court	II
1061054	Yew Tree House	II
1069266	West Tonge Farm	II
1069270	Tonge Corner Farmhouse	II
1069379	Culnells	II
1069420	The White House	II
1116241	Coleshall Farmhouse	II
1121527	Fox Cottage	II
1299595	Upper Toes	II
1338157	Stables 30 Yards East Of West Tonge Farmhouse	II
1343866	Nether Toes	II
1343948	Cheke Court	II
1343949	Granary 20 Yards South Of West Tonge Farmhouse	II
1344246	East Hall	II
1344247	Quinton Cottage	II
Listed Buildings within Milton Regis High Street Conservation Area		
1344240	The Court House	II*
1038333	80, High Street	II
1038339	90 and 92, High Street	II
1038931	44 and 46, High Street	II
1039099	The White Hart Inn	II
1039103	95 and 95a, High Street	II
1039107	113 and 115, High Street	II
1039122	The High House	II
1057660	71 and 71a, High Street	II

1061017	100 and 102, High Street	II
1061018	104a, High Street	II
1061043	5, Crown Road	II
1061048	63, High Street	II
1061049	69, High Street	II
1061050	79 and 81, High Street	II
1061051	83-87 and 87a, High Street	II
1061052	97 and 97a, High Street	II
1061053	117, High Street	II
1061055	56 and 58, High Street	II
1061056	64 and 66, High Street	II
1061057	74 and 76, High Street	II
1061058	82-86, High Street	II
1061059	94, High Street	II
1344213	67, High Street	II
1344214	73 and 73a, High Street	II
1344215	The Three Hats Inn	II
1344216	99 And 99a, High Street	II
1344217	Backs House	II
1344218	Hinds House	II
1344219	72, High Street	II
1344220	88, High Street	II
1344238	96 and 98, High Street	II
1344239	Jay's House	II
1345556	No 65, Including The Building (Former Stables) Adjoining on the South West	II
1374220	54, High Street	II
1374224	62, High Street	II
1374375	68 and 70, High Street	II

Previously Recorded Heritage Assets

4.9 No heritage assets have been recorded within the DCO boundary previously.

Prehistoric and Roman

4.10 The DCO boundary is located on the alluvial floodplain of the Swale, which in general has the potential to contain deposits of palaeo-environmental significance. The Stour Palaeolithic Proposal, a joint venture between the University of Southampton and Kent County Council notes that along the whole of the south bank of the Swale the geology is Holocene in origin, with:

> *possible outcrops of Pleistocene terraces poking through surface of alluvium in places; There may be deeply buried Late Pleistocene terrace systems or infilled channels in places.*
>
> (Cuming 2015, 24)

4.11 The wider area saw extensive activity from early times, with remains of ritual, settlement and agricultural origin being recorded on the mainland and on Sheppey. The nearby higher ground of the Kemsley Ridge is known to have been used for occupation activity during the prehistoric and Roman periods, while the alluvial floodplain would have been marshland and would have been exploited for a number of purposes, including salt making and

pottery manufacture as well as hunting and fishing. Part of the area now covered by the Swale may have been drier in prehistory than it is today and may therefore have potential for prehistoric terrestrial as well as maritime remains (Wessex Archaeology 2005, 47).

4.12 A small collection of Mesolithic or Neolithic flints was recovered during fieldwork in connection with the construction of Swale Way approximately 750m to the southwest of the DCO boundary (HER number TQ96NW122), with Mesolithic flints also being recovered at Castle Rough, approximately 470m to the south of the DCO boundary (HER number TQ96NW10).

4.13 A prehistoric log boat was found in 1924, apparently during river drainage in Milton Creek, approximately 700m to the south of the DCO boundary, while a greenstone celt found in the vicinity was apparently a separate find (HER number TQ96NW12).

4.14 A Middle Bronze Age barrow was found at Kemsley Down, during fieldwork in connection with the construction of Swale Way, some 600m southwest of the DCO boundary (HER number TQ96NW125). There is further extensive evidence of Prehistoric activity in the search area, most notably in the vicinity of Ridham Avenue, Kemsley where excavation recorded a multi-period Prehistoric site (TQ96NW96-100), with evidence of activity extending into the Roman period. It may be noted that this site and most sites of similar period lie on higher ground above the alluvial deposits that mark the extents of the former intertidal zone.

4.15 Prehistoric activity within the intertidal zone is likely to have been less intensive in character in general; hunting fishing and perhaps seasonal grazing. More intensive use of the intertidal area is likely to have commenced in the late prehistoric period in the form of salt-production. No such prehistoric sites are recorded in the search area but the remains of two possibly Roman period salterns are located on the west side of Sheppy, approximately 4-500m to the east of the DCO boundary, and finds including briquetage, pottery, burnt flint and animal bone have been made (TQ96NW1108 & TQ961110).

4.16 The wider area was heavily Romanised with the line of Roman Watling Street leading from London to the coast running rather less than 3km to the south of the DCO boundary. Also, a late Iron Age to early Roman enclosure was discovered during fieldwork in connection with the construction of Swale Way, some 500m southwest of the DCO boundary (HER number TQ96NW127).

Medieval

4.17 There is relatively little physical evidence for an Anglo-Saxon presence in the area, although several local place names appear in early records. The place name Milton first appears in the Anglo-Saxon Chronicle in 893. Its derivation indicates that it was the meeting place for the Hundred of Milton and it would have been located at its centre (Wallenberg: 254). The place name Kemsley seems to be post-Norman Conquest in origin (Wallenberg: 255), while Sittingbourne first appears in 1200 (Wallenberg 264).

4.18 A possible Anglo-Saxon site of unknown type is recorded as being located some 150 metres southeast of the DCO boundary. The source is antiquarian and the site type and location uncertain, although it may be based on place name evidence (HER number TQ96NW13).

4.19 There is documentary evidence for oyster beds in the area being exploited from the end of the 12th century onwards. The oyster grounds probably included Milton Creek and a stretch of the Swale (HER number TQ96NW1007); there is no indication that these extended into the DCO boundary.

4.20 A moated site, Castle Rough, is located some 470m southwest of the DCO boundary. The site is located below the 5m contour, overlooks Milton Creek and comprises a rectangular earthwork island surrounded on four sides by a moat. Excavations during the early 1970s indicated that the site was constructed during the 13th or 14th century. Numerous earlier artefacts were recovered dating from the Mesolithic and Roman periods. These were interpreted by the excavators as having been brought in with material from elsewhere. It is not entirely clear from the available information whether material was imported from some distance away or whether the dumped material represents upcast from the moat. The site is a Scheduled Monument (HER number TQ96NW10, List1013368).

4.21 The parish church of the Holy Trinity at Milton, located some 1.3km southwest of the DCO boundary, is flint-faced with stone quoins. The roof is of the 14th century, while the south porch is of the 15th century. The church was subject to restoration during the 1880s. The building is listed at Grade I (list entry number 1061036).

4.22 The DCO boundary is likely to have lain in the intertidal zone and marshland during this period and therefore to have seen relatively low level activity.

Post-medieval and modern

4.23 There are numerous remains of timber structures and vessels recorded along the foreshore outside the DCO boundary. The vast majority of these are probably post-medieval in origin and when recognisable this seems to be the case, although some remains may be earlier.

4.24 The remains of a number of barges or other hulked vessels are recorded in Milton Creek, to the south of the DCO boundary and the Swale, to its north and east (HER numbers TQ96NW33, TQ96NW35, TQ96NW37, TQ96NW39, TQ96NW42, TQ96NW43, TQ96NW55, TQ96NW59, TQ96NW60, TQ96NW61 and TQ96NW1119). The closest of these to the DCO boundary (TQ96NW60) comprises five unidentified hulks recorded on aerial photographs dating to 1961. These are not visible on earlier photographs and are no longer visible and have presumably been removed or destroyed. To the north of the DCO boundary the remains of a wooden vessel (HER number TQ96NW38, NRHE number 900626) survive to the west of the Knauf jetty. This vessel seems to have arrived between 1960 and 1990 to judge from aerial photographs and was seen in 2004, according to the RCZAS (Wessex Archaeology 2005: 43).

4.25 The DCO boundary cannot be accurately located on Andrew and Dury's map (1769). The mouth of Milton Creek is depicted as wider on this map than on subsequent maps and it appears likely that the DCO boundary largely lay within the intertidal zone, with parts extending into the adjacent marshes (Figure 5).

4.26 The DCO boundary can be located with greater certainty on the 1797 Ordnance Survey surveyor's drawing (Figure 6). This shows a sea wall in the north-eastern part of the WKN Site which appears on subsequent Ordnance Survey maps. The wall presumably dates to

the latter part of the 18th century. The eastern part of the DCO boundary is depicted as forming part of the intertidal zone with a small creek flowing into Milton Creek, whilst the western part is shown as fields. It is not clear whether these were reclaimed. The situation as depicted by Mudge and Faden (1801) is broadly the same (not illustrated).

4.27 The Milton Next Sittingbourne Tithe Map of 1838 (not illustrated) shows the DCO boundary and much of the surrounding area as being owned by William Marshall. The area was being used for pasture, with parcels occasionally being recorded as 'pasture and water'.

4.28 The First Edition six inch to the mile Ordnance Survey map of 1869 (Figure 7) shows that by this time a new length of sea wall had been erected and the WKN Site had been fully reclaimed. The main body of the DCO boundary is depicted as a field, crossed by a track, drainage ditch and small watercourse. The surrounding area is predominantly rural, although a brick field (TQ96NW78) is marked immediately south of New Milton, approximately 250m to the south of the DCO boundary. In the wider area a large duck decoy (TQ96NW62) is marked some 550 metres to the northwest of the DCO boundary.

4.29 By the time of the OS six inch edition of 1898 (Figure 8) the surrounding area had become much more industrialised with a number of brick works having been established in the area, including buildings constructed on the brick field marked on the OS edition of 1869 (paragraph 4.28 above). Along the shore line, a disused oyster pond is marked. At the northern part of the DCO boundary, in the vicinity of the access road, a tramway had been constructed from a wharf on Milton Creek in the east, west past Decoy House to the west of the DCO boundary to a brickworks. By the time of the OS edition of 1909, the brickworks immediately south of New Milton were disused and the Govehurst Dock had been excavated (HER number TQ96NW1003).

4.30 A narrow gauge mineral railway, the Sittingbourne and Kemsley Light Railway was laid by the Bowater Paper Company in 1908 to connect their mills at Sittingbourne and Kemsley with their dock on the Swale (HER number TQ 96NW22). When Gravenhurst Dock became too small a larger facility was constructed at Ridham and the railway extended in 1919.

4.31 The post First World War shortage of wood pulp and an increased demand for paper led Frank Lloyd, the owner of the Sittingbourne paper mill to expand the operation and build a new paper mill at Kemsley. Construction began in 1923 and the mill was in operation in 1924. The mill was coal powered and featured an aerial ropeway from Ridham Dock, which brought in logs for grinding. Kemsley village was constructed for the paper mill workers. Of the planned 750 houses, 188 had been completed by the summer of 1927 (Bellingham 1996: 67-69). The 1938 edition of the OS shows these buildings.

4.32 The mill was supplied from Ridham Dock by the earlier light railway. The railway expanded after the opening of Lloyd's Kemsley Mill in 1924 and from Sittingbourne to the south acted as a passenger railway, bringing workers to and from the mill.

4.33 The railway line was taken over by Bowater's in 1948 and operated until 1968. The maintenance depot is situated at the original end of the line, Kemsley Down.

4.34 In 1969 the railway was handed over to the Locomotive Club of Great Britain's Light Railway Section which became the Sittingbourne & Kemsley Light Railway. The southern half of the railway, south of the DCO boundary, continues in use as a preserved railway,

while the section of the northern part which lies within the DCO boundary had been dismantled by 1966.

4.35 An aerial photograph taken in 1945 shows the paper mill with conical mounds of material to its north covering the western part of the DCO boundary, with only the eastern part of the WKN and K3 Sites open ground at this stage. Subsequent aerial photographs and maps show a similar situation, though the extents of the mounded materials vary over time; the water course in the eastern part of the DCO boundary does not appear on aerial photographs or maps after 1945 indicating that the entire area had been remodelled by this time.

4.36 The DCO boundary lies within the Industrial Complexes and Factories three historic landscape character (HLC) area (HLC number 2702).

4.37 At the time of the site visit in October 2017, the WKN Site and K3 Site were entirely covered in hardstanding. No archaeological features were observed or finds made during the site visit.

4.38 At the time of writing, construction of the K3 facility was almost complete. The WKN Site was in use as a laydown area and had been stripped of vegetation and hardcore and concrete had been laid. The greater part of the proposed laydown area had also been stripped.

Geotechnical and Archaeological Fieldwork

4.39 A Phase Two geotechnical site investigation was undertaken in 2009 (RPS 2009), which comprised three cable percussion boreholes, 15 trial pits and 8 window sample boreholes. The bulk of these works were within the K3 Site but this saw limited work in the WKN Site. Interventions were undertaken from the base of any arisings.

4.40 The survey revealed made ground across the whole of the K3 Site, comprising brown grey gravelly sands and clays with frequent infill materials including bricks, plastics, and wood, with peat and gravels of coal dust, ash and clinker noted as being present in places.

4.41 Superficial deposits were encountered directly beneath the made ground in the majority of the borehole and trial pit locations. The superficial deposits typically comprised grey brown orange mottled firm to stiff clays and appear to be alluvium, as mapped in the area by the BGS. These were sandy, gravelly and friable in places. Below the made ground the borehole logs from WS1 and WS3 indicate the possible presence of organic matter.

4.42 Further geotechnical investigation, including a series of trial pits, was undertaken by RPS in the western part of the WKN Site (RPS 2015, Appendix 5). This revealed that there was made ground of a minimum thickness of 0.9m and in excess of 4.2m, underlain by alluvium in the single test pit that penetrated the made ground. An illustrative section across the K3 site is presented within Appendix 5.

4.43 An archaeological watching brief was undertaken during geotechnical works within the DCO boundary (see Appendix 1). The watching brief comprised constant archaeological supervision during the excavation of nine trial pits and eight window samples. Again most of this work took place in the K3 Site, with limited work in the WKN Site. Evidence for buried topsoil was encountered within WS10 in the WKN Site at a depth of 4.6m below

ground level but no features, deposits or artefacts of archaeological or palaeoenvironmental significance were encountered within the trial pits or window samples (Wessex Archaeology 2011).

4.44 An archaeological trial trenching evaluation was undertaken immediately west of the northern part of the DCO boundary ahead of the formation of an access road and other infrastructure (ASE 2015). The evaluation comprised the excavation of a single trial trench measuring 30m in length by approximately 2m wide (Appendix 2). This trench lay at the northern end of the access road, in the location of a proposed pond.

4.45 The full length of the trench was excavated to c.1m depth, however, due to water ingress, it was necessary to excavate the lower levels, to a depth of 2m, within a series of four smaller test pits along its length. The stratigraphic sequence encountered comprised topsoil of up to 0.5m overlying a layer of made ground which was up to 0.8m thick, this overlying the natural alluvial subsoil. No finds or features of archaeological interest were encountered during the evaluation.

5 ASSESSMENT OF POTENTIAL

5.1 The nearest designated asset is Castle Rough, a Scheduled Monument (HER number TQ96NW10, List 1013368). This is located some 470m south of the DCO boundary. It is low lying and not visible from any distance away.

5.2 The closest Listed Building to the proposed development is Great Grovehurst Farmhouse, located some 1.3km west of the DCO boundary. The building is listed at Grade II (List 1057685). The closest Listed Building to the main body of the DCO boundary is Little Murston Farmhouse, located some 1.4km southeast of the DCO boundary. The building is listed at Grade II (List 1061035).

5.3 The medieval parish church of the Holy Trinity, Milton is listed at Grade I (List 1061036). The Listed Building is located some 1.5km southwest of the DCO boundary and is adjacent to a Country Park, which faces Milton Creek to its east.

5.4 The nearest Conservation Area is Milton Regis High Street, located some 2.3km southwest of the DCO boundary.

5.5 The nearest Registered Park and Garden is Doddington Place, some 9km to the south of the DCO boundary. There would be no physical impact upon the Registered Park and Garden from the proposed development and no effect on its setting. There are no registered battlefields within 15km of the DCO boundary. There are a number of other designated assets within the study area. There is no evidence that the proposed development would have a significant effect on any of them.

5.6 No heritage assets have been recorded within the DCO boundary previously. No archaeological remains were observed on the surface within or adjacent to the DCO boundary, but given the substantial deposits of modern made ground this is not evidence of absence.

5.7 It is noted that the DCO boundary is located in a landscape which generally has high potential to contain remains of all dates from the prehistoric onwards. However, the DCO boundary lies in an area that has historically lain in the intertidal area or in marshes and hence is unlikely to have seen intensive activity. Furthermore, landuse since the mid 20th century is likely to have disturbed the upper part of the alluvial sequence and any archaeological features that may have been present. It is considered thatthe survival of previously unidentified sub-surface archaeological remains of national importance, or of sufficient importance to warrant preservation *in situ*, is unlikely. It is likely that any archaeological deposits within the proposed construction footprint, have been damaged, possibly removed, and that the potential for the survival of archaeological remains is low.

6 CONCLUSIONS

6.1 This study has established that there are no statutorily designated sites (e.g. Scheduled Monuments, Listed Buildings) within the DCO boundary.

6.2 The closest designated asset is Castle Rough, a Scheduled Monument (HER number TQ96NW10, List 1013368). The Scheduled Monument is located some 470m south of the DCO boundary. It is low lying and not visible from any distance away. The closest Listed Building to the proposed development is the Grade II Great Grovehurst Farmhouse (List 1057685), located some 1.3km west of the DCO boundary. The closest Listed Building to the main body of the DCO boundary is the Grade II Little Murston Farmhouse (List 1061035, located some 1.4km southeast of the DCO boundary.

6.3 It is considered that the DCO boundary is located within a landscape that has high potential to contain remains of all dates. However, the DCO boundary itself lies in an area that is likely to have been within the intertidal zone or marsh throughout history and hence is unlikely to have seen intensive activity. Furthermore, the nature of the 20th and 21st century land-use within the DCO boundary and the associated ground disturbance suggest that the potential for the survival of previously unidentified sub-surface archaeological remains of national importance, or of sufficient importance to warrant preservation *in situ*, is unlikely. It is likely that any archaeological deposits within the proposed construction footprint, have been damaged, possibly removed, and that the potential for the survival of significant, coherent archaeological remains is low.

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Ordnance Survey Drawing 1797

Mudge, W, & Faden, 1801 An Entirely New and Accurate Survey of the County of Kent with Part of the County of Essex.

Milton Next Sittingbourne Tithe and Award 1838

British Geological Survey 1996 1:1250 sheet

Ordnance Survey six-inch and twenty-five inch to the mile County Series mapping (supplied by Groundsure Mapping)

Soil Survey of England and Wales 1983 Soil Map of England and Wales 1:250,000 and Legend Harpenden: Soil Survey of England and Wales

FIGURES

Environmental Statement

Legend

- DCO Boundary
- WKN Boundary

Notes
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Client	Wheelabrator Technologies Inc
Project	K3 and WKN DCO
Title	Site Location Plan

Status	Drawn By:	PM/Checked By
Final	NB	NC
Job Ref	**Scale @ A3**	**Date Created**
JAC23569	1:10,000	JUL 2019

Figure Number
1

0 0.1 0.2 km

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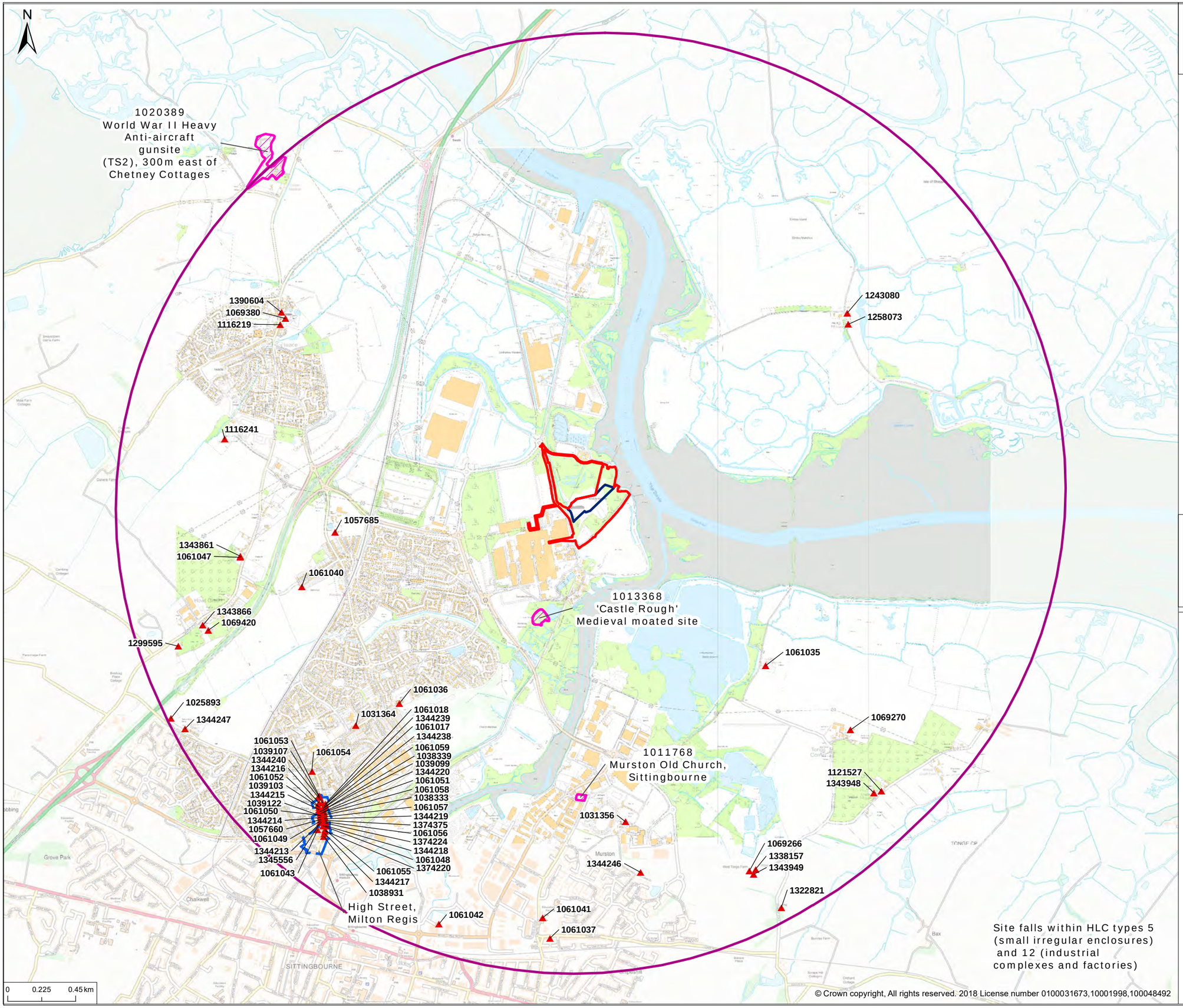

Environmental Statement

Legend

- DCO Boundary
- WKN Boundary
- 3km search radius
- Listed Buildings
- Scheduled Monuments
- Conservation Areas

Notes
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Client	Wheelabrator Technologies Inc
Project	K3 and WKN DCO
Title	Designated Heritage Assets

Status	Drawn By:	PM/Checked By
Final	NB	RC
Job Ref	**Scale @ A3**	**Date Created**
JAC23569	1:24,000	AUG 2019

Figure Number
2

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Environmental Statement

Legend

- DCO Boundary
- WKN Boundary
- 1km search radius

Non-Designated Heritage Assets:

HER Record Point

- Monument
- Find Spot
- Marine
- Protected Military Remains
- Farm
- Land
- HER Monuments Line
- HER Monuments Polygon

Previous Archaeological Work:

- HER Events Point
- HER Events Line
- HER Events Polygon

Notes

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Client: Wheelabrator Technologies Inc

Project: K3 and WKN DCO

Title: HER Data Plot

Status	Drawn By:	PM/Checked By
Final	NB	NC
Job Ref	**Scale @ A3**	**Date Created**
JAC23569	1:9,000	JUL 2019

Figure Number

3

Site falls within HLC types 5 (small irregular enclosures) and 12 (industrial complexes and factories)

0 0.075 0.15 km

M:\Cheltenham\live\Archaeology\Current Jobs\23000 - 23999\23564 - K3 WKN\Kemsley For Nick Cooke\K3 & WKN\Graphics\01 GIS\Figure 3 HER RPS.mxd

Environmental Statement

Legend

- DCO Boundary
- WKN Boundary
- 3km search radius
- HEA Monuments Polygons
- HEA Monuments Points
- HEA Events
- HEA Monuments Lines

Site falls within HLC types 5 (small irregular enclosures) and 12 (industrial complexes and factories)

Notes
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Client	Wheelabrator Technologies Inc
Project	K3 and WKN DCO
Title	HEA Data Plot

Status	Drawn By:	PM/Checked By
Final	NB	RC
Job Ref	**Scale @ A3**	**Date Created**
JAC23569	1:25,000	JUL 2019

Figure Number
4

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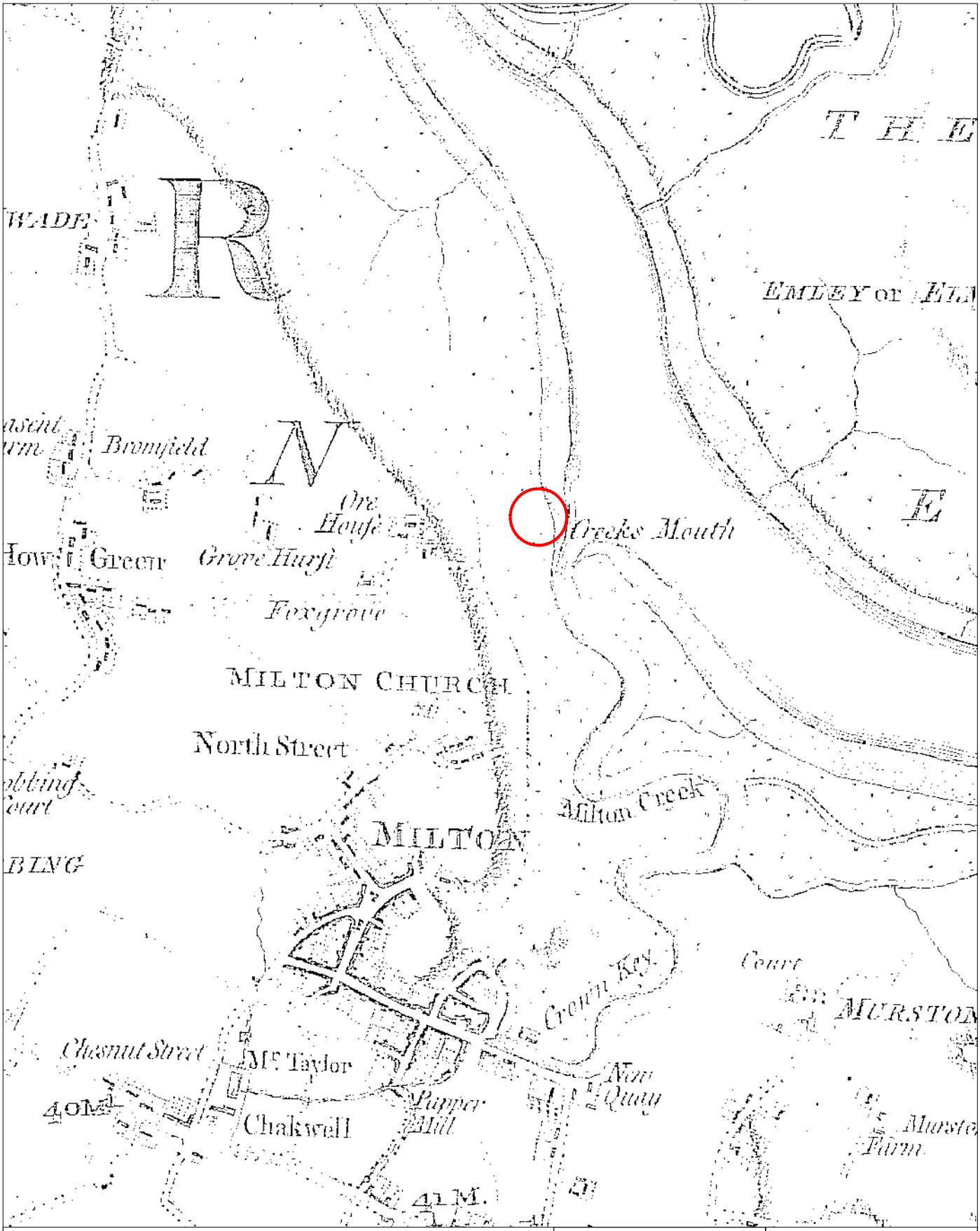


