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Sustainable Energy Plant, Kemsley Paper Mill, Sittingbourne, Kent.

'DEVELOPMENT OF A SUSTAINABLE ENERGY PLANT TO SERVE KEMSLEY PAPER MILL, COMPRISING WASTE FUEL RECEPTION, MOVING GRATE TECHNOLOGY, POWER GENERATION AND EXPORT FACILITY, AIR COOLED CONDENSERS, TRANSFORMER, BOTTOM ASH FACILITY, OFFICE ACCOMMODATION, VEHICLE PARKING, LANDSCAPING, DRAINAGE AND ACCESS.'

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E.ON Energy from Waste

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Volume 4 of 4

Phase 2 Intrusive Site Investigation

Kemsley Paper Mill, Sittingbourne, Kent

On behalf of E.ON

Quality Management

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1 Introduction

1.1 Background

RPS Planning and Development Chepstow were commissioned by E.ON to undertake a focused Phase II intrusive site investigation at Kemsley Mill, Sittingbourne, Kent. The site is centred at National Gird Reference (NGR) 592170, 166640 and occupies an area of approximately 5 Hectares, as is shown on Drawing *JER4418-KM-02*.

The site investigation has been undertaken to establish the physical nature of the site subsurface and presence or otherwise of ground contamination associated with the historical and current activities on the site. The factual information collected will be utilised to assess environmental liabilities, geotechnical soil properties associated with the site and advise on the suitability of the site for redevelopment.

1.2 Sustainable Energy Plant (SEP)

E.ON is proposing to develop a sustainable energy plant to supply energy to the existing paper mill and expand the amount of sustainable energy currently being produced on site. The proposed Sustainable Energy Plant (SEP) site occupies an area of approximately 5 hectares.

The proposed design of the site development is in preliminary stages. The latest site layout issued at the stage of completion of this report is shown in *General Site Plan Kemsley Grate Combustion Plant, Preliminary Drawings 07/09/2009*.

1.3 Objectives

The objectives of the intrusive site investigation are to:

- Determine current (baseline) environmental conditions at the site, including geology, hydrogeology, hydrology, geotechnical information and potential land contamination;
- Identify the potential risks posed by the site to the environment and other sensitive receptors;
- Determine the sensitivity of the environment to any future change in land use at the site;
- Identify potential impacts on proposed / future development by current site conditions;
- Assess the potential environmental liabilities associated with the site ownership and redevelopment in accordance with the current development plans.

1.4 Report Structure

The remainder of the report is structured as follows:

Section 2; Environmental Setting. This section details a summary of the current site setting and previous investigations undertaken.

Section 3; Site Investigation. This section describes the intrusive investigation undertaken by RPS at the site.

Section 4; Site Investigation Findings. This section describes the main findings of the intrusive site investigation including the ground conditions encountered and any contamination identified.

Section 5; Laboratory Analytical Results. This section provides an account of the findings of the soil and groundwater analytical data.

Section 6; Engineering Properties. This section provides an account of the findings of the soil geotechnical analytical data.

Section 7; Engineering Discussion. This section provides an interpretation of the soil geotechnical analytical data.

Section 8; Conceptual Site Model. This section sets out the conceptual model of the site and identifies possible contaminant sources, pathways and receptors that are of significance.

Section 9; Summary and Conclusions. Conclusions of the site investigation are made and recommendations are presented in this section.

2 Environmental Setting

2.1 Introduction

The following section provides a summary fo the site environmental setting. For a more comprehensive description of the environmental setting at the site please refer to the Phase 1 Environmental Site Assessment by RPS for E.ON in March 2009.

2.2 Site Background

The proposed Sustainable Energy Plant (SEP) site is located immediately adjacent and north-east of the existing Kemsley Paper Mill, Sittingbourne, Kent. The site is centred at National Grid Reference (NGR) 592170, 166640.

Two previous site investigations have been undertaken in the vicinity of the site, of which are described in the following reports:

- Ground Solutions Group Ltd. Kemsley Mill Sittingbourne, IPPC Initial Site Report (Ground Condition Survey), December 2001;
- Enviros, Quarterly reports for September and November 2008 for Kemsley Landfill Monitoring.

A desk study and site walkover was undertaken at the site as part of the Phase 1 Environmental Site Assessment by RPS for E.ON in March 2009.

A plan of the site is shown in Drawing *JER4418-KM-02.*

2.3 Site Setting and Activities

The topography of the site and surrounding area is generally flat; with the elevation of the site at approximately 5 metres Above Ordnance Datum (mAOD).

The current site is split into three different areas; these comprise an area of marsh land, a stockpile area and a contractors laydown area.

The site for proposed Sustainable Energy Plant (SEP has recently been utilised as a contractors laydown area during the Phase 2 extension to the existing fluidised combustion plant associated with the existing CHP (combined Heat and Power) plant. The area of stockpiled material is located in the west of the site and is understood to have been generated during the Phase 2 extension works.

2.3.1 Historical Activities

From 1939 the paper mill building to the south-west of the site has developed. From 1978 the land has been used for the disposal of spoil from the paper mill. There are currently a number of lagoons and a spoil heap to the south. The area to the north comprises marsh land.

2.4 Geology

The published geology of the area indicates that there is likely to be drift deposits of alluvium underlain by London Clay. The Woolwich Beds, Thanet Beds and Upper

Cretaceous Chalk outcrop to the south of the site so it likely that these would be encountered at depth below the site.

Previous site investigations referenced in *Section 2.2* have identified significant Made Ground across the site with land historically raised across the development area.

2.5 Hydrogeology and Hydrology

The London Clay is classified as a Non Aquifer; however the Chalk is classified as a Major Aquifer. The Woolwich and Thanet beds located between the two formations are classified as a Minor Aquifer. The Swale estuary lies approximately 0.2km to the north-east of the site.

A shallow water table has been identified within superficial deposits during previous investigations. It is likely that the regional groundwater flow direction is to the north-east with a very shallow gradient. It is also considered likely that the surface watercourses (The Swale and Milton Creek) are in hydraulic continuity with the site.

The site does not lie within a groundwater source protection zone. Zone 1 of the nearest groundwater protection source, with travel time of 50 days or less to the groundwater source has been indentified 2.1km to the south-west site boundary. Zone II of this source has been recorded 1.5km to the south-west site boundary.

3 Site Investigation

3.1 Intrusive Investigation Works

3.1.1 Introduction

RPS was instructed to undertake a Phase II intrusive site investigation at Kemsley Paper Mill, by E.ON, who proposes to redevelop the site as a sustainable energy plant. The site investigation was undertaken between 6th and 16th July 2009.

The principal objectives of the investigation were to provide a baseline assessment of the ground conditions and determine the extent of any contamination in the soils and groundwater beneath the site. A geotechnical assessment was also undertaken to determine the engineering properties of the underlying soil and inform the preliminary design.

All investigation works were undertaken in accordance with current guidance advocated by regulatory authorities, including *BS10175:2001 Code of Practice for Investigation of Potentially Contaminated Sites* and *BS5930-1999 Code of Practice for Site Investigations*.

3.1.2 Exploratory Locations

Prior to the site walkover, historical maps and proposed Sustainable Energy Plant (SEP) plans were used to identify areas of potential historical contamination and areas where geotechnical properties of the ground required assessment (for example, below the proposed building footprint of the energy plant). Any area where there was a potential for contamination was targeted for investigation as best as practicable. Proposed exploratory hole locations were identified in an attempt to provide a representative spatial distribution across the site and to obtain optimum information on ground conditions.

The site walkover on 6th July 2009 was undertaken by an RPS Environmental Consultant along with an RPS Ecologist who was present due to the sensitive nature of the wildlife present across the site. There were frequent breeding birds and birds nests identified by the ecologist within areas of dense vegetation, particularly in the central and north eastern areas of the site. It was advised that exploratory hole locations were not positioned in close vicinity to these features. In addition, two large areas in the centre and north of site were difficult to access due to uneven topography and dense vegetation, and therefore no exploratory holes were advanced in these areas.

The exploratory hole locations are shown on Drawing *JER4418-KM-02*.

3.1.3 Service Surveys and Health & Safety Plan

Health and safety plans detailing health and safety protocols required for site works were presented to the on site contractors prior to the start of works. Permits to dig were issued by Kemsley Mill site staff and all ground investigation and monitoring works undertaken in accordance with site protocols.

Prior to the advancement of exploratory positions a detailed independent services survey was undertaken on 6th July 2009. Site service plans of approximate locations of the gas, electricity, water mains and other services were used as a guide.

The services and the detected route of the live electricity cables, as well as the drainage systems were identified and marked out as best as practicable during the site walkover and survey.

3.1.4 Topographic Survey

Post service clearance on 10th July 2009 all of the borehole and window sample positions were levelled in relative to m AOD (Above Ordnance Datum) by a surveyor during the progression of a topographic survey of the proposed Sustainable Energy Plant (SEP) site.

3.2 Cable Percussion Drilling

In order to carry out geotechnical sampling and install gas and groundwater monitoring wells beneath the area, three exploratory holes were advanced using cable percussion techniques. The works were undertaken between 6th and 16th July 2009. The exploratory hole locations are shown on Drawing *JER4418-KM-02*. The exploratory locations were initially cleared and then advanced through Made Ground and natural strata at depth using a cable percussion rig. The boreholes were advanced to a maximum depth of 20 metres below ground level (mBGL) (in Borehole BH2), until sufficient depth was achieved to allow geotechnical data to be derived or until refusal within competent strata, where SPT N values exceeded 50 blows.

Representative soil samples were collected during borehole advancement for subsequent laboratory analysis. During borehole advancement, SPT testing was carried out (at metre intervals within the top 5 m, then subsequently every metre and a half thereafter) to collect geotechnical information across the site, and where possible in competent strata U100 (undisturbed) samples were collected for subsequent laboratory analysis.

All three boreholes were completed with permanent groundwater and gas monitoring installations. The boreholes were installed to monitor deep groundwater conditions, with between 5 m and 7.5 m of slotted screen pipe to the base of each location. A bentonite seal was formed above this in order to separate the natural London Clay and Woolwich and Thanet Beds from the Made Ground unit above. The screen was constructed at a depth in order to facilitate subsequent representative sampling of groundwater within the Minor Aquifer unit of the Woolwich and Thanet Beds. Each installation was finished at ground level with a low permeability grout seal and concrete sealed raised heavy duty borehole covers. Each borehole was fitted with a gas tap bung to allow monitoring of the soil gas regimes beneath the site. The borehole logs and installation details are provided in *Appendix A*.

3.3 Window Sampling

In order to further determine the nature of shallow subsurface strata, carry out chemical sampling and install shallow gas and groundwater monitoring wells beneath the site; eight exploratory boreholes were advanced using window sampling techniques. The works were undertaken on 7th and 8th July 2009. The exploratory locations are shown on Drawing *JER4418-KM-02*.

The exploratory locations were initially cleared and then advanced through Made Ground, and Superficial Glacial Till strata using a window sampling rig. The boreholes were advanced to a maximum depth of 4.0 mBGL, until sufficient depth was achieved to allow gas and shallow groundwater monitoring installation. Representative soil samples were collected during borehole advancement for subsequent laboratory analysis. Super heavy dynamic probing was carried out at metre intervals in immediate vicinity to each window sample location prior to window sampling to gain geotechnical information across the site area. The maximum depth of penetration was 7 mBGL.

Each of the boreholes were installed with permanent ground gas and shallow groundwater monitoring installations, where the installations were screened across Made Ground and underlying superficial deposits. The screen was constructed at a depth in order to facilitate subsequent representative sampling of ground gas and groundwater within the Made Ground and underlying natural strata. Each installation was finished at ground level with a low permeability grout seal and concrete sealed borehole covers. Each borehole was fitted with a gas tap bung to allow monitoring of the soil gas regimes beneath the site. The borehole logs and installation details are provided in *Appendix A.*

3.4 Trial Pitting

Fifteen trial pits were excavated across the site area. The works were undertaken between 14th and 15th July 2009. Following service clearance of each trial pit location, excavations were progressed by mechanical excavator, reaching a maximum depth of 3.3 mBGL. Made Ground and natural arisings were logged in accordance with *BS 5930*. Soils of representative strata were collected and sampled. Representative bulk samples were also collected for subsequent geotechnical testing. Each trial pit on completion 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 A* and the trial pit locations are shown on Drawing *JER4418-KM-02*.

3.5 Testing, Sampling and Monitoring

3.5.1 Soil Sampling

Representative soil samples were collected from each exploratory hole location during advancement. One sample was obtained in the top metre and additional samples at further depth intervals within the Made Ground and underlying strata. Any soils exhibiting visual or olfactory evidence of contamination were targeted for sampling and subsequent laboratory analysis.

Samples were placed into laboratory supplied containers and dispatched for analysis to Alcontrol Geochem Analytical Services in Chester.

A Photo-ionisation Detector (PID) (MiniRae 2000) was used during the drilling works to determine the concentration of Volatile Organic Compound vapours (VOCs) in the arisings encountered. The results of the PID monitoring are included in *Appendix D*.

Bulk soil samples for subsequent geotechnical analysis were collected at regular intervals from all cable percussion boreholes and selected representative trial pits across the investigation area. These were collected at intervals where a change in ground conditions was encountered while advancement of the exploratory holes took place. Samples were sealed in bulk bags, labelled and dispatched for subsequent analysis to Geolabs in Hertfordshire, following completion of the site investigation. Also sent to Geoloabs were U100 (undisturbed) samples and SPT cores collected during advancement of both the cable percussion boreholes.

3.5.2 Groundwater

Measureable groundwater strikes were encountered during the site investigation and were recorded during the logging of exploratory hole positions.

A monitoring round took place on 28th July 2009 after installation of the boreholes to sample the groundwater and record rest levels beneath the site. Groundwater level monitoring was also undertaken on 14th August 2009.

3.5.3 Ground Gas Monitoring

Gas monitoring was undertaken on 28th July and 14th August 2009 after completion of the site investigation. A gas box (LMS xi) was used to determine the concentration of oxygen, carbon dioxide, nitrogen, methane and hydrogen sulphide gas within all RPS installed monitoring wells, as well as the flow regime and pressure of the gas in the wells. A PID was used during the second monitoring round to determine concentrations of VOCs.

3.5.4 Laboratory Analysis

Laboratory analysis of soil and groundwater was undertaken at a UKAS accredited laboratory, in accordance with MCERTS validation methodologies (in soils) where appropriate. Given the previous contamination identified at the site and taking into account the sites historical uses, the samples were analysed for the following selected contaminants of concern including:

- Total Petroleum Hydrocarbons (TPH) – analysis with six broad carbon bands was undertaken to assess the total TPH concentration;
- Speciated TPH analysis;
- Polycyclic Aromatic Hydrocarbons (PAH);
- Inorganic and metal compounds including Total Sulphate, Boron, Arsenic Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Zinc, Sulphide, Total Sulphur, Hexavalent Chromium, Phenols, Thiocyanate, Total Cyanide, Free Cyanide and pH;
- A suite of Semi Volatile Organic Compounds (SVOCs);
- A suite of Volatile Organic Compounds (VOCs);
- Fraction of Organic Carbon (FOC);
- An Asbestos screen of selected representative samples.

The laboratory analytical data for the soil and groundwater samples is provided in *Appendix B* and *Appendix C* and discussed further in *Section 5* of this report.

4 Site Investigation Findings

4.1 Geology

The main geological units identified during the intrusive site investigation are summarised in the following sections. Reference should also be made to the individual exploratory hole logs presented in *Appendix A*.

4.1.1 Made Ground

Made Ground was encountered across the whole of the site to depths of 0.9 mBGL to 4.6 mBGL.

The Made Ground mainly comprised brown and grey gravelly sands and clays with frequent infill materials including bricks, concrete, plastics, and wood. These infill materials were more commonly found in locations within the northern and western site areas such as Trial Pits TP10, TP11 and TP13. Ash and clinker were also identified as is described in *Section 4.2*.

Topsoil comprising gravelly silt and sands and organic matter was present across the majority of the site, excluding the laydown area in the south of the site. Peat was occasionally present within Made Ground in the north and east of the site and was encountered as a peaty silt / clay layer (1.6 to 1.8 mBGL in boreholes WS3 and WS5) or as occasional pockets (Trial Pits TP1 and TP14).

In the far south of the site underneath the hard standing area, gravels cobbles and coal residues were encountered. This comprised a thick layer of 1.9 m beneath hardstanding in trial pit TP6, and a thinner layer between 0.75 and 1.2 mBGL in borehole WS4.

4.1.2 Superficial Deposits

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. These were sandy, gravelly and friable in places. The depths of the deposits were proven in the three deep borehole locations, with maximum depth to base of the strata at 7.4 mBGL.

4.1.3 Solid Geology

London Clay

London Clay was encountered below Made Ground and Superficial Deposits at proven depths of between 7.4 and 14 mBGL. It comprised a stiff grey clay with occasional sands, and sand bands present at depth.

Woolwich and Thanet Beds

Presumed Woolwich and Thanet Beds were encountered at depths of between 7 mBGL and 20 mBGL beneath Superficial Deposits and London Clay in the deep boreholes. The Woolwich and Thanet Beds comprised a dense grey slightly silty sand. An aquifer was present within these deposits, confined by the London Clay, and is descried in *Section 4.4*.

4.1.4 Geological Sequence Summary

The geological sequence identified during the site investigation is summarised in *Table 4.1*.

Table 4.1 Geological Sequence

Unit	Description	Approximate Depth to Base of Strata where proven (and thickness, metres)
Made Ground	Brown grey gravelly sands and clays with frequent infill materials including bricks, plastics, and wood. Peat and gravels of coal dust, ash and clinker present in places.	0.45 – 4.6 (0.45 – 4.6)
Superficial Deposits	Grey brown orange mottled firm to stiff clay.	7 – 7.4 (3.2 – 3.55)
Solid Geology	London Clay: Stiff grey clay with sand bands at depth.	7.4 – 14 (maximum of 4.9)
Solid Geology	Woolwich and Thanet Beds: Dense grey slightly silty sand.	Not proven
Solid Geology	Upper Chalk	Not encountered

4.2 Visual and Olfactory Evidence of Contamination

The Made Ground was encountered as an ashy sand in Trial Pits TP9, TP11, TP12 and boreholes BH1 and WS1. Clinker was encountered at a number of locations including Trial Pits TP4 and TP9, boreholes WS1, WS5 and WS7 within the top 4 m in the central and southern site areas. These layers occasionally exhibited a slight hydrocarbon odour. Sand, silt and gravel sized fragments of coal were encountered in the south of the site. Details and observations noted during drilling and trial pitting are presented on the exploratory logs attached in *Appendix A*.

The olfactory evidence of contamination observed was minor, and the PID readings of the soil samples did not exceed 5 ppm. The PID readings are presented in *Appendix D*. Where groundwater was observed this appeared to also be clean in appearance, with no evidence of an oily sheen or colouring.

4.3 Gas Monitoring

Two gas monitoring rounds have been undertaken since completion of the site investigation. These were undertaken on 28th July and 14th August 2009.

Current guidance on the assessment of soil gases is derived from a number of sources. *Waste Management Paper 27* and *Building Regulations* (*Department of Environment, 1992*) require measures to be implemented to mitigate risks posed by potentially hazardous, explosive or asphyxiant gases at above guideline concentrations, that is:

- Methane exceeding 1% by volume;
- Carbon dioxide exceeding 5% by volume.

The guidance suggests that a gas assessment or gas protection measures may be required if methane concentrations in the ground are above 1 % or carbon dioxide concentrations are above 1.5 %.

The gas results obtained from the site are presented in *Appendix D*.

Gas flows were only observed in two of eight shallow boreholes and two of three deep boreholes. In the shallow boreholes flow rates were only observed in boreholes WS1 and WS3 with a range of between -0.5 litres per hour (l/h) and 0.3 l/h. In the deep boreholes flow rates above zero were observed in boreholes BH1 and BH3 and ranged from -2.4 l/h to 0.6 l/h.

Methane was absent from all boreholes except boreholes WS5 (0.1% v/v on 28th July) and WS7 (0.2% v/v on 28th July; 0.1% on 14th August). Carbon dioxide concentrations were generally low with all readings below 0.5% v/v except for borehole WS3 on 28th July 2009 where a concentration of 5.5% was observed and on 14th August where concentrations of 1.7% v/v were observed in boreholes WS3 and BH2. No hydrogen sulphide or carbon monoxide was observed within the monitored boreholes.

Concentrations of Volatile Organic Compounds (VOCs) were 0 ppm in 7 out of 11 no. exploratory holes. In the remaining four holes, the concentrations of VOCs ranged from 0.1 ppm to a peak concentration of 5.8 ppm (Borehole WS4).

4.4 Groundwater Encountered During Investgiation

Shallow water strikes were encountered at depths of between 2.5 and 5 mBGL within the window sample boreholes. Maximum depth of penetration within these holes was 6 metres. Within the trial pits, shallow water strikes were encountered in 4 out of 15 no. locations, ranging from depths of 1.6 mBGL (Trial Pit TP7) to 2.3 mBGL (Trial Pit TP1). Flows ranged from a low seepage in Trial Pits TP1 and TP9 to a medium to fast inflow in Trial Pits TP6 and TP7. A shallow groundwater strike was also encountered within Borehole BH3 at 3 mBGL, which subsequently rose to 2.87 mBGL after 20 minutes of encountering the strike. Shallow groundwater strikes were not recorded within the other two boreholes. However, other results from neighbouring exploratory locations suggest that a shallow groundwater table should be present in these locations. The shallow water strikes were encountered within Made Ground and underlying natural clay deposits.

A deep groundwater strike was encountered in the cable percussion boreholes at depths of between 13 mBGL (Borehole BH1) and 14.5 mBGL (Borehole BH2) within the Woolwich and Thanet Beds. Confined groundwater conditions under hydrostatic pressure were present as was identified by the rise in groundwater level in boreholes BH1 and BH2 to 5.25 mBGL and 5.10 mBGL after 209 minutes of encountering the strikes.

4.5 Groundwater Monitoring

Two groundwater monitoring rounds were undertaken on 28th July and 14th August 2009 post completion of the site investigation at Kemsley Mill. Groundwater levels in the boreholes were dipped on each occasion to gain an understanding of the groundwater conditions beneath site. The results of the dip rounds are presented in *Appendix D*.

During the first monitoring round groundwater samples were taken from each borehole and sent for subsequent laboratory analysis. The results of the sample testing are presented in *Section 5*.

Groundwater level monitoring of the window sample boreholes indicates that groundwater levels in the shallow aquifer of which boreholes are screened within Made Ground and shallow natural clays range from 1.63 mAOD (Borehole WS3) to 5.84 mAOD (Borehole WS4). Groundwater levels tend to be higher in the southwest of the site (i.e. further from The Swale) implying a groundwater flow direction towards the Swale. However, the groundwater levels appear to be highly influenced by local conditions. The groundwater levels were typically 0.2 m lower on 14th August than on 28th July suggesting a tidal influence.

Groundwater level monitoring of the deeper boreholes has indicated groundwater levels of between 1.46 mAOD (Borehole BH3) and 2.08 mAOD (Borehole BH2). Groundwater levels appear marginally higher in boreholes in the southwest of the site than the borehole located in the central to eastern area of the site (Borehole BH3) although the installation of borehole BH3 was slightly shallower at 15.5 mbgl as apposed 19 – 20 mbgl in BH 1 and BH2. Tidal influence is also suggested by the results, with elevations typically 0.2 to 0.3 m lower on 14th August than 28th July. A clear groundwater flow direction within the deep boreholes has not been determined.

5 Laboratory Analytical Results

5.1 Introduction

The following section summarises the analysis of representative soil and groundwater samples collected during the intrusive site investigation. The laboratory results are included in *Appendix B* and *Appendix C*.

5.2 Soil Chemical Analytical Results

Soil samples were collected and scheduled for chemical analysis based on current and historical site use and site investigation observations. The chemical analytical results are presented in *Appendix B*.

5.2.1 Metal Parameters

24 no. soil samples were analysed for metals including arsenic, cadmium, chromium, mercury, copper, lead, nickel and zinc, which were found to be present at a number of locations across the site. Several of the determinants were detected in the samples above their respective Laboratory Limit of Detection (LLOD).

Values of pH ranged from 4.62 (Trial Pit TP2, 0.1 – 0.4 mBGL) to 11.11 (Trial Pit TP3, 0.1 – 0.5 mBGL) in the samples.

Arsenic was detected at a concentration greater than the LLOD in 21 of the analysed samples, with concentrations ranging from below the LLOD of 3 mg/kg (various samples) to 55 mg/kg (Borehole WS4, 0.5 – 1 mBGL).

Cadmium has been detected above the LLOD in 19 of the analysed samples, with concentrations ranging from below the LLOD of 0.2 mg/kg (various samples) to 0.8 mg/kg (Trial Pit TP10, 0.5 – 1 mBGL).

Chromium has been detected above the LLOD in all of the analysed samples, at concentrations ranging from 7.9 mg/kg (Borehole WS7, 0.5 – 1 mBGL) to 50 mg/kg (Trial Pit TP10, 0.5 – 1 mBGL).

Copper was detected above the LLOD in 22 of the samples analysed, with concentrations ranging from below the LLOD of 6 mg/kg (various samples) to 360 mg/kg (Trial Pit TP10, 0.5 – 1 mBGL).

Lead was detected above the LLOD in all of the samples analysed. The lowest lead concentration was recorded at 2 mg/kg (Borehole WS2, 0 – 0.4 mBGL). The highest concentration was recorded at 240 mg/kg (Trial Pit TP11, 0.5 – 1.5 mBGL).

Mercury was only detected above the LLOD in one of the samples analysed (Borehole BH2, 0.5 – 1 mBGL) at a concentration of 1.6 mg/kg.

Nickel was detected above the LLOD in all of the samples analysed. The nickel concentrations ranged from 12 mg/kg (Borehole WS5, 0 – 1 mBGL) to 100 mg/kg (Trial Pit TP6, 0.5 – 1 mBGL).

Zinc was detected above the LLOD in all of the analysed samples. The lowest zinc concentration recorded was 12 mg/kg (Borehole WS2, 0 – 0.4 mBGL) and the highest concentration recorded was 580 mg/kg (Trial Pit TP10, 0.5 – 1 mBGL).

5.2.2 Inorganic Parameters

Total sulphate was detected above the LLOD in all of the samples analysed, occurring at concentrations of 540 mg/kg (Trial Pit TP10, 0.5 – 1 mBGL) to 14,000 mg/kg (Trial Pit TP8, 0.4 – 0.7 mBGL).

Total sulphur concentrations ranged from 0.02% (Trial Pit TP10, 0.5 – 1 mBGL) to 0.73% (Trial Pit TP8, 0.4 – 0.7 mBGL)

7 no. samples contained boron at concentrations above the LLOD of 3.5 mg/kg with a maximum concentration of 16 mg/kg in Borehole WS2 at 0.5 to 1 mBGL.

Hexavalent chromium was detected above its LLOD in five of the analysed samples, occurring at concentrations ranging from below an LLOD of 0.3 mg/kg (various samples) to 1.1 mg/kg (Borehole WS2, 0 – 0.4 mBGL).

Only one sample of selenium was encountered at concentrations above it’s LLOD. This was a concentration of 3 mg/kg at Trial Pit TP6 (0.5 – 1 mBGL).

One sample of thiocyanate, total cyanide and free cyanide was detected above their LLODs of 1 mg/kg at Trial Pit TP9 (1 – 2 mBGL) with concentrations of 3 mg/kg, 4 mg/kg and 1 mg/kg respectively.

5.2.3 Organic Parameters

40 no. of the collected samples were analysed for organic determinants, with 34 being analysed for carbon band speciated TPH, and 6 no. analysed for fully speciated aliphatic and aromatic TPH.

In the carbon band speciated TPH, 28 samples were recorded above their LLOD with a maximum concentration of 1,700 mg/kg (Trial Pit TP4, 0 – 0.5 mBGL). The majority of this was recorded in the C12 to C40 range.

Out of the six fully speciated TPH samples, there were no exceedances above LLOD for C5 to C12 range determinants. For total TPH, concentrations ranged from 36 mg/kg (Trial Pit TP6, 0.5 – 1 mBGL) to 2,300 mg/kg (Trial Pit TP9, 1 – 2 mBGL).

A number of different Polycyclic Aromatic Hydrocarbon fractions (PAHs) were detected in most of the soil samples analysed from across the site. The highest PAH (16 Total) concentration was 400 mg/kg detected in a sample from Borehole WS7 at depths of between 0.5 and 1 mBGL. Naphthalene concentrations were detected above LLOD in 26 out of 34 samples, with a maximum concentration of 6.2 mg/kg at WS4 (0.5 – 1 mBGL). 28 samples were detected above LLOD for benzo(a)pyrene with a maximum concentration of 25 mg/kg observed at WS7 (0.5 – 1 mBGL).

No determinants were observed at concentrations above LLOD for MTBE, BTEX, and Gasoline Range Organics (GRO) (C4 to C12 range) of which 6 samples were analysed for each respectively. No determinands were observed at concentrations above LLOD for Phenols of which 24 no. samples were analysed.

5.2.4 Volatile and Semi-Volatile Compounds

Other contaminants detected in the soil samples include low concentrations of VOCs and SVOCs. 6 no. samples were analysed for these determinants.

Out of the SVOCS, all phenols were below LLOD. Various PAHs were above their respective LLODs in a number of samples including naphthalene (maximum of 0.42 mg/kg) and benzo(a)pyrene (maximum of 0.23 mg/kg) at Trial Pit TP8, 1.2 – 1.6 mBGL. Phthalates were observed above LLOD in 3 samples for bis(2-ethylhexyl)phthalate (maximum of 24 mg/kg at Trial Pit TP10, 0.5 – 1 mBGL), two samples for butylbenzylphthalate (maximum of 0.18 mg/kg at Trial Pit TP8, 1.2 – 1.6 mBGL), one sample for di-n-butylphthalate (1.3 mg/kg at Trial Pit TP10, 0.5 – 1 mBGL) and one sample for di-n-octylphthalate (0.35 mg/kg at Trial Pit TP10, 0.5 – 1 mBGL). Other semi-volatiles above their respective LLODs include azobenzene (0.42 mg/kg at Trial Pit TP8, 1.2 – 1.6 mBGL) and dibenzofuran (0.13 mg/kg at Trial Pit TP8, 1.2 – 1.6 mBGL).

Out of the VOCS, three determinants were detected above their respective LLODs comprising one sample for chloromethane (0.016 mg/kg; Trial Pit TP9; 1 – 2 mBGL), two samples for carbon disulphide (maximum of 0.023 mg/kg; Trial Pit TP9, 1 – 2 mBGL) and one sample for ethylbenzene (0.012 mg/kg, Trial Pit TP15, 0.1 – 0.6 mBGL).

The full set of laboratory results and summary tables are included in *Appendix B*.

5.2.5 Asbestos

Six soil samples were analysed for presence of asbestos, of which asbestos was identified in one (Borehole WS8, 0.8 – 1.2 mBGL). The asbestos was identified as amosite (brown) asbestos. The source of the asbestos could not be confirmed by the laboratories. However, gauze type material was identified within this location within soils which could have potentially been the source. Please see the logs in *Appendix A* for more detail.

5.2.6 Soil Screening Assessment

At the time of writing, the assessment of risk to human health posed by soil contaminants in the UK is in a transitory state. In 2008, the original SGVs and CLEA UK software model were formally withdrawn by the EA. Since then new SGVs for a limited number of contaminants have been published, with further SGVs to be issued as and when they become available.

A range of available screening criteria have been used to assess site soil data. The hierarchy of criteria used is as follows:

- New UK CLEA Soil Guideline Values (SGVs);
- RPS Derived General Assessment Criteria (GACs) using the CLEA UK model and old SGVs.

The concentrations of contaminants in the soil samples have been subject to an initial screening level assessment. The soils results have been screened against the new CLEA soil guideline values, for a commercial / industrial end use, where available. Where SGVs are not available, the contaminant concentrations have been compared against RPS GACs and old SGVs as an initial first pass screening exercise, to indicate whether there is a potential for a particular contaminant to pose a theoretical risk to human health.

Where significant concentrations of contaminants of concern are identified we will confirm the potential risks and where appropriate recommend that further investigation and where required a site specific quantitative risk assessment is undertaken in order to assess risks and derive remedial targets for the site.

5.2.7 Soil Assessment Summary

None of the inorganic parameters analysed for were found to occur above Soil Guideline Values (SGVs) or human health Generic Assessment Criteria (GACs).

Although occurring above the LLOD, none of the TPH fractions analysed for occurred above their respective human health GAC (for commercial / industrial end-use).

Other contaminants detected in the soil samples include low concentrations of VOCs and SVOCs, none of which exceed available soil standards or GACs where applicable.

The highest concentrations of inorganic and organic determinands were typically within shallow Made Ground in the north and east of the site

The summary soil screening assessment using these guidelines is presented in Table 5.1, and the full list of screening criteria comprising SGVs and GACs are shown in *Appendix B*.

Table 5.1 Soil Chemical Analytical Results (in mg/kg)

Determinant	LLOD	Total No. Samples	No. Samples > LLOD	Max Value	SGV / GAC*	Location of Maximum Sample
Arsenic	<3.0	24	21	55	640 (SGV)	WS4
Cadmium	<0.2	24	19	0.8	1,400 (SGV)	TP10
Chromium	<4.5	24	24	50	5000 (SGV)	TP10
Copper	<6.0	24	22	360	N/A	TP10
Lead	<2.0	24	24	240	750 (SGV)	TP11
Mercury	<0.4	24	1	1.6	3,600 (SGV)	BH2
Nickel	<0.9	24	24	100	1,800 (SGV)	TP6
Zinc	<2.5	24	24	580	N/A	TP10
pH	<1.0	24	24	11.11	N/A	TP3
GRO (C4 – C12)	<0.01	6	0	0.01	N/A	-
TPH (C6-C40)	<10	40	34	2300	N/A	TP9
Benzo(a)pyrene	<0.015	33	28	25	28.1 (GAC)	WS7
PAH 16 Total	<0.118	29	33	400	N/A	WS7

* N/A denotes where no guideline or screening value exists for a determinant.

5.3 Groundwater Analytical Results

Groundwater samples were collected from nine of the eleven installed boreholes following completion of the site investigation. The remaining two holes (Boreholes WS6 and WS8) did not contain groundwater during the two monitoring rounds undertaken at site. The samples were analysed for a number of contaminants and the results of this analysis are presented below, and summarised in *Table 5.2*. The chemical analysis is presented in *Appendix C*.

5.3.1 Metal Parameters

Nine samples were analysed for metals including arsenic, cadmium, chromium, copper, lead, nickel and zinc. Several metals appear to occur at concentrations elevated above the LLOD within the samples collected from the installations on site.

Arsenic concentrations exceed the LLOD in all nine samples, occurring at a range of 1.5 µg/l (Borehole BH3) to 10 µg/l (Borehole WS7).

Cadmium had been detected above the LLOD in three of the samples analysed, occurring at a range of 110 µg/l (Borehole BH3) to 5,900 µg/l (Borehole WS1).

Copper is present at concentrations above the LLOD in 8 of the 9 samples analysed, occurring at concentrations of below a detection limit of 1.6 µg/l (Borehole WS7) to 11 µg/l (Borehole WS3).

Chromium concentrations occur above the LLOD in all of the samples analysed, ranging from 6 µg/l (Borehole BH3) to 30 µg/l (Borehole WS7).

Lead has been detected in seven of the samples, with concentrations ranging from below a detection limit of 0.4 µg/l (various samples) to 1 µg/l (Borehole WS4).

Nickel concentrations exceed the LLOD in all of the samples analysed, ranging from 14 µg/l (various samples) to 63 µg/l (Borehole WS5).

Zinc occurs at concentrations exceeding the LLOD in eight of the samples, ranging from below a detection limit of 5 µg/l (Borehole WS7) to 460 µg/l (Borehole BH1).

5.3.2 Other Parameters

The alkalinity (as $CaCO_3$) of the samples was high, ranging from 1200 mg/l (Boreholes WS1 and WS7) to 1900 mg/l (Borehole BH2). The pH of the samples analysed ranged from 7.30 (Borehole WS5) to 7.61 (Borehole WS3).

Sulphate was detected in all of the samples as occurring above the LLOD, ranging from 80 mg/l (Borehole WS7) to 1,700 mg/l (Borehole BH1).

Boron concentrations occur above the LLOD in all of the samples analysed. It is present at concentrations ranging from between 110 µg/l (Borehole BH3) and 5,900 µg/l (Borehole WS1).

Selenium is present in eight of the samples above the LLOD, ranging from below a laboratory detection limit of 1µg/l (Borehole WS5) to 14 µg/l (Borehole WS7).

Sulphide, hexavalent chromium, monohydric phenols, thiocyanate, free and total cyanide and free sulphur had concentrations that were all below their respective laboratory limit of detection.

None of the groundwater samples had concentrations above their respective LLODs for TPH except Borehole WS3 where a total TPH concentration (C5 – C35) of 3.3 mg/l was encountered comprising the heavier aromatic and aliphatic fractions of C16 – 21 and C21 – 35.

A number of PAH determinants were detected in the samples including naphthalene, acenaphthene, fluorene, phenanthracene, pyrene and benzo(a)pyrene. The concentration of PAH 16 Total ranged in from below an LLOD of 0.1 µg/l (various samples) to 12 µg/l (Borehole WS3). Concentrations of naphthalene ranged from below an LLOD of 0.1 µg/l (various samples) to 1.1 µg/l (Borehole WS4). Benzo(a)pyrene concentrations ranged from below an LLOD of 0.009 µg/l (various samples) to 1.5 µg/l (Borehole WS3).

No VOCs or SVOCs were detected in the samples above their respective laboratory LLODs.

A summary of key parameters detected through the groundwater laboratory analysis is presented in *Table 5.2*.

5.3.3 Groundwater Screening Assessment

To determine the significance of contaminant concentrations in groundwater sample data have been screened against a range of Water Quality Standards.

In particular the following standards have been considered in assessing the water quality data:

- UK Environmental Quality Standards (EQS) (For saline water) - applied to surface water, or groundwater that could enter a surface water
- UK Environmental Quality Standards (EQS) (For freshwater) - applied to surface water, or groundwater that could enter a surface water
- UK / EU Drinking Water Standards (DWS) – Taken from UK Water Supply (Water Quality) Regulations (1989 and 2000).
- World Health Organisation (WHO) Health Standards and Appearance Taste and Odour (ATO) Standards – for Drinking Water.

In general the UK EQS values for saline water are considered most applicable to groundwater beneath the site due to the close proximity of the Swale. Where the EQS is given as a range, the most conservative value is used for the water screening, adopting a worst case approach for the assessment. The results were screened against the applicable EQS as a guideline, using the DWS and subsequently the WHO standard for screening only when no EQS is available for a given determinant. The greatest potential risk associated with groundwater contamination corresponds with discharge to surface waters, rather than to abstractions used for drinking water supply.

The values used for the initial screening of the groundwater results can be viewed in *Appendix B*.

5.3.4 Groundwater Assessment Summary

There are no exceedances of water samples above an EQS of 25 µg/l for arsenic. However there is one concentration that is equal to the UK DWS of 10 µg/l in Borehole WS7.

There are three exceedances above the UK DWS for boron with a maximum concentration of 5,900 µg/l at Borehole WS1. There are no exceedances above the EQS for boron.

There are no exceedances above EQS or UK DWS for cadmium, mercury or lead.

For chromium there are three exceedances above an EQS of 15 µg/l with a maximum concentration of 30 ug/l at Borehole WS7. No exceedances above UK DWS were identified.

Four exceedances above an EQS of 5 µg/l were identified for copper, with a maximum concentration at Borehole WS3 (11 µg/l). No exceedances above UK DWS were identified.

For nickel, there are 4 exceedances above UK DWS of 50 µg/l with a maximum concentration of 63 µg/l at Borehole WS5. Other exceedances occur at Boreholes BH1, WS3, WS4 and WS5. There are three exceedances above the EQS of 30 µg/l.

For selenium there is one exceedance above a UK DWS of 10 µg/l at Borehole WS7 (14 µg/l).

Chloride concentrations range from 130 mg/l (Borehole WS1) to 800 mg/l (Borehole WS7) suggesting freshwater to brackish water conditions in both shallow and deep boreholes in both shallow and deep boreholes.

Zinc has no exceedances above an EQS of 500 µg/l assuming a hardness above 250 mg/l using the freshwater standard due to a saline water standard not being available. Eight out of nine sulphate samples have concentrations above EQS and UK DWS, with a maximum concentration observed at Borehole BH1.

There were no exceedances for cyanide or phenol above their respective LLODs.

Concentrations of PAH (sum of 16) indicates that five samples exceed the UK DWS of 0.1 µg/l, with a maximum concentration of 12 µg/l in Borehole WS3.

Concentrations of benzo(a)pyrene occur above the LLOD in three samples. All of these concentrations exceed the DWS for this determinant of 0.01 µg/l. The concentrations exceed the DWS in the samples from Borehole WS3 (1.5 µg/l), Borehole WS5 (0.03 µg/l), and Borehole WS7 (0.041 µg/l). There was one exceedance above the WHO Health standard of 0.7 ug/l for benzo(a)pyrene at Borehole WS3.

The determinants which exceed Water Quality Standards in the assessment are summarised in *Table 5.2*.

Table 5.2 Groundwater Chemical Analytical Results (in µg/l)

Determinant	LLOD	Total No. Samples	Max Value	No. Samples > EQS	Saline EQS	No. Samples > UK DWS	UK DWS	Location of Maximum Concentration
Copper	1.6	9	30	4	15	0	2000	WS3
Chromium	1	9	11	3	5	0	50	WS7
Nickel	1.5	9	63	3	30	4	50	WS5
Selenium	1	9	14	-	-	1	10	WS7
Sulphate	3	9	1700	8	400	8	250	BH1
TPH C6 – C40	10	9	3300	-	-	1	10	WS3
Benzo(a)pyrene	0.009	9	1.5	1	0.7*	3	0.01	WS3
PAHs	0.1	9	12	-	-	5	0.1	WS3

* WHO Health standard.

Elevated concentrations of nickel, selenium, sulphate, TPH and PAHs have been identified in shallow groundwater with the majority of exceedances occurring when compared to UK DWS. However, the majority of these exceedances are located within the shallow aquifer within the natural clays (superficial deposits and London Clay) of which the latter are classified as a non aquifer. Exceedances above UK DWS within the underlying deep aquifer occur for nickel and sulphate. These are more relevant due to the aquifer’s status as a minor aquifer, and the possibility of hydraulic continuity between the Woolwich and Thanet Beds and the underlying sensitive Chalk major aquifer.

In addition, elevated concentrations of chromium and copper above saline water EQS have been detected within shallow groundwater.

5.4 Soil Geotechnical Analytical Results

Samples from each borehole location and from selected trial pit locations were collected for subsequent geotechnical analysis. Samples scheduled for analysis were generally taken at metre intervals within the material or where a change in unit was observed during advancement of the exploratory holes. The engineering properties of the soil as derived from the geotechnical analysis are presented in *Section 6*.

6 Engineering Properties

A programme of in situ and laboratory testing was carried out on samples taken from the various strata encountered to assess the engineering properties of the materials underlying the site in the context of the proposed site redevelopment.

Testing undertaken is summarised in *Table 6.1* and the results presented within *Appendix F.*

Table 6.1 Summary of Geotechnical Laboratory Testing

Test Type	Made Ground	Alluvial Clay	London Clay	Woolwich Beds
Insitu CBR Test	12	-	-	-
Laboratory CBR	2	1	-	-
Sulphate Suite	1	1	1	2
Oedometer	-	1	-	-
Atterberg Limits	1	3	1	-
NMC	3	4	1	-
Particle Size Distribution	6	-	-	3
Proctor Compaction (2.5 kg)	2	1	-	-
Undrained Triaxial Test	-	1	1	-
Shear Box Test	-	-	-	2
SPT	8			

6.1 Soil Properties

6.1.1 Made Ground

The Made Ground was encountered variably as a cohesive and granular material with localised refuse content. Extraneous material comprised metal, plastic, brick, concrete and ash fragments. The Made Ground is therefore considered as a mixed quality material resulting in variable engineering behaviour.

Putrefying material such as wood and organic matter were encountered typically within the upper 0.1-0.8m of the Made Ground but also locally at greater depth across the north eastern half of the site (Trial Pit TP11: 0.8 – 3.1 mBGL; Trial Pit TP13: Ground level to 2.5 mBGL; Trial Pit TP14: ground level to 1.2 mBGL; Borehole WS5: 0.9 – 1.4 mBGL, Borehole WS7: 1 – 1.8 mBGL and Borehole WS8: 1 – 3 mBGL). A peat band was also proven at Borehole WS3 (1.2 – 1.8 mBGL) and Borehole WS5 (1.6 – 1.8 mBGL).

Particle size distribution tests indicate a well / even graded material, consisting of clayey very silty gravel and sand or clayey silt with some to much sand and gravel. The uniformity coefficients were measured in excess of 150 (EN ISO 14688 pt 2).

A single plasticity test carried out within a cohesive soil sample indicated a plasticity index of 22 with correspondingly high natural moisture content of 46%. A moderate shrinkage material is indicated.

Results of 2 no. laboratory CBR tests gave values of 3% and 34%. Both samples were of similar material described as slightly clayey sandy and gravelly silt. However, it is noted that the sample of high natural moisture content (21%) gave the lowest CBR value. The higher CBR value was associated with a drier natural moisture content of 11%. These findings would indicate that performance of the material will be highly sensitive to moisture content.

Results of the 12 no. insitu CBR tests gave typical values of between 20% and 50%, with a single lower value of 7% and a maximum value of 300%.

Results of 8 no. standard penetration tests (Appendix B) indicate a material with a predominantly loose relative density (SPT N value <10) irrespective of depth. Occasional reported higher values are likely due to obstructions, either large gravel or relic concrete or other waste debris within the made ground. The variability of the material is demonstrated by the continuous dynamic probing which ranges widely with depth and between each probe location.

Two proctor compaction tests record optimum moisture contents of 14% and 35% with corresponding maximum dry densities of 1.08 mg/m^3 and 1.69 mg/m^3. Their respective natural moisture contents were 22% and 46%. It is noted that whilst the results are widely different, both samples displayed similar particle size distributions. It is also noted that the sample of the lowest compaction capability (and associated high optimum moisture content) was described as including wood and plastic fragments which would have impacted on the reliability of the test.

6.1.2 Superficial Deposits

Superficial Deposits were encountered beneath the Made Ground to 7.0-7.8m depth. These are described as Alluvium, generally proved as brown mottled grey sandy clay locally grading to clayey very sandy gravel.

Three plasticity tests carried out indicate a high plasticity index of between 25 and 50 with correspondingly high moisture contents of 33% to 38%. A high shrinkage material is indicated.

Results of 1 no. laboratory CBR test gave values 1.1% for relatively high natural moisture contents of 29% and 34%.

In total 3 no. standard penetration tests were undertaken within representative soils. SPT ‘N’ value results ranged between 12 and 25 within cohesive material and with refusal within granular material. A material with a firm or stiff consistency or very dense relative density is indicated. This correlates with the single undrained triaxial test result giving a Cu value of 65kPa, representative of a firm consistency.

However, the continuous dynamic probing gave a blow counts per 100mm penetration of typically 0 and 2 to depths of 4 to 5 mBGL, increasing with depth to typically 4 and 5 below 5.5 to 6 mBGL. This suggests a very soft or soft consistency hardening to firm or stiff. The ‘softer’ consistency recorded by the continuous penetration testing within the shallower Alluvium is further supported by the hand shear vanes undertaken within the trial pits which ranges between 3kPa and 38kPa.

A single proctor compaction test records an optimum moisture content of 15% with a corresponding maximum dry density of 1.72 mg/m^3. Natural moisture contents within the alluvium are noted to range between 30% and 38%.

6.1.3 Solid Geology – London Clay

The Solid Geology is recorded as typically consisting of a veneer of the London Clay formation underlain by the Woolwich Beds.

The London Clay was proven as a grey clay with localised sand bands to 12.3m depth at BH1 and 14m depth at BH2. The London Clay was not encountered at BH3 with the Superficial Deposits underlain directly by the Woolwich Beds below 7m depth. This is supported by the high SPT 'N' values recorded within BH3, consistent with expectation for the Woolwich Beds. However, the associated high SPT 'N' values correlate very much with the latter one. The soils at BH3 between 7m and 14m may simply be a transition zone between the two formations.

A single plasticity test indicates a high plasticity index of 49 with a natural moisture content of 30%. A high shrinkage material is indicated.

4 no. standard penetration tests recorded uncorrected N values of between 14 and 29. The results are provided in *Appendix F* and indicate a trend of increasing value with depth from a firm consistency within the upper formation, gradually hardening to stiff with depth. These results correlate with the single triaxial test result of 97kPa (stiff).

6.1.4 Solid Geology – Woolwich Beds

The Woolwich Beds was proven as a grey silty sand to at least 20m depth.

3 no. particle size distribution tests indicate a variable material ranging from gap graded (consisting of silty fine sand) to poorly graded (consisting of slightly sandy very silty clay).

9 no. standard penetration tests all recorded uncorrected N values in excess of 50 indicating a very dense relative density. The results are provided in *Appendix F*.

The 2 no. shear box test within cohesive material gave an angle of shearing resistance of 14.5^{o} and 15.5^{o} associated with an apparent cohesion of 20kPa and 22kPa.

6.2 Groundwater

Groundwater seepages within the Made Ground or the upper Alluvium were recorded in most trial pits and boreholes. These are believed to be perched and characteristic of the variability of the material and the associated infiltrations. A deeper ground water body was encountered at 13 to 14.5 mBGL confined below the London Clay within the Woolwich Beds. All deeper strikes rose to about 5 m depth after 20mins (recorded as fast inflow).

Standing levels of the confined groundwater body were recorded between 3 and 4.7 mBGL. Standing levels of the perched groundwater body were recorded between 1.7 and 4.4 mBGL within the Made Ground or Alluvium.

7 Engineering Discussion

7.1 Introduction

It is understood that the development is to comprise a Waste Transfer Station. Information relating to structural layout and anticipated loadings is not presently available. Information relating to proposed finished site levels suggest re-grading of the existing levels with up to 0.8-1.5m infill over the north eastern third (over proposed slag laydown area) of the site. Earthwork cutting of 0.8m to 2.0m is limited to the south western corner of the site. A large basement excavation (34m by 57m in plan) to 8m below existing ground level is also proposed for the storage of solid fuel.

7.2 Foundations

Made Ground across the site extends in thickness in some areas to 4.5m depth but is generally between 2 m and 3 m. The superficial deposits beneath these extend to between 7 and 8 mBGL with a generally soft or firm becoming firm or stiff consistency with depth. A veneer of firm to stiff London Clay was encountered intermittently across the site to 14m depth. This overlies the Woolwich Beds, a very dense fine sand or very stiff clay to at least 20 m depth. Groundwater was encountered confined within the Woolwich Beds with perched bodies within the Made Ground and Alluvial strata.

It is concluded that the Made Ground and the Superficial Deposits do not provide a suitable foundation material and their thicknesses preclude the use of traditional shallow foundation options founded within the London Clay. Two further options are considered, namely ground improvement with pad type foundations and piling.

7.2.1 Ground Improvement

The grading characteristics for the Made Ground would indicate that it could benefit from ground improvement enabling it to be utilised as a foundation material. Characteristically, ground improvement could give a material with an allowable bearing of 100-150kN/m^2 for settlement tolerances of 25mm. However the material contains some organic and wood fragments and this could impact on the viability of ground improvement. Traditionally, ground improvement is undertaken on the basis of a performance specification developed specifically for the intended use. In order to consider this further we would propose consultation with specialist sub contractors in order to confirm the viability of ground improvement given the ground conditions and then to consider and develop the most appropriate technical approach and methodology. Our experience is that on schemes of this nature the specification requirements can vary significantly from area to area giving the opportunity to develop several specifications that can significantly reduce costs against a blanket approach to the whole site ground improvement.

Whilst details of the proposed loadings are currently unavailable, even if ground improvement to an allowable bearing capacity of 100kN/m^2 was successfully achieved, the anticipated high loads would require significant pad foundations making this foundation option potentially uneconomic.

7.2.2 Piling

In the event that ground improvement is not viable, piling to within the Woolwich Beds will provide a robust foundation solution. Both driven or bored pile would be acceptable in these ground conditions. Bored piles would need to be taken through the Made Ground, Superficial Deposits and London Clay, end-bearing within the very stiff or very dense Woolwich Beds. A preliminary estimate would indicate that for a 600mm diameter pile taken 5 m into this formation an allowable pile capacity of 550-850kN can be readily achieved.

Driven piles would need to be taken through the Made Ground Superficial Deposits, London Clay and set to refusal within the very dense or very stiff Woolwich Beds. A preliminary estimate would indicate that for a 300mm diameter pile taken 2 m into this formation an allowable pile capacity of 360-600kN can be achieved.

Piling design will also need to take account of potentially high pore water pressures and will require the input of a specialist contractor in confirming pile type, working capacities and the layout. Pile capacities will depend on the specific design of pile used, pile grouping and specialist piling contractors should be contacted to provide guaranteed capacities, in terms of ultimate and working load, for the piles they propose to install.

When piles are installed in a group then behaviour of the group needs to be considered as well as that for individual piles particularly with regard to settlement of the foundation as a whole. Specialist contractor support will be required in developing the appropriate solution.

Some site level changes are proposed requiring the need to consider development of negative skin friction. Piling methodology will need to be considered fully in light of site contamination and gas status. Where piles are to be adopted there is likely to be a requirement for a piling risk assessment to be undertaken.

7.3 Floor Slabs

Given the predominance of Made Ground it is recommended that where practical, Made Ground is treated to enable the use of ground bearing floor slabs. Where Made Ground treatment is not viable or performance dictates, a piled solution with a suspended slab may become appropriate. Floor slab construction will need to take account of any gas protection measures required following results of the gas monitoring presently being undertaken.

Differential settlement between the structure and floor slab will need to be considered to avoid detrimental structure floor slab interaction.

7.4 Chemical Attack on Buried Concrete

Various soil samples were scheduled for BRE SD1 suite of tests. The results are presented in *Table 7.1*.

Table 7.1 Summary of Sulphate Testing

Geological Formation	pH	Water soluble (2:1 extract) sulphate (mg/l)	Total Sulphur (%)	Total Sulphate (%)	Total Potential Sulphate (%)	Oxidisable Sulfides (%)	Design Sulphate Class	ACEC Class
Made Ground	7.5	2,500	0.32	0.36	0.96	0.6	DS-3	AC-3
Superficial Deposit	8.5	1,000	0.046	0.11	0.138	0.028	DS-2	AC-2
London Clay	8.0	2,400	0.54	0.37	1.62	1.25	DS-4	AC-4
Woolwich Beds	7.7-8.0	750-1,600	0.036-0.870	0.11-0.18	0.108-2.61	0.072-2.43	DS-4	AC-4

Based on this data for the site, the design sulphate class is DS-4, and the ACEC class is AC-4 based on mobile groundwater conditions and possible presence of pyrites within the Made Ground, London Clay and Woolwich Beds.

It is considered appropriate to undertake further assessment within the Made Ground in view of perhaps downgrading the class identified for ground bearing floor slabs.

7.5 Temporary Works

It is considered that shoring of any shallow excavations will be required due to the predominantly granular / mixed nature of near surface materials. Precautions such as battering or trench support systems will be needed. This will be mandatory where access is required for construction personnel.

Significant shallow groundwater was not encountered during the drilling and trial pitting and therefore it is anticipated that groundwater control measures will only be required for potential pockets of perched water within the Made Ground and Superficial Deposits materials. Suitable control to mitigate surface water ingress should be considered.

Confined aquifer was identified within the Woolwich Beds (typically 14m depth) which may present a constraint to the construction of the 8 m deep basement. Detailed design will be required to determine the degree of any uplift force associated with this.

7.6 Hardstanding and Pavements

The overall design for pavement areas will need to account for the organic and degradable nature of some of the Made Ground material. Laboratory CBR results for the Made Ground ranged between 3% and 34%. However, insitu CBR gave values of typically between 20 and 50. It is recommended that a value of 20% be adopted for design at this stage. However it is recommended for additional laboratory CBR testing to be completed in order to refine the design value appropriately in areas of filling where

Made Ground material is reused. In areas were Alluvium formation is exposed, lower CBR values of 1% should be adopted.

Given the variable organic content of the Made Ground there remains the risk of degradation settlements occurring over time. Consideration could be given to the use of ground improvement in mitigating settlements but this could prove to be expensive. Alternatively construction could be approached with the use of geogrid reinforcement that whilst not mitigating the settlements will distribute settlements more evenly thereby reducing differential movements and potential impact.

The possibility of soft spots or hard spots within the sub-grade should be inspected by a suitably experienced engineer and proof rolled. Any soft or hard spots should be dug out and replaced with suitably compacted granular material. It is recommended that the construction be carried out soon after preparation of the formation so as to minimise excessive interaction with surface water, which may result in localised softening.

It is noted that some of the Made Ground records greater than 10% material finer than 63 microns this should be considered as frost susceptible.

7.7 Material Reuse

Material excavated as part of the works is most likely to be the Made Ground. It has an even grading and is likely to compact well. Given the organic content it is likely to require processing to remove degradable material in advance of re-use. Furthermore any aspects relating to contamination would need to be addressed in considering re-use on site.

In the event that re-use is considered viable with regard to contamination and organic material content we would propose a site trial be undertaken in order to identify a suitable placement methodology based on the performance characteristics required.

The material gradings summarised have been compared against Highway Standards of acceptable earthworks materials (Volume 1, Series 600, Table 6/2) for common classes and the acceptances summarised in *Table 7.2.*

Table 7.2 Acceptance to Grading Requirements

Geological Formation	**General Granular Fill (number of results)**						**Capping Granular Fill (number of results)**	
	1A (well graded)	**1B (uniformly graded)**	**1C (coarse)**	**6A (well graded)**	**6B (coarse)**	**6C (uniformly graded)**	**6F1 (fine graded)**	**6F2 (coarse graded)**
Made Ground	0	0	0	0	0	0	0	0

Position	General Cohesive Fill				Failure (neither Granular or cohesive Fill)
	2A (wet)	2B (dry)	2C (stony)	2D (silty)	
Made Ground	2	2	5	0	0

The above indicates that in terms of grading the Made Ground meets the criteria to be suitable for general cohesive fill purposes. The testing also indicates that none of the Made Ground is likely to be suitable as general granular fill or as a Capping material.

A total of three Proctor Compaction tests were carried out on Made Ground and Alluvium material near the proposed area of basement excavation. These results indicate that the material will compact variably and that natural moisture contents are significantly wetter than the calculated optimum moisture contents. Therefore, significant drying of any excavated material will be required prior to re-use. As the excavated material appears to be relatively granular in nature, the material could potentially dry out during the course of excavation especially during dryer months of the year. Alternatively, consideration may be given to addition of lime or cement to condition the materials prior to placement.

8 Conceptual Site Model

8.1 Introduction

The following section sets out a Conceptual Site Model, which qualitatively describes the potential contaminant sources present within and around the Kemsley Mill site, receptors upon which contaminants could have an impact and also pathways that may exist to allow contaminants to impact upon the identified receptors. The model is based on the future site use, which is proposed to be the construction of a sustainable energy plant (commercial / industrial scenario).

The Conceptual Site Model has been developed using current UK guidelines including CLR11 and developed using the information provided in the previous site investigation reports, as well as from the recent intrusive investigation undertaken by RPS.

8.1.1 Contamination Sources Identified Through Laboratory Analysis

Table 8.1 outlines sources of soil and groundwater contamination identified through laboratory analysis following sampling undertaken by RPS during the recent site investigation. Borehole and trial pit locations are identified on Drawing *JER4418-KM-02*.

Table 8.1 Contamination Sources Identified Through Laboratory Analysis

Borehole / Trial Pit Sample Location	Contaminant Source	Media in which Contamination was Identified
BH1	Nickel	Deep groundwater.
Widespread across site.	Copper, chromium	Shallow groundwater
Widespread across site.	Sulphate	Shallow and deep groundwater.
Various locations across site.	Metals and inorganic determinants. Potential to impact underlying groundwater.	Soils. Within Made Ground.
Various locations across site.	TPH. Potential to impact underlying groundwater.	Soils. Within Made Ground.
WS8	Brown asbestos (amosite).	Soils. Within Made Ground.

Elevated concentrations of nickel have been identified at concentrations exceeding the UK DWS in the deep aquifer. Concentrations of sulphate exceed the EQS and UK DWS in both the shallow and deep aquifer. Additionally chromium and copper were elevated in respect to EQS in the shallow aquifer.

Brown asbestos (amosite) was identified in the northeast of the site at Borehole WS8 within Made Ground. Phthalates have also been identified within shallow Made Ground.

8.1.2 Visual Contamination Identified

The sources of visual and olfactory contamination identified during the site investigation are summarised *Table 8.2*. Sample locations are depicted on Drawing *JER4418-KM-02*.

Table 8.2 Potential Contamination Sources Based on Visual / Olfactory Evidence

Borehole / Trial Pit Location	Source of Olfactory / Visual Contamination	Media in which Contamination Identified	Depth of Contamination (mBGL)
Widespread across site	Ash, clinker, black staining and general demolition and construction materials	Made Ground	0 – 3

8.2 Conceptual Site Model

8.2.1 Potential Sources

Based on a review of previous and recent ground investigation findings and the known current and historical land uses of the site, it is considered that there is potential for the following types of contaminant source to be present within the ground around at the site:

- Chemical contaminants in soils and groundwater (heavy metals, TPH, PAHs solvents etc) from current or historical sources;
- Historical storage of gas, oils, hydrocarbons, other chemicals;
- Soil gas (methane, VOCs, carbon dioxide);
- Asbestos materials in Made Ground.

The sources of contamination are most likely to occur in:

- Soil where spills or leakages have taken place near chemical storage;
- Buried/infilled areas that could include demolition rubble and other unknown materials that could contain contaminants, including asbestos; and,
- Releases to groundwater from contaminant plumes within the soil.

In addition the following contaminant sources have been identified through laboratory analysis during investigations at the site, as outlined in *Section 5*;

- Inorganic and organic contaminants within Made Ground which include hotspots of inorganic determinants, PAH and TPH.
- Brown asbestos (amosite) within Made Ground.

8.2.2 Potential Receptors

Potential receptors to contamination based on the proposed use of the site include:

- Site staff and visitors to site, end users;
- Ground workers / construction staff;
- Shallow groundwater;
- Deep groundwater;
- Surface waters, The Swale.

8.2.3 Potential Pollutant Linkages

Potential pollutant linkages along with their likelihood of occurring are qualitatively described in brackets based on the construction phase and proposed operational site use. We have considered that the site will be designed and comply with all current best environmental practice. Pollutant linkages are therefore considered to comprise:

- Inhalation, dermal contact and ingestion of contaminants (chemical and asbestos) in soils by ground workers/construction staff (Low to moderate);
- Inhalation, dermal contact and ingestion of contaminants (chemical and asbestos) in soils by operational site staff, visitors (Low);
- Leaching of contaminants in soils by infiltrating rainfall and contaminants migrating into local watercourses during construction phase (Moderate);
- Leaching of contaminants in soils by infiltrating rainfall and contaminants migrating into local watercourses during the operational phase (Low);
- Leaching of contaminants in soils by infiltrating rainfall and contaminants migrating into the shallow aquifer during construction phase (Moderate);
- Leaching of contaminants in soils by infiltrating rainfall and contaminants migrating into the shallow aquifer during operational phase (Low);
- Migration of contaminants in groundwater off site during the construction phase (Moderate);
- Migration of contaminants in groundwater off site during the operational phase (Low);
- Leaching of chemical contamination in soils by infiltrating rainfall and contaminants migrating into the deep aquifer during construction phase (Low to Moderate);
- Leaching of chemical contamination in soils by infiltrating rainfall and contaminants migrating into the deep aquifer during operational phase (Low);
- Migration of contaminants into the Swale during construction phase (Moderate).
- Migration of contaminants into the Swale during operational phase (Low).

8.2.4 Summary of Conceptual Site Model

Targeted site investigation has identified the presence of organic and inorganic contaminants of concern within shallow soils and groundwater across the site area. There is also the potential for elevated levels of methane, carbon dioxide and other soil gases to be present in the ground. Further monitoring and subsequent assessment of ground gases in line with *CIRIA C665* guidance is recommended in order to determine the extent to which ground gas protection measures are required for the redevelopment.

The potential pollutant linkages between the identified contaminant sources and sensitive receptors have been identified based upon the propsoed development. Within Made Ground, slightly elevated concentrations of inorganic determinants and hydrocarbons have been identified which may have the potential to impact underlying groundwater. Also, amosite asbestos of unknown source has been identified in the northeast of the site which is detrimental to human health.

The preliminary site development plans identify that a significant amount of the existing surface material, up to 8 m below existing ground level, may be removed to facilitate the construction of a waste bunker. During the construction phase there appears to be a moderate potential risk with regard to contamination of underlying shallow groundwater due to the amount of material planned for removal across the site. During the operational phase this should be much reduced by presence of hardstanding across the majority of the site.

With regards to the deeper aquifer, there appears to be a limited potential pathway from contamination within shallow soils at the current time due to the presence of confining clay strata below the site. However, during construction phase this could be exposed particularly in the central site area increasing potential risk of contamination. During the operational phase this should be significantly reduced due to the presence of hardstanding and concrete base of deeper structure. Hydraulic continuity between the Woolwich and Thanet Beds and the underlying Chalk aquifer has not been determined.

It is therefore considered based upon an initial assessment and the assumption that the site will be constructed in accordance with current best environmental practice that there is a low risk that contamination could cause significant harm to human health and controlled waters through the site operational phase.

Control measures would be required through the construction phase in order to minimise risk to construction workers. It is considered that risks could be mitigated through safe working methodologies and additionally the use of appropriate PPE including protection against asbestos.

9 Conclusions and Recommendations

RPS Planning and Development Chepstow were commissioned by E.ON to undertake a focused Phase II intrusive site investigation at Kemsley Mill, Sittingbourne, Kent, between 6th and 16th July 2009.

The site investigation comprised the excavation of fifteen trial pits and advancement of eight window sample boreholes and three cable percussion boreholes. Window samples boreholes were advanced to a maximum depth of 3.3 mBGL and cable percussive boreholes to a maximum depth of 20 mBGL. All boreholes were installed as permanent gas and groundwater monitoring installations. Groundwater and gas monitoring was undertaken in these boreholes on two occasions following completion of the site investigation.

The geology of the site comprises Made Ground of up to 4.6 mBGL comprising gravelly sands and clays with fill material underlain by superficial deposits of clay, and London Clay. Beneath this, slightly silty sands of presumed Woolwich and Thanet Beds were encountered at depths of 12.3 to 14 mBGL. Two groundwater bodies were encountered: a shallow aquifer within Made Ground and underlying natural clays, and a deep confined aquifer under hydrostatic pressure within the sands below 13 mBGL.

Subsequent groundwater level monitoring indicates a groundwater flow within the shallow aquifer towards the Swale to the east of the site, but highly influenced by local conditions. A clear groundwater flow direction within the deep boreholes has not been determined. There additionally appears to be a tidal influence within both the shallow and deep boreholes. Further monitoring of groundwater levels and fluctuation across the development area is recommended in order to inform the detailed design.

From the initial two rounds of ground gas monitoring, concentrations of ground gas are generally low with methane concentrations rarely above 0 %. However one concentration of carbon dioxide was measured above current guidance levels for the assessment of soil gases (*Waste Management Paper 27* and *Building Regulations* (*Department of Environment, 1992*) at Borehole WS3 (5.5%).

It is recommended that further gas monitoring and a gas assessment takes place at the site prior to development in accordance with CIRIA C665 *Assessing risks posed by hazardous ground gases to buildings*. This will enable the site to be characterised regarding risk to human health and buildings, and inform the detailed design on the requirement or otherwise for ground gas protection measures to be incorporated.

The site investigation analytical data confirms that there are concentrations of inorganic and organic determinants detected above their respective laboratory limits of detection in soil samples collected from the site. There are no exceedances of inorganic or organic parameters measured in soils above their respective Soil Guideline Values (SGVs) or human health Generic Assessment Criteria (GACs) for commercial / industrial end use. Brown asbestos (amosite) has been identified in the northeast of the site.

Concentrations of nickel, sulphate, chromium, copper, PAH and TPH exceed EQS or DWS including. The only exceedances above DWS within the deeper aquifer comprise nickel and sulphate.

The measured concentrations of soil and groundwater contamination detected beneath the site have been screened as part of an initial assessment. It is considered that the potential risks presented by identified contaminants to human health and controlled waters are low risk based on the environmental site setting and industrial site end use. However, the extensive phase of construction associated with the redevelopment at the site may disturb soil and groundwater contaminants, create potential pathways for contamination into the shallow / deep aquifers and controlled waters. Furthermore given the potential to encounter additional contaminant hotspots during the earth works phase it is recommended that human health and controlled risk assessments, including a piling risk assessment is progressed. The risk assessments will assess the risk posed to construction workers, site end users and controlled waters based on the contaminants identified at site.

The assessments will derive remedial target concentrations for key contaminants of concern encountered on site. We would advise that in the first instance this report is submitted to the Environment Agency and Contaminated Land Officer in order to open a dialogue and discuss the development proposals. The risk assessment and remedial targets generated would be available to subsequently formulate a site Remedial Strategy and Materials Management Plan (MMP) which eases complexities of waste legislation which would otherwise apply for the treatment or disposal of the materials generated.

The remedial strategy will detail how contaminant hotspots would be dealt with upon identification and the MMP will detail the appropriate end use for materials generated onsite. During progression of the works suitable validation data should be collected in order to formulate a works Verification Report.

Furthermore since the Site Waste Management Plans Regulations became law in April 2008, any client who intends to carry out a project on any one construction site with an estimated cost greater than £300,000 must prepare a site waste management plan (SWMP). The SWMP should conform with the Site Waste Management Plans Regulations and should be completed before construction work begins.

The SWMP ensures consideration during construction work of management of material and waste to ensure best practice is undertaken in line with non-statutory guidance. SWMP provides a mechanism by which individual waste streams generated from larger scale brownfield redevelopment or remediation projects can be identified, estimated/quantified, categorised, appropriately handled (such as for reuse, recycling etc), recorded and validated. Generation of a SWMP does not negate the requirement for an Environmental Permit or Waste Exemption which would otherwise be required but can offer significant cost benefits by identifying practical measures to eliminate or and at the very least, minimise, the generation of volumes or wastes during construction.

We would advise that control measures will be required through the construction phase in order to minimise risk to construction workers from organic and inorganic contaminants. This would include the use of appropriate works methodologies and PPE. Further assessment of the quantitative risk posed by contaminants to site construction workers and end users will offer an extra level of confidence in formulating fit for purpose works method statements.

The Made Ground and the underlying Superficial Deposits were found to be of too poor quality and of too greater thickness to allow for the use of traditional shallow foundation options. Whilst ground improvement could be considered, the inclusion of organic and wood matter within the shallow depth strata as well as the anticipated high load associated with the structure make this foundation option potentially uneconomic. Consequently, pile foundation is suggested to provide a robust solution. Both driven or bored piles would need to be taken through the Made Ground, Superficial Deposits and

London Clay, end bearing within the very dense or very stiff Woolwich Beds. However, detailed design will be required, particularly taking into account the high pore water pressures recorded within the bedrock formation.

Given the poor quality of the shallow material, it is recommended that ground improvement beneath the footprint of the building is adopted to allow for ground bearing floor slab. Alternatively a piled solution may be considered.

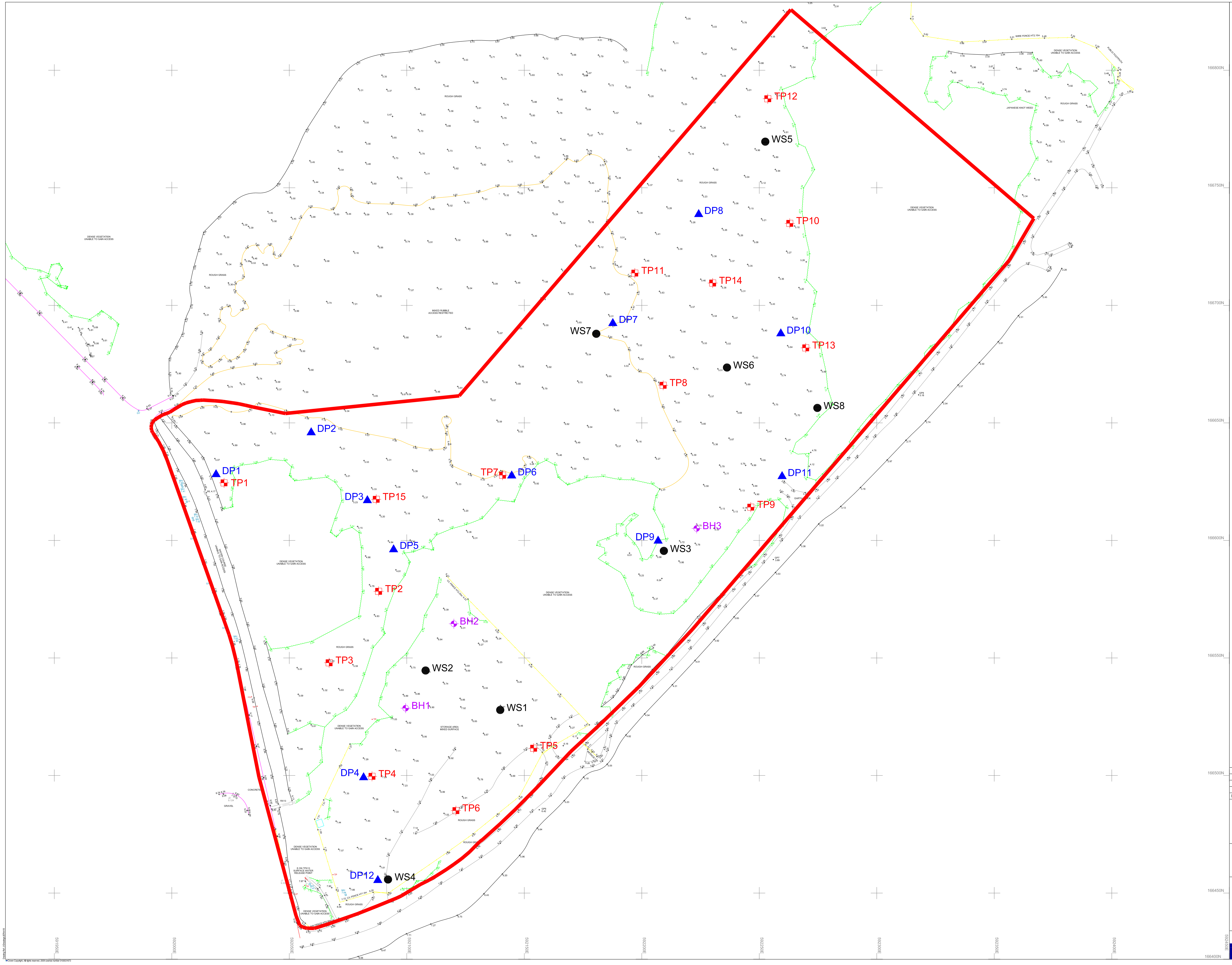
Possible presence of pyrites associated with the Made Ground, London Clay and Woolwich Beds give significant requirements for concrete protection against sulphate attack with a design class taken as DS-4.

Significant groundwater control measures are unlikely to be required during construction. However, it is likely that seepages within the Made Ground and natural deposits would vary seasonally and additional monitoring of groundwater levels is recommended prior to construction construction in order to determine seasonal and tidal variations. Artesian pressures recorded within the confined aquifer will require detailed design to determine the degree of any uplift force associated with the construction of any proposed deep basement structures.

Relatively high CBR values were recorded from the in situ testing which contradict the limited laboratory testing. It is recommended that further works are considered to confirm to inform final design and confirm the design value, currently given as 20%. It is considered that the proven variability of the Made Ground as well as its organic content would warrant the use of geogrid reinforcement.

Laboratory testing suggested that the Made Ground meet the criteria to be reused as a general cohesive fill material. However, the inclusion of organic and wood material should be considered. It is also noted that significant drying will be required prior to placement and site re-use.

Drawings



Legend

🟥	Site Boundary
🟩	Dense Vegetation - Unable to Gain Access
🟨	Mixed Rubble - Access Restricted
⊕	Shell & Auger Borehole with Installation
⊞	Exploratory Trial Pit Location
●	Window Sample Borehole with Installation
▲	Dynamic Cone Penetrometer Test

Rev:	Date:	Amendment:	Name:	Checked:

Drawing Based Upon: RPS 2009

Status: Draft

Notes: Contractors are not to scale from this drawing. All dimensions to be checked on site and any discrepancies, ambiguities and/or ommisions between this drawing and information given elsewhere must be reported to this office. If in doubt, ask.

RPS

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Client: E.ON

Project: Kemsley Mill

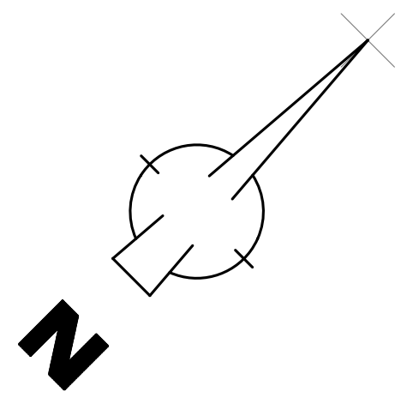
Title: Exploratory Hole Location Plan
& Topographical Survey

Date: 23/07/09 Scale: 1:500 Original Paper Size: A0

Drawn: RJ Checked: AP Job Ref: JER4418

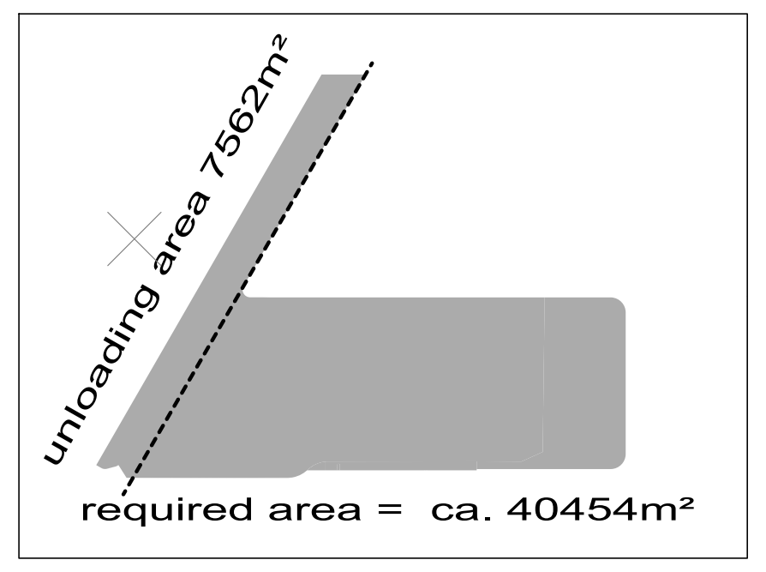
Drawing Number: JER4418-KM-002 Rev: 0

www.rpsgroup.com



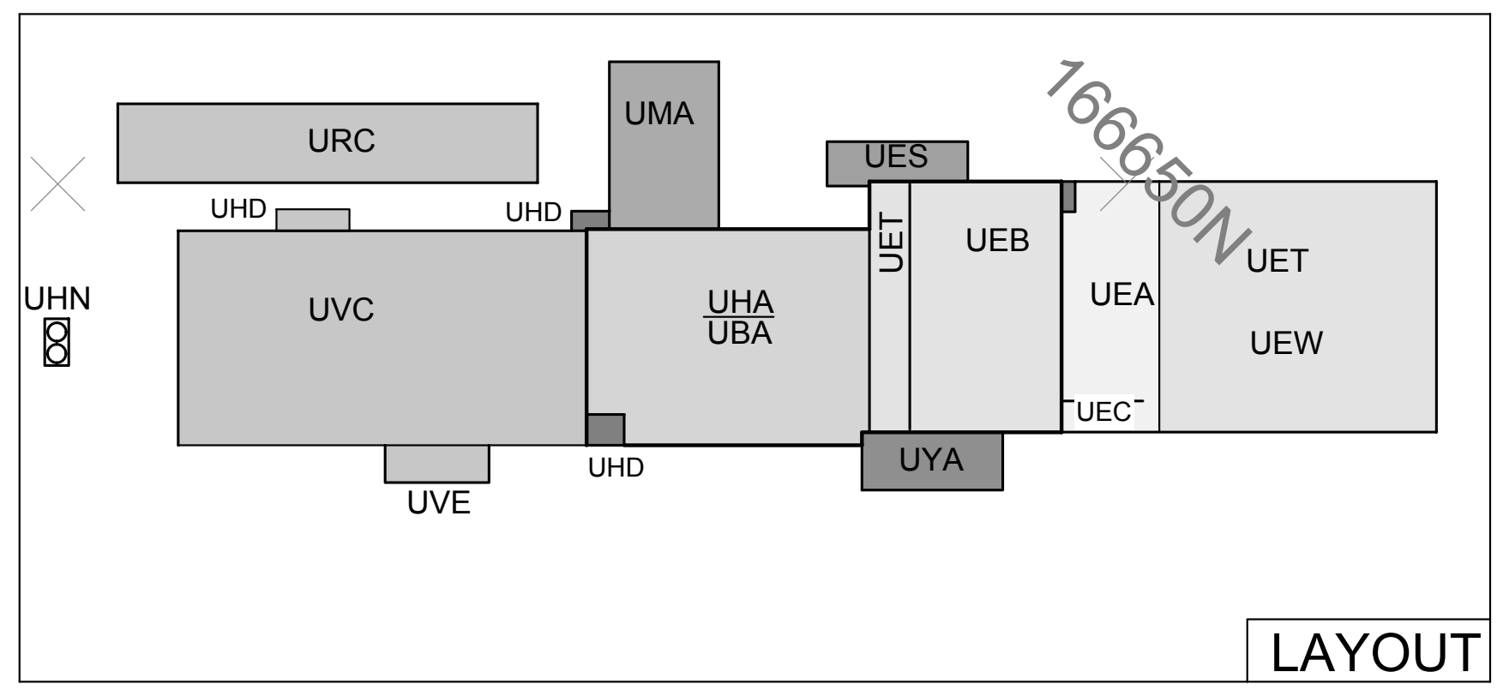
- waste transport
- slag transport
- vehicles (empty)
- access road

🟨	vegetation
🟩	Green area
🟩	forest
▨	way
▨	paved surface
🟦	sea



required area = ca. 40454m²

LEGENDE		
UBA	switchgear building	Schaltanlagengebäude
UBN	structure for emergency power generating sets	Notstromdiesel / Notstromanlage
UEA	structure for unloading of solid fuels	Bauwerk für Anlieferung fester Brennstoffe
UEB	structure for storage of solid fuels	Bauwerk für Lagerung fester Brennstoffe
UEC	controlling area	Kontrollfläche
UEP	residue silo	Reststoffsilo
UET	residue for slag storage	Schlackebunker
UEU	structure for slag transport	Schlackeverladung
UEW	structure for combustion residues handling	Bauwerk für Behandlung von Verbrennungsrückständen
UHA	boiler house	Kesselhaus
UHD	staircase	Treppenraum
UHN	smoke stack	Schornstein
UMA	steam turbine building	Maschinenhaus
URC	structure for air cooled condenser	Luftkondensator
UVC	structure for flue gas scrubber	Rauchgasreinigung
UVE	structure for reagent supply	Bauwerk für Reaktionsmittelversorgung
UYA	office and staff amenities building	Funktionstrakt
UYE	gate house	Pförtnergebäude



0m 5m 10m 15m 20m 25m 50m

+-0.00 = 5,80 ü.N. / mean see level

Index	Änderungen	Datum	Name
	Änderungen	Datum	Name

KEMSLEY
GRATE COMBUSTION
2 x 100 MW

preliminary
07 / 09
-2009

Bauherr

Datum

Unterschrift

Zeichnungsnummer
X X X X X X X X X X X X X
[redacted]

Anlagenteil
Gesamtanlage / general site

Planbezeichnung

Planer: EEW AG
Schoeninger Straße 2-3
D-38350 Helmstedt

Büroadresse:
Dudweilerstr. 41
66111 Saarbrücken
Tel.: +49 681 9454 0

e·on

Datum
Unterschrift
Entwurf ABT. TP - TEAM BAU
Plannr.(int.)

Auftragnehmer

Datum
Unterschrift
Plannr.(int.)

	Datum	Name	Maßstab	Plangrösse
Gezeichnet		BOST	1: 500	A0
Geprüft				

H/B = 841 / 1189 (1.00m²)

Appendices

Appendix A

Exploratory Hole Logs

RPS

BOREHOLE LOG

Borehole No.
BH1
Sheet 1 of 2

Project Name: Kemsley Mill
Project No. JER4418
Location: Sittingbourne, Kent
Client: E.ON

Coordinates
Northings: -
Eastings: -
Ground Level: 6.730 m OD

Drilling Plant:
Start Date: 09/07/2009
End Date: 10/07/2009
Logged By:

Casing Details	
Hole Diameter (mm)	Casing Depth (m)

Hole Type: BH
Scale: 1:50

Samples & In Situ Testing					
Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Description Of Strata
					Grey brown slightly gravelly silty SAND with occasional fill including metal, stone and bricks. Occasional bands of light brown clay with concrete. (MADE GROUND)
1.00	SPT	68/225mm (3,3,9,9,50)			
2.00	U001		4.73	2.00	Firm to stiff grey slightly gravelly slightly sandy CLAY. Gravels are subangular to angular stone. (MADE GROUND)
3.00	SPT	N=10 (1,1,2,2,3,3)			
			2.88	3.85	Firm to stiff grey brown occasionally orange mottled CLAY.
4.00	U002				
5.00	SPT	N=12 (1,2,3,3,3,3)			
6.50	U003				
			-0.67	7.40	Stiff light grey CLAY. Occasional bands of sand present with depth.
8.00	SPT	N=14 (1,2,2,4,4,4)			
9.50	U004				

6.23, 5.73, 5.23, 4.73, 4.23, 3.73, 3.23, 2.73, 2.23, 1.73, 1.23, 0.73, 0.23, -0.27, -0.77, -1.27, -1.77, -2.27, -2.77

Continued next sheet

Remarks:

Chiselling Details

Time Taken	Depth From (m)	Depth To (m)	Tool Used

Groundwater Notes

Strike (m)	Casing Depth (m)	Level After 20 Mins (m)
13.00	12.50	5.25

AGS

BOREHOLE LOG

Borehole No.
BH1
Sheet 2 of 2

Project Name: Kemsley Mill
Project No. JER4418
Location: Sittingbourne, Kent
Client: E.ON

Coordinates
Northings: -
Eastings: -
Ground Level: 6.730 m OD

Drilling Plant:
Start Date: 09/07/2009
End Date: 10/07/2009
Logged By:

Casing Details

Hole Diameter (mm)	Casing Depth (m)

Hole Type
BH

Scale
1:50

Samples & In Situ Testing Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Description Of Strata
					Stiff light grey CLAY. Occasional bands of sand present with depth.
11.00	SPT	N=29 (4,6,6,7,7,9)			
			-5.57	12.30	Dense grey slightly silty SAND.
12.50	U005				
14.00	SPT	69/150mm - Abandoned			
15.50	SPT	85/150mm - Abandoned			
17.00	SPT	53/150mm (16,18,22,31)			
18.50	SPT	86/150mm - Abandoned			
18.65	SPT	90/150mm - Abandoned			
			-12.27	19.00	End of Borehole at 19.00 m

-3.77
-4.27
-4.77
-5.27
-5.77
-6.27
-6.77
-7.27
-7.77
-8.27
-8.77
-9.27
-9.77
-10.27
-10.77
-11.27
-11.77
-12.27
-12.77

Remarks:

Chiselling Details

Time Taken	Depth From (m)	Depth To (m)	Tool Used

Groundwater Notes

Strike (m)	Casing Depth (m)	Level After 20 Mins (m)
13.00	12.50	5.25

RPS

BOREHOLE LOG

Borehole No.
BH2
Sheet 1 of 2

Project Name:	Kemsley Mill	Coordinates Northings: - Eastings: -	Drilling Plant:
Project No.	JER4418		Start Date: 06/07/2009
Location:	Sittingbourne, Kent	Ground Level: 6.270 m OD	End Date: 06/07/2009
Client:	E.ON		Logged By:

Casing Details	
Hole Diameter (mm)	Casing Depth (m)

Hole Type: BH

Scale 1:50

Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Description Of Strata
					Grey slightly gravelly silty sand. Gravel is subangular flient, stone and stone ash. Occasional metal, bricks and bands of firm light brown clay. (MADE GROUND)
1.00	SPT	N=4 (1,1,1,1,1,1)			
2.00	SPT	N=10 (2,2,2,2,3,3)	4.27	2.00	Stiff light brown light brown slightly sandy CLAY. Occasional fragments of brick and concrete. (MADE GROUND)
3.00	U001				
4.00	SPT	N=9 (2,3,2,2,3,2)			
			1.67	4.60	Firm light grey orange mottled CLAY.
			1.27	5.00	Stiff light grey orange mottled slightly sandy CLAY.
6.50	SPT	N=25 (3,5,6,6,6,7)			
			-1.53	7.80	Stiff grey CLAY.
8.00	U002				
9.50	SPT	N=24 (2,4,4,6,7,7)	-3.23	9.50	Stiff grey CLAY with occasional sand. Sand bands present below 12.1m.

5.77 5.27 4.77 4.27 3.77 3.27 2.77 2.27 1.77 1.27 0.77 0.27 -0.23 -0.73 -1.23 -1.73 -2.23 -2.73 -3.23

Continued next sheet

Remarks:

Chiselling Details

Time Taken	Depth From (m)	Depth To (m)	Tool Used

Groundwater Notes

Strike (m)	Casing Depth (m)	Level After 20 Mins (m)
14.50	14.50	5.10

AGS

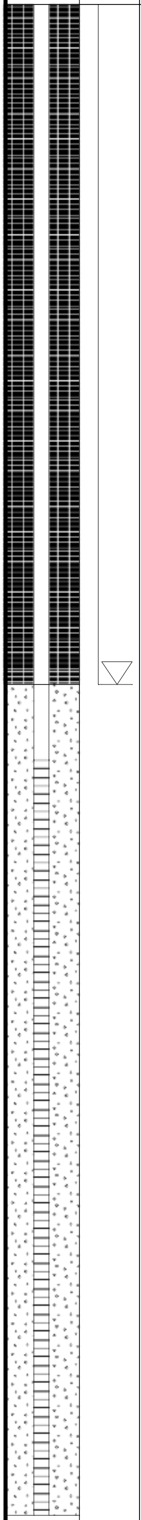
BOREHOLE LOG

Borehole No.
BH2
Sheet 2 of 2

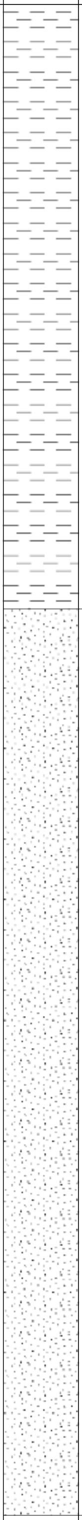
Project Name: Kemsley Mill	Coordinates Northings: - Eastings: -	Drilling Plant:	Hole Type: BH
Project No. JER4418	Ground Level: 6.270 m OD	Start Date: 06/07/2009	Scale 1:50
Location: Sittingbourne, Kent		End Date: 06/07/2009	
Client: E.ON		Logged By:	

Casing Details

Hole Diameter (mm)	Casing Depth (m)



Depth (m)	Type	Results	Level (m AOD)	Depth (m)
11.00	U003			
12.50	SPT	N=28 (4,6,7,5,8,8)		
14.00	U004		-7.73	14.00
15.50	SPT	50/75mm (16,41,50)		
17.00	SPT	30/75mm - Abandoned		
18.50	SPT	50/150mm (7,18,25,25)		



Description Of Strata
Stiff grey CLAY with occasional sand. Sand bands present below 12.1m.
Dense grey slightly silty SAND.

-4.23
-4.73
-5.23
-5.73
-6.23
-6.73
-7.23
-7.73
-8.23
-8.73
-9.23
-9.73
-10.23
-10.73
-11.23
-11.73
-12.23
-12.73
-13.23

End of Borehole at 20.00 m

Remarks:

Chiselling Details

Time Taken	Depth From (m)	Depth To (m)	Tool Used

Groundwater Notes

Strike (m)	Casing Depth (m)	Level After 20 Mins (m)
14.50	14.50	5.10

BOREHOLE LOG

Borehole No.
BH3
Sheet 1 of 2

Project Name:	Kemsley Mill	Coordinates Northings: - Eastings: -	Drilling Plant:	Casing Details	Hole Type BH
Project No.	JER4418		Start Date: 13/07/2009	Hole Diameter (mm) / Casing Depth (m)	
Location:	Sittingbourne, Kent	Ground Level: 5.230 m OD	End Date: 14/07/2009		Scale 1:50
Client:	E.ON		Logged By:		

Water Strikes	Samples & In Situ Testing Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata
						▨	Stiff brown slightly gravelly slightly sandy CLAY. Gravels are subangular to angular limestone and stone fill. Includes fill material such as glass and pottery. (MADE GROUND)
	1.00	SPT	N=6 (1,1,1,1,2,2)			▨	
	2.00	SPT	65/225mm (2,2,5,10,50)	3.23	2.00	▨	Dense dark grey slightly sandy SILT. Becomes clayey with depth. (MADE GROUND)
▼ ▽	3.00	SPT	N=11 (2,2,2,3,3,3)	2.23	3.00	═	Stiff light brown orange grey mottled slightly sandy CLAY. Becomes grey with depth.
	4.00	U001				═	
	5.00	SPT	50/150mm (9,21,30,20)			═	
	6.50	U002				═	
				-1.77	7.00	⁘	Dense grey slightly silty SAND.
	8.00	SPT	52/150mm (11,23,22,30)			⁘	
	9.50	U003				⁘	

4.73, 4.23, 3.73, 3.23, 2.73, 2.23, 1.73, 1.23, 0.73, 0.23, -0.27, -0.77, -1.27, -1.77, -2.27, -2.77, -3.27, -3.77, -4.27

Continued next sheet

Remarks:

Chiselling Details

Time Taken	Depth From (m)	Depth To (m)	Tool Used

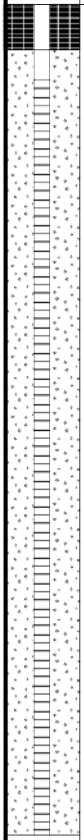
Groundwater Notes

Strike (m)	Casing Depth (m)	Level After 20 Mins (m)
3.00	3.00	2.87
14.00	-	-

BOREHOLE LOG

Borehole No.
BH3
Sheet 2 of 2

Project Name: Kemsley Mill	Coordinates Northings: - Eastings: -	Drilling Plant:	Casing Details		Hole Type
Project No. JER4418		Start Date: 13/07/2009	Hole Diameter (mm)	Casing Depth (m)	BH
Location: Sittingbourne, Kent	Ground Level: 5.230 m OD	End Date: 14/07/2009			Scale 1:50
Client: E.ON		Logged By:			



Water Strikes	Samples & In Situ Testing: Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata
						▨	Dense grey slightly silty SAND.
	11.00	U004					
	12.50	SPT	80/150mm - Abandoned				
▽				-8.77	14.00		End of Borehole at 15.50 m

-5.27
-5.77
-6.27
-6.77
-7.27
-7.77
-8.27
-8.77
-9.27
-9.77
-10.27
-10.77
-11.27
-11.77
-12.27
-12.77
-13.27
-13.77
-14.27

Type Results

Remarks:

Chiselling Details

Time Taken	Depth From (m)	Depth To (m)	Tool Used

Groundwater Notes

Strike (m)	Casing Depth (m)	Level After 20 Mins (m)
3.00	3.00	2.87
14.00	-	-

AGS

BOREHOLE LOG

Borehole No.
TP1
Sheet 1 of 1

Project Name:	Kemsley Mill	Coordinates Northings: - Eastings: -	Drilling Plant:	Casing Details: Hole Diameter (mm) / Casing Depth (m)	Hole Type TP
Project No.	JER4418		Start Date: -		
Location:	Sittingbourne, Kent	Ground Level: 5.060 m OD	End Date: -		Scale 1:50
Client:	E.ON		Logged By:		

Well	Water Strikes	Samples & In Situ Testing Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata
					4.56	0.50	▨	Brown dark brown slightly gravelly silty SAND. Peat and frequent organic matter in places. (MADE GROUND)
					4.16	0.90	▨	Firm to stiff grey occasionally green orange mottled friable CLAY. (MADE GROUND)
		1.25 1.75	IVN kPa IVN kPa	4 kPa 3 kPa	2.56	2.50	— —	Firm to stiff grey brown orange green mottled friable CLAY. Becomes more brown and orange with depth.

End of Borehole at 2.50 m

4.56 4.06 3.56 3.06 2.56 2.06 1.56 1.06 0.56 0.06 -0.44 -0.94 -1.44 -1.94 -2.44 -2.94 -3.44 -3.94 -4.44

Type Results

Remarks: Water strike at 2.3m. Low seepage.

Chiselling Details				Groundwater Notes		
Time Taken	Depth From (m)	Depth To (m)	Tool Used	Strike (m)	Casing Depth (m)	Level After 20 Mins (m)

AGS

RPS

BOREHOLE LOG

Borehole No.
TP2
Sheet 1 of 1

Project Name:	Kemsley Mill	Coordinates Northings: - Eastings: -	Drilling Plant:	Casing Details	Hole Type TP
Project No.	JER4418		Start Date: -	Hole Diameter (mm) / Casing Depth (m)	
Location:	Sittingbourne, Kent	Ground Level: 4.800 m OD	End Date: -		Scale 1:50
Client:	E.ON	Logged By:			

Well	Water Strikes	Samples & In Situ Testing: Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata
					4.75	0.05		Dark grey tarmacadam. (MADE GROUND)
					4.65	0.15		Dark grey black subangular to angular GRAVEL. (MADE GROUND)
					4.40	0.40		Brown slightly sandy SILT / CLAY with occasional fill material including plastics and metal. (MADE GROUND)
					4.35	0.45		Soft to firm grey friable CLAY. (MADE GROUND)
		0.65	IVN kPa	30 kPa				
					3.70	1.10		Firm to stiff brown occasionally orange grey mottled CLAY.
								End of Borehole at 1.10 m

4.30
3.80
3.30
2.80
2.30
1.80
1.30
0.80
0.30
-0.20
-0.70
-1.20
-1.70
-2.20
-2.70
-3.20
-3.70
-4.20
-4.70

Type Results

Remarks:

Chiselling Details

Time Taken	Depth From (m)	Depth To (m)	Tool Used

Groundwater Notes

Strike (m)	Casing Depth (m)	Level After 20 Mins (m)

AGS

BOREHOLE LOG

Borehole No.
TP3
Sheet 1 of 1

Project Name:	Kemsley Mill	Coordinates	Drilling Plant:	Casing Details		Hole Type
Project No.	JER4418	Northings: - Eastings: -	Start Date: -	Hole Diameter (mm)	Casing Depth (m)	TP
Location:	Sittingbourne, Kent	Ground Level: 5.090 m OD	End Date: -			Scale 1:50
Client:	E.ON		Logged By:			

Well	Water Strikes	Samples & In Situ Testing Depth (m)	Samples & In Situ Testing Type	Samples & In Situ Testing Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata
					4.89	0.20		Brown slightly silty slightly gravelly SAND with occasional roots. (TOPSOIL)
		0.60	IVN kPa	15 kPa	4.19	0.90		Soft to firm slightly gravelly SILT / CLAY with various fill material including plastics. metals and brick. (MADE GROUND)
		1.10	IVN kPa	28 kPa	3.59	1.50		Firm to stiff brown occasionally grey mottled CLAY.
								End of Borehole at 1.50 m

4.59
4.09
3.59
3.09
2.59
2.09
1.59
1.09
0.59
0.09
-0.41
-0.91
-1.41
-1.91
-2.41
-2.91
-3.41
-3.91
-4.41

Type Results

Remarks:

Chiselling Details				Groundwater Notes		
Time Taken	Depth From (m)	Depth To (m)	Tool Used	Strike (m)	Casing Depth (m)	Level After 20 Mins (m)

AGS

BOREHOLE LOG

Borehole No.
TP4
Sheet 1 of 1

Project Name: Kemsley Mill	Coordinates	Drilling Plant:	Casing Details		Hole Type
			Hole Diameter (mm)	Casing Depth (m)	
Project No. JER4418	Northings: - Eastings: -	Start Date: -			TP
Location: Sittingbourne, Kent	Ground Level: 7.240 m OD	End Date: -			Scale 1:50
Client: E.ON		Logged By:			

Well	Water Strikes	Samples & In Situ Testing Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata
					6.94	0.30	▨	Grey gravelly cobbly sandy SILT. Gravel and occasional cobbles are subangular to angular stone. Weak textile membrane at 0.3 m of below 2 mm thickness. (MADE GROUND)
					6.24	1.00	▨	DArk grey brown slightly gravelly silty SAND with frequent subangular to angular concrete cobbles and occasional boulders. Very occasional brick fragments. (MADE GROUND)
					5.74	1.50	▨	Dark grey black slightly gravelly sility SAND of clinker. Gravels and occasional cobbles are subangualr to angular stone. (MADE GROUND)
		1.75	IVN kPa	18 kPa				
					5.34	1.90	▨	Firm grey orange brown green mottled CLAY with frequent subangular to angular gravel and cobbles of various stone, brick, and occasional flint. (MADE GROUND)
		2.25	IVN kPa	38 kPa				
					4.64	2.60	☰	Firm grey brown mottled CLAY.

End of Borehole at 2.60 m

6.74
6.24
5.74
5.24
4.74
4.24
3.74
3.24
2.74
2.24
1.74
1.24
0.74
0.24
-0.26
-0.76
-1.26
-1.76
-2.26

Type Results

Remarks:

Chiselling Details				Groundwater Notes		
Time Taken	Depth From (m)	Depth To (m)	Tool Used	Strike (m)	Casing Depth (m)	Level After 20 Mins (m)

RPS

BOREHOLE LOG

Borehole No.
TP5
Sheet 1 of 1

Project Name:	Kemsley Mill	Coordinates Northings: - Eastings: -	Drilling Plant:	Casing Details	Hole Type TP
Project No.	JER4418		Start Date: -	Hole Diameter (mm) / Casing Depth (m)	
Location:	Sittingbourne, Kent	Ground Level: 6.510 m OD	End Date: -		Scale 1:50
Client:	E.ON		Logged By:		

Well	Water Strikes	Samples & In Situ Testing Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata
					6.46	0.05	▨	Brown slightly gravelly silty SAND with root and organic matter. (MADE GROUND)
					6.01	0.50	▨	Light grey white cobbly gravelly sandy SILT. Gravel and cobbles are subangular to angular fine to coarse limestone. Thin geotextile membrane at 0.5m. (MADE GROUND)
							▨	Dark grey slightly gravelly silty SAND. (MADE GROUND)
		2.20	IVN kPa	22 kPa	4.41	2.10	▨	Firm green grey friable CLAY. (MADE GROUND)
					4.16	2.35	— —	Firm brown occasionally grey orange mottled friable CLAY.
					3.31	3.20		End of Borehole at 3.20 m

6.01 5.51 5.01 4.51 4.01 3.51 3.01 2.51 2.01 1.51 1.01 0.51 0.01 -0.49 -0.99 -1.49 -1.99 -2.49 -2.99

Type	Results

Remarks:

Chiselling Details				Groundwater Notes		
Time Taken	Depth From (m)	Depth To (m)	Tool Used	Strike (m)	Casing Depth (m)	Level After 20 Mins (m)

AGS

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BOREHOLE LOG

Borehole No.
TP6
Sheet 1 of 1

Project Name:	Kemsley Mill	Coordinates Northings: - Eastings: -	Drilling Plant:	Casing Details Hole Diameter (mm) / Casing Depth (m)	Hole Type TP
Project No.	JER4418		Start Date: -		
Location:	Sittingbourne, Kent	Ground Level: 6.960 m OD	End Date: -		Scale 1:50
Client:	E.ON		Logged By:		

Well	Water Strikes	Samples & In Situ Testing Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata
					6.91	0.05	▨	Grey brown gravelly slightly silty SAND with roots and organic matter. (MADE GROUND)
							▨	Dark grey gravelly slightly cobbly slightly silty SAND. Gravel and cobbles are subangular to angular coal dust. Sand is fine to coarse coal dust. (MADE GROUND)
		2.00	IVN kPa	40 kPa	5.06	1.90	┄	Firm light grey brown mottled CLAY.
					4.76	2.20		End of Borehole at 2.20 m

Scale (m AOD): 6.46, 5.96, 5.46, 4.96, 4.46, 3.96, 3.46, 2.96, 2.46, 1.96, 1.46, 0.96, 0.46, -0.04, -0.54, -1.04, -1.54, -2.04, -2.54

Type | Results

Remarks: Water strike at 2m. Medium to fast inflow.

Chiselling Details				Groundwater Notes		
Time Taken	Depth From (m)	Depth To (m)	Tool Used	Strike (m)	Casing Depth (m)	Level After 20 Mins (m)

BOREHOLE LOG

Borehole No.
TP7
Sheet 1 of 1

Project Name: Kemsley Mill	Coordinates Northings: - Eastings: -	Drilling Plant:	Casing Details: Hole Diameter (mm)	Casing Depth (m)	Hole Type TP
Project No. JER4418		Start Date: -			
Location: Sittingbourne, Kent	Ground Level: 5.140 m OD	End Date: -			Scale 1:50
Client: E.ON		Logged By:			

Well	Water Strikes	Samples & In Situ Testing: Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata
					4.89	0.25	▨	Brown slightly gravelly slightly clayey slightly silty SAND. Gravel is subangular to angular stone. (TOPSOIL)
					4.04	1.10	▩	Brown slightly sandy slightly gravelly SILT / CLAY. Clay in places. Contains fill including various brick, stone cobbles with occasional boulders and metal. (MADE GROUND)
		1.40	IVN kPa	10 kPa	3.34	1.80	▩	Soft to firm grey occasionally brown CLAY. Friable in places. (MADE GROUND)
		1.90	IVN KPa	25 kPa	3.14	2.00	▤	Brown grey mottled CLAY.

End of Borehole at 2.00 m

4.64
4.14
3.64
3.14
2.64
2.14
1.64
1.14
0.64
0.14
-0.36
-0.86
-1.36
-1.86
-2.36
-2.86
-3.36
-3.86
-4.36

Type Results

Remarks: Water strike at 1.6m. Medium to fast inflow. Stabilises at 1.8m.

Chiselling Details: Time Taken	Depth From (m)	Depth To (m)	Tool Used	Groundwater Notes: Strike (m)	Casing Depth (m)	Level After 20 Mins (m)

AGS

HoleBASE III (Bld 422.00) Standard Borehole Log v1 dated 26th Mar 03

BOREHOLE LOG

Borehole No.
TP8
Sheet 1 of 1

Project Name:	Kemsley Mill	Coordinates Northings: - Eastings: -	Drilling Plant:
Project No.	JER4418		Start Date: -
Location:	Sittingbourne, Kent	Ground Level: 5.520 m OD	End Date: -
Client:	E.ON		Logged By:

Casing Details	
Hole Diameter (mm)	Casing Depth (m)

Hole Type
TP

Scale
1:50

Well	Water Strikes	Samples & In Situ Testing Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata
							☒	Brown grey gravelly sandy SILT with frequent cobbles and gravels of various stone and bricks. (MADE GROUND)
					4.82	0.70	☒	Firm brown CLAY with occasional fill material. (MADE GROUND)
					4.62	0.90	☒	Dark grey friable CLAY with occasional black staining and fill material. (MADE GROUND)
					4.42	1.10	▤	Light grey friable mottled CLAY with occasional fill including plastics, brick, metal. Odorous. White and black staining in places.
					3.52	2.00		End of Borehole at 2.00 m

5.02
4.52
4.02
3.52
3.02
2.52
2.02
1.52
1.02
0.52
0.02
-0.48
-0.98
-1.48
-1.98
-2.48
-2.98
-3.48
-3.98

Type
Results

Remarks:

Chiselling Details			
Time Taken	Depth From (m)	Depth To (m)	Tool Used

Groundwater Notes		
Strike (m)	Casing Depth (m)	Level After 20 Mins (m)

RPS

BOREHOLE LOG

Borehole No.	**TP9**
Sheet 1 of 1	
Project Name:	Kemsley Mill
Project No.	JER4418
Location:	Sittingbourne, Kent
Client:	E.ON
Coordinates	Northings: - Eastings: -
Ground Level:	4.960 m OD
Drilling Plant:	
Start Date:	-
End Date:	-
Logged By:	
Hole Type	TP
Scale	1:50

Casing Details	
Hole Diameter (mm)	Casing Depth (m)

Well	Water Strikes	Samples & In Situ Testing			Level (m AOD)	Depth (m)	Legend	Description Of Strata
		Depth (m)	Type	Results				
		0.00	IPP		4.61	0.35	▨	Dark brown slightly gravelly silty SAND. Grass roots and organic matter within top 0.1m. (MADE GROUND)
					4.26	0.70	▨	Dark grey black slightly gravelly silty SAND of ash and clinker. (MADE GROUND)
					2.56	2.40	▨	Dark grey slightly gravelly silty SAND of ash. Includes various fill material such as plastics, flint gravels, brick, metals. Occasional white clayey substance. (MADE GROUND)
								End of Borehole at 2.40 m

4.46
3.96
3.46
2.96
2.46
1.96
1.46
0.96
0.46
-0.04
-0.54
-1.04
-1.54
-2.04
-2.54
-3.04
-3.54
-4.04
-4.54

Type	Results

Remarks: Water strike at 2.2m. Low seepage.

