**Document 3.3 – 2010 Environmental Statement**

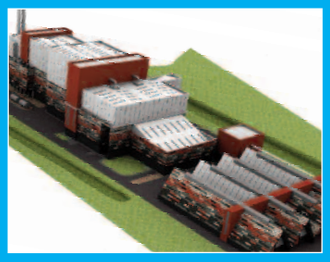
**ES Volume 3 – Appendices for Chapters 10-11**

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

**September 2019 -Submission Version**

**PINS ref: EN010083**

environmental statement technical appendices volume 3



# 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.'

**MARCH 2010**

E.ON Energy from Waste

ST REGIS

# Volume 3 of 4

Appendix 10.1: Envirocheck Report

Appendix 10.2: RPS Flood Risk Assessment

Appendix 10.3: Environment Agency Scoping Response

Appendix 11.1: Legislation and Planning Context

Appendix 11.2: Phase 1 Environmental Site Assessment – Kemsley Paper Mill, Sittingbourne, Kent (RPS, 2009a)

# Envirocheck® Report:

## Datasheet

### Order Details:

**Order Number:**
27464042_1_1

**Customer Reference:**
JER3773

**National Grid Reference:**
592170, 166640

**Slice:**
A

**Site Area (Ha):**
6.55

**Search Buffer (m):**
1000

### Site Details:

Site at
Sittingbourne
Kent

### Client Details:

Ms E Willmott
RPS Consultants
Conrad House
Beaufort Square
Chepstow
Monmouthshire
NP16 5EP

# Contents



**Introduction**

The Environment Act 1995 has made site sensitivity a key issue, as the legislation pays as much attention to the pathways by which contamination could spread, and to the vulnerable targets of contamination, as it does the potential sources of contamination.
For this reason, Landmark's Site Sensitivity maps and Datasheet(s) place great emphasis on statutory data provided by the Environment Agency and the Scottish Environment Protection Agency; it also incorporates data from Natural England (and the Scottish and Welsh equivalents) and Local Authorities; and highlights hydrogeological features required by environmental and geotechnical consultants. It does not include any information concerning past uses of land. The datasheet is produced by querying the Landmark database to a distance defined by the client from a site boundary provided by the client.

In the attached datasheet the National Grid References (NGRs) are rounded to the nearest 10m in accordance with Landmark's agreements with a number of Data Suppliers.

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**Natural England Copyright Notice**



**Ove Arup Copyright Notice**



**Peter Brett Associates Copyright Notice**



**Radon Potential dataset Copyright Notice**



**Report Version v36.0**

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# Summary

| Data Type | Page Number | On Site | 0 to 250m | 251 to 500m | 501 to 1000m (*up to 2000m) |
|---|---|---|---|---|---|
| **Agency & Hydrological** | | | | | |
| Contaminated Land Register Entries and Notices | | | | | |
| Discharge Consents | pg 1 | 1 | 1 | 14 | 5 |
| Enforcement and Prohibition Notices | | | | | |
| Integrated Pollution Controls | pg 6 | | | 9 | 6 |
| Integrated Pollution Prevention And Control | pg 8 | | | 9 | 10 |
| Local Authority Integrated Pollution Prevention And Control | | | | | |
| Local Authority Pollution Prevention and Controls | | | | | |
| Local Authority Pollution Prevention and Control Enforcements | | | | | |
| Nearest Surface Water Feature | pg 12 | | Yes | | |
| Pollution Incidents to Controlled Waters | pg 12 | | 3 | 18 | 4 |
| Prosecutions Relating to Authorised Processes | pg 16 | | | 1 | |
| Prosecutions Relating to Controlled Waters | | | | | |
| Registered Radioactive Substances | | | | | |
| River Quality | | | | | |
| River Quality Biology Sampling Points | | | | | |
| River Quality Chemistry Sampling Points | | | | | |
| Substantiated Pollution Incident Register | pg 16 | | 1 | | |
| Water Abstractions | pg 17 | | 2 | | (*14) |
| Water Industry Act Referrals | | | | | |
| Groundwater Vulnerability | pg 20 | Yes | n/a | n/a | n/a |
| Source Protection Zones | | | | | |
| Extreme Flooding from Rivers or Sea without Defences | pg 21 | Yes | | n/a | n/a |
| Flooding from Rivers or Sea without Defences | pg 21 | Yes | | n/a | n/a |
| Areas Benefiting from Flood Defences | | | | n/a | n/a |
| Flood Water Storage Areas | | | | n/a | n/a |
| Flood Defences | | | | n/a | n/a |
| **Waste** | | | | | |
| BGS Recorded Landfill Sites | | | | | |
| Historical Landfill Sites | pg 22 | 1 | 1 | | 4 |
| Integrated Pollution Control Registered Waste Sites | pg 23 | | | | 2 |
| Licensed Waste Management Facilities (Landfill Boundaries) | pg 23 | | 1 | | |
| Licensed Waste Management Facilities (Locations) | pg 23 | | 1 | 1 | |
| Local Authority Recorded Landfill Sites | | | | | |
| Registered Landfill Sites | pg 24 | | 2 | | |
| Registered Waste Transfer Sites | | | | | |
| Registered Waste Treatment or Disposal Sites | | | | | |

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# Summary

| Data Type | Page Number | On Site | 0 to 250m | 251 to 500m | 501 to 1000m (*up to 2000m) |
|---|---|---|---|---|---|
| **Hazardous Substances** | | | | | |
| Control of Major Accident Hazards Sites (COMAH) | | | | | |
| Explosive Sites | | | | | |
| Notification of Installations Handling Hazardous Substances (NIHHS) | | | | | |
| Planning Hazardous Substance Consents | | | | | |
| Planning Hazardous Substance Enforcements | | | | | |
| **Geological** | | | | | |
| BGS Recorded Mineral Sites | | | | | |
| BGS 1:625,000 Solid Geology | pg 26 | Yes | n/a | n/a | n/a |
| Brine Compensation Area | | | n/a | n/a | n/a |
| Coal Mining Affected Areas | | | n/a | n/a | n/a |
| Mining Instability | | | n/a | n/a | n/a |
| Natural and Mining Cavities | | | | | |
| Potential for Collapsible Ground Stability Hazards | | Yes | | n/a | n/a |
| Potential for Compressible Ground Stability Hazards | | Yes | Yes | n/a | n/a |
| Potential for Ground Dissolution Stability Hazards | | | | n/a | n/a |
| Potential for Landslide Ground Stability Hazards | | Yes | Yes | n/a | n/a |
| Potential for Running Sand Ground Stability Hazards | | Yes | Yes | n/a | n/a |
| Potential for Shrinking or Swelling Clay Ground Stability Hazards | | Yes | Yes | n/a | n/a |
| Radon Potential - Radon Affected Areas | | | n/a | n/a | n/a |
| Radon Potential - Radon Protection Measures | | | n/a | n/a | n/a |
| Shallow Mining Hazards | | | | n/a | n/a |
| **Industrial Land Use** | | | | | |
| Contemporary Trade Directory Entries | pg 28 | | | 5 | 6 |
| Fuel Station Entries | | | | | |

| Data Type | Page Number | On Site | 0 to 250m | 251 to 500m | 501 to 1000m (*up to 2000m) |
|---|---|---|---|---|---|
| **Sensitive Land Use** | | | | | |
| Areas of Adopted Green Belt | | | | | |
| Areas of Unadopted Green Belt | | | | | |
| Areas of Outstanding Natural Beauty | | | | | |
| Environmentally Sensitive Areas | pg 29 | | | 2 | 1 |
| Forest Parks | | | | | |
| Local Nature Reserves | | | | | |
| Marine Nature Reserves | | | | | |
| National Nature Reserves | pg 29 | | | 1 | |
| National Parks | | | | | |
| Nitrate Sensitive Areas | | | | | |
| Nitrate Vulnerable Zones | | | | | |
| Ramsar Sites | pg 29 | | 1 | | |
| Sites of Special Scientific Interest | pg 29 | | 1 | | |
| Special Areas of Conservation | | | | | |
| Special Protection Areas | pg 29 | | 1 | | |

| Map ID | Details | Quadrant Reference (Compass | Estimated Distance From Site | Contact | NGR |
|---|---|---|---|---|---|
| 1 | **Discharge Consents**<br>Operator: Grovehurst Energy Ltd<br>Property Type: Pulp, Paper & Board<br>Location: Kemsley Paper Mill, Sittingbourne Kent<br>Authority: Environment Agency, Southern Region<br>Catchment Area: Not Supplied<br>Reference: K00025<br>Permit Version: 1<br>Effective Date: 2nd December 1971<br>Issued Date: 2nd December 1971<br>Revocation Date: Not Supplied<br>Discharge Type: Trade Discharges - Cooling Water<br>Discharge Environment: Saline Estuary<br>Receiving Water: Saline Estuary<br>**Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989**<br>Positional Accuracy: Located by supplier to within 10m | A13NW (W) | 0 | 1 | 592000 166640 |
| 2 | **Discharge Consents**<br>Operator: Grovehurst Energy Ltd. (Hmip)<br>Property Type: Undefined Or Other<br>Location: Uk Paper House, Kemsley, Sittingbourne, Kent, Me10 2sg<br>Authority: Environment Agency, Southern Region<br>Catchment Area: OLD-RIVER SWALE (CUT-OFF)<br>Reference: Aa3808<br>Permit Version: 1<br>Effective Date: 1st April 1993<br>Issued Date: 22nd June 1992<br>Revocation Date: 31st March 1997<br>Discharge Type: Trade Discharge - Process Water<br>Discharge Environment: Saline Estuary<br>Receiving Water: Saline Estuary<br>**Status: Authorisation revokedRevoked**<br>Positional Accuracy: Located by supplier to within 100m | A13SW (SW) | 65 | 1 | 592000 166400 |
| 3 | **Discharge Consents**<br>Operator: Grovehurst Energy Ltd<br>Property Type: Printing Paper/Wood Ind. Machinery<br>Location: Kemsley Mill, Sittingbourne, Kent, Me10 25g<br>Authority: Environment Agency, Southern Region<br>Catchment Area: Swale<br>Reference: Bj8558<br>Permit Version: 1<br>Effective Date: 25th April 2002<br>Issued Date: 25th April 2002<br>Revocation Date: 25th April 2002<br>Discharge Type: Trade Effluent<br>Discharge Environment: Saline Estuary<br>Receiving Water: Saline Estuary<br>**Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989**<br>Positional Accuracy: Located by supplier to within 10m | A8NW (S) | 273 | 1 | 592160 166180 |
| 3 | **Discharge Consents**<br>Operator: Grovehurst Energy Ltd<br>Property Type: Printing Paper/Wood Ind. Machinery<br>Location: Kemsley Mill, Sittingbourne, Kent, Me10 25g<br>Authority: Environment Agency, Southern Region<br>Catchment Area: Swale<br>Reference: Bj8558<br>Permit Version: 1<br>Effective Date: 25th April 2002<br>Issued Date: 25th April 2002<br>Revocation Date: 25th April 2002<br>Discharge Type: Trade Discharge - Process Water<br>Discharge Environment: Saline Estuary<br>Receiving Water: Saline Estuary<br>**Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989**<br>Positional Accuracy: Located by supplier to within 10m | A8NW (S) | 273 | 1 | 592160 166180 |

| Map ID | Details | Quadrant Reference (Compass | Estimated Distance From Site | Contact | NGR |
|---|---|---|---|---|---|
| 3 | **Discharge Consents**<br>Operator: Grovehurst Energy Ltd<br>Property Type: Printing Paper/Wood Ind. Machinery<br>Location: Kemsley Mill, Sittingbourne, Kent, Me10 2sg<br>Authority: Environment Agency, Southern Region<br>Catchment Area: Swale<br>Reference: Bj8588<br>Permit Version: 1<br>Effective Date: 25th April 2002<br>Issued Date: 25th April 2002<br>Revocation Date: 25th April 2002<br>Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company<br>Discharge Environment: Saline Estuary<br>Receiving Water: Saline Estuary<br>**Status: Revoked and replaced by IPC Authorisation**<br>Positional Accuracy: Located by supplier to within 10m | A8NW (S) | 273 | 1 | 592160 166180 |
| 3 | **Discharge Consents**<br>Operator: Grovehurst Energy Ltd<br>Property Type: Printing Paper/Wood Ind. Machinery<br>Location: Kemsley Mill, Sittingbourne, Kent, Me10 2sg<br>Authority: Environment Agency, Southern Region<br>Catchment Area: Swale<br>Reference: Bj8588<br>Permit Version: 1<br>Effective Date: 25th April 2002<br>Issued Date: 25th April 2002<br>Revocation Date: 25th April 2002<br>Discharge Type: Trade Effluent<br>Discharge Environment: Saline Estuary<br>Receiving Water: Saline Estuary<br>**Status: Revoked and replaced by IPC Authorisation**<br>Positional Accuracy: Located by supplier to within 10m | A8NW (S) | 273 | 1 | 592160 166180 |
| 3 | **Discharge Consents**<br>Operator: Grovehurst Energy Ltd<br>Property Type: Printing Paper/Wood Ind. Machinery<br>Location: Kemsley Mill, Sittingbourne, Kent, Me10 2sg<br>Authority: Environment Agency, Southern Region<br>Catchment Area: Swale<br>Reference: Bj8588<br>Permit Version: 1<br>Effective Date: 25th April 2002<br>Issued Date: 25th April 2002<br>Revocation Date: 25th April 2002<br>Discharge Type: Trade Discharge - Process Water<br>Discharge Environment: Saline Estuary<br>Receiving Water: Saline Estuary<br>**Status: Revoked and replaced by IPC Authorisation**<br>Positional Accuracy: Located by supplier to within 10m | A8NW (S) | 273 | 1 | 592160 166180 |
| 3 | **Discharge Consents**<br>Operator: Southern Water Services Ltd (K)<br>Property Type: Sewerage Network - Pumping Station - Water Company<br>Location: Kemsley Sewage Pumping Station, Kemsley, Kent<br>Authority: Environment Agency, Southern Region<br>Catchment Area: Not Given<br>Reference: A06000<br>Permit Version: 1<br>Effective Date: 5th November 1992<br>Issued Date: 5th November 1992<br>Revocation Date: Not Supplied<br>Discharge Type: Public Sewage: Storm Sewage Overflow<br>Discharge Environment: Saline Estuary<br>Receiving Water: Saline Estuary<br>**Status: Post National Rivers Authority Legislation where issue date > 31/08/1989**<br>Positional Accuracy: Located by supplier to within 100m | A8NE (S) | 315 | 1 | 592200 166150 |

| Map ID | Details | Quadrant Reference (Compass | Estimated Distance From Site | Contact | NGR |
|---|---|---|---|---|---|
| 3 | **Discharge Consents**<br>Operator: Southern Water Services Ltd (K)<br>Property Type: Sewage Disposal Works - Water Company<br>Location: Kemsley S.T.W., Kemsley Kent<br>Authority: Environment Agency, Southern Region<br>Catchment Area: Not Given<br>Reference: A00530<br>Permit Version: 1<br>Effective Date: 9th November 1989<br>Issued Date: 9th November 1989<br>Revocation Date: 5th November 1992<br>Discharge Type: Sewage Discharges - Unspecified - Water Company<br>Discharge Environment: Saline Estuary<br>Receiving Water: Saline Estuary<br>**Status: Revoked (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)**<br>Positional Accuracy: Located by supplier to within 10m | A8NE (S) | 315 | 1 | 592200 166150 |
| 4 | **Discharge Consents**<br>Operator: Grovehurst Energy Ltd<br>Property Type: Undefined Or Other<br>Location: Kemsley Paper Mill, Sittingbourne Kent<br>Authority: Environment Agency, Southern Region<br>Catchment Area: OLD-UNKNOWN RIVER<br>Reference: P05604<br>Permit Version: 1<br>Effective Date: 1st January 1995<br>Issued Date: 15th December 1994<br>Revocation Date: 22nd May 2002<br>Discharge Type: Trade Discharge - Process Water<br>Discharge Environment: Freshwater Stream/River<br>Receiving Water: The Swale<br>**Status: Revoked (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)**<br>Positional Accuracy: Located by supplier to within 100m | A18SW (N) | 275 | 1 | 592150 167080 |
| 5 | **Discharge Consents**<br>Operator: St. Regis Paper Co.<br>Property Type: Pulp, Paper & Board<br>Location: Wood Pulping Plant, Employing Neutral Sulphite Proce<br>Authority: Environment Agency, Southern Region<br>Catchment Area: Not Supplied<br>Reference: K02095<br>Permit Version: 1<br>Effective Date: 1st October 1969<br>Issued Date: 1st October 1969<br>Revocation Date: 25th November 1994<br>Discharge Type: Trade Effluent<br>Discharge Environment: Freshwater Stream/River<br>Receiving Water: Freshwater River<br>**Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989**<br>Positional Accuracy: Located by supplier to within 10m | A18SE (N) | 288 | 1 | 592330 167100 |
| 6 | **Discharge Consents**<br>Operator: Grovehurst Energy Ltd<br>Property Type: Undefined Or Other<br>Location: Kemsley Paper Mill, Sittingbourne Kent<br>Authority: Environment Agency, Southern Region<br>Catchment Area: OLD-RIVER SWALE (CUT-OFF)<br>Reference: K00024<br>Permit Version: 1<br>Effective Date: 14th January 1985<br>Issued Date: 14th January 1985<br>Revocation Date: 31st December 1994<br>Discharge Type: Trade Discharge - Process Water<br>Discharge Environment: Saline Estuary<br>Receiving Water: Saline Estuary<br>**Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989**<br>Positional Accuracy: Located by supplier to within 100m | A18SE (N) | 380 | 1 | 592200 167200 |

| Map ID | Details | Quadrant Reference (Compass | Estimated Distance From Site | Contact | NGR |
|---|---|---|---|---|---|
| 7 | **Discharge Consents**<br>Operator: Grovehurst Energy Ltd<br>Property Type: Pulp, Paper & Board<br>Location: Kemsley Paper Mills, IWADE, Kent<br>Authority: Environment Agency, Southern Region<br>Catchment Area: OLD-SWALE<br>Reference: K02134<br>Permit Version: 1<br>Effective Date: 17th September 1965<br>Issued Date: 17th September 1965<br>Revocation Date: 22nd May 2002<br>Discharge Type: Trade Discharge - Process Water<br>Discharge Environment: Freshwater Stream/River<br>Receiving Water: Milton Creek<br>**Status: Revoked (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)**<br>Positional Accuracy: Located by supplier to within 100m | A8NW (S) | 387 | 1 | 592020 166050 |
| 8 | **Discharge Consents**<br>Operator: Grovehurst Energy Ltd<br>Property Type: Printing Paper/Wood Ind. Machinery<br>Location: Kemsley Mill, Sittingbourne, Kent, Me10 25g<br>Authority: Environment Agency, Southern Region<br>Catchment Area: Swale<br>Reference: Bj8558<br>Permit Version: 1<br>Effective Date: 25th April 2002<br>Issued Date: 25th April 2002<br>Revocation Date: 25th April 2002<br>Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company<br>Discharge Environment: Saline Estuary<br>Receiving Water: Saline Estuary<br>**Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989**<br>Positional Accuracy: Located by supplier to within 10m | A8NW (S) | 414 | 1 | 592150 166030 |
| 9 | **Discharge Consents**<br>Operator: Grovehurst Energy Ltd<br>Property Type: Domestic Property (Single)<br>Location: Uk Paper Ltd, New Thames Mill, Kemsley, Sittingbourne, Kent<br>Authority: Environment Agency, Southern Region<br>Catchment Area: Not Supplied<br>Reference: P09543<br>Permit Version: 1<br>Effective Date: 19th December 2000<br>Issued Date: 19th December 2000<br>Revocation Date: Not Supplied<br>Discharge Type: Trade Effluent Discharge-Site Drainage<br>Discharge Environment: Saline Estuary<br>Receiving Water: Saline Estuary<br>**Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989**<br>Positional Accuracy: Located by supplier to within 10m | A12SE (W) | 423 | 1 | 591570 166600 |
| 10 | **Discharge Consents**<br>Operator: Grovehurst Energy Ltd<br>Property Type: Pulp, Paper & Board<br>Location: Kemsley Paper Mill, Sittingbourne, Kent<br>Authority: Environment Agency, Southern Region<br>Catchment Area: Not Supplied<br>Reference: K02135<br>Permit Version: 1<br>Effective Date: 17th December 1971<br>Issued Date: 17th December 1971<br>Revocation Date: 1st January 1995<br>Discharge Type: Trade Discharge - Process Water<br>Discharge Environment: Saline Estuary<br>Receiving Water: Saline Estuary<br>**Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989**<br>Positional Accuracy: Located by supplier to within 10m | A7NE (SW) | 495 | 1 | 591630 166180 |

| Map ID | Details | Quadrant Reference (Compass | Estimated Distance From Site | Contact | NGR |
|---|---|---|---|---|---|
| 11 | **Discharge Consents**<br>Operator: Niall Cormac-Walsh<br>Property Type: Household; Commercial And Industrial Transfer Stations<br>Location: Countrystyle Recycling Ltd Ridham Dock Road, Iwade, Nr Sittingbourne, Kent, Me9 8sr<br>Authority: Environment Agency, Southern Region<br>Catchment Area: Swale<br>Reference: P21638<br>Permit Version: 1<br>Effective Date: 30th January 2008<br>Issued Date: 30th January 2008<br>Revocation Date: Not Supplied<br>Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company<br>Discharge Environment: Freshwater Stream/River<br>Receiving Water: The Swale Estuary<br>**Status: New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)**<br>Positional Accuracy: Located by supplier to within 10m | A18NW (N) | 611 | 1 | 592120 167420 |
| 12 | **Discharge Consents**<br>Operator: Knauf Drywall<br>Property Type: Undefined Or Other<br>Location: Premises At Knauf Drywall, Ridham Dock, Sittingbourne, Kent, Me9 8sr<br>Authority: Environment Agency, Southern Region<br>Catchment Area: Swale<br>Reference: P20365<br>Permit Version: 1<br>Effective Date: 2nd February 2005<br>Issued Date: 2nd February 2005<br>Revocation Date: Not Supplied<br>Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company<br>Discharge Environment: Freshwater Stream/River<br>Receiving Water: A Tributary Of The River Swale<br>**Status: New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)**<br>Positional Accuracy: Located by supplier to within 100m | A18NW (N) | 762 | 1 | 591900 167500 |
| 12 | **Discharge Consents**<br>Operator: Trevor Ellis<br>Property Type: Undefined Or Other<br>Location: Premises At Knauf Drywall, Ridham Dock, Sittingbourne, Kent, Me9 8sr<br>Authority: Environment Agency, Southern Region<br>Catchment Area: Swale<br>Reference: P20068<br>Permit Version: 1<br>Effective Date: 14th January 2004<br>Issued Date: 14th January 2004<br>Revocation Date: 19th October 2006<br>Discharge Type: Trade Effluent Discharge-Site Drainage<br>Discharge Environment: Freshwater Stream/River<br>Receiving Water: A Trib Of River Swale<br>**Status: Revoked (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)**<br>Positional Accuracy: Located by supplier to within 100m | A18NW (N) | 762 | 1 | 591900 167500 |
| 13 | **Discharge Consents**<br>Operator: National Grid Electricity<br>Property Type: Production & Distribution Of Electricity<br>Location: Outfall 2 - Kemsley Substation Outfall 2 At Kemsley Substation, Ypres Drive, Sittingbourne, Kent, Me10 2tr<br>Authority: Environment Agency, Southern Region<br>Catchment Area: Swale<br>Reference: P21177<br>Permit Version: 1<br>Effective Date: 22nd December 2006<br>Issued Date: 22nd December 2006<br>Revocation Date: Not Supplied<br>Discharge Type: Trade Effluent Discharge-Site Drainage<br>Discharge Environment: Freshwater Stream/River<br>Receiving Water: Coldharbour Fleet<br>**Status: New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)**<br>Positional Accuracy: Located by supplier to within 10m | A11NE (W) | 857 | 1 | 591160 166860 |

| Map ID | Details | Quadrant Reference (Compass | Estimated Distance From Site | Contact | NGR |
|---|---|---|---|---|---|
| 14 | **Discharge Consents**<br>Operator: National Grid Electricity<br>Property Type: Production & Distribution Of Electricity<br>Location: Outfall 1 - Kemsley Substation Outfall 1 At Kemsley Substation, Ypres Drive, Sittingbourne, Kent, Me10 2tr<br>Authority: Environment Agency, Southern Region<br>Catchment Area: Swale<br>Reference: P21176<br>Permit Version: 1<br>Effective Date: 22nd December 2006<br>Issued Date: 22nd December 2006<br>Revocation Date: Not Supplied<br>Discharge Type: Trade Effluent Discharge-Site Drainage<br>Discharge Environment: Freshwater Stream/River<br>Receiving Water: Coldharbour Fleet<br>**Status:** **New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)**<br>Positional Accuracy: Located by supplier to within 10m | A11NE (W) | 902 | 1 | 591140 166950 |
| 15 | **Integrated Pollution Controls**<br>Name: M-Real New Thames Ltd<br>Location: Graphic And Business Papers Division, New Thames Mill, SITTINGBOURNE, Kent, ME10 2SG<br>Authority: Environment Agency, Southern Region<br>Permit Reference: BD4449<br>Dated: 24th November 1998<br>Process Type: IPC minor (non-substantial) variation to previous variation<br>Description: 6.1 A (B) Paper and Pulp manufacturing processes within Miscellaneous Industries<br>**Status:** **Authorisation superseded by a substantial or non substantial variationSuperseded**<br>Positional Accuracy: Manually positioned to the address or location | A7NE (SW) | 340 | 1 | 591805 166205 |
| 16 | **Integrated Pollution Controls**<br>Name: M-Real New Thames Ltd<br>Location: Uk Paper House, Kemsley, SITTINGBOURNE, Kent, ME10 2SG<br>Authority: Environment Agency, Southern Region<br>Permit Reference: AU7184<br>Dated: 3rd June 1996<br>Process Type: IPC new application<br>Description: 6.1 A (B) Paper and Pulp manufacturing processes within Miscellaneous Industries<br>**Status:** **Authorisation superseded by a substantial or non substantial variationSuperseded**<br>Positional Accuracy: Manually positioned to the address or location | A7NE (SW) | 350 | 1 | 591800 166195 |
| 16 | **Integrated Pollution Controls**<br>Name: Uk Paper Plc<br>Location: Uk Paper, Recycled Fibre Plant, Kemsley, SITTINGBOURNE, Kent, ME10 2SG<br>Authority: Environment Agency, Southern Region<br>Permit Reference: BC3161<br>Dated: 21st October 1998<br>Process Type: IPC minor (non-substantial) variation to previous variation<br>Description: 6.1 A (B) Paper and Pulp manufacturing processes within Miscellaneous Industries<br>**Status:** **Application has met the requirements for authorisation (but not yet authorised)Not Yet Authorised**<br>Positional Accuracy: Unknown | A7NE (SW) | 357 | 1 | 591795 166190 |
| 16 | **Integrated Pollution Controls**<br>Name: M-Real New Thames Ltd<br>Location: Uk Paper House, Kemsley, Sittingbourne, Kent, ME10 2SG<br>Authority: Environment Agency, Southern Region<br>Permit Reference: Bl3323<br>Dated: 21st June 2001<br>Process Type: IPC minor (non-substantial) variation to previous variation<br>Description: 6.1 A (B) Paper and Pulp manufacturing processes within Miscellaneous Industries<br>**Status:** **Revoked - Now IPPC**<br>Positional Accuracy: Automatically positioned to the address | A7NE (SW) | 393 | 1 | 591779 166155 |
| 16 | **Integrated Pollution Controls**<br>Name: E.On Uk Chp Ltd<br>Location: Kemsley Paper Mill, Ridham Avenue, KEMSLEY, SITTINGBOURNE, KENT, ME10 2SG<br>Authority: Environment Agency, Southern Region<br>Permit Reference: BD8827<br>Dated: 24th November 1998<br>Process Type: IPC minor (non-substantial) variation to previous variation<br>Description: 1.3 A (A) Combustion processes within the Fuel & Power Industry<br>**Status:** **Revoked - Now IPPC**<br>Positional Accuracy: Manually positioned to the address or location | A7NE (SW) | 393 | 1 | 591779 166155 |

| Map ID | Details | Quadrant Reference (Compass | Estimated Distance From Site | Contact | NGR |
|---|---|---|---|---|---|
| 16 | **Integrated Pollution Controls**<br>Name: E.On Uk Chp Ltd<br>Location: Kemsley Paper Mill, Ridham Avenue, KEMSLEY, SITTINGBOURNE, KENT, ME10 2SG<br>Authority: Environment Agency, Southern Region<br>Permit Reference: AY1587<br>Dated: 30th June 1997<br>Process Type: IPC minor (non-substantial) variation to previous variation<br>Description: 1.3 A (A) Combustion processes within the Fuel & Power Industry<br>**Status: Authorisation superseded by a substantial or non substantial variationSuperseded**<br>Positional Accuracy: Manually positioned to the address or location | A7NE (SW) | 393 | 1 | 591779 166155 |
| 16 | **Integrated Pollution Controls**<br>Name: E.On Uk Chp Ltd<br>Location: UK Paper House, Ridham Avenue, Kemsley, SITTINGBOURNE, Kent, ME10 2SG<br>Authority: Environment Agency, Southern Region<br>Permit Reference: AP2090<br>Dated: 13th March 1995<br>Process Type: IPC new application<br>Description: 1.3 A (A) Combustion processes within the Fuel & Power Industry<br>**Status: Authorisation superseded by a substantial or non substantial variationSuperseded**<br>Positional Accuracy: Manually positioned to the address or location | A7NE (SW) | 393 | 1 | 591779 166155 |
| 16 | **Integrated Pollution Controls**<br>Name: Grovehurst Energy Ltd<br>Location: Uk Paper House, Kemsley, Sittingbourne, Kent, ME10 2SG<br>Authority: Environment Agency, Southern Region<br>Permit Reference: AA3808<br>Dated: 22nd June 1992<br>Process Type: IPC application for process that was regulated by HMIP for air releases under previous legislation<br>Description: 1.3 A (A) Combustion processes within the Fuel & Power Industry<br>**Status: Authorisation revokedRevoked**<br>Positional Accuracy: Automatically positioned to the address | A7NE (SW) | 393 | 1 | 591779 166155 |
| 17 | **Integrated Pollution Controls**<br>Name: St Regis Paper Co Ltd<br>Location: Kemsley Paper Mill, SITTINGBOURNE, Kent, ME10 2TD<br>Authority: Environment Agency, Southern Region<br>Permit Reference: BE4703<br>Dated: 24th November 1998<br>Process Type: IPC minor (non-substantial) variation to previous variation<br>Description: 6.1 A (B) Paper and Pulp manufacturing processes within Miscellaneous Industries<br>**Status: Revoked - Now IPPC**<br>Positional Accuracy: Automatically positioned to the address | A7NE (SW) | 499 | 1 | 591637 166162 |
| 17 | **Integrated Pollution Controls**<br>Name: St Regis Paper Co Ltd<br>Location: Kemsley Mill, Kemsley, SITTINGBOURNE, Kent, ME10 2TD<br>Authority: Environment Agency, Southern Region<br>Permit Reference: AU6269<br>Dated: 3rd June 1996<br>Process Type: IPC new application<br>Description: 6.1 A (B) Paper and Pulp manufacturing processes within Miscellaneous Industries<br>**Status: Authorisation superseded by a substantial or non substantial variationSuperseded**<br>Positional Accuracy: Automatically positioned to the address | A7NE (SW) | 503 | 1 | 591632 166162 |
| 17 | **Integrated Pollution Controls**<br>Name: St Regis Paper Co Ltd<br>Location: Kemsley Mill, Kemsley, SITTINGBOURNE, Kent, ME10 2TD<br>Authority: Environment Agency, Southern Region<br>Permit Reference: BB2712<br>Dated: 13th May 1998<br>Process Type: IPC minor (non-substantial) variation to previous variation<br>Description: 6.1 A (B) Paper and Pulp manufacturing processes within Miscellaneous Industries<br>**Status: Authorisation superseded by a substantial or non substantial variationSuperseded**<br>Positional Accuracy: Automatically positioned to the address | A7NE (SW) | 506 | 1 | 591632 166157 |

| Map ID | Details | Quadrant Reference (Compass | Estimated Distance From Site | Contact | NGR |
|---|---|---|---|---|---|
| 17 | **Integrated Pollution Controls**<br>Name: M-Real New Thames Ltd<br>Location: Uk Paper,Ridham Avenue, Kemsley, SITTINGBOURNE, Kent, ME10 2GT<br>Authority: Environment Agency, Southern Region<br>Permit Reference: Bl1355<br>Dated: 21st June 2001<br>Process Type: IPC minor (non-substantial) variation to previous variation<br>Description: 6.1 A (B) Paper and Pulp manufacturing processes within Miscellaneous Industries<br>**Status: Revoked - Now IPPC**<br>Positional Accuracy: Manually positioned to the road within the address or location | A7NE (SW) | 542 | 1 | 591589 166158 |
| 17 | **Integrated Pollution Controls**<br>Name: M-Real New Thames Ltd<br>Location: Uk Paper,Ridham Avenue, Kemsley, SITTINGBOURNE, Kent, ME10 2GT<br>Authority: Environment Agency, Southern Region<br>Permit Reference: BG9757<br>Dated: 28th October 1999<br>Process Type: IPC minor (non-substantial) variation to previous variation<br>Description: 6.1 A (B) Paper and Pulp manufacturing processes within Miscellaneous Industries<br>**Status: Authorisation superseded by a substantial or non substantial variationSuperseded**<br>Positional Accuracy: Manually positioned to the road within the address or location | A7NE (SW) | 542 | 1 | 591589 166158 |
| 17 | **Integrated Pollution Controls**<br>Name: M-Real New Thames Ltd<br>Location: Uk Paper,Ridham Avenue, Kemsley, SITTINGBOURNE, Kent, ME10 2GT<br>Authority: Environment Agency, Southern Region<br>Permit Reference: BD3051<br>Dated: 24th November 1998<br>Process Type: IPC minor (non-substantial) variation to previous variation<br>Description: 6.1 A (B) Paper and Pulp manufacturing processes within Miscellaneous Industries<br>**Status: Authorisation superseded by a substantial or non substantial variationSuperseded**<br>Positional Accuracy: Manually positioned to the road within the address or location | A7NE (SW) | 542 | 1 | 591589 166158 |
| 17 | **Integrated Pollution Controls**<br>Name: M-Real New Thames Ltd<br>Location: Uk Paper,Ridham Avenue, Kemsley, SITTINGBOURNE, Kent, ME10 2GT<br>Authority: Environment Agency, Southern Region<br>Permit Reference: AT6417<br>Dated: 22nd January 1996<br>Process Type: IPC new application<br>Description: 6.1 A (B) Paper and Pulp manufacturing processes within Miscellaneous Industries<br>**Status: Authorisation superseded by a substantial or non substantial variationSuperseded**<br>Positional Accuracy: Manually positioned to the road within the address or location | A7NE (SW) | 542 | 1 | 591589 166158 |
| 18 | **Integrated Pollution Prevention And Control**<br>Name: M-Real New Thames Limited<br>Location: Kemsley And Sittingbourne Paper Mills, Uk Paper, Ridham Avenue, Kemsley, Sittingbourne, Kent, ME10 2GT<br>Authority: Environment Agency, Southern Region<br>Permit Reference: Bx1080ic<br>Original Permit Ref: Bj7387ih<br>Effective Date: 1st February 2004<br>**Status: Effective**<br>Application Type: Variation<br>App. Sub Type: Standard<br>Positional Accuracy: Manually positioned to the address or location<br>Activity Code: 6.1 A(1) (B)<br>Activity Description: Paper, Pulp And Board; Producing Paper/Board Greater Than 20T/D<br>Primary Activity: Y | A8NW (SW) | 324 | 1 | 591864 166174 |
| 18 | **Integrated Pollution Prevention And Control**<br>Name: M-Real New Thames Limited<br>Location: Kemsley And Sittingbourne Paper Mills, Uk Paper, Ridham Avenue, Kemsley, Sittingbourne, Kent, ME10 2GT<br>Authority: Environment Agency, Southern Region<br>Permit Reference: Bj7387ih<br>Original Permit Ref: Bj7387ih<br>Effective Date: 28th May 2002<br>**Status: Superseded By Variation**<br>Application Type: Application<br>App. Sub Type: New<br>Positional Accuracy: Manually positioned to the address or location<br>Activity Code: 6.1 A(1) (B)<br>Activity Description: Paper, Pulp And Board; Producing Paper/Board Greater Than 20T/D<br>Primary Activity: Y | A8NW (SW) | 324 | 1 | 591864 166174 |

| Map ID | Details | Quadrant Reference (Compass | Estimated Distance From Site | Contact | NGR |
|---|---|---|---|---|---|
| 19 | **Integrated Pollution Prevention And Control**<br>Name: M-Real New Thames Limited<br>Location: Kemsley & Sittingbourne Paper Mills, New Thames Mill, Ridham Avenue,,Kemsley, Sittingbourne, Kent, ME10 2SG<br>Authority: Environment Agency, Southern Region<br>Permit Reference: QP3638XL<br>Original Permit Ref: Bj7387ih<br>Effective Date: Not Supplied<br>**Status:** **Valid**<br>Application Type: Transfer<br>App. Sub Type: Whole limited change in management<br>Positional Accuracy: Manually positioned within the geographical locality<br>Activity Code: 6.1 A(1) (B)<br>Activity Description: Paper, Pulp And Board; Producing Paper/Board Greater Than 20T/D<br>Primary Activity: Y | A12SE (SW) | 341 | 1 | 591725 166344 |
| 20 | **Integrated Pollution Prevention And Control**<br>Name: M-Real Uk Services Ltd<br>Location: New Thames Mill, Uk Paper, Ridham Avenue,Kemsley,, SITTINGBOURNE, Kent, ME10 2GT<br>Authority: Environment Agency, Southern Region<br>Permit Reference: ZP3337XM<br>Original Permit Ref: Bj7387ih<br>Effective Date: 1st December 2008<br>**Status:** **Transfer Not Yet Effective**<br>Application Type: Variation<br>App. Sub Type: Substantial<br>Positional Accuracy: Manually positioned within the geographical locality<br>Activity Code: 6.1 A(1) (B)<br>Activity Description: Paper, Pulp And Board; Producing Paper/Board Greater Than 20T/D<br>Primary Activity: Y | A12SE (W) | 382 | 1 | 591616 166573 |
| 20 | **Integrated Pollution Prevention And Control**<br>Name: M-Real New Thames Limited<br>Location: New Thames Paper Mill, Uk Paper, Ridham Avenue,Kemsley,, SITTINGBOURNE, Kent, ME10 2GT<br>Authority: Environment Agency, Southern Region<br>Permit Reference: JP3535GR<br>Original Permit Ref: Bj7387ih<br>Effective Date: Not Supplied<br>**Status:** **Valid**<br>Application Type: Transfer<br>App. Sub Type: Whole with Fit and Proper Person<br>Positional Accuracy: Manually positioned within the geographical locality<br>Activity Code: 6.1 A(1) (B)<br>Activity Description: Paper, Pulp And Board; Producing Paper/Board Greater Than 20T/D<br>Primary Activity: Y | A12SE (W) | 382 | 1 | 591616 166574 |
| 21 | **Integrated Pollution Prevention And Control**<br>Name: Grovehurst Energy Limited<br>Location: Kemsley And Sittingbourne Paper Mills, Uk Paper House, Kemsley Mill, Kemsley, Sittingbourne, Kent, ME10 2SG<br>Authority: Environment Agency, Southern Region<br>Permit Reference: Kp3833ll<br>Original Permit Ref: Bj8588iw<br>Effective Date: 6th July 2006<br>**Status:** **Effective**<br>Application Type: Variation<br>App. Sub Type: Standard<br>Positional Accuracy: Automatically positioned to the address<br>Activity Code: 0.0 Associated Process<br>Activity Description: Associated Process<br>Primary Activity: Y | A7NE (SW) | 393 | 1 | 591779 166155 |
| 21 | **Integrated Pollution Prevention And Control**<br>Name: M-Real New Thames Ltd<br>Location: UK Paper House, Kemsley, SITTINGBOURNE, Kent, ME10 2SG<br>Authority: Environment Agency, Southern Region<br>Permit Reference: Bj7387<br>Original Permit Ref: Bj7387<br>Effective Date: 28th May 2002<br>**Status:** **Superseded By Variation**<br>Application Type: PPC APPLICATION<br>App. Sub Type: Not Supplied<br>Positional Accuracy: Automatically positioned to the address<br>Activity Code: 6.1 A(1) (B)<br>Activity Description: Paper, Pulp And Board; Producing Paper/Board Greater Than 20T/D<br>Primary Activity: Not Supplied | A7NE (SW) | 393 | 1 | 591779 166155 |

| Map ID | Details | Quadrant Reference (Compass | Estimated Distance From Site | Contact | NGR |
|---|---|---|---|---|---|
| 21 | **Integrated Pollution Prevention And Control**<br>Name: Grovehurst Energy Limited<br>Location: Kemsley And Sittingbourne Paper Mills, Uk Paper House, Kemsley Mill, Kemsley, Sittingbourne, Kent, ME10 2SG<br>Authority: Environment Agency, Southern Region<br>Permit Reference: Bj8588iw<br>Original Permit Ref: Bj8588iw<br>Effective Date: 25th April 2002<br>**Status:** **Superseded By Variation**<br>Application Type: Application<br>App. Sub Type: New<br>Positional Accuracy: Automatically positioned to the address<br>Activity Code: 0.0 Associated Process<br>Activity Description: Associated Process<br>Primary Activity: Y | A7NE (SW) | 393 | 1 | 591779 166155 |
| 21 | **Integrated Pollution Prevention And Control**<br>Name: Grovehurst Energy Limited<br>Location: Kemsley Paper Mill Effluent Treatment Plant, Uk Paper House, Kemsley Mill,Kemsley,, SITTINGBOURNE, Kent, ME10 2SG<br>Authority: Environment Agency, Southern Region<br>Permit Reference: YP3635GC<br>Original Permit Ref: Bj8588iw<br>Effective Date: Not Supplied<br>**Status:** **Valid**<br>Application Type: Transfer<br>App. Sub Type: Whole without Fit and Proper Person<br>Positional Accuracy: Automatically positioned to the address<br>Activity Code: 0.0 Associated Process<br>Activity Description: Associated Process<br>Primary Activity: Y | A7NE (SW) | 393 | 1 | 591779 166155 |
| 22 | **Integrated Pollution Prevention And Control**<br>Name: E.On Uk Chp Limited<br>Location: Kemsley Mill, Kemsley, Sittingbourne, Kent, ME10 2TD<br>Authority: Environment Agency, Southern Region<br>Permit Reference: CP3036MH<br>Original Permit Ref: Bj7395ig<br>Effective Date: 25th January 2008<br>**Status:** **Effective**<br>Application Type: Variation<br>App. Sub Type: Standard<br>Positional Accuracy: Automatically positioned to the address<br>Activity Code: 1.1 A(1) (A)<br>Activity Description: Combustion; Any Fuel Greater Or Equal To 50Mw<br>Primary Activity: Y<br>Activity Code: 5.1 A(1) (A)<br>Activity Description: Incineration Of Hazardous Waste<br>Primary Activity: N | A7NE (SW) | 503 | 1 | 591632 166162 |
| 22 | **Integrated Pollution Prevention And Control**<br>Name: E.On Uk Chp Limited<br>Location: Kemsley And Sittingbourne Paper Mills, Kemsley Mill, Kemsley, Sittingbourne, Kent, ME10 2TD<br>Authority: Environment Agency, Southern Region<br>Permit Reference: GP3836LU<br>Original Permit Ref: Bj7395ig<br>Effective Date: 9th December 2006<br>**Status:** **Superseded By Variation**<br>Application Type: Variation<br>App. Sub Type: Simple Standard Variation<br>Positional Accuracy: Automatically positioned to the address<br>Activity Code: 1.1 A(1) (A)<br>Activity Description: Combustion; Any Fuel Greater Or Equal To 50Mw<br>Primary Activity: Y<br>Activity Code: 5.1 A(1) (A)<br>Activity Description: Incineration Of Hazardous Waste<br>Primary Activity: N | A7NE (SW) | 503 | 1 | 591632 166162 |
| 22 | **Integrated Pollution Prevention And Control**<br>Name: E.On Uk Chp Limited<br>Location: Kemsley And Sittingbourne Paper Mills, Kemsley Mill, Kemsley, Sittingbourne, Kent, ME10 2TD<br>Authority: Environment Agency, Southern Region<br>Permit Reference: Qp3032sj<br>Original Permit Ref: Bj7395ig<br>Effective Date: 20th December 2005<br>**Status:** **Superseded By Variation**<br>Application Type: Variation<br>App. Sub Type: Standard<br>Positional Accuracy: Automatically positioned to the address<br>Activity Code: 1.1 A(1) (A)<br>Activity Description: Combustion; Any Fuel Greater Or Equal To 50Mw<br>Primary Activity: Y | A7NE (SW) | 503 | 1 | 591632 166162 |

| Map ID | Details | Quadrant Reference (Compass | Estimated Distance From Site | Contact | NGR |
|---|---|---|---|---|---|
| 22 | **Integrated Pollution Prevention And Control**<br>Name: St. Regis Paper Company Limited<br>Location: Kemsley And Sittingbourne Paper Mills, Kemsley Paper Mill, Kemsley, Sittingbourne, Kent, ME10 2TD<br>Authority: Environment Agency, Southern Region<br>Permit Reference: Bx1039ib<br>Original Permit Ref: Bj7468ic<br>Effective Date: 14th July 2005<br>**Status: Superseded By Variation**<br>Application Type: Variation<br>App. Sub Type: Standard<br>Positional Accuracy: Automatically positioned to the address<br>Activity Code: 6.1 A(1) (B)<br>Activity Description: Paper, Pulp And Board; Producing Paper/Board Greater Than 20T/D<br>Primary Activity: Y | A7NE (SW) | 503 | 1 | 591632 166162 |
| 22 | **Integrated Pollution Prevention And Control**<br>Name: E.On Uk Chp Limited<br>Location: Kemsley And Sittingbourne Paper Mills, Kemsley Mill, Kemsley, Sittingbourne, Kent, ME10 2TD<br>Authority: Environment Agency, Southern Region<br>Permit Reference: Dp3139sb<br>Original Permit Ref: Bj7395ig<br>Effective Date: 27th November 2004<br>**Status: Superseded By Variation**<br>Application Type: Variation<br>App. Sub Type: Minor<br>Positional Accuracy: Automatically positioned to the address<br>Activity Code: 1.1 A(1) (A)<br>Activity Description: Combustion; Any Fuel Greater Or Equal To 50Mw<br>Primary Activity: Y | A7NE (SW) | 503 | 1 | 591632 166162 |
| 22 | **Integrated Pollution Prevention And Control**<br>Name: E.On Uk Chp Limited<br>Location: Kemsley And Sittingbourne Paper Mills, Kemsley Mill, Kemsley, Sittingbourne, Kent, ME10 2TD<br>Authority: Environment Agency, Southern Region<br>Permit Reference: Bx0407ib<br>Original Permit Ref: Bj7395ig<br>Effective Date: 29th February 2004<br>**Status: Superseded By Variation**<br>Application Type: Variation<br>App. Sub Type: Standard<br>Positional Accuracy: Automatically positioned to the address<br>Activity Code: 1.1 A(1) (A)<br>Activity Description: Combustion; Any Fuel Greater Or Equal To 50Mw<br>Primary Activity: Y | A7NE (SW) | 503 | 1 | 591632 166162 |
| 22 | **Integrated Pollution Prevention And Control**<br>Name: E.On Uk Chp Ltd<br>Location: Kemsley Mill,Kemsley, Sittingbourne, Kent, Me10 2td<br>Authority: Environment Agency, Southern Region<br>Permit Reference: Bj7395<br>Original Permit Ref: Bj7395<br>Effective Date: 24th April 2002<br>**Status: Superseded By Variation**<br>Application Type: PPC APPLICATION<br>App. Sub Type: Not Supplied<br>Positional Accuracy: Manually positioned to the address or location<br>Activity Code: 1.1 A(1) (A)<br>Activity Description: Combustion; Any Fuel Greater Or Equal To 50Mw<br>Primary Activity: Not Supplied | A7NE (SW) | 503 | 1 | 591632 166162 |
| 22 | **Integrated Pollution Prevention And Control**<br>Name: E.On Uk Chp Limited<br>Location: Kemsley And Sittingbourne Paper Mills, Kemsley Mill, Kemsley, Sittingbourne, Kent, ME10 2TD<br>Authority: Environment Agency, Southern Region<br>Permit Reference: Bj7395ig<br>Original Permit Ref: Bj7395ig<br>Effective Date: 24th April 2002<br>**Status: Superseded By Variation**<br>Application Type: Application<br>App. Sub Type: New<br>Positional Accuracy: Automatically positioned to the address<br>Activity Code: 1.1 A(1) (A)<br>Activity Description: Combustion; Any Fuel Greater Or Equal To 50Mw<br>Primary Activity: Y | A7NE (SW) | 503 | 1 | 591632 166162 |

| Map ID | Details | Quadrant Reference (Compass | Estimated Distance From Site | Contact | NGR |
|---|---|---|---|---|---|
| 22 | **Integrated Pollution Prevention And Control**<br>Name: St. Regis Paper Company Limited<br>Location: Kemsley And Sittingbourne Paper Mills, Kemsley Paper Mill, Kemsley, Sittingbourne, Kent, ME10 2TD<br>Authority: Environment Agency, Southern Region<br>Permit Reference: Bj7468ic<br>Original Permit Ref: Bj7468ic<br>Effective Date: 22nd March 2002<br>**Status: Superseded By Variation**<br>Application Type: Application<br>App. Sub Type: New<br>Positional Accuracy: Automatically positioned to the address<br>Activity Code: 6.1 A(1) (B)<br>Activity Description: Paper, Pulp And Board; Producing Paper/Board Greater Than 20T/D<br>Primary Activity: Y | A7NE (SW) | 503 | 1 | 591632 166162 |
| 22 | **Integrated Pollution Prevention And Control**<br>Name: St. Regis Paper Company Limited<br>Location: Kemsley Paper Mill, Sittingbourne, Kent, ME10 2TD<br>Authority: Environment Agency, Southern Region<br>Permit Reference: MP3835MH<br>Original Permit Ref: Bj7468ic<br>Effective Date: 5th November 2007<br>**Status: Effective**<br>Application Type: Variation<br>App. Sub Type: Standard<br>Positional Accuracy: Manually positioned to the address or location<br>Activity Code: 6.1 A(1) (A)<br>Activity Description: Paper, Pulp And Board; Producing Pulp From Timber Etc<br>Primary Activity: N<br>Activity Code: 6.1 A(1) (B)<br>Activity Description: Paper, Pulp And Board; Producing Paper/Board Greater Than 20T/D<br>Primary Activity: Y<br>Activity Code: 0.0 Associated Process<br>Activity Description: Associated Process<br>Primary Activity: N | A7NE (SW) | 504 | 1 | 591631 166162 |
| | **Nearest Surface Water Feature** | A13NW (W) | 6 | - | 591995 166660 |
| 23 | **Pollution Incidents to Controlled Waters**<br>Property Type: Paper Industry<br>Location: Kemsley Mill, Kemsley, SITTINGBOURNE<br>Authority: Environment Agency, Southern Region<br>Pollutant: Organic Wastes: Other<br>Note: Waste Water Treatment Plant Fault<br>Incident Date: 27th October 1997<br>Incident Reference: 197020<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Not Given<br>Incident Severity: Category 2 - Significant Incident<br>Positional Accuracy: Located by supplier to within 100m | A13NE (NE) | 58 | 1 | 592400 166800 |
| 24 | **Pollution Incidents to Controlled Waters**<br>Property Type: Paper Industry<br>Location: Kemsley Papermill, SITTINGBOURNE<br>Authority: Environment Agency, Southern Region<br>Pollutant: Chemicals - Detergents/Surfactant<br>Note: Small Spill Firewash F1<br>Incident Date: 25th March 1998<br>Incident Reference: 197146<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Industrial Chemicals<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Unknown | A13SW (SW) | 92 | 1 | 591960 166430 |
| 25 | **Pollution Incidents to Controlled Waters**<br>Property Type: Paper Industry<br>Location: Fly Ash Sluice, Discharge To Swale<br>Authority: Environment Agency, Southern Region<br>Pollutant: Oils - Waste Oil<br>Note: Oil - Fly Ash Sluice<br>Incident Date: 16th March 1993<br>Incident Reference: CD/047/93<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Oils/Related Products<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 100m | A13SE (E) | 186 | 1 | 592500 166600 |

| Map ID | Details | Quadrant Reference (Compass | Estimated Distance From Site | Contact | NGR |
|---|---|---|---|---|---|
| 26 | **Pollution Incidents to Controlled Waters**<br>Property Type: Manufacturing<br>Location: OLD EFFLUENT DISCHARGE PIPE ADJACENT TO SLUDGE PRODUCTION.<br>Authority: Environment Agency, Southern Region<br>Pollutant: General Biodegradable : Biological / Non Sewage Microbiological Effluent<br>Note: Not Supplied<br>Incident Date: 17th December 1999<br>Incident Reference: 3855<br>Catchment Area: Swale<br>Receiving Water: Potential River<br>Cause of Incident: Unauthorised Activity : Unconsented Discharge<br>Incident Severity: Category 2 - Significant Incident<br>Positional Accuracy: Located by supplier to within 10m | A8NE (S) | 268 | 1 | 592200 166200 |
| 26 | **Pollution Incidents to Controlled Waters**<br>Property Type: Ships/Boats<br>Location: Grovehurst Energy, Kemsley Mill<br>Authority: Environment Agency, Southern Region<br>Pollutant: Organic Wastes: Other<br>Note: Suspected Paper Sludge Leachate Entering Swale<br>Incident Date: 29th September 1998<br>Incident Reference: 198363<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Poor/Inadequate Maintenance<br>Incident Severity: Category 2 - Significant Incident<br>Positional Accuracy: Located by supplier to within 100m | A8NW (S) | 273 | 1 | 592160 166180 |
| 26 | **Pollution Incidents to Controlled Waters**<br>Property Type: Ships/Boats<br>Location: Grovehurst Energy, Kemsley Mill<br>Authority: Environment Agency, Southern Region<br>Pollutant: Organic Wastes: Other<br>Note: Effluent Treatment Plant Producing Bulking In Final Settlement Tank<br>Incident Date: 3rd November 1998<br>Incident Reference: 198362<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Poor/Inadequate Maintenance<br>Incident Severity: Category 2 - Significant Incident<br>Positional Accuracy: Located by supplier to within 100m | A8NW (S) | 277 | 1 | 592160 166175 |
| 27 | **Pollution Incidents to Controlled Waters**<br>Property Type: Manufacturing<br>Location: Kemsley Mill, SITTINGBOURNE, Kent<br>Authority: Environment Agency, Southern Region<br>Pollutant: Other Pollutant<br>Note: Not Supplied<br>Incident Date: 21st March 1999<br>Incident Reference: 2167<br>Catchment Area: Medway Estuary<br>Receiving Water: Estuary<br>Cause of Incident: Unauthorised Activity : Breach Of Discharge Consent<br>Incident Severity: Category 2 - Significant Incident<br>Positional Accuracy: Located by supplier to within 10m | A18SE (N) | 276 | 1 | 592200 167095 |
| 27 | **Pollution Incidents to Controlled Waters**<br>Property Type: Manufacturing<br>Location: Kemsleymill, SITTINGBOURNE, Kent<br>Authority: Environment Agency, Southern Region<br>Pollutant: Other Pollutant<br>Note: Not Supplied<br>Incident Date: 21st March 1999<br>Incident Reference: 2166<br>Catchment Area: Medway Estuary<br>Receiving Water: Estuary<br>Cause of Incident: Other Cause<br>Incident Severity: Category 2 - Significant Incident<br>Positional Accuracy: Located by supplier to within 10m | A18SE (N) | 281 | 1 | 592200 167100 |
| 27 | **Pollution Incidents to Controlled Waters**<br>Property Type: Ships/Boats<br>Location: Location Description Not Available<br>Authority: Environment Agency, Southern Region<br>Pollutant: Organic Wastes: Other<br>Note: Biological Bulking Problem With Effluent Plant<br>Incident Date: 30th August 1998<br>Incident Reference: 197304<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Poor/Inadequate Maintenance<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 100m | A18SW (N) | 283 | 1 | 592170 167095 |