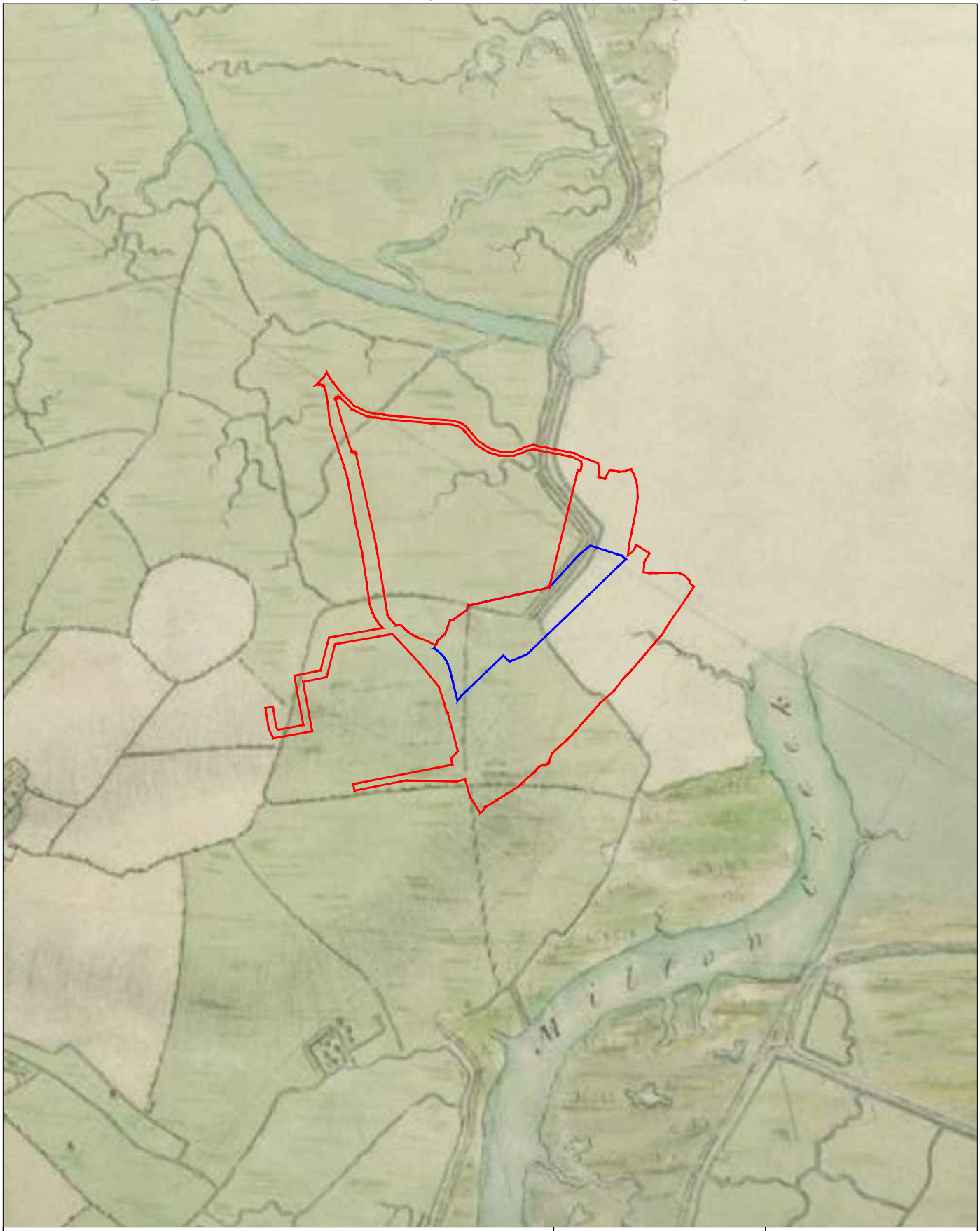
Approximate Site Location

N

RPS

Not to Scale:
Illustrative Only

Figure 5:
1769 Andrews and Dury Map of Kent



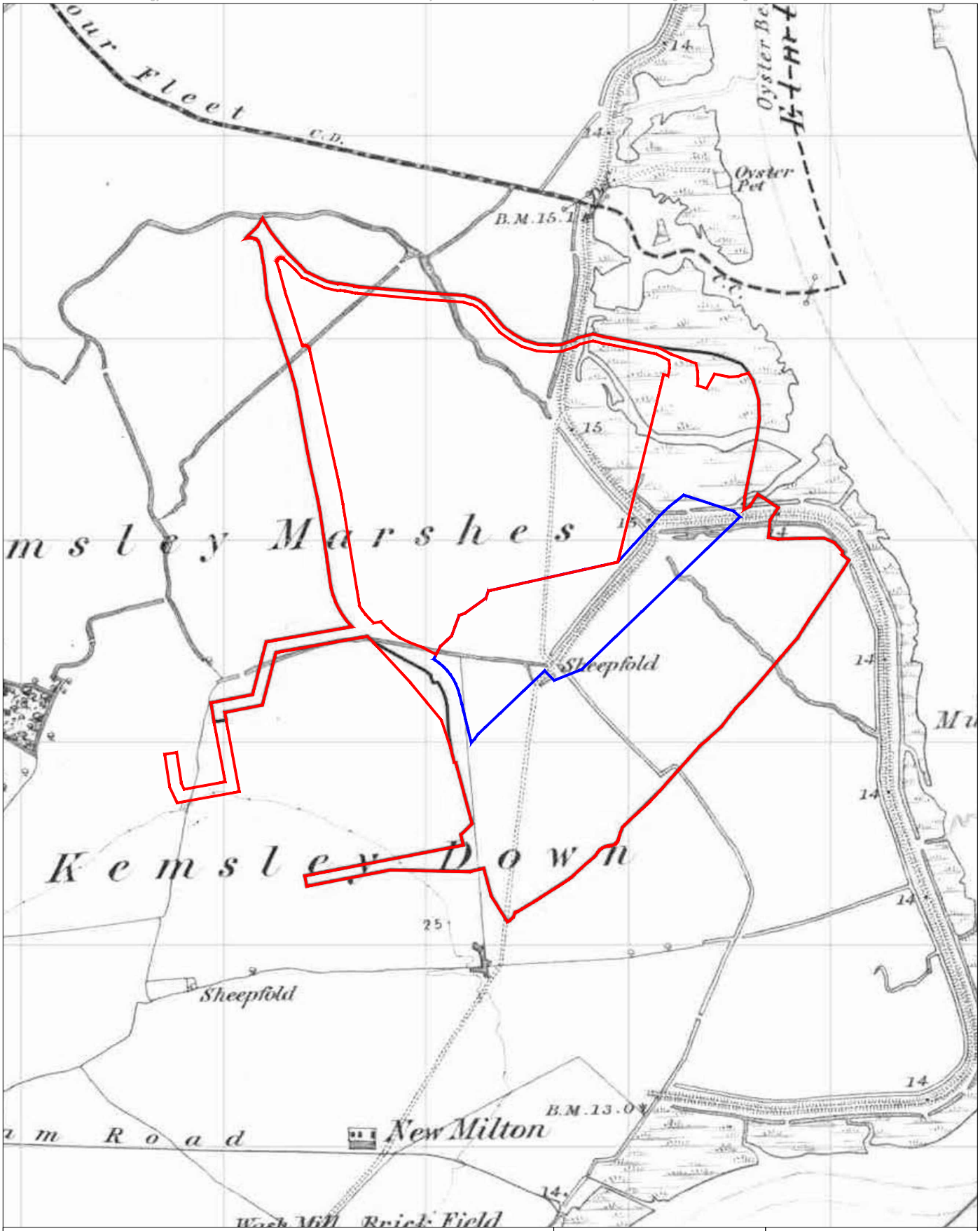
Site Boundary
WKN Boundary

N

RPS

Not to Scale:
Illustrative Only

Figure 6:
1797 Ordnance Survey Drawing



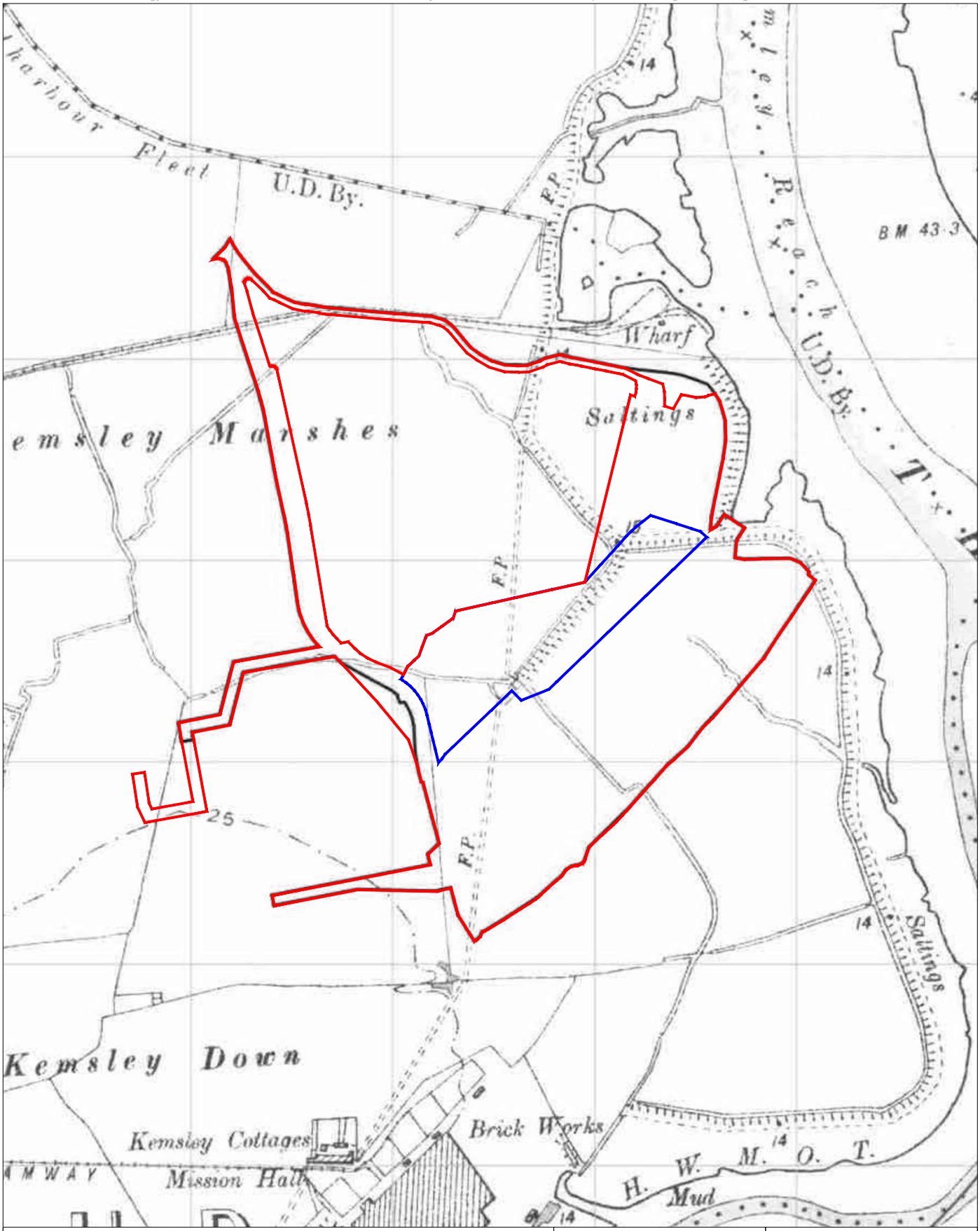
Site Boundary
WKN Boundary

N

Not to Scale:
Illustrative Only

RPS

Figure 7:
1865 Ordnance Survey Map



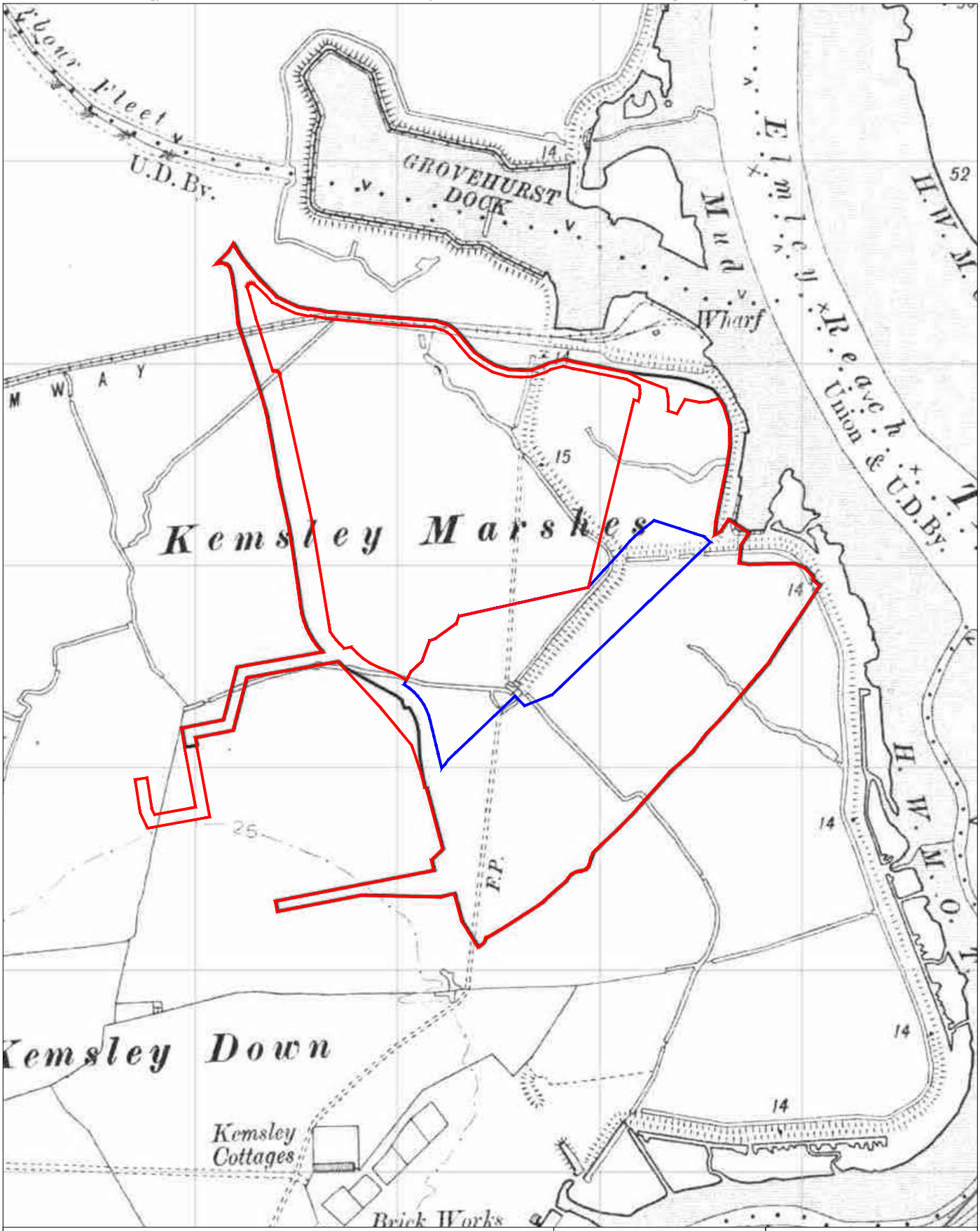
Site Boundary
WKN Boundary

N

Not to Scale:
Illustrative Only

RPS

Figure 8:
1896 Ordnance Survey Map



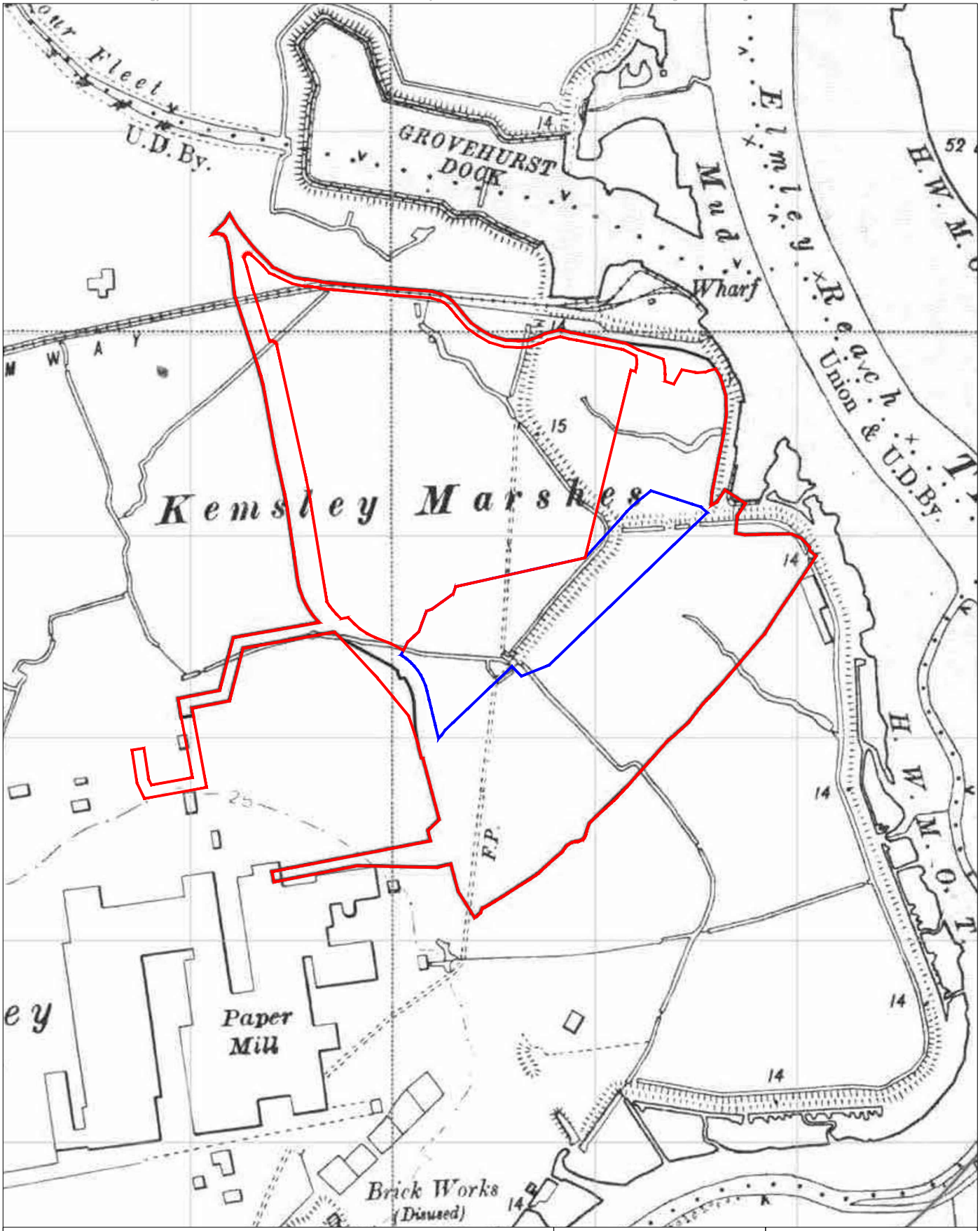
Site Boundary
WKN Boundary

N

Not to Scale:
Illustrative Only

RPS

Figure 9:
1906 Ordnance Survey Map



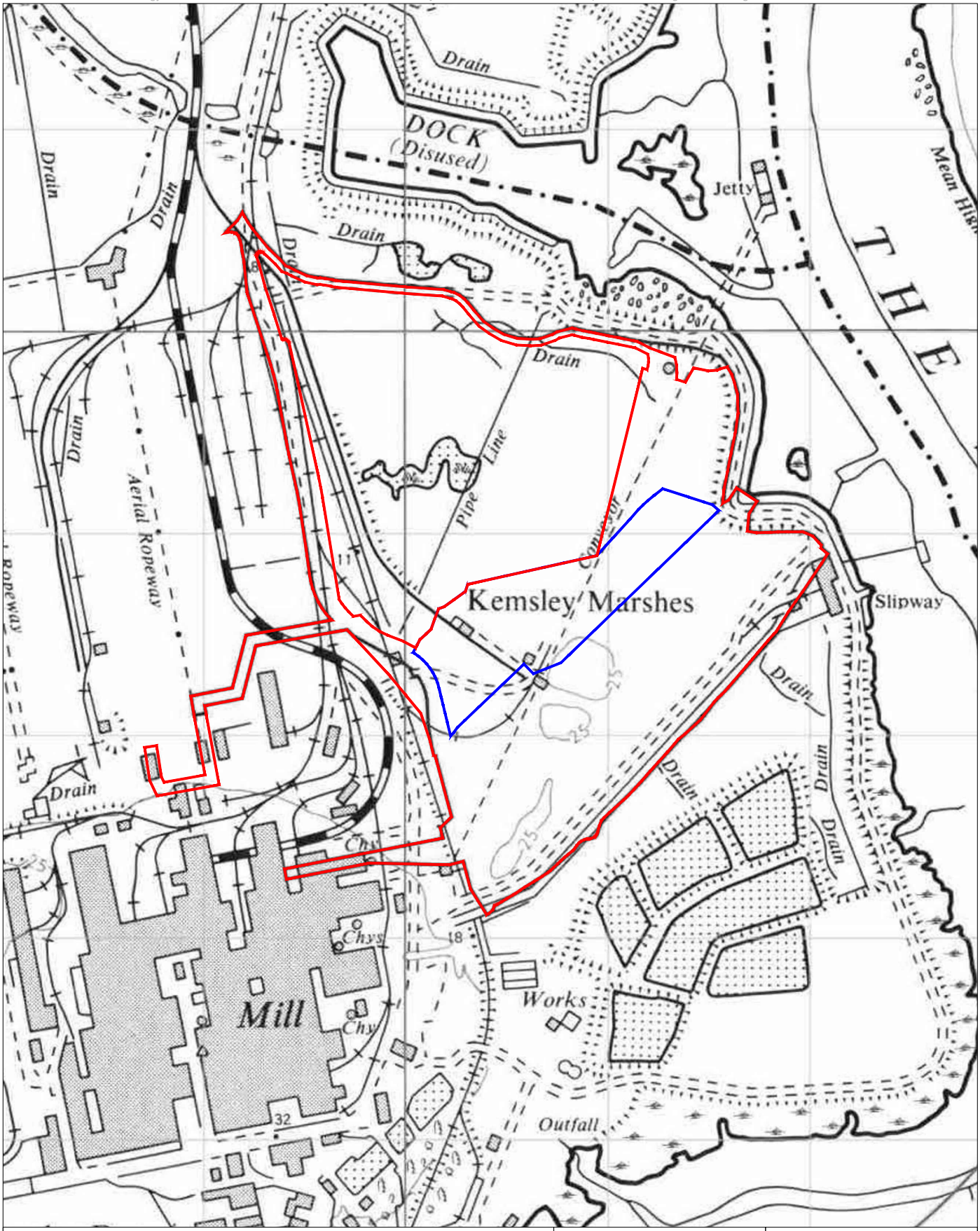
Site Boundary
WKN Boundary

N

Not to Scale:
Illustrative Only

RPS

Figure 10:
1938 Ordnance Survey Map



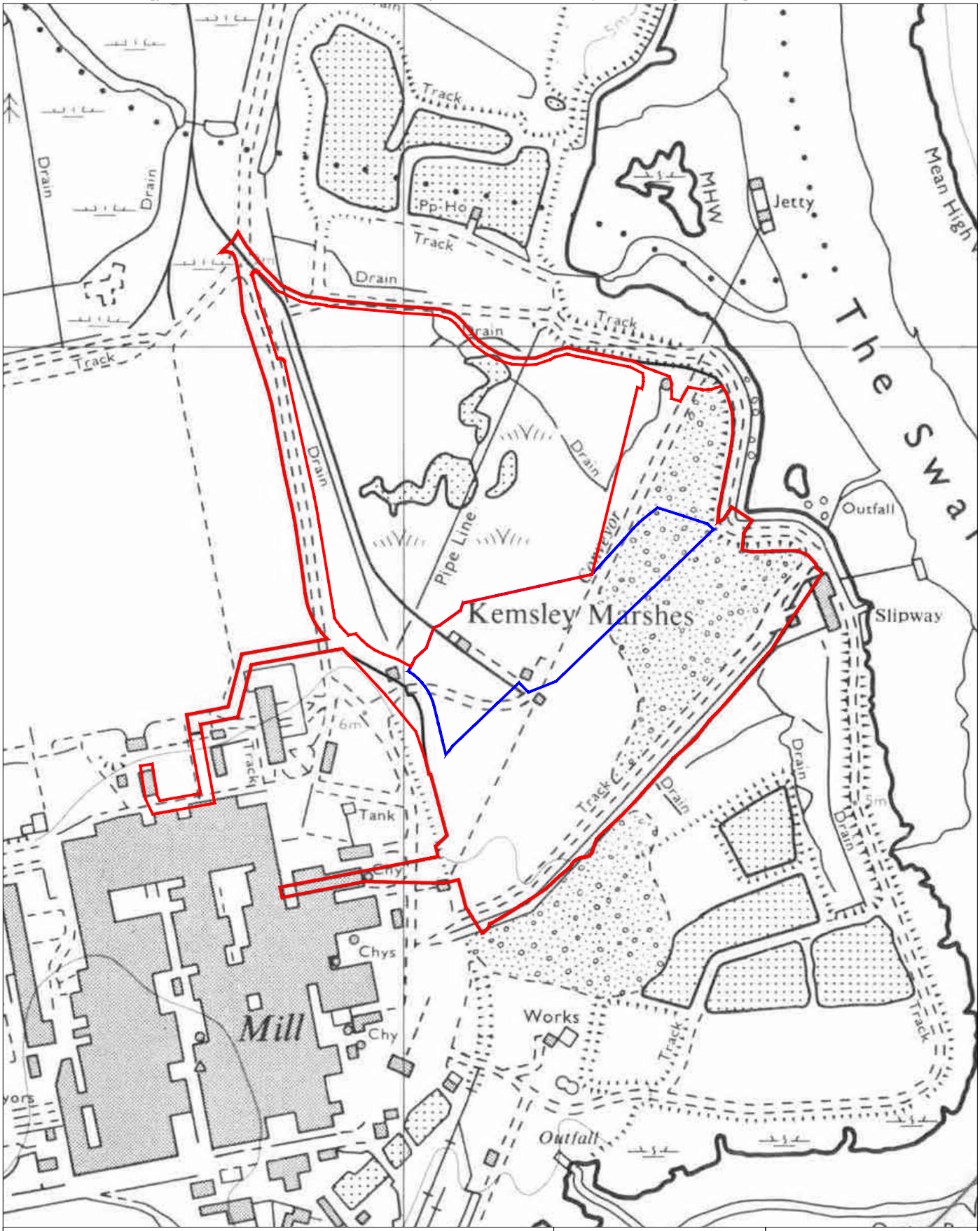
Site Boundary
WKN Boundary

N

Not to Scale:
Illustrative Only

RPS

Figure 11:
1966 Ordnance Survey Map



Site Boundary
WKN Boundary

N

RPS

Not to Scale:
Illustrative Only

Figure 12:
1978 Ordnance Survey Map

APPENDIX 1: ARCHAEOLOGICAL WATCHING BRIEF REPORT: GEOTECHNICAL WORKS

Wessex Archaeology

Kemsley Paper Mill, Sittingbourne, Kent

Archaeological Watching Brief Report on Geotechnical Works

Ref: 78250.01

August 2011

KEMSLEY PAPER MILL, SITTINGBOURNE, KENT

Archaeological Watching Brief Report on Geotechnical Works

Prepared for:
RPS Planning and Development Ltd
Conrad House
Beaufort Square
Chepstow
Monmouthshire
NP16 5EP

On behalf of:
E.ON

By:
Wessex Archaeology
Bridgewood House
8 Laker Road
Rochester Airport Industrial Estate
Rochester
Kent
ME1 3QX

Report reference: 78250.01

NGR: 592170 166640

August 2011

DISCLAIMER

QUALITY ASSURANCE

SITE CODE	**78250**	**ACCESSION CODE**		**CLIENT CODE**	
PLANNING APPLICATION REF.		**NGR**	**592170 166640**		

VERSION	STATUS*	PREPARED BY	APPROVED BY	APPROVER'S SIGNATURE	DATE	FILE
78250.01	E	S.MOUNCE AND DAVID NORCOTT				R:\PROJECTS\78250\REPORT\SUBMITTED\78250.01

*** I= INTERNAL DRAFT E= EXTERNAL DRAFT F= FINAL**

Contents

List of Figures

List of Plates

Summary

Wessex Archaeology was appointed by RPS Planning and Development on behalf of E.ON, to carry out an archaeological watching brief during geotechnical works on land at Kemsley Paper Mill, Sittingbourne, Kent, centred on National Grid Reference (NGR) 592170 166640 (hereafter 'the Site'). The watching brief forms part of a continuing programme of geotechnical site investigations on the Site.

The Site lies on the edge of the tidal water courses of The Swale and Milton Creek, immediately north-east of the existing paper mill, within Kemsley Marshes. This type of habitat increases the potential for the recovery of deposits associated with river exploitation (e.g. hunting, transportation and settlement) and management (e.g. flood defences and crossing sites) from the prehistoric period onwards.

The watching brief comprised the excavation of nine trial pits and eight window samples, under constant archaeological supervision. The fieldwork took place between the 31st May and 3rd June 2011.

Evidence for buried topsoil was encountered within WS10 at a depth of 4.6m below ground level but no features, deposits or artefacts of archaeological or palaeo-environmental significance were encountered within the trial pits or window samples. No further work is recommended.

Acknowledgements

The project was commissioned by RPS Planning and Development acting on behalf of E.ON and Wessex Archaeology is grateful to Richard Graham of RPS in this regard. Wessex Archaeology would also like to thank Ben Found, the Kent County Council Archaeological Advisor to the Swale District Council.

The report was prepared by Sarah Mounce and David Norcott. The illustrations were prepared by Rob Goller and Elizabeth James. The project was managed on behalf of Wessex Archaeology by Mark Williams.

KEMSLEY PAPER MILL, SITTINGBOURNE, KENT

Archaeological Watching Brief Report on Geotechnical Works

1 INTRODUCTION

1.1 Project Background

1.1.1 Wessex Archaeology was commissioned by RPS Planning and Development on behalf of E.ON to carry out an archaeological watching brief during geotechnical works on land at Kemsley Paper Mill, Sittingbourne, Kent (NGR 592170 166640) hereafter 'the Site' (**Figure 1**).

1.1.2 The watching brief formed part of continuing geotechnical site investigations on the Site.

1.1.3 The watching brief was undertaken in accordance with a *Written Scheme of Investigation* (WSI) (Wessex Archaeology 2011), which was agreed in advance of the fieldwork by the Kent County Council (KCC) Archaeological Advisor to Swale District Council.

1.1.4 The fieldwork was conducted between the 31st May and 3rd June 2011.

1.2 Site Location, Topography and Geology

1.2.1 The Site is located immediately north-east of the existing paper mill, within Kemsley Marshes, to the north of Sittingbourne. The Site lies on the edge of The Swale and Milton Creek, both tidal water courses.

1.2.2 The Site is situated on generally flat land with an elevation of approximately 5m above Ordnance Datum (aOD) and occupies an area of c. 5 hectares.

1.2.3 The geological sequence underlying the Site is mapped as London Clay overlain by superficial deposits of alluvium. Previous site investigations (reported in RPS 2009; section 2.2) identified significant depths of made ground across the Site.

Current land use

1.2.4 The Site currently comprises an area of rough marshland pasture, a contractor's laydown area and a stockpile area. From 1978 the area has been used for the disposal of spoil from the paper mill.

2 ARCHAEOLOGICAL AND PALAEOENVIRONMENTAL BACKGROUND

2.1 Introduction

2.1.1 The Site is located in an area of archaeological potential, notably relating to the potential for environmental remains within the alluvial deposits.

2.1.2 The Site is situated on the Kemsley Marshes on the edge of The Swale and Milton Creek. This location increases the potential for the recovery of deposits associated with river exploitation (e.g. hunting, transportation and settlement) and management (e.g. flood defences and crossing sites) from the prehistoric period onwards.

2.1.3 Previous geotechnical site investigations (RPS 2009) have identified peat and alluvial clay deposits which may provide archaeologically significant information.

3 AIMS AND OBJECTIVES

3.1 Archaeological Watching Brief

3.1.1 The aims of the archaeological watching brief, as specified in the Written Scheme of Investigation (WSI) (Wessex Archaeology 2011), were:

- To determine the presence or absence of archaeological remains and, should remains be found to be present, to ensure their preservation by record to the highest possible standard;
- To determine or confirm the approximate date or date range of any remains, by means of artefactual, sedimentological, environmental or other evidence where development is proposed;
- To ascertain the condition and state of preservation of the remains;
- To determine the degree of complexity of the horizontal and/or vertical stratigraphy present;
- To establish the potential for geoarchaeological information preserved within the Site; and
- To inform and provide information for any future mitigation that may be required.

4 METHODOLOGY

4.1 Introduction

4.1.1 The following methodology was proposed in order to meet the aims of the watching brief. All fieldwork was conducted in accordance with the methodology set out in the WSI (Wessex Archaeology 2011) and carried out in compliance with the standards outlined in the Institute for Archaeologists' *Standards and Guidance for an Archaeological Watching Brief* (2008).

4.2 Service location

4.2.1 Prior to the commencement of the exploratory investigations a service survey was undertaken by RPS.

4.3 Trial Pitting

4.3.1 The watching brief comprised the excavation of nine trial pits (**Figure 1**; TP 17-23 and 25-26). These were excavated using a 360° tracked mechanical excavator to a maximum depth of 4.3m.

4.3.2 Trial Pit 26 was located to the southwest of the Site within the stockpile area, with the remaining eight Trial Pits located across the marsh land.

4.3.3 The machine excavated arisings were stored adjacent to the trial pits and spoil heaps were routinely inspected for artefacts and ecofacts of archaeological interest.

4.4 Window Sampling

4.4.1 A total of eight exploratory boreholes using window sampling techniques were monitored (**Figure 1**; WS 9-14 and 16-17). The boreholes were hand dug to a depth of 1.2m below ground level and then advanced to a maximum depth of 5m below ground level.

4.4.2 Five of the Window Samples were positioned across the marsh land with WS12 and WS13 located within the contractor's laydown area and WS14 positioned within the stockpile area towards the south-western end of the Site.

4.4.3 All window samples were marked out on the ground by RPS, using a Global Positioning System (GPS) prior to the commencement of work.

4.5 Recording

4.5.1 All recording was undertaken using Wessex Archaeology's *pro forma* recording system.

4.5.2 Photographs were taken as appropriate, providing a record of the excavated trial pits and window sample cores, and images of the Site overall. The photographic record comprises digital photography. A photographic register of all photographs taken is contained within the project archive.

4.6 Health and Safety

4.6.1 All work was carried out in accordance with the Health and Safety at Work Act 1974, the Management of Health and Safety regulations 1992 and Health and Safety in Field Archaeology 1997, and all other relevant Health and Safety legislation, regulations and codes of practice in force at the time.

4.6.2 A Health and Safety Risk Assessment was carried out by Wessex Archaeology (2011), which was read and understood by all staff attending the Site before groundwork commenced.

5 FIELDWORK RESULTS

5.1 Introduction

5.1.1 This section presents the results of the archaeological watching brief. Detailed descriptions of the contexts recorded are included in **Appendix 1. Figure 1** presents the Site, and the trial pit and window sample locations.

5.2 Natural deposits and soil sequences

5.2.1 A series of made ground layers with a maximum depth of 4.6m below ground level (identified at WS 10) were recorded across the Site. The made ground mainly comprised orangey brown and brownish grey clayey silts and gravelly clays with varying amounts of modern debris including brick, concrete, plastics, metal and wood.

5.2.2 A black sandy gravel containing clinker was recorded in Trial Pits 17, 20-23, 25 and Window Samples 10, 14 and 17, and a thick deposit of coal dust was noted in TP 26.

5.2.3 A thin layer of topsoil comprising mid brown clayey silt was recorded within TP 18-21 and 25 and WS 9-11 and 16.

5.2.4 Alluvial deposits were encountered beneath the made ground layers across the Site. These typically comprised of mid grey soft to firm clays.

5.2.5 From the evidence provided by the borehole logs, made ground appears to extend to a depth of between 0.9m and 3.7m below ground level. Beneath the made ground a series of alluvium deposits extend to a maximum depth of 12.5m below ground level; these are described as black grey or grey orange clay. London Clay was encountered below the alluvium deposits at a minimum depth of 6m (BH9) down to a maximum depth of 15.7m (BH8). The London Clay overlay the Woolwich Formation which comprised dense grey to brown silty sand. This material contained white shell fragments at an average depth of 16m below ground level.

5.3 Archaeological Results

5.3.1 No archaeological features or deposits were recorded within the trial pits or window samples.

5.3.2 Within WS10, a thin layer comprising of black organic silty loam containing numerous fine roots was recorded between 4.6-4.7m below ground level. This represents peaty topsoil sealed by the deposition of the made ground.

6 ARTEFACTS

6.1.1 No artefactual evidence was recovered from the trial pits, window samples or from the excavated spoil. Modern artefacts were noted but not collected.

7 ENVIRONMENTAL EVIDENCE

7.1.1 No features or deposits suitable for environmental sampling were identified during the archaeological watching brief.

8 CONCLUSIONS

8.1.1 The Trial Pits and Window Samples revealed a significant amount of made ground across the Site with a minimum depth of 1.4m (TP 19) down to a maximum depth of 4.6m below ground level (WS 10). Some of the earlier made ground deposits consisted of degraded wood and paper (TP 17, 19 and 21 and WS 11 and 17), with even earlier deposits consisting of black gravels with clinker (TP 17, 20-23 and 25 and WS 10, 14 and 17).

8.1.2 Window Sample 10 produced a thin layer of peaty topsoil overlying the alluvium at 4.6-4.7m below ground level. This buried topsoil can only be dated from the deposition of the made ground above.

8.1.3 No features, deposits or artefacts of archaeological or palaeo-environmental significance were encountered and no further works are recommended.

9 ARCHIVE

9.1 Preparation and Deposition

9.1.1 The complete project archive will be prepared in accordance with Wessex Archaeology's *Guidelines for Archive Preparation* and in accordance with *Guidelines for the Preparation of Excavation Archives for Long-Term Storage* (Walker 1990) and following nationally recommended guidelines (SMA 1995). On completion of the project, the archive will be deposited with the County Museum Service or similar repository to be agreed with the Historic Environment Officer (KCC).

9.2 Archive

9.2.1 Following the fieldwork the archive were subsequently transported to Wessex Archaeology's Rochester office. The documentary records from the works have been compiled into a stable fully cross-referenced and indexed archive in accordance with Appendix 6 of Management of Archaeological Projects (English Heritage 1991).

9.2.2 The contents of the project archive, comprises an A4 ring-bound file containing the following (as further detailed in **Appendix 1**):

- 9 Trial Pit Record Sheets and 8 Window Sample Records
- 1 Photographic Record
- A copy of the WSI

9.2.3 The project archive including plans, photographs and written records are currently held at Wessex Archaeology's Rochester office under the Site code **78250**. The project archive will be deposited with an appropriate local museum in the Kent area as agreed with KCC. As no artefactual evidence was recovered no agreement from the landowner is required in relation to the deposition of the archive.

9.3 Copyright

9.3.1 The full copyright of the written/illustrative archive relating to the Site will be retained by Wessex Archaeology Ltd under the Copyright, Designs and Patents Act 1988 with all rights reserved. The recipient museum, however, will be granted an exclusive license for the use of the archive for educational purposes, including academic research, providing that such use shall be non-profit making, and conforms to the Copyright and Related Rights regulations 2003.

9.4 Security Copy

9.4.1 In line with current best practice, on completion of the project a security copy of the paper records will be prepared, in the form of microfilm. The master jackets and one diazo copy of the microfilm will be submitted to the National Monuments Record Centre (NMR) (English Heritage) in Swindon; a second diazo copy will be deposited with the paper records at the appropriate local museum, and a third diazo copy will be retained by Wessex Archaeology.