Chiselling Details			
Time Taken	Depth From (m)	Depth To (m)	Tool Used

Groundwater Notes		
Strike (m)	Casing Depth (m)	Level After 20 Mins (m)

AGS

BOREHOLE LOG

Borehole No.
TP10
Sheet 1 of 1

Project Name:	Kemsley Mill	Coordinates Northings: - Eastings: -	Drilling Plant:
Project No.	JER4418		Start Date: -
Location:	Sittingbourne, Kent	Ground Level: 5.080 m OD	End Date: -
Client:	E.ON		Logged By:

Casing Details	
Hole Diameter (mm)	Casing Depth (m)

Hole Type: TP

Scale: 1:50

Well	Water Strikes	Samples & In Situ Testing Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata
					5.03	0.05	▨	Brown slightly sandy SILT / CLAY with roots and organic matter. (MADE GROUND)
							▨	Brown slightly sandy SILT / CLAY with frequent infill including brick, stone gravels, plastics. (MADE GROUND)
					3.88	1.20		End of Borehole at 1.20 m

4.58
4.08
3.58
3.08
2.58
2.08
1.58
1.08
0.58
0.08
-0.42
-0.92
-1.42
-1.92
-2.42
-2.92
-3.42
-3.92
-4.42

Type
Results

Remarks:

Chisselling Details				Groundwater Notes		
Time Taken	Depth From (m)	Depth To (m)	Tool Used	Strike (m)	Casing Depth (m)	Level After 20 Mins (m)

RPS

BOREHOLE LOG

Borehole No.
TP11
Sheet 1 of 1

Project Name:	Kemsley Mill	Coordinates Northings: - Eastings: -	Drilling Plant:	Casing Details	Hole Type TP
Project No.	JER4418		Start Date: -	Hole Diameter (mm) / Casing Depth (m)	
Location:	Sittingbourne, Kent	Ground Level: 5.510 m OD	End Date: -		Scale 1:50
Client:	E.ON		Logged By:		

Well	Water Strikes	Samples & In Situ Testing Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata
					4.71	0.80	▨	Grey brown slightly gravelly silty SAND with frequent gravelly and sandy bands. Grass roots and organic matter within top 0.1m. (MADE GROUND)
		1.50	IVN kPa	15 kPa				
		3.00	IVN kPa	45 kPa	2.41	3.10	▨	Firm grey brown mottled slightly sandy gravelly CLAY with various fill material including plastics, wood, textiles, flint and stone gravel and cobbles. Included two concrete kerbs and a steel manhole cover. (MADE GROUND)
					2.21	3.30	▨	Firm dark grey friable CLAY. Ashy in places. (MADE GROUND)

End of Borehole at 3.30 m

5.01
4.51
4.01
3.51
3.01
2.51
2.01
1.51
1.01
0.51
0.01
-0.49
-0.99
-1.49
-1.99
-2.49
-2.99
-3.49
-3.99

Type Results

Remarks:

Chiselling Details				Groundwater Notes		
Time Taken	Depth From (m)	Depth To (m)	Tool Used	Strike (m)	Casing Depth (m)	Level After 20 Mins (m)

AGS

BOREHOLE LOG

Borehole No.
TP12
Sheet 1 of 1

Project Name: Kemsley Mill
Project No. JER4418
Location: Sittingbourne, Kent
Client: E.ON

Coordinates
Northings: -
Eastings: -
Ground Level: 4.940 m OD

Drilling Plant:
Start Date: -
End Date: -
Logged By:

Casing Details	
Hole Diameter (mm)	Casing Depth (m)

Hole Type
TP

Scale
1:50

Well	Water Strikes	Samples & In Situ Testing			Level (m AOD)	Depth (m)	Legend	Description Of Strata
		Depth (m)	Type	Results				
					4.69	0.25	▨	Light brown slightly gravelly silty SAND. (TOPSOIL)
		0.70	IVN kPa	11 kPa	3.74	1.20	▩	White slightly clayey silty SAND with subangular to angular cobbles and gravels of chalk and various stone. Occasional fill material including plastics, metal, wood. (MADE GROUND)
					2.94	2.00	▩	Brown organic silty SAND. Slightly clayey in places with dark grey slightly gravelly silty sand of ash in places. (MADE GROUND)
								End of Borehole at 2.00 m
			Type	Results				

4.44
3.94
3.44
2.94
2.44
1.94
1.44
0.94
0.44
-0.06
-0.56
-1.06
-1.56
-2.06
-2.56
-3.06
-3.56
-4.06
-4.56

Remarks:

Chiselling Details				Groundwater Notes		
Time Taken	Depth From (m)	Depth To (m)	Tool Used	Strike (m)	Casing Depth (m)	Level After 20 Mins (m)

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BOREHOLE LOG

Borehole No.
TP13
Sheet 1 of 1

Project Name: Kemsley Mill	Coordinates Northings: - Eastings: -	Drilling Plant:	Casing Details: Hole Diameter (mm) / Casing Depth (m)	Hole Type TP
Project No. JER4418		Start Date: -		
Location: Sittingbourne, Kent	Ground Level: 5.650 m OD	End Date: -		Scale 1:50
Client: E.ON		Logged By:		

Well	Water Strikes	Samples & In Situ Testing: Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata
							▨	Brown organic silty slightly clayey SAND with various fill material including plastics, rubble, lino, wood and occasional general waste. (MADE GROUND)
					3.15	2.50		End of Borehole at 2.50 m

Level scale (m AOD): 5.15, 4.65, 4.15, 3.65, 3.15, 2.65, 2.15, 1.65, 1.15, 0.65, 0.15, -0.35, -0.85, -1.35, -1.85, -2.35, -2.85, -3.35, -3.85

Type Results

Remarks:

Chiselling Details

Time Taken	Depth From (m)	Depth To (m)	Tool Used

Groundwater Notes

Strike (m)	Casing Depth (m)	Level After 20 Mins (m)

AGS

BOREHOLE LOG

Borehole No.
TP14
Sheet 1 of 1

Project Name: Kemsley Mill
Project No. JER4418
Location: Sittingbourne, Kent
Client: E.ON

Coordinates
Northings: -
Eastings: -
Ground Level: 5.370 m OD

Drilling Plant:
Start Date: -
End Date: -
Logged By:

Casing Details	
Hole Diameter (mm)	Casing Depth (m)

Hole Type
TP

Scale
1:50

Well	Water Strikes	Samples & In Situ Testing			Level (m AOD)	Depth (m)	Legend	Description Of Strata
		Depth (m)	Type	Results				
					4.17	1.20	▨	Dark brown occasionally grey silty SAND with frequent plastics, brick, stone, wood and occasional peat. (MADE GROUND)
								End of Borehole at 1.20 m

4.87
4.37
3.87
3.37
2.87
2.37
1.87
1.37
0.87
0.37
-0.13
-0.63
-1.13
-1.63
-2.13
-2.63
-3.13
-3.63
-4.13

Type Results

Remarks:

Chiselling Details			
Time Taken	Depth From (m)	Depth To (m)	Tool Used

Groundwater Notes		
Strike (m)	Casing Depth (m)	Level After 20 Mins (m)

HoleBASE III (Bld 422.00) Standard Borehole Log v1 dated 26th Mar 03

BOREHOLE LOG

Borehole No.
TP15
Sheet 1 of 1

Project Name: Kemsley Mill	Coordinates Northings: - Eastings: -	Drilling Plant:	Casing Details	Hole Type TP
Project No. JER4418		Start Date: -	Hole Diameter (mm) | Casing Depth (m)	
Location: Sittingbourne, Kent	Ground Level: 5.250 m OD	End Date: -		Scale 1:50
Client: E.ON		Logged By:		

Well	Water Strikes	Samples & In Situ Testing Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata
					5.15	0.10	▨	Brown slightly gravelly silty SAND. (TOPSOIL)
					4.80	0.45	▩	Light brown slightly gravelly CLAY with occasional brick, stone and metal fill. (MADE GROUND)
					3.85	1.40	▩	Dark grey black gravelly silty SAND. Twsted metal pipe in north of pit at 0.7m. (MADE GROUND)
					3.20	2.05	▩	Firm grey friable CLAY. (MADE GROUND)
		2.10	IVN kPa	30 kPa	3.05	2.20	– –	Firm to stiff grey brown mottled CLAY.

End of Borehole at 2.20 m

4.75
4.25
3.75
3.25
2.75
2.25
1.75
1.25
0.75
0.25
-0.25
-0.75
-1.25
-1.75
-2.25
-2.75
-3.25
-3.75
-4.25

Type Results

Remarks:

Chiselling Details Time Taken	Depth From (m)	Depth To (m)	Tool Used	Groundwater Notes Strike (m)	Casing Depth (m)	Level After 20 Mins (m)

BOREHOLE LOG

Borehole No.
WS1
Sheet 1 of 1

Project Name:	Kemsley Mill	Coordinates Northings: - Eastings: -	Drilling Plant:	Casing Details	Hole Type WS
Project No.	JER4418		Start Date: -	Hole Diameter (mm)	Casing Depth (m)
Location:	Sittingbourne, Kent	Ground Level: 6.420 m OD	End Date: -		Scale 1:50
Client:	E.ON		Logged By:		

Well	Water Strikes	Samples & In Situ Testing Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata
								Loose grey fine to medium angular GRAVEL (MADE GROUND).
					6.02	0.40		Firm grey brown mottled slightly sandy SILT / CLAY with occasional roots, brick fragements and plastic. (MADE GROUND)
					5.72	0.70		Medium dense grey silty fine ashy SAND. (MADE GROUND)
					5.07	1.35		Medium dense grey silty fine ashy SAND and clinker. (MADE GROUND)
					4.22	2.20		Firm, occasionally stiff, grey brown mottled slightly silty CLAY with rare pockets of black silt and some iron staining. Occasional pockets of calcareous fine to medium gravels.
					2.42	4.00		No Recovery
					1.92	4.50		Firm grey and brown mottled CLAY with pockets of brown silt.
	▽				1.42	5.00		No Recovery
					1.02	5.40		Hard dessicated brown silty CLAY. Very disturbed.
					0.82	5.60		No Recovery
					0.42	6.00		End of Borehole at 6.00 m

5.92
5.42
4.92
4.42
3.92
3.42
2.92
2.42
1.92
1.42
0.92
0.42
-0.08
-0.58
-1.08
-1.58
-2.08
-2.58
-3.08

Type Results

Remarks:

Chiselling Details				Groundwater Notes		
Time Taken	Depth From (m)	Depth To (m)	Tool Used	Strike (m)	Casing Depth (m)	Level After 20 Mins (m)
				5.00	-	-

HoleBASE III (Bld 422.00) Standard Borehole Log v1 dated 26th Mar 03

AGS

BOREHOLE LOG

Borehole No.
WS2
Sheet 1 of 1

Project Name:	Kemsley Mill	Coordinates Northings: - Eastings: -	Drilling Plant:	Casing Details	Hole Type WS
Project No.	JER4418		Start Date: -	Hole Diameter (mm) / Casing Depth (m)	
Location:	Sittingbourne, Kent	Ground Level: 6.700 m OD	End Date: -		Scale 1:50
Client:	E.ON		Logged By:		

Water Strikes	Samples & In Situ Testing Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Description Of Strata
				6.25	0.45	Light grey yellow silty SAND and GRAVEL of limestone. Sand is fine. Gravel is subangalar to angular and fine to coarse. Frequent limestone cobbles. (MADE GROUND)
				5.85	0.85	Dense dark grey brown occasionally white slightly gravelly sandy SILT. (MADE GROUND)
				4.65	2.05	Dense dark grey slightly gravelly slightly sandy SILT. (MADE GROUND)
▽				1.70	5.00	Firm to stiff light grey brown mottled CLAY.

End of Borehole at 5.00 m

6.20
5.70
5.20
4.70
4.20
3.70
3.20
2.70
2.20
1.70
1.20
0.70
0.20
-0.30
-0.80
-1.30
-1.80
-2.30
-2.80

Type Results

Remarks:

Chiselling Details

Time Taken	Depth From (m)	Depth To (m)	Tool Used

Groundwater Notes

Strike (m)	Casing Depth (m)	Level After 20 Mins (m)
3.00	-	-

AGS

BOREHOLE LOG

Borehole No.
WS3
Sheet 1 of 1

Project Name: Kemsley Mill	Coordinates Northings: - Eastings: -	Drilling Plant:	Hole Type WS
Project No. JER4418		Start Date: -	
Location: Sittingbourne, Kent	Ground Level: 5.990 m OD	End Date: -	Scale 1:50
Client: E.ON		Logged By:	

Casing Details	
Hole Diameter (mm)	Casing Depth (m)

Well	Water Strikes	Samples & In Situ Testing Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata
					5.89	0.10		Broken grey CONCRETE.
					5.49	0.50		Grey brown silty gravelly cobbly SAND. Gravels and cobbles are subangular to angular limestone and stone fill. (MADE GROUND)
					4.79	1.20		Brown grey slightly gravelly SILT / CLAY. Gravels and occasional cobbles and subangular to angular. (MADE GROUND)
					4.49	1.50		Stiff brown slightly gravelly CLAY. Gravels are subangular to angular limestone and stone fill. (MADE GROUND)
					4.39	1.60		Red brick. (MADE GROUND)
					4.19	1.80		Dark brown peaty SILT / CLAY. (MADE GROUND)
					3.29	2.70		Dense dark grey slightly sandy SILT. Becomes clayey with depth. (MADE GROUND)
	▽				0.99	5.00		Firm to stiff brown orange mottled CLAY with occasional organic matter and gravels of subrounded to angular stone.

End of Borehole at 5.00 m

5.49 4.99 4.49 3.99 3.49 2.99 2.49 1.99 1.49 0.99 0.49 -0.01 -0.51 -1.01 -1.51 -2.01 -2.51 -3.01 -3.51

Type Results

Remarks:

Chiselling Details				Groundwater Notes		
Time Taken	Depth From (m)	Depth To (m)	Tool Used	Strike (m)	Casing Depth (m)	Level After 20 Mins (m)
				3.00	-	-

AGS

BOREHOLE LOG

Borehole No.
WS4
Sheet 1 of 1

Project Name: Kemsley Mill	Coordinates	Drilling Plant:	Casing Details		Hole Type
Project No. JER4418	Northings: - Eastings: -	Start Date: -	Hole Diameter (mm)	Casing Depth (m)	WS
Location: Sittingbourne, Kent	Ground Level: 7.570 m OD	End Date: -			Scale
Client: E.ON		Logged By:			1:50

Well	Water Strikes	Samples & In Situ Testing Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata
					7.47	0.10	▨	Brown slightly gravelly slightly silty SAND. (TOPSOIL)
					7.37	0.20	▨	Light brown gravelly SAND of limestone. (MADE GROUND)
					7.22	0.35	▨	Slightly sandy brown CLAY. Silt in places. Frequent iron staining. (MADE GROUND)
					6.82	0.75	▨	Daark grey slightly gravelly silty SAND. (MADE GROUND).
					6.37	1.20	▨	Dark grey SILT / CLAY of coal dust. (MADE GROUND)
					5.97	1.60	▨	Dark grey silghtly gravelly slightly sandy SILT / CLAY of coal dust with occasional brick fragments. Wet. (MADE GROUND)
					5.27	2.30	▨	Firm brown grey CLAY with occasional fill including white subangular to angular gravel. (MADE GROUND)
	▽				4.57	3.00	— —	Firm brown grey CLAY.

End of Borehole at 1.20 m

7.07 6.57 6.07 5.57 5.07 4.57 4.07 3.57 3.07 2.57 2.07 1.57 1.07 0.57 0.07 -0.43 -0.93 -1.43 -1.93

Remarks:

Chiselling Details

Time Taken	Depth From (m)	Depth To (m)	Tool Used

Groundwater Notes

Strike (m)	Casing Depth (m)	Level After 20 Mins (m)
3.00	-	-

BOREHOLE LOG

Borehole No.
WS5
Sheet 1 of 1

Project Name: Kemsley Mill	Coordinates Northings: 0.00 Eastings: 0.00	Drilling Plant:	Hole Type WS
Project No. JER4418		Start Date: / /	
Location: Sittingbourne, Kent	Ground Level: 4.970 m OD	End Date: / /	Scale 1:50
Client: E.ON		Logged By:	

Casing Details	
Hole Diameter (mm)	Casing Depth (m)

Well	Water Strikes	Samples & In Situ Testing: Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata
					4.47	0.50		Brown grey slightly sandy slightly gravelly SILT / CLAY with occasional subangular to angular gravel of brick and stone. (MADE GROUND)
					4.27	0.70		Angular grey GRAVEL of concrete and tarmacadam fill. (MADE GROUND)
					4.07	0.90		Firm brown CLAY with occasional gravel of subanular to angular stone and fill material. (MADE GROUND)
					3.57	1.40		Grey brown sandy gravelly SILT. Freqent organic matter. (MADE GROUND)
					3.37	1.60		Firm brown CLAY. (MADE GROUND)
					3.17	1.80		Brown peaty SILT / CLAY with plastics and wood. (MADE GROUND)
					1.97	3.00		Grey gravelly silty SAND. Gravels are subangular to angular fine to medium stone. (MADE GROUND)
					1.07	3.90		Dark grey slightly gravelly slightly silty SAND of clinker. Wet. (MADE GROUND)
					0.97	4.00		Firm to stiff brown CLAY.

End of Borehole at 4.00 m

4.47
3.97
3.47
2.97
2.47
1.97
1.47
0.97
0.47
-0.03
-0.53
-1.03
-1.53
-2.03
-2.53
-3.03
-3.53
-4.03
-4.53

Type Results

Remarks:

Chiselling Details			
Time Taken	Depth From (m)	Depth To (m)	Tool Used

Groundwater Notes		
Strike (m)	Casing Depth (m)	Level After 20 Mins (m)

AGS

BOREHOLE LOG

Borehole No.
WS6
Sheet 1 of 1

Project Name:	Kemsley Mill	Coordinates Northings: - Eastings: -	Drilling Plant:
Project No.	JER4418		Start Date: -
Location:	Sittingbourne, Kent	Ground Level: 5.470 m OD	End Date: -
Client:	E.ON		Logged By:

Casing Details

Hole Diameter (mm)	Casing Depth (m)

Hole Type
WS

Scale
1:50

Well	Water Strikes	Samples & In Situ Testing Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata
					5.27	0.20		Brown silty SAND with occasional grass roots. (TOPSOIL)
					3.07	2.40		Firm to stiff brown grey CLAY with occasional brick, plastics and other fill. Slightly sandy in places with occasional gravels. (MADE GROUND)
					2.87	2.60		Dark grey slightly gravelly silty SAND. (MADE GROUND)
					2.47	3.00		Firm to stiff brown occasionally grey CLAY.

End of Borehole at 3.00 m

4.97
4.47
3.97
3.47
2.97
2.47
1.97
1.47
0.97
0.47
-0.03
-0.53
-1.03
-1.53
-2.03
-2.53
-3.03
-3.53
-4.03

Type Results

Remarks:

Chiselling Details

Time Taken	Depth From (m)	Depth To (m)	Tool Used

Groundwater Notes

Strike (m)	Casing Depth (m)	Level After 20 Mins (m)

AGS

HoleBASE III (Bld 422.00) Standard Borehole Log v1 dated 26th Mar 03

BOREHOLE LOG

Borehole No.
WS7
Sheet 1 of 1

Project Name:	Kemsley Mill	Coordinates Northings: - Eastings: -	Drilling Plant:
Project No.	JER4418		Start Date: -
Location:	Sittingbourne, Kent	Ground Level: 5.570 m OD	End Date: -
Client:	E.ON		Logged By:

Casing Details

Hole Diameter (mm)	Casing Depth (m)

Hole Type: WS

Scale: 1:50

Well	Water Strikes	Samples & In Situ Testing Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata
					5.47	0.10		Brown sandy SILT with occasional gravel of subangular to angular flint. (TOPSOIL)
					5.07	0.50		Firm to stiff brown grey sandy CLAY with occasional gravels of subangular to angular fill material. (MADE GROUND)
					4.87	0.70		Brown slightly gravelly CLAY. (MADE GROUND)
					4.77	0.80		Dark grey subangular to angular fine to coarse gravels of clinker. (MADE GROUND)
					4.57	1.00		Firm grey brown clay. (MADE GROUND)
					3.77	1.80		No recovery. Wood piece in hole.
					3.07	2.50		Grey occasionally brown slightly silty gravelly SAND. Gravels are subangular to angular stone and clinker. (MADE GROUND)
					2.87	2.70		Firm dark grey occasionally brown red CLAY. (MADE GROUND)
	▽				2.67	2.90		Grey sandy subrounded to angular limestone GRAVEL . (MADE GROUND)
					1.97	3.60		Dark grey black slightly gravelly slightly sandy SILT. Gravels and sands of clinker. (MADE GROUND)
					1.57	4.00		Firm to stiff light brown orange mottled CLAY.

End of Borehole at 4.00 m

5.07 4.57 4.07 3.57 3.07 2.57 2.07 1.57 1.07 0.57 0.07 -0.43 -0.93 -1.43 -1.93 -2.43 -2.93 -3.43 -3.93

Type Results

Remarks:

Chiselling Details

Time Taken	Depth From (m)	Depth To (m)	Tool Used

Groundwater Notes

Strike (m)	Casing Depth (m)	Level After 20 Mins (m)
3.00	-	-

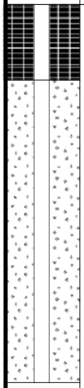
HoleBASE III (Bld 422.00) Standard Borehole Log v1 dated 26th Mar 03

BOREHOLE LOG

Borehole No.
WS8
Sheet 1 of 1

Project Name: Kemsley Mill	Coordinates Northings: - Eastings: -	Drilling Plant:	Hole Type WS
Project No. JER4418		Start Date: -	
Location: Sittingbourne, Kent	Ground Level: 5.700 m OD	End Date: -	Scale 1:50
Client: E.ON		Logged By:	

Casing Details	
Hole Diameter (mm)	Casing Depth (m)



Well	Water Strikes	Samples & In Situ Testing Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata
							▨	Dark brown slightly gravelly silty SAND including chalk and flint gravel. 20% recovery. (MADE GROUND)
					4.70	1.00	▨	Brown grey slightly sandy slightly gravelly CLAY with concrete fragments, organic matter and gauze. Topsoil in places. 50% recovery. (MADE GROUND)
					3.70	2.00	▨	Brown grey slightly sandy slightly gravelly CLAY with organic matter including wood im places. 20% recovery. (MADE GROUND)
					2.70	3.00		End of Borehole at 3.00 m

5.20
4.70
4.20
3.70
3.20
2.70
2.20
1.70
1.20
0.70
0.20
-0.30
-0.80
-1.30
-1.80
-2.30
-2.80
-3.30
-3.80

Type Results

Remarks:

Chiselling Details				Groundwater Notes		
Time Taken	Depth From (m)	Depth To (m)	Tool Used	Strike (m)	Casing Depth (m)	Level After 20 Mins (m)

Appendix B

Laboratory Analytical Results for Soils

ALcontrol Laboratories Analytical Services
Sample Descriptions

Job Number: 09/08204/02/01
Client: RPS Consultants Ltd
Client Ref : JER4418

Grain sizes

<0.063mm	Very Fine
0.1mm - 0.063mm	Fine
0.1mm - 2mm	Medium
2mm - 10mm	Coarse
>10mm	Very Coarse

Sample Identity	Depth (m)	Colour	Grain Size	Description	Batch
BH1	0.5-1.0	Brown	0.1mm - 0.063mm	Silty Clay	1
BH1	0.50-1.00	Dark Grey	0.1mm - 0.063mm	Clay Loam with some Stones	2
BH1	3.50-4.00	Brown	0.1mm - 0.063mm	Clay Loam with some Stones	2
BH2	0.5-1.0	Brown	0.1mm - 0.063mm	Silty Clay with some Stones	1
BH2	2.5-3.0	Brown	0.1mm - 0.063mm	Silty Clay	1
BH2	5.0-5.5	Brown	0.1mm - 0.063mm	Silty Clay	1
TP1	0.50-1.00	Grey	0.1mm - 0.063mm	Clay Loam	2
TP1	2.00-2.50	Grey	0.1mm - 0.063mm	Clay Loam	2
TP2	0.10-0.40	Brown	0.1mm - 0.063mm	Silt Loam with some Stones	2
TP3	0.10-0.50	Brown	0.1mm - 2mm	Sandy Loam with some Stones	2
TP4	0.00-0.50	Brown	0.1mm - 2mm	Sandy Loam with some Stones	2
TP4	1.00-1.50	Dark Grey	0.1mm - 0.063mm	Silty Clay with some Stones	2
TP5	0.00-0.50	Light Grey	0.1mm - 0.063mm	Loam (topsoil) with some Stones	2
TP5	2.00-2.35	Dark Grey	0.1mm - 0.063mm	Loamy Sand with some Stones	2
TP6	0.50-1.00	Dark Grey	0.1mm - 0.063mm	Silty Clay with some Stones	2
TP7	0.20-0.60	Brown	0.1mm - 0.063mm	Silt Loam with some Stones	2
TP7	1.60-2.00	Grey	0.1mm - 0.063mm	Clay Loam with some Stones	2
TP8	0.4-0.7	Brown	0.1mm - 0.063mm	Silt Loam with some Stones	4
TP8	1.2-1.6	Brown	0.1mm - 0.063mm	Silty Clay	4
TP9	1.00-2.00	Brown	0.1mm - 0.063mm	Silty Clay with some Stones	2
TP10	0.5-1	Brown	0.1mm - 0.063mm	Silt Loam with some Stones	3
TP11	0.50-1.50	Brown	0.1mm - 0.063mm	Silty Clay with some Stones	2
TP11	2.50-3.00	Brown	0.1mm - 0.063mm	Silty Clay	2
TP12	0.5-1.0	Brown	0.1mm - 0.063mm	Silt Loam with some Stones	4
TP12	1.5-2.0	Brown	0.1mm - 0.063mm	Silt Loam with some Stones	4
TP13	0-1	Brown	0.1mm - 0.063mm	Silt Loam with some Stones	3
TP13	2-2.5	Brown	0.1mm - 0.063mm	Silt Loam with some Stones	3
TP14	0.2-0.6	Brown	0.1mm - 0.063mm	Silty Clay with some Stones	3
TP15	0.10-0.60	Brown	0.1mm - 0.063mm	Silty Clay with some Stones	2
WS2	0.0-0.4	Light Brown	0.1mm - 0.063mm	Sand with some Stones	1
WS2	0.5-1.0	Dark Brown	0.1mm - 0.063mm	Silty Clay with some Stones	1
WS2	1.5-2.0	Brown	0.1mm - 2mm	Sandy Silt Loam with some Stones	1
WS3	0.5-1.0	Light Brown	0.1mm - 2mm	Sandy Loam with some Stones	1

* These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials-whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.
Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.
¹ Sample Description supplied by client

ALcontrol Laboratories Analytical Services
Sample Descriptions

Job Number: 09/08204/02/01
Client: RPS Consultants Ltd
Client Ref : JER4418

Grain sizes

<0.063mm	Very Fine
0.1mm - 0.063mm	Fine
0.1mm - 2mm	Medium
2mm - 10mm	Coarse
>10mm	Very Coarse

Sample Identity	Depth (m)	Colour	Grain Size	Description	Batch
WS3	1.5-2.0	Cream	<0.063mm	Chalk	1
WS3	3.4-3.8	Brown	0.1mm - 0.063mm	Silty Clay	1
WS4	0.5-1.0	Brown	0.1mm - 0.063mm	Silt with some Stones	4
WS4	1.6-1.9	Brown	0.1mm - 2mm	Sandy Silt Loam with some Stones	4
WS5	0.00-1.00	Dark Grey	0.1mm - 0.063mm	Sandy Loam with some Stones	2
WS5	1.00-2.00	Brown	0.1mm - 0.063mm	Silty Clay with some Stones	2
WS6	0.00-1.00	Light Grey	0.1mm - 0.063mm	Sandy Loam with some Stones	2
WS7	0.50-1.00	Brown	0.1mm - 2mm	Gravel with some Stones	2

* These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials-whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.
Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.
¹ Sample Description supplied by client

Validated ☑

Preliminary ☐

ALcontrol Laboratories Analytical Services
Table Of Results

\# ISO 17025 accredited
M MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 09/08204/02/01 **Matrix:** SOLID
Client: RPS Consultants Ltd **Location:** SITTINGBOURNE
Client Ref. No.: JER4418 **Client Contact:** Adam Parker

Sample Identity	BH1	BH1	BH1	BH2	BH2	BH2	TP1	TP1	TP2	**Method Code**	**LoD/Units**
Depth (m)	0.5-1.0	0.50-1.00	3.50-4.00	0.5-1.0	2.5-3.0	5.0-5.5	0.50-1.00	2.00-2.50	0.10-0.40		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	09.07.09	14.07.09	14.07.09	07.07.09	07.07.09	07.07.09	14.07.09	14.07.09	14.07.09		
Sample Received Date	11.07.09	16.07.09	16.07.09	11.07.09	11.07.09	11.07.09	16.07.09	16.07.09	16.07.09		
Batch	1	2	2	1	1	1	2	2	2		
Sample Number(s)	**1-3**	**31-33**	**34-36**	**4-6**	**7-9**	**10-12**	**38-40**	**41-43**	**44-46**		
Total Sulphate	1600	-	-	1600	-	-	540	-	8000	TM129$^{\#}_{M}$	<100 mg/kg
Boron Water Soluble	6.9	-	-	<3.5	-	-	<3.5	-	4.4	TM129$^{\#}_{M}$	<3.5 mg/kg
Arsenic	8	-	-	15	-	-	<3	-	8	TM129$^{\#}_{M}$	<3.0 mg/kg
Cadmium	0.3	-	-	0.4	-	-	<0.2	-	<0.2	TM129	<0.2 mg/kg
Chromium	26	-	-	27	-	-	39	-	31	TM129$^{\#}_{M}$	<4.5 mg/kg
Copper	35	-	-	46	-	-	21	-	49	TM129$^{\#}_{M}$	<6 mg/kg
Lead	39	-	-	220	-	-	11	-	31	TM129$^{\#}_{M}$	<2 mg/kg
Mercury	<0.4	-	-	1.6	-	-	<0.4	-	<0.4	TM129$^{\#}_{M}$	<0.4 mg/kg
Nickel	33	-	-	24	-	-	38	-	24	TM129$^{\#}_{M}$	<0.9 mg/kg
Selenium	<3	-	-	<3	-	-	<3	-	<3	TM129$^{\#}_{M}$	<3 mg/kg
Zinc	100	-	-	170	-	-	110	-	110	TM129$^{\#}_{M}$	<2.5 mg/kg
Easily Liberated Sulphide	46	-	-	<15	-	-	<15	-	<15	TM180$^{\#}$	<15 mg/kg
Hexavalent Chromium	<0.3	-	-	0.4	-	-	<3.0	-	<3.0	TM151$^{\#}$	<0.3 mg/kg
Phenols Monohydric	<0.15	-	-	<0.15	-	-	<0.15	-	<0.15	TM062$^{\#}_{M}$	<0.15 mg/kg
Thiocyanate	<1	-	-	<1	-	-	<1	-	<1	TM153$^{\#}_{M}$	<1 mg/kg
Total Cyanide	<1	-	-	<1	-	-	<1	-	<1	TM153$^{\#}_{M}$	<1 mg/kg
Free Cyanide	<1	-	-	<1	-	-	<1	-	<1	TM153	<1 mg/kg
Asbestos Containing Material Screen	-	-	-	-	-	-	-	-	No ACM Detected	TM001	NONE
Fraction of Organic Carbon	-	-	-	0.025	-	0.003	-	-	-	TM132$^{\#}$	<0.002 NONE
pH Value	7.80	-	-	8.31	-	-	7.52	-	4.62	TM133$^{\#}_{M}$	<1.00 pH Units
Total Sulphur	0.23	-	-	0.13	-	-	0.02	-	0.27	TM132$^{\#}$	<0.01 %
Amosite (Brown) Asbestos	-	-	-	-	-	-	-	-	-	TM048$^{\#}$	NONE
Chrysotile (White) Asbestos	-	-	-	-	-	-	-	-	-	TM048$^{\#}$	NONE
Crocidolite (Blue) Asbestos	-	-	-	-	-	-	-	-	-	TM048$^{\#}$	NONE
Fibrous Tremolite	-	-	-	-	-	-	-	-	-	TM048$^{\#}$	NONE
Fibrous Anthophyllite	-	-	-	-	-	-	-	-	-	TM048$^{\#}$	NONE
Fibrous Actinolite	-	-	-	-	-	-	-	-	-	TM048$^{\#}$	NONE
Non-Asbestos Fibre	-	-	-	-	-	-	-	-	-	TM048$^{\#}$	NONE

All results expressed on a dry weight basis.

Date 19.08.2009

Validated ☑

Preliminary ☐

ALcontrol Laboratories Analytical Services
Table Of Results

\# ISO 17025 accredited
M MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number:	09/08204/02/01	**Matrix:**	SOLID
Client:	RPS Consultants Ltd	**Location:**	SITTINGBOURNE
Client Ref. No.:	JER4418	**Client Contact:**	Adam Parker

Sample Identity	BH1	BH1	BH1	BH2	BH2	BH2	TP1	TP1	TP2	**Method Code**	**LoD/Units**
Depth (m)	0.5-1.0	0.50-1.00	3.50-4.00	0.5-1.0	2.5-3.0	5.0-5.5	0.50-1.00	2.00-2.50	0.10-0.40		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	09.07.09	14.07.09	14.07.09	07.07.09	07.07.09	07.07.09	14.07.09	14.07.09	14.07.09		
Sample Received Date	11.07.09	16.07.09	16.07.09	11.07.09	11.07.09	11.07.09	16.07.09	16.07.09	16.07.09		
Batch	1	2	2	1	1	1	2	2	2		
Sample Number(s)	**1-3**	**31-33**	**34-36**	**4-6**	**7-9**	**10-12**	**38-40**	**41-43**	**44-46**		
TPH C6-8	<10	<10	<10	<10	<10	<10	<10	<10	<10	TM154	<10 mg/kg
TPH >C8-10	<10	<10	<10	<10	<10	<10	<10	<10	<10	TM154	<10 mg/kg
TPH >C10-12	<10	<10	<10	<10	<10	<10	<10	<10	<10	TM154	<10 mg/kg
TPH >C12-16	<10	<10	<10	<10	<10	<10	<10	<10	<10	TM154	<10 mg/kg
TPH >C16-21	<10	17	<10	42	<10	<10	<10	<10	<10	TM154	<10 mg/kg
TPH >C21-40	83	200	<10	790	170	<10	<10	<10	57	TM154	<10 mg/kg
TPH C6-40	83	220	<10	840	180	<10	<10	<10	57	TM154#	<10 mg/kg

All results expressed on a dry weight basis.

Date 19.08.2009

Validated ☑

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ALcontrol Laboratories Analytical Services
Table Of Results

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Job Number: 09/08204/02/01
Client: RPS Consultants Ltd
Client Ref. No.: JER4418

Matrix: SOLID
Location: SITTINGBOURNE
Client Contact: Adam Parker

Sample Identity	BH1	BH1	BH1	BH2	BH2	BH2	TP1	TP1	TP2	**Method Code**	**LoD/Units**
Depth (m)	0.5-1.0	0.50-1.00	3.50-4.00	0.5-1.0	2.5-3.0	5.0-5.5	0.50-1.00	2.00-2.50	0.10-0.40		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	09.07.09	14.07.09	14.07.09	07.07.09	07.07.09	07.07.09	14.07.09	14.07.09	14.07.09		
Sample Received Date	11.07.09	16.07.09	16.07.09	11.07.09	11.07.09	11.07.09	16.07.09	16.07.09	16.07.09		
Batch	1	2	2	1	1	1	2	2	2		
Sample Number(s)	**1-3**	**31-33**	**34-36**	**4-6**	**7-9**	**10-12**	**38-40**	**41-43**	**44-46**		
PAH by GCMS											
Naphthalene-d8 -Surrogate Recovery	98	-	-	97	82	100	95	-	97	TM218$^{\#}_{M}$	%
Acenaphthene-d10 -Surrogate Recovery	100	-	-	96	72	110	93	-	94	TM218$^{\#}_{M}$	%
Phenanthrene-d10 -Surrogate Recovery	99	-	-	94	62	100	91	-	91	TM218$^{\#}_{M}$	%
Chrysene-d12 -Surrogate Recovery	94	-	-	85	54	99	91	-	89	TM218$^{\#}_{M}$	%
Perylene-d12 -Surrogate Recovery	98	-	-	85	52	110	94	-	92	TM218$^{\#}_{M}$	%
Naphthalene	16	-	-	200	360	<9	<9	-	<9	TM218$^{\#}_{M}$	<9 ug/kg
Acenaphthylene	<12	-	-	100	20	<12	<12	-	<12	TM218$^{\#}_{M}$	<12 ug/kg
Acenaphthene	<8	-	-	310	32	<8	<8	-	<8	TM218$^{\#}_{M}$	<8 ug/kg
Fluorene	<10	-	-	140	63	<10	<10	-	<10	TM218$^{\#}_{M}$	<10 ug/kg
Phenanthrene	30	-	-	1400	400	<15	<15	-	25	TM218$^{\#}_{M}$	<15 ug/kg
Anthracene	<16	-	-	290	56	<16	<16	-	<16	TM218$^{\#}_{M}$	<16 ug/kg
Fluoranthene	110	-	-	2500	180	<17	<17	-	63	TM218$^{\#}_{M}$	<17 ug/kg
Pyrene	99	-	-	2200	150	<15	<15	-	49	TM218$^{\#}_{M}$	<15 ug/kg
Benz(a)anthracene	81	-	-	1200	93	<14	<14	-	44	TM218$^{\#}_{M}$	<14 ug/kg
Chrysene	47	-	-	930	86	15	<10	-	37	TM218$^{\#}_{M}$	<10 ug/kg
Benzo(b)fluoranthene	89	-	-	1700	78	22	<15	-	57	TM218$^{\#}_{M}$	<15 ug/kg
Benzo(k)fluoranthene	32	-	-	530	38	<14	<14	-	27	TM218$^{\#}_{M}$	<14 ug/kg
Benzo(a)pyrene	62	-	-	1200	61	<15	<15	-	43	TM218$^{\#}_{M}$	<15 ug/kg
Indeno(123cd)pyrene	39	-	-	630	36	<18	<18	-	39	TM218$^{\#}_{M}$	<18 ug/kg
Dibenzo(ah)anthracene	<23	-	-	190	<23	<23	<23	-	<23	TM218$^{\#}_{M}$	<23 ug/kg
Benzo(ghi)perylene	45	-	-	770	58	<24	<24	-	48	TM218$^{\#}_{M}$	<24 ug/kg
PAH 16 Total	650	-	-	14000	1700	<118	<118	-	430	TM218$^{\#}_{M}$	<118 ug/kg

All results expressed on a dry weight basis.

Date 19.08.2009

Validated ☑

Preliminary ☐

ALcontrol Laboratories Analytical Services
Table Of Results

$^{\#}$ ISO 17025 accredited
^{M} MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 09/08204/02/01
Client: RPS Consultants Ltd
Client Ref. No.: JER4418

Matrix: SOLID
Location: SITTINGBOURNE
Client Contact: Adam Parker

Sample Identity	TP3	TP4	TP4	TP5	TP5	TP6	TP7	TP7	TP8	**Method Code**	**LoD/Units**
Depth (m)	0.10-0.50	0.00-0.50	1.00-1.50	0.00-0.50	2.00-2.35	0.50-1.00	0.20-0.60	1.60-2.00	0.4-0.7		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	15.07.09		
Sample Received Date	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	20.07.09		
Batch	2	2	2	2	2	2	2	2	4		
Sample Number(s)	**47-49**	**50-52**	**53-55**	**57-59**	**60-62**	**66-68**	**69-70**	**71-73**	**130-132**		
Total Sulphate	3100	3900	-	2000	-	1600	850	-	14000	TM129$^{\#}_{M}$	<100 mg/kg
Boron Water Soluble	<3.5	3.7	-	<3.5	-	16	<3.5	-	4.7	TM129$^{\#}_{M}$	<3.5 mg/kg
Arsenic	14	9	-	6	-	6	10	-	3	TM129$^{\#}_{M}$	<3.0 mg/kg
Cadmium	0.3	0.2	-	<0.2	-	0.7	0.7	-	0.3	TM129	<0.2 mg/kg
Chromium	24	19	-	24	-	22	29	-	30	TM129$^{\#}_{M}$	<4.5 mg/kg
Copper	27	28	-	13	-	120	44	-	26	TM129$^{\#}_{M}$	<6 mg/kg
Lead	42	89	-	17	-	93	140	-	50	TM129$^{\#}_{M}$	<2 mg/kg
Mercury	<0.4	<0.4	-	<0.4	-	<0.4	<0.4	-	<0.4	TM129$^{\#}_{M}$	<0.4 mg/kg
Nickel	26	17	-	25	-	100	29	-	16	TM129$^{\#}_{M}$	<0.9 mg/kg
Selenium	<3	<3	-	<3	-	3	<3	-	<3	TM129$^{\#}_{M}$	<3 mg/kg
Zinc	100	83	-	65	-	290	170	-	120	TM129$^{\#}_{M}$	<2.5 mg/kg
Easily Liberated Sulphide	<15	44	-	<15	-	78	<15	-	<15	TM180$^{\#}$	<15 mg/kg
Hexavalent Chromium	0.4	<0.3	-	<0.3	-	<0.3	0.4	-	<0.3	TM151$^{\#}$	<0.3 mg/kg
Phenols Monohydric	<0.15	<0.15	-	<0.15	-	<0.15	<0.15	-	<0.15	TM062$^{\#}_{M}$	<0.15 mg/kg
Thiocyanate	<1	<1	-	<1	-	<1	<1	-	<1	TM153$^{\#}_{M}$	<1 mg/kg
Total Cyanide	<1	<1	-	<1	-	<1	<1	-	<1	TM153$^{\#}_{M}$	<1 mg/kg
Free Cyanide	<1	<1	-	<1	-	<1	<1	-	<1	TM153	<1 mg/kg
Asbestos Containing Material Screen	No ACM Detected	-	-	-	-	-	-	-	No ACM Detected	TM001	NONE
Fraction of Organic Carbon	-	-	-	-	-	-	-	-	-	TM132$^{\#}$	<0.002 NONE
pH Value	11.11	8.33	-	8.51	-	8.58	8.16	-	8.30	TM133$^{\#}_{M}$	<1.00 pH Units
Total Sulphur	0.24	0.22	-	0.09	-	0.27	0.07	-	0.73	TM132$^{\#}$	<0.01 %
Amosite (Brown) Asbestos	-	-	-	-	-	-	-	-	-	TM048$^{\#}$	NONE
Chrysotile (White) Asbestos	-	-	-	-	-	-	-	-	-	TM048$^{\#}$	NONE
Crocidolite (Blue) Asbestos	-	-	-	-	-	-	-	-	-	TM048$^{\#}$	NONE
Fibrous Tremolite	-	-	-	-	-	-	-	-	-	TM048$^{\#}$	NONE
Fibrous Anthophyllite	-	-	-	-	-	-	-	-	-	TM048$^{\#}$	NONE
Fibrous Actinolite	-	-	-	-	-	-	-	-	-	TM048$^{\#}$	NONE
Non-Asbestos Fibre	-	-	-	-	-	-	-	-	-	TM048$^{\#}$	NONE

All results expressed on a dry weight basis.

Date 19.08.2009

Validated ☑

Preliminary ☐

ALcontrol Laboratories Analytical Services
Table Of Results

$^{\#}$ ISO 17025 accredited
^{M} MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 09/08204/02/01
Client: RPS Consultants Ltd
Client Ref. No.: JER4418

Matrix: SOLID
Location: SITTINGBOURNE
Client Contact: Adam Parker

Sample Identity	TP3	TP4	TP4	TP5	TP5	TP6	TP7	TP7	TP8	**Method Code**	**LoD/Units**
Depth (m)	0.10-0.50	0.00-0.50	1.00-1.50	0.00-0.50	2.00-2.35	0.50-1.00	0.20-0.60	1.60-2.00	0.4-0.7		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	15.07.09		
Sample Received Date	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	20.07.09		
Batch	2	2	2	2	2	2	2	2	4		
Sample Number(s)	**47-49**	**50-52**	**53-55**	**57-59**	**60-62**	**66-68**	**69-70**	**71-73**	**130-132**		
GRO Surrogate	-	-	3	-	-	2	-	-	-	TM089	%
GRO (C4-C12)	-	-	<10	-	-	<10	-	-	-	TM089	<10 ug/kg
MTBE	-	-	<10	-	-	<10	-	-	-	TM089$^{\#}$	<10 ug/kg
Benzene	-	-	<10	-	-	<10	-	-	-	TM089$^{\#}_{M}$	<10 ug/kg
Toluene	-	-	<10	-	-	<10	-	-	-	TM089$^{\#}_{M}$	<10 ug/kg
Ethyl benzene	-	-	<10	-	-	<10	-	-	-	TM089$^{\#}_{M}$	<10 ug/kg
m & p Xylene	-	-	<10	-	-	<10	-	-	-	TM089$^{\#}_{M}$	<10 ug/kg
o Xylene	-	-	<10	-	-	<10	-	-	-	TM089$^{\#}_{M}$	<10 ug/kg
Aliphatics C5-C6	-	-	<10	-	-	<10	-	-	-	TM089	<10 ug/kg
Aliphatics >C6-C8	-	-	<10	-	-	<10	-	-	-	TM089	<10 ug/kg
Aliphatics >C8-C10	-	-	<10	-	-	<10	-	-	-	TM089	<10 ug/kg
Aliphatics >C10-C12	-	-	<10	-	-	<10	-	-	-	TM089	<10 ug/kg
Aliphatics >C12-C16	-	-	11000	-	-	11000	-	-	-	TM173$^{\#}$	<100 ug/kg
Aliphatics >C16-C21	-	-	41000	-	-	7500	-	-	-	TM173$^{\#}$	<100 ug/kg
Aliphatics >C21-C35	-	-	100000	-	-	10000	-	-	-	TM173$^{\#}$	<100 ug/kg
Total Aliphatics C5-C35	-	-	150000	-	-	29000	-	-	-	TM61/89	<100 ug/kg
Aromatics C6-C7	-	-	<10	-	-	<10	-	-	-	TM089	<10 ug/kg
Aromatics >C7-C8	-	-	<10	-	-	<10	-	-	-	TM089	<10 ug/kg
Aromatics >EC8-EC10	-	-	<10	-	-	<10	-	-	-	TM089	<10 ug/kg
Aromatics >EC10-EC12	-	-	<10	-	-	<10	-	-	-	TM089	<10 ug/kg
Aromatics >EC12-EC16	-	-	2600	-	-	190	-	-	-	TM173$^{\#}$	<100 ug/kg
Aromatics >EC16-EC21	-	-	9200	-	-	600	-	-	-	TM173$^{\#}$	<100 ug/kg
Aromatics >EC21-EC35	-	-	32000	-	-	6100	-	-	-	TM173$^{\#}$	<100 ug/kg
Total Aromatics C6-C35	-	-	44000	-	-	6900	-	-	-	TM61/89	<100 ug/kg
TPH (Aliphatics and Aromatics C5-C35)	-	-	200000	-	-	36000	-	-	-	TM61/89	<100 ug/kg

All results expressed on a dry weight basis.

Date 19.08.2009

Validated ☑

Preliminary ☐

ALcontrol Laboratories Analytical Services
Table Of Results

ISO 17025 accredited
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* Subcontracted test
» Shown on prev. report

Job Number: 09/08204/02/01
Client: RPS Consultants Ltd
Client Ref. No.: JER4418

Matrix: SOLID
Location: SITTINGBOURNE
Client Contact: Adam Parker

Sample Identity	TP3	TP4	TP4	TP5	TP5	TP6	TP7	TP7	TP8	**Method Code**	**LoD/Units**
Depth (m)	0.10-0.50	0.00-0.50	1.00-1.50	0.00-0.50	2.00-2.35	0.50-1.00	0.20-0.60	1.60-2.00	0.4-0.7		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	15.07.09		
Sample Received Date	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	20.07.09		
Batch	2	2	2	2	2	2	2	2	4		
Sample Number(s)	**47-49**	**50-52**	**53-55**	**57-59**	**60-62**	**66-68**	**69-70**	**71-73**	**130-132**		
TPH C6-8	<10	<10	-	<10	<10	-	<10	<10	<10	TM154	<10 mg/kg
TPH >C8-10	21	<10	-	<10	<10	-	<10	<10	<10	TM154	<10 mg/kg
TPH >C10-12	17	<10	-	<10	<10	-	<10	<10	<10	TM154	<10 mg/kg
TPH >C12-16	61	48	-	<10	14	-	<10	<10	15	TM154	<10 mg/kg
TPH >C16-21	100	230	-	<10	36	-	<10	<10	98	TM154	<10 mg/kg
TPH >C21-40	490	1400	-	150	180	-	150	230	1200	TM154	<10 mg/kg
TPH C6-40	700	1700	-	160	230	-	150	230	1300	TM154#	<10 mg/kg

All results expressed on a dry weight basis.

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ALcontrol Laboratories Analytical Services
Table Of Results

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Job Number: 09/08204/02/01
Matrix: SOLID
Client: RPS Consultants Ltd
Location: SITTINGBOURNE
Client Ref. No.: JER4418
Client Contact: Adam Parker

Sample Identity	TP3	TP4	TP4	TP5	TP5	TP6	TP7	TP7	TP8	**Method Code**	**LoD/Units**
Depth (m)	0.10-0.50	0.00-0.50	1.00-1.50	0.00-0.50	2.00-2.35	0.50-1.00	0.20-0.60	1.60-2.00	0.4-0.7		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	15.07.09		
Sample Received Date	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	20.07.09		
Batch	2	2	2	2	2	2	2	2	4		
Sample Number(s)	**47-49**	**50-52**	**53-55**	**57-59**	**60-62**	**66-68**	**69-70**	**71-73**	**130-132**		
PAH by GCMS											
Naphthalene-d8 -Surrogate Recovery	95	94	-	93	94	79	97	100	91	TM218$^{\#}_{M}$	%
Acenaphthene-d10 -Surrogate Recovery	96	95	-	91	94	78	93	97	92	TM218$^{\#}_{M}$	%
Phenanthrene-d10 -Surrogate Recovery	95	94	-	89	82	34	93	98	90	TM218$^{\#}_{M}$	%
Chrysene-d12 -Surrogate Recovery	88	92	-	89	51	5.0	87	89	98	TM218$^{\#}_{M}$	%
Perylene-d12 -Surrogate Recovery	89	99	-	91	35	1.9	110	110	100	TM218$^{\#}_{M}$	%
Naphthalene	1800	2500	-	40	430	54	55	18	69	TM218$^{\#}_{M}$	<9 ug/kg
Acenaphthylene	56	450	-	17	<12	<12	100	<12	170	TM218$^{\#}_{M}$	<12 ug/kg
Acenaphthene	65	1800	-	<8	46	15	41	<8	210	TM218$^{\#}_{M}$	<8 ug/kg
Fluorene	130	1400	-	<10	110	15	57	<10	210	TM218$^{\#}_{M}$	<10 ug/kg
Phenanthrene	1800	11000	-	110	650	100	810	69	2600	TM218$^{\#}_{M}$	<15 ug/kg
Anthracene	260	3400	-	29	99	23	250	28	880	TM218$^{\#}_{M}$	<16 ug/kg
Fluoranthene	940	19000	-	190	200	25	2500	170	5100	TM218$^{\#}_{M}$	<17 ug/kg
Pyrene	870	16000	-	170	190	22	2300	150	4200	TM218$^{\#}_{M}$	<15 ug/kg
Benz(a)anthracene	550	9200	-	120	120	<14	1600	100	2800	TM218$^{\#}_{M}$	<14 ug/kg
Chrysene	470	6400	-	120	130	<10	1100	59	2200	TM218$^{\#}_{M}$	<10 ug/kg
Benzo(b)fluoranthene	750	12000	-	170	120	<15	2200	110	2700	TM218$^{\#}_{M}$	<15 ug/kg
Benzo(k)fluoranthene	210	4000	-	67	34	<14	790	35	1200	TM218$^{\#}_{M}$	<14 ug/kg
Benzo(a)pyrene	500	9700	-	130	65	<15	2000	97	2900	TM218$^{\#}_{M}$	<15 ug/kg
Indeno(123cd)pyrene	260	5100	-	86	23	<18	970	59	1600	TM218$^{\#}_{M}$	<18 ug/kg
Dibenzo(ah)anthracene	110	1400	-	30	<23	<23	240	<23	470	TM218$^{\#}_{M}$	<23 ug/kg
Benzo(ghi)perylene	450	5500	-	120	51	<24	1100	66	1900	TM218$^{\#}_{M}$	<24 ug/kg
PAH 16 Total	9200	110000	-	1400	2300	260	16000	960	29000	TM218$^{\#}_{M}$	<118 ug/kg

All results expressed on a dry weight basis.

Date 19.08.2009

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Preliminary ☐

ALcontrol Laboratories Analytical Services
Table Of Results

\# ISO 17025 accredited
M MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 09/08204/02/01
Matrix: SOLID
Client: RPS Consultants Ltd
Location: SITTINGBOURNE
Client Ref. No.: JER4418
Client Contact: Adam Parker

Sample Identity	TP3	TP4	TP4	TP5	TP5	TP6	TP7	TP7	TP8	**Method Code**	**LoD/Units**
Depth (m)	0.10-0.50	0.00-0.50	1.00-1.50	0.00-0.50	2.00-2.35	0.50-1.00	0.20-0.60	1.60-2.00	0.4-0.7		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	15.07.09		
Sample Received Date	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	20.07.09		
Batch	2	2	2	2	2	2	2	2	4		
Sample Number(s)	**47-49**	**50-52**	**53-55**	**57-59**	**60-62**	**66-68**	**69-70**	**71-73**	**130-132**		
SVOC by GCMS											
Phenols											
2-Chlorophenol	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg
2-Methylphenol	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg
2-Nitrophenol	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg
2,4-Dichlorophenol	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg
2,4-Dimethylphenol	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg
2,4,5-Trichlorophenol	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg
2,4,6-Trichlorophenol	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg
4-Chloro-3-methylphenol	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg
4-Methylphenol	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg
4-Nitrophenol	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg
Pentachlorophenol	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg
Phenol	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg

All results expressed on a dry weight basis.

Date 19.08.2009

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ALcontrol Laboratories Analytical Services
Table Of Results

\# ISO 17025 accredited
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* Subcontracted test
» Shown on prev. report

Job Number: 09/08204/02/01 **Matrix:** SOLID
Client: RPS Consultants Ltd **Location:** SITTINGBOURNE
Client Ref. No.: JER4418 **Client Contact:** Adam Parker

Sample Identity	TP3	TP4	TP4	TP5	TP5	TP6	TP7	TP7	TP8	**Method Code**	**LoD/Units**
Depth (m)	0.10-0.50	0.00-0.50	1.00-1.50	0.00-0.50	2.00-2.35	0.50-1.00	0.20-0.60	1.60-2.00	0.4-0.7		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	15.07.09		
Sample Received Date	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	20.07.09		
Batch	2	2	2	2	2	2	2	2	4		
Sample Number(s)	**47-49**	**50-52**	**53-55**	**57-59**	**60-62**	**66-68**	**69-70**	**71-73**	**130-132**		
PAHs											
2-Chloronaphthalene	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg
2-Methylnaphthalene	-	-	230	-	-	<100	-	-	-	TM157	<100 ug/kg
Acenaphthene	-	-	<100	-	-	-	-	-	-	TM157	<100 ug/kg
Acenaphthylene	-	-	<100	-	-	-	-	-	-	TM157	<100 ug/kg
Anthracene	-	-	<100	-	-	-	-	-	-	TM157	<100 ug/kg
Benzo(a)anthracene	-	-	130	-	-	-	-	-	-	TM157	<100 ug/kg
Benzo(a)pyrene	-	-	<100	-	-	-	-	-	-	TM157	<100 ug/kg
Benzo(b)fluoranthene	-	-	<100	-	-	-	-	-	-	TM157	<100 ug/kg
Benzo(ghi)perylene	-	-	<100	-	-	-	-	-	-	TM157	<100 ug/kg
Benzo(k)fluoranthene	-	-	<100	-	-	-	-	-	-	TM157	<100 ug/kg
Chrysene	-	-	150	-	-	-	-	-	-	TM157	<100 ug/kg
Dibenzo(a,h)anthracene	-	-	<100	-	-	-	-	-	-	TM157	<100 ug/kg
Fluoranthene	-	-	390	-	-	-	-	-	-	TM157	<100 ug/kg
Fluorene	-	-	<100	-	-	-	-	-	-	TM157	<100 ug/kg
Indeno(1,2,3-cd)pyrene	-	-	<100	-	-	-	-	-	-	TM157	<100 ug/kg
Naphthalene	-	-	210	-	-	-	-	-	-	TM157	<100 ug/kg
Phenanthrene	-	-	340	-	-	-	-	-	-	TM157	<100 ug/kg
Pyrene	-	-	350	-	-	-	-	-	-	TM157	<100 ug/kg
Phthalates											
Bis(2-ethylhexyl) phthalate	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg
Butylbenzyl phthalate	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg
Di-n-butyl phthalate	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg
Di-n-Octyl phthalate	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg
Diethyl phthalate	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg
Dimethyl phthalate	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg
Other Semi-volatiles											
1,2-Dichlorobenzene	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg
1,2,4-Trichlorobenzene	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg

All results expressed on a dry weight basis.

Date 19.08.2009

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ALcontrol Laboratories Analytical Services
Table Of Results

\# ISO 17025 accredited
M MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 09/08204/02/01
Client: RPS Consultants Ltd
Client Ref. No.: JER4418
Matrix: SOLID
Location: SITTINGBOURNE
Client Contact: Adam Parker

Sample Identity	TP3	TP4	TP4	TP5	TP5	TP6	TP7	TP7	TP8	**Method Code**	**LoD/Units**
Depth (m)	0.10-0.50	0.00-0.50	1.00-1.50	0.00-0.50	2.00-2.35	0.50-1.00	0.20-0.60	1.60-2.00	0.4-0.7		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	15.07.09		
Sample Received Date	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	20.07.09		
Batch	2	2	2	2	2	2	2	2	4		
Sample Number(s)	**47-49**	**50-52**	**53-55**	**57-59**	**60-62**	**66-68**	**69-70**	**71-73**	**130-132**		
Other Semi-volatiles (cont)											
1,3-Dichlorobenzene	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg
1,4-Dichlorobenzene	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg
2-Nitroaniline	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg
2,4-Dinitrotoluene	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg
2,6-Dinitrotoluene	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg
3-Nitroaniline	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg
4-Bromophenylphenylether	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg
4-Chloroaniline	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg
4-Chlorophenylphenylether	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg
4-Nitroaniline	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg
Azobenzene	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg
Bis(2-chloroethoxy)methane	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg
Bis(2-chloroethyl)ether	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg
Carbazole	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg
Dibenzofuran	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg
Hexachlorobenzene	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg
Hexachlorobutadiene	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg
Hexachlorocyclopentadiene	-	-	<200	-	-	<200	-	-	-	TM157	<100 ug/kg
Hexachloroethane	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg
Isophorone	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg
N-nitrosodi-n-propylamine	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg
Nitrobenzene	-	-	<100	-	-	<100	-	-	-	TM157	<100 ug/kg

All results expressed on a dry weight basis.

Date 19.08.2009

Validated ☑

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ALcontrol Laboratories Analytical Services
Table Of Results

$^{\#}$ ISO 17025 accredited
^{M} MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 09/08204/02/01 **Matrix:** SOLID
Client: RPS Consultants Ltd **Location:** SITTINGBOURNE
Client Ref. No.: JER4418 **Client Contact:** Adam Parker

Sample Identity	TP3	TP4	TP4	TP5	TP5	TP6	TP7	TP7	TP8	**Method Code**	**LoD/Units**
Depth (m)	0.10-0.50	0.00-0.50	1.00-1.50	0.00-0.50	2.00-2.35	0.50-1.00	0.20-0.60	1.60-2.00	0.4-0.7		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	15.07.09		
Sample Received Date	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	20.07.09		
Batch	2	2	2	2	2	2	2	2	4		
Sample Number(s)	**47-49**	**50-52**	**53-55**	**57-59**	**60-62**	**66-68**	**69-70**	**71-73**	**130-132**		
Volatile Organic Compounds											
4-Bromofluorobenzene % Surrogate Recovery	-	-	NDP	-	-	NDP	-	-	-	TM116	%
Dibromofluoromethane % Surrogate Recovery	-	-	NDP	-	-	NDP	-	-	-	TM116	%
Toluene-d8 % Surrogate Recovery	-	-	NDP	-	-	NDP	-	-	-	TM116	%
Dichlorodifluoromethane	-	-	NDP	-	-	NDP	-	-	-	TM116$^{\#}$	<4 ug/kg
Chloromethane	-	-	NDP	-	-	NDP	-	-	-	TM116$^{\#}$	<7 ug/kg
Vinyl Chloride	-	-	NDP	-	-	NDP	-	-	-	TM116$^{\#}_{M}$	<10 ug/kg
Bromomethane	-	-	NDP	-	-	NDP	-	-	-	TM116	<13 ug/kg
Chloroethane	-	-	NDP	-	-	NDP	-	-	-	TM116$^{\#}$	<14 ug/kg
Trichlorofluoromethane	-	-	NDP	-	-	NDP	-	-	-	TM116$^{\#}_{M}$	<6 ug/kg
trans-1-2-Dichloroethene	-	-	NDP	-	-	NDP	-	-	-	TM116$^{\#}$	<11 ug/kg
Dichloromethane	-	-	NDP	-	-	NDP	-	-	-	TM116$^{\#}$	<10 ug/kg
Carbon Disulphide	-	-	NDP	-	-	NDP	-	-	-	TM116$^{\#}_{M}$	<7 ug/kg
1.1-Dichloroethene	-	-	NDP	-	-	NDP	-	-	-	TM116$^{\#}_{M}$	<10 ug/kg
1.1-Dichloroethane	-	-	NDP	-	-	NDP	-	-	-	TM116$^{\#}_{M}$	<8 ug/kg
Methyl Tertiary Butyl Ether	-	-	NDP	-	-	NDP	-	-	-	TM116	<11 ug/kg
cis-1-2-Dichloroethene	-	-	NDP	-	-	NDP	-	-	-	TM116$^{\#}_{M}$	<5 ug/kg
Bromochloromethane	-	-	NDP	-	-	NDP	-	-	-	TM116$^{\#}$	<14 ug/kg
Chloroform	-	-	NDP	-	-	NDP	-	-	-	TM116$^{\#}_{M}$	<8 ug/kg
2.2-Dichloropropane	-	-	NDP	-	-	NDP	-	-	-	TM116	<12 ug/kg
1.2-Dichloroethane	-	-	NDP	-	-	NDP	-	-	-	TM116$^{\#}$	<5 ug/kg
1.1.1-Trichloroethane	-	-	NDP	-	-	NDP	-	-	-	TM116$^{\#}_{M}$	<7 ug/kg
1.1-Dichloropropene	-	-	NDP	-	-	NDP	-	-	-	TM116$^{\#}_{M}$	<11 ug/kg
Benzene	-	-	NDP	-	-	NDP	-	-	-	TM116$^{\#}_{M}$	<9 ug/kg
Carbontetrachloride	-	-	NDP	-	-	NDP	-	-	-	TM116$^{\#}_{M}$	<14 ug/kg
Dibromomethane	-	-	NDP	-	-	NDP	-	-	-	TM116$^{\#}$	<9 ug/kg
1.2-Dichloropropane	-	-	NDP	-	-	NDP	-	-	-	TM116$^{\#}_{M}$	<12 ug/kg
Bromodichloromethane	-	-	NDP	-	-	NDP	-	-	-	TM116$^{\#}_{M}$	<7 ug/kg
Trichloroethene	-	-	NDP	-	-	NDP	-	-	-	TM116$^{\#}_{M}$	<9 ug/kg
cis-1-3-Dichloropropene	-	-	NDP	-	-	NDP	-	-	-	TM116$^{\#}_{M}$	<14 ug/kg
trans-1-3-Dichloropropene	-	-	NDP	-	-	NDP	-	-	-	TM116$^{\#}_{M}$	<14 ug/kg

All results expressed on a dry weight basis.

Date 19.08.2009

Validated ☑

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ALcontrol Laboratories Analytical Services
Table Of Results

ISO 17025 accredited
M MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 09/08204/02/01
Matrix: SOLID
Client: RPS Consultants Ltd
Location: SITTINGBOURNE
Client Ref. No.: JER4418
Client Contact: Adam Parker

Sample Identity	TP3	TP4	TP4	TP5	TP5	TP6	TP7	TP7	TP8	**Method Code**	**LoD/Units**
Depth (m)	0.10-0.50	0.00-0.50	1.00-1.50	0.00-0.50	2.00-2.35	0.50-1.00	0.20-0.60	1.60-2.00	0.4-0.7		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	15.07.09		
Sample Received Date	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	20.07.09		
Batch	2	2	2	2	2	2	2	2	4		
Sample Number(s)	**47-49**	**50-52**	**53-55**	**57-59**	**60-62**	**66-68**	**69-70**	**71-73**	**130-132**		
Volatile Organic Compounds (cont)											
1.1.2-Trichloroethane	-	-	NDP	-	-	NDP	-	-	-	TM116#	<10 ug/kg
Toluene	-	-	NDP	-	-	NDP	-	-	-	TM116#M	<5 ug/kg
1.3-Dichloropropane	-	-	NDP	-	-	NDP	-	-	-	TM116#	<7 ug/kg
Dibromochloromethane	-	-	NDP	-	-	NDP	-	-	-	TM116#	<13 ug/kg
1.2-Dibromoethane	-	-	NDP	-	-	NDP	-	-	-	TM116#	<12 ug/kg
Tetrachloroethene	-	-	NDP	-	-	NDP	-	-	-	TM116#	<5 ug/kg
1.1.1.2-Tetrachloroethane	-	-	NDP	-	-	NDP	-	-	-	TM116#M	<10 ug/kg
Chlorobenzene	-	-	NDP	-	-	NDP	-	-	-	TM116#M	<5 ug/kg
Ethylbenzene	-	-	NDP	-	-	NDP	-	-	-	TM116#	<4 ug/kg
p/m-Xylene	-	-	NDP	-	-	NDP	-	-	-	TM116#	<14 ug/kg
Bromoform	-	-	NDP	-	-	NDP	-	-	-	TM116#	<10 ug/kg
Styrene	-	-	NDP	-	-	NDP	-	-	-	TM116#	<10 ug/kg
1.1.2.2-Tetrachloroethane	-	-	NDP	-	-	NDP	-	-	-	TM116#	<10 ug/kg
o-Xylene	-	-	NDP	-	-	NDP	-	-	-	TM116#	<10 ug/kg
1.2.3-Trichloropropane	-	-	NDP	-	-	NDP	-	-	-	TM116#	<17 ug/kg
Isopropylbenzene	-	-	NDP	-	-	NDP	-	-	-	TM116#	<5 ug/kg
Bromobenzene	-	-	NDP	-	-	NDP	-	-	-	TM116#M	<10 ug/kg
2-Chlorotoluene	-	-	NDP	-	-	NDP	-	-	-	TM116#	<9 ug/kg
Propylbenzene	-	-	NDP	-	-	NDP	-	-	-	TM116#	<11 ug/kg
4-Chlorotoluene	-	-	NDP	-	-	NDP	-	-	-	TM116#	<12 ug/kg
1.2.4-Trimethylbenzene	-	-	NDP	-	-	NDP	-	-	-	TM116#	<9 ug/kg
4-Isopropyltoluene	-	-	NDP	-	-	NDP	-	-	-	TM116#	<11 ug/kg
1.3.5-Trimethylbenzene	-	-	NDP	-	-	NDP	-	-	-	TM116#	<8 ug/kg
1.2-Dichlorobenzene	-	-	NDP	-	-	NDP	-	-	-	TM116#M	<12 ug/kg
1.4-Dichlorobenzene	-	-	NDP	-	-	NDP	-	-	-	TM116#M	<5 ug/kg
sec-Butylbenzene	-	-	NDP	-	-	NDP	-	-	-	TM116#	<10 ug/kg
tert-Butylbenzene	-	-	NDP	-	-	NDP	-	-	-	TM116#	<12 ug/kg
1.3-Dichlorobenzene	-	-	NDP	-	-	NDP	-	-	-	TM116#	<6 ug/kg
n-Butylbenzene	-	-	NDP	-	-	NDP	-	-	-	TM116#	<10 ug/kg
1.2-Dibromo-3-chloropropane	-	-	NDP	-	-	NDP	-	-	-	TM116#	<14 ug/kg

All results expressed on a dry weight basis.

Date 19.08.2009

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ALcontrol Laboratories Analytical Services
Table Of Results

ISO 17025 accredited
M MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number:	09/08204/02/01	**Matrix:**	SOLID
Client:	RPS Consultants Ltd	**Location:**	SITTINGBOURNE
Client Ref. No.:	JER4418	**Client Contact:**	Adam Parker

Sample Identity	TP3	TP4	TP4	TP5	TP5	TP6	TP7	TP7	TP8	**Method Code**	**LoD/Units**
Depth (m)	0.10-0.50	0.00-0.50	1.00-1.50	0.00-0.50	2.00-2.35	0.50-1.00	0.20-0.60	1.60-2.00	0.4-0.7		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09	15.07.09		
Sample Received Date	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09	20.07.09		
Batch	2	2	2	2	2	2	2	2	4		
Sample Number(s)	**47-49**	**50-52**	**53-55**	**57-59**	**60-62**	**66-68**	**69-70**	**71-73**	**130-132**		
Volatile Organic Compounds (cont)											
1.2.4-Trichlorobenzene	-	-	NDP	-	-	NDP	-	-	-	TM116#	<6 ug/kg
Naphthalene	-	-	NDP	-	-	NDP	-	-	-	TM116#	<13 ug/kg
1.2.3-Trichlorobenzene	-	-	NDP	-	-	NDP	-	-	-	TM116#	<11 ug/kg
Hexachlorobutadiene	-	-	NDP	-	-	NDP	-	-	-	TM116#	<12 ug/kg

All results expressed on a dry weight basis.

Date 19.08.2009

Validated ☑
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ALcontrol Laboratories Analytical Services
Table Of Results

$^{\#}$ ISO 17025 accredited
^{M} MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 09/08204/02/01
Client: RPS Consultants Ltd
Client Ref. No.: JER4418

Matrix: SOLID
Location: SITTINGBOURNE
Client Contact: Adam Parker

Sample Identity	TP8	TP9	TP10	TP11	TP11	TP12	TP12	TP13	TP13	**Method Code**	**LoD/Units**
Depth (m)	1.2-1.6	1.00-2.00	0.5-1	0.50-1.50	2.50-3.00	0.5-1.0	1.5-2.0	0-1	2-2.5		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	15.07.09	14.07.09	15.07.09	14.07.09	14.07.09	15.07.09	15.07.09	15.07.09	15.07.09		
Sample Received Date	20.07.09	16.07.09	18.07.09	16.07.09	16.07.09	20.07.09	20.07.09	18.07.09	18.07.09		
Batch	4	2	3	2	2	4	4	3	3		
Sample Number(s)	**133-135**	**74-76**	**116-118**	**77-79**	**80-81**	**124-126**	**127-129**	**110-112**	**113-115**		
Total Sulphate	-	3500	2400	6000	-	2300	-	4100	-	TM129$^{\#}_{M}$	<100 mg/kg
Boron Water Soluble	-	5.6	<3.5	<3.5	-	<3.5	-	<3.5	-	TM129$^{\#}_{M}$	<3.5 mg/kg
Arsenic	-	11	29	10	-	8	-	14	-	TM129$^{\#}_{M}$	<3.0 mg/kg
Cadmium	-	0.5	0.8	0.4	-	0.2	-	0.5	-	TM129	<0.2 mg/kg
Chromium	-	21	50	37	-	25	-	22	-	TM129$^{\#}_{M}$	<4.5 mg/kg
Copper	-	310	360	66	-	27	-	74	-	TM129$^{\#}_{M}$	<6 mg/kg
Lead	-	87	96	240	-	45	-	180	-	TM129$^{\#}_{M}$	<2 mg/kg
Mercury	-	<0.4	<0.4	<0.4	-	<0.4	-	<0.4	-	TM129$^{\#}_{M}$	<0.4 mg/kg
Nickel	-	48	72	28	-	27	-	36	-	TM129$^{\#}_{M}$	<0.9 mg/kg
Selenium	-	<3	<3	<3	-	<3	-	<3	-	TM129$^{\#}_{M}$	<3 mg/kg
Zinc	-	240	580	290	-	94	-	220	-	TM129$^{\#}_{M}$	<2.5 mg/kg
Easily Liberated Sulphide	-	85	<15	<15	-	<15	-	<15	-	TM180$^{\#}$	<15 mg/kg
Hexavalent Chromium	-	<6.0	<6.0	<0.3	-	<0.3	-	<3.0	-	TM151$^{\#}$	<0.3 mg/kg
Phenols Monohydric	-	<0.15	<0.15	<0.15	-	<0.15	-	<0.15	-	TM062$^{\#}_{M}$	<0.15 mg/kg
Thiocyanate	-	3	<1	<1	-	<1	-	<1	-	TM153$^{\#}_{M}$	<1 mg/kg
Total Cyanide	-	4	<1	<1	-	<1	-	<1	-	TM153$^{\#}_{M}$	<1 mg/kg
Free Cyanide	-	1	<1	<1	-	<1	-	<1	-	TM153	<1 mg/kg
Asbestos Containing Material Screen	-	-	No ACM Detected	-	-	-	-	No ACM Detected	-	TM001	NONE
Fraction of Organic Carbon	-	-	-	-	-	-	-	-	-	TM132$^{\#}$	<0.002 NONE
pH Value	-	7.33	7.76	8.03	-	8.75	-	7.62	-	TM133$^{\#}_{M}$	<1.00 pH Units
Total Sulphur	-	0.55	0.17	0.26	-	0.10	-	0.28	-	TM132$^{\#}$	<0.01 %
Amosite (Brown) Asbestos	-	-	-	-	-	-	-	-	-	TM048$^{\#}$	NONE
Chrysotile (White) Asbestos	-	-	-	-	-	-	-	-	-	TM048$^{\#}$	NONE
Crocidolite (Blue) Asbestos	-	-	-	-	-	-	-	-	-	TM048$^{\#}$	NONE
Fibrous Tremolite	-	-	-	-	-	-	-	-	-	TM048$^{\#}$	NONE
Fibrous Anthophyllite	-	-	-	-	-	-	-	-	-	TM048$^{\#}$	NONE
Fibrous Actinolite	-	-	-	-	-	-	-	-	-	TM048$^{\#}$	NONE
Non-Asbestos Fibre	-	-	-	-	-	-	-	-	-	TM048$^{\#}$	NONE

All results expressed on a dry weight basis.

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ALcontrol Laboratories Analytical Services
Table Of Results

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* Subcontracted test
» Shown on prev. report

Job Number: 09/08204/02/01
Client: RPS Consultants Ltd
Client Ref. No.: JER4418

Matrix: SOLID
Location: SITTINGBOURNE
Client Contact: Adam Parker

Sample Identity	TP8	TP9	TP10	TP11	TP11	TP12	TP12	TP13	TP13	**Method Code**	**LoD/Units**
Depth (m)	1.2-1.6	1.00-2.00	0.5-1	0.50-1.50	2.50-3.00	0.5-1.0	1.5-2.0	0-1	2-2.5		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	15.07.09	14.07.09	15.07.09	14.07.09	14.07.09	15.07.09	15.07.09	15.07.09	15.07.09		
Sample Received Date	20.07.09	16.07.09	18.07.09	16.07.09	16.07.09	20.07.09	20.07.09	18.07.09	18.07.09		
Batch	4	2	3	2	2	4	4	3	3		
Sample Number(s)	**133-135**	**74-76**	**116-118**	**77-79**	**80-81**	**124-126**	**127-129**	**110-112**	**113-115**		
GRO Surrogate	13	16	33	-	-	-	-	-	-	TM089	%
GRO (C4-C12)	<10	<10	<10	-	-	-	-	-	-	TM089	<10 ug/kg
MTBE	<10	<10	<10	-	-	-	-	-	-	TM089$^{\#}$	<10 ug/kg
Benzene	<10	<10	<10	-	-	-	-	-	-	TM089$^{\#}_{M}$	<10 ug/kg
Toluene	<10	<10	<10	-	-	-	-	-	-	TM089$^{\#}_{M}$	<10 ug/kg
Ethyl benzene	<10	<10	<10	-	-	-	-	-	-	TM089$^{\#}_{M}$	<10 ug/kg
m & p Xylene	<10	<10	<10	-	-	-	-	-	-	TM089$^{\#}_{M}$	<10 ug/kg
o Xylene	<10	<10	<10	-	-	-	-	-	-	TM089$^{\#}_{M}$	<10 ug/kg
Aliphatics C5-C6	<10	<10	<10	-	-	-	-	-	-	TM089	<10 ug/kg
Aliphatics >C6-C8	<10	<10	<10	-	-	-	-	-	-	TM089	<10 ug/kg
Aliphatics >C8-C10	<10	<10	<10	-	-	-	-	-	-	TM089	<10 ug/kg
Aliphatics >C10-C12	<10	<10	<10	-	-	-	-	-	-	TM089	<10 ug/kg
Aliphatics >C12-C16	35000	160000	6100	-	-	-	-	-	-	TM173$^{\#}$	<100 ug/kg
Aliphatics >C16-C21	95000	510000	25000	-	-	-	-	-	-	TM173$^{\#}$	<100 ug/kg
Aliphatics >C21-C35	69000	1100000	300000	-	-	-	-	-	-	TM173$^{\#}$	<100 ug/kg
Total Aliphatics C5-C35	200000	1700000	330000	-	-	-	-	-	-	TM61/89	<100 ug/kg
Aromatics C6-C7	<10	<10	<10	-	-	-	-	-	-	TM089	<10 ug/kg
Aromatics >C7-C8	<10	<10	<10	-	-	-	-	-	-	TM089	<10 ug/kg
Aromatics >EC8-EC10	<10	<10	<10	-	-	-	-	-	-	TM089	<10 ug/kg
Aromatics >EC10-EC12	<10	<10	<10	-	-	-	-	-	-	TM089	<10 ug/kg
Aromatics >EC12-EC16	4700	6000	8400	-	-	-	-	-	-	TM173$^{\#}$	<100 ug/kg
Aromatics >EC16-EC21	130000	49000	24000	-	-	-	-	-	-	TM173$^{\#}$	<100 ug/kg
Aromatics >EC21-EC35	140000	470000	280000	-	-	-	-	-	-	TM173$^{\#}$	<100 ug/kg
Total Aromatics C6-C35	270000	530000	310000	-	-	-	-	-	-	TM61/89	<100 ug/kg
TPH (Aliphatics and Aromatics C5-C35)	470000	2300000	640000	-	-	-	-	-	-	TM61/89	<100 ug/kg

All results expressed on a dry weight basis.

Date 19.08.2009

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ALcontrol Laboratories Analytical Services
Table Of Results

\# ISO 17025 accredited
M MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 09/08204/02/01
Client: RPS Consultants Ltd
Client Ref. No.: JER4418

Matrix: SOLID
Location: SITTINGBOURNE
Client Contact: Adam Parker

Sample Identity	TP8	TP9	TP10	TP11	TP11	TP12	TP12	TP13	TP13	**Method Code**	**LoD/Units**
Depth (m)	1.2-1.6	1.00-2.00	0.5-1	0.50-1.50	2.50-3.00	0.5-1.0	1.5-2.0	0-1	2-2.5		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	15.07.09	14.07.09	15.07.09	14.07.09	14.07.09	15.07.09	15.07.09	15.07.09	15.07.09		
Sample Received Date	20.07.09	16.07.09	18.07.09	16.07.09	16.07.09	20.07.09	20.07.09	18.07.09	18.07.09		
Batch	4	2	3	2	2	4	4	3	3		
Sample Number(s)	**133-135**	**74-76**	**116-118**	**77-79**	**80-81**	**124-126**	**127-129**	**110-112**	**113-115**		
TPH C6-8	-	-	-	<10	<10	<10	<10	<10	<10	TM154	<10 mg/kg
TPH >C8-10	-	-	-	<10	<10	<10	<10	<10	<10	TM154	<10 mg/kg
TPH >C10-12	-	-	-	<10	<10	<10	<10	<10	<10	TM154	<10 mg/kg
TPH >C12-16	-	-	-	<10	<10	<10	24	<10	<10	TM154	<10 mg/kg
TPH >C16-21	-	-	-	59	<10	22	72	24	60	TM154	<10 mg/kg
TPH >C21-40	-	-	-	810	<10	400	1200	580	1400	TM154	<10 mg/kg
TPH C6-40	-	-	-	870	<10	420	1300	600	1400	TM154#	<10 mg/kg

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ALcontrol Laboratories Analytical Services
Table Of Results

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* Subcontracted test
» Shown on prev. report

Job Number: 09/08204/02/01
Matrix: SOLID
Client: RPS Consultants Ltd
Location: SITTINGBOURNE
Client Ref. No.: JER4418
Client Contact: Adam Parker

Sample Identity	TP8	TP9	TP10	TP11	TP11	TP12	TP12	TP13	TP13	**Method Code**	**LoD/Units**
Depth (m)	1.2-1.6	1.00-2.00	0.5-1	0.50-1.50	2.50-3.00	0.5-1.0	1.5-2.0	0-1	2-2.5		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	15.07.09	14.07.09	15.07.09	14.07.09	14.07.09	15.07.09	15.07.09	15.07.09	15.07.09		
Sample Received Date	20.07.09	16.07.09	18.07.09	16.07.09	16.07.09	20.07.09	20.07.09	18.07.09	18.07.09		
Batch	4	2	3	2	2	4	4	3	3		
Sample Number(s)	**133-135**	**74-76**	**116-118**	**77-79**	**80-81**	**124-126**	**127-129**	**110-112**	**113-115**		
PAH by GCMS											
Naphthalene-d8 -Surrogate Recovery	-	93	97	93	92	94	96	95	-	TM218$^{\#}_{M}$	%
Acenaphthene-d10 -Surrogate Recovery	-	93	97	96	95	95	97	91	-	TM218$^{\#}_{M}$	%
Phenanthrene-d10 -Surrogate Recovery	-	91	95	96	95	93	94	89	-	TM218$^{\#}_{M}$	%
Chrysene-d12 -Surrogate Recovery	-	86	91	94	92	97	97	81	-	TM218$^{\#}_{M}$	%
Perylene-d12 -Surrogate Recovery	-	90	95	100	100	100	100	81	-	TM218$^{\#}_{M}$	%
Naphthalene	-	340	130	100	<9	29	440	150	-	TM218$^{\#}_{M}$	<9 ug/kg
Acenaphthylene	-	34	35	87	<12	32	35	21	-	TM218$^{\#}_{M}$	<12 ug/kg
Acenaphthene	-	44	14	100	<8	15	38	23	-	TM218$^{\#}_{M}$	<8 ug/kg
Fluorene	-	71	18	110	<10	19	66	23	-	TM218$^{\#}_{M}$	<10 ug/kg
Phenanthrene	-	540	390	1500	<15	290	770	420	-	TM218$^{\#}_{M}$	<15 ug/kg
Anthracene	-	130	82	400	<16	85	140	59	-	TM218$^{\#}_{M}$	<16 ug/kg
Fluoranthene	-	360	580	2800	39	600	520	390	-	TM218$^{\#}_{M}$	<17 ug/kg
Pyrene	-	360	560	2400	36	500	450	350	-	TM218$^{\#}_{M}$	<15 ug/kg
Benz(a)anthracene	-	210	490	1400	18	440	330	230	-	TM218$^{\#}_{M}$	<14 ug/kg
Chrysene	-	200	420	1100	20	370	350	230	-	TM218$^{\#}_{M}$	<10 ug/kg
Benzo(b)fluoranthene	-	330	910	2000	37	550	380	400	-	TM218$^{\#}_{M}$	<15 ug/kg
Benzo(k)fluoranthene	-	110	270	740	<14	220	160	140	-	TM218$^{\#}_{M}$	<14 ug/kg
Benzo(a)pyrene	-	210	710	1600	30	540	330	250	-	TM218$^{\#}_{M}$	<15 ug/kg
Indeno(123cd)pyrene	-	140	450	880	<18	340	190	180	-	TM218$^{\#}_{M}$	<18 ug/kg
Dibenzo(ah)anthracene	-	54	130	260	<23	110	72	59	-	TM218$^{\#}_{M}$	<23 ug/kg
Benzo(ghi)perylene	-	200	550	1000	<24	410	270	240	-	TM218$^{\#}_{M}$	<24 ug/kg
PAH 16 Total	-	3300	5700	16000	180	4600	4500	3200	-	TM218$^{\#}_{M}$	<118 ug/kg

All results expressed on a dry weight basis.

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ALcontrol Laboratories Analytical Services
Table Of Results

ISO 17025 accredited
M MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 09/08204/02/01 **Matrix:** SOLID
Client: RPS Consultants Ltd **Location:** SITTINGBOURNE
Client Ref. No.: JER4418 **Client Contact:** Adam Parker

Sample Identity	TP8	TP9	TP10	TP11	TP11	TP12	TP12	TP13	TP13	**Method Code**	**LoD/Units**
Depth (m)	1.2-1.6	1.00-2.00	0.5-1	0.50-1.50	2.50-3.00	0.5-1.0	1.5-2.0	0-1	2-2.5		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	15.07.09	14.07.09	15.07.09	14.07.09	14.07.09	15.07.09	15.07.09	15.07.09	15.07.09		
Sample Received Date	20.07.09	16.07.09	18.07.09	16.07.09	16.07.09	20.07.09	20.07.09	18.07.09	18.07.09		
Batch	4	2	3	2	2	4	4	3	3		
Sample Number(s)	**133-135**	**74-76**	**116-118**	**77-79**	**80-81**	**124-126**	**127-129**	**110-112**	**113-115**		
SVOC by GCMS											
Phenols											
2-Chlorophenol	<100	<100	<100	-	-	-	-	-	-	TM157	<100 ug/kg
2-Methylphenol	<100	<100	<100	-	-	-	-	-	-	TM157	<100 ug/kg
2-Nitrophenol	<100	<100	<100	-	-	-	-	-	-	TM157	<100 ug/kg
2,4-Dichlorophenol	<100	<100	<100	-	-	-	-	-	-	TM157	<100 ug/kg
2,4-Dimethylphenol	<100	<100	<100	-	-	-	-	-	-	TM157	<100 ug/kg
2,4,5-Trichlorophenol	<100	<100	<100	-	-	-	-	-	-	TM157	<100 ug/kg
2,4,6-Trichlorophenol	<100	<100	<100	-	-	-	-	-	-	TM157	<100 ug/kg
4-Chloro-3-methylphenol	<100	<100	<100	-	-	-	-	-	-	TM157	<100 ug/kg
4-Methylphenol	300	<100	<100	-	-	-	-	-	-	TM157	<100 ug/kg
4-Nitrophenol	<100	<100	<100	-	-	-	-	-	-	TM157	<100 ug/kg
Pentachlorophenol	<100	<100	<100	-	-	-	-	-	-	TM157	<100 ug/kg
Phenol	<100	<100	<100	-	-	-	-	-	-	TM157	<100 ug/kg

All results expressed on a dry weight basis.

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ALcontrol Laboratories Analytical Services
Table Of Results

ISO 17025 accredited
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Job Number: 09/08204/02/01 **Matrix:** SOLID
Client: RPS Consultants Ltd **Location:** SITTINGBOURNE
Client Ref. No.: JER4418 **Client Contact:** Adam Parker

Sample Identity	TP8	TP9	TP10	TP11	TP11	TP12	TP12	TP13	TP13	**Method Code**	**LoD/Units**
Depth (m)	1.2-1.6	1.00-2.00	0.5-1	0.50-1.50	2.50-3.00	0.5-1.0	1.5-2.0	0-1	2-2.5		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	15.07.09	14.07.09	15.07.09	14.07.09	14.07.09	15.07.09	15.07.09	15.07.09	15.07.09		
Sample Received Date	20.07.09	16.07.09	18.07.09	16.07.09	16.07.09	20.07.09	20.07.09	18.07.09	18.07.09		
Batch	4	2	3	2	2	4	4	3	3		
Sample Number(s)	**133-135**	**74-76**	**116-118**	**77-79**	**80-81**	**124-126**	**127-129**	**110-112**	**113-115**		
PAHs											
2-Chloronaphthalene	<100	<100	<100	-	-	-	-	-	-	TM157	<100 ug/kg
2-Methylnaphthalene	530	500	320	-	-	-	-	-	-	TM157	<100 ug/kg
Acenaphthene	<100	-	-	-	-	-	-	-	-	TM157	<100 ug/kg
Acenaphthylene	<100	-	-	-	-	-	-	-	-	TM157	<100 ug/kg
Anthracene	130	-	-	-	-	-	-	-	-	TM157	<100 ug/kg
Benzo(a)anthracene	250	-	-	-	-	-	-	-	-	TM157	<100 ug/kg
Benzo(a)pyrene	230	-	-	-	-	-	-	-	-	TM157	<100 ug/kg
Benzo(b)fluoranthene	150	-	-	-	-	-	-	-	-	TM157	<100 ug/kg
Benzo(ghi)perylene	<100	-	-	-	-	-	-	-	-	TM157	<100 ug/kg
Benzo(k)fluoranthene	180	-	-	-	-	-	-	-	-	TM157	<100 ug/kg
Chrysene	290	-	-	-	-	-	-	-	-	TM157	<100 ug/kg
Dibenzo(a,h)anthracene	<100	-	-	-	-	-	-	-	-	TM157	<100 ug/kg
Fluoranthene	650	-	-	-	-	-	-	-	-	TM157	<100 ug/kg
Fluorene	<100	-	-	-	-	-	-	-	-	TM157	<100 ug/kg
Indeno(1,2,3-cd)pyrene	<100	-	-	-	-	-	-	-	-	TM157	<100 ug/kg
Naphthalene	420	-	-	-	-	-	-	-	-	TM157	<100 ug/kg
Phenanthrene	440	-	-	-	-	-	-	-	-	TM157	<100 ug/kg
Pyrene	700	-	-	-	-	-	-	-	-	TM157	<100 ug/kg
Phthalates											
Bis(2-ethylhexyl) phthalate	390	300	24000	-	-	-	-	-	-	TM157	<100 ug/kg
Butylbenzyl phthalate	180	<100	140	-	-	-	-	-	-	TM157	<100 ug/kg
Di-n-butyl phthalate	<100	<100	1300	-	-	-	-	-	-	TM157	<100 ug/kg
Di-n-Octyl phthalate	<100	<100	350	-	-	-	-	-	-	TM157	<100 ug/kg
Diethyl phthalate	<100	<100	<100	-	-	-	-	-	-	TM157	<100 ug/kg
Dimethyl phthalate	<100	<100	<100	-	-	-	-	-	-	TM157	<100 ug/kg
Other Semi-volatiles											
1,2-Dichlorobenzene	<100	<100	<100	-	-	-	-	-	-	TM157	<100 ug/kg
1,2,4-Trichlorobenzene	<100	<100	<100	-	-	-	-	-	-	TM157	<100 ug/kg

All results expressed on a dry weight basis.

Date 19.08.2009

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ALcontrol Laboratories Analytical Services
Table Of Results

ISO 17025 accredited
M MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 09/08204/02/01 **Matrix:** SOLID
Client: RPS Consultants Ltd **Location:** SITTINGBOURNE
Client Ref. No.: JER4418 **Client Contact:** Adam Parker

Sample Identity	TP8	TP9	TP10	TP11	TP11	TP12	TP12	TP13	TP13	**Method Code**	**LoD/Units**
Depth (m)	1.2-1.6	1.00-2.00	0.5-1	0.50-1.50	2.50-3.00	0.5-1.0	1.5-2.0	0-1	2-2.5		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	15.07.09	14.07.09	15.07.09	14.07.09	14.07.09	15.07.09	15.07.09	15.07.09	15.07.09		
Sample Received Date	20.07.09	16.07.09	18.07.09	16.07.09	16.07.09	20.07.09	20.07.09	18.07.09	18.07.09		
Batch	4	2	3	2	2	4	4	3	3		
Sample Number(s)	**133-135**	**74-76**	**116-118**	**77-79**	**80-81**	**124-126**	**127-129**	**110-112**	**113-115**		
Other Semi-volatiles (cont)											
1,3-Dichlorobenzene	<100	<100	<100	-	-	-	-	-	-	TM157	<100 ug/kg
1,4-Dichlorobenzene	<100	<100	<100	-	-	-	-	-	-	TM157	<100 ug/kg
2-Nitroaniline	<100	<100	<100	-	-	-	-	-	-	TM157	<100 ug/kg
2,4-Dinitrotoluene	<100	<100	<100	-	-	-	-	-	-	TM157	<100 ug/kg
2,6-Dinitrotoluene	<100	<100	<100	-	-	-	-	-	-	TM157	<100 ug/kg
3-Nitroaniline	<100	<100	<100	-	-	-	-	-	-	TM157	<100 ug/kg
4-Bromophenylphenylether	<100	<100	<100	-	-	-	-	-	-	TM157	<100 ug/kg
4-Chloroaniline	<100	<100	<100	-	-	-	-	-	-	TM157	<100 ug/kg
4-Chlorophenylphenylether	<100	<100	<100	-	-	-	-	-	-	TM157	<100 ug/kg
4-Nitroaniline	<100	<100	<100	-	-	-	-	-	-	TM157	<100 ug/kg
Azobenzene	420	<100	<100	-	-	-	-	-	-	TM157	<100 ug/kg
Bis(2-chloroethoxy)methane	<100	<100	<100	-	-	-	-	-	-	TM157	<100 ug/kg
Bis(2-chloroethyl)ether	<100	<100	<100	-	-	-	-	-	-	TM157	<100 ug/kg
Carbazole	<100	<100	<100	-	-	-	-	-	-	TM157	<100 ug/kg
Dibenzofuran	130	<100	<100	-	-	-	-	-	-	TM157	<100 ug/kg
Hexachlorobenzene	<100	<100	<100	-	-	-	-	-	-	TM157	<100 ug/kg
Hexachlorobutadiene	<100	<100	<100	-	-	-	-	-	-	TM157	<100 ug/kg
Hexachlorocyclopentadiene	<100	<100	<100	-	-	-	-	-	-	TM157	<100 ug/kg
Hexachloroethane	<100	<100	<100	-	-	-	-	-	-	TM157	<100 ug/kg
Isophorone	<100	<100	<100	-	-	-	-	-	-	TM157	<100 ug/kg
N-nitrosodi-n-propylamine	<100	<100	<100	-	-	-	-	-	-	TM157	<100 ug/kg
Nitrobenzene	<100	<100	<100	-	-	-	-	-	-	TM157	<100 ug/kg

All results expressed on a dry weight basis.

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ALcontrol Laboratories Analytical Services
Table Of Results

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^{M} MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 09/08204/02/01
Client: RPS Consultants Ltd
Client Ref. No.: JER4418
Matrix: SOLID
Location: SITTINGBOURNE
Client Contact: Adam Parker

Sample Identity	TP8	TP9	TP10	TP11	TP11	TP12	TP12	TP13	TP13	**Method Code**	**LoD/Units**
Depth (m)	1.2-1.6	1.00-2.00	0.5-1	0.50-1.50	2.50-3.00	0.5-1.0	1.5-2.0	0-1	2-2.5		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	15.07.09	14.07.09	15.07.09	14.07.09	14.07.09	15.07.09	15.07.09	15.07.09	15.07.09		
Sample Received Date	20.07.09	16.07.09	18.07.09	16.07.09	16.07.09	20.07.09	20.07.09	18.07.09	18.07.09		
Batch	4	2	3	2	2	4	4	3	3		
Sample Number(s)	**133-135**	**74-76**	**116-118**	**77-79**	**80-81**	**124-126**	**127-129**	**110-112**	**113-115**		
Volatile Organic Compounds											
4-Bromofluorobenzene % Surrogate Recovery	47	57	49	-	-	-	-	-	-	TM116	%
Dibromofluoromethane % Surrogate Recovery	88	83	76	-	-	-	-	-	-	TM116	%
Toluene-d8 % Surrogate Recovery	58	79	63	-	-	-	-	-	-	TM116	%
Dichlorodifluoromethane	<4	<4	<4	-	-	-	-	-	-	TM116$^{\#}$	<4 ug/kg
Chloromethane	<7	16	<7	-	-	-	-	-	-	TM116$^{\#}$	<7 ug/kg
Vinyl Chloride	<10	<10	<10	-	-	-	-	-	-	TM116$^{\#}_{M}$	<10 ug/kg
Bromomethane	<13	<13	<13	-	-	-	-	-	-	TM116	<13 ug/kg
Chloroethane	<14	<14	<14	-	-	-	-	-	-	TM116$^{\#}$	<14 ug/kg
Trichlorofluoromethane	<6	<6	<6	-	-	-	-	-	-	TM116$^{\#}_{M}$	<6 ug/kg
trans-1-2-Dichloroethene	<11	<11	<11	-	-	-	-	-	-	TM116$^{\#}$	<11 ug/kg
Dichloromethane	<10	<10	<10	-	-	-	-	-	-	TM116$^{\#}$	<10 ug/kg
Carbon Disulphide	12	23	<7	-	-	-	-	-	-	TM116$^{\#}_{M}$	<7 ug/kg
1.1-Dichloroethene	<10	<10	<10	-	-	-	-	-	-	TM116$^{\#}_{M}$	<10 ug/kg
1.1-Dichloroethane	<8	<8	<8	-	-	-	-	-	-	TM116$^{\#}_{M}$	<8 ug/kg
Methyl Tertiary Butyl Ether	<11	<11	<11	-	-	-	-	-	-	TM116	<11 ug/kg
cis-1-2-Dichloroethene	<5	<5	<5	-	-	-	-	-	-	TM116$^{\#}_{M}$	<5 ug/kg
Bromochloromethane	<14	<14	<14	-	-	-	-	-	-	TM116$^{\#}$	<14 ug/kg
Chloroform	<8	<8	<8	-	-	-	-	-	-	TM116$^{\#}_{M}$	<8 ug/kg
2.2-Dichloropropane	<12	<12	<12	-	-	-	-	-	-	TM116	<12 ug/kg
1.2-Dichloroethane	<5	<5	<5	-	-	-	-	-	-	TM116$^{\#}$	<5 ug/kg
1.1.1-Trichloroethane	<7	<7	<7	-	-	-	-	-	-	TM116$^{\#}_{M}$	<7 ug/kg
1.1-Dichloropropene	<11	<11	<11	-	-	-	-	-	-	TM116$^{\#}_{M}$	<11 ug/kg
Benzene	<9	<9	<9	-	-	-	-	-	-	TM116$^{\#}_{M}$	<9 ug/kg
Carbontetrachloride	<14	<14	<14	-	-	-	-	-	-	TM116$^{\#}_{M}$	<14 ug/kg
Dibromomethane	<9	<9	<9	-	-	-	-	-	-	TM116$^{\#}$	<9 ug/kg
1.2-Dichloropropane	<12	<12	<12	-	-	-	-	-	-	TM116$^{\#}_{M}$	<12 ug/kg
Bromodichloromethane	<7	<7	<7	-	-	-	-	-	-	TM116$^{\#}_{M}$	<7 ug/kg
Trichloroethene	<9	<9	<9	-	-	-	-	-	-	TM116$^{\#}_{M}$	<9 ug/kg
cis-1-3-Dichloropropene	<14	<14	<14	-	-	-	-	-	-	TM116$^{\#}_{M}$	<14 ug/kg
trans-1-3-Dichloropropene	<14	<14	<14	-	-	-	-	-	-	TM116$^{\#}_{M}$	<14 ug/kg

All results expressed on a dry weight basis.

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ALcontrol Laboratories Analytical Services
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* Subcontracted test
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Job Number: 09/08204/02/01 **Matrix:** SOLID
Client: RPS Consultants Ltd **Location:** SITTINGBOURNE
Client Ref. No.: JER4418 **Client Contact:** Adam Parker

Sample Identity	TP8	TP9	TP10	TP11	TP11	TP12	TP12	TP13	TP13	**Method Code**	**LoD/Units**
Depth (m)	1.2-1.6	1.00-2.00	0.5-1	0.50-1.50	2.50-3.00	0.5-1.0	1.5-2.0	0-1	2-2.5		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	15.07.09	14.07.09	15.07.09	14.07.09	14.07.09	15.07.09	15.07.09	15.07.09	15.07.09		
Sample Received Date	20.07.09	16.07.09	18.07.09	16.07.09	16.07.09	20.07.09	20.07.09	18.07.09	18.07.09		
Batch	4	2	3	2	2	4	4	3	3		
Sample Number(s)	**133-135**	**74-76**	**116-118**	**77-79**	**80-81**	**124-126**	**127-129**	**110-112**	**113-115**		
Volatile Organic Compounds (cont)											
1.1.2-Trichloroethane	<10	<10	<10	-	-	-	-	-	-	TM116$^{\#}$	<10 ug/kg
Toluene	<5	<5	<5	-	-	-	-	-	-	TM116$^{\#}_{M}$	<5 ug/kg
1.3-Dichloropropane	<7	<7	<7	-	-	-	-	-	-	TM116$^{\#}$	<7 ug/kg
Dibromochloromethane	<13	<13	<13	-	-	-	-	-	-	TM116$^{\#}$	<13 ug/kg
1.2-Dibromoethane	<12	<12	<12	-	-	-	-	-	-	TM116$^{\#}$	<12 ug/kg
Tetrachloroethene	<5	<5	<5	-	-	-	-	-	-	TM116$^{\#}$	<5 ug/kg
1.1.1.2-Tetrachloroethane	<10	<10	<10	-	-	-	-	-	-	TM116$^{\#}_{M}$	<10 ug/kg
Chlorobenzene	<5	<5	<5	-	-	-	-	-	-	TM116$^{\#}_{M}$	<5 ug/kg
Ethylbenzene	<4	<4	<4	-	-	-	-	-	-	TM116$^{\#}$	<4 ug/kg
p/m-Xylene	<14	<14	<14	-	-	-	-	-	-	TM116$^{\#}$	<14 ug/kg
Bromoform	<10	<10	<10	-	-	-	-	-	-	TM116$^{\#}$	<10 ug/kg
Styrene	<10	<10	<10	-	-	-	-	-	-	TM116$^{\#}$	<10 ug/kg
1.1.2.2-Tetrachloroethane	<10	<10	<10	-	-	-	-	-	-	TM116$^{\#}$	<10 ug/kg
o-Xylene	<10	<10	<10	-	-	-	-	-	-	TM116$^{\#}$	<10 ug/kg
1.2.3-Trichloropropane	<17	<17	<17	-	-	-	-	-	-	TM116$^{\#}$	<17 ug/kg
Isopropylbenzene	<5	<5	<5	-	-	-	-	-	-	TM116$^{\#}$	<5 ug/kg
Bromobenzene	<10	<10	<10	-	-	-	-	-	-	TM116$^{\#}_{M}$	<10 ug/kg
2-Chlorotoluene	<9	<9	<9	-	-	-	-	-	-	TM116$^{\#}$	<9 ug/kg
Propylbenzene	<11	<11	<11	-	-	-	-	-	-	TM116$^{\#}$	<11 ug/kg
4-Chlorotoluene	<12	<12	<12	-	-	-	-	-	-	TM116$^{\#}$	<12 ug/kg
1.2.4-Trimethylbenzene	<9	<9	<9	-	-	-	-	-	-	TM116$^{\#}$	<9 ug/kg
4-Isopropyltoluene	<11	<11	<11	-	-	-	-	-	-	TM116$^{\#}$	<11 ug/kg
1.3.5-Trimethylbenzene	<8	<8	<8	-	-	-	-	-	-	TM116$^{\#}$	<8 ug/kg
1.2-Dichlorobenzene	<12	<12	<12	-	-	-	-	-	-	TM116$^{\#}_{M}$	<12 ug/kg
1.4-Dichlorobenzene	<5	<5	<5	-	-	-	-	-	-	TM116$^{\#}_{M}$	<5 ug/kg
sec-Butylbenzene	<10	<10	<10	-	-	-	-	-	-	TM116$^{\#}$	<10 ug/kg
tert-Butylbenzene	<12	<12	<12	-	-	-	-	-	-	TM116$^{\#}$	<12 ug/kg
1.3-Dichlorobenzene	<6	<6	<6	-	-	-	-	-	-	TM116$^{\#}$	<6 ug/kg
n-Butylbenzene	<10	<10	<10	-	-	-	-	-	-	TM116$^{\#}$	<10 ug/kg
1.2-Dibromo-3-chloropropane	<14	<14	<14	-	-	-	-	-	-	TM116$^{\#}$	<14 ug/kg

All results expressed on a dry weight basis.