| Map ID | Details | Quadrant Reference (Compass | Estimated Distance From Site | Contact | NGR |
|---|---|---|---|---|---|
| 27 | **Pollution Incidents to Controlled Waters**<br>Property Type: Ships/Boats<br>Location: Location Description Not Available<br>Authority: Environment Agency, Southern Region<br>Pollutant: Organic Wastes: Other<br>Note: Solid Bulking On Treatment Plant<br>Incident Date: 31st August 1998<br>Incident Reference: 197305<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Poor/Inadequate Maintenance<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 100m | A18SW (N) | 288 | 1 | 592170 167100 |
| 28 | **Pollution Incidents to Controlled Waters**<br>Property Type: Manufacturing<br>Location: Kemsley Paper Mill, KEMSLEY<br>Authority: Environment Agency, Southern Region<br>Pollutant: General Biodegradable : Other Biological / Non Sewage<br>Note: Not Supplied<br>Incident Date: 12th December 1999<br>Incident Reference: 3972<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Structural Failure : Retaining Structure Collapse<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 10m | A18SE (N) | 277 | 1 | 592250 167100 |
| 29 | **Pollution Incidents to Controlled Waters**<br>Property Type: Manufacturing<br>Location: Kemsley Mill, SITTINGBOURNE<br>Authority: Environment Agency, Southern Region<br>Pollutant: Contaminated Water : Fire Fighting Run Off<br>Note: Not Supplied<br>Incident Date: 10th May 1999<br>Incident Reference: 2414<br>Catchment Area: Medway Estuary<br>Receiving Water: Estuary<br>Cause of Incident: Other Cause<br>Incident Severity: Category 2 - Significant Incident<br>Positional Accuracy: Located by supplier to within 10m | A12NE (W) | 295 | 1 | 591700 166700 |
| 30 | **Pollution Incidents to Controlled Waters**<br>Property Type: Paper Industry<br>Location: Grovehurst Energy, Kemsley Mill<br>Authority: Environment Agency, Southern Region<br>Pollutant: Unknown Sewage<br>Note: Power Failure At Effluent Plant<br>Incident Date: 3rd December 1997<br>Incident Reference: 197053<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Not Given<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 100m | A18SE (NE) | 315 | 1 | 592400 167100 |
| 31 | **Pollution Incidents to Controlled Waters**<br>Property Type: Paper Industry<br>Location: Kemsley Papermill<br>Authority: Environment Agency, Southern Region<br>Pollutant: Miscellaneous - Inert Suspended Solids<br>Note: High Solids Discharge<br>Incident Date: 5th February 1998<br>Incident Reference: 298021<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Organic Industrial Waste<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 100m | A8NW (S) | 348 | 1 | 592110 166090 |
| 31 | **Pollution Incidents to Controlled Waters**<br>Property Type: Ships/Boats<br>Location: Grovehurst Energy, SITTINGBOURNE<br>Authority: Environment Agency, Southern Region<br>Pollutant: Organic Wastes: Other<br>Note: Solids Carryover<br>Incident Date: 7th November 1998<br>Incident Reference: 198373<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Deliberate Disposal To Drain<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 100m | A8NW (S) | 353 | 1 | 592110 166085 |

| Map ID | Details | Quadrant Reference (Compass | Estimated Distance From Site | Contact | NGR |
|---|---|---|---|---|---|
| 31 | **Pollution Incidents to Controlled Waters**<br>Property Type: Paper Industry<br>Location: Kemsley Grovehurst Effluent Plant<br>Authority: Environment Agency, Southern Region<br>Pollutant: Sewage - Treated Effluent<br>Note: Exceeding Discharge Consent<br>Incident Date: 6th December 1997<br>Incident Reference: 197052<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Not Given<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 100m | A8NW (S) | 354 | 1 | 592115 166085 |
| 32 | **Pollution Incidents to Controlled Waters**<br>Property Type: Ships/Boats<br>Location: Location Description Not Available<br>Authority: Environment Agency, Southern Region<br>Pollutant: Organic Wastes: Other<br>Note: Activated Sludge Carry Over<br>Incident Date: 30th December 1998<br>Incident Reference: 198970<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Poor/Inadequate Maintenance<br>Incident Severity: Category 2 - Significant Incident<br>Positional Accuracy: Located by supplier to within 100m | A18SE (N) | 375 | 1 | 592200 167195 |
| 32 | **Pollution Incidents to Controlled Waters**<br>Property Type: Paper Industry<br>Location: Kemsley Final Effluent<br>Authority: Environment Agency, Southern Region<br>Pollutant: Chemicals - Paints / Dyes<br>Note: 200 Gallons Of Blue Paper Dye Into Swale (Non Toxic)<br>Incident Date: 21st July 1992<br>Incident Reference: CD/140/92<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Industrial Chemicals<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 100m | A18SE (N) | 380 | 1 | 592200 167200 |
| 33 | **Pollution Incidents to Controlled Waters**<br>Property Type: Ships/Boats<br>Location: Milton Creek, KEMSLEY<br>Authority: Environment Agency, Southern Region<br>Pollutant: Organic Wastes: Other<br>Note: Discharge Of Untreated Paper Mill Effluent<br>Incident Date: 31st August 1998<br>Incident Reference: 197300<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Poor/Inadequate Maintenance<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 100m | A8NW (S) | 392 | 1 | 592020 166045 |
| 34 | **Pollution Incidents to Controlled Waters**<br>Property Type: Manufacturing<br>Location: Kemsley Paper Mill, SITTINGBOURNE<br>Authority: Environment Agency, Southern Region<br>Pollutant: General Biodegradable : Other Sewage & Sewerage Material<br>Note: Not Supplied<br>Incident Date: 29th May 1999<br>Incident Reference: 1560<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Drainage Failures : Foul Sewer Failure<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 10m | A18SW (N) | 452 | 1 | 592000 167200 |
| 35 | **Pollution Incidents to Controlled Waters**<br>Property Type: Landfill/Waste Disposal Site<br>Location: Kemsley Mill Landfill<br>Authority: Environment Agency, Southern Region<br>Pollutant: Miscellaneous - Fire water / Foam<br>Note: Paper & Plastics Waste On Fire<br>Incident Date: 17th August 1998<br>Incident Reference: 197284<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Deliberate Disposal To Drain<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 100m | A8NE (S) | 492 | 1 | 592300 166000 |

| Map ID | Details | Quadrant Reference (Compass | Estimated Distance From Site | Contact | NGR |
|---|---|---|---|---|---|
| 36 | **Pollution Incidents to Controlled Waters**<br>Property Type: Paper Industry<br>Location: Kemsley Mill<br>Authority: Environment Agency, Southern Region<br>Pollutant: Chemicals - Unknown<br>Note: Fracture Of Main Effluent Line<br>Incident Date: 21st August 1992<br>Incident Reference: CD/172/92<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Industrial Chemicals<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 100m | A17SE (NW) | 579 | 1 | 591800 167200 |
| 37 | **Pollution Incidents to Controlled Waters**<br>Property Type: Other Farming<br>Location: Kemsley, SITTINGBOURNE<br>Authority: Environment Agency, Southern Region<br>Pollutant: Miscellaneous - Fire water / Foam<br>Note: 7 Pump Fire<br>Incident Date: 1st June 1997<br>Incident Reference: 297210<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Miscellaneous/Other Pollution Type<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 100m | A17SW (NW) | 814 | 1 | 591500 167300 |
| 38 | **Pollution Incidents to Controlled Waters**<br>Property Type: Not Given<br>Location: SITTINGBOURNE<br>Authority: Environment Agency, Southern Region<br>Pollutant: Miscellaneous - Unknown<br>Note: Dyke At Back Of His House Is Blue And Smelly<br>Incident Date: 26th July 1992<br>Incident Reference: CD/159/92<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Miscellaneous/Other Pollution Type<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 100m | A7SW (SW) | 847 | 1 | 591360 165950 |
| 39 | **Pollution Incidents to Controlled Waters**<br>Property Type: Miscellaneous Premises: Unknown<br>Location: Newman Drive<br>Authority: Environment Agency, Southern Region<br>Pollutant: Oils - Other Oil<br>Note: Oil On Angling Lake<br>Incident Date: 31st January 1998<br>Incident Reference: 298020<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Oils/Related Products<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 100m | A7SW (SW) | 957 | 1 | 591480 165670 |
| 40 | **Prosecutions Relating to Authorised Processes**<br>Location: At their premises, Kemsley, SITTINGBOURNE, Kent, ME<br>Prosecution Text: Environment Times 1997, Illegally disposing of foul-smelling paper waste.<br>Prosecution Act: EPA90<br>Hearing Date: 21st July 1997<br>Verdict: Guilty<br>Fine: 94000<br>Costs: 4240<br>Positional Accuracy: Manually positioned within the geographical locality | A7NE (SW) | 451 | 1 | 591688 166172 |
| 41 | **Substantiated Pollution Incident Register**<br>Authority: Environment Agency - Southern Region, Kent Area<br>Incident Date: 29th August 2005<br>Incident Reference: 341901<br>Water Impact: Category 2 - Significant Incident<br>Air Impact: Category 4 - No Impact<br>Land Impact: Category 4 - No Impact<br>Positional Accuracy: Located by supplier to within 10m<br>Pollutant: Contaminated Water: Other Contaminated Water<br>Pollutant: Contaminated Water: Suspended Solids | A18SE (N) | 247 | 1 | 592198 167065 |

| Map ID | Details | Quadrant Reference (Compass | Estimated Distance From Site | Contact | NGR |
|---|---|---|---|---|---|
| 42 | **Water Abstractions**<br>Operator: Grovehurst Energy Limited<br>Licence Number: 9/40/02/0114/A/Sr<br>Permit Version: 100<br>Location: Point 7, River Swale, Sittingbourne.<br>Authority: Environment Agency, Southern Region<br>Abstraction: Amenity: Spray Irrigation - Direct<br>Abstraction Type: Water may be abstracted from a single point<br>Source: Surface<br>Daily Rate (m3): Not Supplied<br>Yearly Rate (m3): Not Supplied<br>Details: As Shown Coloured Blue On Licence Map.<br>Authorised Start: 01 October<br>Authorised End: 30 September<br>Permit Start Date: 24th November 1966<br>Permit End Date: Not Supplied<br>Positional Accuracy: Located by supplier to within 10m | A13NE (E) | 43 | 1 | 592380 166680 |
| 43 | **Water Abstractions**<br>Operator: Grovehurst Energy Ltd<br>Licence Number: 2/0114/A/SR<br>Permit Version: Not Supplied<br>Location: SITTINGBOURNE<br>Authority: Environment Agency, Southern Region<br>Abstraction: Industrial Cooling (Miscellaneous)<br>Abstraction Type: Not Supplied<br>Source: Unknown<br>Daily Rate (m3): 265123<br>Yearly Rate (m3): 79555000<br>Details: River Swale (Saline)<br>Authorised Start: Not Supplied<br>Authorised End: Not Supplied<br>Permit Start Date: Not Supplied<br>Permit End Date: Not Supplied<br>Positional Accuracy: Located by supplier to within 100m | A13NE (NE) | 134 | 1 | 592500 166795 |
| | **Water Abstractions**<br>Operator: Wienerberger Limited<br>Licence Number: 08/114<br>Permit Version: 103<br>Location: Point A, Borehole At Milton Brickworks, Sittingbourne<br>Authority: Environment Agency, Southern Region<br>Abstraction: Construction: Process Water<br>Abstraction Type: Water may be abstracted from a single point<br>Source: Groundwater<br>Daily Rate (m3): Not Supplied<br>Yearly Rate (m3): Not Supplied<br>Details: As Boldly Outlined On The Map<br>Authorised Start: 01 January<br>Authorised End: 31 December<br>Permit Start Date: 1st April 2008<br>Permit End Date: Not Supplied<br>Positional Accuracy: Located by supplier to within 10m | A3NE (S) | 1127 | 1 | 592230 165320 |
| | **Water Abstractions**<br>Operator: Wienerberger Limited<br>Licence Number: 08/114<br>Permit Version: 103<br>Location: Point A, Borehole At Milton Brickworks, Sittingbourne<br>Authority: Environment Agency, Southern Region<br>Abstraction: Extractive: Non-Evaporative Cooling<br>Abstraction Type: Water may be abstracted from a single point<br>Source: Groundwater<br>Daily Rate (m3): Not Supplied<br>Yearly Rate (m3): Not Supplied<br>Details: As Boldly Outlined On Map<br>Authorised Start: 01 January<br>Authorised End: 31 December<br>Permit Start Date: 1st April 2008<br>Permit End Date: Not Supplied<br>Positional Accuracy: Located by supplier to within 10m | A3NE (S) | 1127 | 1 | 592230 165320 |

| Map ID | Details | Quadrant Reference (Compass | Estimated Distance From Site | Contact | NGR |
|---|---|---|---|---|---|
| | **Water Abstractions**<br>Operator: Thebrickbusiness Ltd<br>Licence Number: 08/114<br>Permit Version: 102<br>Location: Point A, Borehole At Milton Brickworks, Sittingbourne<br>Authority: Environment Agency, Southern Region<br>Abstraction: Extractive: Non-Evaporative Cooling<br>Abstraction Type: Water may be abstracted from a single point<br>Source: Groundwater<br>Daily Rate (m3): Not Supplied<br>Yearly Rate (m3): Not Supplied<br>Details: As Boldly Outlined On Map<br>Authorised Start: 01 January<br>Authorised End: 31 December<br>Permit Start Date: 22nd July 2003<br>Permit End Date: Not Supplied<br>Positional Accuracy: Located by supplier to within 10m | A3NE (S) | 1127 | 1 | 592230 165320 |
| | **Water Abstractions**<br>Operator: Thebrickbusiness Ltd<br>Licence Number: 08/114<br>Permit Version: 102<br>Location: Point A, Borehole At Milton Brickworks, Sittingbourne<br>Authority: Environment Agency, Southern Region<br>Abstraction: Construction: Process Water<br>Abstraction Type: Water may be abstracted from a single point<br>Source: Groundwater<br>Daily Rate (m3): Not Supplied<br>Yearly Rate (m3): Not Supplied<br>Details: As Boldly Outlined On The Map<br>Authorised Start: 01 January<br>Authorised End: 31 December<br>Permit Start Date: 22nd July 2003<br>Permit End Date: Not Supplied<br>Positional Accuracy: Located by supplier to within 10m | A3NE (S) | 1127 | 1 | 592230 165320 |
| | **Water Abstractions**<br>Operator: The Brick Business<br>Licence Number: 08/114<br>Permit Version: 101<br>Location: Point A, Borehole At Milton Brickworks, Sittingbourne<br>Authority: Environment Agency, Southern Region<br>Abstraction: Construction: Process Water<br>Abstraction Type: Water may be abstracted from a single point<br>Source: Groundwater<br>Daily Rate (m3): Not Supplied<br>Yearly Rate (m3): Not Supplied<br>Details: As Boldly Outlined On The Map<br>Authorised Start: 01 January<br>Authorised End: 31 December<br>Permit Start Date: 28th March 2002<br>Permit End Date: Not Supplied<br>Positional Accuracy: Located by supplier to within 10m | A3NE (S) | 1127 | 1 | 592230 165320 |
| | **Water Abstractions**<br>Operator: The Brick Business<br>Licence Number: 08/114<br>Permit Version: 101<br>Location: Point A, Borehole At Milton Brickworks, Sittingbourne<br>Authority: Environment Agency, Southern Region<br>Abstraction: Extractive: Non-Evaporative Cooling<br>Abstraction Type: Water may be abstracted from a single point<br>Source: Groundwater<br>Daily Rate (m3): Not Supplied<br>Yearly Rate (m3): Not Supplied<br>Details: As Boldly Outlined On Map<br>Authorised Start: 01 January<br>Authorised End: 31 December<br>Permit Start Date: 28th March 2002<br>Permit End Date: Not Supplied<br>Positional Accuracy: Located by supplier to within 10m | A3NE (S) | 1127 | 1 | 592230 165320 |

| Map ID | Details | Quadrant Reference (Compass | Estimated Distance From Site | Contact | NGR |
|---|---|---|---|---|---|
| | **Water Abstractions**<br>Operator: Chelwood Brick Ltd<br>Licence Number: 08/114<br>Permit Version: 100<br>Location: Point A, Borehole At Milton Brickworks, Sittingbourne<br>Authority: Environment Agency, Southern Region<br>Abstraction: Extractive: Non-Evaporative Cooling<br>Abstraction Type: Water may be abstracted from a single point<br>Source: Groundwater<br>Daily Rate (m3): Not Supplied<br>Yearly Rate (m3): Not Supplied<br>Details: As Boldly Outlined On Map<br>Authorised Start: 01 January<br>Authorised End: 31 December<br>Permit Start Date: 18th May 1998<br>Permit End Date: Not Supplied<br>Positional Accuracy: Located by supplier to within 10m | A3NE (S) | 1127 | 1 | 592230 165320 |
| | **Water Abstractions**<br>Operator: Chelwood Brick Ltd<br>Licence Number: 08/114<br>Permit Version: 100<br>Location: Point A, Borehole At Milton Brickworks, Sittingbourne<br>Authority: Environment Agency, Southern Region<br>Abstraction: Construction: Process Water<br>Abstraction Type: Water may be abstracted from a single point<br>Source: Groundwater<br>Daily Rate (m3): Not Supplied<br>Yearly Rate (m3): Not Supplied<br>Details: As Boldly Outlined On The Map<br>Authorised Start: 01 January<br>Authorised End: 31 December<br>Permit Start Date: 18th May 1998<br>Permit End Date: Not Supplied<br>Positional Accuracy: Located by supplier to within 10m | A3NE (S) | 1127 | 1 | 592230 165320 |
| | **Water Abstractions**<br>Operator: Blue Circle Industries Ltd<br>Licence Number: 2/0225/ /G<br>Permit Version: Not Supplied<br>Location: SITTINGBOURNE/HIGHSTED<br>Authority: Environment Agency, Southern Region<br>Abstraction: Industrial Cooling (Miscellaneous)<br>Abstraction Type: Not Supplied<br>Source: Groundwater<br>Daily Rate (m3): 68<br>Yearly Rate (m3): 22727<br>Details: I1 & H5 Chalk; Licence Status: Revoked; Lapsed Or Cancelled<br>Authorised Start: Not Supplied<br>Authorised End: Not Supplied<br>Permit Start Date: Not Supplied<br>Permit End Date: Not Supplied<br>Positional Accuracy: Located by supplier to within 100m | A3NE (S) | 1127 | 1 | 592230 165320 |
| | **Water Abstractions**<br>Operator: Mr J John Russell T/A Ridham Sea Terminals Limited<br>Licence Number: 07/037<br>Permit Version: 1<br>Location: Point A, Ridham Dock, Iwade, Sittingbourne<br>Authority: Environment Agency, Southern Region<br>Abstraction: Refuse and Recycling: General use relating to Secondary Category (High Loss)<br>Abstraction Type: Water may be abstracted from a single point<br>Source: Tidal<br>Daily Rate (m3): Not Supplied<br>Yearly Rate (m3): Not Supplied<br>Details: Not Supplied<br>Authorised Start: 01 January<br>Authorised End: 31 December<br>Permit Start Date: 20th September 2006<br>Permit End Date: Not Supplied<br>Positional Accuracy: Located by supplier to within 10m | (N) | 1713 | 1 | 592100 168530 |

| Map ID | Details | Quadrant Reference (Compass | Estimated Distance From Site | Contact | NGR |
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| | **Water Abstractions**<br>Operator: Mr L F Harding<br>Licence Number: 9/40/02/0253/S<br>Permit Version: 100<br>Location: Point A, Tributary Of The Coldharbour Fleet At Sittingbourne<br>Authority: Environment Agency, Southern Region<br>Abstraction: General Agriculture: Spray Irrigation - Storage<br>Abstraction Type: Water may be abstracted from a single point<br>Source: Surface<br>Daily Rate (m3): Not Supplied<br>Yearly Rate (m3): Not Supplied<br>Details: To Fill Off-Stream Reservoir For Subsequent Abstraction<br>Authorised Start: 01 January<br>Authorised End: 31 December<br>Permit Start Date: 30th November 2006<br>Permit End Date: Not Supplied<br>Positional Accuracy: Located by supplier to within 10m | (W) | 1791 | 1 | 590223<br>166939 |
| | **Water Abstractions**<br>Operator: United Marine Aggregates Ltd<br>Licence Number: 07/032<br>Permit Version: 100<br>Location: Point A At Ngr Tq 918 687<br>Authority: Environment Agency, Southern Region<br>Abstraction: Extractive: Mineral Washing<br>Abstraction Type: Water may be abstracted from a single point<br>Source: Groundwater<br>Daily Rate (m3): Not Supplied<br>Yearly Rate (m3): Not Supplied<br>Details: As Boldly Outlined On Map<br>Authorised Start: 01 October<br>Authorised End: 30 September<br>Permit Start Date: 10th October 1994<br>Permit End Date: Not Supplied<br>Positional Accuracy: Located by supplier to within 10m | (N) | 1962 | 1 | 591880<br>168750 |
| | **Water Abstractions**<br>Operator: F T Holt & Son (Farm) Ltd<br>Licence Number: 9/40/02/0222/S<br>Permit Version: 100<br>Location: Points A-B-C, 3 Lakes Forming W/Course & Trib Of Drain No 75<br>Authority: Environment Agency, Southern Region<br>Abstraction: General Agriculture: Spray Irrigation - Direct<br>Abstraction Type: Water may be abstracted from a river or stream reach, or a row of wellpoints<br>Source: Surface<br>Daily Rate (m3): 614<br>Yearly Rate (m3): 18182<br>Details: As Boldly Outlined On Licence Map.<br>Authorised Start: 01 May<br>Authorised End: 31 August<br>Permit Start Date: 29th November 2006<br>Permit End Date: Not Supplied<br>Positional Accuracy: Located by supplier to within 10m | (SE) | 1988 | 1 | 593350<br>164900 |
| | **Water Abstractions**<br>Operator: F T Holt & Son (Farm) Ltd<br>Licence Number: 9/40/02/0222/S<br>Permit Version: 100<br>Location: Points A-B-C, 3 Lakes Forming W/Course & Trib Of Drain No 75<br>Authority: Environment Agency, Southern Region<br>Abstraction: General Agriculture: Spray Irrigation - Storage<br>Abstraction Type: Water may be abstracted from a river or stream reach, or a row of wellpoints<br>Source: Surface<br>Daily Rate (m3): Not Supplied<br>Yearly Rate (m3): Not Supplied<br>Details: As Boldly Outlined On Licence Map.<br>Authorised Start: 01 November<br>Authorised End: 31 March<br>Permit Start Date: 29th November 2006<br>Permit End Date: Not Supplied<br>Positional Accuracy: Located by supplier to within 10m | (SE) | 1988 | 1 | 593350<br>164900 |
| | **Groundwater Vulnerability**<br>Geological Classification: Non Aquifer (Negligibly permeable) - Formations which are generally regarded as containing insignificant quantities of groundwater. However, groundwater flow through such rocks, although imperceptible, does take place and needs to be considered in assessing the risk associated with persistent pollutants<br>Soil Classification: Not classified<br>Map Sheet: Sheet 40 Thames Estuary<br>Scale: 1:100,000 | A13NE (NE) | 0 | 1 | 592339<br>166836 |
| | **Drift Deposits**<br>None | | | | |

| Map ID | Details | Quadrant Reference (Compass | Estimated Distance From Site | Contact | NGR |
|---|---|---|---|---|---|
| | **Extreme Flooding from Rivers or Sea without Defences**<br>Flood Plain Type: Tidal<br>Boundary Accuracy: As Supplied | A13NE (E) | 0 | 1 | 592300 166655 |
| | **Flooding from Rivers or Sea without Defences**<br>Flood Plain Type: Tidal<br>Boundary Accuracy: As Supplied | A13NW (N) | 0 | 1 | 592115 166785 |
| | **Areas Benefiting from Flood Defences**<br>None | | | | |
| | **Flood Water Storage Areas**<br>None | | | | |
| | **Flood Defences**<br>None | | | | |

| Map ID | Details | Quadrant Reference (Compass | Estimated Distance From Site | Contact | NGR |
|---|---|---|---|---|---|
| 44 | **Historical Landfill Sites**<br>Licence Holder: Kemsley Paper Mill<br>Location: Swale, Kent<br>Name: North Kemsley<br>Operator Location: Not Supplied<br>Boundary Accuracy: As Supplied<br>Provider Reference: EAHLD19400<br>First Input Date: Not Supplied<br>Last Input Date: Not Supplied<br>Specified Waste Type: Deposited Waste included Inert Waste<br>EA Waste Ref: Not Supplied<br>Regis Ref: Not Supplied<br>WRC Ref: 2200/7190<br>BGS Ref: Not Supplied<br>Other Ref: SW9 | A13SW (SW) | 0 | 1 | 592155 166623 |
| 45 | **Historical Landfill Sites**<br>Licence Holder: Bowaters UK<br>Location: Swale, Kent<br>Name: Kemsley Mill<br>Operator Location: Not Supplied<br>Boundary Accuracy: As Supplied<br>Provider Reference: EAHLD19822<br>First Input Date: 31st December 1977<br>Last Input Date: 31st December 1993<br>Specified Waste Type: Deposited Waste included Inert, Industrial, Commercial and Household Waste, and Liquid Sludge<br>EA Waste Ref: Not Supplied<br>Regis Ref: Not Supplied<br>WRC Ref: 2200/7133<br>BGS Ref: Not Supplied<br>Other Ref: P/05/14, 21DJ | A13SE (SE) | 9 | 1 | 592244 166571 |
| 46 | **Historical Landfill Sites**<br>Licence Holder: Milton Creek Works<br>Location: Swale, Kent<br>Name: Milton Creek Works<br>Operator Location: Not Supplied<br>Boundary Accuracy: As Supplied<br>Provider Reference: EAHLD19421<br>First Input Date: Not Supplied<br>Last Input Date: Not Supplied<br>Specified Waste Type: Not Supplied<br>EA Waste Ref: Not Supplied<br>Regis Ref: Not Supplied<br>WRC Ref: 2200/7182<br>BGS Ref: Not Supplied<br>Other Ref: SW45 | A8NE (S) | 511 | 1 | 592281 165966 |
| 47 | **Historical Landfill Sites**<br>Licence Holder: Paper Mill<br>Location: Swale, Kent<br>Name: Kemsley Marshes<br>Operator Location: Not Supplied<br>Boundary Accuracy: As Supplied<br>Provider Reference: EAHLD19390<br>First Input Date: Not Supplied<br>Last Input Date: 31st December 1973<br>Specified Waste Type: Deposited Waste included Inert Waste<br>EA Waste Ref: Not Supplied<br>Regis Ref: Not Supplied<br>WRC Ref: 2200/7188<br>BGS Ref: Not Supplied<br>Other Ref: SW7 | A18NW (N) | 547 | 1 | 592023 167323 |
| 48 | **Historical Landfill Sites**<br>Licence Holder: Paper Mill<br>Location: Swale, Kent<br>Name: Kemsley Marshes<br>Operator Location: Not Supplied<br>Boundary Accuracy: As Supplied<br>Provider Reference: EAHLD19385<br>First Input Date: Not Supplied<br>Last Input Date: 31st December 1973<br>Specified Waste Type: Deposited Waste included Inert Waste<br>EA Waste Ref: Not Supplied<br>Regis Ref: Not Supplied<br>WRC Ref: 2200/7188<br>BGS Ref: Not Supplied<br>Other Ref: SW7 | A18NW (N) | 743 | 1 | 591922 167490 |

| Map ID | Details | Quadrant Reference (Compass | Estimated Distance From Site | Contact | NGR |
|---|---|---|---|---|---|
| 49 | **Historical Landfill Sites**<br>Licence Holder: Kent County Council<br>Location: Swale, Kent<br>Name: Church Marshes<br>Operator Location: Not Supplied<br>Boundary Accuracy: As Supplied<br>Provider Reference: EAHLD19424<br>First Input Date: 31st December 1961<br>Last Input Date: 31st December 1991<br>Specified Waste Type: Deposited Waste included Inert, Industrial, Commercial and Household Waste<br>EA Waste Ref: Not Supplied<br>Regis Ref: Not Supplied<br>WRC Ref: 2200/7130<br>BGS Ref: 130<br>Other Ref: 21BB, P/05/04 | A2NE (S) | 914 | 1 | 591769 165567 |
| 50 | **Integrated Pollution Control Registered Waste Sites**<br>Name: E.On Uk Chp Ltd<br>Location: Kemsley Mill, SITTINGBOURNE, Kent, ME10 2TD<br>Authority: Environment Agency, Southern Region<br>Permit Reference: BE3367<br>Dated: 24th November 1998<br>Process Type: IPC minor (non-substantial) variation to previous variation<br>Description: 5.1 A (C) Incineration within the Waste Disposal Industry<br>**Status: Revoked - Now IPPC**<br>Positional Accuracy: Automatically positioned to the address | A7NE (SW) | 502 | 1 | 591637 166157 |
| 50 | **Integrated Pollution Control Registered Waste Sites**<br>Name: E.On Uk Chp Ltd<br>Location: Kemsley Mill, SITTINGBOURNE, Kent, ME10 2TD<br>Authority: Environment Agency, Southern Region<br>Permit Reference: BA7174<br>Dated: 27th July 1998<br>Process Type: IPC new application<br>Description: 5.1 A (C) Incineration within the Waste Disposal Industry<br>**Status: Authorisation superseded by a substantial or non substantial variationSuperseded**<br>Positional Accuracy: Automatically positioned to the address | A7NE (SW) | 503 | 1 | 591632 166162 |
| 51 | **Licensed Waste Management Facilities (Landfill Boundaries)**<br>Name: Kemsley Mill Land Fill<br>Licence Number: 19432<br>Location: Kemsley, Sittingbourne, Kent, ME10 2SG<br>Licence Holder: Grovehurst Energy Limited<br>Authority: Environment Agency - Southern Region, Kent Area<br>Site Category: Industrial Waste Landfills<br>Max Input Rate: Not Supplied<br>**Licence Status: Active**<br>Issued 18th April 1994<br>Positional Accuracy: Positioned by the supplier<br>Boundary Accuracy: As Supplied | A13SE (SE) | 9 | 1 | 592246 166575 |
| 52 | **Licensed Waste Management Facilities (Locations)**<br>Licence Number: 19432<br>Location: Kemsley, Sittingbourne, Kent, ME10 2SG<br>Operator Name: Grovehurst Energy Limited<br>Operator Location: U K Paper House, Kemsley, Sittingbourne, Kent, ME10 2SG<br>Authority: Environment Agency - Southern Region, Kent Area<br>Site Category: Industrial Waste Landfills<br>**Licence Status: Issued**<br>Issued: 18th April 1994<br>Last Modified: Not Supplied<br>Expires: Not Supplied<br>Suspended: Not Supplied<br>Revoked: Not Supplied<br>Surrendered: Not Supplied<br>IPPC Reference: Not Supplied<br>Positional Accuracy: Located by supplier to within 100m | A13SE (SE) | 169 | 1 | 592300 166400 |

| Map ID | Details | Quadrant Reference (Compass | Estimated Distance From Site | Contact | NGR |
|---|---|---|---|---|---|
| 53 | **Licensed Waste Management Facilities (Locations)**<br>Licence Number: 10367<br>Location: Countrystyle Recycling Ltd, Ridham Dock Rd, Iwade, Sittingbourne, Kent, ME9 8SR<br>Operator Name: Countrystyle Recycling Ltd<br>Operator Location: Stanford Bridge Farm, Stanford Road, Pluckley, Ashford, Kent, TN27 0RU<br>Authority: Environment Agency - Southern Region, Kent Area<br>Site Category: Composting<br>**Licence Status: Modified**<br>Issued: 27th November 2006<br>Last Modified: 1st September 2008<br>Expires: Not Supplied<br>Suspended: Not Supplied<br>Revoked: Not Supplied<br>Surrendered: Not Supplied<br>IPPC Reference: Not Supplied<br>Positional Accuracy: Located by supplier to within 100m | A18SW (N) | 500 | 1 | 592100 167300 |
| | **Local Authority Landfill Coverage**<br>Name: Swale Borough Council - Has no landfill data to supply | | 0 | 4 | 588956 173405 |
| | **Local Authority Landfill Coverage**<br>Name: Kent County Council - Had landfill data but passed it to the relevant environment agency | | 0 | 5 | 592344 166688 |
| | **Local Authority Landfill Coverage**<br>Name: Kent County Council - Had landfill data but passed it to the relevant environment agency | | 325 | 5 | 592531 167044 |
| 54 | **Registered Landfill Sites**<br>Licence Holder: Grovehurst Energy Ltd<br>Licence Reference: P/05/63<br>Site Location: Kemsley Mill Extension, Kemsley, Sittingbourne, Kent<br>Licence Easting: 592300<br>Licence Northing: 166400<br>Operator Location: U.K Paper House, Kemsley, SITTINGBOURNE, Kent, ME10 2SG<br>Authority: Environment Agency - Southern Region, Kent Area<br>Site Category: Landfill<br>Max Input Rate: Large (Equal to or greater than 75,000 and less than 250,000 tonnes per year)<br>Waste Source Restrictions: Waste produced/controlled by licence holder<br>Status: Operational as far as is knownOperational<br>Dated: 18th April 1994<br>Preceded By Licence: P/05/14<br>Superseded By Licence: Not Given<br>Positional Accuracy: Manually positioned to the address or location<br>Boundary Accuracy: Not Applicable<br>Authorised Waste: Bio Sludge<br>Dewatered Effluent Sludge Cake<br>Floor Sweepings Not Contam.With<br>Kent Cat. A - Non (V.Slow)-Degrading W<br>Kent Cat. B1 - Slowly Degradable Waste<br>Max.Waste Permitted By Licence<br>Primary Sludge Cake<br>Pulverised Fuel Ash<br>Uncontam. Empty Used Containers<br>Prohibited Waste: Liable To Cause Environmental Hazards<br>Toxic Substances<br>Waste N.O.S. | A13SE (SE) | 169 | 1 | 592300 166400 |

| Map ID | Details | Quadrant Reference (Compass | Estimated Distance From Site | Contact | NGR |
|---|---|---|---|---|---|
| 54 | **Registered Landfill Sites**<br>Licence Holder: New Thames Paper Co Ltd<br>Licence Reference: P/05/14<br>Site Location: Kemsley Mill, Kemsley, SITTINGBOURNE, Kent, ME10 3ET<br>Licence Easting: 592305<br>Licence Northing: 166400<br>Operator Location: As Site Address<br>Authority: Environment Agency - Southern Region, Kent Area<br>Site Category: Landfill<br>Max Input Rate: Medium (Equal to or greater than 25,000 and less than 75,000 tonnes per year)<br>Waste Source Restrictions: Waste produced/controlled by licence holder<br>Status: Record supersededSuperseded<br>Dated: 14th October 1977<br>Preceded By Licence: Not Given<br>Superseded By Licence: P/05/63<br>Positional Accuracy: Manually positioned to the address or location<br>Boundary Accuracy: Not Applicable<br>Authorised Waste: Constr'N/Demol. Inert/Non-Haz/Non-Tox<br>Paper Making Wastes<br>Wet Fly Ash | A13SE (SE) | 172 | 1 | 592305 166400 |

| Map ID | Details | Quadrant Reference (Compass | Estimated Distance From Site | Contact | NGR |
|---|---|---|---|---|---|
| | **BGS 1:625,000 Solid Geology**<br>Description: London Clay | A13SW (SW) | 0 | 2 | 592153 166622 |
| | **Coal Mining Affected Areas**<br>In an area which may not be affected by coal mining | | | | |
| | **Potential for Collapsible Ground Stability Hazards**<br>Hazard Potential: Moderate<br>Source: British Geological Survey, National Geoscience Information Service | A13SW (W) | 0 | 2 | 592050 166625 |
| | **Potential for Compressible Ground Stability Hazards**<br>Hazard Potential: Moderate<br>Source: British Geological Survey, National Geoscience Information Service | A13SW (W) | 0 | 2 | 592075 166600 |
| | **Potential for Compressible Ground Stability Hazards**<br>Hazard Potential: No Hazard<br>Source: British Geological Survey, National Geoscience Information Service | A13SW (W) | 0 | 2 | 592075 166600 |
| | **Potential for Compressible Ground Stability Hazards**<br>Hazard Potential: Moderate<br>Source: British Geological Survey, National Geoscience Information Service | A13NE (NE) | 214 | 2 | 592475 166950 |
| | **Potential for Ground Dissolution Stability Hazards**<br>No Hazard | | | | |
| | **Potential for Landslide Ground Stability Hazards**<br>Hazard Potential: Low<br>Source: British Geological Survey, National Geoscience Information Service | A13SE (E) | 0 | 2 | 592275 166625 |
| | **Potential for Landslide Ground Stability Hazards**<br>Hazard Potential: Low<br>Source: British Geological Survey, National Geoscience Information Service | A13SE (SE) | 0 | 2 | 592250 166600 |
| | **Potential for Landslide Ground Stability Hazards**<br>Hazard Potential: Low<br>Source: British Geological Survey, National Geoscience Information Service | A13SE (SE) | 0 | 2 | 592225 166575 |
| | **Potential for Landslide Ground Stability Hazards**<br>Hazard Potential: Low<br>Source: British Geological Survey, National Geoscience Information Service | A13SE (S) | 0 | 2 | 592200 166550 |
| | **Potential for Landslide Ground Stability Hazards**<br>Hazard Potential: Low<br>Source: British Geological Survey, National Geoscience Information Service | A13SW (S) | 0 | 2 | 592175 166525 |
| | **Potential for Landslide Ground Stability Hazards**<br>Hazard Potential: Low<br>Source: British Geological Survey, National Geoscience Information Service | A13NE (E) | 0 | 2 | 592300 166638 |
| | **Potential for Landslide Ground Stability Hazards**<br>Hazard Potential: Very Low<br>Source: British Geological Survey, National Geoscience Information Service | A13SE (SE) | 0 | 2 | 592225 166575 |
| | **Potential for Landslide Ground Stability Hazards**<br>Hazard Potential: Moderate<br>Source: British Geological Survey, National Geoscience Information Service | A13SE (SE) | 10 | 2 | 592250 166575 |
| | **Potential for Landslide Ground Stability Hazards**<br>Hazard Potential: Very Low<br>Source: British Geological Survey, National Geoscience Information Service | A13SE (E) | 56 | 2 | 592350 166625 |
| | **Potential for Landslide Ground Stability Hazards**<br>Hazard Potential: Very Low<br>Source: British Geological Survey, National Geoscience Information Service | A13SE (SE) | 82 | 2 | 592300 166525 |
| | **Potential for Landslide Ground Stability Hazards**<br>Hazard Potential: Moderate<br>Source: British Geological Survey, National Geoscience Information Service | A13SE (E) | 91 | 2 | 592375 166600 |
| | **Potential for Landslide Ground Stability Hazards**<br>Hazard Potential: Moderate<br>Source: British Geological Survey, National Geoscience Information Service | A13SE (E) | 94 | 2 | 592400 166625 |
| | **Potential for Landslide Ground Stability Hazards**<br>Hazard Potential: Moderate<br>Source: British Geological Survey, National Geoscience Information Service | A13SE (S) | 117 | 2 | 592200 166375 |
| | **Potential for Landslide Ground Stability Hazards**<br>Hazard Potential: Moderate<br>Source: British Geological Survey, National Geoscience Information Service | A13SE (SE) | 188 | 2 | 592300 166350 |

| Map ID | Details | Quadrant Reference (Compass | Estimated Distance From Site | Contact | NGR |
|---|---|---|---|---|---|
| | **Potential for Landslide Ground Stability Hazards**<br>Hazard Potential: Very Low<br>Source: British Geological Survey, National Geoscience Information Service | A13SE (SE) | 239 | 2 | 592375 166375 |
| | **Potential for Landslide Ground Stability Hazards**<br>Hazard Potential: Moderate<br>Source: British Geological Survey, National Geoscience Information Service | A13SE (SE) | 242 | 2 | 592425 166425 |
| | **Potential for Running Sand Ground Stability Hazards**<br>Hazard Potential: Very Low<br>Source: British Geological Survey, National Geoscience Information Service | A13SW (W) | 0 | 2 | 592075 166600 |
| | **Potential for Running Sand Ground Stability Hazards**<br>Hazard Potential: No Hazard<br>Source: British Geological Survey, National Geoscience Information Service | A13SW (W) | 0 | 2 | 592075 166600 |
| | **Potential for Running Sand Ground Stability Hazards**<br>Hazard Potential: Moderate<br>Source: British Geological Survey, National Geoscience Information Service | A13NE (NE) | 64 | 2 | 592325 166850 |
| | **Potential for Running Sand Ground Stability Hazards**<br>Hazard Potential: Very Low<br>Source: British Geological Survey, National Geoscience Information Service | A13NE (NE) | 111 | 2 | 592375 166875 |
| | **Potential for Running Sand Ground Stability Hazards**<br>Hazard Potential: Moderate<br>Source: British Geological Survey, National Geoscience Information Service | A13NE (NE) | 214 | 2 | 592475 166950 |
| | **Potential for Shrinking or Swelling Clay Ground Stability Hazards**<br>Hazard Potential: Moderate<br>Source: British Geological Survey, National Geoscience Information Service | A13SE (SE) | 0 | 2 | 592275 166575 |
| | **Potential for Shrinking or Swelling Clay Ground Stability Hazards**<br>Hazard Potential: Low<br>Source: British Geological Survey, National Geoscience Information Service | A13SE (SE) | 27 | 2 | 592275 166575 |
| | **Radon Potential - Radon Affected Areas**<br>Affected Area: The property is not in a radon affected area, as less than 1% of homes are above the action level<br>Source: British Geological Survey, National Geoscience Information Service | A13SE (S) | 0 | 2 | 592225 166475 |
| | **Radon Potential - Radon Protection Measures**<br>Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions<br>Source: British Geological Survey, National Geoscience Information Service | A13SE (S) | 0 | 2 | 592225 166475 |
| | **Shallow Mining Hazards**<br>No Hazard | | | | |

| Map ID | Details | Quadrant Reference (Compass | Estimated Distance From Site | Contact | NGR |
|---|---|---|---|---|---|
| 55 | **Contemporary Trade Directory Entries**<br>Name: A A G Distribution<br>Location: Kemsley Paper Mill, Kemsley, Sittingbourne, Kent, ME10 2SG<br>Classification: Road Haulage Services<br>**Status: Active**<br>Positional Accuracy: Manually positioned within the geographical locality | A12SE (SW) | 298 | - | 591768 166352 |
| 56 | **Contemporary Trade Directory Entries**<br>Name: Powergen Chp Ltd<br>Location: UK Paper House, Kemsley, Sittingbourne, Kent, ME10 2SG<br>Classification: Electricity Companies<br>**Status: Inactive**<br>Positional Accuracy: Automatically positioned to the address | A7NE (SW) | 393 | - | 591779 166155 |
| 56 | **Contemporary Trade Directory Entries**<br>Name: M-Real New Thames Ltd<br>Location: UK Paper House, Kemsley, Sittingbourne, Kent, ME10 2SG<br>Classification: Paper & Pulp Mills<br>**Status: Active**<br>Positional Accuracy: Automatically positioned to the address | A7NE (SW) | 393 | - | 591779 166155 |
| 56 | **Contemporary Trade Directory Entries**<br>Name: Sittingbourne & Kemsley Light Railway<br>Location: Kemsley, Sittingbourne, Kent, ME10 2SG<br>Classification: Railways (Steam and Miniature)<br>**Status: Inactive**<br>Positional Accuracy: Manually positioned within the geographical locality | A7NE (SW) | 430 | - | 591750 166132 |
| 57 | **Contemporary Trade Directory Entries**<br>Name: A A Griggs<br>Location: Kemsley, Sittingbourne, Kent, ME10 2SG<br>Classification: Road Haulage Services<br>**Status: Active**<br>Positional Accuracy: Manually positioned within the geographical locality | A7NE (SW) | 468 | - | 591692 166140 |
| 58 | **Contemporary Trade Directory Entries**<br>Name: Glosrose Engineering Ltd<br>Location: Kemsley Mill, Kemsley, Sittingbourne, Kent, ME10 2TD<br>Classification: Fork Lift Trucks<br>**Status: Active**<br>Positional Accuracy: Automatically positioned to the address | A7NE (SW) | 503 | - | 591632 166162 |
| 58 | **Contemporary Trade Directory Entries**<br>Name: Mr Clutch<br>Location: Kemsley Mill, Kemsley, Sittingbourne, Kent, ME10 2TD<br>Classification: Brake & Clutch Service Centres<br>**Status: Active**<br>Positional Accuracy: Manually positioned within the geographical locality | A7NE (SW) | 504 | - | 591651 166134 |
| 59 | **Contemporary Trade Directory Entries**<br>Name: Swift Machinery Maintenance<br>Location: 98, Recreation Way, Kemsley, SITTINGBOURNE, Kent, ME10 2TG<br>Classification: Machine Tool Accessories & Services<br>**Status: Active**<br>Positional Accuracy: Automatically positioned to the address | A7NW (SW) | 787 | - | 591390 166014 |
| 60 | **Contemporary Trade Directory Entries**<br>Name: Vibration Monitoring Services Ltd<br>Location: 86, Recreation Way, Kemsley, Sittingbourne, Kent, ME10 2TG<br>Classification: Engineering Services<br>**Status: Active**<br>Positional Accuracy: Automatically positioned to the address | A7NW (SW) | 811 | - | 591321 166089 |
| 61 | **Contemporary Trade Directory Entries**<br>Name: Pillars Property Cleaning & Maintanence<br>Location: 2, George Walk, Kemsley, Sittingbourne, Kent, ME10 2GW<br>Classification: Commercial Cleaning Services<br>**Status: Active**<br>Positional Accuracy: Automatically positioned to the address | A11SE (W) | 879 | - | 591144 166408 |
| 62 | **Contemporary Trade Directory Entries**<br>Name: R Rose Engineering Ltd<br>Location: 24, Walsby Drive, Kemsley, Sittingbourne, Kent, ME10 2TY<br>Classification: Printing Engineering Services<br>**Status: Active**<br>Positional Accuracy: Automatically positioned to the address | A7SW (SW) | 957 | - | 591441 165702 |

| Map ID | Details | Quadrant Reference (Compass | Estimated Distance From Site | Contact | NGR |
|---|---|---|---|---|---|
| 63 | **Environmentally Sensitive Areas**<br>Name: North Kent Marshes<br>Multiple Areas: Y<br>Total Area (m2): 58689973.1<br>Source: Natural England | A19SW (NE) | 396 | 3 | 592640 167041 |
| 64 | **Environmentally Sensitive Areas**<br>Name: North Kent Marshes<br>Multiple Areas: Y<br>Total Area (m2): 4433494.21<br>Source: Natural England | A8NE (S) | 448 | 3 | 592292 166045 |
| 65 | **Environmentally Sensitive Areas**<br>Name: North Kent Marshes<br>Multiple Areas: Y<br>Total Area (m2): 8430039.17<br>Source: Natural England | A17SE (NW) | 516 | 3 | 591746 167114 |
| 66 | **National Nature Reserves**<br>Name: Elmley<br>Multiple Areas: Y<br>Total Area (m2): 12124250.15<br>Source: Natural England<br>Reference: 1007024<br>Designation Date: Not Supplied | A19SW (NE) | 399 | 3 | 592639 167047 |
| 67 | **Ramsar Sites**<br>Name: The Swale<br>Multiple Areas: N<br>Total Area (m2): 65099046.4<br>Source: Natural England<br>Reference: UK11071<br>Designation Date: Not Supplied | A13NE (NE) | 138 | 3 | 592507 166788 |
| 68 | **Sites of Special Scientific Interest**<br>Name: The Swale<br>Multiple Areas: N<br>Total Area (m2): 65093722.95<br>Source: Natural England<br>Reference: 1003678<br>Designation Details: EC Special Protection Area<br>Designation Date: 20th February 1990<br>Date Type: Notified<br>Designation Details: Environmentally Sensitive Area<br>Designation Date: 20th February 1990<br>Date Type: Notified<br>Designation Details: Local Nature Reserve<br>Designation Date: 20th February 1990<br>Date Type: Notified<br>Designation Details: National Nature Reserve<br>Designation Date: 20th February 1990<br>Date Type: Notified<br>Designation Details: Nature Conservation Review<br>Designation Date: 20th February 1990<br>Date Type: Notified<br>Designation Details: Ramsar Site<br>Designation Date: 20th February 1990<br>Date Type: Notified<br>Designation Details: RSPB Reserve<br>Designation Date: 20th February 1990<br>Date Type: Notified | A13NE (NE) | 138 | 3 | 592507 166788 |
| 69 | **Special Protection Areas**<br>Name: The Swale<br>Multiple Areas: N<br>Total Area (m2): 65099046.4<br>Source: Natural England<br>Reference: UK9012011<br>Designation Date: Not Supplied | A13NE (NE) | 138 | 3 | 592507 166788 |

| Agency & Hydrological | Version | Update Cycle |
|---|---|---|
| **Contaminated Land Register Entries and Notices** | | |
| Swale Borough Council - Environmental Health Department | March 2009 | Annual Rolling Update |
| **Discharge Consents** | | |
| Environment Agency - Southern Region | January 2009 | Quarterly |
| **Enforcement and Prohibition Notices** | | |
| Environment Agency - Southern Region | January 2009 | As notified |
| **Integrated Pollution Controls** | | |
| Environment Agency - Southern Region | October 2008 | Quarterly |
| **Integrated Pollution Prevention And Control** | | |
| Environment Agency - Southern Region | January 2009 | Quarterly |
| **Local Authority Integrated Pollution Prevention And Control** | | |
| Swale Borough Council - Environmental Health Department | January 2008 | Annual Rolling Update |
| London Port Health Authority - Environmental Services | January 2009 | Annual Rolling Update |
| **Local Authority Pollution Prevention and Controls** | | |
| Swale Borough Council - Environmental Health Department | January 2008 | Annual Rolling Update |
| London Port Health Authority - Environmental Services | January 2009 | Annual Rolling Update |
| **Local Authority Pollution Prevention and Control Enforcements** | | |
| Swale Borough Council - Environmental Health Department | January 2008 | Annual Rolling Update |
| London Port Health Authority - Environmental Services | January 2009 | Annual Rolling Update |
| **Nearest Surface Water Feature** | | |
| Ordnance Survey | December 2008 | Quarterly |
| **Pollution Incidents to Controlled Waters** | | |
| Environment Agency - Southern Region | December 1999 | Not Applicable |
| **Prosecutions Relating to Authorised Processes** | | |
| Environment Agency - Southern Region | February 2009 | As notified |
| **Prosecutions Relating to Controlled Waters** | | |
| Environment Agency - Southern Region | February 2009 | As notified |
| **Registered Radioactive Substances** | | |
| Environment Agency - Southern Region | January 2009 | Quarterly |
| **River Quality** | | |
| Environment Agency - Head Office | November 2001 | Not Applicable |
| **River Quality Biology Sampling Points** | | |
| Environment Agency - Head Office | September 2007 | Annually |
| **River Quality Chemistry Sampling Points** | | |
| Environment Agency - Head Office | August 2007 | Annually |
| **Substantiated Pollution Incident Register** | | |
| Environment Agency - Southern Region - Kent Area | January 2009 | Quarterly |
| **Water Abstractions** | | |
| Environment Agency - Southern Region | January 2009 | Quarterly |
| **Water Industry Act Referrals** | | |
| Environment Agency - Southern Region | January 2009 | Quarterly |
| **Groundwater Vulnerability** | | |
| Environment Agency - Head Office | January 1999 | Not Applicable |
| **Drift Deposits** | | |
| Environment Agency - Head Office | January 1999 | Not Applicable |
| **Source Protection Zones** | | |
| Environment Agency - Head Office | September 2008 | Variable |
| **Extreme Flooding from Rivers or Sea without Defences** | | |
| Environment Agency - Head Office | January 2009 | Quarterly |
| **Flooding from Rivers or Sea without Defences** | | |
| Environment Agency - Head Office | January 2009 | Quarterly |

| Agency & Hydrological | Version | Update Cycle |
|---|---|---|
| **Areas Benefiting from Flood Defences** | | |
| Environment Agency - Head Office | January 2009 | Quarterly |
| **Flood Water Storage Areas** | | |
| Environment Agency - Head Office | January 2009 | Quarterly |
| **Flood Defences** | | |
| Environment Agency - Head Office | January 2009 | Quarterly |
| **Waste** | **Version** | **Update Cycle** |
| **BGS Recorded Landfill Sites** | | |
| British Geological Survey - National Geoscience Information Service | June 1996 | Not Applicable |
| **Historical Landfill Sites** | | |
| Environment Agency - Southern Region - Kent Area | January 2009 | Quarterly |
| **Integrated Pollution Control Registered Waste Sites** | | |
| Environment Agency - Southern Region | October 2008 | Quarterly |
| **Licensed Waste Management Facilities (Landfill Boundaries)** | | |
| Environment Agency - Southern Region - Kent Area | January 2009 | Quarterly |
| **Licensed Waste Management Facilities (Locations)** | | |
| Environment Agency - Southern Region - Kent Area | November 2008 | Quarterly |
| **Local Authority Landfill Coverage** | | |
| Kent County Council - Waste Management Group | May 2000 | Not Applicable |
| Swale Borough Council - Environmental Health Department | May 2000 | Not Applicable |
| **Local Authority Recorded Landfill Sites** | | |
| Kent County Council - Waste Management Group | May 2000 | Not Applicable |
| Swale Borough Council - Environmental Health Department | May 2000 | Not Applicable |
| **Registered Landfill Sites** | | |
| Environment Agency - Southern Region - Kent Area | March 2003 | Not Applicable |
| **Registered Waste Transfer Sites** | | |
| Environment Agency - Southern Region - Kent Area | March 2003 | Not Applicable |
| **Registered Waste Treatment or Disposal Sites** | | |
| Environment Agency - Southern Region - Kent Area | March 2003 | Not Applicable |
| **Hazardous Substances** | **Version** | **Update Cycle** |
| **Control of Major Accident Hazards Sites (COMAH)** | | |
| Health and Safety Executive | October 2008 | Bi-Annually |
| **Explosive Sites** | | |
| Health and Safety Executive | January 2009 | Bi-Annually |
| **Notification of Installations Handling Hazardous Substances (NIHHS)** | | |
| Health and Safety Executive | November 2000 | Not Applicable |
| **Planning Hazardous Substance Enforcements** | | |
| Kent County Council | April 2008 | Annual Rolling Update |
| London Port Health Authority - Environmental Services | January 2008 | Annual Rolling Update |
| Swale Borough Council | October 2008 | Annual Rolling Update |
| **Planning Hazardous Substance Consents** | | |
| Kent County Council | April 2008 | Annual Rolling Update |
| London Port Health Authority - Environmental Services | January 2008 | Annual Rolling Update |
| Swale Borough Council | October 2008 | Annual Rolling Update |

| Geological | Version | Update Cycle |
|---|---|---|
| **BGS Recorded Mineral Sites**<br>British Geological Survey - National Geoscience Information Service | October 2008 | Bi-Annually |
| **BGS 1:625,000 Solid Geology**<br>British Geological Survey - National Geoscience Information Service | August 1996 | Not Applicable |
| **Brine Compensation Area**<br>Cheshire Brine Subsidence Compensation Board | November 2002 | As notified |
| **Coal Mining Affected Areas**<br>The Coal Authority - Mining Report Service | January 2006 | As notified |
| **Mining Instability**<br>Ove Arup & Partners | October 2000 | Not Applicable |
| **Natural and Mining Cavities**<br>Peter Brett Associates | December 2005 | Variable |
| **Potential for Collapsible Ground Stability Hazards**<br>British Geological Survey - National Geoscience Information Service | January 2009 | Annually |
| **Potential for Compressible Ground Stability Hazards**<br>British Geological Survey - National Geoscience Information Service | January 2009 | Annually |
| **Potential for Ground Dissolution Stability Hazards**<br>British Geological Survey - National Geoscience Information Service | January 2009 | Annually |
| **Potential for Landslide Ground Stability Hazards**<br>British Geological Survey - National Geoscience Information Service | January 2009 | Annually |
| **Potential for Running Sand Ground Stability Hazards**<br>British Geological Survey - National Geoscience Information Service | January 2009 | Annually |
| **Potential for Shrinking or Swelling Clay Ground Stability Hazards**<br>British Geological Survey - National Geoscience Information Service | January 2009 | Annually |
| **Radon Potential - Radon Affected Areas**<br>British Geological Survey - National Geoscience Information Service | May 2007 | Annually |
| **Radon Potential - Radon Protection Measures**<br>British Geological Survey - National Geoscience Information Service | May 2007 | Annually |
| **Shallow Mining Hazards**<br>British Geological Survey - National Geoscience Information Service | August 2002 | Not Applicable |
| **Industrial Land Use** | **Version** | **Update Cycle** |
| **Contemporary Trade Directory Entries**<br>Thomson Directories | November 2008 | Quarterly |
| **Fuel Station Entries**<br>Catalist Ltd - (Fuel Station Data) | February 2009 | Quarterly |

| Sensitive Land Use | Version | Update Cycle |
|---|---|---|
| **Areas of Outstanding Natural Beauty**<br>Natural England | December 2008 | Bi-Annually |
| **Environmentally Sensitive Areas**<br>Natural England | February 2009 | Annually |
| **Forest Parks**<br>Forestry Commission | April 1997 | Not Applicable |
| **Local Nature Reserves**<br>Natural England | December 2008 | Bi-Annually |
| **Marine Nature Reserves**<br>Natural England | February 2009 | Bi-Annually |
| **National Nature Reserves**<br>Natural England | December 2008 | Bi-Annually |
| **National Parks**<br>Natural England | February 2009 | Annually |
| **Nitrate Sensitive Areas**<br>Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA) | December 2003 | Not Applicable |
| **Nitrate Vulnerable Zones**<br>Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA) | May 2007 | Annually |
| **Ramsar Sites**<br>Natural England | December 2008 | Bi-Annually |
| **Sites of Special Scientific Interest**<br>Natural England | December 2008 | Bi-Annually |
| **Special Areas of Conservation**<br>Natural England | December 2008 | Bi-Annually |
| **Special Protection Areas**<br>Natural England | December 2008 | Bi-Annually |