10 REFERENCES

English Heritage 1991 *Management of Archaeological Projects*. London, English Heritage

Institute for Archaeologists 2008 *Standard and Guidance for an Archaeological Watching Brief*

RPS 2009 *Phase 2 Intrusive Site Investigation, Kemsley Paper Mill, Sittingbourne, Kent*

SMA 1995 *Towards an Accessible Archaeological Archive*. Society of Museum Archaeologists

Walker K. 1990 *Guidelines for the Preparation of Excavation Archives for Long-Term Storage*. UKIC Archaeology Section

Wessex Archaeology 2011 *Phase 2 Intrusive Site Investigation, Kemsley Paper Mill, Sittingbourne, Kent. Method Statement: Project Design for an Archaeological Watching Brief*. Ref. no. 14762

Wessex Archaeology 2011 *Phase 2 Intrusive Site Investigation, Kemsley Paper Mill, Sittingbourne, Kent a Project Health and Safety Risk Assessment*. Ref. no. T14762

APPENDIX 1: SEDIMENT DESCRIPTIONS

All archaeological deposits/features shown in **bold**
All (+) indicate deposits/features not fully excavated
'Depth' equals depth from present ground surface

Trial Pit 17	**Depth:** 3.2m (abandoned due to rising ground water)		
Context	**Category**	**Description**	**Depth**
1701	Layer	Made Ground – Mottled mid and dark brown sandy silt with moderate red brick, wood fragments, metal, plastic and concrete rubble	0.00-0.7m
1702	Layer	Made Ground – Bands of mid orange brown and dark brown sandy silt with abundant wood fragments, shredded paper, plastic and metal	0.7-1.3m
1703	Layer	Made Ground – Dark brown sandy silt with abundant wooden planks and chippings and general rubbish	1.3-3.2m
1704	Layer	Made Ground – Dark grey sandy gravels with moderate wood chippings and glass, common clinker fragments and abundant small coarse flint gravels. Layer contaminated with hydro-carbons	3.2m+

Trial Pit 18	**Depth:** 2.8m (abandoned due to rising ground water)		
Context	**Category**	**Description**	**Depth**
1801	Layer	Topsoil – Mid brown sandy silt	0.00-0.1m
1802	Layer	Made Ground – Light yellow brown sandy silt with abundant medium flint nodules, moderate concrete rubble, plastic pipe and red brick	0.1-0.74m
1803	Layer	Made Ground – Mid brown silty clay with common concrete rubble, brick and metal	0.74-2.3m
1804	Layer	Made Ground – Fine dark brown black sand and gravels with occasional brick	2.3m+

Trial Pit 19	**Depth:** 4.2m		
Context	**Category**	**Description**	**Depth**
1901	Layer	Topsoil – Mid brown sandy silt	0.00-0.09m
1902	Layer	Made Ground – Light chalky brown sandy silt with common chalk lumps and flint nodules	0.09-0.3m
1903	Layer	Made Ground – Mid orange brown slightly clayey silt with common bricks, plastic and metal	0.3-0.8m
1904	Layer	Made Ground – Dark grey brown clayey silt with occasional ceramic, brick, plastic and wood	0.8-1.2m
1905	Layer	Made Ground – Mottled light to dark yellow grey and brown clayey sands and gravels with occasional plastic and a lens of degraded wood	1.2-1.4m
1906	Layer	Alluvium – soft mid grey sandy clay with occasional degraded wood and charcoal above very soft light grey organic clay (unable to determine horizon between these two layers)	1.4m+

Trial Pit 20	**Depth:** 4m (abandoned due to rising ground water)		
Context	**Category**	**Description**	**Depth**
2001	Layer	Topsoil – Mid yellow brown sandy silt with moderate sub-angular stones	0.00-0.12m
2002	Layer	Made Ground – Light yellow brown sandy silt with moderate brick, concrete rubble and metal	0.12-0.44m

2003	Layer	Made Ground – Mottled mid yellow brown silty clay with common brick and concrete lumps	0.44-0.9m
2004	Layer	Made Ground – Mottled mid orange brown slightly silty clay with occasional brick	0.9-1.75m
2005	Layer	Made Ground – Dark brown clayey silt with grey mottles and moderate concrete and brick fragments, and common chalk lumps	1.75-2.8m
2006	Layer	Made Ground – Compacted black sandy gravels with occasional clinker and chalk. Mid grey organic clay observed towards base of this layer but unable to determine depth due to rising water level	2.8m+

Trial Pit 21	**Depth:** 4.2m (abandoned due to rising ground water)		
Context	**Category**	**Description**	**Depth**
2101	Layer	Topsoil – Mid brown sandy silt	0.00-0.15m
2102	Layer	Made Ground – Mid orange brown silty clay with common brick, concrete rubble, wood and plastic	0.15-0.8m
2103	Layer	Made Ground – Dark grey brown silty clay with orange brown clay lumps with moderate brick, flint nodules, degraded wood, plastic and metal. Layer contaminated with hydro-carbons	0.8-2.8m
2104	Layer	Made Ground – Light grey soft degraded paper – waste product from recycled paper	2.8-3.1m
2105	Layer	Made Ground – Black sandy gravels with grey brown clays lumps, clinker and occasional yellow brick	3.1-3.5m
2106	Layer	Alluvium – Mottled light orange grey clay	3.5m+

Trial Pit 22	**Depth:** 4.3m		
Context	**Category**	**Description**	**Depth**
2201	Layer	Made Ground – Mid grey brown clayey silt with moderate brick and concrete lumps	0.00-0.6m
2202	Layer	Made Ground – Dark brown sandy silt with brick, wood, plastic and concrete rubble	0.6-1m
2203	Layer	Made Ground – Mid brown sandy silt with abundant broken and degraded wood	1-1.2m
2204	Layer	Made Ground – Grey clay with abundant brick and chalk	1.2-1.5m
2205	Layer	Made Ground – Mid brown clay with orange mottles, with abundant brick, plastic, concrete lumps, wood, metal pipes and chalk lumps	1.5-2.7m
2206	Layer	Made Ground – Mid brown grey silty clay with abundant chalk, common brick, plastic and concrete rubble. Layer tipped in from NW. Thin lens of black gravels with clinker towards base of horizon	1.6-3.6m
2207	Layer	Alluvium – Mottled dark and mid grey clay with orange mottles	3.6m+

Trial Pit 23	**Depth:** 3.6m		
Context	**Category**	**Description**	**Depth**
2301	Layer	Made Ground – Mottled orange grey brown silty clay with common brick, concrete lumps and rubble	0.00-0.7m
2302	Layer	Made Ground – Mottled dark brown grey clayey silt with common brick, coal, concrete rubble and chalk rubble, with lenses of light grey brown clay	0.7-2.8m
2303	Layer	Made Ground – Black sandy gravels with clinker	2.8-3.4m

2304	Layer	Alluvium – Mottled mid orange grey organic clay with occasional flints and very fine roots	3.4m+

Trial Pit 25	**Depth:** 3.8m (rising water at 3.7m)		
Context	**Category**	**Description**	**Depth**
2501	Layer	Topsoil – Mid brown clayey silt with occasional small sub-rounded stones	0.00-0.15m
2502	Layer	Made Ground – Mid brown clayey silt with common brick, wood, concrete lumps, ceramic pipe and chalk lumps	0.15-2.5m
2503	Layer	Made Ground – Black and dark brown sandy gravels with moderate clinker, brick and wood	2.5-3.3m
2504	Layer	Alluvium – Mid grey organic clay with orange mottles and a green hue	3.3m+

Trial Pit 26	**Depth:** 2.5m		
Context	**Category**	**Description**	**Depth**
2601	Layer	Made Ground – Light grey sub-angular stones (Type 1)	0.00-0.3m
2602	Layer	Made Ground – Black silty sand with abundant coal dust. Becomes gravelly towards base of horizon but depth unclear in section	0.3-2.3m
2603	Layer	Alluvium – Mottled mid grey and orange clay with green hue	2.3m+

Window Sample 9		
Depth	**Description**	**Interpretation**
0.00-0.1m	Mid brown clayey silt	Topsoil
0.1-0.6m	Mid brown clayey silt with moderate brick, concrete and sub-angular stones	Made Ground
0.6-1m	Mid brown clayey silt with moderate brick and chalk fragments	Made Ground
1-1.5m	Mid grey brown silty clay with moderate brick and chalk fragments	Made Ground
1.5-1.9m	Concrete rubble within mid grey brown clayey silt	Made Ground
1.9-3.6m	Mid grey slightly silty clay with black organic mottles, moderate small to medium sub-angular stones and chalk flecks	Made Ground
3.6-4.4m	Fine black sand and gravels	Alluvium
4.4-4.85m	Soft mid grey organic clay with green hue	Alluvium
4.85-5m	Very soft light brown clay	Alluvium

Window Sample 10		
Depth	**Description**	**Interpretation**
0.00-0.1m	Mid brown clayey silt	Topsoil
0.1-0.4m	Mid grey brown clayey silt with moderate small sub-rounded and sub-angular flints and stones, chalk flecks, brick and ceramic pipe	Made Ground
0.4-0.8m	Dark brown sandy clay with moderate brick and concrete fragments	Made Ground
0.8-1.55m	Firm brownish grey clay with occasional small sub-rounded stones	Made Ground
1.55-1.9m	Black sandy gravel with degraded wood at base of horizon (1.85-1.9m)	Made Ground
1.9-4.6m	Black gravel with occasional clinker and sub-angular stones. Finer black gravels towards base of horizon	Made Ground
4.6-4.7m	Black organic silty loam with common fine roots	Peat / Buried Topsoil
4.7-5m	Mid grey organic clay with black mottles.	Alluvium

	Common fine roots towards top of horizon and common crushed shell towards base of sample (c. 1.95m)	
Comment: Gap between 3m and 3.5m		

Window Sample 11		
Depth	**Description**	**Interpretation**
0.00-0.05m	Mid brown clayey silt	Topsoil
0.05-1.55m	Mid grey brown clayey silt with orange clay mottles, moderate brick and chalk fragments, occasional plastic and large sub-rounded flint nodules	Made Ground
1.55-1.75m	Light orange brown stiff clay with occasional small angular grit	Made Ground (Redeposited Clay)
1.75-2m	Dark black brown soft clay with abundant degraded wood chippings and occasional paper	Made Ground
2-2.4m	Fine black sandy gravels with occasional medium sub-rounded and sub-angular stones	Made Ground
2.4-2.6m	Yellow sandy gravels with common sub-rounded flints and occasional large yellow brick	Made Ground
2.6-2.8m	Mid grey organic clay with abundant black mottles	Alluvium
2.8-3m	Mid grey organic clay with moderate black mottles and a green hue	Alluvium

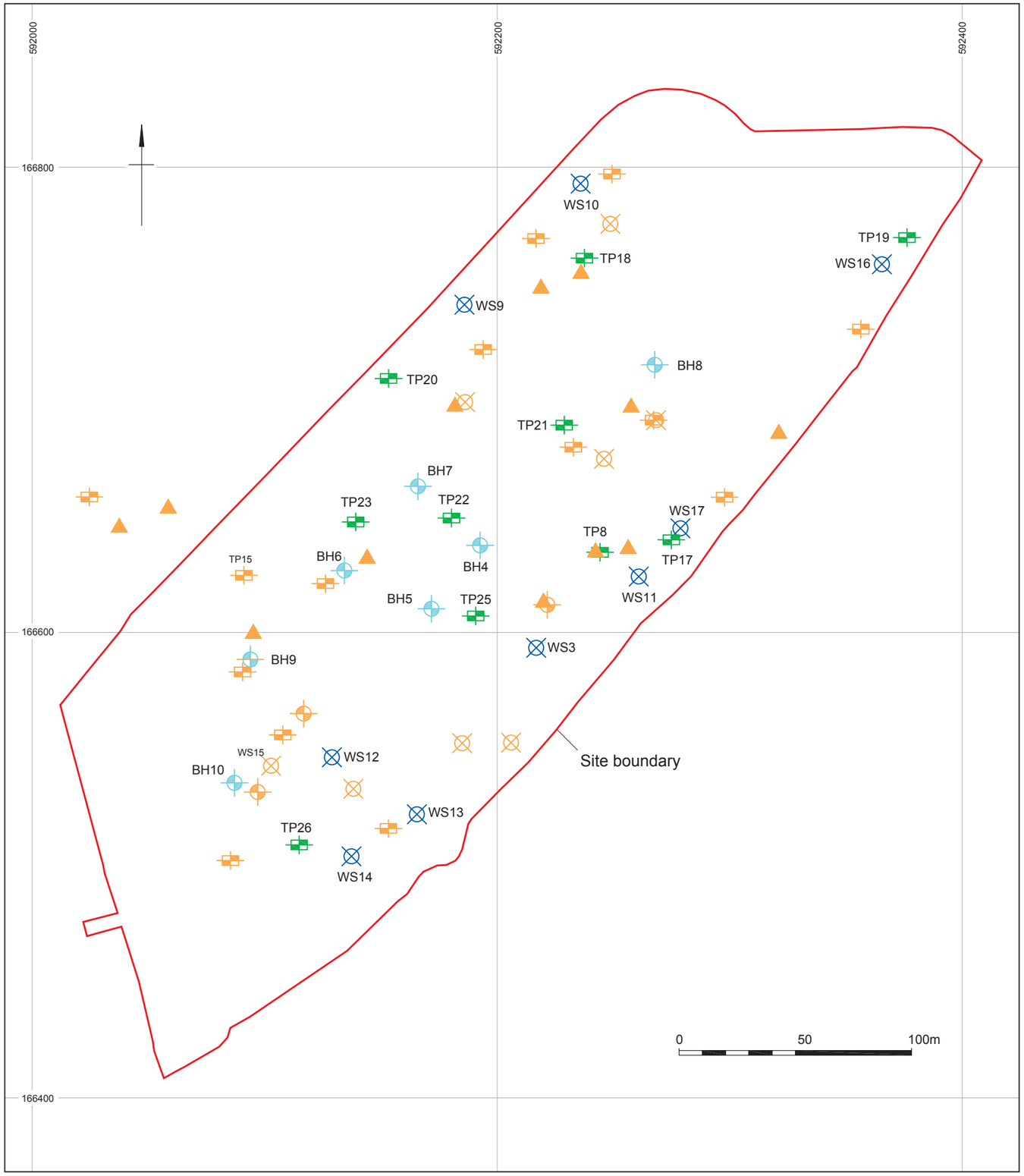
Window Sample 12		
Depth	**Description**	**Interpretation**
0.00-0.3m	Type 1 stone	Made Ground
0.3-1.3m	Very compacted flint, granite and chalk hardcore	Made Ground
1.3-1.8m	Dark brown grey fine silty clay with occasional white ceramic, chalk lumps and very occasional fine gravels	Made Ground
1.8-2.25m	Black coarse sand with moderate small charcoal/coal lumps	Made Ground
2.25-2..85m	Mid grey organic clay with abundant black mottles	Alluvium
2.85-4m	Light orange grey clay	Alluvium
Comment: 50% recovery from 3-4m		

Window Sample 13		
Depth	**Description**	**Interpretation**
0.00-0.2m	Type 1 stone	Made Ground
0.2-1.1m	Mid to dark grey brown gravelly sandy silt with moderate concrete lumps, sub-angular and sub-rounded flints	Made Ground
1.1-1.75m	Mid grey brown gritty clay with moderate chalk flecks and small brick fragments	Made Ground
1.75-2.3m	Black sandy gravel with occasional small red brick fragments. Slightly clayey towards top of horizon	Made Ground
2.3-2.6m	Dark grey slightly silty clay with abundant clack organic mottles	Alluvium
2.6-2.8m	Mid grey organic clay with occasional black mottles	Alluvium
2.8-3.6m	Soft mid orangey brown sandy clay with occasional very small grit	Alluvium
3.6-5m	Stiff mid orange grey clay	Alluvium
Comment: 20% recovery from 4-5m		

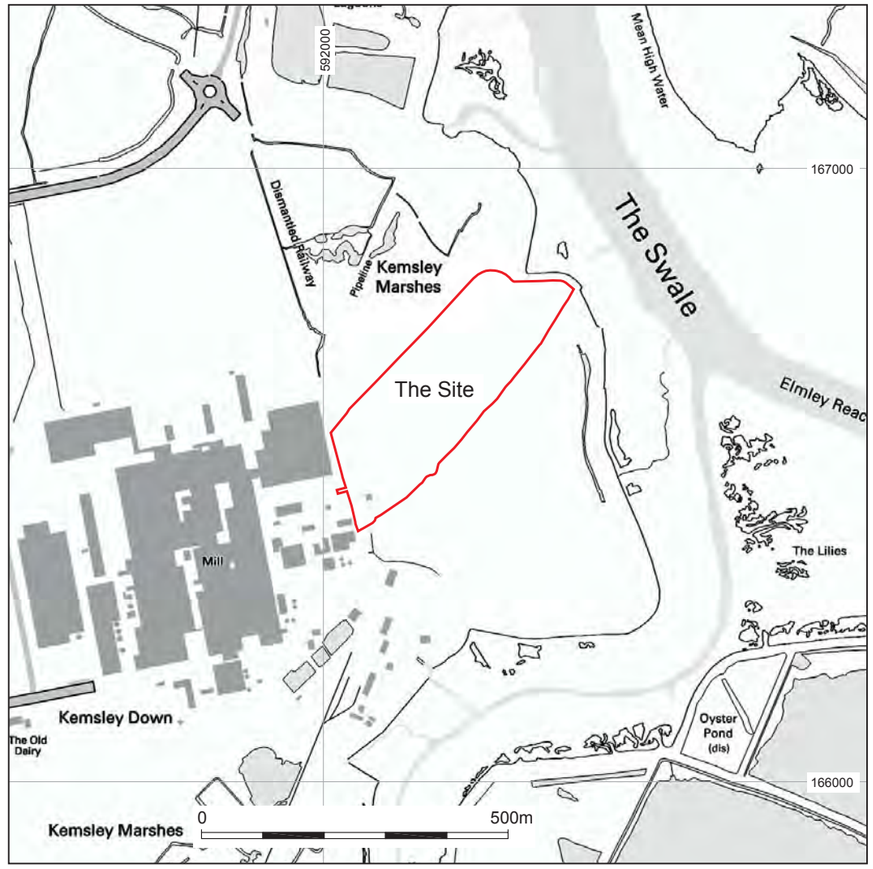
Window Sample 14		
Depth	**Description**	**Interpretation**
0.00-0.2m	Type 1 stone	Made Ground
0.2-0.5m	Mid grey brown gravelly clayey silt with common small chalk, brick and concrete rubble	Made Ground
0.5-1.9m	Very fine black sandy silt (coal dust)	Made Ground
1.9-2.35m	Black sandy gravel with moderate small sub-rounded flint gravels and occasional clinker	Made Ground
2.35-2.7m	Mid grey organic clay with common black mottles	Alluvium
2.7-3.75m	Soft mid orange brown slightly sandy clay	Alluvium
3.75-5m	Mid grey organic clay with moderate small to medium calcareous races	Alluvium
Comment: Gap between 2.1m and 2.35m		

Window Sample 16		
Depth	**Description**	**Interpretation**
0.00-0.05m	Mid brown slightly clayey silt	Topsoil
0.05-0.35m	Mid brown clayey silt with light yellow brown mottles, moderate small sub-rounded and sub-angular stones, common chalk fragments and occasional brick fragments	Made Ground
0.35-0.5m	Dark brown silty clay with occasional glass, plastic, fibre glass and very small sub-angular stones	Made Ground
0.5-0.7m	Mid to dark grey coarse sandy gravels with moderate small to medium crushed brick	Made Ground
0.7-1.8m	Black sandy gravel with abundant small to medium sub-rounded and sub-angular gravels	Made Ground
1.8-2.65m	Dark grey organic clay with abundant black mottles	Alluvium
2.65-3.4m	Soft light brown grey organic clay (becomes softer with depth)	Alluvium
3.4-5m	Very soft dark grey organic clay	Alluvium
Comment: 50% recovery from 3-4m and 4-5m		

Window Sample 17		
Depth	**Description**	**Interpretation**
0.00-0.4m	Dark brown grey clayey silt with light orange brown mottles, moderate small to medium sub-angular and sub-rounded stones, plastic and chalk fragments	Made Ground
0.4-1.5m	Dark brown clayey silt with orange mottles, moderate brick fragments, wood chippings and plastic, and occasional glass and small sub-rounded flints	Made Ground
1.5-1.65m	Mottled grey orange brown silty clay	Made Ground
1.65-3.3m	Dark brown and dark blackish brown degraded wood chippings within very fine clayey silt	Made Ground
3.3-3.5m	Mid brown fine wood chippings	Made Ground
3.5-3.8m	Black slightly sandy gravels. Contaminated with hydro-carbons	Made Ground
3.8-4m	Mid grey organic clay	Alluvium
Comment: 50% recovery from 3-4m and 4-5m		



Site location plan with position of trial pits and window samples



Key:

2011 2009

- Borehole
- Trial pit
- Window sample
- Dynamic core penetrometer

Revision Number:	0
Illustrator:	RG
Date:	02/08/11
Scale:	1:2000 @ 1:10000 @ A3
Path:	Y:\PROJECTS\78250\Drawing Office\
Report figs\Wbrief\11_08_02\78250_location.dwg	

Figure 1

TP 17 viewed from the south

TP 18 viewed from the south-west

TP 19 viewed from the south

TP 20 viewed from the west

TP 21 viewed from the south

TP 22 viewed from the north-east

TP 23 viewed from the east

TP 25 viewed from the east

TP 26 viewed from the north

Wessex Archaeology

Date:	3/08/11	Revision Number:	0
Scale:	n/a	Illustrator:	SEJ
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Photographs of Trial Pits 17 to 26 (TP 24 was completed in an earlier phase)

Figure 2

WS 09

WS 10

WS 11

WS 12

WS 13

WS 14

WS 16

WS 17

Wessex Archaeology

Date:	3/08/11	Revision Number:	0
Scale:	n/a	Illustrator:	SEJ
Path:	Y:\PROJECTS\78250\Drawing Office\Report Figures\(Wbrief\11_08_02\PLATES_WS.cdr		

Photographs of Window Samples 9 to 17 (WS 15 was completed in an earlier phase)

Figure 3

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APPENDIX 2: TRIAL TRENCHING REPORT – ACCESS ROAD

Archaeology South-East

ASE

Archaeological Evaluation Report
Land at Northern Access Road
Kemsley Paper Mill, Ridham Avenue
Sittingbourne, Kent

NGR: 591800 166900
(TQ 91800 66900)

Planning Ref: 15/504458/FULL

ASE Project No: 7882
Site Code: KTP15
ASE Report No: 2015448
OASIS id: archaeol6-232245

By Tom Munnery

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Date of Issue:	December 2015		
Revision:	2		

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Abstract

This report presents the results of an archaeological evaluation carried out by Archaeology South-East at Land at Northern Access Road, Kemsley Paper Mill, Ridham Avenue, Sittingbourne, Kent, between the 23rd and 24th November 2015. The work was commissioned by RPS Planning on behalf of DS Smith Paper in advance of the creation of a pond.

The investigation comprised a 30m length trench within which four deeper test pits were emplaced to a combined depth of 2m. No finds, deposits or features of archaeological interest were encountered.

CONTENTS

TABLES

FIGURES

1.0 INTRODUCTION

1.1 Site Background

1.1.1 Archaeology South-East (ASE) was commissioned by RPS Planning on behalf of DS Smith Paper to undertake an archaeological evaluation of land at Northern Access Road, Kemsley Paper Mill, Ridham Avenue, Sittingbourne, Kent, hereafter 'the site' (centred on NGR TQ 91800 61900; Figure 1).

1.1.2 The site occupies industrial wasteland lying to the immediate north and east of the Kemsley Paper Mill, with open land to its east and bounded to the north by Barge Way.

1.2 Geology and Topography

1.2.1 The solid geology consists of London Clay (BGS 2015). The drift geology comprises Holocene alluvium above Pleistocene terrace gravel (BGS 2015).

1.3 Planning Background

1.3.1 Planning permission has been granted for the development of: 'Formation of new rear access road and extension to trailer park to serve Kemsley Paper Mill and ancillary development including attenuation pond, security kiosk and weightbringers.'

1.3.2 An archaeological condition was required in relation to the development as follows:

> '(9) Prior to the commencement of development hereby approved, the applicant, or their agents or successors in title, shall secure the implementation of a programme of archaeological work in accordance with a written specification and timetable which has been submitted to and approved in writing by the Local Planning Authority.
>
> Reason: To ensure the features of archaeological interest are properly examined and recorded.'

1.4 Scope of Report

1.4.1 This report details the results of the archaeological evaluation carried out on the site between the 23rd and the 24th November 2015.

2.0 ARCHAEOLOGICAL BACKGROUND

2.1 Introduction

2.1.1 A Desk-Based Assessment (RPS 2012) contains a full background to the site. This was summarised in the Written Scheme of Investigation (RPS 2015) and utilised below.

2.2 Prehistoric and Roman

2.2.1 The alluvial floodplain underlying much of the proposed Site has the potential to contain deposits of palaeo-environmental significance. The wider area saw extensive activity from early times, with remains of ritual, settlement and agricultural origin being recorded on the mainland and on Sheppey. At least part of the higher ground of the Kemsley Ridge is known to have been used for occupation activity during the prehistoric and Roman periods, while the alluvial floodplain would have been marshland and would have been exploited for a number of purposes, including salt making and pottery manufacture as well as hunting and fishing.

2.2.2 A Neolithic settlement is recorded at Grovehust, approximately a kilometre west of the proposed internal access road and trailer park (HER number TQ96NW6). A prehistoric log boat was found in 1924, apparently during river drainage on the southeast side of Milton Creek, while a greenstone celt found in the vicinity was apparently a separate find (HER number TQ96NW12). Remains dating from the Late Bronze Age/Early Iron Age, indicating some form of marshside settlement at Kemsley between the 2nd and 1st millennia BC were found during excavations at Kemsley Fields, approximately a kilometre to the southwest of the proposed internal access road and trailer park. Major activity on site dated from the middle Bronze Age to Late Bronze Age, with limited activity in the Iron Age and Roman periods (HER number TQ96NW1004).

2.2.3 Further evidence of prehistoric, Roman and medieval settlement was found at Kemsley fields including Neolithic pottery and flint, late Bronze Age artifacts, as well as various finds from the Mid to Late Iron Age and Roman periods including a four-post structure, ditches,hearth and a possible cremation burial (HER number TQ96NW116). The area of prehistoric activity is extensive. Remains dating to the Neolithic and/ or Bronze Age were recorded during an archaeological evaluation to the north of Ridham Avenue, some 700 west of the proposed internal access road and trailer park. The remains comprised ditches gullies pits and postholes in an area approximately 300 metres in length (HER number TQ96NW96 & 97). On the slightly higher ground to the south, two intercutting features of mid to late Bronze Age date were revealed (HER number TQ96NW98). The remains were interpreted as being an extension of the known settlement activity to the south (TQ96NW99).

2.2.4 Salt making was a major activity locally in the later prehistoric and Roman periods and later. The remains of two salterns are located some 700 metres and 800 metres from the proposed internal access road and trailer park, and finds including briquetage, pottery, burnt flint and animal bone have been made (HER numbersTQ96NW1108 & TQ961110).

2.2.5 The wider area was heavily Romanised with the line of Roman Watling Street leading from London to the coast running rather less than 3 kilometres to the south of the proposed trailer park. Three ditches of Roman date were recorded during an archaeological evaluation to the north of Ridham Avenue, some 700 metres from the proposed internal access road and trailer park (HER number TQ96NW98).

2.3 Medieval

2.3.1 There is relatively little physical evidence for an Anglo-Saxon presence in the area, although several local place names appear in early records. The place name Milton first appears in the Anglo Saxon Chronicle in 893. Its derivation indicates that it was the meeting place for the Hundred of Milton and it would have been located at its centre (Wallenberg: 254). The adjacent parish of Tonge is first mentioned in the Domesday Book of 1086 and probably derives from its topographical location on a projection of land (Wallenberg: 265).

2.3.2 The place name Kemsley seems to be post Norman Conquest in origin (Wallenberg: 255), while Sittingbourne first appears in 1200 (Wallenberg 264). A possible Anglo Saxon site of unknown type is recorded as being located some 200 metres south of the southern end of the proposed internal access road and trailer park. The source is antiquarian and the site type and location uncertain, although it may be based on place name evidence (HER number TQ96NW13).

2.3.3 There is documentary evidence for oyster beds in the area being exploited from the end of the 12th century onwards. The oyster grounds probably included Milton Creek and a stretch of the Swale (HER number TQ96NW1007).

2.3.4 A moated site, Castle Rough, is located some 500 metres south of the proposed trailer park. The site is located below the 5 metre contour and comprises a rectangular earthwork island surrounded on four sides by a moat. Excavations during the early 1970s indicated that the site was constructed during the 13th or 14th century.

2.3.5 Numerous earlier artefacts were recovered dating from the Mesolithic and Roman periods. These were interpreted by the excavators as having been brought in with material from elsewhere. It is not entirely clear from the available material whether material was imported from some distance or whether the dumped material represents upcast from the moat (HER number TQ96NW10, SAM Kent 115).

2.3.6 The parish church of the Holy Trinity, Milton church is flint-faced with Stone Quoins. The roof is of the 14th century, while the south porch is of the 15th century. The church was subject to restoration during the 1880s. The building is listed at grade I and is located some 1.5 kilometres southwest of the proposed trailer park.

2.4 Post-medieval and Modern

2.4.1 There are numerous remains of timber structures and vessels recorded along the foreshore. The vast majority of these are probably post medieval in origin and when recognisable this seems to be the case, although some remains may be earlier. The proposed internal access road and trailer park itself appears to be located in an area used for agricultural purposes until the 19th century, although nearby fields were used for brick making and other industries.

2.4.2 Little Murston Farmhouse, located some 1.4 kilometres southwest of the proposed internal access road and trailer park is a farmhouse of the 18th century or earlier. It is of two storeys in brown brick, now partly pebble-dashed. The building has a hipped tiled roof with one chimney stack. The building is listed at Grade II. The earliest detailed map of the area is probably William Barlow's Map of the hundreds of Milton and Teynham of 1800, published in Halstead's Topographical Survey of Kent, shows the wider area as being divided in to three zones, which seem to represent water, marshland and dry land. The settlement of Milton with its parish church is located within the latter, while the proposed internal access road and trailer park and Castle Rough are located in the marsh.

2.4.3 William Mudge's Map of 1801 shows Milton as being a rather larger settlement than Sittingbourne. Castle Rough is shown with a drain into Milton Creek. The Site is shown as enclosed fields. The Milton Next Sittingbourne Tithe Map of 1838 shows the Site and much of the surrounding area as being owned by William Marshall. The area was being used for pasture, with parcels occasionally being recorded as 'pasture and water'. Castle Rough is shown and is recorded as being recorded as 'wood' at that time. The first edition six inch to the mile Ordnance Survey map of 1869 shows the proposed internal access road and trailer park as being in fields. The proposed internal access road and trailer park is indicated as being within Kemsley Down and Kemsley Marshes. The proposed internal access road and trailer park is divided into two by a field boundary dividing Kemsley Marshes from Kemsley Down. A brick field is marked immediately south of New Milton. In the wider area a large duck decoy (HER number TQ96NW62) is marked some 700 metres to the northwest of the northern end of the Site.

2.4.4 The OS six inch edition of 1898 shows a number of brick works established in the area, including buildings constructed on the brick field marked on the OS edition of 1869. Along the shore line, saltings and a disused oyster pond are marked. By the time of the OS edition of 1909, the brickworks were disused and the Grovehurst Dock had been dug (HER number TQ96NW1003). A tramway is shown running roughly east to west to the south of Grovehurst Dock.

2.4.5 A narrow gauge mineral railway, the Sittingbourne and Kemsley Light Railway was laid by the Bowater Paper Company in 1906 to connect their mills at Sittingbourne and Kemsley with their dock on the Swale (HER number TQ 96 NW 22). When Grovehurst Dock became too small a larger facility was constructed at Ridham and the railway extended in 1919. The post First World War shortage of wood pulp and an increased demand for

paper. Frank Lloyd, the owner of the Sittingbourne paper mill therefore expanded the operation and built a new paper mill at Kemsley. Construction began in 1923 and the mill was in operation in 1924. The mill was coal powered and featured an aerial ropeway from Ridham Dock, which brought in logs for grinding. Kemsley village was constructed for the paper mill workers. Of the planned 750 houses, 188 had been completed by the summer of 1927 (Bellingham 1996, 67-69). The 1938 edition of the OS shows these buildings.

2.4.6 This mill was supplied from Ridham Dock by the earlier tramway. The tramway expanded after the opening of Lloyd's Kemsley Mill in 1924 and from Sittingbourne to the south acted as a passenger railway, bringing workers to and from the mill. The line was taken over by Bowater's in 1948 and operated until 1968. The maintenance depot is situated at the original end of the line, Kemsley Down. In 1969 the railway was handed over to the Locomotive Club of Great Britain's Light Railway Section which became the Sittingbourne & Kemsley Light Railway. The southern half of the railway, south of the proposed internal access road and trailer park, continues in use as a preserved railway, while the OS edition of 1979 indicates that the railway to the north of the had been removed, presumably replaced by the perimeter road around the paper mill which appeared on maps in 1966.

2.4.7 An aerial photograph taken in 1945 shows the paper mill with conical mounds of material to its north. The proposed internal access road and trailer park appears to remain as fields. The OS edition of 1950 indicates a similar disposition. The OS edition of 1966 shows the current internal access road although the trailer park is not marked. The trailer park first appears on the OS edition of 1999 when it is represented by two roads running perpendicular to the existing access road.

2.5 Project Aims and Objectives

General Objective

2.5.1 The general objective of the trial trenching evaluation is to assess the presence or absence and significance of any archaeology at locations within the site commensurate with the new pond. The archaeological investigation sought to understand the context of the findings in relation to the wider settlement pattern, landscape, economy and environment.

Specific Aims

2.5.2 Is there evidence for alluvium at the base of the 2m deep trench and if so does the potentially impacted level have potential to contain significant palaeo-environmental information?

2.5.3 Can the possible late prehistoric date of the upper alluvium be inferred by presence by artefacts or deposits or structures set within it?

2.5.4 Is there any evidence features or structures of Roman or later date cut into the surface of the alluvium that might be affected by pond construction?

3.0 METHODOLOGY

3.1 Fieldwork Methodology

3.1.1 The excavation of one trench was proposed to evaluate the southern area of the site (RPS 2015). The full length of the t rench was excavated t o c.1m depth, however, due to water egress, it was n ecessary to excavate the lower levels, to the pond formation depth of 2m, within a series o f four smaller test pits along its length (Figure 2) as agreed with RPS.

3.1.2 The trench and test p its were scanned prior to excavat ion with a cable avoidance tool. Excavation was undertaken under archaeological supervision in spits of no more than 0.10m to the depth of 2.00m.

3.1.3 All deposits were recorded using standard ASE context sheets, with colours recorded by visual inspection only. A comprehensive photographic record taken.

3.1.4 The trench and test pits were located and planned using GPS and tied in to the Ordnance Survey.

3.2 Archive

3.2.1 The site archive is currently held at the offices of ASE and will be deposited at a suitable local repo sitory in due course. The contents of the archive are tabulated below (Table 1).

Context sheets	4
Section sheets	0
Plans sheets	0
Colour photographs	0
B&W photos	0
Digital photos	100
Context register	0
Drawing register	0
Watching brief forms	0
Trench Record forms	1

Table 1: Quantification of site paper archive

Bulk finds (quantity e.g. 1 bag, 1 box, 0.5 box 0.5 of a box)	0
Registered finds (number of)	0
Flots and environmental remains from bulk samples	0
Palaeoenvironmental specialists sample samples (e.g. columns, prepared slides)	0
Waterlogged wood	0
Wet sieved environmental remains from bulk samples	0

Table 2: Quantification of artefact and environmental samples

4.0 RESULTS

4.1 Trench 1 (Figure 3)

Context	Type	Interpretation	Length m	Width m	Depth m	Height m AOD
[1/001]	Layer	Topsoil	-	- 0.38-0.5	0	2.92-3.02
[1/002]	Layer	Made Ground	-	- 0.34-0.8	0	2.52-2.58-
[1/003]	Layer	Alluvium	-	- -		2.12-2.19
[1/004]	Layer	Made Ground	-	- 0.34-0.3	8	2.35-2.42

Table 3: Trench 1 list of recorded contexts

4.1.1 Trench 1 was cut to approximately 1m for its length prior to the insertion of for elongated test pits; TP1, TP2, TP3 and TP4 in to its base. A total combined length of 14m was cut to the full 2m depth of the proposed pond.