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ALcontrol Laboratories Analytical Services
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» Shown on prev. report

Job Number: 09/08204/02/01
Client: RPS Consultants Ltd
Client Ref. No.: JER4418

Matrix: SOLID
Location: SITTINGBOURNE
Client Contact: Adam Parker

Sample Identity	TP8	TP9	TP10	TP11	TP11	TP12	TP12	TP13	TP13	**Method Code**	**LoD/Units**
Depth (m)	1.2-1.6	1.00-2.00	0.5-1	0.50-1.50	2.50-3.00	0.5-1.0	1.5-2.0	0-1	2-2.5		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	15.07.09	14.07.09	15.07.09	14.07.09	14.07.09	15.07.09	15.07.09	15.07.09	15.07.09		
Sample Received Date	20.07.09	16.07.09	18.07.09	16.07.09	16.07.09	20.07.09	20.07.09	18.07.09	18.07.09		
Batch	4	2	3	2	2	4	4	3	3		
Sample Number(s)	**133-135**	**74-76**	**116-118**	**77-79**	**80-81**	**124-126**	**127-129**	**110-112**	**113-115**		
Volatile Organic Compounds (cont)											
1.2.4-Trichlorobenzene	<6	<6	<6	-	-	-	-	-	-	TM116#	<6 ug/kg
Naphthalene	<13	<13	<13	-	-	-	-	-	-	TM116#	<13 ug/kg
1.2.3-Trichlorobenzene	<11	<11	<11	-	-	-	-	-	-	TM116#	<11 ug/kg
Hexachlorobutadiene	<12	<12	<12	-	-	-	-	-	-	TM116#	<12 ug/kg

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ALcontrol Laboratories Analytical Services
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Job Number: 09/08204/02/01 **Matrix:** SOLID
Client: RPS Consultants Ltd **Location:** SITTINGBOURNE
Client Ref. No.: JER4418 **Client Contact:** Adam Parker

Sample Identity	TP14	TP15	WS2	WS2	WS2	WS3	WS3	WS3	WS4	**Method Code**	**LoD/Units**
Depth (m)	0.2-0.6	0.10-0.60	0.0-0.4	0.5-1.0	1.5-2.0	0.5-1.0	1.5-2.0	3.4-3.8	0.5-1.0		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	15.07.09	14.07.09	10.07.09	10.07.09	10.07.09	10.07.09	10.07.09	10.07.09	15.07.09		
Sample Received Date	18.07.09	16.07.09	11.07.09	11.07.09	11.07.09	11.07.09	11.07.09	11.07.09	20.07.09		
Batch	3	2	1	1	1	1	1	1	4		
Sample Number(s)	**119-121**	**82-84**	**13-15**	**16-18**	**19-21**	**22-24**	**25-27**	**28-30**	**136-138**		
Total Sulphate	3500	850	1500	4900	-	4800	-	-	700	TM129$^{\#}_{M}$	<100 mg/kg
Boron Water Soluble	<3.5	<3.5	<3.5	16	-	<3.5	-	-	<3.5	TM129$^{\#}_{M}$	<3.5 mg/kg
Arsenic	10	11	<3	36	-	5	-	-	55	TM129$^{\#}_{M}$	<3.0 mg/kg
Cadmium	0.5	0.2	<0.2	0.5	-	<0.2	-	-	0.4	TM129	<0.2 mg/kg
Chromium	41	26	8.5	27	-	12	-	-	17	TM129$^{\#}_{M}$	<4.5 mg/kg
Copper	53	18	<6	77	-	25	-	-	82	TM129$^{\#}_{M}$	<6 mg/kg
Lead	130	38	2	55	-	59	-	-	30	TM129$^{\#}_{M}$	<2 mg/kg
Mercury	<0.4	<0.4	<0.4	<0.4	-	<0.4	-	-	<0.4	TM129$^{\#}_{M}$	<0.4 mg/kg
Nickel	32	25	15	44	-	14	-	-	57	TM129$^{\#}_{M}$	<0.9 mg/kg
Selenium	<3	<3	<3	<3	-	<3	-	-	<3	TM129$^{\#}_{M}$	<3 mg/kg
Zinc	280	80	12	150	-	64	-	-	51	TM129$^{\#}_{M}$	<2.5 mg/kg
Easily Liberated Sulphide	<15	<15	<15	<15	-	<15	-	-	<15	TM180$^{\#}$	<15 mg/kg
Hexavalent Chromium	<0.3	<0.3	1.1	<0.3	-	<0.3	-	-	<0.3	TM151$^{\#}$	<0.3 mg/kg
Phenols Monohydric	<0.15	<0.15	<0.15	<0.15	-	<0.15	-	-	<0.15	TM062$^{\#}_{M}$	<0.15 mg/kg
Thiocyanate	<1	<1	<1	<1	-	<1	-	-	<1	TM153$^{\#}_{M}$	<1 mg/kg
Total Cyanide	<1	<1	<1	<1	-	<1	-	-	<1	TM153$^{\#}_{M}$	<1 mg/kg
Free Cyanide	1	<1	<1	<1	-	<1	-	-	<1	TM153	<1 mg/kg
Asbestos Containing Material Screen	-	-	-	-	-	-	-	-	-	TM001	NONE
Fraction of Organic Carbon	0.019	-	-	-	-	-	-	-	-	TM132$^{\#}$	<0.002 NONE
pH Value	8.10	8.36	9.09	7.68	-	8.86	-	-	7.55	TM133$^{\#}_{M}$	<1.00 pH Units
Total Sulphur	0.17	0.06	0.05	0.40	-	0.17	-	-	0.37	TM132$^{\#}$	<0.01 %
Amosite (Brown) Asbestos	-	-	-	-	-	-	-	-	-	TM048$^{\#}$	NONE
Chrysotile (White) Asbestos	-	-	-	-	-	-	-	-	-	TM048$^{\#}$	NONE
Crocidolite (Blue) Asbestos	-	-	-	-	-	-	-	-	-	TM048$^{\#}$	NONE
Fibrous Tremolite	-	-	-	-	-	-	-	-	-	TM048$^{\#}$	NONE
Fibrous Anthophyllite	-	-	-	-	-	-	-	-	-	TM048$^{\#}$	NONE
Fibrous Actinolite	-	-	-	-	-	-	-	-	-	TM048$^{\#}$	NONE
Non-Asbestos Fibre	-	-	-	-	-	-	-	-	-	TM048$^{\#}$	NONE

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Job Number: 09/08204/02/01 **Matrix:** SOLID
Client: RPS Consultants Ltd **Location:** SITTINGBOURNE
Client Ref. No.: JER4418 **Client Contact:** Adam Parker

Sample Identity	TP14	TP15	WS2	WS2	WS2	WS3	WS3	WS3	WS4	**Method Code**	**LoD/Units**
Depth (m)	0.2-0.6	0.10-0.60	0.0-0.4	0.5-1.0	1.5-2.0	0.5-1.0	1.5-2.0	3.4-3.8	0.5-1.0		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	15.07.09	14.07.09	10.07.09	10.07.09	10.07.09	10.07.09	10.07.09	10.07.09	15.07.09		
Sample Received Date	18.07.09	16.07.09	11.07.09	11.07.09	11.07.09	11.07.09	11.07.09	11.07.09	20.07.09		
Batch	3	2	1	1	1	1	1	1	4		
Sample Number(s)	**119-121**	**82-84**	**13-15**	**16-18**	**19-21**	**22-24**	**25-27**	**28-30**	**136-138**		
GRO Surrogate	-	53	-	-	-	-	-	-	-	TM089	%
GRO (C4-C12)	-	<10	-	-	-	-	-	-	-	TM089	<10 ug/kg
MTBE	-	<10	-	-	-	-	-	-	-	TM089#	<10 ug/kg
Benzene	-	<10	-	-	-	-	-	-	-	TM089#M	<10 ug/kg
Toluene	-	<10	-	-	-	-	-	-	-	TM089#M	<10 ug/kg
Ethyl benzene	-	<10	-	-	-	-	-	-	-	TM089#M	<10 ug/kg
m & p Xylene	-	<10	-	-	-	-	-	-	-	TM089#M	<10 ug/kg
o Xylene	-	<10	-	-	-	-	-	-	-	TM089#M	<10 ug/kg
Aliphatics C5-C6	-	<10	-	-	-	-	-	-	-	TM089	<10 ug/kg
Aliphatics >C6-C8	-	<10	-	-	-	-	-	-	-	TM089	<10 ug/kg
Aliphatics >C8-C10	-	<10	-	-	-	-	-	-	-	TM089	<10 ug/kg
Aliphatics >C10-C12	-	<10	-	-	-	-	-	-	-	TM089	<10 ug/kg
Aliphatics >C12-C16	-	1100	-	-	-	-	-	-	-	TM173#	<100 ug/kg
Aliphatics >C16-C21	-	2700	-	-	-	-	-	-	-	TM173#	<100 ug/kg
Aliphatics >C21-C35	-	8000	-	-	-	-	-	-	-	TM173#	<100 ug/kg
Total Aliphatics C5-C35	-	12000	-	-	-	-	-	-	-	TM61/89	<100 ug/kg
Aromatics C6-C7	-	<10	-	-	-	-	-	-	-	TM089	<10 ug/kg
Aromatics >C7-C8	-	<10	-	-	-	-	-	-	-	TM089	<10 ug/kg
Aromatics >EC8-EC10	-	<10	-	-	-	-	-	-	-	TM089	<10 ug/kg
Aromatics >EC10-EC12	-	<10	-	-	-	-	-	-	-	TM089	<10 ug/kg
Aromatics >EC12-EC16	-	110	-	-	-	-	-	-	-	TM173#	<100 ug/kg
Aromatics >EC16-EC21	-	1900	-	-	-	-	-	-	-	TM173#	<100 ug/kg
Aromatics >EC21-EC35	-	24000	-	-	-	-	-	-	-	TM173#	<100 ug/kg
Total Aromatics C6-C35	-	26000	-	-	-	-	-	-	-	TM61/89	<100 ug/kg
TPH (Aliphatics and Aromatics C5-C35)	-	38000	-	-	-	-	-	-	-	TM61/89	<100 ug/kg

All results expressed on a dry weight basis.

Date 19.08.2009

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ALcontrol Laboratories Analytical Services
Table Of Results

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* Subcontracted test
» Shown on prev. report

Job Number: 09/08204/02/01
Client: RPS Consultants Ltd
Client Ref. No.: JER4418

Matrix: SOLID
Location: SITTINGBOURNE
Client Contact: Adam Parker

Sample Identity	TP14	TP15	WS2	WS2	WS2	WS3	WS3	WS3	WS4	**Method Code**	**LoD/Units**
Depth (m)	0.2-0.6	0.10-0.60	0.0-0.4	0.5-1.0	1.5-2.0	0.5-1.0	1.5-2.0	3.4-3.8	0.5-1.0		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	15.07.09	14.07.09	10.07.09	10.07.09	10.07.09	10.07.09	10.07.09	10.07.09	15.07.09		
Sample Received Date	18.07.09	16.07.09	11.07.09	11.07.09	11.07.09	11.07.09	11.07.09	11.07.09	20.07.09		
Batch	3	2	1	1	1	1	1	1	4		
Sample Number(s)	**119-121**	**82-84**	**13-15**	**16-18**	**19-21**	**22-24**	**25-27**	**28-30**	**136-138**		
TPH C6-8	<10	-	<10	<10	<10	<10	<10	<10	<10	TM154	<10 mg/kg
TPH >C8-10	<10	-	<10	14	<10	<10	<10	<10	<10	TM154	<10 mg/kg
TPH >C10-12	<10	-	<10	<10	<10	<10	<10	<10	<10	TM154	<10 mg/kg
TPH >C12-16	<10	-	<10	43	<10	<10	27	<10	<10	TM154	<10 mg/kg
TPH >C16-21	15	-	<10	80	40	76	58	<10	29	TM154	<10 mg/kg
TPH >C21-40	440	-	12	410	240	480	410	<10	290	TM154	<10 mg/kg
TPH C6-40	460	-	12	560	290	560	500	<10	330	TM154#	<10 mg/kg

All results expressed on a dry weight basis.

Date 19.08.2009

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ALcontrol Laboratories Analytical Services
Table Of Results

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Job Number: 09/08204/02/01
Client: RPS Consultants Ltd
Client Ref. No.: JER4418

Matrix: SOLID
Location: SITTINGBOURNE
Client Contact: Adam Parker

Sample Identity	TP14	TP15	WS2	WS2	WS2	WS3	WS3	WS3	WS4	**Method Code**	**LoD/Units**
Depth (m)	0.2-0.6	0.10-0.60	0.0-0.4	0.5-1.0	1.5-2.0	0.5-1.0	1.5-2.0	3.4-3.8	0.5-1.0		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	15.07.09	14.07.09	10.07.09	10.07.09	10.07.09	10.07.09	10.07.09	10.07.09	15.07.09		
Sample Received Date	18.07.09	16.07.09	11.07.09	11.07.09	11.07.09	11.07.09	11.07.09	11.07.09	20.07.09		
Batch	3	2	1	1	1	1	1	1	4		
Sample Number(s)	**119-121**	**82-84**	**13-15**	**16-18**	**19-21**	**22-24**	**25-27**	**28-30**	**136-138**		
PAH by GCMS											
Naphthalene-d8 -Surrogate Recovery	93	93	96	92	89	92	84	85	94	TM218$^{\#}_{M}$	%
Acenaphthene-d10 -Surrogate Recovery	96	93	95	93	89	92	83	84	90	TM218$^{\#}_{M}$	%
Phenanthrene-d10 -Surrogate Recovery	95	92	93	89	66	92	83	83	73	TM218$^{\#}_{M}$	%
Chrysene-d12 -Surrogate Recovery	93	86	87	78	20	95	84	84	43	TM218$^{\#}_{M}$	%
Perylene-d12 -Surrogate Recovery	100	92	90	74	9.5	100	86	88	27	TM218$^{\#}_{M}$	%
Naphthalene	42	<9	<9	1000	54	62	99	<9	6200	TM218$^{\#}_{M}$	<9 ug/kg
Acenaphthylene	67	<12	<12	42	<12	450	<12	<12	1600	TM218$^{\#}_{M}$	<12 ug/kg
Acenaphthene	120	<8	<8	59	<8	90	15	<8	81	TM218$^{\#}_{M}$	<8 ug/kg
Fluorene	170	<10	<10	140	<10	430	27	<10	310	TM218$^{\#}_{M}$	<10 ug/kg
Phenanthrene	2200	51	<15	1200	85	5200	250	23	1100	TM218$^{\#}_{M}$	<15 ug/kg
Anthracene	590	<16	<16	170	<16	810	41	<16	200	TM218$^{\#}_{M}$	<16 ug/kg
Fluoranthene	2300	160	<17	430	31	6600	170	<17	350	TM218$^{\#}_{M}$	<17 ug/kg
Pyrene	1800	140	<15	410	29	5200	150	<15	530	TM218$^{\#}_{M}$	<15 ug/kg
Benz(a)anthracene	890	90	<14	270	<14	2900	140	26	120	TM218$^{\#}_{M}$	<14 ug/kg
Chrysene	730	61	<10	220	<10	2100	110	24	100	TM218$^{\#}_{M}$	<10 ug/kg
Benzo(b)fluoranthene	1100	100	<15	300	<15	3700	140	25	84	TM218$^{\#}_{M}$	<15 ug/kg
Benzo(k)fluoranthene	420	43	<14	84	<14	1200	46	<14	32	TM218$^{\#}_{M}$	<14 ug/kg
Benzo(a)pyrene	940	78	<15	180	<15	3000	92	19	84	TM218$^{\#}_{M}$	<15 ug/kg
Indeno(123cd)pyrene	510	55	<18	93	<18	1500	45	<18	31	TM218$^{\#}_{M}$	<18 ug/kg
Dibenzo(ah)anthracene	140	<23	<23	49	<23	380	<23	<23	<23	TM218$^{\#}_{M}$	<23 ug/kg
Benzo(ghi)perylene	580	61	<24	210	<24	1600	74	<24	69	TM218$^{\#}_{M}$	<24 ug/kg
PAH 16 Total	13000	830	<118	4900	200	35000	1400	<118	11000	TM218$^{\#}_{M}$	<118 ug/kg

All results expressed on a dry weight basis.

Date 19.08.2009

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ALcontrol Laboratories Analytical Services
Table Of Results

ISO 17025 accredited
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* Subcontracted test
» Shown on prev. report

Job Number:	09/08204/02/01	**Matrix:**	SOLID
Client:	RPS Consultants Ltd	**Location:**	SITTINGBOURNE
Client Ref. No.:	JER4418	**Client Contact:**	Adam Parker

Sample Identity	TP14	TP15	WS2	WS2	WS2	WS3	WS3	WS3	WS4	**Method Code**	**LoD/Units**
Depth (m)	0.2-0.6	0.10-0.60	0.0-0.4	0.5-1.0	1.5-2.0	0.5-1.0	1.5-2.0	3.4-3.8	0.5-1.0		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	15.07.09	14.07.09	10.07.09	10.07.09	10.07.09	10.07.09	10.07.09	10.07.09	15.07.09		
Sample Received Date	18.07.09	16.07.09	11.07.09	11.07.09	11.07.09	11.07.09	11.07.09	11.07.09	20.07.09		
Batch	3	2	1	1	1	1	1	1	4		
Sample Number(s)	**119-121**	**82-84**	**13-15**	**16-18**	**19-21**	**22-24**	**25-27**	**28-30**	**136-138**		
SVOC by GCMS											
Phenols											
2-Chlorophenol	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
2-Methylphenol	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
2-Nitrophenol	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
2,4-Dichlorophenol	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
2,4-Dimethylphenol	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
2,4,5-Trichlorophenol	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
2,4,6-Trichlorophenol	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
4-Chloro-3-methylphenol	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
4-Methylphenol	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
4-Nitrophenol	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
Pentachlorophenol	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
Phenol	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg

All results expressed on a dry weight basis.

Date 19.08.2009

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ALcontrol Laboratories Analytical Services
Table Of Results

$^{\#}$ ISO 17025 accredited
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* Subcontracted test
» Shown on prev. report

Job Number:	09/08204/02/01	**Matrix:**	SOLID
Client:	RPS Consultants Ltd	**Location:**	SITTINGBOURNE
Client Ref. No.:	JER4418	**Client Contact:**	Adam Parker

Sample Identity	TP14	TP15	WS2	WS2	WS2	WS3	WS3	WS3	WS4	**Method Code**	**LoD/Units**
Depth (m)	0.2-0.6	0.10-0.60	0.0-0.4	0.5-1.0	1.5-2.0	0.5-1.0	1.5-2.0	3.4-3.8	0.5-1.0		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	15.07.09	14.07.09	10.07.09	10.07.09	10.07.09	10.07.09	10.07.09	10.07.09	15.07.09		
Sample Received Date	18.07.09	16.07.09	11.07.09	11.07.09	11.07.09	11.07.09	11.07.09	11.07.09	20.07.09		
Batch	3	2	1	1	1	1	1	1	4		
Sample Number(s)	**119-121**	**82-84**	**13-15**	**16-18**	**19-21**	**22-24**	**25-27**	**28-30**	**136-138**		
PAHs											
2-Chloronaphthalene	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
2-Methylnaphthalene	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
Acenaphthene	-	-	-	-	-	-	-	-	-	TM157	<100 ug/kg
Acenaphthylene	-	-	-	-	-	-	-	-	-	TM157	<100 ug/kg
Anthracene	-	-	-	-	-	-	-	-	-	TM157	<100 ug/kg
Benzo(a)anthracene	-	-	-	-	-	-	-	-	-	TM157	<100 ug/kg
Benzo(a)pyrene	-	-	-	-	-	-	-	-	-	TM157	<100 ug/kg
Benzo(b)fluoranthene	-	-	-	-	-	-	-	-	-	TM157	<100 ug/kg
Benzo(ghi)perylene	-	-	-	-	-	-	-	-	-	TM157	<100 ug/kg
Benzo(k)fluoranthene	-	-	-	-	-	-	-	-	-	TM157	<100 ug/kg
Chrysene	-	-	-	-	-	-	-	-	-	TM157	<100 ug/kg
Dibenzo(a,h)anthracene	-	-	-	-	-	-	-	-	-	TM157	<100 ug/kg
Fluoranthene	-	-	-	-	-	-	-	-	-	TM157	<100 ug/kg
Fluorene	-	-	-	-	-	-	-	-	-	TM157	<100 ug/kg
Indeno(1,2,3-cd)pyrene	-	-	-	-	-	-	-	-	-	TM157	<100 ug/kg
Naphthalene	-	-	-	-	-	-	-	-	-	TM157	<100 ug/kg
Phenanthrene	-	-	-	-	-	-	-	-	-	TM157	<100 ug/kg
Pyrene	-	-	-	-	-	-	-	-	-	TM157	<100 ug/kg
Phthalates											
Bis(2-ethylhexyl) phthalate	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
Butylbenzyl phthalate	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
Di-n-butyl phthalate	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
Di-n-Octyl phthalate	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
Diethyl phthalate	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
Dimethyl phthalate	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
Other Semi-volatiles											
1,2-Dichlorobenzene	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
1,2,4-Trichlorobenzene	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg

All results expressed on a dry weight basis.

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ALcontrol Laboratories Analytical Services
Table Of Results

ISO 17025 accredited
M MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 09/08204/02/01
Matrix: SOLID
Client: RPS Consultants Ltd
Location: SITTINGBOURNE
Client Ref. No.: JER4418
Client Contact: Adam Parker

Sample Identity	TP14	TP15	WS2	WS2	WS2	WS3	WS3	WS3	WS4	**Method Code**	**LoD/Units**
Depth (m)	0.2-0.6	0.10-0.60	0.0-0.4	0.5-1.0	1.5-2.0	0.5-1.0	1.5-2.0	3.4-3.8	0.5-1.0		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	15.07.09	14.07.09	10.07.09	10.07.09	10.07.09	10.07.09	10.07.09	10.07.09	15.07.09		
Sample Received Date	18.07.09	16.07.09	11.07.09	11.07.09	11.07.09	11.07.09	11.07.09	11.07.09	20.07.09		
Batch	3	2	1	1	1	1	1	1	4		
Sample Number(s)	**119-121**	**82-84**	**13-15**	**16-18**	**19-21**	**22-24**	**25-27**	**28-30**	**136-138**		
Other Semi-volatiles (cont)											
1,3-Dichlorobenzene	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
1,4-Dichlorobenzene	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
2-Nitroaniline	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
2,4-Dinitrotoluene	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
2,6-Dinitrotoluene	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
3-Nitroaniline	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
4-Bromophenylphenylether	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
4-Chloroaniline	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
4-Chlorophenylphenylether	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
4-Nitroaniline	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
Azobenzene	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
Bis(2-chloroethoxy)methane	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
Bis(2-chloroethyl)ether	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
Carbazole	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
Dibenzofuran	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
Hexachlorobenzene	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
Hexachlorobutadiene	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
Hexachlorocyclopentadiene	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
Hexachloroethane	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
Isophorone	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
N-nitrosodi-n-propylamine	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg
Nitrobenzene	-	<100	-	-	-	-	-	-	-	TM157	<100 ug/kg

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ALcontrol Laboratories Analytical Services
Table Of Results

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Job Number: 09/08204/02/01
Client: RPS Consultants Ltd
Client Ref. No.: JER4418

Matrix: SOLID
Location: SITTINGBOURNE
Client Contact: Adam Parker

Sample Identity	TP14	TP15	WS2	WS2	WS2	WS3	WS3	WS3	WS4	**Method Code**	**LoD/Units**
Depth (m)	0.2-0.6	0.10-0.60	0.0-0.4	0.5-1.0	1.5-2.0	0.5-1.0	1.5-2.0	3.4-3.8	0.5-1.0		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	15.07.09	14.07.09	10.07.09	10.07.09	10.07.09	10.07.09	10.07.09	10.07.09	15.07.09		
Sample Received Date	18.07.09	16.07.09	11.07.09	11.07.09	11.07.09	11.07.09	11.07.09	11.07.09	20.07.09		
Batch	3	2	1	1	1	1	1	1	4		
Sample Number(s)	**119-121**	**82-84**	**13-15**	**16-18**	**19-21**	**22-24**	**25-27**	**28-30**	**136-138**		
Volatile Organic Compounds											
4-Bromofluorobenzene % Surrogate Recovery	-	52	-	-	-	-	-	-	-	TM116	%
Dibromofluoromethane % Surrogate Recovery	-	75	-	-	-	-	-	-	-	TM116	%
Toluene-d8 % Surrogate Recovery	-	74	-	-	-	-	-	-	-	TM116	%
Dichlorodifluoromethane	-	<4	-	-	-	-	-	-	-	TM116$^{\#}$	<4 ug/kg
Chloromethane	-	<7	-	-	-	-	-	-	-	TM116$^{\#}$	<7 ug/kg
Vinyl Chloride	-	<10	-	-	-	-	-	-	-	TM116$^{\#}_{M}$	<10 ug/kg
Bromomethane	-	<13	-	-	-	-	-	-	-	TM116	<13 ug/kg
Chloroethane	-	<14	-	-	-	-	-	-	-	TM116$^{\#}$	<14 ug/kg
Trichlorofluoromethane	-	<6	-	-	-	-	-	-	-	TM116$^{\#}_{M}$	<6 ug/kg
trans-1-2-Dichloroethene	-	<11	-	-	-	-	-	-	-	TM116$^{\#}$	<11 ug/kg
Dichloromethane	-	<10	-	-	-	-	-	-	-	TM116$^{\#}$	<10 ug/kg
Carbon Disulphide	-	<7	-	-	-	-	-	-	-	TM116$^{\#}_{M}$	<7 ug/kg
1.1-Dichloroethene	-	<10	-	-	-	-	-	-	-	TM116$^{\#}_{M}$	<10 ug/kg
1.1-Dichloroethane	-	<8	-	-	-	-	-	-	-	TM116$^{\#}_{M}$	<8 ug/kg
Methyl Tertiary Butyl Ether	-	<11	-	-	-	-	-	-	-	TM116	<11 ug/kg
cis-1-2-Dichloroethene	-	<5	-	-	-	-	-	-	-	TM116$^{\#}_{M}$	<5 ug/kg
Bromochloromethane	-	<14	-	-	-	-	-	-	-	TM116$^{\#}$	<14 ug/kg
Chloroform	-	<8	-	-	-	-	-	-	-	TM116$^{\#}_{M}$	<8 ug/kg
2.2-Dichloropropane	-	<12	-	-	-	-	-	-	-	TM116	<12 ug/kg
1.2-Dichloroethane	-	<5	-	-	-	-	-	-	-	TM116$^{\#}$	<5 ug/kg
1.1.1-Trichloroethane	-	<7	-	-	-	-	-	-	-	TM116$^{\#}_{M}$	<7 ug/kg
1.1-Dichloropropene	-	<11	-	-	-	-	-	-	-	TM116$^{\#}_{M}$	<11 ug/kg
Benzene	-	<9	-	-	-	-	-	-	-	TM116$^{\#}_{M}$	<9 ug/kg
Carbontetrachloride	-	<14	-	-	-	-	-	-	-	TM116$^{\#}_{M}$	<14 ug/kg
Dibromomethane	-	<9	-	-	-	-	-	-	-	TM116$^{\#}$	<9 ug/kg
1.2-Dichloropropane	-	<12	-	-	-	-	-	-	-	TM116$^{\#}_{M}$	<12 ug/kg
Bromodichloromethane	-	<7	-	-	-	-	-	-	-	TM116$^{\#}_{M}$	<7 ug/kg
Trichloroethene	-	<9	-	-	-	-	-	-	-	TM116$^{\#}_{M}$	<9 ug/kg
cis-1-3-Dichloropropene	-	<14	-	-	-	-	-	-	-	TM116$^{\#}_{M}$	<14 ug/kg
trans-1-3-Dichloropropene	-	<14	-	-	-	-	-	-	-	TM116$^{\#}_{M}$	<14 ug/kg

All results expressed on a dry weight basis.

Date 19.08.2009

Validated ☑

Preliminary ☐

ALcontrol Laboratories Analytical Services
Table Of Results

$^{\#}$ ISO 17025 accredited
^{M} MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 09/08204/02/01
Client: RPS Consultants Ltd
Client Ref. No.: JER4418

Matrix: SOLID
Location: SITTINGBOURNE
Client Contact: Adam Parker

Sample Identity	TP14	TP15	WS2	WS2	WS2	WS3	WS3	WS3	WS4	**Method Code**	**LoD/Units**
Depth (m)	0.2-0.6	0.10-0.60	0.0-0.4	0.5-1.0	1.5-2.0	0.5-1.0	1.5-2.0	3.4-3.8	0.5-1.0		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	15.07.09	14.07.09	10.07.09	10.07.09	10.07.09	10.07.09	10.07.09	10.07.09	15.07.09		
Sample Received Date	18.07.09	16.07.09	11.07.09	11.07.09	11.07.09	11.07.09	11.07.09	11.07.09	20.07.09		
Batch	3	2	1	1	1	1	1	1	4		
Sample Number(s)	**119-121**	**82-84**	**13-15**	**16-18**	**19-21**	**22-24**	**25-27**	**28-30**	**136-138**		
Volatile Organic Compounds (cont)											
1.1.2-Trichloroethane	-	<10	-	-	-	-	-	-	-	TM116$^{\#}$	<10 ug/kg
Toluene	-	<5	-	-	-	-	-	-	-	TM116$^{\#}_{M}$	<5 ug/kg
1.3-Dichloropropane	-	<7	-	-	-	-	-	-	-	TM116$^{\#}$	<7 ug/kg
Dibromochloromethane	-	<13	-	-	-	-	-	-	-	TM116$^{\#}$	<13 ug/kg
1.2-Dibromoethane	-	<12	-	-	-	-	-	-	-	TM116$^{\#}$	<12 ug/kg
Tetrachloroethene	-	<5	-	-	-	-	-	-	-	TM116$^{\#}$	<5 ug/kg
1.1.1.2-Tetrachloroethane	-	<10	-	-	-	-	-	-	-	TM116$^{\#}_{M}$	<10 ug/kg
Chlorobenzene	-	<5	-	-	-	-	-	-	-	TM116$^{\#}_{M}$	<5 ug/kg
Ethylbenzene	-	12	-	-	-	-	-	-	-	TM116$^{\#}$	<4 ug/kg
p/m-Xylene	-	<14	-	-	-	-	-	-	-	TM116$^{\#}$	<14 ug/kg
Bromoform	-	<10	-	-	-	-	-	-	-	TM116$^{\#}$	<10 ug/kg
Styrene	-	<10	-	-	-	-	-	-	-	TM116$^{\#}$	<10 ug/kg
1.1.2.2-Tetrachloroethane	-	<10	-	-	-	-	-	-	-	TM116$^{\#}$	<10 ug/kg
o-Xylene	-	<10	-	-	-	-	-	-	-	TM116$^{\#}$	<10 ug/kg
1.2.3-Trichloropropane	-	<17	-	-	-	-	-	-	-	TM116$^{\#}$	<17 ug/kg
Isopropylbenzene	-	<5	-	-	-	-	-	-	-	TM116$^{\#}$	<5 ug/kg
Bromobenzene	-	<10	-	-	-	-	-	-	-	TM116$^{\#}_{M}$	<10 ug/kg
2-Chlorotoluene	-	<9	-	-	-	-	-	-	-	TM116$^{\#}$	<9 ug/kg
Propylbenzene	-	<11	-	-	-	-	-	-	-	TM116$^{\#}$	<11 ug/kg
4-Chlorotoluene	-	<12	-	-	-	-	-	-	-	TM116$^{\#}$	<12 ug/kg
1.2.4-Trimethylbenzene	-	<9	-	-	-	-	-	-	-	TM116$^{\#}$	<9 ug/kg
4-Isopropyltoluene	-	<11	-	-	-	-	-	-	-	TM116$^{\#}$	<11 ug/kg
1.3.5-Trimethylbenzene	-	<8	-	-	-	-	-	-	-	TM116$^{\#}$	<8 ug/kg
1.2-Dichlorobenzene	-	<12	-	-	-	-	-	-	-	TM116$^{\#}_{M}$	<12 ug/kg
1.4-Dichlorobenzene	-	<5	-	-	-	-	-	-	-	TM116$^{\#}_{M}$	<5 ug/kg
sec-Butylbenzene	-	<10	-	-	-	-	-	-	-	TM116$^{\#}$	<10 ug/kg
tert-Butylbenzene	-	<12	-	-	-	-	-	-	-	TM116$^{\#}$	<12 ug/kg
1.3-Dichlorobenzene	-	<6	-	-	-	-	-	-	-	TM116$^{\#}$	<6 ug/kg
n-Butylbenzene	-	<10	-	-	-	-	-	-	-	TM116$^{\#}$	<10 ug/kg
1.2-Dibromo-3-chloropropane	-	<14	-	-	-	-	-	-	-	TM116$^{\#}$	<14 ug/kg

All results expressed on a dry weight basis.

Date 19.08.2009

Validated ☑

Preliminary ☐

ALcontrol Laboratories Analytical Services
Table Of Results

ISO 17025 accredited
M MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number:	09/08204/02/01	**Matrix:**	SOLID
Client:	RPS Consultants Ltd	**Location:**	SITTINGBOURNE
Client Ref. No.:	JER4418	**Client Contact:**	Adam Parker

Sample Identity	TP14	TP15	WS2	WS2	WS2	WS3	WS3	WS3	WS4	**Method Code**	**LoD/Units**
Depth (m)	0.2-0.6	0.10-0.60	0.0-0.4	0.5-1.0	1.5-2.0	0.5-1.0	1.5-2.0	3.4-3.8	0.5-1.0		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	15.07.09	14.07.09	10.07.09	10.07.09	10.07.09	10.07.09	10.07.09	10.07.09	15.07.09		
Sample Received Date	18.07.09	16.07.09	11.07.09	11.07.09	11.07.09	11.07.09	11.07.09	11.07.09	20.07.09		
Batch	3	2	1	1	1	1	1	1	4		
Sample Number(s)	**119-121**	**82-84**	**13-15**	**16-18**	**19-21**	**22-24**	**25-27**	**28-30**	**136-138**		
Volatile Organic Compounds (cont)											
1.2.4-Trichlorobenzene	-	<6	-	-	-	-	-	-	-	TM116#	<6 ug/kg
Naphthalene	-	<13	-	-	-	-	-	-	-	TM116#	<13 ug/kg
1.2.3-Trichlorobenzene	-	<11	-	-	-	-	-	-	-	TM116#	<11 ug/kg
Hexachlorobutadiene	-	<12	-	-	-	-	-	-	-	TM116#	<12 ug/kg

All results expressed on a dry weight basis.

Date 19.08.2009

Validated ☑

Preliminary ☐

ALcontrol Laboratories Analytical Services
Table Of Results

$^{\#}$ ISO 17025 accredited
^{M} MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 09/08204/02/01
Client: RPS Consultants Ltd
Client Ref. No.: JER4418

Matrix: SOLID
Location: SITTINGBOURNE
Client Contact: Adam Parker

Sample Identity	WS4	WS5	WS5	WS6	WS7	WS8				**Method Code**	**LoD/Units**
Depth (m)	1.6-1.9	0.00-1.00	1.00-2.00	0.00-1.00	0.50-1.00	0.80-1.20					
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID					
Sampled Date	15.07.09	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09					
Sample Received Date	20.07.09	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09					
Batch	4	2	2	2	2	2					
Sample Number(s)	**139-141**	**89-90**	**92-94**	**98-100**	**102**	**103,106-108**					
Total Sulphate	-	5200	-	2000	1100	-				TM129$^{\#}_{M}$	<100 mg/kg
Boron Water Soluble	-	<3.5	-	<3.5	<3.5	-				TM129$^{\#}_{M}$	<3.5 mg/kg
Arsenic	-	4	-	11	<3	-				TM129$^{\#}_{M}$	<3.0 mg/kg
Cadmium	-	0.3	-	0.3	0.2	-				TM129	<0.2 mg/kg
Chromium	-	11	-	27	7.9	-				TM129$^{\#}_{M}$	<4.5 mg/kg
Copper	-	16	-	67	<6	-				TM129$^{\#}_{M}$	<6 mg/kg
Lead	-	58	-	33	18	-				TM129$^{\#}_{M}$	<2 mg/kg
Mercury	-	<0.4	-	<0.4	<0.4	-				TM129$^{\#}_{M}$	<0.4 mg/kg
Nickel	-	12	-	30	12	-				TM129$^{\#}_{M}$	<0.9 mg/kg
Selenium	-	<3	-	<3	<3	-				TM129$^{\#}_{M}$	<3 mg/kg
Zinc	-	88	-	93	28	-				TM129$^{\#}_{M}$	<2.5 mg/kg
Easily Liberated Sulphide	-	<15	-	<15	<15	-				TM180$^{\#}$	<15 mg/kg
Hexavalent Chromium	-	<0.3	-	0.3	<0.3	-				TM151$^{\#}$	<0.3 mg/kg
Phenols Monohydric	-	<0.15	-	<0.15	<0.15	-				TM062$^{\#}_{M}$	<0.15 mg/kg
Thiocyanate	-	<1	-	<1	<1	-				TM153$^{\#}_{M}$	<1 mg/kg
Total Cyanide	-	<1	-	<1	<1	-				TM153$^{\#}_{M}$	<1 mg/kg
Free Cyanide	-	<1	-	<1	<1	-				TM153	<1 mg/kg
Asbestos Containing Material Screen	-	-	-	-	-	ACM Detected				TM001	NONE
Fraction of Organic Carbon	-	-	-	-	-	-				TM132$^{\#}$	<0.002 NONE
pH Value	-	8.51	-	8.02	9.07	-				TM133$^{\#}_{M}$	<1.00 pH Units
Total Sulphur	-	0.22	-	0.11	0.13	-				TM132$^{\#}$	<0.01 %
Amosite (Brown) Asbestos	-	-	-	-	-	Fibres Detected				TM048$^{\#}$	NONE
Chrysotile (White) Asbestos	-	-	-	-	-	No Fibres Detected				TM048$^{\#}$	NONE
Crocidolite (Blue) Asbestos	-	-	-	-	-	No Fibres Detected				TM048$^{\#}$	NONE
Fibrous Tremolite	-	-	-	-	-	No Fibres Detected				TM048$^{\#}$	NONE
Fibrous Anthophyllite	-	-	-	-	-	No Fibres Detected				TM048$^{\#}$	NONE
Fibrous Actinolite	-	-	-	-	-	No Fibres Detected				TM048$^{\#}$	NONE
Non-Asbestos Fibre	-	-	-	-	-	No Fibres Detected				TM048$^{\#}$	NONE

All results expressed on a dry weight basis.

Date 19.08.2009

Validated	☑
Preliminary	☐

ALcontrol Laboratories Analytical Services
Table Of Results

ISO 17025 accredited
M MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number:	09/08204/02/01	**Matrix:**	SOLID
Client:	RPS Consultants Ltd	**Location:**	SITTINGBOURNE
Client Ref. No.:	JER4418	**Client Contact:**	Adam Parker

Sample Identity	WS4	WS5	WS5	WS6	WS7	WS8				**Method Code**	**LoD/Units**
Depth (m)	1.6-1.9	0.00-1.00	1.00-2.00	0.00-1.00	0.50-1.00	0.80-1.20					
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID					
Sampled Date	15.07.09	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09					
Sample Received Date	20.07.09	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09					
Batch	4	2	2	2	2	2					
Sample Number(s)	**139-141**	**89-90**	**92-94**	**98-100**	**102**	**103,106-108**					
TPH C6-8	<10	<10	<10	<10	-	-				TM154	<10 mg/kg
TPH >C8-10	<10	<10	<10	<10	-	-				TM154	<10 mg/kg
TPH >C10-12	<10	<10	<10	<10	-	-				TM154	<10 mg/kg
TPH >C12-16	<10	17	17	<10	-	-				TM154	<10 mg/kg
TPH >C16-21	<10	130	57	65	-	-				TM154	<10 mg/kg
TPH >C21-40	190	1100	920	500	-	-				TM154	<10 mg/kg
TPH C6-40	210	1200	1000	580	-	-				TM154#	<10 mg/kg

All results expressed on a dry weight basis.

Date 19.08.2009

Validated ☑

Preliminary ☐

ALcontrol Laboratories Analytical Services
Table Of Results

$^{\#}$ ISO 17025 accredited
^{M} MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 09/08204/02/01
Client: RPS Consultants Ltd
Client Ref. No.: JER4418

Matrix: SOLID
Location: SITTINGBOURNE
Client Contact: Adam Parker

Sample Identity	WS4	WS5	WS5	WS6	WS7	WS8				**Method Code**	**LoD/Units**
Depth (m)	1.6-1.9	0.00-1.00	1.00-2.00	0.00-1.00	0.50-1.00	0.80-1.20					
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID					
Sampled Date	15.07.09	14.07.09	14.07.09	14.07.09	14.07.09	14.07.09					
Sample Received Date	20.07.09	16.07.09	16.07.09	16.07.09	16.07.09	16.07.09					
Batch	4	2	2	2	2	2					
Sample Number(s)	**139-141**	**89-90**	**92-94**	**98-100**	**102**	**103,106-108**					
PAH by GCMS											
Naphthalene-d8 -Surrogate Recovery	-	93	-	93	93	-				TM218$^{\#}_{M}$	%
Acenaphthene-d10 -Surrogate Recovery	-	91	-	91	93	-				TM218$^{\#}_{M}$	%
Phenanthrene-d10 -Surrogate Recovery	-	90	-	90	92	-				TM218$^{\#}_{M}$	%
Chrysene-d12 -Surrogate Recovery	-	94	-	93	91	-				TM218$^{\#}_{M}$	%
Perylene-d12 -Surrogate Recovery	-	98	-	97	95	-				TM218$^{\#}_{M}$	%
Naphthalene	-	150	-	140	170	-				TM218$^{\#}_{M}$	<9 ug/kg
Acenaphthylene	-	280	-	180	800	-				TM218$^{\#}_{M}$	<12 ug/kg
Acenaphthene	-	200	-	50	9500	-				TM218$^{\#}_{M}$	<8 ug/kg
Fluorene	-	200	-	76	6800	-				TM218$^{\#}_{M}$	<10 ug/kg
Phenanthrene	-	1700	-	540	69000	-				TM218$^{\#}_{M}$	<15 ug/kg
Anthracene	-	740	-	240	22000	-				TM218$^{\#}_{M}$	<16 ug/kg
Fluoranthene	-	4400	-	1500	87000	-				TM218$^{\#}_{M}$	<17 ug/kg
Pyrene	-	3900	-	1300	66000	-				TM218$^{\#}_{M}$	<15 ug/kg
Benz(a)anthracene	-	2500	-	1000	30000	-				TM218$^{\#}_{M}$	<14 ug/kg
Chrysene	-	2100	-	770	20000	-				TM218$^{\#}_{M}$	<10 ug/kg
Benzo(b)fluoranthene	-	2500	-	1300	29000	-				TM218$^{\#}_{M}$	<15 ug/kg
Benzo(k)fluoranthene	-	1300	-	560	11000	-				TM218$^{\#}_{M}$	<14 ug/kg
Benzo(a)pyrene	-	2900	-	1300	25000	-				TM218$^{\#}_{M}$	<15 ug/kg
Indeno(123cd)pyrene	-	1600	-	750	12000	-				TM218$^{\#}_{M}$	<18 ug/kg
Dibenzo(ah)anthracene	-	470	-	210	3200	-				TM218$^{\#}_{M}$	<23 ug/kg
Benzo(ghi)perylene	-	2000	-	910	13000	-				TM218$^{\#}_{M}$	<24 ug/kg
PAH 16 Total	-	27000	-	11000	400000	-				TM218$^{\#}_{M}$	<118 ug/kg

All results expressed on a dry weight basis.

Date 19.08.2009

ALcontrol Laboratories Analytical Services
Table Of Results - Appendix

Job Number: 09/08204/02/01
Client: RPS Consultants Ltd
Client Ref. No.: JER4418

Report Key :

Results expressed as (e.g.) 1.03E-07 is equivalent to $1.03x10^{-7}$

NDP	No Determination Possible	*	Subcontracted test
ACM	Asbestos Containing Materia	»	Result previously reported (Incremental reports only)
#	ISO 17025 accredited	M	MCERTS Accredited
		EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control.

Summary of Method Codes contained within report :

Method No.	Reference	Description	ISO 17025 Accredited	MCERTS Accredited	Wet/Dry Sample ¹	Surrogate Corrected
TM001	In - house Method	Screening of Soils for Fibres			WET	
TM048		Identification of Asbestos in Bulk Material	✓		WET	
TM062	MEWAM BOOK 124 1988.HMSO/ Method 17.7, Second Site property, March 2003	Determination of Phenolic compounds by HPLC with electro-chemical detection	✓	✓	WET	
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)			WET	
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)	✓		WET	
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)	✓	✓	WET	
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS			WET	
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS	✓		WET	
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS	✓	✓	WET	
TM129	Method 3120B, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 3050B	Determination of Metal Cations by IRIS Emission Spectrometer			DRY	
TM129	Method 3120B, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 3050B	Determination of Metal Cations by IRIS Emission Spectrometer	✓	✓	DRY	
TM132	In - house Method	ELTRA CS800 Operators Guide	✓		DRY	
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter	✓	✓	WET	
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser	✓		WET	

¹ Applies to Solid samples only. **DRY** indicates samples have been dried at 35°C. **NA** = not applicable.
WET indicates samples analysed as submitted.

ALcontrol Laboratories Analytical Services
Table Of Results - Appendix

Job Number: 09/08204/02/01
Client: RPS Consultants Ltd
Client Ref. No.: JER4418

Report Key :

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03x10^{-7}

NDP	No Determination Possible	*	Subcontracted test
ACM	Asbestos Containing Materia	»	Result previously reported (Incremental reports only)
#	ISO 17025 accredited	M	MCERTS Accredited
		EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control.

Summary of Method Codes contained within report :

Method No.	Reference	Description	ISO 17025 Accredited	MCERTS Accredited	Wet/Dry Sample [1]	Surrogate Corrected
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the "Skalar SANS+ System" Segmented Flow Analyser			WET	
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the "Skalar SANS+ System" Segmented Flow Analyser	✓	✓	WET	
TM154	In - house Method	Determination of Petroleum Hydrocarbons by EZ Flash GC-FID in the Carbon range C6- C40			WET	
TM154	In - house Method	Determination of Petroleum Hydrocarbons by EZ Flash GC-FID in the Carbon range C6- C40	✓		WET	
TM157		Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone			WET	
TM173		Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID	✓		DRY	
TM180	Sulphide in waters and waste waters 1991 ISBN 01 175 7186 SCA rec. 2007 (unpublished)'	The Determination Of Easily Liberated Sulphide In Soil Samples by Ion Selective Electrode Technique	✓		WET	
TM218		Microwave extraction - EPA method 3546	✓	✓	WET	
TM61/89		see TM061 and TM089 for details			WET	

[1] Applies to Solid samples only. **DRY** indicates samples have been dried at 35°C. **NA** = not applicable.
WET indicates samples analysed as submitted.

ALcontrol Laboratories Analytical Services
Table Of Results - Appendix

Job Number: 09/08204/02/01
Client: RPS Consultants Ltd
Client Ref. No.: JER4418

Summary of Coolbox temperatures

Batch No.	Coolbox Temperature (°C)
1	12.3
2	17.2
3	9.2
4	14.2

ALcontrol Laboratories Analytical Services
Sample Descriptions

Job Number: 09/08204/02/01
Client: RPS Consultants Ltd
Client Ref : JER4418

Grain sizes

<0.063mm	Very Fine
0.1mm - 0.063mm	Fine
0.1mm - 2mm	Medium
2mm - 10mm	Coarse
>10mm	Very Coarse

Sample Identity	Depth (m)	Colour	Grain Size	Description	Batch
TP9	1.00-2.00	Brown	0.1mm - 0.063mm	Silty Clay with some Stones	2
WS6	0.00-1.00	Light Grey	0.1mm - 0.063mm	Sandy Loam with some Stones	2

* These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials-whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.
Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.
¹ Sample Description supplied by client

Validated ☑
Preliminary ☐

ALcontrol Laboratories Analytical Services
Table Of Results

ISO 17025 accredited
M MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number:	09/08204/02/01	**Matrix:**	SOLID
Client:	RPS Consultants Ltd	**Location:**	SITTINGBOURNE
Client Ref. No.:	JER4418	**Client Contact:**	Adam Parker

Sample Identity	TP9	WS6								**Method Code**	**LoD/Units**
Depth (m)	1.00-2.00	0.00-1.00									
Sample Type	SOLID	SOLID									
Sampled Date	14.07.09	14.07.09									
Sample Received Date	16.07.09	16.07.09									
Batch	2	2									
Sample Number(s)	**74-76**	**98-100**									
Asbestos Containing Material Screen	No ACM Detected	No ACM Detected								TM001	NONE

All results expressed on a dry weight basis.

Date 02.09.2009

ALcontrol Laboratories Analytical Services
Table Of Results - Appendix

Job Number:	09/08204/02/01
Client:	RPS Consultants Ltd
Client Ref. No.:	JER4418

Report Key :

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03×10^{-7}

NDP	No Determination Possible	*	Subcontracted test
ACM	Asbestos Containing Materia	»	Result previously reported (Incremental reports only)
#	ISO 17025 accredited	M	MCERTS Accredited
		EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control.

Summary of Method Codes contained within report :

Method No.	Reference	Description	ISO 17025 Accredited	MCERTS Accredited	Wet/Dry Sample ¹	Surrogate Corrected
TM001	In - house Method	Screening of Soils for Fibres			WET	

¹ Applies to Solid samples only. **DRY** indicates samples have been dried at 35°C. **NA** = not applicable.
WET indicates samples analysed as submitted.

ALcontrol Laboratories Analytical Services
Table Of Results - Appendix

Job Number: 09/08204/02/01
Client: RPS Consultants Ltd
Client Ref. No.: JER4418

Summary of Coolbox temperatures

Batch No.	Coolbox Temperature (°C)
2	17.2

ALcontrol Laboratories

Unit 7-8, Hawarden Business Park
Off Manor Lane
Hawarden
Deeside
CH5 3US

Test Report

Report Number : **297**
Page : **1**
Of : **2**

Issue Date : **27/7/9**
Issued By : **Rhodri Williams**
Authorised Signatory : [redacted]
Print Name : **Rhodri Williams**
Position Held : **Asbestos Lab Supervisor**

Asbestos Fibre Identification

Project & sample number(s) 09/8204-56, 106
Project Co-ordinator Kim Harrison

Samples of materials referenced in this report have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005). The bulk samples examined have been removed during the documented in-house method for screening samples for the presence of Asbestos Containing Materials.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content.

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: -

Trace – Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in MDHS 100.

The identification of asbestos containing materials falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

UKAS
TESTING
1291
GROUP

Report Number 297

Page 2

Of 2

Analysis by **Rhodri Williams**

Date **27/7/9**

Sample ID	Chrysotile	Amosite	Crocidolite	Fibrous Anthophyllite	Fibrous Actinolite	Fibrous Tremolite	Other non-asbestos fibres *	Comments
09/8204-56	-	-	-	-	-	-	✓	
09/8204-106	-	✓	-	-	-	-	-	Unable to identify substrate

* - The identification of fibres other than asbestos falls outside the scope of accreditation.

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Appendix C

Laboratory Analytical Results for Groundwater

Validated ☑

Preliminary ☐

ALcontrol Laboratories Analytical Services
Table Of Results

ISO 17025 accredited
M MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 09/08204/02/01
Matrix: LIQUID
Client: RPS Consultants Ltd
Location: SITTINGBOURNE
Client Ref. No.: JER4418
Client Contact: Adam Parker

Sample Identity	BH 1	BH 2	BH 3	WS 1	WS 2	WS 3	WS 4	WS 5	WS 7	**Method Code**	**LoD/Units**
Depth (m)											
Sample Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID		
Sampled Date											
Sample Received Date	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09		
Batch	5	5	5	5	5	5	5	5	5		
Sample Number(s)	**142-148**	**149-155**	**156-162**	**163-169**	**170-176**	**177-180**	**181-187**	**188-194**	**195-201**		
Arsenic Dissolved (ICP-MS)	1.9	2.4	1.5	2.0	3.2	2.9	3.4	2.0	10	TM152#	<0.75 ug/l
Boron Dissolved (ICP-MS)	540	3100	110	5900	3100	580	1400	640	1400	TM152#	<20 ug/l
Cadmium Dissolved (ICP-MS)	0.46	<0.22	<0.22	0.67	<0.22	1.6	<0.22	<0.22	<0.22	TM152#	<0.22 ug/l
Chromium Dissolved (ICP-MS)	11	12	6	7	14	14	18	18	30	TM152#	<1 ug/l
Copper Dissolved (ICP-MS)	4.1	4.5	1.7	7.1	5.6	11	5.2	4.4	<1.6	TM152#	<1.6 ug/l
Lead Dissolved (ICP-MS)	0.5	0.4	<0.4	0.6	0.9	0.4	1.0	<0.4	0.6	TM152#	<0.4 ug/l
Nickel Dissolved (ICP-MS)	51	19	14	16	14	59	21	63	14	TM152#	<1.5 ug/l
Selenium Dissolved (ICP-MS)	5	6	4	4	7	3	4	<1	14	TM152#	<1 ug/l
Zinc Dissolved (ICP-MS)	460	43	150	7	6	68	6	39	<5	TM152#	<5 ug/l
Mercury Dissolved (CVAF)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	TM183#	<0.01 ug/l
Sulphate (soluble)	1700	1600	480	880	1500	730	1100	750	80	TM098#	<3 mg/l
Sulphide	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	TM101	<0.1 mg/l
Hexavalent Chromium	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	TM151#	<0.03 mg/l
Phenols Monohydric	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	TM062#	<0.01 mg/l
Thiocyanate	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	TM153#	<0.05 mg/l
Total Cyanide	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	TM153#	<0.05 mg/l
Free Cyanide	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	TM153	<0.05 mg/l
Free Sulphur	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	TM136	<0.05 mg/l
pH Value	7.52	7.73	8.05	7.60	7.56	7.61	7.38	7.30	7.45	TM133#	<1.00 pH Units

Date 17.08.2009

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ALcontrol Laboratories Analytical Services
Table Of Results

$^{\#}$ ISO 17025 accredited
^{M} MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 09/08204/02/01
Matrix: LIQUID
Client: RPS Consultants Ltd
Location: SITTINGBOURNE
Client Ref. No.: JER4418
Client Contact: Adam Parker

Sample Identity	BH 1	BH 2	BH 3	WS 1	WS 2	WS 3	WS 4	WS 5	WS 7	**Method Code**	**LoD/Units**
Depth (m)											
Sample Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID		
Sampled Date											
Sample Received Date	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09		
Batch	5	5	5	5	5	5	5	5	5		
Sample Number(s)	**142-148**	**149-155**	**156-162**	**163-169**	**170-176**	**177-180**	**181-187**	**188-194**	**195-201**		
GRO Surrogate	97	97	96	100	100	110	110	110	81	TM089	%
GRO (C4-C12)	<10	<10	<10	<10	<10	<10	<10	<10	<10	TM089$^{\#}$	<10 ug/l
MTBE	<10	<10	<10	<10	<10	<10	<10	<10	<10	TM089$^{\#}$	<10 ug/l
Benzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	TM089$^{\#}$	<10 ug/l
Toluene	<10	<10	<10	<10	<10	<10	<10	<10	<10	TM089$^{\#}$	<10 ug/l
Ethyl benzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	TM089$^{\#}$	<10 ug/l
m & p Xylene	<10	<10	<10	<10	<10	<10	<10	<10	<10	TM089$^{\#}$	<10 ug/l
o Xylene	<10	<10	<10	<10	<10	<10	<10	<10	<10	TM089$^{\#}$	<10 ug/l
Aliphatics C5-C6	<10	<10	<10	<10	<10	<10	<10	<10	<10	TM089	<10 ug/l
Aliphatics >C6-C8	<10	<10	<10	<10	<10	<10	<10	<10	<10	TM089	<10 ug/l
Aliphatics >C8-C10	<10	<10	<10	<10	<10	<10	<10	<10	<10	TM089	<10 ug/l
Aliphatics >C10-C12	<10	<10	<10	<10	<10	<10	<10	<10	<10	TM089	<10 ug/l
Aliphatics >C12-C16 Aqueous	<10	<10	<10	<10	<10	<10	<10	<10	<10	TM174	<10 ug/l
Aliphatics >C16-C21 Aqueous	<10	<10	<10	<10	<10	140	<10	<10	<10	TM174	<10 ug/l
Aliphatics >C21-C35 Aqueous	<10	<10	<10	<10	<10	1800	<10	<10	<10	TM174	<10 ug/l
Total Aliphatics C5-C35 Aqueous	<10	<10	<10	<10	<10	1900	<10	<10	<10	TM61/89	<10 ug/l
Aromatics C6-C7	<10	<10	<10	<10	<10	<10	<10	<10	<10	TM089$^{\#}$	<10 ug/l
Aromatics >C7-C8	<10	<10	<10	<10	<10	<10	<10	<10	<10	TM089$^{\#}$	<10 ug/l
Aromatics >EC8-EC10	<10	<10	<10	<10	<10	<10	<10	<10	<10	TM089	<10 ug/l
Aromatics >EC10-EC12	<10	<10	<10	<10	<10	<10	<10	<10	<10	TM089	<10 ug/l
Aromatics >EC12-EC16 Aqueous	<10	<10	<10	<10	<10	<10	<10	<10	<10	TM174	<10 ug/l
Aromatics >EC16-EC21 Aqueous	<10	<10	<10	<10	<10	89	<10	<10	<10	TM174	<10 ug/l
Aromatics >EC21-EC35 Aqueous	<10	<10	<10	<10	<10	1300	<10	<10	<10	TM174	<10 ug/l
Total Aromatics C6-C35 Aqueous	<10	<10	<10	<10	<10	1400	<10	<10	<10	TM61/89	<10 ug/l
TPH (Aliphatics and Aromatics C5-C35) Aqueou	<10	<10	<10	<10	<10	3300	<10	<10	<10	TM61/89	<10 ug/l

Date 17.08.2009

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Preliminary ☐

ALcontrol Laboratories Analytical Services
Table Of Results

\# ISO 17025 accredited
M MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 09/08204/02/01
Client: RPS Consultants Ltd
Client Ref. No.: JER4418

Matrix: LIQUID
Location: SITTINGBOURNE
Client Contact: Adam Parker

Sample Identity	BH 1	BH 2	BH 3	WS 1	WS 2	WS 3	WS 4	WS 5	WS 7	**Method Code**	**LoD/Units**
Depth (m)											
Sample Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID		
Sampled Date											
Sample Received Date	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09		
Batch	5	5	5	5	5	5	5	5	5		
Sample Number(s)	**142-148**	**149-155**	**156-162**	**163-169**	**170-176**	**177-180**	**181-187**	**188-194**	**195-201**		
PAH by GCMS											
Naphthalene Aqueous	<100	<100	<100	<100	580	630	1100	<100	<100	TM178	<100 ng/l
Acenaphthylene Aqueous	<11	<11	<11	<11	20	40	40	<11	<11	TM178	<11 ng/l
Acenaphthene Aqueous	<15	<15	<15	<15	<15	60	<15	<15	58	TM178	<15 ng/l
Fluorene Aqueous	<14	<14	<14	<14	20	90	<14	20	59	TM178	<14 ng/l
Phenanthrene Aqueous	<22	<22	<22	30	<22	700	<22	170	340	TM178	<22 ng/l
Anthracene Aqueous	<15	<15	<15	<15	<15	100	<15	30	59	TM178	<15 ng/l
Fluoranthene Aqueous	<17	<17	<17	<17	<17	1300	<17	220	250	TM178	<17 ng/l
Pyrene Aqueous	<15	<15	<15	40	40	1200	30	560	410	TM178	<15 ng/l
Benz(a)anthracene Aqueous	<17	<17	<17	<17	<17	880	<17	20	43	TM178	<17 ng/l
Chrysene Aqueous	<13	<13	<13	<13	<13	870	<13	20	47	TM178	<13 ng/l
Benzo(b)fluoranthene Aqueous	<23	<23	<23	<23	<23	1500	<23	30	53	TM178	<23 ng/l
Benzo(k)fluoranthene Aqueous	<27	<27	<27	<27	<27	480	<27	<27	27	TM178	<27 ng/l
Benzo(a)pyrene Aqueous	<9	<9	<9	<9	<9	1500	<9	30	41	TM178	<9 ng/l
Indeno(123cd)pyrene Aqueous	<14	<14	<14	<14	<14	870	<14	20	23	TM178	<14 ng/l
Dibenzo(ah)anthracene Aqueous	<16	<16	<16	<16	<16	400	<16	<16	<16	TM178	<16 ng/l
Benzo(ghi)perylene Aqueous	<16	<16	<16	<16	<16	1600	<16	80	41	TM178	<16 ng/l
PAH 16 Total Aqueous	<100	<100	<100	<100	660	12000	1200	1200	1400	TM178	<100 ng/l

Date 17.08.2009

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ALcontrol Laboratories Analytical Services
Table Of Results

ISO 17025 accredited
M MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 09/08204/02/01
Matrix: LIQUID
Client: RPS Consultants Ltd
Location: SITTINGBOURNE
Client Ref. No.: JER4418
Client Contact: Adam Parker

Sample Identity	BH 1	BH 2	BH 3	WS 1	WS 2	WS 3	WS 4	WS 5	WS 7	**Method Code**	**LoD/Units**
Depth (m)											
Sample Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID		
Sampled Date											
Sample Received Date	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09		
Batch	5	5	5	5	5	5	5	5	5		
Sample Number(s)	**142-148**	**149-155**	**156-162**	**163-169**	**170-176**	**177-180**	**181-187**	**188-194**	**195-201**		
SVOC by GCMS											
Phenols											
2-Chlorophenol	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l
2-Methylphenol	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l
2-Nitrophenol	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l
2,4-Dichlorophenol	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l
2,4-Dimethylphenol	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l
2,4,5-Trichlorophenol	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l
2,4,6-Trichlorophenol	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l
4-Chloro-3-methylphenol	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l
4-Methylphenol	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l
4-Nitrophenol	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l
Pentachlorophenol	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l
Phenol	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l

Date 17.08.2009

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ALcontrol Laboratories Analytical Services
Table Of Results

\# ISO 17025 accredited
M MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number:	09/08204/02/01	**Matrix:**	LIQUID
Client:	RPS Consultants Ltd	**Location:**	SITTINGBOURNE
Client Ref. No.:	JER4418	**Client Contact:**	Adam Parker

Sample Identity	BH 1	BH 2	BH 3	WS 1	WS 2	WS 3	WS 4	WS 5	WS 7	**Method Code**	**LoD/Units**
Depth (m)											
Sample Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID		
Sampled Date											
Sample Received Date	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09		
Batch	5	5	5	5	5	5	5	5	5		
Sample Number(s)	**142-148**	**149-155**	**156-162**	**163-169**	**170-176**	**177-180**	**181-187**	**188-194**	**195-201**		
PAHs											
2-Chloronaphthalene	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l
2-Methylnaphthalene	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l
Phthalates											
Bis(2-ethylhexyl) phthalate	<2	<2	<2	<2	<2	<2	<2	<2	<2	TM176	<2 ug/l
Butylbenzyl phthalate	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l
Di-n-butyl phthalate	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l
Di-n-Octyl phthalate	<5	<5	<5	<5	<5	<5	<5	<5	<5	TM176	<5 ug/l
Diethyl phthalate	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l
Dimethyl phthalate	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l
Other Semi-volatiles											
1,2-Dichlorobenzene	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l
1,2,4-Trichlorobenzene	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l
1,3-Dichlorobenzene	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l
1,4-Dichlorobenzene	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l
2-Nitroaniline	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l
2,4-Dinitrotoluene	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l
2,6-Dinitrotoluene	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l
3-Nitroaniline	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l
4-Bromophenylphenylether	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l
4-Chloroaniline	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l
4-Chlorophenylphenylether	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l
4-Nitroaniline	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l
Azobenzene	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l
Bis(2-chloroethoxy)methane	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l
Bis(2-chloroethyl)ether	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l
Carbazole	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l
Dibenzofuran	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l
Hexachlorobenzene	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l

Date 17.08.2009

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ALcontrol Laboratories Analytical Services
Table Of Results

\# ISO 17025 accredited
M MCERTS accredited
* Subcontracted test
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Job Number: 09/08204/02/01
Client: RPS Consultants Ltd
Client Ref. No.: JER4418

Matrix: LIQUID
Location: SITTINGBOURNE
Client Contact: Adam Parker

Sample Identity	BH 1	BH 2	BH 3	WS 1	WS 2	WS 3	WS 4	WS 5	WS 7	**Method Code**	**LoD/Units**
Depth (m)											
Sample Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID		
Sampled Date											
Sample Received Date	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09		
Batch	5	5	5	5	5	5	5	5	5		
Sample Number(s)	**142-148**	**149-155**	**156-162**	**163-169**	**170-176**	**177-180**	**181-187**	**188-194**	**195-201**		
Other Semi-volatiles (cont)											
Hexachlorobutadiene	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l
Hexachlorocyclopentadiene	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l
Hexachloroethane	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l
Isophorone	<4	<4	<4	<4	<4	<4	<4	<4	<4	TM176	<1 ug/l
N-nitrosodi-n-propylamine	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l
Nitrobenzene	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM176	<1 ug/l

Date 17.08.2009

Validated ☑

Preliminary ☐

ALcontrol Laboratories Analytical Services
Table Of Results

$^{\#}$ ISO 17025 accredited
^{M} MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 09/08204/02/01
Client: RPS Consultants Ltd
Client Ref. No.: JER4418

Matrix: LIQUID
Location: SITTINGBOURNE
Client Contact: Adam Parker

Sample Identity	BH 1	BH 2	BH 3	WS 1	WS 2	WS 3	WS 4	WS 5	WS 7	**Method Code**	**LoD/Units**
Depth (m)											
Sample Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID		
Sampled Date											
Sample Received Date	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09		
Batch	5	5	5	5	5	5	5	5	5		
Sample Number(s)	**142-148**	**149-155**	**156-162**	**163-169**	**170-176**	**177-180**	**181-187**	**188-194**	**195-201**		
Volatile Organic Compounds											
Dibromofluoromethane % Surrogate Recovery	110	110	110	110	110	110	110	110	110	TM208	%
Toluene-d8 % Surrogate Recovery	97	97	98	97	97	96	96	95	88	TM208	%
4-Bromofluorobenzene % Surrogate Recovery	96	96	96	95	97	93	96	86	66	TM208	%
Dichlorodifluoromethane	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM208$^{\#}$	<1 ug/l
Chloromethane	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM208$^{\#}$	<1 ug/l
Vinyl Chloride	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM208$^{\#}$	<1 ug/l
Bromomethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	TM208$^{\#}$	<2 ug/l
Chloroethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	TM208$^{\#}$	<2 ug/l
Trichlorofluoromethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	TM208$^{\#}$	<2 ug/l
trans-1-2-Dichloroethene	<2	<2	<2	<2	<2	<2	<2	<2	<2	TM208$^{\#}$	<2 ug/l
Dichloromethane	<3	<3	<3	<3	<3	<3	<3	<3	<3	TM208$^{\#}$	<3 ug/l
Carbon Disulphide	<2	<2	<2	<2	<2	<2	<2	<2	<2	TM208$^{\#}$	<2 ug/l
1.1-Dichloroethene	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM208$^{\#}$	<1 ug/l
1.1-Dichloroethane	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM208$^{\#}$	<1 ug/l
Methyl Tertiary Butyl Ether	<2	<2	<2	<2	3	<2	<2	<2	<2	TM208$^{\#}$	<2 ug/l
cis-1-2-Dichloroethene	<2	<2	<2	<2	<2	<2	<2	<2	<2	TM208$^{\#}$	<2 ug/l
Bromochloromethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	TM208$^{\#}$	<2 ug/l
Chloroform	<2	<2	<2	<2	<2	<2	<2	<2	<2	TM208$^{\#}$	<2 ug/l
2.2-Dichloropropane	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM208	<1 ug/l
1.2-Dichloroethane	<4	<4	<4	<4	<4	<4	<4	<4	<4	TM208$^{\#}$	<4 ug/l
1.1.1-Trichloroethane	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM208$^{\#}$	<1 ug/l
1.1-Dichloropropene	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM208$^{\#}$	<1 ug/l
Benzene	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM208$^{\#}$	<1 ug/l
Carbontetrachloride	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM208$^{\#}$	<1 ug/l
Dibromomethane	<3	<3	<3	<3	<3	<3	<3	<3	<3	TM208$^{\#}$	<3 ug/l
1.2-Dichloropropane	<3	<3	<3	<3	<3	<3	<3	<3	<3	TM208$^{\#}$	<3 ug/l
Bromodichloromethane	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM208$^{\#}$	<1 ug/l
Trichloroethene	<2	<2	<2	<2	<2	<2	<2	<2	<2	TM208$^{\#}$	<2 ug/l
cis-1-3-Dichloropropene	<2	<2	<2	<2	<2	<2	<2	<2	<2	TM208$^{\#}$	<2 ug/l
trans-1-3-Dichloropropene	<3	<3	<3	<3	<3	<3	<3	<3	<3	TM208$^{\#}$	<3 ug/l

Date 17.08.2009

Validated ☑
Preliminary ☐

ALcontrol Laboratories Analytical Services
Table Of Results

$^{\#}$ ISO 17025 accredited
^{M} MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 09/08204/02/01
Client: RPS Consultants Ltd
Client Ref. No.: JER4418

Matrix: LIQUID
Location: SITTINGBOURNE
Client Contact: Adam Parker

Sample Identity	BH 1	BH 2	BH 3	WS 1	WS 2	WS 3	WS 4	WS 5	WS 7	**Method Code**	**LoD/Units**
Depth (m)											
Sample Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID		
Sampled Date											
Sample Received Date	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09		
Batch	5	5	5	5	5	5	5	5	5		
Sample Number(s)	**142-148**	**149-155**	**156-162**	**163-169**	**170-176**	**177-180**	**181-187**	**188-194**	**195-201**		
Volatile Organic Compounds (cont)											
1.1.2-Trichloroethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	TM208$^{\#}$	<2 ug/l
Toluene	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM208$^{\#}$	<1 ug/l
1.3-Dichloropropane	<2	<2	<2	<2	<2	<2	<2	<2	<2	TM208$^{\#}$	<2 ug/l
Dibromochloromethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	TM208$^{\#}$	<2 ug/l
1.2-Dibromoethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	TM208$^{\#}$	<2 ug/l
Tetrachloroethene	<2	<2	<2	<2	<2	<2	<2	<2	<2	TM208$^{\#}$	<2 ug/l
1.1.1.2-Tetrachloroethane	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM208$^{\#}$	<1 ug/l
Chlorobenzene	<4	<4	<4	<4	<4	<4	<4	<4	<4	TM208$^{\#}$	<4 ug/l
Ethylbenzene	<2	<2	<2	<2	<2	<2	<2	<2	<2	TM208$^{\#}$	<2 ug/l
p/m-Xylene	<2	<2	<2	<2	<2	<2	<2	<2	<2	TM208$^{\#}$	<2 ug/l
Bromoform	<3	<3	<3	<3	<3	<3	<3	<3	<3	TM208$^{\#}$	<3 ug/l
Styrene	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM208$^{\#}$	<1 ug/l
1.1.2.2-Tetrachloroethane	<5	<5	<5	<5	<5	<5	<5	<5	<5	TM208$^{\#}$	<5 ug/l
o-Xylene	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM208$^{\#}$	<1 ug/l
1.2.3-Trichloropropane	<9	<9	<9	<9	<9	<9	<9	<9	<9	TM208$^{\#}$	<9 ug/l
Isopropylbenzene	<2	<2	<2	<2	<2	<2	<2	<2	<2	TM208$^{\#}$	<2 ug/l
Bromobenzene	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM208$^{\#}$	<1 ug/l
2-Chlorotoluene	<2	<2	<2	<2	<2	<2	<2	<2	<2	TM208$^{\#}$	<2 ug/l
Propylbenzene	<3	<3	<3	<3	<3	<3	<3	<3	<3	TM208$^{\#}$	<3 ug/l
4-Chlorotoluene	<2	<2	<2	<2	<2	<2	<2	<2	<2	TM208$^{\#}$	<2 ug/l
1.2.4-Trimethylbenzene	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM208$^{\#}$	<1 ug/l
4-Isopropyltoluene	<3	<3	<3	<3	<3	<3	<3	<3	<3	TM208$^{\#}$	<3 ug/l
1.3.5-Trimethylbenzene	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM208$^{\#}$	<1 ug/l
1.2-Dichlorobenzene	<3	<3	<3	<3	<3	<3	<3	<3	<3	TM208$^{\#}$	<3 ug/l
1.4-Dichlorobenzene	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM208$^{\#}$	<1 ug/l
sec-Butylbenzene	<1	<1	<1	<1	<1	<1	<1	<1	<1	TM208$^{\#}$	<1 ug/l
tert-Butylbenzene	<2	<2	<2	<2	<2	<2	<2	<2	<2	TM208$^{\#}$	<2 ug/l
1.3-Dichlorobenzene	<2	<2	<2	<2	<2	<2	<2	<2	<2	TM208$^{\#}$	<2 ug/l
n-Butylbenzene	<2	<2	<2	<2	<2	<2	<2	<2	<2	TM208$^{\#}$	<2 ug/l
1.2-Dibromo-3-chloropropane	<10	<10	<10	<10	<10	<10	<10	<10	<10	TM208$^{\#}$	<10 ug/l

Date 17.08.2009

Validated ☑

Preliminary ☐

ALcontrol Laboratories Analytical Services
Table Of Results

ISO 17025 accredited
M MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 09/08204/02/01
Client: RPS Consultants Ltd
Client Ref. No.: JER4418
Matrix: LIQUID
Location: SITTINGBOURNE
Client Contact: Adam Parker

Sample Identity	BH 1	BH 2	BH 3	WS 1	WS 2	WS 3	WS 4	WS 5	WS 7	**Method Code**	**LoD/Units**
Depth (m)											
Sample Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID		
Sampled Date											
Sample Received Date	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09	31.07.09		
Batch	5	5	5	5	5	5	5	5	5		
Sample Number(s)	**142-148**	**149-155**	**156-162**	**163-169**	**170-176**	**177-180**	**181-187**	**188-194**	**195-201**		
Volatile Organic Compounds (cont)											
1.2.4-Trichlorobenzene	<2	<2	<2	<2	<2	<2	<2	<2	<2	TM208#	<2 ug/l
Naphthalene	<4	<4	<4	<4	<4	<4	<4	<4	<4	TM208#	<4 ug/l
1.2.3-Trichlorobenzene	<3	<3	<3	<3	<3	<3	<3	<3	<3	TM208#	<3 ug/l
Hexachlorobutadiene	<3	<3	<3	<3	<3	<3	<3	<3	<3	TM208#	<3 ug/l

Date 17.08.2009

ALcontrol Laboratories Analytical Services
Table Of Results - Appendix

Job Number:	09/08204/02/01
Client:	RPS Consultants Ltd
Client Ref. No.:	JER4418

Report Key :

Results expressed as (e.g.) 1.03E-07 is equivalent to $1.03\text{x}10^{-7}$

NDP	No Determination Possible	*	Subcontracted test
ACM	Asbestos Containing Materia	»	Result previously reported (Incremental reports only)
#	ISO 17025 accredited	M	MCERTS Accredited
		EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control.

Summary of Method Codes contained within report :

Method No.	Reference	Description	ISO 17025 Accredited	MCERTS Accredited	Wet/Dry Sample ¹	Surrogate Corrected
TM062	MEWAM BOOK 124 1988.HMSO/ Method 17.7, Second Site property, March 2003	Determination of Phenolic compounds by HPLC with electro-chemical detection	✓		NA	
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)			NA	
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)	✓		NA	
TM098	Method 4500E, AWWA/APHA, 20th Ed., 1999	Determination of Sulphate using the Kone Analyser	✓		NA	
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser			NA	
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter	✓		NA	
TM136	Method 17.10, Second Site property, March 2003	Determination of Sulphur by HPLC			NA	
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser	✓		NA	
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS	✓		NA	
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the "Skalar SANS+ System" Segmented Flow Analyser			NA	
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the "Skalar SANS+ System" Segmented Flow Analyser	✓		NA	
TM174		Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID			NA	
TM176		Determination of SVOCs in Water by GCMS			NA	
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters			NA	

¹ Applies to Solid samples only. **DRY** indicates samples have been dried at 35°C. **NA** = not applicable.
WET indicates samples analysed as submitted.

ALcontrol Laboratories Analytical Services
Table Of Results - Appendix

Job Number:	09/08204/02/01
Client:	RPS Consultants Ltd
Client Ref. No.:	JER4418

Report Key :

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03x10^{-7}

NDP	No Determination Possible	*	Subcontracted test
ACM	Asbestos Containing Materia	»	Result previously reported (Incremental reports only)
#	ISO 17025 accredited	M	MCERTS Accredited
		EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control.

Summary of Method Codes contained within report :

Method No.	Reference	Description	ISO 17025 Accredited	MCERTS Accredited	Wet/Dry Sample ¹	Surrogate Corrected
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry	✓		NA	
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters			NA	
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters	✓		NA	
TM61/89		see TM061 and TM089 for details			NA	

¹ Applies to Solid samples only. **DRY** indicates samples have been dried at 35°C. **NA** = not applicable.
WET indicates samples analysed as submitted.

ALcontrol Laboratories Analytical Services
Table Of Results - Appendix

Job Number: 09/08204/02/01
Client: RPS Consultants Ltd
Client Ref. No.: JER4418

Summary of Coolbox temperatures

Batch No.	Coolbox Temperature (°C)
5	15

Appendix D

Ground Gas and Groundwater Level Monitoring and PID Soil Monitoring Results

28th July 2009 – Ground Gas Monitoring

Location	CH_4	LEL	CO_2	O_2	H_2S	CO	Flow (l/h)	AP (mB)	DP (Pa)	Temperature (°C)
BH1	0	0	0.1	20.8	0	0	-2.4 – -0.4	1015	-3 – 0	24.4
BH2	0	0	0.5	17.9	0	0	0	1015	0	23.2
BH3	0	0	0.1	21.1	0	0	-0.6 – 0.6	1016	0 – 2	22.5
WS1	0	0	0	21.0	0	0	0	1016	0	22.0
WS2	0	0	0.1	21.0	0	0	0	1014	0	26.5
WS3	0	0	5.5	16.7	0	0	-0.5 – 0.3	1015	0 – 2	27.3
WS4	0	0	0	21.1	0	0	0	1015	0	28.6
WS5	0.1	0.3	0.3	20.7	0	0	0	1015	0	22.7
WS6	0	0	0	21.0	0	0	0	1016	0	26.8
WS7	0.2	4.0	0.3	20.0	0	0	0	1015	0	24.3
WS8	0	0	0	20.8	0	0	0	1015	0	28.2

All readings in % of total gas volume unless otherwise stated.

28th July 2009 – Groundwater Level Monitoring

Location	Depth to Groundwater from Ground Level (m)	Elevation At Ground Level (mAOD)	Groundwater Elevation (mAOD)	Base of Borehole (mAOD)
BH1	4.30	6.73	2.08	19.15

BH2	3.78	6.27	2.14	19.19
BH3	2.99	5.23	1.89	13.21
WS1	2.64	6.42	3.78	4.90
WS2	2.30	6.70	4.40	4.20
WS3	4.36	5.99	1.63	4.70
WS4	1.73	7.57	5.84	2.90
WS5	2.50	4.97	2.47	2.70
WS6	No water encountered	5.47	-	2.80
WS7	3.10	5.57	2.47	3.80
WS8	No water encountered	5.70	-	2.38

14th August 2009 – Ground Gas Monitoring

Location	CH_4	LEL	CO_2	O_2	H_2S	CO	Flow (l/h)	AP (mB)	DP (Pa)	Temperature (°C)	PID Readings (ppm)	
											Average	Maximum
BH1	0	0	0.3	20.9	0	0	-0.3 – 0	1014	0	26.7	0.1	0.4
BH2	0	0	1.7	19.8	0	0	0	1014	0	25.8	0	0
BH3	0	0	0.1	21.0	0	0	-0.3 – 0.1	1014	0	27.6	0	0
WS1	0	0	0	20.9	0	0	-0.1 – 0.1	1014	0	26.5	0	0
WS2	0	0	0.3	20.9	0	0	0	1014	0	26.7	0.1	0.4
WS3	0	0	1.7	19.8	0	0	-0.2 – 0.2	1014	0	28.8	0	0

WS4	0	0	0	21.0	0	0	0	1014	0	27.9	0.1	5.8
WS5	0	0	0	20.8	0	0	0	1014	0	27.5	0	0
WS6	0	0	0	20.9	0	0	0	1014	0	27.1	0	0
WS7	0.1	0.4	0.1	20.8	0	0	0	1015	0	27.5	0.1	1.0
WS8	0	0	0	20.9	0	0	0	1014	0	27.9	0	0

All readings in % of total gas volume unless otherwise stated.

14th August 2009 – Groundwater Level Monitoring

Location	**Depth to Groundwater from Ground Level (m)**	**Elevation At Ground Level (mAOD)**	**Groundwater Elevation (mAOD)**	**Base of Borehole (mAOD)**
BH1	4.68	6.73	1.7	19.15
BH2	4.18	6.27	1.74	19.19
BH3	3.42	5.23	1.46	13.21
WS1	2.67	6.42	3.75	4.90
WS2	2.38	6.70	4.32	4.20
WS3	No water encountered	5.99	-	4.76
WS4	1.78	7.57	5.79	2.90
WS5	2.58	4.97	2.39	2.70
WS6	No water encountered	5.47	-	2.80
WS7	3.12	5.57	2.45	3.82
WS8	No water encountered	5.70		2.38

PID Readings, ppm

Location	**Depth**		**PID reading, ppm**	
	Min	**Max**	**Average**	**Peak**
TP1	0	1	0	0
TP2	0	1	0.1	0.8
TP3	0	1	0	0
TP4	0	2	0.1	1.1
TP5	0	2	0	0
	2	3	0	0
TP6	0	2	0	2
TP7	0	2	0	2
TPB	0	1	0	0
TPD	0	1	0.1	0.5
TPA	0	1	0	0
TP11	0	2	0	0
TP12	0	2	0	0
TP13	0	2.5	0	0
TP14	0	1	0	0
TP15	0	2	0.8	5
WS1	0	2	0	0
	2	4	0	0
WS2	0	2	0	0
	2	4	0	0
WS3	0	2	0	0
	2	4	0	0
WS4	0	2	0.2	2.2
WS5	0	2	0	0
	2	4	0	0
WS6	0	3	0	0
WS7	0	2	0	0
	2	4	0	0.3
WS8	0	3	0.2	1.6
BH1	0	2	0.2	0.8
	2	4	0	0
	4+		0	0
BH2	0	2	0.4	1.5
	2	4	0	0
	4+		0	0
BH3	0	2	0	0
	2	3	0	0
	3+		0	0

Appendix E

In Situ Geotechnical Data

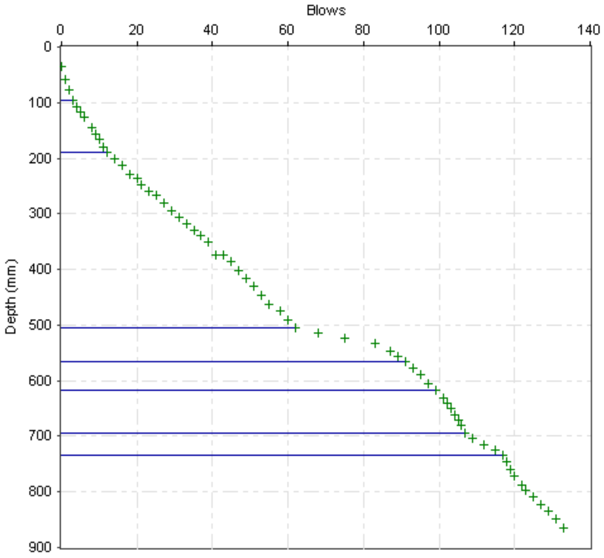
DCP Layer Strength Analysis Report

Project Name: Kemsley mill

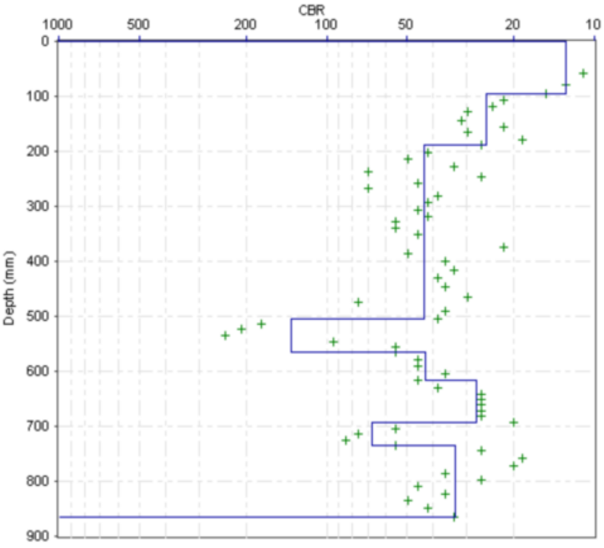
Surface Type:	Unpaved
Thickness (mm):	0

Test DP1

Cone Angle:	60 degrees
Zero Error (mm):	45
Test Date:	10/07/2009



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	20.00	13	95	95
2	10.44	25	94	189
3	6.30	43	315	504
4	2.14	135	62	566
5	6.38	43	51	617
6	9.63	28	77	694
7	4.10	68	41	735
8	8.06	33	129	864

CBR Relationship:

TRL equation: $\log_{10}(\mathrm{CBR}) = 2.48 - 1.057 \times \log_{10}(\mathrm{Strength})$

Report produced by ....

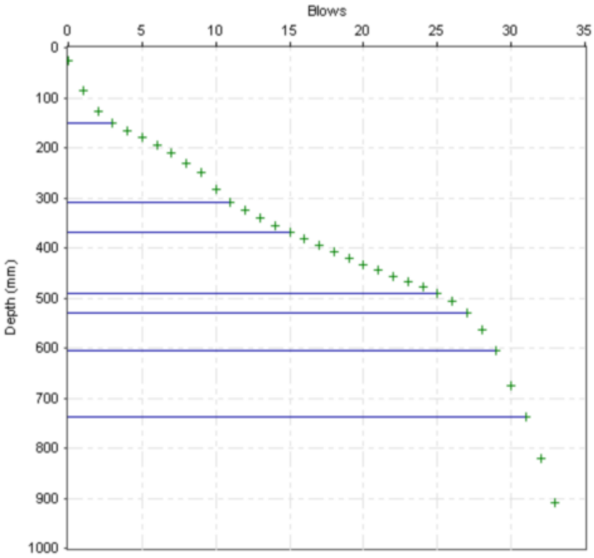
DCP Layer Strength Analysis Report

Project Name: Kemsley mill

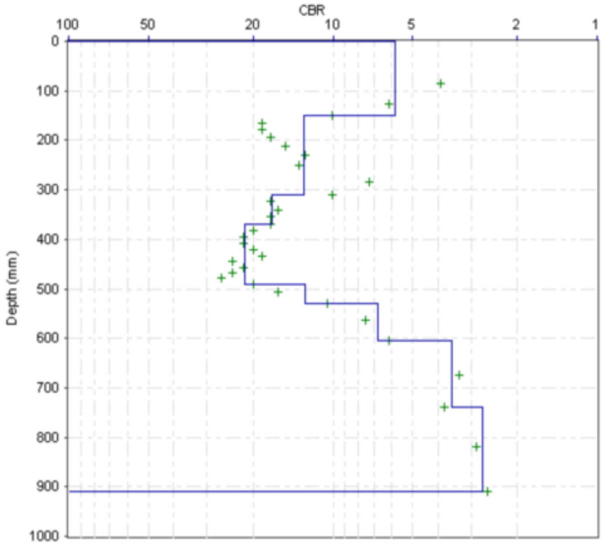
Surface Type:	Unpaved
Thickness (mm):	0

Test DP2

Cone Angle:	60 degrees
Zero Error (mm):	45
Test Date:	10/07/2009



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	42.00	6	151	151
2	19.75	13	158	309
3	15.25	17	61	370
4	12.10	22	121	491
5	20.00	13	40	531
6	36.50	7	73	604
7	67.00	4	134	738
8	86.00	3	172	910

CBR Relationship:

TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by ....

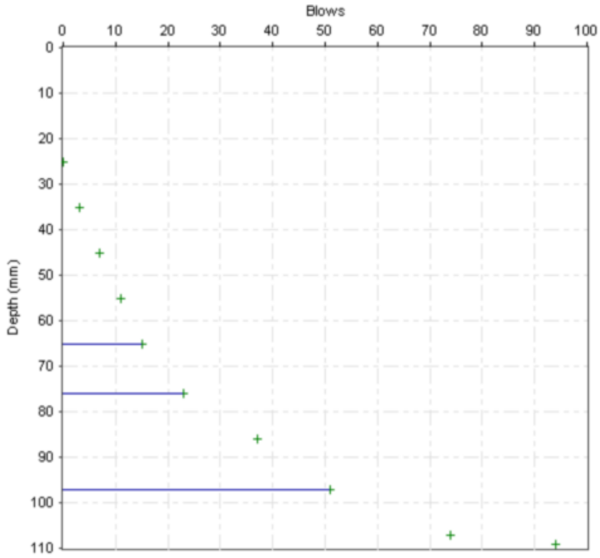
DCP Layer Strength Analysis Report

Project Name: Kemsley mill

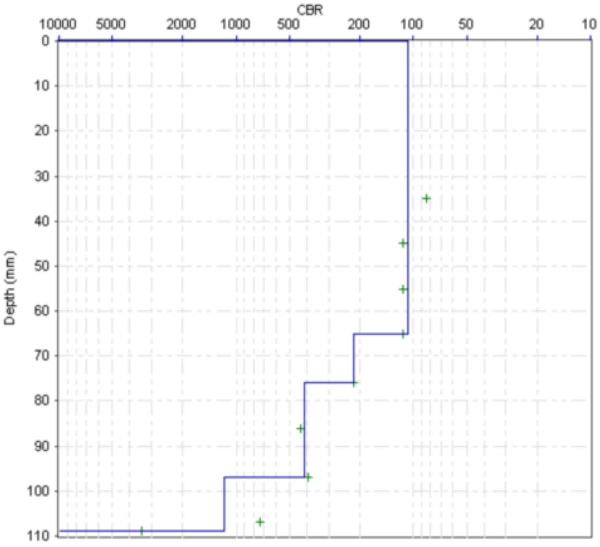
Surface Type:	Unpaved
Thickness (mm):	0

Test DP3

Cone Angle:	60 degrees
Zero Error (mm):	45
Test Date:	10/07/2009



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	2.67	107	65	65
2	1.38	216	11	76
3	0.75	409	21	97
4	0.28	1164	12	109

CBR Relationship:

TRL equation: $\log_{10}$(CBR) = 2.48 - 1.057 x $\log_{10}$(Strength)

Report produced by ……………………………………………………………

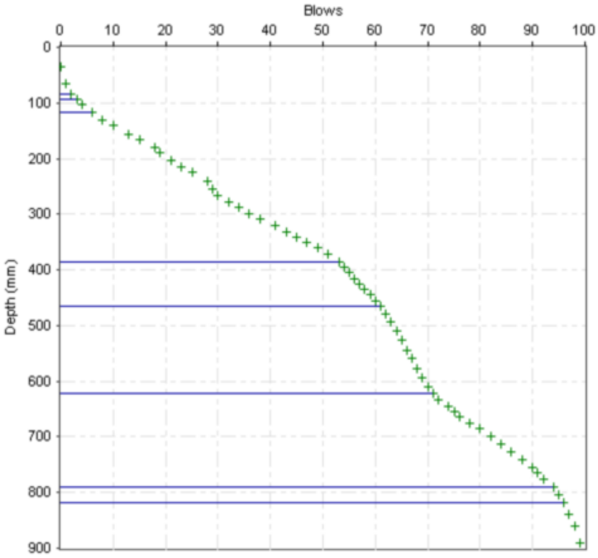
DCP Layer Strength Analysis Report

Project Name: Kemsley mill

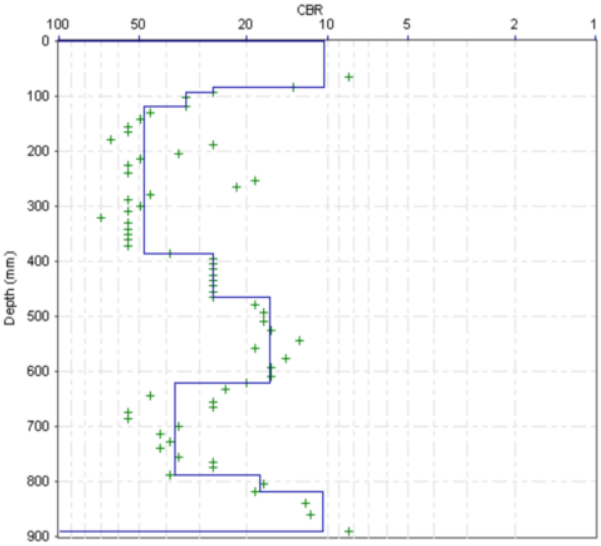
Surface Type:	Unpaved
Thickness (mm):	0

Test DP4

Cone Angle:	60 degrees
Zero Error (mm):	45
Test Date:	10/07/2009



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	24.50	10	84	84
2	10.00	26	10	94
3	8.00	34	24	118
4	5.68	48	267	385
5	10.00	26	80	465
6	15.70	16	157	622
7	7.26	37	167	789
8	14.50	18	29	818
9	24.33	10	73	891

CBR Relationship:

TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by ....

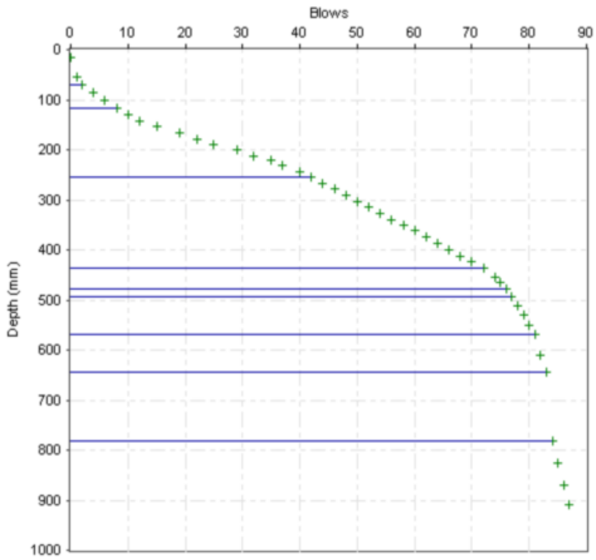
DCP Layer Strength Analysis Report

Project Name: Kemsley mill

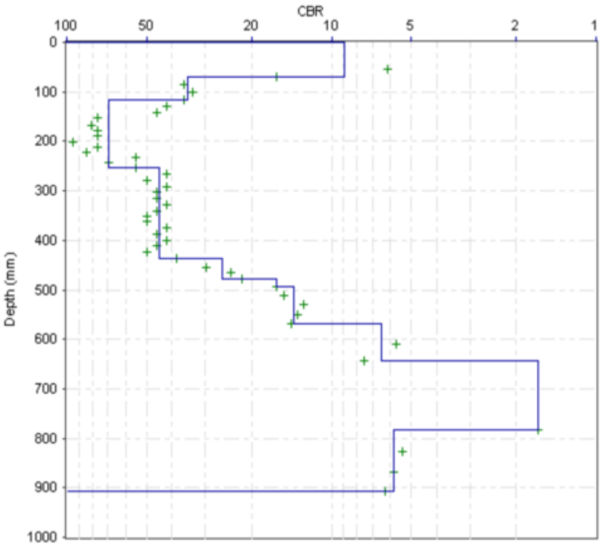
Surface Type:	Unpaved
Thickness (mm):	0

Test DP5

Cone Angle:	60 degrees
Zero Error (mm):	45
Test Date:	10/07/2009



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	28.00	9	71	71
2	7.67	35	46	117
3	4.03	69	137	254
4	6.10	45	183	437
5	10.25	26	41	478
6	16.00	16	16	494
7	18.50	14	74	568
8	38.00	6	76	644
9	138.00	2	138	782
10	42.00	6	126	908

CBR Relationship:

TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by ....

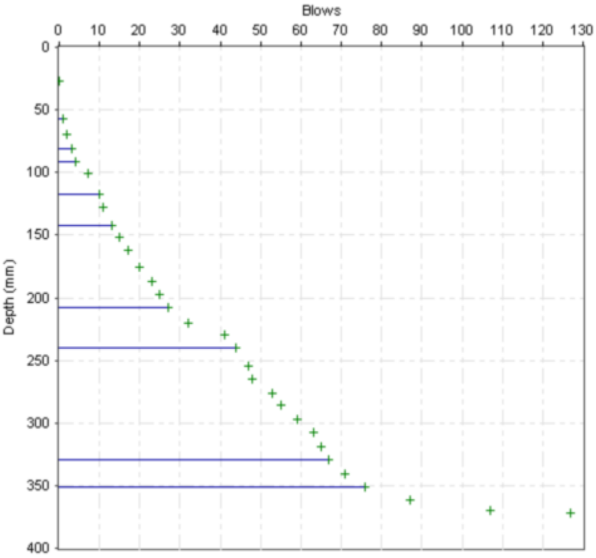
DCP Layer Strength Analysis Report

Project Name: Kemsley mill

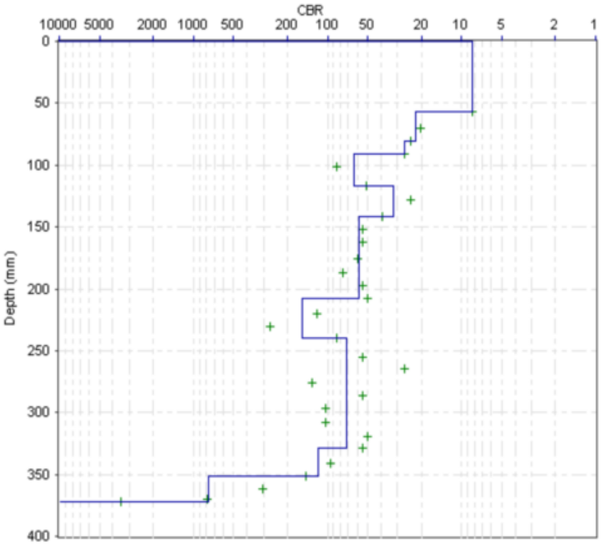
Surface Type: Unpaved
Thickness (mm): 0

Test DP6

Cone Angle: 60 degrees
Zero Error (mm): 45
Test Date: 10/07/2009



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	30.00	8	57	57
2	12.00	22	24	81
3	10.00	26	10	91
4	4.33	64	26	117
5	8.33	32	25	142
6	4.71	59	66	208
7	1.88	155	32	240
8	3.87	72	89	329
9	2.44	117	22	351
10	0.41	771	21	372

CBR Relationship:
TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by ……………………………………………………………

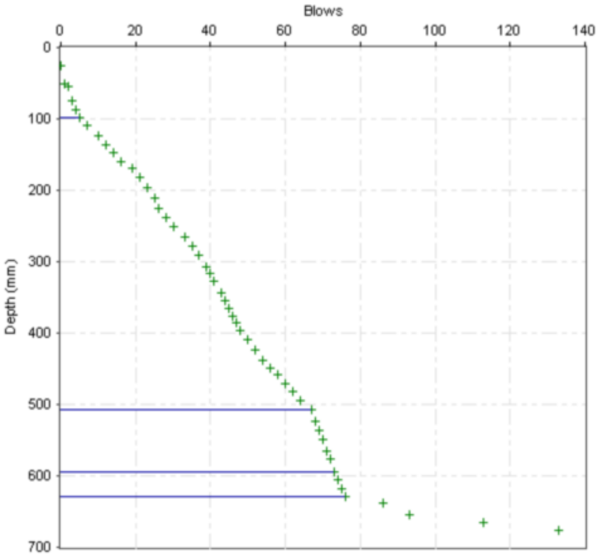
DCP Layer Strength Analysis Report

Project Name: Kemsley mill

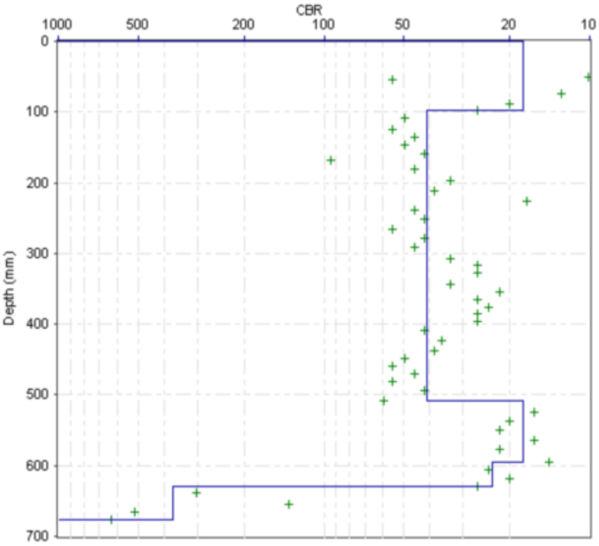
Surface Type:	Unpaved
Thickness (mm):	0

Test DP7

Cone Angle:	60 degrees
Zero Error (mm):	45
Test Date:	10/07/2009



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	14.60	18	98	98
2	6.61	41	410	508
3	14.50	18	87	595
4	11.33	23	34	629
5	0.82	370	47	676

CBR Relationship:

TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by ………………………………………………………………

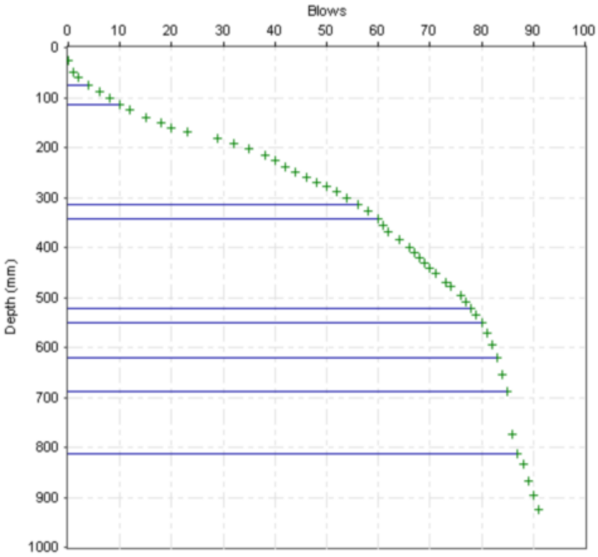
DCP Layer Strength Analysis Report

Project Name: Kemsley mill

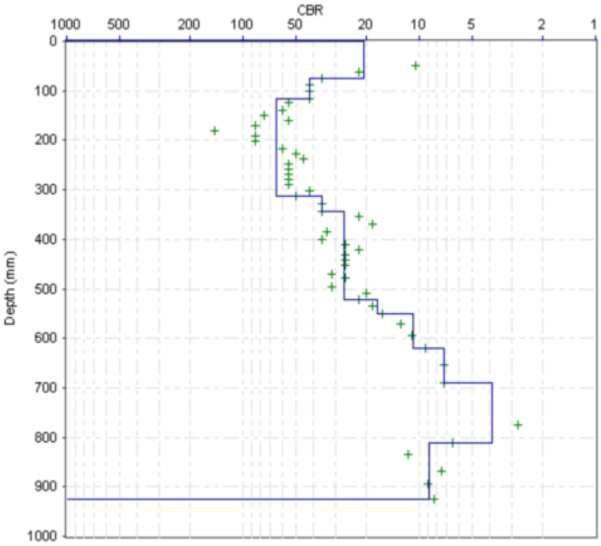
Surface Type:	Unpaved
Thickness (mm):	0

Test DP8

Cone Angle:	60 degrees
Zero Error (mm):	45
Test Date:	10/07/2009



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	12.75	20	76	76
2	6.50	42	39	115
3	4.30	65	198	313
4	7.50	36	30	343
5	9.89	27	178	521
6	15.00	17	30	551
7	23.33	11	70	621
8	34.00	7	68	689
9	61.50	4	123	812
10	28.25	9	113	925

CBR Relationship:

TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by ……………………………………………………………

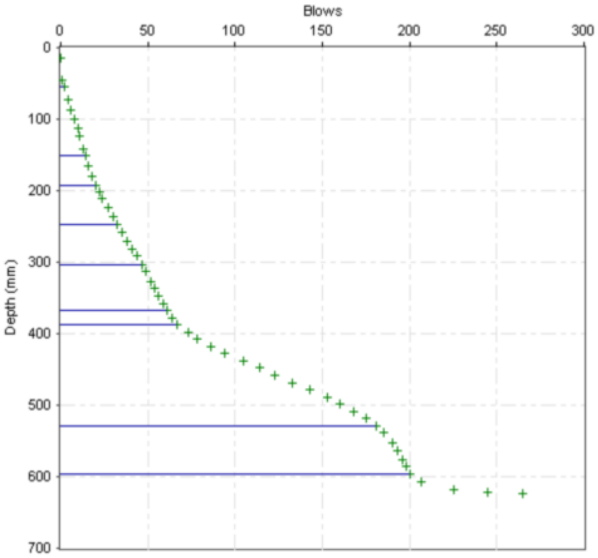
DCP Layer Strength Analysis Report

Project Name: Kemsley mill

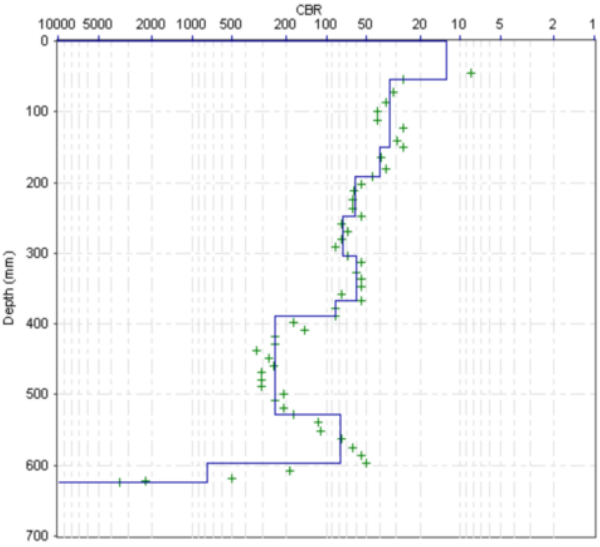
Surface Type:	Unpaved
Thickness (mm):	0

Test DP9

Cone Angle:	60 degrees
Zero Error (mm):	45
Test Date:	10/07/2009



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	20.00	13	55	55
2	8.00	34	96	151
3	6.83	40	41	192
4	4.58	60	55	247
5	3.73	75	56	303
6	4.64	60	65	368
7	3.33	85	20	388
8	1.24	241	141	529
9	3.58	78	68	597
10	0.42	764	27	624

CBR Relationship:

TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by ....

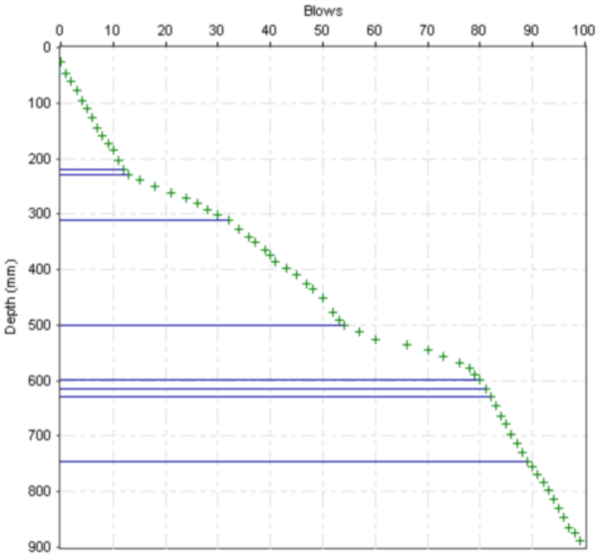
DCP Layer Strength Analysis Report

Project Name: Kemsley mill

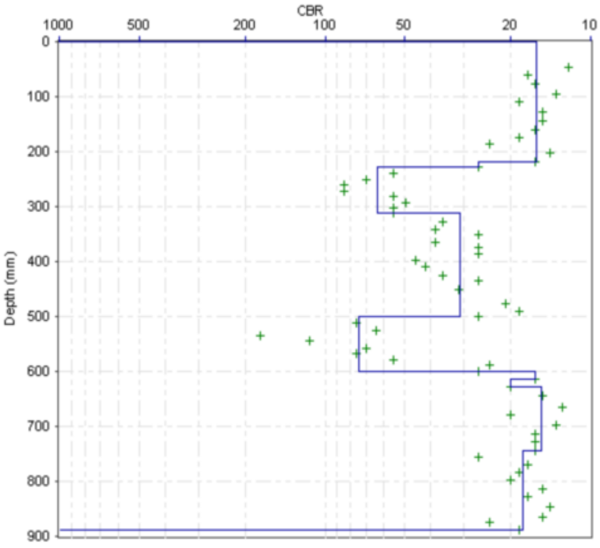
Surface Type:	Unpaved
Thickness (mm):	0

Test DP10

Cone Angle:	60 degrees
Zero Error (mm):	45
Test Date:	10/07/2009



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	16.17	16	219	219
2	10.00	26	10	229
3	4.37	64	83	312
4	8.59	31	189	501
5	3.77	74	98	599
6	16.00	16	16	615
7	13.00	20	13	628
8	16.71	15	117	745
9	14.40	18	144	889

CBR Relationship:

TRL equation: $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by ………………………………………………………………

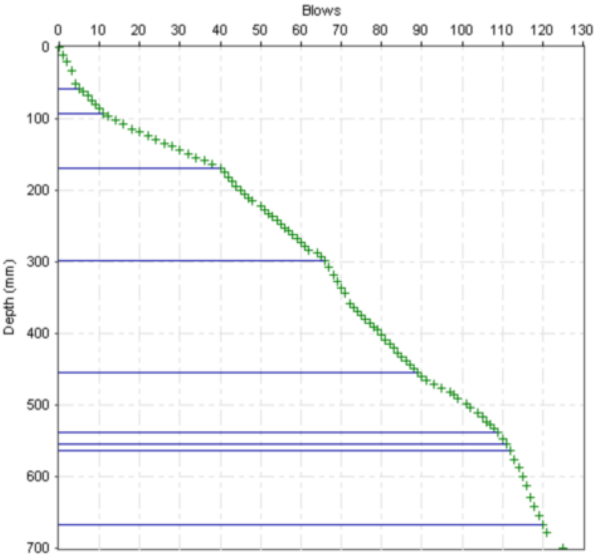
DCP Layer Strength Analysis Report

Project Name: Kemsley mill

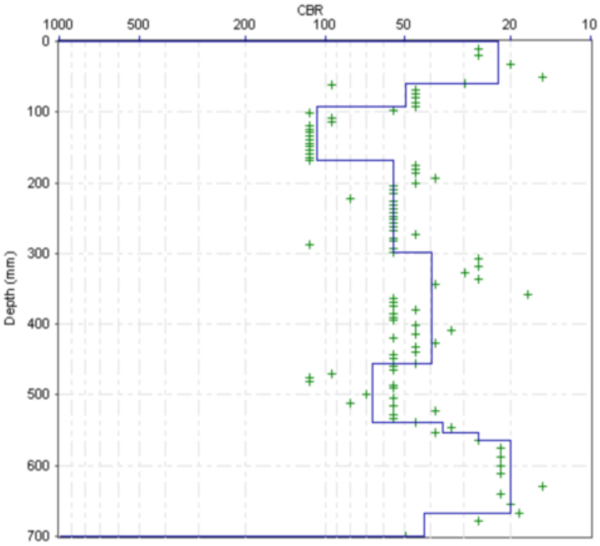
Surface Type:	Unpaved
Thickness (mm):	0

Test DP11

Cone Angle:	60 degrees
Zero Error (mm):	45
Test Date:	10/07/2009



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	11.80	22	59	59
2	5.50	50	33	92
3	2.66	108	77	169
4	4.96	56	129	298
5	6.83	40	157	455
6	4.20	66	84	539
7	7.50	36	15	554
8	10.00	26	10	564
9	13.00	20	104	668
10	6.40	42	32	700

CBR Relationship:

TRL equation: $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by ………………………………………………………………

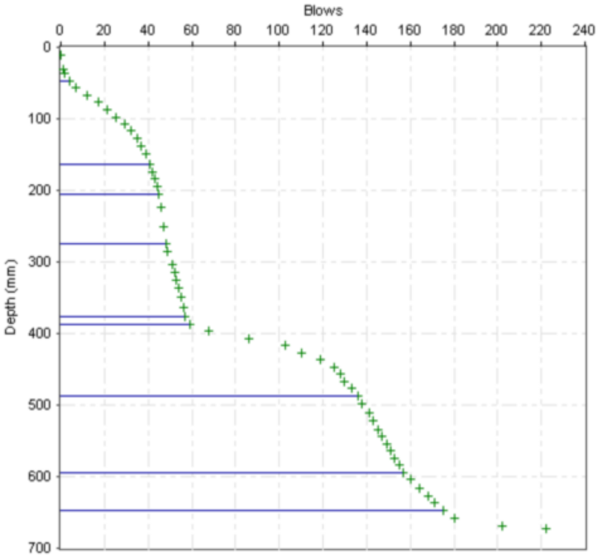
DCP Layer Strength Analysis Report

Project Name: Kemsley mill

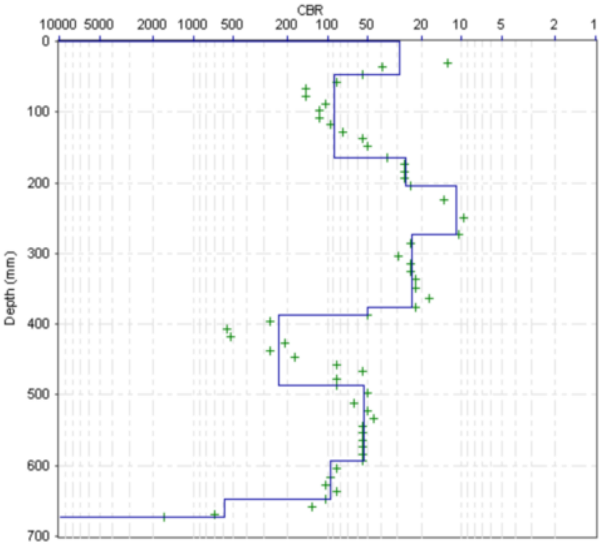
Surface Type: Unpaved
Thickness (mm): 0

Test DP12

Cone Angle: 60 degrees
Zero Error (mm): 45
Test Date: 10/07/2009



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	9.25	29	47	47
2	3.16	89	117	164
3	10.25	26	41	205
4	23.00	11	69	274
5	11.33	23	102	376
6	5.50	50	11	387
7	1.30	229	100	487
8	5.10	54	107	594
9	3.00	95	54	648
10	0.53	589	25	673

CBR Relationship:
TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by ....