# Data Suppliers

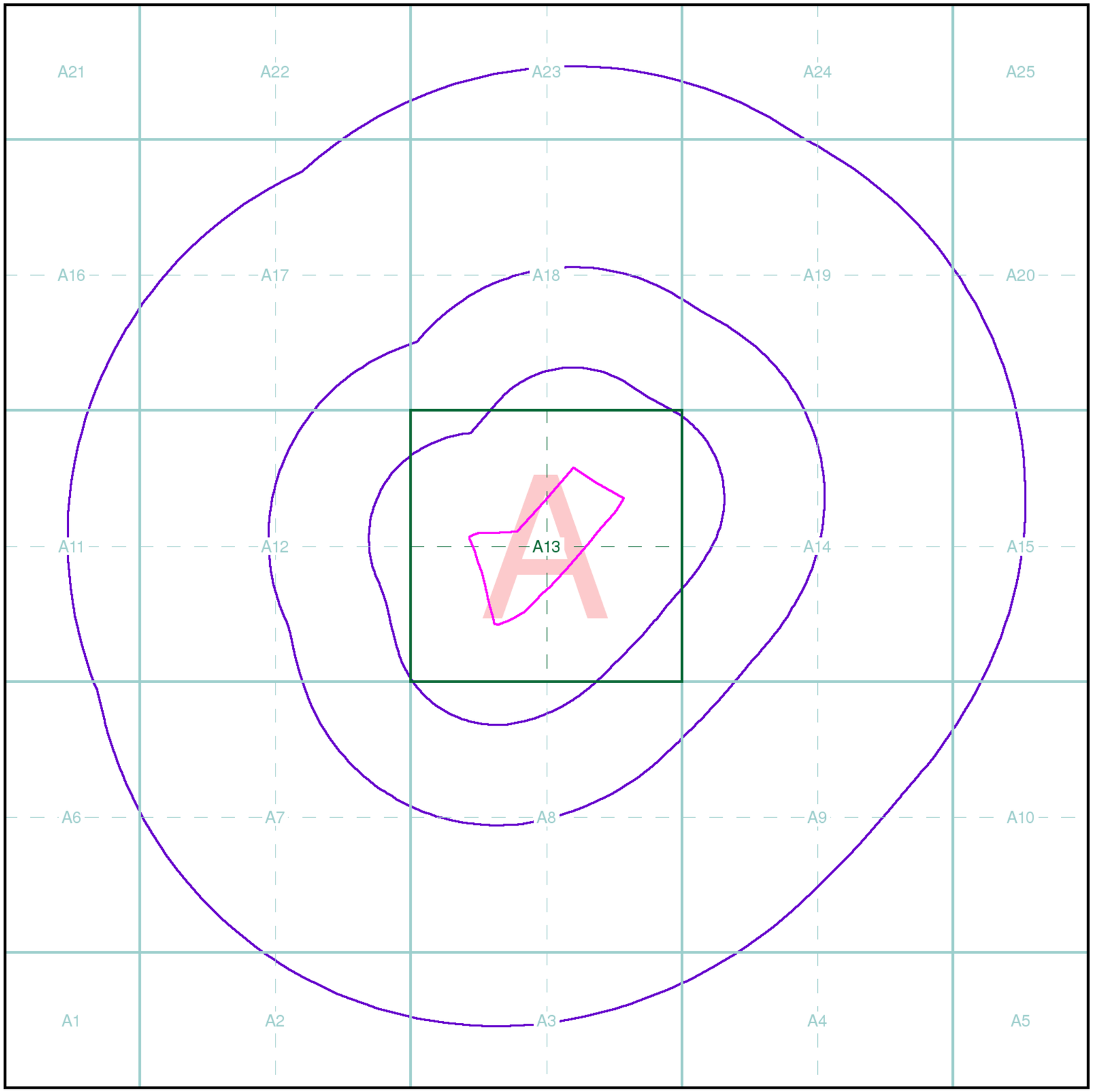
A selection of organisations who provide data within this report

| Data Supplier | Data Supplier Logo |
|---|---|
| Ordnance Survey | |
| Environment Agency | |
| Scottish Environment Protection Agency | |
| The Coal Authority | |
| British Geological Survey | |
| Centre for Ecology and Hydrology | |
| Countryside Council for Wales | |
| Scottish Natural Heritage | |
| Natural England | |
| Health Protection Agency | |
| Ove Arup | |
| Peter Brett Associates | |

# Useful Contacts

| Contact | Name and Address | Contact Details |
|---|---|---|
| 1 | **Environment Agency - National Customer Contact Centre (NCCC)**<br>PO Box 544, Templeborough, Rotherham, S60 1BY | Telephone: 08708 506 506<br>Email: enquiries@environment-agency.gov.uk |
| 2 | **British Geological Survey - Enquiry Service**<br>British Geological Survey, Kingsley Dunham Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG | Telephone: 0115 936 3143<br>Fax: 0115 936 3276<br>Email: enquiries@bgs.ac.uk<br>Website: www.bgs.ac.uk |
| 3 | **Natural England**<br>Northminster House, Northminster Road, Peterborough, Cambridgeshire, PE1 1UA | Telephone: 0845 600 3078<br>Fax: 01733 455103<br>Email: enquiries@naturalengland.org.uk<br>Website: www.naturalengland.org.uk |
| 4 | **Swale Borough Council - Environmental Health Department**<br>Swale House, East Street, Sittingbourne, Kent, ME10 3HT | Telephone: 01795 424341<br>Fax: 01795 417217<br>Website: www.swale.gov.uk |
| 5 | **Kent County Council - Waste Management Group**<br>Block H, The Forstal, Beddow Way, Aylesford, Kent, ME20 7BT | Telephone: 01622 605976<br>Website: www.kent.gov.uk |
| - | **Health Protection Agency - Radon Survey, Centre for Radiation, Chemical and Environmental Hazards**<br>Chilton, Didcot, Oxfordshire, OX11 0RQ | Telephone: 01235 822622<br>Fax: 01235 833891<br>Email: radon@hpa.org.uk<br>Website: www.hpa.org.uk |
| - | **Landmark Information Group Limited**<br>The Smith Centre, Henley On Thames, Oxfordshire, RG9 6AB | Telephone: 0844 844 9952<br>Fax: 0844 844 9951<br>Email: customerservices@landmarkinfo.co.uk<br>Website: www.landmarkinfo.co.uk |

Please note that the Environment Agency / SEPA have a charging policy in place for enquiries.




Envirocheck®
A Landmark service

## Index Map

For ease of identification, your site and buffer have been split into Slices, Segments and Quadrants. These are illustrated on the Index Map opposite and explained further below.

**Slice**
Each slice represents a 1:10,000 plot area (2.7km x 2.7km) for your site and buffer. A large site and buffer may be made up of several slices (represented by a red outline), that are referenced by letters of the alphabet, starting from the bottom left corner of the slice "grid". This grid does not relate to National Grid lines but is designed to give best fit over the site and buffer.

**Segment**
A segment represents a 1:2,500 plot area. Segments that have plot files associated with them are shown in dark green, others in light blue. These are numbered from the bottom left hand corner within each slice.

**Quadrant**
A quadrant is a quarter of a segment. These are labelled as NW, NE, SW, SE and are referenced in the datasheet to allow features to be quickly located on plots. Therefore a feature that has a quadrant reference of A7NW will be in Slice A, Segment 7 and the NW Quadrant.

A selection of organisations who provide data within this report:

Ordnance Survey® Licensed Partner

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

Environment Agency

NATURAL ENGLAND

Envirocheck reports are compiled from 136 different sources of data.

## Client Details

Ms E Willmott, RPS Consultants, Conrad House, Beaufort Square, Chepstow, Monmouthshire, NP16 5EP

## Order Details

| | |
|---|---|
| Order Number: | 27464042_1_1 |
| Customer Ref: | JER3773 |
| National Grid Reference: | 592170, 166630 |
| Site Area (Ha): | 6.55 |
| Search Buffer (m): | 1000 |

## Site Details

Site at, Sittingbourne, Kent

LANDMARK® Information Group
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

# LANDMARK TERMS AND CONDITIONS

Version 6.04 28 Jul 2007

**Definitions**

**"Authorised Reseller"** means an agent or reseller of Landmark whom Landmark has duly appointed to resell its Reports and Services.

**"Content"** means any data, computing and information services and software, and other content and documentation or support materials and updates included in and/or supplied by or through the Websites, in Reports or Services or in any other way by Landmark and shall include Landmark developed and Third Party Content.

**"First Purchaser"** means the first person, or legal entity to purchase the Property Site following provision of a Report.

**"First Purchaser's Lender"** means the funding provider for the First Purchaser

**"Information Pack"** means a pack compiled by or on behalf of the owner or prospective buyer of the Property Site, designed to aid the marketing or purchase of the Property Site and containing information provided by or on behalf of the owner or prospective buyer of the Property Site.

**"Intellectual Property Rights"** means copyright, patent, design right (registered or unregistered), service or trade mark (registered or unregistered), database right or other data right, moral right or know how or any other intellectual property right.

**"Order"** means the request for Services from Landmark by You.

**"Property Site"** means a land site on which Landmark provides a Service.

References to **"We"**, **"Us"** and **"Our"** are references to Landmark Information Group Limited ("Landmark"), whose registered office is 7 Abbey Court, Eagle Way, Exeter, EX2 7HY. Where You are not ordering the Services directly from Landmark, but from an Authorised Reseller, references to "Landmark" or "We", "Us" and "Our" shall be construed so as to mean either Landmark and/or the Authorised Reseller as the context shall indicate.

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**"Report"** includes any information that Landmark supplies to You including all reports, services, datasets, software or information contained in them.

**"Services"** means the provision of any service by Landmark pursuant to these Terms, including without limitation, any Report.

**"Landmark Fees"** means any charges levied by Landmark for Services provided to You.

**"Suppliers"** means any organisation who provides data or information of any form to Landmark.

**"Terms"** means these Terms & Conditions.

**"Third Party Content"** means the services, software, information and other content or functionality provided by third parties and linked to or contained in the Services.

**"Websites"** means websites hosted by Landmark and includes the Content and any report, service, document, data-set, software or information contained therein, derived there from or thereby.

**1. Terms & Conditions**

a. These Terms govern the relationship between You and Landmark whether You are an unregistered visitor to the Website or are purchasing Services. Where these Terms are not expressly accepted by You they will be deemed to have been accepted by You, and You agree to be bound by these Terms when You place any Order, or pay for any Services provided

b. If the person communicating with Landmark is an Authorised Reseller, they must ensure that You agree to these Terms.

c. The headings in these Terms are for convenience only and shall not affect the meaning or interpretation of any part of these Terms.

d. Landmark may modify these Terms, and may discontinue or revise any or all other aspects of the Services at our sole discretion, with immediate effect and without prior notice, including without limitation changing the Services available at any given time. Any amendment or variation to these Terms shall be posted on our Websites. Continued use of the Services by You shall be deemed an acceptance by You to be bound by any such amendments to the Terms.

e. These Terms, together with the prices and delivery details set out on our Websites, Landmark's Privacy Policy and Your Order comprise the whole agreement relating to the supply of Services to You by Landmark. No prior stipulation, agreement, promotional material or statement whether written or oral made by any sales or other person or representative on our behalf should be understood as a variation of these Terms. Save for fraud or misrepresentation, Landmark shall have no liability for any such representation being untrue or misleading.

f. These Terms shall prevail at all times to the exclusion of all other terms and conditions including any terms and conditions which You may purport to apply even if such other provisions are submitted in a later document or purport to exclude or override these Terms and neither the course of conduct between parties nor trade practice shall act to modify these Terms.

**2. Services**

a. Landmark will use reasonable care and skill in providing the Services to You, however, the Services are provided on the express basis that the information and data supplied in the Services are derived from third party sources and Landmark does not warrant the accuracy or completeness of such information or data. Such information is derived solely from those sources specifically cited in the Services and Landmark does not claim that these sources represent an exhaustive or comprehensive list of all sources that might be consulted.

**3. Intellectual Property**

a. You acknowledge that all Intellectual Property Rights in the Services are and shall remain owned by either Landmark or our Suppliers and nothing in these Terms purports to transfer, assign or grant any rights to You in respect of the Intellectual Property Rights.

b. Subject always to these Terms You may, without further charge, make the Services available to;
   i. the owner of the Property at the date of the Report,
   ii. any person who purchases the whole of the Property Site,
   iii. any person who provides funding secured on the whole of the Property Site,
   iv. any person for whom You act in a professional or commercial capacity,
   v. any person who acts for You in a professional or commercial capacity; and
   vi. prospective buyers of the Property Site as part of an Information Pack but for the avoidance of doubt, Landmark shall have no liability to such prospective buyer unless the prospective buyer subsequently purchases the Property Site, and the prospective (or actual) buyer shall not be entitled to make the Service available to any other third party.
   Accordingly Landmark shall have the same duties and obligations to those persons in respect of the Services as it has to You.

c. Each of those persons referred to in clause 3.b. shall have the benefit and the burden of Your rights and obligations under these Terms. The limitations of Landmark's liability as set out in clause 6 shall apply to all users of the Service in question in aggregate and Landmark shall not be liable to any other person.

d. All parties given access to the Services agree that they will treat as strictly private and confidential the Services and all information which they obtain from the Services and shall restrict any disclosure to employees or professional advisors to enable the relevant party to conduct its internal business. The requirement in this clause to treat the Services as confidential shall include a requirement to maintain adequate security measures to safeguard the Services from unauthorised access, use or copying.

e. Each recipient of the Services agrees (and agrees it will cause its employees, agents or contractors who may from time to time have access to the Services to agree) it will not, except as permitted herein or by separate agreement with Landmark:-
   i. effect or attempt to effect any modification, merger or change to the Service, nor permit any other person to do so; or
   ii. copy, use, market, re-sell, distribute, merge, alter, add to or carry on any redistribution, reproduction, translation, publication, reduction to any electronic medium or machine readable form or commercially exploit or in any other way deal with or utilise or (except as expressly permitted by applicable law) reverse engineer, decompile or disassemble the Services, Content or Website; or
   iii. remove, alter or in any way change any trademark or proprietary marking in any element of the Services and You shall acknowledge the ownership of the Content, where such Content is incorporated or used into Your own documents, reports, systems or services whether or not these are supplied to any third party.
   iv. create any product which is derived directly or indirectly from the data contained in the Services

f. The mapping contained in any Services is protected by Crown Copyright and must not be used for any purpose outside the context of the Services or as specifically provided by these Terms.

g. You are permitted to make five copies of any Report, but are not authorised to re-sell the Report, any part thereof or any copy thereof unless you are an Authorised Reseller. Further copies may not be made in whole or in part without the prior written permission of Landmark who shall be entitled to make a charge for each additional copy.

**4. Charges**

a. VAT at the prevailing rate shall be payable in addition to the Landmark Fees. You shall pay any other applicable indirect taxes related to Your use of the Services.

b. An individual or a monthly invoice showing all Orders created by You will be generated subject to these Terms. You will pay the Landmark Fees at the rates set out in Landmark's or its Authorised Reseller's invoice. The Landmark Fees are payable in full within 30 days without deduction, counterclaim or set off. You acknowledge that time is of the essence with respect to the payment of such invoices. Landmark reserve the right to amend the Landmark Fees from time to time and the Services will be charged at the Landmark Fee applicable at the date on which the Service is ordered.

c. We may charge interest on late payment at a rate equal to 3% per annum above the base lending rate of National Westminster Bank plc.

d. Landmark or its Authorised Reseller shall not be obliged to invoice any party other than You for the provision of Services, but where Landmark or its Authorised Reseller does so invoice any third party at Your request, and such invoice is not accepted or remains unpaid, Landmark or its Authorised Reseller shall have the option at any time to cancel such invoice and invoice You direct for such Services. Where Your order comprises a number of Services or severable elements within any one or more Services, any failure by Landmark or its Authorised Reseller to provide an element or elements of the Services shall not prejudice Landmark's or its Authorised Reseller's ability to require payment in respect of the Services delivered to You.

**5. Termination**

a. Landmark may suspend or terminate Your rights under these Terms without any liability to You with immediate effect if at any time:-
   i. You fail to make any payment due in accordance with clause 4;
   ii. You repeatedly breach or commit or cause to be committed any material breach of these Terms; or
   iii. You commit a breach and You fail to remedy the breach within 7 days of receipt of a written notice to do so; additionally, without prejudice to the foregoing, Landmark may remedy the breach and recover the costs thereof from You.

b. If Your rights are terminated under this clause and You have made an advance payment We will refund You a reasonable proportion of the balance as determined by Us in relation to the value of Services previously purchased.

c. Landmark reserves the right to refuse to supply any or all Services to You without notice or reason.

**6. Liability**

a. We provide warranties and accept liability only to the extent stated in this clause 6 and clause 7.

b. Nothing in these Terms excludes either party's liability for death or personal injury caused by that party's negligence or wilful default, and the remainder of this clause 6 is subject to this provision and Your statutory rights.

c. As most of the information contained in the Services is provided to Landmark by others, Landmark cannot control its accuracy or completeness, nor is it within the scope of Landmark's Services to check the information on the ground. Accordingly, Landmark will only be liable to You for any loss or damage caused by its negligence or willful default and subject to clause 6.o below neither Landmark nor any person providing information contained in any Services shall in any circumstances be liable for any inaccuracies, faults or omissions in the Services, nor shall Landmark have any liability if the Services are used otherwise than in accordance with these Terms.

d. Save as precluded by law, Landmark shall not be liable for any indirect or consequential loss, damage or expenses (including loss of profits, loss of contracts, business or goodwill) howsoever arising out of any problem, event, action or default by Landmark.

e. In any event, and notwithstanding anything contained in these Terms, Landmark's liability in contract, tort (including negligence or breach of statutory duty) or otherwise howsoever arising by reason or in connection with this Contract (except in relation to death or personal injury) shall be limited to an aggregate amount not exceeding £1 million if the complaint is in relation to a Report on residential property and an aggregate amount not exceeding £10 million in respect of any other Report or Service purchased from Landmark.

f. Landmark will not be liable for any defect, failure or omission relating to Services that is not notified to Landmark within six months of the date of the issue becoming apparent and in any event, within twelve years of the date of the Service.

g. You acknowledge that:-
   i. Subject to clause 6.o below You shall have no claim or recourse against any Third Party Content supplier nor any of our other Suppliers. You will not in any way hold us responsible for any selection or retention of, or the acts of omissions of Third Party Content suppliers or other Suppliers (including those with whom We have contracted to operate various aspects or parts of the Service) in connection with the Services (for the avoidance of doubt Landmark is not a Third Party Content supplier). Landmark does not promise that the supply of the Services will be uninterrupted or error free or provide any particular facilities or functions, or that the Content will always be complete, accurate, precise, free from defects of any other kind, computer viruses, software locks or other similar code although Landmark will use reasonable efforts to correct any inaccuracies within a reasonable period of them becoming known to us;
   ii. Landmark's only obligation is to exercise reasonable skill and care in providing environmental property risk information to persons acting in a professional or commercial capacity who are skilled in the use of property and environmental information and You hereby acknowledge that You are such a person;
   iii. no physical inspection of the Property Site reported on is carried out as part of any Services offered by Landmark and Landmark do not warrant that all land uses or features whether past or current will be identified in the Services. The Services do not include any information relating to the actual state or condition of any Property Site nor should they be used or taken to indicate or exclude actual fitness or unfitness of a Property Site for any particular purpose nor should it be relied upon for determining saleability or value or used as a substitute for any physical investigation or inspection. Landmark recommends that You inspect and take other advice in relation to the Property Site and not rely exclusively on the Services.
   iv. Subject to clause 6.o below, Landmark shall not be responsible for error or corruption in the Services resulting from inaccuracy or omission in primary or secondary information and data, inaccurate processing of information and data by third parties, computer malfunction or corruption of data whilst in the course of conversion, geo-coding, processing by computer or electronic means, or in the course of transmission by telephone or other communication link, or printing.
   v. Landmark will not be held liable in any way if a Report on residential property is used for commercial property or more than the one residential property for which it was ordered.
   vi. the Services have not been prepared to meet Your or anyone else's individual requirements; that You assume the entire risk as to the suitability of the Services and waive any claim of detrimental reliance upon the same; and You confirm You are solely responsible for the selection or omission of any specific part of the Content;
   vii. Landmark offer no warranty for the performance of any linked internet service not operated by Landmark;
   viii. You will on using the Services make a reasonable inspection of any results to satisfy Yourself that there are no defects or failures. In the event that there is a material defect You will notify us in writing of such defect within seven days of its discovery;
   ix. Any support or assistance provided to You in connection with these Terms is at Your risk;

h. All liability for any insurance products purchased by You rests solely with the insurer. Landmark does not endorse any particular product or insurer and no information contained within the Services should be deemed to imply otherwise. You acknowledge that if You Order any such insurance Landmark will deem such as Your consent to forward a copy of the Report to the insurers. Where such policy is purchased, all liability remains with the insurers and You are entirely responsible for ensuring that the insurance policy offered is suitable for Your needs and should seek independent advice. Landmark does not guarantee that an insurance policy will be available on a Property Site. All decisions with regard to the offer of insurance policies for any premises will be made solely at the discretion of the insurers and Landmark accepts no liability in this regard. The provision of a Report does not constitute any indication by Landmark that insurance will be available on the property.

i. Professional opinions contained in Reports are provided to Landmark by third parties, and such third parties are solely liable for the opinion provided. For the avoidance of doubt, those parties providing assessments or professional opinions on Landmark products include RPS Plc & Wilbourn Associates Limited, and any issues with regard to the provision of such opinion should be taken up with the relevant third party.
   If Landmark provides You with any additional service obtained from a third party, including but not limited to any interpretation or conclusion, risk assessment or environmental report or search carried out in relation to a Report on Your Property Site, subject to clause 6.o below Landmark will not be liable in any way for any information contained therein or any issues arising out of the provision of those additional services to You. Landmark will be deemed to have acted as an agent in these circumstances and the supply of these additional services will be governed by the terms and conditions of those Third Parties.

j. In any event no person may rely on a Service more than 12 months after its original date.

k. If You wish to vary any limitation of liability as set out in these Terms, You must request such variation prior to ordering the Service. Landmark shall use its reasonable endeavours to agree such variation but shall not be obliged to do so.

l. Time shall not be of the essence with respect to the provision of the Services.

m. Ordnance Survey have undertaken a positional accuracy improvement programme which may result in discrepancies between the positioning of features used in datasets in the Services and the updated Ordnance Survey mapping. Subject to clause 6.o below, Landmark and its Suppliers exclude all and any liability incurred as a result of the implementation of such positional accuracy improvement programme.

n. Where Landmark provides its own risk assessment in connection with any Report, Landmark shall carry out such assessment with all reasonable skill and care but shall have no liability for any such risk assessment conclusion which is provided for information only, save where Landmark conducted the same negligently, in which case the provisions of clause 6 shall apply. Notwithstanding the provision of any such risk assessment conclusion you should carefully examine the remainder of the Report and should not take or refrain from taking any action based solely on the basis of the risk assessment. For the avoidance of doubt, the provisions of this clause 6n apply solely to risk assessments conducted by Landmark, and the provision of any other risk assessment by a third party shall be governed by such third party's terms in accordance with the provisions of clause 6i above.

o. Landmark obtains much of the information contained in its Report from third parties. Landmark will not accept any liability to You for any negligent or incorrect entry, or error or corruption in the Third Party Content supplied to Landmark, but Landmark's Suppliers may be liable for such negligent or incorrect entries, or errors or corruptions, subject to the terms and conditions on which they supply the Third Party Content to Landmark.

**7. Contribution**

a. Save where expressly provided, this clause 7 shall apply solely to Envirosearch Residential Reports (regardless of the result of such Report). Nothing in this clause 7 shall operate to override or vary the provisions of clause 6.

b. Landmark are prepared to offer, at their sole discretion, and without any admission or inference of liability a contribution towards the costs of any remediation works required under a Notice (as defined below) on the terms of this clause 7 ("the Contribution")

c. In the event that a Remediation Notice is served on the First Purchaser or First Purchaser's Lender of a Property Site under Part II(A) of the Environmental Protection Act 1990 ("the Notice") Landmark will contribute to the cost of such works as either the First Purchaser or First Purchaser's Lender (but not both) are required to carry out under the Notice subject to the provisions of this clause 7 and on the following terms:
   i. the Contribution shall only apply to contamination or a pollution incident present or having occurred prior to the date of the Report;
   ii. the Contribution shall only apply where the Property Site is a single residential dwelling house or a single residential flat within a block of flats. For the avoidance of doubt, this obligation does not apply to any commercial property, nor to any Property Site being developed or redeveloped whether for residential purposes or otherwise;
   iii. the Contribution is strictly limited to the cost of works at the Property Site and at no other site.
   iv. the Contribution will not be paid in respect of any of the following:
   Radioactive contamination of whatsoever nature, directly or indirectly caused by or contributed to or arising from ionising radiations or contamination by radioactivity from any nuclear fuel or from any nuclear waste from the combustion of nuclear fuel or the radioactive toxic explosive or other hazardous properties of any explosive nuclear assembly or nuclear component thereof.
   Asbestos arising out of or related in any way to asbestos or asbestos-containing materials on or in structures or services serving the structures.
   Naturally occurring materials arising from the presence or required removal of naturally occurring materials except in circumstances where such materials are present in concentrations which are in excess of their natural concentration.
   Intentional non-compliance arising from the intentional disregard of or knowing wilful or deliberate non-compliance by any owner or occupier of the Property Site with any statute, regulation, administrative complaint, notice of violation, or notice letter of any Regulatory Authority.
   Any condition which is known or ought reasonably to have been known to the First Purchaser or the First Purchaser's Lender prior to the purchase of the Report.
   Any condition which is caused by acts of War or an Act of Terrorism.
   Any property belonging to or in the custody or control of the First Purchaser which does not form a fixed part of the Property Site or the structure.
   Any fines liquidated damages punitive or exemplary damages.
   Any bodily injury including without limitation, death, illness or disease, mental injury, anguish or nervous shock.
   Any financial loss in respect of any loss of any rental, profit, revenue, savings or business or any consequential indirect or economic loss damage or expense including the cost of rent of temporary premises or business interruption.
   Any losses incurred following a material change in use of, alteration or development of the Property Site.

d. The maximum sum that shall be contributed by Landmark in respect of any Contribution shall be limited to £60,000. In the event that more than one Report is purchased on the Property Site the Contribution will only be payable under the first Report purchased by or on behalf of any First Purchaser or First Purchaser's Lender and no Contribution will be made in respect of subsequent Reports purchased by or on behalf of such First Purchaser, First Purchaser's Lender or any person connected to them.

e. Landmark shall only pay a Contribution where the Notice is served within 36 months of the date of the Report.

f. Any rights to a Contribution under this Clause 7 are not assignable in the event of a sale of the Property Site and Landmark will not make any Contribution after the date of completion of such sale.

g. In the event the First Purchaser or First Purchaser's Lender wishes to claim any Contribution, it shall notify Landmark in writing within 3 months of the date of the Notice. The First Purchaser or First Purchaser's Lender (as applicable) shall comply with all reasonable requirements of Landmark with regard to the commission and conduct of the remediation works to be carried out under the Notice, and in the event the First Purchaser or First Purchaser's Lender (as applicable) does not do so, including without limitation, obtaining Landmark's prior written consent to any estimates for such works or complying with any other reasonable request by Landmark, Landmark shall not be required to pay any Contribution. Notwithstanding the payment of the Contribution by Landmark the First Purchaser or First Purchaser's Lender as applicable shall take all reasonable steps to mitigate any costs incurred in connection with the conduct of works required under the terms of any Notice.

h. In the event that the First Purchaser or First Purchaser's Lender receives any communication from a statutory authority to the effect that there is an intent to serve a notice received under PartII(A) of the Environmental Protection Act 1990 they will advise Landmark within a maximum period of two months from receipt of such communication. This clause 7h and the service of any notice under it shall not affect the provisions of clauses 7 e and g, and any such communications, even if advised to Landmark will not operate as notice under clause 7e.

i. Landmark reserve the right at any time prior to a claim for Contribution being made in accordance with clause 7 g) above, to withdraw the offer of payment of Contributions without further notice.

**8. Events Beyond Our Control**

a. You acknowledge that Landmark shall not be liable for any delay, interruption or failure in the provision of the Services which are caused or contributed to by any circumstance which is outside our reasonable control including but not limited to, lack of power, telecommunications failure or overload, computer malfunction, inaccurate processing of data, or delays in receiving, loading or checking data, corruption of data whilst in the course of conversion, geo-coding, processing by computer in the course of electronic communication, or printing.

**9. Severability**

a. If any provision of these Terms are found by either a court or other competent authority to be void, invalid, illegal or unenforceable, that provision shall be deemed to be deleted from these Terms and never to have formed part of these Terms and the remaining provisions shall continue in full force and effect.

**10. Governing Law**

a. These terms shall be governed by and construed in accordance with English law and each party agrees irrevocably submit to the exclusive jurisdiction of the English courts If any dispute arises out of or in connection with this agreement (a "Dispute") the parties undertake that, prior to the commencement of Court proceedings, they will seek to have the Dispute resolved amicably by use of an alternative dispute resolution procedure acceptable to both parties with the assistance of the Centre for Dispute Resolution (CEDR) if required, by written notice initiating that procedure. If the Dispute has not been resolved to the satisfaction of either party within 60 days of initiation of the procedure or if either party fails or refuses to participate in or withdraws from participating in the procedure then either party may refer the Dispute to the Court.

**11. General; Complaints**

a. Landmark may assign its rights and obligations under these Terms without prior notice or any limitation.

b. Landmark may authorise or allow our contractors and other third parties to provide to Landmark and/or to You services necessary or related to the Services and to perform Landmark's obligations and exercise Landmark's rights under these Terms, which may include collecting payment on Landmark's behalf.

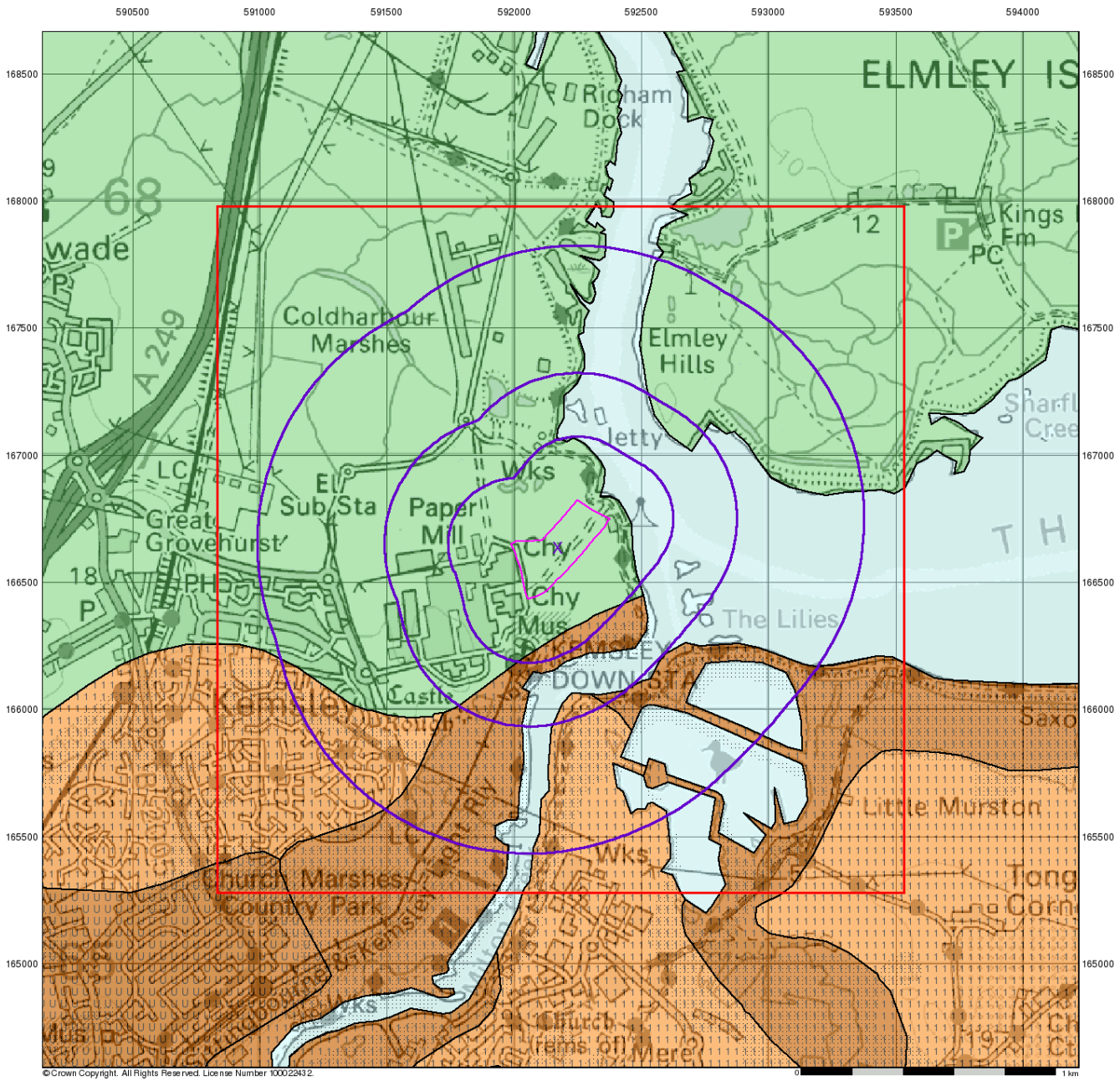
c. No waiver on Landmark's part to exercise, and no delay in exercising, any right, power or provision hereunder shall operate as a waiver thereof, nor shall any single or partial exercise of any right, power or provision hereunder preclude the exercise of that or any other right, power or provision.

d. Unless otherwise stated in these Terms, all notices from You to Landmark must be in writing and sent to the Landmark registered office (or in the case of an Authorised Reseller, to its registered office address) and subject to paragraph e below all notices from Landmark to You will be displayed on our Websites from time to time.

e. Any complaints in relation to the Services should, in the first instance, be in writing addressed to the Customer Service Support Manager at the Landmark registered office. Landmark or its agents will respond to any such complaints in writing as soon as practicably possible.

f. A person who is not a party to any contract made pursuant to these Terms shall have no right under the Contract (Right of Third Parties) Act 1999 to enforce any terms of such contract and Landmark shall not be liable to any such third party in respect of any Services supplied.

g. Landmark's Privacy Policy as displayed on the Website governs the use made of any information You supply to Landmark.




# Groundwater Vulnerability

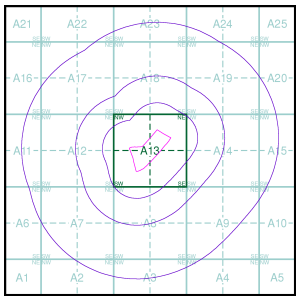
## General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

## Agency and Hydrological

| Geological Classes | Soil Classes |
|---|---|
| Major Aquifer (Highly Permeable) | High (H) 1, 2, 3, U |
| | Intermediate (I) 1, 2 |
| | Low |
| Minor Aquifer (Variably Permeable) | High (H) 1, 2, 3, U |
| | Intermediate (I) 1, 2 |
| | Low |
| Non Aquifer (Negligibly Permeable) | |
| Water or Sea | |
| Drift Deposit | |

## Site Sensitivity Context Map - Slice A



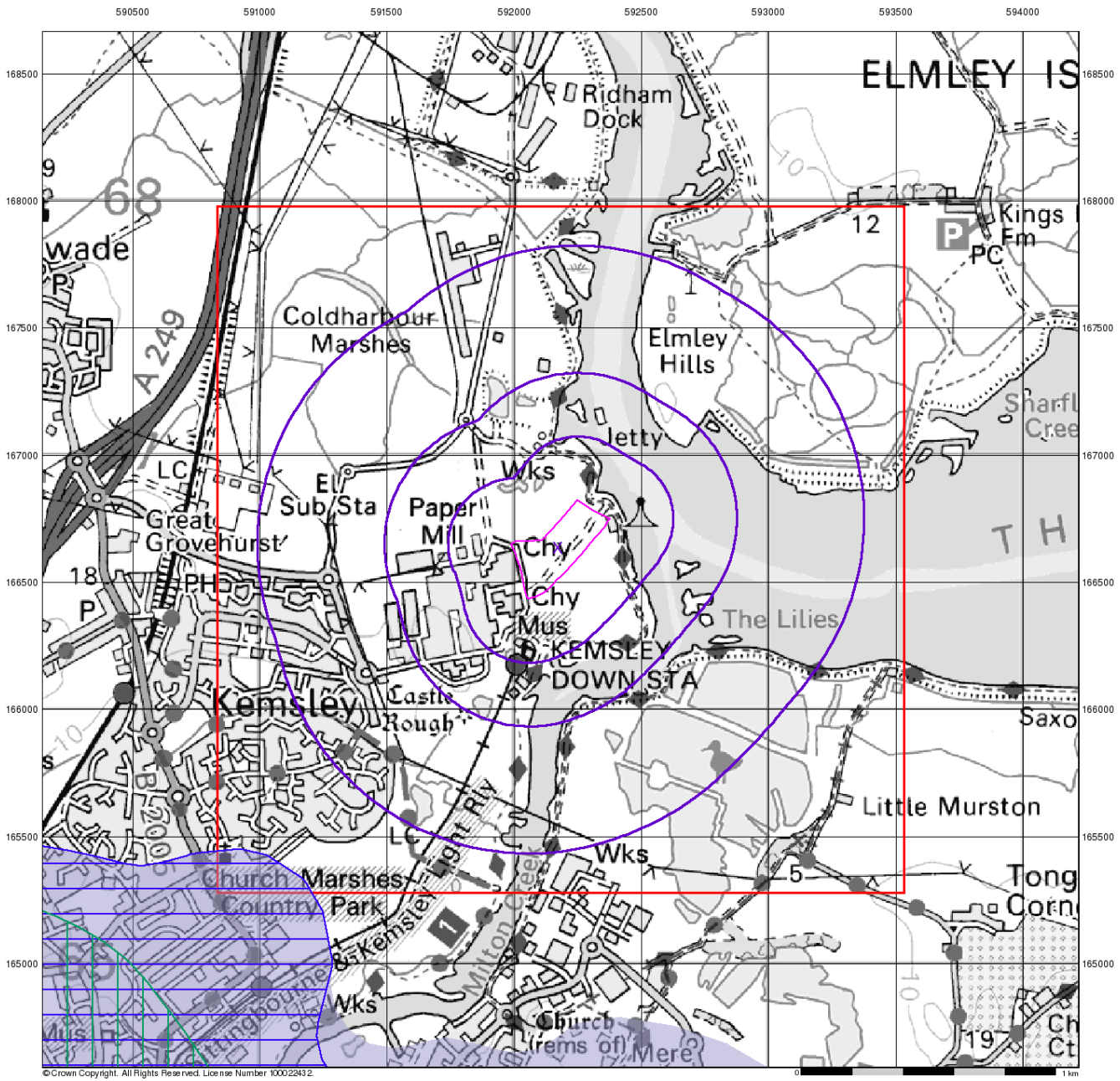

## Order Details

| | |
|---|---|
| Order Number: | 27464042_1_1 |
| Customer Ref: | JER3773 |
| National Grid Reference: | 592170, 166640 |
| Slice: | A |
| Site Area (Ha): | 6.55 |
| Search Buffer (m): | 1000 |

## Site Details

Site at, Sittingbourne, Kent


LANDMARK Information Group
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

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# Source Protection Zones

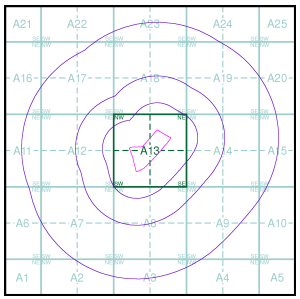
## General

Specified Site
Specified Buffer(s)
Bearing Reference Point
Slice
Map ID

## Agency and Hydrological

Source Protection Zone I
Source Protection Zone II
Source Protection Zone III
Zone of Special Interest
Source Protection Zone Borehole

## Site Sensitivity Context Map - Slice A




## Order Details

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|---|---|
| Order Number: | 27464042_1_1 |
| Customer Ref: | JER3773 |
| National Grid Reference: | 592170, 166640 |
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| Site Area (Ha): | 6.55 |
| Search Buffer (m): | 1000 |

## Site Details

Site at, Sittingbourne, Kent

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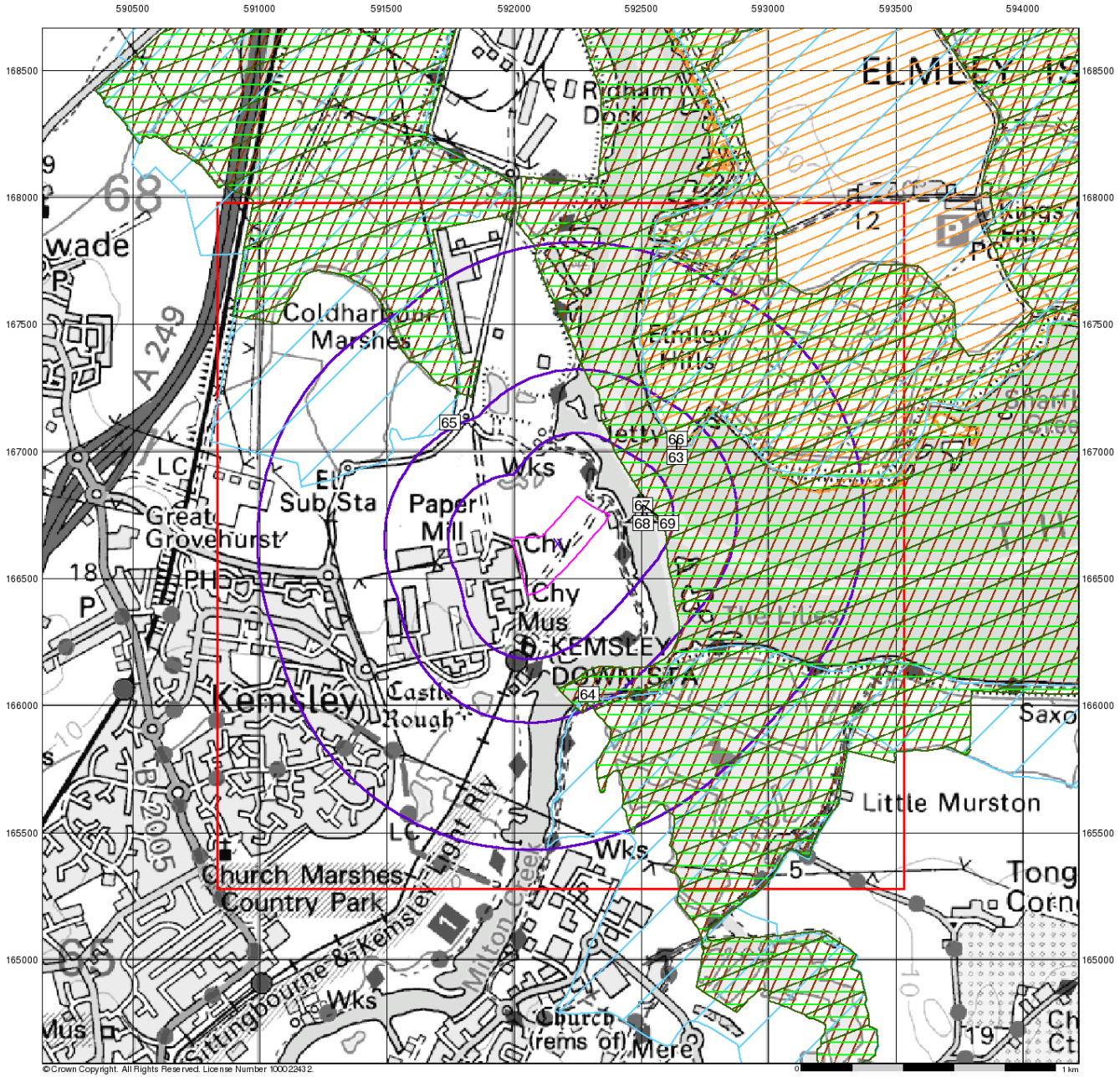


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## Sensitive Land Uses

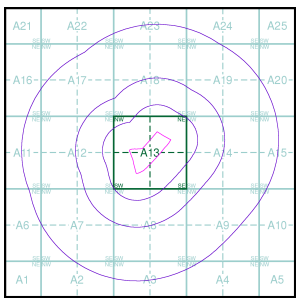
### General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

### Sensitive Land Uses

- Area of Adopted Green Belt
- Area of Unadopted Green Belt
- Area of Outstanding Natural Beauty
- Environmentally Sensitive Area
- Forest Park
- Local Nature Reserve
- Marine Nature Reserve
- National Nature Reserve
- National Park
- Nitrate Sensitive Area
- Nitrate Vulnerable Zone
- Ramsar Site
- Site of Special Scientific Interest
- Special Area of Conservation
- Special Protection Area

### Site Sensitivity Context Map - Slice A




### Order Details

| | |
|---|---|
| Order Number: | 27464042_1_1 |
| Customer Ref: | JER3773 |
| National Grid Reference: | 592170, 166640 |
| Slice: | A |
| Site Area (Ha): | 6.55 |
| Search Buffer (m): | 1000 |

### Site Details

Site at, Sittingbourne, Kent

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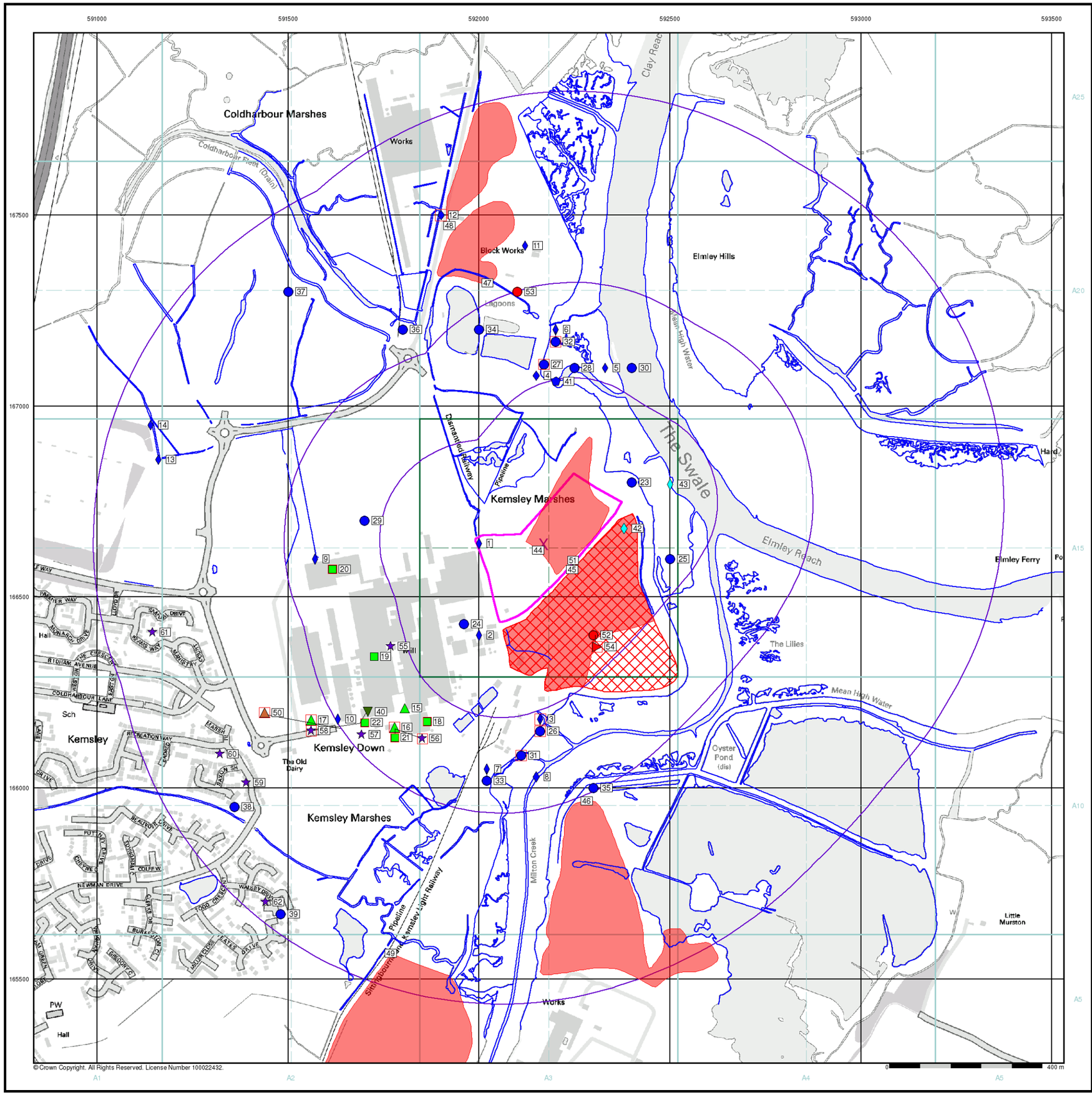


Envirocheck®
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## General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID
- Several of Type at Location

## Agency and Hydrological

- Contaminated Land Register Entry or Notice (Location)
- Contaminated Land Register Entry or Notice
- Discharge Consent
- Enforcement or Prohibition Notice
- Integrated Pollution Control
- Integrated Pollution Prevention Control
- Local Authority Integrated Pollution Prevention and Control
- Local Authority Pollution Prevention and Control
- Local Authority Pollution Prevention and Control Enforcement
- Pollution Incident to Controlled Waters
- Prosecution Relating to Authorised Processes
- Prosecution Relating to Controlled Waters
- Registered Radioactive Substance
- River Network or Water Feature
- River Quality Sampling Point
- Substantiated Pollution Incident Register
- Water Abstraction
- Water Industry Act Referral

## Geological

- BGS Recorded Mineral Site

## Industrial Land Use

- Contemporary Trade Directory Entry
- Fuel Station Entry

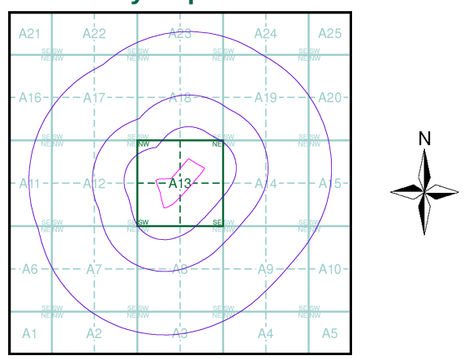
## Waste

- BGS Recorded Landfill Site (Location)
- BGS Recorded Landfill Site
- EA Historic Landfill (Buffered Point)
- EA Historic Landfill (Polygon)
- Integrated Pollution Control Registered Waste Site
- Licensed Waste Management Facility (Landfill Boundary)
- Licensed Waste Management Facility (Location)
- Local Authority Recorded Landfill Site (Location)
- Local Authority Recorded Landfill Site
- Registered Landfill Site
- Registered Landfill Site (Location)
- Registered Landfill Site (Point Buffered to 100m)
- Registered Landfill Site (Point Buffered to 250m)
- Registered Waste Transfer Site (Location)
- Registered Waste Transfer Site
- Registered Waste Treatment or Disposal Site (Location)
- Registered Waste Treatment or Disposal Site

## Hazardous Substances

- COMAH Site
- Explosive Site
- NIHHS Site
- Planning Hazardous Substance Consent
- Planning Hazardous Substance Enforcement

## Site Sensitivity Map - Slice A




## Order Details

| | |
|---|---|
| Order Number: | 27464042_1_1 |
| Customer Ref: | JER3773 |
| National Grid Reference: | 592170, 166640 |
| Slice: | A |
| Site Area (Ha): | 6.55 |
| Search Buffer (m): | 1000 |