4.1.2 Test pits 1 and 2 had stratigraphy of 0.40m topsoil [1/001] above 0.75-0.80m of made ground inclu ding depositions of clinker. Made ground [1/002] was recorded above sterile (non-organic) mid-grey silt-clay alluvium [1/003], the base of which was not encountered.

4.1.3 Test pits 3 and 4 had the same similar stratigraphy to Test pits 1 and 2, but with an additional layer of 0.34-0.3 8m made g round [1/004] composed of wood chippings which sat between [1/002] and [1/003], reducin g the thickness of [1/002].

4.1.3 No finds or features of archaeological interest were encountered during the evaluation.

5.0 DISCUSSION AND CONCLUSIONS

5.1 Overview of stratigraphic sequence

5.1.1 The stratigraphic sequence comprised topsoil, made ground, and the natural alluvium. The alluvium was encountered at heights between 2.12m and 2.19m OD.

5.1.2 No archaeological finds, deposits or features were encountered.

5.1.3 The methodology was effective in determining the extent of any archaeological activity on site.

5.2 Deposit survival and existing impacts

5.2.1 The extent to which previous activity on site has had an effect on any potential archaeology is unclear. No evidence of an original topsoil or subsoil was encountered, suggesting it might have been cleared prior to the creation of the made ground. However, no prehistoric remains were encountered in the alluvial deposits.

5.3 Discussion of archaeological remains by period

5.3.1 No archaeological remains or artefacts were encountered across the site.

5.4 Potential impact on archaeological remains

5.4.1 The proposed pond is to be excavated to a depth of 2.00m from the existing ground level. On the basis of the evaluation this work is unlikely to have a detrimental effect on archaeological remains.

5.5 Consideration of research aims

5.5.1 The evaluation has revealed no evidence of archaeological activity.

5.6 Conclusions

5.6.1 No finds, deposits or features of archaeological interest were encountered during the course of this evaluation.

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HER Summary

HER enquiry no.						
Site code	KTP15					
Project code	7882					
Planning reference	15/504458/FULL					
Site address	Land at Northern Access Road, Kemsley Paper Mill, Ridham Avenue, Sittingbourne, Kent					
District/Borough	Swale, Sittingbourne					
NGR (12 figures)	591800 166900					
Geology	Alluvial over terrace gravels over London Clay					
Fieldwork type	Eval					
Date of fieldwork	23rd to 24 November 2015					
Sponsor/client	RPS Planning					
Project manager	Jon Sygrave					
Project supervisor	Tom Munnery					
Period summary	None					
Project summary **(100 word max)**	An archaeological evaluation was conducted at Land at Northern Access Road, Kemsley Paper Mill, Ridham Avenue, Sittingbourne, Kent NGR 5 91800 166900, between the 23rd and 24th November 2015. Four test pits were excavated. No find s or featu res of archaeological interest were encountered.					
Museum/Accession No.						

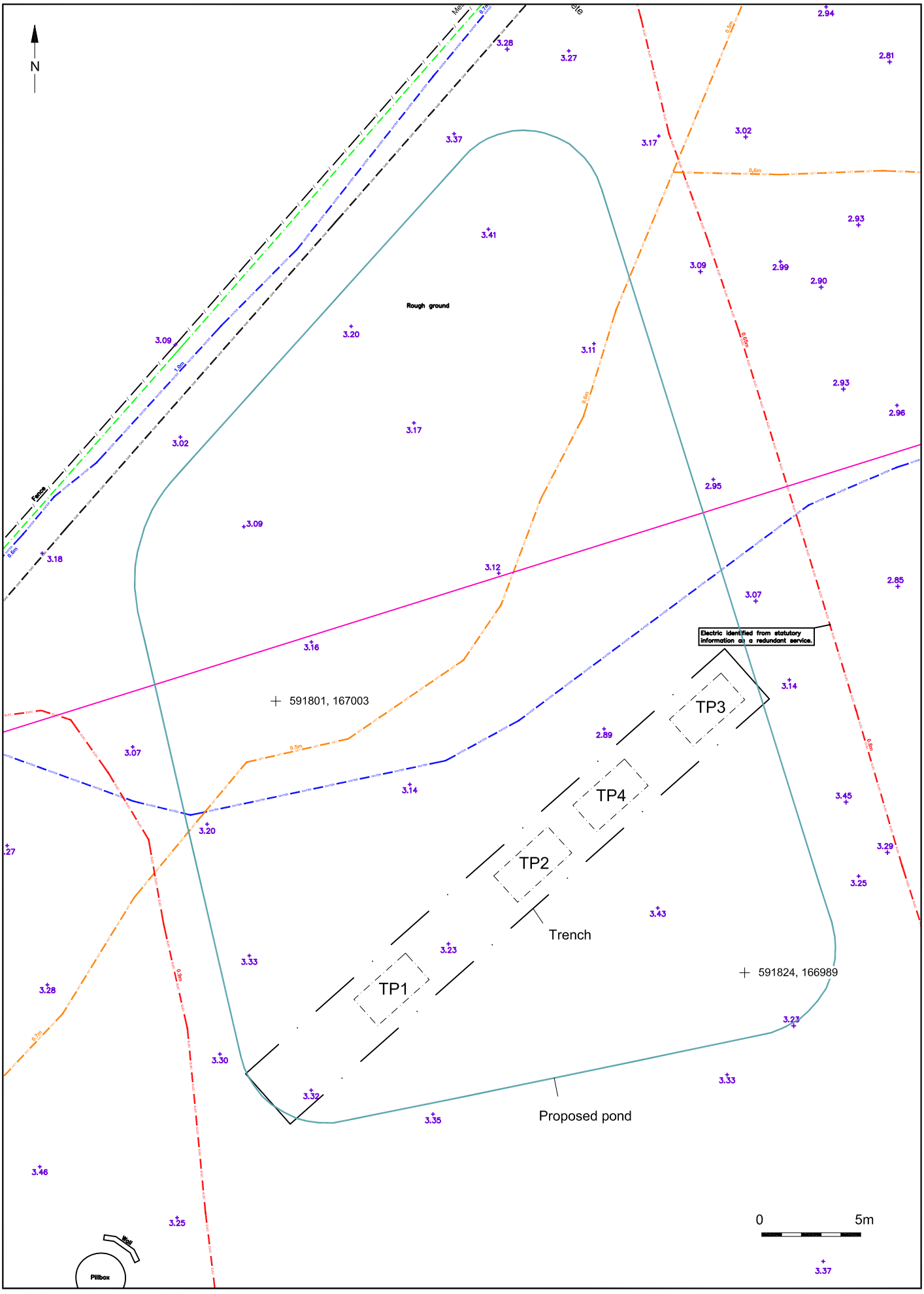
OASIS Form

OASIS ID: archaeol6-232245

Project details	
Project name	An Archaeological Evaluation at Land at Northern Access Road, Kemsley Paper Mill, Ridham Avenue, Sittingbourne, Kent
Short description of the project	This report presents the results of an archaeological evaluation carried out by Archaeology South-East at Land at Northern Access Road, Kemsley Paper Mill, Ridham Avenue, Sittingbourne, Kent NGR 591800 166900, between the 23rd and 24th November 2015. The work was commissioned by RPS Planning on behalf of DS Smith Paper in advance of the creation of a pond. Four test pits were excavated. No finds or features of archaeological interest were encountered.
Project dates	Start: 23-11-2015 End: 24-11-2015
Previous/future work	Not known / Not known
Any associated project reference codes	7882 - Contracting Unit No.
Any associated project reference codes	KTP15 - Sitecode
Type of project	Field evaluation
Site status	None
Current Land use	Industry and Commerce 1 - Industrial
Monument type	NONE None
Significant Finds	NONE None
Methods & techniques	"Sample Trenches"
Development type	Urban commercial (e.g. offices, shops, banks, etc.)
Prompt	Planning condition
Position in the planning process	After full determination (eg. As a condition)
Project location	
Country	England
Site location	KENT SWALE SITTINGBOURNE Land at Northern Access Road, Kemsley Paper Mill, Ridham Avenue, Sittingbourne, Kent
Postcode	ME10 2FB
Study area	0 Square metres
Site coordinates	TQ 91800 66900 51.368154477652 0.755742716403 51 22 05 N 000 45 20 E Point
Project creators	
Name of	Archaeology South-East

Organisation	
Project brief originator	RPS Consulting
Project design originator	RPS Consulting
Project director/manager	Jon Sygrave
Project supervisor	Tom Munnery
Type of sponsor/funding body	Client
Project archives	
Physical Archive Exists?	No
Digital Archive recipient	Local Museum
Digital Media available	"Images raster / digital photography","Survey"
Paper Archive recipient	Local Museum
Paper Media available	"Context sheet","Report"
Project bibliography 1	
Publication type	Grey literature (unpublished document/manuscript)
Title	An Archaeological Evaluation at Land at Northern Access Road, Kemsley Paper Mill, Ridham Avenue, Sittingbourne, Kent
Author(s)/Editor(s)	Munnery, T.
Date	2015
Issuer or publisher	Archaeology South-East
Place of issue or publication	Kent HER
Entered by	Tom Munnery (t.munnery@ucl.ac.uk)
Entered on	30 November 2015

© Archaeology South-East		Kemsley Trailer Park, Swale District	Fig. 1
Project Ref: 7882	Nov 2015	Site location	
Report Ref:	Drawn by: LG		



© Archaeology South-East		Kemsley Trailer Park, Swale District	Fig. 2
Project Ref: 7882	Nov 2015	Trench location	
Report Ref:	Drawn by: LG		

Test pit 1

Test pit 2

N

591801, 167003

TP3

TP4

TP2

TP1

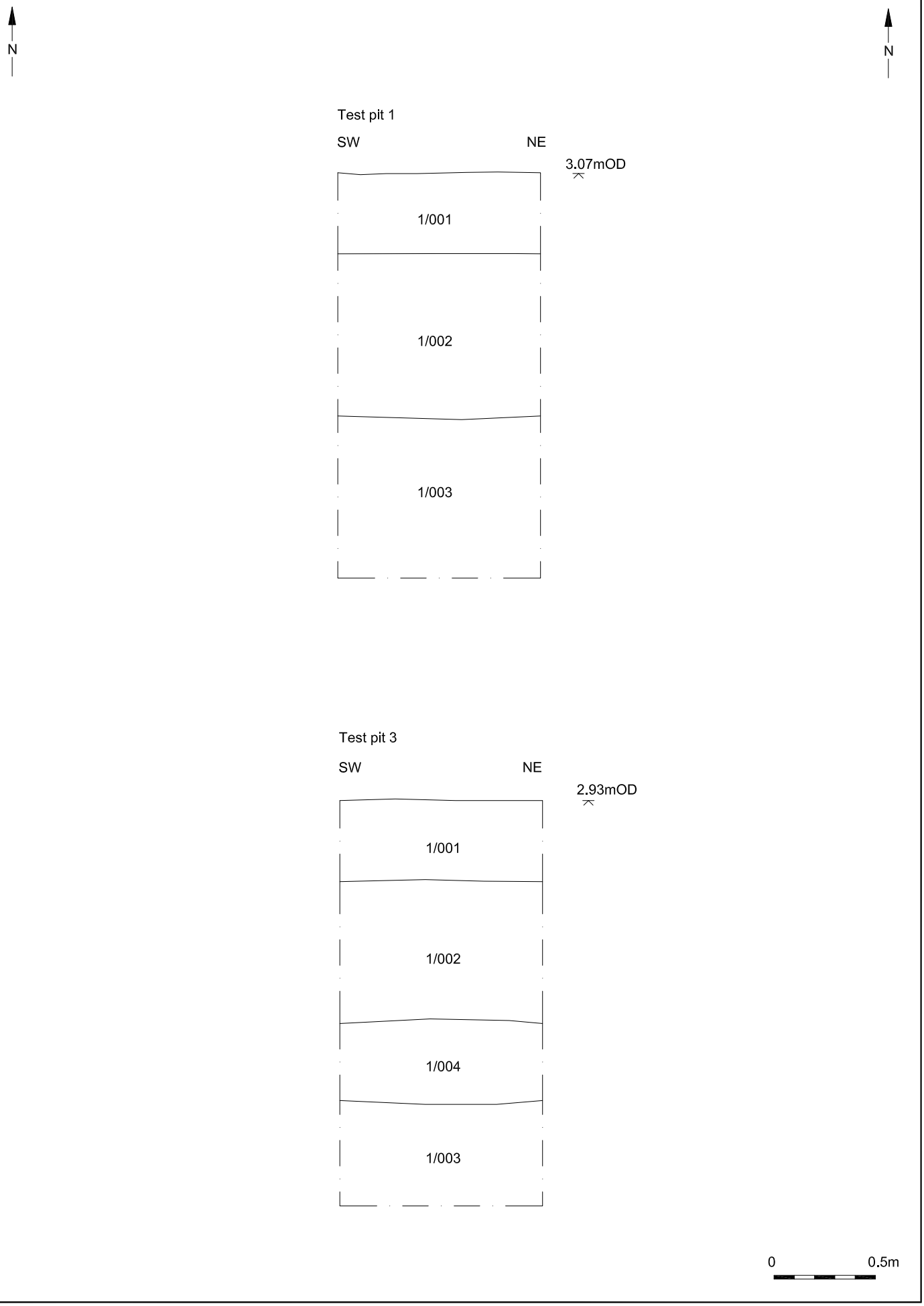
591824, 166989

0 5m

Test pit 3

Test pit 4

© Archaeology South-East		Kemsley Trailer Park, Swale District	Fig. 3
Project Ref: 7882	Nov 2015	Trench plan and photos	
Report Ref:	Drawn by: LG		



© **Archaeology South-East**		Kemsley Trailer Park, Swale District	Fig. 4
Project Ref: 7882	Nov 2015	Representative sections from test pits 1 and 3	
Report Ref:	Drawn by: LG		

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APPENDIX 3: HER ENTRIES

PrefRef	Name	PeriodRang
TQ 96 NW 33	Unknown	Modern
TQ 96 NW 37	Unknown	Modern
TQ 96 NW 38	Unidentified wreck, by Kemsley Marshes	Modern
TQ 96 NW 42	Webster	Post Medieval
TQ 96 NW 43	Juniper	Modern
TQ 96 NW 59	Unknown	Modern
TQ 96 NW 60	REMAINS OF UNIDENTIFIED BARGES	Post Medieval to Modern
TQ 96 NW 61	Unknown Barges, by Kemsley Marshes	Modern
TQ 96 NW 96	Neolithic and/or Bronze Age Features on land north of Ridham Avenue, Kemsley	Early Neolithic to Late Bronze Age
TQ 96 NW 97	Mid-Late Bronze Age features north of Ridham Avenue	Middle Bronze Age to Late Bronze Age
TQ 96 NW 98	Late Iron Age/Roman features north of Ridham Avenue	Late Iron Age to Roman
TQ 96 NW 99	Mid-Late Bronze Age features, north of Ridham Avenue, Kemsley	Middle Bronze Age to Late Bronze Age
TQ 96 NW 100	Late Iron Age and Roman features north of Ridham Avenue, Kemsley	Late Iron Age to Roman
TQ 96 NW 101	Medieval features north of Ridham Avenue	Medieval
TQ 96 NW 116	Multi period occupation site on Kemsley Fields, Kemsley, near Sittingbourne	Late Bronze Age to Roman
TQ 96 NW 12	Possible site of Prehistoric logboat and Neolithic Greenstone celt	Later Prehistoric
TQ 96 NW 13	Archaeological site/EM	Early Medieval or Anglo-Saxon
TQ 96 NW 122	Prehistoric worked flints, residual finds, Kemsley Down	Early Mesolithic to Late Iron Age
TQ 96 NW 123	Early Neolithic pit, Kemsley Down	Early Neolithic
TQ 96 NW 124	Late Neolithic/Early Bronze Age occupation, Kemsley Marsh	Late Neolithic to Early Bronze Age
TQ 96 NW 125	Middle Bronze Age barrow, Kemsley Down	Middle Bronze Age
TQ 96 NW 126	Late Bronze Age/Early Iron Age activity, Kemsley Down	Late Bronze Age to Early Iron Age
TQ 96 NW 127	Late Iron Age/early Roman enclosures, Kemsley Down	Late Iron Age to Roman
TQ 96 NW 128	Roman cremation cemetery, Kemsley Down	Late Iron Age to Roman
TQ 96 NW 129	A Roman or post-Roman salt-evaporating hearth, Kemsley Marsh	Roman to Early Medieval or Anglo-Saxon

PrefRef	Name	PeriodRang
MKE85371	Kemsley	Post Medieval
TQ 96 NW 78	Brickfield, new milton	Modern
TQ 96 NW 79	Post medieval brickfield wash mill, New Milton	Post Medieval
TQ 96 NW 133	Crash site of Supermarine Spitfire I	Modern
TQ 96 NW 131	Second World War air raid shelter, Kemsley Paper Mill	Modern
TQ 96 NW 1167	Residual Palaeolithic flake, Kemsley Down	Palaeolithic
MKE96845	Neolithic Flint scraper (tool)	Early Neolithic to Early Bronze Age
MKE96846	Neolithic Copper alloy scraper (tool)	Early Neolithic to Early Bronze Age
MKE96867	Flint barbed and tanged arrowhead	Unknown to Medieval
TQ 96 NW 1132	Wharf, Milton Creek	Post Medieval
TQ 96 NW 1145	Possible shooting hide, Clay Reach	Modern
TQ 96 NW 1146	Gun platform, derrick base?, Milton Creek	Modern
TQ 96 NW 1147	Slipway, by Kemsley Marshes	Post Medieval
TQ 96 NW 1148	Possible wharf, by Kemsley Marshes	Post Medieval
TQ 96 NW 1149	Possible wharf, by Kemsley Marshes	Post Medieval
TQ 96 NW 1150	Possible Wharf, by Kemsley Marshes	Post Medieval
TQ 96 NW 1001	Oyster Pond	Post Medieval
TQ 96 NW 1003	Grovehurst Dock, Elmley Reach, Kemsley Marshes, Iwade	Post Medieval
TQ 96 NW 1007	Oyster fishery rights at Milton Regis	Medieval to Post Medieval
TQ 96 NW 1067	Site of tram route	Post Medieval
TQ 96 NW 1050	Navigation beacon	Post Medieval to Modern
TQ 96 NW 1048	Remains of wooden revetment	Post Medieval to Modern
TQ 96 NW 1046	Possible enclosure, Milton Creek	Unknown
TQ 96 NW 1098	Unidentified vessel, by Kemsley Marshes	Post Medieval to Modern
TQ 96 NW 1045	Circular earthwork	Unknown
TQ 96 NW 1044	Structural remains	Post Medieval to Modern

PrefRef	Name	PeriodRang
TQ 96 NW 1038	Pipeline, Elmley reach	Post Medieval to Modern
TQ 96 NW 1017	Wharf, by Kemsley Marshes	Modern
TQ 96 NW 1026	Two circular features of higher ground	Unknown
TQ 96 NW 1025	Former sea defence	Unknown
TQ 96 NW 1024	Unidentified circular features, by Kemsley Marshes	Unknown
TQ 96 NW 1020	Possible buried vessel, Milton Creek	Post Medieval to Modern
TQ 96 NW 135	Oyster pits, by Kemsley Marshes	Post Medieval
TQ 96 NW 1057	Elmley Reach Oyster Beds	Post Medieval to Modern
TQ 96 NW 1058	Milton Creek Coastguard Station	Post Medieval
TQ 96 NW 1092	Wharf, Milton Creek	Post Medieval
TQ 96 NW 1104	Dump	Post Medieval to Modern
TQ 96 NW 1105	Structure	Modern
TQ 96 NW 1106	Possible remains of small jetty	Modern
TQ 96 NW 1107	Former groyne	Post Medieval to Modern
TQ 96 NW 1108	Salt working site	Roman
TQ 96 NW 1109	Four possible frames joined to a single plank	Post Medieval to Modern
TQ 96 NW 1110	Salt working site	Roman
TQ 96 NW 1111	Organic Clay	Unknown

APPENDIX 4: NATIONAL RECORD OF THE HISTORIC ENVIRONMENT ENTRIES

HOB No.	Name	Description
900619		HULKED VESSEL, POSSIBLY A BARGE
900625		UNIDENTIFIED HULKED VESSEL
511799		A house built circa 1600 and altered in the early 19th century.
949043	TONGE CORNER	Medieval hall house with an added Georgian brick front.
1025219		REMAINS OF UNIDENTIFIED BARGE
1025237		REMAINS OF UNIDENTIFIED BARGE
419874		Archaeological site/EM.
419877		Samian ware
419880		`U' axe.
420092		A Roman cemetery consisting of inhumations and cremations of 1st to 3rd century date was found at Bayford. Possible hut sites or funeral pyres also present. Vessels of pottery, glass and bronze and a bronze lamp stand were excavated.
420115		Two bronze hoards, each in a pottery vessel, found close together near Sittingbourne; a human skeleton also recovered nearby
1316045		Surface finds of Roman tesserae, roof and flue tiles, 2nd-3rd century pottery indicate the site of a Roman building, possibly a villa. Testing by auger revealed stone floors and foundations.
1525843	MILTON CREEK, CHURCH MARSHES HULK ASSEMBLAGE	Assemblage of two hulks in the eastern of two inlets on Church Marshes, on the northern bank of Milton Creek.
1560775	SEARCHLIGHT BATTERY HC04 1	The site of Second World War searchlight battery no. HC04 1 at Kemsley . It was manned by 322 Searchlight Battery under the command of 28 Searchlight Regiment. The battery was operational by 14th October 1941.
1575494	NATIONAL SALVAGE DEPOT	A First World War Salvage Depot was established at Ridham, Kent in 1917.
511800	27-33 HIGH STREET	A range of tenements probably of 16th century origin, entirely remodelled in the 18th century and 19th century.
511801	PERIWINKLE MILL	A mid 18th century house altered circa 1800.
1025220		REMAINS OF UNIDENTIFIED BARGE
1025235		REMAINS OF UNIDENTIFIED BARGE
419856		Coin/Ro; whetstone/Md.
419895		Windpump (skeleton framed, hollow post drainage mill). Presumed post medieval.
1478221	DIVER BOX DIVER BATTERY TS31	Site of a Second World War heavy anti aircraft (Diver) Battery in the Diver Box in the Minster Marshes. It was armed with eight 3.7-inch Mark IIc guns, and was occupied from July 26th 1944, when it was manned by 115 Anti Aircraft Artillery Regiment. At a
1525850	CHURCH WHARF MILTON CREEK HULK ASSEMBLAGE	Assemblage of at least eight hulked barges at Church Wharf on Milton Creek. Shown on photographs taken in 1946.
900623		Remains of hulked wreck of uncertain date, possibly of 19th to early 20th century origin, which was abandoned by 1961. Seen to be constructed of wood, she lies on the south side of the Swale to the

HOB No.	Name	Description
		east of Elmley Ferry, and to the north of the vessels re
975457	MILTON REGIS	Medieval town
527554	CHURCH OF HOLY TRINITY	A 14th century church restored by W L Grant in 1889. The church is flint-faced with stone quoins.
831755		Unidentified obstruction plotted in 1992, in the inter-tidal zone south of the tidal creek west of Elmley Ferry, towards the southern bank of the Swale. This feature may be a natural feature, wreck site or other archaeological feature.
419862		A cremation cemetery consisting of a number of tiled cremations were found in 1889-94 during gravel digging.
420061		Roman cinerary urns and an amphora were found between 1870 and 1880 in the fields to the rear of the White Hart Inn, Milton.
420064		A Roman cemetery with eight lead coffins with pottery and glass vessels found east of Milton as early as 1868.
420070		A Roman lead coffin burial containing a skeleton and two or three fragments of glass bottles was found in Eleven Acres Field, Murston. A bronze handle was found nearby.
900610		Assemblage of four or five hulked vessels visible on aerial photographs taken in 1973. Located on the west bank of Milton Creek, by Church Wharf.
1025229		REMAINS OF UNIDENTIFIED BARGE
1025233		REMAINS OF UNIDENTIFIED BARGE
1025240		REMAINS OF UNIDENTIFIED BARGE
1025241		REMAINS OF UNIDENTIFIED BARGE
418333		Cinerary urns and burnt stones were found dispersed over a field known as 'The Downs' about 2 feet below the surface during a land-draining exercise. The area is now under pasture.
419836	HOLY TRINITY CHURCH	Nave and chancel with south aisle to both and crenellated West tower with flint and stone buttresses. South porch. 15th century windows and 14th century roof. The church incorporates some Anglo-Saxon herring-bone masonry. The tower probably dates from ci
419839	CHIRCH OF ALL SAINTS	A 13th century church with later additions.
419859		A possible Roman villa may be located under the Holy Trinity Church. When the churchyard was extended in the late 19th century building foundations were uncovered supposedly constructed of Roman masonry. Excavations in the nearby Church Field (TQ 96 NW
419871		A logboat was found in 1924 at Murston Marshes and thought to have been burned or hewn out of an oak trunk. It was not dated, although a Neolithic axe was said to have been found close by, and measured 3.35 metres long by 0.91 metres wide. It was present
420067	ALL SAINTS CHURCH	Church c.1375-1550 transitional Norman in style. Demolished in 1873, leaving only part standing to act as a mortuary chapel.
420251	DOLPHIN YARD SAILING BARGE MUSEUM	Museum; barge building yard
1525848	MILTON CREEK	Assemblage of three hulks in the western of two inlets on Church

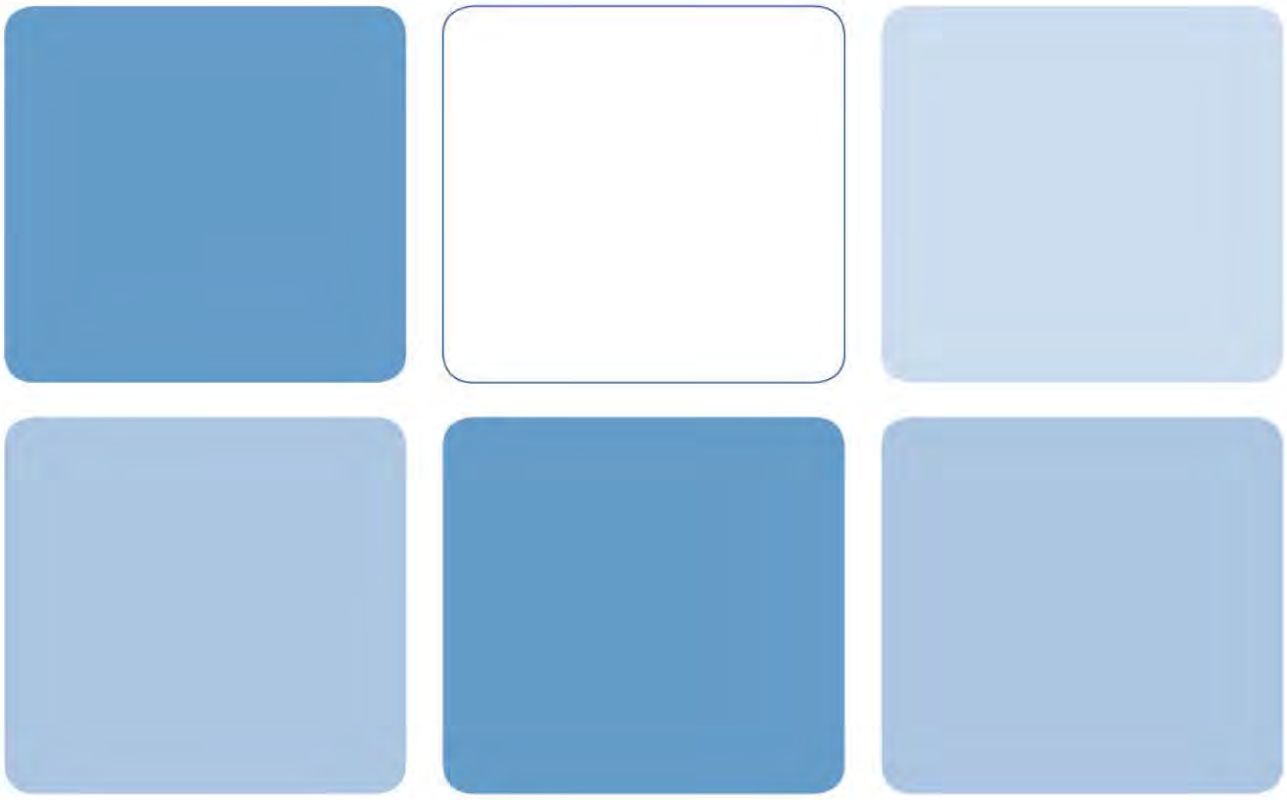
HOB No.	Name	Description
	CHURCH MARSHES WEST HULK ASSEMBLAGE	Marshes on the northern bank of Milton Creek.
1526106	MILTON CREEK HULK ASSEMBLAGE	Assemblage of ten barges on the mud in Milton Creek, Sittingbourne. Vessel remains shown on aerial photograph taken in 1946.
900622		Remains of unidentified hulked craft recorded by 1992 as abandoned on the south bank of the Swale, and to the west of Elmley Ferry. Constructed of wood, and possibly of mid to late 19th century or early 20th century origin, little else is known about thi
1025221		REMAINS OF UNIDENTIFIED BARGE
1025225		REMAINS OF UNIDENTIFIED BARGE
1025226		Remains of hulked and unidentified wooden craft of probable late 19th to early 20th century date, which was recorded by 1961. It lies abandoned side by side with, and to the east of 900621, still visible and recorded today on the south side of Elmley Fer
418324		Flint axe found at Quinton Farm.
419889		3 mounds in Eastchuruch Marshes. Probably medieval saltworkings.
420073		The foundations of a large building were exposed near edge of the marsh running eastwards into the enclosure of the Murston Sewage Works, beneath which it undoubtedly extends. From foundations, Mr. S.J. Williams has found wall plaster, many roof tiles,
420078		Anglo-Saxon inhumation accompanied by a sword was found at Mere's Court, Murston in 1929.
900626		UNIDENTIFIED WRECK
900635	CLAY REACH HULK ASSEMBLAGE	Assemblage of UNIDENTIFIED HULKED VESSELS located in the inter-tidal zone of the Swale, on the western bank at Clay Reach. They are shown on aerial photos taken in 1973.
520735	BRAMBLEFIELD FARM	Timber-framed building begun as an open-hall house, probably late 15th century or early to mid 16th century with later alterations.
527211	CHURCH OF ALL SAINTS	A 12th century chapel of ease rebuilt between 1873 and 1874 using the architect William Burges. The chapel is in Early Gothic style and built of knapped flints with stone dressings. The roof is tiled.
1025218		REMAINS OF UNIDENTIFIED BARGE
1025223		REMAINS OF UNIDENTIFIED BARGE
1025230	KELMSLEY MARSHES HULK ASSEMBLAGE	POSSIBLE AREA OF REMAINS OF UNIDENTIFIED BARGES Assemblage of hulked barges located in the inter-tidal zone at Kemsley Marshes. Shown on Aerial photo take in 1961.
1025231	KELMSLEY MARSHES SEWAGE WORKS HULK ASSEMBLAGE	Assemblage of hulked vessels. POSSIBLE AREA OF REMAINS OF UNIDENTIFIED BARGES
1025234	MURSTON INDUSTRIAL ESTATE HULK ASSEMBLAGE	Assemblage of hulked vessels in the inter-tidal zone close to Murston Industrial Estate. POSSIBLE REMAINS OF UNIDENTIFIED BARGES

HOB No.	Name	Description
1025236		REMAINS OF UNIDENTIFIED BARGE
765806		There is evidence that the church at Milton Regis was a minster in the late Saxon period. The Kent Domesday Monachorum refers to the church and its dependant chapels.
419850		Excavations uncovered Roman pottery and fragments of Roman roof and flue tiles indicating the site of a Roman building, possibly the villa under the church (TQ 96 NW 8).
419896	TONGE CORNER FARMHOUSE	Farmhouse, C16
900621		Remains of hulked craft of unidentified date, possibly of late 19th to early 20th century origin, and constructed of wood, on the south side of Elmley Ferry. Recorded as the westernmost and more substantially intact of a pair of abandoned vessels lying s
900631		POSIBLE REMAINS OF A BARGE
420095		A Roman cremation cemetery dating from circa 70 to 110 AD was found at Murston, with finds of bronze fibulae, beads and Samian paterae.
420129		Roman burials and Anglo-Saxon inhumation cemetery found at Huggins Fields, (Fair Meadows), in 1824. It is possible that Buckelurnen had been found at the site pre-1924. Further inhumations were excavated in 1826 bringing the toatl excavated to circa 50.
420161	CHURCH OF ST GILES	A 12th to 14th century church with 16th century additions.
420226		Possible Anglo-Saxon inhumations with grave goods including glass beads, gold pendants and a gold cross.
420233		Fragments of a 6th century Anglo Saxon glass claw beaker, found at Bexhill Marsh, Sittingbourne, now in the British Museum, possibly indicate an inhumation.
1333730	MURSTON HOUSE	A mid 19th century house of three storeys. The ground and first floors are of red brick but a second storey in yellow brick was added later. The hipped roof is of slate. To the first and second floors there are three sash windows whilst to the ground
1474285	HMS BLAZER HEAVY ANTI AIRCRAFT BATTERY	General location of the site of a First World War heavy anti aircraft battery on HMS Blazer, Kingsferry, which was armed with two 6-pounder Hotchkiss guns in 1916.
498028	WINDMILL MILTON REGIS	A smock mill built in the late 18th-early 19th century. The mill was built of brick and weatherboarding and had a steam engine installed in 1889 as auxilliary power. The mill was abandoned in working order in 1814, and has since gradually become more d
1012312		Cropmarks of 19th century field drainage
419853		Neolithic unenclosed settlement, excavations have revealed hollows and finds of pottery, flint working debris, stone axes, animal remains and arrowheads.
420048		Belgic cremation - ? cemetery fd 1957
420229	OLD COURT HOUSE	A timber framed building constructed c1450. This was the Mediaeval Court Hall of Milton with 2 prison cells beneath. It was also used as a

HOB No.	Name	Description
		school when there were no courts. It has been restored and is now in use as a museum.
1493324		The Countess of Huntingdon's Connexion built a chapel here in 1790, the Paradise Chapel, which was replaced by a Congregational chapel on the same site by Poulton and Woodman in Gothic style in 1860 and a Sunday school built in 1865. These were demolishe
1526119	MILTON CREEK (WESTERN END) HULK ASSEMBLAGE	Assemblage of five hulked barges on the mud in Milton Creek. Located at the western end of the creek. Vessel remains recorded in 1967.

APPENDIX 5: GEOTECHNICAL REPORT

Site Investigation Report
Kemsley Paper Mill
On Behalf of
Wheelabrator Technologies Inc.