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'The South West's Premier Geotechnical & Environmental Drilling Company'

Site Location: Sittingbourne

Super Heavy Dynamic Probing

Date (9,10)-7-09

Job No:

DP No:1

Concrete Core

63.5 kg Weight 0.75 m Drop

Mtr	BC
0.1	49
0.2	32
0.3	9
0.4	4
0.5	3
0.6	2
0.7	2
0.8	2
0.9	1
1	2
1.1	1
1.2	1
1.3	2
1.4	2
1.5	5
1.6	8
1.7	9
1.8	12
1.9	18
2	5
2.1	2
2.2	2
2.3	2
2.4	2
2.5	2
2.6	2
2.7	1
2.8	2
2.9	2
3	1
3.1	2
3.2	2
3.3	2
3.4	3
3.5	3
3.6	3
3.7	2
3.8	2
3.9	3
4	2
4.1	3
4.2	2
4.3	3
4.4	3
4.5	4
4.6	3
4.7	3
4.8	3
4.9	3
5	3
5.1	3
5.2	3
5.3	3
5.4	5
5.5	4
5.6	4
5.7	5
5.8	4
5.9	3
6	4
6.1	
6.2	
6.3	
6.4	
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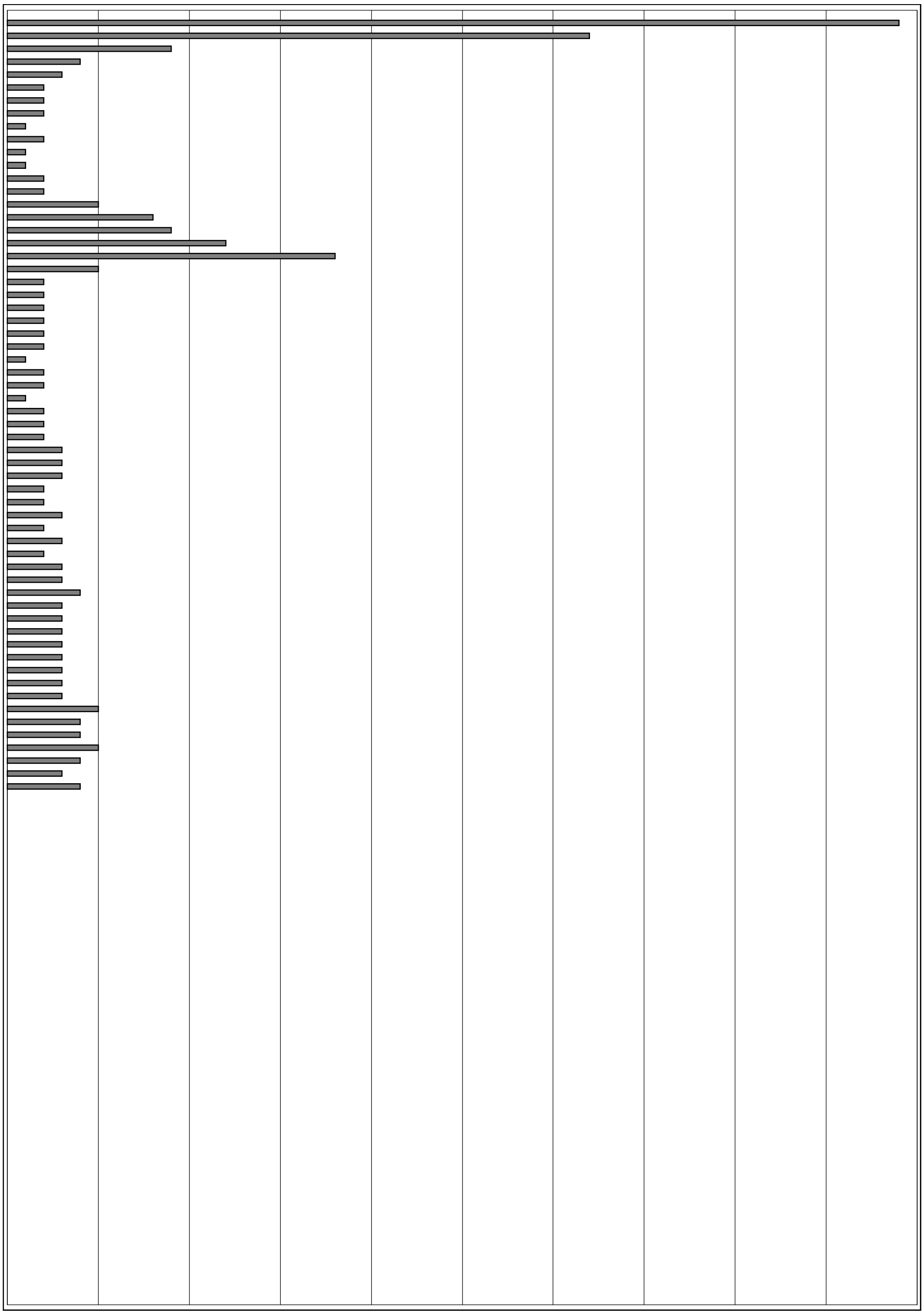

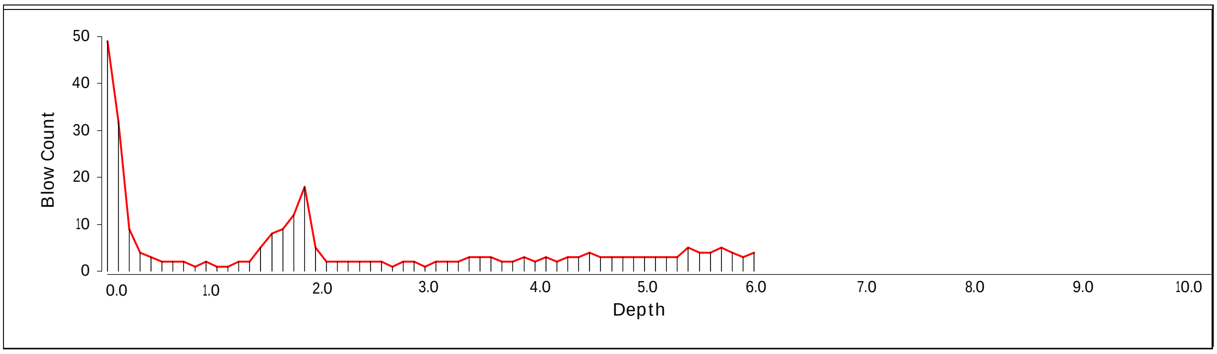

Site Location: Sittingbourne

Super Heavy Dynamic Probing

Date (9,10)-7-09

Job No:

DP No:2

Concrete Core

63.5 kg Weight 0.75 m Drop

Mtr	BC
0.1	29
0.2	32
0.3	30
0.4	13
0.5	10
0.6	8
0.7	4
0.8	6
0.9	6
1	4
1.1	5
1.2	2
1.3	3
1.4	5
1.5	6
1.6	7
1.7	9
1.8	10
1.9	4
2	2
2.1	1
2.2	2
2.3	1
2.4	0
2.5	1
2.6	0
2.7	1
2.8	1
2.9	1
3	2
3.1	1
3.2	1
3.3	2
3.4	1
3.5	0
3.6	1
3.7	1
3.8	1
3.9	2
4	1
4.1	2
4.2	2
4.3	2
4.4	2
4.5	2
4.6	3
4.7	2
4.8	2
4.9	2
5	2
5.1	3
5.2	3
5.3	4
5.4	4
5.5	3
5.6	4
5.7	4
5.8	4
5.9	4
6	3
6.1	4
6.2	5
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6.7	6
6.8	6
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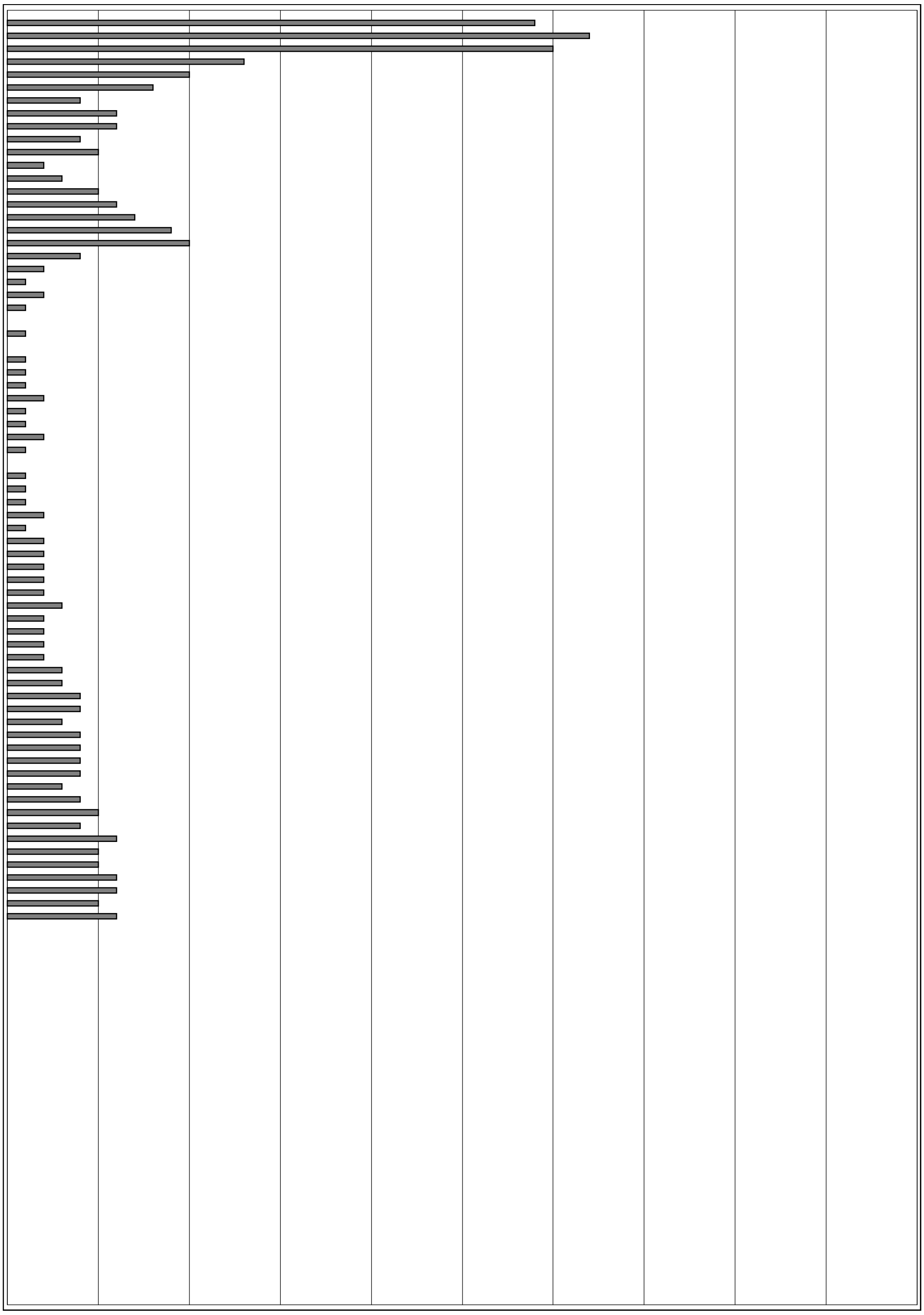

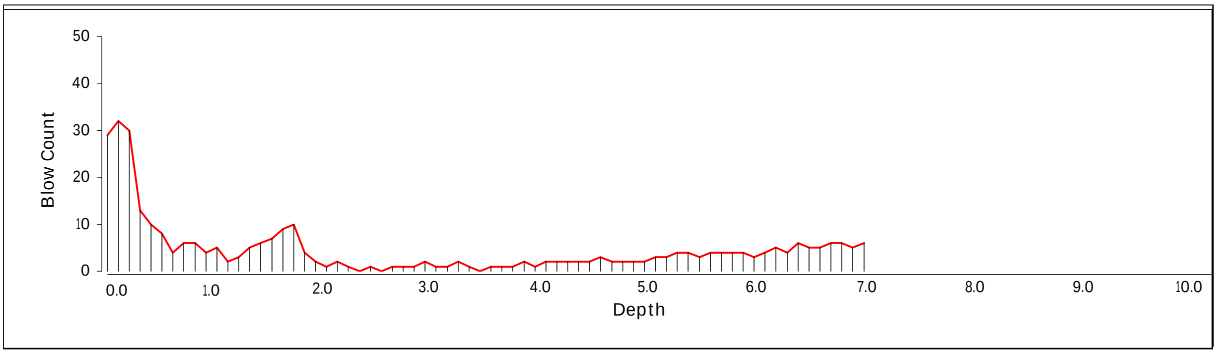

Site Location: Sittingbourne

Super Heavy Dynamic Probing

Date (9,10)-7-09

Job No:

DP No:3

Concrete Core

63.5 kg Weight 0.75 m Drop

Mtr	BC
0.1	3
0.2	11
0.3	16
0.4	10
0.5	9
0.6	6
0.7	6
0.8	4
0.9	3
1	3
1.1	2
1.2	2
1.3	2
1.4	2
1.5	1
1.6	1
1.7	0
1.8	1
1.9	1
2	0
2.1	0
2.2	0
2.3	1
2.4	1
2.5	2
2.6	2
2.7	2
2.8	2
2.9	2
3	2
3.1	
3.2	
3.3	
3.4	
3.5	
3.6	
3.7	
3.8	
3.9	
4	
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6.8	
6.9	
7	
7.1	
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8.6	
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8.9	
9	
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9.7	
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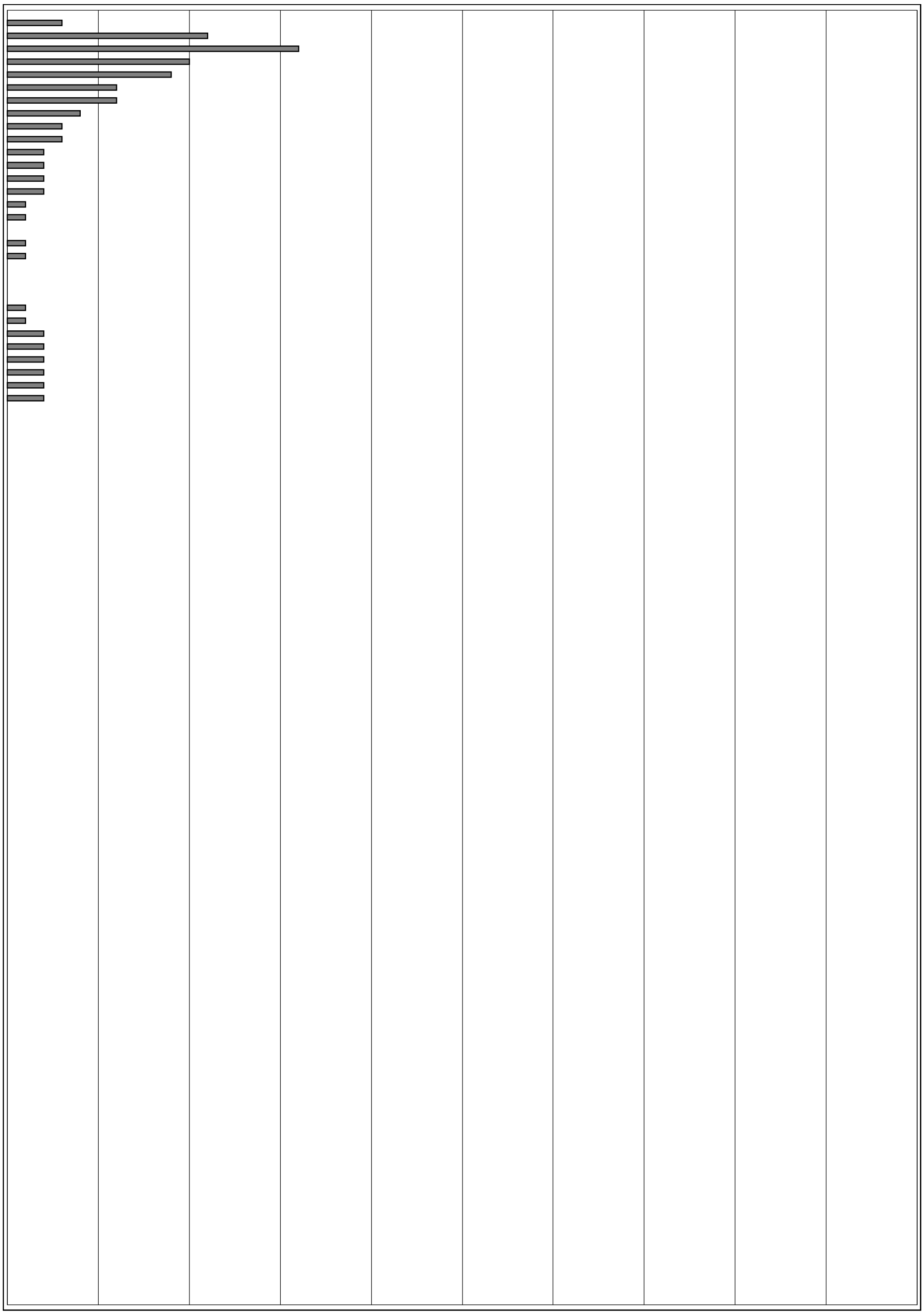
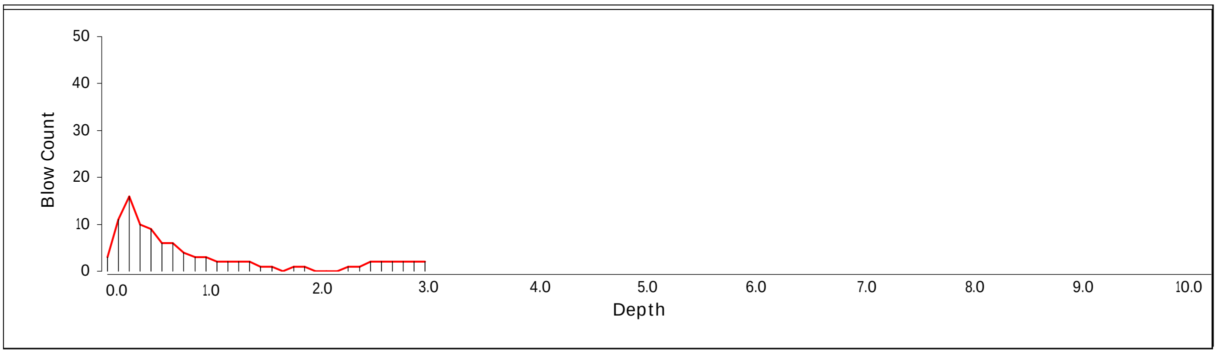
9.9	
10	





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Office: 01458 851515 Fax: 01458 851181 Email: tordrilling@btinternet.com
'The South West's Premier Geotechnical & Environmental Drilling Company'

Site Location: Sittingbourne

Super Heavy Dynamic Probing

Date (9,10)-7-09

Job No:

DP No:4

Concrete Core

63.5 kg Weight 0.75 m Drop

Mtr	BC
0.1	4
0.2	7
0.3	8
0.4	5
0.5	5
0.6	5
0.7	9
0.8	7
0.9	3
1	4
1.1	5
1.2	3
1.3	2
1.4	3
1.5	4
1.6	4
1.7	2
1.8	1
1.9	1
2	1
2.1	1
2.2	1
2.3	1
2.4	2
2.5	1
2.6	2
2.7	1
2.8	2
2.9	2
3	2
3.1	
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3.8	
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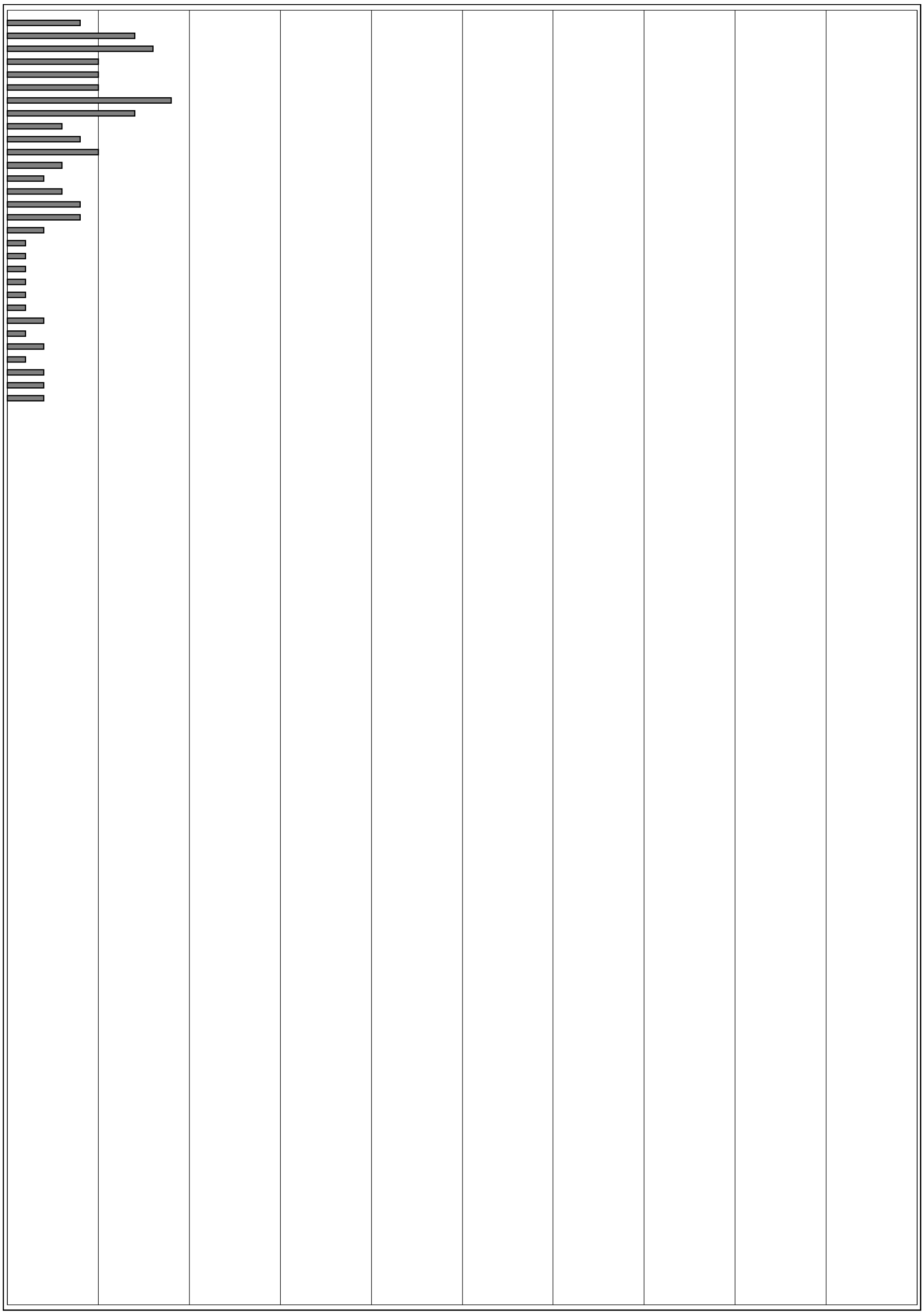

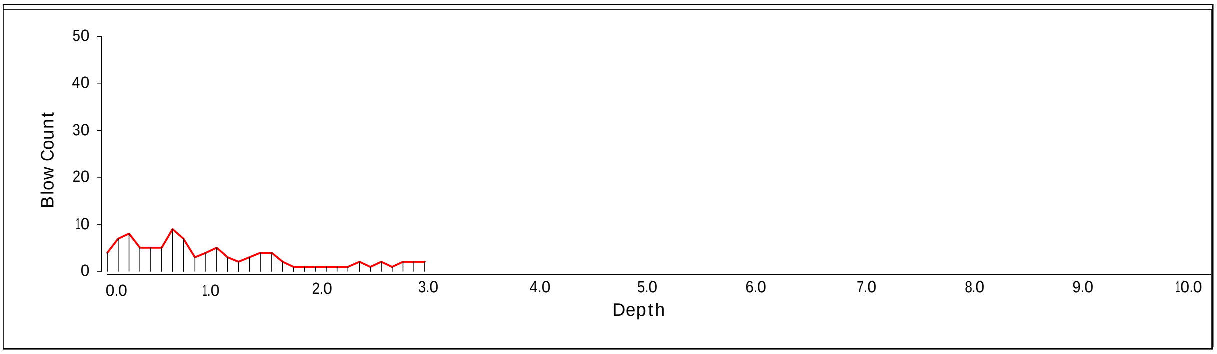

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Site Location: Sittingbourne

Super Heavy Dynamic Probing

Date (9,10)-7-09

Job No:

DP No:5

Concrete Core

63.5 kg Weight 0.75 m Drop

Mtr	BC
0.1	11
0.2	8
0.3	4
0.4	4
0.5	4
0.6	2
0.7	6
0.8	3
0.9	2
1	1
1.1	1
1.2	0
1.3	1
1.4	1
1.5	1
1.6	1
1.7	6
1.8	9
1.9	7
2	5
2.1	5
2.2	4
2.3	4
2.4	3
2.5	3
2.6	2
2.7	2
2.8	2
2.9	2
3	1
3.1	
3.2	
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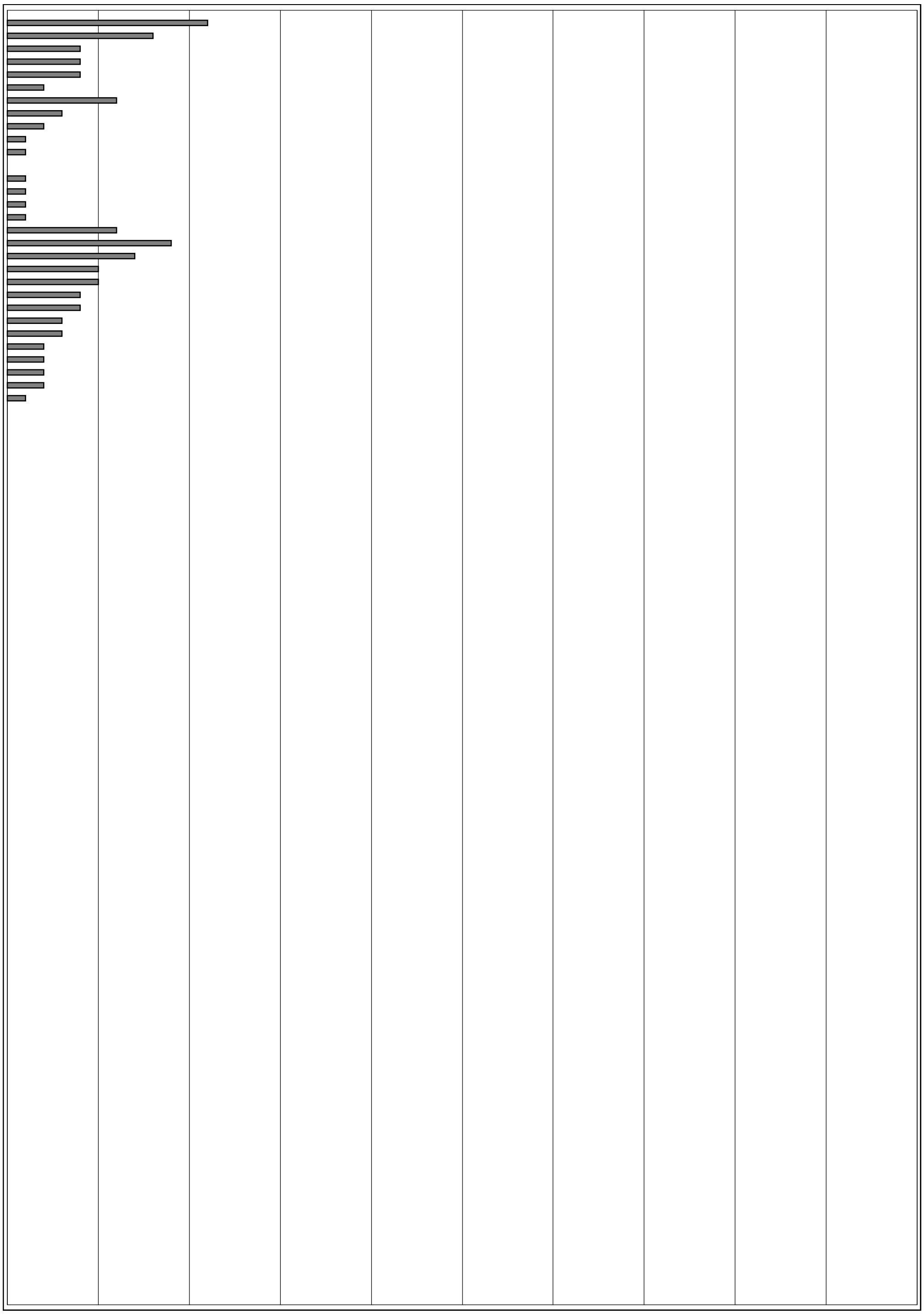

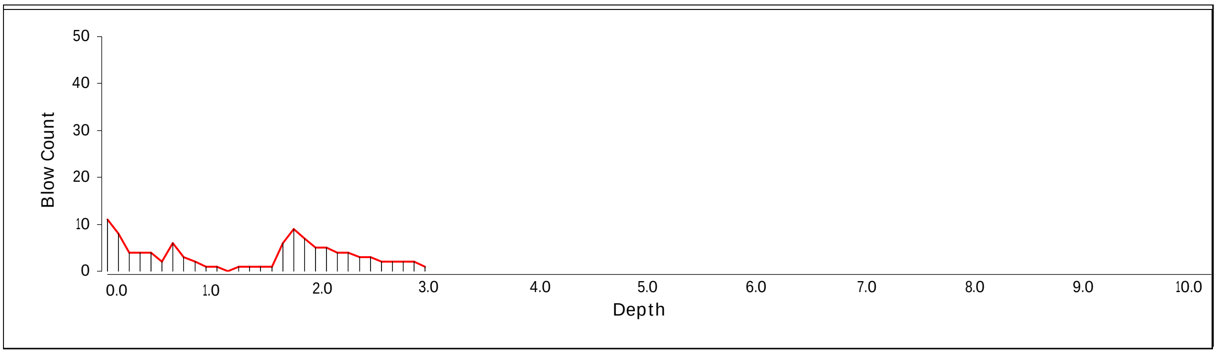

Site Location: Sittingbourne

Super Heavy Dynamic Probing

Date (9,10)-7-09

Job No:

DP No:6

Concrete Core

63.5 kg Weight 0.75 m Drop

Mtr	BC
0.1	3
0.2	5
0.3	5
0.4	4
0.5	4
0.6	3
0.7	2
0.8	1
0.9	2
1	1
1.1	1
1.2	0
1.3	1
1.4	0
1.5	3
1.6	2
1.7	1
1.8	1
1.9	2
2	1
2.1	1
2.2	3
2.3	10
2.4	8
2.5	10
2.6	25
2.7	9
2.8	7
2.9	5
3	3
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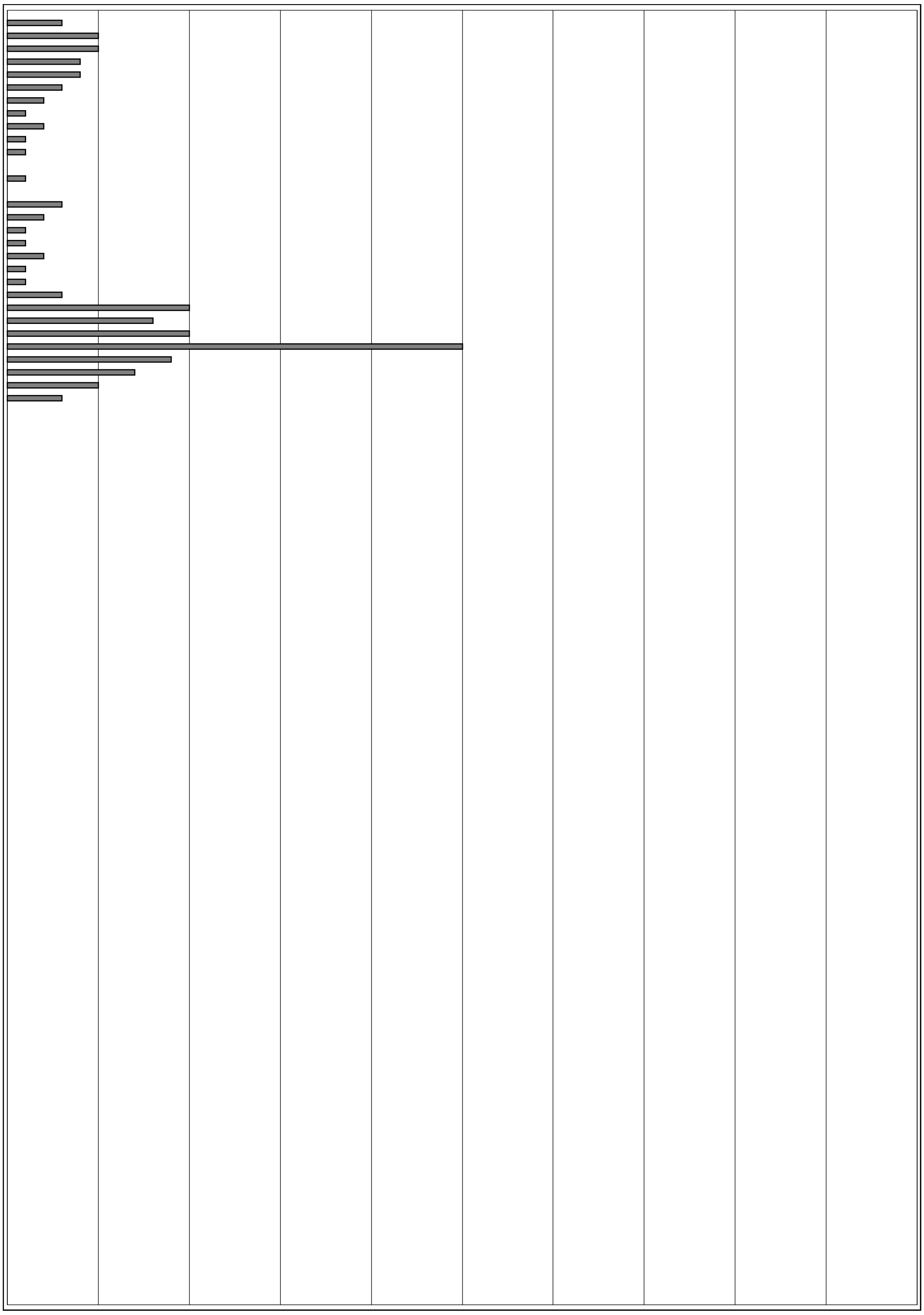

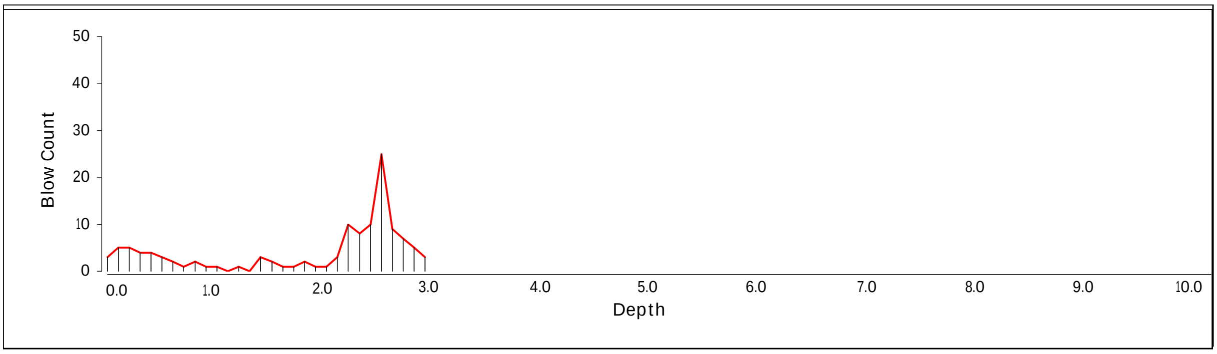

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Site Location: Sittingbourne

Super Heavy Dynamic Probing

Date (9,10)-7-09

Job No:

DP No:7

Concrete Core

63.5 kg Weight 0.75 m Drop

Mtr	BC
0.1	9
0.2	5
0.3	2
0.4	1
0.5	1
0.6	2
0.7	3
0.8	3
0.9	2
1	3
1.1	3
1.2	1
1.3	1
1.4	1
1.5	1
1.6	1
1.7	1
1.8	0
1.9	0
2	0
2.1	1
2.2	2
2.3	3
2.4	0
2.5	1
2.6	1
2.7	0
2.8	1
2.9	0
3	0
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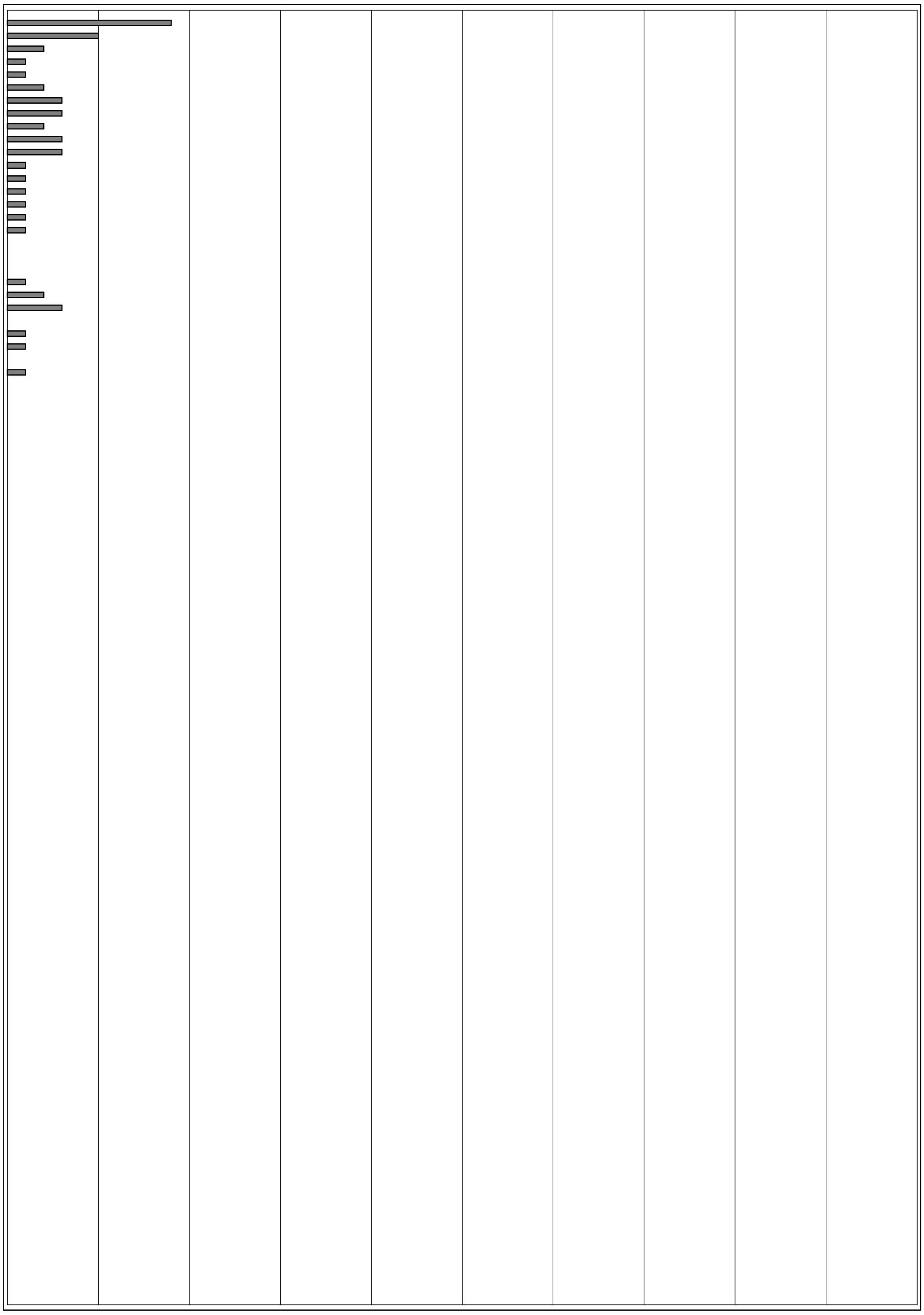

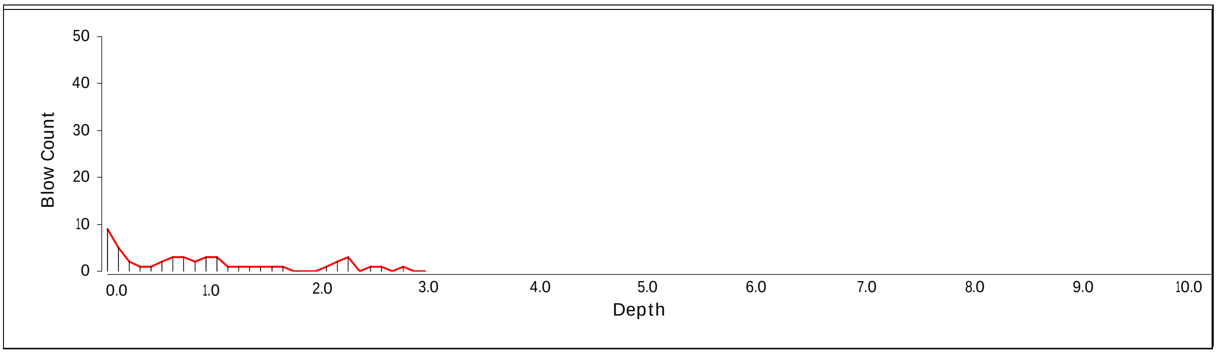

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Super Heavy Dynamic Probing

Date (9,10)-7-09

Job No:

DP No:8

Concrete Core

63.5 kg Weight 0.75 m Drop

Mtr	BC
0.1	6
0.2	11
0.3	10
0.4	6
0.5	4
0.6	8
0.7	12
0.8	3
0.9	4
1	4
1.1	10
1.2	2
1.3	3
1.4	6
1.5	5
1.6	3
1.7	1
1.8	2
1.9	3
2	3
2.1	2
2.2	1
2.3	1
2.4	5
2.5	9
2.6	1
2.7	2
2.8	2
2.9	1
3	2
3.1	
3.2	
3.3	
3.4	
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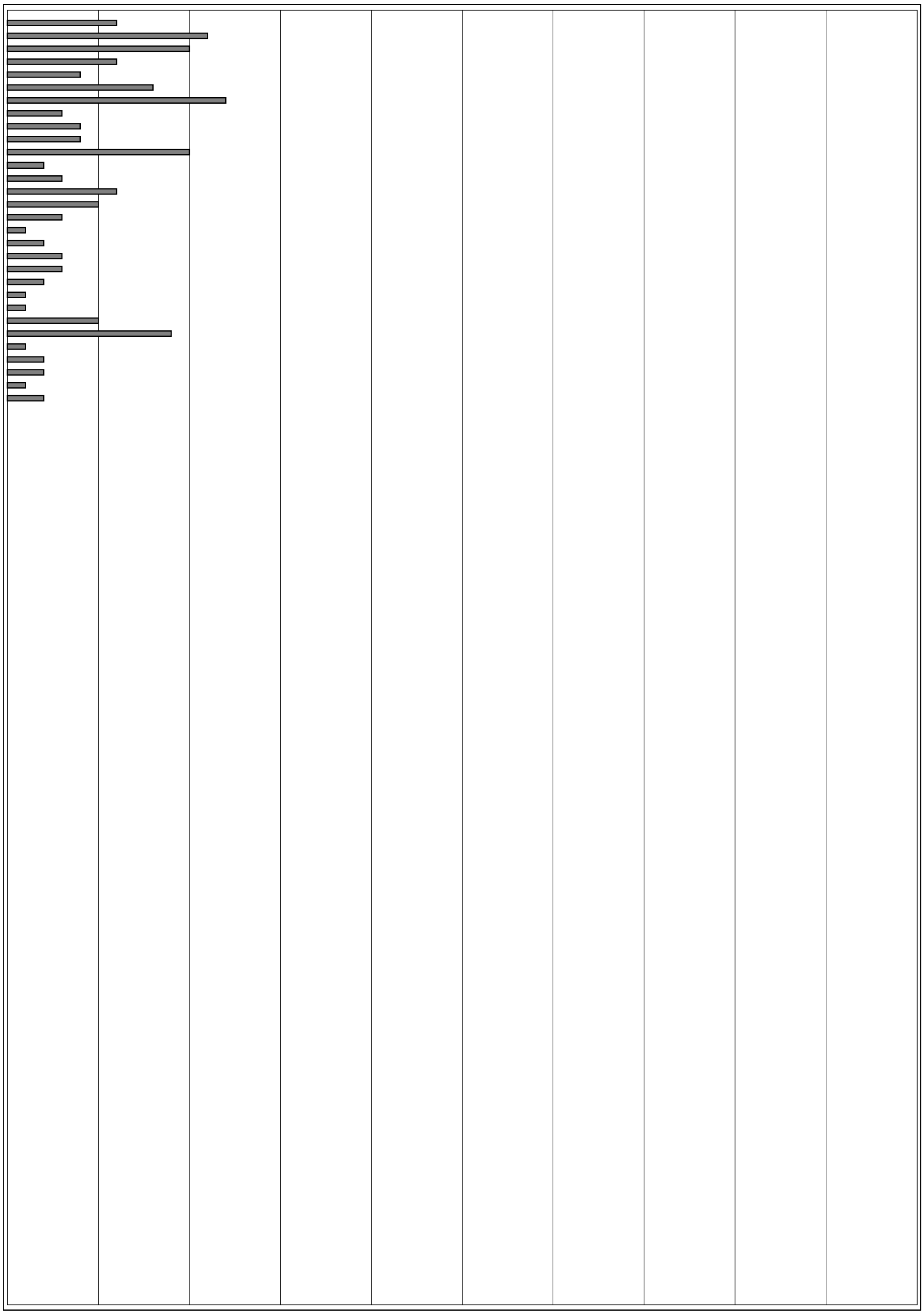
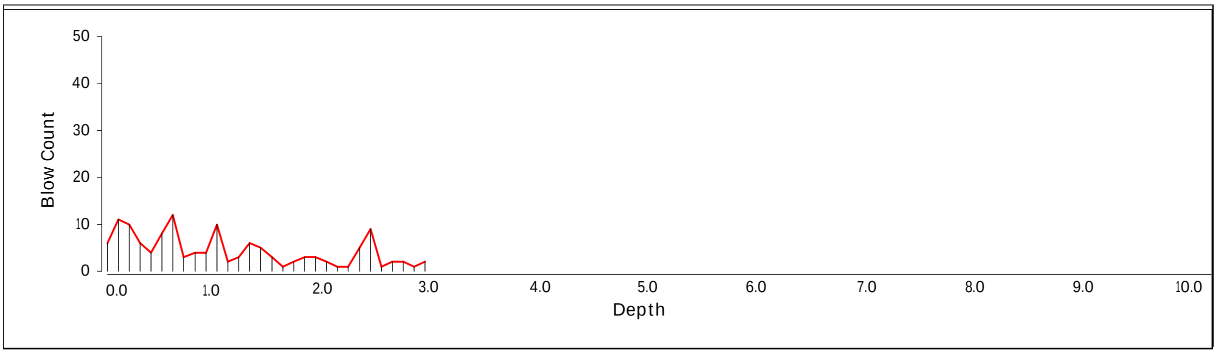




Appendix F

Laboratory Geotechnical Analytical Results

BS1377 : Part 7 : Clause 8 : 1990

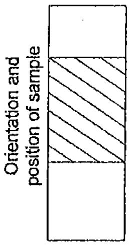
Quick Undrained Triaxial Test

Borehole Number:	BH1
Sample Number:	-
Depth (m):	4.00 - 4.45

Description:
Firm very closely fissured grey silty CLAY
with occasional iron staining

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	201.9
Diameter (mm):	103.3
Moisture Content (%):	33
Bulk Density (Mg/m³):	1.89
Dry Density (Mg/m³):	1.42
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	1.0
Axial displacement rate (%/min):	1.9
Cell pressure (kPa):	80
Strain at failure (%):	18.8
Maximum Deviator Stress (kPa):	129
Shear Stress Cu (kPa):	65



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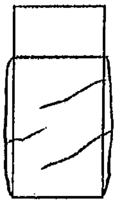


Checked and Approved

Initials: [redacted]

Date: 25/08/2009

Project Number:

GEO / 14829

Project Name:

SITTINGBOURNE

IBP 0 1 6 4

GEOLABS

Test Report by GEOLABS Limited Bucknalls Lane, Garston, Watford, Hertfordshire, WD25 9XX (Ref4050.724769) Page 1 of 1

Authorised Signatories: ☐ J R Masters (Qual Mgr) ☐ C F Wallace (Tech Mgr) ☐ G J Corlo (Tech Mgr) ☒ J Sturges (Tech Mgr) ☐ R J Platt (Snr Tech) ☐ J J M Powell (Tech Dir)

Client: Peter Brett Associates, Caversham Bridge House, Waterman Place, Reading, Berkshire RG1 8DN

BS1377 ; Part 7 : Clause 8 : 1990

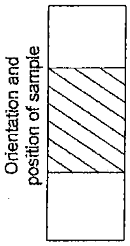
Quick Undrained Triaxial Test

Borehole Number: BH2
Sample Number: -
Depth (m): 8.00 - 8.45

Description:
Stiff closely fissured grey silty CLAY
with rare shell fragments

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	202.2
Diameter (mm):	103.1
Moisture Content (%):	30
Bulk Density (Mg/m³):	1.94
Dry Density (Mg/m³):	1.49
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.4
Axial displacement rate (%/min):	1.9
Cell pressure (kPa):	160
Strain at failure (%):	5.9
Maximum Deviator Stress (kPa):	193
Shear Stress Cu (kPa):	97



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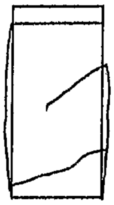

Checked and Approved
Initials: [redacted]
Date: 25/08/2009

Project Number:
GEO / 14829

Project Name:
SITTINGBOURNE

IBP 0 1 6 4

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BS1377 : Part 4 : Clause 7 : 1990

Determination of California Bearing Ratio

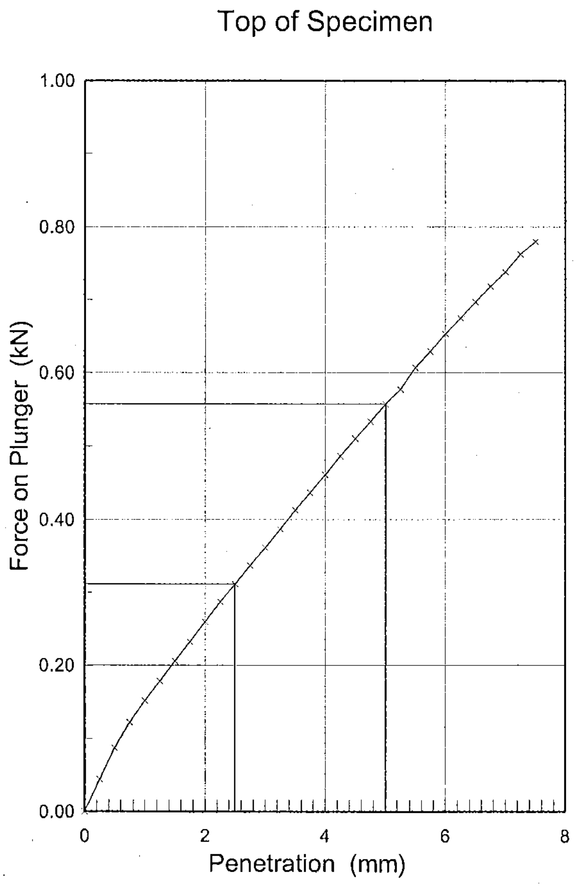
Borehole Number: BH3
Sample Number: -
Depth (m): 0.50 - 2.00

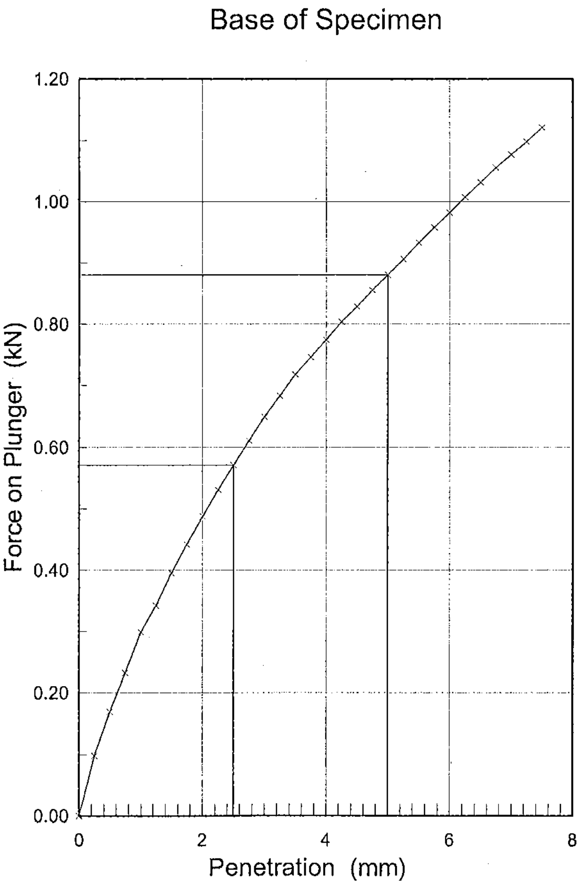
Description:
MADE GROUND: (Brown clayey very sandy silt and gravel with rare rare rootlets and ash, gravel is fine to coarse gravel clinker and brick)

Preparation Details

The specimen was tested in an unsoaked condition
The specimen was tested at its existing moisture content
The specimen was prepared by dynamic compaction using a 2.5 kg rammer
Specimen bulk density 1.85 Mg/m³
Specimen dry density 1.52 Mg/m³
14.4 % of the sample was retained on a 20mm sieve

Test Details	Top	Base
Surcharge	8.0 kg	8.0 kg
Seating load	10 N	10 N
Moisture content	21 %	22 %
CBR Value	2.8 %	4.4 %





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Initials: [redacted]
Date: 25/08/2009

Project Number: **GEO / 14829**

Project Name: **SITTINGBOURNE**
IBP 0 1 6 4

GEOLABS

BS1377 : Part 4 : Clause 7 : 1990

Determination of California Bearing Ratio

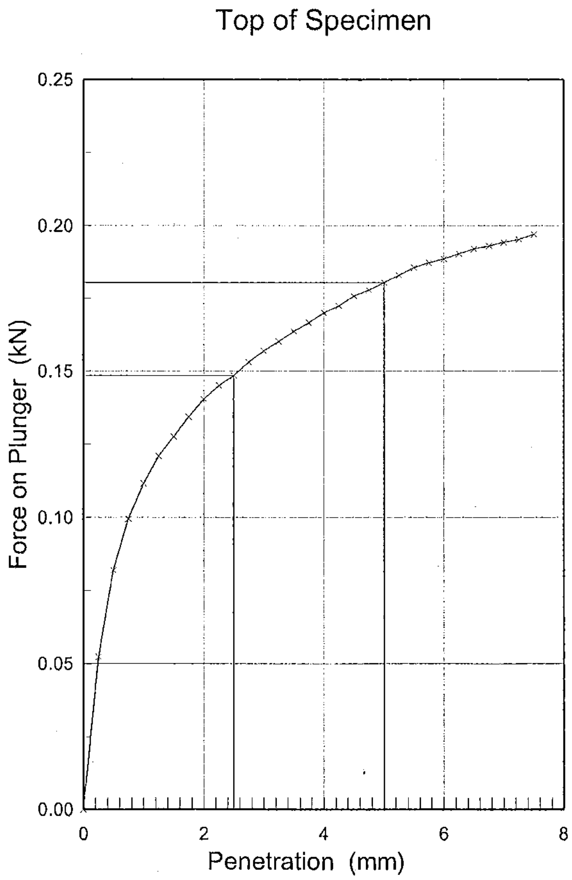
Borehole Number:	BH3
Sample Number:	-
Depth (m):	3.50 - 5.00

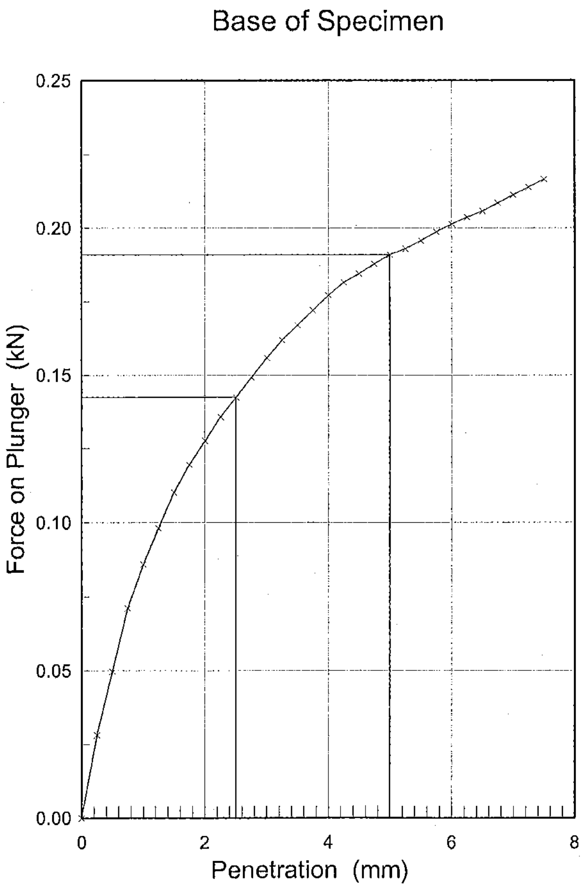
Description:
Mottled brown and dark brown slightly gravelly silty CLAY

Preparation Details

The specimen was tested in an unsoaked condition
The specimen was tested at its existing moisture content
The specimen was prepared by dynamic compaction using a 2.5 kg rammer
Specimen bulk density 1.90 Mg/m³
Specimen dry density 1.45 Mg/m³

Test Details	Top	Base	Mean
Surcharge	8.0 kg	8.0 kg	
Seating load	10 N	10 N	
Moisture content	34 %	29 %	
CBR Value	1.1 %	1.1 %	1.1 %





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Initials: [redacted]
Date: 25/08/2009

Project Number:
GEO / 14829

Project Name:
SITTINGBOURNE
IBP 0 1 6 4

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BS1377 : Part 4 : Clause 7 : 1990

Determination of California Bearing Ratio

Trial Pit Number: TPB
Sample Number: -
Depth (m): A

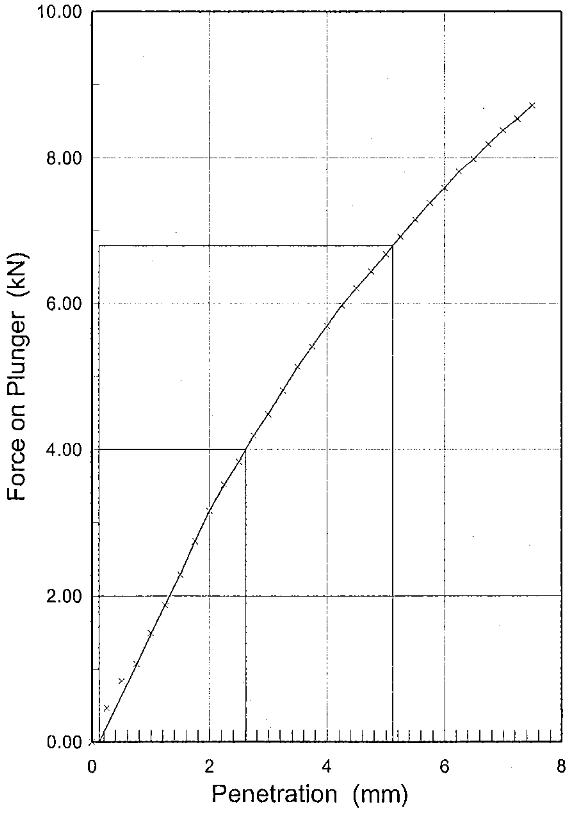
Description:
MADE GROUND: (Grey-brown slightly clayey very sandy very gravelly silt, gravel is fine to coarse gravel sized breeze block fragments)

Preparation Details

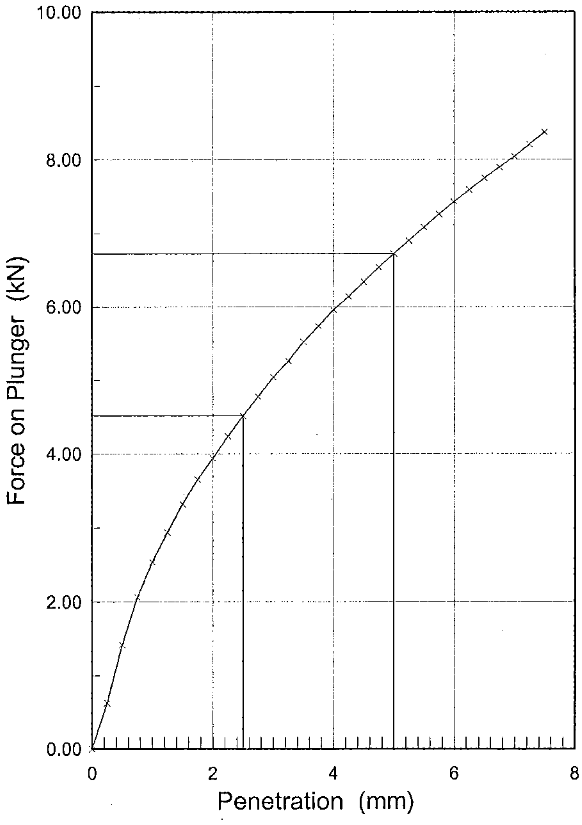
The specimen was tested in an unsoaked condition
The specimen was tested at its existing moisture content
The specimen was prepared by dynamic compaction using a 2.5 kg rammer
Specimen bulk density 1.68 Mg/m³
Specimen dry density 1.52 Mg/m³
12.4 % of the sample was retained on a 20mm sieve

Test Details	Top	Base	Mean
Surcharge	8.0 kg	8.0 kg	
Seating load	250 N	50 N	
Moisture content	11 %	11 %	
CBR Value	34 %	34 %	34 %

Top of Specimen



Base of Specimen



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Initials: [redacted]
Date: 25/08/2009

Project Number: GEO / 14829
Project Name: SITTINGBOURNE
IBP 0 1 6 4

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BS1377 : Part 4 : 1990

Moisture Content / Dry Density Relationship

Borehole No: BH3
Sample No: -
Depth: 0.50 - 2.00

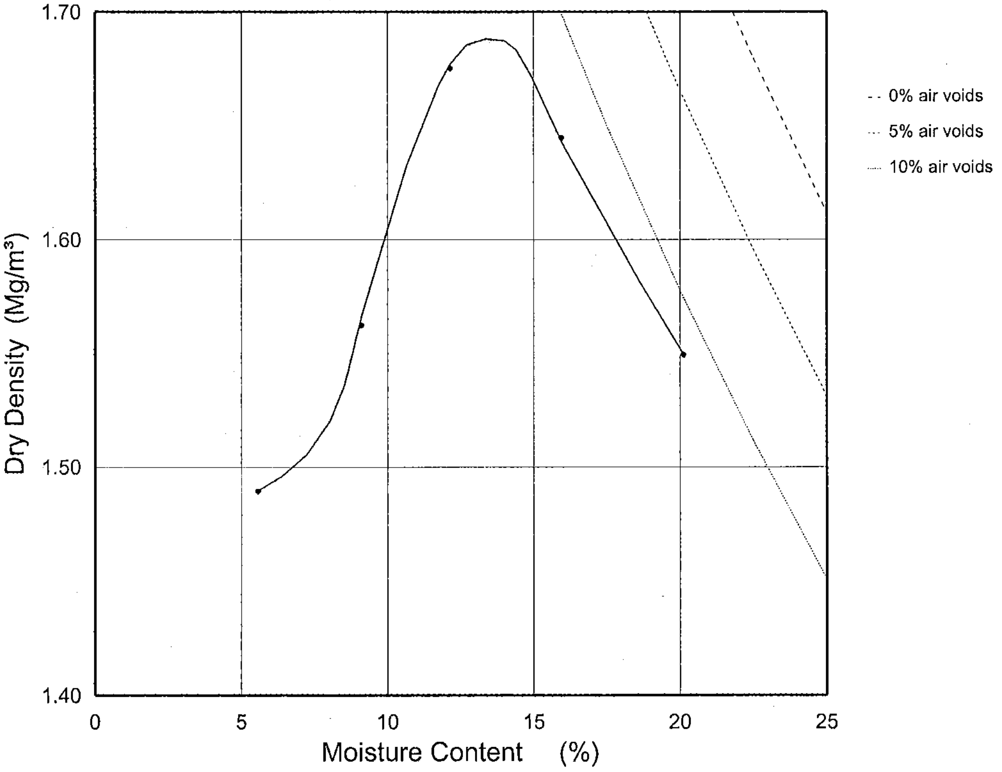
Description:
MADE GROUND: (Brown clayey very sandy silt and gravel with rare rare rootlets and ash, gravel is fine to coarse gravel clinker and brick)

BS1377 : Part 4 : Clause 3.4.4.1 : 1990 2.5 kg Compaction Test

Sample Preparation: Material was air dried. Single sample
Particles greater than 37.5mm were replaced by 20 to 37.5mm material.

Particle Density: 2.70 (assumed)

Material Retained
on 20 mm test sieve: 16 %
on 37.5 mm test sieve: 10 %



Maximum Dry Density **1.69 Mg/m³**

Optimum Moisture Content **14 %**

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Initials: [redacted]
Date: 25/08/2009

Project Number:
GEO / 14829
Project Name:
SITTINGBOURNE
IBP 0 1 6 4

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BS1377 : Part 4 : 1990

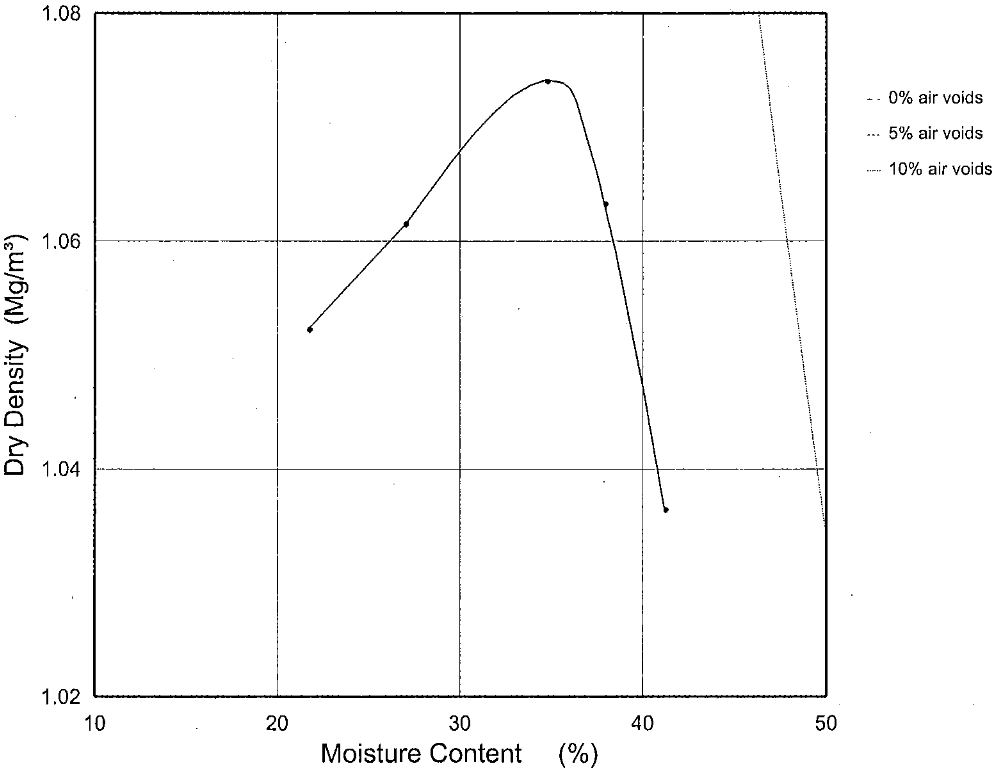
Moisture Content / Dry Density Relationship

Borehole No:	BH3
Sample No:	-
Depth:	2.50 - 3.00

Description:
MADE GROUND:(Black slightly clayey very silty very gravelly sand, gravel is fine to coarse coal, wood and plastic fragments)

BS1377 : Part 4 : Clause 3.3.4.1 : 1990 2.5 kg Compaction Test

Sample Preparation:	Material was air dried. Single sample Particles greater than 20mm were removed
Particle Density:	2.70 (assumed)
Material Retained	
on 20 mm test sieve:	3 %
on 37.5 mm test sieve:	0 %



Maximum Dry Density	**1.08 Mg/m³**
Optimum Moisture Content	**35 %**

Checked and Approved
Initials: [redacted]
Date: 25/08/2009

Project Number:
GEO / 14829
Project Name:
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BS1377 : Part 4 : 1990

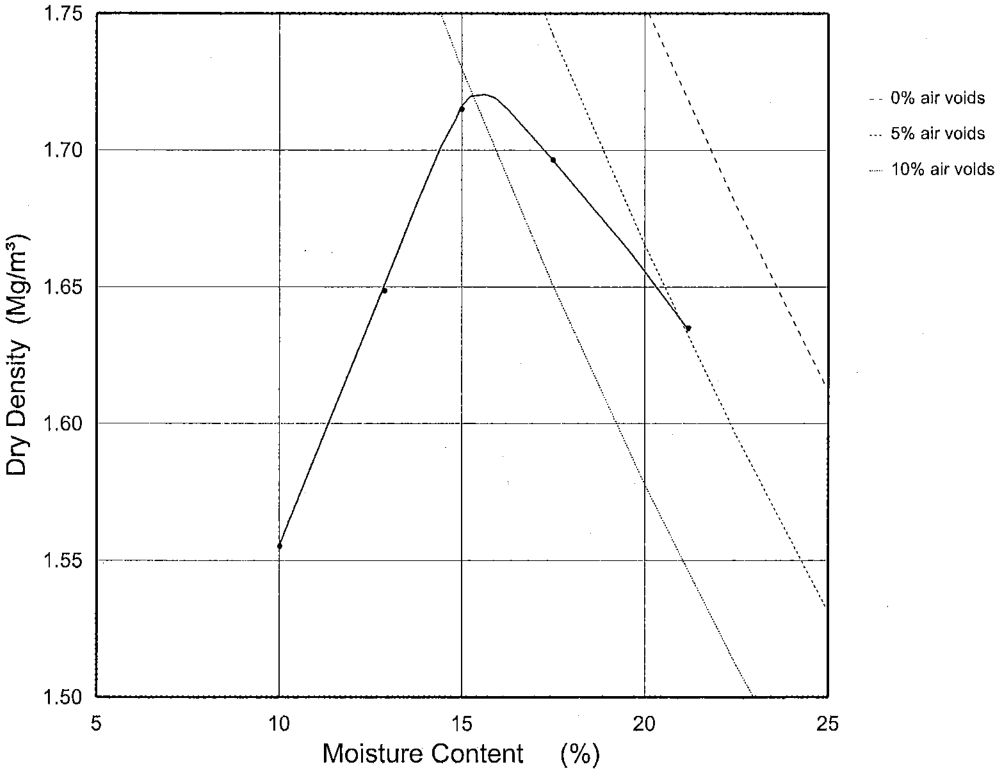
Moisture Content / Dry Density Relationship

Borehole No:	BH3
Sample No:	-
Depth:	3.50 - 5.00

Description:
Mottled brown and dark brown slightly gravelly silty CLAY

BS1377 : Part 4 : Clause 3.3.4.1 : 1990 2.5 kg Compaction Test

Sample Preparation:	Material was air dried. Single sample No particles were removed
Particle Density:	2.70 (assumed)
Material Retained	
on 20 mm test sieve:	0 %
on 37.5 mm test sieve:	0 %



Maximum Dry Density **1.72 Mg/m³**

Optimum Moisture Content **15 %**

Checked and Approved

Initials: [redacted]

Date: 25/08/2009

Project Number:

GEO / 14829

Project Name:

SITTINGBOURNE

IBP 0 1 6 4

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PROJECT NAME :	SITTINGBOURNE IBP 0 1 6 4
PROJECT NO:	GEO / 14829

BH	Sample No.	Depth (m)	pH	Total (Acid-soluble) SO4 (%)	Water-soluble (2:1 extract) SO4 (g/L)	Total Sulphur (%)	Water Soluble Chloride (mg/l)	Water Soluble Nitrate (mg/l)	Magnesium (mg/l)	Organic Content (%)	Carbonate Content (%)
BH3	-	4.00 - 4.45	8.5	0.110	1.00	0.046	325	<1.0	-	-	-
BH3	-	7.00 - 7.50	8.0	0.110	0.75	0.036	1400	<1.0	-	-	-
BH2	-	8.00 - 8.45	8.0	0.370	2.40	0.540	170	<1.0	-	-	-
BH3	-	12.00 - 12.50	7.7	0.180	1.60	0.870	265	<1.0	-	-	-
BH3	-	2.00 - 3.00	7.5	0.360	2.50	0.320	110	<1.0	-	-	-

Checked and approved:

Initials: [redacted]

Date: 25/08/2009

SUMMARY OF CHEMICAL TESTS ON SOIL

Test Report by GEOLABS Limited Bucknalls Lane, Garston, Watford, Hertfordshire, WD25 9XX
Authorised Signatories: • J R Masters (Qual Mgr) • C F Wallace (Tech Mgr) • G J Corio (Tech Mgr) [X] J Sturges (Tech Mgr)
Client: Peter Brett Associates, Caversham Bridge House, Waterman Place, Reading, Berkshire RG1 8DN

BS1377:Part 7:1990 Clause 4

Determination of Shear Strength by Direct Shear

(small shearbox apparatus)

Borehole No: 3
Sample No:
Depth: 7.00m

Description:

Stiff grey silty CLAY

Specimen Details

Depth within original sample		n/a
Orientation within original sample		n/a
Test condition		Submerged
Preparation		Remoulded at existing moisture content to a "medium" density
Particle density	*Mg/m^3*	2.70 (assumed)

Specimen Number		1	2	3
Length	*mm*	60.22	60.30	60.10
Width	*mm*	60.17	60.06	59.87
Height	*mm*	20	20	20
Initial moisture content	*%*	32	32	32
Initial wet density	*Mg/m^3*	1.89	1.89	1.89
Initial dry density	*Mg/m^3*	1.43	1.43	1.43
Initial voids ratio		0.88	0.89	0.89
Consolidation Stage				
Normal stress	*kPa*	50	100	200
Duration	*day(s)*	1	1	1
Shearing Stage				
Normal stress	*kPa*	50	100	200
Peak Conditions:				
Rate of horizontal displacement	*mm/min*	0.0072	0.0072	0.0072
Maximum shear stress	*kPa*	34	48	75
Horizontal displacement at MSS	*mm*	1.1	1.3	2.3
Residual Conditions:				
Rate of horizontal displacement	*mm/min*	n/a	n/a	n/a
Residual shear stress	*kPa*	n/a	n/a	n/a
Final cumulative displacement	*mm*	n/a	n/a	n/a
Total traverses		n/a	n/a	n/a
Method of reversal		n/a	n/a	n/a
Final moisture content	*%*	39	37	35
Duration	*day(s)*	1	1	1

Shear Strength Parameters

Maximum Condition:

Apparent Cohesion	*kPa*	**20**
Angle of Shearing Resistance	*degrees*	**15.5**

Residual Condition:

Apparent Cohesion	*kPa*	**n/a**
Angle of Shearing Resistance	*degrees*	**n/a**

Checked and Approved
Initials: **GJC**
Date: 26/08/09

Project Number:
GEO / 14829

Project Name:
SITTINGBOURNE

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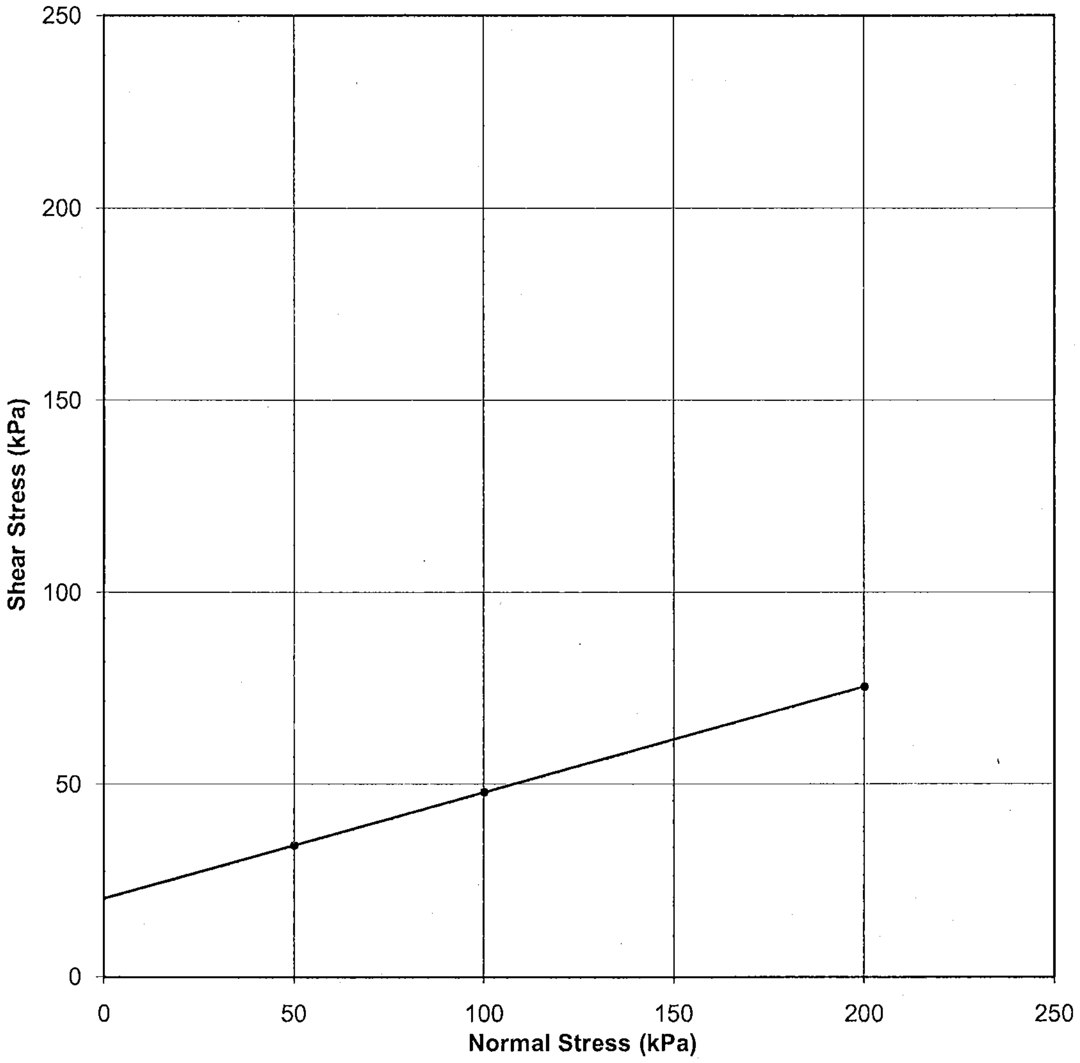
BS1377:Part 7:1990 Clause 4

Determination of Shear Strength by Direct Shear

(small shearbox apparatus)

Borehole No:	3	Description:
Sample No:		Stiff grey silty CLAY
Depth:	7.00m	

Shear Stress v Normal Stress



Peak: c' = 20 kPa

Φ' = 15.5 °

Checked and Approved	Project Number:	**GEOLABS**
Initials: GJC	GEO / 14829	
	Project Name:	
Date: 26/08/09	SITTINGBOURNE	

BS1377:Part 7:1990 Clause 4

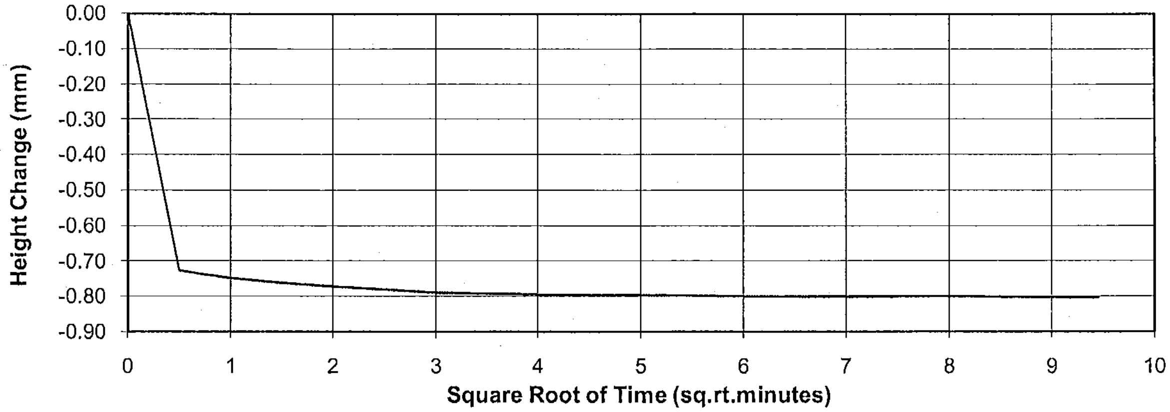
Determination of Shear Strength by Direct Shear

(small shearbox apparatus)

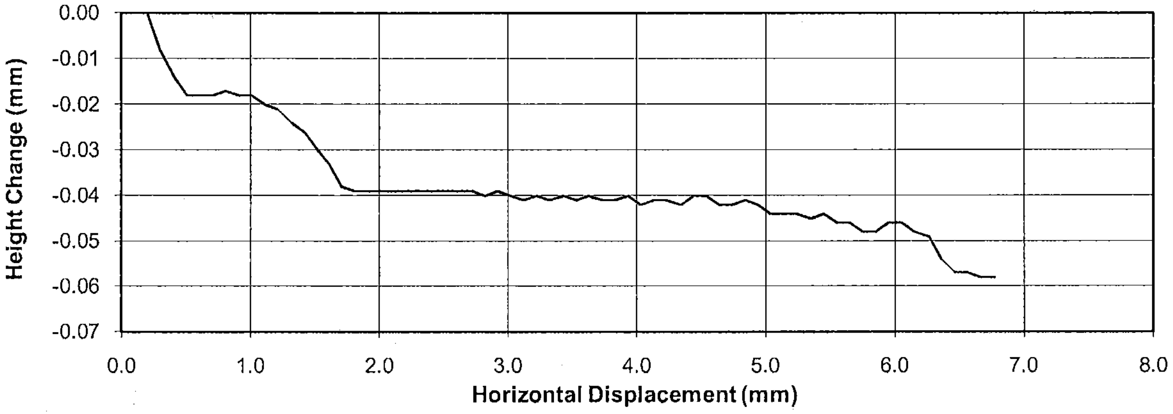
Borehole No:	3
Sample No:	
Depth:	7.00m

Specimen No 1 **Normal Pressure = 50 kPa**

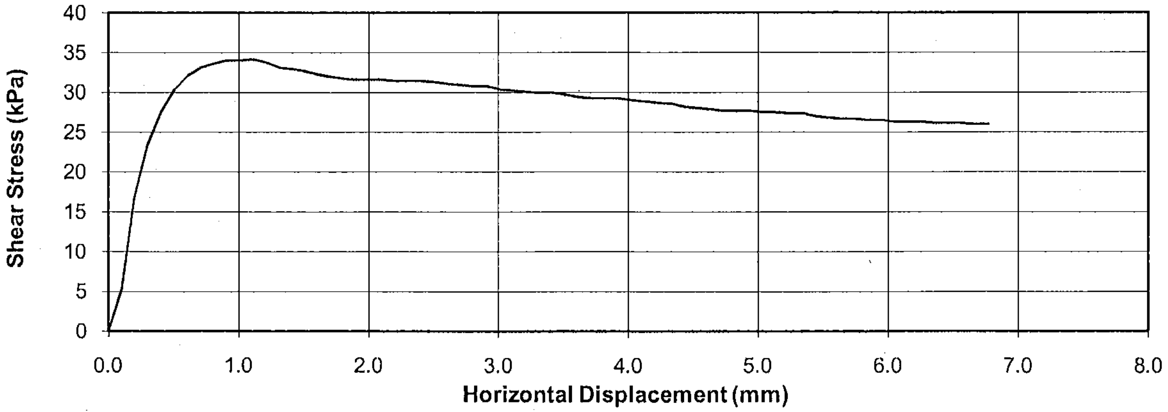
Height Change v Square Root Time



Height Change v Horizontal Displacement



Shear Stress v Horizontal Displacement



Checked and Approved	Project Number: GEO / 14829
Initials: GJC	Project Name: SITTINGBOURNE
Date: 26/08/09	**GEOLABS**

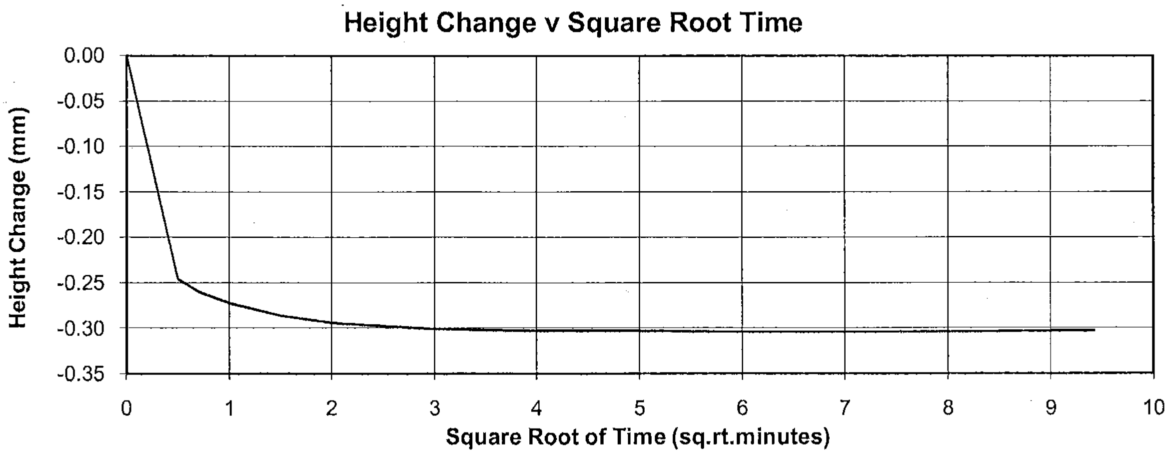
BS1377:Part 7:1990 Clause 4

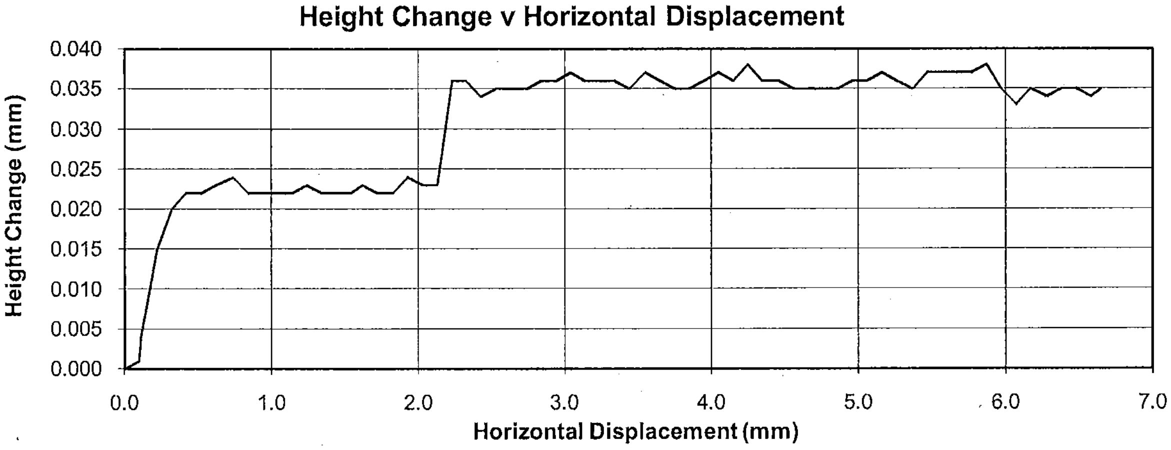
Determination of Shear Strength by Direct Shear

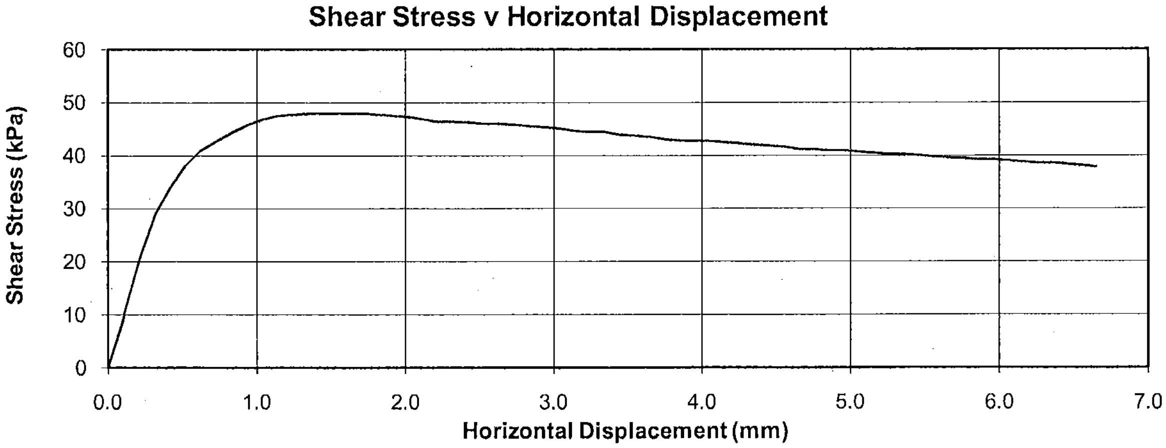
(small shearbox apparatus)

Borehole No: 3
Sample No:
Depth: 7.00m

Specimen No 2 **Normal Pressure = 100 kPa**







Checked and Approved Initials: GJC Date: 26/08/09	Project Number: GEO / 14829 Project Name: SITTINGBOURNE	**GEOLABS**

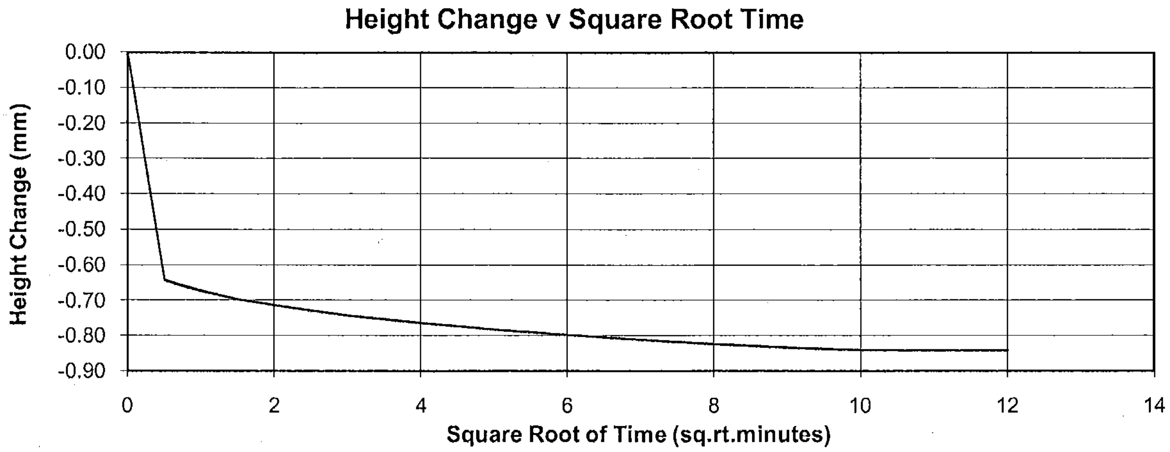
BS1377:Part 7:1990 Clause 4

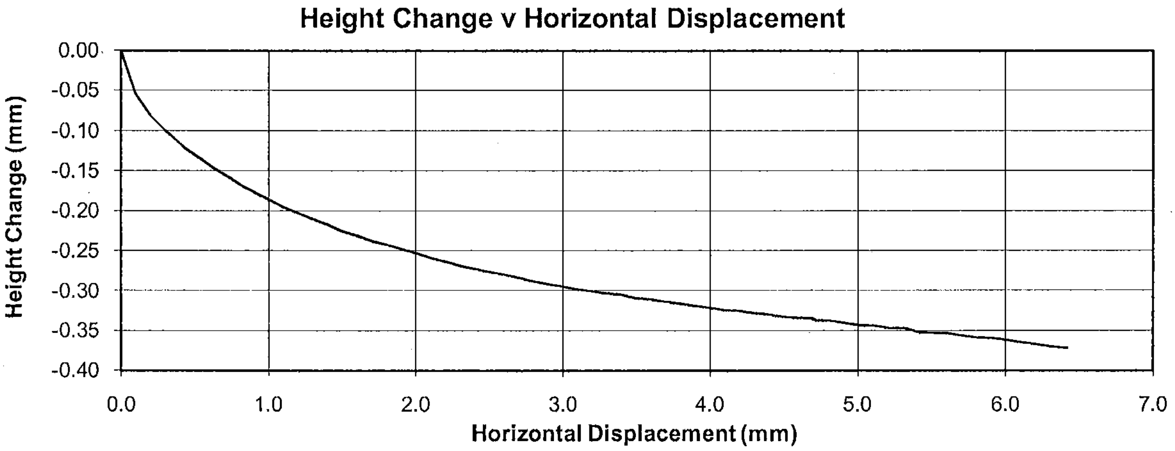
Determination of Shear Strength by Direct Shear

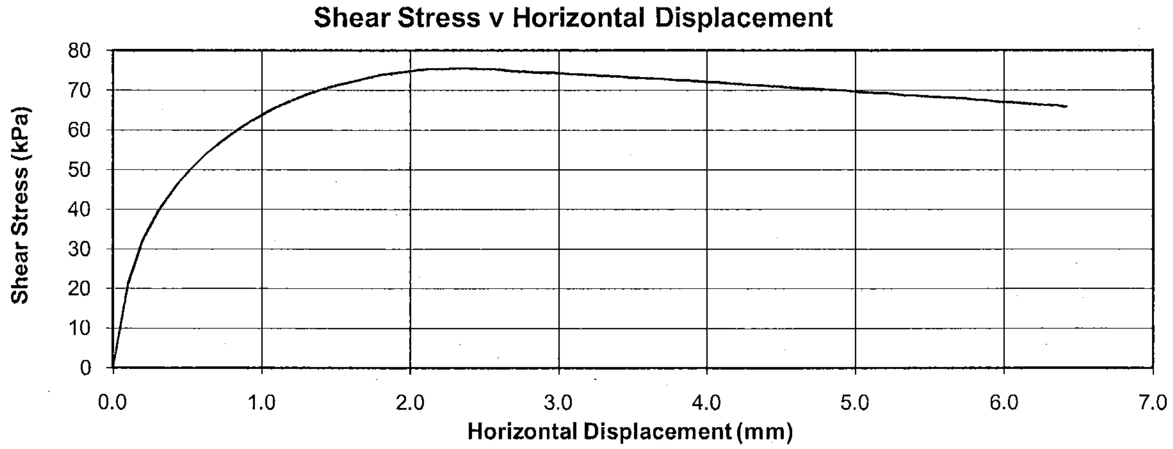
(small shearbox apparatus)

Borehole No:	3
Sample No:	
Depth:	7.00m

Specimen No 3 **Normal Pressure = 200 kPa**







Checked and Approved

Initials: GJC

Date: 26/08/09

Project Number:

GEO / 14829

Project Name:

SITTINGBOURNE

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BS1377:Part 7:1990 Clause 4

Determination of Shear Strength by Direct Shear

(small shearbox apparatus)

Borehole No: 3
Sample No:
Depth: 12.00m

Description:
Stiff grey silty CLAY

Specimen Details

Depth within original sample: n/a
Orientation within original sample: n/a
Test condition: Submerged
Preparation: Remoulded at existing moisture content to a "medium" density
Particle density Mg/m^3: 2.70 (assumed)

Specimen Number		1	2	3
Length	*mm*	60.22	60.30	60.10
Width	*mm*	60.17	60.06	59.87
Height	*mm*	20	20	20
Initial moisture content	*%*	31	31	31
Initial wet density	Mg/m^3	1.93	1.93	1.93
Initial dry density	Mg/m^3	1.48	1.48	1.48
Initial voids ratio		0.83	0.83	0.83
Consolidation Stage				
Normal stress	*kPa*	50	100	200
Duration	*day(s)*	1	1	1
Shearing Stage				
Normal stress	*kPa*	50	100	200
Peak Conditions:				
Rate of horizontal displacement	*mm/min*	0.0072	0.0072	0.0072
Maximum shear stress	*kPa*	35	49	74
Horizontal displacement at MSS	*mm*	0.7	0.9	1.7
Residual Conditions:				
Rate of horizontal displacement	*mm/min*	n/a	n/a	n/a
Residual shear stress	*kPa*	n/a	n/a	n/a
Final cumulative displacement	*mm*	n/a	n/a	n/a
Total traverses		n/a	n/a	n/a
Method of reversal		n/a	n/a	n/a
Final moisture content	*%*	37	34	32
Duration	*day(s)*	1	1	1

Shear Strength Parameters

Maximum Condition:

Apparent Cohesion	*kPa*	**22**
Angle of Shearing Resistance	*degrees*	**14.5**

Residual Condition:

Apparent Cohesion	*kPa*	**n/a**
Angle of Shearing Resistance	*degrees*	**n/a**

Checked and Approved
Initials: **GJC**
Date: 26/08/09

Project Number:
GEO / 14829

Project Name:
SITTINGBOURNE

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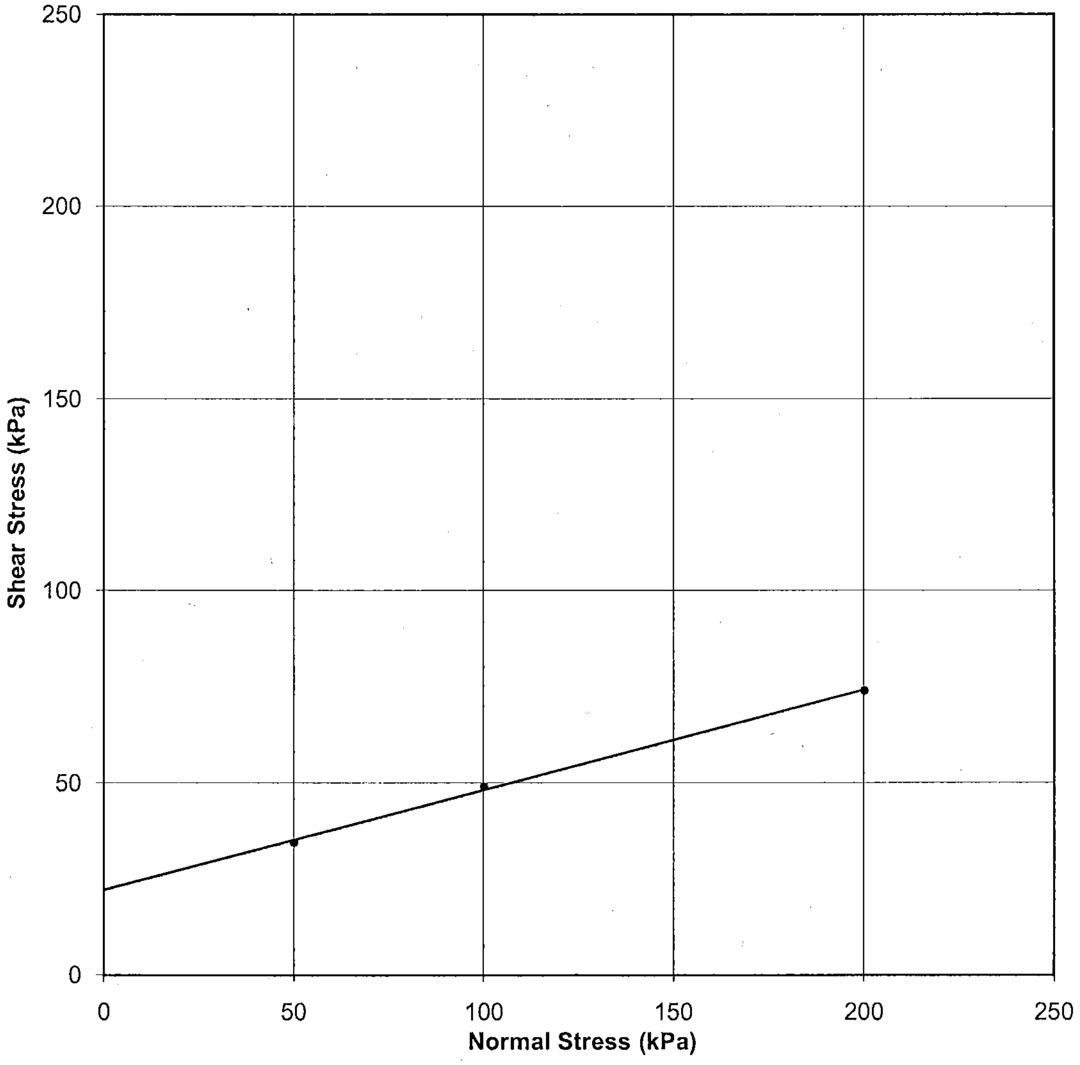
BS1377:Part 7:1990 Clause 4

Determination of Shear Strength by Direct Shear

(small shearbox apparatus)

Borehole No:	3	Description:
Sample No:		Stiff grey silty CLAY
Depth:	12.00m	

Shear Stress v Normal Stress



Peak: c' = 22 kPa

Φ' = 14.5 °

Checked and Approved	Project Number:	
	GEO / 14829	
Initials: GJC	Project Name:	**GEOLABS**
Date: 26/08/09	SITTINGBOURNE	

BS1377:Part 7:1990 Clause 4

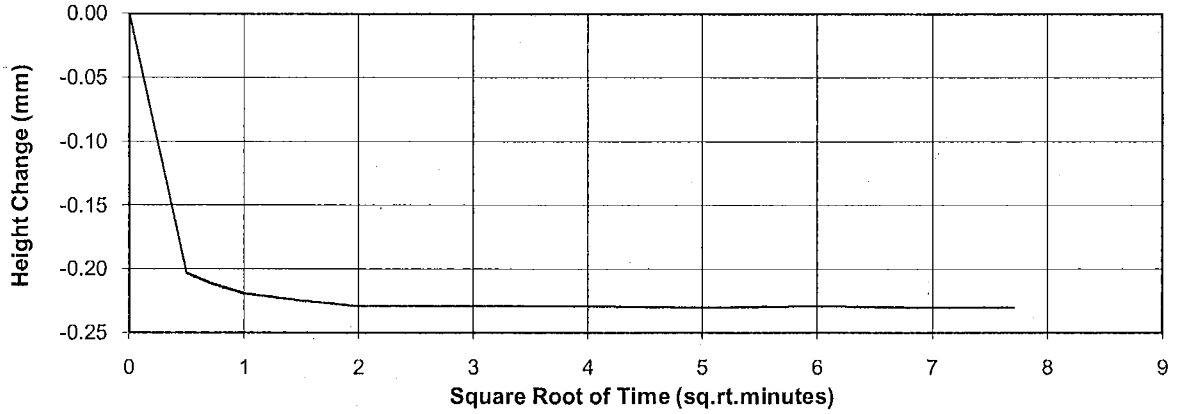
Determination of Shear Strength by Direct Shear

(small shearbox apparatus)

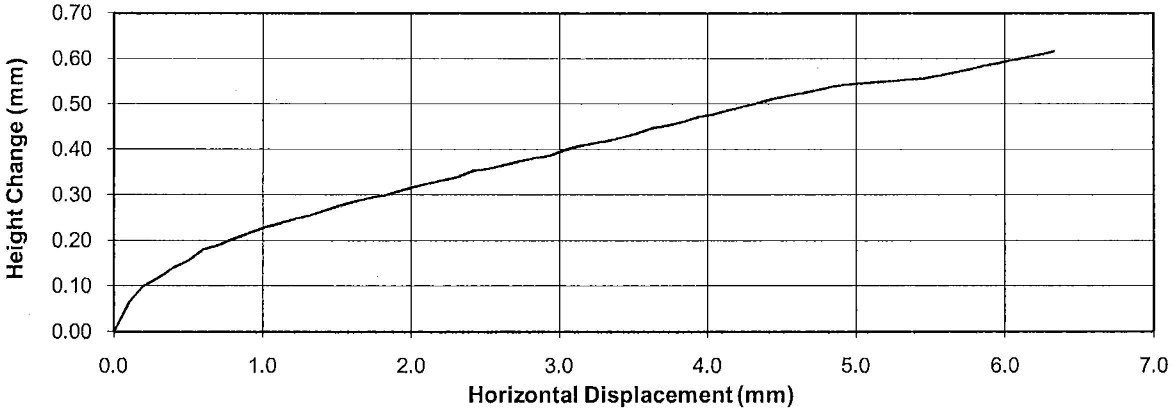
Borehole No:	3
Sample No:	
Depth:	12.00m