## Site Details

Site at, Sittingbourne, Kent

LANDMARK Information Group
Tel: 0844 844 9952
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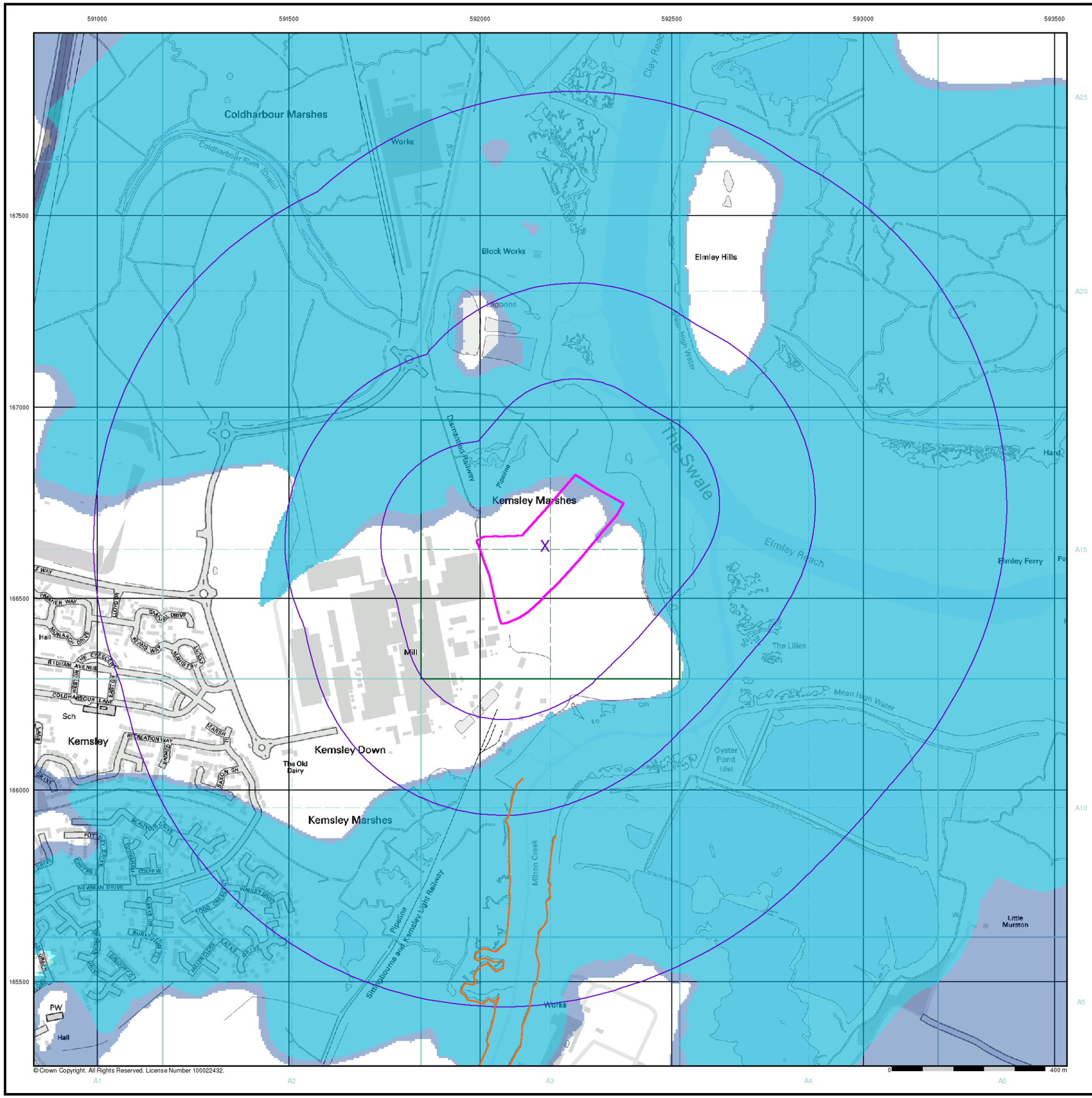
Web: www.envirocheck.co.uk



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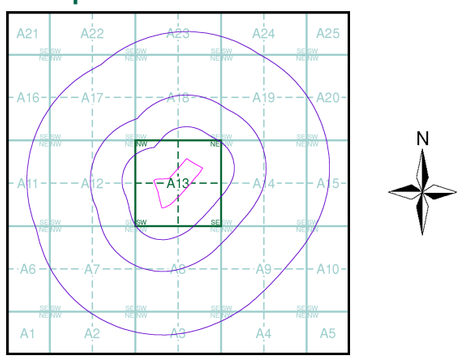
## General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

## Agency and Hydrological (Flood)

- Extreme Flooding from Rivers or Sea without Defences (Zone 2)
- Flooding from Rivers or Sea without Defences (Zone 3)
- Area Benefiting from Flood Defence
- Flood Water Storage Areas
- Flood Defence

## Flood Map - Slice A




## Order Details

| | |
|---|---|
| Order Number: | 27464042_1_1 |
| Customer Ref: | JER3773 |
| National Grid Reference: | 592170, 166640 |
| Slice: | A |
| Site Area (Ha): | 6.55 |
| Search Buffer (m): | 1000 |

## Site Details

Site at, Sittingbourne, Kent

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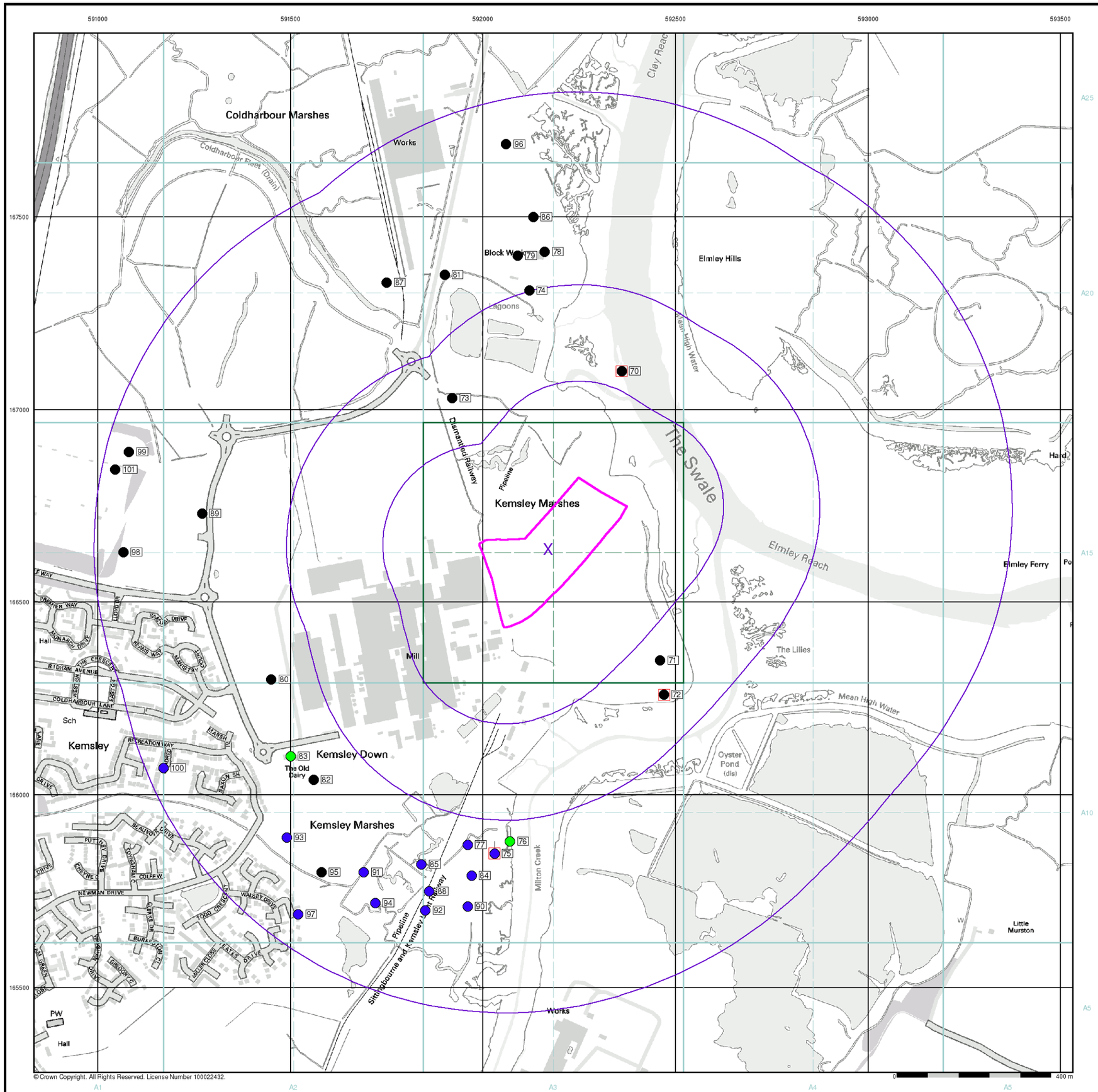
Fax: 0844 844 9951
Web: www.envirocheck.co.uk





Envirocheck®
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## General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID
- Several of Type at Location

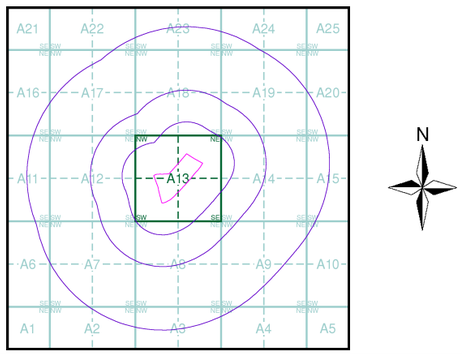
## Agency and Hydrological (Boreholes)

- BGS Borehole Depth 0 - 10m
- BGS Borehole Depth 10 - 30m
- BGS Borehole Depth 30m +
- Confidential
- Other

For Borehole information please refer to the Borehole .csv file which accompanied this slice.

A copy of the BGS Borehole Ordering Form is available to download from the Support section of www.envirocheck.co.uk.

## Borehole Map - Slice A



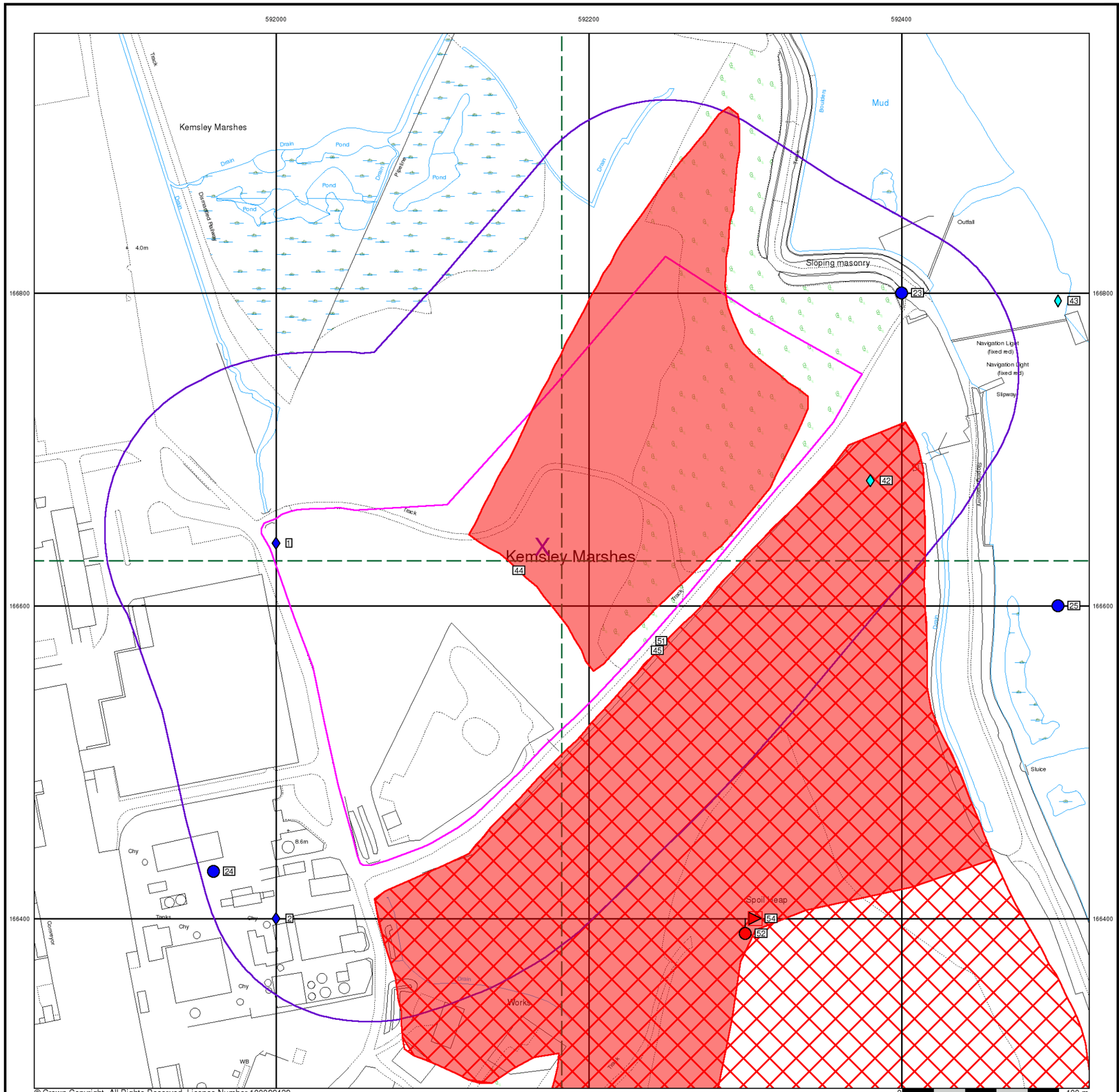

## Order Details

| | |
|---|---|
| Order Number: | 27464042_1_1 |
| Customer Ref: | JER3773 |
| National Grid Reference: | 592170, 166640 |
| Slice: | A |
| Site Area (Ha): | 6.55 |
| Search Buffer (m): | 1000 |

## Site Details

Site at, Sittingbourne, Kent

LANDMARK Information Group
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk




Envirocheck®
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## General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID
- Several of Type at Location
- Pylon
- Overhead Transmission Line

## Agency and Hydrological

- Contaminated Land Register Entry or Notice (Location)
- Contaminated Land Register Entry or Notice
- Discharge Consent
- Enforcement or Prohibition Notice
- Integrated Pollution Control
- Integrated Pollution Prevention Control
- Local Authority Integrated Pollution Prevention and Control
- Local Authority Pollution Prevention and Control
- Local Authority Pollution Prevention and Control Enforcement
- Pollution Incident to Controlled Waters
- Prosecution Relating to Authorised Processes
- Prosecution Relating to Controlled Waters
- Registered Radioactive Substance
- River Network or Water Feature
- River Quality Sampling Point
- Substantiated Pollution Incident Register
- Water Abstraction
- Water Industry Act Referral

## Waste

- BGS Recorded Landfill Site (Location)
- BGS Recorded Landfill Site
- EA Historic Landfill (Buffered Point)
- EA Historic Landfill (Polygon)
- Integrated Pollution Control Registered Waste Site
- Licensed Waste Management Facility (Landfill Boundary)
- Licensed Waste Management Facility (Location)
- Local Authority Recorded Landfill Site (Location)
- Local Authority Recorded Landfill Site
- Registered Landfill Site
- Registered Landfill Site (Location)
- Registered Landfill Site (Point Buffered to 100m)
- Registered Landfill Site (Point Buffered to 250m)
- Registered Waste Transfer Site (Location)
- Registered Waste Transfer Site
- Registered Waste Treatment or Disposal Site (Location)
- Registered Waste Treatment or Disposal Site

## Geological

- BGS Recorded Mineral Site

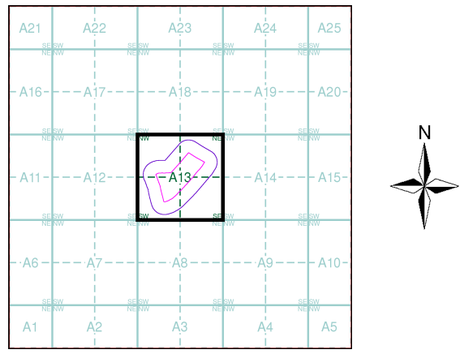
## Hazardous Substances

- COMAH Site
- Explosive Site
- NIHHS Site
- Planning Hazardous Substance Consent
- Planning Hazardous Substance Enforcement

## Industrial Land Use

- Contemporary Trade Directory Entry
- Fuel Station Entry

## Site Sensitivity Map - Segment A13




## Order Details

| | |
|---|---|
| Order Number: | 27464042_1_1 |
| Customer Ref: | JER3773 |
| National Grid Reference: | 592170, 166640 |
| Slice: | A |
| Site Area (Ha): | 6.55 |
| Plot Buffer (m): | 100 |

## Site Details

Site at, Sittingbourne, Kent

LANDMARK Information Group
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

# Historical Mapping Legends

## Ordnance Survey County Series 1:10,560

Gravel Pit
Sand Pit
Other Pits
Quarry
Shingle
Orchard
Osiers
Reeds
Marsh
Mixed Wood
Deciduous
Brushwood
Fir
Furze
Rough Pasture
Arrow denotes flow of water
Trigonometrical Station
Site of Antiquities
Bench Mark
Pump, Guide Post, Signal Post
Well, Spring, Boundary Post
·285 Surface Level
Sketched Contour
Instrumental Contour
Main Roads
Fenced
Un-Fenced
Minor Roads
Fenced
Un-Fenced
Sunken Road
Raised Road
Road over Railway
Railway over River
Railway over Road
Level Crossing
Road over River or Canal
Road over Stream
Road over Stream
County Boundary (Geographical)
County & Civil Parish Boundary
Administrative County & Civil Parish Boundary
Co. Boro. Bdy. County Borough Boundary (England)
Co. Burgh Bdy. County Burgh Boundary (Scotland)
R.D. Bdy. Rural District Boundary
Civil Parish Boundary

## Ordnance Survey Plan 1:10,000

Chalk Pit, Clay Pit or Quarry
Gravel Pit
Sand Pit
Disused Pit or Quarry
Refuse or Slag Heap
Lake, Loch or Pond
Dunes
Boulders
Coniferous Trees
Non-Coniferous Trees
Orchard
Scrub
Coppice
Bracken
Heath
Rough Grassland
Marsh
Reeds
Saltings
Building
Direction of Flow of Water
Shingle
Sand
Glasshouse
Pylon
Pylon
Electricity Transmission Line
Sloping Masonry
Cutting
Embankment
Standard Gauge Multiple Track
Road Under
Road Over
Level Crossing
Foot Bridge
Standard Gauge Single Track
Siding, Tramway or Mineral Line
Narrow Gauge
Geographical County
Administrative County, County Borough or County of City
Municipal Borough, Urban or Rural District, Burgh or District Council
Borough, Burgh or County Constituency
Shown only when not coincident with other boundaries
Civil Parish
Shown alternately when coincidence of boundaries occurs

| | | | |
|---|---|---|---|
| BP, BS | Boundary Post or Stone | Pol Sta | Police Station |
| Ch | Church | PO | Post Office |
| CH | Club House | PC | Public Convenience |
| F E Sta | Fire Engine Station | PH | Public House |
| FB | Foot Bridge | SB | Signal Box |
| Fn | Fountain | Spr | Spring |
| GP | Guide Post | TCB | Telephone Call Box |
| MP | Mile Post | TCP | Telephone Call Post |
| MS | Mile Stone | W | Well |

## 1:10,000 Raster Mapping

Gravel Pit
Refuse tip or slag heap
Rock
Rock (scattered)
Boulders
Boulders (scattered)
Shingle
Mud
Mud
Sand
Sand
Sand Pit
Slopes
Top of cliff
General detail
Underground detail
Overhead detail
Narrow gauge railway
Multi-track railway
Single track railway
County boundary (England only)
Civil, parish or community boundary
District, Unitary, Metropolitan, London Borough boundary
Constituency boundary
Area of wooded vegetation
Non-coniferous trees
Non-coniferous trees (scattered)
Coniferous trees
Coniferous trees (scattered)
Positioned tree
Orchard
Coppice or Osiers
Rough Grassland
Heath
Scrub
Marsh, Salt Marsh or Reeds
Water feature
Flow arrows
MHW(S) Mean high water (springs)
MLW(S) Mean low water (springs)
Telephone line (where shown)
Electricity transmission line (with poles)
BM 123.45 m Bench mark (where shown)
Triangulation station
Point feature (e.g. Guide Post or Mile Stone)
Pylon, flare stack or lighting tower
Site of (antiquity)
Glasshouse
General Building
Important Building

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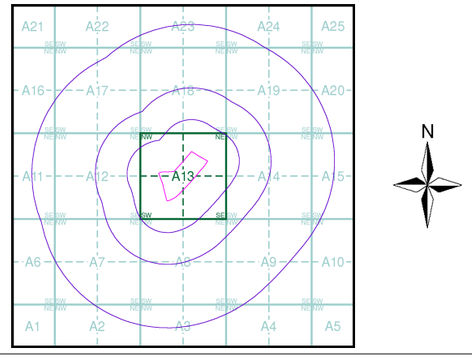
## Historical Mapping & Photography included:

| Mapping Type | Scale | Date | Pg |
|---|---|---|---|
| Kent | 1:10,560 | 1869 | 2 |
| Kent | 1:10,560 | 1898 | 3 |
| Kent | 1:10,560 | 1909 | 4 |
| Kent | 1:10,560 | 1938 | 5 |
| Kent | 1:10,560 | 1940 - 1950 | 6 |
| Historical Aerial Photography | 1:10,560 | 1945 | 7 |
| Ordnance Survey Plan | 1:10,000 | 1961 | 8 |
| Ordnance Survey Plan | 1:10,000 | 1966 | 9 |
| Ordnance Survey Plan | 1:10,000 | 1979 | 10 |
| Ordnance Survey Plan | 1:10,000 | 1991 | 11 |
| 10K Raster Mapping | 1:10,000 | 1999 | 12 |
| 10K Raster Mapping | 1:10,000 | 2008 | 13 |

## Historical Map - Slice A



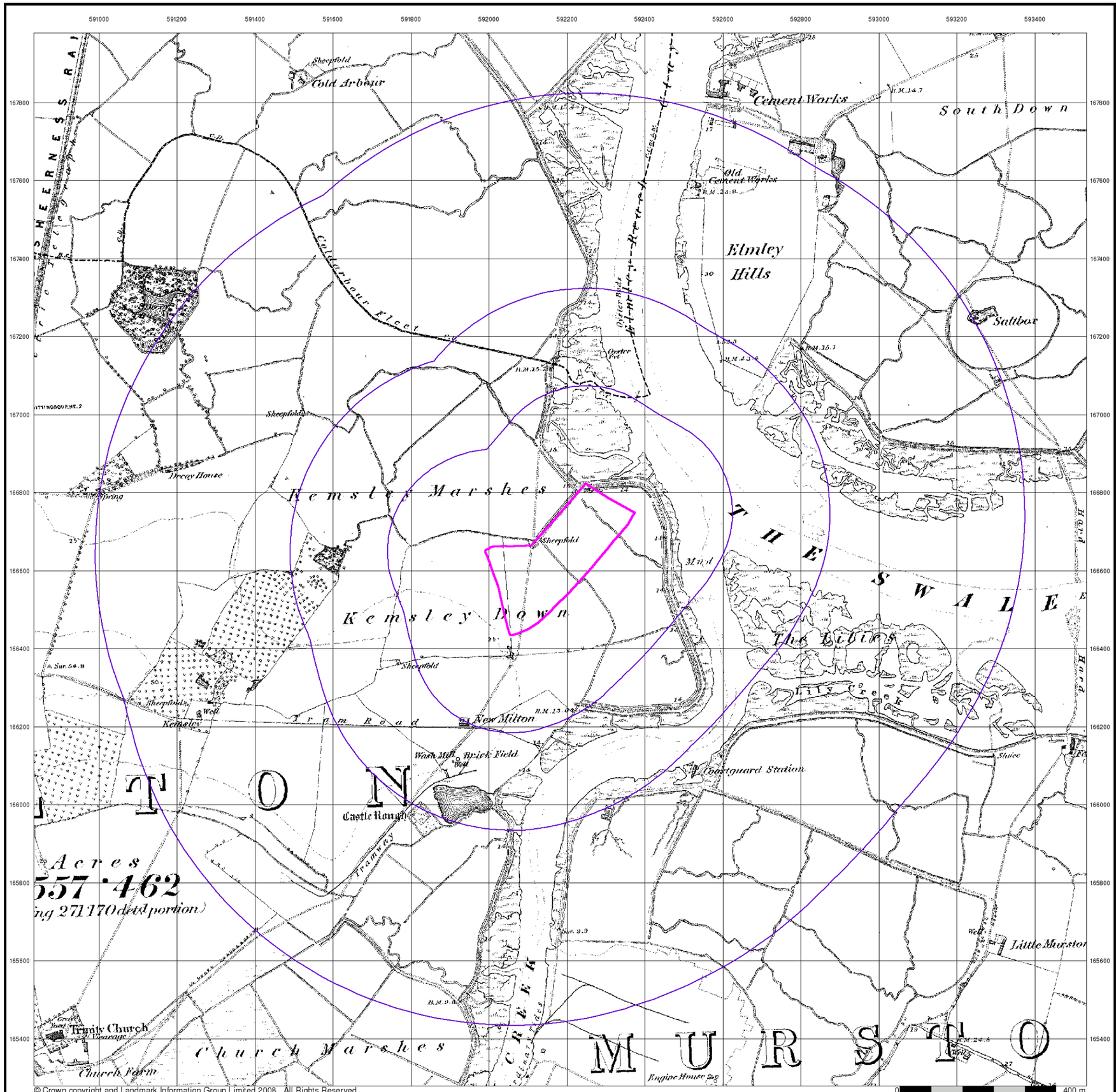

## Order Details

Order Number: 27464042_1_1
Customer Ref: JER3773
National Grid Reference: 592170, 166640
Slice: A
Site Area (Ha): 6.55
Search Buffer (m): 1000

## Site Details

Site at, Sittingbourne, Kent


LANDMARK® Information Group
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

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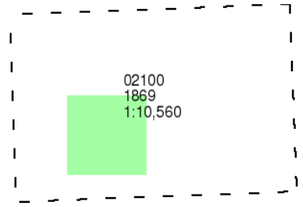
## Kent

## Published 1869

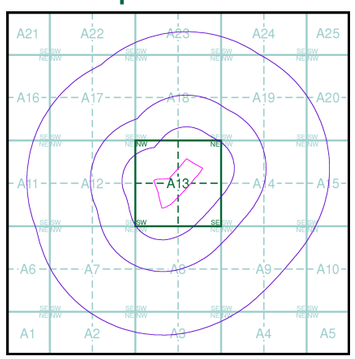
## Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

## Map Name(s) and Date(s)




## Historical Map - Slice A



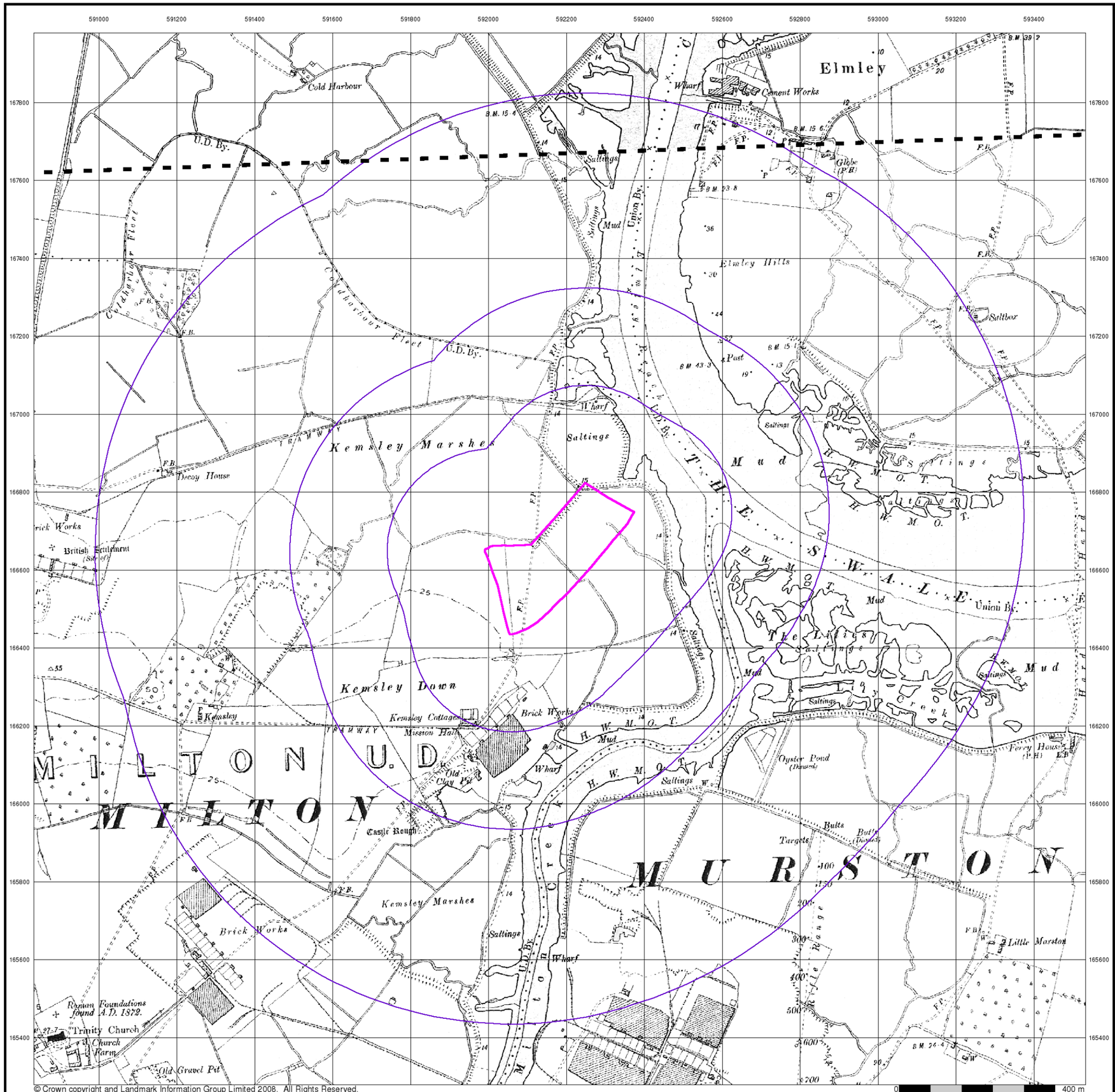

## Order Details

| | |
|---|---|
| Order Number: | 27464042_1_1 |
| Customer Ref: | JER3773 |
| National Grid Reference: | 592170, 166640 |
| Slice: | A |
| Site Area (Ha): | 6.55 |
| Search Buffer (m): | 1000 |

## Site Details

Site at, Sittingbourne, Kent

LANDMARK Information Group
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk





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## Kent

## Published 1898

## Source map scale - 1:10,560

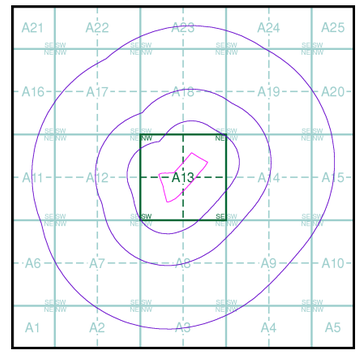
The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

## Map Name(s) and Date(s)

021NW
1898
1:10,560

021SW
1898
1:10,560

## Historical Map - Slice A

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| Order Number: | 27464042_1_1 |
| Customer Ref: | JER3773 |
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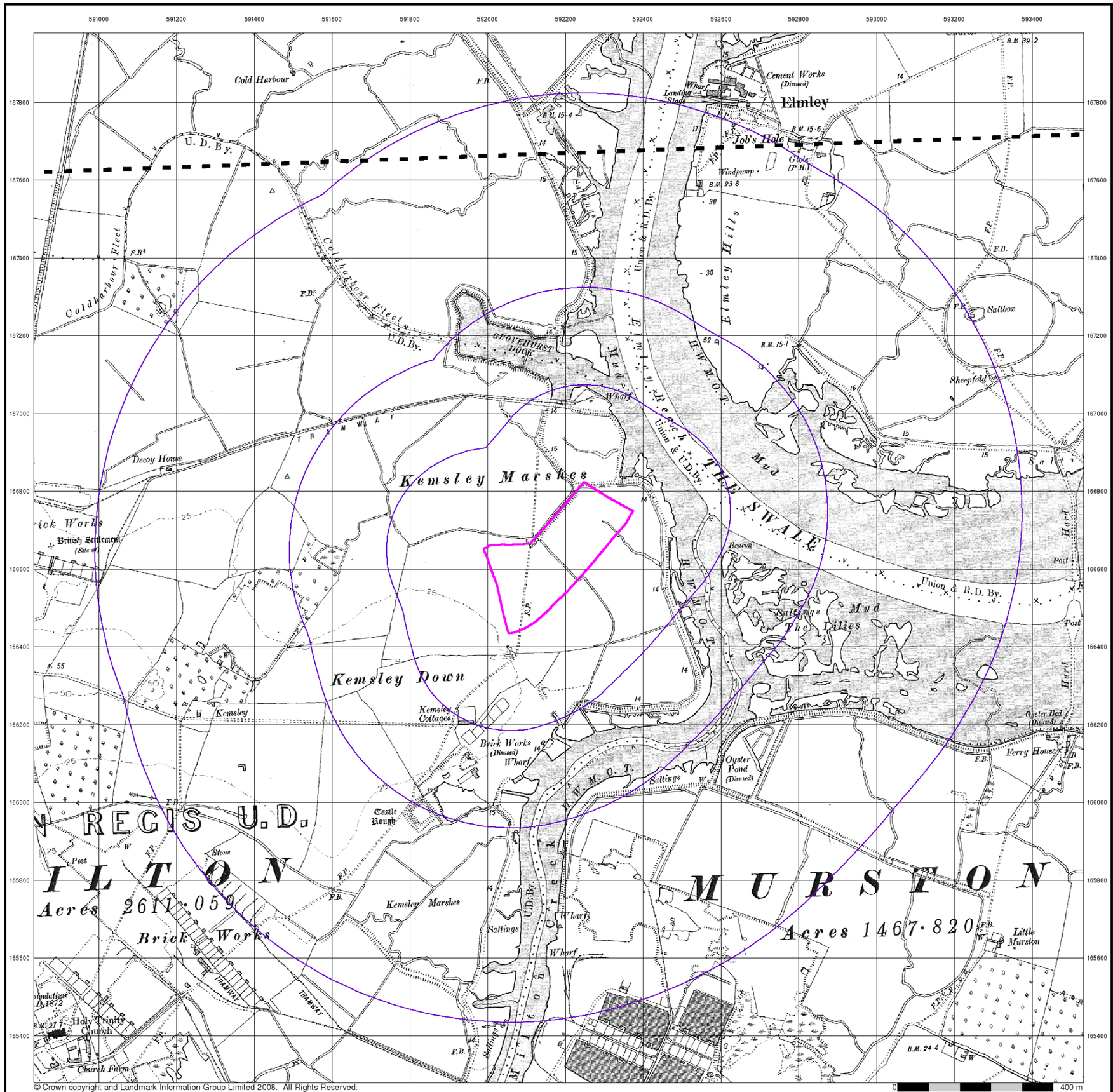


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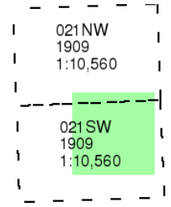
## Kent

## Published 1909

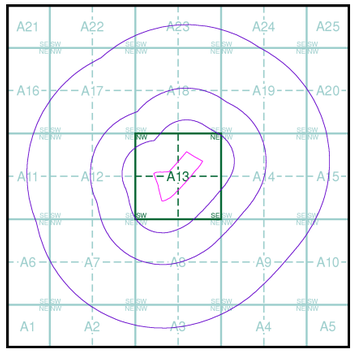
## Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

## Map Name(s) and Date(s)




## Historical Map - Slice A




## Order Details

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## Kent

## Published 1938

## Source map scale - 1:10,560

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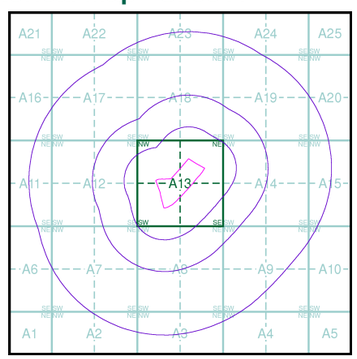
## Map Name(s) and Date(s)

021NW
1938
1:10,560

021SW
1938
1:10,560

## Historical Map - Slice A




## Order Details

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| Order Number: | 27464042_1_1 |
| Customer Ref: | JER3773 |
| National Grid Reference: | 592170, 166640 |
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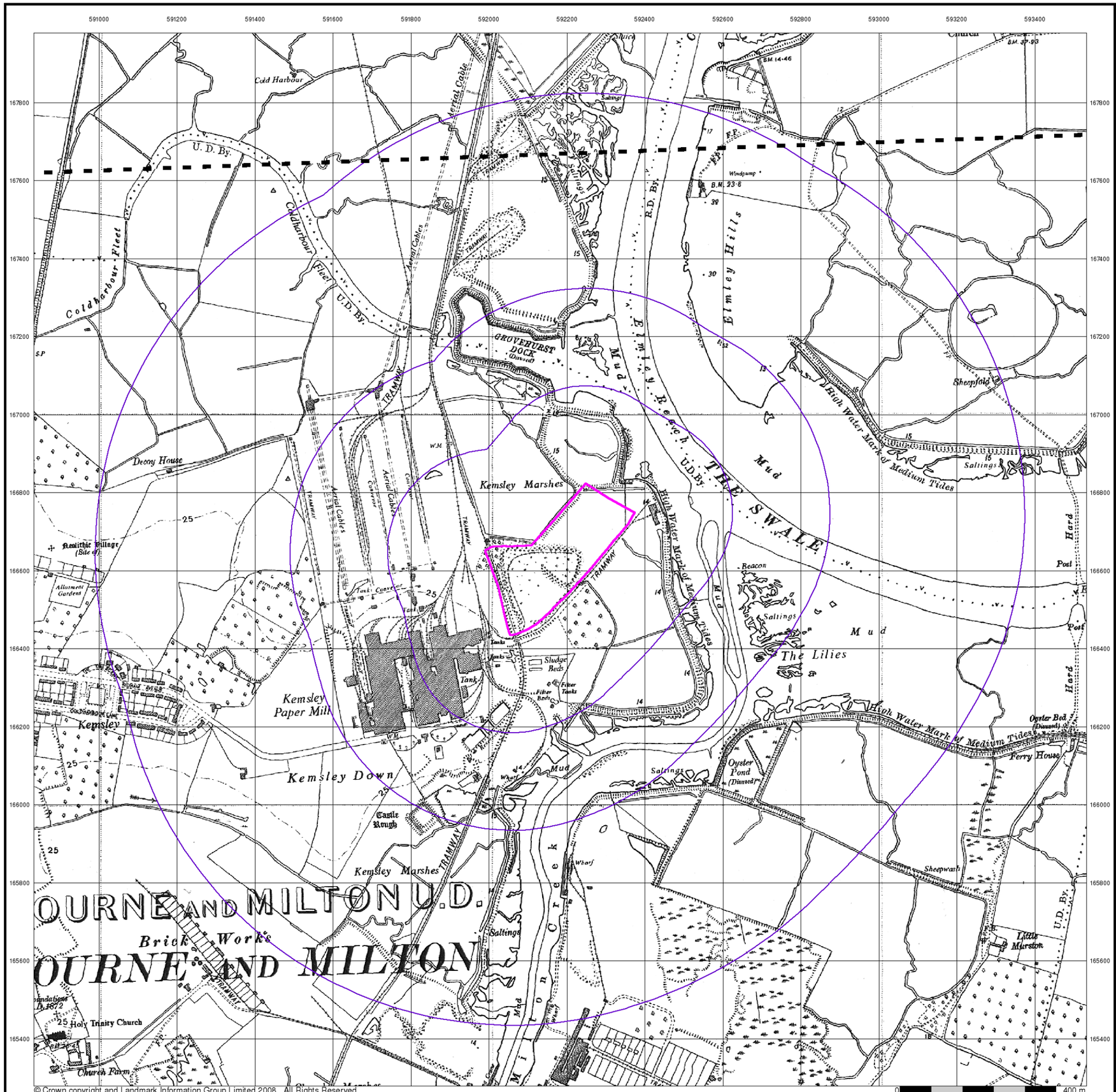




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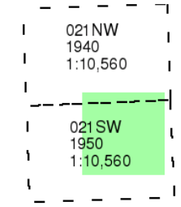
## Kent

## Published 1940 - 1950

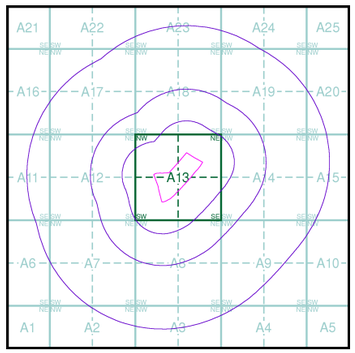
## Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

## Map Name(s) and Date(s)




## Historical Map - Slice A




## Order Details

| | |
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| Order Number: | 27464042_1_1 |
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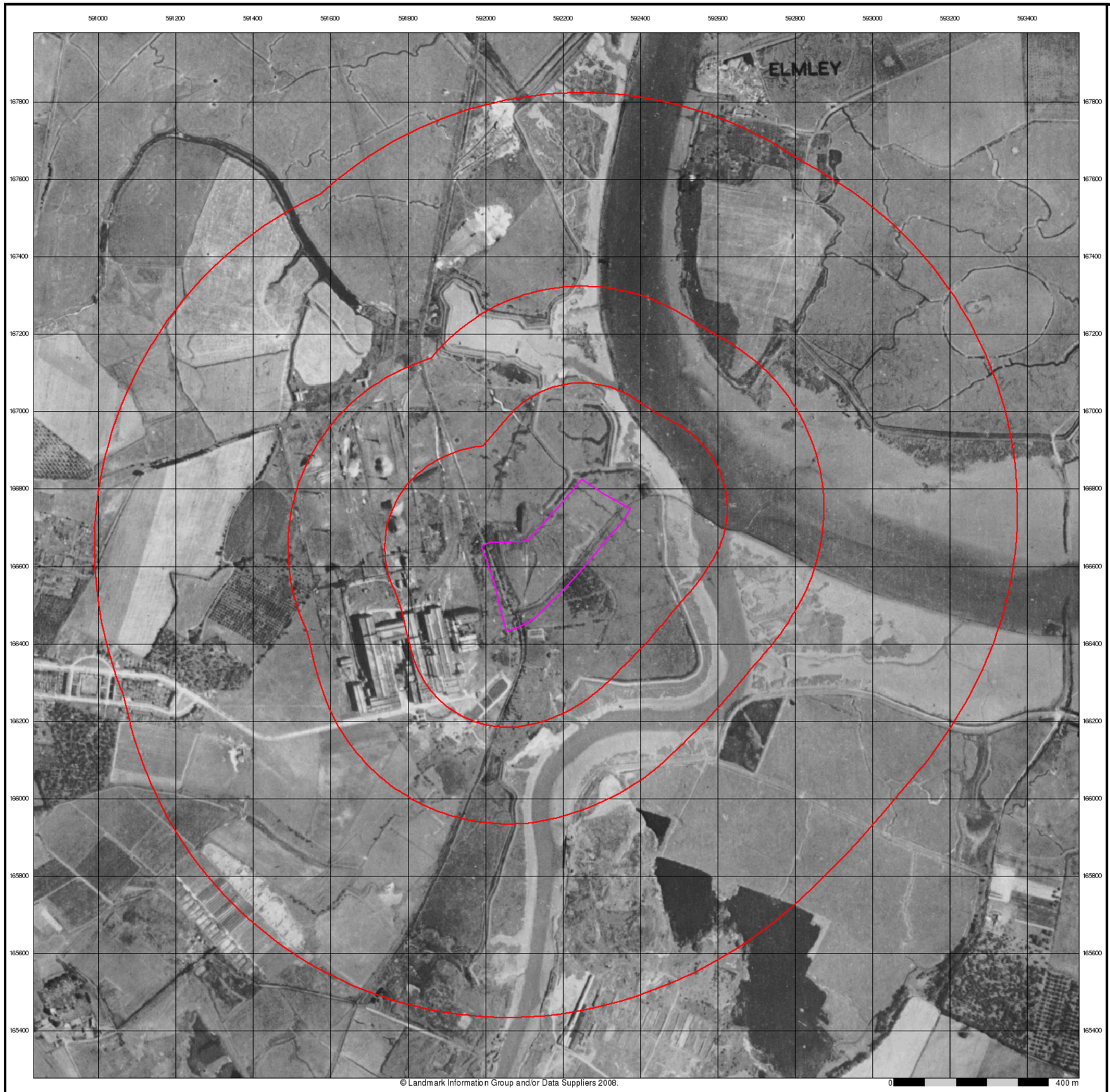


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## Historical Aerial Photography

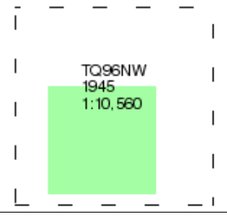
**Published 1945**

**Source map scale - 1:10,560**

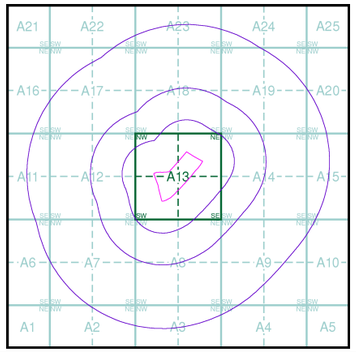
The Historical Aerial Photos were produced by the Ordnance Survey at a scale of 1:1,250 and 1:10,560 from Air Force photography. They were produced between 1944 and 1951 as an interim measure, pending preparation of conventional mapping, due to post war resource shortages. New security measures in the 1950's meant that every photograph was re-checked for potentially unsafe information with security sites replaced by fake fields or clouds. The original editions were withdrawn and only later made available after a period of fifty years although due to the accuracy of the editing, without viewing both revisions it is not easy to spot the edits. Where available Landmark have included both revisions.



## Map Name(s) and Date(s)




## Historical Aerial Photography - Slice A




BRITISH LIBRARY

## Order Details

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|---|---|
| Order Number: | 27464042_1_1 |
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| National Grid Reference: | 592170, 166640 |
| Slice: | A |
| Site Area (Ha): | 6.55 |
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## Site Details

Site at, Sittingbourne, Kent

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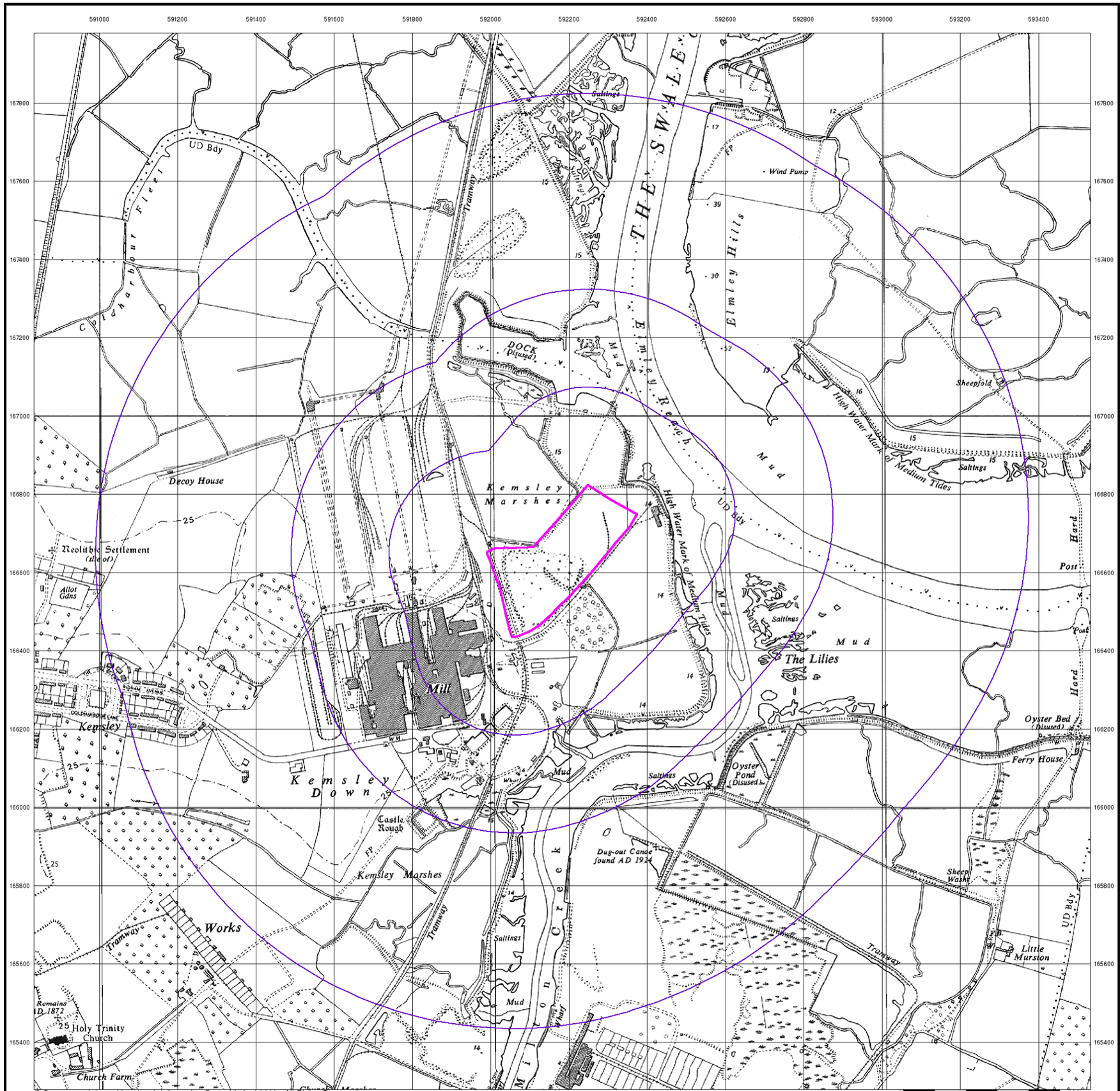



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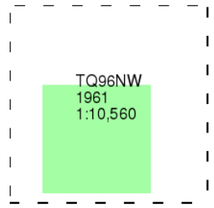
## Ordnance Survey Plan

## Published 1961

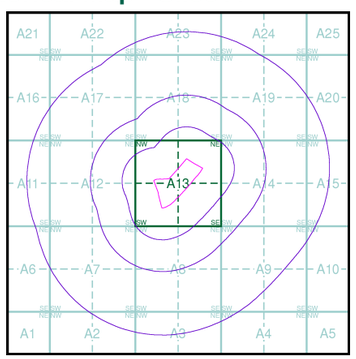
## Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

## Map Name(s) and Date(s)




## Historical Map - Slice A




## Order Details

| | |
|---|---|
| Order Number: | 27464042_1_1 |
| Customer Ref: | JER3773 |
| National Grid Reference: | 592170, 166640 |
| Slice: | A |
| Site Area (Ha): | 6.55 |
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## Site Details

Site at, Sittingbourne, Kent

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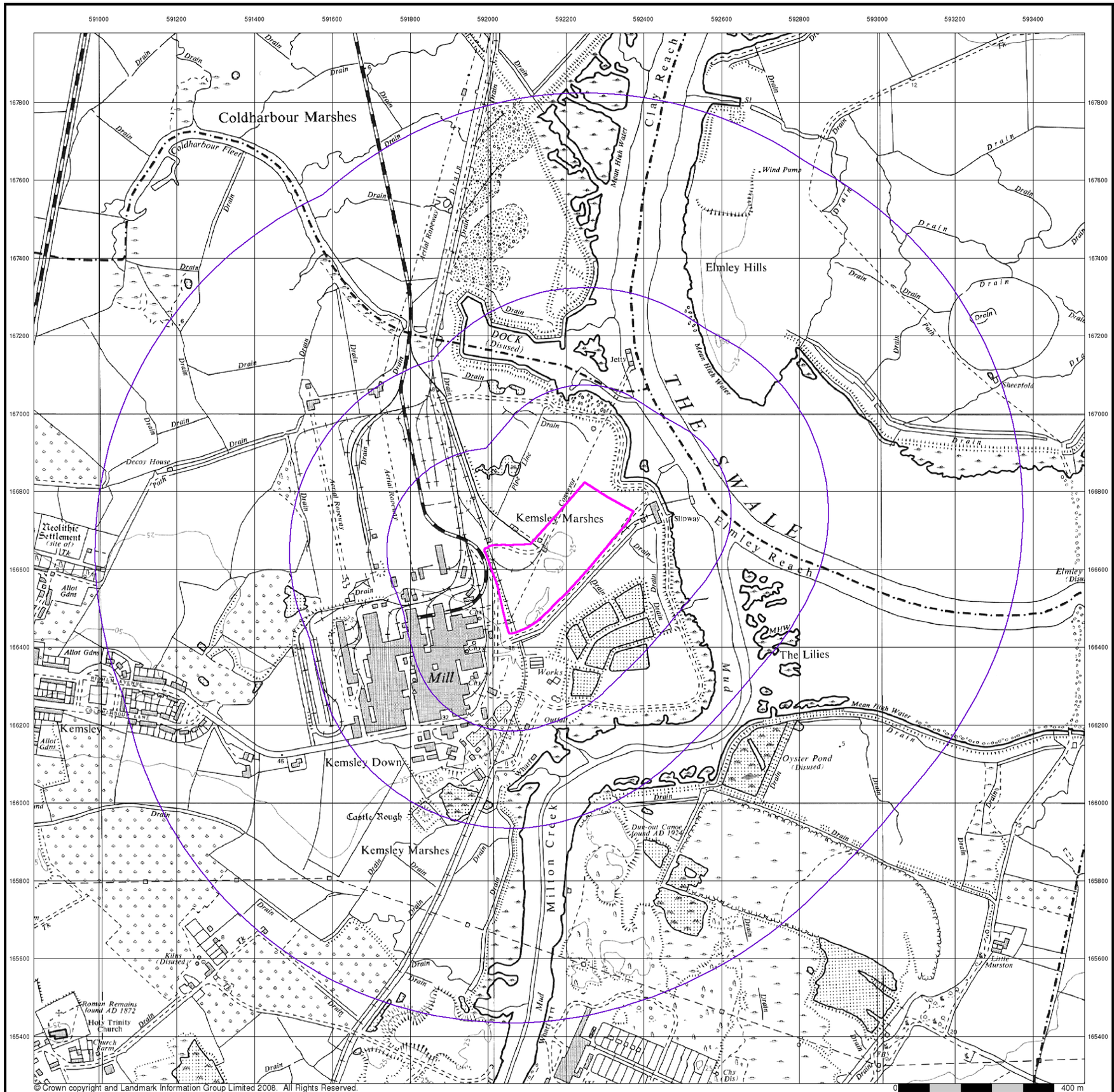




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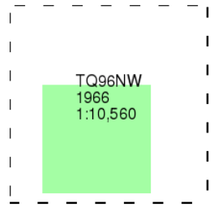
## Ordnance Survey Plan