Date: Decmeber 2015
Our Ref: JER6773
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Amendment Record

Revision No.	Date	Reason for Change	Authors Initials

Contents

Drawings & Appendices

Drawings

JER6773-SI-001	**Investigation locations**

Appendices

Appendix 1	**Exploratory Borehole Logs**
Appendix 2	**Soil Chemical Analysis Results**
Appendix 3	**SGV and GAC Screening Criteria**
Appendix 4	**Photographs**

1 Introduction

1.1 Background

1.1.1 RPS Planning and Development (RPS) has been commissioned by Wheelabrator Technologies Inc. to undertake an intrusive site investigation and assessment at an area of land located at Kemsley Paper Mill herein referred to as the 'Assessment Site'. The extent of the Assessment Site is detailed upon Drawing JER6773-SI-001. The investigation has been undertaken to provide baseline ground quality information prior to the lease of the Assessment Site by Wheelabrator Technologies Inc. from Kemsley Paper Mill. It is understood that the intended use of the Assessment Site is for an Incinerator Bottom Ash (IBA) storage facility.

1.1.2 There are records of two previous ground investigations that have been undertaken on the land adjacent to the Assessment Site. These are:

- RPS 2013, Interpretative Ground Investigation Report Pre-Commencement Works for the Sustainable Energy Plant Kemsley Paper Mill, Sittingbourne, Kent On Behalf of EEW Energy from Waste UK Limited (Ref 1); and
- URS 2012, Geotechnical and Environmental Site Investigation (Ref 2).

1.1.3 Additionally there is understood to have been a further investtigation undertaken by CMW at and adjacent to the Assessment Site in 1995, however a report is not currently available.

1.2 Report Structure

1.2.1 The remainder of the report is structured as follows:

- Section 2: Site Location and Description. This section details the environmental setting of the Assessment Site and reviews the availible previous ground investigation reports relating to the Assessment Site.
- Section 3: Site Investigation Methodology. This section describes the intrusive investigation works undertaken at the Assessment Site.
- Section 4: Site Investigation Findings. This section describes the main findings of the intrusive site investigation including the ground conditions encountered and any visual or olfactory evidence of contamination identified.
- Section 5: Contamination Screening Assessment. This section screens the results against the slected criteria. A rationale is presented for the slected screening criteria.
- Section 6: Conclusions. This section sets out the conclusions based upon the testing and assessments undertaken.

1.3 Limitation

1.3.1 The appraisal presented within this report is based on the information at the time of writing as referenced within the report. The appraisal is based on the identified soil concentrations at the

specific locations investigated. RPS takes no respeoncsibility for the accurancy or otherwisae of third party data used in this assessment.

2 Site Location and Description

2.1 Site Setting

2.1.1 The Assessment Site forms part of the Kemsley paper mill located near Sittingborne, Kent. It is centred at National Grid Reference (NGR) 592170, 166640.

2.1.2 The Assessment Site is understood not to have been subject to previous development. There is evidence of recent tipping of materials across the Assessment Site including demolition rubble, concrete and soils. It is understood that these wastes originate from the extension of the Kemsley Paper Mill CHP plant extension.

2.2 Previous investigations

RPS 2013, Interpretative Ground Investigation Report Pre-Commencement Works for the Sustainable Energy Plant Kemsley Paper Mill

2.2.1 An investigation was undertaken by RPS in 2011 on land directly adjacent to the Assessment Site site on behalf of EEW Energy from Waste UK Limited as part of a Sustainable Energy Plant (SEP) development proposed at this location. Further Assessment was undertaken in 2013 using the findings of this investigation and the 2012 URS ground investigation. The relevant environmental findings are summarised:

- A generic, Tier 2, assessment of chemical contamination within Made Ground from the SEP Site demonstrated that inorganic parameters, petroleum hydrocarbons and other organic parameters are unlikley represent an unacceptable risk to human health.
- Benzo(a)pyrene was recorded at one location above the relevant screening criteria for this contaminant. A detailed review of this location identified that the observed concentrations may not represent an unacceptable risk to human health considering the depth of occurrence.
- Based on the generally limited occurrence of perched groundwater within Made Ground and patterns and concentrations of contamination it was concluded that there was not a significant potential to pollute wider Controlled Waters.
- No evidence was found of an observable gas impact on the SEP site from the neighbouring Kemsley Waste Disposal Site. Ground gasses were not considered to present a risk to the SEP development or surrounding areas.
- Amosite, crocidolite and chrysotile asbestos fibres were detected in samples at 4 no. locations within the Made Ground.

URS 2012, Geotechnical and Environmental Site Investigation

2.2.2 An investigation was undertaken by URS in 2012 on land directly adjacent to the Assessment Site site on behalf of John Sisk and Sons Ltd as part of a Sustainable Energy Plant development proposed at this location. The relevant environmental findings are summarised:

- Made Ground was encountered up to 3.6 meters below ground level (mbgl) and underlain with Alluvium.
- Groundwater was encountered in trial pits between 2.0 and 3.5 mbgl and was thought to be discontinuous when present in the Made Ground.
- Concentrations of contaminants of concern including Polycyclic Aromatic Hydrocarbons (PAHs) and Total Petroleum Hydrocarbons (TPHs) were considered not to pose an unacceptable risk to human health or controlled waters.
- Asbestos fibres were identified at one location which were considered to represent a potential risk to human health.
- Material sampled was categorised as non-hazardous waste in accordance with WM2 published by the Environment Agency (EA).

2.3 Geology

2.3.1 Published geological information indicates that the Assessment Site is underlain by alluvium (superficial deposits) which is in turn underlain by the London Clay Formation of unknown thickness) and then the Woolwich Formation comprising sands and clays. The Woolwich Formation is recrded to be up to 18 m thick. This is underlain by the Thanet Sand Formation (recorded to be between 21 and 40 m in thickness) which is in turn underlain by the Upper Cretaceous White Chalk Subgroup.

2.4 Hydrogeology and Hydrology

2.4.1 The Alluvium is classified by the EA as a Secondary Undifferentiated aquifer. This means that the deposit has previously been designated as both minor and non-aquifers in different locations due to the variable characteristics of the deposits in question. The London Clay Formation is classified as an unproductive stratum which means the deposits are of low permeability that has negligible significance for water supply or river base flow. This is likely to act as a aquiclude preventing migration of contaminatants to the deeper geological units.

2.4.2 The Woolwich Formation and Thanet Sand Formation are classified as Secondary A aquifers, which means that the deposits contain permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. The White Chalk Subgroup is classified as a principal aquifer with a high intergranular and / or fracture permeability typically capable of providing high groundwater storage.

2.4.3 A Swale is present directly to the east of the Assessment Site and Milton Creek is present to the south. Both of these surface watercourses are considered to be potential receptors for potential contamination from the Assessment Site.

3 Site Investigation Methodology

3.1 Introduction

3.1.1 As previously stated the ground investigation has been undertaken to provide baseline ground conditions prior to the leasing of the land by Whellbrator Technologies Inc.

3.1.2 All investigation works were undertaken in general accordance with current guidance advocated by regulatory authorities, including *BS10175:2011 Code of Practice for Investigation of Potentially Contaminated Sites (Ref. 3) and BS5930:2015 Code of Practice for Site Investigations (Ref. 4).* It should however be noted that the density of investigation reflects the agreed effort of one days trial pitting and therefore in accordance with BS10175:2011, the investigation should be considered an exploratory investigation.

3.1.3 Intrusive works were undertaken on the Assessment Site on 26th November 2015 with an RPS Geo-environmental Consultant present throughout the works.

3.2 Service Clearance

3.2.1 Service clearance was undertaken by an RPS Geo-environmnetal consultant and Kemsley Paper Mill Engineer as part of the Permit to Dig system operated at the site. Investigation locations were scanned for services using cable avoidance tools (CAT).

3.3 Intrusive Exploratory Holes

Machine Excavated Trial Pits

3.3.1 Six trial pits were excavated using a 13 tonne excavator. Following service clearance of each trial pit location, excavations were progressed using a mechanical excavator, reaching a maximum depth of 4.2 mbgl.

3.3.2 Representative soil samples from Made Ground and natural strata were collected during the ground investigation for subsequent chemical analysis. On completion each trial pit was backfilled and compacted in layers with arisings in the sequence in which they were excavated as best as practicable. Trial pit logs are provided in *Appendix 1* and investigation locations are shown on *Drawing JER6773-001*.

3.4 Soil Sampling and Field Testing

3.4.1 Representative soil samples were collected at each investigation location for chemical analysis. Each soil sample was labelled with a unique reference number together with the project details.

3.4.2 Chemical samples were placed into laboratory supplied containers which were then packed into cool boxes and kept at a nominal temperature of +4ºC ±2ºC by the use of ice packs. The

samples were then dispatched for analysis to Environmental Scientifics laboratories in Burton upon Trent, together with appropriate chain of custody documentation.

3.5 Laboratory Analysis

Chemical Analysis for Soils

3.5.1 Laboratory analysis of soil samples was undertaken at a United Kingdom Accreditation Service (UKAS) accredited laboratory (ESG), in accordance with MCERTS validation methodologies (in soils). The soil samples were analysed for a wide range of soil contaminants including:

- Total and Speciated Total Petroleum Hydrocarbons (TPH) with silica screening;
- Speciated Polycyclic Aromatic Hydrocarbons (PAH);
- Metals suite including arsenic, boron, cadmium, chromium, copper, lead, mercury, nickel, selenium and zinc;
- Inorganics suite including free and total cyanide and total sulphur.
- Asbestos screening;
- pH;
- Volatile Organic Compounds (VOCs) and Semi-Volatile Organic Compounds (SVOCs).

3.5.2 The analytical soil results are provided in *Appendix 2.*

4 Site Investigation Findings

4.1 Introduction

4.1.1 This section sets out the ground conditions identified through the investigation works detailed within *Section 3*. For a detailed account of the ground conditions at each location reference should also be made to the individual borehole records presented in *Appendix 1*.

4.2 Ground Conditions

4.2.1 The ground conditions identified during the intrusive site investigation are summarised in the following sections.

Made Ground

4.2.2 Made Ground was encountered at all trial pit locations. The full thickness of Made Ground was only proven at one location, trial pit TP01, where it was 0.9 m in thickness. All other trial pits terminated within the Made Ground, with a maximum proven thickness of 4.2 m at trial pit TP03.

4.2.3 The Made Ground was variable in nature, characterised as a gravelly clayey sand or gravelly sandy clay typically containing fragments of brick, concrete, wood, glass and metal. Infrequently the Made Ground consisted of a black sand and gravel of ash and clinker. A layer of organic material was encountered at trial pit TP06.

4.2.4 Boulder sized concrete fragments were encounterefd at trial pits TP04, TP05 and TP06. Trial pits TP02, TP05 and TP06 refussed on concrete obstructions or boulder sized concrete fragments.

4.2.5 Made Ground associated with recent tipping was present at trial pits TP02, TP04 and TP06. The area of recently tipped material was raised with respect to the surround ground and contained more extrenuous materials such as concrete and brick. The possible extent of the recently tipped material based on a visual inspection of the ground surface is shown on *Drawing JER6773-SI-001*. Given the high variability of material observed within the Made Ground material it is considered that the scale of investigation carried out in this area is unlikely to have fully characterised the material. As such the potential for hotspots of contamination above concentrations observed within the locations commenced remains.

Alluvium

4.2.6 Alluvium was encountered at trial pit TP01 after 0.9 mbgl consisting of soft becoming firm sandy clay.

4.3 Groundwater

4.3.1 Groundwater was observed as a slight seepage between 0.9 and 1.4 mbgl in trial pit TP01. A rapid influx of groundwater occured in trial pit TP03 at 4.2 mbgl.

4.4 Volatile Organic Compound Screening

4.4.1 Soils were screened for volatile organic compounds (VOCs) using a hand held MiniRae 2000 photoionisation detector (PID). VOCs were not detected above the limit of detection of the PID.

4.5 Visual and Olfactory Evidence of Contamination

4.5.1 Limited olfactory evidence of contamination was identified during the investigation works.

4.5.2 Made Ground was indentified at each trial pit location consisting of concrete fragments, brick fragments, glass, metal, ash and clinker.

4.5.3 An oily sheen was observed on the groundwater encountered at trial pit TP03.

5 Assessments

5.1 Introduction

5.1.1 This section presents an initial appraisal of risk to human health and controlled waters based on the identified soil contaminant concentrations. The appraisal of human health risk comprises a semi quanatative screening assessment. The appraisal of risk to controlled waters comprises a qualative assessment. In addition to the peviosuly stated risk assessments the identified pH levels and sulphur concentrations are also assessed to establish the baseline conditions for these determinands as these have the potential to be intrudced through the proposed activities during lease of the Assessment Site. These are set out within the following sections.

5.2 Human Health Risk Assessment

5.2.1 Soil chemical results for all trail pits have undergone preliminary screening against relevant Suitable for Use Levels (S4ULs) Generic Assessment Criteria (GAC) that have been published by LQM/CIEH (*Ref. 5*) and CL:AIRE (*Ref. 6*) and Soil Guideline Values (SGVs) published by the Enivronment Agency for a commercial end use. The SGVs and GACs used for screening are detailed in *Appendix 3.*

5.2.2 A total of 7 no. samples of Made Ground and 1 no. sample of alluvium were analysed for a range of determinants including heavy metals, speciated PAHs, speciated TPH, SVOCs, VOCs, sulphate, pH, sulphur and asbestos.

5.2.3 Metals were not present at concentrations above the selected screening criteria for a comercial end use and as such are unlikely to present an unacceptable risk to human health. The highest concentrations of metals were observed at trial pit TP02 (1.0 mbgl) including copper concentrations of 496.5 mg/kg. Concentrations of metals within the natural material at trial pit TP01 were lower than the overlying Made Ground.

5.2.4 Asbestos was identified at three locations within the Made Ground underlying the site. Chrysotile asbestos was present within a sample at 1.0 mbgl in trial pit TP02. Ammosite asbestos was present in a sample at 1.0 mbgl at trial pit TP04. Crocodolite asbestos was present in a sample at 1.5 mbgl at trial pit TP05. The presence of asbestos fibres within samples collected from the shallow made ground indicates a potentially unnacceptable risk to human health at the Assessment Site. The removal of asbestos containing soils or placement of a clean capping or hardstanding may be required to reduce the potential risk to future site users at the Assessment Site.

5.2.5 PAHs were observed at concentrations above the laboratory limit of detection within Made Ground samples collected at the assessment site from trial pits TP02, TP04 and TP06. The highest concentrations of PAHs were recorded in Made Ground sampled at 1.5 mbgl at trial pit

TP06 (Total PAH 288 mg/kg). The concentrations observed were below the relevant screening criteria for a commercial land use and as such are unlikely to present an unacceptable risk to human health. PAHs were not present at concentrations above the laboratory limit of detection within the natural material sampled at trial pit TP01.

5.2.6 Concentrations of petroleum hydrocrbons measured in samples collected during the investigation did not exceed the relevant screening criteria for a commercial land use and as such are unlikely to present an unacceptable risk to human health. Short chained hydrocarbons <C12 were not measured at concetrations above the laboratory limit of detection. TPH concentrations ranged from 146 to 925 mg/kg within the Made Ground sampled at the Assessment Site. Petroleum hydrocarbons were not measured at concentrations above the laboratory limit of detection within the natural material sampled at trial pit TP01. BTEX compounds and gasoline range organics (GRO) were not measured at concentrations above the laboratory limit of detection.

5.2.7 SVOCs and VOCs were typically below the laboratory limit of detection with the exception of the PAH compounds which were reflective of results provided by targetted PAH analysis. Napthalene was by the VOC analsysis at trial pits TP02, TP04 and TP06. Tetrachloroethene was also present as a VOC at a concentration of 10 µg/kg in a sample of Made Ground taken at 1.0 mbgl in trial pit TP04. Concentrations of VOCs and SVOCs were not present at concetrations exceeding the relevant screening criteria where available and as such are unlikely to present an unacceptable risk to human health.

5.2.8 Full laboratory certificates are included in appendix 3.

5.3 Controlled Waters Assessment

5.3.1 A controlled waters assessment has been undertaken as part of the previous investigations detailed in section 2. The findings of this ground investigation provide no evidence to the contrary of these assessments. Therefore the previous conclusion that there is unlikely to be an unacceptable riks to controlled waters remains valid.

5.4 pH and Sulphur

5.4.1 The pH measured within the soil samples taken from the Made Ground at the Assessment Site ranged between 8 – 8.6 pH units. The pH measured within the natural ground at trial pit RPS-TP01 was measured as 8.7 pH units.

5.4.2 The total sulphur concentrations measured within the made ground at the Assessment Site ranged between 0.065 and 0.275%. Analysis for sulphur was not undertaken within the natural deposits.

6 Conclusions

6.1.1 A ground investigation was undertaken on the 26th November 2015 at Kemsley Paper Mill to provide baseline conditions at a site (reffered to as the Assessment Site) to be leased by Wheelabrator Technologies Inc. for use as an IBA storage area. The investigation comprised of the commencement of 6 no. machine excavated trial pits up to a maximum depth of 4.2 mbgl.

6.1.2 Made Ground was encountered at all trial pit locations. Made Ground was encountered across the Assessment Site at thicknesses ranging from 0.9 m to > 4.2 mbgl. The identified Made Ground was present due to historical activities and development at the Assessment Site and due to recent tipping. The Made Ground generally contained fragments of brick, concrete, wood, glass, metal, organic material, ash and clinker. Boulder sized concrete fragments were encountered at trial pits TP04, TP05 and TP06. Made Ground associated with recent tipping was present at trial pits TP02, TP04 and TP06. Trial pits TP02, TP05 and TP06 refussed at shallow depths due to concrete obstructions.

6.1.3 Alluvium was encountered at trial pit TP01 after 0.9 mbgl consisting of soft becoming firm sandy clay.

6.1.4 An oily sheen was observed on groundwater present in trial pit TP03.

6.1.5 VOCs were not detected in soils using a hand held PID.

6.1.6 Representative soil samples were collected at each trial pit location from the Made Ground and alluvium (where encountered) and sent for subsequent laboratory chemical analysis. Samples were analysed for a suite of heavy metals, speciated PAHs, speciated TPH, SVOCs, VOCs, pH, sulphur and asbestos.

6.1.7 An assessment of risk to human health was undertaken based on the proposed commercial land use. This assessment concluded that the identified contaminant concentrations, other than asbestos, were unlikely to present an unacceptable to human health. Asbestos identified at 3 locations was considered to present a potentially unacceptable risk to human health however it is considered that removal of asbestos containing soils or use of a clean capping layer or hardstanding would significantly reduce this risk. Chemical analysis results were screened against relevant S4UL GACs and SGVs for a commercial land use. Where present above the laboratory limit of detection, all measured concentrations of determinants were below the relevant screening criteria.

6.1.8 PAHs were recorded at concentrations above the laboratory limit of detection at trial pits TP02, TP04 and TP06 possibly related to the recently tipped Made Ground materials. Where present, TPHs were characterised by longer chained hydrocarbons >C_{12}.

A controlled waters assessment has been undertaken as part of the previous investigations detailed in section 2. The findings of this ground investigation provide no evidence to the contrary of these assessments.

References

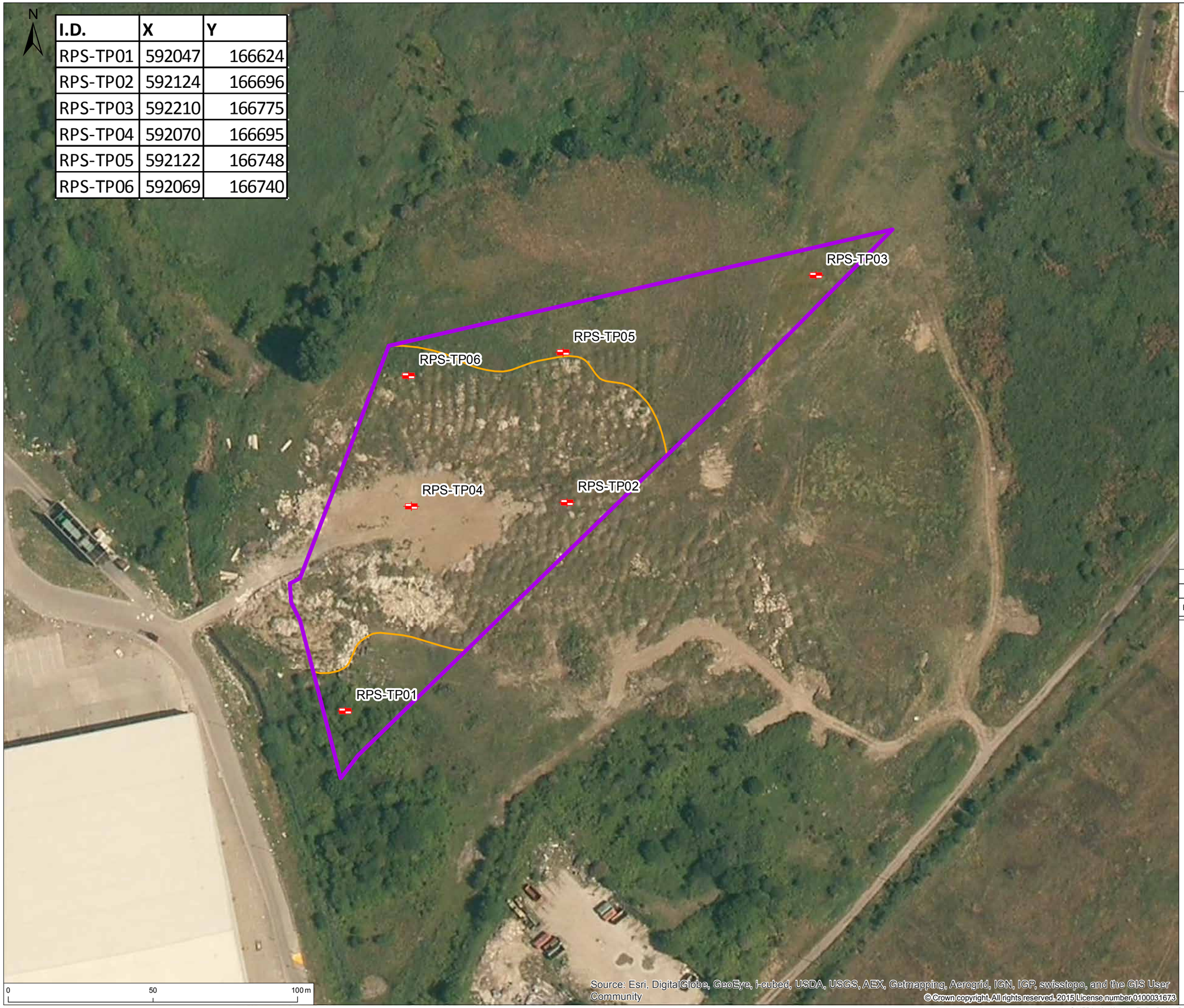
1. RPS Planning and Development. 2013. Interpretative Ground Investigation Report, Pre-Commencement Works for the Sustainable Energy Plant, Kemsley Paper Mill, Sittingbourne, Kent, On Behalf of EEW Energy from Waste UK Limited
2. URS Infrastructure & Environment UK Ltd. 2013. Kemsley paper Mill Geotechnical and Environmental Site Investigation. Prepared for John Sisk and Sons Ltd.
3. British Standards Institute. 2011. BS10175, Code of Practice for Investigation of Potentially Contaminated Sites.
4. British Standards Institute. 2009. BS5930, Code of Practice for Site investigation.
5. Land Quality Management Ltd. 2009. The LQM/CIEH Generic Assessment Criteria for Human Health Risk Assessment 2nd Edition
6. CL:AIRE. December 2009. The Soil Generic Assessment Criteria for Human Health Risk Assessment.

Glossary

AC	Assessment Criteria
BGS	British Geological Survey
BTEX	Benzene, toluene, ethylbenzene and xylene
COC	Contaminants of Concern
EA	Environment Agency
GAC	Generic Assessment Criteria
mbgl	meters below Ground Level
NGR	National Grid Reference
PAH	Polycyclic Aromatic Hydrocarbons
PID	Photo Ionisation Detector
PSCM	Preliminary Site Conceptual Model
SGV	Soil Guideline Value
SVOCs	Semi Volatile Organic Compounds
TPH	Total Petroleum Hydrocarbons
VOCs	Volatile Organic Compounds
ESG	Environmental Scientifics Groups
PRA	Preliminary Risk Assessment
LOD	Limit of Detection
LLOD	Laboratory Limit of Detection
SPZ	Source Protection Zone
PPM	Parts Per Million
UKAS	United Kingdom Accreditation Service
GRO	Gasoline Range Organics

Drawings

I.D.	X	Y
RPS-TP01	592047	166624
RPS-TP02	592124	166696
RPS-TP03	592210	166775
RPS-TP04	592070	166695
RPS-TP05	592122	166748
RPS-TP06	592069	166740



Notes
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2. If received electronically it is the recipients responsibility to print to correct scale. Only written dimensions should be used.

Legend

- Proposed IBA/Laydown Area
- Possible Extent of Recently Tipped Material Based on Visual Observations of Ground Surface

Rev	Description	Date	Initial	Checked
A	Actual Investigation Locations	DEC 15	JGB	RH

2420 The Quadrant, Aztec West, Almondsbury,
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Client DS SMITH

Project KEMSLEY PAPER MILL

Title INVESTIGATION LOCATIONS

Status PRELIMINARY
Drawn By JGB
PM/Checked By RH
Job Ref JER6773
Scale @ A3 1:1,250
Date Created DEC 15

Drawing Number **JER6773-SI-001**
Rev **A**

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O:\JER6773 - Kemsley Trailer Park\4. Drawings\1. RPS Drawings\MXD\-SI-\JER6773-SI-001A_D_151217_InvestigationLocations.mxd

Appendices

Appendix 1

Exploratory Borehole Logs

TRIAL PIT LOG

Pit No. **TP01** Sheet 1 of 1

Project Name:	Kemsley Paper Mill	Co-ordinates:	Date(s): 26/11/2015		Hole Type:
Project No:	JER6773	Easting:	Equipment:		TP
Location:	Sittingbourne	Northing:	JCB 13T 360	Pit Length: 2.00 m	Scale:
Client:	WTI UK	Ground Level (mAOD):	Logged By: RH	Pit Width: 0.50 m	1:25

Backfill	Water Strike(s)	Samples & In Situ Testing			Depth (mbGL)	Thickness (m)	Level (mAOD)	Legend	Stratum Description	Scale
		Depth (m)	Type	Results						
					0.00				Black SAND and GRAVEL of ash and clinker. Sand is medium to coarse. Gravel is angular to subangular fine to medium. Ash and clinker. (MADE GROUND)	
		0.50 0.50	ES PID1	0.0ppm		(0.90)				
					0.90				Soft organgey light brown sandy CLAY. (ALLUVIUM)	1
						(0.50)				
					1.40				Soft becoming firm light brown mottled grey and orangey brown occasionally gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is fine to medium angular to subangular of chert and shell fragments. (ALLUVIUM)	2
		2.50	ES							
						(2.60)				3
									End of Pit at 4.00m	4
										5

Remarks: Made Ground.

Groundwater: Slight seepage 0.9-1.4 mbgl.

Stability: Stable.

TRIAL PIT LOG

Pit No. **TP02** Sheet 1 of 1

Project Name:	Kemsley Paper Mill	Co-ordinates:	Date(s): 26/11/2015		Hole Type:
Project No:	JER6773	Easting:	Equipment:		TP
Location:	Sittingbourne	Northing:	JCB 13T 360	Pit Length: 2.00 m	Scale:
Client:	WTI UK	Ground Level (mAOD):	Logged By: RH	Pit Width: 0.50 m	1:25

Backfill	Water Strike(s)	Samples & In Situ Testing			Depth (mbGL)	Thickness (m)	Level (mAOD)	Legend	Stratum Description	Scale
		Depth (m)	Type	Results						
					0.00				Mid to dark brown gravelly slightly clayey SAND with some cobble sized brick and concrete fragments. Gravel is fine to coarse angular to sub-angular of brick and concrete fragments. (MADE GROUND)	
		0.50	ES			(0.90)				
		0.50	PID1	0.0ppm						
					0.90				Dark brown occasionally black gravelly clayey SAND with frequent brick concrete and wood fragments. (MADE GROUND)	1
		1.00	ES							
						(0.90)				
		1.50	PID2	0.0ppm					*Crushed concrete odour.*	
					1.80				Dark grey very silty SAND with concrete brick and wood fragments. Frequent rootlets and some organic material. (MADE GROUND)	2
		2.00	ES							
						(1.10)				
		2.50	PID3	0.0ppm						
					2.90				Black SAND and GRAVEL of ash and clinker. Sand is fine to coarse. Gravel is fine to medium of clinker. (MADE GROUND)	3
		3.00	PID4	0.0ppm		(0.30)				
									Concrete obstruction.	
									End of Pit at 3.20m	4
										5

Remarks: Excavation difficult after 2.9 mbgl.

Groundwater: None.

Stability: Stable.

AGS

TRIAL PIT LOG

Pit No. **TP03** Sheet 1 of 1

Project Name:	Kemsley Paper Mill	Co-ordinates:	Date(s): 26/11/2015		Hole Type:
Project No:	JER6773	Easting:	Equipment:		TP
Location:	Sittingbourne	Northing:	JCB 13T 360	Pit Length: 2.00 m	Scale:
Client:	WTI UK	Ground Level (mAOD):	Logged By: RH	Pit Width: 0.50 m	1:25

Backfill	Water Strike(s)	Samples & In Situ Testing			Depth (mbGL)	Thickness (m)	Level (mAOD)	Legend	Stratum Description	Scale
		Depth (m)	Type	Results						
					0.00	(0.40)			Light brown gravelly fine to medium SAND with occasional fine to coarse chalk gravel. (TOPSOIL)	
		0.50	PID1	0.0ppm	0.40				Light brown gravelly very sandy CLAY. Sand is fine to medium. Gravel is fine to coarse angular to subrounded of chalk brick glass and concrete fragments. Some large fragments of clay. Brick glass and concrete constituents increasing with depth. (MADE GROUND)	1
		1.00 1.00	ES PID2	0.0ppm		(1.70)				2
		2.50 2.50	ES PID3	0.0ppm	2.10	(1.60)			Dark brown and black very gravelly medium to coarse SAND. Gravel is fine to coarse round to angular of brick chert chalk and concrete fragments with infrequent clinker. (MADE GROUND)	3
		3.50	PID4	0.0ppm						
		3.70	ES		3.70	(0.50)			Firm light grey and light brown CLAY with inclusions of brick concrete and metal. (MADE GROUND) *Concrete boulder 0.4 x 0.3 m at 3.7 mbgl.*	4
		4.00	PID5	0.0ppm					End of Pit at 4.20m	5

Remarks: Oily sheen on GW.

Groundwater: Rapid influx 4.2 mbgl.

Stability: Stable.

AGS

TRIAL PIT LOG

Pit No. **TP04** Sheet 1 of 1

Project Name:	Kemsley Paper Mill	Co-ordinates:	Date(s): 26/11/2015		Hole Type:
Project No:	JER6773	Easting:	Equipment:		TP
Location:	Sittingbourne	Northing:	JCB 13T 360	Pit Length: 2.00 m	Scale:
Client:	WTI UK	Ground Level (mAOD):	Logged By: RH	Pit Width: 0.50 m	1:25

Backfill	Water Strike(s)	Samples & In Situ Testing			Depth (mbGL)	Thickness (m)	Level (mAOD)	Legend	Stratum Description	Scale
		Depth (m)	Type	Results						
					0.00				Light greyish brown sandy CLAY with occasional brick and concrete fragments. (MADE GROUND)	
		0.50	ES			(0.80)				
					0.80				Dark brown and black gravelly fine to coarse SAND with occasional clay fragments and boulder sized concrete fragments at depth. Gravel is angular to subangular of brick ash clinker concrete and brick. (MADE GROUND)	1
		1.00	ES							
										2
						(3.20)				
										3
									Large concrete boulders and rebar at 3.5 to 4.0 mbgl.	
									End of Pit at 4.00m	4
										5

Remarks: Made Ground.

Groundwater: None

Stability: Collapse on East side of pit.

AGS

TRIAL PIT LOG

Pit No. **TP05** Sheet 1 of 1

Project Name:	Kemsley Paper Mill	Co-ordinates:	Date(s): 26/11/2015		Hole Type:
Project No:	JER6773	Easting:	Equipment:		TP
Location:	Sittingbourne	Northing:	JCB 13T 360	Pit Length: 2.00 m	Scale:
Client:	WTI UK	Ground Level (mAOD):	Logged By: RH	Pit Width: 0.50 m	1:25

Backfill	Water Strike(s)	Samples & In Situ Testing			Depth (mbGL)	Thickness (m)	Level (mAOD)	Legend	Stratum Description	Scale
		Depth (m)	Type	Results						
		0.50 0.50	ES PID1	0.0ppm	0.00	(0.90)			Light grey and brown gravelly SAND with frequent cobbles of concrete fragments and brick. Gravel is fine to coarse angular to subrounded of concrete and brick fragments. (MADE GROUND) *Concrete boulder 0.7x0.2 m at 0.1mbgl.*	
		1.00	PID2	0.0ppm	0.90	(0.60)			Light grey and brown gravelly sandy CLAY with brick cobbles and concrete fragments. Gravel is fine to coarse angular to subrounded of concrete and brick fragments. (MADE GROUND)	1
		1.50 1.50	ES PID3	0.0ppm	1.50	(0.30)			Dark grey gravelly silty SAND with frequent cobbles of brick and concrete fragments. Gravel is fine to coarse angular to subrounded of concrete brick and occasional chalk. (MADE GROUND)	
									Concrete obstruction. Unable to break with excavator. End of Pit at 1.80m	2
										3
										4
										5

Remarks: Made Ground.

Groundwater: None.

Stability: Stable.

AGS

TRIAL PIT LOG

Pit No. **TP06** Sheet 1 of 1

Project Name:	Kemsley Paper Mill	Co-ordinates:	Date(s): 26/11/2015		Hole Type:
Project No:	JER6773	Easting:	Equipment:		TP
Location:	Sittingbourne	Northing:	JCB 13T 360	Pit Length: 2.00 m	Scale:
Client:	WTI UK	Ground Level (mAOD):	Logged By: RH	Pit Width: 0.50 m	1:25

Backfill	Water Strike(s)	Samples & In Situ Testing			Depth (mbGL)	Thickness (m)	Level (mAOD)	Legend	Stratum Description	Scale
		Depth (m)	Type	Results						
					0.00	(0.60)			Light brownish grey sandy CLAY with gravel sized fragments of tile and brick. (MADE GROUND)	
		0.50 0.50	ES PID1	0.0ppm	0.60	(0.60)			Black organic material of wood chipping with frequent tile and brick fragments and strong organic odour. (MADE GROUND)	
		1.00	PID2	0.0ppm						1
					1.20	(0.30)			Soft firm light grey occasional black gravelly cobbly CLAY. Gravel and cobbles are frequent of brick and concrete fragments angular to subangular. (MADE GROUND)	
		1.50 1.50	ES PID3	0.0ppm	1.50	(1.50)			Grey black and brown gravelly SAND some concrete brick rubble and tarmac fragments with occasional metal and plastic. Some boulder sized concrete fragments. (MADE GROUND)	2
									Terminated due to difficulties caused by concrete boulders. End of Pit at 3.00m	3
										4
										5

Remarks: Made Ground.