Specimen No 1 **Normal Pressure = 50 kPa**

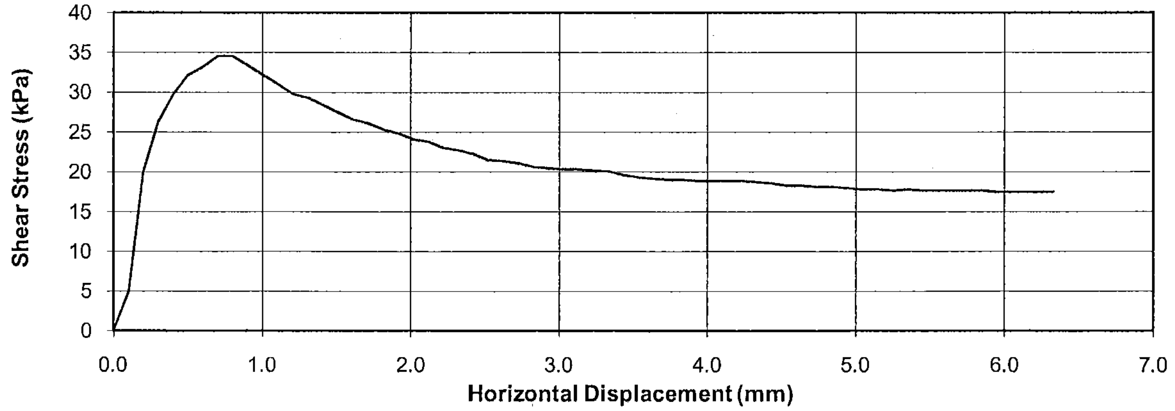
Height Change v Square Root Time



Height Change v Horizontal Displacement



Shear Stress v Horizontal Displacement



Checked and Approved	Project Number: GEO / 14829	**GEOLABS**
Initials: GJC	Project Name: SITTINGBOURNE	
Date: 26/08/09		

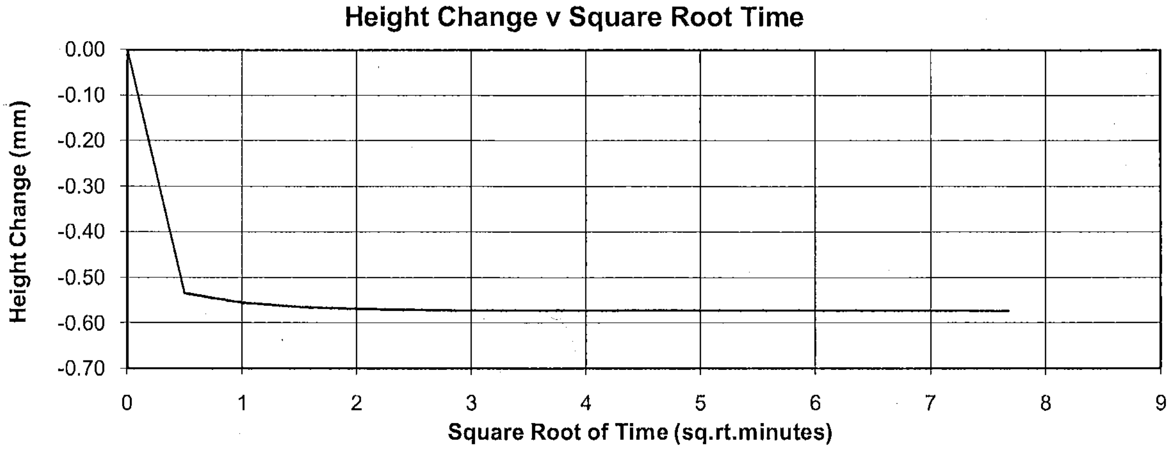
BS1377:Part 7:1990 Clause 4

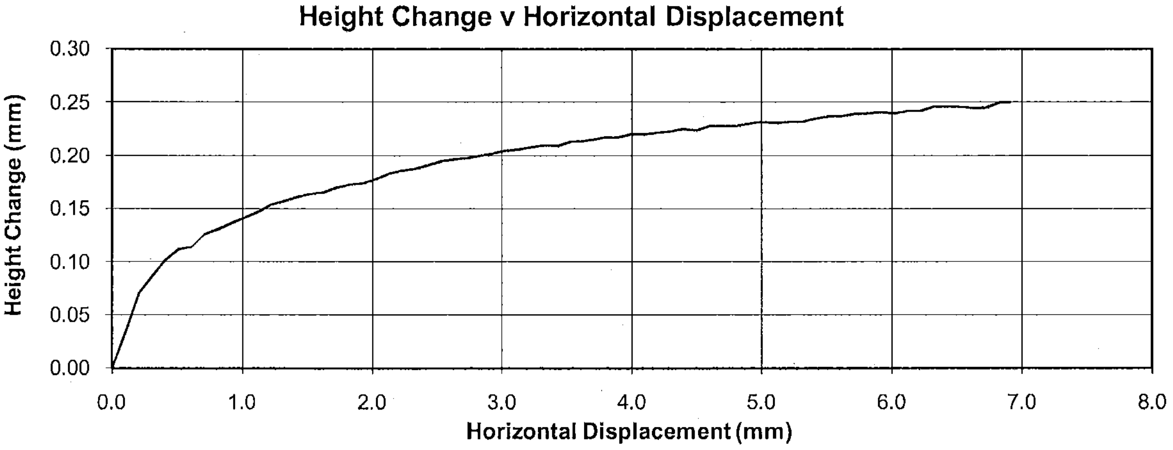
Determination of Shear Strength by Direct Shear

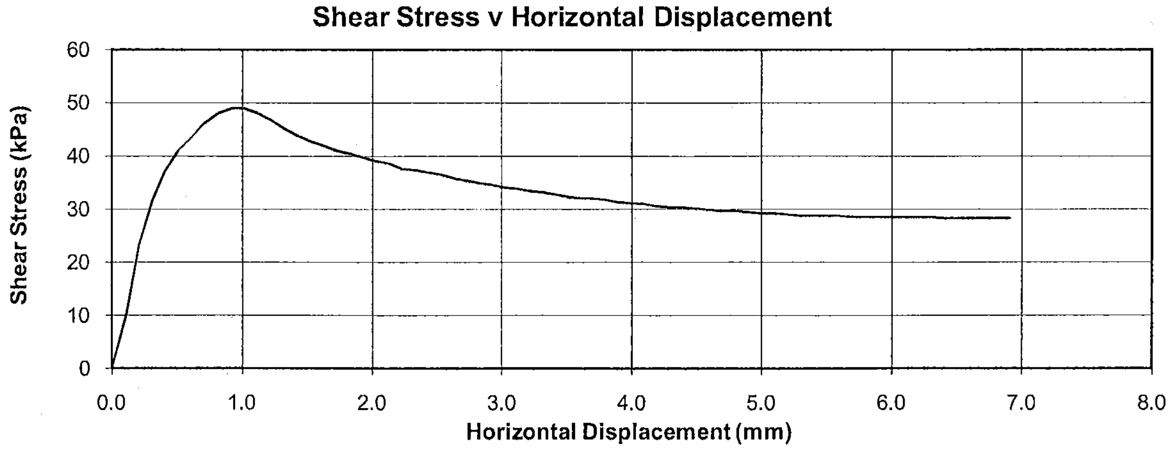
(small shearbox apparatus)

Borehole No: 3
Sample No:
Depth: 12.00m

Specimen No 2 **Normal Pressure = 100 kPa**







Checked and Approved
Initials: GJC
Date: 26/08/09

Project Number:
GEO / 14829
Project Name:
SITTINGBOURNE

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BS1377:Part 7:1990 Clause 4

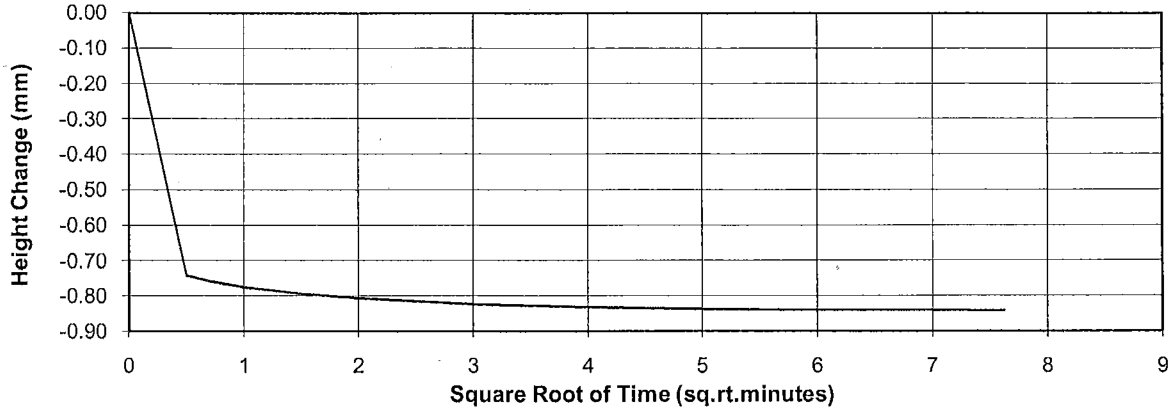
Determination of Shear Strength by Direct Shear

(small shearbox apparatus)

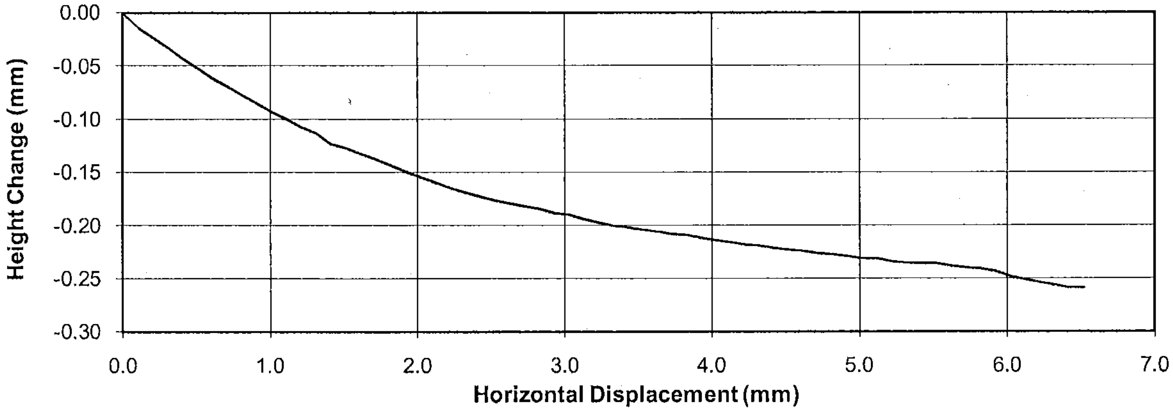
Borehole No: 3
Sample No:
Depth: 12.00m

Specimen No 3   **Normal Pressure = 200 kPa**

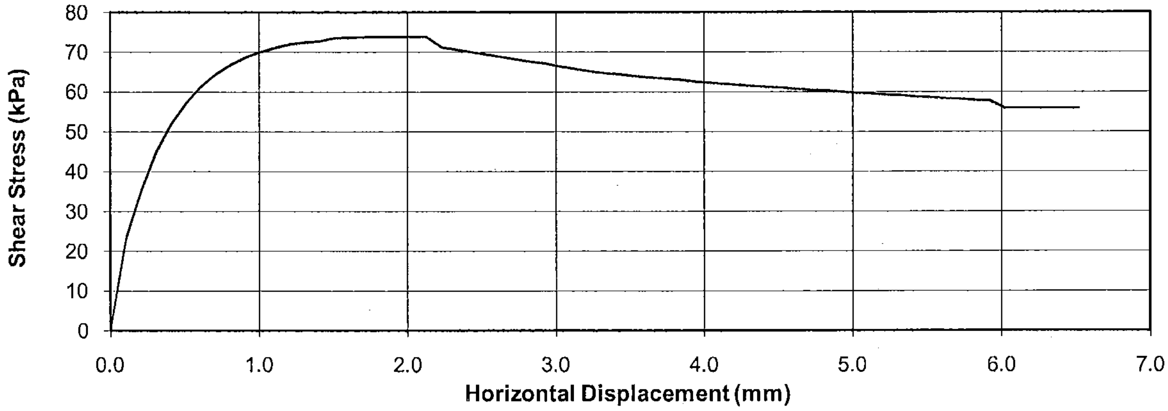
Height Change v Square Root Time



Height Change v Horizontal Displacement



Shear Stress v Horizontal Displacement



Checked and Approved

Initials: **GJC**

Date: 26/08/09

Project Number:

GEO / 14829

Project Name:

SITTINGBOURNE

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BS1377 : Part 2 : Clause 9 : 1990

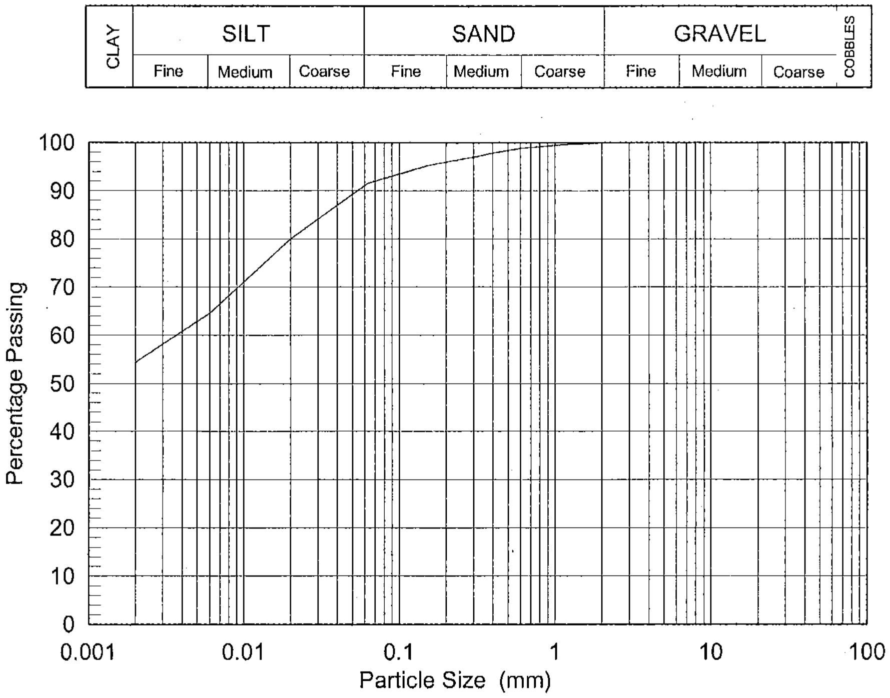
Determination of Particle Size Distribution

Borehole Number:	BH3
Sample Number:	-
Depth (m):	7.00 - 7.50

Description:
Brown silty CLAY with rare pockets of red-brown sand

BS1377 : Part 2 : Clause 9.2 : 1990 Wet Sieving Method
BS1377 : Part 2 : Clause 9.4 : 1990 Sedimentation by the Pipette Method

SIEVE	
Sieve	% pass
200 mm	100
125 mm	100
90 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
28 mm	100
20 mm	100
14 mm	100
10 mm	100
6.3 mm	100
5 mm	100
3.35 mm	100
2 mm	100
1.18 mm	100
600 µm	99
425 µm	98
300 µm	97
212 µm	96
150 µm	95
63 µm	92



Particle Proportions		
Cobbles	0.0	%
Gravel	0.1	%
Sand	8.3	%
Silt	37.2	%
Clay	54.4	%

PIPETTE	
Particle size	% pass
20.0 µm	80
6.0 µm	65
2.0 µm	54

Preparation:
No Pre-treatment used

Temp (°C)	20

Checked and Approved
Initials: [redacted]
Date: 25/08/2009

Project Number:
GEO / 14829
Project Name:
SITTINGBOURNE
IBP 0 1 6 4

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Test Report by GEOLABS Limited Bucknalls Lane, Garston, Watford, Hertfordshire, WD25 9XX
(Ref4050.722755) Page 1 of 1
Authorised Signatories: • J R Masters (Qual Mgr) • C F Wallace (Tech Mgr) • G J Corlo (Tech Mgr) [X] J Sturges (Tech Mgr) • R Platt (Snr Tech)

Client: Peter Brett Associates, Caversham Bridge House, Waterman Place, Reading, Berkshire RG1 8DN

BS1377 : Part 2 : Clause 9 : 1990

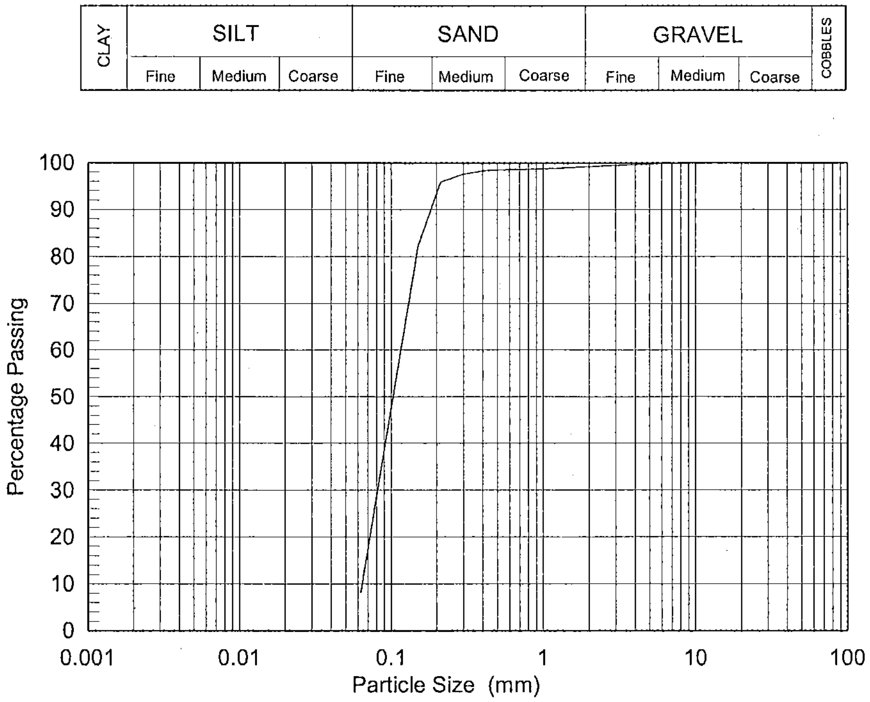
Determination of Particle Size Distribution

Borehole Number:	BH1
Sample Number:	-
Depth (m):	15.00 - 15.50

Description:
Grey silty SAND with rare shell fragments

BS1377 : Part 2 : Clause 9.2 : 1990 Wet Sieving Method

SIEVE	
Sieve	% pass
200 mm	100
125 mm	100
90 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
28 mm	100
20 mm	100
14 mm	100
10 mm	100
6.3 mm	100
5 mm	100
3.35 mm	99
2 mm	99
1.18 mm	99
600 µm	99
425 µm	98
300 µm	98
212 µm	96
150 µm	82
63 µm	8



Particle Proportions		
Cobbles	0.0	%
Gravel	0.8	%
Sand	91.1	%
Silt & Clay	8.1	%

Checked and Approved

Initials: [redacted]

Date: 25/08/2009

Project Number:

GEO / 14829

Project Name:

SITTINGBOURNE

IBP 0 1 6 4

GEOLABS

Test Report by GEOLABS Limited Bucknalls Lane, Garston, Watford, Hertfordshire, WD25 9XX (Ref4050.722801) Page 1 of 1

Authorised Signalories: • J R Masters (Qual Mgr) • C F Wallace (Tech Mgr) • G J Corio (Tech Mgr) [X] J Sturges (Tech Mgr) • R Platt (Snr Tech)

Client: Peter Brett Associates, Caversham Bridge House, Waterman Place, Reading, Berkshire RG1 8DN

BS1377 : Part 2 : Clause 9 : 1990

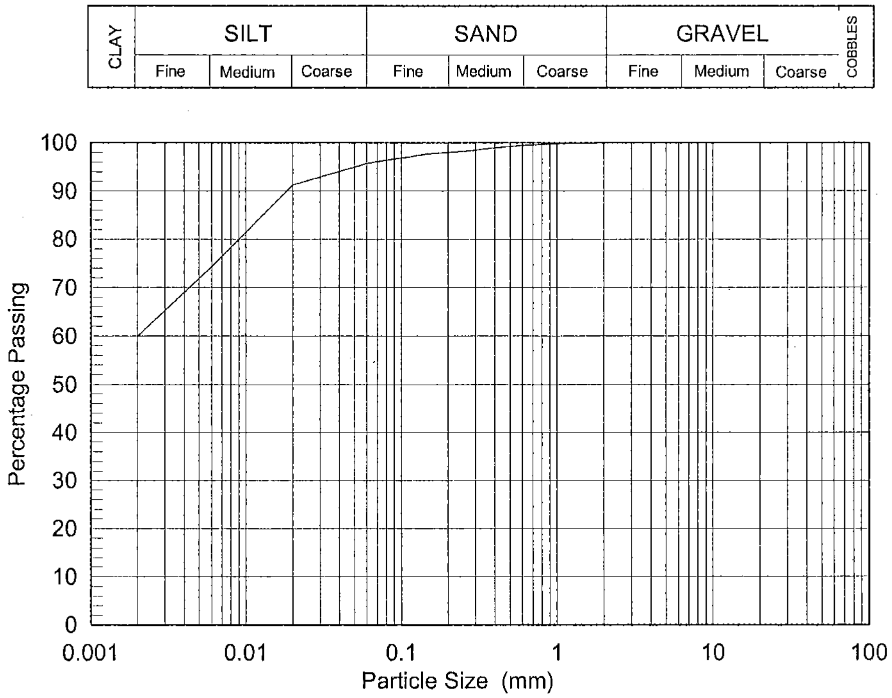
Determination of Particle Size Distribution

Borehole Number: BH3
Sample Number: -
Depth (m): 12.00 - 12.50

Description:
Grey slightly sandy silty CLAY

BS1377 : Part 2 : Clause 9.2 : 1990 Wet Sieving Method
BS1377 : Part 2 : Clause 9.4 : 1990 Sedimentation by the Pipette Method

SIEVE	
Sieve	% pass
200 mm	100
125 mm	100
90 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
28 mm	100
20 mm	100
14 mm	100
10 mm	100
6.3 mm	100
5 mm	100
3.35 mm	100
2 mm	100
1.18 mm	100
600 µm	99
425 µm	99
300 µm	98
212 µm	98
150 µm	98
63 µm	96



Particle Proportions		
Cobbles	0.0	%
Gravel	0.0	%
Sand	4.1	%
Silt	35.9	%
Clay	60.0	%

PIPETTE	
Particle size	% pass
20.0 µm	91
6.0 µm	74
2.0 µm	60

Preparation:
No Pre-treatment used

Temp (°C)	20

Checked and Approved
Initials: [redacted]
Date: 25/08/2009

Project Number:
GEO / 14829
Project Name:
SITTINGBOURNE
IBP 0 1 6 4

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BS1377 : Part 2 : Clause 9 : 1990

Determination of Particle Size Distribution

Trial Pit Number:	TPB
Sample Number:	-
Depth (m):	B

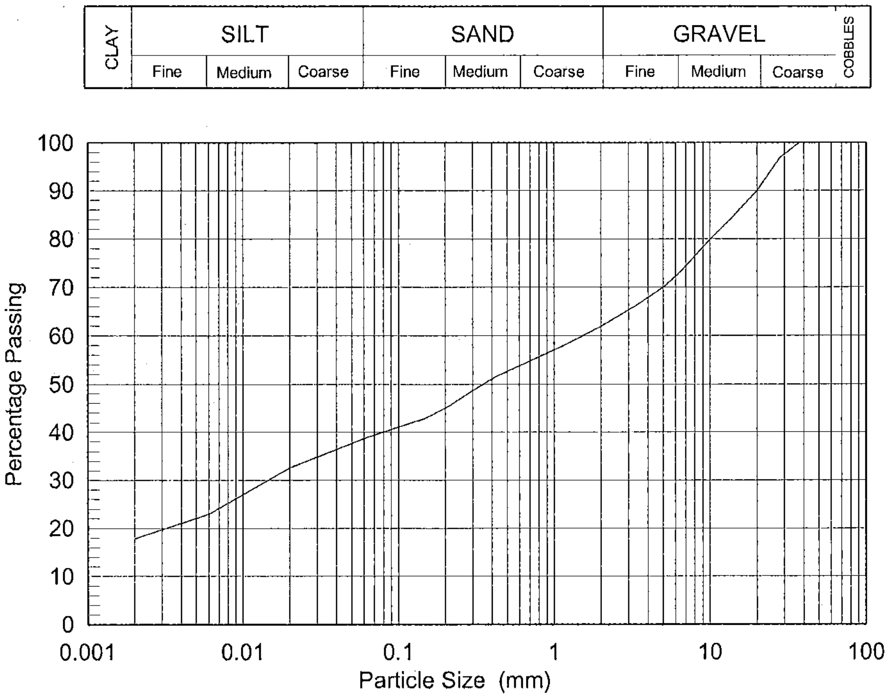
Description:
MADE GROUND: (Mottled grey and brown clayey very silty very sandy gravel with rare rootlets, gravel is fine to coarse gravel and brick fragments)

BS1377 : Part 2 : Clause 9.2 : 1990 Wet Sieving Method
BS1377 : Part 2 : Clause 9.4 : 1990 Sedimentation by the Pipette Method

SIEVE	
Sieve	% pass
200 mm	100
125 mm	100
90 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
28 mm	97
20 mm	90
14 mm	85
10 mm	80
6.3 mm	73
5 mm	70
3.35 mm	66
2 mm	62
1.18 mm	58
600 µm	54
425 µm	52
300 µm	49
212 µm	45
150 µm	43
63 µm	39

PIPETTE	
Particle size	% pass
20.0 µm	33
6.0 µm	23
2.0 µm	18
Preparation: No Pre-treatment used	

Temp (°C)	20



Particle Proportions		
Cobbles	0.0	%
Gravel	38.0	%
Sand	23.0	%
Silt	21.1	%
Clay	17.8	%

Checked and Approved

Initials: [redacted]

Date: 25/08/2009

Project Number:

GEO / 14829

Project Name:

SITTINGBOURNE

IBP 0 1 6 4

GEOLABS

BS1377 : Part 2 : Clause 9 : 1990

Determination of Particle Size Distribution

Borehole Number: BH3
Sample Number: -
Depth (m): 0.50 - 2.00

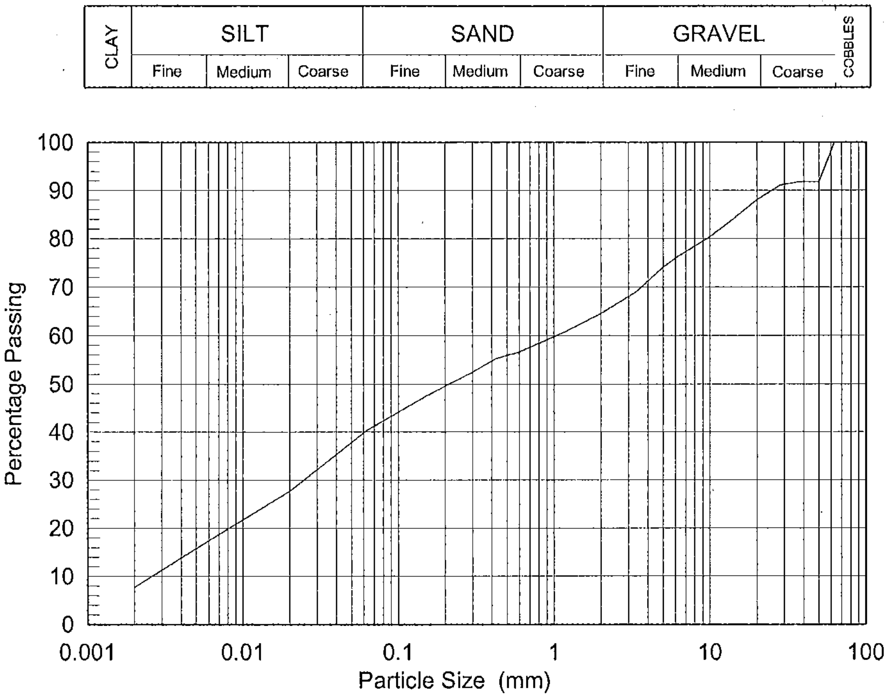
Description:
MADE GROUND: (Brown clayey very sandy silt and gravel with rare rare rootlets and ash, gravel is fine to coarse gravel clinker and brick)

BS1377 : Part 2 : Clause 9.2 : 1990 Wet Sieving Method
BS1377 : Part 2 : Clause 9.4 : 1990 Sedimentation by the Pipette Method

SIEVE	
Sieve	% pass
200 mm	100
125 mm	100
90 mm	100
75 mm	100
63 mm	100
50 mm	92
37.5 mm	92
28 mm	91
20 mm	88
14 mm	84
10 mm	80
6.3 mm	76
5 mm	74
3.35 mm	69
2 mm	65
1.18 mm	61
600 µm	57
425 µm	55
300 µm	52
212 µm	50
150 µm	47
63 µm	40

PIPETTE	
Particle size	% pass
20.0 µm	28
6.0 µm	17
2.0 µm	8
Preparation: No Pre-treatment used	

Temp (°C)	20



Particle Proportions		
Cobbles	0.0	%
Gravel	35.4	%
Sand	24.2	%
Silt	32.7	%
Clay	7.7	%

Checked and Approved
Initials: [redacted]
Date: 25/08/2009

Project Number:
GEO / 14829

Project Name:
SITTINGBOURNE
IBP 0 1 6 4

GEOLABS

BS1377 : Part 2 : Clause 9 : 1990

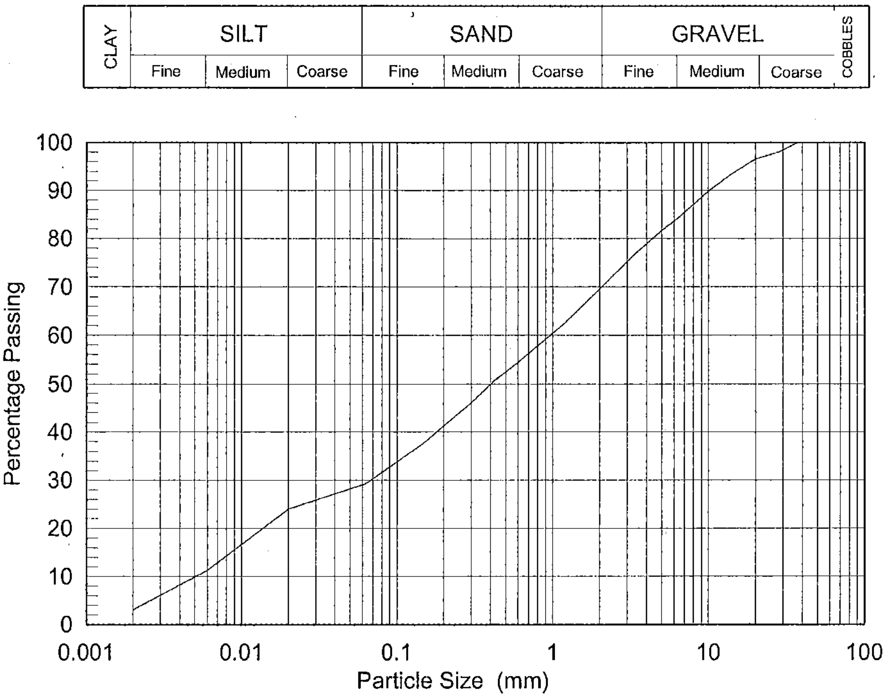
Determination of Particle Size Distribution

Borehole Number:	BH3
Sample Number:	-
Depth (m):	2.50 - 3.00

Description:
MADE GROUND: (Black slightly clayey very silty very gravelly sand, gravel is fine to coarse coal, wood and plastic fragments)

BS1377 : Part 2 : Clause 9.2 : 1990 Wet Sieving Method
BS1377 : Part 2 : Clause 9.4 : 1990 Sedimentation by the Pipette Method

SIEVE	
Sieve	% pass
200 mm	100
125 mm	100
90 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
28 mm	98
20 mm	97
14 mm	93
10 mm	90
6.3 mm	84
5 mm	82
3.35 mm	77
2 mm	70
1.18 mm	62
600 µm	54
425 µm	51
300 µm	46
212 µm	42
150 µm	38
63 µm	29



Particle Proportions		
Cobbles	0.0	%
Gravel	30.4	%
Sand	40.3	%
Silt	26.2	%
Clay	3.1	%

PIPETTE	
Particle size	% pass
20.0 µm	24
6.0 µm	11
2.0 µm	3

Preparation:
No Pre-treatment used

Temp (°C)	20

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Initials: [redacted]
Date: 25/08/2009

Project Number:
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Project Name:
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IBP 0 1 6 4

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BS1377 : Part 2 : Clause 9 : 1990

Determination of Particle Size Distribution

Trial Pit Number: TPB
Sample Number: -
Depth (m): A

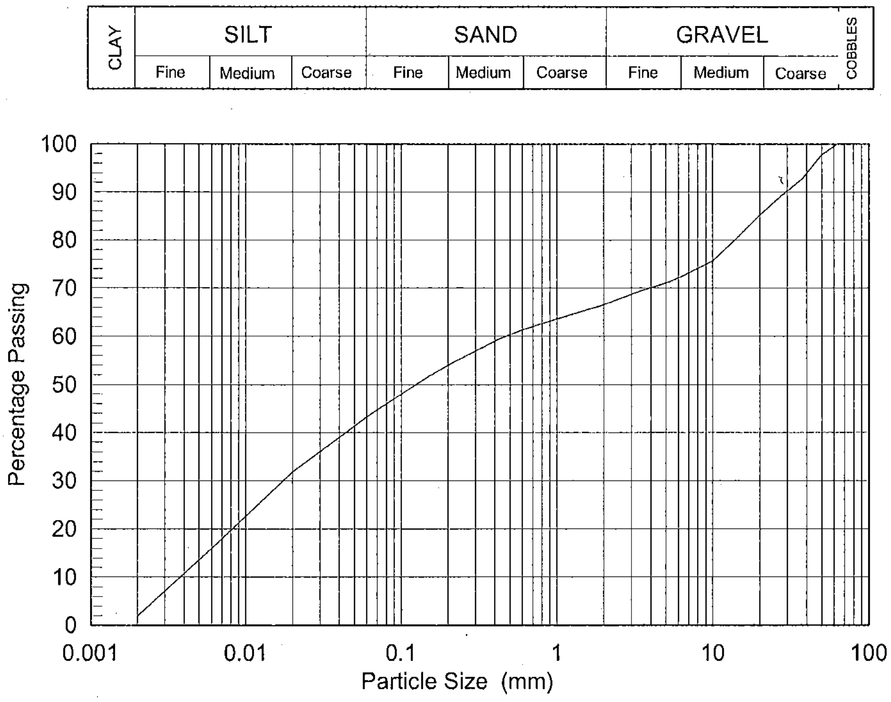
Description:
MADE GROUND: (Grey-brown slightly clayey very sandy very gravelly silt, gravel is fine to coarse gravel sized breeze block fragments)

BS1377 : Part 2 : Clause 9.2 : 1990 Wet Sieving Method
BS1377 : Part 2 : Clause 9.4 : 1990 Sedimentation by the Pipette Method

SIEVE	
Sieve	% pass
200 mm	100
125 mm	100
90 mm	100
75 mm	100
63 mm	100
50 mm	98
37.5 mm	93
28 mm	90
20 mm	85
14 mm	80
10 mm	76
6.3 mm	72
5 mm	71
3.35 mm	69
2 mm	67
1.18 mm	64
600 µm	61
425 µm	59
300 µm	57
212 µm	54
150 µm	52
63 µm	44

PIPETTE	
Particle size	% pass
20.0 µm	32
6.0 µm	16
2.0 µm	2
Preparation: No Pre-treatment used	

Temp (°C)	20



Particle Proportions		
Cobbles	0.0	%
Gravel	33.4	%
Sand	22.8	%
Silt	41.8	%
Clay	1.9	%

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Date: 25/08/2009

Project Number: GEO / 14829
Project Name: SITTINGBOURNE
IBP 0 1 6 4

GEOLABS

Test Report by GEOLABS Limited Bucknalls Lane, Garston, Watford, Hertfordshire, WD25 9XX
Authorised Signatories: • J R Masters (Qual Mgr) • C F Wallace (Tech Mgr) • G J Corlo (Tech Mgr) [X] J Sturges (Tech Mgr) • R Platt (Snr Tech)
Client: Peter Brett Associates, Caversham Bridge House, Waterman Place, Reading, Berkshire RG1 8DN

(Ref4050.723299) Page 1 of 1

BS1377 : Part 2 : Clause 9 : 1990

Determination of Particle Size Distribution

Trial Pit Number:	TP11
Sample Number:	-
Depth (m):	0.50 - 1.00

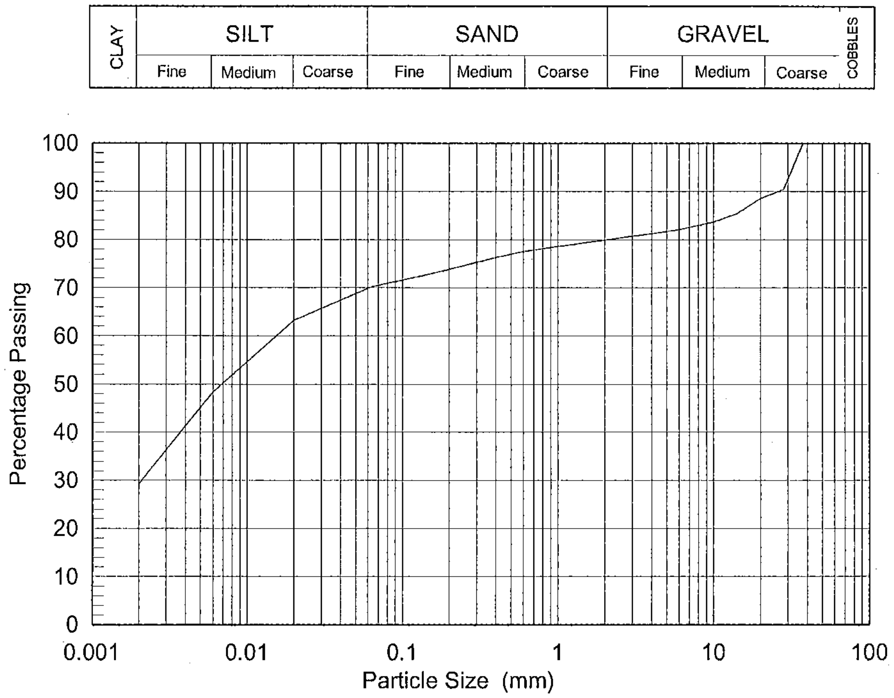
Description:
Brown sandy very gravelly clayey SILT with rare rootlets

BS1377 : Part 2 : Clause 9.2 : 1990 Wet Sieving Method
BS1377 : Part 2 : Clause 9.4 : 1990 Sedimentation by the Pipette Method

SIEVE	
Sieve	% pass
200 mm	100
125 mm	100
90 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
28 mm	90
20 mm	89
14 mm	85
10 mm	84
6.3 mm	82
5 mm	82
3.35 mm	81
2 mm	80
1.18 mm	79
600 µm	78
425 µm	77
300 µm	75
212 µm	74
150 µm	73
63 µm	70

PIPETTE	
Particle size	% pass
20.0 µm	63
6.0 µm	48
2.0 µm	29
Preparation: No Pre-treatment used	

Temp (°C)	20



Particle Proportions		
Cobbles	0.0	%
Gravel	20.0	%
Sand	9.7	%
Silt	41.0	%
Clay	29.3	%

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Date: 25/08/2009

Project Number:
GEO / 14829
Project Name:
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BS1377 : Part 2 : Clause 9 : 1990

Determination of Particle Size Distribution

Trial Pit Number: TP11
Sample Number: -
Depth (m): 2.50 - 3.00

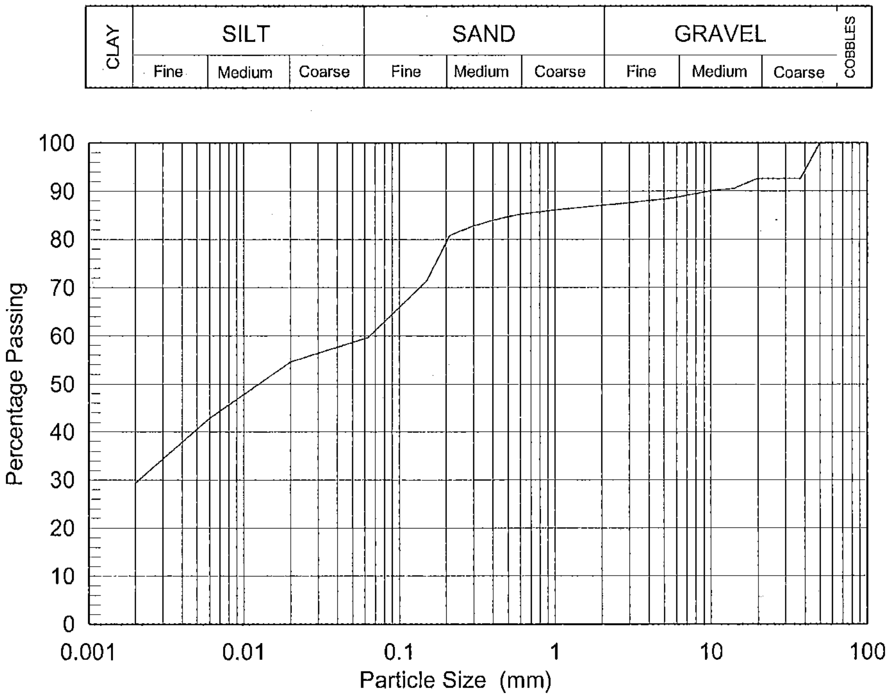
Description:
Mottled grey and brown gravelly SAND and silty CLAY

BS1377 : Part 2 : Clause 9.2 : 1990 Wet Sieving Method
BS1377 : Part 2 : Clause 9.4 : 1990 Sedimentation by the Pipette Method

SIEVE	
Sieve	% pass
200 mm	100
125 mm	100
90 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	93
28 mm	93
20 mm	93
14 mm	91
10 mm	90
6.3 mm	89
5 mm	88
3.35 mm	88
2 mm	87
1.18 mm	86
600 µm	85
425 µm	84
300 µm	83
212 µm	81
150 µm	71
63 µm	60

PIPETTE	
Particle size	% pass
20.0 µm	55
6.0 µm	43
2.0 µm	29
Preparation: No Pre-treatment used	

Temp (°C)	20



Particle Proportions		
Cobbles	0.0	%
Gravel	12.9	%
Sand	27.4	%
Silt	30.3	%
Clay	29.4	%

Checked and Approved
Initials: [redacted]
Date: 25/08/2009

Project Number:
GEO / 14829
Project Name:
SITTINGBOURNE
IBP 0 1 6 4

GEOLABS

PROJECT NAME	SITTINGBOURNE IBP 0 1 6 4	Date	25/08/2009
PROJECT NO:	GEO / 14829	Approved	[redacted]
		Page	1 of 1

Sample details					Classification Tests					Density Tests		Undrained Triaxial Compression Tests			Chemical Tests			
Borehole No.	Depth (m)	No.	Type	Description	MC (%)	LL (%)	PL (%)	PI (%)	<425 mic (%)	Bulk (Mg/m^3)	Dry (Mg/m^3)	Cell Pressure (kPa)	Deviator Stress (kPa)	Shear Stress (kPa)	pH	2:1 W/S SO4 (g/l)	Ground Water SO4 (g/l)	Other tests and comments
BH3	4.00 - 4.45	-	U	Mottled brown and orange silty clayey very sandy fine GRAVEL	38	41	16	25	26									Chemical Testing Oedometer Consolidation Test
BH3	6.00 - 6.50	-	B	Brown sandy silty CLAY, sand is fine	37	72	26	46	99									
BH3	7.00 - 7.50	-	B	Brown silty CLAY with rare pockets of red-brown sand														Direct Shear Test Chemical Testing Particle Size Distribution Test
BH1	4.00 - 4.45	-	U	Firm very closely fissured grey silty CLAY with occasional iron staining	33	77	27	50	100	1.89	1.42	80	129	65				
BH1	15.00 - 15.50	-	B	Grey silty SAND with rare shell fragments														Particle Size Distribution Test
BH2	8.00 - 8.45	-	U	Stiff closely fissured grey silty CLAY with rare shell fragments	30	74	25	49	99	1.94	1.49	160	193	97				Chemical Testing
BH3	12.00 - 12.50	-	B	Grey slightly sandy silty CLAY														Direct Shear Test Chemical Testing Particle Size Distribution Test
TPB	B	-	B	MADE GROUND: (Mottled grey and brown clayey very silty very sandy gravel with rare rootlets, gravel is fine to coarse gravel and brick fragments)														2.5kg Compaction Test Particle Size Distribution Test California Bearing Ratio Test
BH3	0.50 - 2.00	-	B	MADE GROUND: (Brown clayey very sandy silt and gravel with rare rare rootlets and ash, gravel is fine to coarse gravel clinker and brick)	22													Chemical Testing 2.5kg Compaction Test Particle Size Distribution Test
BH3	2.50 - 3.00	-	B	MADE GROUND: (Black slightly clayey very silty very gravelly sand, gravel is fine to coarse coal, wood and plastic fragments)	46	46	24	22	98									2.5kg Compaction Test California Bearing Ratio Test
BH3	3.50 - 5.00	-	B	Mottled brown and dark brown slightly gravelly silty CLAY														Particle Size Distribution Test
TPB	A	-	B	MADE GROUND: (Grey-brown slightly clayey very sandy very gravelly silt, gravel is fine to coarse gravel sized breeze block fragments)	11													Particle Size Distribution Test California Bearing Ratio Test

SUMMARY OF GEOTECHNICAL TESTING

GEOLABS

Test Report by GEOLABS Limited Bucknalls Lane, Garston, Watford, Hertfordshire, WD25 9XX
Authorised Signatories: • J R Masters (Qual Mgr) • C F Wallace (Tech Mgr) • G J Corio (Tech Mgr) [X] J Sturges (Tech Mgr) • R J Platt (Snr Tech) • J J M Powell (Tech Dir)
Client: Peter Brett Associates, Caversham Bridge House, Waterman Place, Reading, Berkshire RG1 8DN

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Appendix G

Generic Assessment Criteria for Commercial / Industrial End Use

Screening Criteria for Commerical/Industrial

Determinant	Source	GAC (mg/kg)			Notes
		1% SOM	2.5% SOM	5% SOM	
Aliphatic C5-C6	GAC based on CLEA UK	94.6	166	286	pH 7, sandy soil
Aliphatic C6-C8	GAC based on CLEA UK	241	533	1020	pH 7, sandy soil
Aliphatic C8-C10	GAC based on CLEA UK	64.1	156	308	pH 7, sandy soil
Aliphatic C10-C12	GAC based on CLEA UK	31300	31000	31100	pH 7, sandy soil
Aliphatic C12-C16	GAC based on CLEA UK	31300	31000	31100	pH 7, sandy soil
Aliphatic C16-C21	GAC based on CLEA UK	614000	616000	622000	pH 7, sandy soil
Aliphatic C21-C35	GAC based on CLEA UK	614000	616000	622000	pH 7, sandy soil
Aromatic C5-C7	GAC based on CLEA UK	41.6	95.9	186	pH 7, sandy soil
Aromatic C7-C8	GAC based on CLEA UK	46.8	110	214	pH 7, sandy soil
Aromatic C8-C10	GAC based on CLEA UK	106	259	507	pH 7, sandy soil
Aromatic C10-C12	GAC based on CLEA UK	608	1510	2429	pH 7, sandy soil
Aromatic C12-C16	GAC based on CLEA UK	12500	12400	12400	pH 7, sandy soil
Aromatic C16-C21	GAC based on CLEA UK	9210	9240	9330	pH 7, sandy soil
Aromatic C21-C35	GAC based on CLEA UK	9210	9240	9330	pH 7, sandy soil
Benzene	New SGV	95			SOM 6%, sandy loam soil
Tolune	New SGV	4400			SOM 6%, sandy loam soil
Ethylbenzene	New SGV	2800			SOM 6%, sandy loam soil
o-xylene	New SGV	2600			SOM 6%, sandy loam soil
m-xylene	New SGV	3500			SOM 6%, sandy loam soil
p-xylene	New SGV	3200			SOM 6%, sandy loam soil
Anthracene	GAC based on CLEA UK	58100	58700	58700	pH 7, sandy soil
Benzo(a)pyrene	GAC based on CLEA UK	27.8	28.2	28.1	pH 7, sandy soil
Benzo(ghi)perylene	GAC based on CLEA UK	44900	44000	44000	pH 7, sandy soil
Fluorene	GAC based on CLEA UK	58100	58600	58700	pH 7, sandy soil
Phenanthrene	GAC based on CLEA UK	58100	58600	58600	pH 7, sandy soil
Naphthalene	GAC based on CLEA UK	290	720	1440	pH 7, sandy soil
1,1,1-Trichloroethane	GAC based on CLEA UK	551	1280	2480	pH 7, sandy soil
Vinyl Chloride	GAC based on CLEA UK	0.0589	0.114	0.204	pH 7, sandy soil
Carbon Tetrachloride	GAC based on CLEA UK	2.48	5.84	11.4	pH 7, sandy soil
1,2-Dichloroethane	GAC based on CLEA UK	0.539	1.17	2.21	pH 7, sandy soil
Trichloroethene	GAC based on CLEA UK	6.46	14.9	29	pH 7, sandy soil
Tetrachloroethene	GAC based on CLEA UK	49.1	113	218	pH 7, sandy soil
1,1,2,2-Tetrachloroethane	GAC based on CLEA UK	288	656	1210	pH 7, sandy soil
PCBs (dioxin like mix)	GAC based on CLEA UK	0.00063	0.00062	0.00062	pH 7, sandy soil
Arsenic	New SGV	640			SOM 6%, sandy loam soil
Cadmium	Old SGV	1400			
Chromium	Old SGV	5000			
Lead	Old SGV	750			
Mercury (Inorganic)	New SGV	3600			SOM 6%, sandy loam soil
Nickel	New SGV	1800			SOM 6%, sandy loam soil
Selenium	New SGV	13000			SOM 6%, sandy loam soil

Appendix H

Plates

Plate 1 : WS2 Core Sample & WS3 Core Sample

Plate 2 : WS8 Core Sample & WS5 Core Sample

Client: E.O N

Project: kemsley Mill, Sittingbourne

Date: 22.07.09 Checked: AP Job Ref :4418

Plate 3 : WS6 Core Sample & WS4 core sample

Plate 4 : TP4 Spoil and TP4

Client: E.O N

Project: kemsley Mill, Sittingbourne

Date: 22.07.09 Checked: AP Job Ref :4418

Plate 5 : TP5 Spoil and TP5

Plate 6 : TP9 Spoil & TP9

Client: E.O N

Project: kemsley Mill, Sittingbourne

Date: 22.07.09 Checked: AP Job Ref :4418

Plate 7 : TP11 spoil & TP11

Plate 8 : TP15 spoil & TP15

Client: E.O N

Project: kemsley Mill, Sittingbourne

Date: 22.07.09 Checked: AP Job Ref :4418

Plate 9 : TP2 spoil & TP 2

Plate 10
: TP3 Spoil & TP 3

Client: E.O N

Project: kemsley Mill, Sittingbourne

Date: 22.07.09 Checked: AP Job Ref :4418

Plate 11 : TP7 spoil & TP7

Plate 12 :TP8 spoil

Client: E.O N

Project: kemsley Mill, Sittingbourne

Date: 22.07.09 Checked: AP Job Ref :4418

Plate 13 : TP10 spoil & TP10

Plate 14 : TP14 spoil & TP14

Client: E.O N

Project: kemsley Mill, Sittingbourne

Date: 22.07.09 Checked: AP Job Ref :4418

Plate 15 : TP13 spoil & TP13

Client: E.O N

Project: kemsley Mill, Sittingbourne

Date: 22.07.09 Checked: AP Job Ref :4418

Appendix 12.1

Noise and Vibration Units, Standards and Guidance

Noise and Noise Units

A12.1.1 Noise is defined as unwanted sound. The range of audible sound is from 0 dB to 140 dB. The frequency response of the ear is usually taken to be about 18 Hz (number of oscillations per second) to 18000 Hz. The ear does not respond equally to different frequencies at the same level. It is more sensitive in the mid-frequency range than the lower and higher frequencies and because of this, the low and high frequency components of a sound are reduced in importance by applying a weighting (filtering) circuit to the noise measuring instrument. The weighting which is most widely used and which correlates best with subjective response to noise is the dB(A) weighting. This is an internationally accepted standard for noise measurements.

A12.1.2 For variable noise sources such as traffic, a difference of 3 dB(A) is just distinguishable. In addition, a doubling of a noise source would increase the overall noise by 3 dB(A). For example, if one item of machinery results in noise levels of 30 dB(A) at 10 m, then two identical items of machinery adjacent to one another would result in noise levels of 33 dB(A) at 10 m. The 'loudness' of a noise is a purely subjective parameter but it is generally accepted that an increase/decrease of 10 dB(A) corresponds to a doubling/halving in perceived loudness.

A12.1.3 External noise levels are rarely steady but rise and fall according to activities within an area. In an attempt to produce a figure that relates this variable noise level to subjective response, a number of noise metrics have been developed. These include:

- L_{Aeq} noise level - This is the 'equivalent continuous A-weighted sound pressure level, in decibels' and is defined in BS 7445 [1] as the 'value of the A-weighted sound pressure level of a continuous, steady sound that, within a specified time interval, T, has the same mean square sound pressure as a sound under consideration whose level varies with time'. It is a unit commonly used to describe community response plus, construction noise and noise from industrial premises and is the most suitable unit for the description of other forms of environmental noise. In more straightforward terms, it is a measure of energy within the varying noise.
- L_{A90} noise level - This is the noise level that is exceeded for 90% of the measurement period and gives an indication of the noise level during quieter periods. It is often referred to as the background noise level and is used in the assessment of disturbance from industrial noise.
- L_{A10} noise level - This is the noise level that is exceeded for 10% of the measurement period and gives an indication of the noisier levels. It is a unit that has been used over many years for the measurement and assessment of road traffic noise.

Vibration and Vibration Units

A12.1.4 Whereas noise is primarily received through the air and perceived by the auditory senses, vibration is lower frequency phenomenon, which is primarily received through the ground or through structures and is perceived by the body as movement. This movement can be felt as sudden shocks or more gentle displacement dependent upon the frequency/ies and magnitude of the source.

A12.1.5 Groundborne vibration from construction sources, such as piling, can be a source of concern for occupants of buildings in the vicinity. The concern can be that the building may suffer some form of cosmetic or structural damage or that ground settlement may arise that could subsequently lead to damage. Research associated with BS 7385, Part 1 [2], concerned with vibration-induced building damage, found that although a large number of case histories were assembled, very few cases of vibration-induced damage were found. However, structural vibration in buildings can be detected by the occupants and can affect them in many ways: their quality of life can be reduced, as also can their working efficiency, although, there is little evidence that whole-body vibration directly affects cognitive processes. It should be noted that there is a major difference between the sensitivity of people feeling vibration and the onset of levels of vibration that damage a structure.

Peak Particle Velocity (PPV)

A12.1.6 Peak particle velocity is defined as '*the maximum instantaneous velocity of a particle at a point during a given time interval*', and has been found to be the best single descriptor for correlating with case history data on the occurrence of vibration-induced damage to buildings and structures. It is normally evaluated at the foundations of a building.

Vibration Dose Value (VDV)

A12.1.7 The effect of structureborne vibration affecting people inside buildings is assessed by determining their vibration dose. Present knowledge indicates that this is best evaluated with the VDV, as promoted through BS 6472 Part 1 [3]. VDV defines a relationship that yields a consistent assessment of intermittent, occasional and impulsive vibration, as well as continuous input, and correlates well with subjective response. The way in which people perceive building vibration depends upon various factors, including the vibration frequency and direction. The VDV is given by the fourth root of the time integral of the fourth power of the acceleration after it has been frequency weighted.

Standards and Guidance

Construction

BS 5228

Noise

A12.1.8 BS 5228-1 [4] gives recommendations for basic methods of noise control relating to construction and open sites where work activities/operations generate significant noise levels, including industry-specific guidance. The legislative background to noise control is described and recommendations are given regarding procedures for the establishment of effective liaison between developers, site operators and local authorities. BS 5228-1 provides guidance concerning methods of predicting and measuring noise and assessing its impact on those exposed to it.

A12.1.9 BS 5228-1 Annex E contains three example methods for determining the significance of noise effects from construction and demolition activities.

A12.1.10 For projects of significant size such as the construction of a new railway or trunk road, historically, the approach to determining whether construction noise levels are significant or not was based upon exceedance of fixed noise limits which were originally promoted by the Wilson Committee in their report on noise [5] as presented to Parliament in 1963. These noise limits were then included in Advisory Leaflet 72 [6] first published in 1968; the accompanying wording was subsequently revised and the 1976 version is quoted below:

'Noise from construction and demolition sites should not exceed the level at which conversation in the nearest building would be difficult with the windows shut. The noise can be measured with a simple sound level meter, as we hear it, in A-weighted decibels (dB(A))– see note below. Noise levels, between say 07.00 and 19.00 hours, outside the nearest window of the occupied room closest to the site boundary should not exceed:

- *70 decibels (dBA) in rural, suburban and urban areas away from main road traffic and industrial noise;*

- *75 decibels (dBA) in urban areas near main roads in heavy industrial areas.*

These limits are for daytime working outside living rooms and offices. In noise-sensitive situations, for example, near hospitals and educational establishments – and when working outside the normal hours say between 19.00 and 22.00 hours – the allowable noise levels from building sites will be less: such as the reduced values given in the contract specification or as advised by the Environmental Health Officer (a reduction of 10 dB(A) may often be appropriate). Noisy work likely to cause annoyance locally should not be permitted between 22.00 hours and 07.00 hours.'

A12.1.11 The above principle has been expanded over time to include a suite of noise levels covering the whole day/week period taking into account the varying sensitivities through these periods. An example is provided below and these levels are also often used as limits above which noise insulation would be provided if the temporal criteria are also exceeded.

A12.1.12 An alternative and/or additional method to determine the significance of construction noise levels is to consider the change in the ambient noise level with the construction noise. This reflects more conventional EIA methodologies for noise.

A12.1.13 One method is whereby a noise effect is considered significant if the total noise (pre-construction ambient plus construction noise) exceeds the pre-construction ambient noise by 5 dB or more, subject to lower cut-off values of 65 dB, 55 dB and 45 dB $L_{Aeq, Period}$, from construction noise alone, for the daytime, evening and night-time periods, respectively; and a duration of one month or more, unless works of a shorter duration are likely to result in significant impact.

Vibration

A12.1.14 BS 5228-2 [7] gives recommendations for basic methods of vibration control relating to construction and open sites where work activities/operations generate significant vibration levels, including industry specific guidance. The legislative background to vibration control is described and recommendations are given regarding procedures for the establishment of effective liaison between developers, site operators and local authorities. Guidance is provided concerning methods of measuring vibration and assessing its effects on the environment.

A12.1.15 Human beings are known to be very sensitive to vibration, the threshold of perception being typically in the PPV range of 0.14 mm/s to 0.3 mm/s. Vibrations above these values can disturb, startle, cause annoyance or interfere with work activities.

A12.1.16 BS 6472 sets down vibration levels at which minimal adverse comment is likely to be provoked from the occupants of the premises being subjected to vibration. It is not concerned primarily with short□term health hazards or working efficiency. Whilst the assessment of the response to vibration in BS 6472 is based on the VDV and weighted acceleration, for construction it is considered more appropriate to provide guidance in terms of the PPV, since this parameter is likely to be more routinely measured based upon the more usual concern over potential building damage. Furthermore, since many of the empirical vibration predictors yield a result in terms of PPV, it is necessary to understand what the consequences might be of any predicted levels in terms of human perception and disturbance.

A12.1.17 Guidance on the human response to vibration from demolition and construction activities that is contained within BS 5228-2 is provided in Table A1.1. With regards to effects upon buildings and structures, BS 5228-2 refers to BS 7385-2.

Table A1.1: Human Response to Vibration from Construction and Demolition Activities

Vibration Level (mm/s)	Effect
0.14	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration.
0.3	Vibration might be just perceptible in residential environments.
1.0	It is likely that vibration of this level in residential environments will cause complaint, but can be tolerated if prior warning and explanation has been given to residents.
10	Vibration is likely to be intolerable for any more than a very brief exposure to this level.

BS 7385 – Parts 1 and 2

A12.1.18 BS 7385: Parts 1 and 2 provide guidance on the evaluation and measurement for vibration in buildings. Part 1 [8], Guide for measurement of vibrations and evaluation of their effects on buildings, provides advice on measurement, measurement instrumentation, location and fixing of transducers and data evaluation. Annexes also provide advice on classifying buildings with regard to their likely sensitivity; estimating peak stress from peak particle velocity; random data; a bibliography is also provided.

A12.1.19 Part 2, Guide to damage levels from groundborne vibration, provides guidance on the levels of vibration above which building structures could be damaged. It identifies the factors that influence the vibration response of buildings, and describes the basic procedure for carrying out measurements. It also states that there is a major difference between the sensitivity of people feeling vibration and the onset of levels of vibration, which damage structures; and that levels of vibration at which adverse comment from people is likely are below levels of vibration, which damage buildings, except at lower frequencies.

A12.1.20 Table A1.2 provides the vibration limits contained within BS 7385 Part 2 above which cosmetic damage could occur and have been adopted as the thresholds of significant effect for construction vibration. Minor damage is possible at vibration magnitudes that are greater than twice those given in Table A1.2 and major damage to a structure may occur at values greater than four times the tabulated values.

Table A1.2 – Threshold Vibration Values for the Evaluation of Cosmetic Building Damage (BS 7385 Part 2)

Building Classification	Frequency Range of Vibration (Hz)	PPV mm/s	
		Transient Vibration	Continuous Vibration
Unreinforced or light framed structures Residential or light commercial type buildings	4 Hz to 15 Hz	15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz	7.5 mm/s at 4 Hz increasing to 10 mm/s at 15 Hz
	15 Hz and above	20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above	10 mm/s at 15 Hz increasing to 25 mm/s at 40 Hz and above
Reinforced or framed structures Industrial and heavy commercial buildings	4 Hz and above	50	25

Note: the limits refer to vibration measured in the foundations of a building.

A12.1.21 BS 7385 provides the following guidance with reference to other structures:

- important buildings that are difficult to repair (for example listed buildings) may require special consideration on a case-by-case basis. A building of historical value should not (unless it is structurally unsound) be assumed to be more sensitive.
- structures below ground level (for example underground water pumping stations or water and gas pipelines) are known to sustain higher levels of vibration and are very resistant to damage unless in very poor condition.

BS 6472

A12.1.22 BS 6472: *'Guide to evaluation of human exposure to vibration in buildings. Part 1: Vibration sources other than blasting*' provides guidance on human response to vibration experienced in buildings. BS 6472-1 provides separate weighting curves related to human response for vibration in the spinal vertical and the horizontal directions.

A12.1.23 The VDV is evaluated at the point of entry to the subject. If direct measurement is not possible, for example, on a building that has not yet been built, then BS 6472-1 states that it will be necessary to estimate the vibration environment to be expected within the building. Appendix D of BS 6472-1 contains guidance on the estimation of building vibration response.

A12.1.24 The VDVs associated with various probabilities of adverse comment within residential buildings are provided in Table A1.3. For offices and workshops, BS 6472-1 states that multiplying factors of 2 and 4, respectively, should be applied to the values provided in Table A1.3. The criteria are presented as ranges due to the widely differing susceptibility to vibration evident among members of the population and also their differing expectations of the vibration environment. BS 6472-1 states that adverse comment is not expected for VDVs below the ranges in Table A1.3.

Table A1.3 – Vibration dose value ranges which might result in various probabilities of adverse comment within residential buildings

Place	Low probability of adverse comment (m/s1.75)	Adverse comment possible (m/s1.75)	Adverse comment probable (m/s1.75)
Residential buildings 16 hour day	0.2 to 0.4	0.4 to 0.8	0.8 to 1.6
Residential buildings 8 hours night	0.1 to 0.2	0.2 to 0.4	0.4 to 0.8

Operation

Planning Policy Guidance 24 (PPG 24) – Planning and Noise and BS 4142 - Method for Rating industrial noise affecting mixed residential and industrial areas, 1997

A12.1.25 Sections 19 and 20 of Annex 3 of Planning Policy Guidance Note 24: Planning and Noise (PPG 24) [9] cite the use of British Standard 4142 'Method for Rating industrial noise affecting mixed residential and industrial areas' (BS 4142) [10] to assess noise from industrial and commercial developments. The Standard provides a method for rating industrial noise affecting mixed residential and industrial areas and has been extensively used by local authorities and consultants to rate noise from fixed installations, such as plant noise. Paragraph 19 of PPG 24 states the following:

'The likelihood of complaints about noise from industrial development can be assessed, where the Standard is appropriate, using guidance in BS 4142: 1990. Tonal or impulsive characteristics of the noise are taken into account by the 'rating level' defined in BS 4142. This 'rating level' should be used when stipulating the level of noise than can be permitted. The likelihood of complaints is indicated by the difference between the noise from the new development (expressed in terms of the rating level) and the existing background noise. The Standard states that: 'A difference of around 10 dB or higher indicates that complaints are likely. A difference of around 5 dB is of marginal significance.' Since background noise levels vary throughout the a 24 hour period it has been necessary to assess the acceptability of noise levels for separate periods (e.g. day and night) chosen to suit the hours of operation of the project. Similar considerations apply to developments that would emit significant noise at the weekend as well as during the week. In addition, general guidance on acceptable noise levels within buildings can be found in BS 8233: 1987, and guidance on the control of noise from surface mineral workings can be found in MPG 11.'

A12.1.26 The Standard advocates the use of L_{Aeq}, a level that is directly measurable. The L_{Aeq} is either measured or calculated at a receptor location and this is termed the 'specific noise level'. The specific noise level may then be corrected for the character of the noise, if appropriate, and it is then termed the 'rating level'. A correction of +5 dB is made if the noise contains any discrete tones e.g. hums or whistles, any impulsive characteristics such as crashes, bangs or thumps or if the noise is irregular enough in character to attract attention.

A12.1.27 When used to rate the likelihood of complaints, the rating level is determined and the L_{A90} background noise level is subtracted from it. Where positive differences occur, the greater the difference between the two levels, the greater the likelihood of complaints. Where negative differences occur, the greater the difference between the two levels, the lesser the likelihood of complaints. A difference of around +10 dB or higher indicates that complaints are likely; a difference of around +5 dB is of marginal significance; and a difference of -10 dB is a positive indication that complaints are unlikely. These descriptions are summarised in Table A1.4.

Table A1.4 – BS 4142 Significance Criteria

BS 4142 Assessment Level dB(A) **(Rating level relative to background level)**	**BS 4142 Semantic** **(as described in BS 4142)**
< - 10	*'If the rating level is more than 10 dB below the measured background level then this is a positive indication that complaints are unlikely'*
- 10 to + 5	No BS 4142 description but the more negative the difference, the less the likelihood of complaints.
+ 5	*'A difference of around +5 dB is of marginal significance'*
+ 5 to + 10	No BS 4142 description but the more positive the difference, the greater the likelihood of complaints.
> + 10	*'A difference of around 10 dB or more indicates that complaints are likely'*

A12.1.28 BS 4142 states that measurement positions should be outside buildings in free-field conditions, where the microphone is at least 3.5 m from any reflecting surfaces other than the ground and at a preferred height of between 1.2 m and 1.5 m above ground level. However, where it is necessary to make measurements above ground floor level, the measurement position, height and distance from reflecting surfaces should be reported, ideally measurements should be made at a position 1 m from the façade of the relevant floor.

A12.1.29 When assessing the noise from night-time operations, the period of 23:00 to 07:00 hours, as recommended in PPG 24, should be adopted. Whilst BS 4142 may be used to assess the likelihood of night-time noise complaints, it is generally accepted that other appropriate criteria should be adopted for assessing sleep disturbance during night-time periods, such as BS 8233 [11] or the 'Guidelines for Community Noise' (GCN) [12], which was published by the World Heath Organisation (WHO).

A12.1.30 In situations where the L_{A90} background noise level is 'low' (less than 30 dB(A)) and the rating level is 'low' (less than 35 dB(A)), the Standard states that the rating method of BS 4142 is not applicable. In these circumstances, for the night-time period (i.e. it is rare for this situation to occur during the day), it is usually more appropriate to assess the noise impact by considering sleep disturbance criteria and other aspects such as noise change. It should be noted that this is not a BS 4142 or British Standards Institution (BSi) recommendation, as there is no advice given as to an acceptable approach in these circumstances but it is accepted practice for situations of this type.

A12.1.31 BS 4142 requires a 'representative background noise level' to be adopted for the assessment. There is no Government or BS guidance that states what is considered to constitute 'representative' and the night-time period is particularly difficult as it can be subject to a wide variation in noise level between the shoulder night periods.

Guidelines for Community Noise and Sleep Disturbance Criteria

A12.1.32 *'Guidelines for Community Noise'* (GCN) was published by the World Health Organisation (WHO) in 2000 and provides guidance on desirable levels of environmental noise. GCN refers to observation threshold levels at which the lowest observable effects occurred and are not suggestions of noise limits.

A12.1.33 For daytime levels, it is considered that:

- *'To protect the majority of people from being seriously annoyed during the daytime, the outdoor sound level from steady, continuous noise should not exceed 55 dB L_{Aeq} on balconies, terraces, and outdoor living areas. To protect the majority of people from being moderately annoyed during the daytime, the outdoor sound level should not exceed 50 dB L_{Aeq}. Where it is practical and feasible, the lower outdoor sound level should be considered the maximum desirable sound level for new development.'*

A12.1.34 In the 2000 guidelines, the authors suggest that 80 – 90% of the reported cases of sleep disturbance in noisy environments are for reasons other than noise originating outdoors and that:

- *'For a good sleep, it is believed that indoor sound pressure levels should not exceed approximately 45 dB L_{Amax} more than 10-15 times per night…';*
- *'If negative effects on sleep are to be avoided the equivalent sound pressure level should not exceed 30 dBA indoors for continuous noise.'; and*
- *'It should be noted that it should be possible to sleep with a bedroom window slightly open (a reduction from outside to inside of 15 dB).'*

A12.1.35 The time base for the L_{Aeq} values provided above are 16-hours for the daytime effects and 8-hours for the night-time effects. This implies that $L_{Aeq,16h}$ is the appropriate parameter to assess reaction of people to changes in ambient daytime noise level.

Horizontal Guidance Note IPPC H3: Horizontal Guidance for Noise, 2004

A12.1.36 H3 [13] cites the use of BS 4142 for assessing whether industrial noise is likely to give rise to complaints from residents and states (Part 2, page 57, A2.1.2.1):

- *'This standard does not offer any guidance on BAT, although the alleviation of complaints should be one of the criteria considered in the determination of BAT'.*

IPPC Sector Guidance Note – Combustion Activities

A12.1.37 As of 6th April 2008, the Waste Management Licensing Regulations and the Pollution Prevention and Control (PPC) Regulations were replaced by the Environmental Permitting Regulations 2007. However, the Integrated Pollution Prevention and Control (IPPC) Sector Guidance Notes remain current. The IPPC Technical Guidance Note applicable to Energy from Waste Facilities, S5.01 [14] contains the following advice with regard to noise and vibration:

'Indicative BAT requirements for noise and vibration

- *Describe the main sources of noise and vibration (including infrequent sources), the nearest noise-sensitive locations and relevant environmental surveys which have been undertaken, and the techniques and measures used for the control of noise.*
- *The Operator should employ basic good practice measures for the control of noise, including adequate maintenance of any parts of plant or equipment whose deterioration may give rise to increases in noise (for example, bearings, air handling plant, the building fabric, and specific noise attenuation kit associated with plant, equipment or machinery).*
- *The Operator should also employ such other noise control techniques to ensure that the noise from the installation does not give rise to reasonable cause for annoyance, in the view of the Regulator and, in particular, should justify where*

Rating Levels ($L_{Aeq,T}$) from the installation exceed the numerical value of the Background Sound Level ($L_{A90,T}$).

- *Further justification will be required should the resulting field rating level ($L_{Ar,Tr}$) exceed 50 dB by day and a facade rating level exceed 45 dB by night, with day being defined as 07:00 to 23:00 and night 23:00 to 07:00.*
- *In some circumstances 'creeping background' (i.e. creeping ambient) may be an issue. Where this has been identified in pre application discussions or in previous discussions with the local authority, the Operator should employ such noise control techniques as are considered appropriate to minimise problems to an acceptable level within the BAT criteria.*
- *Noise surveys, measurement, investigation e.g. on sound power levels of individual items of plant) or modelling may be necessary for either new or existing installations, depending upon the potential for noise problems. Where appropriate, the Operator should have a noise management plan as part of its management system.'*

ISO 9613

A12.1.38 Operational noise has been predicted using SoundPLAN implementing ISO 9613 [15] for each individual octave or third octave band. The spectral results are then summed to obtain the L_{Aeq} at the receptor. SoundPLAN can also accommodate broadband source data. The calculation is summarised by:

$$L_p = [\ L_w + DI + K_0\ ] – [\ D_s + \Sigma\ D\ ]$$

Where:
L_p = sound pressure level at receptor
L_w = sound power level of source
DI = directivity of the source
K_0 = spherical model
D_s = spreading
D = other contributing factors:

- air absorption
- ground absorption and meteorological effects
- volume type absorption
- screening

A12.1.39 K_0 is defined by the spatial angle, Ω, and takes account of the fact that the equations of ISO 9613 are based on spherical spreading whereas in the real world, spreading may be not be spherical, as described above.

Road Traffic Noise

A12.1.40 The main method of calculating road noise is defined in the Calculation of Road Traffic Noise (CRTN) [16]. This method of predicting noise at a reception point from a road scheme, a formal procedure originally issued in accordance with the requirements of the Noise Insulation Regulations 1975 [17], consists of five main parts:

- Divide the road scheme into one or more segments such that the variation of noise within the segment is small
- Calculate the basic noise level at a reference distance of 10 m away from the nearside carriageway edge for each segment
- Assess for each segment the noise level at the reception point taking into account distance attenuation and screening of the source line
- Correct the noise level at the reception point to take into account site layout feature including reflections from buildings and facades, and the size of the source segment
- Combine the contributions from all segments to give the predicted noise level at the reception point for the whole road scheme

A12.1.41 For this project, the CRTN methodology has been used in a simplified form to predict changes in road traffic noise levels along route sections, i.e. calculations have not been carried out at individual receptors but for sections of road subject to the same changes in traffic flow. On this basis, all receptors along a route section will be subject to the same change in noise level.

A12.1.42 However, CRTN is subject to a minimum flow of 50 vehicles/hour or 1000 vehicles/18 hour day below which the methodology cannot be applied. Where this has occurred, the methodology defined in BS 5228 has been used to calculate L_{Aeq} noise levels from route sections. Calculated levels have then been added to other levels produced by either the construction or operational noise models to provide cumulative effects from both plant and traffic.

A12.1.43 Two scenarios have been considered: traffic changes during construction and during operation. The assessment then considers the change in the noise level without and with the additional traffic. The following semantic scale has been adopted to describe the noise change associated with increases in traffic on local roads.

Table A1.5 – Semantic Scale for Describing Noise Change Thresholds of Significance (Operational Traffic)

Predicted Noise Change		Scale Rating
Decrease of more than 3 dB	Significant decrease	Significant Positive Effect
Less than 3 dB	Not Significant	
Increase of 3 – 5 dB	Minor Increase	Significant Negative Effect
Increase of 6 – 10 dB	Moderate Increase	
Increase of more than 11 dB	Major Increase	

Source of Data: Mackie and Davies [18]

A12.1.44 For construction traffic, it is considered that a greater effect would be tolerated, as the source is only temporary. Therefore, the following semantic scale has been adopted to describe temporary noise change:

Table A1.6 – Semantic Scale for Describing Noise Change – Thresholds of Significance (Construction Traffic)

Predicted Noise Change		Scale Rating
Decrease of more than 6 dB	Significant decrease	Significant Positive Effect
Less than 6 dB	No Significant change	No Effect
Increase of 6 – 10 dB	Minor Increase	Significant Negative Effect
Increase of 11 – 20 dB	Moderate Increase	
Increase of more than 20 dB	Major Increase	

References

1. British Standards Institution. British Standard 7445: Description and measurement of environmental noise, Part 1. Guide to Quantities and Procedures, 2003.

2. British Standards Institution. BS 7385-1. ISO 4866. Evaluation and measurement for vibration in buildings. Guide for measurement of vibrations and evaluation of their effects on buildings, 1990.

3. British Standards Institution. British Standard 6472-1: Guide to evaluation of human exposure to vibration in buildings. Part 1: Vibration sources other than blasting. 2008.

4. British Standards Institution. British Standard 5228: Code of practice for noise and vibration control on construction and open sites. Part 1: Noise. 2009.

5. The Stationery Office Limited. Committee on the problem of noise – Final report. Command paper 2056. July 1963.

6. Department of the Environment. Advisory Leaflet 72. Noise Control on Building Sites. Department of the Environment. 1976.

7. British Standards Institution. British Standard 5228: Code of practice for noise and vibration control on construction and open sites. Part 2: Vibration. 2009.

8. British Standards Institution. BS 7385-2. Evaluation and measurement for vibration in buildings. Guide to damage levels from groundborne vibration. 1993.

9. Department of the Environment. Planning Policy Guidance (PPG) 24, Planning and Noise, September 1994.

10. British Standards Institution. British Standard 4142: Method for Rating industrial noise affecting mixed residential and industrial areas, 1997.

11. British Standards Institution. British Standard 8233: Sound insulation and noise reduction for buildings - Code of practice. 1999.

12. World Health Organisation (WHO). Guidelines for Community Noise, 2000.

13. Environment Agency. IPPC H3 Horizontal Guidance for Noise. Part 1: Regulation and Permitting. Part 2: Noise Assessment and Control. June 2004.

14. Environment Agency. IPPC S5.01 Guidance for the Incineration of Waste and Fuel Manufactured from or Including Waste. 29 July 2004.

15. International Organization for Standardization. ISO 9613-2:1993: Acoustics - Attenuation of sound during propagation outdoors - Part 2: General method of calculation.

16. Department of Transport/Welsh Office. Calculation of Road Traffic Noise. HMSO, 1988.

17. Building and Buildings No. 1763. The Noise Insulation Regulations 1975. Amended 1998 No. 2000. The Noise Insulation (Amendment) Regulations 1988.

18. Mackie and Davies. Studies on Abrupt Changes in Traffic Exposure. 1981.

Appendix 12.2: Construction Noise Model Input Data

Noise Model Input Data

Table 1: Prediction of L_{Aeq} Levels

		Sound Power Level, L_W (dB) per Octave Band							
Source	**%on-time**	*63Hz*	*125Hz*	*250Hz*	*500Hz*	*1kHz*	*2kHz*	*4kHz*	*8kHz*
Ground Excavations									
Dozer . (2.12) (x 2)	80	113	102	104	101	100	106	90	84
Tracked Excavator . (2.14) (x 2)	80	113	106	105	105	101	99	96	91
Dumper (Idling) . (4.5) (x 2)	100	101	92	83	83	88	84	78	71
Lorry. (2.34) (dB/m of line source) [60 mpd]	60 mpd*	68	73	73	73	69	68	63	61
Pre-cast Concrete Piling - Hydraulic Hammer Rig									
Dozer . (2.12)	80	113	102	104	101	100	106	90	84
Tracked Excavator . (2.14)	80	113	106	105	105	101	99	96	91
Hydraulic Hammer Rig . (3.1)	30	110	110	110	117	111	106	103	98
Tracked Mobile Crane . (3.29)	50	109	105	97	95	90	88	89	79
Diesel Generator . (4.77)	100	98	90	90	85	81	80	76	69
Diesel Generator . (4.87)	100	105	100	92	88	87	85	82	70
Building Construction									
Dumper (Idling) . (4.5)	100	101	92	83	83	88	84	78	71
Concrete Mixer Truck (Discharging) & Concrete Pump (Pumping) . (4.28)	100	107	108	101	100	97	96	87	81
Poker Vibrator . (4.34)	80	90	98	98	92	90	89	87	84
Mobile Telescopic Crane . (4.41)	50	101	99	96	98	94	91	82	77
Tracked Mobile Crane . (4.50)	50	101	92	83	83	88	84	78	71
Diesel Generator . (4.77)	100	98	90	90	85	81	80	76	69
Diesel Generator . (4.87)	100	105	100	92	88	87	85	82	70
Lorry. (2.34) (dB/m of line source) [80 mpd]	80 mpd*	69	74	74	74	70	69	64	62
Night-time Concrete Pour									
Concrete Mixer Truck (Discharging) & Concrete Pump (Pumping) . (4.28)	100	107	108	101	100	97	96	87	81
Poker Vibrator . (4.34)	80	90	98	98	92	90	89	87	84
Diesel Generator . (4.77)	100	98	90	90	85	81	80	76	69
Diesel Generator . (4.87)	100	105	100	92	88	87	85	82	70

*mpd = maximum average 2-way movements per day

Table 2: Prediction of L_{Amax} Levels

		Sound Power Level, L_W (dB) per Octave Band							
Source		*63Hz*	*125Hz*	*250Hz*	*500Hz*	*1kHz*	*2kHz*	*4kHz*	*8kHz*
Hydraulic Hammer Rig . (3.1)		119	119	119	126	120	115	112	107

Brigade Alarms: *http://www.reverseinsafety.co.uk/catalogue/index.php*

Fixed medium duty alarm of : 97 dB(A) @ 1 m

and, on the basis of hemispherical geometric spreading: 85 dB L_{Amax} at 16 m
80 dB L_{Amax} at 50 m

Appendix 12.3: Construction Noise and Vibration Assessment

Residential Receptors

Daytime

Receptor	Direction	Baseline Ambient Noise Level, $L_{Aeq, 12\text{-}hours}$ (dB)	Noise Level from Construction Site, $L_{Aeq, 12\text{-}hours}$ (dB)			Ambient Noise Change (dB)			Significant?		
			Ground Excavations	Piling	Building Construction	Ground Excavations	Piling	Building Construction	Ground Excavations	Piling	Building Construction
Reams Way (Gnd)	E	51	41	41	35	0	0	0	No	No	No
Rec Way (Gnd)	E	53	35	37	30	0	0	0	No	No	No
Walsby Drive (Gnd)	E	53	39	40	33	0	0	0	No	No	No

Night-time

Receptor	Direction	Baseline Ambient Noise Level, $L_{Aeq, 8\text{-}hours}$ (dB)	Noise Level from Construction Site, $L_{Aeq, 8\text{-}hours}$ (dB)	Ambient Noise Change (dB)	Significant?
			Concrete Pour	Concrete Pour	Concrete Pour
Reams Way (1st)	E	50	32	0	No
Rec Way (1st)	E	40	31	1	No
Walsby Drive (1st)	E	40	29	0	No

Recreational Receptors

Receptor	Baseline Ambient Noise Level, $L_{Aeq, 12\text{-}hours}$ (dB)	Noise Level from Construction Site, $L_{Aeq, 12\text{-}hours}$ (dB)			Ambient Noise Change (dB)		
		Ground Excavations	Piling	Building Construction	Ground Excavations	Piling	Building Construction
Saxon Shore Way (Jetty)	49	50	49	42	4	3	1
Saxon Shore Way (Milton Creek)	49	48	48	43	3	3	1
Saxon Shore Way (Slipway)	49	53	52	46	5	5	2

Avian Receptors

Baseline Daytime Ambient Noise Level Measured at Reedbed

	Sound Pressure Level in Octave Band $L_{Aeq,15\text{-}min}$ (dB)								
	63	*125*	*250*	*500*	*1000*	*2000*	*4000*	*8000*	*Overall*
Maximum $L_{Aeq, 15\text{-}min}$ (dB) per 1/3rd octave-band (07.00 to 19.00 hours)	36	39	42	46	45	47	40	36	52
Mean $L_{Aeq, 15\text{-}min}$ (dB) per 1/3rd octave-band (07.00 to 19.00 hours)	24	27	32	38	37	35	26	20	42
Minimum $L_{Aeq, 15\text{-}min}$ (dB) per 1/3rd octave-band (07.00 to 19.00 hours)	17	19	24	31	32	29	21	9	36

Ground Excavations

	Sound Pressure Level in Octave Band $L_{Aeq,15\text{-}min}$ (dB)								
	63	*125*	*250*	*500*	*1000*	*2000*	*4000*	*8000*	*Overall*
Milton Creek	30	32	40	44	44	48	39	32	51
Milton Creek (north)	32	34	41	45	46	50	40	33	53
Milton Creek (south)	27	29	37	41	41	44	35	28	48
North of Reedbed	29	30	36	39	37	38	25	16	44
Reedbed (100 m from UEU)	40	41	49	53	54	59	47	40	61
Reedbed (200 m from URC)	37	39	46	51	51	55	45	38	58
The Swale	31	33	40	45	45	50	39	32	53

Piling

	Sound Pressure Level in Octave Band $L_{Aeq,15\text{-}min}$ (dB)								
	63	*125*	*250*	*500*	*1000*	*2000*	*4000*	*8000*	*Overall*
Milton Creek	27	31	38	48	46	45	39	31	52
Milton Creek (north)	28	32	39	49	47	46	40	33	53
Milton Creek (south)	25	29	36	45	43	42	35	27	49
North of Reedbed	27	29	35	42	38	36	26	16	45
Reedbed (100 m from UEU)	34	38	46	55	53	52	47	40	59
Reedbed (200 m from URC)	34	38	45	54	52	53	46	39	58
The Swale	27	31	38	48	46	45	39	32	52

Piling

	Maximum Sound Pressure Level in Octave Band L_{Amax} (dB)								
	63	*125*	*250*	*500*	*1000*	*2000*	*4000*	*8000*	*Overall*
Milton Creek	31	41	49	61	58	55	52	45	64
Milton Creek (north)	35	45	52	65	62	58	55	48	67
Milton Creek (south)	26	36	44	56	53	50	46	39	59
North of Reedbed	31	41	47	57	51	45	39	29	59
Reedbed (100 m from UEU)	45	55	62	75	72	68	65	58	77
Reedbed (200 m from URC)	38	48	55	68	65	61	58	51	70
The Swale	35	45	52	65	62	58	55	48	68

Building Construction

	Sound Pressure Level in Octave Band $L_{Aeq,15\text{-}min}$ (dB)								
	63	*125*	*250*	*500*	*1000*	*2000*	*4000*	*8000*	*Overall*
Milton Creek	22	31	34	39	39	38	32	26	44
Milton Creek (north)	24	33	35	40	40	40	34	28	46
Milton Creek (south)	21	29	33	37	37	36	30	24	43
North of Reedbed	21	30	31	34	32	29	20	11	39
Reedbed (100 m from UEU)	31	41	43	48	48	48	41	35	54
Reedbed (200 m from URC)	30	40	42	46	46	46	40	34	52
The Swale	23	32	35	39	40	39	33	27	45

Baseline Early Morning Ambient Noise Level Measured at Reedbed

	Sound Pressure Level in Octave Band $L_{Aeq,15\text{-}min}$ (dB)								
	63	*125*	*250*	*500*	*1000*	*2000*	*4000*	*8000*	*Overall*
Maximum $L_{Aeq,\ 15\text{-}min}$ (dB) per 1/3rd octave-band (03.00 to 07.00 hours)	27	29	35	42	42	39	40	39	48
Mean $L_{Aeq,\ 15\text{-}min}$ (dB) per 1/3rd octave-band (03.00 to 07.00 hours)	22	24	32	39	38	36	28	15	43
Minimum $L_{Aeq,\ 15\text{-}min}$ (dB) per 1/3rd octave-band (03.00 to 07.00 hours)	18	21	27	36	35	33	23	7	40

Night-time Concrete Pour

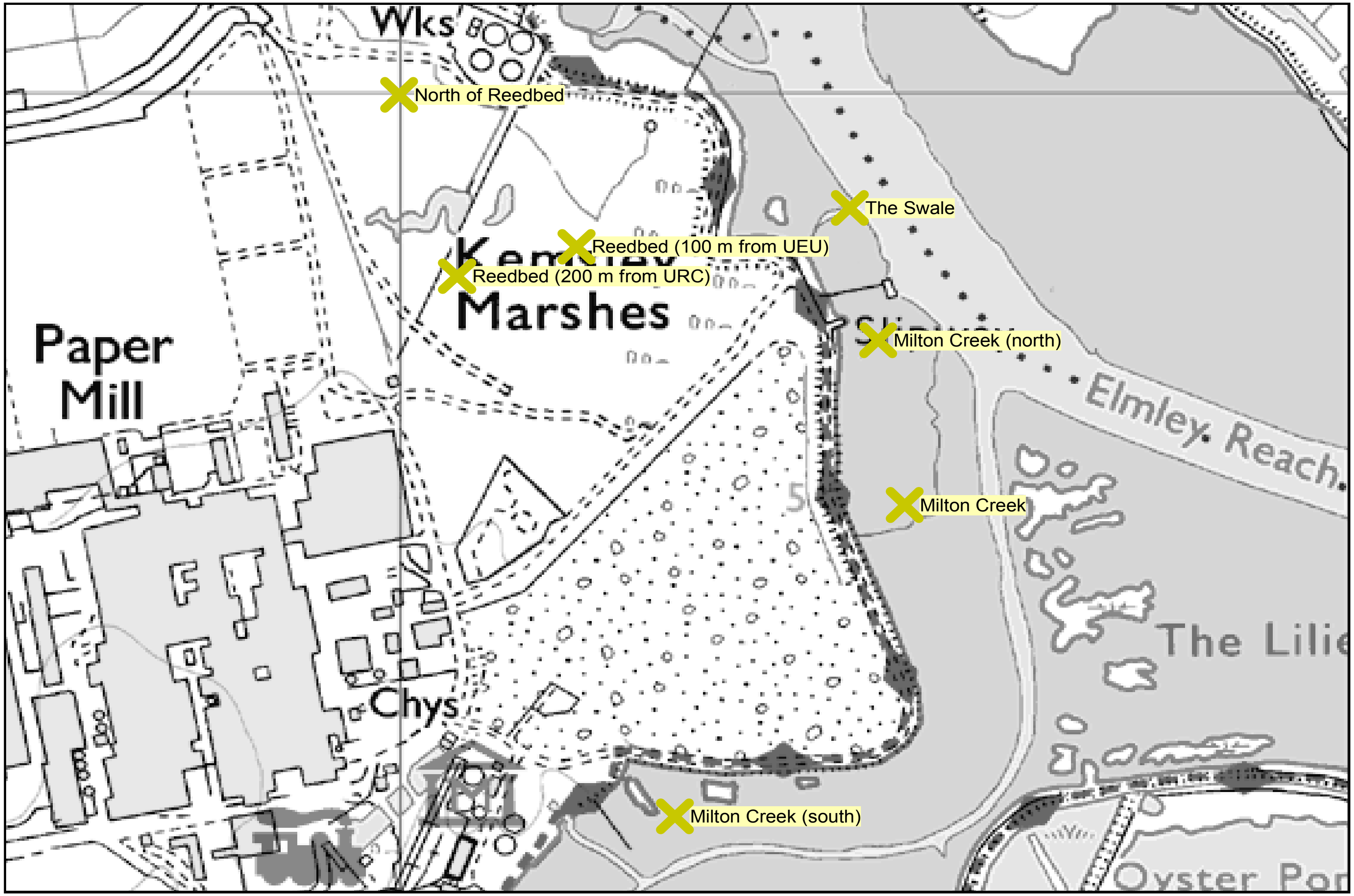
	Sound Pressure Level in Octave Band $L_{Aeq,15\text{-}min}$ (dB)								
	63	*125*	*250*	*500*	*1000*	*2000*	*4000*	*8000*	*Overall*
Milton Creek	20	30	32	35	35	36	28	21	41
Milton Creek (north)	21	32	33	37	37	37	30	23	43
Milton Creek (south)	20	28	29	32	33	33	25	16	39
North of Reedbed	20	29	30	31	29	26	17	7	36
Reedbed (100 m from UEU)	29	40	42	45	45	46	38	32	51
Reedbed (200 m from URC)	29	39	41	44	45	45	38	31	50
The Swale	21	31	33	36	36	37	29	23	42

Delivery HGVs

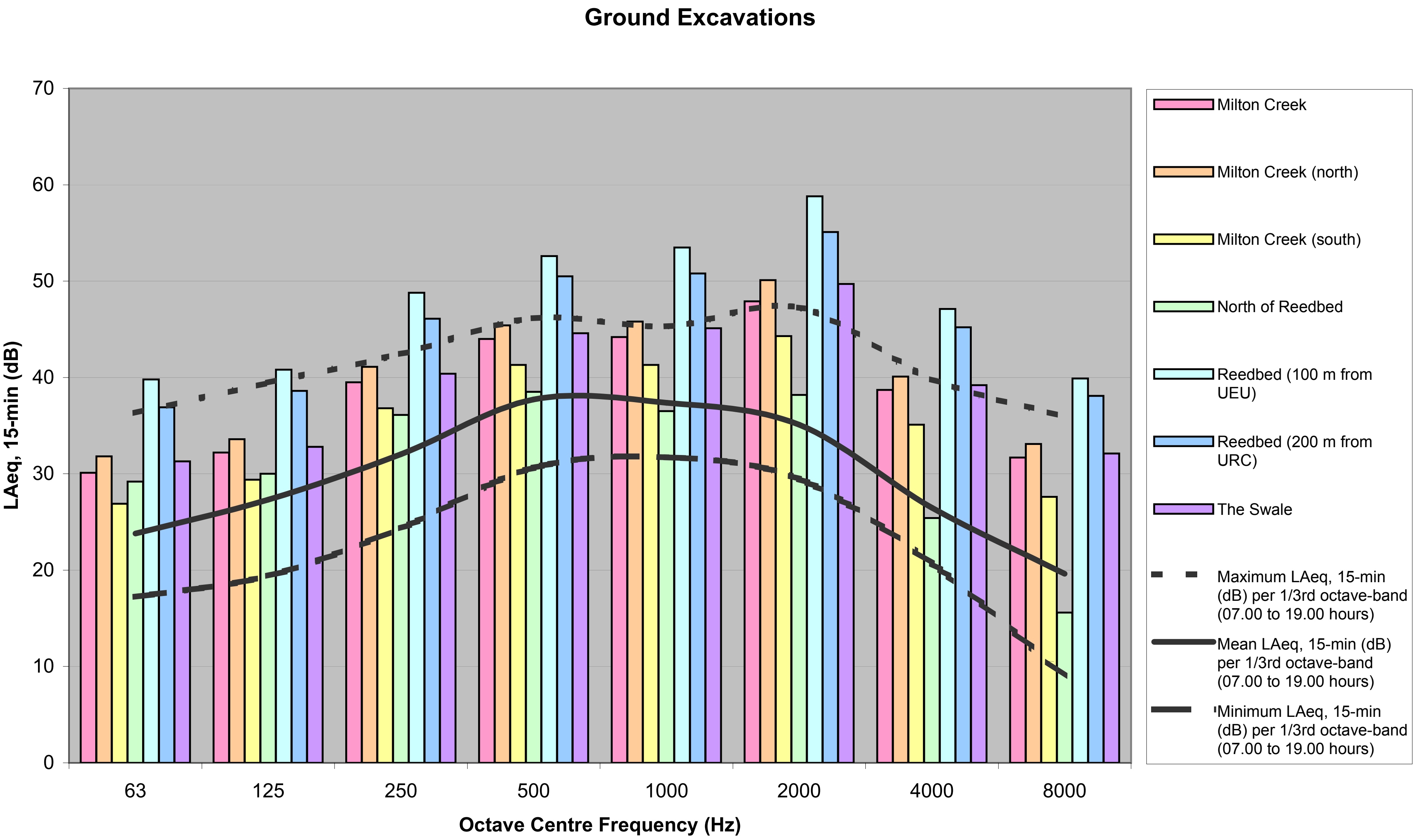
		Baseline				During Construction				Noise Change (dB)	Significant?
		18-hr AAWT (06:00 - 00:00 hr)				18-hr AAWT (06:00 - 00:00 hr)					
Road Section		*Cars*	*HGVs*	*% HGV*	*Speed (km/h)*	*Cars*	*HGVs*	*% HGV*	*Speed (km/h)*		
Swale Way		12,453	2,372	16.0	50	12,573	2,852	18.5	50	0.6	No
A249 East of Swale Way		34,130	3,375	9.0	50	34,250	3,855	10.1	50	0.3	No
A249 West of Swale Way		31,520	4,710	13.0	50	31,640	5,190	14.1	50	0.3	No
M2 Junction 5 East		49,012	6,089	11.1	97	49,132	6,569	11.8	97	0.2	No
M2 Junction 5 West		53,474	8,198	13.3	97	53,594	8,678	13.9	97	0.1	No

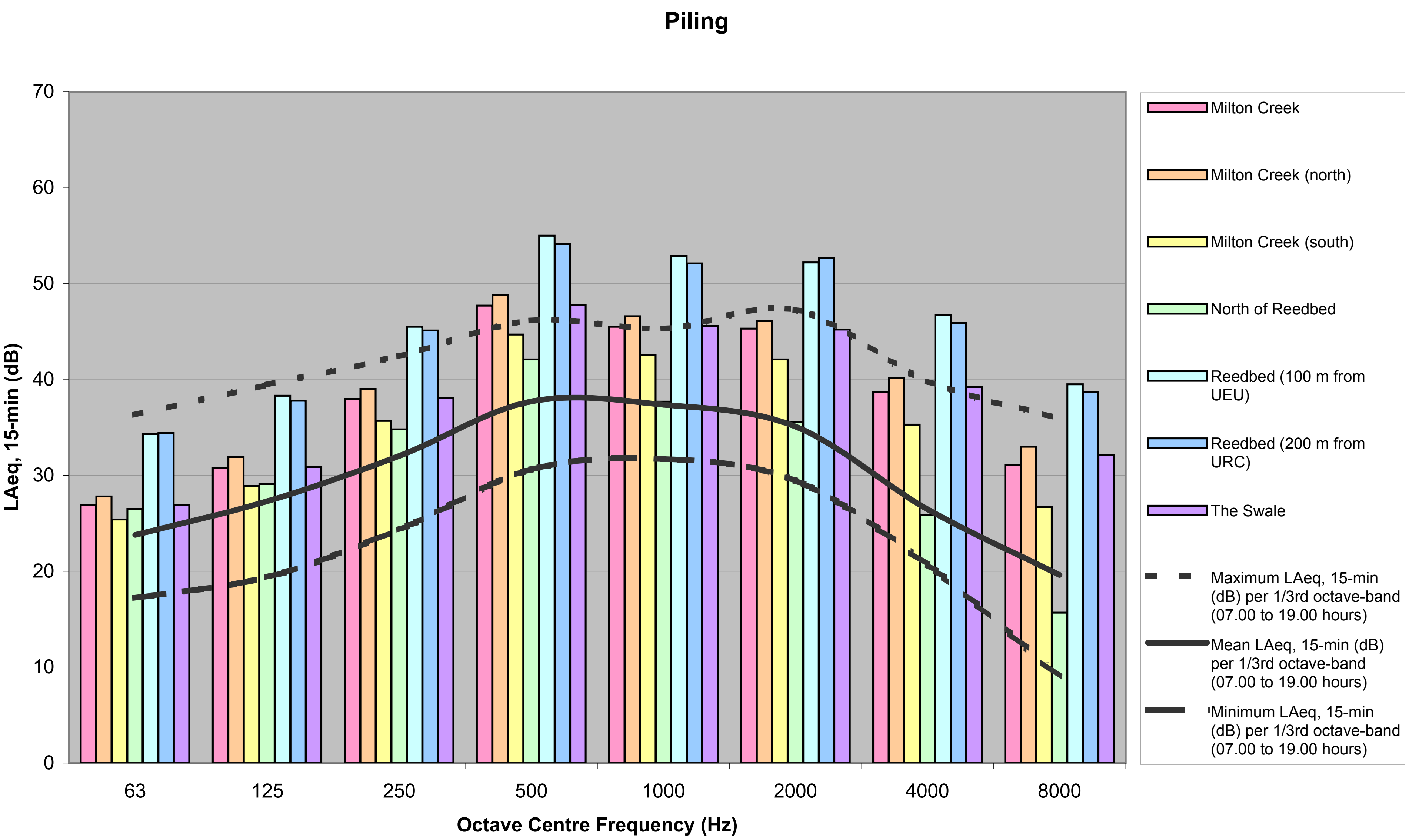
Vibration

k_p	5	piles driven to refusal
W	50000	nominal hammer energy (J)
r	60	slope distance to pile toe (m)
v_{res}	5	resultant peak particle velocity (mm/s), freefield



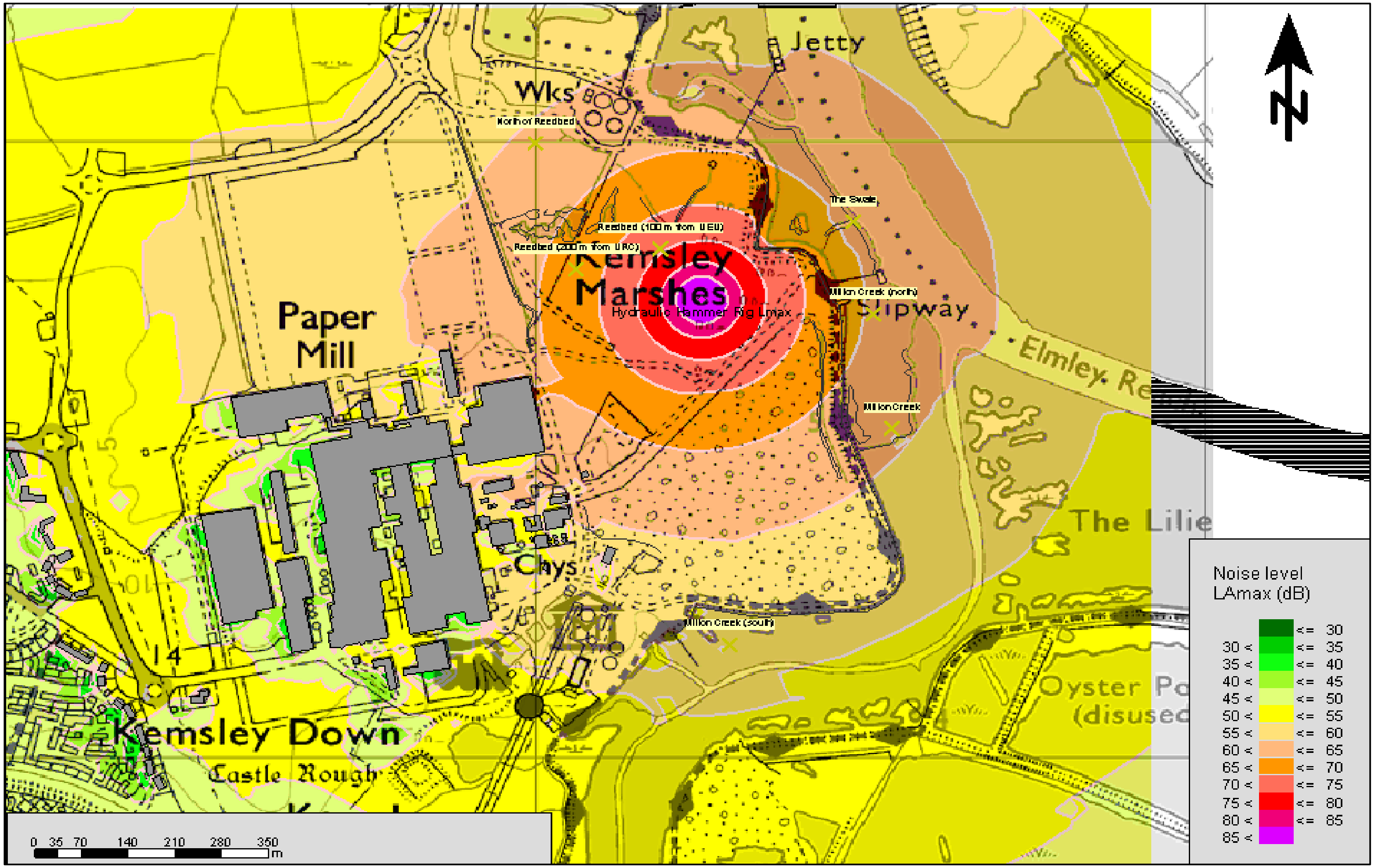
Noise Model Avian Receptor Locations

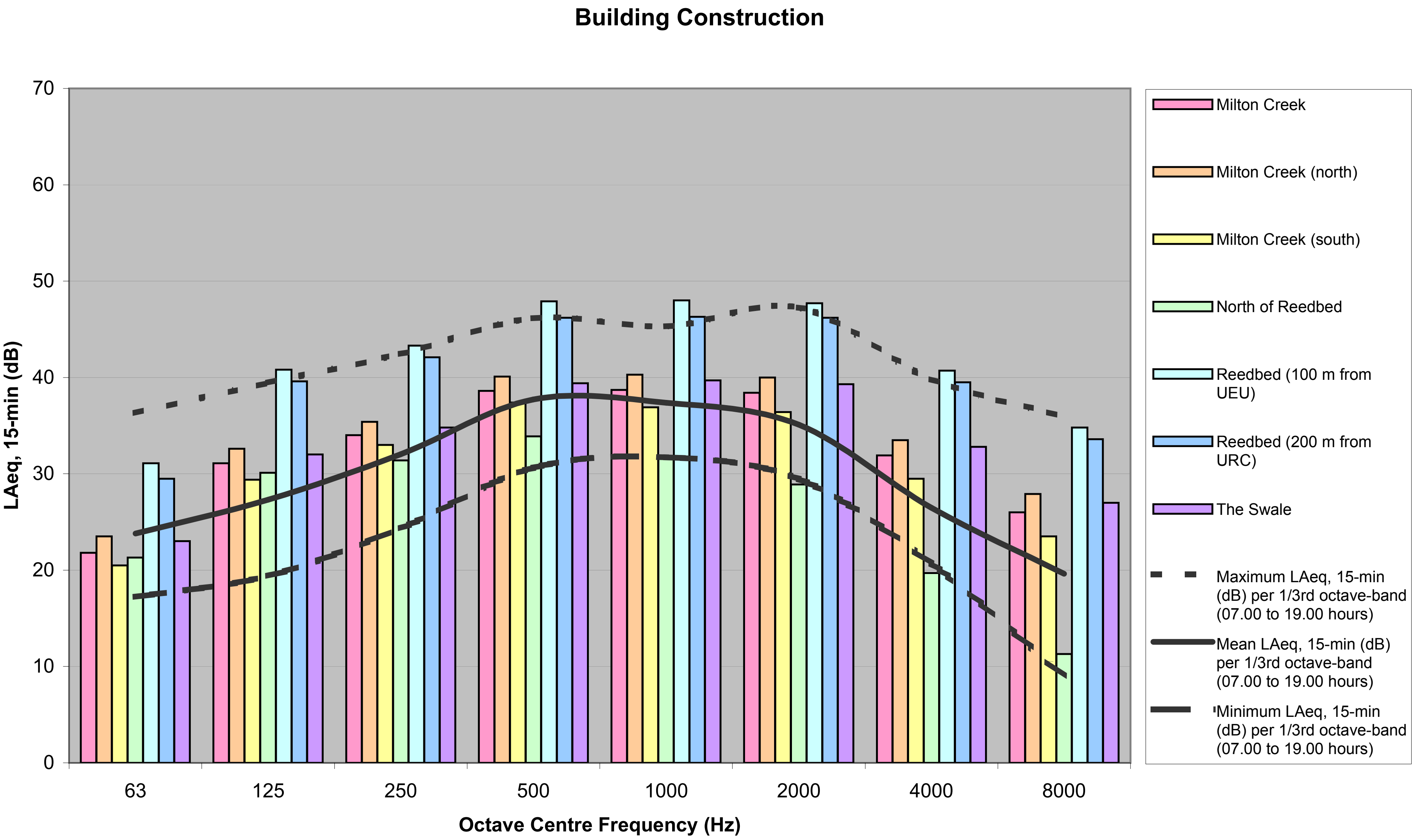

Ground Excavations
70
60
50
40
30
20
10
0
LAeq, 15-min (dB)
63
125
250
500
1000
2000
4000
8000
Octave Centre Frequency (Hz)
Milton Creek
Milton Creek (north)
Milton Creek (south)
North of Reedbed
Reedbed (100 m from UEU)
Reedbed (200 m from URC)
The Swale
Maximum LAeq, 15-min (dB) per 1/3rd octave-band (07.00 to 19.00 hours)
Mean LAeq, 15-min (dB) per 1/3rd octave-band (07.00 to 19.00 hours)
Minimum LAeq, 15-min (dB) per 1/3rd octave-band (07.00 to 19.00 hours)

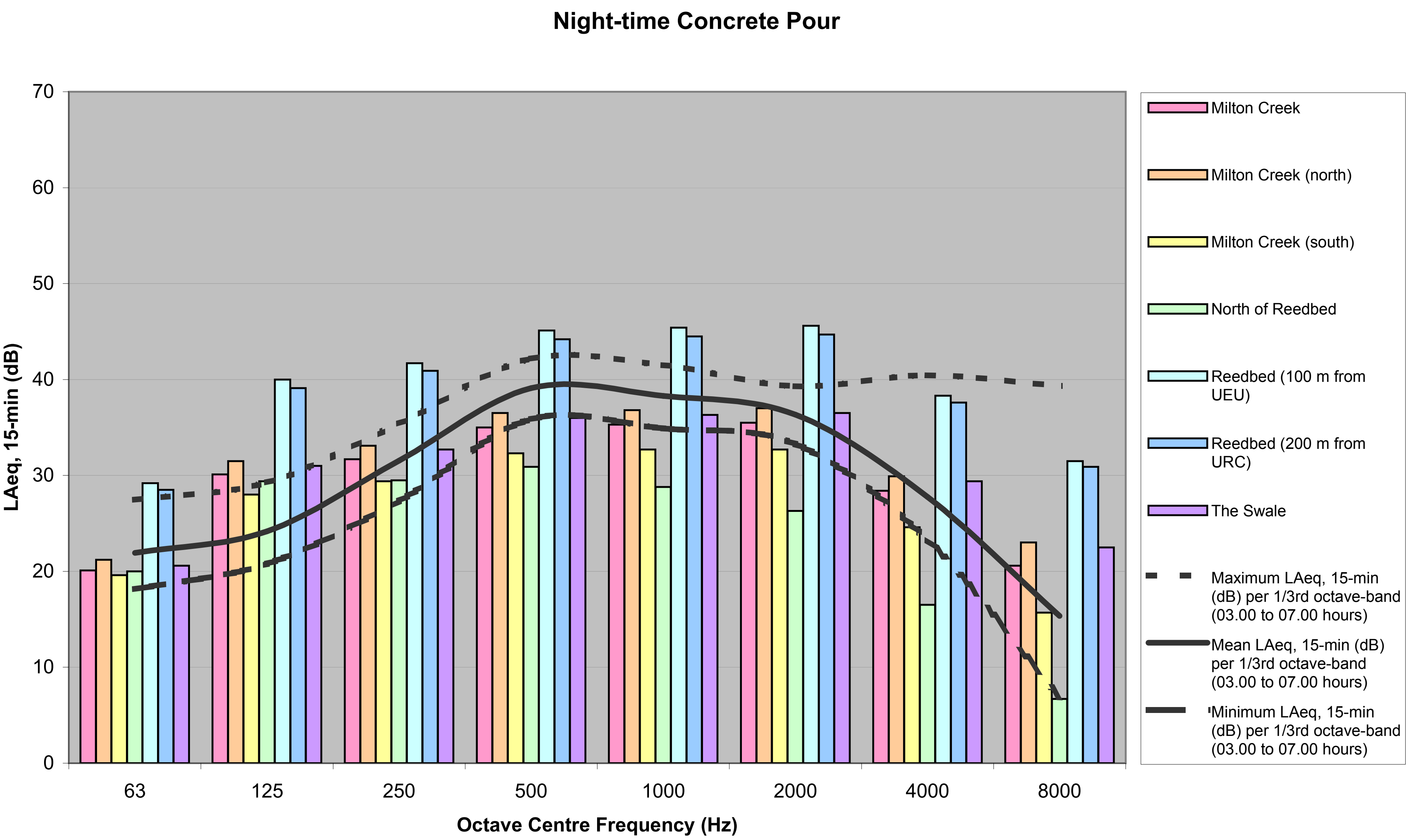

Piling
LAeq, 15-min (dB)
70
60
50
40
30
20
10
0
63
125
250
500
1000
2000
4000
8000
Octave Centre Frequency (Hz)
Milton Creek
Milton Creek (north)
Milton Creek (south)
North of Reedbed
Reedbed (100 m from UEU)
Reedbed (200 m from URC)
The Swale
Maximum LAeq, 15-min (dB) per 1/3rd octave-band (07.00 to 19.00 hours)
Mean LAeq, 15-min (dB) per 1/3rd octave-band (07.00 to 19.00 hours)
Minimum LAeq, 15-min (dB) per 1/3rd octave-band (07.00 to 19.00 hours)

Appendix 12.3: Construction Noise and Vibration Assessment

Maximum Noise Levels During Piling




Building Construction
LAeq, 15-min (dB)
0
10
20
30
40
50
60
70
63
125
250
500
1000
2000
4000
8000
Octave Centre Frequency (Hz)
Milton Creek
Milton Creek (north)
Milton Creek (south)
North of Reedbed
Reedbed (100 m from UEU)
Reedbed (200 m from URC)
The Swale
Maximum LAeq, 15-min (dB) per 1/3rd octave-band (07.00 to 19.00 hours)
Mean LAeq, 15-min (dB) per 1/3rd octave-band (07.00 to 19.00 hours)
Minimum LAeq, 15-min (dB) per 1/3rd octave-band (07.00 to 19.00 hours)


Night-time Concrete Pour
LAeq, 15-min (dB)
70
60
50
40
30
20
10
0
63
125
250
500
1000
2000
4000
8000
Octave Centre Frequency (Hz)
Milton Creek
Milton Creek (north)
Milton Creek (south)
North of Reedbed
Reedbed (100 m from UEU)
Reedbed (200 m from URC)
The Swale
Maximum LAeq, 15-min (dB) per 1/3rd octave-band (03.00 to 07.00 hours)
Mean LAeq, 15-min (dB) per 1/3rd octave-band (03.00 to 07.00 hours)
Minimum LAeq, 15-min (dB) per 1/3rd octave-band (03.00 to 07.00 hours)

Appendix 12.4: Operational Noise Model Input Data

Spectral Shape for Emissions from Building Facades

		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz
Normalised Spectral Shapes from Survey of EfW Facility at Pontenx Les Forges, France	General internal reverberant level near boiler	-7	-6	-7	-7	-10	-14	-20	-28
	Reverberant level in flue gas treatment area	-4	-7	-11	-14	-11	-8	-19	-29
	Reverberant level in unloading hall during RCV unloading	-6	-6	-8	-9	-10	-10	-14	-23
	Internal level in ferrous clinker	-13	-9	-8	-6	-8	-8	-11	-16
	Internal level in small non-ferrous clinker	-12	-9	-8	-8	-8	-7	-9	-14
	Internal level in large non-ferrous clinker	-12	-8	-8	-8	-8	-8	-10	-16
	Adopted Generic Internal Spectrum	-3	-6	-10	-11	-11	-16	-21	-27
	Adopted Spectral Shape of SRI	11	20	29	43	48	56	57	58
	Adopted Generic Emission Spectrum (dB)	0	-12	-25	-40	-45	-58	-64	-71

Source Terms for Building Facades

Building		Internal, Diffuse, Reverberant Sound Pressure Level dB(A)	Radiating Surface	Material	Sound Reduction Index / dB	Sound Power Level of Facade, L"w (dBA/m2)
UEB	Structure for storage of solid fuels	85	Outwalls	Exposed Concrete	54	25
			Roof	Exposed Concrete	54	25
			Doors	Steel w/out seal	20	59
UEA	Structure for unloading soid fuels	85	Outwalls	Steel Panel	19	60
			Roof	Steel Panel	19	60
UHA	Boiler house	85	Outwalls	Steel panel, twin-trapezodial cross secion	32	47
			Roof	Steel panel, insulated	32	47
			Doors	Steel w/out seal	20	59
UVC	Structure for flue gas scrubber	85	Outwalls	Steel panel, twin-trapezodial cross secion	32	47
			Roof	Steel panel, insulated	32	47
UMA	steam turbine building	90	Outwalls	Steel panel, twin-trapezodial cross secion	32	52
			Roof	Steel panel, insulated	32	52
UEW	Structure for combustion residues handling	90	Outwalls	Steel panel, twin-trapezodial cross secion	32	52
			Roof	Steel panel, insulated	32	52
UEU	Structure for Slag Transport	85	Opening	-	-	79
			Roof	Steel Panel	19	60

Source Terms for External Sources

Building		Sound Power dB(A)	Sound Power dB(A) per item	Source Height / m
URC	Structure for air-cooled condensers	106	96	8
UHN	Smoke Stack	92	89	69.6
UEP	Residue Silo	86	-	
UVE	Structure for reagent supply - activated carbon silo	84	-	22.1
UVE	Structure for reagent supply - calcium hydroxide silo	84	-	22.1
UVE	Structure for reagent supply - unhydrated lime silo	84	-	22.1

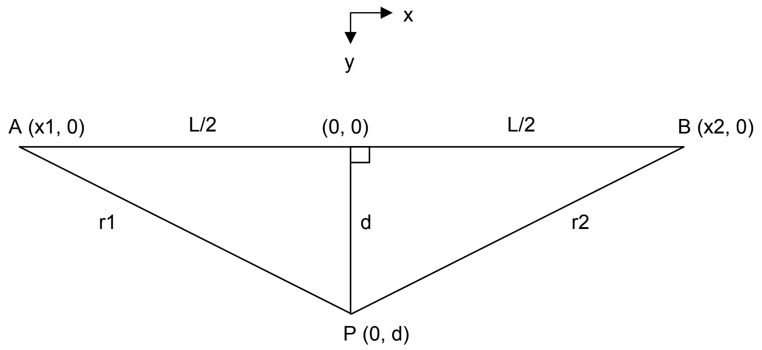
Impulsive sources

95 dB(A) @ 1 m

85 dB LAmax @ 10 m
80 dB LAmax @ 32 m

HGVs on Access Road and Manoeuvring in Service Yard

It be shown that, for a point source of constant sound power moving at a constant velocity in a straight line, as illustrated below, the Leq at point P can be related to the sound power per meter of a line source located on the trajectory of the moving so



$$L'_W = L_{eq,T} + 10\log\left[\frac{\pi d}{\arctan(L/2d)}\right]$$

Five measurements were made of an HGV arriving at or leaving the site. Measurements were made of the movement from (to) the weighbridge over a distance of approximately 65 m. The measurement was taken on the verge at the far side (near) side of the road a

Measurement Time (s) =	16	06	14	12	13
Mean Speed of Vehicle (m/s) =	4	11	5	5	5

Approximate length of trajectory, L (m) =	65	65	65	65	65
Approximate perpendicular distance between trajectory and measurement location, d (m) =	7	4	7	7	7

Filename	60	61	62	63	64
Description	HGV Leaving Site	HGV Arriving at the Site	HGV Leaving Site	HGV Leaving Site	HGV Leaving Site
$L_{Aeq,T}$ (dB)	74	72	71	73	71

Frequency [Hz]	**$L_{eq,T}$ (dB)**	**$L_{eq,T}$ (dB)**	**$L_{eq,T}$ (dB)**	**$L_{eq,T}$ (dB)**	**$L_{eq,T}$ (dB)**
50	78	68	84	75	84
63	69	67	79	67	81
80	65	65	62	66	69
100	67	68	63	67	68
125	69	68	63	65	68
160	67	67	64	65	68
200	69	65	64	64	66
250	69	65	61	66	66
315	71	68	67	68	67
400	68	65	66	65	65
500	67	64	61	64	65
630	65	64	63	64	63
800	65	64	62	63	62
1000	64	61	62	64	62
1250	63	61	61	64	61
1600	63	60	62	64	59
2000	62	59	60	61	58
2500	59	57	55	59	55
3150	58	56	52	55	53
4000	54	53	51	55	52
5000	51	52	50	52	48
6300	49	50	46	52	44
8000	47	46	42	46	40
10000	47	43	39	43	37

Filename	60	61	62	63	64	
Description	HGV Leaving Site	HGV Arriving at the Site	HGV Leaving Site	HGV Leaving Site	HGV Leaving Site	**Mean**
Emission Sound Power Level, L'_{AW} (dB/m)	86	81	83	85	83	84

Frequency [Hz]	**L'_W (dB/m)**	**L'_W (dB/m)**	**L'_W (dB/m)**	**L'_W (dB/m)**	**L'_W (dB/m)**	**L'_W (dB/m)**
50	90	77	96	87	96	89
63	81	77	91	79	93	84
80	77	74	74	78	81	77
100	79	77	75	79	80	78
125	81	77	75	77	80	78
160	80	77	76	77	81	78
200	81	74	77	76	78	77
250	81	74	73	78	78	77
315	83	77	79	80	79	80
400	81	74	78	77	77	77
500	79	73	73	77	77	76
630	78	74	75	76	75	76
800	77	74	74	75	74	75
1000	76	71	74	76	74	74
1250	75	70	73	76	73	73
1600	75	69	74	76	71	73
2000	74	68	72	73	70	71
2500	72	67	68	71	67	69
3150	70	66	64	68	65	66
4000	66	62	64	67	64	65
5000	63	61	62	64	60	62
6300	61	59	58	64	56	60
8000	59	56	54	58	52	56
10000	59	52	51	55	49	53

To model the access road for the facility, the source term must be corrected for the number of vehicles that would occur during the required assessment period and activity on-time (i.e. the time for which vehicles would be present on the access road, whic

Correction for number of vehicle $10 \times \log(Q)$ dB where Q = number of vehicle movements in assessment period

Correction for activity on tim $10 \times \log\left(\frac{L_M}{v_M T_M}\right)$ where L_M = length of source line in model; v_M = mean speed of vehicles in model; and T_M = assessment period in model

	Per Day	**Average Hour**	
Q =	702	58.5	vehicle movements in assessment period
L_M =	370	370	m
v_M =	5	5	m/s
T_M =	57600	3600	seconds

Overall Correction to L'_W (dB) =	0	1	dB/m for assessment period

Reversing Signals

The source term for reversing signals has been derived on the basis of the following supplier's data:

Brigade Alarms: *http://www.reverseinsafety.co.uk/catalogue/index.php*

Fixed medium duty alarm of 97 dB(A) @ 1 m

Assuming a 50% on-time and hemispherical radiation, this is equivalent to:

Reversing Signal, L_W = 102 dB(A)

The reversing signal is included in the model as a line source that describes the trajectory of the rear of the trailer during the manoeuvre with a sound power level for the entire line equal to L_W (as above) and a %on-time commensurate with the duration

Duration of 1 reversing manoeuvre (s)	20	20
Number of vehicles in assessment period	351	29.25
Assessment period (hours)	16	1
%on-time of model source	12	16

The supplier's data indicate that reversing signals are typically tuned to approximately 1 kHz. On this basis, the source term is modelled with all of the acoustic energy (L_W=102 dB(A)) in the 1 kHz octave-band.