**Published 1966**

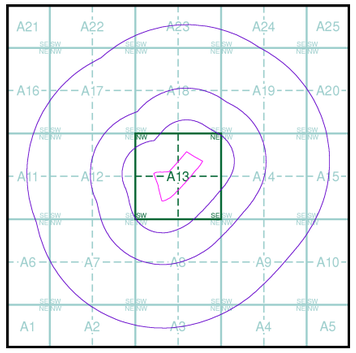
**Source map scale - 1:10,000**

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

## Map Name(s) and Date(s)




## Historical Map - Slice A

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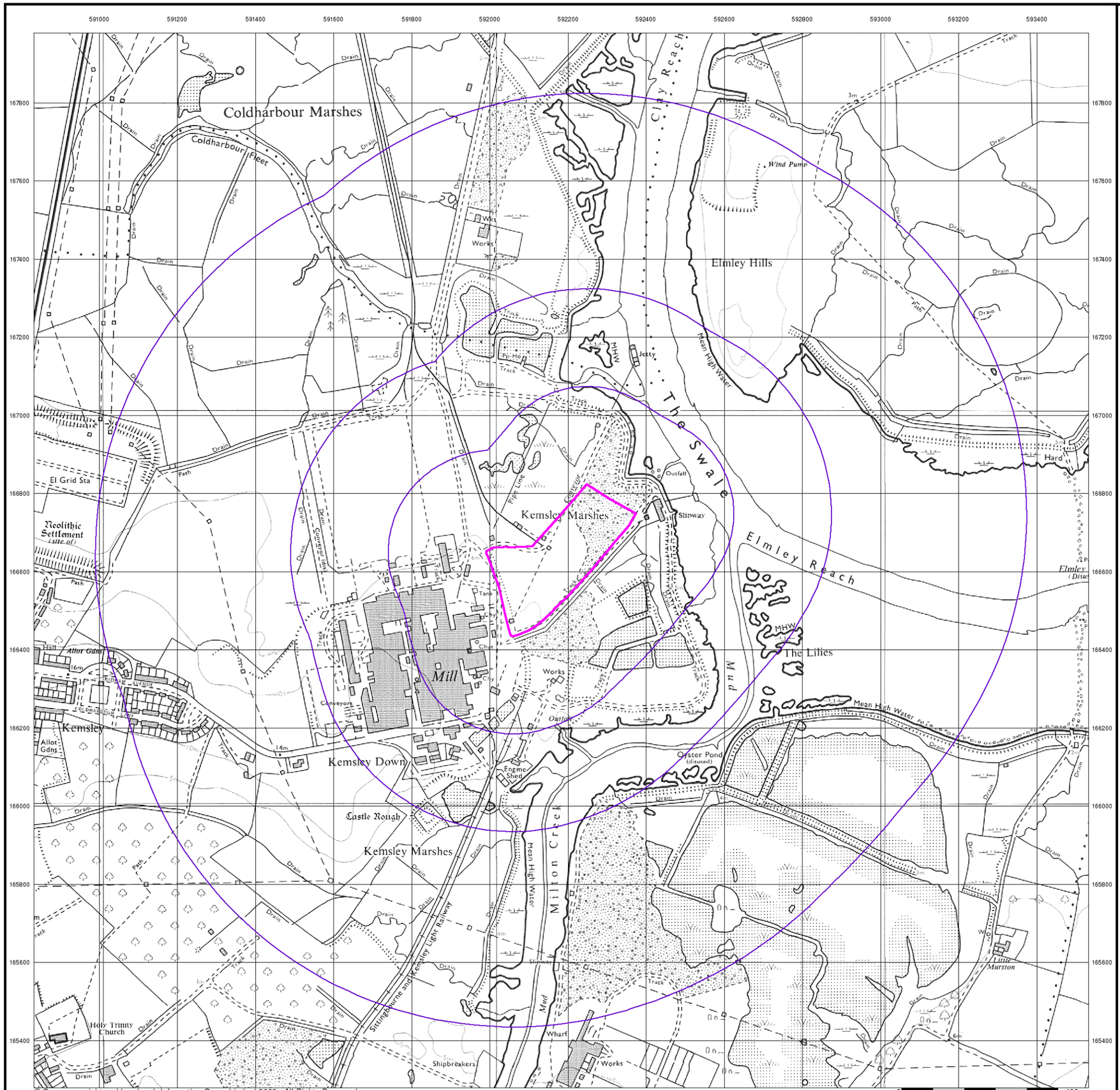



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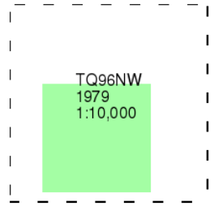
## Ordnance Survey Plan

**Published 1979**

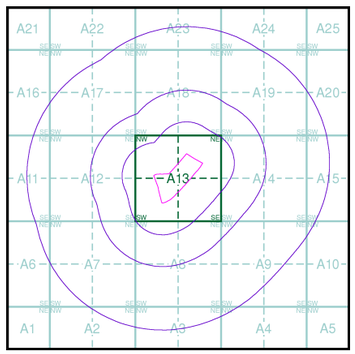
**Source map scale - 1:10,000**

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

## Map Name(s) and Date(s)




## Historical Map - Slice A




## Order Details

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| Customer Ref: | JER3773 |
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## Site Details

Site at, Sittingbourne, Kent

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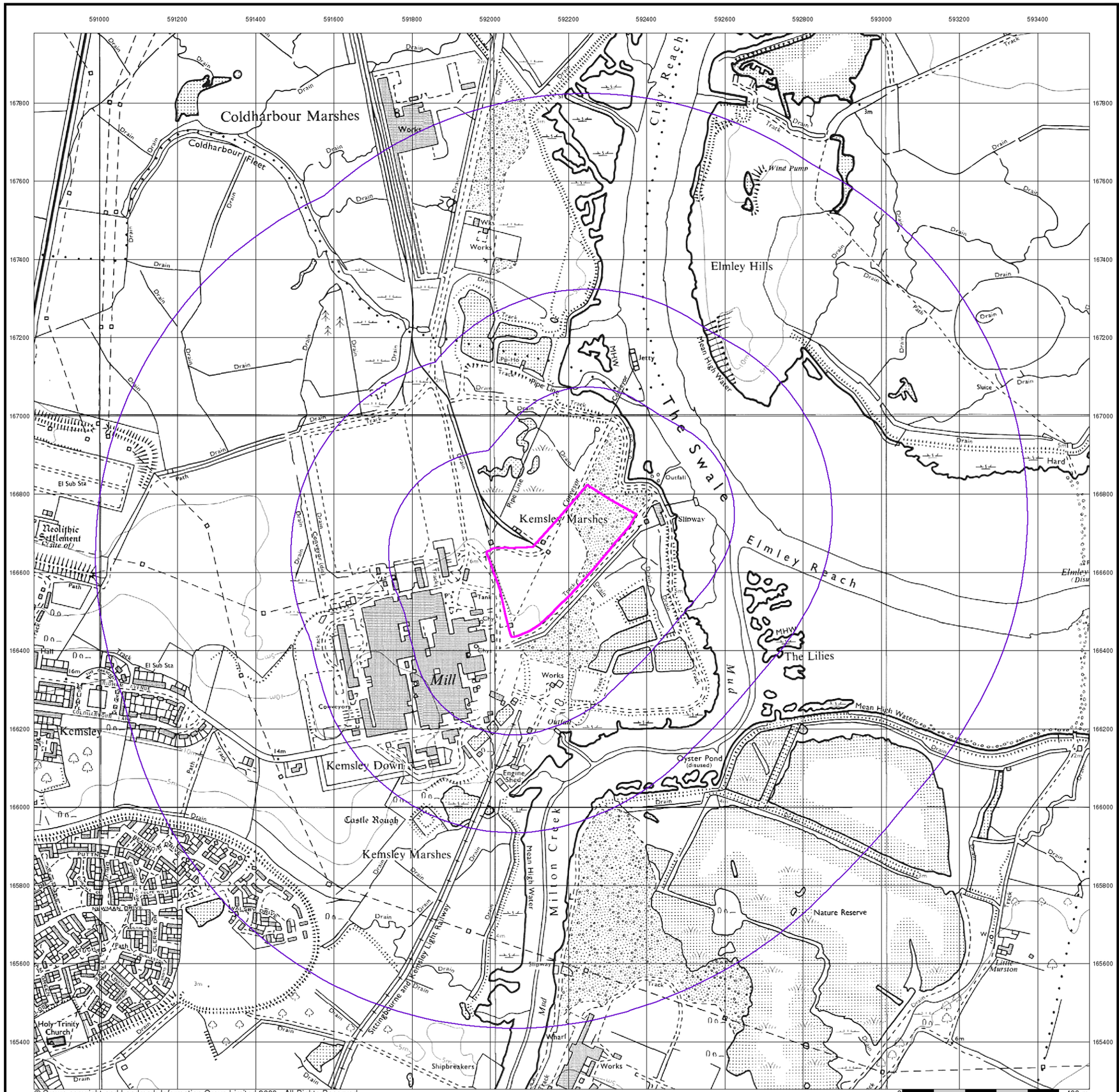




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## Ordnance Survey Plan

**Published 1991**

**Source map scale - 1:10,000**

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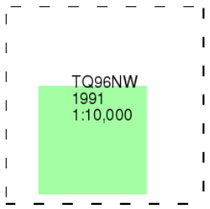
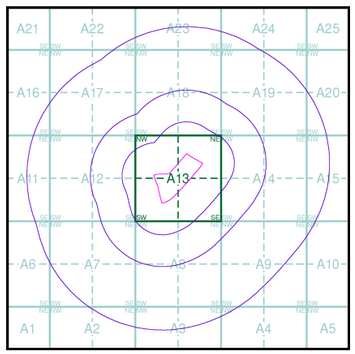
## Map Name(s) and Date(s)




## Historical Map - Slice A

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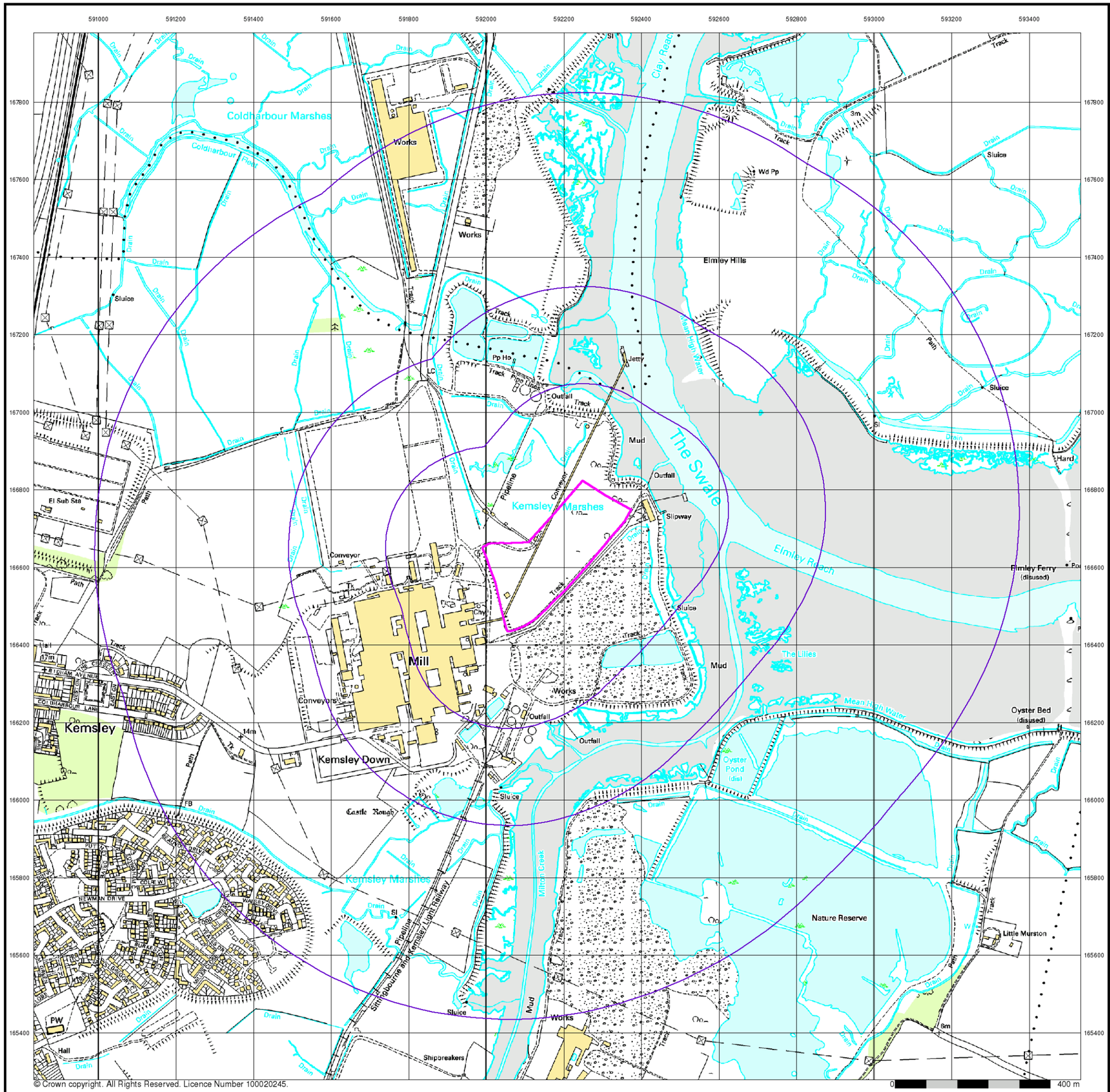



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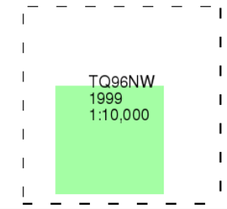
## 10k Raster Mapping

**Published 1999**

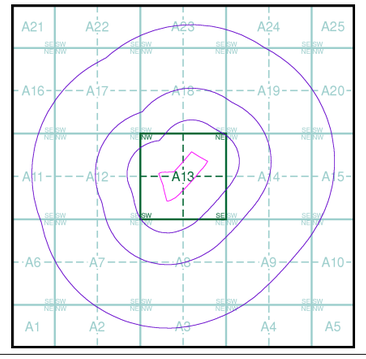
**Source map scale - 1:10,000**

The historical maps shown were produced from the Ordnance Survey`s 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

## Map Name(s) and Date(s)




## Historical Map - Slice A




## Order Details

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| Slice: | A |
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## Site Details

Site at, Sittingbourne, Kent

LANDMARK Information Group

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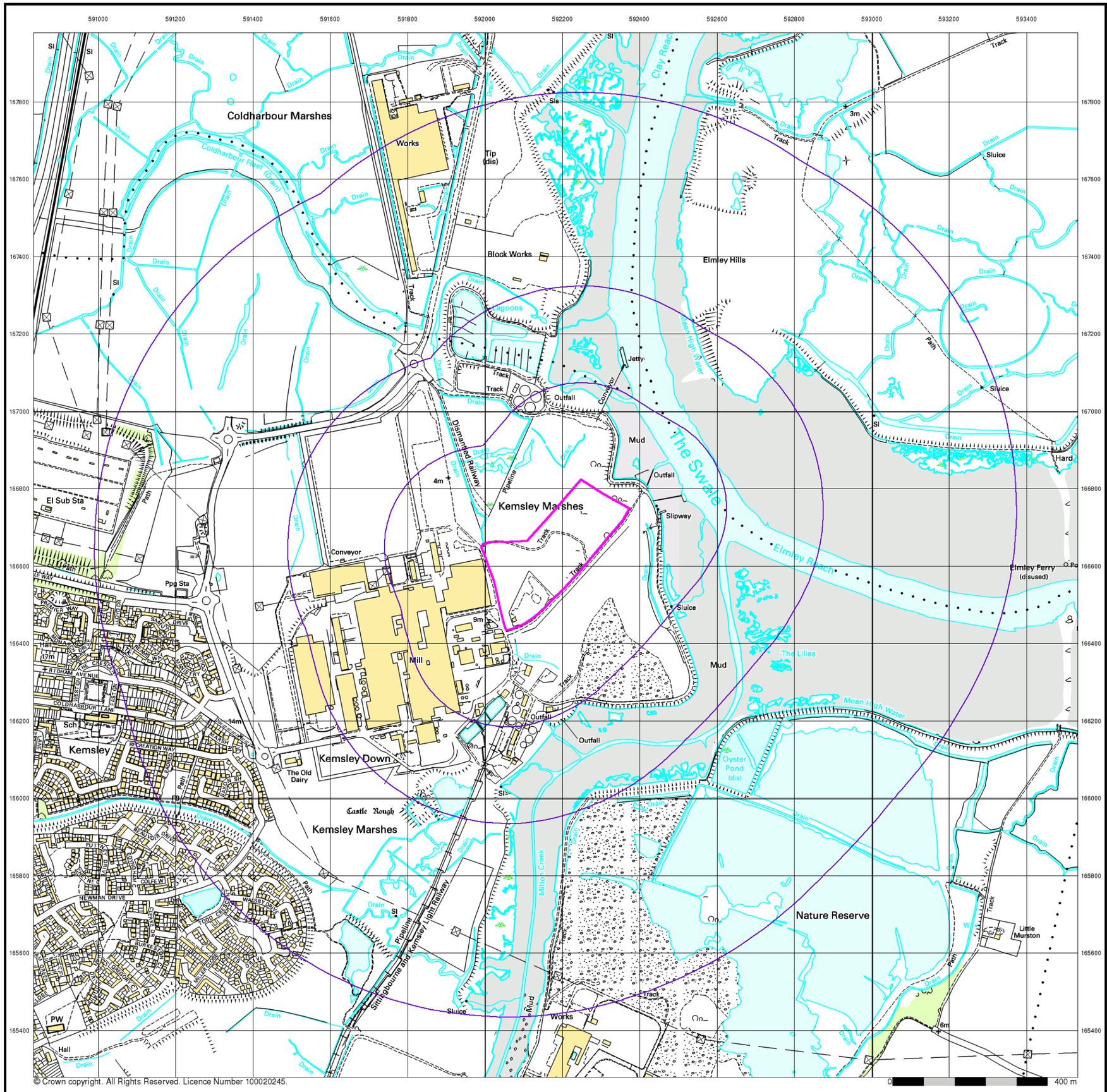
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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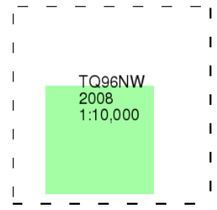
## 10k Raster Mapping

## Published 2008

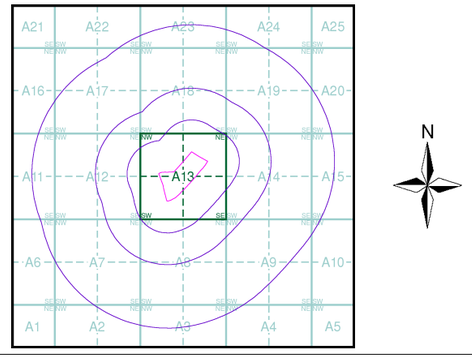
## Source map scale - 1:10,000

The historical maps shown were produced from the Ordnance Survey`s 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

## Map Name(s) and Date(s)




## Historical Map - Slice A




## Order Details

| | |
|---|---|
| Order Number: | 27464042_1_1 |
| Customer Ref: | JER3773 |
| National Grid Reference: | 592170, 166640 |
| Slice: | A |
| Site Area (Ha): | 6.55 |
| Search Buffer (m): | 1000 |

## Site Details

Site at, Sittingbourne, Kent

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Fax: 0844 844 9951
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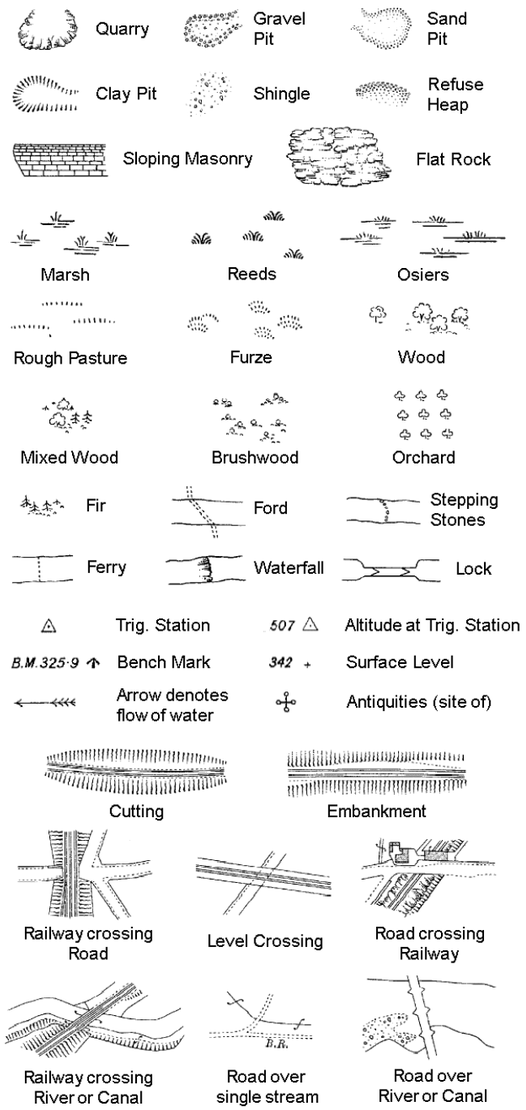
# Historical Mapping Legends

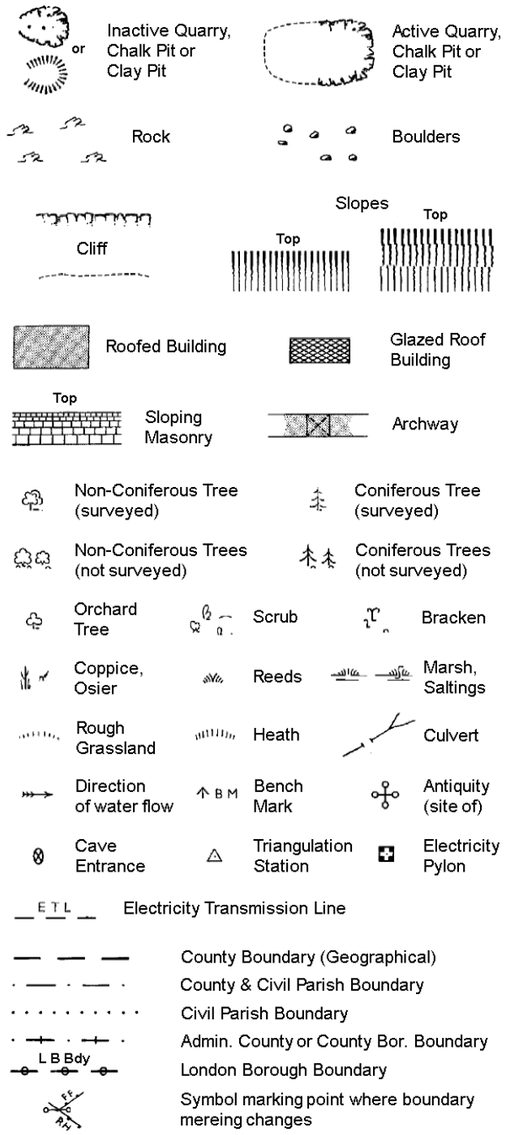
## Ordnance Survey County Series and Ordnance Survey Plan 1:2,500




County Boundary (Geographical)
County & Civil Parish Boundary
Administrative County & Civil Parish Boundary
Co. Boro. Bdy. County Borough Boundary (England)
Co. Burgh Bdy. County Burgh Boundary (Scotland)

| | | | |
|---|---|---|---|
| B P B S | Boundary Post or Stone | P.C.B | Police Call Box |
| B.R. | Bridle Road | P | Pump |
| E.P | Electricity Pylon | S.P | Signal Post |
| F.B. | Foot Bridge | St. | Sluice |
| F.P. | Foot Path | Sp. | Spring |
| G.P | Guide Post or Board | T.C.B | Telephone Call Box |
| M.S | Mile Stone | Tr. | Trough |
| M.P M.R | Mooring Post or Ring | W | Well |

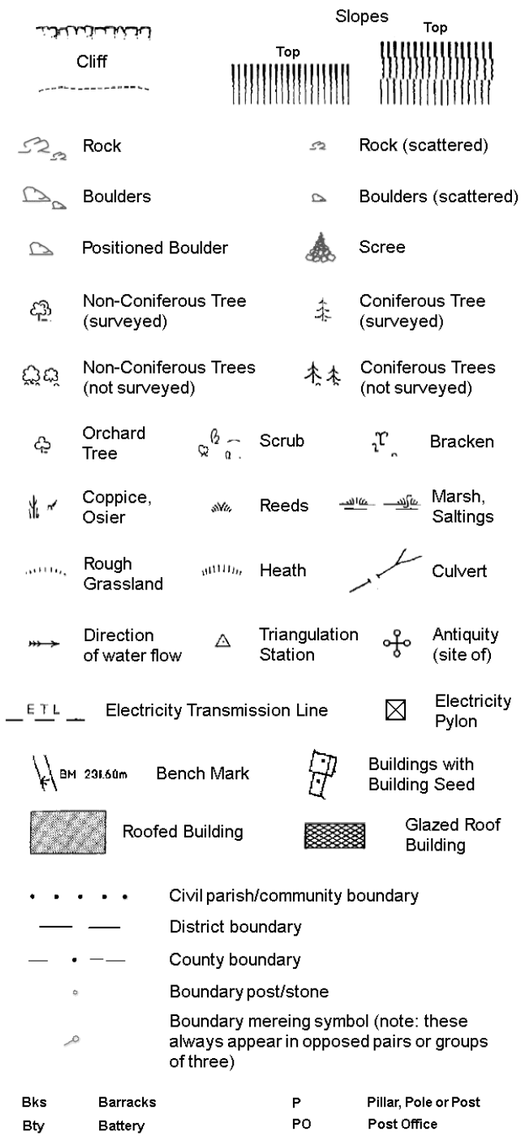
## Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250




County Boundary (Geographical)
County & Civil Parish Boundary
Civil Parish Boundary
Admin. County or County Bor. Boundary
L B Bdy London Borough Boundary
Symbol marking point where boundary mereing changes

| | | | |
|---|---|---|---|
| BH | Beer House | P | Pillar, Pole or Post |
| BP, BS | Boundary Post or Stone | PO | Post Office |
| Cn, C | Capstan, Crane | PC | Public Convenience |
| Chy | Chimney | PH | Public House |
| D Fn | Drinking Fountain | Pp | Pump |
| El P | Electricity Pillar or Post | SB, S Br | Signal Box or Bridge |
| FAP | Fire Alarm Pillar | SP, SL | Signal Post or Light |
| FB | Foot Bridge | Spr | Spring |
| GP | Guide Post | Tk | Tank or Track |
| H | Hydrant or Hydraulic | TCB | Telephone Call Box |
| LC | Level Crossing | TCP | Telephone Call Post |
| MH | Manhole | Tr | Trough |
| MP | Mile Post or Mooring Post | Wr Pt, Wr T | Water Point, Water Tap |
| MS | Mile Stone | W | Well |
| NTL | Normal Tidal Limit | Wd Pp | Wind Pump |

## Large-Scale National Grid Data 1:2,500 and 1:1,250




Civil parish/community boundary
District boundary
County boundary
Boundary post/stone
Boundary mereing symbol (note: these always appear in opposed pairs or groups of three)

| | | | |
|---|---|---|---|
| Bks | Barracks | P | Pillar, Pole or Post |
| Bty | Battery | PO | Post Office |
| Cemy | Cemetery | PC | Public Convenience |
| Chy | Chimney | Pp | Pump |
| Cis | Cistern | Ppg Sta | Pumping Station |
| Dismtd Rly | Dismantled Railway | PW | Place of Worship |
| El Gen Sta | Electricity Generating Station | Sewage Ppg Sta | Sewage Pumping Station |
| El P | Electricity Pole, Pillar | SB, S Br | Signal Box or Bridge |
| El Sub Sta | Electricity Sub Station | SP, SL | Signal Post or Light |
| FB | Filter Bed | Spr | Spring |
| Fn / D Fn | Fountain / Drinking Ftn. | Tk | Tank or Track |
| Gas Gov | Gas Valve Compound | Tr | Trough |
| GVC | Gas Governer | Wd Pp | Wind Pump |
| GP | Guide Post | Wr Pt, Wr T | Water Point, Water Tap |
| MH | Manhole | Wks | Works (building or area) |
| MP, MS | Mile Post or Mile Stone | W | Well |

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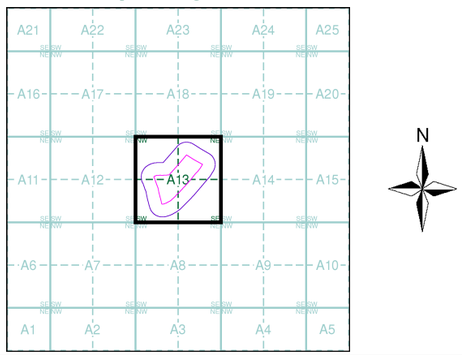
## Historical Mapping & Photography included:

| Mapping Type | Scale | Date | Pg |
|---|---|---|---|
| Kent | 1:2,500 | 1885 | 2 |
| Kent | 1:2,500 | 1896 | 3 |
| Kent | 1:2,500 | 1908 | 4 |
| Kent | 1:2,500 | 1939 | 5 |
| Ordnance Survey Plan | 1:2,500 | 1964 | 6 |
| Additional SIMs | 1:2,500 | 1964 - 1978 | 7 |
| Additional SIMs | 1:2,500 | 1978 - 1989 | 8 |
| Ordnance Survey Plan | 1:2,500 | 1979 | 9 |
| Large-Scale National Grid Data | 1:2,500 | 1993 | 10 |
| Large-Scale National Grid Data | 1:2,500 | 1994 | 11 |

## Historical Map - Segment A13




## Order Details

Order Number: 27464042_1_1
Customer Ref: JER3773
National Grid Reference: 592170, 166640
Slice: A
Site Area (Ha): 6.55
Search Buffer (m): 100

## Site Details

Site at, Sittingbourne, Kent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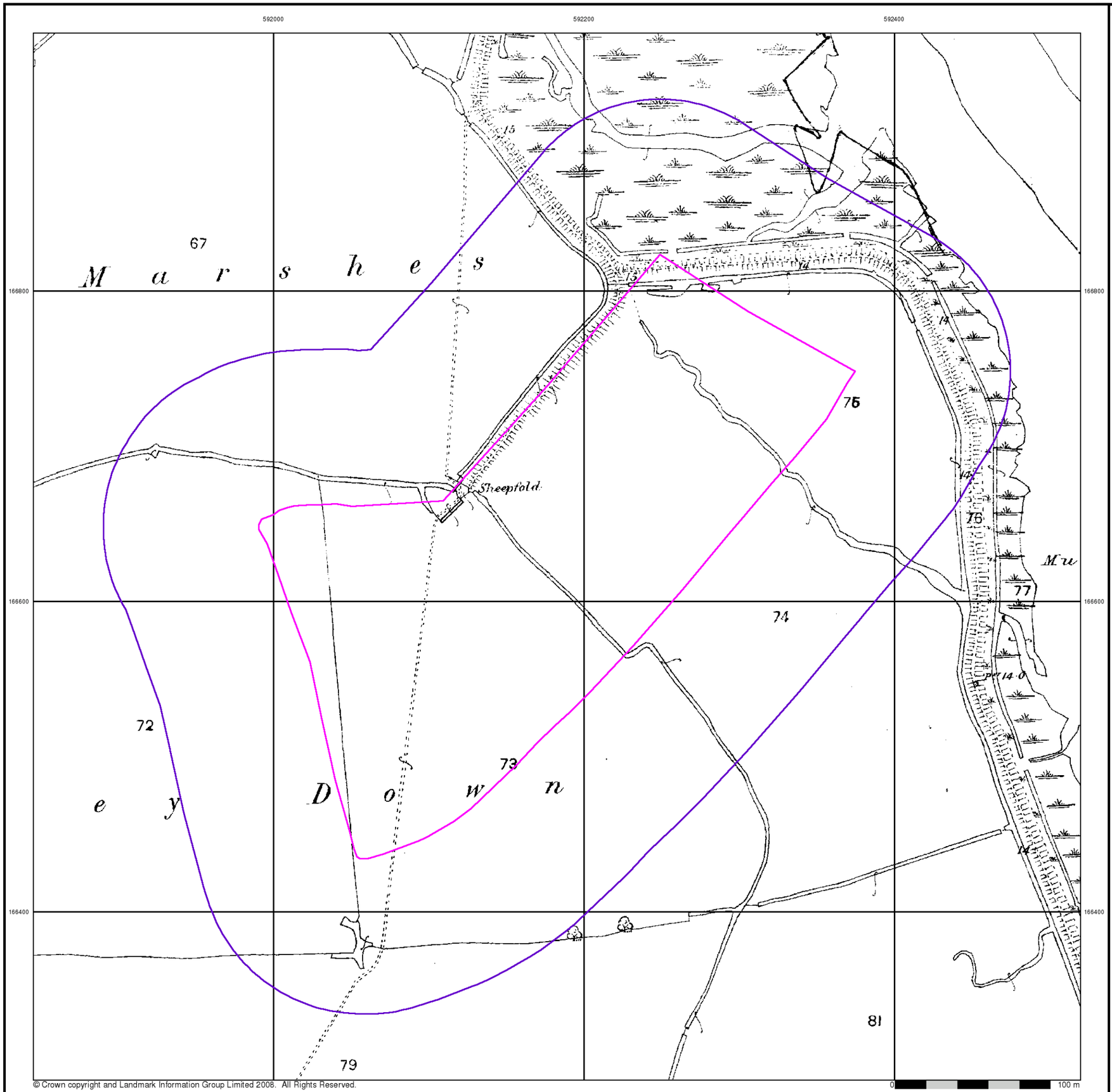
Web: www.envirocheck.co.uk



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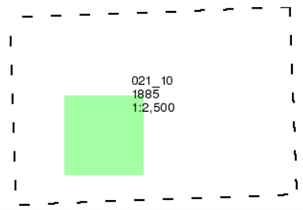
## Kent

## Published 1885

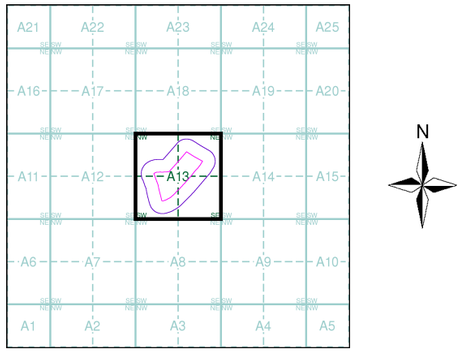
## Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

## Map Name(s) and Date(s)




## Historical Map - Segment A13




## Order Details

| | |
|---|---|
| Order Number: | 27464042_1_1 |
| Customer Ref: | JER3773 |
| National Grid Reference: | 592170, 166640 |
| Slice: | A |
| Site Area (Ha): | 6.55 |
| Search Buffer (m): | 100 |

## Site Details

Site at, Sittingbourne, Kent

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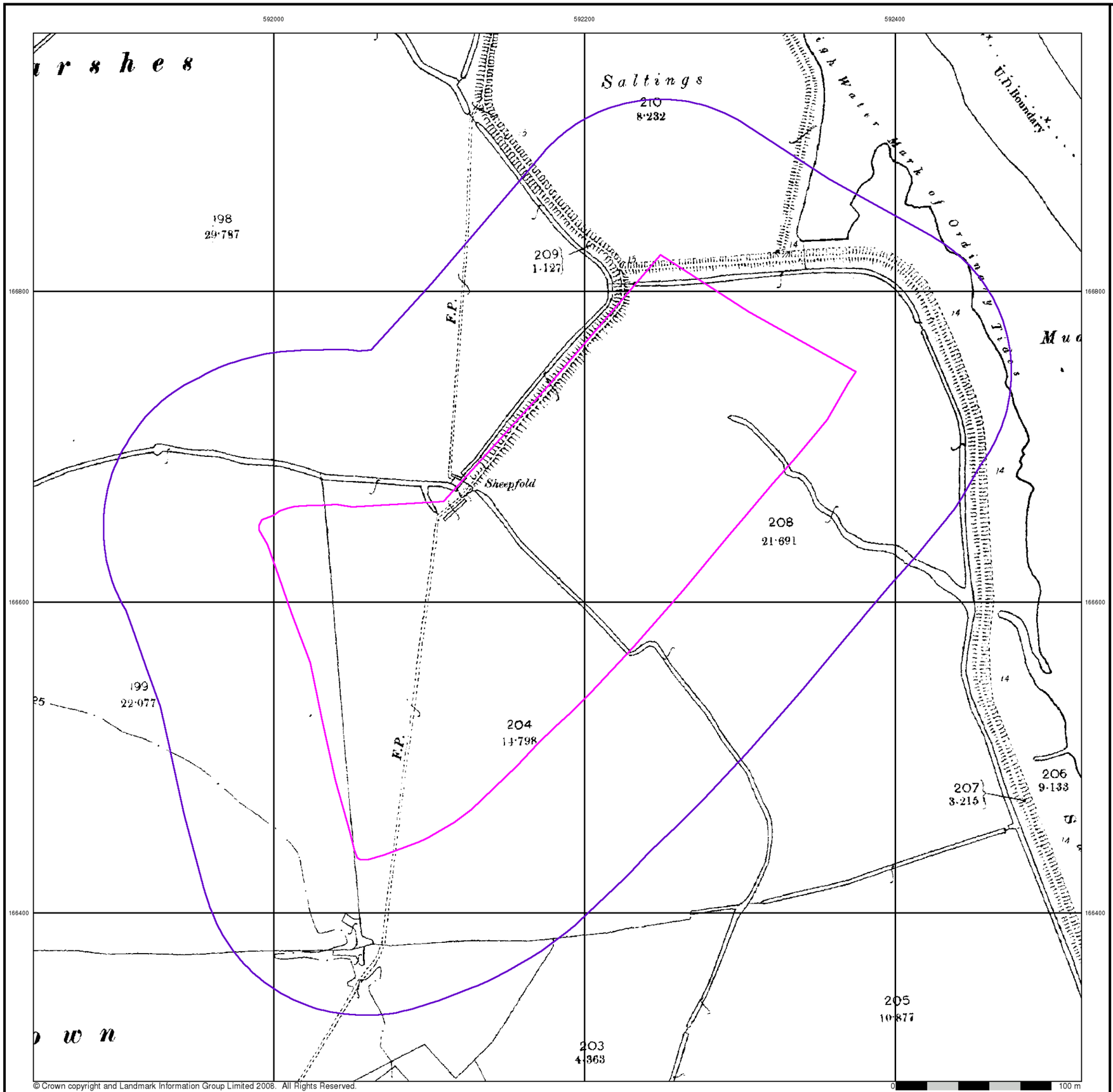
Web: www.envirocheck.co.uk



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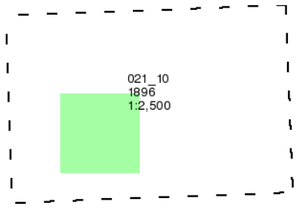
## Kent

## Published 1896

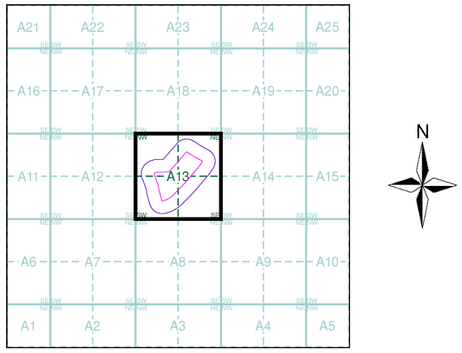
## Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

## Map Name(s) and Date(s)




## Historical Map - Segment A13




## Order Details

| | |
|---|---|
| Order Number: | 27464042_1_1 |
| Customer Ref: | JER3773 |
| National Grid Reference: | 592170, 166640 |
| Slice: | A |
| Site Area (Ha): | 6.55 |
| Search Buffer (m): | 100 |

## Site Details

Site at, Sittingbourne, Kent

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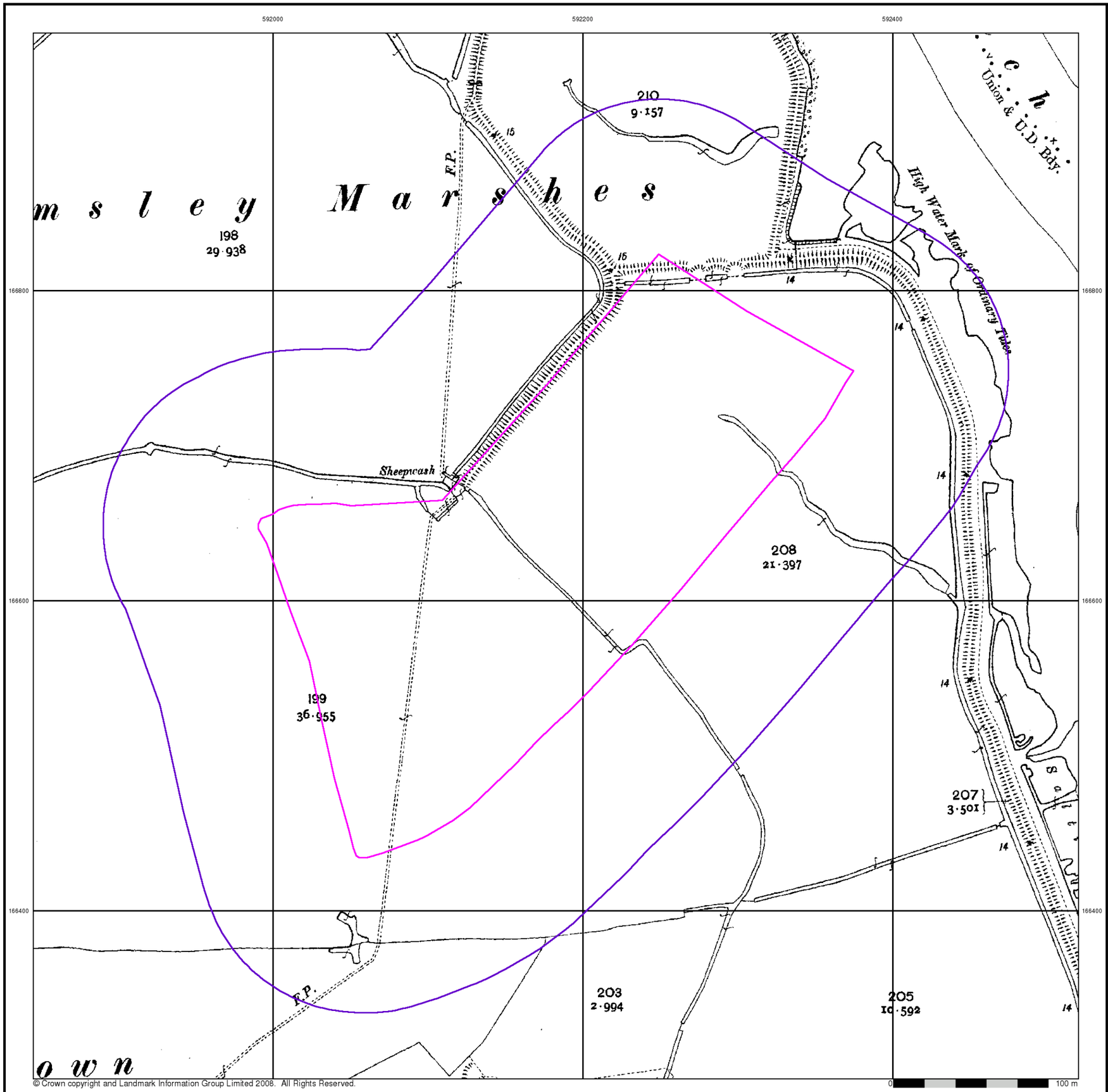



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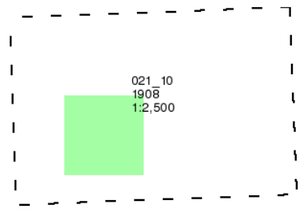
## Kent

## Published 1908

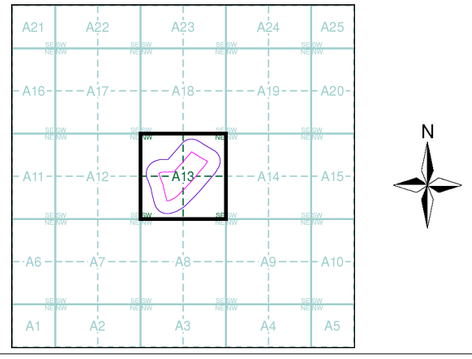
## Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

## Map Name(s) and Date(s)




## Historical Map - Segment A13




## Order Details

| | |
|---|---|
| Order Number: | 27464042_1_1 |
| Customer Ref: | JER3773 |
| National Grid Reference: | 592170, 166640 |
| Slice: | A |
| Site Area (Ha): | 6.55 |
| Search Buffer (m): | 100 |

## Site Details

Site at, Sittingbourne, Kent

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Tel: 0844 844 9952
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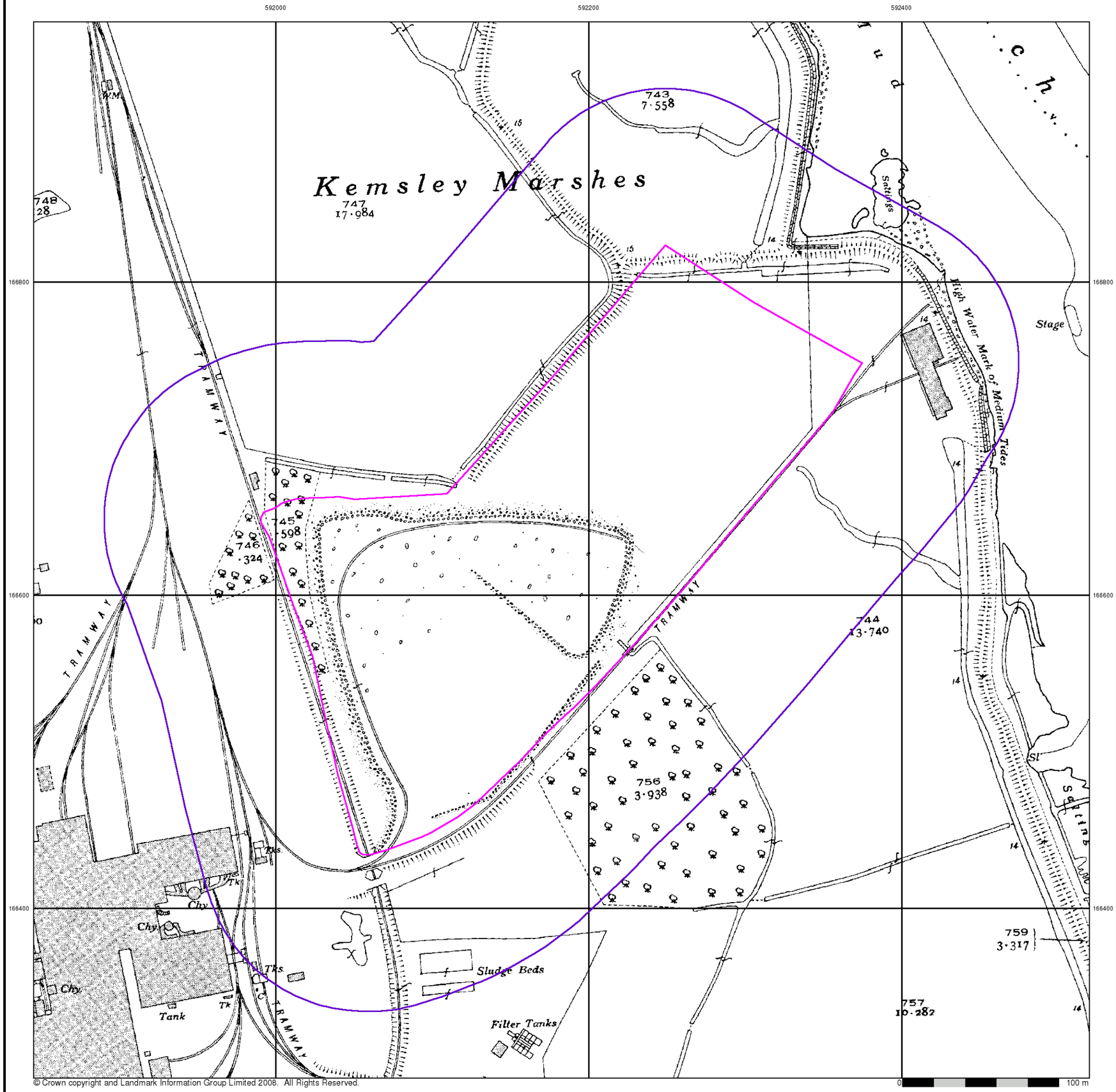
Web: www.envirocheck.co.uk



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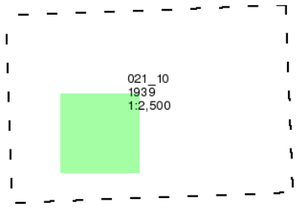
## Kent

## Published 1939

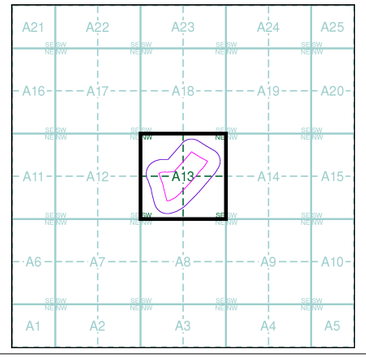
## Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

## Map Name(s) and Date(s)




## Historical Map - Segment A13




## Order Details

| | |
|---|---|
| Order Number: | 27464042_1_1 |
| Customer Ref: | JER3773 |
| National Grid Reference: | 592170, 166640 |
| Slice: | A |
| Site Area (Ha): | 6.55 |
| Search Buffer (m): | 100 |

## Site Details

Site at, Sittingbourne, Kent

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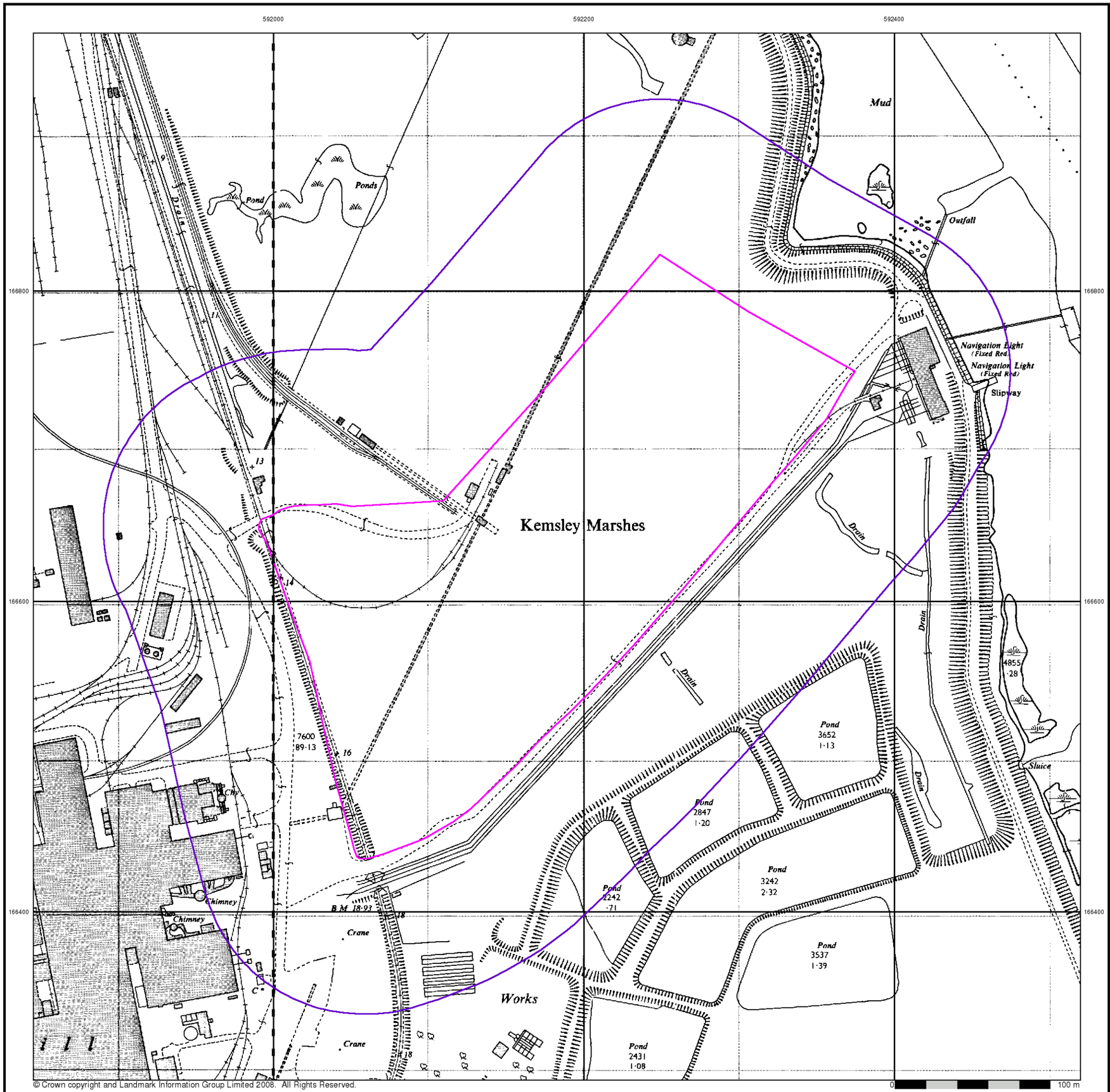
Web: www.envirocheck.co.uk






0 100 m

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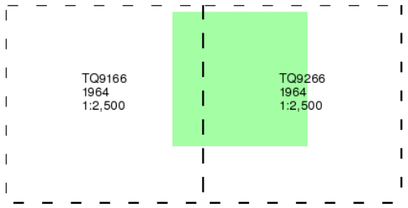
## Ordnance Survey Plan

**Published 1964**

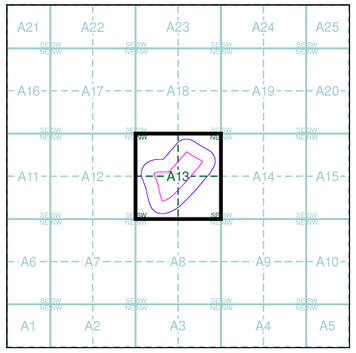
**Source map scale - 1:2,500**

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

## Map Name(s) and Date(s)




## Historical Map - Segment A13




## Order Details

| | |
|---|---|
| Order Number: | 27464042_1_1 |
| Customer Ref: | JER3773 |
| National Grid Reference: | 592170, 166640 |
| Slice: | A |
| Site Area (Ha): | 6.55 |
| Search Buffer (m): | 100 |