Groundwater: None.

Stability: Some collapse 1.2 to 3.0 mbgl when removing concrete boulders.

Appendix 6

URS Geotechnical and Environmental Site Investigation Report

URS

Kemsley Paper Mill

Geotechnical and Environmental Site Investigation

47064660

Prepared for:
John Sisk & Sons Ltd

UNITED KINGDOM & IRELAND

REVISION SCHEDULE				
Date	**Details**	**Prepared by**	**Reviewed by**	**Approved by**
January 2013	Draft	Massimo Masala / Rachel Pottinger Project Manager / Senior Consultant	Russell Cullen Associate Director	Russell Cullen Associate Director

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Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the services. The results of any measurements taken may vary spatially or with time and further confirmatory measurements should be made after any significant delay in using this Report.

Where assessments of works or costs required to reduce or mitigate any environmental liability identified in this Report are made, such assessments are based upon the information available at the time and are subject to further investigations or information which may become available. Costs may therefore vary outside the ranges quoted. No allowance has been made for changes in prices or exchange rates or changes in any other conditions which may result in price fluctuations in the future. Where assessments of works or costs necessary to achieve compliance have been made these are based upon measures which, in URS's experience, could normally be negotiated with the relevant authorities under present legislation and enforcement practice, assuming a pro-active and reasonable approach by site management.

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1 INTRODUCTION & BACKGROUND

1.1 General Introduction

URS Infrastructure & Environment Limited (URS) is pleased to present John Sisk & Sons Ltd (Sisk) with this report, detailing a geotechnical and environmental site investigation and assessment at the Kemsley Paper Mill site in Sittingbourne, Kent (the site).

E.ON Energy Waste UK Limited (EON) and Wheelabrator Technologies Inc. are planning to develop the main site as a Sustainable Energy Plant (SEP) to supply energy to the existing paper mill, with Ridham Dock developed as a container storage area. It is understood that the redevelopment will include a revision in site levels and therefore approximately 35,000m^3 of material will be removed from the Main Site for off-site disposal.

1.2 Objectives

The objective of this site investigation is to provide detailed ground conditions information to aid foundation and road design.

The site investigation has targeted areas where site levels are to be reduced. The investigation also aims to provide information to assess the suitability of material left in-situ and to classify the material for off-site disposal under the Landfill Directive.

1.3 Site Description

In the context of this report, the site consists of two areas. The first area is indicated as the Main Site and Access Road located immediately north east of the Kemsley Paper Mill site (operated by DS Smith Paper Ltd) and the second is indicated as Ridham Dock. A site location map, showing the two areas of the site, is provided as Figure 1.

1.3.1 Main Site and Access Road

The Main Site is located to the north east of the Kemsley Paper Mill, approximately 3.5km to the north of Sittingbourne, Kent. The Main Site is centred at National Grid Reference (NGR) 592160 166650 and covers an area of approximately 8.0 hectares.

The Main Site is gently undulating and is at an elevation of approximately 5m above mean sea level. The southern part is covered by rough hardstanding with skips and containers present. URS understands that this has previously been used as a contractor's laydown area. The remainder of the main site is rough grass and low vegetation which is marshy in places due to its proximity to the Swale estuary. The Swale estuary is located approximately 200m to the north east of the main site.

URS understands that large parts of the Main Site have been used as an unengineered landfill for waste produced by Kemsley Paper Mill since the mill was constructed in the late 1930s. It is also understood that stockpiles of fill include demolition rubble resulting from an extension to the mill and that these may have been stockpiled on the north western part of the main site.

The access road area extends northwards from the western part of the main site, and covers are area of approximately 4.2 hectares. The access road area includes Kemsley Mill Road, and an asphalted parking area immediately west of the road.

1.3.2 Ridham Dock

The Ridham Dock area is located approximately 1.8km to the North of the main site, around NGR 591870 168420, and covers an area of approximately 0.9 hectares. The Ridham Dock area is generally flat, and situated at an elevation of approximately 2m above mean sea level. Ridham Dock itself is located approximately 1100m to the northeast of the Ridham Dock site.

The Ridham Dock area is currently used as a storage area, with large stockpiles of wood chips and gravel present. The Ridham Dock site is bound to the south and partially bound to the North West by railway lines.

1.4 Scope of Work

The URS combined geotechnical and environmental investigation comprised:

- Task 1 – Project planning and development of a site-specific Health, Safety and Environmental Plan;
- Task 2 – Preliminary works and clearance of locations for underground services;
- Task 3 – Site works: Unexploded Ordnance (UXO) survey, cone penetration test (CPT) probing, trial pitting, light weight deflectometer (LWD) testing and dynamic cone penetrometer (DCP) testing.
- Task 4 – Geotechnical and environmental laboratory; and,
- Task 5 – Data review and preparation of a combined interpretative geotechnical and environmental report.

1.5 Previous Investigations

Phase II Intrusive Site Investigation, Kemsley Paper Mill, Sittingbourne, Kent. Prepared by RPS, September 2009, on behalf of E.ON (RPS report ref. JER4418)

In 2009, an intrusive investigation was undertaken by RPS at the main site (excluding the access road area) to determine baseline environmental conditions.

RPS supervised the excavation of fifteen trial pits to approximately 3.0m below ground level (bgl), eight window sample boreholes to approximately 4.0m bgl and three cable percussion boreholes to approximately 20m bgl. Investigation locations are shown on Figure 3a. Made Ground was encountered at all investigation locations, consistent with that encountered in the 2011 investigation. In addition, a layer of coal dust was encountered, up to 1.9m in thickness, in trial pits excavated in the south of the Main Site. The underlying natural geology is consistent with that reported in the 2011, above.

Perched groundwater was encountered at depths of between 1.6m bgl and 5.0m bgl in the Made Ground and alluvial deposits. The report noted that shallow groundwater appeared to flow towards the northeast, and concluded that this was in hydraulic continuity with the Swale and showed tidal influence. Deeper groundwater was encountered in the Woolwich Sand Formation at 13.0m bgl to 14.5m bgl, consistent with the 2011 investigations.

Environmental laboratory results were generally consistent with those reported in the 2011 report at the Main Site. In this investigation, contamination was not detected at concentrations reported to present a potential risk to human health or controlled waters based on the Generic Quantitative Risk Assessment (GQRA) undertaken by RPS. However, amosite (brown) asbestos was detected at one location (WS8).

The report notes that metals, PAH and TPH contamination was detected in groundwater samples collected from the site. Concentrations of a small number of contaminants exceeded

UK DWS (Drinking Water Standards) and EQS (Environmental Quality Standards). With the exception of nickel and sulphide, exceedances of all other contaminants were in perched water samples recovered from the relatively impermeable Made Ground and alluvial deposits, which the report stated were classified as non-aquifers. Concentrations of nickel and sulphide in the deeper groundwater (Woolwich Sands) exceeded the corresponding DWS. The Woolwich Sands, a minor aquifer (now a Secondary B Aquifer), may potentially be in hydraulic continuity with the underlying chalk major aquifer (now a Principal Aquifer).

Ground gas monitoring undertaken at the site detected maximum concentrations of carbon dioxide (5.5%) and methane (5.8%). These concentrations are lower than those reported in the 2011 investigations.

A summary of the geotechnical laboratory testing in this report indicates that the Made Ground is of variable behaviour, due to its heterogeneity, but indicates the presence of putrefying material. The report suggests that the underlying alluvial deposits are firm, of high shrinkage potential, and are highly moisture sensitive, and that the London Clay shows increasing stiffness with depth.

Interpretative Ground Investigation Report, Pre-commencement Works for the Sustainable Energy Plant, Kemsley Paper Mill, Sittingbourne, Kent. Prepared by RPS, August 2011, on behalf of E.ON Energy from Waste UK Ltd and Wheelabrator Technologies Inc (RPS report ref. JER5057)

In 2011, RPS undertook a ground investigation at the Main Site (excluding the Access Road area), comprising seven cable percussion boreholes, eight window sample boreholes with some locations installed as combined gas and groundwater monitoring wells, ten trial pits and ten CPT probeholes. Investigation locations are presented on Figure 3a. Soil samples were collected for environmental and geotechnical laboratory analysis.

Made Ground was encountered at all locations across the Main Site, at a thickness of up to 4.7m. The thickness of Made Ground increased towards the north-western part of the main site, together with large amounts of wood, glass, concrete and plastic. The Made Ground was found to be underlain by alluvium, comprising soft to firm, orange-grey mottled clay, overlying London Clay comprising stiff, blue-grey clay and in turn overlying the Woolwich Sand Formation.

Visual and olfactory evidence of contamination was noted across the site. The report lists the presence of ash and clinker in made ground at all 17 sample locations. In addition, hydrocarbon staining and odour was recorded at four locations, and an ammonia-type odour at one location in the central part of the site.

A shallow groundwater strike was encountered at depths of 1.3m bgl to 3.8m bgl in less than half of the investigation locations, mainly at the base of the Made Ground. The remaining locations were dry and therefore the shallow groundwater may be discontinuous beneath the site. However, the report notes that the work was undertaken during a particularly dry period of weather in May to June 2011. Deeper, confined groundwater was encountered at approximately 12m bgl to 15m bgl at the top of the permeable Woolwich Sand Formation.

Laboratory analysis indicates that contamination was primarily limited to the Made Ground, with the exception of sulphate concentrations which were highest in the underlying alluvial deposits. The highest concentrations of contaminants in soil were typically reported in the central part of the site. Metals, PAH, total petroleum hydrocarbons (TPH), volatile organic compounds (VOC) and asbestos were all detected at elevated concentrations in the Made Ground.

Asbestos was identified in four locations; two samples (TP17 and TP26) contained amosite (brown) asbestos and two samples (WS14 and WS17) contained crocidolite/chrysotile (blue/white) asbestos. Two of the locations where asbestos was reported were located adjacent to where asbestos was detected in 2009 in WS8. The report concludes that there are no potential risks to human health, with the exception of one concentration of benzo(a)pyrene at a depth of 2.0m to 2.5m bgl. The report did not identify potentially significant risks from contaminants in groundwater.

Gas monitoring undertaken at the site indicated maximum carbon dioxide and methane concentrations of 14.7% and 25.9%, respectively. The report infers that the principal source of this gas production is Made Ground at the site and recommends that, based on CIRIA guidance, mitigation measures, including gas membrane(s) and floor venting, may be required for buildings constructed at the site.

Interpretative Ground Investigation Report, Pre-commencement Works, Ridham Dock, Sittingbourne, Kent. Prepared by RPS, July 2012, on behalf of E.ON Energy from Waste UK Ltd and Wheelabrator Technologies Inc (RPS report ref. JER5414)

In July 2012, RPS undertook a ground investigation at the Ridham Dock site to assess the environmental and geotechnical ground conditions. Three cable percussion boreholes, sixteen window sample borehole, four plate load tests and 23 CBR tests were carried out, as well as subsequent environmental and geotechnical laboratory testing. These investigation locations are shown on Figure 2.

Made Ground was encountered in all investigation locations, to a maximum thickness of 3.4m and principally comprised ash fill, as black sand and gravel, with grey-brown silt, sand and gravel. This was underlain by alluvium, comprising soft to firm clay with localised fibrous peat layers, and stiff, grey-blue London Clay.

Shallow groundwater was encountered between 0.5m and 2.0m depth in all locations, and was inferred to represent a continuous water body beneath the site, in hydraulic continuity with the Swale estuary. Deeper, slow groundwater seepages were also encountered at approximately 12m depth in the London Clay.

Evidence of contamination was observed in the form of ash at all investigation locations. In addition, a hydrocarbon odour was noted at BH2, in the southern part of the Ridham Dock site. Laboratory analysis reported elevated concentrations of heavy metals and polycyclic aromatic hydrocarbons (PAH) in the Made Ground across the site. Asbestos (chrysotile fibres) was also detected at two locations (WS3 and WS7).

RPS undertook a Generic Quantitative Risk Assessment (GQRA) based on the 95% UCL (Upper Confidence Limit) of the contaminant concentrations across the site and concluded that there were no unacceptable risks to human health. A small number of outlying samples did exceed relevant screening criteria for a number of metals and PAHs in samples recovered from the upper 1.0m of made ground.

Concentrations of metals, inorganic contaminants and PAH concentrations also exceeded relevant screening criteria for controlled waters. The RPS report states that the contaminants of concern were likely derived from the ash fill found across the whole of the Ridham Dock site. The report notes that covering the site with hardstanding during development should prevent infiltration of rainwater through the Made Ground, and therefore minimise the amount of contamination leaching into groundwater.

Ground gas monitoring undertaken by RPS detected low concentrations of carbon dioxide and methane at the site. The report recommends that, based on CIRIA guidelines, mitigation measures, including a gas membrane and floor venting, may be required for buildings constructed on the Ridham Dock site.

2 FIELD INVESTIGATIONS AND METHODS

2.1 General Introduction

The following section provides a summary of fieldwork methodologies undertaken to fulfil the project aims and objectives defined in Section 1.2. Fieldwork was undertaken between Monday 24th September 2012 and Thursday 4th October 2012.

The exploratory hole locations are presented on Figures 2, 3a and 3b. Borehole and trial pits logs are presented in Appendix A.

2.2 Site Reconnaissance & Preliminary Works

Intrusive investigation locations were identified by the URS field engineer in collaboration with an ecologist (RPS), the service clearance subcontractor (Endeavour Drilling Ltd) and the earth moving subcontractor (J. Daly Ltd) for their suitability with respect to sampling objectives, health and safety requirements and accessibility.

URS had to liaise closely with the RPS ecology team since a reptile translocation programme was underway. Several areas were not accessible due to the presence of reptile fencing however both URS and RPS worked together to ensure that the bulk of the site was investigated. Habitat clearance was necessary to facilitate access to several of the locations, including TP1 to TP3.

A specialist subcontractor (Endeavour Drilling Ltd) assessed the potential for underground services such as electrical cables and drainage/effluent pipes in the vicinity of each proposed investigation location. The reconnaissance identified a number of underground services within the investigation areas. Services were identified along the Access Road and therefore intrusive locations were positioned to the eastern side of the road. All remaining intrusive locations within the Main Site and Ridham Dock proceeded as proposed.

2.3 Intrusive Site Works

2.3.1 Hand Dug Pits

In accordance with URS guidance, all Unexploded Ordnance (UXO) survey, Cone Penetration Test (CPT) and Dynamic Cone Penetrometer (DCP) locations were hand dug to 1.2m bgl at 110% of the casing diameter under the oversight of a URS field engineer. This was undertaken prior to the commencement of drilling to confirm the absence of underground services at each location.

2.3.2 UXO Survey

The UXO survey was carried out on the 26th September 2012 at the Main Site and Access Road within Kemsley Paper Mill and on the 3rd October 2012 at Ridham Dock by BACTEC, using a single survey rig at locations adjacent to the proposed CPT locations.

A total of seventeen positions were surveyed using an intrusive magnetometry survey system across the areas of interest, including eight survey locations at the Main Site and Access Road and nine survey locations at Ridham Dock. The average depth of survey was 12.8m below ground level (bgl). No magnetic anomalies with the characteristics anticipated from German WWII air-dropped bombs were detected within the clearance radii, which varied between 1.0 and 1.25m.

Most recently, the Main Site has been used as a waste disposal area for the paper mill. As all trial pitting was proposed to be restricted to the recent shallow Made Ground, it was considered that there was limited potential for buried UXO to be encountered in these materials. Therefore, the trial pit locations were not included in the UXO survey.

The Light Weight Deflectometer (LWD) tests did not involve intrusive work and as a result these locations did not require clearance for services or UXO.

2.3.3 Trial Pitting

Trial pits TP1 to TP18 were situated in areas with limited historical testing to provide additional information on environmental and geotechnical ground conditions.

Eighteen trial pits (TP1 – TP18) were excavated by J. Daly Ltd at the main site using a JCB 3CX-type backhoe excavator, under the supervision of a URS field engineer. The trial pits were excavated between the 24th and 26th September 2012. The trial pits were excavated to a maximum depth of 3.6m bgl, with at least four soil samples recovered from each location; three for environmental and one for geotechnical laboratory analysis. The excavations were backfilled with soil arisings, and the surface reinstated to its original condition.

The trial pits were logged by a URS field engineer in general accordance with British Standard BS EN ISO 14688-1:2002. Soil arisings were screened in the field using a portable MiniRAE 2000 photo ionisation detector (PID), equipped with a 10.6eV lamp and calibrated daily to isobutylene (100ppm). Soil samples were recovered at approximately 1m intervals or change in strata, placed in sealed containers and left for 10 to 15 minutes to equilibrate. The headspace above the soil in each container was then tested using the PID. On the basis of the PID readings and observations of contamination, samples were selected for analysis at the discretion of the URS field engineer.

Trial pit locations are shown on Figure 3a and trial pit logs, including the results of field screening, soil descriptions and observations of potential contamination, are presented in Appendix A.

2.3.4 Cone Penetration Tests (CPTs)

Seventeen CPTs were conducted on the 27th September 2012 at the main site (CPT21 to CPT24) and Access Road (CPT34 to CPT37), and at Ridham Dock (CPT25 to CPT33) between the 3rd and 4th October 2012 by BACTEC, using a truck mounted CPT rig.

CPTs undertaken at the Main Site were initially advanced using rotary drilling techniques to a depth of 3.0m bgl (following hand pitting to a depth of 1.20m bgl in order to progress through the Made Ground to facilitate the CPT drilling. The CPT probe would have been unable to progress through potential obstruction in the Made Ground e.g. concrete and boulders, without predrilling the CPT locations.

The CPT locations are presented on Figures 2, 3a and 3b and CPT logs are presented in Appendix A.

2.3.5 Light Weight Deflectometer (LWD) Tests

Nineteen LWD tests were undertaken on the 1st to 4th October 2012 at the Main Site (LDW5 to LWD11), Access Road (LWD1 to LWD4 and LWD12 to LWD14), and Ridham Dock (LWD15 to LWD19) by URS, using an LWD survey unit.

LWD tests are designed to impart a load pulse to the pavement surface which simulates the load produced by a rolling vehicle wheel. The load is produced by dropping a large weight, and transmitted to the pavement through a circular load plate.

The LWD test locations are shown on Figures 2, 3a and 3b.

2.3.6 Dynamic Cone Penetrometer (DCP) Tests

Nineteen DCP tests were carried out on the 1st to 4th October at the Main Site (DCP5 to DCP11), Access Road (DCP1 to DCP4 and DCP12 to DCP4) and Ridham Dock (DCP15 to DCP19) by URS, using a DCP survey unit.

DCP tests involve a standard cone, on the end of a long steel rod, which is subject to a blow of an 8kg mass falling a distance of 575mm onto an anvil attached to the penetrometer rod. The distance of penetration of the cone tip is then recorded and the cycle repeated to a maximum depth of 1.2m bgl, or refusal.

The DCP tests were undertaken adjacent to the LWD tests. The DCP test locations are shown on Figures 2, 3a and 3b and the logs are presented in Appendix A.

2.4 Geotechnical Laboratory Testing

Soil samples recovered during the investigation were selected for laboratory testing to assess their geotechnical properties and to allow the interpretation of geotechnical design parameters.

Nine soil samples were submitted to URS' laboratory in Ashford for remoulded California Bearing Ratio (CBR) testing. The laboratory operates under URS' ISO 9000 accreditation and all testing was carried out in general accordance with BS 1377:1990.

The CBR laboratory certificates are presented as Appendix B.

2.5 Environmental Laboratory Analysis

Soil samples collected from trial pits TP1 to TP18 were submitted to Jones Environmental Laboratory, a URS approved subcontract laboratory. Jones Environmental Laboratory is also UKAS accredited and holds MCERTS accreditation for a number of its analytical methodologies.

Soil samples were collected by the URS field engineer in clean, laboratory-supplied containers and stored in pre-chilled cool boxes under chain of custody procedures.

The environmental laboratory certificates are presented as Appendix C.

2.5.1 Sample Handling

2.5.2 Environmental Analytical Schedule

Up to fifty-four soil samples from across the Main Site were submitted for analysis of the following potential contaminants:

- Total Petroleum Hydrocarbons (TPH-CWG), Benzene, Toluene, Ethyl benzene and xylenes (BTEX), and MTBE;
- Volatile Organic Compounds (VOCs);
- Semi Volatile Organic Compounds (SVOCs);
- Heavy metals (As, Ba, Be, Cd, Cr, Cu, Hg, Ni, Pb, Se, V, Zn, Cr VI, Cr III);
- pH;
- Anions (chloride, fluoride, sulphate, nitrate, nitrite, phosphate);
- Water soluble boron; and
- Asbestos screen and asbestos quantification (where fibres detected)
- Waste Acceptance Criteria (WAC).

3 SITE INVESTIGATION FINDINGS

3.1 Regional Geology & Previous Reports

Based on a review of previous investigations undertaken by RPS between 2009 and 2012 and data available from the British Geological Survey, the geology underlying the study comprises the following:

3.1.1 Main Site and Access Road areas

Made Ground, consisting of heterogeneous silt, sand and gravel with ash, clinker and large debris fragments, is present to a depth of up to approximately 4.5m bgl, increasing in thickness towards the northwest. Under the majority of the site, this is underlain by soft to firm, orange and grey mottled alluvial clay to a depth of approximately 6.0m bgl to 8.5m bgl. In the eastern part of the site, close to the Swale estuary, the alluvial deposits are soft to very soft, grey, silty clay. The alluvial deposits are in turn underlain by stiff, grey-blue London Clay to a depth of approximately 12.0m bgl to 15.5m bgl, overlying dense sands of the Woolwich Formation. The base of the Woolwich Formation was not proven.

3.1.2 Ridham Dock

Made Ground at Ridham Dock is typically thinner than the Main Site, reaching a depth of approximately 3.0m in thickness, and comprising principally black, ash fill. This is underlain by orange and grey mottled alluvial deposits, London Clay and the Woolwich Sand Formation at depths generally consistent with the Main Site.

3.2 Site Geology

Soil was recovered within the trial pits only, which were excavated to a maximum depth of 3.6m bgl. The geology in the CPT holes is inferred through the Robertson Classification (1986) and is presented on the CPT logs in Appendix A, however the interpretation has been correlated with the RPS investigations and is consistent with their findings.

The geology is summarised below and is presented in more detail on the trial pit logs in Appendix A. Geological cross-sections of the Main Site and Ridham Dock are presented in Figures 5a and 5b, respectively.

3.3 Main Site and Access Road

3.3.1 Made Ground

Made Ground was encountered in all of the trial pits (TP1 to TP18) to a maximum thickness of 3.6m bgl (TP5 and TP6). The Made Ground was thicker in the centre (3.0m to 3.4m) and north east of the site (2.3m to 3.6m). The base of the Made Ground was not proven in the north of the site (TP5 to TP7) as this was beyond the reach of the excavator.

Given the site's former use as a waste disposal area for the paper mill, the composition of the made ground varies across the site but is predominantly sandy gravel and gravelly clay. The made ground also contains varying amounts of ash, clinker, plastics, timber, metal fragments and guttering, polystyrene, wood chippings, glass, brick and abundant paper in the north of the site (TP1, TP2, TP3) and occasionally in the centre (TP14) and south (TP13) of the site.

In the far south of the site in trial pit TP13, the Made Ground comprised dark grey silt to 1.70m bgl. TP13 – dark grey silt to 1.7m

Trial pitting was not undertaken within the Access Road and therefore data is only available from the hand dug pits. Made Ground was encountered at all the location within the Access Road and comprised dark brown to dark grey, clayey gravel grading to soft, grey/black, gravelly clay.

3.3.2 Alluvium

Alluvial deposits beneath the Main Site were encountered in all the trial pits at depths of between 1.20m bgl (TP9) and 3.40m bgl (TP 4 and TP15) with the exception of TP5 to TP7 in the north of the main site.

The alluvial deposits generally comprised firm, grey, silty clay with occasional sand and organic content. Peat was identified beneath the made ground at approximately 3.4m to 3.6m bgl in TP4 in the north of the site.

In addition, the CPT data infers that the geology comprises clay interbedded with frequent bands of silty clay to clayey silt to a maximum depth of approximately 14m bgl, overlying silty sand to sandy silt to a maximum depth of 14.6m bgl.

The alluvial deposits inferred beneath the Access Road are consistent with those inferred beneath the Main Site, with the exception of location CPT35, which indicates organic rich material between approximately 3.0m and 3.5m bgl, underlain by a sensitive fine grained soil type to approximately 6m bgl. This is in turn underlain by clay proven to a depth of approximately 10m bgl at the base of the CPT hole.

3.4 Ridham Dock Geology

Trial pitting was not undertaken at Ridham Dock and therefore the geology has been inferred from the hand dug pits and CPT results from CPT25 to CPT33. However, determination of the depth of Made Ground is not always possible from CPT logs alone.

3.4.1 Made Ground

Surface hardstanding comprised bituminous macadam and concrete overlying black ash, sand and gravel to a maximum depth of 1.5m bgl in the hand dug pits. The base of the Made Ground was not proven in the hand dug pits at any of the CPT locations.

3.4.2 Alluvial Deposits

The alluvial deposits comprised layers of clay interbedded with frequent bands of sand and silt with varying clay content.

A layer of organic material has been inferred between 2m and 5m bgl in the southern part of Ridham Dock with thinner bands of organic material inferred at approximately 3m bgl in locations in the north western part of the dock area.

3.5 Hydrogeology

Groundwater strikes were encountered in seven of the trial pits excavated on the Main Site at depths of between 2.0m bgl (TP4) and 3.5m bgl (TP6) in the north of the site and between 2.5m bgl (TP16) and 3.0m bgl (TP18) adjacent to the southern boundary of the site.

Groundwater was not encountered beneath the Access Road or Ridham Dock since trial pitting was not undertaken in these areas.

It is likely that a shallow groundwater body exists within the alluvial deposits and that the overall groundwater flow is to the north east, towards the Swale estuary. Given the sand content within the alluvial deposits beneath the site, it is likely that shallow groundwater is in continuity with surface water features (surface water drains and small streams within 50m of the main site and the Swale estuary).

The alluvial deposits are classified as a Secondary Aquifer (undifferentiated) and the London Clay is classified as unproductive strata. The deeper Woolwich Sands are classified as a Secondary Aquifer overlying Cretaceous chalk (a Principal Aquifer).

The site does not lie within a groundwater source protection zone, however there is a Zone II (Outer Zone) approximately 1.5km to the south west of the site boundary.

3.6 Field Observations of Contamination

Visual and olfactory observations of contamination were recorded on the trial pit logs during site works and are presented in Appendix A.

- Elevated PID readings were not recorded during the intrusive works.
- TP14 (3.0-3.2m bgl) - Strong hydrocarbon odour was noted, however PID readings were recorded below the instrument detection limit (<0.1ppm).
- CPT27 (ground level to 0.4m bgl) - Suspected fragments of bound asbestos.

8 SUMMARY AND CONCLUSIONS

URS was commissioned by John Sisk & Sons Ltd to undertake geotechnical and environmental site investigation at the Kemsley Paper Mill site in Sittingbourne, Kent (the site).

The site consists of two areas including the Main Site and Access Road, and Ridham Dock. E.ON Energy Waste UK Limited (EON) and Wheelabrator Technologies Inc. are planning to develop the main site as a Sustainable Energy Plant (SEP) to supply energy to the existing paper mill with Ridham Dock developed as a container storage area. It is understood that the redevelopment will include a revision in site levels and therefore approximately 35,000m^3 of material will be removed for off-site disposal.

The intrusive investigation included liaison with the ecology consultants to agree access, clearance of location for suspected services and UXO, excavation of eighteen trial pits, drilling of seventeen CPTs, and nineteen LWD and DCP tests. Soil samples were obtained from the trial pits for subsequent environmental and geotechnical testing.

Made Ground was encountered in all of the trial pits at the Main Site to a maximum thickness of 3.6m bgl (TP5 and TP6), however the base of the Made Ground was not proven in the north of the site. The composition of the Made Ground varies but is predominantly sandy gravel and gravelly clay with varying amounts of waste including abundant paper in the north of the site. The Made Ground was underlain by alluvium at depths of between 1.20m bgl (TP9) and 3.40m bgl (TP 4 and TP15) and comprised firm, grey, silty clay with occasional sand and organic content.

In addition, the CPT data infers that the geology comprises clay interbedded with frequent bands of silty clay to clayey silt to a maximum depth of approximately 14m bgl, overlying silty sand to sandy silt to a maximum depth of 14.6m bgl.

The Made Ground at Ridham Dock comprised black ash, sand and gravel to a maximum depth of 1.5m bgl at the base of the hand dug pits, however the base of the Made Ground was not proven.

Groundwater was encountered in seven of the trial pits excavated on the Main Site at depths of between 2.0m bgl (TP4) and 3.5m bgl (TP6). The remaining trial pits were dry indicating that shallow groundwater in the Made Ground is likely to be discontinuous. Groundwater was not encountered beneath the Access Road and Ridham Dock since no trial pitting was undertaken in these areas.

Given the sand content within the alluvial deposits beneath the site, it is likely that shallow groundwater is in continuity with surface water features (surface water drains and small streams within 50m of the main site and the Swale estuary to the northeast).

The LWD results indicated minimum and maximum values of surface moduli of 13MPa to 73MPa (Main Site), 14MPa to 65MPa (Access Road), and 34MPa to 79MPa (Ridham Dock).

The minimum CBR values recorded by the DCP tests were 3% (Main Site), 2.5% (Access Road) and 4.5% (Ridham Dock). However, remoulded CBR test results ranged from 1.6% to 35.8% at the Main Site.

Based on the analytical results, comparison to Stage 2 screening values and the conceptual site model, potential risks to human health receptors (both on-site and off-site) are not considered significant. However, asbestos fibres have been identified in one location during this site investigation and in four historical locations by RPS which may present a significant risk to human health if the site is redeveloped.

Concentrations of contaminants of potential concern were not identified at concentrations which may present a potential risk to controlled waters receptors in the majority of samples analysed. However, potential risks to controlled waters from reported concentrations in soil (TPH in TP14, PAH in TP4 and TP11, and metals in TP2 and TP3 have been identified as potentially significant. All trial pits are located in areas where it is understood that there will be a reduction in site levels during redevelopment. As such, it is recommended that material in these areas is not re-used on site and is removed for off-site disposal.

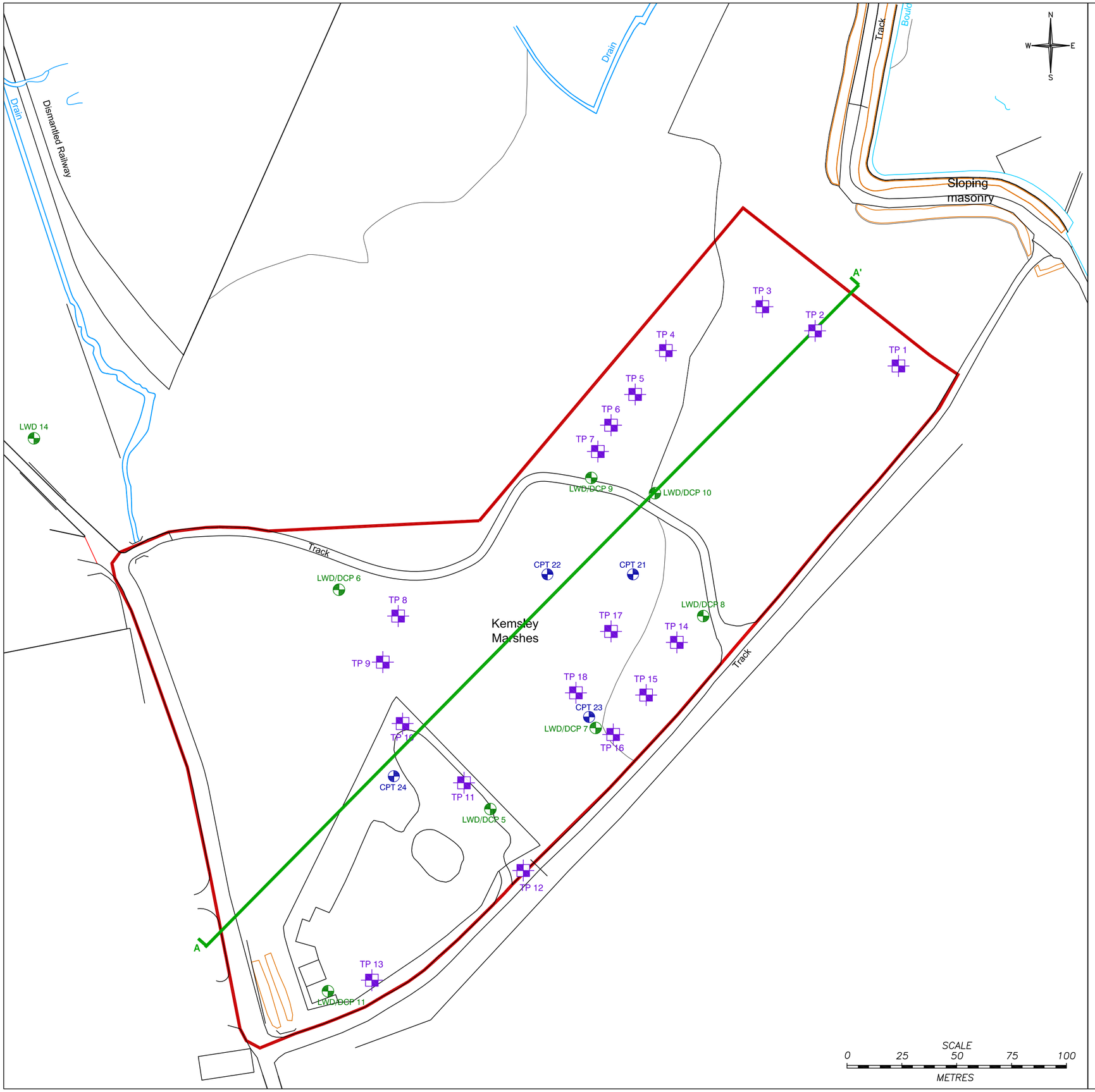
All the soil samples obtained have been classified in accordance with Technical Guidance WM2, published by the Environment Agency, to assess whether the material may be classified as hazardous waste based on the revised Waste Framework Directive. The assessment indicates that all material on site should be classified as non-hazardous for off-site disposal based on the samples submitted for analysis. Please note that access to the site was constrained by an ecological translocation process. As a result hotspots of hazardous waste may be present on site that were not investigated nor sampled as part of this investigation.