Appendix 12.5: Operational Noise Assessment

Residential Receptors

Daytime

Receptor	Direction	Baseline Ambient Noise Level, $L_{Aeq, 16\text{-}hours}$ (dB)	Baseline Background Noise Level, L_{A90} (dB)	Specific Noise Level, $L_{Aeq, 1\text{-}hour}$ (dB)	Rating Level, $L_{Ar,Tr}$ (dB)	Rating / Background Difference (dB)	Ambient Noise Change (dB)	Significant?
Reams Way (Gnd)	E	51	41	34	39	-2	0	No
Rec Way (Gnd)	E	51	40	26	31	-9	0	No
Walsby Drive (Gnd)	E	51	40	30	35	-5	0	No

Night-time

Receptor	Direction	Baseline Ambient Noise Level, $L_{Aeq, 8\text{-}hours}$ (dB)	Baseline Background Noise Level, L_{A90} (dB)	Specific Noise Level, $L_{Aeq, 5\text{-}min}$ (dB)	Rating Level, $L_{Ar,Tr}$ (dB)	Rating / Background Difference (dB)	Ambient Noise Change (dB)	Significant?
Reams Way (1st)	E	50	42	34	39	-3	0	No
Rec Way (1st)	E	40	38	27	32	-6	0	No
Walsby Drive (1st)	E	40	38	29	34	-4	0	No

Recreational Receptors

Receptor	Baseline Ambient Noise Level, $L_{Aeq, 16\text{-}hours}$ (dB)	Overall Noise Emissions, $L_{Aeq, 16\text{-}hour}$ (dB)	Ambient Noise Change (dB)
Saxon Shore Way (Jetty)	49	54	6
Saxon Shore Way (Milton Creek)	49	49	3
Saxon Shore Way (Slipway)	49	60	11

Avian Receptors

Baseline Early Morning Background Noise Level Measured at Reedbed

	Sound Pressure Level, $L_{A90,15\text{-}min}$ (dB)								
	63	*125*	*250*	*500*	*1000*	*2000*	*4000*	*8000*	*Overall*
Maximum $L_{A90,\ 15\text{-}min}$ (dB) per octave-band (03.00 to 07.00 hours)	25	24	32	40	40	36	28	14	44
Mean $L_{A90,\ 15\text{-}min}$ (dB) per octave-band (03.00 to 07.00 hours)	19	21	29	37	36	34	24	9	41
Minimum $L_{A90,\ 15\text{-}min}$ (dB) per octave-band (03.00 to 07.00 hours)	16	17	24	33	32	30	19	6	37

Operational Noise Emissions from SEP (03.00 - 07.00 hours)

	Sound Pressure Level, $L_{Aeq,T}$ (dB)								
	63	*125*	*250*	*500*	*1000*	*2000*	*4000*	*8000*	*Overall*
Milton Creek	49	42	30	28	23	13	-1	0	50
Milton Creek (north)	52	47	34	29	27	18	7	-19	54
Milton Creek (south)	37	34	24	29	16	2	-17	0	40
North of Reedbed	36	33	23	20	10	-4	-22	0	38
Reedbed (100 m from UEU)	55	48	35	30	28	19	10	-9	56
Reedbed (200 m from URC)	52	43	30	30	22	14	2	-25	52
The Swale	51	47	40	31	29	17	5	-22	52

Operational Impulsive Noise Emissions from SEP

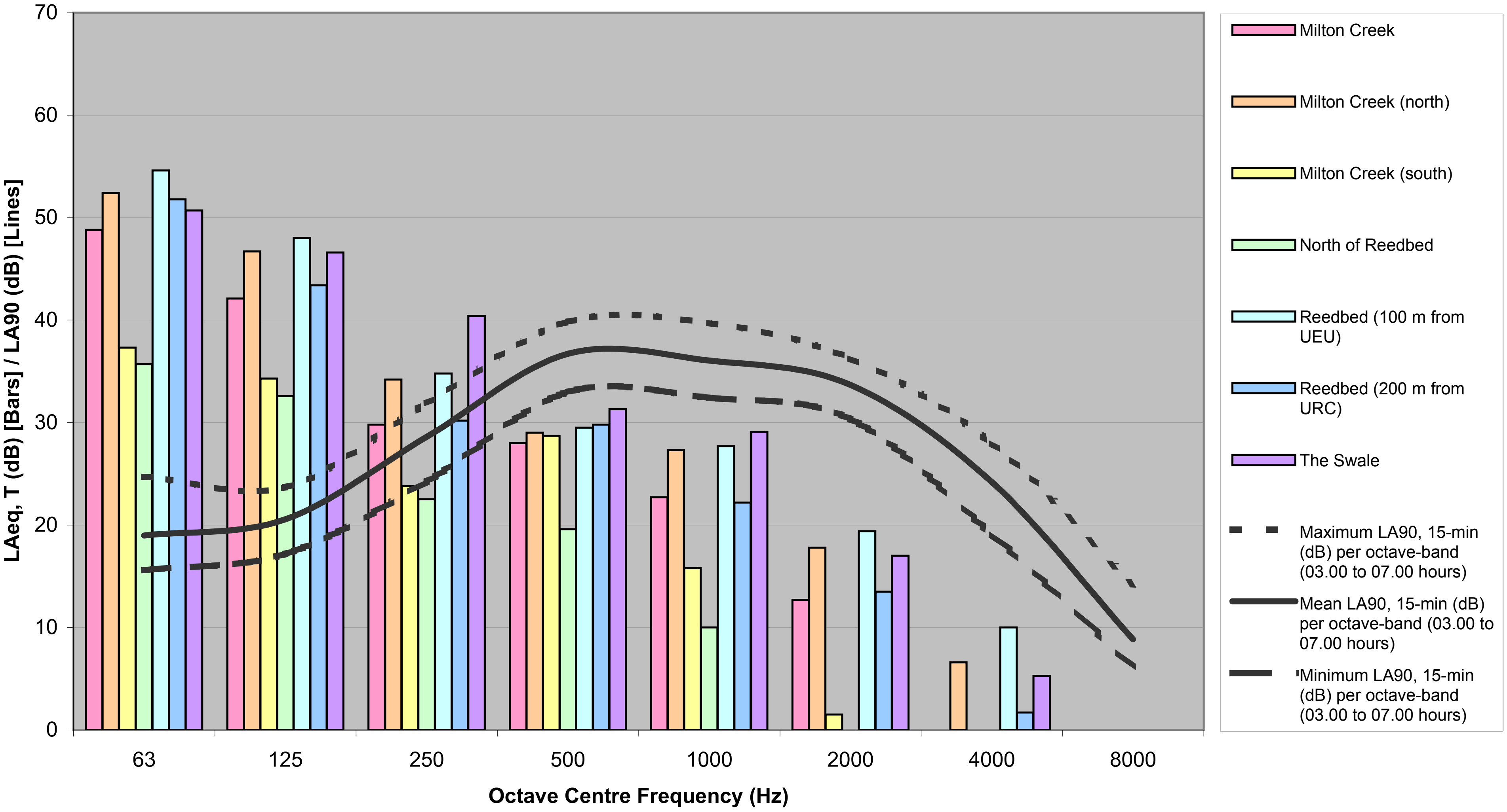
	Maximum Sound Pressure Level, L_{Amax} (dB)								
	63	*125*	*250*	*500*	*1000*	*2000*	*4000*	*8000*	*Overall*
Milton Creek	-3	4	0	1	23	29	25	4	31
Milton Creek (north)	0	6	3	4	26	33	30	14	35
Milton Creek (south)	-7	-3	-4	-3	18	22	15	-17	24
North of Reedbed	-3	2	0	0	16	18	12	-12	21
Reedbed (100 m from UEU)	18	18	13	15	35	47	48	39	51
Reedbed (200 m from URC)	13	12	6	7	28	41	40	26	43
The Swale	0	6	13	18	27	32	30	13	35

Delivery HGVs

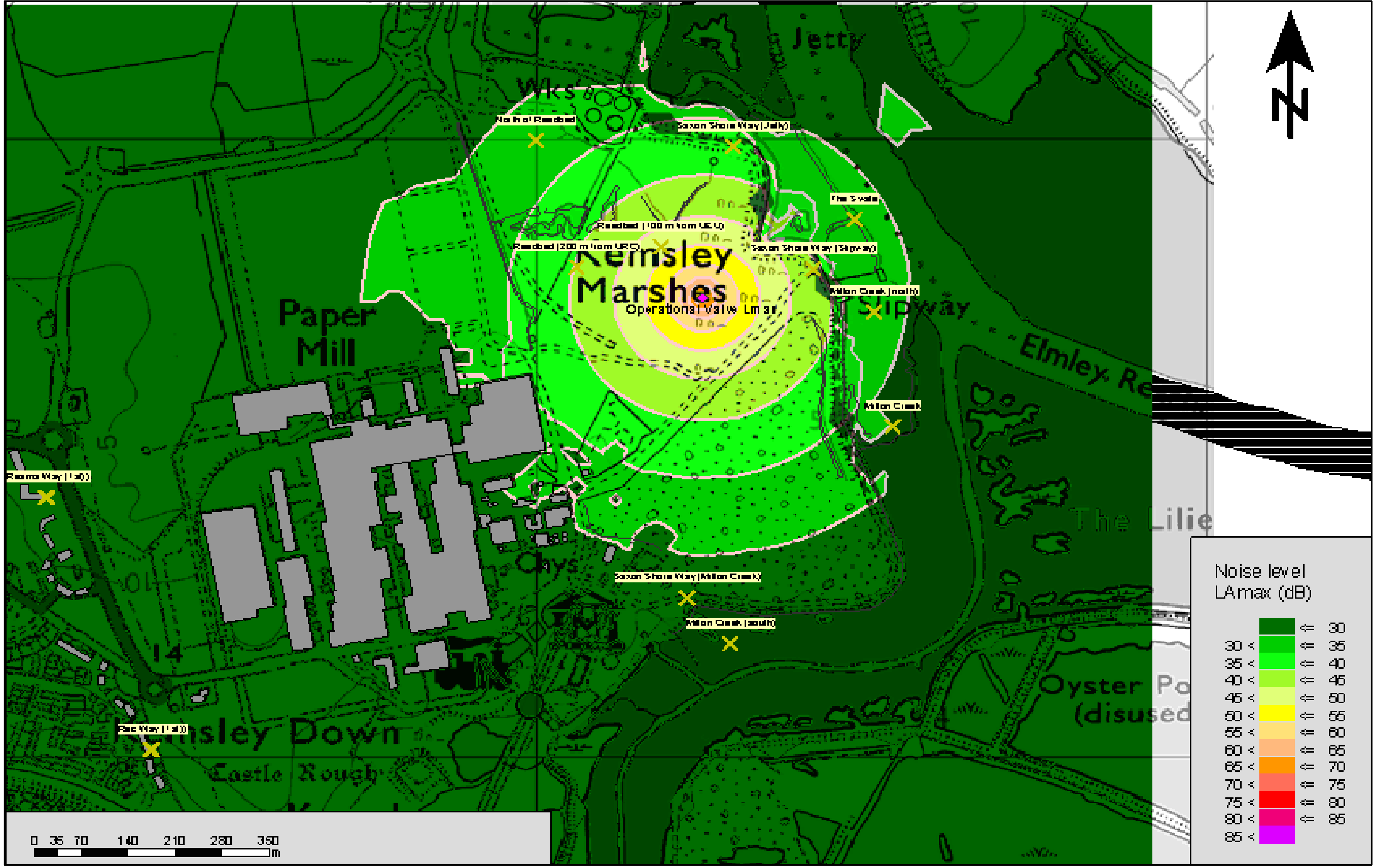
	Without Development 2014				With Development 2014				Noise Change (dB)	Significant?
	18-hr AAWT (06:00 - 00:00 hr)				18-hr AAWT (06:00 - 00:00 hr)					
Road Section	*Cars*	*HGVs*	*% HGV*	*Speed (km/h)*	*Cars*	*HGVs*	*% HGV*	*Speed (km/h)*		
Swale Way	40,166	3,972	9.0	50	40,207	4,232	9.5	50	0.1	No
A249 East of Swale Way	3,084	305	9.0	50	3,084	305	9.0	50	0	No
A249 West of Swale Way	34,264	5,120	13.0	50	34,279	5,380	13.6	50	0.1	No
M2 Junction 5 East	49,515	7,768	13.6	97	49,516	7,794	13.6	97	0	No
M2 Junction 5 West	59,338	9,809	14.2	97	59,339	9,965	14.4	97	0	No

	Without Development 2029				With Development 2029				Noise Change (dB)	Significant?
	18-hr AAWT (06:00 - 00:00 hr)				18-hr AAWT (06:00 - 00:00 hr)					
Road Section	*Cars*	*HGVs*	*% HGV*	*Speed (km/h)*	*Cars*	*HGVs*	*% HGV*	*Speed (km/h)*		
Swale Way	49,298	4,876	9.0	50	49,339	5,136	9.4	50	0.1	No
A249 East of Swale Way	3,786	374	9.0	50	3,786	374	9.0	50	0	No
A249 West of Swale Way	42,054	6,284	13.0	50	42,069	6,544	13.5	50	0.1	No
M2 Junction 5 East	60,772	9,534	13.6	97	60,773	9,560	13.6	97	0	No
M2 Junction 5 West	72,828	12,039	14.2	97	72,830	12,195	14.3	97	0	No

Operational Noise Emissions



Maximum Noise Levels from Operational Impulsive Sources (Valve Release)



A Desk- Based Archaeological Assessment in Connection with the Proposed Development of a Sustainable Energy Plant, Kemsley Mill, Kemsley, Kent

A Desk- Based Archaeological Assessment in Connection with the Proposed Development of a Sustainable Energy Plant, Kemsley Mill, Kemsley, Kent

Dan Slatcher BA, MA, MIFA, October 2009

DLE1726/010Rev2

This report has been prepared under the Framework of BS EN ISO 9001:2000	
Prepared By: Name Dan Slatcher Date December 2009	Signature
Approved for Issue By: Name Adrian Turgel Date December 2009	Signature

CONTENTS

SUMMARY

RPS Planning and Development have been commissioned to produce a desk based archaeological and cultural heritage assessment of a site at Kemsley Mill, Kemsley, Kent, in order to evaluate the potential of the area in advance of the proposed development of a sustainable energy plant.

The proposed development area is located immediately east of the existing paper mill in an area previously used for coal storage at NGR TQ 9220 6650. The proposed development area covers approximately 7ha and is bounded to the south west by the existing paper mill, to the northwest by open land, to the north east by open land and the Saxon Shore Way along the coast of the Swale and to the south east by a drain and a large spoil heap. The proposed development site currently comprises an area of open ground with extensive dumping of demolition material and arisings from excavations. The solid geology of the proposed development area consists of London Clay (BGS 1:1,250 1996). The drift geology is unmapped but the north eastern part of the proposed development area and the area to the south of the drain forming the south eastern site boundary are recorded as landfill sites.

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 study has revealed that there are no statutorily designated sites (e.g. Scheduled Monuments, Listed Buildings) within the application site. The closest statutorily protected cultural heritage receptor is Castle Rough, a Scheduled Ancient Monument (County Number 115), located some 500 metres south of the proposed development area. It is low lying and not visible from any distance away. There would be no physical impact upon the SAM from the proposed development and little or no effect on it's setting

Little Murston Farmhouse is located some 1.4 kilometres southwest of the proposed development area, is the closest listed building to the proposed development area and is listed at Grade II. There would be no physical impact upon the listed building from the proposed development and little or no effect on it's setting.

There will be no effect on any other listed building, or its setting. No Scheduled Ancient Monuments, Registered Parks and Gardens, Historic Battlefields or Conservation Areas, or their settings, will be affected by the proposed development.

It is concluded that the proposed development area is located within a landscape that has high potential to contain remains of all dates. However, there is considerable evidence for ground disturbance. The proposed development area has low potential for the survival of below-ground archaeological remains.

It is recommended, therefore, that an appropriate programme of fieldwork should be carried out in consultation with the County Archaeologist.

In the first instance archaeological mitigation would comprise the monitoring of a further tranche of geotechnical test pits further to assess the survival or otherwise of below ground archaeological remains. Depending on results, it may be appropriate to undertake further work, including a borehole survey of the alluvium and/ or archaeological trial trenching. These works may lead to further mitigation.

1.0 INTRODUCTION

1.1 Background

1.1.1 RPS Planning and Development have been commissioned to produce a desk based archaeological and cultural heritage assessment of a site at Kemsley Mill, Kemsley, Kent, in order to evaluate the potential of the area in advance of the proposed development of a sustainable energy plant.

1.2 Site Description

1.2.1 The proposed development area is located immediately east of the existing paper mill in an area previously used for coal storage at NGR TQ 9220 6650.

1.2.2 The proposed development area covers approximately 7ha and is bounded to the south west by the existing paper mill, to the northwest by open land, to the north east by open land and the Saxon Shore Way along the coast of the Swale and to the south east by a drain and a large spoil heap.

1.2.3 The proposed development site currently comprises an area of open ground with extensive dumping of demolition material and arisings from excavations

1.2.4 The solid geology of the proposed development area consists of London Clay (BGS 1:1,250 1996). The drift geology is alluvium (BGS 1:50,000 1975). The north eastern part of the proposed development area and the area to the south of the drain forming the south eastern site boundary are recorded as landfill sites. Site investigation has indicated that the proposed development area is underlain by made ground to a depth of between 0.9 metres and 4.6 metres below current ground level.

1.3 Consultation

1.3.1 Initial consultation has been undertaken with the County Historic Environment Record.

1.4 Aims

1.4.1 The aims of this study are to assess the likelihood of the proposed development site to contain archaeological remains and to provide an indication of what, if any, further work may be required with regard to archaeology.

1.5 Project Archive

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

1.5.2 This report has been written for and on behalf of RPS by Dan Slatcher BA, MA, MIFA.

2.0 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 during this assessment.

2.2 The desk assessment comprised, in the first instance, consultation with the Kent Historic Environment Record (HER). In addition, information on Scheduled Ancient Monuments, Registered Parks and Gardens and Registered Battlefields was obtained from English Heritage. 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 Site visits were undertaken in June 2009 to establish the presence of above ground archaeology and the potential for sub-surface remains, whether or not previously recorded. The site visit also provided an indication of the suitability of any further survey techniques, and sought to identify the likely effect of the proposed development on the settings of cultural heritage features in the vicinity. Site notes were made and digital photographs taken of the proposed development area and features visited.

2.4 The assessment has conformed to the relevant legislation and guidance, including:

- *Planning Policy Guidance: Planning And The Historic Environment* (PPG 15) Department of the Environment, DNH September 1994;
- *Planning Policy Guidance: Archaeology And Planning* (PPG 16) Department of the Environment November 1990;
- *Code of Conduct* Institute of Field Archaeologists 2006 and
- *Standard And Guidance for Archaeological Desk based Assessment* Institute of Field Archaeologists 2001.

2.5 PPG 16 provides guidance on the distinction between remains of national importance and those of lesser importance at paragraphs 8 and 27. A basis for establishing the relative order of importance of archaeological sites is given in Annexe 4 of PPG 16. In addition, the *Design Manual for Road and Bridges (Vol 11, Section 3 Part 2 HA208/07)* Highways Agency August 2007 details categories of relative importance:

- Sites of Very High Value – usually world Heritage sites or sites of acknowledged **International Importance**
- Sites of High Value or **National Importance** – usually Scheduled Ancient Monuments, or monuments in the process of being scheduled.
- Sites of Medium Value, these being of **Regional** or **County importance**;
- Sites of Low Value, these being of district or **Local importance**;
- Sites of **Negligible** Value - with very little of no surviving archaeological interest.
- Sites of **Unknown** Value

2.6 Designations of relative importance in this report are based on this designation.

2.7 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 onwards)

3.0 PLANNING CONTEXT

3.1 *PPG 16 Planning Policy Guidance: Archaeology and Planning* (1990), provides advice to planning authorities regarding the protection of archaeology within the planning process. The guidance makes clear that prospective developers should make provision for the archaeological appraisal of a site when assessing a sites development potential (Section 2B, paragraph 18a, 1990).

3.2 *PPG15 Planning and the Historic Environment* (1994) deals with Conservation Areas, Listed Buildings, World Heritage Sites, Historic Parks and Gardens, Historic Battlefields and the wider historic landscape.

3.3 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.

3.4 Scheduled Ancient 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).

3.5 The development plan for the application site currently comprises The South East Plan, Regional Spatial Strategy for the South East, RSS 3, adopted May 2009, Kent Waste Local Plan, adopted March 1998. (Saved' Policies only, none of which relate to cultural heritage) and Swale Borough Local Plan, February 2008.

Regional Planning Guidance

The South East Plan, Regional Spatial Strategy for the South East

POLICY BE6: MANAGEMENT OF THE HISTORIC ENVIRONMENT
When developing and implementing plans and strategies, local authorities and other bodies will adopt policies and support proposals which protect, conserve and, where appropriate, enhance the historic environment and the contribution it makes to local and regional distinctiveness and sense of place. The region's internationally and nationally designated historic assets should receive the highest level of protection. Proposals that make sensitive use of historic assets through regeneration, particularly where these bring redundant or under-used buildings and areas into appropriate use should be encouraged.

POLICY NRM15: LOCATION OF RENEWABLE ENERGY DEVELOPMENT
Local development documents should encourage the development of renewable energy in order to achieve the regional and sub-regional targets. Renewable energy development, particularly wind and biomass, should be located and designed to minimise adverse impacts on landscape, wildlife, heritage assets and amenity. Outside of urban areas, priority should be given to development in less sensitive parts of countryside and coast, including on previously developed land and in major transport areas.

The location and design of all renewable energy proposals should be informed by landscape character assessment where available. Within areas of protected and sensitive landscapes including Areas of Outstanding Natural Beauty or the national parks, development should generally be of a small scale or community-based. Proposals within or close to the boundaries of designated areas should demonstrate that development will not undermine the objectives that underpin the purposes of designation.

Swale Borough Local Plan, February 2008.

Policy E14

Development Involving Listed Buildings

1. Proposals, including any change of use, affecting a Listed Building, and/or its setting, will only be permitted if the building's special architectural or historic interest, and its setting, are preserved. Proposals will pay special attention to the:
   a. design, including scale, materials, situation and detailing;
   b. appropriateness of the proposed use of the building; and
   c. desirability of removing unsightly or negative features or restoring or reinstating historic features.
2. The total or part demolition of a Listed Building will be wholly exceptional, and will only be permitted provided convincing evidence has been submitted showing that:
   a. all reasonable efforts have been made to sustain existing uses or viable new uses and have failed;
   b. preservation in charitable or community ownership is not possible or suitable; and
   c. the cost of maintaining and repairing the building outweighs its importance and the value derived from its continued use.

If as a last resort, the Borough Council is prepared to consider the grant of a listed building consent for demolition, it may, in appropriate circumstances, consider whether the building could be re-erected elsewhere to an appropriate location. When re-location is not possible and demolition is permitted, arrangements will be required to allow access to the building prior to demolition to make a record of it and to allow for the salvaging of materials and features.

Policy E15

Development Affecting a Conservation Area

Development (including changes of use and the demolition of unlisted buildings or other structures) within, affecting the setting of, or views into and out of a conservation area, will preserve or enhance all features that contribute positively to the area's special character or appearance. The Borough Council expects development proposals to:

1. respond positively to its conservation area appraisals where these have been prepared;
2. retain the layout, form of streets, spaces, means of enclosure and buildings, and pay special attention to the use of detail and materials, surfaces, landform, vegetation and land use;
3. take into account the current or likely resulting ambience provided by the mix of land uses or traffic;
4. remove features that detract from the character of the area and reinstate those that would enhance it; and
5. retain unlisted buildings or other structures that make, or could make, a positive contribution to the character or appearance of the area.

Policy E16

Scheduled Ancient Monuments and Archaeological sites

1. Development will not be permitted which would adversely affect a Scheduled Ancient Monument, as shown on the Proposals Map or subsequently designated, or other nationally important monument or archaeological site, or its setting.
2. Whether they are currently known or discovered during the Plan period, there will be a preference to preserve important archaeological sites in-situ and to protect their settings. Development that does not achieve acceptable mitigation of adverse archaeological effects will not be permitted.

Where development is permitted and preservation in-situ is not justified, the applicant will be required to ensure that provision will be made for archaeological excavation and recording, in advance of and/or during development.

Policy E17

Historic Parks and Gardens

The Borough Council will seek to protect registered Historic Parks and Gardens, as shown on the Proposals Map, or which are registered during the Plan period. Development that would adversely affect the landscape character, layout and features of a Historic Park and Garden, or its setting, will not be permitted.

4.0 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

4.1 Introduction

4.1.1 The baseline data has been included as an appendix, which can be cross-referenced to the Historic Environment Record Entries Plan (Figure 3).

4.2 Prehistoric and Roman.

4.2.1 The proposed development area is located at the junction of the higher ground of the Kemsley Ridge, which lies on London Clay, and the alluvial floodplain, underlying the proposed development site and which in general has the potential to contain deposits of palaeo-environmental significance.

4.2.2 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.

4.2.3 A prehistoric log boat was found in 1924, apparently during river drainage in Milton Creek, while a greenstone celt found in the vicinity was apparently a separate find (HER number TQ96NW12).

4.2.4 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 development area. 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 TW96NW98). The remains were interpreted as being an extension of the known settlement activity to the south (TQ96NW99).

4.2.5 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 development area, and finds including briquetage, pottery, burnt flint and animal bone have been made (HER numbersTQ96NW1108 & TQ961110).

4.2.6 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 development area.

4.2.7 Three ditches of Roman date were recorded during an archaeological evaluation to the north of Ridham Avenue, some 700 metres from the proposed development area (HER number TQ96NW98).

4.3 Medieval

4.3.1 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). The place name Kemsley seems to be post Norman conquest in origin (Wallenberg: 255), while Sittingbourne first appears in 1200(Wallenberg 264).

4.3.2 A possible Anglo Saxon site of unknown type is recorded as being located some 200 metres south of the proposed development area. The source is antiquarian and the site type and location uncertain, although it may be based on place name evidence (HER number TQ96NW13).

4.3.3 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).

4.3.4 A moated site, Castle Rough, is located some 500 metres south of the proposed development area. 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. 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).

4.3.5 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 development area.

4.4 **Post-medieval**

4.4.1 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 development area itself appears to have been used for agricultural purposes until the 19th century, although nearby fields were used for brick making and other industries.

4.4.2 Little Murston Farmhouse, located some 1.4 kilometres southwest of the proposed development area 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.

4.4.3 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, marchland and dry land. The settlement of Milton with its parish church is located within the latter, while the proposed development area and Castle Rough are located in the marsh.

4.4.4 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 proposed development area is shown as enclosed fields.

4.4.5 The Milton Next Sittingbourne Tithe Map of 1838 shows the proposed development area 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.

4.4.6 The first edition six inch to the mile Ordnance Survey map of 1869 shows the proposed development area as being in fields with a sheepfold on its north eastern boundary. The proposed development area is indicated as being within Kemsley Down and Kemsley Marshes. he proposed development area ids divided into two by a field boundary and is crossed by a north-south running tramway. A further tramway runs roughly east to west approximately 200 metres south of the proposed development area and connects with that running through the proposed development area. A brick field is marked immediately south of New Milton. In the wider area a large duck decoy is marked 950 metres to the northwest of the proposed development area.

4.4.7 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 (paragraph 4.4.4, above). 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 Govehurst Dock had been dug.

4.4.8 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 (Bellingham1996: 67-69). The 1938 edition of the OS shows these buildings.

4.4.9 The mill was supplied from Ridham Dock by a tramway which extended into Sittingbourne to the south, from where it acted as a passenger railway, bringing workers to and from the mill. 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 development area, continues in use as a preserved railway, while the section of the northern part which forms the western boundary of the proposed development area has been replaced by the perimeter road around the paper mill.

4.4.10 An aerial photograph taken in 1945 shows the paper mill with conical mounds of material to its north. Most of the proposed development area, in particular the western half, has material piled upon it. The OS edition of 1950 indicates a similar disposition. The OS edition of 1979 indicates that material has been deposited on the eastern half of the proposed development area.

4.4.11 The site visit indicated that the proposed development area is located within the perimeter fence of the paper mill, but lies outside the perimeter road around the main paper mill buildings and is divided form the main area by a deep ditch. There has been significant tipping of arisings from excavations and building material to a depth of c. 1.8 metres in places. The tipping covers over half of the proposed development area.

4.5 Geotechnical Survey

4.5.1 A Phase Two geotechnical site investigation was undertaken by RPS in 2009. Intrusive works comprised 3 cable percussion boreholes, 15 trial pits and 8 window sample boreholes. Interventions were undertaken from the base of any arisings.

4.5.2 The survey revealed made ground across the whole of the 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 level. These infill materials were more commonly found in locations within the northern and western site areas such as Trial Pits TP10, TP11 and TP13. The made ground extended to depths of between 0.9metres and 4.6metres below current ground level

4.5.3 Peat was occasionally present within Made Ground in the north and east of the site and was encountered as a peaty silt / clay layer within the made ground at1.6 to 1.8m below current ground level in boreholes WS3 and WS5 or as occasional pockets in the made ground in Trial Pits TP1 and TP14.

4.5.4 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.

5.0 ASSESSMENT OF POTENTIAL

5.1 The nearest statutorily protected cultural heritage receptor is Castle Rough, a Scheduled Ancient Monument (County Number 115). The SAM is located some 500 metres south of the proposed development area. It is low lying and not visible from any distance away. Assuming that the final design of the proposed development is similar in scale to that of the existing CHP plant, it is likely that only the stack of the proposed development, which would be located so that buildings forming part of the current paper mill were between the SAM and the proposed development, would be visible from the SAM. There would be no physical impact upon the SAM from the proposed development and little or no effect on it's setting.

5.2 The closest listed building to the proposed development is Little Murston Farmhouse, located some 1.4 kilometres southwest of the proposed development area There is currently no intervisibility with the proposed development area. Much of the proposed development would lie on a line of sight between the listed building and the existing paper mill and would be located adjacent to the latter. Assuming that the final design of the proposed development is similar in scale to that of the existing CHP plant, it is likely that only the stack of the proposed development would be visible from the listed building. There would be no physical impact upon the listed building from the proposed development and little or no effect on it's setting.

5.3 The medieval parish church of the Holy Trinity, Milton church is listed at grade I. The listed building is located some 1.5 kilometres southwest of the proposed development area. The existing paper mill buildings are located between the listed building and the proposed development area. There would be no intervisibility between the proposed development and the listed building. There would be no physical impact upon the listed building from the proposed development and no effect on it's setting.

5.4 The nearest Conservation Area is Milton Regis High Street, located some 2.5 kilometres south west of the proposed development area. Assuming that the final design of the proposed development is similar in scale to that of the existing CHP plant, it is likely that at most only the stack of the proposed development would be visible from the Conservation Area. There would be no physical impact upon the Conservation Area from the proposed development and little or no effect on it's setting.

5.5 Sittingbourne High Street Conservation Area is located some 2.9 kilometres south of the proposed development area. Assuming that the final design of the proposed development is similar in scale to that of the existing CHP plant, it is likely that at most only the stack of the proposed development would be visible from the Conservation Area. There would be no physical impact upon the Conservation Area from the proposed development and little or no effect on it's setting.

5.6 The Tonge Conservation Area is located some 2.9 kilometres south west if the proposed development area. Assuming that the final design of the proposed development is similar in scale to that of the existing CHP plant, it is likely that at most only the stack of the proposed development would be visible from the Conservation Area. There would be no physical impact upon the Conservation Area from the proposed development and little or no effect on it's setting.

5.7 The nearest Registered Park and Garden is Doddington Place, some 9 kilometres to the south of the proposed development area. There would be no physical impact upon the Registered Park and Garden from the proposed development and no effect on it's setting.

5.8 There are no registered battlefields within 15 kilometres of the proposed development area.

5.9 It is noted that the proposed development area is located in a landscape which generally has high potential to contain remains of all dates from the prehistoric onwards.

5.10 Recent archaeological work on the Sittingbourne Northern Relief Road has indicated that the higher ground of the Kemsley Ridge has the potential to contain remains from the prehistoric through to the medieval periods, with further activity taking place in the lower lying marshlands now represented by areas of alluvium.

5.11 The site visit, however, has indicated that there has been significant tipping of arisings from excavations and building material to a depth of c. 1.8 metres in places. The tipping covers over half of the proposed development area and is located in its north and west.

5.12 The phase two geotechnical site investigation undertaken by RPS in 2009 revealed made ground, extending to depths of between 0.9metres and 4.6metres below current ground level. The made ground was underlain by the natural alluvium. Borehole logs indicate that this material contains organic matter in places. On this basis there may be some potential for surviving palaeo-environmental remains.

5.13 Both the nature of the 20th century land-use at the site and the associated ground disturbance suggests 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. In addition there is no evidence for a surviving soil horizon beneath the made ground, it is likely that any archaeological deposits have been damaged or removed and that the potential for the survival of archaeological remains immediately below the former land surface is low.

5.14 The proposed development area is now of low archaeological potential, with the possible exception of very deeply buried deposits under alluvium. It is noted that the proposed development, with the exception of the fuel storage pit, lies on top of and within the area of made ground and an additional layer of general fill to be imported as part of the proposed development.

5.15 The fuel storage pit would have a finished floor level of approximately -1.2maOD. The fuel storage bunker within the building envelope will have dimensions of 32 m in length and 71.6 m in width .

5.16 There is no evidence for the proposed development area to contain below ground remains of national importance, or of sufficient importance to warrant preservation in situ of archaeological remains. Both the nature of the 20th century land-use at the site and the associated ground disturbance suggests 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 and that the proposed development area is of low archaeological potential.

6.0 CONCLUSIONS

6.1 This study has revealed that there are no statutorily designated sites (e.g. Scheduled Monuments, Listed Buildings) within the application site. The closest statutorily protected cultural heritage receptor is Castle Rough, a Scheduled Ancient Monument (County Number 115), located some 500 metres south of the proposed development area. It is low lying and not visible from any distance away. There would be no physical impact upon the SAM from the proposed development and little or no effect on it's setting

6.2 Little Murston Farmhouse is located some 1.4 kilometres southwest of the proposed development area, is the closest listed building to the proposed development area and is listed at Grade II. There would be no physical impact upon the listed building from the proposed development and little or no effect on it's setting.

6.3 There will be no effect on any other listed building, or its setting. No Scheduled Ancient Monuments, Registered Parks and Gardens, Historic Battlefields or Conservation Areas, or their settings, will be affected by the proposed development.

6.4 It is concluded that the proposed development area is located within a landscape that has high potential to contain remains of all dates. However, there is considerable evidence for ground disturbance. The proposed development area has low potential for the survival of below-ground archaeological remains.

6.5 It is recommended, therefore, that an appropriate programme of fieldwork should be carried out in consultation with the County Archaeologist.

6.6 In the first instance archaeological mitigation would comprise the monitoring of a further tranche of geotechnical test pits further to assess the survival or otherwise of below ground archaeological remains. Depending on results, it may be appropriate to undertake further work, including a borehole survey of the alluvium and/ or archaeological trial trenching. These works may lead to further mitigation.

7.0 BIBLIOGRAPHY AND REFERENCES

7.1 Published

Brabner, J.H.F. ed., c1893. *The Comprehensive Gazetteer of England and Wales*. London: William Mackenzie.

Cantor, L, 1983. *The Medieval Parks of England: A Gazetteer.* Loughborough: Loughborough University of Technology**.**

Ekwall, E 1960. *The Concise Oxford Dictionary of English Place Names* Oxford

English Heritage, c1994. *Register of Historic Battlefields*. London: English Heritage.

Margarey, I.D. 1955 *Roman Roads in Britain Volume 1, South of the Fosse Way-Bristol Channel* London: Phoenix House.

Meaney, A., 1964. *A Gazetteer of Early Anglo-Saxon Burial Sites*. London: George Allen & Unwin.

RPS 2009 *Phase 2 Intrusive Site Investigation Kemsley Paper mill, Sittingbourne, Kent* unpublished client report

Sawyer, P.H. 1968. *Anglo-Saxon Charters: an Annotated List and Bibliography*. London: Royal Historical Society.

Tate, W.E. & Turner, M.E., 1978. *A Domesday of English Enclosure Acts and Awards.* Reading: University of Reading.

Williams, A. & Martin, G.H. (eds), 1992 *Domesday Book* London: Penguin.

7.2 Maps

British Geological Survey 1996 1:1250 sheet
1:50,000 Series map *Chatham* 1975

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

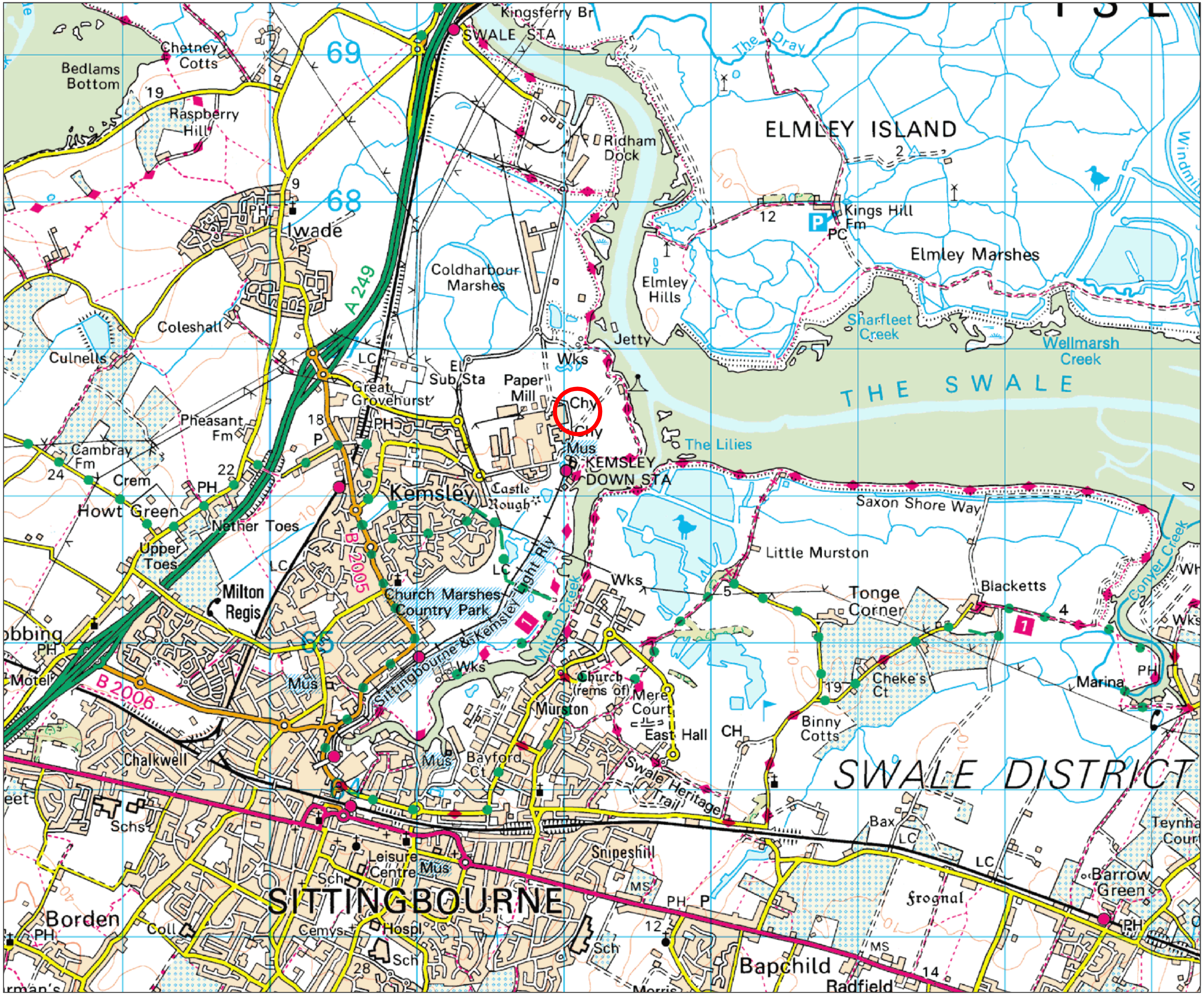
Historical Map and Guide Roman Britain 1994.

Mudge, William, 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

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

8.0 FIGURES



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Key:

○ Proposal Location

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PROJECT
Kemsley Sustainable Energy Plant

TITLE
Site Location Plan

SCALE 1:25000 @A3	DRAWN BY AWF
DATE March 2009	CHECKED JS
CAD FILE	

PROJECT NUMBER DLE1726	DRAWING NUMBER Figure 1.1	REV

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PROJECT
Kemsley Sustainable Energy Plant

TITLE
Proposal Site

SCALE 1:2500 @A3	DRAWN BY LB
DATE October 2009	CHECKED JS
CAD FILE	
PROJECT NUMBER DLE1726	DRAWING NUMBER Figure 1.2
	REV

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LEGEND

● HER monument point data

▨ Scheduled Monument

▭ 1 kilometre buffer

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PROJECT
Kemsley Sustainable Energy Plant

TITLE
Site Locations within 1km of Proposed Development Area supplied by Kent Historic Environment Record

SCALE NTS	DRAWN BY AT
DATE June 2009	CHECKED DS

MAPINFO FILE

PROJECT NUMBER DLE1726	DRAWING NUMBER Fig. 3	REV

CRPS

APPENDIX 1 HER ENTRIES (supplied by Kent County Council)

Kent County Council Monument Full Report

12/06/2009 **Number of records: 53**

Kemsley Area HER

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 1132 -	Wharf, Milton Creek.	Monument

Concrete wharf structure, Milton Creek

Monument Types and Dates

WHARF (Post Medieval - 1540 AD to 1900 AD)
Evidence STRUCTURE

Description and Sources

Description

Concrete wharf structure with rubble make up visible behind it. Has upright wooden rubbing strakes.(1)

Sources

Unpublished document: Wessex Archaeology. 2004. NORTH KENT COAST RAPID COASTAL ZONE ASSESSMENT SURVEY PHASE II: FIELD ASSESSMENT.

Location

National Grid Reference

TQ 92179 65773 (point) TQ96NW Point

Administrative Areas

Civil Parish	SHEERNESS, SWALE, KENT
District	SWALE, KENT

Address/Historic Names

Milton Creek , Swale, Sittingbourne, Kent

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

Sites & Monuments Record - TQ 96 NW 1132 Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse Inter-tidal

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

EWX8437 North Kent Coast Rapid Coastal Zone Assessment Survey (Event - Survey. Ref: 56750)

Associated Individuals/Organisations

Wessex Archaeology

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 1145 -	Possible shooting hide, Clay Reach.	Monument

Shooting hide? Clay Reach.

Monument Types and Dates

HIDE? (Modern - 1901 AD to 2050 AD)
Evidence STRUCTURE

Description and Sources

Description

Timber structure, visible remains no more than 1 metre square, perhaps the remains of a modern shooting hide. In the intertidal mud, timbers are both rounded and squared the largest diameter is approximately 10 cm. Remains are roughly square in plan.(1)

Sources

(1) Unpublished document: Wessex Archaeology. 2004. NORTH KENT COAST RAPID COASTAL ZONE ASSESSMENT SURVEY PHASE II: FIELD ASSESSMENT.

Location

National Grid Reference

TQ 92253 67431 (point)	TQ96NW	Point

Administrative Areas

Civil Parish	IWADE, SWALE, KENT
District	SWALE, KENT

Address/Historic Names

Clay Reach, West Swale, Kent

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

Sites & Monuments Record - TQ 96 NW 1145	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Coastland above high water

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

EWX8437 North Kent Coast Rapid Coastal Zone Assessment Survey (Event - Survey. Ref: 56750)

Associated Individuals/Organisations

Wessex Archaeology

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 1146 -	Gun platform, derrick base?, Milton Creek.	Monument

WWII gun platform, Milton Creek.

Monument Types and Dates

DERRICK? (Modern - 1901 AD to 2050 AD)
  Evidence STRUCTURE
GUN EMPLACEMENT (Modern - 1940 AD to 2050 AD)
  Evidence STRUCTURE

Description and Sources

Description

Circular cut in concrete platform with 8 large exposed bolts. (1)

Sources

(1) Unpublished document: Wessex Archaeology. 2004. NORTH KENT COAST RAPID COASTAL ZONE ASSESSMENT SURVEY PHASE II: FIELD ASSESSMENT.

Location

National Grid Reference

TQ 92104 66100 (point)	TQ96NW	Point

Administrative Areas

Civil Parish	SHEERNESS, SWALE, KENT
District	SWALE, KENT

Address/Historic Names

Milton Creek, Milton Regis, Kent

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

Sites & Monuments Record - TQ 96 NW 1146	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Coastland above high water

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

EWX8437 North Kent Coast Rapid Coastal Zone Assessment Survey (Event - Survey. Ref: 56750)

Associated Individuals/Organisations

Wessex Archaeology

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 1147 -	Slipway, by Kemsley Marshes.	Monument

Concrete slipway on the Swale with large wooden beams for berthing vessels.

Monument Types and Dates

SLIPWAY (Post Medieval - 1540 AD to 1900 AD)
Evidence STRUCTURE

Description and Sources

Description

Concrete slipway with large wooden beams enclosing v-shaped wooden structure held together by large iron bolts. The structure provided support for bottom of hull and shallow keels. (1)

Sources

(1) Unpublished document: Wessex Archaeology. 2004. NORTH KENT COAST RAPID COASTAL ZONE ASSESSMENT SURVEY PHASE II: FIELD ASSESSMENT.

Location

National Grid Reference

Centroid TQ 92456 66741 (MBR: 12m by 8m) TQ96NW Dispersed

Administrative Areas

Civil Parish	SHEERNESS, SWALE, KENT
District	SWALE, KENT

Address/Historic Names

By Kemsley Marshes, Swale, Kent

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

Sites & Monuments Record - TQ 96 NW 1147 Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse Coastland above high water

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

EWX8437 North Kent Coast Rapid Coastal Zone Assessment Survey (Event - Survey. Ref: 56750)

Associated Individuals/Organisations

Wessex Archaeology

SMR Number TQ 96 NW 1148 - **Site Name** Possible wharf, by Kemsley Marshes.

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 1148 -	Possible wharf, by Kemsley Marshes.	Monument

Curved wharf-like structure, on Swale by Kemsley Marshes.

Monument Types and Dates

WHARF (Post Medieval - 1540 AD to 1900 AD)
Evidence STRUCTURE

Description and Sources

Description

Curved wharf-like structure. Close to second identical opposing structure, TQ 96 NW 1149. (1)

Sources

(1) Unpublished document: Wessex Archaeology. 2004. NORTH KENT COAST RAPID COASTAL ZONE ASSESSMENT SURVEY PHASE II: FIELD ASSESSMENT.

Location

National Grid Reference

TQ 92452 66743 (point)	TQ96NW	Point

Administrative Areas

Civil Parish	SHEERNESS, SWALE, KENT
District	SWALE, KENT

Address/Historic Names

By Kemsley Marshes, Swale, Kent

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

Sites & Monuments Record - TQ 96 NW 1148	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Coastland above high water

Related Monuments

TQ 96 NW 1149	Possible wharf, by Kemsley Marshes.	Functional Association
TQ 96 NW 1150	Possible Wharf, by Kemsley Marshes.	Functional Association

Finds - None recorded

Associated Events/Activities

EWX8437 North Kent Coast Rapid Coastal Zone Assessment Survey (Event - Survey. Ref: 56750)

Associated Individuals/Organisations

Wessex Archaeology

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 1149 -	Possible wharf, by Kemsley Marshes.	Monument

Arc-shaped wharf like structure on Swale, by Kemsley Marshes.

Monument Types and Dates

WHARF (Post Medieval - 1540 AD to 1900 AD)
Evidence STRUCTURE

Description and Sources

Description

Similar to identical opposing structure, TQ 96 1150. May be part of same structure. (1)

Sources

(1) Unpublished document: Wessex Archaeology. 2004. NORTH KENT COAST RAPID COASTAL ZONE ASSESSMENT SURVEY PHASE II: FIELD ASSESSMENT.

Location

National Grid Reference

TQ 92449 66748 (point)	TQ96NW	Point

Administrative Areas

Civil Parish	SHEERNESS, SWALE, KENT
District	SWALE, KENT

Address/Historic Names

By Kemsley Marshes, Swale, Kent

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

Sites & Monuments Record - TQ 96 NW 1149	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Coastland above high water

Related Monuments

TQ 96 NW 1148	Possible wharf, by Kemsley Marshes.	Functional Association

Finds - None recorded

Associated Events/Activities

EWX8437 North Kent Coast Rapid Coastal Zone Assessment Survey (Event - Survey. Ref: 56750)

Associated Individuals/Organisations

Wessex Archaeology

SMR Number TQ 96 NW 1150 - **Site Name** Possible Wharf, by Kemsley Marshes.

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 1150 -	Possible Wharf, by Kemsley Marshes.	Monument

Possible wharf, maybe part of TQ 96 NW 1149.

Monument Types and Dates

WHARF? (Post Medieval - 1540 AD to 1900 AD)
Evidence STRUCTURE

Description and Sources

Description

Possible wharf, maybe part of TQ 96 NW 1149. (1)

Sources

(1) Unpublished document: Wessex Archaeology. 2004. NORTH KENT COAST RAPID COASTAL ZONE ASSESSMENT SURVEY PHASE II: FIELD ASSESSMENT.

Location

National Grid Reference

Centroid TQ 92456 66741 (MBR: 13m by 8m) TQ96NW Dispersed

Administrative Areas

Civil Parish	SHEERNESS, SWALE, KENT
District	SWALE, KENT

Address/Historic Names

By Kemsley Marshes, Swale, Kent

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

Sites & Monuments Record - TQ 96 NW 1150 Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse Coastland above high water

Related Monuments

TQ 96 NW 1148 Possible wharf, by Kemsley Marshes. Functional Association

Finds - None recorded

Associated Events/Activities

EWX8437 North Kent Coast Rapid Coastal Zone Assessment Survey (Event - Survey. Ref: 56750)

Associated Individuals/Organisations

Wessex Archaeology

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 10 - MKE3516	"Castle Rough", defensive work, Milton	Monument

Moat/Md.

Monument Types and Dates

MOAT (MOAT, Medieval - 1066 AD to 1539 AD)
Evidence EARTHWORK

Description and Sources

Description

[TQ 9184 6597] Castle Rough [NR] (1) Possible Danish defensive work - uncertain (2). Castle Rough in Milton is usually said to be a Danish fortress site, constructed c. 893. It is not large enough to serve an army, but may have sheltered Danish marauders or conversely have been a defensive work against the Danes. The moat on the S.W. side is about 12ft. below the enclosed mount, and a little less on the other sides. (3) Castle Rough is of square form, surrounded by a high bank, thrown up, and a broad ditch. There is a raised causeway, very plain to be seen,leading from it towards the sea shore (4). Two Viking fleets set out from France in 893 under the leadership of Hastein. The second division advanced up the Thames and encamped at Milton-next-Sittingbourne. The small, rectangular earthwork near Milton Creek, known as Castle Rough, may mark the encampment but it was hardly of sufficient size to accommodate Hastein's army (5). Castle Rough. The earthwork lies at the foot of the E. slope of Kemsley Down, a few feet above present sea level. 70 metres square in plan, it comprises a broad ditch with a slight outer bank on all sides but the N.W.; the interior is nearly level. The ditch has a maximum depth of 2.5 metres on the N.W. side. It is everywhere dry, but doubtless was originally filled, by tidal means, from the E. corner. There is no trace of the original entrance nor of internal occupation. There is also a marked absence of an inner rampart. The earthwork is in fairly good condition; partially covered by trees and bushes. It has the appearance of a normal homestead moat (6). The place called Castle Rough on Kemsley Downs is wholly unsuited to be the stronghold of an army, it is too small even to have accommodated Hastein's men and there was no place for the ships. This small square-shaped enclosure appears to be the site of a fortified manor house. (7) [TQ 918 660] Castle Rough, scheduled (8). Examination of "Castle Rough" by the Sittingbourne and Swale Archaeological Research Group in c. 1972, provided evidence that it was in fact constructed in the 13th or 14th century. The site comprises a water-filled moat of average width 7 metres, surrounding amound 45 metres by 43 metres in area, and 3 metres high above water level. The ground is now pasture, with a dense clump of bushes on the mound. The banks of the moat are being eroded by cattle. A single trench, divided into three sections was opened on the south flank of the mound. On cutting through its make up it was found to consist of brickearth, sand, and blue clay, throughout which were scattered Mesolithic scrapers and flakes. In the lowest deposit just above the natural brickearth, several sherds of Romano-British pottery were found accompanied by some sherds of 13th or 14th century green- glazed pottery. All the artifacts seemed to have been brought in with the dumped earth. The presence of the medieval pottery in the mounds make up suggest that the "Castle" was constructed at least 500 years after the visit of the Danes. (See Illustration Card for plan.) (9). Mesolithic flints from the 1972 excavations (10). [TQ 918 660] Castle Rough, listed in the county checklist for moated sites in Kent - December 1979 (11). Castle Rough moat and island site are large. Water encircles all four sides with a stream running into Milton Creek as a secondary defence on the south-east side. In parts the water is shallow enough to allow wading on to the island. This is partly open grass, but there is much thorn shrub and there has been recent interference in the shape of the trenching (a). The monument is as described in (a); the moat is as wide as 6 metres in places. On the north side where the moat is shallow are tracks across the island made by a tractor. Much of the thorn shrub on top has been uprooted (b) (12). Additional references (13-16) and site

Sources

(1) Unpublished document: OS Card / NAR index entry. OS 6" 1938-47
(2) Unpublished document: OS Card / NAR index entry. OS Ancient Britain Map Index 1951
(3) Unpublished document: OS Card / NAR index entry. VCH Kent 1 1908 432-3 sketch plan 1 (Chalkley Gould FSA)
(4) Unpublished document: OS Card / NAR index entry. History of Kent 1782 2 616 631 (E Hasted)
(5) Unpublished document: OS Card / NAR index entry. Arch of Kent 1930 246-7 (R F Jessup)
(6) Unpublished document: OS Card / NAR index entry. F1 ASP 31-JUL-59
(7) Unpublished document: OS Card / NAR index entry. Arch J 42 1885 294 (F C J Spurrell)
(8) Unpublished document: OS Card / NAR index entry. DOE (IAM) AMs England 2 1978 112
(9) Unpublished document: OS Card / NAR index entry. Kent Arch Review 31 Spring 1973 15-19 plans
(10) Unpublished document: OS Card / NAR index entry. Kent Arch Review 32 Summer 1973 60-61 illust
(11) Unpublished document: OS Card / NAR index entry. Moated Sites Research Gp 6 1979 47
(12) Unpublished document: OS Card / NAR index entry. AM 12 J Melhuish

photographs (17-32).(13) Unpublished document: OS Card / NAR index entry. AM 107 K Chant 1982
(14) Unpublished document: OS Card / NAR index entry. HBMC Record Forms
(15) Bibliographic reference: Field report for monument TQ 96 NW 10 - July, 1959.
(16) Index: Sittingbourne and Swale Archaeological Group. Site Files. C13 9(a) 94
(17) Photograph (Print): 1946. 3191.
(18) Photograph (Print): 1946. 3230.
(19) Photograph (Print): 1946. 3228.
(20) Photograph (Print): 2000. 46.
(21) Photograph (Print): 1953. MA 6-8 tq918659/1.
(22) Photograph (Print): 1956. SV 19-22 tq918659/2.
(23) Photograph (Print): 1953. TQ9165/1.
(24) Photograph (Print): 1953. TQ9165/2.
(25) Photograph (Print): 1953. TQ9165/3.
(26) Photograph (Print): 1998. TQ9165/4.
(27) Photograph (Print): 1998. TQ9165/5.
(28) Photograph (Print): 1998. TQ9165/6.
(29) Photograph (Print): 1986. TQ9166/1.
(30) Photograph (Print): 1986. TQ9166/2.
(31) Photograph (Print): 1986. TQ9166/3.
(32) Photograph (Print): 1986. TQ9166/6.

Location

National Grid Reference

Centroid TQ 9182 6596 (MBR: 105m by 112m)	TQ96NW	Dispersed

Administrative Areas

Civil Parish	SWALE, SWALE, KENT
County	KENT
District	SWALE, KENT

Address/Historic Names - None recorded

Designations, Statuses and Scorings

Associated Legal Designations

Register of Scheduled Monuments (EH national number) - 12729	Title not entered	Active	DKE19

Other Statuses and Cross-References

Monarch Uid - 419865	Active
Scheduled Monument - KENT 115	Active
- 60015	Active
National Monuments Record - TQ 96 NW 10	Active
- TQ 96 NW 10	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Coastland above high water

SMR Number TQ 96 NW 10 - **Site Name** "Castle Rough", defensive work, Milton

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

EWX6722	0200 (Event - Survey)
EWX6962	MA 6-8 tq918659/1 (Event - Survey)
EWX6979	SV 19-22 tq918659/2 (Event - Survey)
EWX7548	TQ9165/1 (Event - Survey)
EWX7549	TQ9165/2 (Event - Survey)
EWX7550	TQ9165/3 (Event - Survey)
EWX7551	TQ9165/4 (Event - Survey)
EWX7552	TQ9165/5 (Event - Survey)
EWX7553	TQ9165/6 (Event - Survey)
EWX7554	TQ9166/1 (Event - Survey)
EWX7555	TQ9166/2 (Event - Survey)
EWX7556	TQ9166/3 (Event - Survey)
EWX7559	TQ9166/6 (Event - Survey)
EWX6419	106G/UK/1444 (Event - Survey. Ref: 353)
EWX6424	106G/UK/1444 (Event - Survey. Ref: 353)
EKE2242	Field observation on TQ 96 NW 10 (Event - Survey)
EKE4042	CASTLE ROUGH,KEMSLEY (Event - Intervention. Ref: EI 15087)

Associated Individuals/Organisations

PHILLIPS, ALAN S. - Ordnance Survey Archaeology Division	Compiler
PHILLIPS, ALAN S. - Ordnance Survey Archaeology Division	Compiler
SMITH, NICKY - RCHME Swindon (HQ)	Compiler
SMITH, NICKY - RCHME Swindon (HQ)	Compiler

Maritime Information

Vessel Type	**Port of Registration**	**Departure Port**	**Destination Port**
Not entered	Unknown	Unknown	Unknown
Manner of Loss	**Propulsion**	**Construction**	**Construction Material**
			Unknown

Length	**Depth**	**Date of Loss**	**Nationality**
0 m	m		
Breadt	**Tonnage:**	**Cargo List**	
0 m	0 m		
Latitude:	**Longitude**		
°	°		

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 12 - MKE3518	Possible site of Prehistoric logboat and Neo Greenstone celt	Find Spot

Possible site of Prehistoric logboat and Neo Greenstone celt (other location WX19324)

Monument Types and Dates

(Undated)

Evidence	FIND
Main Building Material	WOOD

(logboat, Prehistoric - 500000 BC to 42 AD)

Evidence	FIND
Main Building Material	WOOD

(celt, Neolithic - 4000 BC to 2351 BC)

Evidence	FIND

Description and Sources

Description

[TQ 9240 6590] Prehistoric boat found January 1924 (by Mr S. William), now in Rochester Museum. A greenstone celt was found not far away. (1) (a) [TQ 9271 6331 (TQ 96 NW 1072) : Alternative site shown] (2) The boat from Murston, found by Mr S. T. Williams has probably been burnt or hewn out from an oaken trunk. The stem and prow are missing leaving a hull 11ft. long by 3ft. by 2ft. 6" deep, of curved section. It was found at a spot in the angle formed by the junction of the Swale and Milton Creek, 650 yards due E. of Castle Rough and 1480 yards N. of Mere Court. It is nearly 200 yards from the river wall and was found 8ft. down and 15ft. below H.W.M. See GP/AO/58/380/6. (3) The dug-out boat is on view in the forecourt of Rochester Museum. Of the two sitings, Authority 1 is likely to be correct as it agrees with Authority 3 which was published in the year of the discovery. (4) [TQ 9240 6590] A logboat found on February 1st 1924, in a river drainage area at Murston Marshes, Milton Creek, was given to Eastgate House Museum, Rochester, where it was displayed outside under a shelter. Subsequently it disintegrated (5-7). Additional references (8-9).

Sources

(1) Unpublished document: OS Card / NAR index entry. Ant J 4 1924 277

(2) Unpublished document: OS Card / NAR index entry. Maidstone Museum 6" (Anon undated)

(3) Unpublished document: OS Card / NAR index entry. Kent Arch Soc 6" (Anon undated)

(4) Unpublished document: OS Card / NAR index entry. Rochester Naturalist 6 no 130 1924 41-42 plans and elevations opp p 42 (G E Dibley)

(5) Unpublished document: OS Card / NAR index entry. F1 ASP 12-NOV-59

(6) Unpublished document: OS Card / NAR index entry. BAR 51 1978 Part I 242-3 Part II fig 32 (S McGrail)

(7) Bibliographic reference: Field report for monument TQ 96 NW 12 - November, 1959.

(8) Bibliographic reference: McGrail, Sean. 1978. Logboats of England and Wales. BAR Brit Ser 51 (i)242-268. McGrail, Sean

(9) Index: Sittingbourne and Swale Archaeological Group. Site Files. A17 9(b) 17

Location

National Grid Reference

TQ 924 659 (point)	TQ96NW	Point

Administrative Areas

Civil Parish	SWALE, SWALE, KENT
County	KENT
District	SWALE, KENT

Address/Historic Names - None recorded

Designations, Statuses and Scorings

SMR Number TQ 96 NW 12 - **Site Name** Possible site of Prehistoric logboat and Neo Greenstone celt

Associated Legal Designations - None recorded

Other Statuses and Cross-References

Monarch Uid - 419871	Active
- 60015	Active
National Monuments Record - TQ 96 NW 12	Active
- TQ 96 NW 12	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Coastland above high water

Related Monuments - None Recorded

Associated Finds

FKE1956	AXEHEAD (Neolithic - 4000 BC to 2351 BC)	FLINT

Associated Events/Activities

EKE2244 Field observation on TQ 96 NW 12 (Event - Survey)

Associated Individuals/Organisations

PHILLIPS, ALAN S. - Ordnance Survey Archaeology Division	Compiler
PHILLIPS, ALAN S. - Ordnance Survey Archaeology Division	Compiler
SMITH, NICKY - RCHME Swindon (HQ)	Compiler

Maritime Information

Vessel Type	**Port of Registration**	**Departure Port**	**Destination Port**
Not entered	Unknown	Unknown	Unknown
Manner of Loss	**Propulsion**	**Construction**	**Construction Material**
			Unknown

Length	**Depth**	**Date of Loss**	**Nationality**
0 m	m		
Breadt	**Tonnage:**	**Cargo List**	
0 m	0 m		
Latitude:	**Longitude**		
°	°		

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 13 - MKE3519	Archaeological site/EM.	Monument

Archaeological site/EM.

Monument Types and Dates

SITE (SITE, Early Medieval/Dark Age - 410 AD to 1065 AD)

Description and Sources

Description

[TQ 92156629] A.S. site - "40 acres field", Milton-next-Sittingbourne. Material in Museum. From Humphrey Wood to Arnold Collection. MB.1956. [Approximate siting only] (1) "Mr.G.Arnold was Mayor of Gravesend, living about the turn of the century, so this is quite an old site. The initials [M.B.] refer to Miss Blumstein, formerly assistant curator at the Maidstone Museum, but now at the Victoria & Albert Museum, London. I do not know of the site nor of anything in our possession from it. Possibly Gravesend Museum is referred to." (2) The siting by Authority 1 lies within an area occupied by long- disused sewage beds, the property of Kemsley Mill (Bowater & Lloyds). Mr.Ray, Group Assistant Director of the Mill, knows nothing of the site. Miss Blumstein is now in Israel (3)

Sources

Photograph (Print): 1986. TQ9166/6.
Photograph (Print): 1986. TQ9166/5.
Photograph (Print): 1986. TQ9166/4.
Photograph (Print): 1986. TQ9166/3.
(1) Unpublished document: OS Card / NAR index entry. Maidstone Museum 6" (Anon Undated)
(2) Unpublished document: OS Card / NAR index entry. Oral:Mr L R A Grove, Curator, Maidstone Mus, Kent.
(3) Unpublished document: OS Card / NAR index entry. F2 ASP 25-AUG-59
(4) Bibliographic reference: Field report for monument TQ 96 NW 13 - August, 1959.

Location

National Grid Reference

TQ 9215 6629 (point)	TQ96NW	Point

Administrative Areas

Civil Parish	SWALE, SWALE, KENT
District	SWALE, KENT

Address/Historic Names - None recorded

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

Monarch Uid - 419874	Active
National Monuments Record - TQ 96 NW 13	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes - None recorded

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

SMR Number TQ 96 NW 13 - **Site Name** Archaeological site/EM.

EWX7556	TQ9166/3 (Event - Survey)
EWX7557	TQ9166/4 (Event - Survey)
EWX7558	TQ9166/5 (Event - Survey)
EWX7559	TQ9166/6 (Event - Survey)
EKE2245	Field observation on TQ 96 NW 13 (Event - Survey)

Associated Individuals/Organisations

PHILLIPS, ALAN S. - Ordnance Survey Archaeology Division Compiler

Maritime Information

Vessel Type	**Port of Registration**	**Departure Port**	**Destination Port**
Not entered	Unknown	Unknown	Unknown
Manner of Loss	**Propulsion**	**Construction**	**Construction Material**
			Unknown

Length	**Depth**	**Date of Loss**	**Nationality**
0 **m**	**m**		
Breadt	**Tonnage:**	**Cargo List**	
0 **m**	0 **m**		
Latitude:	**Longitude**		
°	°		

SMR Number TQ 96 NW 22 - **Site Name** Sittingbourne and Kemsley light railway

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 22 - MKE3528	Sittingbourne and Kemsley light railway	Monument

Railway - 1908

Monument Types and Dates

SITE (Undated)
Evidence STRUCTURE
RAILWAY (RAILWAY, (between) Modern - 1908 AD to 1968 AD)
Evidence STRUCTURE

Description and Sources

Description

(TQ 92076628 - 90456419) Sittingbourne and Kemsley Light Railway. [NAT] (1) Sittingbourne and Kemsley Light Railway: A narrow gauge railway laid by Edward Lloyd in 1908 to connect his paper mill at Sittingbourne with the dock at Grovehurst TQ 920685, on the Swale. TQ 905642 - 920664; a two mile section saved and operated by a preservation society is the only part still in use. (2) When Grovehurst Dock became too small a larger facility was constructed at Ridham and the railway extended in 1919 and expanede after the opening of Lloyd's Kemsley Mill in 1924. The line was taken over by Bowater's in 1948 and operated until 1968. The maaintainance depot is siutated at the original end of the line, Kemsely Down. Branch line added to Burley's Wharf in 1953, now disused (3).Site photographs (4-9).

Sources

(1) Unpublished document: OS Card / NAR index entry. OS 1:10000 1979
(2) Unpublished document: OS Card / NAR index entry. Batsford Guide to Ind Arch of SE Eng 1978 55-56 (A J Haselfoot)
(3) Miscellaneous Material: Not applicable. SMR Kent uncatalogued index entry. 'From Sittingbourne to Kemsley Down (S&KLR Guide Book 1989)
(4) Photograph (Print): 1946. 4194.
(5) Photograph (Print): 1946. 4197.
(6) Photograph (Print): 1946. 4288.
(7) Photograph (Print): 1946. 4290.
(8) Photograph (Print): 2000. 46.
(9) Photograph (Print): 1986. TQ9166/3.
(10) Photograph (Print): 1986. TQ9166/4.
(11) Photograph (Print): 1986. TQ9166/5.
(12) Photograph (Print): 1986. TQ9166/6.

Location

National Grid Reference

Centroid TQ 9126 6604 (MBR: 1647m by 3705m) TQ96NW Dispersed

Administrative Areas

Civil Parish	SWALE, SWALE, KENT
County	KENT
District	SWALE, KENT

Address/Historic Names - None recorded

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

SMR Number TQ 96 NW 22 - **Site Name** Sittingbourne and Kemsley light railway

Monarch Uid - 419897	Active
- 60015	Active
National Monuments Record - TQ 96 NW 22	Active
- TQ 96 NW 22	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Coastland above high water
Landuse	Coastland above high water

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

EWX6722	0200 (Event - Survey)
EWX7556	TQ9166/3 (Event - Survey)
EWX7557	TQ9166/4 (Event - Survey)
EWX7558	TQ9166/5 (Event - Survey)
EWX7559	TQ9166/6 (Event - Survey)
EWX6425	106G/UK/1444 (Event - Survey. Ref: 353)
EWX6429	106G/UK/1444 (Event - Survey. Ref: 353)

Associated Individuals/Organisations

Eve, David Jackson - Kent County Council	Compiler
SMITH, NICKY - RCHME Swindon (HQ)	Compiler

Maritime Information

Vessel Type	**Port of Registration**	**Departure Port**	**Destination Port**
Not entered	Unknown	Unknown	Unknown
Manner of Loss	**Propulsion**	**Construction**	**Construction Material**
			Unknown

Length	**Depth**	**Date of Loss**	**Nationality**
0 m	m		
Breadt	**Tonnage:**	**Cargo List**	
0 m	0 m		
Latitude:	**Longitude**		
°	°		

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 78 - MKE8973	Brickfield, new milton	Monument

Brickfield

Monument Types and Dates

BRICKWORKS (disused by 1909, (pre) Modern - 1909 AD)
Evidence DOCUMENTARY EVIDENCE

Description and Sources

Description

O.S. 1st ed, 6" map, sheet 21 shows brickfield- (uncertain boundaries of brick pit at NE end). Disused on 3rd ed, O.S. 6" 1909 map, sheet 21 SW (1) and site photographs (2-7).

Sources

(1) Chart: N/A. Kent SMR Quarry Industries Survey. KCC 127
(2) Photograph (Print): 1946. 3230.
(3) Photograph (Print): 2000. 46.
(4) Photograph (Print): 1986. TQ9166/3.
(5) Photograph (Print): 1986. TQ9166/4.
(6) Photograph (Print): 1986. TQ9166/5.
(7) Photograph (Print): 1986. TQ9166/6.

Location

National Grid Reference

Centroid TQ 9200 6615 (MBR: 374m by 313m) TQ96NW Dispersed

Administrative Areas

Civil Parish	SITTINGBOURNE, SWALE, KENT
County	KENT
District	SWALE, KENT

Address/Historic Names - None recorded

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

Monarch Uid - 1031433	Active
SAR - 28	Active
- 60015	Active
National Monuments Record - TQ 96 NW 78	Active
- TQ 96 NW 78	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Coastland above high water

Related Monuments - None Recorded

Finds - None recorded

SMR Number TQ 96 NW 78 - **Site Name** Brickfield, new milton

Associated Events/Activities

EWX6722	0200 (Event - Survey)
EWX7556	TQ9166/3 (Event - Survey)
EWX7557	TQ9166/4 (Event - Survey)
EWX7558	TQ9166/5 (Event - Survey)
EWX7559	TQ9166/6 (Event - Survey)
EWX6419	106G/UK/1444 (Event - Survey. Ref: 353)

Associated Individuals/Organisations

KOENIG, NICOLA - Rumley, Peter J.	Compiler

Maritime Information

Vessel Type	**Port of Registration**	**Departure Port**	**Destination Port**
Not entered	Unknown	Unknown	Unknown
Manner of Loss	**Propulsion**	**Construction**	**Construction Material**
			Unknown

Length	**Depth**	**Date of Loss**	**Nationality**
0 m	m		
Breadt	**Tonnage:**	**Cargo List**	
0 m	0 m		
Latitude:	**Longitude**		
°	°		

SMR Number TQ 96 NW 79 - **Site Name** Pm brickfield wash mill, new milton

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 79 - MKE8974	Pm brickfield wash mill, new milton	Monument

Wash Mill

Monument Types and Dates

BRICKWORKS (BRICKWORKS, Post Medieval - 1540 AD to 1900 AD)
CLAY MILL (CLAY MILL, Post Medieval - 1540 AD to 1900 AD)

Description and Sources

Description

Wash mill shown on O.S. 6", 1st ed. ,ap. sheet 21

Sources

Photograph (Print): 1986. TQ9166/6.
Photograph (Print): 1986. TQ9166/5.
Photograph (Print): 1986. TQ9166/4.
Photograph (Print): 1986. TQ9166/3.
Photograph (Print): 1986. TQ9166/2.
Photograph (Print): 1986. TQ9166/1.
Photograph (Print): 1998. TQ9165/6.
Photograph (Print): 1998. TQ9165/5.
Photograph (Print): 1998. TQ9165/4.
Chart: N/A. Kent SMR Quarry Industries Survey.

Location

National Grid Reference

Centroid TQ 9127 6600 (MBR: 1067m by 394m) TQ96NW Dispersed

Administrative Areas

Civil Parish	SITTINGBOURNE, SWALE, KENT
District	SWALE, KENT

Address/Historic Names - None recorded

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

SAR - 28	Active
Monarch Uid - 1031434	Active
National Monuments Record - TQ 96 NW 79	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes - None recorded

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

EWX7551 TQ9165/4 (Event - Survey)
EWX7552 TQ9165/5 (Event - Survey)
EWX7553 TQ9165/6 (Event - Survey)
EWX7554 TQ9166/1 (Event - Survey)
EWX7555 TQ9166/2 (Event - Survey)
EWX7556 TQ9166/3 (Event - Survey)
EWX7557 TQ9166/4 (Event - Survey)
EWX7558 TQ9166/5 (Event - Survey)
EWX7559 TQ9166/6 (Event - Survey)

Associated Individuals/Organisations

KOENIG, NICOLA - Rumley, Peter J.	Compiler

Maritime Information

Vessel Type	**Port of Registration**	**Departure Port**	**Destination Port**
Not entered	Unknown	Unknown	Unknown
Manner of Loss	**Propulsion**	**Construction**	**Construction Material**
			Unknown

Length	**Depth**	**Date of Loss**	**Nationality**
0 m	m		
Breadt	**Tonnage:**	**Cargo List**	
0 m	0 m		
Latitude:	**Longitude**		
°	°		

SMR Number TQ 96 NW 33 - **Site Name** Unknown

SMR Number	**Site Name**	**Record Type**	
TQ 96 NW 33 - MKE12860		Unknown	Maritime

HULKED VESSEL, POSSIBLY A BARGE

Monument Types and Dates

WRECK (visible 1973, (pre) Modern - 1973 AD)

Evidence	DOCUMENTARY EVIDENCE
Evidence	VESSEL STRUCTURE

Description and Sources

Description

Vertical Datum: LAT Orientation: NS 30-OCT-1973 Wreck of large vessel shown on airphoto in 51 21 27.5N 000 45 37.3E. Lying N/S along the edge of Milton Creek in the intertidal area. Stands about 1-2m high above the mud at LW. Possibly a barge (1). Photographs (2,3).

Sources

(1) Bibliographic reference: Hydrographic Office wreck index. Extracted 20-JAN-1993, Page Nos. N/a

(2) Photograph (Print): 1946. 3191.

(3) Photograph (Print): 2000. 46.

Location

National Grid Reference

TQ 92166 65735 (point)	TQ96NW	Point

Administrative Areas

Civil Parish	SITTINGBOURNE, SWALE, KENT
District	SWALE, KENT

Address/Historic Names - None recorded

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

Admiralty Chart - 1183a 15-07-83	Active
Admiralty Chart - 2572a 01-03-74	Active
Monarch Uid - 900619	Active
Admiralty Chart - 2482d 12-08-88	Active
Admiralty Chart - 2572b 01-03-74	Active
Admiralty Chart - 2482c 12-08-88	Active
Hydrographic Office - 012200190	Active
National Monuments Record - TQ 96 NW 33	Active
- TQ 96 NW 33	Active
- 60015	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Inter-tidal
Landuse	Inter-tidal
Landuse	Marine coastland

SMR Number TQ 96 NW 33 - **Site Name** Unknown

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

EWX6722 0200 (Event - Survey)
EWX6424 106G/UK/1444 (Event - Survey. Ref: 353)

Associated Individuals/Organisations

VMW, - Rumley, Peter J. Compiler

Maritime Information

Vessel Type	**Port of Registration**	**Departure Port**	**Destination Port**
Not entered	Unknown	Unknown	Unknown
Manner of Loss	**Propulsion**	**Construction**	**Construction Material**
			Unknown

Length	**Depth**	**Date of Loss**	**Nationality**
0 m	m		
Breadt	**Tonnage:**	**Cargo List**	
0 m	0 m		
Latitude:	**Longitude**		
51.35764 °	0.760361 °		

SMR Number TQ 96 NW 37 - **Site Name** Unknown

SMR Number	**Site Name**	**Record Type**	
TQ 96 NW 37 - MKE12866		Unknown	Maritime

UNIDENTIFIED HULKED VESSEL

Monument Types and Dates

WRECK (visible 1983, (pre) Modern - 1983 AD)

Evidence	DOCUMENTARY EVIDENCE
Evidence	VESSEL STRUCTURE

Description and Sources

Description

Vertical Datum: LAT Orientation: 130310 07-DEC-1983 DWP hulk in 51 22 06N 000 46 19.2E. (1). Photograph (2-4). Site identified during 2002 survey and comprises the buried remains of thames barge, lying with slight list on starboard side. Evidence of iron tiller with former pulley attachment (5).

Sources

(1) Bibliographic reference: Hydrographic Office wreck index. Extracted 20-JAN-1993, Page Nos. N/a
(2) Photograph (Print): 1946. 3191.
(3) Photograph (Print): 2000. 99.
(4) Photograph (Print): 1975. BSU 15-19 tq796703/1.
(5) Bibliographic reference: Wessex Archaeology. 2002. North Kent Coast RCZAS Phase II: Field Assessment (Pilot).

Location

National Grid Reference

TQ 92930 66970 (point)	TQ96NW	Point

Administrative Areas

Civil Parish	EASTCHURCH, SWALE, KENT
District	SWALE, KENT

Address/Historic Names - None recorded

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

Admiralty Chart - 1183a 15-07-83	Active
Admiralty Chart - 2572a 01-03-74	Active
Monarch Uid - 900625	Active
Admiralty Chart - 2482d 12-08-88	Active
Admiralty Chart - 2482c 12-08-88	Active
Hydrographic Office - 012206040	Active
National Monuments Record - TQ 96 NW 37	Active
- TQ 96 NW 37	Active
- 60015	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

SMR Number TQ 96 NW 37 - **Site Name** Unknown

Landuse	Inter-tidal
Landuse	Inter-tidal
Landuse	Marine coastland

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

EWX6718	0200 (Event - Survey)
EWX6867	BSU 15-19 tq796703/1 (Event - Survey)
EWX6424	106G/UK/1444 (Event - Survey. Ref: 353)
Ewx8094	North Kent Coast RCZAS Phase II: Field Assessment (Pilot) (Event - Survey. Ref: 46565)

Associated Individuals/Organisations

VMW, - Rumley, Peter J.	Compiler

Maritime Information

Vessel Type		**Port of Registration**	**Departure Port**	**Destination Port**
Not entered		Unknown	Unknown	Unknown
Manner of Loss		**Propulsion**	**Construction**	**Construction Material**
				Unknown
Length	**Depth**		**Date of Loss**	**Nationality**
0 m	m			
Breadt	**Tonnage:**		**Cargo List**	
0 m	0 m			
Latitude:	**Longitude**			
51.36847 °	0.772 °			

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 38 - MKE12867	Unidentified wreck, by Kemsley Marshes.	Maritime

Unidentified wreck, by Kemsley Marshes.

Monument Types and Dates

WRECK (visible 1987, (pre) Modern - 1987 AD)

Evidence	DOCUMENTARY EVIDENCE
Evidence	VESSEL STRUCTURE

Description and Sources

Description

Vertical Datum: LAT 04-NOV-1987 Hulk shown in 51 22 13N 000 45 49E.(1). Photograph (2). Seen in 2004. (3)

Sources

(1) Bibliographic reference: Hydrographic Office wreck index. Extracted 20-JAN-1993, Page Nos. N/a

(2) Photograph (Print): 2000. 99.

(3) Unpublished document: Wessex Archaeology. 2004. NORTH KENT COAST RAPID COASTAL ZONE ASSESSMENT SURVEY PHASE II: FIELD ASSESSMENT.

Location

National Grid Reference

TQ 92320 67148 (point)	TQ96NW	Point

Administrative Areas

Civil Parish	IWADE, SWALE, KENT
District	SWALE, KENT

Address/Historic Names

By Kemsley Marshes, Swale, Kent

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

Admiralty Chart - 1183a 15-07-83	Active
Admiralty Chart - 2572a 01-03-74	Active
Monarch Uid - 900626	Active
Admiralty Chart - 2482d 12-08-88	Active
Admiralty Chart - 2482c 12-08-88	Active
Hydrographic Office - 012206969	Active
National Monuments Record - TQ 96 NW 38	Active
- TQ 96 NW 38	Active
- 60015	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Inter-tidal
Landuse	Inter-tidal
Landuse	Marine coastland

SMR Number TQ 96 NW 38 - **Site Name** Unidentified wreck, by Kemsley Marshes.

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

EWX6718	0200 (Event - Survey)
EWX8437	North Kent Coast Rapid Coastal Zone Assessment Survey (Event - Survey. Ref: 56750)

Associated Individuals/Organisations

VMW, - Rumley, Peter J.	Compiler

Maritime Information

Vessel Type	**Port of Registration**	**Departure Port**	**Destination Port**
Not entered	Unknown	Unknown	Unknown
Manner of Loss	**Propulsion**	**Construction**	**Construction Material**
			Unknown

Length	**Depth**	**Date of Loss**	**Nationality**
0 m	m		
Breadt	**Tonnage:**	**Cargo List**	
0 m	0 m		
Latitude:	**Longitude**		
51.37028 °	0.763333 °		

SMR Number	**Site Name**	**Record Type**	
TQ 96 NW 42 - MKE14277		Webster	Maritime

WEBSTER, ENGLISH SPRITSAIL BARGE

Monument Types and Dates

WRECK (visible in 1986, Post Medieval - 1863 AD)

Evidence	DOCUMENTARY EVIDENCE
Evidence	VESSEL STRUCTURE

Description and Sources

Description

Registration No. ROCHESTER 47949 Precise coordinates not available, last known location of vessel reported by Society for Spritsail Barge Research. WEBSTER was built at Lambeth in 1863. She was owned successively by Webster, Butcher, Wakeley and Tilbury Dredging Co. She is noted as a hulk and her remains reported visible in 1986. (1). Site not identified during 2002 survey (2).

Sources

(1) Bibliographic reference: Society for Spiritsail Barge Research. 1996. The last berth of the sailorman. 9.5.d., Page Nos. N/a

(2) Bibliographic reference: Wessex Archaeology. 2002. North Kent Coast RCZAS Phase II: Field Assessment (Pilot).

Location

National Grid Reference

TQ 9291 6695 (point)	TQ96NW	Point

Administrative Areas

Civil Parish	QUEENBOROUGH, SWALE, KENT
District	SWALE, KENT

Address/Historic Names

The Swale, Elmley Island

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

Admiralty Chart - 1183a 15-07-83	Active
Admiralty Chart - 2572a 01-03-74	Active
Monarch Uid - 967596	Active
Admiralty Chart - 2482d 12-08-88	Active
Admiralty Chart - 2482c 12-08-88	Active
National Monuments Record - TQ 96 NW 42	Active
- TQ 96 NW 42	Active
- 60015	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Inter-tidal
Landuse	Inter-tidal

SMR Number TQ 96 NW 42 - **Site Name** Webster

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

Ewx8094 North Kent Coast RCZAS Phase II: Field Assessment (Pilot) (Event - Survey. Ref: 46565)

Associated Individuals/Organisations

GALE, ALISON B. - Rumley, Peter J.	Compiler

Maritime Information

Vessel Type	**Port of Registration**	**Departure Port**	**Destination Port**
SPRITSAIL BARGE	ROCHESTER	Unknown	Unknown
Manner of Loss	**Propulsion**	**Construction**	**Construction Material**
			Unknown

Length	**Depth**	**Date of Loss**	**Nationality**
0 **m**	**m**		England
Breadt	**Tonnage:**	**Cargo List**	
0 **m**	1280 **m**		
Latitude:	**Longitude**		
51.36833 °	0.771667 °		

SMR Number TQ 96 NW 43 - **Site Name** Juniper

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 43 - MKE14278		JuniperMaritime

JUNIPER, ENGLISH SPRITSAIL BARGE

Monument Types and Dates

WRECK (sunk sometime in 1950's, Modern - 1902 AD to 1950 AD)
Evidence DOCUMENTARY EVIDENCE

Description and Sources

Description

Registration No. LONDON 115920 Precise coordinates not available, last known location of vessel reported by Society for Spritsail Barge Research. JUNIPER was built at Crayford by Rutter in 1902. She was owned successively by Rutter and Wakering Brick, and sold again in 1939.. She is noted as being a roads barge at Gravesend by 1946 and sunk in the 1950s. (1)

Sources

(1) Bibliographic reference: Society for Spiritsail Barge Research. 1996. The last berth of the sailorman. 9.5.d., Page Nos. N/a

Location

National Grid Reference

TQ 9291 6695 (point)	TQ96NW	Point

Administrative Areas

Civil Parish	QUEENBOROUGH, SWALE, KENT
District	SWALE, KENT

Address/Historic Names

The Swale, Elmley Island

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

Admiralty Chart - 1183a 15-07-83	Active
Admiralty Chart - 2572a 01-03-74	Active
Monarch Uid - 967597	Active
Admiralty Chart - 2482d 12-08-88	Active
Admiralty Chart - 2482c 12-08-88	Active
National Monuments Record - TQ 96 NW 43	Active
- TQ 96 NW 43	Active
- 60015	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Inter-tidal
Landuse	Inter-tidal

Related Monuments - None Recorded

Finds - None recorded

SMR Number TQ 96 NW 43 - **Site Name** Juniper

Associated Events/Activities - None recorded

Associated Individuals/Organisations

GALE, ALISON B. - Rumley, Peter J.	Compiler

Maritime Information

Vessel Type	**Port of Registration**	**Departure Port**	**Destination Port**
SPRITSAIL BARGE	LONDON	Unknown	Unknown
Manner of Loss	**Propulsion**	**Construction**	**Construction Material**
			Unknown

Length	**Depth**	**Date of Loss**	**Nationality**
0 m	m		England
Breadt	**Tonnage:**	**Cargo List**	
0 m	1280 m		
Latitude:	**Longitude**		
51.36833 °	0.771667 °		

SMR Number	**Site Name**	**Record Type**	
TQ 96 NW 59 - MKE14743		Unknown	Maritime

REMAINS OF UNIDENTIFIED BARGE

Monument Types and Dates

WRECK (visible 1961 and 1967, (pre) Modern to Unknown - 1961 AD)
Evidence VESSEL STRUCTURE

Description and Sources

Description

Method of Fix: Aerial Photograph Interpretation Photograph Number: KCC 1961 Line 9: 6574 Method of Fix: Aerial Photograph Interpretation Photograph Number: KCC 1967 Line 29: 1224 (1). A barge lying on saltmarsh. It can also be seen on the 1967 survey which shows that the tide has reached it, and may be filling the vessel with water, but was not identified during 2002 survey (2).

Sources

(1) Photograph (Print): 2000. 99.
(2) Bibliographic reference: Wessex Archaeology. 2002. North Kent Coast RCZAS Phase II: Field Assessment (Pilot).

Location

National Grid Reference

TQ 9293 6696 (point)	TQ96NW	Point

Administrative Areas

Civil Parish	EASTCHURCH, SWALE, KENT
District	SWALE, KENT

Address/Historic Names

Swale, Elmley Reach, opposite entrance to Milton Creek

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

Admiralty Chart - 1183a 15-07-83	Active
Admiralty Chart - 2572a 01-03-74	Active
Admiralty Chart - 2482c 12-08-88	Active
Admiralty Chart - 2482d 12-08-88	Active
Monarch Uid - 1025229	Active
National Monuments Record - TQ 96 NW 59	Active
- TQ 96 NW 59	Active
- 60015	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Coastal saltmarsh
Landuse	Inter-tidal

Related Monuments - None Recorded

SMR Number TQ 96 NW 59 - **Site Name** Unknown

Finds - None recorded

Associated Events/Activities

EWX6718	0200 (Event - Survey)
Ewx8094	North Kent Coast RCZAS Phase II: Field Assessment (Pilot) (Event - Survey. Ref: 46565)

Associated Individuals/Organisations

GALE, ALISON B. - Rumley, Peter J.	Compiler

Maritime Information

Vessel Type	**Port of Registration**	**Departure Port**	**Destination Port**
BARGE	Unknown	Unknown	Unknown
Manner of Loss	**Propulsion**	**Construction**	**Construction Material**
			Unknown

Length	**Depth**	**Date of Loss**	**Nationality**
20 m	m		
Breadt	**Tonnage:**	**Cargo List**	
0 m	0 m		
Latitude:	**Longitude**		
51.36833 °	0.772 °		

SMR Number	**Site Name**	**Record Type**	
TQ 96 NW 60 - MKE14744		Unknown	Maritime

REMAINS OF UNIDENTIFIED BARGES

Monument Types and Dates

SITE (Undated)
  Evidence VESSEL STRUCTURE
WRECK (visible 1961, (pre) Modern to Unknown - 1961 AD)
  Evidence DOCUMENTARY EVIDENCE
  Evidence VESSEL STRUCTURE

Description and Sources

Description

Method of Fix: Aerial Photograph Interpretation Photograph Number: KCC 1961 Line 9: 6575 This area lies on the south side of the Swale north of Milton Creek (1). On the 1961 survey a number of small vessels can be seen. On later surveys the area is indistinct but may contain vessel remains.

Sources

(1) Photograph (Print): 1946. 3191.

Location

National Grid Reference

TQ 9241 6686 (point)	TQ96NW	Point

Administrative Areas

Civil Parish	BOBBING, SWALE, KENT
District	SWALE, KENT

Address/Historic Names

Swale, Kelmsley Marshes

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

Admiralty Chart - 1183a 15-07-83	Active
Admiralty Chart - 2572a 01-03-74	Active
Admiralty Chart - 2482c 12-08-88	Active
Admiralty Chart - 2482d 12-08-88	Active
Monarch Uid - 1025230	Active
National Monuments Record - TQ 96 NW 60	Active
- TQ 96 NW 60	Active
- 60015	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Inter-tidal
Landuse	Inter-tidal

Related Monuments - None Recorded

SMR Number TQ 96 NW 60 - **Site Name** Unknown

Finds - None recorded

Associated Events/Activities

EWX6424 106G/UK/1444 (Event - Survey. Ref: 353)

Associated Individuals/Organisations

GALE, ALISON B. - Rumley, Peter J.	Compiler

Maritime Information

Vessel Type		**Port of Registration**	**Departure Port**	**Destination Port**
Not entered		Unknown	Unknown	Unknown
Manner of Loss		**Propulsion**	**Construction**	**Construction Material**
				Unknown
Length	**Depth**		**Date of Loss**	**Nationality**
0 **m**	**m**			
Breadt	**Tonnage:**		**Cargo List**	
0 **m**	0 **m**			
Latitude:	**Longitude**			
51.36767 **°**	0.7645 **°**			

SMR Number TQ 96 NW 61 - **Site Name** Unknown Barges, by Kemsley Marshes.

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 61 - MKE14745	Unknown Barges, by Kemsley Marshes.	Maritime

Possible remains of unidentified barges, by Kemsley Marshes.

Monument Types and Dates

WRECK (visible 1961, (pre) Modern - 1961 AD)
Evidence VESSEL STRUCTURE

Description and Sources

Description

Method of Fix: Aerial Photograph Interpretation Photograph Number: KCC 1961 Line 9: 6575 This area lies on the south side of the Swale north of Milton Creek. It is sheltered by a jetty which is linked to the nearby mill by conveyor. On the 1961 survey a no. of vessels can be seen, but on later surveys the area is indistinct but may contain vessel remains.

No visible remains in 2004 - the vessel is presumed cleared. (1)

Sources

(1) Unpublished document: Wessex Archaeology. 2004. NORTH KENT COAST RAPID COASTAL ZONE ASSESSMENT SURVEY PHASE II: FIELD ASSESSMENT.

Location

National Grid Reference

TQ 9225 6713 (point)	TQ96NW	Point

Administrative Areas

Civil Parish	IWADE, SWALE, KENT
District	SWALE, KENT

Address/Historic Names

By Kelmsley Marshes, Swale, Kent

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

Admiralty Chart - 1183a 15-07-83	Active
Admiralty Chart - 2572a 01-03-74	Active
Admiralty Chart - 2482c 12-08-88	Active
Admiralty Chart - 2482d 12-08-88	Active
Monarch Uid - 1025231	Active
National Monuments Record - TQ 96 NW 61	Active
- TQ 96 NW 61	Active
- 60015	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Inter-tidal
Landuse	Inter-tidal

Related Monuments - None Recorded

SMR Number TQ 96 NW 61 - **Site Name** Unknown Barges, by Kemsley Marshes.

Finds - None recorded

Associated Events/Activities

EWX8437 North Kent Coast Rapid Coastal Zone Assessment Survey (Event - Survey. Ref: 56750)

Associated Individuals/Organisations

GALE, ALISON B. - Rumley, Peter J.	Compiler

Maritime Information

Vessel Type		**Port of Registration**	**Departure Port**	**Destination Port**
Not entered		Unknown	Unknown	Unknown
Manner of Loss		**Propulsion**	**Construction**	**Construction Material**
				Unknown
Length	**Depth**		**Date of Loss**	**Nationality**
0 m	m			
Breadt	**Tonnage:**		**Cargo List**	
0 m	0 m			
Latitude:	**Longitude**			
51.37017 °	0.762333 °			

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 1001 -	Oyster Pond	Monument

Oyster Pond

Monument Types and Dates

SITE (Undated)
 Evidence STRUCTURE
OYSTER BEDS (Oyster Pond, Post Medieval - 1540 AD to 1900 AD)
 Evidence STRUCTURE

Description and Sources

Description

Late nineteenth century Oyster Pond (1-6).