## Site Details

Site at, Sittingbourne, Kent

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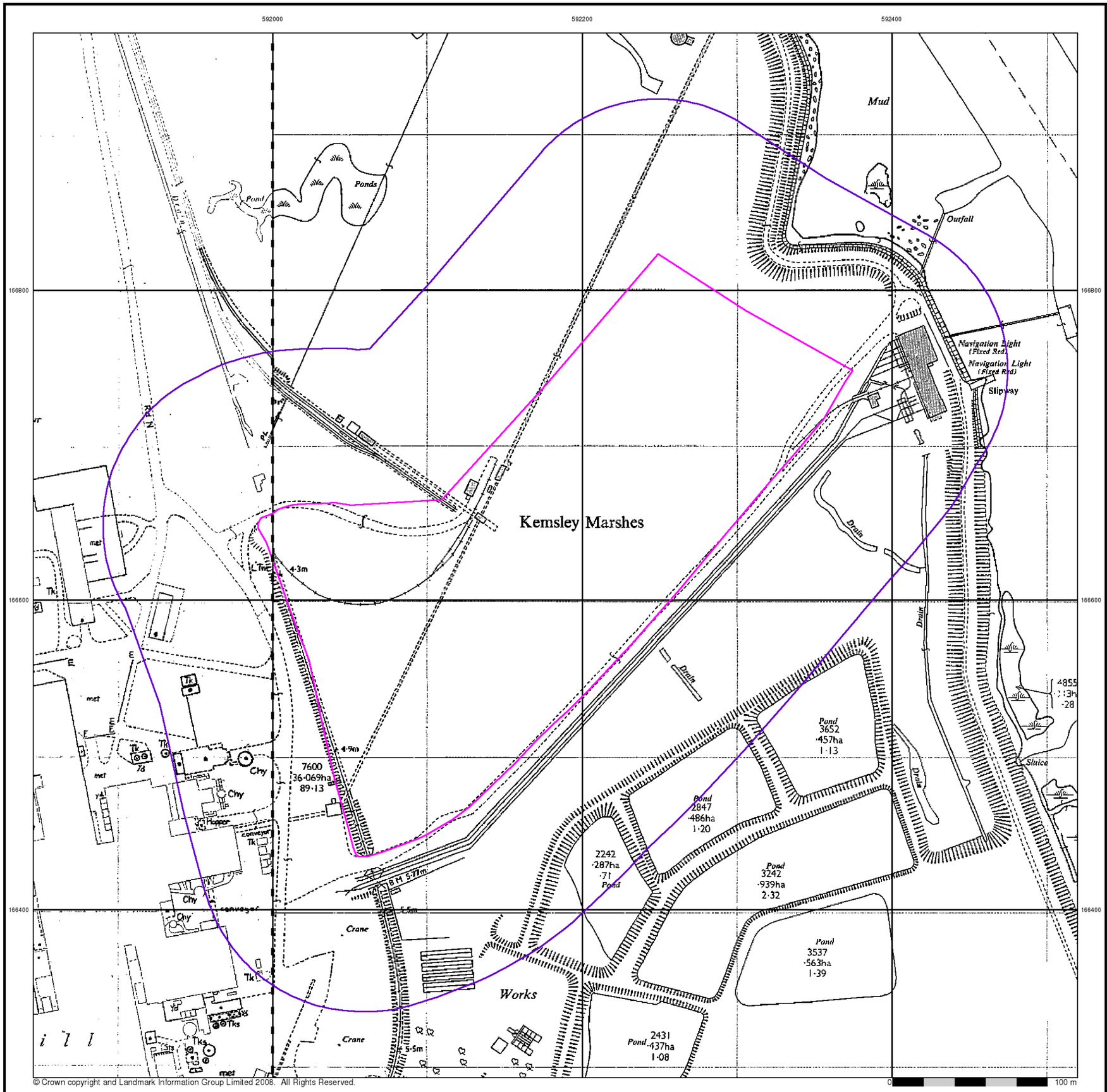



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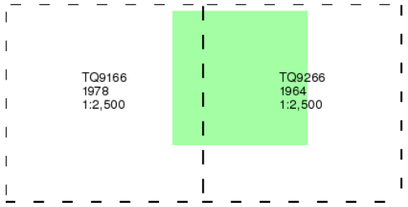
## Additional SIMs

**Published 1964 - 1978**

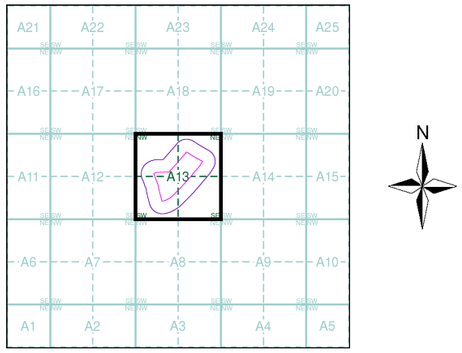
**Source map scale - 1:2,500**

The SIM cards (Ordnance Survey's `Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

## Map Name(s) and Date(s)




## Historical Map - Segment A13




## Order Details

| | |
|---|---|
| Order Number: | 27464042_1_1 |
| Customer Ref: | JER3773 |
| National Grid Reference: | 592170, 166640 |
| Slice: | A |
| Site Area (Ha): | 6.55 |
| Search Buffer (m): | 100 |

## Site Details

Site at, Sittingbourne, Kent

LANDMARK Information Group
Tel: 0844 844 9952
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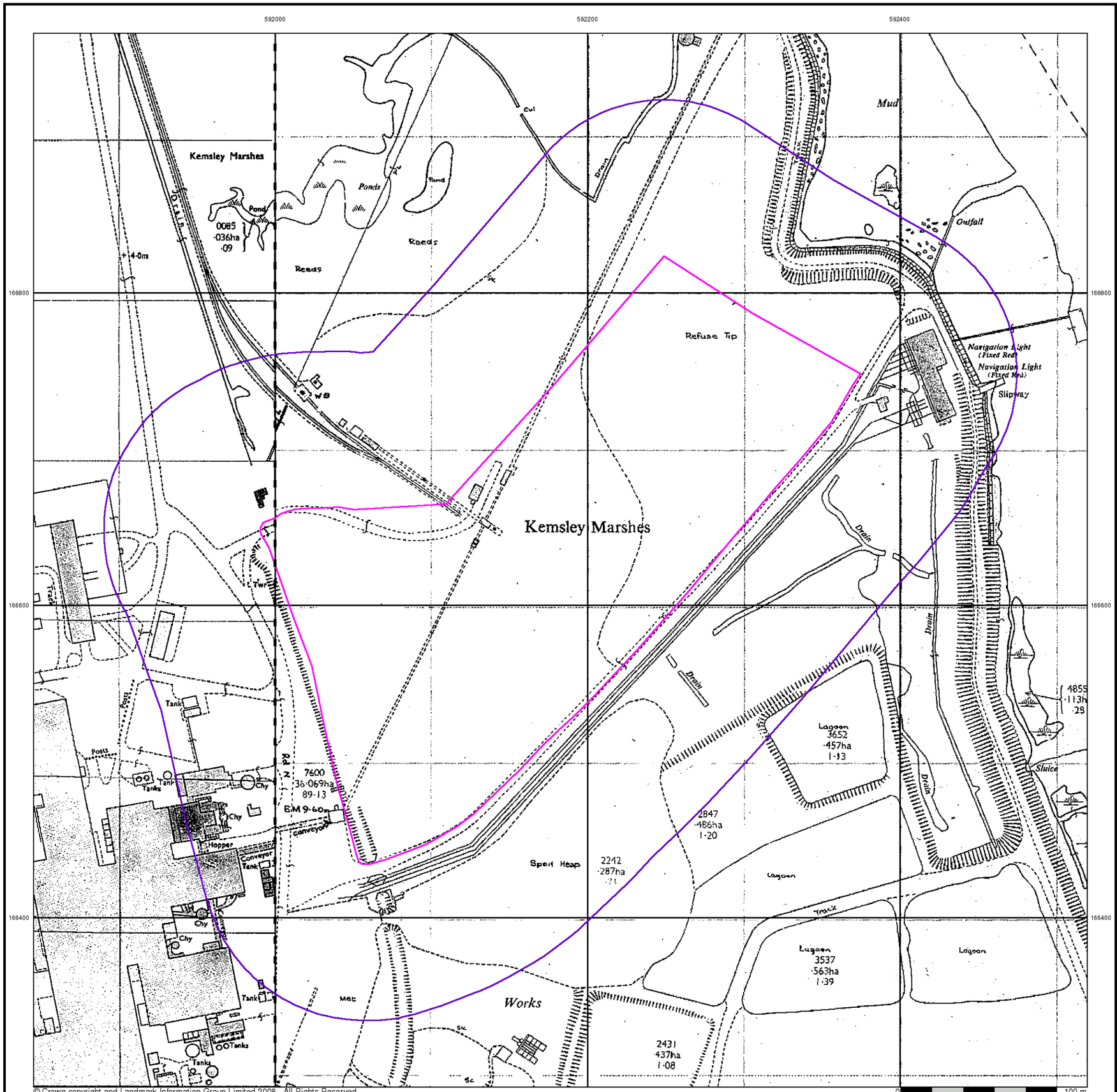



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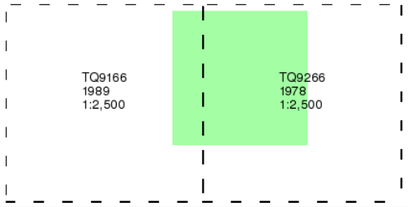
## Additional SIMs

**Published 1978 - 1989**

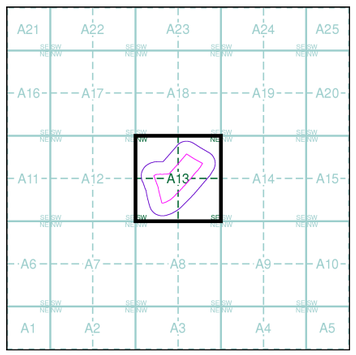
**Source map scale - 1:2,500**

The SIM cards (Ordnance Survey's `Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

## Map Name(s) and Date(s)




## Historical Map - Segment A13




## Order Details

| | |
|---|---|
| Order Number: | 27464042_1_1 |
| Customer Ref: | JER3773 |
| National Grid Reference: | 592170, 166640 |
| Slice: | A |
| Site Area (Ha): | 6.55 |
| Search Buffer (m): | 100 |

## Site Details

Site at, Sittingbourne, Kent

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Tel: 0844 844 9952
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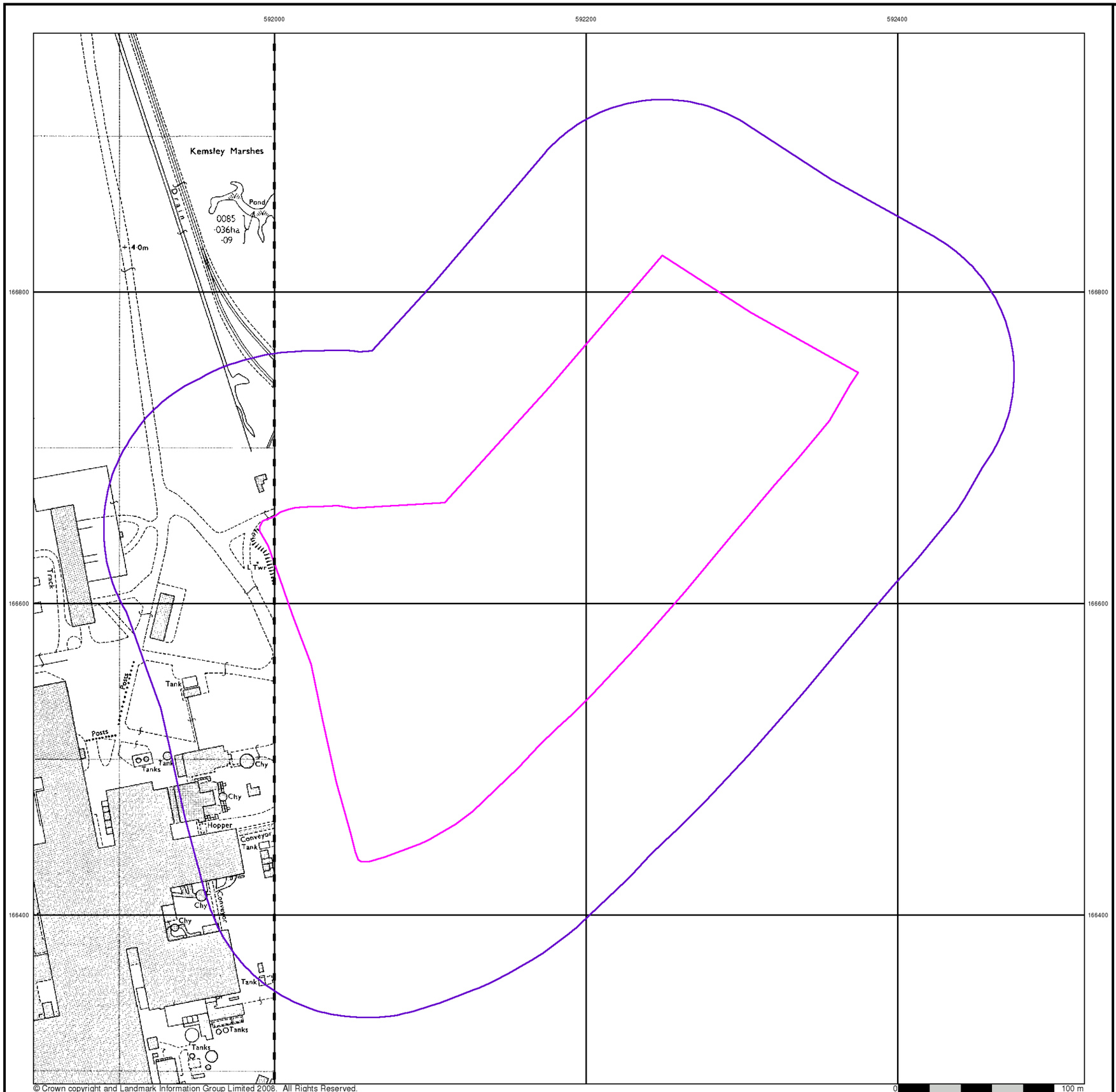
Web: www.envirocheck.co.uk





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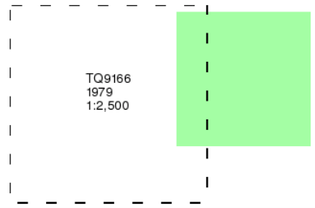
## Ordnance Survey Plan

**Published 1979**

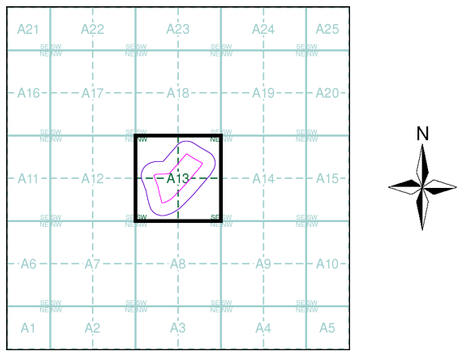
**Source map scale - 1:2,500**

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

## Map Name(s) and Date(s)




## Historical Map - Segment A13




## Order Details

| | |
|---|---|
| Order Number: | 27464042_1_1 |
| Customer Ref: | JER3773 |
| National Grid Reference: | 592170, 166640 |
| Slice: | A |
| Site Area (Ha): | 6.55 |
| Search Buffer (m): | 100 |

## Site Details

Site at, Sittingbourne, Kent

LANDMARK® Information Group

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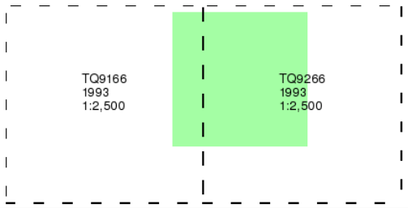
## Large-Scale National Grid Data

**Published 1993**

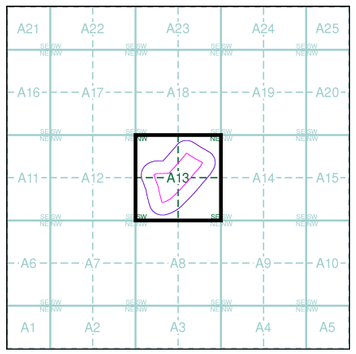
**Source map scale - 1:2,500**

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

## Map Name(s) and Date(s)




## Historical Map - Segment A13




## Order Details

| | |
|---|---|
| Order Number: | 27464042_1_1 |
| Customer Ref: | JER3773 |
| National Grid Reference: | 592170, 166640 |
| Slice: | A |
| Site Area (Ha): | 6.55 |
| Search Buffer (m): | 100 |

## Site Details

Site at, Sittingbourne, Kent

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## Large-Scale National Grid Data

**Published 1994**

**Source map scale - 1:2,500**

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

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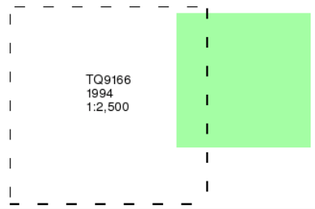


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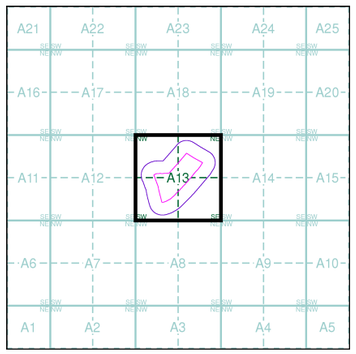


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# Kemsley Paper Mill, Sittingbourne, Kent St. Regis Paper Co. Limited & E.ON Energy from Waste

## Flood Risk Assessment


| Prepared by: | Checked by: |
| --- | --- |
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RPS Planning & Development

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# APPENDICES

# 1 INTRODUCTION

## 1.1 Background

St Regis Paper Co Limited and E.ON Energy from Waste has commissioned RPS to undertake a Flood Risk Assessment (FRA) in accordance with UK PPS25[1], for the development of a Sustainable Energy Plant and associated infrastructure. The site is located to the north of Kemsley, within the St Regis Paper Mill complex (Drawing 1). This FRA will form part of the Development Brief as agreed with the Environment Agency (EA).

It is recognised that developments that are designed without regard to flood risk may endanger lives, damage property, cause disruption to the wider community, damage the environment, be difficult to insure and require additional expense on remedial works. Current guidance on development and flood risk[2] identifies several key aims for a development to ensure that it is sustainable in flood risk terms. These aims are as follows:

- the development should not be at a significant risk of flooding and should not be susceptible to damage due to flooding;
- the development should not be exposed to flood risk such that the health, safety and welfare of the users of the development, or the population elsewhere, is threatened;
- normal operation of the development should not be susceptible to disruption as a result of flooding;
- safe access to and from the development should be possible during flood events;
- the development should not increase flood risk elsewhere;
- the development should not prevent safe maintenance of watercourses or maintenance and operation of flood defences;
- the development should not be associated with an onerous or difficult operation and maintenance regime to manage flood risk. The responsibility for any operation and maintenance required should be clearly defined;
- future users of the development should be made aware of any flood risk issues relating to the development;

[1] Communities and Local Government (2006) Planning and Policy Statement 25: Development and Flood Risk (PPS25).

- the development design should be such that future users will not have difficulty obtaining insurance or mortgage finance, or in selling all or part of the development, as a result of flood risk issues;
- the development should not lead to degradation of the environment; and
- the development should meet all of the above criteria for its entire lifetime, including consideration of the potential effects of climate change.

The FRA is undertaken with due consideration of these sustainability aims.

The key objectives of the FRA are:

- to assess the flood risk to the proposed development and to demonstrate the feasibility of appropriately designing the development such that any residual flood risk to the development and its users would be acceptable;
- to assess the potential impact of the proposed development on flood risk elsewhere and to demonstrate the feasibility of appropriately designing the development such that the development would not increase flood risk elsewhere; and
- to satisfy the requirements of national planning policy guidance which require FRAs to be submitted in support of planning applications.

## 1.2 Project Scope

In order to achieve the aims outlined above a staged approach has been adopted in undertaking this FRA in accordance with current best practice. First, a screening study has been undertaken to identify whether there are any potential sources of flooding at the site, which may warrant further consideration. Second, any potential flooding issues identified in the screening study have been considered in a scoping study. The aim of the scoping study is to review all available information and provide a qualitative assessment of the flood risk to the site and the impact of the site on flood risk elsewhere.

[2] CIRIA (2004) Funders report CP/102 Development and Flood Risk – Guidance for the Construction Industry.

## 1.3 Report Structure

This FRA has the following report structure:

- Documentation of sources of information that have been consulted during the FRA;
- A description of the application area including the existing and proposed development;
- The flood risk to the existing and proposed development is outlined;
- The site drainage and any potential impacts of the proposed development on surface water drainage is highlighted;
- The risk management options available to reduce and manage the flood risk at the site are determined; and
- A summary and conclusions is presented.

# 2 SOURCES OF INFORMATION

## 2.1 Sources of Information

General information regarding the site setting and hydrology of the application site has been obtained from the OS Landranger Map 178: Thames Estuary.

Information regarding the current flood risk at the site, local flood defences, water levels and water quality has been obtained from the Environment Agency.

## 2.2 Discussion with Regulators

Joseph Williamson, a Development and Flood Risk Officer at the Environment Agency was contacted in June 2009 to discuss the nature and scale of flood risk at the site. EA data indicates that the majority of the site is located within Flood Zone 1. However, a proportion of the northeast region of the proposed ash treatment facility is located with Flood Zones 2 and 3a and is subject to an extreme tidal flood level of 5.2m Above Ordnance Datum (Newlyn) (mAODN), as shown on the EA flood map (Drawing 2).

To ensure that the site does not become 'tide locked' the EA has requested that appropriate SUDS techniques are implemented to attenuate a 1 in 100 year with climate change (20%) storm event coinciding with the extreme tidal event. As the site is tidally influenced the EA has not specified any maximum discharge rates (Appendix 2).

# 3 DESCRIPTION OF THE APPLICATION AREA

## 3.1 Site Location

The proposed development site is located approximately 3km north of Sittingbourne centre and 1.3km north of Kemsley town centre. It is bounded to the southwest and west by the St Regis Paper Mill complex, and to the north and east by marsh scrubland with the Swale Estuary beyond.

The National Grid Reference of the site is 592070, 166551.

## 3.2 Existing Site

The existing site comprises a roughly rectangular shaped parcel of land of approximately 7 ha. The site consists of vegetated marshland, a number of spoil heaps approximately 1-2m in height and areas of construction waste materials. The ground level at the site varies from around 4.0mAODN at the eastern side to 7.0mAODN on the western landward side.

## 3.3 Proposed Development

St Regis Paper Limited and E.ON Energy from Waste has prepared an outline application for comprehensive development on some 4.6 ha of the site consisting of:

- A Sustainable Power Pant for the thermal treatment of non hazardous waste including solid recovered fuel (SRF);
- An ash treatment facility;
- Ancillary development including internal roads, parking, weighbridge, water treatment tanks, fuel tanks, fencing, landscaping and offices;

A site concept plan has been developed for the proposed development site and is shown in Appendix 4.

# 4 FLOOD RISK

## 4.1 Potential Sources of Flooding – Level 1 Screening Study

A summary of the potential sources of flooding and a review of the potential risk posed by each source at the application site is presented in Table 1.

**Table 1**

**Potential Risk Posed by Flooding Sources**

| Potential Source | Potential Flood Risk at Application Site? | Data Source |
|---|---|---|
| Fluvial flooding | No | Environment Agency |
| Tidal flooding | Yes | Environment Agency |
| Flooding from rising / high groundwater | No | Environment Agency |
| Overland flow flooding | No | Environment Agency |
| Flooding from artificial drainage systems | No | Environment Agency |
| Flooding due to infrastructure failure | No | Environment Agency |

### Fluvial Flooding Sources

The nearest watercourses to the proposed development site are a number of drain networks, which lie to the north and south of the site. OS data and information obtained from a site visit by an RPS hydrologist notes a culverted drain beneath the site access road on the northwest edge of the site. The drain flows south to north and converges with a number of other drainage networks and then flows east into The Swale, the watercourse that separates the Kent mainland from the Isle of Sheppey.

The EA notes The Swale as the only source of flooding, therefore fluvial influences are not considered further in this report.

### Tidal Flooding Sources

The tidally dominated Swale is approximately 55m to the north east of the proposed development site and has been classified by the EA as the main source of flooding. Information supplied by the EAs Development and Flood Risk Officer indicates that that a 5.2mAODN tidal flood level has been calculated for the Swale up to the year 2070.

### Groundwater Flooding

The Environment Agency has confirmed that they have no record of groundwater flooding at the proposed development site (see Appendix 2).

Previous ground investigations have noted a shallow water table within the superficial deposits at the site, which maybe in hydraulic continuity with nearby water courses and may therefore fluctuate with the tide.

The superficial soils are underlain by a bedrock geology comprising Eocene-aged London Clay, a negligibly permeable non-aquifer. The London Clay is generally regarded as containing insignificant quantities of groundwater, but is underlain by more permeable Eocene Woolwich and Thanet beds. These are major aquifer units that can provide significant quantities of groundwater for abstraction.

### Overland flow (pluvial) flooding

Pluvial flooding occurs when rainfall precipitation rates exceed ground infiltration rates, causing rainfall to run off across the ground surface. This is common on low permeability surfaces such as asphalt and concrete, on saturated ground, and on compacted or low permeability natural soils such as the clayey soils that occur within site. It is often localised with flows into natural surface channels or artificial drainage systems. No pluvial flooding has been reported at the site.

### Flooding due to infrastructure failure

No potential sources of flooding from artificial drainage systems, sewers, ponds or reservoirs have been identified and none have been reported.

### Other Sources of Flooding

No other potential sources of flooding have been identified.

## 4.2 Environment Agency Flood Map

The EA flood map indicates that the site lies primarily within Flood Zone 1, which has a ‘low to medium’ probability of flooding (Drawing 2). A small proportion of the northeast end of the site lies within Flood Zones 2 and 3a, with a ‘medium to high probability’ of flooding. The site zoning was confirmed by the EA Development and Flood Risk Officer.

## 4.3 Site Vulnerability

The proposed development can be split into two areas:

a) A Sustainable Energy Plant classified as Essential Infrastructure, to be located on land within flood zone 1.

b) The ash treatment facility classified as a Less Vulnerable development within PPS25 and noted to be partly located on land within flood zone 2 and 3a.

The flood risk vulnerability classification of the developed site as defined in PPS25 is shown in Table 2.

The Environment Agency Flood Zones and acceptable development types are explained in Table 3. In PPS25 (Table D.2 and 3) appropriate uses have been identified for the Flood Risk Zones (see Table 4).

Applying the Flood Risk Vulnerability Classification in Table D2 of PPS25, the types of development that are proposed for the site are classified as essential infrastructure and less vulnerable and are appropriate uses for there respective flood zones.

**Table 2**

**Flood Risk Vulnerability Classification of the site concept plan from PPS25**

| Type of Development | Flood Risk Vulnerability Classification | Flood Zone 'Compatibility' |
|---|---|---|
| Sustainable Energy Plant | Essential Infrastructure | 1 and 2 |
| Waste (Ash) Treatment Facility | Less Vulnerable | 1, 2 and 3a |

**Table 3**

**Environment Agency Flood Zones (Table D.2 of PPS25)**

| Flood Zone | Probability | Explanation | Appropriate Land use |
|---|---|---|---|
| Zone 1 | Low | Less than 1 in 1000 annual probability of river or sea flooding in any year (<0.1%) | All development types generally acceptable |
| Zone 2 | Medium | Between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% - 0.1%) or between a 1 in 200 and 1 in 1000 annual probability of sea flooding (0.5% 0.1%) in any year | Most development type are generally acceptable Exception and Sequential test may be required |
| Zone 3a | High | A 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year | Some development types not acceptable Exception test may be required |
| Zone 3b | Functional Floodplain | This zone comprises land where water has to flow or be stored in times of flood | |

*Note: The Flood Zones are the current best information on the extent of the extreme flood from rivers or the sea that would occur without the presence of flood defences, because these can be breached, overtopped and may not be in existence for the lifetime of the development.*

**Table 4**

**Flood Risk Vulnerability and Flood Zone 'Compatibility' (Table D.3 of PPS25)**

| Flood Risk Vulnerability classification (see Table D2 of PPS25) | Essential Infrastructure | Water Compatible | Highly Vulnerable | More Vulnerable | Less Vulnerable |
|---|---|---|---|---|---|
| Zone 1 | Yes | Yes | Yes | Yes | Yes |
| Zone 2 | Yes | Yes | Exception test required | Yes | Yes |
| Zone 3a | Exception test required | Yes | No | Exception test required | Yes |
| Zone 3b Functional Floodplain | Exception test required | Yes | No | | No |

*Key: Yes: Development is appropriate, No: Development should not be permitted*

## 4.4 Historical Flooding

The EA has confirmed that it has no records of fluvial or tidal flooding at the proposed development site. However, its records do indicate that land immediate surrounding the site was affected by flooding in 1953. Drawing 3 illustrates the extent of the 1953 flood event.

No other historical records of flooding for the site have been recorded.

## 4.5 Existing and Planned Flood Defence Measures

The Environment Agency has confirmed that there are formal flood defences or alleviation schemes within this area, constructed to a 1 in 1000 year standard. (see Drawing 2 and Appendix 2). However, a review of EA data indicates that the proposed development site may not be protected from tidal flooding from The Swale.

## 4.6 Current Flood Risk

A small proportion of the proposed development site lies within Flood Zone 2 and 3a and therefore has a 'medium to high probability' of flooding from extreme tidal events, noted to be 5.2maODN up to 2070.

The EA flood map indicates that the only significant source of flooding at the proposed development site is from The Swale.

# 5 SITE DRAINAGE

## 5.1 Surface Water Drainage

The alteration of natural surface water flow patterns through developments can lead to problems elsewhere in a catchment. For example, replacing vegetated areas with low permeability roofs, roads and other paved areas can increase both the total and the peak flow of surface water runoff from a development site. Changes of land use on previously developed land can also have significant downstream impacts where the existing drainage system may not have sufficient capacity to receive the additional drainage. This section considers the existing drainage system at the application site and potential impacts resulting from the proposed re-development.

The site will drain directly into The Swale, and hence the EA has not required a reduced run-off rate following the site development. However, the EA has requested that the proposed development incorporates attenuation facilities that can store site run-off for a 1 in 100 year storm event coinciding with an extreme tidal flood event.

## 5.2 Runoff

RPS has calculated a worst case site run-off based on 100% impermeable ground cover on the site Appendix 1.

## 5.3 Runoff Calculations

In order to determine the surface water attenuation requirements for the site in a 1 in 100 year storm event, rates of runoff have been determined using the current 'industry best practice' guidelines as outlined in the Interim Code of Practice for SUDS. The recommended methodology for sites up to 50 hectares in area is the Institute of Hydrology Report 124 method (IoH124). The runoff rates have been calculated using the Micro Drainage WinDes software suite.

The following parameters have been incorporated into the runoff calculations:

- Impermeable Site Area: 4.6ha
- Average Annual Rainfall (SAAR): 574mm/year;
- Soil: 0.30;

- Estimated Impermeable Area:
  - Post-development = 100%;
- Region No: 7.

Within WinDes, 100% impermeable areas are represented by the use of a 75% urban function for summer storm event and 84% for winter run-off. The change in percentage is representative of the alteration in hydrological characteristics of the catchment throughout the seasons.

In order to represent the change in runoff at the site as a result of the proposed development, and to ascertain the required attenuation, the urban function within the IoH 124 method has been altered to represent the percentage change in permeable area for the development.

Correspondence with the EA's Development and Flood Risk Officer has determined that given the locality of the proposed development to a tidally influenced water source that no reduction in discharge rates will be applicable for the proposed development, as noted in by the EA below:

*"…as it [is] likely that it [the proposed development] is intended to discharge the surface water directly to the tidal creek, it is unlikely that we [EA] will require attenuation of the surface water to reduce the rate at which water flows to this watercourse. However, we [EA] would advise that SuDS are utilised and that space is made available for the attenuation of water should an extreme rainfall event coincide with an extreme tidal event, resulting in the site becoming tide-locked. We [EA] would advise that the 100yr rainfall event (plus climate change 20%) be investigated as the critical event."*

To meet the EA requirements, RPS has calculated the attenuation needed to mitigate a 100 year storm event coinciding with an extreme tidal event would be 3,200m$^3$.

## 5.5 Sustainable Drainage Options

Current guidance promotes sustainable water management through the use of SUDS. A range of SUDS options is described in Annex F of PPS25 and includes:

- Green roofs
- Water butts
- Porous/pervious paving
- Rainwater harvesting
- Filter strips
- Swales
- Infiltration basins
- Detention basins
- Retention ponds
- Wetland

A hierarchy of techniques is identified:

1. **Prevention** – the use of good site design and housekeeping measures on individual sites to prevent runoff and pollution (e.g. minimise areas of hard standing).

2. **Source Control** – control of runoff at or very near its source (such as the use of rainwater harvesting).

3. **Site Control** – management of water from several sub-catchments (including routing water from roofs and car parks to one/several large soakaways for the whole site).

4. **Regional Control** – management of runoff from several sites, typically in a detention pond or wetland.

It is generally accepted that the implementation of SUDS as opposed to conventional drainage systems, provides several benefits by:

- reducing peak flows to watercourses or sewers and potentially reducing the risk of flooding downstream;
- reducing the volumes and frequency of water flowing directly to watercourses or sewers from developed sites;
- improving water quality over conventional surface water sewers by removing pollutants from diffuse pollutant sources;
- reducing potable water demand through rainwater harvesting;
- improving amenity through the provision of public open spaces and wildlife habitat; and
- replicating natural drainage patterns, including the recharge of groundwater so that base flows are maintained.

RPS has developed a Surface Water Management and Foul Drainage Design Philosophy Statement, Ref 16315, October 2009, (Appendix 4). This indicates that water storage ponds allowing the controlled discharge of 'clean/treated' surface to the Swale would be the most appropriate solution and that direct infiltrating SuDS are deemed inappropriate. It is proposed that the detailed design of the final scheme would be agreed with the Environment Agency.

### 5.6.1 Attenuation Requirements

Environment Agency data shows that the site is at risk from flooding by a predicted extreme tidal event of 5.2mAOD (excluding climate change).

To mitigate the site from being inundated via tidal flood waters, the proposed development formation level will be raised to 5.8mAODN. This will prevent tidal flooding by the 5.2mAODN extreme tidal event, and the freeboard of 600mm will allow for climate change to tide level.

However, the Environment Agency requested that the site must also provide extreme storm attenuation for a 1 in 100 year storm event, coinciding with the extreme tidal event. The attenuation volume required for the 1 in 100 year rainfall event plus climate change (+ 20%) assuming no infiltration losses to the ground, coinciding with the extreme tidal event has been determined using the following input parameters:

- Area of proposed site: 4.6 hectares;
- Cv (proportion of rainfall forming surface water runoff): assume a factor of 75% for the development in summer, and 84% in winter (weighted average based on proposed land use);
- Assuming no infiltration losses.

Furthermore, tidal levels and storm surge events data from the EA have been used to assess the attenuation requirements for a drainage design outfall invert at 1.75mAOD, as outlined in the Design Philosophy Statement.

**Normal Tidal Event and Extreme Storm**

EA data indicate that the mean fortnightly semi-diurnal spring tide high water level is approximately 2.8mAODN. An outfall invert at 1.75mAODN will be submerged for approximately 3.5 hours when there would be no discharge to The Swale from the attenuation ponds.

WinDes calculations (Apppendix 3) indicate that the storage requirement to accommodate a 1 in 100 year (+20% Climate Change allowance) storm event occurring during the critical 3.5 hour period is 2,600$m^3$.

As the tide recedes to below the outfall crown level it is assumed that water in the storage ponds will discharge into The Swale.

**Extreme Tidal Events and Extreme Strom**

Predicted extreme tidal event data from the EA shows an increase in the static tidal level by 2.40m to 5.2mAODN (plus climate change) up to 2070.

Should an extreme tidal event occur there will be an increased period when the attenuation pond outlet will be submerged. Calculations indicate an 8 hour period during which no discharge will be possible.

However, should the extreme storm event occur during a neap tide event with a high water level of 4.1mAOD there will be a 9.5hour period when no discharge from the attenuation ponds will be possible.

Taking into account the information provided above, and a designed outlet invert of 1.75mAOD, it has been determined that the 1 in 100 year (plus 20% Climate Change) occurring during a neap tide is the critical event by which attenuation calculation will be made, as this provides the longest outlet submersion period.

Preliminary WinDes Calculations indicate that a storage volume of 3,220m$^3$ would be required to accommodate the critical storm site runoff during a neap tide.

It is assumed that, once the tide recedes after 9.5hours, the storage ponds will discharge freely to the Swale Estuary. Tidal graphs show that there is a 3.5 hour period during the critical event for the storage ponds to drain before the tide level rises again.

It has been calculated that the 3.5 hour discharge should reduce the stored volume by at least 50% and thus be able to provide suitable attenuation for a secondary storm event.

The storm storage will be provided by two elongated ponds connecting by a pipe. One will run along the northern boundary of the site and around the eastern edge of the ash treatment facility and hold 2,600m$^3$, the second will be located on the southern boundary of the site with a 600m$^3$ capacity.

The outfall pipe will incorporate a non return flap valve or similar to prevent water backing up and reducing storage capacity.

A management strategy will be but in place to ensure continued efficacy of the drainage network and storage ponds.

For full details of the drainage design refer to RPS Surface Water and Foul Drainage Design Philosophy Statement, October 2009 (Appendix 4).

**SUDS**

A number of mitigation measures have been incorporated into the drainage design to minimise the risk of surface water pollutants entering the natural water environment,

The perimeter storage ponds will incorporate filter strips and vegetated banks to slow down and assist in the treatment of surface water run-off.

The underlying geology of the site precludes the use of infiltration SUDS techniques.

## 5.7 Geology and Groundwater

The following information should be taken into account when the detailed design of the surface water management strategy is finalised for the proposed development site.

### 5.7.1 Geology

The geological map indicates that the majority of the site is covered by superficial Alluvial Deposits, comprising a mix of angular to rounded gravels, sand, silt and clay. The Alluvium is underlain by bedrock comprising London Clay and the underlying Woolwich and Thanet beds.

An area of exposed London Clay is noted within the southwest edge of the application boundary.

### 5.7.3 Aquifer Designation

The proposed development site is located on Pleistocene Alluvium and Eocene London Clay, which is designated as a Non Aquifer by the Environment Agency.

### 5.7.4 Soil Classification

The soils are classified as of low to negligible leaching potential and with some ability to attenuate contaminants.

### 5.7.5 Source Protection Zone

The site is not located within a Source Protection Zone. The nearest Source Protection Zone II and III is located approximately c.1.6km to the southwest of the site.

### 5.7.6 Other

A Phase 1 ecological survey undertaken by RPS in June 2009 indicates that much of the land to the northeast and south of the site has been designated a SSSI and RAMSAR site for coastal grazing and salt marshes and intertidal habitats.

# 6 RISK MANAGEMENT

## 6.1 Design Strategy

Buildings should be designed to withstand the effects of flooding. The Companion Guide to PPS25 recommends the use of the following design measures:

- **Flood resistance**, or 'dry proofing', where flood water is prevented from entering the building. For example using flood barriers across doorways and airbricks, or raising floor levels, or;
- **Flood resilience**, or 'wet proofing', accepts that flood water will enter the building and allows for this situation through careful internal design for example raising electrical sockets and fitting tiled floors. The finishes and services are such that the building can quickly be returned to use after the flood.

## 6.2 Safe Access and Egress

Paragraph 8 of PPS25 requires that, where required, safe access and escape is available to/from new developments in flood risk areas. Access routes should be such that occupants can safely access and exit their dwellings in design flood conditions. Vehicular access to allow the emergency services to safely reach the development during design flood conditions will also be normally required.

## 6.3 Water Resources Act 1991 and the Land Drainage Byelaws

The approval of the Environment Agency and Swale Borough Council must be obtained prior to the commencement of any works to culvert a stream or watercourse (Section 263 of the Public Health Act 1936 refers). Under the terms of the Land Drainage Act 1991, the prior written consent of the Environment Agency is required for any proposal to divert, culvert or otherwise obstruct the flow in any watercourse (including the provision of a connection to a culvert).

Under the terms of the Water Resources Act 1991, the prior written consent of the Environment Agency is normally required for any discharge of sewage or trade effluent into controlled water, and may be required for any discharge of sewage or trade effluent from buildings or fixed plant into or onto grounds or into waters, which are not controlled waters. Such consent may be withheld. (Controlled waters include rivers, streams, underground waters, reservoirs, estuaries and coastal waters).

## 6.4 Proposed Surface Water Management

The following recommendations regarding surface water management should be put in place.

### 6.4.1 Water Quality during Construction

Construction activities, such as foundation work and road resurfacing, may require the use of water on site. Possible site run-off and discharges may impact on the water quality of the nearby ditches, during the construction phase of the project.

Potential impacts that could arise during the construction of the scheme include:

- direct discharges to ground and surface water from run-off during the construction phase, possibly containing increased loads of suspended solids and/or contaminants;
- accidental spillage or leakage resulting from storage of potentially polluting substances during construction, affecting groundwater and surface waters;
- disposal of drainage and effluent from construction sites, and from any concrete batching plant used at construction compounds;
- localised increased flooding from increased siltation in surface watercourses as a result of construction site run-off;
- localised increases in flooding as a result of any construction activities affecting land drainage;
- direct loss, disturbance or other effects on aquatic habitats and species of nature conservation value;
- pollution and increased sediment loads entering the drainage ditches during associated works in close proximity to these watercourses; and
- changes in surface water hydrology caused by compaction of soils and increase in impermeable surfaces.

### 6.4.2 Mitigation during Construction

Mitigation to minimise the risk of potential impacts during construction is likely to include the following:

- All surface water discharges from construction activities should pass through sediment traps (e.g. settlement lagoons or tanks).
- All construction work should be undertaken in accordance with guidelines including; Environment Agency, Planning Policy Guidance Note 6 (PPG6): Pollution Prevention Guidelines – Working at Construction and Demolition Sites; Environment Agency, Planning Policy Guidance Note 5 (PPG5): Pollution Prevention Guidelines – Working, in, near or liable to affect watercourses; CIRIA (C532) Control of Water Pollution from Construction Sites – Guidance for Consultants and Contractors; CIRIA – SUDS Manual.

- Construction vehicles should be maintained to reduce the risk of hydrocarbon contamination and should only be active when required. Other construction materials will be managed in such a way as to effectively minimise the risk posed to the aquatic environment.
- Disturbance to areas close to watercourses will be reduced to the minimum necessary for the work.
- Regular cleaning of roads of any construction waste and dirt will be carried out.
- A construction method statement will be submitted for approval by the relevant statutory authorities prior to the commencement of construction.

### 6.4.3 Water Quality during Operation

Surface water runoff can contain a wide range of contaminants such as oil, organic matter and toxic metals. Although often at low levels, cumulatively these can result in poor water quality in rivers and streams which affects biodiversity and amenity. After rainfall, the first flush can often be highly polluting.

### 6.4.4 Mitigation during Operation

The CIRIA SUDS Manual[3] highlights the fact that to remove the major proportion of pollution, it is therefore necessary to:

1. Capture and treat the runoff from frequent, small events.
2. Capture and treat a proportion of the initial runoff (first flush) from larger and rarer events.

This will ensure that any runoff discharged to the receiving watercourse is of improved quality compared to a direct discharge from a traditional drainage system. The methods as proposed in Section 5.6 will achieve these requirements.

[3] CIRIA (2007) The SUDS Manual.

# 7 SUMMARY AND CONCLUSIONS

This report presents a FRA, in accordance with PPS25, for the development of vacant land located within the St Regis Paper Mill complex, located northeast of Kemsley Town centre.

The FRA has demonstrated the following:

- Following the re-profiling of the site it will lie within Flood Zone 1. This is awaiting final confirmation from the Environment Agency following the submission of the Master Plan and Drainage Philosophy Statement.

- All aspects of the proposed development are appropriate for their respective flood zoning classification without the need for Sequential and Exception Tests to be undertaken.

The FRA has also considered the potential impact of the proposed development on surface water runoff rates. Appropriate mitigation measures to attenuate surface runoff have been presented, in accordance with EA requirements.

Suitable storage will be provided to attenuate a 1 in 100 year storm event coinciding with a extreme tidal event. This utilises a storage pond. Windes modelling indicates that a storage volume of 3,220$m^3$ will be required to attenuate the 1 in 100 year storm event.

This FRA demonstrates that the proposed development will not be at risk from flooding and with appropriate mitigation measures will not increase flood risk elsewhere. Therefore the proposed development meets the requirements of PPS25. The development should not therefore be precluded on the grounds of flood risk.

## References

Planning Policy Statement 25: Development and Flood Risk. Department of Transport, Environment and the Regions. December 2006.

Funders report CP/102 Development and Flood Risk – Guidance for the Construction Industry. CIRIA. 2004.

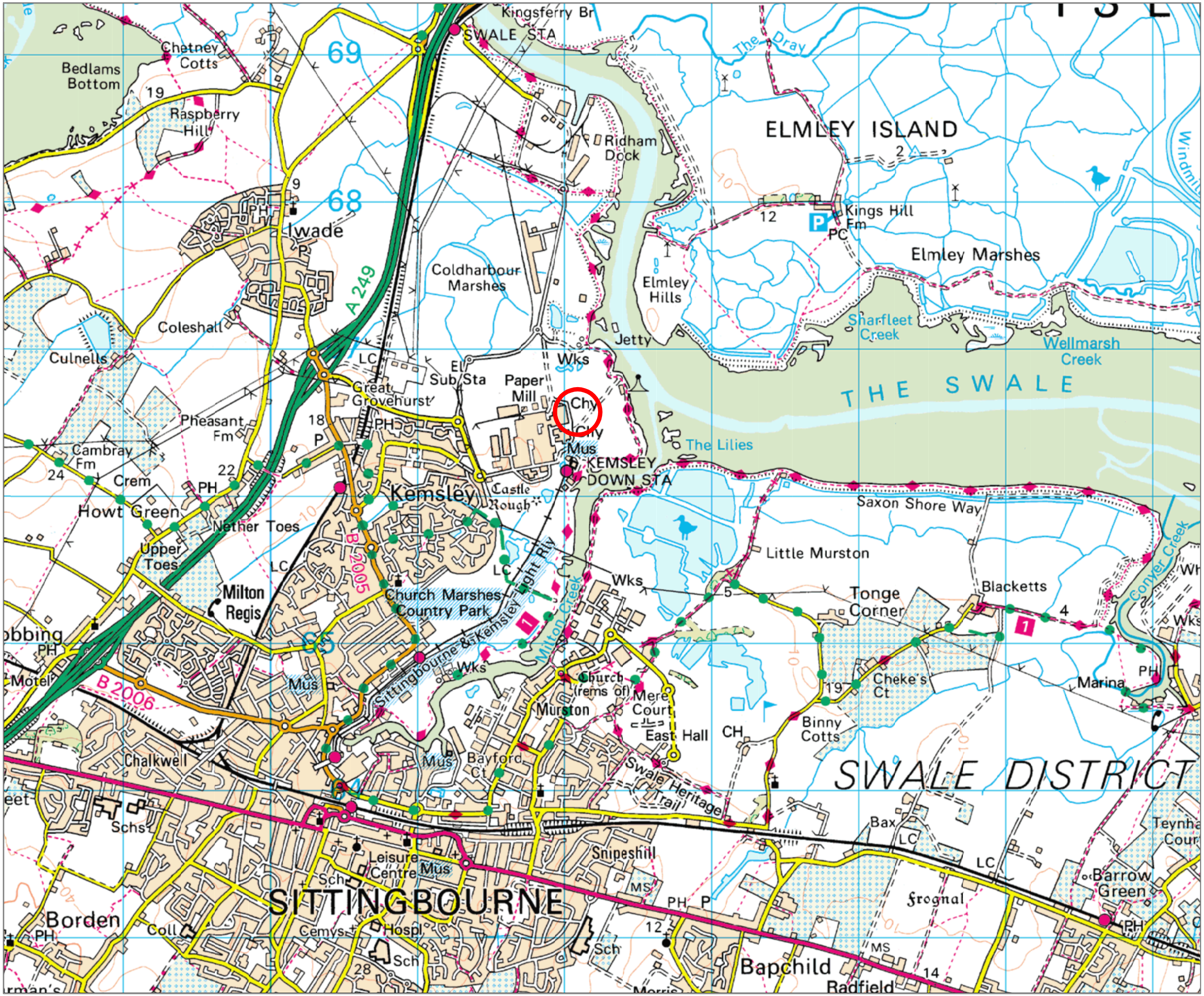
Interim Code of Practice for sustainable drainage systems. Office of the Deputy Prime Minister, National SUDS Working Group. July 2004.

Flood estimation for small catchments. Institute of Hydrology (1994). Report no 124.

Sustainable Drainage Systems – Hydraulic, Structural and Water Quality advice. CIRIA Report C609. 2004.

# FRA APPENDIX 1

## Drawings






RPS
3RD FLOOR
34 LISBON ST.
LEEDS
LS1 4LX
TEL: 0113 220 6190
FAX: 0113 243 9161



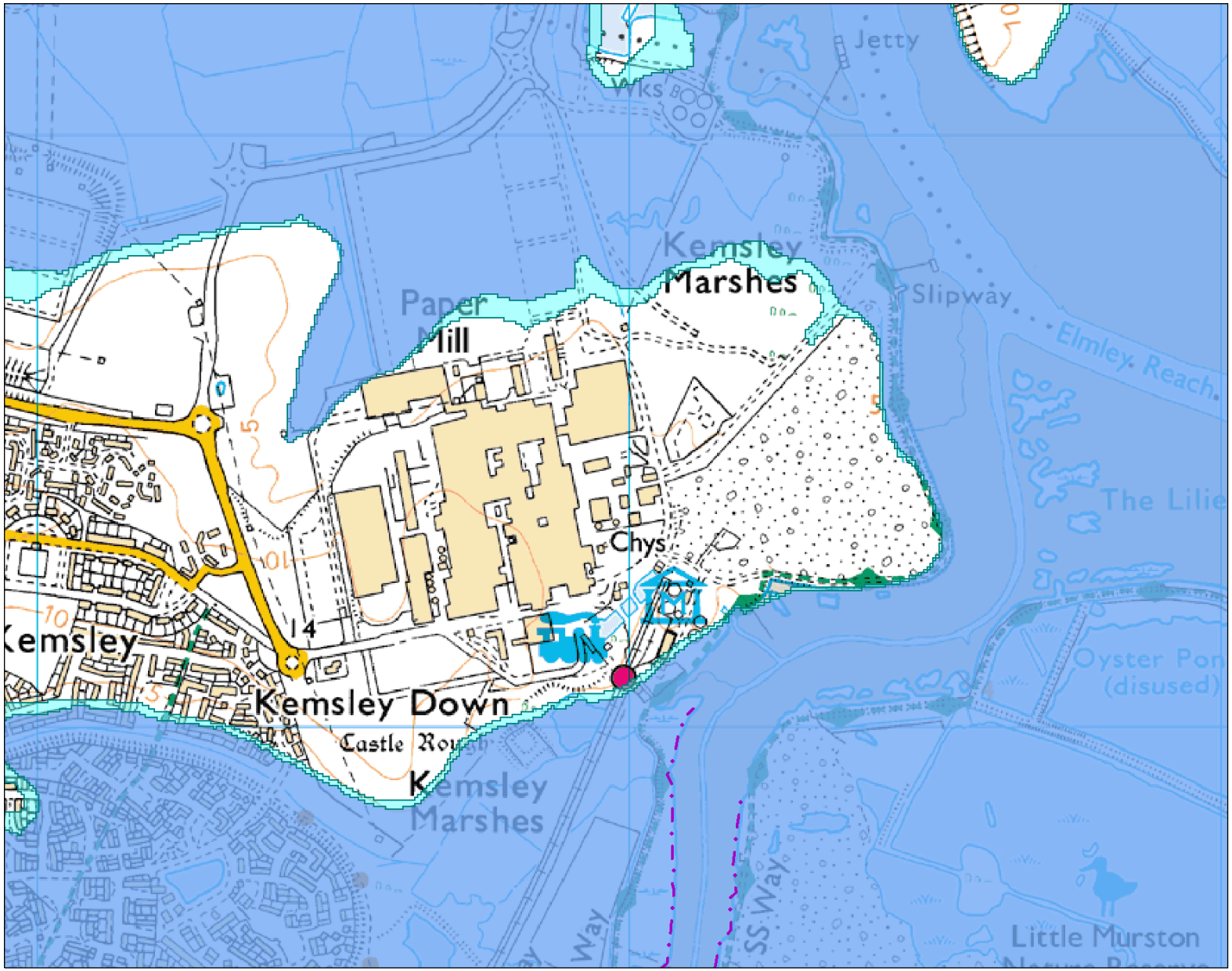
PROJECT
Kemsley Sustainable Energy Plant

TITLE
Site Location Plan

| SCALE | DRAWN BY |
|---|---|
| 1:25000 @A3 | JM |
| DATE | CHECKED |
| June 2009 | PH |
| CAD FILE | |

| PROJECT NUMBER | DRAWING NUMBER | REV |
|---|---|---|
| DLE1726 | Drawing 1 | |

# Flood Map centred on St Regis Paper Mill, Kemsley, Sittingbourne, Kent - Created 19 August 2009




Environment Agency

Scale 1:10,001

N
W E
S

## Legend

- Flood Map - Defences
- Areas Benefiting from Flood Defences
- Flood Map - Flood Storage Areas
- Flood Map - Flood Zone 3
- Flood Map - Flood Zone 2

**Flood Map Areas (assuming no defences)**

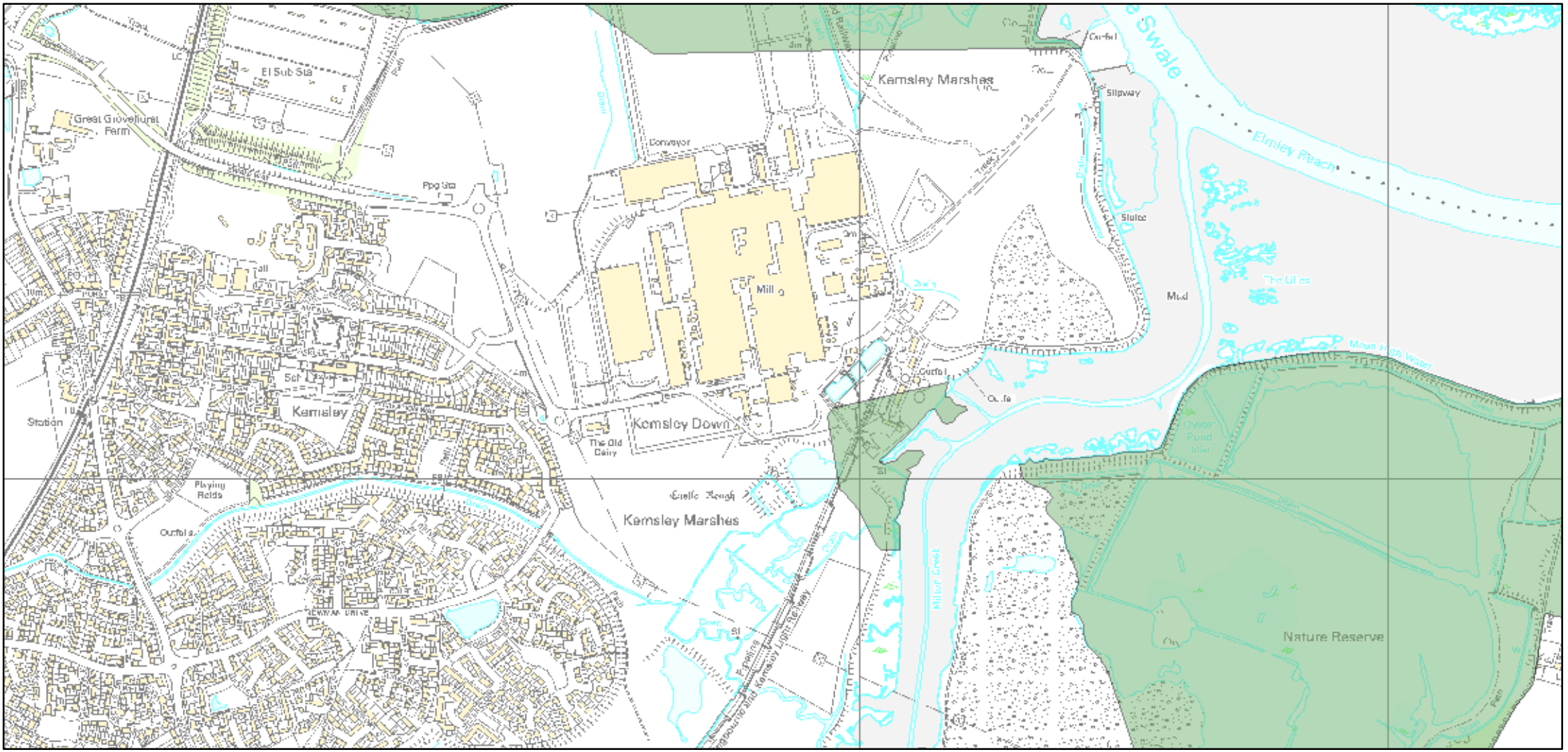
**Flood Zone 3** shows the area that could be affected by flooding:
- from the sea with a 1 in 200 or greater chance of happening each year
- or from a river with a 1 in 100 or greater chance of happening each year.