FIGURES

Title	SITE LOCATION MAP
Location	KEMSLEY PAPER MILL, SITTINGBOURNE, KENT
Client	JOHN SISK & SONS LIMITED

URS

App'd:	Drawn:	Date:
KS	SQ	JAN 2013
		Ref: KS/SQ/MCH
Scale: 1:50,000		Job No: 47064660
Drg. Size: A4		FIGURE 1



KEY:

- Site Boundary Main Site
- CPT — CPT Location
- LWD/DCP — LWD/Dynamic Cone Penetrometer Location
- TP — Trial Pit Location
- Cross section transect line

CONSTRUCTION RISKS	MAINTENANCE / CLEANING RISK	DEMOLITION RISKS

In addition to the hazard/risks normally associated with the types of work detailed on this drawing take note of above.
It is assumed that all works on this drawing will be carried out by a competent contractor working, where appropriate, to an appropriate method statement.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX

NOTES

This drawing is for preliminary purposes only and is subject to amendment during design development. UNDER NO CIRCUMSTANCES MUST THIS DRAWING BE USED FOR CONSTRUCTION PURPOSES

Revision Details	By / Check	Date	Suffix

Purpose of issue: FOR INFORMATION

Client: JOHN SISK & SONS LIMITED

Project Title: KEMSLEY PAPER MILL, SITTINGBOURNE, KENT

Drawing Title: Figure 2a Intrusive Investigation Plan Main Site

Designed	Drawn	Checked	Approved	Date
KS	RH	RC	KS	JAN 2013

URS Internal Project No. | Suitability

Scale @ A2: 1:1250 | Zone / Mileage

URS Infrastructure & Environment UK Limited
BRUNEL HOUSE
54 PRINCESS STREET
MANCHESTER M1 6HS
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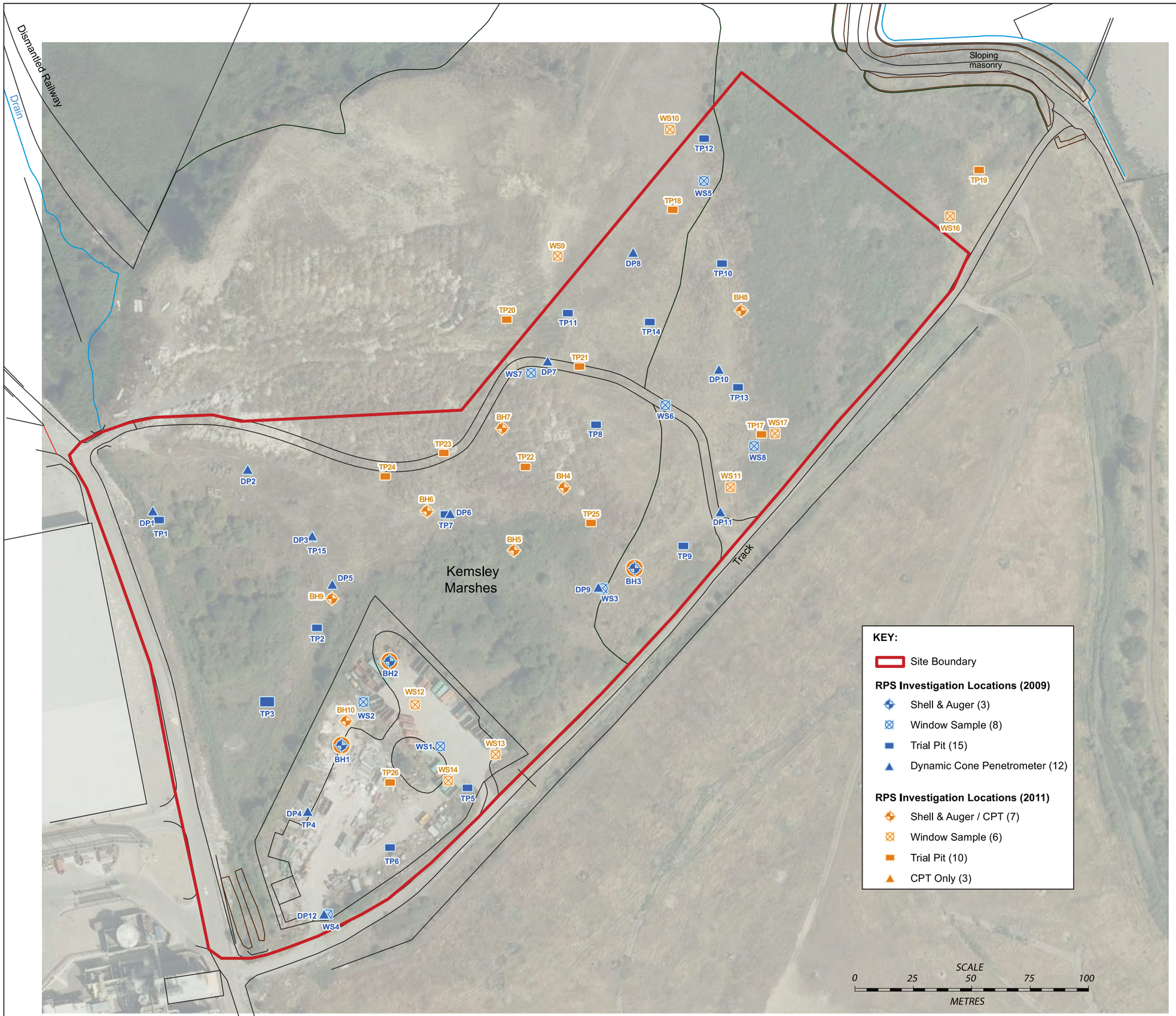
FAX 0161-907-35011
www.ursglobal.com

Drawing Number: 47064660/ 2A | Rev



CONSTRUCTION RISKS	MAINTENANCE / CLEANING RISK	DEMOLITION RISKS

In addition to the hazard/risks normally associated with the types of work detailed on this drawing take note of above.
It is assumed that all works on this drawing will be carried out by a competent contractor working, where appropriate, to an appropriate method statement.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX

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Revision Details	By / Check	Date	Suffix

Purpose of issue
FOR INFORMATION

Client
JOHN SISK & SONS LIMITED

Project Title
KEMSLEY PAPER MILL, SITTINGBOURNE, KENT

Drawing Title
Figure 3a
Historical Site Investigation Locations
Main Site

Designed	Drawn	Checked	Approved	Date
KS	RH	RC	KS	JAN 2013

URS Internal Project No. | Suitability

Scale @ A2: As Shown | Zone / Mileage

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FAX 0161-907-35011
www.ursglobal.com

Drawing Number: 47064660/3A
Rev:

South West

North East

A

A'

A-A'

TP13

BH1(RPS)

TP12, CPT24

BH2(RPS), TP10, TP11

TP9

TP8

TP16, TP18, CPT23

BH5 (RPS), CPT22

TP15

BH3 (RPS), TP17

TP14

CPT21

TP7

TP6

TP5

BH8 (RPS)

TP4

TP1, TP2, TP3

Made Ground

Alluvial Clay

London Clay

Woolwich & Thanet Beds

Localised Peat

Perched Groundwater in Made Ground

Groundwater at top of Woolwich & Thanet Beds

Ground Level

mAOD

5

0

-5

-10

-15

-20

0 50 100m

APPROXIMATE HORIZONTAL SCALE

KEY:

- Made Ground
- Localised Peat
- Alluvial Clay
- London Clay
- Woolwich & Thanet Beds

mBGL metres Below Ground Level

Note; Surveyed ground level from Barrett Mahoney drawing 11.204/502, May 2012

Title	GEOLOGICAL CROSS SECTION A-A' - MAIN SITE
Location	KEMSLEY PAPER MILL, SITTINGBOURNE, KENT
Client	JOHN SISK & SONS LIMITED

URS

App'd:	Drawn:	Date:
KS	RH	JAN 2013
		Ref: KS/RH/MCH
Scale: as shown		Job No: 47064660
Drg. Size: A4		FIGURE 4a

APPENDIX A - Exploratory Hole Logs

Client: John Sisk & Son Ltd

Project: Kemsley, Sittingbourne, Kent.

Contract No: 47064660

URS

Record of Trial Pit

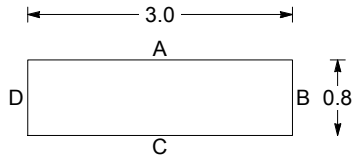
TP01

Samples & in situ Tests				Water Level	Strata			
Depth	Type/ No.	Test Results	PID (ppm)		Reduced Level m(AOD)	Legend	Depth (Thick-ness)	DESCRIPTION
1.15	B/TP1_1.2 D/TP1_1.2		<0.1				(2.50)	MADE GROUND. Brown, silty, slightly gravelly sand. Sand is fine to coarse. Gravel is fine to coarse, sub-rounded to sub-angular. Abundant plastics, paper waste, metal guttering and polystyrene waste. Dry.
2.45	D/TP1_2.5		<0.1				2.50	
							(0.30)	MADE GROUND. Dense, black, sandy gravel. Sand is fine to coarse. Gravel is of fine clinker. Dry. NVO.
2.95	B/TP1_3.0		<0.1				2.80 (0.30)	Brown-grey, organic CLAY. Dry. Moderate organic odour.
							3.10	**Trial pit terminated at 3.1m bgl.**

GENERAL REMARKS

NVO: No visual or olfactory evidence of contamination.

Stability: Unstable. Backfilled on completion.



Exploratory hole logs should be read in conjunction with Key Sheets.

Logged by: M.Williams	Equipment: JCB 3CX-type backhoe excavator	Co-ordinates: Not Surveyed	Ground Level: Not Surveyed	Date: Start: 26/09/2012	AGS
Checked by: M Masala	Contractor: J.Ealy			End: 26/09/2012	Sheet 1 of 1
Status:					

Client: John Sisk & Son Ltd

Project: Kemsley, Sittingbourne, Kent.

Contract No: 47064660

URS

Record of Trial Pit

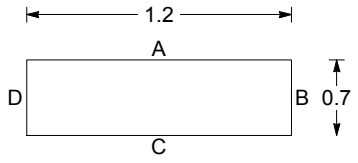
TP02

Samples & in situ Tests				Water Level	Strata			
Depth	Type/ No.	Test Results	PID (ppm)		Reduced Level m(AOD)	Legend	Depth (Thick-ness)	DESCRIPTION
							(1.80)	MADE GROUND. Silty, slightly gravelly sand. Sand is fine to coarse. Gravel is fine to coarse. Approximately 50% is waste, comprising plastic, rubber, wood, paper and chippings, increasing to 70% from 1.2m bgl. Dry.
1.45	D/TP2_1.5		<0.1					
1.75	B/TP2_1.8 D/TP2_1.8		<0.1				1.80	
							(0.50)	MADE GROUND. Black, sandy gravel of ash and clinker. Approximately 30-40% is waste comprising plastic, rubber, wood, paper and chippings. Dry.
							2.30	
2.45	B/TP2_2.5		<0.1				(0.30)	Grey, organic CLAY. Wet. NVO.
							2.60	
								Trial pit terminated at 2.6m bgl.

GENERAL REMARKS

NVO: No visual or olfactory evidence of contamination.

Stability: Highly unstable. Backfilled on completion



Exploratory hole logs should be read in conjunction with Key Sheets.

Logged by: M.Williams	Equipment: JCB 3CX-type backhoe excavator	Co-ordinates: Not Surveyed	Ground Level: Not Surveyed	Date: Start: 26/09/2012	AGS
Checked by: M Masala	Contractor: J.Ealy			End: 26/09/2012	Sheet 1 of 1
Status:					

Client: John Sisk & Son Ltd

Project: Kemsley, Sittingbourne, Kent.

Contract No: 47064660

URS

Record of Trial Pit

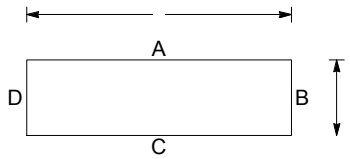
TP03

Samples & in situ Tests					Strata			
Depth	Type/ No.	Test Results	PID (ppm)	Water Level	Reduced Level m(AOD)	Legend	Depth (Thick-ness)	DESCRIPTION
0.35	D/TP3_0.4		<0.1				(0.80)	MADE GROUND. Loose, brown sand with plastic, wood, glass and metal fragments, wood chippings and paper waste. Dry.
							0.80	
0.95	B/TP3_1.0 D/TP3_1.0		<0.1				(0.60)	MADE GROUND. Black, silty sand. Silt and sand are ash. Sand is fine to coarse. Some waste content comprising plastic, wood, glass and metal fragments, wood chippings and paper waste. Dry.
							1.40	
							(1.20)	MADE GROUND. Ash and clinker gravel. Waste comprising wood chippings (approx. 50%), ash and clinker gravel (approx. 40%) and plastic, paper and metal waste (10%). Dry.
2.55	B/TP3_2.6		<0.1				2.60	
							2.80	Grey, organic CLAY. Wet. NVO.
								Trial pit terminated at 2.8m bgl.

GENERAL REMARKS

NVO: No visual or olfactory evidence of contamination.

Stability: Highly unstable. Backfilled on completion



Exploratory hole logs should be read in conjunction with Key Sheets.

Logged by: M.Williams	Equipment: JCB 3CX-type backhoe excavator	Co-ordinates: Not Surveyed	Ground Level: Not Surveyed	Date: Start: 26/09/2012	AGS
Checked by: M Masala	Contractor: J.Ealy			End: 26/09/2012	Sheet 1 of 1
Status:					

Client: John Sisk & Son Ltd

Project: Kemsley, Sittingbourne, Kent.

Contract No: 47064660

URS

Record of Trial Pit

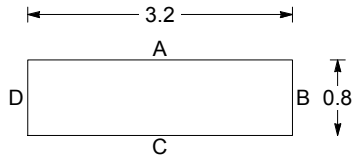
TP04

Samples & in situ Tests				Water Level	Strata			
Depth	Type/ No.	Test Results	PID (ppm)		Reduced Level m(AOD)	Legend	Depth (Thick-ness)	DESCRIPTION
0.25	D/TP4_0.3		<0.1				(1.45)	MADE GROUND. Brown, slightly silty, slightly sandy, gravelly, friable clay. Sand is fine. Gravel is fine to coarse, angular to sub-rounded of brick, concrete, flint, tiles and glass. Fragments of metal and plastic and boulder-sized fragments of timber and concrete. Dry.
1.45	D/TP4_1.5		<0.1				1.45	
							(0.75)	MADE GROUND. Brown and grey mottled, slightly sandy, gravelly clay. Gravel is fine to coarse of brick and stone. Occasional metal pipe fragments. Dry.
2.15	B/TP4_2.2 D/TP4_2.2		<0.1				2.20	
							(1.20)	MADE GROUND. Black, sandy gravel. Sand is fine to coarse, some is ash. Gravel is fine to coarse, angular to sub-angular of clinker. Wet.
3.45	B/TP4_3.5		<0.1				3.40	
							3.60	Grey-brown, pseudo fibrous PEAT. Wet. Strong organic odour.
								Trial pit terminated at 3.6m bgl.

GENERAL REMARKS

NVO: No visual or olfactory evidence of contamination.

Stability: Moderately stable.
Backfilled on completion.



Exploratory hole logs should be read in conjunction with Key Sheets.

Logged by: M.Williams	Equipment: JCB 3CX-type backhoe excavator	Co-ordinates: Not Surveyed	Ground Level: Not Surveyed	Date: Start: 26/09/2012	AGS
Checked by: M Masala	Contractor: J.Ealy			End: 26/09/2012	Sheet 1 of 1
Status:					

Client: John Sisk & Son Ltd

Project: Kemsley, Sittingbourne, Kent.

Contract No: 47064660

URS

Record of Trial Pit

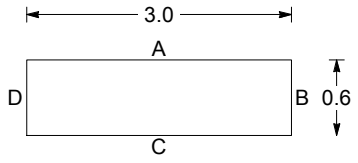
TP05

Samples & in situ Tests				Water Level	Strata			
Depth	Type/ No.	Test Results	PID (ppm)		Reduced Level m(AOD)	Legend	Depth (Thick-ness)	DESCRIPTION
0.45	B/TP5_0.5 D/TP5_0.5		<0.1				(0.80)	MADE GROUND. Brown, slightly sandy, gravelly clay. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded of brick, stone, tile fragments, concrete and chalk. Some plastic and metal fragments, cobble- and boulder-sized fragments of concrete. Dry.
0.75	D/TP5_0.8		<0.1				0.80	
3.15	D/TP5_3.2		<0.1	1 2020 1			(2.80)	MADE GROUND. Dark grey-black, slightly clayey, sandy gravel. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular of tile fragments, flint and slate. Occational metal, wood and cobble-sized fragments of broken brick. Fragments increasing to boulder-sized at 1.8m. Becoming clayey below 2.4m. Dry, becoming wet at 3.4m bgl.
							3.60	**Trial pit terminated at 3.6m bgl.**

GENERAL REMARKS

NVO: No visual or olfactory evidence of contamination.

Stability: Moderately stable.
Backfilled on completion.



Exploratory hole logs should be read in conjunction with Key Sheets.

Logged by: M.Williams	Equipment: JCB 3CX-type backhoe excavator	Co-ordinates: Not Surveyed	Ground Level: Not Surveyed	Date: Start: 26/09/2012	AGS
Checked by: M Masala	Contractor: J.Ealy			End: 26/09/2012	Sheet 1 of 1
Status:					

Client: John Sisk & Son Ltd

Project: Kemsley, Sittingbourne, Kent.

Contract No: 47064660

URS

Record of Trial Pit

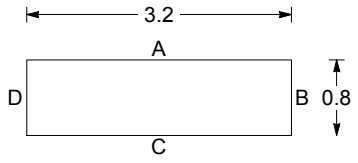
TP06

Samples & in situ Tests				Water Level	Strata			
Depth	Type/ No.	Test Results	PID (ppm)		Reduced Level m(AOD)	Legend	Depth (Thick-ness)	DESCRIPTION
0.45	B/TP6_0.5 D/TP6_0.5		<0.1				(1.50)	MADE GROUND: Dark brown, slightly silty, slightly sandy, gravelly, friable clay. Sand is fine to coarse. Gravel is fine to coarse, sub-anguar to sub-rounded of flint, brick, glass, tile and coal. Occasional cobbles of stone, brick and tile. Occasional boulder-sized concrete fragments. Dry.
1.45	D/TP6_1.5		<0.1				1.50	
							(0.55)	MADE GROUND: Dark grey, silty, sandy gravel. Sand is fine to coarse of ash. Gravel is fine to coarse, angular to sub-rounded of ash. Occasional wood and wire fragments, whole bricks and occasional boulder-sized concrete fragments. Dry.
2.45	D/TP6_2.5		<0.1				2.05	MADE GROUND. Dark grey-brown, silty, slightly sandy, slightly gravelly clay. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular. Dry, becoming wet at 3.5m bgl. Slight hydrocarbon odour at 2.3m bgl.
							(1.55)	
							3.60	**Trial pit terminated at 3.6m bgl.**

GENERAL REMARKS

NVO: No visual or olfactory evidence of contamination.

Stability: Moderately stable.
Backfilled on completion.



Exploratory hole logs should be read in conjunction with Key Sheets.

Logged by: M.Williams	Equipment: JCB 3CX-type backhoe excavator	Co-ordinates: Not Surveyed	Ground Level: Not Surveyed	Date: Start: 25/09/2012	AGS
Checked by: M Masala	Contractor: J.Ealy			End: 25/09/2012	Sheet 1 of 1
Status:					

Client: John Sisk & Son Ltd

Project: Kemsley, Sittingbourne, Kent.

Contract No: 47064660

URS

Record of Trial Pit

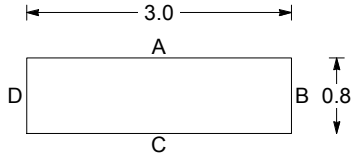
TP07

Samples & in situ Tests				Water Level	Strata			
Depth	Type/ No.	Test Results	PID (ppm)		Reduced Level m(AOD)	Legend	Depth (Thick-ness)	DESCRIPTION
0.25	D/TP7_0.3		<0.1				(0.90)	MADE GROUND. Brown, slightly sandy, gravelly, friable clay. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular of tile, brick, stone, concrete and timber fragments. Dry.
							0.90	
1							(0.30)	MADE GROUND. Brown-grey, slightly sandy, slightly gravelly clay. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded of flint.
1.15	B/TP7_1.2 D/TP7_1.2		<0.1				1.20	Dry.
							(0.80)	MADE GROUND. Dark grey, slightly clayey, silty, gravelly sand. Silt is ash. Sand is fine to coarse. Gravel is fine to coarse of broken stone and clinker. Abundant metal, wire, plastic and timber fragments at 2.0m bgl. Dry.
1.95	D/TP7_2.0		<0.1				2.00	
2							(1.50)	MADE GROUND. Brown-dark grey, slightly silty, slightly sandy, gravelly, friable clay. Sand is fine to coarse, some of ash. Gravel is fine to coarse of brick and stone. Occasional boulder-sized fragments of timber and concrete. Dry.
3							3.50	
4								**Trial pit terminated at 3.5m bgl.**

GENERAL REMARKS

NVO: No visual or olfactory evidence of contamination.

Stability: Unstable below 1.20m



Exploratory hole logs should be read in conjunction with Key Sheets.

Logged by: M.Williams	Equipment: JCB 3CX-type backhoe excavator	Co-ordinates: Not Surveyed	Ground Level: Not Surveyed	Date: Start: 26/09/2012	AGS
Checked by: M Masala	Contractor: J.Ealy			End: 26/09/2012	Sheet 1 of 1
Status:					

Client: John Sisk & Son Ltd

Project: Kemsley, Sittingbourne, Kent.

Contract No: 47064660

URS

Record of Trial Pit

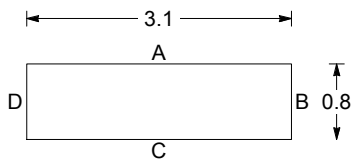
TP08

Samples & in situ Tests				Water Level	Strata			
Depth	Type/ No.	Test Results	PID (ppm)		Reduced Level m(AOD)	Legend	Depth (Thick-ness)	DESCRIPTION
0.35	D/TP8_0.4		<0.1				(0.50)	MADE GROUND. Brown-grey, slightly silty, slightly sandy, clayey gravel. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded of brick, concrete, flint and stone. Occasional cobble-sized of brick and concrete fragments and wire and timber fragments.
0.45	B/TP8_0.5		<0.1					Dry.
0.55	D/TP8_0.6		<0.1				0.50	
0.90	B/TP8_1.0		<0.1				(1.40)	MADE GROUND. Very dense, dark grey-black, silty, sandy gravel. Silt and sand are ash. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular of clinker and slag. Dry.
1.45	D/TP8_1.5		<0.1				1.90	
1.95	B/TP8_2.0		<0.1				(0.60)	Grey, silty, slightly sandy, organic CLAY. Becoming brown-grey at 2.3m bgl. Organic odour noted from 2.4m bgl. Dry.
							2.50	**Trial pit terminated at 2.5m bgl.**

GENERAL REMARKS

NVO: No visual or olfactory evidence of contamination.

Stability: Moderately stable. Backfilled on completion.



Exploratory hole logs should be read in conjunction with Key Sheets.

Logged by: M.Williams	Equipment: JCB 3CX-type backhoe excavator	Co-ordinates: Not Surveyed	Ground Level: Not Surveyed	Date: Start: 25/09/2012	AGS
Checked by: M Masala	Contractor: J.Ealy			End: 25/09/2012	Sheet 1 of 1
Status:					

Client: John Sisk & Son Ltd

Project: Kemsley, Sittingbourne, Kent.

Contract No: 47064660

URS

Record of Trial Pit

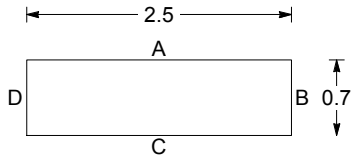
TP09

Samples & in situ Tests				Water Level	Strata			
Depth	Type/ No.	Test Results	PID (ppm)		Reduced Level m(AOD)	Legend	Depth (Thick-ness)	DESCRIPTION
0.15	D/TP9_0.2		<0.1				(0.40) 0.40	MADE GROUND. Brown, slightly sandy, slightly gravelly, friable clay. Dry. NVO.
0.65	D/TP9_0.7		<0.1				(0.60)	MADE GROUND. Black, silty, gravelly sand. Sand is fine to coarse of ash. Gravel is fine to coarse of clinker. Dry.
0.95	B/TP9_1.0 D/TP9_1.0		<0.1				1.00	
							1.20	MADE GROUND. Black, slightly sandy gravel. Sand is fine to coarse of ash. Gravel is fine to coarse, angular to sub-angular of clinker. Dry.
1.55	B/TP9_1.6		<0.1				(0.60) 1.80	Grey, silty, organic CLAY. Becoming grey-brown at 1.5m bgl. Dry. Strong organic odour.
								Trial pit terminated at 1.8m bgl.

GENERAL REMARKS

NVO: No visual or olfactory evidence of contamination.

Stability: Moderately stable. Backfilled on completion.



Exploratory hole logs should be read in conjunction with Key Sheets.

Logged by: M.Williams	Equipment: JCB 3CX-type backhoe excavator	Co-ordinates: Not Surveyed	Ground Level: Not Surveyed	Date: Start: 25/09/2012	AGS
Checked by: M Masala	Contractor: J.Ealy			End: 25/09/2012	Sheet 1 of 1
Status:					

Client: John Sisk & Son Ltd

Project: Kemsley, Sittingbourne, Kent.

Contract No: 47064660

URS

Record of Trial Pit

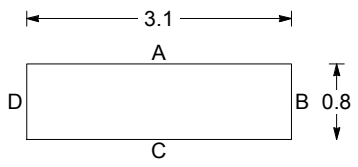
TP10

Samples & in situ Tests				Water Level	Strata			
Depth	Type/ No.	Test Results	PID (ppm)		Reduced Level m(AOD)	Legend	Depth (Thick-ness)	DESCRIPTION
							(0.50)	MADE GROUND. Light brown, silty, sandy gravel. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded of concrete, sandstone and siltstone. Occasional timber fragments, fabric and geotextile membrane at 0.5m bgl.
0.35	D/TP10_0.4		<0.1					Dry.
0.45	B/TP10_0.5		<0.1				0.50	
							(1.00)	MADE GROUND. Brown, slightly sandy, gravelly clay. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular of brick and flint. Occasional metal fragments.
0.95	B/TP10_1.0		<0.1					Dry.
1.05	D/TP10_1.1		<0.1					
1.45	D/TP10_1.5		<0.1				1.50	
							(1.10)	MADE GROUND. Black, sandy, silty gravel. Sand is fine to coarse of ash. Gravel is fine to medium, sub-angular to sub-rounded of stone and clinker. Occasional half and whole bricks.
								Dry.
							2.60	
2.65	D/TP10_2.7		<0.1					Firm, grey, friable, silty CLAY with organic material.
2.75	B/TP10_2.8		<0.1				(0.30)	Dry. NVO.
							2.90	
								Trial pit terminated at 2.9m bgl.

GENERAL REMARKS

NVO: No visual or olfactory evidence of contamination.

Stability: Unstable below 0.50m. Backfilled on completion.



Exploratory hole logs should be read in conjunction with Key Sheets.

Logged by: M.Williams	Equipment: JCB 3CX-type backhoe excavator	Co-ordinates: Not Surveyed	Ground Level: Not Surveyed	Date: Start: 24/09/2012	AGS
Checked by: M Masala	Contractor: J.Ealy			End: 24/09/2012	
Status:					Sheet 1 of 1

Client: John Sisk & Son Ltd

Project: Kemsley, Sittingbourne, Kent.

Contract No: 47064660

URS

Record of Trial Pit

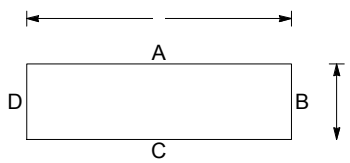
TP11

Samples & in situ Tests				Water Level	Strata			
Depth	Type/ No.	Test Results	PID (ppm)		Reduced Level m(AOD)	Legend	Depth (Thick-ness)	DESCRIPTION
0.25	D/TP11_0.3		<0.1				(1.50)	MADE GROUND. Brown-grey, slightly sandy, gravelly clay. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded of stone, asphalt, clinker, brick and flint. Plastic, timber and fabric fragments. Cobble sized asphalt fragments. Occasional boulder-sized concrete fragments. Hard obstuction, possibly concrete, at 1.4m bgl. Dry.
0.95	D/TP11_0.1		<0.1					
1.10	D/TP11_1.1		<0.1					
1.25	B/TP11_1.3		<0.1					
1.45	D/TP11_1.5		<0.1				1.50	
							(0.95)	MADE GROUND. Black, silty, gravelly sand. Sand is fine to coarse of ash. Gravel is fine to coarse, sub-angular of clinker and stone. Increasing clinker with depth. Dry.
2.45	B/TP11_2.5		<0.1				2.45	
							(0.40)	Firm, dark grey-brown, friable CLAY. Clay has yellow, organic fletching and organic odour. Dry.
							2.85	**Trial pit terminated at 2.85m bgl.**

GENERAL REMARKS

NVO: No visual or olfactory evidence of contamination.

Stability: Unstable below 1.50m.
Backfilled on completion.



Exploratory hole logs should be read in conjunction with Key Sheets.

Logged by: M.Williams	Equipment: JCB 3CX-type backhoe excavator	Co-ordinates: Not Surveyed	Ground Level: Not Surveyed	Date: Start: 24/09/2012	AGS
Checked by: M Masala	Contractor: J.Ealy			End: 24/09/2012	Sheet 1 of 1
Status:					

Client: John Sisk & Son Ltd

Project: Kemsley, Sittingbourne, Kent.

Contract No: 47064660

URS

Record of Trial Pit

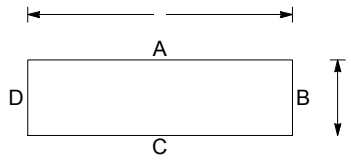
TP12

Samples & in situ Tests				Water Level	Strata			
Depth	Type/ No.	Test Results	PID (ppm)		Reduced Level m(AOD)	Legend	Depth (Thick-ness)	DESCRIPTION
0.25	D/TP12_0.3		<0.1				(1.50)	MADE GROUND. Light brown-grey, slightly sandy gravel. Sand is fine. Gravel is fine to coarse, angular to sub-angular of concrete, igneous rock and sandstone. Geotextile membrane at 0.25m bgl. Dry.
1.15	D/TP12_1.2		<0.1					
1.45	D/TP12_1.5		<0.1				1.50	
1.60	B/TP12_1.65		<0.1				1.65	MADE GROUND: Black, slightly gravelly, silty sand. Silt and sand are of ash. Gravel is fine to coarse, angular to sub-angular of clinker and brick. Dry.
1.95	B/TP12_2.0		<0.1				(0.40)	Firm, grey-brown, silty CLAY with dark grey organic material. Dry. Strong organic odour.
							2.05	Firm, brown-grey, silty CLAY.
							(0.45)	Dry. Slight organic odour.
							2.50	**Trial pit terminated at 2.5m bgl.**

GENERAL REMARKS

NVO: No visual or olfactory evidence of contamination.

Stability: Moderately stable.
Backfilled on completion.



Exploratory hole logs should be read in conjunction with Key Sheets.

Logged by: M.Williams	Equipment: JCB 3CX-type backhoe excavator	Co-ordinates: Not Surveyed	Ground Level: Not Surveyed	Date: Start: 24/09/2012	AGS
Checked by: M Masala	Contractor: J.Ealy			End: 24/09/2012	Sheet 1 of 1
Status:					

Client: John Sisk & Son Ltd

Project: Kemsley, Sittingbourne, Kent.

Contract No: 47064660

URS

Record of Trial Pit

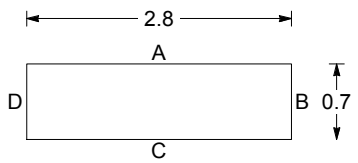
TP13

Samples & in situ Tests				Water Level	Strata			
Depth	Type/ No.	Test Results	PID (ppm)		Reduced Level m(AOD)	Legend	Depth (Thick-ness)	DESCRIPTION
							0.10	MADE GROUND: Brown, silty, sandy, friable clay with rootlets. Dry. NVO.
0.25	D/TP13_0.3		<0.1					MADE GROUND: Dark grey silt. Silt is of ash. Bricks and clay pockets at 1.65m bgl.
0.45	D/TP13_0.5		<0.1					Dry.
0.95	D/TP13_1.0		<0.1				(1.60)	
1.35	B/TP13_1.4		<0.1					
							1.70	
								Firm, brown and grey mottled, silty CLAY. Slight organic odour. Dry.
2.25	B/TP13_2.3		<0.1				(0.90)	
							2.60	
								Trial pit terminated at 2.6m bgl.

GENERAL REMARKS

NVO: No visual or olfactory evidence of contamination.

Stability: Moderately stable. Backfilled on completion.



Exploratory hole logs should be read in conjunction with Key Sheets.

Logged by: M.Williams	Equipment: JCB 3CX-type backhoe excavator	Co-ordinates: Not Surveyed	Ground Level: Not Surveyed	Date: Start: 24/09/2012	AGS
Checked by: M Masala	Contractor: J.Ealy			End: 24/09/2012	Sheet 1 of 1
Status:					

Client: John Sisk & Son Ltd

Project: Kemsley, Sittingbourne, Kent.

Contract No: 47064660

URS

Record of Trial Pit

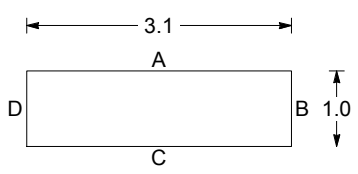
TP14

Samples & in situ Tests				Water Level	Strata			
Depth	Type/ No.	Test Results	PID (ppm)		Reduced Level m(AOD)	Legend	Depth (Thick-ness)	DESCRIPTION
0.45	B/TP14_0.5 D/TP14_0.5		<0.1				(1.40)	MADE GROUND. Brown and dark brown mottled, slightly sandy clay. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular of concrete, flint, brick, clinker and stone. Cobble-sized flint, concrete and brick fragments. Occasional plastic and timber fragments. Layer of shredded paper waste at 1.3m bgl. Dry.
1.45	D/TP14_1.5		<0.1				1.40	MADE GROUND. Dark grey-brown, silty, sandy gravel. Silt and sand is ash. Gravel is sub-angular, fine to coarse of clinker. Abundant paper waste and timber fragments. 2.0m bgl: Boulder-sized concrete fragments. 2.4m bgl: Becoming very clayey with occasional metal fragments. Dry.
1.95	D/TP14_2.0		<0.1				(1.60)	
2.95	D/TP14_3.0		<0.1				3.00	
3.15	B/TP14_3.2		<0.1				3.20	MADE GROUND. Dark grey-black, very clayey, silty, slightly gravelly sand. Sand is fine to coarse with some ash. Gravel is of clinker with timber fragments. Strong hydrocarbon odour. Dry.
							3.40	Grey, silty, organic CLAY. Dry. NVO. **Trial pit terminated at 3.4m bgl.**

GENERAL REMARKS

NVO: No visual or olfactory evidence of contamination.

Stability: Moderately stable.
Backfilled on completion.



Exploratory hole logs should be read in conjunction with Key Sheets.

Logged by: M.Williams	Equipment: JCB 3CX-type backhoe excavator	Co-ordinates: Not Surveyed	Ground Level: Not Surveyed	Date: Start: 25/09/2012	AGS
Checked by: M Masala	Contractor: J.Ealy			End: 25/09/2012	Sheet 1 of 1
Status:					

Client: John Sisk & Son Ltd

Project: Kemsley, Sittingbourne, Kent.