Sources

(1) Monograph: Eve, D.. 1999. A guide to the Industrial Archaeology of Kent. A38
(2) Photograph (Print): 2000. 48.
(3) Photograph (Print): 2000. 46.
(4) Photograph (Print): 1946. 3230.
(5) Photograph (Print): 1946. 3232.
(6) Photograph (Print): 1946. 3191.

Location

National Grid Reference

Centroid TQ 9266 6611 (MBR: 179m by 195m) TQ96NW Dispersed

Administrative Areas

Civil Parish	TONGE, SWALE, KENT
County	KENT
District	SWALE, KENT

Address/Historic Names

Mouth of Milton Creek

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

- 60015	Active
Sites & Monuments Record - TQ 96 NW 1001	Active
- TQ 96 NW 1001	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Coastland above high water

Related Monuments - None Recorded

Finds - None recorded

SMR Number TQ 96 NW 1001 - **Site Name** Oyster Pond

Associated Events/Activities - None recorded

Associated Individuals/Organisations

Eve, David Jackson - Kent County Council

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 1003 -	Grovehurst Dock, Elmley Reach, Kemsley Marshes, Iwade	Monument

Grovehurst Dock, at Elmley Reach was used as a wharf for the nearby Grovehurst Brick and tile works. It was built in the 1860's and is visible on the 1st and 2nd edition Ordnance Survey maps (c.1858-1898). There were no visible remains during a coastal survey in 2004; the dock is partially filled in, and now lies behind the earthen seawall. The site is also occupied by a sewage works.

Monument Types and Dates

DOCK (Post Medieval to Unknown - 1860 AD?)

Evidence	STRUCTURE

Description and Sources

Description

Grovehurst Dock used from the 1860's as a wharf for the nearby Grovehurst Brick and tile works (1). Also seen on 1st and 2nd edition OS maps (2,3). No visible remains in 2004 as the dock is partially filled in, and now lies behind the earthen seawall. The site is now occupied by a sewage works. (4)

Sources

(1) Monograph: Eve, D.. 1999. A guide to the Industrial Archaeology of Kent. I20

(2) Map: Ordnance Survey. 1858-73. Ordnance Survey 1:2500 1st Edition: 1872-1897.

(3) Map: Ordnance Survey. 1893-7. Ordnance Survey 1:2500 2nd edition: 1893-1898.

(4) Unpublished document: Wessex Archaeology. 2004. NORTH KENT COAST RAPID COASTAL ZONE ASSESSMENT SURVEY PHASE II: FIELD ASSESSMENT.

Location

National Grid Reference

Centroid TQ 9203 6720 (MBR: 279m by 247m) TQ96NW Dispersed

Administrative Areas

Civil Parish	IWADE, SWALE, KENT
Civil Parish	SITTINGBOURNE, SWALE, KENT
County	KENT
District	SWALE, KENT

Address/Historic Names

Coldharbour

Grovehurst Dock, Coldharbour Marshes, Elmley Reach, Kent

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

- 60015	Active
Sites & Monuments Record - TQ 96 NW 1003	Active
- TQ 96 NW 1003	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Coastland above high water

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

EWX8437 North Kent Coast Rapid Coastal Zone Assessment Survey (Event - Survey. Ref: 56750)

Associated Individuals/Organisations

Eve, David Jackson - Kent County Council

SMR Number TQ 96 NW 1007 - **Site Name** Oyster fishery rights at Milton Regis

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 1007 -	Oyster fishery rights at Milton Regis	Monument

Fishery granted by King John

Monument Types and Dates

OYSTER BEDS (First mentioned late 12th century, Medieval to Post Medieval - 1066 AD to 1900 AD)
Evidence DOCUMENTARY EVIDENCE

Description and Sources

Description

The men of Seasalter held the fisheries of Milton at the end of the 12th century, until the manor of Milton was granted by King John to Faversham Abbey. The manor was subsequently granted by Charles 1 in 1635 to Sir Edward Browne and Christopher Favell who leased it to the Milton Company of Fishers and Dredgers. The oysters from these grounds, 'Milton Natives', were apparently esteemed as the finest and richest flavoured in Europe. The grounds probably encompassed Milton Creek and a stretch of the Swale. At the end of the 18th century oyster sales returned bytetween £3000 and £7000

Sources

(1) Article in serial: Goodsall, Robert H. 1965. Oyster fisheries on the North Kent coast. 80, 118-151.

Location

National Grid Reference

TQ 9264 6613 (point)	TQ96NW	Point

Administrative Areas

County	KENT
District	SWALE, KENT

Address/Historic Names - None recorded

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

- 60015	Active
Sites & Monuments Record (Kent) - TQ 96 NW 1007	Active
- TQ 96 NW 1007	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Coastland above high water

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

EWX6639 Documentary survey of oyster fisheries, North Kent (Event - Interpretation)

Associated Individuals/Organisations - None recorded

SMR Number TQ 96 NW 1067 - **Site Name** Site of tram route

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 1067 -	Site of tram route	Monument

Site of tram route serving a brickfield marked on 1st Ed OS

Monument Types and Dates

SITE (Undated)
Evidence DOCUMENTARY EVIDENCE
TRAMWAY (Earlier than 1946, (pre) Post Medieval - 1870 AD to 1900 AD)
Evidence DOCUMENTARY EVIDENCE

Description and Sources

Description

Site of tram route serving a brickfield marked on 1st Ed OS (1). Photgraphs (2-16)

Sources

(1) Map: Ordnance Survey. 1858-73. Ordnance Survey 1:2500 1st Edition: 1872-1897.
(2) Photograph (Print): 1998. TQ9165/6.
(3) Photograph (Print): 1946. 3230.
(4) Photograph (Print): 1946. 3228.
(5) Photograph (Print): 2000. 46.
(6) Photograph (Print): 1953. MA 6-8 tq918659/1.
(7) Photograph (Print): 1956. SV 19-22 tq918659/2.
(8) Photograph (Print): 1946. 3191.
(9) Photograph (Print): 1998. TQ9165/5.
(10) Photograph (Print): 1986. TQ9166/1.
(11) Photograph (Print): 1986. TQ9166/2.
(12) Photograph (Print): 1986. TQ9166/3.
(13) Photograph (Print): 1986. TQ9166/4.
(14) Photograph (Print): 1986. TQ9166/5.
(15) Photograph (Print): 1986. TQ9166/6.
(16) Photograph (Print): 1998. TQ9165/4.

Location

National Grid Reference

Centroid TQ 91732 65938 (MBR: 467m by 352m) TQ96NW Dispersed

Administrative Areas

Civil Parish	SITTINGBOURNE, SWALE, KENT
District	SWALE, KENT

Address/Historic Names - None recorded

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

- 60015	Active
Sites & Monuments Record - TQ 96 NW 1067	Active
- TQ 96 NW 1067	Active

Ratings and Scorings - None recorded

SMR Number TQ 96 NW 1067 - **Site Name** Site of tram route

Land Use
Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Coastland above high water

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

EWX6722	0200 (Event - Survey)
EWX6962	MA 6-8 tq918659/1 (Event - Survey)
EWX6979	SV 19-22 tq918659/2 (Event - Survey)
EWX7551	TQ9165/4 (Event - Survey)
EWX7552	TQ9165/5 (Event - Survey)
EWX7553	TQ9165/6 (Event - Survey)
EWX7554	TQ9166/1 (Event - Survey)
EWX7555	TQ9166/2 (Event - Survey)
EWX7556	TQ9166/3 (Event - Survey)
EWX7557	TQ9166/4 (Event - Survey)
EWX7558	TQ9166/5 (Event - Survey)
EWX7559	TQ9166/6 (Event - Survey)
EWX6419	106G/UK/1444 (Event - Survey. Ref: 353)
EWX6424	106G/UK/1444 (Event - Survey. Ref: 353)

Associated Individuals/Organisations - None recorded

SMR Number TQ 96 NW 1050 - **Site Name** Navigation beacon

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 1050 -	Navigation beacon	Monument

Navigation beacon

Monument Types and Dates

SITE (Undated)
  Evidence DOCUMENTARY EVIDENCE
SEA BEACON (Earlier than 1946, Unknown to Modern)
  Evidence DOCUMENTARY EVIDENCE

Description and Sources

Description

Navigation beacon. Site photographs (1,2).

Sources

(1) Photograph (Print): 1946. 3232.
(2) Photograph (Print): 1946. 3191.

Location

National Grid Reference

Centroid TQ 92635 66613 (MBR: 51m by 53m) TQ96NW Dispersed

Administrative Areas

Civil Parish	SITTINGBOURNE, SWALE, KENT
District	SWALE, KENT

Address/Historic Names - None recorded

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

- 60015	Active
Sites & Monuments Record - TQ 96 NW 1050	Active
- TQ 96 NW 1050	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse Inter-tidal

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

EWX6419 106G/UK/1444 (Event - Survey. Ref: 353)
EWX6424 106G/UK/1444 (Event - Survey. Ref: 353)

Associated Individuals/Organisations - None recorded

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 1048 -	Remains of wooden revetment	Monument

Remains of wooden revetment

Monument Types and Dates

SITE (Undated)
    Evidence   DOCUMENTARY EVIDENCE
REVETMENT (Earlier than 1946, Post Medieval to Modern - 1800 AD to 2050 AD)
    Evidence   DOCUMENTARY EVIDENCE

Description and Sources

Description

Remains of wooden revetment. Site photographs (1,2).

Sources

(1) Photograph (Print): 1946. 3230.
(2) Photograph (Print): 1946. 3191.

Location

National Grid Reference

Centroid TQ 92160 65647 (MBR: 34m by 143m) TQ96NW Dispersed

Administrative Areas

Civil Parish	SITTINGBOURNE, SWALE, KENT
District	SWALE, KENT

Address/Historic Names - None recorded

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

- 60015	Active
Sites & Monuments Record - TQ 96 NW 1048	Active
- TQ 96 NW 1048	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Inter-tidal

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

EWX6419 106G/UK/1444 (Event - Survey. Ref: 353)
EWX6424 106G/UK/1444 (Event - Survey. Ref: 353)

Associated Individuals/Organisations - None recorded

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 1046 -	Possible enclosure, Milton Creek	Monument

Possible enclosure, at the mouth of Milton Creek.

Monument Types and Dates

ENCLOSURE (Earlier than 1946, Undated)
  Evidence DOCUMENTARY EVIDENCE
SITE (Undated)
  Evidence DOCUMENTARY EVIDENCE

Description and Sources

Description

Possible enclosure, not marked on any mapping earlier than 1997. Photographs (1-4). Seen in 2004. (5)

Sources

(1) Photograph (Print): 2000. 48.
(2) Photograph (Print): 1946. 3230.
(3) Photograph (Print): 1946. 3232.
(4) Photograph (Print): 1946. 3191.
(5) Unpublished document: Wessex Archaeology. 2004. NORTH KENT COAST RAPID COASTAL ZONE ASSESSMENT SURVEY PHASE II: FIELD ASSESSMENT.

Location

National Grid Reference

TQ 92784 66199 (point)	TQ96NW	Point

Administrative Areas

Civil Parish	SITTINGBOURNE, SWALE, KENT
District	SWALE, KENT

Address/Historic Names

Mouth of Milton Creek , Swale, Sittingbourne, Kent

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

- 60015	Active
Sites & Monuments Record - TQ 96 NW 1046	Active
- TQ 96 NW 1046	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Coastland above high water

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

EWX6722	0200 (Event - Survey)
EWX6419	106G/UK/1444 (Event - Survey. Ref: 353)
EWX6424	106G/UK/1444 (Event - Survey. Ref: 353)
EWX8437	North Kent Coast Rapid Coastal Zone Assessment Survey (Event - Survey. Ref: 56750)

Associated Individuals/Organisations - None recorded

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 1098 -	Unidentified vessel, by Kemsley Marshes.	Maritime

Unidentified vessel by Kemsley Marshes.- now buried or possibly removed.

Monument Types and Dates

SITE (Undated)
Evidence DOCUMENTARY EVIDENCE
WRECK (Earlier than 1946, Post Medieval to Modern - 1800 AD to 2050 AD)
Evidence DOCUMENTARY EVIDENCE

Description and Sources

Description

Unidentified vessel. (1,2). No visible remains in 2004 - presumed cleared. (3)

Sources

(1) Photograph (Print): 1946. 4194.
(2) Photograph (Print): 1946. 3191.
(3) Unpublished document: Wessex Archaeology. 2004. NORTH KENT COAST RAPID COASTAL ZONE ASSESSMENT SURVEY PHASE II: FIELD ASSESSMENT.

Location

National Grid Reference

TQ 92175 67088 (point)	TQ96NW	Point

Administrative Areas

District	SWALE, KENT

Address/Historic Names

By Kemsley Marshes, Swale, Kent

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

-	Active
- 60015	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Inter-tidal

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

EWX6424	106G/UK/1444 (Event - Survey. Ref: 353)
EWX6425	106G/UK/1444 (Event - Survey. Ref: 353)
EWX8437	North Kent Coast Rapid Coastal Zone Assessment Survey (Event - Survey. Ref: 56750)

Associated Individuals/Organisations - None recorded

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 1045 -	Circular earthwork	Monument

Circular earthwork

Monument Types and Dates

EARTHWORK (Earlier than 1946, Undated)
Evidence DOCUMENTARY EVIDENCE
SITE (Undated)
Evidence DOCUMENTARY EVIDENCE

Description and Sources

Description

Circular earthwork. Not marked on any mapping. Photographs (1-4).

Sources

(1) Photograph (Print): 2000. 46.
(2) Photograph (Print): 1946. 3228.
(3) Photograph (Print): 1946. 3230.
(4) Photograph (Print): 1946. 3191.

Location

National Grid Reference

TQ 91727 65682 (point)	TQ96NW	Point

Administrative Areas

Civil Parish	SITTINGBOURNE, SWALE, KENT
District	SWALE, KENT

Address/Historic Names - None recorded

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

- 60015	Active
Sites & Monuments Record - TQ 96 NW 1045	Active
- TQ 96 NW 1045	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Coastland above high water

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

EWX6722	0200 (Event - Survey)
EWX6419	106G/UK/1444 (Event - Survey. Ref: 353)
EWX6424	106G/UK/1444 (Event - Survey. Ref: 353)

SMR Number TQ 96 NW 1045 - **Site Name** Circular earthwork

Associated Individuals/Organisations - None recorded

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 1044 -	Structural remains	Monument

Structural remains at entrance to Milton Creek

Monument Types and Dates

SITE (Undated)
Evidence DOCUMENTARY EVIDENCE
STRUCTURE (Earlier than 1900, Post Medieval to Modern - 1900 AD to 1950 AD)
Evidence DOCUMENTARY EVIDENCE

Description and Sources

Description

Structural remains at entrance to Milton Creek. Feature marked here on 2nd and 3rd ed OS (1,2). Photographs (3-5).

Sources

(1) Map: Ordnance Survey. 1893-7. Ordnance Survey 1:2500 2nd edition: 1893-1898.
(2) Map: Ordnance Survey. 1905-10. Ordnance Survey 1:2500 3rd edition: 1901-1912.
(3) Photograph (Print): 2000. 48.
(4) Photograph (Print): 1946. 3230.
(5) Photograph (Print): 1946. 3232.

Location

National Grid Reference

Centroid TQ 92765 66299 (MBR: 11m by 34m) TQ96NW Dispersed

Administrative Areas

Civil Parish	SITTINGBOURNE, SWALE, KENT
District	SWALE, KENT

Address/Historic Names - None recorded

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

- 60015	Active
Sites & Monuments Record - TQ 96 NW 1044	Active
- TQ 96 NW 1044	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Inter-tidal

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

EWX6722 0200 (Event - Survey)
EWX6419 106G/UK/1444 (Event - Survey. Ref: 353)

SMR Number TQ 96 NW 1044 - **Site Name** Structural remains

Associated Individuals/Organisations - None recorded

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 1038 -	Pipeline, Elmley reach.	Monument

Pipeline, Elmley Reach.

Monument Types and Dates

SITE (Undated)
  Evidence DOCUMENTARY EVIDENCE
PIPELINE (Earlier than 1946, Unknown to Modern)
  Evidence DOCUMENTARY EVIDENCE

Description and Sources

Description

Pipeline. Photograph (1). No visible remains in 2004. (2)

Sources

(1) Photograph (Print): 1946. 4194.

(2) Unpublished document: Wessex Archaeology. 2004. NORTH KENT COAST RAPID COASTAL ZONE ASSESSMENT SURVEY PHASE II: FIELD ASSESSMENT.

Location

National Grid Reference

TQ 92171 67077 (point)	TQ96NW	Point

Administrative Areas

Civil Parish	SITTINGBOURNE, SWALE, KENT
District	SWALE, KENT

Address/Historic Names

Kemsley Marshes, Swale, Kent

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

- 60015	Active
Sites & Monuments Record - TQ 96 NW 1038	Active
- TQ 96 NW 1038	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Inter-tidal

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

EWX6425	106G/UK/1444 (Event - Survey. Ref: 353)
EWX8437	North Kent Coast Rapid Coastal Zone Assessment Survey (Event - Survey. Ref: 56750)

Associated Individuals/Organisations - None recorded

SMR Number TQ 96 NW 1038 - **Site Name** Pipeline, Elmley reach.

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 1017 -	Wharf, by Kemsley Marshes	Monument

Wharf, by Kemsley Marshes.

Monument Types and Dates

SITE (Undated)
Evidence DOCUMENTARY EVIDENCE
WHARF (First mentioned 1918, (pre) Modern - 1918 AD? to 1950 AD?)
Evidence DOCUMENTARY EVIDENCE

Description and Sources

Description

Wharf marked on the 3rd ed OS map and an additional chart (1,2). In 2004, it was noted that the wharf had been replaced by aggregate(?) conveyor, although timber piles remain on foreshore. (3)

Sources

(1) Map: Ordnance Survey. 1905-10. Ordnance Survey 1:2500 3rd edition: 1901-1912.
(2) Chart: Chearnley. 1918. East Swale. chart.
(3) Unpublished document: Wessex Archaeology. 2004. NORTH KENT COAST RAPID COASTAL ZONE ASSESSMENT SURVEY PHASE II: FIELD ASSESSMENT.

Location

National Grid Reference

Centroid TQ 9223 6703 (MBR: 160m by 70m) TQ96NW Dispersed

Administrative Areas

Civil Parish	IWADE, SWALE, KENT
District	SWALE, KENT

Address/Historic Names

By Kemsley Marshes, Swale, Kent

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

- 60015	Active
Sites & Monuments Record - TQ 96 NW 1017	Active
- TQ 96 NW 1017	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Coastland above high water

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

EWX8437 North Kent Coast Rapid Coastal Zone Assessment Survey (Event - Survey. Ref: 56750)

Associated Individuals/Organisations - None recorded

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 1026 -	Two circular features of higher ground	Monument

Two circular features of higher ground

Monument Types and Dates

FEATURE (Earlier than 2000, Undated)
Evidence DOCUMENTARY EVIDENCE
SITE (Undated)
Evidence DOCUMENTARY EVIDENCE

Description and Sources

Description

Two circular features of higher ground (1) identified during 2002 survey. Features now compries islands of new saltmarsh

Sources

(1) Photograph (Print): 2000. 99.
(2) Bibliographic reference: Wessex Archaeology. 2002. North Kent Coast RCZAS Phase II: Field Assessment (Pilot).

Location

National Grid Reference

Centroid TQ 92722 66992 (MBR: 48m by 10m) TQ96NW Dispersed

Administrative Areas

Civil Parish	QUEENBOROUGH, SWALE, KENT
District	SWALE, KENT

Address/Historic Names - None recorded

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

- 60015	Active
Sites & Monuments Record - TQ 96 NW 1026	Active
- TQ 96 NW 1026	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Inter-tidal

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

EWX6718	0200 (Event - Survey)
Ewx8094	North Kent Coast RCZAS Phase II: Field Assessment (Pilot) (Event - Survey. Ref: 46565)

Associated Individuals/Organisations - None recorded

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 1025 -	Former sea defence	Monument

Former sea defence

Monument Types and Dates

SEA DEFENCES (Earlier than 2000, Undated)
  Evidence DOCUMENTARY EVIDENCE
SITE (Undated)
  Evidence DOCUMENTARY EVIDENCE

Description and Sources

Description

Former sea defence (1) not identified during 2002 survey (2).

Sources

(1) Photograph (Print): 2000. 99.
(2) Bibliographic reference: Wessex Archaeology. 2002. North Kent Coast RCZAS Phase II: Field Assessment (Pilot).

Location

National Grid Reference

TQ 92680 67003 (point)	TQ96NW	Point

Administrative Areas

Civil Parish	QUEENBOROUGH, SWALE, KENT
District	SWALE, KENT

Address/Historic Names - None recorded

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

- 60015	Active
Sites & Monuments Record - TQ 96 NW 1025	Active
- TQ 96 NW 1025	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Inter-tidal

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

EWX6718	0200 (Event - Survey)
Ewx8094	North Kent Coast RCZAS Phase II: Field Assessment (Pilot) (Event - Survey. Ref: 46565)

Associated Individuals/Organisations - None recorded

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 1024 -	Unidentified circular features, by Kemsley Marshes.	Monument

Unidentified circular features, by Kemsley Marshes.

Monument Types and Dates

FEATURE (Earlier than 2000, Undated)
Evidence DOCUMENTARY EVIDENCE
SITE (Undated)
Evidence DOCUMENTARY EVIDENCE

Description and Sources

Description

Unidentified circular feature (1). No visible remains in 2004. (2)

Sources

(1) Photograph (Print): 2000. 101.
(2) Unpublished document: Wessex Archaeology. 2004. NORTH KENT COAST RAPID COASTAL ZONE ASSESSMENT SURVEY PHASE II: FIELD ASSESSMENT.

Location

National Grid Reference

TQ 92277 67151 (point) TQ96NW Point

Administrative Areas

Civil Parish	IWADE, SWALE, KENT
District	SWALE, KENT

Address/Historic Names

By Kemsley Marshes, Swale, Kent

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

- 60015	Active
Sites & Monuments Record - TQ 96 NW 1024	Active
- TQ 96 NW 1024	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Inter-tidal

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

EWX6718	0200 (Event - Survey)
EWX8437	North Kent Coast Rapid Coastal Zone Assessment Survey (Event - Survey. Ref: 56750)

Associated Individuals/Organisations - None recorded

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 1020 -	Possible buried vessel, Milton Creek.	Maritime

Possible buried vessel, Milton Creek.

Monument Types and Dates

SITE (Undated)
Evidence DOCUMENTARY EVIDENCE
WRECK (Post Medieval to Modern - 1540 AD to 2000 AD)
Evidence DOCUMENTARY EVIDENCE

Description and Sources

Description

Possible buried vessel (1). No visible remains in 2004 other than a single solitary post in the mud that was not considered to be part of the wreck. (2)

Sources

(1) Photograph (Print): 2000. 46.
(2) Unpublished document: Wessex Archaeology. 2004. NORTH KENT COAST RAPID COASTAL ZONE ASSESSMENT SURVEY PHASE II: FIELD ASSESSMENT.

Location

National Grid Reference

TQ 92114 65939 (point)	TQ96NW	Point

Administrative Areas

Civil Parish	TONGE, SWALE, KENT
District	SWALE, KENT

Address/Historic Names

Milton Creek, Milton Regis, Kent

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

- 60015	Active
Sites & Monuments Record - TQ 96 NW 1020	Active
- TQ 96 NW 1020	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Inter-tidal

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

EWX6722	0200 (Event - Survey)
EWX8437	North Kent Coast Rapid Coastal Zone Assessment Survey (Event - Survey. Ref: 56750)

SMR Number TQ 96 NW 1020 - **Site Name** Possible buried vessel, Milton Creek.

Associated Individuals/Organisations - None recorded

SMR Number	**Site Name**	**Record Type**
TQ 97 NW 1056 -	Oyster pits, by Kemsley Marshes.	Monument

Oyster Pits, by Kemsley Marshes.

Monument Types and Dates

SITE (Undated)
  Evidence DOCUMENTARY EVIDENCE
OYSTER BEDS (First mentioned 1870, (pre) Post Medieval - 1870 AD? to 1900 AD?)
  Evidence DOCUMENTARY EVIDENCE

Description and Sources

Description

Oyster Pits, shown on 1st ed OS 6 inch (1), but not on any later surveys. No visible remains in 2004. (2)

Sources

(1) Map: Ordnance Survey. 1858-73. Ordnance Survey 1:2500 1st Edition: 1872-1897.
(2) Unpublished document: Wessex Archaeology. 2004. NORTH KENT COAST RAPID COASTAL ZONE ASSESSMENT SURVEY PHASE II: FIELD ASSESSMENT.

Location

National Grid Reference

Centroid TQ 92293 67153 (MBR: 19m by 15m) TQ96NW Dispersed

Administrative Areas

Civil Parish	IWADE, SWALE, KENT
District	SWALE, KENT

Address/Historic Names

By Kemsley Marshes, Swale, Kent

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

Sites & Monuments Record - TQ 97 NW 1056	Active
- TQ 97 NW 1056	Active
- 60015	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Inter-tidal

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

EWX8437 North Kent Coast Rapid Coastal Zone Assessment Survey (Event - Survey. Ref: 56750)

Associated Individuals/Organisations - None recorded

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 1057 -	Elmley Reach Oyster Beds	Monument

Elmley Reach Oyster Beds

Monument Types and Dates

SITE (Undated)
Evidence DOCUMENTARY EVIDENCE
OYSTER BEDS (First mentioned 1870, (pre) Post Medieval to Modern - 1870 AD? to 1930 AD?)
Evidence DOCUMENTARY EVIDENCE

Description and Sources

Description

Elmley Reach Oyster Beds, shown on 1st, 2nd and 3rd ed OS 6 inch (1-3) but not marked on current mapping. No visible remains in 2004. (4)

Sources

(1) Map: Ordnance Survey. 1858-73. Ordnance Survey 1:2500 1st Edition: 1872-1897.
(2) Map: Ordnance Survey. 1893-7. Ordnance Survey 1:2500 2nd edition: 1893-1898.
(3) Map: Ordnance Survey. 1905-10. Ordnance Survey 1:2500 3rd edition: 1901-1912.
(4) Unpublished document: Wessex Archaeology. 2004. NORTH KENT COAST RAPID COASTAL ZONE ASSESSMENT SURVEY PHASE II: FIELD ASSESSMENT.

Location

National Grid Reference

TQ 92332 67292 (point)	TQ96NW	Point

Administrative Areas

Civil Parish	IWADE, SWALE, KENT
District	SWALE, KENT

Address/Historic Names

Elmley Reach, West Swale, Kent

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

- 60015	Active
Sites & Monuments Record - TQ 96 NW 1057	Active
- TQ 96 NW 1057	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Marine coastland

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

EWX8437 North Kent Coast Rapid Coastal Zone Assessment Survey (Event - Survey. Ref: 56750)

Associated Individuals/Organisations - None recorded

SMR Number TQ 96 NW 1058 - **Site Name** Milton Creek Coastguard Station

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 1058 -	Milton Creek Coastguard Station	Monument

Milton Creek Coastguard Station

Monument Types and Dates

SITE (Undated)
Evidence DOCUMENTARY EVIDENCE
COASTGUARD STATION (First mentioned 1870, (pre) Post Medieval - 1870 AD? to 1900 AD?)
Evidence DOCUMENTARY EVIDENCE

Description and Sources

Description

Milton Creek Coastguard Station, maybe housed in a boat. Shown on 1st ed OS 6 inch (1) but not present on any later surveys

Sources

(1) Map: Ordnance Survey. 1858-73. Ordnance Survey 1:2500 1st Edition: 1872-1897.

Location

National Grid Reference

Centroid TQ 92525 66082 (MBR: 16m by 26m) TQ96NW Dispersed

Administrative Areas

Civil Parish	SITTINGBOURNE, SWALE, KENT
District	SWALE, KENT

Address/Historic Names - None recorded

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

- 60015	Active
Sites & Monuments Record - TQ 96 NW 1058	Active
- TQ 96 NW 1058	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Inter-tidal

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities - None recorded

Associated Individuals/Organisations - None recorded

SMR Number TQ 96 NW 1092 - **Site Name** Wharf, Milton Creek.

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 1092 -	Wharf, Milton Creek.	Monument

Wharf, Milton Creek, on 2nd and 3rd ed OS

Monument Types and Dates

SITE (Undated)
Evidence DOCUMENTARY EVIDENCE
WHARF (2nd ed OS 1893-1897, (pre) Post Medieval to Unknown - 1897 AD)
Evidence DOCUMENTARY EVIDENCE

Description and Sources

Description

Wharf, Milton Creek, on 2nd and 3rd ed OS (1,2) Seen in 2004 as a set of wooden posts supporting plank revetment. More recently, it has been capped with concrete. (3)

Sources

(1) Map: Ordnance Survey. 1905-10. Ordnance Survey 1:2500 3rd edition: 1901-1912.
(2) Map: Ordnance Survey. 1893-7. Ordnance Survey 1:2500 2nd edition: 1893-1898.
(3) Unpublished document: Wessex Archaeology. 2004. NORTH KENT COAST RAPID COASTAL ZONE ASSESSMENT SURVEY PHASE II: FIELD ASSESSMENT.

Location

National Grid Reference

Centroid TQ 9210 6610 (MBR: 58m by 64m) TQ96NW Dispersed

Administrative Areas

Civil Parish	SITTINGBOURNE, SWALE, KENT
District	SWALE, KENT

Address/Historic Names

Milton Creek, Milton Regis, Kent

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

- 60015	Active
- TQ 96 NW 1092	Active
Sites & Monuments Record - TQ 96 NW 1092	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Coastland above high water

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

EWX8437 North Kent Coast Rapid Coastal Zone Assessment Survey (Event - Survey. Ref: 56750)

SMR Number TQ 96 NW 1092 - **Site Name** Wharf, Milton Creek.

Associated Individuals/Organisations - None recorded

SMR Number TQ 96 NW 1106 - **Site Name** Possible remains of small jetty

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 1106 -	Possible remains of small jetty	Monument

Possible remains of small jetty

Monument Types and Dates

JETTY ((at some time) Modern - 1901 AD to 2050 AD)
Evidence STRUCTURE

Description and Sources

Description

Regular pattern of vertical plank shaped stakes - possible remains of small jetty (1).

Sources

(1) Bibliographic reference: Wessex Archaeology. 2002. North Kent Coast RCZAS Phase II: Field Assessment (Pilot).

Location

National Grid Reference

TQ 92514 67291 (point)	TQ96NW	Point

Administrative Areas

County	KENT
District	SWALE, KENT

Address/Historic Names - None recorded

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

Sites & Monuments Record - TQ 96 NW 1106	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Foreshore

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

Ewx8094 North Kent Coast RCZAS Phase II: Field Assessment (Pilot) (Event - Survey. Ref: 46565)

Associated Individuals/Organisations

Wessex Archaeology

SMR Number TQ 96 NW 1107 - **Site Name** Former groyne

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 1107 -	Former groyne	Monument

Former groyne

Monument Types and Dates

GROYNE ((at some time) Post Medieval to Modern - 1540 AD to 2050 AD)
Evidence STRUCTURE

Description and Sources

Description

Former groyne. immediate area surrounding feature littered with post-med and modern finds comprising pottery, glass and cbm (1).

Sources

(1) Bibliographic reference: Wessex Archaeology. 2002. North Kent Coast RCZAS Phase II: Field Assessment (Pilot).

Location

National Grid Reference

TQ 92667 67038 (point)	TQ96NW	Point

Administrative Areas

County	KENT
District	SWALE, KENT

Address/Historic Names - None recorded

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

Sites & Monuments Record - TQ 96 NW 1107	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Foreshore

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

Ewx8094 North Kent Coast RCZAS Phase II: Field Assessment (Pilot) (Event - Survey. Ref: 46565)

Associated Individuals/Organisations

Wessex Archaeology

SMR Number TQ 96 NW 1108 - **Site Name** Salt working site

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 1108 -	Salt working site	Monument

Salt working site

Monument Types and Dates

SALTERN ((at some time) Roman - 43 AD to 409 AD)
Evidence FIND

Description and Sources

Description

Salt working site comprising compact bricketage, occasional pottery, burnt flint and animal bone (1).

Sources

(1) Bibliographic reference: Wessex Archaeology. 2002. North Kent Coast RCZAS Phase II: Field Assessment (Pilot).

Location

National Grid Reference

TQ 92723 67083 (point)	TQ96NW	Point

Administrative Areas

County	KENT
District	SWALE, KENT

Address/Historic Names - None recorded

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

Sites & Monuments Record - TQ 96 NW 1108	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Foreshore

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

Ewx8094 North Kent Coast RCZAS Phase II: Field Assessment (Pilot) (Event - Survey. Ref: 46565)

Associated Individuals/Organisations

Wessex Archaeology

SMR Number TQ 96 NW 1109 - **Site Name** Four possible frames joined to a single plank

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 1109 -	Four possible frames joined to a single plank	Maritime

Four possible frames joined to a single plank

Monument Types and Dates

WRECK ((at some time) Post Medieval to Modern - 1540 AD to 2050 AD)
Evidence STRUCTURE

Description and Sources

Description

Four possible frames joined to a single plank (1).

Sources

(1) Bibliographic reference: Wessex Archaeology. 2002. North Kent Coast RCZAS Phase II: Field Assessment (Pilot).

Location

National Grid Reference

TQ 92750 67106 (point)	TQ96NW	Point

Administrative Areas

County	KENT
District	SWALE, KENT

Address/Historic Names - None recorded

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

Sites & Monuments Record - TQ 96 NW 1109	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Foreshore

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

Ewx8094 North Kent Coast RCZAS Phase II: Field Assessment (Pilot) (Event - Survey. Ref: 46565)

Associated Individuals/Organisations

Wessex Archaeology

Maritime Information

Vessel Type	**Port of Registration**	**Departure Port**	**Destination Port**
Not entered	Unknown	Unknown	Unknown
Manner of Loss	**Propulsion**	**Construction**	**Construction Material**
		Wood	Unknown

SMR Number TQ 96 NW 1109 - **Site Name** Four possible frames joined to a single plank

Length		**Depth**		**Date of Loss**	**Nationality**
0	m	0	m		
0	m	0	m		
Latitude:		**Longitude**			
0	°	0	°		

SMR Number TQ 96 NW 1110 - **Site Name** Salt working site

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 1110 -	Salt working site	Monument

Salt working site

Monument Types and Dates

SALTERN ((at some time) Roman - 43 AD to 409 AD)
Evidence FIND

Description and Sources

Description

Continuation of Saltern TQ 96 NW 1108 (1).

Sources

(1) Bibliographic reference: Wessex Archaeology. 2002. North Kent Coast RCZAS Phase II: Field Assessment (Pilot).

Location

National Grid Reference

TQ 92765 67156 (point)	TQ96NW	Point

Administrative Areas

County	KENT
District	SWALE, KENT

Address/Historic Names - None recorded

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

Sites & Monuments Record - TQ 96 NW 1110 Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Foreshore

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

Ewx8094 North Kent Coast RCZAS Phase II: Field Assessment (Pilot) (Event - Survey. Ref: 46565)

Associated Individuals/Organisations

Wessex Archaeology

SMR Number TQ 96 NW 1111 - **Site Name** Organic Clay

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 1111 -	Organic Clay	Landscape

Organic Clay

Monument Types and Dates

NATURAL FEATURE (Unknown date)

Evidence	FIND

Description and Sources

Description

Exposure of organic clay above blue alluvium. No finds recorded (1).

Sources

(1) Bibliographic reference: Wessex Archaeology. 2002. North Kent Coast RCZAS Phase II: Field Assessment (Pilot).

Location

National Grid Reference

TQ 92825 67099 (point)	TQ96NW	Point

Administrative Areas

County	KENT
District	SWALE, KENT

Address/Historic Names - None recorded

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

Sites & Monuments Record - TQ 96 NW 1111	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes

Landuse	Foreshore

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

Ewx8094 North Kent Coast RCZAS Phase II: Field Assessment (Pilot) (Event - Survey. Ref: 46565)

Associated Individuals/Organisations

Wessex Archaeology

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 96 - Mke20324	Neolithic and/or Bronze Age Features on land north of Ridham Avenue, Kemsley	Monument

Archaeological features were recorded along the western leg of a proposed road scheme (west of what the report refers to as junction 3 of the scheme) and dated on the basis of flint work and ceramic evidence, to the neolithic and/or bronze age. The interpretation of the features was problematic, given the limited exposure of the trenching and poor weather conditions, however ditches, gullies, pits and postholes were identified along the road corridor in an area approximately 300m long. Approximate grid references are given for the western and eastern extents of the observed remains.
To the south, on the higher land adjacent to Ridham Avenue in the area around the proposed junction 4, two monument records were created for inter-cutting prehistoric features of mid-late bronze age date (TQ 96 NW 97) and three ditches of late iron age and/or Romano-British date (TQ 96 NW 98) .

Monument Types and Dates

DITCH ((at some time) Early Neolithic to Late Bronze Age - 4000 BC? to 701 BC?)
GULLY (Early Neolithic to Late Bronze Age - 4000 BC? to 701 BC?)
PIT ((at some time) Early Neolithic to Late Bronze Age - 4000 BC? to 701 BC)
POST HOLE ((at some time) Early Neolithic to Late Bronze Age - 4000 BC? to 701 BC?)

Description and Sources

Description

Archaeological features were recorded along the western leg of a proposed road scheme (west of what the report refers to as junction 3 of the scheme) and dated on the basis of flint work and ceramic evidence, to the neolithic and/or bronze age. The interpretation of the features was problematic, given the limited exposure of the trenching and poor weather conditions, however ditches, gullies, pits and postholes were identified along the road corridor in an area approximately 300m long. Approximate grid references are given for the western and eastern extents of the observed remains.
To the south, on the higher land adjacent to Ridham Avenue in the area around the proposed junction 4, two monument records were created for inter-cutting prehistoric features of mid-late bronze age date (TQ 96 NW 97) and three ditches of late iron age and/or Romano-British date (TQ 96 NW 98) .

Sources

(1) Unpublished document: Canterbury Archaeological Trust. 2002. An Archaeological Evaluation on land north of
Ridham Avenue, Kemsley, near Sittingbourne. Kent.

Location

National Grid Reference

Centroid TQ 9112 6634 (MBR: 550m by 394m) TQ96NW Dispersed

Administrative Areas

Civil Parish	SITTINGBOURNE, SWALE, KENT
County	KENT
District	SWALE, KENT

Address/Historic Names - None recorded

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

Sites & Monuments Record - TQ 96 NW 96 Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes - None recorded

Related Monuments - None Recorded

SMR Number TQ 96 NW 96 - **Site Name** Neolithic and/or Bronze Age Features on land north of Ridham Avenue, Kemsley

Finds - None recorded

Associated Events/Activities

Eke8594 (Event - Interpretation) An archaeological evaluation on land north of Ridham Avenue, Kemsley, near Sittingbourne, Kent

Associated Individuals/Organisations

Allen, Tim - Canterbury Archaeological Trust	Excavator
Mayfield, Andrew - Kent County Council	Compiler
Canterbury Archaeological Trust	Excavator

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 97 - Mke20326	Mid-Late Bronze Age features north of Ridham Avenue	Monument

Evaluation trenches around the proposed junction 4 of the road scheme revealed intercutting prehistoric features, dated through the flints and diagnostic potsherds recovered from them to the Mid-Late Bronze Age. The features were located along an 80m branch off this junction, with grid ref points given at either end of the observed archaeology. The report states that the function and type of these features could not be determined. It is suggested in the report that the date of these features links this archaeology to the Mid-Late Bronze Age site discovered south of Ridham Avenue at Kemsley Fields (TQ 96 NW 1004), which is presumed to have extended northward into the current development area.
The road scheme also revealed features of late neolithic to bronze age date to the north (TQ 96 NW 96) and Late Iron Age/ Romano-British features to the east (TQ 96 NW 98).

Monument Types and Dates

FEATURE ((at some time) Middle Bronze Age to Late Bronze Age - 1600 BC to 701 BC)

Description and Sources

Description

Evaluation trenches around the proposed junction 4 of the road scheme revealed intercutting prehistoric features, dated through the flints and diagnostic potsherds recovered from them to the Mid-Late Bronze Age. The features were located along an 80m branch off this junction, with grid ref points given at either end of the observed archaeology. The report states that the function and type of these features could not be determined. It is suggested in the report that the date of these features links this archaeology to the Mid-Late Bronze Age site discovered south of Ridham Avenue at Kemsley Fields (TQ 96 NW 1004), which is presumed to have extended northward into the current development area.
The road scheme also revealed features of late neolithic to bronze age date to the north (TQ 96 NW 96) and Late Iron Age/ Romano-British features to the east (TQ 96 NW 98).

Sources

Unpublished document: Canterbury Archaeological Trust. 2002. An Archaeological Evaluation on land north of
Ridham Avenue, Kemsley, near Sittingbourne. Kent.

Location

National Grid Reference

Centroid TQ 9112 6632 (MBR: 550m by 360m) TQ96NW Dispersed

Administrative Areas

Civil Parish	SITTINGBOURNE, SWALE, KENT
District	SWALE, KENT

Address/Historic Names - None recorded

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

Sites & Monuments Record - TQ 96 NW 97 Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes - None recorded

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

Eke8594 (Event - Interpretation) An archaeological evaluation on land north of Ridham Avenue, Kemsley, near Sittingbourne, Kent

Associated Individuals/Organisations

Mayfield, Andrew - Kent County Council	Compiler

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 98 - Mke20329	Late Iron Age/Roman features north of Ridham Avenue	Monument

Three ditches were recorded in evaluation work along a proposed road scheme north of Ridham avenue. Just south of the proposed junction 4, the ditches produced Late Iron Age and/or Romano-British ceramic material. Two of the ditches appeared to be part of a still visible linear embanked earthwork, interpreted as probably part of an abandoned hollow way. The report states that the waterlogged nature of the area indicates good potential for the survival of high quality paleo-environmental evidence. The features were recorded within a 50m trench, which the grid refs below mark the approximate extent of.
In and around junction 4 a complex pattern of intercutting features dated to the Mid-Late Bronze Age were recorded (TQ 96 NW 97), while to the north further prehistoric features were recorded (TQ 96 NW 96).

Monument Types and Dates

((at some time) Late Iron Age to Roman - 100 BC? to 409 AD?)
((at some time) Late Iron Age to Roman - 100 BC? to 409 AD?)

Description and Sources

Description

Three ditches were recorded in evaluation work along a proposed road scheme north of Ridham avenue. Just south of the proposed junction 4, the ditches produced Late Iron Age and/or Romano-British ceramic material. Two of the ditches appeared to be part of a still visible linear embanked earthwork, interpreted as probably part of an abandoned hollow way. The report states that the waterlogged nature of the area indicates good potential for the survival of high quality paleo-environmental evidence. The features were recorded within a 50m trench, which the grid refs below mark the approximate extent of.
In and around junction 4 a complex pattern of intercutting features dated to the Mid-Late Bronze Age were recorded (TQ 96 NW 97), while to the north further prehistoric features were recorded (TQ 96 NW 96).

Sources

Unpublished document: Canterbury Archaeological Trust. 2002. An Archaeological Evaluation on land north of
Ridham Avenue, Kemsley, near Sittingbourne. Kent.

Location

National Grid Reference

Centroid TQ 9112 6632 (MBR: 550m by 360m) TQ96NW Dispersed

Administrative Areas

Civil Parish	SITTINGBOURNE, SWALE, KENT
District	SWALE, KENT

Address/Historic Names - None recorded

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

Sites & Monuments Record - TQ 96 NW 98 Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes - None recorded

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

Eke8594 (Event - Interpretation) An archaeological evaluation on land north of Ridham Avenue, Kemsley, near Sittingbourne, Kent

Associated Individuals/Organisations

Mayfield, Andrew - Kent County Council	Compiler

SMR Number	Site Name	Record Type
TQ 96 NW 99 - Mke20333	Mid-Late Bronze Age features, north of Ridham Avenue, Kemsley	Monument

Evaluation of an area just north of Ridham Avenue. The site was located north of the Kemsley Fields excavations (TQ 96 NW 1004) and south and west of the evaluation for the proposed road scheme, which also revealed three periods of activity (TQ 96 NW 96, 97, 98).
Mid-Late Bronze Age remains were the most numerous in this evaluation, demonstrating the high archaeological potential of the area and a reflection of the Kemsley Fields site to the south. Features included a burial consisting of cremated human bone and settlement remains. Part of a curved gully was recorded in one trench, similar to the type in the Kemsley field excavations, although it has also been suggested that this ring ditch and some of the other features maybe of an earlier Late Neolithic/Early Bronze Age date. These results support the findings of the evaluation work to the north and east for the proposed road, which suggested that only part of the settlement was exposed during the Kemsley Fields excavation (to the south) and that it extended to the north across this proposed housing area and road scheme.
Monuments were also recorded for activity on the site in the Late Iron Age-Roman period (TQ 96 NW 100) and the Medieval period (TQ 96 NW 101).
The evaluation extended across 5.1ha of land, the perimeter of which is approximately given in the grid refs.

Monument Types and Dates

CREMATION ((at some time) Middle Bronze Age to Late Bronze Age - 1600 BC to 701 BC)
DITCH ((at some time) Middle Bronze Age to Late Bronze Age - 1600 BC? to 701 BC?)
GULLY ((at some time) Middle Bronze Age to Late Bronze Age - 1600 BC? to 701 BC?)
PIT (Middle Bronze Age to Late Bronze Age - 1600 BC? to 701 BC?)
POST HOLE ((at some time) Middle Bronze Age to Late Bronze Age - 1600 BC? to 701 BC?)

Description and Sources

Description

Evaluation of an area just north of Ridham Avenue. The site was located north of the Kemsley Fields excavations (TQ 96 NW 1004) and south and west of the evaluation for the proposed road scheme, which also revealed three periods of activity (TQ 96 NW 96, 97, 98).
Mid-Late Bronze Age remains were the most numerous in this evaluation, demonstrating the high archaeological potential of the area and a reflection of the Kemsley Fields site to the south. Features included a burial consisting of cremated human bone and settlement remains. Part of a curved gully was recorded in one trench, similar to the type in the Kemsley field excavations, although it has also been suggested that this ring ditch and some of the other features maybe of an earlier Late Neolithic/Early Bronze Age date. These results support the findings of the evaluation work to the north and east for the proposed road, which suggested that only part of the settlement was exposed during the Kemsley Fields excavation (to the south) and that it extended to the north across this proposed housing area and road scheme.
Monuments were also recorded for activity on the site in the Late Iron Age-Roman period (TQ 96 NW 100) and the Medieval period (TQ 96 NW 101).
The evaluation extended across 5.1ha of land, the perimeter of which is approximately given in the grid refs.

Sources

(1) Unpublished document: Canterbury Archaeological Trust. 2003. An archaeological evaluation of the North Housing Area, north of Ridham Avenue, Kemsley, near Sittingbourne, Kent.

Location

National Grid Reference

Centroid TQ 9112 6632 (MBR: 550m by 360m) TQ96NW Dispersed

Administrative Areas

Civil Parish	SITTINGBOURNE, SWALE, KENT
District	SWALE, KENT

Address/Historic Names - None recorded

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

Sites & Monuments Record - TQ 96 NW 99	Active

SMR Number	TQ 96 NW 99 -	**Site Name**	Mid-Late Bronze Age features, north of Ridham Avenue, Kemsley

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes - None recorded

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

Eke8600	An archaeological evaluation of the Northern Housing Area, north of Ridham Avenue, Kemsley, near Sittingbourne, Kent (Event - Interpretation. Ref: CAT ref 1772)

Associated Individuals/Organisations

Mayfield, Andrew - Kent County Council	Compiler

SMR Number TQ 96 NW 100 - **Site Name** Late Iron Age and Roman features north of Ridham Avenue, Kemsley

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 100 -	Late Iron Age and Roman features north of Ridham Avenue, Kemsley	Monument

A number of features identified during evaluation work north of Ridham Avenue were dated through pottery recovered, to the Late Iron Age/Romano-British period. Some of this pottery included high quality Late Iron Age 'Belgic' fine wares. The features recorded pointed to significant occupation and/or settlement activity on the site, particularly in the higher lying southern and north eastern parts of site. Activity from this period was also recorded in the evaluation for the proposed road scheme to the east (TQ 96 NW 98) and in the Kemsley Field excavations to the south (TQ 96 NW 1004). Prehistoric features (TQ 96 NW 99) and Medieval features (TQ 96 NW 101), were also recorded during the evaluation. The whole evaluation area extended over 5.1 ha and was confined within the grid refs given below.

Monument Types and Dates

((at some time) Late Iron Age to Roman - 100 BC? to 409 AD?)
((at some time) Late Iron Age to Roman - 100 BC? to 409 AD?)

Description and Sources

Description

A number of features identified during evaluation work north of Ridham Avenue were dated through pottery recovered, to the Late Iron Age/Romano-British period. Some of this pottery included high quality Late Iron Age 'Belgic' fine wares. The features recorded pointed to significant occupation and/or settlement activity on the site, particularly in the higher lying southern and north eastern parts of site. Activity from this period was also recorded in the evaluation for the proposed road scheme to the east (TQ 96 NW 98) and in the Kemsley Field excavations to the south (TQ 96 NW 1004). Prehistoric features (TQ 96 NW 99) and Medieval features (TQ 96 NW 101), were also recorded during the evaluation. The whole evaluation area extended over 5.1 ha and was confined within the grid refs given below.

Sources

Unpublished document: Canterbury Archaeological Trust. 2003. An archaeological evaluation of the North Housing Area, north of Ridham Avenue, Kemsley, near Sittingbourne, Kent.

Location

National Grid Reference

Centroid TQ 9112 6632 (MBR: 550m by 360m) TQ96NW Dispersed

Administrative Areas

Civil Parish	SITTINGBOURNE, SWALE, KENT
District	SWALE, KENT

Address/Historic Names - None recorded

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

Sites & Monuments Record - TQ 96 NW 100 Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes - None recorded

Related Monuments - None Recorded

Finds - None recorded

Associated Events/Activities

Eke8600	An archaeological evaluation of the Northern Housing Area, north of Ridham Avenue, Kemsley, near Sittingbourne, Kent (Event - Interpretation. Ref: CAT ref 1772)

SMR Number TQ 96 NW 100 - **Site Name** Late Iron Age and Roman features north of Ridham Avenue, Kemsley

Associated Individuals/Organisations

Mayfield, Andrew - Kent County Council	Compiler

SMR Number TQ 96 NW 116 - **Site Name** Multi period occupation site on Kemsley Fields, Kemsley, near Sittingbourne

SMR Number	**Site Name**	**Record Type**
TQ 96 NW 116 -	Multi period occupation site on Kemsley Fields, Kemsley, near Sittingbourne	Monument

Evidence of prehistoric, Roman and medieval settlement found on site. Neolithic pottery and flint, late bronze age artfacts, as well as various finds from Mid to Late Iron Age, Roman and medieval periods found. Four-post structure, ditches, hearth, and possible cremation burial.

Monument Types and Dates

DITCH (Late Bronze Age - 1000 BC to 701 BC)
HEARTH (Late Bronze Age - 1000 BC to 701 BC)
PIT (Late Bronze Age - 1000 BC to 701 BC)
GRANARY? (First millenium BC, Iron Age - 800 BC to 42 AD)
DITCH (Middle Iron Age to Late Iron Age - 400 BC to 42 AD)
BRICKEARTH PIT (Late Iron Age to Roman - 100 BC to 409 AD?)
PIT (Late Iron Age to Roman - 100 BC to 409 AD)

Description and Sources

Description

Evidence of prehistoric, Roman and medieval settlement found on site. Neolithic pottery and flint, late bronze age artfacts, as well as various finds from Mid to Late Iron Age, Roman and medieval periods found. Four-post structure, ditches, hearth, and possible cremation burial.

Sources

(1) Unpublished document: Museum of London Archaeological Service. 2006. Archaeological post excavation assessment of Kemsley fields, Kemsley, near Sittingbourne..

Location

National Grid Reference

TQ 91115 66451 (point)	TQ96NW	Point

Administrative Areas

Civil Parish	SITTINGBOURNE, SWALE, KENT
County	KENT
District	SWALE, KENT

Address/Historic Names - None recorded

Designations, Statuses and Scorings

Associated Legal Designations - None recorded

Other Statuses and Cross-References

Sites & Monuments Record - TQ 96 NW 116	Active

Ratings and Scorings - None recorded

Land Use

Associated Historic Landscape Character Records - None recorded

Other Land Classes - None recorded

Related Monuments - None Recorded

Associated Finds

Fke7460	LOOMWEIGHT (1) (Late Iron Age - 100 BC? to 42 AD?)	
Fke7462	BOWL? (Neolithic - 4000 BC to 2351 BC)	POTTERY

SMR Number TQ 96 NW 116 - **Site Name** Multi period occupation site on Kemsley Fields, Kemsley, near Sittingbourne

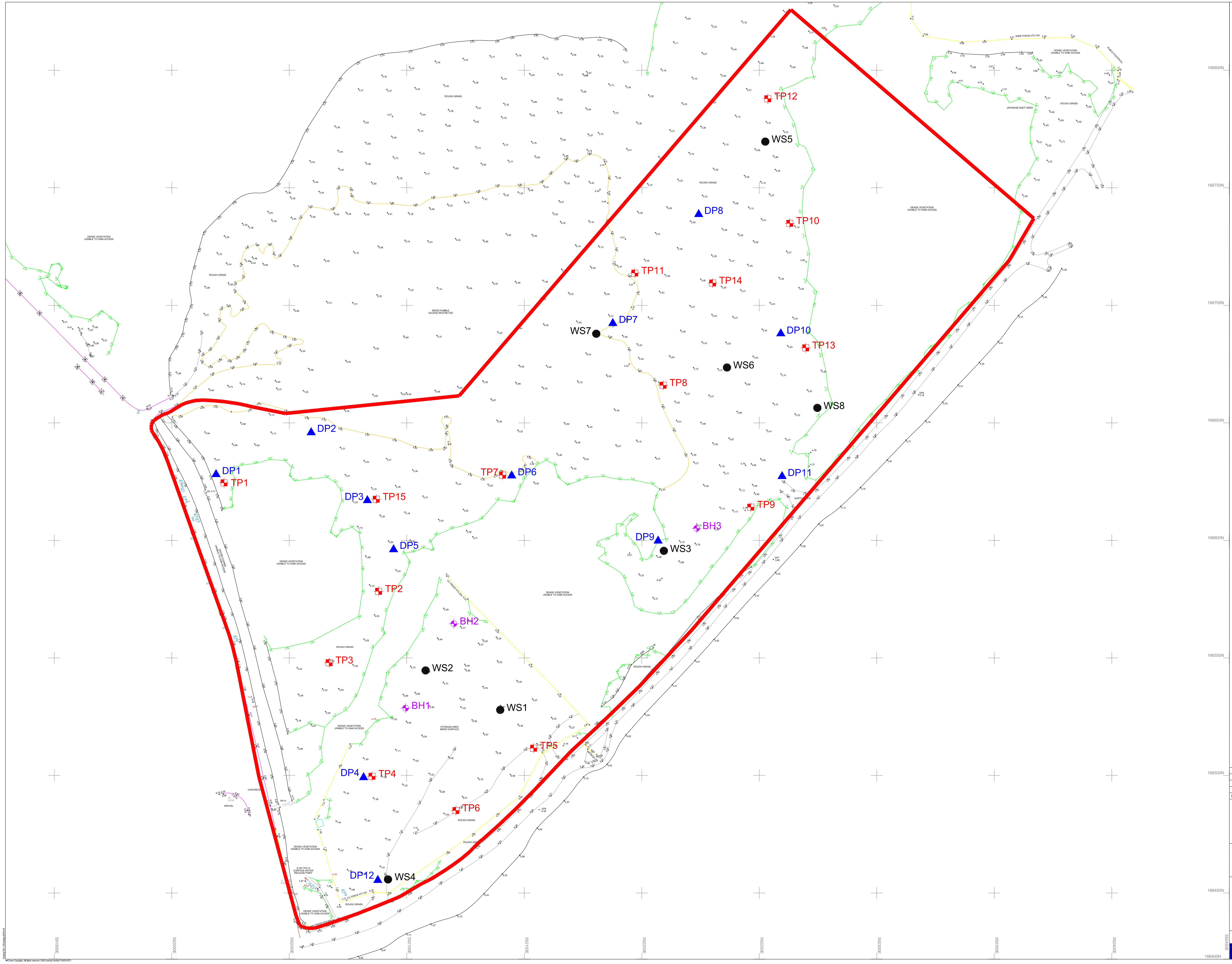
Fke7463	LITHIC IMPLEMENT (Medium quantity) (Early Neolithic to Late Bronze Age - 4000 BC to 701 BC)	FLINT
Fke7464	POTTERY ASSEMBLAGE (Small quantity) (Middle Iron Age to Late Iron Age - 400 BC to 42 AD)	POTTERY
Fke7465	ROOF TILE (Roman - 43 AD to 409 AD)	
Fke7466	POTTERY ASSEMBLAGE (Prehistoric or Roman - 500000 BC to 409 AD)	POTTERY
Fke7467	QUERN (Roman - 43 AD? to 409 AD?)	LAVA
Fke7468	TESSERA (2) (Roman - 43 AD to 409 AD)	POTTERY
Fke7469	ROOF TILE (Large quantity) (Medieval to Post Medieval - 1066 AD? to 1900 AD?)	POTTERY
Fke7470	BRICK (Medieval - 1300 AD to 1499 AD)	
Fke7471	POTTERY ASSEMBLAGE (Small quantity) (Post Roman - 410 AD to 1900 AD)	POTTERY
Fke7472	BURNT FLINT (Large quantity) (Prehistoric or Roman - 500000 BC to 409 AD)	FLINT
Fke7473	ANIMAL REMAINS (Medium quantity)	BONE
Fke7474	MOLLUSCA REMAINS (Small quantity)	
Fke7475	RING (1) (Roman - 43 AD to 409 AD)	COPPER ALLOY
Fke7476	BRACELET (Roman - 43 AD to 409 AD)	JET
Fke7477	KNIFE	IRON
Fke7478	GLASS WORKING DEBRIS (4) (Roman - 43 AD to 409 AD)	GLASS
Fke7479	GLASS WORKING DEBRIS (1) (Post Medieval to Modern - 1540 AD to 2050 AD)	GLASS
Fke7480	WASTE (1)	LEAD
Fke7481	STUD (1) (Roman - 43 AD? to 409 AD?)	COPPER ALLOY
Fke7482	NAIL? (1)	IRON
Fke7483	CHAIN (1) (Roman - 43 AD to 409 AD)	COPPER ALLOY
Fke7484	CLAY PIPE (SMOKING) (1)	CLAY
Fke7485	NAIL (>10)	IRON
Fke7486	SLAG (Small quantity)	IRON

Associated Events/Activities

Eke9415 Archaeological post excavation assessment of Kemsley fields, Kemsley, near Sittingbourne. (Event - Intervention)

Associated Individuals/Organisations - None recorded

APPENDIX 2 Exploratory Hole location Plan and Logs (from RPS 2009)



Drawing Ref: J:\Drawings\JER4418

Legend

- 🟥 **Site Boundary**
- 🟩 **Dense Vegetation - Unable to Gain Access**
- 🟨 **Mixed Rubble - Access Restricted**
- ⊕ **Shell & Auger Borehole with Installation**
- ▨ **Exploratory Trial Pit Location**
- ● **Window Sample Borehole with Installation**
- ▲ **Dynamic Cone Penetrometer Test**

Rev:	Date:	Amendment:	Name:	Checked:

Drawing Based Upon: RPS 2009

Status: Draft

Notes: Contractors are not to scale from this drawing. All dimensions to be checked on site and any discrepancies, ambiguities and/or ommisions between this drawing and information given elsewhere must be reported to this office. If in doubt, ask.

RPS
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N

Client: E.ON

Project: Kemsley Mill

Title: Exploratory Hole Location Plan
& Topographical Survey

Date: 23/07/09 Scale: 1:500 Original Paper Size: A0

Drawn: RJ Checked: AP Job Ref: JER4418

Drawing Number: JER4418-KM-002 Rev: 0

www.rpsgroup.com

RPS

BOREHOLE LOG

Borehole No.
BH1
Sheet 1 of 2

Project Name:	Kemsley Mill	Coordinates Northings: - Eastings: - Ground Level: - m OD	Drilling Plant:
Project No.	JER4418		Start Date: 09/07/2009
Location:	Sittingbourne, Kent		End Date: 10/07/2009
Client:	E.ON		Logged By:

Casing Details

Hole Diameter (mm)	Casing Depth (m)

Hole Type
BH

Scale
1:50

Samples & In Situ Testing

Depth (m)	Type	Results
1.00	SPT	68/225mm (3,3,9,9,50)
2.00	U001	
3.00	SPT	N=10 (1,1,2,2,3,3)
4.00	U002	
5.00	SPT	N=12 (1,2,3,3,3,3)
6.50	U003	
8.00	SPT	N=14 (1,2,2,4,4,4)
9.50	U004	

Level (m AOD)	Depth (m)	Description Of Strata
		Grey brown slightly gravelly silty SAND with occasional fill including metal, stone and bricks. Occasional bands of light brown clay with concrete. (MADE GROUND)
	2.00	Firm to stiff grey slightly gravelly slightly sandy CLAY. Gravels are subangular to angular stone. (MADE GROUND)
	3.85	Firm to stiff grey brown occasionally orange mottled CLAY.
	7.40	Stiff light grey CLAY. Occasional bands of sand present with depth.

0.50 1.00 1.50 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 6.00 6.50 7.00 7.50 8.00 8.50 9.00 9.50

Continued next sheet

Remarks:

Chiselling Details

Time Taken	Depth From (m)	Depth To (m)	Tool Used

Groundwater Notes

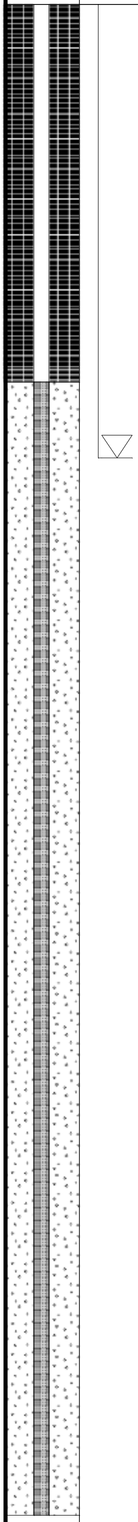
Strike (m)	Casing Depth (m)	Level After 20 Mins (m)
13.00	12.50	5.25

AGS

BOREHOLE LOG

Borehole No.	**BH1**
Sheet	2 of 2
Project Name:	Kemsley Mill
Project No.	JER4418
Location:	Sittingbourne, Kent
Client:	E.ON
Coordinates	Northings: - Eastings: -
Ground Level:	- m OD
Drilling Plant:	
Start Date:	09/07/2009
End Date:	10/07/2009
Logged By:	
Hole Type	BH
Scale	1:50

Casing Details	
Hole Diameter (mm)	Casing Depth (m)



Samples & In Situ Testing Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Description Of Strata
					Stiff light grey CLAY. Occasional bands of sand present with depth.
11.00	SPT	N=29 (4,6,6,7,7,9)			
12.50	U005			12.30	Dense grey slightly silty SAND.
14.00	SPT	69/150mm - Abandoned			
15.50	SPT	85/150mm - Abandoned			
17.00	SPT	53/150mm (16,18,22,31)			
18.50	SPT	86/150mm - Abandoned			
18.65	SPT	90/150mm - Abandoned			
				19.00	End of Borehole at 19.00 m

10.50 11.00 11.50 12.00 12.50 13.00 13.50 14.00 14.50 15.00 15.50 16.00 16.50 17.00 17.50 18.00 18.50 19.00 19.50

Remarks:

Chiselling Details			
Time Taken	Depth From (m)	Depth To (m)	Tool Used

Groundwater Notes		
Strike (m)	Casing Depth (m)	Level After 20 Mins (m)
13.00	12.50	5.25

AGS

BOREHOLE LOG

Borehole No.
BH2
Sheet 1 of 2

Project Name:	Kemsley Mill	Coordinates Northings: - Eastings: -	Drilling Plant:
Project No.	JER4418	Ground Level: - m OD	Start Date: 06/07/2009
Location:	Sittingbourne, Kent		End Date: 06/07/2009
Client:	E.ON		Logged By:

Casing Details	
Hole Diameter (mm)	Casing Depth (m)

Hole Type
BH

Scale
1:50

Samples & In Situ Testing				
Depth (m)	Type	Results	Level (m AOD)	Depth (m)
1.00	SPT	N=4 (1,1,1,1,1,1)		
2.00	SPT	N=10 (2,2,2,2,3,3)		2.00
3.00	U001			
4.00	SPT	N=9 (2,3,2,2,3,2)		
				4.60
				5.00
6.50	SPT	N=25 (3,5,6,6,6,7)		
				7.80
8.00	U002			
9.50	SPT	N=24 (2,4,4,6,7,7)		9.50

Depth (m)	Description Of Strata
	Grey slightly gravelly silty sand. Gravel is subangular flient, stone and stone ash. Occasional metal, bricks and bands of firm light brown clay. (MADE GROUND)
2.00	Stiff light brown light brown slightly sandy CLAY. Occasional fragments of brick and concrete. (MADE GROUND)
4.60	Firm light grey orange mottled CLAY.
5.00	Stiff light grey orange mottled slightly sandy CLAY.
7.80	Stiff grey CLAY.
9.50	Stiff grey CLAY with occasional sand. Sand bands present below 12.1m.

Continued next sheet

Remarks:

Chiselling Details			
Time Taken	Depth From (m)	Depth To (m)	Tool Used

Groundwater Notes		
Strike (m)	Casing Depth (m)	Level After 20 Mins (m)
14.50	14.50	5.10

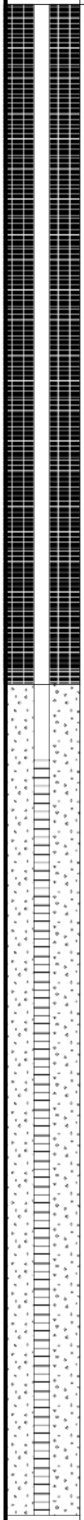
AGS

RPS

BOREHOLE LOG

Borehole No.
BH2
Sheet 2 of 2

Project Name:	Kemsley Mill	Coordinates Northings: - Eastings: -	Drilling Plant:	Casing Details Hole Diameter (mm) / Casing Depth (m)	Hole Type BH
Project No.	JER4418		Start Date: 06/07/2009		
Location:	Sittingbourne, Kent	Ground Level: - m OD	End Date: 06/07/2009		Scale 1:50
Client:	E.ON		Logged By:		



Water Strikes	Samples & In Situ Testing Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Description Of Strata
						Stiff grey CLAY with occasional sand. Sand bands present below 12.1m.
	11.00	U003				
	12.50	SPT	N=28 (4,6,7,5,8,8)			
	14.00	U004			14.00	Dense grey slightly silty SAND.
▽						
	15.50	SPT	50/75mm (16,41,50)			
	17.00	SPT	30/75mm - Abandoned			
	18.50	SPT	50/150mm (7,18,25,25)			

End of Borehole at 20.00 m

Remarks:

Chiselling Details

Time Taken	Depth From (m)	Depth To (m)	Tool Used

Groundwater Notes

Strike (m)	Casing Depth (m)	Level After 20 Mins (m)
14.50	14.50	5.10

AGS

HoleBASE III (Bld 422.00) Standard Borehole Log v1 dated 26th Mar 03

BOREHOLE LOG

Borehole No.
BH3
Sheet 1 of 2

Project Name:	Kemsley Mill	Coordinates Northings: - Eastings: -	Drilling Plant:	Casing Details	Hole Type BH
Project No.	JER4418		Start Date: 13/07/2009	Hole Diameter (mm) / Casing Depth (m)	
Location:	Sittingbourne, Kent	Ground Level: - m OD	End Date: 14/07/2009		Scale 1:50
Client:	E.ON		Logged By:		

Well	Water Strikes	Samples & In Situ Testing Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata	
								Stiff brown slightly gravelly slightly sandy CLAY. Gravels are subangular to angular limestone and stone fill. Includes fill material such as glass and pottery. (MADE GROUND)	
									0.50
		1.00	SPT	N=6 (1,1,1,1,2,2)					1.00
									1.50
		2.00	SPT	65/225mm (2,2,5,10,50)		2.00		Dense dark grey slightly sandy SILT. Becomes clayey with depth. (MADE GROUND)	2.00
									2.50
	▼	3.00	SPT	N=11 (2,2,2,3,3,3)		3.00		Stiff light brown orange grey mottled slightly sandy CLAY. Becomes grey with depth.	3.00
									3.50
		4.00	U001						4.00
									4.50
		5.00	SPT	50/150mm (9,21,30,20)					5.00
									5.50
									6.00
		6.50	U002						6.50
						7.00		Dense grey slightly silty SAND.	7.00
									7.50
		8.00	SPT	52/150mm (11,23,22,30)					8.00
									8.50
									9.00
		9.50	U003						9.50
			Type	Results					

Continued next sheet

Remarks:

Chiselling Details

Time Taken	Depth From (m)	Depth To (m)	Tool Used

Groundwater Notes

Strike (m)	Casing Depth (m)	Level After 20 Mins (m)
3.00	3.00	2.87
14.00	-	-

BOREHOLE LOG

Borehole No.
BH3
Sheet 2 of 2

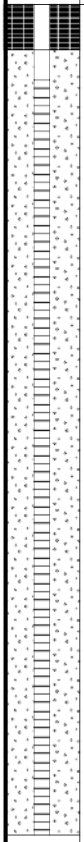
Project Name:	Kemsley Mill	Coordinates Northings: - Eastings: -	Drilling Plant:
Project No.	JER4418		Start Date: 13/07/2009
Location:	Sittingbourne, Kent	Ground Level: - m OD	End Date: 14/07/2009
Client:	E.ON		Logged By:

Casing Details

Hole Diameter (mm)	Casing Depth (m)

Hole Type: BH

Scale: 1:50



Well	Water Strikes	Samples & In Situ Testing Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata
								Dense grey slightly silty SAND.
		11.00	U004					
		12.50	SPT	80/150mm - Abandoned				
	▽					14.00		End of Borehole at 15.50 m

Depth scale: 10.50, 11.00, 11.50, 12.00, 12.50, 13.00, 13.50, 14.00, 14.50, 15.00, 15.50, 16.00, 16.50, 17.00, 17.50, 18.00, 18.50, 19.00, 19.50

Type | Results

Remarks:

Chiselling Details

Time Taken	Depth From (m)	Depth To (m)	Tool Used

Groundwater Notes

Strike (m)	Casing Depth (m)	Level After 20 Mins (m)
3.00	3.00	2.87
14.00	-	-

AGS

HoleBASE III (Bld 422.00) Standard Borehole Log v1 dated 26th Mar 03

BOREHOLE LOG

Borehole No.
TP1
Sheet 1 of 1

Project Name: Kemsley Mill	Coordinates Northings: - Eastings: - Ground Level: - m OD	Drilling Plant: Start Date: - End Date: -	Hole Type TP
Project No. JER4418			Scale 1:50
Location: Sittingbourne, Kent			
Client: E.ON		Logged By:	

Casing Details	
Hole Diameter (mm)	Casing Depth (m)

Well	Water Strikes	Samples & In Situ Testing			Level (m AOD)	Depth (m)	Legend	Description Of Strata
		Depth (m)	Type	Results				
						0.50	▩	Brown dark brown slightly gravelly silty SAND. Peat and frequent organic matter in places. (MADE GROUND)
						0.90	▩	Firm to stiff grey occasionally green orange mottled friable CLAY. (MADE GROUND)
		1.25	IVN kPa	4 kPa			▤	Firm to stiff grey brown orange green mottled friable CLAY. Becomes more brown and orange with depth.
		1.75	IVN kPa	3 kPa			▤	
						2.50		End of Borehole at 2.50 m
			Type	Results				

0.50 1.00 1.50 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 6.00 6.50 7.00 7.50 8.00 8.50 9.00 9.50

Remarks: Water strike at 2.3m. Low seepage.

Chiselling Details			
Time Taken	Depth From (m)	Depth To (m)	Tool Used

Groundwater Notes		
Strike (m)	Casing Depth (m)	Level After 20 Mins (m)

BOREHOLE LOG

Borehole No.
TP2
Sheet 1 of 1

Project Name:	Kemsley Mill	Coordinates	Drilling Plant:	Casing Details	Hole Type
Project No.	JER4418	Northings: - Eastings: -	Start Date: -	Hole Diameter (mm) / Casing Depth (m)	TP
Location:	Sittingbourne, Kent	Ground Level: - m OD	End Date: -		Scale
Client:	E.ON		Logged By:		1:50

Well	Water Strikes	Samples & In Situ Testing Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata
						0.05	▨	Dark grey tarmacadam. (MADE GROUND)
						0.15	▨	Dark grey black subangular to angular GRAVEL. (MADE GROUND)
						0.40	▨	Brown slightly sandy SILT / CLAY with occasional fill material including plastics and metal. (MADE GROUND)
						0.45	‒ ‒	Soft to firm grey friable CLAY. (MADE GROUND)
		0.65	IVN kPa	30 kPa		1.10	‒ ‒	Firm to stiff brown occasionally orange grey mottled CLAY.

End of Borehole at 1.10 m

0.50 1.00 1.50 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 6.00 6.50 7.00 7.50 8.00 8.50 9.00 9.50

Type Results

Remarks:

Chiselling Details

Time Taken	Depth From (m)	Depth To (m)	Tool Used

Groundwater Notes

Strike (m)	Casing Depth (m)	Level After 20 Mins (m)

AGS

HoleBASE III (Bld 422.00) Standard Borehole Log v1 dated 26th Mar 03

BOREHOLE LOG

Borehole No.	**TP3**
Sheet 1 of 1	
Hole Type	TP
Scale	1:50

Project Name:	Kemsley Mill	Coordinates Northings: - Eastings: -	Drilling Plant:	
Project No.	JER4418		Start Date: -	
Location:	Sittingbourne, Kent	Ground Level: - m OD	End Date: -	
Client:	E.ON		Logged By:	

Casing Details	
Hole Diameter (mm)	Casing Depth (m)

Well	Water Strikes	Samples & In Situ Testing			Level (m AOD)	Depth (m)	Legend	Description Of Strata
		Depth (m)	Type	Results				
						0.20	▨	Brown slightly silty slightly gravelly SAND with occasional roots. (TOPSOIL)
		0.60	IVN kPa	15 kPa		0.90	▩	Soft to firm slightly gravelly SILT / CLAY with various fill material including plastics. metals and brick. (MADE GROUND)
		1.10	IVN kPa	28 kPa		1.50	☰	Firm to stiff brown occasionally grey mottled CLAY.
								End of Borehole at 1.50 m

0.50 1.00 1.50 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 6.00 6.50 7.00 7.50 8.00 8.50 9.00 9.50

Remarks:

Chiselling Details				Groundwater Notes		
Time Taken	Depth From (m)	Depth To (m)	Tool Used	Strike (m)	Casing Depth (m)	Level After 20 Mins (m)

BOREHOLE LOG

Borehole No.
TP4
Sheet 1 of 1

Project Name:	Kemsley Mill	Coordinates Northings: - Eastings: -	Drilling Plant:	Casing Details	Hole Type
Project No.	JER4418		Start Date: -	Hole Diameter (mm) / Casing Depth (m)	TP
Location:	Sittingbourne, Kent	Ground Level: - m OD	End Date: -		Scale 1:50
Client:	E.ON		Logged By:		

Well	Water Strikes	Samples & In Situ Testing: Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata
						0.30	▨	Grey gravelly cobbly sandy SILT. Gravel and occasional cobbles are subangular to angular stone. Weak textile membrane at 0.3 m of below 2 mm thickness. (MADE GROUND)
						1.00	▨	DArk grey brown slightly gravelly silty SAND with frequent subangular to angular concrete cobbles and occasional boulders. Very occasional brick fragments. (MADE GROUND)
						1.50	▨	Dark grey black slightly gravelly sility SAND of clinker. Gravels and occasional cobbles are subangualr to angular stone. (MADE GROUND)
		1.75	IVN kPa	18 kPa		1.90	▨	Firm grey orange brown green mottled CLAY with frequent subangular to angular gravel and cobbles of various stone, brick, and occasional flint. (MADE GROUND)
		2.25	IVN kPa	38 kPa		2.60	▤	Firm grey brown mottled CLAY.

End of Borehole at 2.60 m

0.50 1.00 1.50 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 6.00 6.50 7.00 7.50 8.00 8.50 9.00 9.50

Type Results

Remarks:

Chiselling Details

Time Taken	Depth From (m)	Depth To (m)	Tool Used

Groundwater Notes

Strike (m)	Casing Depth (m)	Level After 20 Mins (m)

BOREHOLE LOG

Borehole No.
TP5
Sheet 1 of 1

Project Name:	Kemsley Mill	Coordinates	Drilling Plant:	Casing Details	Hole Type
Project No.	JER4418	Northings: - Eastings: -	Start Date: -	Hole Diameter (mm) / Casing Depth (m)	TP
Location:	Sittingbourne, Kent	Ground Level: - m OD	End Date: -		Scale
Client:	E.ON		Logged By:		1:50

Well	Water Strikes	Samples & In Situ Testing: Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata
						0.05		Brown slightly gravelly silty SAND with root and organic matter. (MADE GROUND)
						0.50		Light grey white cobbly gravelly sandy SILT. Gravel and cobbles are subangular to angular fine to coarse limestone. Thin geotextile membrane at 0.5m. (MADE GROUND)
								Dark grey slightly gravelly silty SAND. (MADE GROUND)
		2.20	IVN kPa	22 kPa		2.10		Firm green grey friable CLAY. (MADE GROUND)
						2.35		Firm brown occasionally grey orange mottled friable CLAY.
						3.20		End of Borehole at 3.20 m

Type Results

Remarks:

Chiselling Details

Time Taken	Depth From (m)	Depth To (m)	Tool Used

Groundwater Notes

Strike (m)	Casing Depth (m)	Level After 20 Mins (m)

HoleBASE III (Bld 422.00) Standard Borehole Log v1 dated 26th Mar 03

BOREHOLE LOG

Borehole No.
TP6
Sheet 1 of 1

Project Name: Kemsley Mill	Coordinates	Drilling Plant:	Casing Details	Hole Type
Project No. JER4418	Northings: - Eastings: -	Start Date: -	Hole Diameter (mm) / Casing Depth (m)	TP
Location: Sittingbourne, Kent	Ground Level: - m OD	End Date: -		Scale
Client: E.ON		Logged By:		1:50

Well	Water Strikes	Samples & In Situ Testing Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata
						0.05	▨	Grey brown gravelly slightly silty SAND with roots and organic matter. (MADE GROUND)
						1.90	▨	Dark grey gravelly slightly cobbly slightly silty SAND. Gravel and cobbles are subangular to angular coal dust. Sand is fine to coarse coal dust. (MADE GROUND)
		2.00	IVN kPa	40 kPa		2.20	- -	Firm light grey brown mottled CLAY.
								End of Borehole at 2.20 m

0.50
1.00
1.50
2.00
2.50
3.00
3.50
4.00
4.50
5.00
5.50
6.00
6.50
7.00
7.50
8.00
8.50
9.00
9.50

Type Results

Remarks: Water strike at 2m. Medium to fast inflow.

Chiselling Details				Groundwater Notes		
Time Taken	Depth From (m)	Depth To (m)	Tool Used	Strike (m)	Casing Depth (m)	Level After 20 Mins (m)

AGS

BOREHOLE LOG

Borehole No.
TP7
Sheet 1 of 1

Project Name:	Kemsley Mill	Coordinates Northings: - Eastings: -	Drilling Plant:	Casing Details Hole Diameter (mm) / Casing Depth (m)	Hole Type TP
Project No.	JER4418		Start Date: -		
Location:	Sittingbourne, Kent	Ground Level: - m OD	End Date: -		Scale 1:50
Client:	E.ON		Logged By:		

Well	Water Strikes	Samples & In Situ Testing Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata
						0.25	▨	Brown slightly gravelly slightly clayey slightly silty SAND. Gravel is subangular to angular stone. (TOPSOIL)
						1.10	▨	Brown slightly sandy slightly gravelly SILT / CLAY. Clay in places. Contains fill including various brick, stone cobbles with occasional boulders and metal. (MADE GROUND)
		1.40	IVN kPa	10 kPa		1.80	▨	Soft to firm grey occasionally brown CLAY. Friable in places. (MADE GROUND)
		1.90	IVN KPa	25 kPa		2.00	▨	Brown grey mottled CLAY.
								End of Borehole at 2.00 m

0.50 1.00 1.50 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 6.00 6.50 7.00 7.50 8.00 8.50 9.00 9.50

Type Results

Remarks: Water strike at 1.6m. Medium to fast inflow. Stabilises at 1.8m.

Chiselling Details

Time Taken	Depth From (m)	Depth To (m)	Tool Used

Groundwater Notes

Strike (m)	Casing Depth (m)	Level After 20 Mins (m)

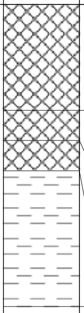
AGS

BOREHOLE LOG

Borehole No.
TP8
Sheet 1 of 1

Project Name: Kemsley Mill	Coordinates Northings: - Eastings: -	Drilling Plant:	Casing Details		Hole Type
Project No. JER4418		Start Date: -	Hole Diameter (mm)	Casing Depth (m)	TP
Location: Sittingbourne, Kent	Ground Level: - m OD	End Date: -			Scale 1:50
Client: E.ON		Logged By:			

Well	Water Strikes	Samples & In Situ Testing Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata
							▨	Brown grey gravelly sandy SILT with frequent cobbles and gravels of various stone and bricks. (MADE GROUND)
						0.70	▨	Firm brown CLAY with occasional fill material. (MADE GROUND)
						0.90	▨	Dark grey friable CLAY with occasional black staining and fill material. (MADE GROUND)
						1.10		Light grey friable mottled CLAY with occasional fill including plastics, brick, metal. Odorous. White and black staining in places.
						2.00		End of Borehole at 2.00 m



Depth scale: 0.50, 1.00, 1.50, 2.00, 2.50, 3.00, 3.50, 4.00, 4.50, 5.00, 5.50, 6.00, 6.50, 7.00, 7.50, 8.00, 8.50, 9.00, 9.50

Type	Results

Remarks:

Chiselling Details

Time Taken	Depth From (m)	Depth To (m)	Tool Used

Groundwater Notes

Strike (m)	Casing Depth (m)	Level After 20 Mins (m)

HoleBASE III (Bld 422.00) Standard Borehole Log v1 dated 26th Mar 03

RPS

BOREHOLE LOG

Borehole No.
TP9
Sheet 1 of 1

Project Name:	Kemsley Mill	Coordinates Northings: - Eastings: -	Drilling Plant:
Project No.	JER4418		Start Date: -
Location:	Sittingbourne, Kent	Ground Level: - m OD	End Date: -
Client:	E.ON		Logged By:

Casing Details	
Hole Diameter (mm)	Casing Depth (m)

Hole Type
TP

Scale
1:50

Well	Water Strikes	Samples & In Situ Testing			Level (m AOD)	Depth (m)	Legend	Description Of Strata
		Depth (m)	Type	Results				
		0.00	IPP			0.35	▨	Dark brown slightly gravelly silty SAND. Grass roots and organic matter within top 0.1m. (MADE GROUND)
						0.70	▨	Dark grey black slightly gravelly silty SAND of ash and clinker. (MADE GROUND)
						2.40	▨	Dark grey slightly gravelly silty SAND of ash. Includes various fill material such as plastics, flint gravels, brick, metals. Occasional white clayey substance. (MADE GROUND)
								End of Borehole at 2.40 m

0.50 1.00 1.50 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 6.00 6.50 7.00 7.50 8.00 8.50 9.00 9.50

Type Results

Remarks: Water strike at 2.2m. Low seepage.

Chiselling Details			
Time Taken	Depth From (m)	Depth To (m)	Tool Used

Groundwater Notes		
Strike (m)	Casing Depth (m)	Level After 20 Mins (m)

AGS

BOREHOLE LOG

Borehole No.
TP10
Sheet 1 of 1

Project Name: Kemsley Mill	Coordinates	Drilling Plant:	Casing Details	Hole Type
Project No. JER4418	Northings: - Eastings: -	Start Date: -	Hole Diameter (mm) / Casing Depth (m)	TP
Location: Sittingbourne, Kent	Ground Level: - m OD	End Date: -		Scale 1:50
Client: E.ON		Logged By:		

Well	Water Strikes	Samples & In Situ Testing Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata
						0.05	▨	Brown slightly sandy SILT / CLAY with roots and organic matter. (MADE GROUND)
						1.20	▨	Brown slightly sandy SILT / CLAY with frequent infill including brick, stone gravels, plastics. (MADE GROUND)
								End of Borehole at 1.20 m
			Type	Results				

0.50
1.00
1.50
2.00
2.50
3.00
3.50
4.00
4.50
5.00
5.50
6.00
6.50
7.00
7.50
8.00
8.50
9.00
9.50

Remarks:

Chiselling Details				Groundwater Notes		
Time Taken	Depth From (m)	Depth To (m)	Tool Used	Strike (m)	Casing Depth (m)	Level After 20 Mins (m)

AGS

HoleBASE III (Bld 422.00) Standard Borehole Log v1 dated 26th Mar 03

RPS

BOREHOLE LOG

Borehole No.
TP11
Sheet 1 of 1

Project Name:	Kemsley Mill	Coordinates Northings: - Eastings: -	Drilling Plant:	Casing Details	Hole Type TP
Project No.	JER4418		Start Date: -	Hole Diameter (mm) / Casing Depth (m)	
Location:	Sittingbourne, Kent	Ground Level: - m OD	End Date: -		Scale 1:50
Client:	E.ON		Logged By:		

Well	Water Strikes	Samples & In Situ Testing: Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata
						0.80	▨	Grey brown slightly gravelly silty SAND with frequent gravelly and sandy bands. Grass roots and organic matter within top 0.1m. (MADE GROUND)
		1.50	IVN kPa	15 kPa				
		3.00	IVN kPa	45 kPa		3.10	▨	Firm grey brown mottled slightly sandy gravelly CLAY with various fill material including plastics, wood, textiles, flint and stone gravel and cobbles. Included two concrete kerbs and a steel manhole cover. (MADE GROUND)
						3.30	▨	Firm dark grey friable CLAY. Ashy in places. (MADE GROUND)

End of Borehole at 3.30 m

0.50 1.00 1.50 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 6.00 6.50 7.00 7.50 8.00 8.50 9.00 9.50

Type Results

Remarks:

Chiselling Details

Time Taken	Depth From (m)	Depth To (m)	Tool Used

Groundwater Notes

Strike (m)	Casing Depth (m)	Level After 20 Mins (m)

AGS

BOREHOLE LOG

Borehole No.
TP12
Sheet 1 of 1

Project Name:	Kemsley Mill	Coordinates	Drilling Plant:	Casing Details	Hole Type
Project No.	JER4418	Northings: - Eastings: -	Start Date: -	Hole Diameter (mm) | Casing Depth (m)	TP
Location:	Sittingbourne, Kent	Ground Level: - m OD	End Date: -		Scale 1:50
Client:	E.ON		Logged By:		

Well	Water Strikes	Samples & In Situ Testing Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata
						0.25	▨	Light brown slightly gravelly silty SAND. (TOPSOIL)
		0.70	IVN kPa	11 kPa		1.20	▩	White slightly clayey silty SAND with subangular to angular cobbles and gravels of chalk and various stone. Occasional fill material including plastics, metal, wood. (MADE GROUND)
						2.00	▩	Brown organic silty SAND. Slightly clayey in places with dark grey slightly gravelly silty sand of ash in places. (MADE GROUND)

End of Borehole at 2.00 m

0.50 1.00 1.50 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 6.00 6.50 7.00 7.50 8.00 8.50 9.00 9.50

Remarks:

Chiselling Details				Groundwater Notes		
Time Taken	Depth From (m)	Depth To (m)	Tool Used	Strike (m)	Casing Depth (m)	Level After 20 Mins (m)

BOREHOLE LOG

Borehole No.
TP13
Sheet 1 of 1

Project Name:	Kemsley Mill	Coordinates	Drilling Plant:	Casing Details	Hole Type
Project No.	JER4418	Northings: - Eastings: -	Start Date: -	Hole Diameter (mm) / Casing Depth (m)	TP
Location:	Sittingbourne, Kent	Ground Level: - m OD	End Date: -		Scale
Client:	E.ON		Logged By:		1:50

Well	Water Strikes	Samples & In Situ Testing Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata	
						2.50	▨	Brown organic silty slightly clayey SAND with various fill material including plastics, rubble, lino, wood and occasional general waste. (MADE GROUND)	0.50 1.00 1.50 2.00 2.50
								End of Borehole at 2.50 m	3.00 3.50 4.00 4.50 5.00 5.50 6.00 6.50 7.00 7.50 8.00 8.50 9.00 9.50
			Type	Results					

Remarks:

Chiselling Details				Groundwater Notes		
Time Taken	Depth From (m)	Depth To (m)	Tool Used	Strike (m)	Casing Depth (m)	Level After 20 Mins (m)

BOREHOLE LOG

Borehole No.
TP14
Sheet 1 of 1

Project Name: Kemsley Mill	Coordinates	Drilling Plant:	Casing Details		Hole Type
Project No. JER4418	Northings: - Eastings: -	Start Date: -	Hole Diameter (mm)	Casing Depth (m)	TP
Location: Sittingbourne, Kent	Ground Level: - m OD	End Date: -			Scale
Client: E.ON		Logged By:			1:50

Well	Water Strikes	Samples & In Situ Testing			Level (m AOD)	Depth (m)	Legend	Description Of Strata
		Depth (m)	Type	Results				
						1.20	▨	Dark brown occasionally grey silty SAND with frequent plastics, brick, stone, wood and occasional peat. (MADE GROUND)
								End of Borehole at 1.20 m

0.50
1.00
1.50
2.00
2.50
3.00
3.50
4.00
4.50
5.00
5.50
6.00
6.50
7.00
7.50
8.00
8.50
9.00
9.50

Type Results

Remarks:

Chiselling Details				Groundwater Notes		
Time Taken	Depth From (m)	Depth To (m)	Tool Used	Strike (m)	Casing Depth (m)	Level After 20 Mins (m)

HoleBASE III (Bld 422.00) Standard Borehole Log v1 dated 26th Mar 03

BOREHOLE LOG

Borehole No.
TP15
Sheet 1 of 1

Project Name: Kemsley Mill	Coordinates Northings: - Eastings: -	Drilling Plant:	Hole Type TP
Project No. JER4418		Start Date: -	
Location: Sittingbourne, Kent	Ground Level: - m OD	End Date: -	Scale 1:50
Client: E.ON		Logged By:	

Casing Details	
Hole Diameter (mm)	Casing Depth (m)

Well	Water Strikes	Samples & In Situ Testing			Level (m AOD)	Depth (m)	Legend	Description Of Strata
		Depth (m)	Type	Results				
						0.10	▨	Brown slightly gravelly silty SAND. (TOPSOIL)
						0.45	▨	Light brown slightly gravelly CLAY with occasional brick, stone and metal fill. (MADE GROUND)
							▨	Dark grey black gravelly silty SAND. Twsted metal pipe in north of pit at 0.7m. (MADE GROUND)
						1.40	▨	Firm grey friable CLAY. (MADE GROUND)
		2.10	IVN kPa	30 kPa		2.05 2.20	– – –	Firm to stiff grey brown mottled CLAY.

End of Borehole at 2.20 m

0.50 1.00 1.50 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 6.00 6.50 7.00 7.50 8.00 8.50 9.00 9.50

Type	Results

Remarks:

Chiselling Details				Groundwater Notes		
Time Taken	Depth From (m)	Depth To (m)	Tool Used	Strike (m)	Casing Depth (m)	Level After 20 Mins (m)

BOREHOLE LOG

Borehole No.
WS1
Sheet 1 of 1

Project Name:	Kemsley Mill	Coordinates Northings: - Eastings: -	Drilling Plant:
Project No.	JER4418		Start Date: -
Location:	Sittingbourne, Kent	Ground Level: - m OD	End Date: -
Client:	E.ON	Logged By:	

Casing Details	
Hole Diameter (mm)	Casing Depth (m)

Hole Type
WS

Scale
1:50

Well	Water Strikes	Samples & In Situ Testing: Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata
								Loose grey fine to medium angular GRAVEL (MADE GROUND).
						0.40		Firm grey brown mottled slightly sandy SILT / CLAY with occasional roots, brick fragements and plastic. (MADE GROUND)
						0.70		Medium dense grey silty fine ashy SAND. (MADE GROUND)
						1.35		Medium dense grey silty fine ashy SAND and clinker. (MADE GROUND)
						2.20		Firm, occasionally stiff, grey brown mottled slightly silty CLAY with rare pockets of black silt and some iron staining. Occasional pockets of calcareous fine to medium gravels.
						4.00		No Recovery
						4.50		Firm grey and brown mottled CLAY with pockets of brown silt.
	▽					5.00		No Recovery
						5.40		Hard dessicated brown silty CLAY. Very disturbed.
						5.60		No Recovery
						6.00		End of Borehole at 6.00 m

0.50
1.00
1.50
2.00
2.50
3.00
3.50
4.00
4.50
5.00
5.50
6.00
6.50
7.00
7.50
8.00
8.50
9.00
9.50

Type	Results

Remarks:

Chiselling Details				Groundwater Notes		
Time Taken	Depth From (m)	Depth To (m)	Tool Used	Strike (m)	Casing Depth (m)	Level After 20 Mins (m)
				5.00	-	-

AGS

BOREHOLE LOG

Borehole No.
WS2
Sheet 1 of 1

Project Name:	Kemsley Mill	Coordinates Northings: - Eastings: -	Drilling Plant:	Casing Details	Hole Type: WS
Project No.	JER4418		Start Date: -	Hole Diameter (mm) / Casing Depth (m)	
Location:	Sittingbourne, Kent	Ground Level: - m OD	End Date: -		Scale 1:50
Client:	E.ON		Logged By:		

Well	Water Strikes	Samples & In Situ Testing: Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata
						0.45	▨	Light grey yellow silty SAND and GRAVEL of limestone. Sand is fine. Gravel is subangalar to angular and fine to coarse. Frequent limestone cobbles. (MADE GROUND)
						0.85	▨	Dense dark grey brown occasionally white slightly gravelly sandy SILT. (MADE GROUND)
						2.05	▨	Dense dark grey slightly gravelly slightly sandy SILT. (MADE GROUND)
	▽					5.00	— —	Firm to stiff light grey brown mottled CLAY.

End of Borehole at 5.00 m

0.50 1.00 1.50 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 6.00 6.50 7.00 7.50 8.00 8.50 9.00 9.50

Remarks:

Chiselling Details

Time Taken	Depth From (m)	Depth To (m)	Tool Used

Groundwater Notes

Strike (m)	Casing Depth (m)	Level After 20 Mins (m)
3.00	-	-

AGS

BOREHOLE LOG

Borehole No.
WS3
Sheet 1 of 1

Project Name:	Kemsley Mill	Coordinates Northings: - Eastings: -	Drilling Plant:
Project No.	JER4418		Start Date: -
Location:	Sittingbourne, Kent	Ground Level: - m OD	End Date: -
Client:	E.ON	Logged By:	

Casing Details

Hole Diameter (mm)	Casing Depth (m)

Hole Type: WS

Scale: 1:50

Well	Water Strikes	Samples & In Situ Testing: Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata
						0.10		Broken grey CONCRETE.
						0.50		Grey brown silty gravelly cobbly SAND. Gravels and cobbles are subangular to angular limestone and stone fill. (MADE GROUND)
						1.20		Brown grey slightly gravelly SILT / CLAY. Gravels and occasional cobbles and subangular to angular. (MADE GROUND)
						1.50		Stiff brown slightly gravelly CLAY. Gravels are subangular to angular limestone and stone fill. (MADE GROUND)
						1.60		Red brick. (MADE GROUND)
						1.80		Dark brown peaty SILT / CLAY. (MADE GROUND)
						2.70		Dense dark grey slightly sandy SILT. Becomes clayey with depth. (MADE GROUND)
	▽					5.00		Firm to stiff brown orange mottled CLAY with occasional organic matter and gravels of subrounded to angular stone.

End of Borehole at 5.00 m

0.50 1.00 1.50 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 6.00 6.50 7.00 7.50 8.00 8.50 9.00 9.50

Type Results

Remarks:

Chiselling Details

Time Taken	Depth From (m)	Depth To (m)	Tool Used

Groundwater Notes

Strike (m)	Casing Depth (m)	Level After 20 Mins (m)
3.00	-	-

AGS

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BOREHOLE LOG

Borehole No.	**WS4**
Sheet 1 of 1	

Project Name:	Kemsley Mill	Coordinates	Drilling Plant:	Casing Details	Hole Type
Project No.	JER4418	Northings: - Eastings: -	Start Date: -	Hole Diameter (mm) / Casing Depth (m)	WS
Location:	Sittingbourne, Kent	Ground Level: - m OD	End Date: -		Scale 1:50
Client:	E.ON		Logged By:		

Well	Water Strikes	Samples & In Situ Testing Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata
						0.10	▨	Brown slightly gravelly slightly silty SAND. (TOPSOIL)
						0.20	▨	Light brown gravelly SAND of limestone. (MADE GROUND)
						0.35	▨	Slightly sandy brown CLAY. Silt in places. Frequent iron staining. (MADE GROUND)
						0.75	▨	Daark grey slightly gravelly silty SAND. (MADE GROUND).
							▨	Dark grey SILT / CLAY of coal dust. (MADE GROUND)
						1.20	▨	Dark grey silghtly gravelly slightly sandy SILT / CLAY of coal dust with occasional brick fragments. Wet. (MADE GROUND)
						1.60	▨	Firm brown grey CLAY with occasional fill including white subangular to angular gravel. (MADE GROUND)
						2.30	═	Firm brown grey CLAY.
	▽					3.00		End of Borehole at 1.20 m

0.50
1.00
1.50
2.00
2.50
3.00
3.50
4.00
4.50
5.00
5.50
6.00
6.50
7.00
7.50
8.00
8.50
9.00
9.50

Type Results

Remarks:

Chiselling Details				Groundwater Notes		
Time Taken	Depth From (m)	Depth To (m)	Tool Used	Strike (m)	Casing Depth (m)	Level After 20 Mins (m)
				3.00	-	-

AGS

HoleBASE III (Bld 422.00) Standard Borehole Log v1 dated 26th Mar 03

BOREHOLE LOG

Borehole No.
WS5
Sheet 1 of 1

Project Name:	Kemsley Mill	Coordinates Northings: 0.00 Eastings: 0.00	Drilling Plant:	Casing Details	Hole Type WS
Project No.	JER4418		Start Date: / /	Hole Diameter (mm)	Casing Depth (m)
Location:	Sittingbourne, Kent	Ground Level: 0.000 m OD	End Date: / /		Scale 1:50
Client:	E.ON		Logged By:		

Well	Water Strikes	Samples & In Situ Testing: Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata
					-0.50	0.50		Brown grey slightly sandy slightly gravelly SILT / CLAY with occasional subangular to angular gravel of brick and stone. (MADE GROUND)
					-0.70	0.70		Angular grey GRAVEL of concrete and tarmacadam fill. (MADE GROUND)
					-0.90	0.90		Firm brown CLAY with occasional gravel of subanular to angular stone and fill material. (MADE GROUND)
					-1.40	1.40		Grey brown sandy gravelly SILT. Freqent organic matter. (MADE GROUND)
					-1.60	1.60		Firm brown CLAY. (MADE GROUND)
					-1.80	1.80		Brown peaty SILT / CLAY with plastics and wood. (MADE GROUND)
					-3.00	3.00		Grey gravelly silty SAND. Gravels are subangular to angular fine to medium stone. (MADE GROUND)
					-3.90	3.90		Dark grey slightly gravelly slightly silty SAND of clinker. Wet. (MADE GROUND)
					-4.00	4.00		Firm to stiff brown CLAY.

End of Borehole at 4.00 m

-0.50 -1.00 -1.50 -2.00 -2.50 -3.00 -3.50 -4.00 -4.50 -5.00 -5.50 -6.00 -6.50 -7.00 -7.50 -8.00 -8.50 -9.00 -9.50

Type	Results

Remarks:

Chiselling Details

Time Taken	Depth From (m)	Depth To (m)	Tool Used

Groundwater Notes

Strike (m)	Casing Depth (m)	Level After 20 Mins (m)

AGS

HoleBASE III (Bld 422.00) Standard Borehole Log v1 dated 26th Mar 03

BOREHOLE LOG

Borehole No.
WS6
Sheet 1 of 1

Project Name:	Kemsley Mill	Coordinates Northings: - Eastings: -	Drilling Plant:	Casing Details	Hole Type WS
Project No.	JER4418		Start Date: -	Hole Diameter (mm) / Casing Depth (m)	
Location:	Sittingbourne, Kent	Ground Level: - m OD	End Date: -		Scale 1:50
Client:	E.ON		Logged By:		

Well	Water Strikes	Samples & In Situ Testing: Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata
						0.20		Brown silty SAND with occasional grass roots. (TOPSOIL)
						2.40		Firm to stiff brown grey CLAY with occasional brick, plastics and other fill. Slightly sandy in places with occasional gravels. (MADE GROUND)
						2.60		Dark grey slightly gravelly silty SAND. (MADE GROUND)
						3.00		Firm to stiff brown occasionally grey CLAY.

End of Borehole at 3.00 m

0.50 1.00 1.50 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 6.00 6.50 7.00 7.50 8.00 8.50 9.00 9.50

Type Results

Remarks:

Chiselling Details

Time Taken	Depth From (m)	Depth To (m)	Tool Used

Groundwater Notes

Strike (m)	Casing Depth (m)	Level After 20 Mins (m)

BOREHOLE LOG

Borehole No.
WS7
Sheet 1 of 1

Project Name:	Kemsley Mill	Coordinates Northings: - Eastings: -	Drilling Plant:	Casing Details	Hole Type WS
Project No.	JER4418		Start Date: -	Hole Diameter (mm) / Casing Depth (m)	
Location:	Sittingbourne, Kent	Ground Level: - m OD	End Date: -		Scale 1:50
Client:	E.ON		Logged By:		

Well	Water Strikes	Samples & In Situ Testing: Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata
						0.10		Brown sandy SILT with occasional gravel of subangular to angular flint. (TOPSOIL)
						0.50	▨	Firm to stiff brown grey sandy CLAY with occasional gravels of subangular to angular fill material. (MADE GROUND)
						0.70	▨	Brown slightly gravelly CLAY. (MADE GROUND)
						0.80	▨	Dark grey subangular to angular fine to coarse gravels of clinker. (MADE GROUND)
						1.00	▨	Firm grey brown clay. (MADE GROUND)
								No recovery. Wood piece in hole.
						1.80	▨	Grey occasionally brown slightly silty gravelly SAND. Gravels are subangular to angular stone and clinker. (MADE GROUND)
						2.50	▨	Firm dark grey occasionally brown red CLAY. (MADE GROUND)
						2.70	▨	Grey sandy subrounded to angular limestone GRAVEL . (MADE GROUND)
	▽					2.90	▨	Dark grey black slightly gravelly slightly sandy SILT. Gravels and sands of clinker. (MADE GROUND)
						3.60		Firm to stiff light brown orange mottled CLAY.
						4.00		End of Borehole at 4.00 m

Remarks:

Chiselling Details

Time Taken	Depth From (m)	Depth To (m)	Tool Used

Groundwater Notes

Strike (m)	Casing Depth (m)	Level After 20 Mins (m)
3.00	-	-

AGS

BOREHOLE LOG

Borehole No.
WS8
Sheet 1 of 1

Project Name: Kemsley Mill	Coordinates Northings: - Eastings: -	Drilling Plant:	Hole Type WS
Project No. JER4418		Start Date: -	
Location: Sittingbourne, Kent	Ground Level: - m OD	End Date: -	Scale 1:50
Client: E.ON		Logged By:	

Casing Details

Hole Diameter (mm)	Casing Depth (m)

Well	Water Strikes	Samples & In Situ Testing: Depth (m)	Type	Results	Level (m AOD)	Depth (m)	Legend	Description Of Strata
						1.00	▨	Dark brown slightly gravelly silty SAND including chalk and flint gravel. 20% recovery. (MADE GROUND)
						2.00	▨	Brown grey slightly sandy slightly gravelly CLAY with concrete fragments, organic matter and gauze. Topsoil in places. 50% recovery. (MADE GROUND)
						3.00	▨	Brown grey slightly sandy slightly gravelly CLAY with organic matter including wood im places. 20% recovery. (MADE GROUND)
								End of Borehole at 3.00 m

0.50
1.00
1.50
2.00
2.50
3.00
3.50
4.00
4.50
5.00
5.50
6.00
6.50
7.00
7.50
8.00
8.50
9.00
9.50

Type Results

Remarks:

Chiselling Details

Time Taken	Depth From (m)	Depth To (m)	Tool Used

Groundwater Notes

Strike (m)	Casing Depth (m)	Level After 20 Mins (m)

AGS

HoleBASE III (Bld 422.00) Standard Borehole Log v1 dated 26th Mar 03

APPENDIX 3 Historic Maps (supplied by Landmark Mapping)

Appendix 13.2 Relevant Plan Policies

Relevant plan policies are as follows:

Regional Planning Guidance

The South East Plan, Regional Spatial Strategy for the South East

POLICY BE6: MANAGEMENT OF THE HISTORIC ENVIRONMENT

When developing and implementing plans and strategies, local authorities and other bodies will adopt policies and support proposals which protect, conserve and, where appropriate, enhance the historic environment and the contribution it makes to local and regional distinctiveness and sense of place. The region's internationally and nationally designated historic assets should receive the highest level of protection. Proposals that make sensitive use of historic assets through regeneration, particularly where these bring redundant or under-used buildings and areas into appropriate use should be encouraged.

POLICY NRM15: LOCATION OF RENEWABLE ENERGY DEVELOPMENT

Local development documents should encourage the development of renewable energy in order to achieve the regional and sub-regional targets. Renewable energy development, particularly wind and biomass, should be located and designed to minimise adverse impacts on landscape, wildlife, heritage assets and amenity. Outside of urban areas, priority should be given to development in less sensitive parts of countryside and coast, including on previously developed land and in major transport areas.

The location and design of all renewable energy proposals should be informed by landscape character assessment where available. Within areas of protected and sensitive landscapes including Areas of Outstanding Natural Beauty or the national parks, development should generally be of a small scale or community-based. Proposals within or close to the boundaries of designated areas should demonstrate that development will not undermine the objectives that underpin the purposes of designation.

Swale Borough Local Plan, adopted February 2008.

Policy E14 Development Involving Listed Buildings

1. Proposals, including any change of use, affecting a Listed Building, and/or its setting, will only be permitted if the building's special architectural or historic interest, and its setting, are preserved. Proposals will pay special attention to the:
    a. design, including scale, materials, situation and detailing;
    b. appropriateness of the proposed use of the building; and
    c. desirability of removing unsightly or negative features or restoring or reinstating historic features.
2. The total or part demolition of a Listed Building will be wholly exceptional, and will only be permitted provided convincing evidence has been submitted showing that:
    a. all reasonable efforts have been made to sustain existing uses or viable new uses and have failed;
    b. preservation in charitable or community ownership is not possible or suitable; and
    c. the cost of maintaining and repairing the building outweighs its importance and the value derived from its continued use.

    If as a last resort, the Borough Council is prepared to consider the grant of a listed building consent for demolition, it may, in appropriate circumstances, consider whether the building could be re-erected elsewhere to an appropriate location. When re-location is not possible and demolition is permitted, arrangements will be required to allow access to the building prior to demolition to make a record of it and to allow for the salvaging of materials and features.

Policy E15 Development Affecting a Conservation Area

Development (including changes of use and the demolition of unlisted buildings or other structures) within, affecting the setting of, or views into and out of a conservation area, will preserve or enhance all features that contribute positively to the area's special character or appearance. The Borough Council expects development proposals to:

1. respond positively to its conservation area appraisals where these have been prepared;
2. retain the layout, form of streets, spaces, means of enclosure and buildings, and pay special attention to the use of detail and materials, surfaces, landform, vegetation and land use;
3. take into account the current or likely resulting ambience provided by the mix of land uses or traffic;
4. remove features that detract from the character of the area and reinstate those that would enhance it; and
5. retain unlisted buildings or other structures that make, or could make, a positive contribution to the character or appearance of the area.

Policy E16 Scheduled Ancient Monuments and Archaeological Sites

1. Development will not be permitted which would adversely affect a Scheduled Ancient Monument, as shown on the Proposals Map or subsequently designated, or other nationally important monument or archaeological site, or its setting.
2. Whether they are currently known or discovered during the Plan period, there will be a preference to preserve important archaeological sites in-situ and to protect their settings. Development that does not achieve acceptable mitigation of adverse archaeological effects will not be permitted.