**Flood Zone 2** shows the extent of an extreme flood from rivers or the sea with up to a 1 in 1000 chance of occurring each year.



**Contact Us:** National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 08708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

# Historic Flood Map For Kemsley, Sittingbourne, Kent




Scale 1:10000

February 1953 Flood



0 250 500 Metres

Produced On 13th July 2009

# FRA APPENDIX 2

## Correspondence

Emailed to Jonathan Morley

Jonathan.morley@rpsgroup.com

**Our ref:** CSC/2009/0552b.let
**Your ref:**

**Date:** 20 August 2009

Dear Jonathan

**RE: Update of Flood Risk Information For St Regis Paper Mill, Kemsley, Sittingbourne, Kent**

I refer to your information request received in this office on 30 June.

Having consulted with various team, I am now in a position to provide you with the following information,

Our Flood Map shows the natural floodplain ignoring the presence and effect of defences for England and Wales, and therefore the areas potentially at risk of flooding from rivers or the sea.

The map indicates an area with a 1 in 100 (1%) chance of flooding from rivers in any given year and an area with a 1 in 200 (0.5%) chance of flooding in any given year from the sea. The map also shows:

- The area with a 1 in 1000 (0.1%) chance of flooding from rivers and/or the sea in any given year. This is also known as the Extreme Flood Outline (EFO).
- The location of some flood defences and the areas that benefit from them;
- Information on the likelihood of flooding at any location taking account of the presence and effect of flood defences.

Further to your recent enquiry an extract of our Flood Map is enclosed for your information. It shows that property/site partially lies within the outline of the area with a 1 in 200 (0.5%) chance of flooding in any given year from the sea. The majority of the site however, is out side of the Extreme Flood Outline.

Orchard House, Endeavour Park, London Road, Addington, West Malling, Kent, ME19 5SH.
Customer services line: 08708 506 506
Email: enquiries@environment-agency.gov.uk
www.environment-agency.gov.uk

The Flood Map is intended to act as a guide to indicate the potential risk of flooding. When producing it we use the best data available to us at the time and also take into account historic flooding and local knowledge. The Flood Map is then updated on a quarterly basis to account for any amendments required. These amendments are then displayed on the internet.

The Flood Map only indicates the floodplain, as it would exist without defences present. This is because although flood defences reduce the risk of flooding they cannot completely remove that risk.

You should note that this information is based on that currently available as of the date of this letter. You may feel it is appropriate to contact our office at regular intervals, to check whether any amendments/ improvements have been made. Should you re-contact us after a period of time, please quote the above reference in order to help us deal with your query.

The groundwater level data is held by the Monitoring and Data team and I am waiting for a response,

As far as groundwater vulnerability goes, the site is underlain by the London Clay, which is an unproductive strata and thus the groundwater vulnerability is low. Risks to controlled waters are mainly concerning drainage getting into the wetlands and rivers in the locality. You can gather a lot of information by referring to the "whats in your backyard" on our website.

http://www.environment-agency.gov.uk/homeandleisure/default.aspx

I also enclose a copy of the Environment Agency's Notice. Please note the conditions listed and let me know if you consider that you may require a special data licence. This information is provided subject to the enclosed notice, which you should read.

I hope the enclosed information is sufficient for your current requirements. If you require any further assistance please do not hesitate to get in touch.

Yours sincerely

Karen Rigg

**External Relations Assistant**

Direct dial 01732 223224
Direct fax 01732 223289
E-mail sokes@environment-agency.gov.uk

Cont/d..

## Jonathan Morley

**From:** Williamson, Joseph [joseph.williamson@environment-agency.gov.uk]
**Sent:** 13 July 2009 14:46
**To:** Jonathan Morley
**Subject:** RE: Regis Paper Mill, Kemsley, Sittingbourne, Kent.
**Attachments:** Regis Paper Mill, Kemsley, Sittingbourne, Kent..pdf

Good afternoon Jonathan.

Please find attached a copy of the flood map for the area referred to in your e-mail. As can be seen, the site lies partially within Flood Zones 2 & 3.

Any application for development on this site would therefore need to be accompanied by a Flood Risk Assessment (this would still be the case if it weren't within the Flood Zones as the site is over 1 ha in area).

As it likely that it is intended to discharge the surface water directly to the tidal creek, it is unlikely that we will require attenuation of the surface water to reduce the rate at which water flows to this watercourse. However, we would advise that SuDS are utilised and that space is made available for the attenuation of water should an extreme rainfall event coincide with an extreme tidal event, resulting in the site becoming tide-locked (and therefore unable to drain). We would advise that the 100yr rainfall event (with an additional 20% allowance for climate change) be investigated as the critical event. For information, the maximum predicted tide level for this area (to the year 2070) is approximately 5.2maODN.

Please contact me if I can be of further assistance.

Kind regards,

**Joseph Williamson**
Development and Flood Risk Officer

☎ 01732 222905
Joseph.williamson@environment-agency.gov.uk
✉ Orchard House, Endeavour Park, London Road, Addington, West Malling, Kent, ME19 5SH

Have a look at the Environment Agency's Guide for Developers for advice on how to add value to a site, and make developments better for people and the environment.

---

**From:** Jonathan Morley [mailto:jonathan.morley@rpsgroup.com]
**Sent:** 30 June 2009 13:45
**To:** Williamson, Joseph
**Subject:**



Dear Joseph,

***Data enquiry regarding flood information for St Regis Paper Mill, Sittingbourne, Kent.***

Further to our conversation last week please find information outlining the proposed development on a site in Kemsley. The address of the site is ***St Regis Paper Mill, Kemsley, Sittingbourne, Kent.*** The grid reference of the site is 592070 166551. I have attached a map showing the location of the site.

In summary, the proposed development incorporates:

- A Sustainable Energy Plant with a fuel stock capacity of 500,000 tonnes per annum
- An ash treatment facility to stabilise up to 150,00 tpa of boiler ash;
- Ancillary development including internal roads, oarking, weighbridge, water treatment tanks, fuel tanks, fencing, landscaping and offices;
- The facility will use combustible non hazardous waste including solid recovered fuel (SRF) as the fuel source.

Following a review of the EA's website it is my understanding that the site is located within flood zone 1 and not affected by fluvial or tidal flood events. Therefore please could you confirm the EA run-off rate requirements for the proposed development?

Kind regards

**Jonathan Morley BSc (Hons) - Consultant Geo-Environmental Engineer**

**RPS Planning & Development Ltd, 3rd Floor, 34 Lisbon Street, Leeds LS1 4LX**

**☎ switchboard: 0113 220 6190 ☎: 07920 566 017 🖷 0113 243 9161 ✉ jonathan.morley@rpsgroup.com**

## Jonathan Morley

**From:** Williamson, Joseph [joseph.williamson@environment-agency.gov.uk]
**Sent:** 16 October 2009 13:51
**To:** Jonathan Morley
**Subject:** RE: Regis Paper Mill, Kemsley, Sittingbourne, Kent.
**Follow Up Flag:** Follow up
**Flag Status:** Red

Good afternoon Jonathan.

I can confirm that the below will be acceptable provided my previous e-mail is referred to with regard to SuDS and surface-water storage during extreme tidal events. It must also be ensured that the runoff to the creek is uncontaminated by any of the processes/materials from the site.

Any works whatsoever within 15m of the top of the bank of the creek or from the landward toe of any flood defence (if one exists) requires the consent of the Environment Agency. I am the consenting officer in this area for any such works; if you let me know of the nature and scale of these, we can start that process.

Kind regards,

**Joseph Williamson**
Development and Flood Risk Officer

☎ 01732 222905
Joseph.williamson@environment-agency.gov.uk
✉ Orchard House, Endeavour Park, London Road, Addington, West Malling, Kent, ME19 5SH

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---

**From:** Jonathan Morley [mailto:jonathan.morley@rpsgroup.com]
**Sent:** 05 October 2009 15:17
**To:** Williamson, Joseph
**Cc:** Paul Hardwick
**Subject:** Regis Paper Mill, Kemsley, Sittingbourne, Kent.
**Importance:** High

Good Afternoon Joseph,

Thank you for the telephone conversation last week.

Just to confirm, that we are now looking to raise the Kemsley Development at St Regis Paper Mill to a constructional level of 5.8mODN.

This will elevate the site above the extreme tidal flood level of 5.2mODN with 0.6m left for freeboard.

We are then looking to discharge any runoff from the site including 1 in 100 year storm event water directly into the Swale.

Please can you confirm that this will be acceptable to the Environment Agency?

Furthermore, I understand that the EA will require a consent application for constructional works within 15m of flood defences, please can you provide me with further information how we would proceed with the application.

Thank you in advance

Kind regards

**Jonathan Morley BSc (Hons) - Consultant Geo-Environmental Engineer**

**RPS Planning & Development Ltd, 3rd Floor, 34 Lisbon Street, Leeds LS1 4LX**

**☎ switchboard: 0113 220 6190 ☎: 07920 566 017 🖹 0113 243 9161 ✉ jonathan.morley@rpsgroup.com**



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Please contact me if I can be of further assistance.

Kind regards,

**Joseph Williamson**
Development and Flood Risk Officer

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---

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**Sent:** 30 June 2009 13:45
**To:** Williamson, Joseph
**Subject:**

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Kind regards

**Jonathan Morley BSc (Hons) - Consultant Geo-Environmental Engineer**

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**☎ switchboard: 0113 220 6190 ☎: 07920 566 017 🖷 0113 243 9161 ✉ jonathan.morley@rpsgroup.com**


please don't print this e-mail unless you really need to.

www.environment-agency.gov.uk

## Jonathan Morley

**From:** Simon Turton
**Sent:** 27 October 2009 11:44
**To:** Jonathan Morley
**Subject:** FW: Regis Paper Mill, Kemsley, Sittingbourne Kent-surface water drainage.
**Attachments:** kemsleysummary.pdf

Jonathan-

My e-mail correspondence with the EA – PLUS Windes summary sheet.

Simon

**Simon Turton**
**Principal Engineer**

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Tel: +44 (0)1636 605700 • Fax: +44 (0)1636 610696 • www.rpsgroup.com

---

**From:** Williamson, Joseph [mailto:joseph.williamson@environment-agency.gov.uk]
**Sent:** 14 October 2009 12:15
**To:** Simon Turton
**Subject:** RE: Regis Paper Mill, Kemsley, Sittingbourne Kent-surface water drainage.

Good afternoon Simon.

I have the following information for you. Of greatest relevance are the levels relative to Ordnance Datum (as this is the datum which the predicted maximum surge tide levels are measured against). As you can see, the present day MHWS at Milton Creek is 2.8maODN. The combined effects of a storm-surge and climate change is likely to raise this to a static-tide level of 5.2maODN by 2070. Assuming a storm-surge may last in the region of 2 tidal cycles (approx 24hrs), the additional 2.4m would result in a low-water level of 0.2maODN. We would recommend that a certain amount of freeboard is also incorporated in your outfall design to account for wave action.

Please contact me if I can be of further assistance.

Kind regards,

**Joseph Williamson**
Development and Flood Risk Officer

☎ 01732 222905
💻 Joseph.williamson@environment-agency.gov.uk
✉ Orchard House, Endeavour Park, London Road, Addington, West Malling, Kent, ME19 5SH

Have a look at the Environment Agency's Guide for Developers for advice on how to add value to a site, and make developments better for people and the environment.

Tide Levels In Milton Creek Relative To **Ordnance Datum**

Mean High Water Springs (MHWS) 2.8 m

Mean High Water Neaps (MHWN) 1.7 m

Mean Tide Level 0.3 m

Mean Low Water Neaps (MLWN) -1.3 m

Mean Low Water Springs (MLWS) -2.2 m

Tide Levels In Milton Creek Relative to **Chart Datum**

Mean High Water Springs (MHWS 5.6 m

Mean High Water Neaps (MHWN) 4.5 m

Mean Tide Level 3.1 m

Mean Low Water Neaps (MLWN)1.5 m

Mean Low Water Springs (MLWS) 0.6 m

---

**From:** Simon Turton [mailto:simon.turton@rpsgroup.com]
**Sent:** 09 October 2009 10:10
**To:** Simon Turton; Williamson, Joseph
**Cc:** Andy Young; Richard Smyth
**Subject:** RE: Regis Paper Mill, Kemsley, Sittingbourne Kent-surface water drainage.



Joseph-

Many thanks for getting back to me the other day – as discussed we would be very grateful if you could look into the question of the normal high and low tide levels.

Additionally –and having thought about this some more following our discussion of the nature of the storm surge tide :

We note your comments that the storm surge event will follow a diurnal tidal timescale –which I think makes life easier for us in determining the storage requirements. However we would need to know the low tide level associated with the storm surge event in addition to the 5.2 m high tide level already provided. Again if this information is known to the EA it would be much appreciated if it could be made available to us.

Simon

**Simon Turton**
**Principal Engineer**

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Tel: +44 (0)1636 605700 • Fax: +44 (0)1636 610696 • www.rpsgroup.com

---

**From:** Simon Turton
**Sent:** 23 September 2009 17:42
**To:** 'joseph.williamson@environment-agency.gov.uk'
**Cc:** Andy Young; Richard Smyth

**Subject:** Regis Paper Mill, Kemsley, Sittingbourne Kent-surface water drainage.

Joseph-

Further to our discussions yesterday and your e-mail to my colleague Jonathan Morley on 13th July.

Basically, I will be producing a surface water drainage design philosophy document which we envisage will be a stand alone document but will read with the FRA.

We intend to investigate discharge of the surface water unattenuated to the tidal creek. We understand the requirement to accommodate the co-incidence of an extreme rainfall event with an extreme tidal event by the provision of suitable storage –all as per your e-mail. In order to progress this envisaged approach however we would be very grateful if you could provide the additional information and clarifications outlined below. Obviously any further comments the EA may have as a result of this discussion would of course also be welcome.

1. Our overall approach to the surface water management of the site is as follows. Run off from the buildings and hard surfaces is to be discharged freely into a storage swale or pond constructed as part of the works –which we envisage to be located on the northwest boundary of the site. The pond would represent a SUDS approach in terms of source control and would also contribute to treatment of the stored water. A review of the available ground information data would appear to rule out any infiltration techniques. Under normal tidal conditions the volume of water in the pond will be discharged unattenuated into the Swale estuary. Our initial thoughts are that we would propose to set the level of the storage pond outfall to just above the normal low tide level. Thus the pond would drain at low tides but would be subject to submerged discharge conditions under normal high tide –which would lead to water being retained in the pond during the high tide periods. We would have more than enough storage capacity to do this –as explained below- and we think this approach could be considered as a likely habitat enhancement –as a wetland type environment would be created in the pond. Habitat enhancement of this type is recommended in the Habitat scoping survey prepared by RPS. However the required outfall level may also be influenced by the tidal coincident storage requirements outlined below.

   It would therefore be appreciated if you could provide us with information relating to the mean estuary water level and the normal high and low tide levels. It is our assumption that the 5.2m AOD 'maximum predicted tide level' indicated in your e-mail is the tide event co-incident with a storm surge –and thus a rather exceptional event.

2. In order to accommodate the 1 in 100 year rainfall event coinciding with an extreme tide event we would anticipate the following approach : Under this condition we would not be able to discharge any run-off water to the Swale estuary and would have to store all the water associated with 1 in 100 year events on site-this will amount to a volume of several thousand cubic meters. We would wish to minimise this volume as much as possible – not least because even under this condition we would wish to discharge the site freely at all times into the pond such that we don't cause flooding on the site. The lower the surface level of this storage volume the easier this becomes. This calls into question the determination of **duration**. Clearly we need to consider the time period(s) that the critical tide event would make discharge possible/impossible. The required storage could then be rationally designed for the full range of 1 in 100 year storms as we would know when the periods of unattenuated discharge would be available within the critical tidal event. We do not know whether the storm tide event you refer to follows the normal diurnal tide periods or whether completely different timescales are involved. We would appreciate your advise in this matter –because as you can see it will be fundamental in determining a workable storage volume.

   It would be greatly appreciated if the time –level data related to the maximum predicted tide could be made available to us-would this be possible ?

   The bank level to the constructed swale or pond would be set to 5.80 m AOD to ensure that the maximum tide did not inundate the site. We would also look to ensure that in normal tidal conditions the pond could empty to half full within 24 hours –which is the normal practice- in order that protection against a significant rainfall event occurring soon after the design event.

   The above would -we hope-show that the design of the surface water management system as described in outline detail would protect the site from flooding. We would wish to work this up into a full philosophy document –but it would appear we require additional information re : tidal events to do this properly.

We look forward to receiving your comments.

Simon

**Simon Turton**
**Principal Engineer**

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# FRA APPENDIX 3

## WinDes Calculations

Sherwood House
Sherwood Avenue
Newark NG24 1QQ

Date 20 November 2009 11:13 | Designed By ryan.marsden
File STORAGE VOLUME.SRC | Checked By
Micro Drainage | Source Control W.11.2 net

## Summary of Results for 100 year Return Period (+20%)

| Storm Duration (mins) | Maximum Control (l/s) | Maximum Outflow (l/s) | Maximum Water Level (m OD) | Maximum Depth (m) | Maximum Volume (m³) | Status | |
|---|---|---|---|---|---|---|---|
| 15 Summer | 0.0 | 0.0 | 0.3377 | 0.3377 | 1013.3 | O K | |
| 30 Summer | 0.0 | 0.0 | 0.4437 | 0.4437 | 1331.2 | O K | |
| 60 Summer | 0.0 | 0.0 | 0.5558 | 0.5558 | 1666.5 | O K | |
| 120 Summer | 0.0 | 0.0 | 0.6723 | 0.6723 | 2016.5 | O K | |
| 180 Summer | 0.0 | 0.0 | 0.7418 | 0.7418 | 2224.8 | O K | |
| 240 Summer | 0.0 | 0.0 | 0.7908 | 0.7908 | 2371.7 | O K | |
| 360 Summer | 0.0 | 0.0 | 0.8608 | 0.8608 | 2582.6 | O K | |
| 480 Summer | 0.0 | 0.0 | 0.9148 | 0.9148 | 2744.7 | O K | |
| 600 Summer | 0.0 | 0.0 | 0.9583 | 0.9583 | 2875.2 | O K | |
| 15 Winter | 0.0 | 0.0 | 0.3782 | 0.3782 | 1134.9 | O K | |
| 30 Winter | 0.0 | 0.0 | 0.4972 | 0.4972 | 1490.9 | O K | |
| 60 Winter | 0.0 | 0.0 | 0.6223 | 0.6223 | 1866.5 | O K | |
| 120 Winter | 0.0 | 0.0 | 0.7528 | 0.7528 | 2258.4 | O K | |
| 180 Winter | 0.0 | 0.0 | 0.8308 | 0.8308 | 2491.8 | O K | -Normal spring tide |
| 240 Winter | 0.0 | 0.0 | 0.8853 | 0.8853 | 2656.3 | O K | |
| 360 Winter | 0.0 | 0.0 | 0.9643 | 0.9643 | 2892.6 | O K | |
| 480 Winter | 0.0 | 0.0 | 1.0248 | 1.0248 | 3074.1 | O K | |
| 600 Winter | 0.0 | 0.0 | 1.0733 | 1.0733 | 3220.3 | O K | -Neap tide plus storm surge |

| Storm Duration (mins) | Rain (mm/hr) | Time-Peak (mins) |
|---|---|---|
| 15 Summer | 115.18 | 19 |
| 30 Summer | 75.66 | 34 |
| 60 Summer | 47.36 | 64 |
| 120 Summer | 28.65 | 124 |
| 180 Summer | 21.07 | 184 |
| 240 Summer | 16.85 | 244 |
| 360 Summer | 12.23 | 364 |
| 480 Summer | 9.75 | 484 |
| 600 Summer | 8.17 | 604 |
| 15 Winter | 115.18 | 19 |
| 30 Winter | 75.66 | 34 |
| 60 Winter | 47.36 | 64 |
| 120 Winter | 28.65 | 124 |
| 180 Winter | 21.07 | 184 |
| 240 Winter | 16.85 | 244 |
| 360 Winter | 12.23 | 364 |
| 480 Winter | 9.75 | 484 |
| 600 Winter | 8.17 | 604 |

## Rainfall Details

| | | | |
|---|---|---|---|
| Region | ENG+WAL | Shortest Storm (mins) | 15 |
| Return Period (years) | 100 | Longest Storm (mins) | 600 |
| M5-60 (mm) | 19.500 | Summer Storms | Yes |
| Ratio-R | 0.400 | Winter Storms | Yes |
| Cv (Summer) | 0.750 | Climate Change % | +20 |
| Cv (Winter) | 0.840 | | |

## Time / Area Diagram

Total Area (ha) = 4.692

| Time from: | (mins) to: | Area (ha) |
|---|---|---|
| 0 | 4 | 4.692 |

# FRA APPENDIX 4

## Surface Water Management and

## Foul Drainage Philosophy Statement

# Surface Water Management and Foul Drainage Design Philosophy Statement

Prepared for

Kemsley Sustainable Energy Plant

# Document Details

| | | |
|---|---|---|
| Project Ref | 16315 | |
| Revision | B | |
| Written by | | Simon Turton |
| Reviewed by | | Andy Young |
| Date | October 2009 | |

**Rev A:**

Amended in accordance with Landowners comments in clause 7.2.10

**Rev B:**

Project description fuel stock capacity corrected.

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# Contents

**Appendices**

## 1.0 Introduction

The following report outlines the scheme design philosophy with respect to surface water, foul and process drainage for a proposed Sustainable Energy project to be constructed on the Swale Estuary at Sittingbourne in Kent.

## 2.0 Project Description

Set within a development site of 7 ha, the proposed 4.6 ha project will comprise:

- A sustainable energy plant with a fuel stock capacity of 550,000 tpa.
- An ash treatment facility to stabilise 150,000 tpa of boiler ash.

The facility will use combustible non hazardous waste as the fuel source.

In addition to the main fuel store, treatment, boiler and turbine buildings, ancillary development will comprise access roads, parking, weighbridge, maintenance and office areas.

The current site layout is indicated on drawing 16315/A1/0600.

## 3.0 Ground Conditions/Adjacent Land

A phase II site investigation undertaken by RPS in July 2009 indicates that the geological strata beneath the site comprise:

(i) Cohesive made ground to maximum thickness of 4.5m.
(ii) Cohesive alluvium to maximum thickness of 3.5m
(iii) London clays to maximum thickness of 5m.

These deposits overlay the solid geology associated with the Woolwich and Thanet sands and Cretaceous bedrock Chalk.

The site section indicated on drawing 16315/A0/200 shows the geological strata described above.

Historical site investigation information made available by the landowner indicates the following:

(i) The area of land to the north of the site was previously used to store coal. This area is indicated as hatched on the drawings. The made ground in this area retains a residual coal element.

(ii) The area to the south of the site forms the Kemsley Waste Disposal Site (KWDS). This landfill area has recently been capped with clay. An access track forms the northern boundary of the KWDS. It is understood that methane monitoring stations are located along the path. Furthermore it is believed that leachate from the KWDS is discharged to an existing ditch located on the development site.

It is proposed that the path is retained on its present line such that access is maintained post development.

## 4.0 Ground Water

The site investigation groundwater monitoring indicates wide spread seepage within the made ground and alluvium layers. It is likely that this represents a perched system. A deeper groundwater system (most likely in continuity with the Swale estuary) was encountered at a depth of 14m below existing ground level.

The London clay is classified as a non-aquifer. The Woolwich and Thanet sands are minor aquifers and the chalk bedrock is classified as a major aquifer.

## 5.0 Existing Topography and Proposed Finished Levels

The existing site slopes gently from west to east towards the Swale estuary.

The elevation at the western end is approximately 7.0m AOD and at the eastern boundary approximately 4.0m AOD. Finished floor levels for the proposed scheme are anticipated to be set to a level of 5.80m. Thus part of the site will be in cut and part will require upfilling (as indicated on the site section drawing).

## 6.0 Ecological Context

A phase I Habitat and Scoping Survey and assessment was carried out by RPS in June 2009.

Much of the surrounding area to the north-east, east and south of the site is designated as SSSI, SPA and Ramsar notable for coastal grazing and salt marshes and intertidal habitat.

## 7.0 Surface Water Management

### 7.1 Overall Philosophy

The current site generally comprises undeveloped marsh land (together with a stock pile area used by the adjacent paper mill). The construction and operation of the new development will therefore significantly increase the impermeable area of the site and hence the volume of the surface water run-off from the site and potentially the nature of the run-off in terms of its capacity to pollute receiving watercourses/bodies.

The overall philosophy for the design of the surface water drainage system for the site development is therefore to manage surface water discharge sustainably and at source and to ensure that discharged waters do not constitute a pollution risk.

This overall approach is in accordance with the requirements of Appendix F of PPS 25 (Development and Flood Risk). It is anticipated that the pollution risks identified and mitigations proposed in this document will satisfy the requirements of the relevant planning consultees such as the Environment Agency and Natural England.

A preliminary proposed Surface Water Drainage design is shown on drawing 16315/301. As shown on the drawing, it is proposed that all clean surface water from the site is discharged to receiving storage ponds constructed on the northern, eastern and southern perimeters of the site. The storage ponds discharge this water under gravity to the tidal Swale estuary to the north east. The provision of the constructed pond will provide an effective and economic way of conveying water to the receiving swale during normal conditions with the added benefit of protecting the adjacent marsh land habitat from surface water run-off. The pond will also provide protection against flooding of the site during design rainfall and tidal events. This design proposal is assessed in detail below against the following criteria:

- Pollution/Aquifer contamination
- Flooding
- SUD's
- Climate change
- Water reclamation

## 7.2 Pollution/Aquifer Contamination

The operation of the facility exposes the surface water management system to pollution risk. The operations and activities which contribute to this risk together with the proposed mitigation measures to be implemented are outlined below.

### 7.2.1 Potential Polluting Activities/Sources

The following activities/operations require consideration.

(i) Fuel storage/laydown.
(ii) Waste water associated with the process.
(iii) Movement of lorries, loading shovels and cars.
(iv) Storage of fuel and operation of on site re-fuelling facility.
(v) Production of domestic foul waste water.
(vi) Operation of vehicle wash.
(vii) Fire suppression.
(viii) Landscape top soil run-off
(ix) Discharge of leachate from adjacent KWDS land.
(x) Exposure of contaminated land/creation of pathways in areas adjacent to the site.

### 7.2.2 Fuel Storage/Laydown

The process requires the large scale storage of ash/slag in a covered laydown area (UEU) located in the north east of the site. The stored ash will be wet initially and will be moved by loading shovels entering from the adjacent external areas. Thus potential exists for highly contaminated/turbid run off water to enter the surface water system. To address the above the following protective measures are proposed:

(i) A raised concrete bund will be provided on the open sides of the UEU building. This will help to ensure that the majority of potential contaminated water is always contained within the UEU building space.
(ii) The main part of the contaminated run-off described above will be collected in 4No. slot drains and discharged to the foul drainage system.

(iii) Circulation and yard areas immediately adjacent the laydown area will be subject to the regular movement of loading shovel vehicles. These areas are potentially subject to a degree of contamination as the loading shovels convey the ash/slag to the adjacent tipping hall. It is proposed that run-off from these external areas is discharged to the surface water system following pre-treatment (envisaged to be coalescence separation or similar) such that it is of suitable quality (to be agreed with the EA) for discharge to the estuary waters. Full retention oil separators (to deal with loading shovel oil spillage) together with catch pits and silt traps will also be provided.

### 7.2.3 Waste Water associated with the process

Refer to Section 8 for further details.

### 7.2.4 Movement of lorries, loading shovels and cars

**Normal activity**

Minor day to day fuel/oil spillages from car/lorry/loading shovel engines will be flushed into the yard and car park surface water drainage systems and treated through class 1 full retention interceptors.

The full retention interceptors will be alarmed for fuel and silt build up and to indicate when routine maintenance is required.

**Lorry yard accident / exceptional fuel spillage/unloading spillages**

Lorry or loading shovel impact or damage to fuel pumps could result in volumes of fuel/oil released sufficient to exceed the capacity of the interceptors. In these scenarios untreated contaminated water would be discharged directly to the storage pond. In order to deal with this an electrically operated closure valve will be provided so that contaminated water is retained in the storage pond such that it can be pumped to tanker for removal off site.

### 7.2.5 Production of Domestic foul Waste Water

The energy plant will comprise areas of office space with associated welfare facilities. The domestic waste water produced shall be discharged to the foul system as indicated on drawing 16315/300.

### 7.2.6 Operation of Vehicle Wash

The facility will be constructed with an automated vehicle wash as indicated on the drawing. The drainage design assumes that the vehicle wash will operate with a near 100% water reclamation system – but over-flow connection is provided to the foul system.

### 7.2.7 Fire Suppression

In the event of fire, the water required to suppress it will be stored in pits and sumps constructed within each building. Perimeter upstands and ramped access doors will prevent this water escaping to the external areas. Contaminated water contained within the fire water pits and sumps will be tested and disposed of off site.

7.2.8 **Landscape Topsoil run-off**

Surface water run-off from the landscape slopes will be collected by a series of land drains located at the base of the slopes and these will discharge the water into the storage pond.

7.2.9 **Aquifer Contamination**

As indicated in section 7.4, the ground conditions and finished levels effectively proclude the use of infiltration drainage techniques. Thus the project presents no risk of contamination to the underlying aquifers.

7.2.10 **Existing Ditch**

(i) The location of an existing ditch on the western boundary of the site is shown on the drawings. The land owner has indicated that this ditch does not receive any leachate discharge from the adjacent KWDS. In order to accommodate the proposed scheme the ditch will be infilled and a new mitigation ditch constructed – see section 10.

7.2.11 **Adjacent Area Pollution Pathways.**

The construction of the storage ponds will require works (including excavations) in the potentially contaminated areas on the boundaries of the site – in particular the north and south boundaries:
Excavations to the north boundary are likely to encounter the made ground associated with the coal storage area. It is intended however that the storage pond will be lined with clean site won clay placed to a depth of at least 300mm. Thus potential for the pond to act as a pathway for coal residue pollution is removed.

It is not proposed to extend the pond works past the existing path on the southern boundary, as indicated on the drawings, thus removing the potential risk Of encountering potentially contaminated ground.

7.3 **Flooding**

The site will be exposed to the risk of flooding due to the following:

(i) Exceedance of the capacity of the below ground pipework, channel drains storage elements, etc., constructed as part of the works during design rainfall events.
(ii) Failure of the above ground superstructure drainage elements such as siphonic pipework and gutters as a consequence of (i) above.
(iii) Exceedance of available storage capacity as a result of design rainfall events coinciding with tidal events. This situation will result in the site becoming tide locked. Thus discharge to the adjacent Swale estuary or Milton Creek would not be possible during these periods.

(iv) Inundation of the site of seawater during extreme tidal events.

For the purposes of this report, flooding as a result of (i), (ii) and (iii) described above is defined as:

- Rainwater falling on the development site, entering the drainage system and subsequently crossing the site boundary at any location.
- Rainwater falling on the development site, entering the drainage system and subsequently entering buildings on the development site.

### 7.3.1 Capacity Exceedance

#### 7.3.1.1 Basic Criteria for Design

The surface water drainage system shown on drawing 16315/301 will be designed in accordance with the following basic criteria:

(i) All network pipework will be designed for no surcharging above pipe soffit for 1 in 2 year design storms.

(ii) The system shall be designed not to flood (as defined above) for 1 in 100 year design storms.

(iii) The site drainage serving the roofs and external areas will discharge freely to the storage pond for all rainfall events.

(iv) The drainage networks will be designed and flooding simulated using WINDES micro-drainage software. All drainage will generally be designed in accordance with BS EN 752-2008: Drain and Sewer Systems outside buildings and the recommendations outlined in the 6th edition of Sewers for Adoption.

(v) The roof drainage for the various buildings comprising the facility shall be siphonic drainage systems designed to provide category 3 protection (as described in BS EN 12056:3) and a 25-year design life. The siphonic drainage systems and gutters will therefore be designed for 1 in 100 year return period storms.

For the UMA, UHA, UEB and UEW buildings, a primary system shall be provided discharging directly to the below ground network. The primary system shall be designed to deal with run-off from the first 100mm/hour of each design storm. Flows generated on the roofs above this intensity (to a maximum of 177mm/hr) will be taken by a secondary system discharging directly to clean areas of yard.

For the UEU building, a primary only system shall be provided discharging directly to the storage pond. This will ensure that roof water from this building does not add to that requiring pre-treatment. (See 7.2.2).

#### 7.3.1.2 Additional Comments with respect to Capacity Exceedance

In addition to the basic criteria defined above, it should be noted:

- As indicated on the drawing slot, channel and kerb drains constructed close to the surface will be utilised to a considerable extent. This will ensure that the drainage is generally kept shallow thus avoiding expensive and potentially dangerous deep excavations and the perched water table at high level.

- Storage of run-off water in external areas through design of the external levels/provision of raised kerbs, etc., has not been utilised given the nature of the facility (extensive buildings, limited yard areas, potential ash contamination).

The two points above will require that, in effect, the below ground pipework and high level slot and kerb drains are designed to convey 1 in 100 year rainfall volumes (including secondary siphonic roof water) directly to the storage pond.

Preliminary calculations indicate that in order to achieve free discharge of the site drainage pipework to the storage pond for all rainfall events, the water level in the pond must not exceed 3.450m AOD.

### 7.3.2 Coincidence of design rainfall and tidal events

In order to achieve free discharge for the site drainage apparatus discharging into the pond, provide a workable volume and depth of storage and sufficient fall to the swale estuary it is proposed to set the outfall level to 1.75m AOD. Information received from the EA relating to tide levels and storm surge events has been used to assess the storage requirements for the development with the outfall set to the level outlined above:

(i) Design Rainfall and Normal Tidal Events

The mean fortnightly semi-diurnal spring tide high water level is 2.8m AOD. With the outfall set to 1.75m AOD there will be a 3.5 hour (approximately) period when the outfall will be submerged and it is assumed (for the purposes of this report) that no discharge of run off water from the site attenuation ponds will be possible. Thus a storage volume is required should a critical 1 in 100 year rainfall event occur during this period. Preliminary Windes calculations indicated that a volume of 2600 $m^3$ is required to accommodate the critical 3.5 hour rainfall event. The Windes summary calculation sheet is contained in Appendix C. As the spring tide recedes to below the outfall crown level the storage pond will discharge freely and unattenuated to the Swale Estuary. The discharge windows for this tidal cycle are summarised graphically on drawing 16315/A3/201.

(ii) Design Rainfall and Extreme Tidal Events

The Environment Agency have indicated that a storm surge event combined with envisaged climate change effects (considered up to 2070) will raise the static tide levels by an additional 2.40m.

Therefore should the storm surge event occur during a spring tide resulting in a high water level of 5.2m AOD there will be an 8.0 hour (approximately) period when the outfall will be submerged and no discharge from the storage pond can occur.
Should the storm surge event occur during a neap tide resulting in a high water level of 4.1m AOD there will be a 9.5 hour (approximately) period when the outfall will be submerged. Thus the neap tide and storm surge event is critical for determine the required storage volume. Preliminary Windes calculations indicate that a storage volume of 3220 $m^3$ is required to accommodate the critical 1 in 100 year storm occurring during this tidal event. The Windes summary calculation is contained in Appendix C. As the storm surge tide recedes the storage pond will discharge freely and unattenuated to the swale estuary.

As indicated on drawing 16315/A3/204 there will be an approximate 3.5 hour period during this tidal event for the storage pond to empty before the tide levels rise again and discharge would not be possible.

This period is sufficient for the pond to empty to at least half its capacity. Thus suitable protection is provided to accommodate another significant rainfall event occurring in close time proximity to the design rainfall/storm surge event.

The outfall pipe/structure will be constructed in accordance with Environment Agency recommendations and will incorporate a non return/flap valve to prevent water backing up and reducing the available storage volume.

The provision of the above storage will ensure that free discharge conditions exist for the development site drainage water for all rainfall and tide event combinations and that neither fluvial or tidal flooding will therefore not occur on the site.

### 7.3.3 Sea Water Innundation

In order to ensure that the site and storage pond will have protection against sea water innundation during the extreme tide events the seaward bank of the storage pond will be set to a level of 5.80m. (600m free board above the 5.20m storm tide levels).

## 7.4 SUD's

With reference to Appendix F7 of PPS 25 a sustainable approach to the management of surface water drainage is to be adopted:

(i) The perimeter storage pond will be vegetated and will hold, slow down and contribute to treatment of the run-off water. The pond will prevent uncontrolled discharge water entering areas of land adjacent the site.
(ii) The gravel filter strips will slow down and treat run-off water from the perimeter access road indicated on the drawings before it enters the swale.
(iii) The water reclamation systems indicated, represent additional source control in addition to providing a useable resource.

The ground conditions comprising essentially cohesive impermeable strata to considerable depth and the presence of perched water table preclude the use of infiltration devices.

7.5 **Climate Change**

As indicated in preliminary discussions with the EA and as recommended in PPS 25 (table B.2) design peak rainfall intensities will be increased by 20% as a precaution against the effects of climate change.

7.6 **Water Reclamation**

The surface water drainage network will incorporate underground water harvesting tanks and pump arrangements to collect water from the building roofs. This water will be used for fire water purposes, for toilet flushing and landscape irrigation.

## 8.0 Process Drainage

In addition to the specific measures outlined in 7.2.2 related to the fuel laydown area, the following measures will be implemented to deal with waste process water generally:

(i) Areas receiving fuel/slag directly (UEA and UEU buildings) will be provided with internal building drainage discharging to the foul system. Level entry doors will be provided with threshold channel drains discharging to the foul system.

(ii) All other process buildings or equipment areas where waste water is generated or the risk of spillage of fuel, oil, condensate etc. is present will be provided with internal building drainage as necessary. It is envisaged that waste water associated with the boiler process will be recycled for slag cooling purposes.

(iii) As indicated in 7.2.7 all buildings will be provided with perimeter upstands and ramped access to ensure all spillages, leaks, etc. remain with the building footprint.

## 9.0 Foul Drainage

The foul drainage elements described in 7.2 above (production of domestic foul waste, process driven waste water, refuelling and vehicle wash down area run-off etc.) will discharge (to rates agreed with the receiving sewer owners and/or the Water Authority) to the existing foul sewer located within Ridham Avenue.

The new site foul drainage will be designed in accordance with BS EN 752, 6$^{th}$ Edition of Sewers for Adoption and the requirements of the Building Regulations.

The remoteness of some of the areas requiring connection to the foul system (e.g. slag laydown area) will require that a pumping station and rising main are provided to discharge foul water to the receiving sewer at self cleansing velocities.

## 10.0 Ecological Enhancement

In order to compensate for infilling of the existing ditch located on the western boundary (see 7.2.10) it is intended to provide a new ditch cut approximately 1.0 m deep into the marshland north of the pond located on the northern boundary. The ditch is indicated on the drawings.

## 11.0 Construction Phase Pollution Control

Safeguards shall be implemented during the construction phase to minimise the risk of pollution and detrimental effects to the water interests around the site. The following general mitigation measures shall be implemented.

(i) Works on site shall generally follow the best practice guidelines outlined in Section 5 and 6 of CIRIA C532 – Control of Water Pollution from Construction Sites.

(ii) Temporary foul drainage to serve the contractors welfare facilities will be provided at the start of works on site.

(iii) Refuelling and maintenance of machines shall be strictly controlled and oil storage tanks confined to locations remote from the perimeter of the site. All leaking or empty oil drums shall be immediately removed from site.

(iv) Well constructed and designated storage areas shall be provided located more than 20m away from the site perimeter. Chemical or fuel storage shall comprise of impermeable boxes and appropriate bunding.

(v) On site concrete batching plants (if utilised) are to be located more than 20m away from the site perimeter. The washing out of any concrete mixing plant or cleaning of ready mix concrete tankers shall be strictly controlled. The effluent from such cleaning shall be tankered off site or suitably treated using sedimentation tanks before the run-off is discharged.

(vi) A strict waste management system will be incorporated to prevent the disposal of construction or domestic rubbish entering the adjacent marshland areas. Waste materials will be properly stored on site.

(vii) Fill material imported to upfill to site will be sourced with due regard to leachate characteristics to the approval of the EA and Natural England. It is anticipated that the storage pond required for the permanent works will be constructed in advance of the earthworks operations such that construction phase storage and settling pond capabilities are available from the start of the works, and to provide tidal innundation protection to the construction site.

# Appendix A

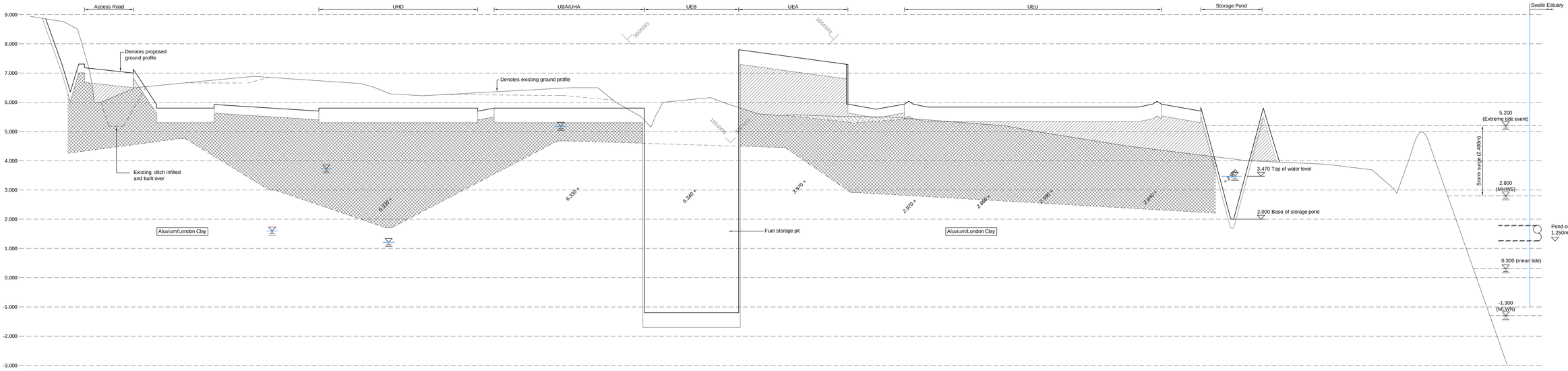
## Ground Investigation Report Extracts/Ground Water Level Extract

# Appendix B

## Drawings

notes :

1. If this drawing has been received electronically it is the recipients responsibility to print the document to the correct scale.
2. All dimensions are in millimetres unless stated otherwise. It is recommended that information is not scaled off this drawing.
3. This drawing should be read in conjunction with all other relevant drawings and specifications.




## Section A-A
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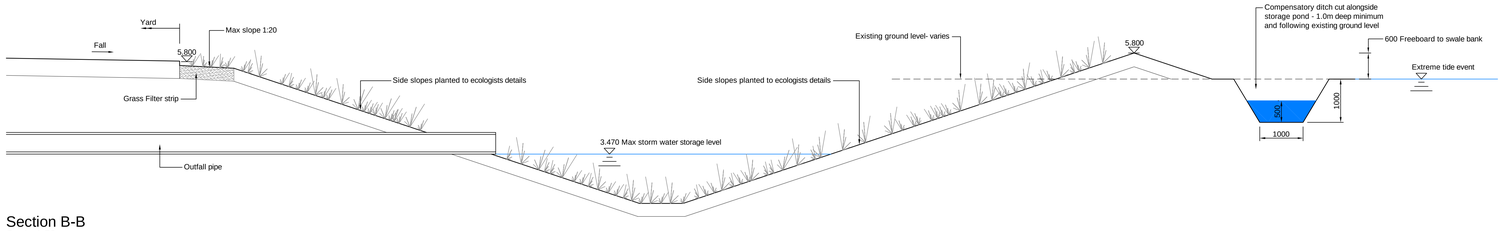
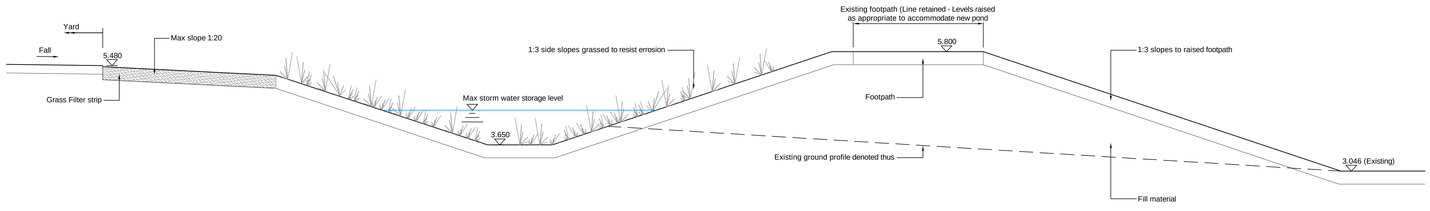



## Section B-B
Scale 1:50




## Section C-C
Scale 1:50

Key

| | |
|---|---|
| ——— | Denotes proposed finished level |
| ——— | Denotes existing ground level |
| | Denotes general fill |
| | Denotes made ground |
| | Denotes proposed construction thickness |
| | Denotes ground water strike |
| MHWS | Denotes mean high water spring tide |
| MLWN | Denotes mean low water neap tide |

10m SCALE 1:500

Drawing for PLANNING purposes only

| rev | amendments | by | ckd | date |
|---|---|---|---|---|
| C | Drawing figure added. Drawing updated to suit revised site layout. | AKC | ST | 24/11/09 |
| B | 1. Existing ditch noted as infilled/culverted 2. Pond outfall pipe added. 3. Minor amendents | JDW | RM | 04/11/09 |
| A | Compensatory ditch indicated. | AKC | ST | 29/10/09 |

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stREGIS

Project: Kemsley Sustainable Energy Plant

Title: Site Sections

| Drawing Status | Date Created | Drawing Scale |
|---|---|---|
| Preliminary | October 2009 | 1:500 |
| Project Leader | Drawn By | Initial Review |
| AWY | AKC | ST |

Drawing Number: 16315 / A0 / 0200 Rev: C

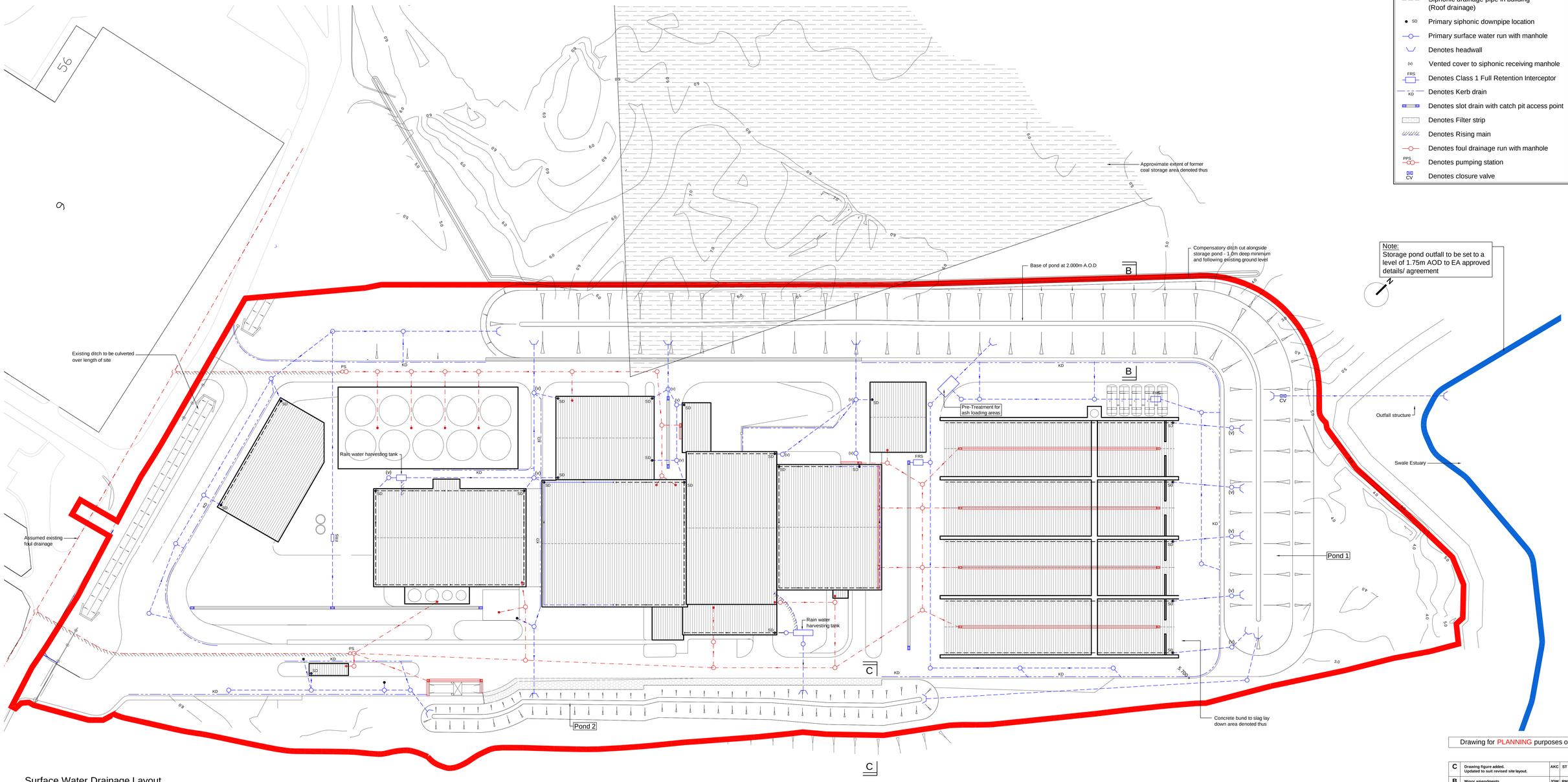
Figure 4.24

notes :

1. If this drawing has been received electronically it is the recipients responsibility to print the document to the correct scale.
2. All dimensions are in millimetres unless stated otherwise. It is recommended that information is not scaled off this drawing.
3. This drawing should be read in conjunction with all other relevant drawings and specifications.

Key:

- Siphonic drainage pipe in building (Roof drainage)
- SD — Primary siphonic downpipe location
- Primary surface water run with manhole
- Denotes headwall
- (v) — Vented cover to siphonic receiving manhole
- FRS — Denotes Class 1 Full Retention Interceptor
- KD — Denotes Kerb drain
- Denotes slot drain with catch pit access point
- Denotes Filter strip
- Denotes Rising main
- Denotes foul drainage run with manhole
- PPS — Denotes pumping station
- CV — Denotes closure valve




Surface Water Drainage Layout

Scale 1:500

KWDS

Total storage volume pond 1 + pond 2 provided = 3200m³

Note:
All drainage inicative/preliminary only - all to be confirmed by detailed deign

Surface Water Drainage Design Assumptions

(i) Site drainage apparatus to discharge freely into storage ponds for all design rainfall events.
(ii) Site drainage designed for no flooding for all design rainfall events up to 1:100 year return periods.
(iii) Storage volume provided is that required for maximum anticipated storm surge spring high tide level of 5.200m A.O.D, storm surge neap high tide level of 4.10m, tide locked discharge period of 9.5 hours Max and maximum storm surge duration of 24 hours.
(iv) Outfall level = 1.75m A.O.D
(v) Drainage layout to be read in conjunction with RPS design philosophy documents

10m SCALE 1:500

Drawing for PLANNING purposes only

| rev | amendments | by | ckd | date |
|---|---|---|---|---|
| C | Drawing figure added. Updated to suit revised site layout. | AKC | ST | 16/12/09 |
| B | Minor amendments | JDW | RM | 04/11/09 |
| A | Compensatory ditch indicated. | AKC | ST | 29/10/09 |

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Client: stREGIS

Project: Kemsley Sustainable Energy Plant

Title: Proposed Drainage Layout

| Drawing Status | Date Created | Drawing Scale |
|---|---|---|
| Preliminary | September 2009 | 1:500 |
| Project Leader | Drawn By | Initial Review |
| AWY | AKC | ST |

Drawing Number: 16315 / A0 / 0301 Rev: C

Figure 4.25

notes :

1. If this drawing has been received electronically it is the recipients responsibility to print the document to the correct scale.
2. All dimensions are in millimetres unless stated otherwise. It is recommended that information is not scaled off this drawing.
3. This drawing should be read in conjunction with all other relevant drawings and specifications.