Contract No: 47064660

URS

Record of Trial Pit

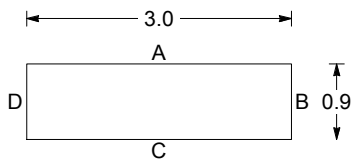
TP15

Samples & in situ Tests				Water Level	Strata			
Depth	Type/ No.	Test Results	PID (ppm)		Reduced Level m(AOD)	Legend	Depth (Thick-ness)	DESCRIPTION
0.35	D/TP15_0.4		<0.1				(1.00)	MADE GROUND. Brown, slightly clayey, silty, sandy gravel. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded of flint, concrete, brick and asphalt. Occasional cobble-sized concrete fragments. Timber, metal and plastic fragments. Dry.
0.95	B/TP15_1.0		<0.1				1.00	
1.35	D/TP15_1.4		<0.1				(1.50)	MADE GROUND. Dark brown, slightly sandy, slightly gravelly, silty clay. Sand is fine to coarse of ash. Gravel is fine to coarse of coal, clinker and lime. Abundant paper waste and timber fragments. Dry.
2.45	D/TP15_2.5		<0.1				2.50	
							(0.90)	MADE GROUND. Dark brown, sandy gravel. Sand is fine to coarse of ash. Gravel is fine to coarse, angular to sub-rounded of clinker. Dry.
							3.40	
3.45	B/TP15_3.5		<0.1				3.50	Grey, silty, slightly sandy CLAY with black organic fragments. Dry. Organic odour.
								Trial pit terminated at 3.5m bgl.

GENERAL REMARKS

NVO: No visual or olfactory evidence of contamination.

Stability: Moderately stable.
Backfilled on completion.



Exploratory hole logs should be read in conjunction with Key Sheets.

Logged by: M.Williams	Equipment: JCB 3CX-type backhoe excavator	Co-ordinates: Not Surveyed	Ground Level: Not Surveyed	Date: Start: 25/09/2012	AGS
Checked by: M Masala	Contractor: J.Ealy			End: 25/09/2012	Sheet 1 of 1
Status:					

Client: John Sisk & Son Ltd

Project: Kemsley, Sittingbourne, Kent.

Contract No: 47064660

URS

Record of Trial Pit

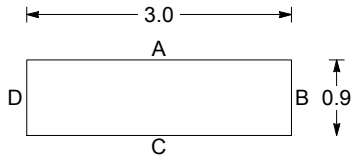
TP16

Samples & in situ Tests				Water Level	Strata			
Depth	Type/ No.	Test Results	PID (ppm)		Reduced Level m(AOD)	Legend	Depth (Thick-ness)	DESCRIPTION
							(0.30) 0.30	MADE GROUND. Brown-grey, sandy gravel. Sand is fine to coarse, some is ash. Gravel is of flint, brick and concrete. Some wire, rubber and plastic waste. Dry.
0.65	D/TP16_0.7		<0.1					MADE GROUND. Dark grey, sandy, silty gravel. Sand and silt is of ash. Gravel is fine, sub-angular to sub-rounded of clinker and slag. Approximately 20 - 40% is waste, comprising fabric, metal, timber and plastic. Some large lamp posts and scaffolding poles. Dry.
1								
1.45	D/TP16_1.5		<0.1				(2.20)	
2								
2.45	D/TP16_2.5		<0.1	2.50			2.50	
							(0.50) 3.00	MADE GROUND. Black, sandy gravel. Sand is fine to coarse of ash. Gravel is fine to coarse of clinker. Wet.
2.95	B/TP16_3.0		<0.1					
3							(0.40) 3.40	Firm, organic CLAY. Wet. NVO.
								Trial pit terminated at 3.4m bgl.
4								

GENERAL REMARKS

NVO: No visual or olfactory evidence of contamination.

Stability: Unstable below 1.09m. Backfilled on completion.



Exploratory hole logs should be read in conjunction with Key Sheets.

Logged by: M.Williams	Equipment: JCB 3CX-type backhoe excavator	Co-ordinates: Not Surveyed	Ground Level: Not Surveyed	Date: Start: 25/09/2012	AGS
Checked by: M Masala	Contractor: J.Ealy			End: 25/09/2012	Sheet 1 of 1
Status:					

Client: John Sisk & Son Ltd

Project: Kemsley, Sittingbourne, Kent.

Contract No: 47064660

URS

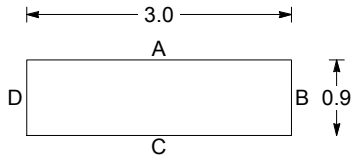
Record of Trial Pit

TP17

Samples & in situ Tests				Water Level	Strata			
Depth	Type/ No.	Test Results	PID (ppm)		Reduced Level m(AOD)	Legend	Depth (Thick-ness)	DESCRIPTION
0.45	B/TP17_0.5		<0.1					MADE GROUND. Brown, slightly silty, slightly sandy, clayey gravel with occasional cobbles and boulders. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded of stone, brick, concrete and sandstone. Occasional timber and plastic. Kerbstone at 1.0m bgl. Dry.
0.65	D/TP17_0.7		<0.1					
0.95	B/TP17_1.0		<0.1				(2.10)	
2.05	D/TP17_2.1		<0.1				2.10	
							(0.70)	MADE GROUND. Dark, grey, silty, sandy, locally clayey gravel. Sand is fine to coarse of ash. Gravel is fine to coarse, angular to sub-angular of flint, slag and clinker. Occasional white lime, timber and plastic fragments. Dry.
2.75	D/TP17_2.8		<0.1				2.80	
							(0.60)	MADE GROUND: Grey, slightly silty, sandy gravel. Sand is fine to coarse of ash. Gravel is fine to coarse, angular to sub-angular. Dry.
							3.40	
3.45	B/TP17_3.5		<0.1				3.55	Soft dark, grey-brown, organic CLAY. Dry. Strong organic odour.
								Trial pit terminated at 3.55m bgl.

GENERAL REMARKS

NVO: No visual or olfactory evidence of contamination.



Exploratory hole logs should be read in conjunction with Key Sheets.

Logged by: M.Williams	Equipment: JCB 3CX-type backhoe excavator	Co-ordinates: Not Surveyed	Ground Level: Not Surveyed	Date: Start: 25/09/2012	AGS
Checked by: M Masala	Contractor: J.Ealy			End: 25/09/2012	Sheet 1 of 1
Status:					

Client: John Sisk & Son Ltd

Project: Kemsley, Sittingbourne, Kent.

Contract No: 47064660

URS

Record of Trial Pit

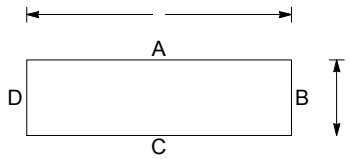
TP18

Samples & in situ Tests				Water Level	Strata			
Depth	Type/ No.	Test Results	PID (ppm)		Reduced Level m(AOD)	Legend	Depth (Thick-ness)	DESCRIPTION
1.05	D/TP18_1.1		<0.1				(1.10) 1.10	MADE GROUND. Brown, friable, sandy, clayey gravel with rootlets. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular of coal, clinker, concrete, brick, flint, stone and glass. Occasional cobble-sized fragments of brick, paving stone, concrete and clinker. Dry.
1.45	B/TP18_1.5 D/TP18_1.5		<0.1				(1.90) 3.00	MADE GROUND. Grey, sandy, clayey gravel. Sand is fine to coarse of ash. Gravel is fine to coarse, angular to sub-angular of clinker and slag. Occassional timber, plastic, glass, metal, rubber and ceramic fragments. Dry.
2.45	D/TP18_2.5		<0.1					
2.95	B/TP18_3.0		<0.1	1 3.00			(0.55) 3.55	Grey, organic CLAY. Wet. NVO.
								Trial pit terminated at 3.55m bgl.

GENERAL REMARKS

NVO: No visual or olfactory evidence of contamination.

Stability: Moderately stable.
Backfilled on completion.



Exploratory hole logs should be read in conjunction with Key Sheets.

Logged by: M.Williams	Equipment: JCB 3CX-type backhoe excavator	Co-ordinates: Not Surveyed	Ground Level: Not Surveyed	Date: Start: 26/09/2012 End: 26/09/2012	AGS
Checked by: M Masala	Contractor: J.Ealy				Sheet 1 of 1
Status:					

Client: John Sisk & Son Ltd

Project: Kemsley, Sittingbourne, Kent.

Contract No: 47064660

URS

Record of Window Sampler Hole

CPT21

Samples & in situ Tests				Water Level	Strata				
Depth	Type/ No.	Test Results	PID (ppm)		Reduced Level m(AOD)	Legend	Depth (Thick-ness)	DESCRIPTION	Instru-ment/ Backfill
							(0.90)	MADE GROUND. Loose, brown, slightly sandy, slightly silty, clayey gravel. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular of red bricks and tarmac. Plastic fragments. Dry.	
			<0.1				0.90		
1			<0.1				(0.30)	MADE GROUND. Soft, black, sandy, gravelly clay. Sand is fine to coarse. Gravel is fine to coarse, angular of red bricks. Dry. NVO.	
							1.20	**Hand dug pit terminated at 1.2m for CPT testing**	
2									

GENERAL REMARKS

NVO: No visual or olfactory evidence of contamination.

Exploratory hole logs should be read in conjunction with Key Sheets.

Boring Progress			Water Observations				
Date	Time	Hole Depth	Standing Level	Strike	Rise	Time (mins)	Sealed

Logged by: G. Brumfield	Equipment: Hand Dug	Co-ordinates: Not Surveyed	Ground Level: Not Surveyed	Date: Start: 24/09/2012	AGS
Checked by: M. Masala	Contractor: Shaun Smith Drilling			End: 24/09/2012	Sheet 1 of 1
Status:					

Client: John Sisk & Son Ltd

Project: Kemsley, Sittingbourne, Kent.

Contract No: 47064660

URS

Record of Window Sampler Hole

CPT22

Samples & in situ Tests				Water Level	Strata				
Depth	Type/ No.	Test Results	PID (ppm)		Reduced Level m(AOD)	Legend	Depth (Thick-ness)	DESCRIPTION	Instru-ment/ Backfill
							0.10	MADE GROUND. Loose, brown, slightly silty, slightly sandy, gravelly clay. Sand is fine to coarse. Gravel is fine to coarse of flint and stone. Dry. NVO.	
			<0.1				(1.10)	MADE GROUND. Loose, brown, slightly clayey, sandy, gravel of red bricks and concrete. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular. Becoming increasinly sandy with depth. Metal fragemnts at base of pit.	
1			<0.1				1.20		
								Hand dug pit terminated at 1.2m for CPT testing	
2									

GENERAL REMARKS

NVO: No visual or olfactory evidence of contamination.

Exploratory hole logs should be read in conjunction with Key Sheets.

Boring Progress			Water Observations				
Date	Time	Hole Depth	Standing Level	Strike	Rise	Time (mins)	Sealed

Logged by: G. Brumfield	Equipment: Hand Dug	Co-ordinates: Not Surveyed	Ground Level: Not Surveyed	Date: Start: 24/09/2012 End: 24/09/2012
Checked by: M. Masala	Contractor: Shaun Smith Drilling			
Status:				Sheet 1 of 1

AGS

Client: John Sisk & Son Ltd

Project: Kemsley, Sittingbourne, Kent.

Contract No: 47064660

URS

Record of Window Sampler Hole

CPT23

Samples & in situ Tests				Water Level	Strata				
Depth	Type/ No.	Test Results	PID (ppm)		Reduced Level m(AOD)	Legend	Depth (Thick-ness)	DESCRIPTION	Instru-ment/ Backfill
							(0.30)	MADE GROUND. Loose, brown, slightly sandy, slightly silty, clayey gravel. Gravel is fine to coarse, angular to sub-angular of bricks, concrete and flint. Occasional cobble-sized asphalt fragments. Dry.	
							0.30		
			<0.1				(0.90)	MADE GROUND. Loose, light brown, sandy, silty gravel. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular of flint. Occasional cobble-sized fragments of concrete and flint. Dry. NVO.	
1			<0.1				1.20		
								Hand dug pit terminated at 1.2m for CPT testing	
2									

GENERAL REMARKS

NVO: No visual or olfactory evidence of contamination.

Exploratory hole logs should be read in conjunction with Key Sheets.

Boring Progress			Water Observations				
Date	Time	Hole Depth	Standing Level	Strike	Rise	Time (mins)	Sealed

Logged by: G. Brumfield	Equipment: Hand Dug	Co-ordinates: Not Surveyed	Ground Level: Not Surveyed	Date: Start: 24/09/2012 End: 24/09/2012
Checked by: M. Masala	Contractor: Shaun Smith Drilling			
Status:				Sheet 1 of 1

AGS

Client: John Sisk & Son Ltd

Project: Kemsley, Sittingbourne, Kent.

Contract No: 47064660

URS

Record of Window Sampler Hole

CPT24

Samples & in situ Tests				Water Level	Strata				
Depth	Type/ No.	Test Results	PID (ppm)		Reduced Level m(AOD)	Legend	Depth (Thick-ness)	DESCRIPTION	Instru-ment/ Backfill
							(0.30)	MADE GROUND. Dense, brown, sandy gravel. Gravel is fine to coarse, angular to sub-angular of bricks, concrete and flint. Dry. NVO.	
							0.30		
			<0.1				(0.90)	MADE GROUND. Dense, light brown, slightly sandy, silty gravel. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular of flint and bricks. Occasional cobble-sized fragments of concrete and whole bricks. Dry. NVO.	
1			<0.1				1.20		
								Hand dug pit terminated at 1.2m for CPT testing	
2									

GENERAL REMARKS

NVO: No visual or olfactory evidence of contamination.

Exploratory hole logs should be read in conjunction with Key Sheets.

Boring Progress			Water Observations				
Date	Time	Hole Depth	Standing Level	Strike	Rise	Time (mins)	Sealed

Logged by: G. Brumfield	Equipment: Hand Dug	Co-ordinates: Not Surveyed	Ground Level: Not Surveyed	Date: Start: 24/09/2012 End: 24/09/2012
Checked by: M. Masala	Contractor: Shaun Smith Drilling			AGS
Status:				Sheet 1 of 1

Client: John Sisk & Son Ltd

Project: Kemsley, Sittingbourne, Kent.

Contract No: 47064660

URS

Record of Window Sampler Hole

CPT25

Samples & in situ Tests				Water Level	Strata				
Depth	Type/ No.	Test Results	PID (ppm)		Reduced Level m(AOD)	Legend	Depth (Thick-ness)	DESCRIPTION	Instru-ment/ Backfill
							(0.40)	MADE GROUND. Brown-grey, slightly silty, sandy gravel. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded of concrete and brick. Occasional cobble-sized fragments of brick and concrete. Dry. NVO.	
							0.40		
			<0.1				(0.80)	MADE GROUND. Black, slightly clayey, slightly silty, sandy gravel. Sand is fine to coarse. Gravel is fine to medium, sub-angular to sub-rounded of clinker and quartz. Wet. NVO.	
1			<0.1				1.20		
								Hand dug pit terminated at 1.2m for CPT testing	
2									

GENERAL REMARKS

NVO: No visual or olfactory evidence of contamination.

Exploratory hole logs should be read in conjunction with Key Sheets.

Boring Progress			Water Observations				
Date	Time	Hole Depth	Standing Level	Strike	Rise	Time (mins)	Sealed

Logged by: M. Williams	Equipment: Hand Dug	Co-ordinates: Not Surveyed	Ground Level: Not Surveyed	Date: Start: 01/10/2012	AGS
Checked by: M. Masala	Contractor: Shaun Smith Drilling			End: 01/10/2012	Sheet 1 of 1
Status:					

Client: John Sisk & Son Ltd

Project: Kemsley, Sittingbourne, Kent.

Contract No: 47064660

URS

Record of Window Sampler Hole

CPT26

Samples & in situ Tests				Water Level	Strata				
Depth	Type/ No.	Test Results	PID (ppm)		Reduced Level m(AOD)	Legend	Depth (Thick-ness)	DESCRIPTION	Instru-ment/ Backfill
							(0.30)	MADE GROUND. Brown-grey, clayey, gravelly sand. Sand is fine to coarse. Gravel is angular to sub-rounded of flint, bricks, concrete and quartz with occasional metal fragments. Dry.	
							0.30		
			<0.1				(0.90)	MADE GROUND. Dark grey, silty, gravelly sand. Sand is fine to coarse. Silt and sand is ash. Gravel is fine to coarse, angular to sub-angular of clinker. Dry. NVO. Fabric and geotextile membrane at 0.8m bgl.	
				1 1					
1			<0.1					Becoming clayey and soft at 0.9m bgl. Becoming wet at 0.95m bgl.	
							1.20		
								Hand dug pit terminated at 1.2m for CPT testing	
2									

GENERAL REMARKS

NVO: No visual or olfactory evidence of contamination.

Exploratory hole logs should be read in conjunction with Key Sheets.

Boring Progress			Water Observations				
Date	Time	Hole Depth	Standing Level	Strike	Rise	Time (mins)	Sealed

Logged by: M. Williams	Equipment: Hand Dug	Co-ordinates: Not Surveyed	Ground Level: Not Surveyed	Date: Start: 01/10/2012	AGS
Checked by: M. Masala	Contractor: Shaun Smith Drilling			End: 01/10/2012	
Status:					Sheet 1 of 1

Client: John Sisk & Son Ltd

Project: Kemsley, Sittingbourne, Kent.

Contract No: 47064660

URS

Record of Window Sampler Hole

CPT27

Samples & in situ Tests				Water Level	Strata				
Depth	Type/ No.	Test Results	PID (ppm)		Reduced Level m(AOD)	Legend	Depth (Thick-ness)	DESCRIPTION	Instru-ment/ Backfill
							(0.40)	MADE GROUND. Brown-grey, sandy, silty gravel. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular of asphalt, concrete, flint and brick. Suspected asbestos fragments. Dry.	
							0.40		
			<0.1				(0.80)	MADE GROUND. Dark grey-black, slightly silty, clayey, sandy gravel. Silt and sand are ash. Gravel is fine to medium, angular to sub-angular of clinker and brick. Dry, becoming wet at 0.9m bgl.	
1			<0.1				1.20		
								Hand dug pit terminated at 1.2m for CPT testing	
2									

GENERAL REMARKS

NVO: No visual or olfactory evidence of contamination.

Exploratory hole logs should be read in conjunction with Key Sheets.

Boring Progress			Water Observations				
Date	Time	Hole Depth	Standing Level	Strike	Rise	Time (mins)	Sealed

Logged by: M. Williams	Equipment: Hand Dug	Co-ordinates: Not Surveyed	Ground Level: Not Surveyed	Date: Start: 01/10/2012	AGS
Checked by: M. Masala	Contractor: Shaun Smith Drilling			End: 01/10/2012	Sheet 1 of 1
Status:					

Client: John Sisk & Son Ltd

Project: Kemsley, Sittingbourne, Kent.

Contract No: 47064660

URS

Record of Window Sampler Hole

CPT28

Samples & in situ Tests				Water Level	Strata				
Depth	Type/ No.	Test Results	PID (ppm)		Reduced Level m(AOD)	Legend	Depth (Thick-ness)	DESCRIPTION	Instru-ment/ Backfill
							0.25	MADE GROUND. Dense, sandy gravel with medium cobbles. Sand is fine. Gravel is fine to coarse, angular to sub-angular of asphalt, concrete, gravels, flint and quartz. Cobbles are of concrete and brick. Sand is ash below 0.2m. Dry.	
			<0.1				(0.95)	MADE GROUND. Dark grey-black, gravelly sand and silt. Sand is fine to coarse of ash. Gravel is fine to medium, angular to sub-angular of clinker, brick, tiles and stone. Occasional metal wires and wood fragments. Dry, becoming wet at 0.9m bgl.	
1			<0.1				1.20	Geotexile membrane at 0.8m bgl. Wood fragments more frequent.	
								Hand dug pit terminated at 1.2m for CPT testing	
2									

GENERAL REMARKS

NVO: No visual or olfactory evidence of contamination.

Exploratory hole logs should be read in conjunction with Key Sheets.

Boring Progress			Water Observations				
Date	Time	Hole Depth	Standing Level	Strike	Rise	Time (mins)	Sealed

Logged by: M. Williams	Equipment: Hand Dug	Co-ordinates: Not Surveyed	Ground Level: Not Surveyed	Date: Start: 01/10/2012 End: 01/10/2012
Checked by: M. Masala	Contractor: Shaun Smith Drilling			AGS
Status:				Sheet 1 of 1

Client: John Sisk & Son Ltd

Project: Kemsley, Sittingbourne, Kent.

Contract No: 47064660

URS

Record of Window Sampler Hole

CPT29

Samples & in situ Tests				Water Level	Strata				
Depth	Type/ No.	Test Results	PID (ppm)		Reduced Level m(AOD)	Legend	Depth (Thick-ness)	DESCRIPTION	Instru-ment/ Backfill
							0.10	TARMACADAM.	
							0.28	MADE GROUND. Light brown, slightly clayey, slightly sandy gravel. Sand is fine to coarse. Gravel is fine to coarse, sub-angular of limestone (sub-base). Dry. NVO.	
			<0.1	1 06/09/2012 1			(0.92)	MADE GROUND. Dark grey, sandy gravel. Sand is fine to coarse of ash. Gravel is fine to coarse, angular to sub-angular of clinker. Occasional wood and wire fragments. Dry, becoming wet at 0.6m bgl.	
1			<0.1				1.20		
								Hand dug pit terminated at 1.2m for CPT testing	
2									

GENERAL REMARKS

NVO: No visual or olfactory evidence of contamination.

Exploratory hole logs should be read in conjunction with Key Sheets.

Boring Progress			Water Observations				
Date	Time	Hole Depth	Standing Level	Strike	Rise	Time (mins)	Sealed

Logged by: M. Williams	Equipment: Hand Dug	Co-ordinates: Not Surveyed	Ground Level: Not Surveyed	Date: Start: 29/09/2012	AGS
Checked by: M. Masala	Contractor: Shaun Smith Drilling			End: 29/09/2012	
Status:					Sheet 1 of 1

Client: John Sisk & Son Ltd

Project: Kemsley, Sittingbourne, Kent.

Contract No: 47064660

URS

Record of Window Sampler Hole

CPT30

Samples & in situ Tests				Water Level	Strata				
Depth	Type/ No.	Test Results	PID (ppm)		Reduced Level m(AOD)	Legend	Depth (Thick-ness)	DESCRIPTION	Instru-ment/ Backfill
							(0.35)	MADE GROUND. Grey-brown, sandy gravel. Sand is fine to coarse of ash. Gravel is fine to coarse, angular to sub-angular of brick, flint, concrete, igneous rock and limestone. Occasional wood fragments and plastic. Dry.	
							0.35		
			<0.1				(0.85)	MADE GROUND. Dark grey, slightly sandy gravel. Sand is fine to coarse of ash and clinker. Gravel is fine to coarse, angular to sub-angular of clinker. Occasional plastic and wood fragments. Dry, becoming wet at 0.5m bgl.	
1			<0.1				1.20		
								Hand dug pit terminated at 1.2m for CPT testing	
2									

GENERAL REMARKS

NVO: No visual or olfactory evidence of contamination.

Exploratory hole logs should be read in conjunction with Key Sheets.

Boring Progress			Water Observations				
Date	Time	Hole Depth	Standing Level	Strike	Rise	Time (mins)	Sealed

Logged by: M. Williams	Equipment: Hand Dug	Co-ordinates: Not Surveyed	Ground Level: Not Surveyed	Date: Start: 28/09/2012 End: 28/09/2012
Checked by: M. Masala	Contractor: Shaun Smith Drilling			
Status:				Sheet 1 of 1

AGS

Client: John Sisk & Son Ltd

Project: Kemsley, Sittingbourne, Kent.

Contract No: 47064660

URS

Record of Window Sampler Hole

CPT31

Samples & in situ Tests				Water Level	Strata				
Depth	Type/ No.	Test Results	PID (ppm)		Reduced Level m(AOD)	Legend	Depth (Thick-ness)	DESCRIPTION	Instru-ment/ Backfill
							(0.35)	MADE GROUND. Brown-grey, sandy gravel. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded of brick, concrete, flint, igneous rock, coal and clinker. Occasional wood fragments and cobble-sized concrete and paving stone fragments. Dry.	
							0.35		
			<0.1				(0.25)	MADE GROUND. Dark grey, gravelly sand. Sand is fine to coarse of ash. Gravel is angular to sub-angular, fine to coarse of clinker and brick. Rare shell fragments. Dry.	
				1 05/09 1			0.60		
							(0.40)	MADE GROUND. Brown, silty, sandy gravel. Sand is fine to coarse of quartz. Gravel is sub-angular to sub-rounded of quartz and flint with occasional rounded flint cobbles. Dry, becoming wet at 0.8m bgl. NVO.	
1			<0.1				1.00		
							(0.20)	MADE GROUND. Black sand with occasional sub-rounded flint cobbles. Sand is ash. Wet.	
							1.20		
								Hand dug pit terminated at 1.2m for CPT testing	
2									

GENERAL REMARKS

NVO: No visual or olfactory evidence of contamination.

Exploratory hole logs should be read in conjunction with Key Sheets.

Boring Progress			Water Observations				
Date	Time	Hole Depth	Standing Level	Strike	Rise	Time (mins)	Sealed

Logged by: M. Williams	Equipment: Hand Dug	Co-ordinates: Not Surveyed	Ground Level: Not Surveyed	Date: Start: 28/09/2012	AGS
Checked by: M. Masala	Contractor: Shaun Smith Drilling			End: 28/09/2012	Sheet 1 of 1
Status:					

Client: John Sisk & Son Ltd

Project: Kemsley, Sittingbourne, Kent.

Contract No: 47064660

URS

Record of Window Sampler Hole

CPT32

Samples & in situ Tests				Water Level	Strata				
Depth	Type/ No.	Test Results	PID (ppm)		Reduced Level m(AOD)	Legend	Depth (Thick-ness)	DESCRIPTION	Instru-ment/ Backfill
							0.20	MADE GROUND. Brown-grey, sandy gravel. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular of brick, concrete and flint. Occasional cobble-sized concrete and brick fragments. Dry. NVO.	
			<0.1	1 06/09/2012 1			(1.00)	MADE GROUND. Dark grey, gravelly sand. Sand is fine to coarse of ash. Gravel is fine to coarse, angular to sub-angular of clinker. Dry, becoming wet at 0.65m bgl.	
1			<0.1				1.20	**Hand dug pit terminated at 1.2m for CPT testing**	
2									

GENERAL REMARKS

NVO: No visual or olfactory evidence of contamination.

Exploratory hole logs should be read in conjunction with Key Sheets.

Boring Progress			Water Observations				
Date	Time	Hole Depth	Standing Level	Strike	Rise	Time (mins)	Sealed

Logged by: M. Williams	Equipment: Hand Dug	Co-ordinates: Not Surveyed	Ground Level: Not Surveyed	Date: Start: 28/09/2012	AGS
Checked by: M. Masala	Contractor: Shaun Smith Drilling			End: 28/09/2012	Sheet 1 of 1
Status:					

Client: John Sisk & Son Ltd

Project: Kemsley, Sittingbourne, Kent.

Contract No: 47064660

URS

Record of Window Sampler Hole

CPT33

Samples & in situ Tests				Water Level	Strata				
Depth	Type/ No.	Test Results	PID (ppm)		Reduced Level m(AOD)	Legend	Depth (Thick-ness)	DESCRIPTION	Instru-ment/ Backfill
							(0.30)	MADE GROUND. Grey-brown, sandy gravel. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular of concrete, brick and stone. Dry. NVO.	
							0.30		
			<0.1	1 50 50 1			(0.90)	MADE GROUND. Dark grey-black silty, sandy gravel. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to angular of clinker. Dry, becoming wet at 0.5m bgl.	
1			<0.1				1.20		
								Hand dug pit terminated at 1.2m for CPT testing	
2									

GENERAL REMARKS

NVO: No visual or olfactory evidence of contamination.

Exploratory hole logs should be read in conjunction with Key Sheets.

Boring Progress			Water Observations				
Date	Time	Hole Depth	Standing Level	Strike	Rise	Time (mins)	Sealed

Logged by: M. Williams	Equipment: Hand Dug	Co-ordinates: Not Surveyed	Ground Level: Not Surveyed	Date: Start: 28/09/2012 End: 28/09/2012
Checked by: M. Masala	Contractor: Shaun Smith Drilling			AGS
Status:				Sheet 1 of 1

Client: John Sisk & Son Ltd

Project: Kemsley, Sittingbourne, Kent.

Contract No: 47064660

URS

Record of Window Sampler Hole

CPT34

Samples & in situ Tests				Water Level	Strata				
Depth	Type/ No.	Test Results	PID (ppm)		Reduced Level m(AOD)	Legend	Depth (Thick-ness)	DESCRIPTION	Instru-ment/ Backfill
			<0.1	1 60 60 1			(1.20)	MADE GROUND. Loose, dark brown, sandy, silty gravel. Sand is fine to coarse. Gravel is angular of red brick and flint. Dry, becoming wet at 0.6m bgl. NVO.	
1			<0.1				1.20		
								Hand dug pit terminated at 1.2m for CPT testing	
2									

GENERAL REMARKS

NVO: No visual or olfactory evidence of contamination.

Exploratory hole logs should be read in conjunction with Key Sheets.

Boring Progress			Water Observations				
Date	Time	Hole Depth	Standing Level	Strike	Rise	Time (mins)	Sealed

Logged by: G. Brumfield	Equipment: Hand Dug	Co-ordinates: Not Surveyed	Ground Level: Not Surveyed	Date: Start: 24/09/2012	AGS
Checked by: M. Masala	Contractor: Shaun Smith Drilling			End: 24/09/2012	Sheet 1 of 1
Status:					

Client: John Sisk & Son Ltd

Project: Kemsley, Sittingbourne, Kent.

Contract No: 47064660

URS

Record of Window Sampler Hole

CPT35

Samples & in situ Tests				Water Level	Strata				
Depth	Type/ No.	Test Results	PID (ppm)		Reduced Level m(AOD)	Legend	Depth (Thick-ness)	DESCRIPTION	Instru-ment/ Backfill
							(0.30) 0.30	CONCRETE.	
			<0.1				(0.50) 0.80	MADE GROUND. Dark grey, slightly silty, slightly clayey, sandy gravel. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular of red brick and concrete. Dry. NVO.	
1			<0.1				(0.40) 1.20	MADE GROUND. Soft, grey-black, gravelly clay. Gravel is fine to coarse, sub-angular to angular of crushed concrete, brick fragments and flint. Dry. NVO.	
2								**Hand dug pit terminated at 1.2m for CPT testing**	

GENERAL REMARKS

NVO: No visual or olfactory evidence of contamination.

Exploratory hole logs should be read in conjunction with Key Sheets.

Boring Progress			Water Observations				
Date	Time	Hole Depth	Standing Level	Strike	Rise	Time (mins)	Sealed

Logged by: G. Brumfield	Equipment: Hand Dug	Co-ordinates: Not Surveyed	Ground Level: Not Surveyed	Date: Start: 25/09/2012	AGS
Checked by: M. Masala	Contractor: Shaun Smith Drilling			End: 25/09/2012	Sheet 1 of 1
Status:					

Client: John Sisk & Son Ltd

Project: Kemsley, Sittingbourne, Kent.

Contract No: 47064660

URS

Record of Window Sampler Hole

CPT36

Samples & in situ Tests				Water Level	Strata				
Depth	Type/ No.	Test Results	PID (ppm)		Reduced Level m(AOD)	Legend	Depth (Thick-ness)	DESCRIPTION	Instru-ment/ Backfill
							(0.30)	TARMACADAM.	
							0.30		
			<0.1				(0.90)	MADE GROUND. Loose, dark brown and black mottled, slightly sandy, silty gravel. Sand is medium to coarse. Gravel is angular to sub-angular of flint, brick fragments and crushed concrete. Dry. NVO.	
1			<0.1				1.20		
								Hand dug pit terminated at 1.2m for CPT testing	
2									

GENERAL REMARKS

NVO: No visual or olfactory evidence of contamination.

Exploratory hole logs should be read in conjunction with Key Sheets.

Boring Progress			Water Observations				
Date	Time	Hole Depth	Standing Level	Strike	Rise	Time (mins)	Sealed

Logged by: G. Brumfield	Equipment: Hand Dug	Co-ordinates: Not Surveyed	Ground Level: Not Surveyed	Date: Start: 25/09/2012 End: 25/09/2012
Checked by: M. Masala	Contractor: Shaun Smith Drilling			
Status:				Sheet 1 of 1

AGS

Client: John Sisk & Son Ltd

Project: Kemsley, Sittingbourne, Kent.

Contract No: 47064660

URS

Record of Window Sampler Hole

CPT37

Samples & in situ Tests				Water Level	Strata				
Depth	Type/ No.	Test Results	PID (ppm)		Reduced Level m(AOD)	Legend	Depth (Thick-ness)	DESCRIPTION	Instru-ment/ Backfill
							0.10	MADE GROUND. Decorative flint gravel. Dry. NVO.	
			<0.1				(1.10)	MADE GROUND. Loose, grey-black, slightly sandy, slightly silty, clayey gravel. Sand is fine to coarse. Gravel is angular to sub-angular of red bricks and concrete. Occasional cobble-sized fragments of flint and concrete. Dry. NVO.	
1			<0.1				1.20		
								Hand dug pit terminated at 1.2m for CPT testing	
2									

GENERAL REMARKS

NVO: No visual or olfactory evidence of contamination.

Exploratory hole logs should be read in conjunction with Key Sheets.

Boring Progress			Water Observations				
Date	Time	Hole Depth	Standing Level	Strike	Rise	Time (mins)	Sealed

Logged by: G. Brumfield	Equipment: Hand Dug	Co-ordinates: Not Surveyed	Ground Level: Not Surveyed	Date: Start: 25/09/2012 End: 25/09/2012
Checked by: M. Masala	Contractor: Shaun Smith Drilling			
Status:				Sheet 1 of 1

AGS

APPENDIX 6: WORK AREAS

EN010083
Planning Act 2008
The Infrastructure Planning (Applications: Prescribed forms and Procedure) Regulations 2009
Regulation: 5(2)(j)

Legend

- DCO Boundary
- Works Area 1
- Works Area 1A
- Works Area 1B
- Works Area 1C
- Works Area 1D
- Works Area 1E

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.
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Client: Wheelabrator Technologies Inc

Project: K3 and WKN DCO

Title: K3 Works Plan

Scale 1: 1,500 @ A1

0 30 60 90 120 Metres

Status	Drawn By	PM/Checked By
SUBMISSION	CR	TS
Job Ref		**Date Created**
OXF9812		SEPT 2019
Document Reference		**Document Number**
9812-0059-004		5.5a

EN010083
Planning Act 2008
The Infrastructure Planning (Applications: Prescribed forms and Procedure) Regulations 2009
Regulation: 5(2)(j)

Legend

- DCO Boundary
- Works Area 2
- Works Area 3
- Works Area 4
- Works Area 5
- Works Area 6
- Works Area 7

Notes
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Title: WKN Works Plan

Scale: 1: 1,500 @ A1
0 30 60 90 120 Metres

Status	Drawn By	PM/Checked By
SUBMISSION	CR	TS
Job Ref		**Date Created**
OXF9812		SEPT 2019
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9812-0060-005		5.5b