   Where development is permitted and preservation in-situ is not justified, the applicant will be required to ensure that provision will be made for archaeological excavation and recording, in advance of and/or during development.

Policy E17 Historic Parks and Gardens

The Borough Council will seek to protect registered Historic Parks and Gardens, as shown on the Proposals Map, or which are registered during the Plan period. Development that would adversely affect the landscape character, layout and features of a Historic Park and Garden, or its setting, will not be permitted.

DEVELOPMENT OF A SUSTAINABLE ENERGY PLANT.

Kemsley Paper Mill,

ST REGIS PAPER COMPANY LIMITED & E.ON ENERGY FROM WASTE UK LIMITED

ENVIRONMENTAL STATEMENT

CHAPTER 14:

SOCIO-ECONOMIC APPENDICES 14.1 to 14.17

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RPS Planning & Development

Appendices

Appendix 14.1

Table UV01 Population

Population (UV01)	Count	Kemsley Ward	Swale	South East Region	England
All People	Persons (Apr 01)	5840	122801	8000645	49138831
People resident in households	Persons (Apr 01)	5840	120412	7809823	48248150
People resident in Communal Establishments	Persons (Apr 01)	0	2389	190822	890681
People resident in Communal Establishments, of which People Sleeping Rough	Persons (Apr 01)	0	0	163	836

Appendix 14.2

Table KS24 Migration (Percentage in brackets)

Migration (KS24)	All people #	Number of all people who are migrants	Number of all people: Who moved into the area: From within the UK	Number of all people: Who moved into the area: From outside the UK	Number of all people: With no usual address one year before Census	Number of all people: Who moved within the area	Number of all people: Who moved out of the area*	All people in ethnic groups other than 'White' #	Number of all people in ethnic groups other than 'White': Who are migrants	Number of people in ethnic groups other than 'White': Who moved into the area: From within the UK	Number of people in ethnic groups other than white: Who moved into the area: From outside the UK	Number of people in ethnic groups other than 'White': With no usual address one year before Census	Number of people in ethnic groups other than 'White': Who moved within the area	Number of people in ethnic groups other than 'White': Who moved out of the area*
29UM Swale	122,801	14344 (11.68%)	5273 (4.29%)	287 (0.23%)	932 (0.76%)	7852 (6.39%)	3990 (3.25%)	2285	479 (20.96%)	251 (10.98%)	44 (1.93%)	36 (1.58%)	148 (6.48%)	156 (6.83%)

Appendix 14.3

Table UV20 General Health Data

General Health (UV20)	Count	Kemsley Ward	Swale	South East Region	England
All People	Persons (Apr 01)	5840	122801	8000645	49138831
Good Health	Persons (Apr 01)	4286	83846	5720436	33787361
Fairly Good Health	Persons (Apr 01)	1213	28849	1710768	10915594
Not Good Health	Persons (Apr 01)	341	10106	569441	4435876

Appendix 14.4

Table UV22 Long term Limiting Illness Data

Long Term Limiting Illness (UV22)		Kemsley Ward	Swale	South East Region	England
All People	Persons (Apr 01)	5840	122801	8000645	49138831
With a Limiting Long-Term Illness	Persons (Apr 01)	706	21623	1237399	8809194
Without a Limiting Long-Term Illness	Persons (Apr 01)	5134	101178	6763246	40329637

Appendix 14.5

Table UV62 Car Ownership Data

Cars or Vans (UV62)		Kemsley Ward	Swale	South East Region	England
All Households	Households (Apr 01)	2288	49257	3287489	20451427
No car or van	Households (Apr 01)	320	10903	638772	5488386
1 car or van	Households (Apr 01)	1079	21653	1400989	8935718
2 cars or vans	Households (Apr 01)	762	13062	971698	4818581
3 cars or vans	Households (Apr 01)	110	2715	206914	924289
4 or more cars or vans	Households (Apr 01)	17	924	69116	284453
Total cars or vans	Households (Apr 01)	3001	60087	4271483	22607629

Appendix 14.6

Table UV34 Industry of Employment

Table UV34 Types of Industry Data		Kemsley Ward	Swale	South East Region	England
All People	Persons (Apr 01)	2960	55712	3888756	22441498
A. Agriculture, hunting and forestry	Persons (Apr 01)	20	1129	56287	326117
B. Fishing	Persons (Apr 01)	0	9	831	5396
C. Mining and quarrying	Persons (Apr 01)	5	79	7163	55481
D. Manufacturing	Persons (Apr 01)	458	9336	471634	3328437
E. Electricity, gas and water supply	Persons (Apr 01)	20	286	28177	159619
F. Construction	Persons (Apr 01)	289	5285	277314	1515996
G. Wholesale and retail trade, repairs	Persons (Apr 01)	555	9922	635792	3782043
H. Hotels and restaurants	Persons (Apr 01)	88	2134	167134	1061617
I. Transport, storage and communications	Persons (Apr 01)	251	4458	316408	1590031
J. Financial intermediation	Persons (Apr 01)	168	2233	198074	1078082
K. Real estate, renting and business activities	Persons (Apr 01)	365	6139	606110	2964468
L. Public administration and defence, social security	Persons (Apr 01)	208	3499	230684	1270755
M. Education	Persons (Apr 01)	177	3849	305155	1736497
N. Health and social work	Persons (Apr 01)	216	4802	382289	2400698
O. Other community, social and personal service activities	Persons (Apr 01)	136	2492	198094	1131406
P. Private households with employed persons	Persons (Apr 01)	4	53	6294	21441
Q. Extra-territorial organisations and bodies	Persons (Apr 01)	0	7	1316	13414

Appendix 14.7

Table KS11A Industrial Sector of Employment

Industrial Sector of Employment (KS11A)	Count	Kemsley Ward	Swale	South East Region	England
All people aged 16-74 in employment	Persons (Apr 01)	2960	55712	3888756	22441498
People aged 16-74 in employment working in: Agriculture; hunting; forestry	Persons (Apr 01)	20	1129	56287	326117
People aged 16-74 in employment working in: Fishing	Persons (Apr 01)	0	9	831	5396
People aged 16-74 in employment working in: Mining & quarrying	Persons (Apr 01)	5	79	7163	55481
People aged 16-74 in employment working in: Manufacturing	Persons (Apr 01)	458	9336	471634	3328437
People aged 16-74 in employment working in: Electricity; gas and water supply	Persons (Apr 01)	20	286	28177	159619
People aged 16-74 in employment working in: Construction	Persons (Apr 01)	289	5285	277314	1515996
People aged 16-74 in employment working in: Wholesale & retail trade; repair of motor vehicles	Persons (Apr 01)	555	9922	635792	3782043
People aged 16-74 in employment working in: Hotels and catering	Persons (Apr 01)	88	2134	167134	1061617
People aged 16-74 in employment working in: Transport storage and communication	Persons (Apr 01)	251	4458	316408	1590031
People aged 16-74 in employment working in: Financial intermediation	Persons (Apr 01)	168	2233	198074	1078082
People aged 16-74 in employment working in: Real estate; renting and business activities	Persons (Apr 01)	365	6139	606110	2964468

Appendix 14.8

Table UV 30 Occupation

Occupation (UV30)	Count	Swale	South East Region	England
All People	Persons (Apr 01)	55712	3888756	22441498
1. Managers and Senior Officials	Persons (Apr 01)	7497	678238	3424899
2. Professional Occupations	Persons (Apr 01)	4512	470881	2515679
3. Associate Professional and Technical Occupations	Persons (Apr 01)	6502	568493	3104993
4. Administrative and Secretarial Occupations	Persons (Apr 01)	7702	538365	3004721
5. Skilled Trades Occupations	Persons (Apr 01)	7532	426576	2591875
6. Personal Service Occupations	Persons (Apr 01)	3952	269121	1545367
7. Sales and Customer Service Occupations	Persons (Apr 01)	3977	285578	1717796
8. Process; Plant and Machine Operatives	Persons (Apr 01)	6029	244489	1889126
9. Elementary Occupations	Persons (Apr 01)	8009	407015	2647042

Appendix 14.9

Table UV 28 Economic Activity Data

Economic Activity (UV28)	Count	Kemsley Ward	Swale	South East Region	England
All People	Persons (Apr 01)	4116	87888	5766307	35532091
Economically Active	Persons (Apr 01)	3122	59013	4037629	23756707
Employee	Persons (Apr 01)	2586	46540	3195580	18695282
Employee Part-Time	Persons (Apr 01)	481	10848	703347	4196041
Employee Full-time	Persons (Apr 01)	2105	35692	2492233	14499241
Self-employed with employees	Persons (Apr 01)	94	2626	180275	1049823
Self-employed with employees: Part-time	Persons (Apr 01)	13	420	26926	151575
Self-employed with employees: Full-time	Persons (Apr 01)	81	2206	153349	898248
Self-employed without employees	Persons (Apr 01)	219	5004	371963	1905165
Self-employed without employees: Part-time	Persons (Apr 01)	42	1270	111701	542458
Self-employed without employees: Full-time	Persons (Apr 01)	177	3734	260262	1362707
Unemployed	Persons (Apr 01)	157	3092	133481	1188855
Full-time Students	Persons (Apr 01)	66	1751	156330	917582
Economically Inactive	Persons (Apr 01)	994	28875	1728678	11775384
Retired	Persons (Apr 01)	303	11981	772936	4811595
Student	Persons (Apr 01)	78	2435	240554	1660564
Looking after home / family	Persons (Apr 01)	374	6923	377565	2316229
Permanently sick / disabled	Persons (Apr 01)	144	4404	198886	1884901
Other	Persons (Apr 01)	95	3132	138737	1102095

Appendix 14.10

Unemployment/Worklessness Data (Summary Stats - 2007)

Worklessness	Count	Kemsley Ward	Swale	South East Region	England
Population Aged 18-24	Persons (Jan07-Dec07)	576	10800	723600	4816400
Population Aged 25-49	Persons (Jan07-Dec07)	2810	44000	2876400	18001900
Population Aged 50-64 (male) and 50-59 (female)	Persons (Jan07-Dec07)	884	20800	1275600	7634400
Economically Active	Persons (Jan07-Dec07)	~	59700	4122700	24769100
In Employment	Persons (Jan07-Dec07)	~	55000	3943800	23437700
Unemployed	Persons (Jan07-Dec07)	~	4000	178800	1331400
Economically Inactive	Persons (Jan07-Dec07)	~	17600	907000	6738200
All Claimants	Persons (Jan07-Dec07)	100	1789	72695	729477
Claimants Aged 18-24	Persons (Jan07-Dec07)	25	625	20235	217350
Claimants Aged 25-49	Persons (Jan07-Dec07)	50	850	37620	384635
Claimants Aged 50+	Persons (Jan07-Dec07)	20	295	13755	117440
Claimants for Less than 12 Months	Persons (Jan07-Dec07)	80	1530	61820	606265
Claimants for Over 12 Months	Persons (Jan07-Dec07)	10	260	10715	120390

Appendix 14.11

Table UV24 Qualifications Data

Qualifications (UV24)	Count	Kemsley Ward	Swale	South East Region	England
All People	Persons (Apr 01)	4116	87888	5766307	35532091
No Qualifications	Persons (Apr 01)	1146	30188	1379247	10251674
Level 1 qualifications (GCSE or equivaent)	Persons (Apr 01)	974	17155	987835	5909093
Level 2 qualifications (GCSE or equivaent)	Persons (Apr 01)	976	17239	1221136	6877530
Level 3 qualifications (A-Level)	Persons (Apr 01)	296	5518	530682	2962282
Level 4 / 5 qualifications (Degree Level and above)	Persons (Apr 01)	427	10558	1253917	7072052
Other qualifications: Level unknown	Persons (Apr 01)	297	7230	393490	2459460

Appendix 14.12

Table UV31 Socio-Economic Classification Data

Socio-Economic Classification (UV31)	Count	Kemsley Ward	Swale	South East Region	England
All People	Persons (Apr 01)	4114	87888	5766307	35532091
1. Higher managerial and professional occupations	Persons (Apr 01)	296	5446	622063	3059958
2. Lower managerial and professional occupations	Persons (Apr 01)	914	14706	1221409	6656918
3. Intermediate occupations	Persons (Apr 01)	539	8365	594723	3366759
4. Small employers and own account workers	Persons (Apr 01)	278	7106	447524	2479472
5. Lower supervisory and technical occupations	Persons (Apr 01)	357	7575	393911	2526120
6. Semi-routine occupations	Persons (Apr 01)	514	11173	612884	4139697
7. Routine occupations	Persons (Apr 01)	454	10161	423721	3203764
8. Never worked and long-term unemployed	Persons (Apr 01)	136	3085	125657	1324706
Not Classified	Persons (Apr 01)	626	20271	1324415	8774697

Appendix 14.13

Table KS15 Modes of Travel to Work Data

Travel to Work (KS15)	Count	Kemsley Ward	Swale	South East Region	England
All people aged 16-74 in employment	Persons (Apr 01)	2960	55712	3888756	22441498
People who work mainly at or from home	Persons (Apr 01)	238	5107	386302	2055224
People aged 16-74 who usually travel to work by: Underground, Metro, Light Rail or Tram	Persons (Apr 01)	5	60	8949	709386
People aged 16-74 who usually travel to work by: Train		214	3649	218822	950023
People aged 16-74 who usually travel to work by: Bus, Mini Bus or Coach	Persons (Apr 01)	157	1576	169312	1685361
People aged 16-74 who usually travel to work by: Motorcycle, Scooter or Moped	Persons (Apr 01)	43	673	43731	249456
People aged 16-74 who usually travel to work by: Driving a Car or Van	Persons (Apr 01)	1905	32896	2301493	12324166
People aged 16-74 who usually travel to work by: Passenger in a Car or Van	Persons (Apr 01)	206	3775	219850	1370685
People aged 16-74 who travel to work by: Taxi or Minicab	Persons (Apr 01)	8	217	16032	116503
People aged 16-74 who usually travel to work by: Bicycle	Persons (Apr 01)	51	1547	119315	634588
People aged 16-74 who usually travel to work by: On foot	Persons (Apr 01)	125	5975	385450	2241901
People aged 16-74 who usually travel to work by: Other	Persons (Apr 01)	8	237	19500	104205
Average distance (km) travelled to fixed place of work	Persons (Apr 01)	22.79	17.46	14.89	13.31
Public transport users in households: With car or van	Persons (Apr 01)	323	4459	323282	2307988
Public transport users in households: Without car or van	Persons (Apr 01)	53	800	70393	1018494

Appendix 14.14

Table UV35 Distance Travelled to Work Data

Distance Travelled to Work (UV35)	Count	Kemsley Ward	Swale	South East Region	England
All People	Persons (Apr 01)	2960	55712	3888756	22441497
Works mainly at or from home	Persons (Apr 01)	238	5107	386302	2055224
Less than 2km	Persons (Apr 01)	459	13104	792325	4484082
2km to less than 5km	Persons (Apr 01)	487	7676	683531	4510259
5km to less than 10km	Persons (Apr 01)	244	5554	589320	4094614
10km to less than 20km	Persons (Apr 01)	572	9540	532799	3412081
20km to less than 30km	Persons (Apr 01)	175	3482	260817	1197605
30km to less than 40km	Persons (Apr 01)	91	1654	138450	527840
40km to less than 60km	Persons (Apr 01)	252	2414	151207	487683
60km and over	Persons (Apr 01)	271	3834	141187	607571
No fixed place of work	Persons (Apr 01)	167	3222	199278	991537
Working outside the UK	Persons (Apr 01)	4	96	11593	59346
Working at an offshore installation	Persons (Apr 01)	0	29	1947	13655

Appendix 14.15

Earnings Data (ASHE - 2009)

Earnings Data (ASHE 2009)	Swale	South East Region	England
ALL: Number of Jobs (thousand)	39	3319	20336
MALE: Number of Jobs (thousand)	21	1715	10336
FEMALE: Number of Jobs (thousand)	19	1604	9970
ALL: Gross Weekly Pay (£) Median	392.1	415.8	402.5
MALE: Gross Weekly Pay (£) Median	486.2	524.6	498.3
FEMALE: Gross Weekly Pay (£) Median	264.6	309.4	311.2
ALL: Gross Weekly Pay (£) Mean	435.8	499.3	488.9
MALE: Gross Weekly Pay (£) Mean	531	621.4	600.3
FEMALE: Gross Weekly Pay (£) Mean	329.7	368.9	373.1
ALL: Gross Hourly Pay (£) Median	9.92	11.57	11.16
MALE: Gross Hourly Pay (£) Median	11.10	13.35	12.67
FEMALE: Gross Hourly Pay (£) Median	8.51	9.94	9.75
ALL: Gross Hourly Pay (£) Mean	12.5	15.08	14.64
MALE: Gross Hourly Pay (£) Mean	13.02	16.65	16.09
FEMALE: Gross Hourly Pay (£) Mean	11.66	12.89	12.72

Weekly Pay (Gross) from Table 7.1a of ASHE 2009
Hourly Pay (Gross) from Table 7.5a of ASHE 2009

Appendix 14.16

Job Density Data (Table 5.29 - 2001)

Job Density	Swale	South East Region	United Kingdom
Density	0.66	0.87	0.82

Appendix 14.17

Indices of Multiple Deprivation Data (IMD - 2007)

Indices of Multiple Deprivation	Average Score	Rank of Average Score	Average Rank	Rank of Average Rank
Kent	16.99	104	13888.08	102

Rank out of 149

St Regis Paper Company Ltd
Kemsley Mill Sustainable Energy Plant
Stakeholder Engagement Report

Prepared on behalf of St Regis Paper Company Ltd and E.ON Energy from Waste by
Maxim PR & Marketing Ltd
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Kent TN4 9NP

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Fax: 01895 513081
Email: philip@maxim-pr.co.uk

15 December 2009

1. Contents

2. Introduction & Summary

This report details the stakeholder and community engagement programme undertaken by St Regis Paper Company Ltd and its consultant team on proposals for a new Sustainable Energy Plant, to be developed and operated by E.ON, at Kemsley Mill. It outlines the methods employed, the results generated and how we have responded to the issues raised.

Key steps in the community and stakeholder management process included:

1st Phase

A 4-page newsletter with covering letter was sent to 13,987 residential and business addresses in the Kemsley, Iwade and north Sittingbourne area in June 2009. This newsletter announced St Regis's proposals for the Sustainable Energy Plant, publicised the dates of the July public exhibitions and gave contact details (web, phone, post and email) for recipients wanting further information. The newsletter was also distributed to St Regis and E.ON staff at Kemsley Mill.

Letters and copies of the newsletter were sent to local councillors (at both Kent County Council and Swale Borough Council) as well as other interested parties, outlining the proposals and offering further information.

A free telephone information line (0800 8815429) went live from 1 June 2009 (although only publicised once newsletter was distributed). A special postal address (Kemsley Energy Project, Kemsley Mill, Kemsley, Sittingbourne ME10 2TD) was set up as was an email address (info@kemsleyenergy.co.uk).

Posters were placed in a number of locations in Kemsley Village to publicise the forthcoming exhibitions.
Adverts to promote the exhibitions were placed in the local media for two successive weeks prior to the exhibitions.

Press releases were issued to the local media in advance of the public exhibitions. The first of these announced the proposals. The second served as a reminder for the public exhibitions.

A website, www.kemsleyenergy.co.uk, was set up to give further details of the proposals. This also included dates of the public exhibitions as well as contact details.

Public exhibitions were held at Kemsley Village Hall on Thursday, 2 July and Friday, 3 July 2009. The exhibitions were staffed by representatives from St Regis, E.ON and the consultant team.

Comment forms encouraging feedback from visitors were available at the exhibitions. These could either be left on the day or returned Freepost.

2nd Phase

A second 4-page newsletter with covering letter was circulated in mid November to a smaller distribution (6,284 addresses) based on levels of interest and feedback from the first mailing. The distribution area consisted of the Swale Borough Council wards of Kemsley and Milton Regis, plus the village of Iwade. Letters and newsletters were also sent to people who had expressed an interest in the project but fell outside the area of the second mailing. The newsletter provided updated information on the project, provided contact details and publicised the dates of further public exhibitions.

Letters and copies of the newsletter were sent to local councillors (at both Kent County Council and Swale Borough Council) as well as other interested parties.

Posters were placed in a number of locations in Kemsley Village to publicise the forthcoming exhibitions.

Adverts to promote the exhibitions were placed in the local media for two successive weeks prior to the exhibitions.

A press release was issued to the local media to publicise the second round of public exhibitions.

A second round of public exhibitions was held at Kemsley Village Hall on 26th and 27th of November 2009. The exhibitions were staffed by representatives from St Regis, E.ON and the consultant team.

Comment forms encouraging feedback from visitors were available at the exhibitions. These could either be left on the day or returned Freepost.

In between the two main phases of consultation, the website was kept updated and there was ongoing contact with local residents by phone and email. There were also a number of briefings for interested local parties.

3. Engagement tools

A variety of means was used to contact local residents and organisations, to inform them about the proposals, to enable them to find out further information, and to encourage their feedback.

I. Newsletters/letters

At the launch of the programme a 4-page newsletter (see appendix i) with covering letter (see appendix ii) was sent to 13,987 residential and business addresses. The newsletter served as an introduction to the proposals, publicised forthcoming exhibitions and highlighted ways in which recipients could find out further information and provide feedback.

The mailing area, which had been agreed in consultation with Kent County Council, covered an area north of the A2 from Bobbing in the east to Tonge in the west, and north to the Sheppey crossing.

The newsletter and covering letter were sent First Class Royal Mail on Thursday 11 June; received Saturday 13 June and Monday 15 June 2009.

The newsletter was also distributed to St Regis and E.ON staff at Kemsley Mill and made available for download on the project website.

Copies with covering letters were sent to key stakeholders such as local councillors.

A second newsletter (appendix iii) was issued in November (received Monday 16 November), again with a covering letter (appendix iv). The distribution area was reduced from the first mailing. This reflected levels of response to the first mailing as well as comments from one local councillor that he and his ward residents could not understand why they had been written to.

The new mailing covered 6,284 residential and business addresses and consisted of the Swale Borough Council wards of Kemsley and Milton Regis, plus the village of Iwade. It was determined following discussion with Kent County Council. Letters and newsletters were also sent to some 20 people who had expressed an interest in the project but fell outside the area of the second mailing.

Newsletters were again distributed to E.ON and St Regis staff as well as interested stakeholders such as local politicians.

II. Meetings and presentations

Meetings and presentations have been offered to a number of key stakeholders. Those who have met with the project team or taken up invitations to visit Kemsley Mill include:

- Locate in Kent (8 June 2009)
- Swale Borough Council officers (27 July 2009)
- Swale Borough Council cabinet members (14 September 2009)
- Gordon Henderson, Conservative Parliamentary Candidate for Sittingbourne & Sheppey (20 October 2009)
- Derek Wyatt, MP for Sittingbourne & Sheppey (pending)
- Swale Borough Council officers (different group to first meeting; pending)

III. Information line

A freephone community helpline (0800 881 5429) went live on 1 June 2009 to provide local residents with a direct and easy way to contact the project team. The phone line is answered 24/7 by a specialist contractor and queries/comments are emailed to the project team who then return the calls the same day (or the next day in the case of out of hours calls).

The number has been widely publicised on the written material relating to the project. From 1 June 2009 to 8 December 2009 the helpline received 29 calls of which 21 related to the Sustainable Energy Plant. These included potential contractors and two press calls as well as people wanting to ask questions about or comment on the proposals. The balance of calls included a wrong number, someone wanting to know if her son could visit the mill as well as three calls from one person asking about job vacancies at the mill.

A second 24/7 number (01795 564777) was subsequently publicised following feedback from visitors at the first of the exhibitions asking how they could contact the mill should they have any concerns about current operations. The number was given to interested parties and also appeared in the second issue of the newsletter.

IV. Post and email

Four letters were received by post: two from potential contractors and two from Iwade residents. The tone of one of the latter letters was broadly hostile; the other, broadly favourable.

The email address received correspondence from 16 individuals and organisations; of these:

- Three were from businesses interested in the opportunities presented by the proposals
- Two were clearly opposed to the project
- Two were from local residents wanting to wish the project well
- One was from a job seeker
- One was from a consultant seeking information
- One was from a local politician wanting a site visit
- Six were from people who seemed broadly happy with the proposals but wanted further information (more detail on emissions, fuelstock, odour, relationship with applications going forward at Ridham Dock, stack height, traffic)

V. Posters

Posters (appendix v) were put up in Kemsley in advance of both public exhibitions; on 18 June 2009 for the first public exhibition and on 16 November 2009 for the second exhibition. Locations on each occasion were:

- Village Stores, Ridham Avenue
- The Kemsley Arms, Ridham Avenue
- Kemsley Village Hall, Ridham Avenue
- Grovehurst Surgery, Grovehurst Rd
- Pharmacy, Grovehurst Rd
- Grovehurst Newsagents, Grovehurst Rd

VI. Press releases

Running alongside direct contact with local stakeholders via newsletters and letters etc, there has been a programme of indirect engagement via the media.

There has been regular contact with the local media to publicise the proposals, highlight forthcoming exhibitions and report on those exhibitions.

Press releases have been issued to:

- Announce the proposals (issued 15 June 2009 to Your Swale, Kent Messenger Sittingbourne, East Kent Gazette, KM Kent Business, Kent Director, South East Business and Kent on Sunday)
- Promote the first public exhibitions (issued 23 June 2009 and 24 June 2009 to Your Swale, Kent Messenger Sittingbourne, East Kent Gazette)
- Follow up on the first public exhibitions (issued 7 July 2009 to Your Swale, Kent Messenger Sittingbourne, East Kent Gazette)
- Promote the second round of exhibitions (issued 16 November 2009 to Your Swale, Kent Messenger Sittingbourne, East Kent Gazette, yourcounty.co.uk and onlykent.co.uk)

- Follow up on the second round of public exhibitions (issued 30 November 2009 to Your Swale, KM Sittingbourne, East Kent Gazette, yourcounty.co.uk and onlykent.co.uk)

Both the East Kent Gazette and the Kent Messenger Sittingbourne were in contact at various points with the project team. Both publications sent photographers to the second exhibition.

For samples of press coverage and a press release see appendix vi.

A further press release will follow the formal submission of the planning application.

VII. Adverts

In addition to the press releases, adverts (appendix vii) have been placed in the local media to publicise forthcoming exhibitions. These appeared in the East Kent Gazette and the Kent Messenger Sittingbourne Extra in the two weeks running up to each of the two rounds of exhibitions.

VIII. Website

A website, www.kemsleyenergy.co.uk, was launched at the start of the engagement programme. The site includes details of the proposals, downloadable information (such as exhibition boards and newsletters), contact details and details of forthcoming public exhibitions. It has been periodically updated as the project has progressed.

Peak traffic to the website was in the week that the initial mailing was received when 39 first time visitors were recorded. In the period to the end of September there was a total of 160 first time visitors. At this point the stat counter had to be reset for technical reasons. It has since recorded a further 127 first time visitors. This gives a total maximum number of first time visitors of 287. The actual total is almost certain to be less as there will be people who visited the site both before and after the stat counter was reset.

IX. Public exhibitions

Four public exhibition days were held at Kemsley Village Hall on:
- Thursday, 2 July 2009 from 3pm to 8.30pm
- Friday, 3 July from 10am to 5pm
- Thursday, 26 September 2009 from 3pm to 8.30pm
- Friday, 27 September 2009, from 10am to 5pm

Representatives from St Regis, E.ON and the consultant team were available on all four days to explain the project to visitors and to answer any questions. In a number of cases, after the first set of exhibitions, follow up letters were sent to visitors dealing with any outstanding queries (see appendix viii).

During the first set of exhibitions, 100 visitors were logged (52 on the Thursday, 48 on the Friday). They included four Swale Borough Councillors. The vast majority were residents local to the mill (Kemsley, Milton Regis and Iwade; in that order). There were exhibition boards outlining the project, the organisations involved, the benefits of the proposal and the rationale behind it, the use of waste as a fuel, how the proposed Sustainable Energy Plant would work and how visitors could make their opinions known and/or find out further information (see appendix ix).

Members of the project team made a note of issues raised during discussions with visitors. A number related to noise and odour issues as well as the appearance of the current plume from the site. These appear to have been prompted by the mill's existing operations and – with regards odour – other local activities.

The issues raised/comments made can be summarised as follows:

Traffic

- Concerns from residents in the new estate called Kemsley Fields as they need to access the new road and have voiced concerns over traffic movements, especially as the new Morrisons warehouse will also use this road. Currently, without the Morrisons warehouse, the residents experience long delays at the roundabout beside the A249.

- The radius of the roundabout prior to the one at the mill entrance is too small as there have been a number of incidents with HGVs on this roundabout including one rollover.
- The increase in volume of traffic on the A249 would be unacceptable.
- Would deliveries come along Grovehurst Road?
- Additional emissions/noise from vehicles on the access roads going to the mill. Some residents described existing levels as intolerable.
- Impact on A249 roundabout (seemed a particular concern to Iwade residents).
- Noise from empty waste delivery vehicles leaving the mill.
- Types of vehicles coming to site, potential for waste being blown off vehicles and would vehicles be sheeted or fully enclosed.
- St Regis will need to fund road improvements.

Emissions

- Numerous concerns over the emissions and how effective the abatement system would be and also how failsafe it would be.
- Current emissions from the site – misperceptions relating to the appearance of the current plumes.
- Could the power plants at Kemsley Mill form part of a carbon capture and storage cluster.

Fuel stock

- Concerns over burning municipal waste as there was a perception that this was hazardous.
- More information on how it was going to be pre-treated or sorted.
- What other types of waste would be used?
- Would it include chemical or hospital waste?
- How would the content of the waste be monitored/controlled – could there be an independent person checking it?
- Where would it come from (geographically)?

Odour

- Mentioned by a number of residents – possibly sparked by concerns re existing odour issues, although of less concern when the system of odour abatement was described.

Noise

- Mentioned by a number of residents – possibly sparked by concerns re existing noise issues, although less of a concern once the proposed location of the Sustainable Energy Plant was explained.

Miscellaneous

- The planning consent for the existing waste to energy plant "promised" that there would be no waste imported to the site and that there would be no further waste to energy expansion.
- What would happen if the mill shut? Would E.ON still operate the facility?
- Was the proposal part of a broader plan by E.ON to burn all of London's waste as the waste could be barged down the Thames to Ridham Dock and supply further expansion of the waste to energy facilities.
- Opportunities for local businesses – how could local companies be helped to secure some of the construction work?
- Would there be a project liaison committee?
- Would it affect the future of the Sittingbourne and Kemsley Light Railway?
- Job opportunities are to be welcomed.
- Will there be a briefing for Swale councillors?
- Will there be much waste water?
- Is the Kemsley application linked to the Phoenix Ballast application for a Bottom Ash incineration plant [sic] at Ridham Dock?
- Has E.ON ever been prosecuted for breaching conditions at similar plants it runs?
- Potential for tree planting/carbon offsetting?

The second set of exhibitions attracted 38 visitors (22 visitors were logged on 26 November and 16 on 27 November 2009). Of the 38 visitors, it is believed 20 had either attended the previous exhibition or had already been in touch with the project team.

The exhibition featured updated boards (see appendix x). As well as a summary of the information provided at the first exhibition, the boards provided further information on how the proposed Sustainable Energy Plant would work and a summary of the studies and surveys that had taken place. This included information on visual impact, traffic, air quality, ecology and noise.

There was much less comment about existing operations at the mill. Opinion appeared broadly favourable towards the project. The feedback recorded covered the following:

Traffic

- One visitor felt traffic impact would be negligible.
- Concern over the size of the Grovehurst Interchange roundabouts.
- Concern about HGV impact, although visitor was satisfied there would be no impact on individual situation after hearing about the proposed vehicle route.
- One visitor (from Reams Way), representing five neighbours who were unable to attend, voiced all of their concerns regarding traffic.
- One couple liked the concept but was concerned about traffic – departures less of an issue than arrivals.
- One issue raised was queuing off of the A249.
- Could traffic be brought in by Ridham Dock road?
- One couple would prefer deliveries to be by rail and barges but generally thought it a good idea.
- Another visitor had no concerns regarding traffic and also thinks rail is a good idea.

Emissions

- Three visitors raised the issue of emissions – one commented that they were satisfied with the response given.
- One visitor was interested in how emissions are dealt with, although generally positive with no objections.

Fuel Stock

- One visitor understood that raw material is going to use an alternative route into the site and existing waste material generated on site will be used, thus eliminating the use of landfill sites.
- One concern at waste being transported in from outside of the region, but supportive of the burning of waste originating in Kent.
- Comparison made with Allington – would Kemsley Mill take waste from this plant?

Odour

- One visitor was interested in odour but satisfied with the response given.

Noise

- One couple raised the issue of noise.

Miscellaneous

- One visitor recognised the benefits, such as less landfill and preservation of jobs, and could see no downside.
- The same visitor is pleased investments are being made into the area, and is looking forward to a plant tour.
- One visitor questioned terminology – why refer to a Sustainable Energy Plant and not an incinerator.
- One couple said they remained ‘unconvinced’.
- One visitor commented that the building, which will house the plant, has been built as a mirror image of existing buildings.
- One visitor hopes the development will be approved by all of the statutory bodies, including local council and residents.
- Another visitor hopes the plant gets approval.
- Long term plans for Kemsley Mill?
- Interested in the process.
- Two visitors commented that they were curious, interested, think the project is a good idea and want to find out more.
- The same two visitors had visited a similar plant in Europe and, as a result, know how clean they are.

- Four people in total used the word, or were described as being ‘supportive’.
- A swale councillor raised the issue of the potential for district heating and requested a follow up meeting.
- One visitor was surprised at the size of the plant but happy with the description of it.
- One visitor supports the use of energy from Sustainable Energy Plants.
- Jobs secured for the future of the paper mill.
- Sustainability – good use of waste.
- Safe – environmental controls.

Following representation from the Chairman of Iwade Parish Council, it is planned to hold a further public exhibition in Iwade Village Hall in January 2010.

X. Feedback forms

At both sets of exhibitions Freepost response forms (Business Reply Licence Number RSBX-XBRC-HEJE) were freely available.

A total of 19 were returned or left on the day. 10 arrived in a single batch, were all opposed to the project and were all anonymous (a visitor to the first exhibition had asked for and taken 10 forms). Of the nine that had been completed with names and addresses, three were supportive, three were negative, two could be judged neutral and one was a request from an interested party for a copy of some of the exhibition material. For sample copies of the forms (one favourable, one negative, one neutral, with names blocked out) see appendix xi.

4. Conclusions and next steps

Conclusions

The community and stakeholder engagement programme has given residents, their representatives and local business a range of opportunities over a prolonged period to comment on the proposals being put forward for a Sustainable Energy Plant at Kemsley Mill.

In the initial phases of the engagement programme, there appeared to be four main issues of concern: traffic, emissions, noise and odour.

By the time of the second exhibition, the latter three issues appeared to be of far less concern. However, although the proposed development is predicted to increase traffic flows on the A249 by less than 1% on a daily basis and by less than 2% on the Swale Way, vehicle movements remained a concern. This related in particular to the stretch of the Swale Way running from the roundabout on the A249 up to Kemsley Mill itself.

Next steps

This engagement programme will continue after the submission of the planning application. A public exhibition is scheduled for January to brief Iwade residents on the proposals and there will be further newsletters/letters to stakeholders if required.

Meantime dialogue will be continued with local stakeholders and interested parties during the planning process. This will include the local media.

The website will continue to be updated, and the postal address, freephone information line and dedicated email address will remain operational so that local residents can easily make comments about the proposals or seek further information.

Appendices

Appendix i – First newsletter

Kemsley Mill **Update**

St Regis plans for **environmentally sustainable energy supply at Kemsley Mill**

St Regis Paper Company Limited (St Regis), a wholly owned subsidiary of DS Smith Plc and owner of Kemsley Mill, is looking at the possibility of building a new Sustainable Energy Plant, fuelled by pre-treated waste, to supply energy to the existing paper mill and to expand the amount of sustainable energy currently being produced on site.

Kemsley matters

St Regis & Kemsley at a glance

Why the new energy plant is needed

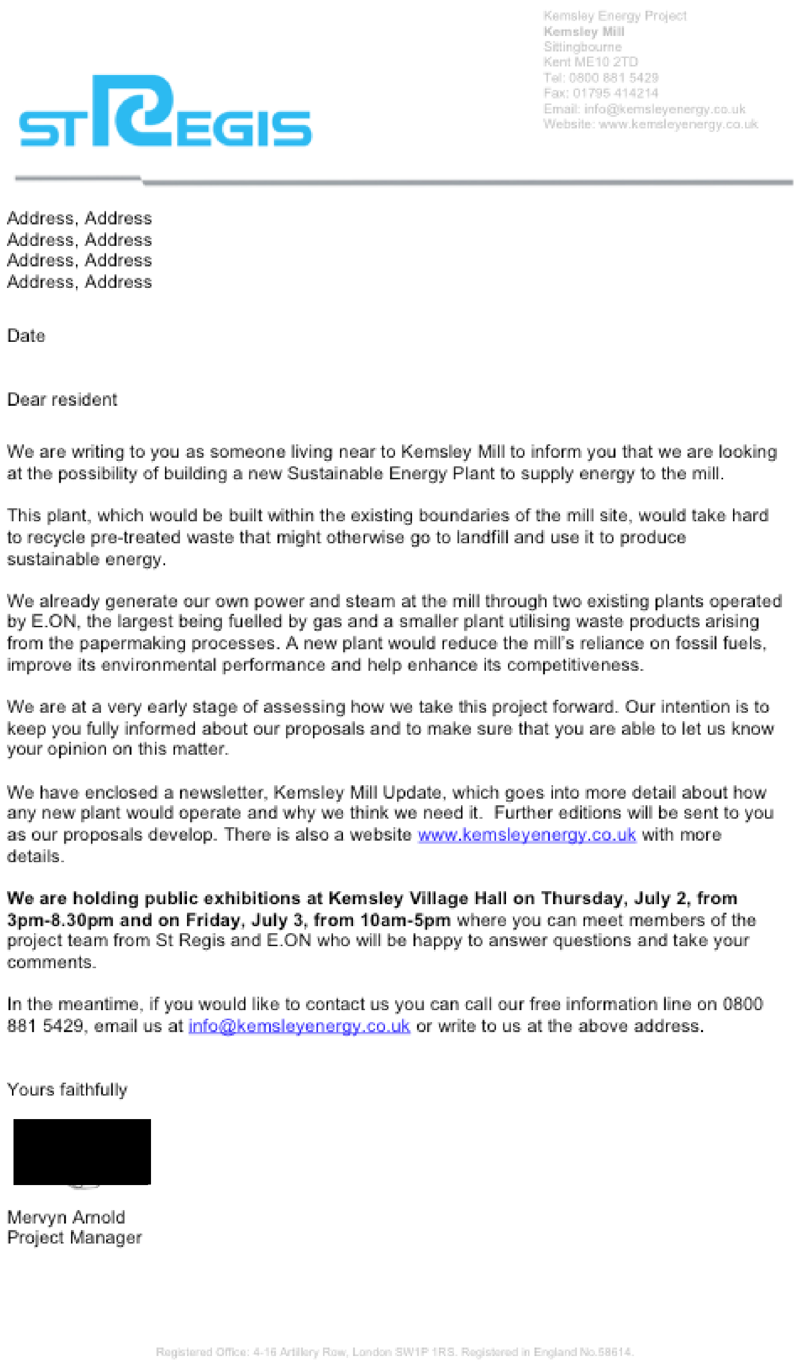
More power **to the mill**

How the waste fuel would get to Kemsley

What happens next?

Keeping you **informed**

Appendix ii – First covering letter



Kemsley Energy Project
Kemsley Mill
Sittingbourne
Kent ME10 2TD
Tel: 0800 881 5429
Fax: 01795 414214
Email: info@kemsleyenergy.co.uk
Website: www.kemsleyenergy.co.uk

Address, Address
Address, Address
Address, Address
Address, Address

Date

Dear resident

We are writing to you as someone living near to Kemsley Mill to inform you that we are looking at the possibility of building a new Sustainable Energy Plant to supply energy to the mill.

This plant, which would be built within the existing boundaries of the mill site, would take hard to recycle pre-treated waste that might otherwise go to landfill and use it to produce sustainable energy.

We already generate our own power and steam at the mill through two existing plants operated by E.ON, the largest being fuelled by gas and a smaller plant utilising waste products arising from the papermaking processes. A new plant would reduce the mill's reliance on fossil fuels, improve its environmental performance and help enhance its competitiveness.

We are at a very early stage of assessing how we take this project forward. Our intention is to keep you fully informed about our proposals and to make sure that you are able to let us know your opinion on this matter.

We have enclosed a newsletter, Kemsley Mill Update, which goes into more detail about how any new plant would operate and why we think we need it. Further editions will be sent to you as our proposals develop. There is also a website www.kemsleyenergy.co.uk with more details.

We are holding public exhibitions at Kemsley Village Hall on Thursday, July 2, from 3pm-8.30pm and on Friday, July 3, from 10am-5pm where you can meet members of the project team from St Regis and E.ON who will be happy to answer questions and take your comments.

In the meantime, if you would like to contact us you can call our free information line on 0800 881 5429, email us at info@kemsleyenergy.co.uk or write to us at the above address.

Yours faithfully

[redacted]

Mervyn Arnold
Project Manager

Registered Office: 4-16 Artillery Row, London SW1P 1RS. Registered in England No.58614.

Appendix iii – Second newsletter

Kemsley Mill **Update**

Plans move forward for new **Sustainable Energy Plant at Kemsley Mill**

Fact finders

How we got here

Please call

The issues raised

About us

Looking ahead

Country needs power

Appendix iv – Second covering letter

ST REGIS

Kemsley Energy Project
Kemsley Mill
Sittingbourne
Kent ME10 2TD
Tel: 0800 881 5429
Fax: 01795 414214
Email: info@kemsleyenergy.co.uk
Website: www.kemsleyenergy.co.uk

Address, Address
Address, Address
Address, Address
Address, Address

Date

Dear Resident

I am delighted to enclose the second edition of Kemsley Mill Update which gives you the latest information on our plans to build a Sustainable Energy Plant at Kemsley Mill.

We are committed to keeping you informed about the progress of our plans so if you have any questions once you have read the newsletter please do not hesitate to contact us. You can call our free information line on 0800 881 5429, email us at info@kemsleyenergy.co.uk or write to us at the above address.

Alternatively, we will be delighted to discuss our plans with you at our second set of public exhibitions. These take place at **Kemsley Village Hall on Thursday, November 26, from 3pm-8.30pm and on Friday, November 27, from 10am-5pm** where you can meet members of the project team from St Regis and E.ON who will be happy to answer questions and take your comments.

Yours faithfully

[redacted]

Mervyn Arnold
Project Manager

Appendix v – Exhibition posters

Public exhibitions

Thursday, 2 July, 3pm – 8.30pm
Friday, 3 July, 10am – 5pm
at
Kemsley Village Hall
Ridham Avenue, Kemsley

St Regis Paper Co Ltd, the owner of Kemsley Mill at Sittingbourne, in conjunction with E.ON, is considering the possibility of building a new Sustainable Energy Plant to supply energy to the mill and expand the amount of sustainable energy currently being produced on the site.

St Regis and E.ON are holding two public exhibitions and would like to invite local residents to attend. Information on our proposals will be on display and you will be able to talk directly to members of the project team.

For more information call Freephone
0800 881 5429
email: info@kemsleyenergy.co.uk • www.kemsleyenergy.co.uk

ST REGIS

Public exhibitions

Thursday, 26 November, 3pm – 8.30pm
Friday, 27 November, 10am – 5pm
at
Kemsley Village Hall
Ridham Avenue, Kemsley

St Regis Paper Co Ltd, the owner of Kemsley Mill, is preparing a planning application for a Sustainable Energy Plant at the mill.

St Regis would like to invite local residents to two public exhibitions where information on our proposals will be on display and you will be able to talk to members of the project team directly.

For more information call Freephone
0800 881 5429
email: info@kemsleyenergy.co.uk • www.kemsleyenergy.co.uk

ST REGIS

Appendix vi – Sample press release and press coverage

Chance to see plan for waste burner

by Nick Evans
nevans@thekmgroup.co.uk

THOUSANDS of households have received letters outlining a proposed scheme to build a waste-burning electricity plant at Kemsley Paper Mill.

Owner St Regis Paper wants to establish what effect such a plant would have on the town and surrounding villages before it prepares any environmental impact assessment as part of a future planning application.

Exhibition

Some 14,000 letters have gone out in an area extending from Bobbing to Tonge and from the A2 to the Sheppey Crossing, inviting residents to a two-day exhibition in Kemsley next month.

At the same time, the company is asking Kent County Council for the go-ahead to carry out preliminary environmental studies – known as a scoping opinion – ahead of seeking planning permission to build the plant.

A St Regis spokesman pointed out the plant would generate electricity for the mill by burning only pre-sorted and treated waste which would otherwise have gone to landfill sites.

He said: "Any recyclable materials will have already been removed. The rest would be brought to Kemsley in sealed containers and unloaded into a large hall, where it will be burnt.

"The process will generate not just electricity for the mill, but also steam, which is used extensively in the paper making process.

"We expect the early study to take several months to complete and we want to hear the views of people from all over the area."

The site is already home to a gas-fired combined heat and power plant, as well as a smaller energy plant producing steam from the mill's waste products.

If the plant does get the go-ahead, it will be located on a brownfield plot within the mill boundaries, on a former coal yard. That spot makes it accessible for road, rail and barge transport to bring waste materials to the site.

■ **The exhibition will be held at Kemsley Village Hall on Thursday, July 2, from 3pm to 8.30pm and Friday, July 3, from 10am to 5pm, when visitors will be able to meet members of the project team to ask questions. There is also information at www.kemsleyenergy.co.uk**

LATEST COMMITMENT TO THE FUTURE

The mill is one of the largest European manufacturers of recycled cardboard. The site handles about a million tons of UK-sourced waste paper every year.

St Regis environmental director Mike Collins said: "The development of the proposed new facility demonstrates St Regis's further commitment to maintaining the longer-term competitiveness of Kemsley mill, after the £100 million investment made during 2008 to produce high-quality lightweight corrugated packaging on site.

"It will also help reduce our dependence on fossil fuels while making use of resources which would otherwise go to landfill."

> ‘ The process will generate not just electricity for the mill, but also steam, which is used extensively in the paper making process ’

Update on plans for energy plant project

NEIGHBOURS of Kemsley Mill had a chance to catch up with the progress of plans for a new waste-fuelled sustainable energy plant on the site.

Mill owner St Regis Paper Company Limited is preparing to submit a planning application for a sustainable energy plant, which would be developed and operated by E.ON, to take sorted, hard to recycle waste that might otherwise go to landfill and use it to create heat and power for the mill.

Following an earlier exhibition in July, residents and businesses visited the second two-day public exhibition at Kemsley village hall last Thursday and Friday, where they were able to discuss progress with experts from St Regis and E.ON.

Mike Collins, St Regis environmental director, said: "We were delighted to be able to update local people on our plans. We hope to submit a planning application before Christmas so it was important for us to be able to answer any further questions people had about the proposals."

Michael Litwinczuk, from Kemsley, studies the proposals PD1649471

Mill plan to burn waste for energy

MEMBERS of the public will have the chance to see and comment on a proposal for a new energy plant at Kemsley Mill at a two-day public exhibition this week.

Mill owner St Regis Paper Company is looking at the possibility of building a new waste-fuelled sustainable energy plant to be developed and operated by Eon.

The plan would be to take pre-treated hard-to-recycle waste bound for landfill and burn it to create heat and power for the mill.

Members of the project team will be at the public exhibition to be held at Kemsley Village Hall from 3pm to 8.30pm tomorrow (Thursday) and from 10am to 5pm on Friday. They will be on hand to answer questions and take comments from visitors.

St Regis environmental director Mike Collins said: "We are at a very early stage in the planning process but we are committed to communicating with local people and interested organisations from the outset.

"We have sent residents and businesses a newsletter outlining our ideas, and we would welcome the chance to talk to them face-to-face at this public exhibition to discuss any concerns or questions they might have. As the proposals progress, there will be further opportunities for people to have their say."

For more details about the proposed energy plant see www.kemsleyenergy.co.uk.

Mill's new plant plan on display

By Nicola Forman
[illegible]

RESIDENTS were able to voice their concerns about plans to build a waste-burning electricity plant at Kemsley Paper Mill.

The plans were on view for people to see just what, if any effect it will have on them.

Owner St Regis has sent out letters to thousands of households outlining the proposed scheme. They had just 40 responses, two of which were negative.

A St Regis spokesman said: "People's main concerns were about noise, emissions and possible traffic problems, but we have been able to allay these fears.

"Firstly the site of the proposal is at the back of the mill, away from the residential area. The plant would generate electricity for the mill by burning only pre-sorted and treated waste which would otherwise have gone to landfill sites.

"Any recyclable materials will have already been removed. The rest would be brought to Kemsley in sealed containers and unloaded into a large hall, where it will be burnt.

"The process will generate not just electricity for the mill, but also steam, which is used extensively in the paper making process.

"We expect the early study to take several months to complete and we want to hear the views of people from all over the area."

The site is already home to a gas-fired combined heat and power plant, as well as a smaller energy plant producing steam from the mill's waste products.

He also pointed out there were various options for transporting the material which included through Ridham Dock, by boat along the Swale or by rail.

Representatives from Eon and St Regis were also at the exhibition to answer questions from residents.

Following the exhibition there will be further consultations as well as environmental impact assessments. Residents will also be kept informed via newsletters.

■ **For more information visit the website www.kemsleyenergy.co.uk**

'WE'RE DELIGHTED'

St Regis environmental director Mike Collins said: "We are delighted so many people took the time to visit the public exhibition, to find out more and to comment on the proposals.

"The project is at a very early stage and the feedback we received will help shape our thinking as our plans develop. It will also influence the scope of the studies we will be undertaking in advance of any planning application."

Dr Nilton Chan of Eon and Colin Heppell talk about the proposed waste-burning plant at the exhibition at Kemsley Village Hall Picture: Andy Payton PD2593929

Extra power avoids landfill

St Regis Paper Company Ltd is planning to increase power generation at its Kemsley paper mill in Kent.

The company has asked Kent county council for its opinion on the project. The Kemsley site already has a gas fired combined heat and power plant as well as a smaller energy plant that produces steam from waste products arising from the paper mill's operations.

An efficient and sustainable energy supply is crucial for Kemsley Mill, which is one of the largest European manufacturers of recycled corrugated case material (CCM) used for producing corrugated packaging. The site handles some one million tonnes of UK sourced waste paper every year.

Now, in response to big increases in fossil fuel costs over recent years, St Regis wants to reduce the mill's reliance on fossil fuels by developing a new sustainable energy plant. The fuel feedstock for this would be materials which are hard to recycle.

Plant scheme goes on show

VILLAGERS were due to view plans to build a waste-burning electricity plant at Kemsley Paper Mill today (July 3).

Thousands of households have received letters outlining a proposed scheme to build a waste-burning electricity plant at the mill.

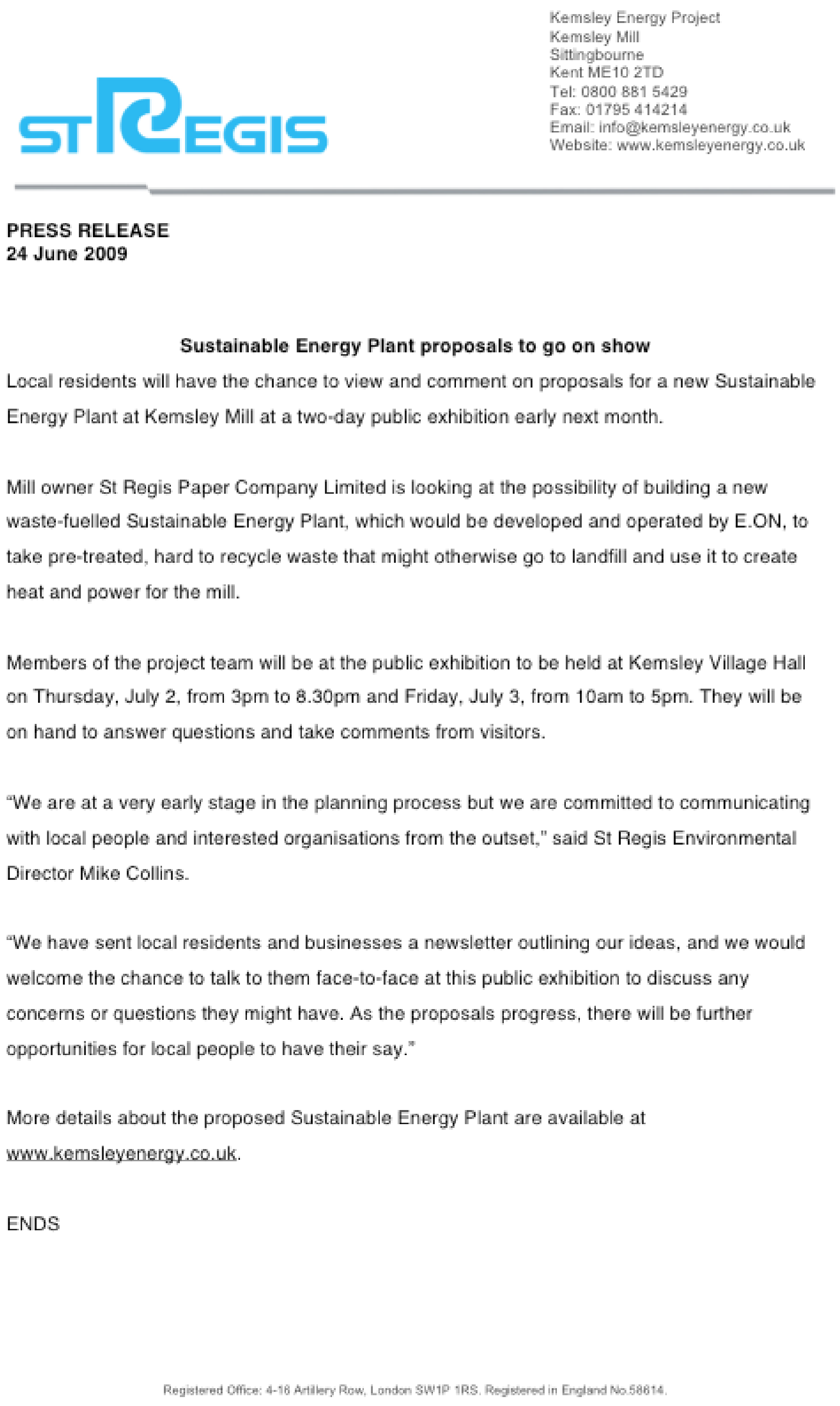
Owner St Regis Paper wants to establish what effect such a plant would have, before a future planning application.

Some 14,000 letters have gone out in an area extending from Bobbing to Tonge, and from the A2 to the Sheppey Crossing, inviting people to the exhibition.

At the same time, the company is asking Kent County Council for the go-ahead to carry out preliminary environmental studies – known as a scoping opinion – ahead of seeking planning permission to build the plant.

The site is already home to a gas-fired combined heat and power plant, as well as a smaller energy plant producing steam from the mill's waste products.

■ **See next week's Messenger for responses to the plans.**



Kemsley Energy Project
Kemsley Mill
Sittingbourne
Kent ME10 2TD
Tel: 0800 881 5429
Fax: 01795 414214
Email: info@kemsleyenergy.co.uk
Website: www.kemsleyenergy.co.uk

PRESS RELEASE
24 June 2009

Sustainable Energy Plant proposals to go on show

Local residents will have the chance to view and comment on proposals for a new Sustainable Energy Plant at Kemsley Mill at a two-day public exhibition early next month.

Mill owner St Regis Paper Company Limited is looking at the possibility of building a new waste-fuelled Sustainable Energy Plant, which would be developed and operated by E.ON, to take pre-treated, hard to recycle waste that might otherwise go to landfill and use it to create heat and power for the mill.

Members of the project team will be at the public exhibition to be held at Kemsley Village Hall on Thursday, July 2, from 3pm to 8.30pm and Friday, July 3, from 10am to 5pm. They will be on hand to answer questions and take comments from visitors.

“We are at a very early stage in the planning process but we are committed to communicating with local people and interested organisations from the outset,” said St Regis Environmental Director Mike Collins.

“We have sent local residents and businesses a newsletter outlining our ideas, and we would welcome the chance to talk to them face-to-face at this public exhibition to discuss any concerns or questions they might have. As the proposals progress, there will be further opportunities for local people to have their say.”

More details about the proposed Sustainable Energy Plant are available at www.kemsleyenergy.co.uk.

ENDS

Registered Office: 4-16 Artillery Row, London SW1P 1RS. Registered in England No.58614.

Appendix vii – Sample press adverts

Public exhibitions

Thursday, 2 July, 3pm – 8.30pm
Friday, 3 July, 10am – 5pm
at
Kemsley Village Hall
Ridham Avenue, Kemsley

St Regis Paper Co Ltd, the owner of Kemsley Mill at Sittingbourne, in conjunction with E.ON, is considering the possibility of building a new Sustainable Energy Plant to supply energy to the mill and expand the amount of sustainable energy currently being produced on the site.

St Regis and E.ON are holding two public exhibitions and would like to invite local residents to attend. Information on our proposals will be on display and you will be able to talk directly to members of the project team.

For more information call Freephone
0800 881 5429
email: info@kemsleyenergy.co.uk • www.kemsleyenergy.co.uk

ST REGIS

Public exhibitions

Thursday, 26 November, 3pm – 8.30pm
Friday, 27 November, 10am – 5pm
at
Kemsley Village Hall
Ridham Avenue, Kemsley

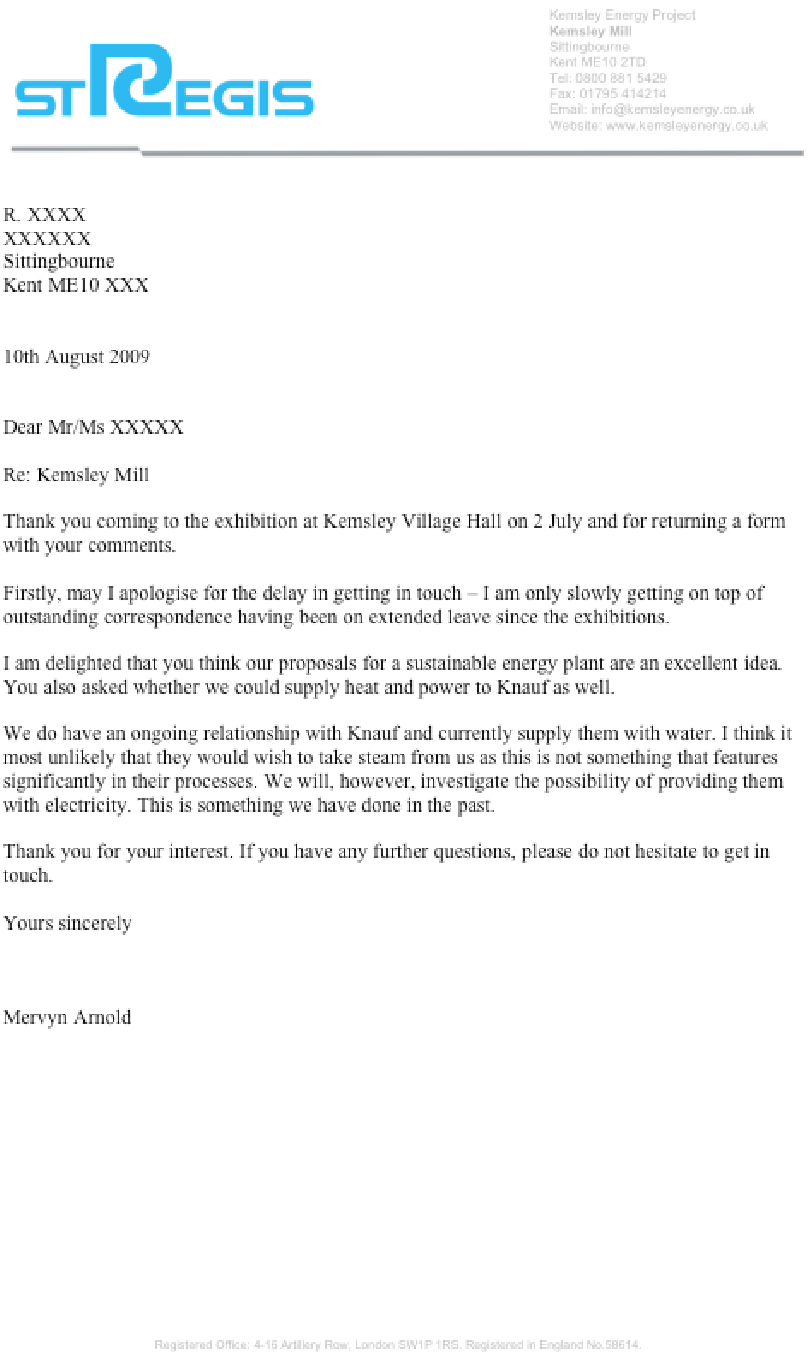
St Regis Paper Co Ltd, the owner of Kemsley Mill, is preparing a planning application for a Sustainable Energy Plant at the mill.

St Regis would like to invite local residents to two public exhibitions where information on our proposals will be on display and you will be able to talk to members of the project team directly.

For more information call Freephone
0800 881 5429
email: info@kemsleyenergy.co.uk • www.kemsleyenergy.co.uk

ST REGIS

Appendix viii – Sample post exhibition letters



ST REGIS

Kemsley Energy Project
Kemsley Mill
Sittingbourne
Kent ME10 2TD
Tel: 0800 881 5429
Fax: 01795 414214
Email: info@kemsleyenergy.co.uk
Website: www.kemsleyenergy.co.uk

R. XXXX
XXXXXX
Sittingbourne
Kent ME10 XXX

10th August 2009

Dear Mr/Ms XXXXX

Re: Kemsley Mill

Thank you coming to the exhibition at Kemsley Village Hall on 2 July and for returning a form with your comments.

Firstly, may I apologise for the delay in getting in touch – I am only slowly getting on top of outstanding correspondence having been on extended leave since the exhibitions.

I am delighted that you think our proposals for a sustainable energy plant are an excellent idea. You also asked whether we could supply heat and power to Knauf as well.

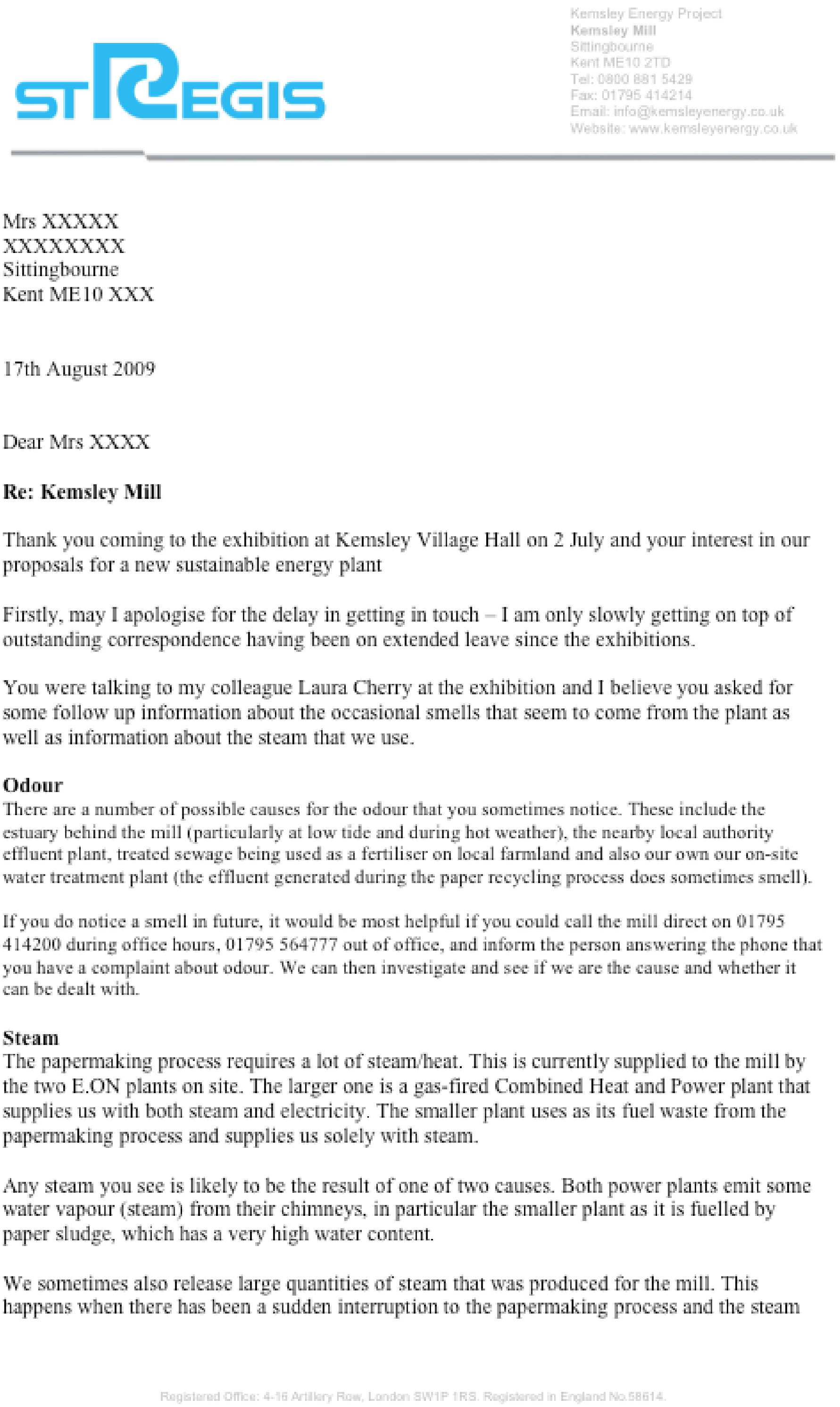
We do have an ongoing relationship with Knauf and currently supply them with water. I think it most unlikely that they would wish to take steam from us as this is not something that features significantly in their processes. We will, however, investigate the possibility of providing them with electricity. This is something we have done in the past.

Thank you for your interest. If you have any further questions, please do not hesitate to get in touch.

Yours sincerely

Mervyn Arnold

Registered Office: 4-16 Artillery Row, London SW1P 1RS. Registered in England No.58614.



ST REGIS

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Email: info@kemsleyenergy.co.uk
Website: www.kemsleyenergy.co.uk

Mrs XXXXX
XXXXXXXX
Sittingbourne
Kent ME10 XXX

17th August 2009

Dear Mrs XXXX

Re: Kemsley Mill

Thank you coming to the exhibition at Kemsley Village Hall on 2 July and your interest in our proposals for a new sustainable energy plant

Firstly, may I apologise for the delay in getting in touch – I am only slowly getting on top of outstanding correspondence having been on extended leave since the exhibitions.

You were talking to my colleague Laura Cherry at the exhibition and I believe you asked for some follow up information about the occasional smells that seem to come from the plant as well as information about the steam that we use.

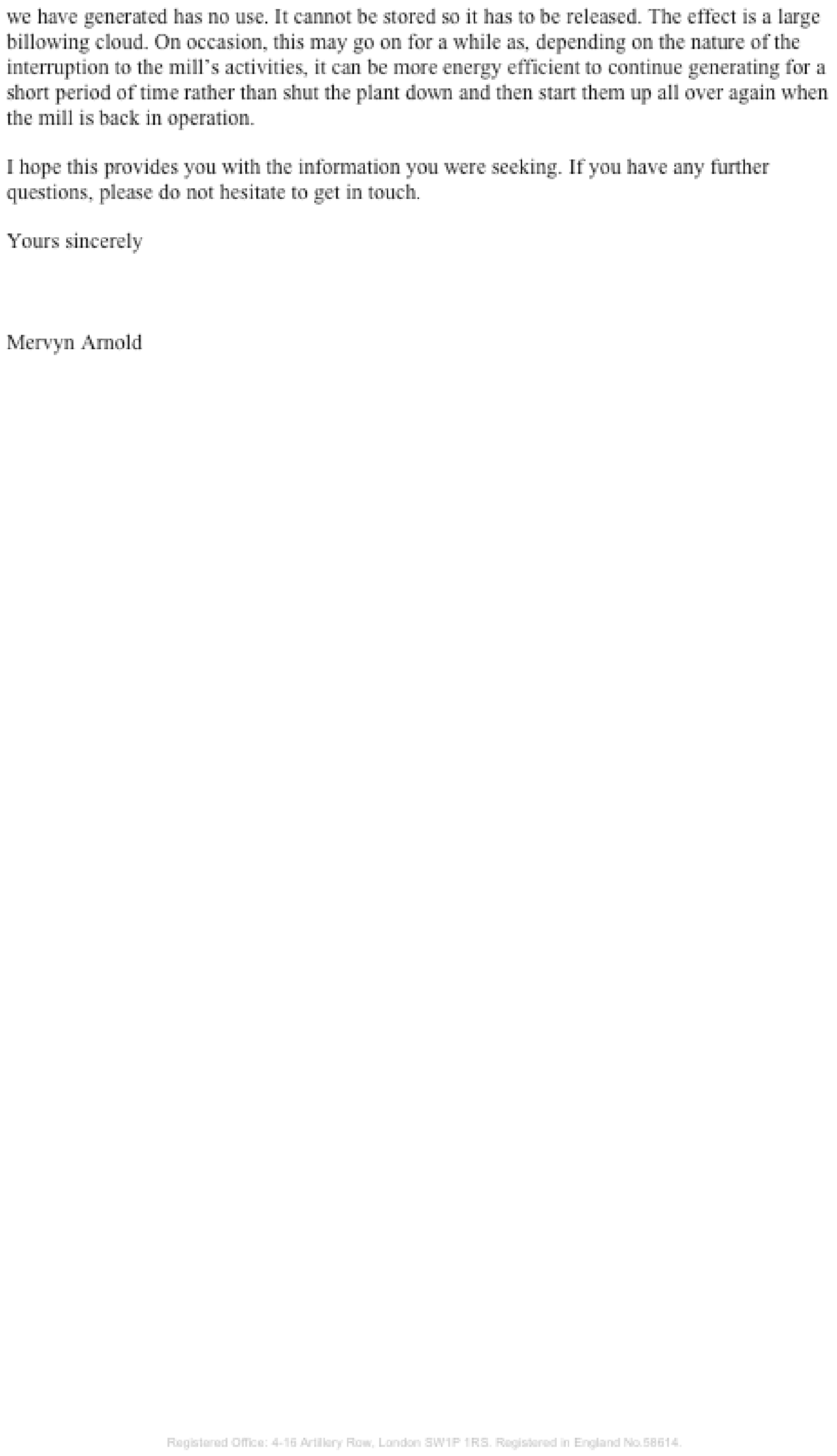
Odour
There are a number of possible causes for the odour that you sometimes notice. These include the estuary behind the mill (particularly at low tide and during hot weather), the nearby local authority effluent plant, treated sewage being used as a fertiliser on local farmland and also our own our on-site water treatment plant (the effluent generated during the paper recycling process does sometimes smell).

If you do notice a smell in future, it would be most helpful if you could call the mill direct on 01795 414200 during office hours, 01795 564777 out of office, and inform the person answering the phone that you have a complaint about odour. We can then investigate and see if we are the cause and whether it can be dealt with.

Steam
The papermaking process requires a lot of steam/heat. This is currently supplied to the mill by the two E.ON plants on site. The larger one is a gas-fired Combined Heat and Power plant that supplies us with both steam and electricity. The smaller plant uses as its fuel waste from the papermaking process and supplies us solely with steam.

Any steam you see is likely to be the result of one of two causes. Both power plants emit some water vapour (steam) from their chimneys, in particular the smaller plant as it is fuelled by paper sludge, which has a very high water content.

We sometimes also release large quantities of steam that was produced for the mill. This happens when there has been a sudden interruption to the papermaking process and the steam



we have generated has no use. It cannot be stored so it has to be released. The effect is a large billowing cloud. On occasion, this may go on for a while as, depending on the nature of the interruption to the mill's activities, it can be more energy efficient to continue generating for a short period of time rather than shut the plant down and then start them up all over again when the mill is back in operation.

I hope this provides you with the information you were seeking. If you have any further questions, please do not hesitate to get in touch.

Yours sincerely

Mervyn Arnold

Registered Office: 4-16 Artillery Row, London SW1P 1RS. Registered in England No.58614.

Appendix ix – First set of exhibition boards

Welcome

This exhibition is to inform local residents about proposals for the development of a new Sustainable Energy Plant at Kemsley Mill and to answer any questions that you may have:

- Who are we?
- Kemsley Mill – what is it?
- What are the challenges facing the paper industry?
- Where is the proposed Sustainable Energy Plant?
- What is being proposed?
- What are the benefits?
- How does a Sustainable Energy Plant work?
- Why use waste as a fuel?
- Will it affect me?
- Environmental protection
- Committed to communicating
- What happens next?
- Your views

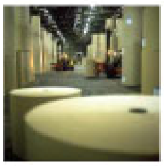
Kemsley Mill – what is it?

Kemsley Mill is a large industrial site that is the UK's largest recycler of waste paper and one of Europe's largest paper mills, producing more than 900,000 tonnes of 100% recycled paper and pulp a year all of which is made from recovered waste paper. Established in 1924, today Kemsley Mill employs more than 470 people.

It requires a lot of energy to operate a paper mill. Kemsley Mill currently generates its own power and steam through two existing on site plants operated by E.ON, the larger being fuelled by gas with the smaller plant utilising waste products arising from the papermaking processes.

The proposed new plant would further reduce the mill's reliance on fossil fuels, improve its environmental performance and help enhance its competitiveness in what is a very challenging global industry.

The existing plants would continue to operate alongside the new one, giving Kemsley Mill a flexible, efficient and diverse source of power.



Who are we?

St Regis Paper Co Ltd, the owner of Kemsley Mill, is a subsidiary of DS Smith Plc, an international group focused on packaging, paper and office products with 12,000 employees across Europe.

St Regis also has paper mills in Somerset, Lancashire and Devon. More than 470 people work at Kemsley, many living within two miles of the mill.

In developing our proposals for a new Sustainable Energy Plant, we are working in partnership with E.ON, one of the UK's leading power and gas companies that generates and distributes electricity and retails power and gas. The E.ON group is one of the world's largest investor-owned power and gas companies.

In the UK, E.ON is a market leader in combined heat and power, providing its customers with around 600MW of electricity and more than 1,000MW of heat at 13 sites across the country. E.ON operates the existing gas-fired CHP plant at Kemsley.

E.ON has a strong track record in developing, building and operating Sustainable Energy Plants. The company has a portfolio of plants similar to the one proposed at Kemsley in operation or under construction in Germany, Holland and Luxembourg.

What are the challenges facing the paper industry?

Kemsley Mill is an important player in an industry experiencing challenging commercial times and which also aims to help the UK meet its renewable energy targets.

Four UK paper and board mills closed last year and three more have recently announced closures, largely due to difficult trading conditions in part due to the high cost of fuel.

The world's supply of fossil fuels is dwindling and the UK is a net importer. Fluctuations in price have highlighted the need for the industry to find alternative and sustainable sources of energy to improve competitiveness and aid investment decision-making.

Experts predict the UK is facing an energy crunch within the next decade. Many of the country's ageing coal-fired power stations are expected to close by 2015 as a result of new EU environmental legislation. The remaining nuclear plants are coming to the end of their operational lives. As a result, we face being unable to meet industrial and domestic electricity needs, unless alternative sources of power can be found.

What is being proposed?

St Regis is proposing a new Sustainable Energy Plant, using hard-to-recycle materials – sourced and pre-treated off-site and that might otherwise go to landfill – as fuel.

The new plant would use a mix of Municipal Solid Waste, Commercial and Industrial (C&I) waste and Solid Recovered Fuel (SRF), reducing Kemsley Mill's reliance on fossil fuels.

The plant would use conventional, state-of-the-art proven technology to create energy from waste. There are many similar plants operating throughout Europe, for example in Germany, Holland, Sweden and Denmark.

It is proposed that the new plant, which would be developed and operated by E.ON, would be adjacent to E.ON's existing power plants at Kemsley. The new facility would enhance the competitiveness of papermaking operations at Kemsley.

The fuel feedstock would be delivered pre-treated and ready for use to Kemsley Mill with useful recyclables such as metal and glass already removed. No roadside collection vehicles would deliver to the plant.

Where is it?

The new Sustainable Energy Plant would be located on land to the north east of the existing paper mill complex, behind existing buildings (when viewed from the south and west) and adjacent to the current power plants.

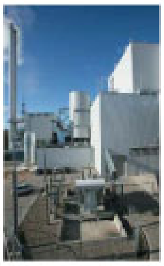
The area earmarked for the proposed plant's development is within the existing boundaries of Kemsley Mill and is a brownfield site that historically was used for coal storage. Since the new gas-fired CHP plant opened in 1995 it has been used for very little, other than as a construction lay down area or as a temporary storage facility.

Initial surveys have revealed little of environmental interest within the footprint of the development although land nearby is more ecologically sensitive. Detailed survey work is being undertaken as part of preparing our proposal.

What are the benefits?

A new Sustainable Energy Plant at Kemsley Mill would bring a number of important benefits. It would help to:

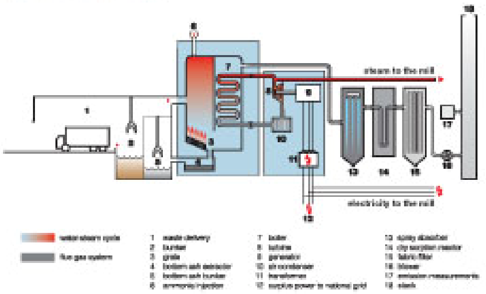
- reduce the mill's reliance on fossil fuels;
- meet the mill's energy needs by using materials that might otherwise go to landfill;
- make use of Kemsley Mill's excellent transport links (easy access to the M2 and the M20 as well as the potential to deliver by rail and/or barge);
- meet national renewable energy targets;
- maintain the longer term efficiency and competitiveness of Kemsley Mill;
- bring additional employment opportunities to the area (some 40 to 50 extra people would be needed to operate the new plant);
- cut greenhouse gases by reducing methane release from landfill and lessening the need for fossil fuels;
- meet UK Government and European best practice to recover energy from non-recyclable material for use in heat and power schemes.



How does a Sustainable Energy Plant work?

Waste would be transported to Kemsley Mill in bulk transporters – no roadside refuse collection vehicles would deliver to the plant. Vehicles arriving at the plant would unload into a purpose-built storage bunker within the plant tipping hall. There is also the potential to transport the waste – potentially up to 500,000 tonnes a year – direct to the site by rail or by barge via Ridham Dock.

The waste then takes the following path through the Sustainable Energy Plant, as shown by the diagram below.



Why use waste as a fuel?

Waste is a valuable raw material which can generate energy and heat.

The energy from waste process uses waste that would otherwise go to landfill to produce clean, sustainable power. Even much of the residue left at the end of the process is useful as it can be used by the construction industry.

Waste is an excellent fuel. The calorific value of municipal waste is comparable with that of lignite (brown coal), on average roughly 11,000 kilojoules per kilogram.

And there is plenty of it. According to Government figures (Defra), the UK generates about 100 million tonnes of waste from households, commerce and industry combined. Most of this currently ends up in landfill.

Around 60% of domestic waste consists of wood, paper and cardboard. Using waste as a replacement for fossil fuels results in lower climate-damaging emissions of CO_2 and methane gas.

In the UK, biodegradable waste in landfill accounts for 40% of all methane emissions and 3% of all the country's greenhouse gas emissions. Methane is 23 times as damaging a greenhouse gas as carbon dioxide.

Energy plants in Germany similar to the one proposed for Kemsley Mill are estimated to save the emission of four million tonnes of carbon dioxide per year.

Will it affect me?

All the waste for use as fuel would have been sorted and pre-treated before reaching Kemsley. It would be unloaded and stored in a purpose-built sealed hall before being used in the proposed Sustainable Energy Plant. The hall would be kept at a lower atmospheric pressure than the air outside to prevent any odours or litter escaping.

There would be no significant increase on current noise levels from Kemsley Mill. The proposed plant would be designed and operated to ensure that noise levels do not exceed published noise guidelines or cause a nuisance to local residents.

E.ON's Sustainable Energy Plants are equipped with a highly efficient flue gas purification system, guaranteeing that any emissions remain well below the levels permitted by the regulatory authorities.

Environmental protection

Protecting the environment is key to using waste-derived fuels. The environmental benefits of the proposed technology include:

- having incineration temperatures in excess of 850°C to destroy critical hydrocarbon compounds such as dioxin and furan;
- ensuring optimal operational conditions in the combustion chamber to reduce other emissions such as carbon monoxide (CO) and nitrogen oxide (NOx);
- treating the NOx with ammonia solution to break it down into environmentally neutral nitrogen and water;
- neutralising any acidic gases, once they leave the boiler, by passing them through a milk of lime suspension;
- treating heavy metals and any newly formed dioxins in a continuous flow absorber;
- passing emissions through fine filters to remove any remaining particles before being discharged via the chimney stack, taking pollutants out of the environment.

As well as planning consent, the proposed plant will require an Environmental Permit (EP) from the Environment Agency. This will impose very strict emission limits set by the Government and other regulatory bodies at levels below which they consider there is harm to human health or the environment.

Limits for emissions are set in half hourly and daily time segments and monthly reports on emissions would have to be submitted to the Environment Agency.

The EP process is a public one, and the application and subsequent review by the Environment Agency is open to scrutiny.

What happens next?

We are at a very early stage in the planning process.

Before submitting a planning application we will undertake a number of studies as part of an Environmental Impact Assessment, which would then be submitted as part of the application.

Among other things, these studies will examine the impact of the proposals on:

- The local transport network
- Local air quality
- Local ecosystem, ecology and nature conservation
- Noise and vibration
- Landscape and visual impact
- Archaeology and cultural heritage

And your opinion counts too. Feedback from today's public exhibition along with any other comments we receive from local residents and neighbours of Kemsley Mill will form part of any future planning submission to Kent County Council.

If a planning application is submitted, the council's planning officers will then undertake their own consultation giving local people a further opportunity to register their views. The planning application will then be determined by Kent County Council, in consultation with Swale Borough Council and other statutory consultees, including the Environment Agency and Natural England.

Committed to communicating

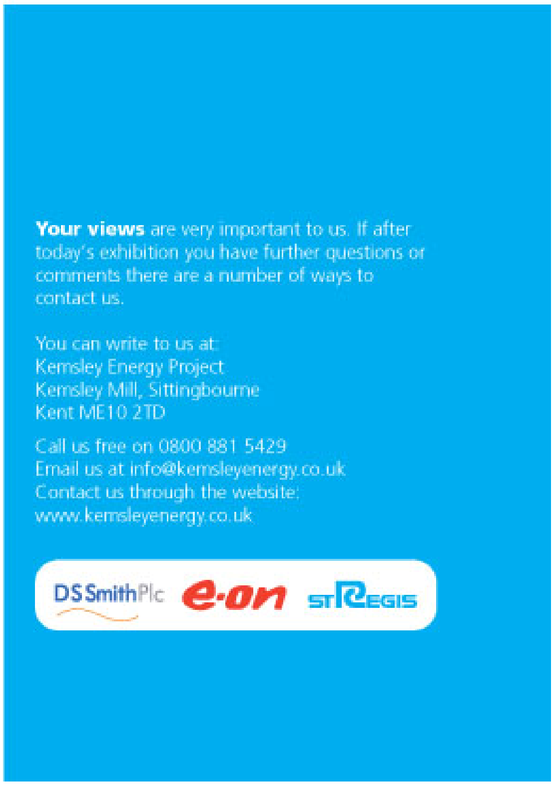
We are keen to hear your views on our proposals. If you have any comments or questions please talk to any of the project team here today or if you prefer please complete and return one of the feedback forms.

You can visit our website, www.kemsleyenergy.co.uk, which contains more details about our proposals, including details of other ways to contact us.

The news page on our website will be updated regularly as our proposals progress, keeping you up to date with the latest developments.

You should also have received a copy of our Kemsley Mill Update newsletter through the post. If not, copies are available here today or you can download them from www.kemsleyenergy.co.uk

Further newsletters will be published as the proposals progress with the next one due in the autumn.



Your views are very important to us. If after today's exhibition you have further questions or comments there are a number of ways to contact us.

You can write to us at:
Kemsley Energy Project
Kemsley Mill, Sittingbourne
Kent ME10 2TD

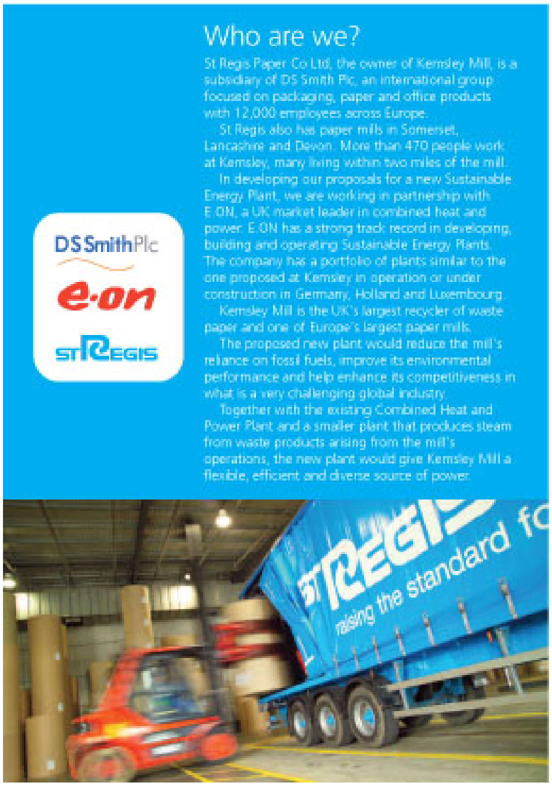
Call us free on 0800 881 5429
Email us at info@kemsleyenergy.co.uk
Contact us through the website:
www.kemsleyenergy.co.uk

Appendix x – Second set of exhibition boards

Welcome

This exhibition has been designed to provide information to local residents about a planning application we hope to submit shortly for a new Sustainable Energy Plant at Kemsley Mill and to answer any questions that you may have

- Who are we?
- What are the challenges facing the paper industry?
- What is being proposed?
- What are the benefits?
- Why use waste as fuel?
- Where would the proposed plant be located?
- How would the Sustainable Energy Plant work?
- What's been happening since the last exhibition?
- What have the technical and environmental surveys shown?
- Will it affect me?
- What happens next?
- Your views



Who are we?

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St Regis also has paper mills in Somerset, Lancashire and Devon. More than 470 people work at Kemsley, many living within two miles of the mill.

In developing our proposals for a new Sustainable Energy Plant, we are working in partnership with E.ON, a UK market leader in combined heat and power. E.ON has a strong track record in developing, building and operating Sustainable Energy Plants. The company has a portfolio of plants similar to the one proposed at Kemsley in operation or under construction in Germany, Holland and Luxembourg.

Kemsley Mill is the UK's largest recycler of waste paper and one of Europe's largest paper mills.

The proposed new plant would reduce the mill's reliance on fossil fuels, improve its environmental performance and help enhance its competitiveness in what is a very challenging global industry.

Together with the existing Combined Heat and Power Plant and a smaller plant that produces steam from waste products arising from the mill's operations, the new plant would give Kemsley Mill a flexible, efficient and diverse source of power.

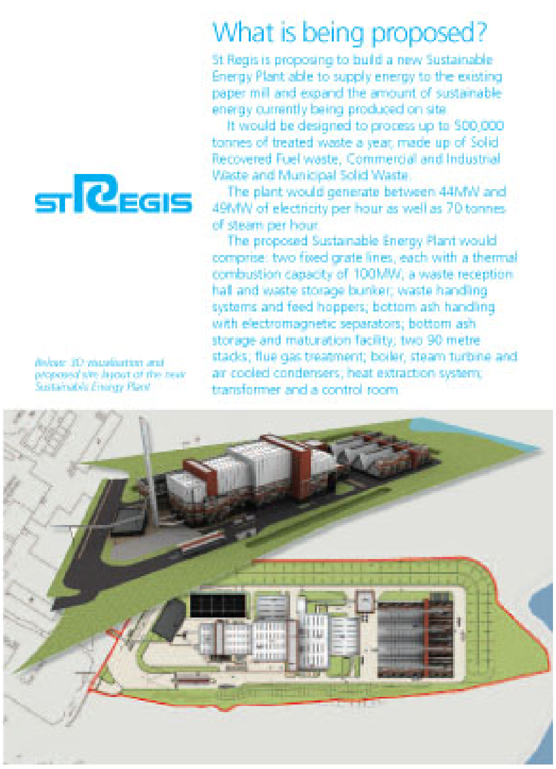
What are the challenges facing the paper industry?

Kemsley Mill is an important player in an industry experiencing challenging commercial times and which also aims to help the UK meet its energy reduction targets.

Four UK paper and board mills closed last year and three more have recently announced closures, largely due to difficult trading conditions in part due to the high cost of fuel.

The world's supply of fossil fuels is dwindling and the UK is a net importer. Recent problems with the supply of fuel, such as gas from Eastern Europe, and fluctuations in price have highlighted the need for the industry to find alternative and sustainable sources of energy to improve competitiveness and aid investment decision-making.

Experts predict the UK is facing an energy crunch within the next decade. Many of the country's ageing coal-fired power stations are expected to close when new EU environmental legislation comes into force in 2015. The remaining nuclear plants are coming to the end of their operational lives. As a result, we face being unable to meet industrial and domestic electricity needs unless alternative sources of power can be found.



What is being proposed?

St Regis is proposing to build a new Sustainable Energy Plant able to supply energy to the existing paper mill and expand the amount of sustainable energy currently being produced on site.

It would be designed to process up to 500,000 tonnes of treated waste a year, made up of Solid Recovered Fuel waste, Commercial and Industrial Waste and Municipal Solid Waste.

The plant would generate between 44MW and 49MW of electricity per hour as well as 70 tonnes of steam per hour.

The proposed Sustainable Energy Plant would comprise: two fixed grate lines, each with a thermal combustion capacity of 100MW; a waste reception hall and waste storage bunker; waste handling systems and feed hoppers; bottom ash handling with electromagnetic separators; bottom ash storage and maturation facility; two 90 metre stacks; flue gas treatment; boiler, steam turbine and air cooled condensers; heat extraction system; transformer and a control room.

Below: 3D visualisation and proposed site layout of the new Sustainable Energy Plant

What are the benefits?

A new Sustainable Energy Plant at Kemsley Mill would bring a number of important benefits. It would help to:

- reduce the mill's reliance on fossil fuels;
- reduce the mill's carbon footprint;
- meet the mill's energy needs by using materials that might otherwise go to landfill;
- make use of Kemsley Mill's excellent transport links (easy access to the M2 and the M20 as well as the potential to deliver by rail and/or barge);
- meet national energy reduction targets;
- maintain the longer term efficiency and competitiveness of Kemsley Mill;
- bring additional employment opportunities to the area (some 40 to 50 extra people would be needed to operate the new plant);
- help reduce greenhouse gases by preventing methane release from landfill and reducing the need for fossil fuels;
- meet UK Government and European best practice to recover energy from non-recyclable material for use in heat and power schemes.

Why use waste as a fuel?

Waste is a valuable raw material which can generate energy and heat.

The energy from waste process uses waste that would otherwise go to landfill to produce clean, sustainable power. Even the residual material left at the end of the process is useful as it can be used by the construction industry.

Waste is an excellent fuel. The calorific value of municipal waste is comparable with that of lignite (brown coal), on average roughly 11,000 kilojoules per kilogram.

And there is plenty of it. The UK produces some 90 million tonnes of waste a year – 30 million tonnes from households and 60 million tonnes from industry. Currently over 40% of all UK waste is sent to landfill while just 10% is used to generate electricity. (In contrast, Denmark recycles 65% of its waste, uses 26% to produce energy and sends just 8% to landfill.)

Around 60% of domestic waste consists of wood, paper and cardboard. Using waste as a replacement for fossil fuels results in lower climate-damaging emissions of C02 and methane gas.

In the UK, biodegradable waste in landfill accounts for 40% of all methane emissions and 3% of all the country's greenhouse gas emissions. Methane is 23 times as damaging a greenhouse gas as carbon dioxide.

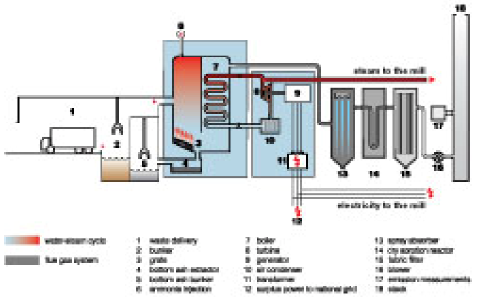
Energy plants in Germany similar to the one proposed for Kemsley Mill are estimated to save the emission of four million tonnes of carbon dioxide per year.

Where would it be?

The new Sustainable Energy Plant would be located on land to the north east of the existing paper mill complex, behind existing buildings (when viewed from the south and west) and adjacent to the current power plants.

The area earmarked for the proposed plant's development is within the existing boundaries of Kemsley Mill and has historically been used for coal storage and other development uses. Since the new gas-fired CHP plant opened in 1995, the land has been used infrequently as a construction lay down area or as a temporary storage facility.

How does a Sustainable Energy Plant work?



The waste for use as fuel is unloaded in a sealed hall (1) and stored in a fuel bunker (2), before being mixed and taken by crane to the feed hopper. It then drops down a feed chute onto a sloped grate (3) where combustion takes place. Ensuring that incineration temperatures are in excess of 850°C destroys critical hydrocarbon compounds such as dioxin and furan.

Ash from the burning process is cooled and removed via the bottom ash extractor (4) and taken to the ash bunker (5) for storage. Ferrous metals are removed for recycling. The remaining ash is recycled for road building or construction use.

Ammonia (6) is injected into the combustion chamber. This reacts with the NOx to break it down into environmentally neutral nitrogen and water.

Hot gases produced in the combustion chamber pass through the boiler (7) where they heat water (and are themselves cooled) to produce steam.

At Kemsley, this steam could be used both for export to the mill and to drive the turbine (8). The turbine powers the generator (9), producing electricity.

The remaining steam is cooled in an air condenser (10), converting it back into water for re-use in the boiler. The cycle is then repeated.

The electricity from the generator passes through a transformer (11) ready for use. At Kemsley, it could either power the mill or feed into the national grid (12).

Meantime, the gases are treated by milk of lime in the spray absorber (13) – to neutralise any acidic gases – and by lime and activated carbon in the dry sorption reactor (14) to remove heavy metals and any newly formed dioxins.

Finally, the emissions are passed through fine filters (15) to remove any remaining particles before being monitored (17) and discharged via the chimney stack (18).

What has been happening?

Since our previous public exhibition in July, we have been conducting a number of surveys to assess what impact a Sustainable Energy Plant would have, among other things, on:

The local traffic network

- There are two main options for bringing the waste fuel stock to the plant: by road or via Ridham Dock (either by train or barge).
- If all the waste was brought by road, it is predicted traffic flows on Swale Way would increase by less than 2% on a daily basis.
- Lorries will arrive via the M2 and A249 and use the existing A249/Swale Way junction. They will travel south on Swale Way and then turn left onto Barge Way which leads to the Kemsley Paper Mill northern access.
- If the plant works at maximum capacity and all the waste is delivered by road, in peak hours (08:00-09:00 and 17:00-18:00) the site is expected to generate around 22 lorry movements and six staff car movements.

Local air quality within a 10km radius

- A study was made of the potential effects of emissions of gases, hydrocarbons and metals from the proposed Sustainable Energy Plant on all statutory sites, European sites and Sites of Special Scientific Interest (SSSI) within 10 km and non-statutory sites within 3 km of the site and on the site itself.
- The onsite monitoring concluded that there is unlikely to be any exceeding of the relevant Environment Agency limits.
- In Kemsley, the maximum magnitude is "extremely small" for the long-term contributions to the atmosphere associated with the Sustainable Energy Plant and for short-term contributions the maximum magnitude is "small".

Local ecosytem, ecology and nature conservation

Surveys highlighted:

- The Swale Site of Special Scientific Interest (SSSI), Special Protection Area (SPA) and Ramsar site 100m to the east of the proposed development
- Possible Water Vole presence in a ditch to the south west
- Populations of Slow-worm, although limited within development footprint, Grass Snake and Common Lizard
- Three Schedule One bird species breeding in the area (Marsh Harrier, Cetti's Warbler and Bearded Tit), although not directly on site
- Annual Beard-grass (a nationally scarce grass) on site

Reptile and breeding bird habitat will be provided and the central channel of each attenuation pond will be reed-lined, creating a substantial addition to this habitat type within the local area.

Noise and vibration

- Surveys indicate that noise emissions from the operation of the Sustainable Energy Plant, including noise from lorries delivering waste fuel stock, would not exceed the current background noise levels or the maximum noise levels recommended by the Environment Agency for this kind of development.
- Current daytime ambient noise levels are not expected to increase as a result of the development.
- The results of the vibration assessment indicate that significant adverse vibration would not be expected during either the construction or operational phases.

Below: Photomontage A

Above: Photomontage locations

Landscape and visual impact

- The site is concealed from the majority of Sittingbourne by industrial development on the edge of the town and the restored landfill mound.
- To the north of the site the Saxon Shore Way long distance footpath is the closest point at which the plant would be seen. Views from this section of the path are largely of the industrial edge of Sittingbourne.
- The Isle of Sheppey to the north east contains several small settlements, public rights of way and roads from which the proposed Sustainable Energy Plant could be seen. From here, the industrial townscape of Sittingbourne is visible as an expanse of development along The Swale, of which the site forms a small fragment of disused land.
- An integral part of the scheme would be shrub and tree planting around the perimeter of the site using native species to screen low level views of the proposed plant.

We have also collated the comments received from members of the public who visited our previous exhibition or who have phoned or emailed. That feedback will be submitted as part of the planning application process.

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Below: Photomontage II

What happens next?

We hope to submit a planning application to Kent County Council in December. The council's planning officers will then undertake their own consultation giving local people a further opportunity to register their views.

The planning application will be determined by Kent County Council, in consultation with Swale Borough Council and other statutory consultees, including the Environment Agency and Natural England.

As the planning process progresses and we receive feedback from Kent County Council and the other consultees, we will be able to finalise details of the plan.

If the application is approved and depending on the progress of the planning process, we hope to start work on the new Sustainable Energy Plant by the end of 2010.

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Will it affect me?

All the waste for use as fuel would have been sorted and pre-treated before reaching Kemsley. It would be unloaded and stored in a purpose-built sealed hall before being used in the proposed Sustainable Energy Plant. The hall would be kept at a lower atmospheric pressure than the air outside to prevent any odours or litter escaping.

The proposed plant would be designed and operated to ensure that noise levels do not exceed published noise guidelines or cause a nuisance to local residents.

E.ON's Sustainable Energy Plants are equipped with a highly efficient flue gas purification system, guaranteeing that any emissions remain well below the levels permitted by the regulatory authorities.

The proposed plant will require an Environmental Permit (EP) from the Environment Agency. This will impose very strict emission limits set at levels well below those which could cause unacceptable levels of background pollution or harm human health or the environment.

Limits for emissions are set in half hourly and daily time segments and monthly reports on emissions would have to be submitted to the Environment Agency.

The EP process is a public one, and the application and subsequent review by the Environment Agency is open to scrutiny.

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Your views are very important to us and we are very grateful to those of you who have taken the time to contact us since our first public exhibition in July.

If after today's exhibition you have further questions or comments there are a number of ways to contact us.

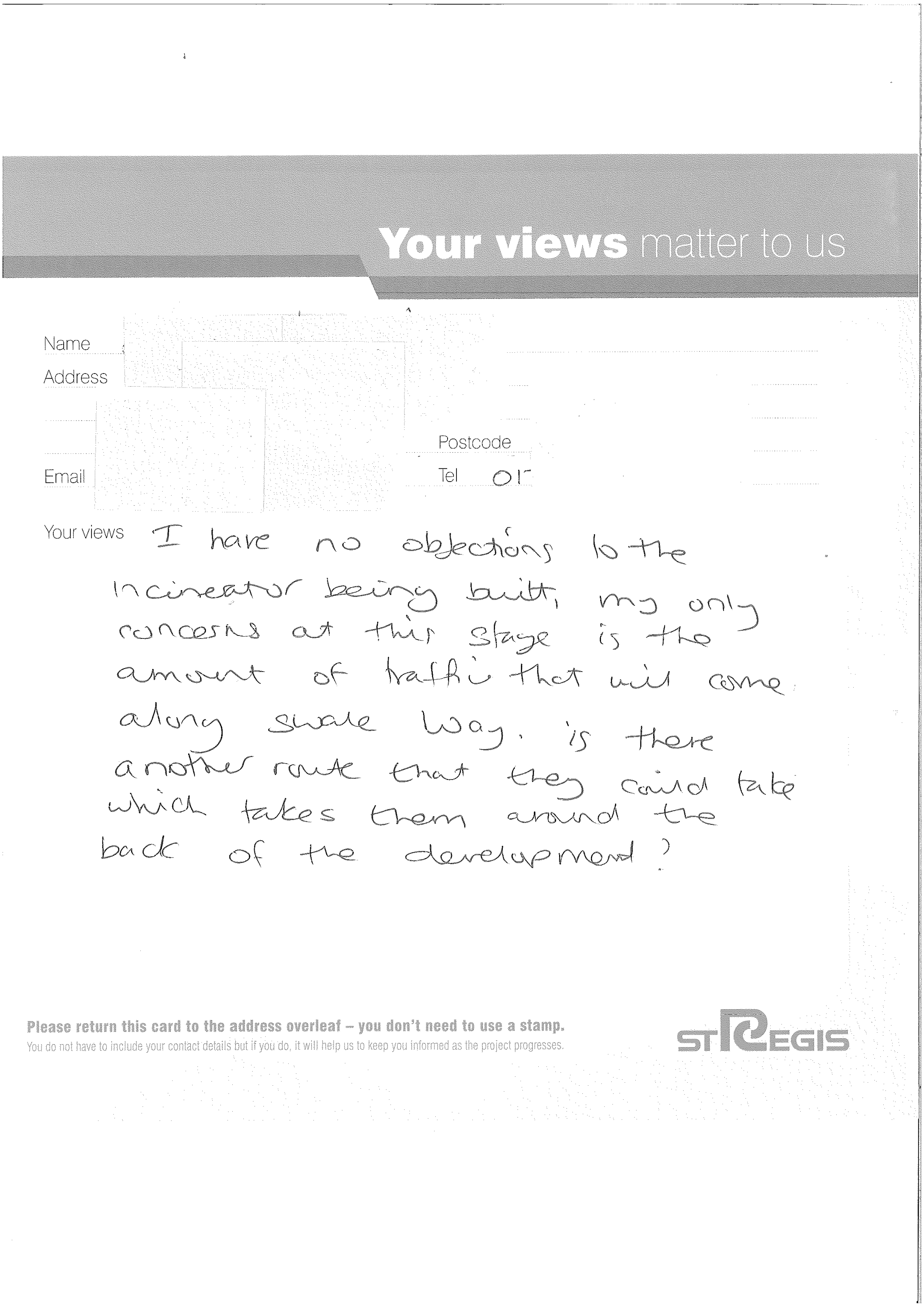
You can fill out one of the comment cards available here at the exhibition and hand it in to any of the staff on duty before you leave.

You can write to us at:
Kemsley Energy Project
Kemsley Mill, Sittingbourne
Kent ME10 2TD

Call us free on 0800 881 5429
Email us at info@kemsleyenergy.co.uk
Contact us through the website:
www.kemsleyenergy.co.uk

DS Smith Plc e·on ST REGIS

Appendix xi – Sample feedback forms (please note contact details have been concealed)



Your views matter to us

Name [redacted]
Address
Postcode
Email
Tel 01

Your views I have no objections to the incinerator being built, my only concerns at this stage is the amount of traffic that will come along Swale Way. is there another route that they could take which takes them around the back of the development?

Please return this card to the address overleaf – you don't need to use a stamp.
You do not have to include your contact details but if you do, it will help us to keep you informed as the project progresses.

ST REGIS

27/11

Your views matter to us

Name [redacted]
Address [redacted]

Postcode
Email [redacted]
Tel [redacted]

Your views

There seems to be benefits to be had (less landfill - preservation of jobs) and no downsides as far as I can see. I'm pleased that investment is being made in the area

Looking forward to a plant tour!

Please return this card to the address overleaf – you don't need to use a stamp.
You do not have to include your contact details but if you do, it will help us to keep you informed as the project progresses.

ST REGIS

Your views matter to us

Name [redacted]
Address [redacted]

Email [redacted]
Postcode
Tel

Your views

There were very legitimate reasons why Kent County Council won the public enquiry when SITA applied for the incinerator. As far as we are concerned the reasons still stand. Allington should already provide enough provision for Kent. E-on already have land and port facilities at Kingsnorth Power Station. At the end of the day St. Regis is still a customer of E-on regardless of location of the incinerator.

Kent should not be responsible for the disposal of rubbish outside Kent especially not from overseas.

Please return this card to the address overleaf – you don't need to use a stamp.
You do not have to include your contact details but if you do, it will help us to keep you informed as the project progresses.

ST REGIS

St Regis Paper Company Ltd
Kemsley Mill Sustainable Energy Plant
Supplementary Stakeholder Engagement Report

Prepared on behalf of St Regis Paper Company Ltd and E.ON Energy from Waste by
Maxim PR & Marketing Ltd
8 St Johns Road
Tunbridge Wells
Kent TN4 9NP

Tel: 01892 513033
Fax: 01895 513081
Email: philip@maxim-pr.co.uk

20 January 2010

Iwade Public Exhibition

A further public exhibition was held in Iwade Village Hall on Thursday 13 January from 4pm to 8pm. This followed a request by Iwade Parish Council for one to be held in the village.

Letters (copy below) were sent to 1,200 local households and businesses to publicise the event. These were sent Royal Mail second class on Tuesday, 5 January.

A poster (copy below) was sent to the parish clerk with the request that it be printed out and put up locally.

12 people visited the exhibition. Of these, 10 were from Iwade, one was from Rainham and one did not give an address. Two of the 12 had attended earlier exhibitions.

Representatives from St Regis, E.ON and the consultant team were available to explain the project to visitors and to answer any questions.

The issues discussed included:
- Lorry movements and the potential for bringing in fuelstock via Ridham Dock
- The level of emissions
- The technology behind the proposed Sustainable Energy Plant
- Treatment of air pollution control residues and bottom ash
- Whether the proposed Sustainable Energy Plant would export electricity to the national grid
- What would happen to the waste in the event of a shut down
- Business opportunities

Some people appeared to favour the project but most seemed to have no strong feelings either for or against – they were attending the exhibition to gain further information and seemed to have had their questions answered. At the time of writing, no feedback forms had been received.

ST REGIS

Kemsley Energy Project
Kemsley Mill
Sittingbourne
Kent ME10 2TD
Tel: 0800 881 5429
Fax: 01795 414214
Email: info@kemsleyenergy.co.uk
Website: www.kemsleyenergy.co.uk

The Resident
2 Helen Thompson Close
Iwade, Sittingbourne
Kent
ME9 8DW

Dear Sir or Madam

Invitation to public exhibition, Iwade Village Hall, Wednesday January 13, 4-8pm

St Regis Paper Company Limited and E.ON invite you to a public exhibition at Iwade Village Hall on Wednesday, January 13, from 4pm to 8pm, at which you can find out more about proposals for a Sustainable Energy Plant at Kemsley Mill.

St Regis Paper Company Limited, the owner of Kemsley Mill, and leading energy company E.ON, are proposing to develop a Sustainable Energy Plant which would take hard-to-recycle waste which might otherwise go to landfill and use it to provide the Mill with a sustainable supply of heat and power.

Experts from St Regis Paper Company Limited and E.ON, which would build and operate the proposed plant, will be on hand to answer any questions you may have about the scheme.

You can find out more about the proposal ahead of the public exhibition by visiting www.kemsleyenergy.co.uk.

Yours faithfully

[redacted]

Will Faure Walker
Commercial Director
St Regis Paper Company Limited

Public exhibition

Wednesday, 13 January, 4pm – 8pm
at
Iwade Village Hall
Ferry Road, Iwade

St Regis Paper Co Ltd, the owner of Kemsley Mill, is preparing a planning application for a Sustainable Energy Plant at the mill.

St Regis would like to invite local residents to a public exhibition where information on our proposals will be on display and you will be able to talk to members of the project team directly.

For more information call Freephone
0800 881 5429
email: info@kemsleyenergy.co.uk • www.kemsleyenergy.co.uk

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Chapter 15 – No Technical Appendices

Chapter 16 – No Technical Appendices