Proposed Levels
Scale 1:500

Kemsley Waste Disposal Site KWDS

All levels preliminary - TBC by detailed design

Drawing for PLANNING purposes only

Key

- Proposed Level (m A.O.D.)
- Existing Level (m A.O.D.)
- Existing contour
- UEA E.ON building designation
- Fall line
- 1:60 Slope down

Note:
Existing topographical information obtained from RPS drawing JKK5098-1C

Site layout taken from E.ON drawing: Preliminary 16/09/09

All levels relative to ordinance datum

10m SCALE 1:500

| rev | amendments | by | ckd | date |
|---|---|---|---|---|
| A | BH 1-3 indicated. Ecological ditch position indicated. Drawing figure added. Levels updated to suit revised site layout. | JDW | RM | 16/12/09 |

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Client: stREGIS

Project: Kemsley Sustainable Energy Plant

Title: Proposed Levels/ Site Plan

| Drawing Status | Date Created | Drawing Scale |
|---|---|---|
| Preliminary | September 2009 | 1:500 |
| Project Leader | Drawn By | Initial Review |
| AWY | AKC | ST |

Drawing Number: 16315 / A0 / 0600
Rev: A

Figure 4.26

# Appendix C

**WINDES microdrainage results showing storage volumes associated with zero flow to estuary during design tidal events.**

Sherwood House
Sherwood Avenue
Newark NG24 1QQ

Date 20 November 2009 11:13 | Designed By ryan.marsden
File STORAGE VOLUME.SRC | Checked By
Micro Drainage | Source Control W.11.2 net

## Summary of Results for 100 year Return Period (+20%)

| Storm Duration (mins) | Maximum Control (l/s) | Maximum Outflow (l/s) | Maximum Water Level (m OD) | Maximum Depth (m) | Maximum Volume (m³) | Status | |
|---|---|---|---|---|---|---|---|
| 15 Summer | 0.0 | 0.0 | 0.3377 | 0.3377 | 1013.3 | O K | |
| 30 Summer | 0.0 | 0.0 | 0.4437 | 0.4437 | 1331.2 | O K | |
| 60 Summer | 0.0 | 0.0 | 0.5558 | 0.5558 | 1666.5 | O K | |
| 120 Summer | 0.0 | 0.0 | 0.6723 | 0.6723 | 2016.5 | O K | |
| 180 Summer | 0.0 | 0.0 | 0.7418 | 0.7418 | 2224.8 | O K | |
| 240 Summer | 0.0 | 0.0 | 0.7908 | 0.7908 | 2371.7 | O K | |
| 360 Summer | 0.0 | 0.0 | 0.8608 | 0.8608 | 2582.6 | O K | |
| 480 Summer | 0.0 | 0.0 | 0.9148 | 0.9148 | 2744.7 | O K | |
| 600 Summer | 0.0 | 0.0 | 0.9583 | 0.9583 | 2875.2 | O K | |
| 15 Winter | 0.0 | 0.0 | 0.3782 | 0.3782 | 1134.9 | O K | |
| 30 Winter | 0.0 | 0.0 | 0.4972 | 0.4972 | 1490.9 | O K | |
| 60 Winter | 0.0 | 0.0 | 0.6223 | 0.6223 | 1866.5 | O K | |
| 120 Winter | 0.0 | 0.0 | 0.7528 | 0.7528 | 2258.4 | O K | |
| 180 Winter | 0.0 | 0.0 | 0.8308 | 0.8308 | 2491.8 | O K | -Normal spring tide |
| 240 Winter | 0.0 | 0.0 | 0.8853 | 0.8853 | 2656.3 | O K | |
| 360 Winter | 0.0 | 0.0 | 0.9643 | 0.9643 | 2892.6 | O K | |
| 480 Winter | 0.0 | 0.0 | 1.0248 | 1.0248 | 3074.1 | O K | |
| 600 Winter | 0.0 | 0.0 | 1.0733 | 1.0733 | 3220.3 | O K | -Neap tide plus storm surge |

| Storm Duration (mins) | Rain (mm/hr) | Time-Peak (mins) |
|---|---|---|
| 15 Summer | 115.18 | 19 |
| 30 Summer | 75.66 | 34 |
| 60 Summer | 47.36 | 64 |
| 120 Summer | 28.65 | 124 |
| 180 Summer | 21.07 | 184 |
| 240 Summer | 16.85 | 244 |
| 360 Summer | 12.23 | 364 |
| 480 Summer | 9.75 | 484 |
| 600 Summer | 8.17 | 604 |
| 15 Winter | 115.18 | 19 |
| 30 Winter | 75.66 | 34 |
| 60 Winter | 47.36 | 64 |
| 120 Winter | 28.65 | 124 |
| 180 Winter | 21.07 | 184 |
| 240 Winter | 16.85 | 244 |
| 360 Winter | 12.23 | 364 |
| 480 Winter | 9.75 | 484 |
| 600 Winter | 8.17 | 604 |

## Rainfall Details

| | | | |
|---|---|---|---|
| Region | ENG+WAL | Shortest Storm (mins) | 15 |
| Return Period (years) | 100 | Longest Storm (mins) | 600 |
| M5-60 (mm) | 19.500 | Summer Storms | Yes |
| Ratio-R | 0.400 | Winter Storms | Yes |
| Cv (Summer) | 0.750 | Climate Change % | +20 |
| Cv (Winter) | 0.840 | | |

## Time / Area Diagram

Total Area (ha) = 4.692

| Time from: | (mins) to: | Area (ha) |
|---|---|---|
| 0 | 4 | 4.692 |

# Kemsley Paper Mill, Sittingbourne, Kent
# St. Regis Paper Co. Limited & E.ON Energy from Waste

## Flood Risk Assessment


| Prepared by: | Checked by: |
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RPS Planning & Development

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# APPENDICES

# 1 INTRODUCTION

## 1.1 Background

St Regis Paper Co Limited and E.ON Energy from Waste has commissioned RPS to undertake a Flood Risk Assessment (FRA) in accordance with UK PPS25[1], for the development of a Sustainable Energy Plant and associated infrastructure. The site is located to the north of Kemsley, within the St Regis Paper Mill complex (Drawing 1). This FRA will form part of the Development Brief as agreed with the Environment Agency (EA).

It is recognised that developments that are designed without regard to flood risk may endanger lives, damage property, cause disruption to the wider community, damage the environment, be difficult to insure and require additional expense on remedial works. Current guidance on development and flood risk[2] identifies several key aims for a development to ensure that it is sustainable in flood risk terms. These aims are as follows:

the development should not be at a significant risk of flooding and should not be susceptible to damage due to flooding;

the development should not be exposed to flood risk such that the health, safety and welfare of the users of the development, or the population elsewhere, is threatened;

normal operation of the development should not be susceptible to disruption as a result of flooding;

safe access to and from the development should be possible during flood events;

the development should not increase flood risk elsewhere;

the development should not prevent safe maintenance of watercourses or maintenance and operation of flood defences;

the development should not be associated with an onerous or difficult operation and maintenance regime to manage flood risk. The responsibility for any operation and maintenance required should be clearly defined;

future users of the development should be made aware of any flood risk issues relating to the development;

[1] Communities and Local Government (2006) Planning and Policy Statement 25: Development and Flood Risk (PPS25).

the development design should be such that future users will not have difficulty obtaining insurance or mortgage finance, or in selling all or part of the development, as a result of flood risk issues;

the development should not lead to degradation of the environment; and

the development should meet all of the above criteria for its entire lifetime, including consideration of the potential effects of climate change.

The FRA is undertaken with due consideration of these sustainability aims.

The key objectives of the FRA are:

to assess the flood risk to the proposed development and to demonstrate the feasibility of appropriately designing the development such that any residual flood risk to the development and its users would be acceptable;

to assess the potential impact of the proposed development on flood risk elsewhere and to demonstrate the feasibility of appropriately designing the development such that the development would not increase flood risk elsewhere; and

to satisfy the requirements of national planning policy guidance which require FRAs to be submitted in support of planning applications.

## 1.2 Project Scope

In order to achieve the aims outlined above a staged approach has been adopted in undertaking this FRA in accordance with current best practice. First, a screening study has been undertaken to identify whether there are any potential sources of flooding at the site, which may warrant further consideration. Second, any potential flooding issues identified in the screening study have been considered in a scoping study. The aim of the scoping study is to review all available information and provide a qualitative assessment of the flood risk to the site and the impact of the site on flood risk elsewhere.

[2] CIRIA (2004) Funders report CP/102 Development and Flood Risk Guidance for the Construction Industry.

## 1.3 Report Structure

This FRA has the following report structure:

Documentation of sources of information that have been consulted during the FRA;

A description of the application area including the existing and proposed development;

The flood risk to the existing and proposed development is outlined;

The site drainage and any potential impacts of the proposed development on surface water drainage is highlighted;

The risk management options available to reduce and manage the flood risk at the site are determined; and

A summary and conclusions is presented.

# 2 SOURCES OF INFORMATION

## 2.1 Sources of Information

General information regarding the site setting and hydrology of the application site has been obtained from the OS Landranger Map 178: Thames Estuary.

Information regarding the current flood risk at the site, local flood defences, water levels and water quality has been obtained from the Environment Agency.

## 2.2 Discussion with Regulators

Joseph Williamson, a Development and Flood Risk Officer at the Environment Agency was contacted in June 2009 to discuss the nature and scale of flood risk at the site. EA data indicates that the majority of the site is located within Flood Zone 1. However, a proportion of the northeast region of the proposed ash treatment facility is located with Flood Zones 2 and 3a and is subject to an extreme tidal flood level of 5.2m Above Ordnance Datum (Newlyn) (mAODN), as shown on the EA flood map (Drawing 2).

To ensure that the site does not become tide locked the EA has requested that appropriate SUDS techniques are implemented to attenuate a 1 in 100 year with climate change (20%) storm event coinciding with the extreme tidal event. As the site is tidally influenced the EA has not specified any maximum discharge rates (Appendix 2).

# 3 DESCRIPTION OF THE APPLICATION AREA

## 3.1 Site Location

The proposed development site is located approximately 3km north of Sittingbourne centre and 1.3km north of Kemsley town centre. It is bounded to the southwest and west by the St Regis Paper Mill complex, and to the north and east by marsh scrubland with the Swale Estuary beyond.

The National Grid Reference of the site is 592070, 166551.

## 3.2 Existing Site

The existing site comprises a roughly rectangular shaped parcel of land of approximately 7 ha. The site consists of vegetated marshland, a number of spoil heaps approximately 1-2m in height and areas of construction waste materials. The ground level at the site varies from around 4.0mAODN at the eastern side to 7.0mAODN on the western landward side.

## 3.3 Proposed Development

St Regis Paper Limited and E.ON Energy from Waste has prepared an outline application for comprehensive development on some 4.6 ha of the site consisting of:

A Sustainable Power Pant for the thermal treatment of non hazardous waste including solid recovered fuel (SRF);

An ash treatment facility;

Ancillary development including internal roads, parking, weighbridge, water treatment tanks, fuel tanks, fencing, landscaping and offices;

A site concept plan has been developed for the proposed development site and is shown in Appendix 4.

# 4 FLOOD RISK

## 4.1 Potential Sources of Flooding Level 1 Screening Study

A summary of the potential sources of flooding and a review of the potential risk posed by each source at the application site is presented in Table 1.

**Table 1**

**Potential Risk Posed by Flooding Sources**

| Potential Source | Potential Flood Risk at Application Site? | Data Source |
|---|---|---|
| Fluvial flooding | No | Environment Agency |
| Tidal flooding | Yes | Environment Agency |
| Flooding from rising / high groundwater | No | Environment Agency |
| Overland flow flooding | No | Environment Agency |
| Flooding from artificial drainage systems | No | Environment Agency |
| Flooding due to infrastructure failure | No | Environment Agency |

### Fluvial Flooding Sources

The nearest watercourses to the proposed development site are a number of drain networks, which lie to the north and south of the site. OS data and information obtained from a site visit by an RPS hydrologist notes a culverted drain beneath the site access road on the northwest edge of the site. The drain flows south to north and converges with a number of other drainage networks and then flows east into The Swale, the watercourse that separates the Kent mainland from the Isle of Sheppey.

The EA notes The Swale as the only source of flooding, therefore fluvial influences are not considered further in this report.

### Tidal Flooding Sources

The tidally dominated Swale is approximately 55m to the north east of the proposed development site and has been classified by the EA as the main source of flooding. Information supplied by the EAs Development and Flood Risk Officer indicates that that a 5.2mAODN tidal flood level has been calculated for the Swale up to the year 2070.

### Groundwater Flooding

The Environment Agency has confirmed that they have no record of groundwater flooding at the proposed development site (see Appendix 2).

Previous ground investigations have noted a shallow water table within the superficial deposits at the site, which maybe in hydraulic continuity with nearby water courses and may therefore fluctuate with the tide.

The superficial soils are underlain by a bedrock geology comprising Eocene-aged London Clay, a negligibly permeable non-aquifer. The London Clay is generally regarded as containing insignificant quantities of groundwater, but is underlain by more permeable Eocene Woolwich and Thanet beds. These are major aquifer units that can provide significant quantities of groundwater for abstraction.

### Overland flow (pluvial) flooding

Pluvial flooding occurs when rainfall precipitation rates exceed ground infiltration rates, causing rainfall to run off across the ground surface. This is common on low permeability surfaces such as asphalt and concrete, on saturated ground, and on compacted or low permeability natural soils such as the clayey soils that occur within site. It is often localised with flows into natural surface channels or artificial drainage systems. No pluvial flooding has been reported at the site.

### Flooding due to infrastructure failure

No potential sources of flooding from artificial drainage systems, sewers, ponds or reservoirs have been identified and none have been reported.

### Other Sources of Flooding

No other potential sources of flooding have been identified.

## 4.2 Environment Agency Flood Map

The EA flood map indicates that the site lies primarily within Flood Zone 1, which has a low to medium probability of flooding (Drawing 2). A small proportion of the northeast end of the site lies within Flood Zones 2 and 3a, with a medium to high probability of flooding. The site zoning was confirmed by the EA Development and Flood Risk Officer.

## 4.3 Site Vulnerability

The proposed development can be split into two areas:

a) A Sustainable Energy Plant classified as Essential Infrastructure, to be located on land within flood zone 1.

b) The ash treatment facility classified as a Less Vulnerable development within PPS25 and noted to be partly located on land within flood zone 2 and 3a.

The flood risk vulnerability classification of the developed site as defined in PPS25 is shown in Table 2.

The Environment Agency Flood Zones and acceptable development types are explained in Table 3. In PPS25 (Table D.2 and 3) appropriate uses have been identified for the Flood Risk Zones (see Table 4).

Applying the Flood Risk Vulnerability Classification in Table D2 of PPS25, the types of development that are proposed for the site are classified as essential infrastructure and less vulnerable and are appropriate uses for there respective flood zones.

**Table 2**

**Flood Risk Vulnerability Classification of the site concept plan from PPS25**

| Type of Development | Flood Risk Vulnerability Classification | Flood Zone Compatibility |
|---|---|---|
| Sustainable Energy Plant | Essential Infrastructure | 1 and 2 |
| Waste (Ash) Treatment Facility | Less Vulnerable | 1, 2 and 3a |

**Table 3**

**Environment Agency Flood Zones (Table D.2 of PPS25)**

| Flood Zone | Probability | Explanation | Appropriate Land use |
|---|---|---|---|
| Zone 1 | Low | Less than 1 in 1000 annual probability of river or sea flooding in any year (<0.1%) | All development types generally acceptable |
| Zone 2 | Medium | Between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% - 0.1%) or between a 1 in 200 and 1 in 1000 annual probability of sea flooding (0.5% 0.1%) in any year | Most development type are generally acceptable Exception and Sequential test may be required |
| Zone 3a | High | A 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year | Some development types not acceptable Exception test may be required |
| Zone 3b | Functional Floodplain | This zone comprises land where water has to flow or be stored in times of flood | |

*Note: The Flood Zones are the current best information on the extent of the extreme flood from rivers or the sea that would occur without the presence of flood defences, because these can be breached, overtopped and may not be in existence for the lifetime of the development.*

**Table 4**

**Flood Risk Vulnerability and Flood Zone Compatibility (Table D.3 of PPS25)**

| Flood Risk Vulnerability classification (see Table D2 of PPS25) | Essential Infrastructure | Water Compatible | Highly Vulnerable | More Vulnerable | Less Vulnerable |
|---|---|---|---|---|---|
| Zone 1 | Yes | Yes | Yes | Yes | Yes |
| Zone 2 | Yes | Yes | Exception test required | Yes | Yes |
| Zone 3a | Exception test required | Yes | No | Exception test required | Yes |
| Zone 3b Functional Floodplain | Exception test required | Yes | No | | No |

*Key: Yes: Development is appropriate, No: Development should not be permitted*

## 4.4 Historical Flooding

The EA has confirmed that it has no records of fluvial or tidal flooding at the proposed development site. However, its records do indicate that land immediate surrounding the site was affected by flooding in 1953. Drawing 3 illustrates the extent of the 1953 flood event.

No other historical records of flooding for the site have been recorded.

## 4.5 Existing and Planned Flood Defence Measures

The Environment Agency has confirmed that there are formal flood defences or alleviation schemes within this area, constructed to a 1 in 1000 year standard. (see Drawing 2 and Appendix 2). However, a review of EA data indicates that the proposed development site may not be protected from tidal flooding from The Swale.

## 4.6 Current Flood Risk

A small proportion of the proposed development site lies within Flood Zone 2 and 3a and therefore has a medium to high probability of flooding from extreme tidal events, noted to be 5.2maODN up to 2070.

The EA flood map indicates that the only significant source of flooding at the proposed development site is from The Swale.

# 5 SITE DRAINAGE

## 5.1 Surface Water Drainage

The alteration of natural surface water flow patterns through developments can lead to problems elsewhere in a catchment. For example, replacing vegetated areas with low permeability roofs, roads and other paved areas can increase both the total and the peak flow of surface water runoff from a development site. Changes of land use on previously developed land can also have significant downstream impacts where the existing drainage system may not have sufficient capacity to receive the additional drainage. This section considers the existing drainage system at the application site and potential impacts resulting from the proposed re-development.

The site will drain directly into The Swale, and hence the EA has not required a reduced run-off rate following the site development. However, the EA has requested that the proposed development incorporates attenuation facilities that can store site run-off for a 1 in 100 year storm event coinciding with an extreme tidal flood event.

## 5.2 Runoff

RPS has calculated a worst case site run-off based on 100% impermeable ground cover on the site Appendix 1.

## 5.3 Runoff Calculations

In order to determine the surface water attenuation requirements for the site in a 1 in 100 year storm event, rates of runoff have been determined using the current industry best practice guidelines as outlined in the Interim Code of Practice for SUDS. The recommended methodology for sites up to 50 hectares in area is the Institute of Hydrology Report 124 method (IoH124). The runoff rates have been calculated using the Micro Drainage WinDes software suite.

The following parameters have been incorporated into the runoff calculations:

Impermeable Site Area: 4.6ha

Average Annual Rainfall (SAAR): 574mm/year;

Soil: 0.30;

Estimated Impermeable Area:

- Post-development = 100%;

Region No: 7.

Within WinDes, 100% impermeable areas are represented by the use of a 75% urban function for summer storm event and 84% for winter run-off. The change in percentage is representative of the alteration in hydrological characteristics of the catchment throughout the seasons.

In order to represent the change in runoff at the site as a result of the proposed development, and to ascertain the required attenuation, the urban function within the IoH 124 method has been altered to represent the percentage change in permeable area for the development.

Correspondence with the EA s Development and Flood Risk Officer has determined that given the locality of the proposed development to a tidally influenced water source that no reduction in discharge rates will be applicable for the proposed development, as noted in by the EA below:

*as it [is] likely that it [the proposed development] is intended to discharge the surface water directly to the tidal creek, it is unlikely that we [EA] will require attenuation of the surface water to reduce the rate at which water flows to this watercourse. However, we [EA] would advise that SuDS are utilised and that space is made available for the attenuation of water should an extreme rainfall event coincide with an extreme tidal event, resulting in the site becoming tide-locked. We [EA] would advise that the 100yr rainfall event (plus climate change 20%) be investigated as the critical event.*

To meet the EA requirements, RPS has calculated the attenuation needed to mitigate a 100 year storm event coinciding with an extreme tidal event would be 3,200m$^3$.

## 5.5 Sustainable Drainage Options

Current guidance promotes sustainable water management through the use of SUDS. A range of SUDS options is described in Annex F of PPS25 and includes:

| | |
|---|---|
| Green roofs | Swales |
| Water butts | Infiltration basins |
| Porous/pervious paving | Detention basins |
| Rainwater harvesting | Retention ponds |
| Filter strips | Wetland |

A hierarchy of techniques is identified:

1. **Prevention** the use of good site design and housekeeping measures on individual sites to prevent runoff and pollution (e.g. minimise areas of hard standing).

2. **Source Control** control of runoff at or very near its source (such as the use of rainwater harvesting).

3. **Site Control** management of water from several sub-catchments (including routing water from roofs and car parks to one/several large soakaways for the whole site).

4. **Regional Control** management of runoff from several sites, typically in a detention pond or wetland.

It is generally accepted that the implementation of SUDS as opposed to conventional drainage systems, provides several benefits by:

reducing peak flows to watercourses or sewers and potentially reducing the risk of flooding downstream;

reducing the volumes and frequency of water flowing directly to watercourses or sewers from developed sites;

improving water quality over conventional surface water sewers by removing pollutants from diffuse pollutant sources;

reducing potable water demand through rainwater harvesting;

improving amenity through the provision of public open spaces and wildlife habitat; and

replicating natural drainage patterns, including the recharge of groundwater so that base flows are maintained.

RPS has developed a Surface Water Management and Foul Drainage Design Philosophy Statement, Ref 16315, October 2009, (Appendix 4). This indicates that water storage ponds allowing the controlled discharge of clean/treated surface to the Swale would be the most appropriate solution and that direct infiltrating SuDS are deemed inappropriate. It is proposed that the detailed design of the final scheme would be agreed with the Environment Agency.

### 5.6.1 Attenuation Requirements

Environment Agency data shows that the site is at risk from flooding by a predicted extreme tidal event of 5.2mAOD (excluding climate change).

To mitigate the site from being inundated via tidal flood waters, the proposed development formation level will be raised to 5.8mAODN. This will prevent tidal flooding by the 5.2mAODN extreme tidal event, and the freeboard of 600mm will allow for climate change to tide level.

However, the Environment Agency requested that the site must also provide extreme storm attenuation for a 1 in 100 year storm event, coinciding with the extreme tidal event. The attenuation volume required for the 1 in 100 year rainfall event plus climate change (+ 20%) assuming no infiltration losses to the ground, coinciding with the extreme tidal event has been determined using the following input parameters:

Area of proposed site: 4.6 hectares;

Cv (proportion of rainfall forming surface water runoff): assume a factor of 75% for the development in summer, and 84% in winter (weighted average based on proposed land use);

Assuming no infiltration losses.

Furthermore, tidal levels and storm surge events data from the EA have been used to assess the attenuation requirements for a drainage design outfall invert at 1.75mAOD, as outlined in the Design Philosophy Statement.

**Normal Tidal Event and Extreme Storm**

EA data indicate that the mean fortnightly semi-diurnal spring tide high water level is approximately 2.8mAODN. An outfall invert at 1.75mAODN will be submerged for approximately 3.5 hours when there would be no discharge to The Swale from the attenuation ponds.

WinDes calculations (Apppendix 3) indicate that the storage requirement to accommodate a 1 in 100 year (+20% Climate Change allowance) storm event occurring during the critical 3.5 hour period is 2,600$m^3$.

As the tide recedes to below the outfall crown level it is assumed that water in the storage ponds will discharge into The Swale.

**Extreme Tidal Events and Extreme Strom**

Predicted extreme tidal event data from the EA shows an increase in the static tidal level by 2.40m to 5.2mAODN (plus climate change) up to 2070.

Should an extreme tidal event occur there will be an increased period when the attenuation pond outlet will be submerged. Calculations indicate an 8 hour period during which no discharge will be possible.

However, should the extreme storm event occur during a neap tide event with a high water level of 4.1mAOD there will be a 9.5hour period when no discharge from the attenuation ponds will be possible.

Taking into account the information provided above, and a designed outlet invert of 1.75mAOD, it has been determined that the 1 in 100 year (plus 20% Climate Change) occurring during a neap tide is the critical event by which attenuation calculation will be made, as this provides the longest outlet submersion period.

Preliminary WinDes Calculations indicate that a storage volume of 3,220m$^3$ would be required to accommodate the critical storm site runoff during a neap tide.

It is assumed that, once the tide recedes after 9.5hours, the storage ponds will discharge freely to the Swale Estuary. Tidal graphs show that there is a 3.5 hour period during the critical event for the storage ponds to drain before the tide level rises again.

It has been calculated that the 3.5 hour discharge should reduce the stored volume by at least 50% and thus be able to provide suitable attenuation for a secondary storm event.

The storm storage will be provided by two elongated ponds connecting by a pipe. One will run along the northern boundary of the site and around the eastern edge of the ash treatment facility and hold 2,600m$^3$, the second will be located on the southern boundary of the site with a 600m$^3$ capacity.

The outfall pipe will incorporate a non return flap valve or similar to prevent water backing up and reducing storage capacity.

A management strategy will be but in place to ensure continued efficacy of the drainage network and storage ponds.

For full details of the drainage design refer to RPS Surface Water and Foul Drainage Design Philosophy Statement, October 2009 (Appendix 4).

**SUDS**

A number of mitigation measures have been incorporated into the drainage design to minimise the risk of surface water pollutants entering the natural water environment,

The perimeter storage ponds will incorporate filter strips and vegetated banks to slow down and assist in the treatment of surface water run-off.

The underlying geology of the site precludes the use of infiltration SUDS techniques.

## 5.7 Geology and Groundwater

The following information should be taken into account when the detailed design of the surface water management strategy is finalised for the proposed development site.

### 5.7.1 Geology

The geological map indicates that the majority of the site is covered by superficial Alluvial Deposits, comprising a mix of angular to rounded gravels, sand, silt and clay. The Alluvium is underlain by bedrock comprising London Clay and the underlying Woolwich and Thanet beds.

An area of exposed London Clay is noted within the southwest edge of the application boundary.

### 5.7.3 Aquifer Designation

The proposed development site is located on Pleistocene Alluvium and Eocene London Clay, which is designated as a Non Aquifer by the Environment Agency.

### 5.7.4 Soil Classification

The soils are classified as of low to negligible leaching potential and with some ability to attenuate contaminants.

### 5.7.5 Source Protection Zone

The site is not located within a Source Protection Zone. The nearest Source Protection Zone II and III is located approximately c.1.6km to the southwest of the site.

### 5.7.6 Other

A Phase 1 ecological survey undertaken by RPS in June 2009 indicates that much of the land to the northeast and south of the site has been designated a SSSI and RAMSAR site for coastal grazing and salt marshes and intertidal habitats.

# 6 RISK MANAGEMENT

## 6.1 Design Strategy

Buildings should be designed to withstand the effects of flooding. The Companion Guide to PPS25 recommends the use of the following design measures:

**Flood resistance**, or dry proofing , where flood water is prevented from entering the building. For example using flood barriers across doorways and airbricks, or raising floor levels, or;

**Flood resilience**, or wet proofing , accepts that flood water will enter the building and allows for this situation through careful internal design for example raising electrical sockets and fitting tiled floors. The finishes and services are such that the building can quickly be returned to use after the flood.

## 6.2 Safe Access and Egress

Paragraph 8 of PPS25 requires that, where required, safe access and escape is available to/from new developments in flood risk areas. Access routes should be such that occupants can safely access and exit their dwellings in design flood conditions. Vehicular access to allow the emergency services to safely reach the development during design flood conditions will also be normally required.

## 6.3 Water Resources Act 1991 and the Land Drainage Byelaws

The approval of the Environment Agency and Swale Borough Council must be obtained prior to the commencement of any works to culvert a stream or watercourse (Section 263 of the Public Health Act 1936 refers). Under the terms of the Land Drainage Act 1991, the prior written consent of the Environment Agency is required for any proposal to divert, culvert or otherwise obstruct the flow in any watercourse (including the provision of a connection to a culvert).

Under the terms of the Water Resources Act 1991, the prior written consent of the Environment Agency is normally required for any discharge of sewage or trade effluent into controlled water, and may be required for any discharge of sewage or trade effluent from buildings or fixed plant into or onto grounds or into waters, which are not controlled waters. Such consent may be withheld. (Controlled waters include rivers, streams, underground waters, reservoirs, estuaries and coastal waters).

## 6.4 Proposed Surface Water Management

The following recommendations regarding surface water management should be put in place.

### 6.4.1 Water Quality during Construction

Construction activities, such as foundation work and road resurfacing, may require the use of water on site. Possible site run-off and discharges may impact on the water quality of the nearby ditches, during the construction phase of the project.

Potential impacts that could arise during the construction of the scheme include:

direct discharges to ground and surface water from run-off during the construction phase, possibly containing increased loads of suspended solids and/or contaminants;

accidental spillage or leakage resulting from storage of potentially polluting substances during construction, affecting groundwater and surface waters;

disposal of drainage and effluent from construction sites, and from any concrete batching plant used at construction compounds;

localised increased flooding from increased siltation in surface watercourses as a result of construction site run-off;

localised increases in flooding as a result of any construction activities affecting land drainage;

direct loss, disturbance or other effects on aquatic habitats and species of nature conservation value;

pollution and increased sediment loads entering the drainage ditches during associated works in close proximity to these watercourses; and

changes in surface water hydrology caused by compaction of soils and increase in impermeable surfaces.

### 6.4.2 Mitigation during Construction

Mitigation to minimise the risk of potential impacts during construction is likely to include the following:

All surface water discharges from construction activities should pass through sediment traps (e.g. settlement lagoons or tanks).

All construction work should be undertaken in accordance with guidelines including; Environment Agency, Planning Policy Guidance Note 6 (PPG6): Pollution Prevention Guidelines Working at Construction and Demolition Sites; Environment Agency, Planning Policy Guidance Note 5 (PPG5): Pollution Prevention Guidelines Working, in, near or liable to affect watercourses; CIRIA (C532) Control of Water Pollution from Construction Sites Guidance for Consultants and Contractors; CIRIA SUDS Manual.

Construction vehicles should be maintained to reduce the risk of hydrocarbon contamination and should only be active when required. Other construction materials will be managed in such a way as to effectively minimise the risk posed to the aquatic environment.

Disturbance to areas close to watercourses will be reduced to the minimum necessary for the work.

Regular cleaning of roads of any construction waste and dirt will be carried out.

A construction method statement will be submitted for approval by the relevant statutory authorities prior to the commencement of construction.

### 6.4.3 Water Quality during Operation

Surface water runoff can contain a wide range of contaminants such as oil, organic matter and toxic metals. Although often at low levels, cumulatively these can result in poor water quality in rivers and streams which affects biodiversity and amenity. After rainfall, the first flush can often be highly polluting.

### 6.4.4 Mitigation during Operation

The CIRIA SUDS Manual[3] highlights the fact that to remove the major proportion of pollution, it is therefore necessary to:

1. Capture and treat the runoff from frequent, small events.
2. Capture and treat a proportion of the initial runoff (first flush) from larger and rarer events.

This will ensure that any runoff discharged to the receiving watercourse is of improved quality compared to a direct discharge from a traditional drainage system. The methods as proposed in Section 5.6 will achieve these requirements.

[3] CIRIA (2007) The SUDS Manual.

# 7 SUMMARY AND CONCLUSIONS

This report presents a FRA, in accordance with PPS25, for the development of vacant land located within the St Regis Paper Mill complex, located northeast of Kemsley Town centre.

The FRA has demonstrated the following:

Following the re-profiling of the site it will lie within Flood Zone 1. This is awaiting final confirmation from the Environment Agency following the submission of the Master Plan and Drainage Philosophy Statement.

All aspects of the proposed development are appropriate for their respective flood zoning classification without the need for Sequential and Exception Tests to be undertaken.

The FRA has also considered the potential impact of the proposed development on surface water runoff rates. Appropriate mitigation measures to attenuate surface runoff have been presented, in accordance with EA requirements.

Suitable storage will be provided to attenuate a 1 in 100 year storm event coinciding with a extreme tidal event. This utilises a storage pond. Windes modelling indicates that a storage volume of 3,220$m^3$ will be required to attenuate the 1 in 100 year storm event.

This FRA demonstrates that the proposed development will not be at risk from flooding and with appropriate mitigation measures will not increase flood risk elsewhere. Therefore the proposed development meets the requirements of PPS25. The development should not therefore be precluded on the grounds of flood risk.

## References

Planning Policy Statement 25: Development and Flood Risk. Department of Transport, Environment and the Regions. December 2006.

Funders report CP/102 Development and Flood Risk Guidance for the Construction Industry. CIRIA. 2004.

Interim Code of Practice for sustainable drainage systems. Office of the Deputy Prime Minister, National SUDS Working Group. July 2004.

Flood estimation for small catchments. Institute of Hydrology (1994). Report no 124.

Sustainable Drainage Systems Hydraulic, Structural and Water Quality advice. CIRIA Report C609. 2004.

# FRA APPENDIX 1

## Drawings


Key:

Proposal Location

N

RPS
3RD FLOOR
34 LISBON ST.
LEEDS
LS1 4LX
TEL: 0113 220 6190
FAX: 0113 243 9161



PROJECT

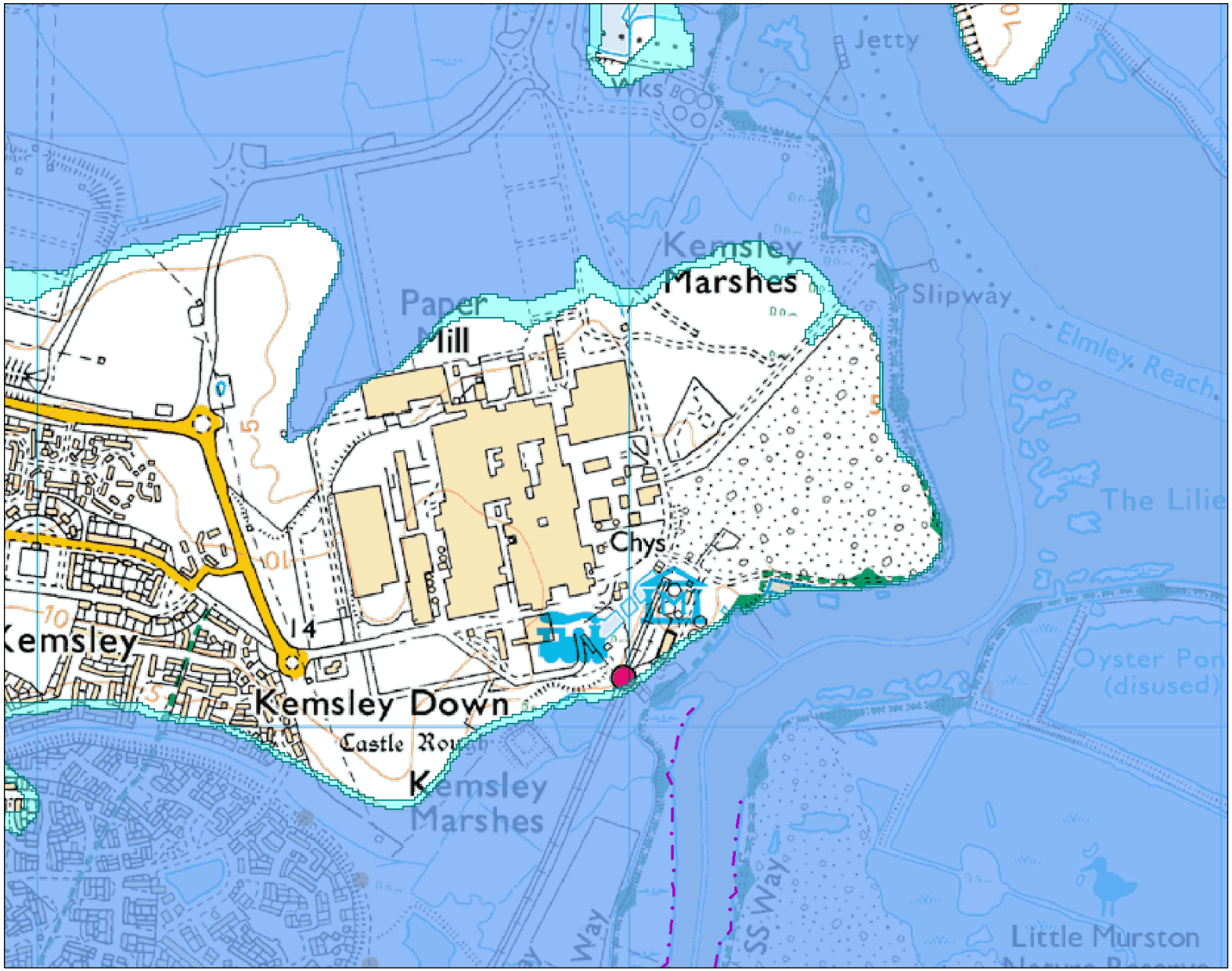
Kemsley Sustainable Energy Plant

TITLE

Site Location Plan

| SCALE | DRAWN BY |
|---|---|
| 1:25000 @A3 | JM |
| DATE | CHECKED |
| June 2009 | PH |
| CAD FILE | |
| PROJECT NUMBER | DRAWING NUMBER / REV |
| DLE1726 | Drawing 1 |

# Flood Map centred on St Regis Paper Mill, Kemsley, Sittingbourne, Kent - Created 19 August 2009




Environment Agency

Scale 1:10,001

N
W E
S

## Legend

- Flood Map - Defences
- Areas Benefiting from Flood Defences
- Flood Map - Flood Storage Areas
- Flood Map - Flood Zone 3
- Flood Map - Flood Zone 2

**Flood Map Areas (assuming no defences)**

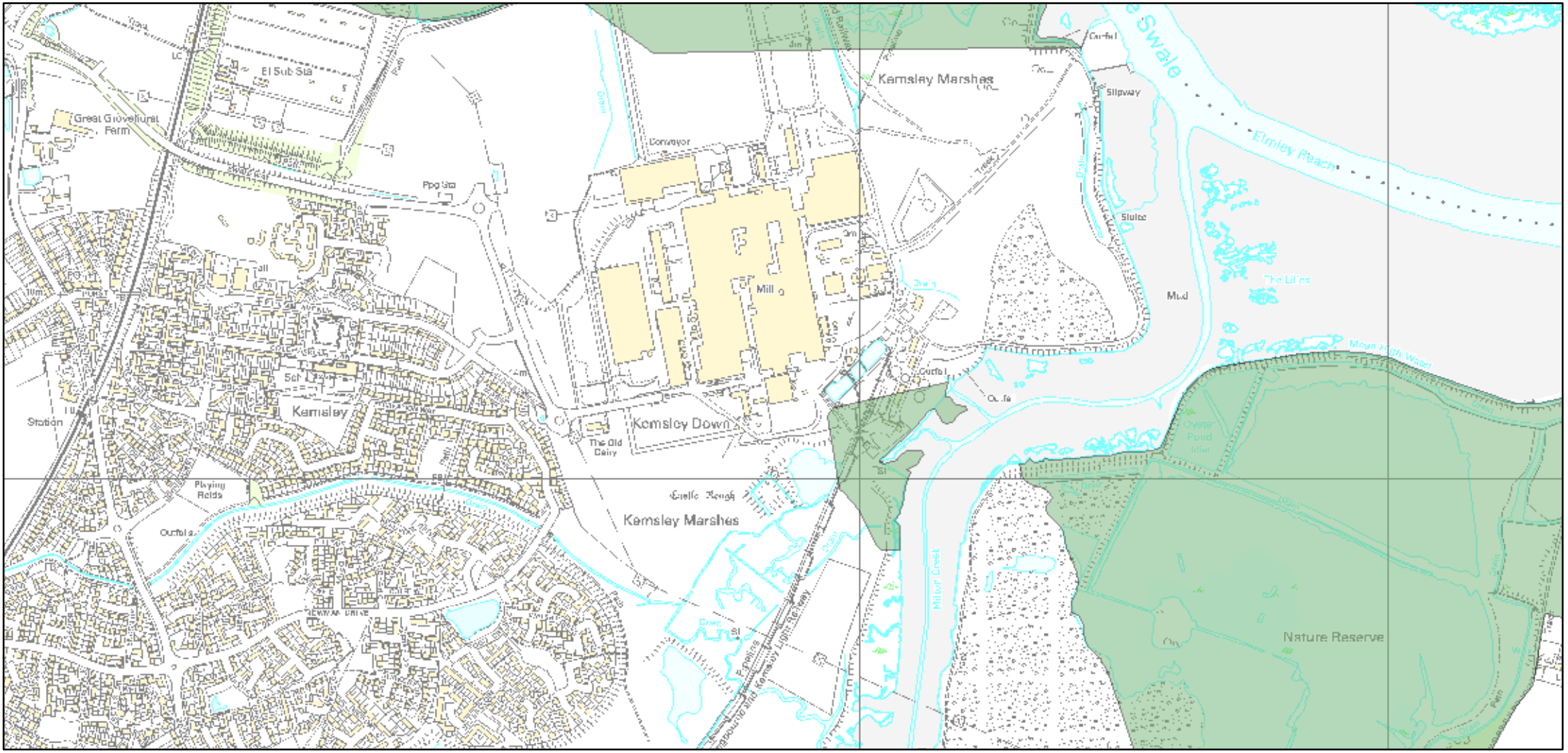
**Flood Zone 3** shows the area that could be affected by flooding:
- from the sea with a 1 in 200 or greater chance of happening each year
- or from a river with a 1 in 100 or greater chance of happening each year.

**Flood Zone 2** shows the extent of an extreme flood from rivers or the sea with up to a 1 in 1000 chance of occurring each year.



**Contact Us:** National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 08708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

# Historic Flood Map For Kemsley, Sittingbourne, Kent




Scale 1:10000

February 1953 Flood



0 250 500 Metres

Produced On 13th July 2009

# FRA APPENDIX 2

## Correspondence

Emailed to Jonathan Morley

Jonathan.morley@rpsgroup.com

**Our ref:** CSC/2009/0552b.let
**Your ref:**

**Date:** 20 August 2009

Dear Jonathan

**RE: Update of Flood Risk Information For St Regis Paper Mill, Kemsley, Sittingbourne, Kent**

I refer to your information request received in this office on 30 June.

Having consulted with various team, I am now in a position to provide you with the following information,

Our Flood Map shows the natural floodplain ignoring the presence and effect of defences for England and Wales, and therefore the areas potentially at risk of flooding from rivers or the sea.

The map indicates an area with a 1 in 100 (1%) chance of flooding from rivers in any given year and an area with a 1 in 200 (0.5%) chance of flooding in any given year from the sea. The map also shows:

- The area with a 1 in 1000 (0.1%) chance of flooding from rivers and/or the sea in any given year. This is also known as the Extreme Flood Outline (EFO).
- The location of some flood defences and the areas that benefit from them;
- Information on the likelihood of flooding at any location taking account of the presence and effect of flood defences.

Further to your recent enquiry an extract of our Flood Map is enclosed for your information. It shows that property/site partially lies within the outline of the area with a 1 in 200 (0.5%) chance of flooding in any given year from the sea. The majority of the site however, is out side of the Extreme Flood Outline.

Orchard House, Endeavour Park, London Road, Addington, West Malling, Kent, ME19 5SH.
Customer services line: 08708 506 506
Email: enquiries@environment-agency.gov.uk
www.environment-agency.gov.uk

The Flood Map is intended to act as a guide to indicate the potential risk of flooding. When producing it we use the best data available to us at the time and also take into account historic flooding and local knowledge. The Flood Map is then updated on a quarterly basis to account for any amendments required. These amendments are then displayed on the internet.

The Flood Map only indicates the floodplain, as it would exist without defences present. This is because although flood defences reduce the risk of flooding they cannot completely remove that risk.

You should note that this information is based on that currently available as of the date of this letter. You may feel it is appropriate to contact our office at regular intervals, to check whether any amendments/ improvements have been made. Should you re-contact us after a period of time, please quote the above reference in order to help us deal with your query.

The groundwater level data is held by the Monitoring and Data team and I am waiting for a response,

As far as groundwater vulnerability goes, the site is underlain by the London Clay, which is an unproductive strata and thus the groundwater vulnerability is low. Risks to controlled waters are mainly concerning drainage getting into the wetlands and rivers in the locality. You can gather a lot of information by referring to the "whats in your backyard" on our website.

http://www.environment-agency.gov.uk/homeandleisure/default.aspx

I also enclose a copy of the Environment Agency s Notice. Please note the conditions listed and let me know if you consider that you may require a special data licence. This information is provided subject to the enclosed notice, which you should read.

I hope the enclosed information is sufficient for your current requirements. If you require any further assistance please do not hesitate to get in touch.

Yours sincerely

Karen Rigg

**External Relations Assistant**

Direct dial 01732 223224
Direct fax 01732 223289
E-mail sokes@environment-agency.gov.uk

## Jonathan Morley

**From:** Williamson, Joseph [joseph.williamson@environment-agency.gov.uk]
**Sent:** 13 July 2009 14:46
**To:** Jonathan Morley
**Subject:** RE: Regis Paper Mill, Kemsley, Sittingbourne, Kent.
**Attachments:** Regis Paper Mill, Kemsley, Sittingbourne, Kent..pdf

Good afternoon Jonathan.

Please find attached a copy of the flood map for the area referred to in your e-mail. As can be seen, the site lies partially within Flood Zones 2 & 3.

Any application for development on this site would therefore need to be accompanied by a Flood Risk Assessment (this would still be the case if it weren't within the Flood Zones as the site is over 1 ha in area).

As it likely that it is intended to discharge the surface water directly to the tidal creek, it is unlikely that we will require attenuation of the surface water to reduce the rate at which water flows to this watercourse. However, we would advise that SuDS are utilised and that space is made available for the attenuation of water should an extreme rainfall event coincide with an extreme tidal event, resulting in the site becoming tide-locked (and therefore unable to drain). We would advise that the 100yr rainfall event (with an additional 20% allowance for climate change) be investigated as the critical event. For information, the maximum predicted tide level for this area (to the year 2070) is approximately 5.2maODN.

Please contact me if I can be of further assistance.

Kind regards,

**Joseph Williamson**
Development and Flood Risk Officer

☎ 01732 222905
Joseph.williamson@environment-agency.gov.uk
✉ Orchard House, Endeavour Park, London Road, Addington, West Malling, Kent, ME19 5SH

Have a look at the Environment Agency s Guide for Developers for advice on how to add value to a site, and make developments better for people and the environment.

---

**From:** Jonathan Morley [mailto:jonathan.morley@rpsgroup.com]
**Sent:** 30 June 2009 13:45
**To:** Williamson, Joseph
**Subject:**



Dear Joseph,

***Data enquiry regarding flood information for St Regis Paper Mill, Sittingbourne, Kent.***

Further to our conversation last week please find information outlining the proposed development on a site in Kemsley. The address of the site is ***St Regis Paper Mill, Kemsley, Sittingbourne, Kent.*** The grid reference of the site is 592070 166551. I have attached a map showing the location of the site.

In summary, the proposed development incorporates:

- A Sustainable Energy Plant with a fuel stock capacity of 500,000 tonnes per annum
- An ash treatment facility to stabilise up to 150,00 tpa of boiler ash;
- Ancillary development including internal roads, oarking, weighbridge, water treatment tanks, fuel tanks, fencing, landscaping and offices;
- The facility will use combustible non hazardous waste including solid recovered fuel (SRF) as the fuel source.

Following a review of the EA s website it is my understanding that the site is located within flood zone 1 and not affected by fluvial or tidal flood events. Therefore please could you confirm the EA run-off rate requirements for the proposed development?

Kind regards

**Jonathan Morley BSc (Hons) - Consultant Geo-Environmental Engineer**

**RPS Planning & Development Ltd, 3rd Floor, 34 Lisbon Street, Leeds LS1 4LX**

**☎ switchboard: 0113 220 6190 ☎: 07920 566 017 🖷 0113 243 9161 ✉ jonathan.morley@rpsgroup.com**

please don't print this e-mail unless you really need to.

## Jonathan Morley

**From:** Williamson, Joseph [joseph.williamson@environment-agency.gov.uk]
**Sent:** 16 October 2009 13:51
**To:** Jonathan Morley
**Subject:** RE: Regis Paper Mill, Kemsley, Sittingbourne, Kent.
**Follow Up Flag:** Follow up
**Flag Status:** Red

Good afternoon Jonathan.

I can confirm that the below will be acceptable provided my previous e-mail is referred to with regard to SuDS and surface-water storage during extreme tidal events. It must also be ensured that the runoff to the creek is uncontaminated by any of the processes/materials from the site.

Any works whatsoever within 15m of the top of the bank of the creek or from the landward toe of any flood defence (if one exists) requires the consent of the Environment Agency. I am the consenting officer in this area for any such works; if you let me know of the nature and scale of these, we can start that process.

Kind regards,

**Joseph Williamson**
Development and Flood Risk Officer

☎ 01732 222905
Joseph.williamson@environment-agency.gov.uk
✉ Orchard House, Endeavour Park, London Road, Addington, West Malling, Kent, ME19 5SH

Have a look at the Environment Agency s Guide for Developers for advice on how to add value to a site, and make developments better for people and the environment.

---

**From:** Jonathan Morley [mailto:jonathan.morley@rpsgroup.com]
**Sent:** 05 October 2009 15:17
**To:** Williamson, Joseph
**Cc:** Paul Hardwick
**Subject:** Regis Paper Mill, Kemsley, Sittingbourne, Kent.
**Importance:** High

Good Afternoon Joseph,

Thank you for the telephone conversation last week.

Just to confirm, that we are now looking to raise the Kemsley Development at St Regis Paper Mill to a constructional level of 5.8mODN.

This will elevate the site above the extreme tidal flood level of 5.2mODN with 0.6m left for freeboard.

We are then looking to discharge any runoff from the site including 1 in 100 year storm event water directly into the Swale.

Please can you confirm that this will be acceptable to the Environment Agency?

Furthermore, I understand that the EA will require a consent application for constructional works within 15m of flood defences, please can you provide me with further information how we would proceed with the application.

Thank you in advance

Kind regards

**Jonathan Morley BSc (Hons) - Consultant Geo-Environmental Engineer**

**RPS Planning & Development Ltd, 3rd Floor, 34 Lisbon Street, Leeds LS1 4LX**

**☎ switchboard: 0113 220 6190 ☎: 07920 566 017 🖹 0113 243 9161 ✉ jonathan.morley@rpsgroup.com**



---

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Please contact me if I can be of further assistance.

Kind regards,

**Joseph Williamson**
Development and Flood Risk Officer

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---

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**Sent:** 30 June 2009 13:45
**To:** Williamson, Joseph
**Subject:**

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Following a review of the EA s website it is my understanding that the site is located within flood zone 1 and not affected by fluvial or tidal flood events. Therefore please could you confirm the EA run-off rate requirements for the proposed development?

Kind regards

**Jonathan Morley BSc (Hons) - Consultant Geo-Environmental Engineer**

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www.environment-agency.gov.uk

## Jonathan Morley

**From:** Simon Turton
**Sent:** 27 October 2009 11:44
**To:** Jonathan Morley
**Subject:** FW: Regis Paper Mill, Kemsley, Sittingbourne Kent-surface water drainage.
**Attachments:** kemsleysummary.pdf

Jonathan-

My e-mail correspondence with the EA PLUS Windes summary sheet.

Simon

**Simon Turton**
**Principal Engineer**

RPS
RPS Sherwood House Sherwood Avenue Newark Nottinghamshire NG24 1QQ UK
Tel: +44 (0)1636 605700 Fax: +44 (0)1636 610696 www.rpsgroup.com

---

**From:** Williamson, Joseph [mailto:joseph.williamson@environment-agency.gov.uk]
**Sent:** 14 October 2009 12:15
**To:** Simon Turton
**Subject:** RE: Regis Paper Mill, Kemsley, Sittingbourne Kent-surface water drainage.

Good afternoon Simon.

I have the following information for you. Of greatest relevance are the levels relative to Ordnance Datum (as this is the datum which the predicted maximum surge tide levels are measured against). As you can see, the present day MHWS at Milton Creek is 2.8maODN. The combined effects of a storm-surge and climate change is likely to raise this to a static-tide level of 5.2maODN by 2070. Assuming a storm-surge may last in the region of 2 tidal cycles (approx 24hrs), the additional 2.4m would result in a low-water level of 0.2maODN. We would recommend that a certain amount of freeboard is also incorporated in your outfall design to account for wave action.

Please contact me if I can be of further assistance.

Kind regards,

**Joseph Williamson**
Development and Flood Risk Officer

☎ 01732 222905
Joseph.williamson@environment-agency.gov.uk
✉ Orchard House, Endeavour Park, London Road, Addington, West Malling, Kent, ME19 5SH

Have a look at the Environment Agency s Guide for Developers for advice on how to add value to a site, and make developments better for people and the environment.

Tide Levels In Milton Creek Relative To **Ordnance Datum**

Mean High Water Springs (MHWS) 2.8 m

Mean High Water Neaps (MHWN) 1.7 m

Mean Tide Level 0.3 m

Mean Low Water Neaps (MLWN) -1.3 m

Mean Low Water Springs (MLWS) -2.2 m

Tide Levels In Milton Creek Relative to **Chart Datum**

Mean High Water Springs (MHWS 5.6 m

Mean High Water Neaps (MHWN) 4.5 m

Mean Tide Level 3.1 m

Mean Low Water Neaps (MLWN)1.5 m

Mean Low Water Springs (MLWS) 0.6 m

---

**From:** Simon Turton [mailto:simon.turton@rpsgroup.com]
**Sent:** 09 October 2009 10:10
**To:** Simon Turton; Williamson, Joseph
**Cc:** Andy Young; Richard Smyth
**Subject:** RE: Regis Paper Mill, Kemsley, Sittingbourne Kent-surface water drainage.



Joseph-

Many thanks for getting back to me the other day as discussed we would be very grateful if you could look into the question of the normal high and low tide levels.

Additionally and having thought about this some more following our discussion of the nature of the storm surge tide :

We note your comments that the storm surge event will follow a diurnal tidal timescale which I think makes life easier for us in determining the storage requirements. However we would need to know the low tide level associated with the storm surge event in addition to the 5.2 m high tide level already provided. Again if this information is known to the EA it would be much appreciated if it could be made available to us.

Simon

**Simon Turton**
**Principal Engineer**

RPS
RPS Sherwood House Sherwood Avenue Newark Nottinghamshire NG24 1QQ UK
Tel: +44 (0)1636 605700 Fax: +44 (0)1636 610696 www.rpsgroup.com

---

**From:** Simon Turton
**Sent:** 23 September 2009 17:42
**To:** 'joseph.williamson@environment-agency.gov.uk'
**Cc:** Andy Young; Richard Smyth

**Subject:** Regis Paper Mill, Kemsley, Sittingbourne Kent-surface water drainage.

Joseph-

Further to our discussions yesterday and your e-mail to my colleague Jonathan Morley on 13th July.

Basically, I will be producing a surface water drainage design philosophy document which we envisage will be a stand alone document but will read with the FRA.

We intend to investigate discharge of the surface water unattenuated to the tidal creek. We understand the requirement to accommodate the co-incidence of an extreme rainfall event with an extreme tidal event by the provision of suitable storage all as per your e-mail. In order to progress this envisaged approach however we would be very grateful if you could provide the additional information and clarifications outlined below. Obviously any further comments the EA may have as a result of this discussion would of course also be welcome.

1. Our overall approach to the surface water management of the site is as follows. Run off from the buildings and hard surfaces is to be discharged freely into a storage swale or pond constructed as part of the works which we envisage to be located on the northwest boundary of the site. The pond would represent a SUDS approach in terms of source control and would also contribute to treatment of the stored water. A review of the available ground information data would appear to rule out any infiltration techniques. Under normal tidal conditions the volume of water in the pond will be discharged unattenuated into the Swale estuary. Our initial thoughts are that we would propose to set the level of the storage pond outfall to just above the normal low tide level. Thus the pond would drain at low tides but would be subject to submerged discharge conditions under normal high tide which would lead to water being retained in the pond during the high tide periods. We would have more than enough storage capacity to do this as explained below- and we think this approach could be considered as a likely habitat enhancement as a wetland type environment would be created in the pond. Habitat enhancement of this type is recommended in the Habitat scoping survey prepared by RPS. However the required outfall level may also be influenced by the tidal coincident storage requirements outlined below.

   It would therefore be appreciated if you could provide us with information relating to the mean estuary water level and the normal high and low tide levels. It is our assumption that the 5.2m AOD maximum predicted tide level indicated in your e-mail is the tide event co-incident with a storm surge and thus a rather exceptional event.

2. In order to accommodate the 1 in 100 year rainfall event coinciding with an extreme tide event we would anticipate the following approach : Under this condition we would not be able to discharge any run-off water to the Swale estuary and would have to store all the water associated with 1 in 100 year events on site-this will amount to a volume of several thousand cubic meters. We would wish to minimise this volume as much as possible not least because even under this condition we would wish to discharge the site freely at all times into the pond such that we don t cause flooding on the site. The lower the surface level of this storage volume the easier this becomes. This calls into question the determination of **duration**. Clearly we need to consider the time period(s) that the critical tide event would make discharge possible/impossible. The required storage could then be rationally designed for the full range of 1 in 100 year storms as we would know when the periods of unattenuated discharge would be available within the critical tidal event. We do not know whether the storm tide event you refer to follows the normal diurnal tide periods or whether completely different timescales are involved. We would appreciate your advise in this matter because as you can see it will be fundamental in determining a workable storage volume.

   It would be greatly appreciated if the time level data related to the maximum predicted tide could be made available to us-would this be possible ?

   The bank level to the constructed swale or pond would be set to 5.80 m AOD to ensure that the maximum tide did not inundate the site. We would also look to ensure that in normal tidal conditions the pond could empty to half full within 24 hours which is the normal practice- in order that protection against a significant rainfall event occurring soon after the design event.

   The above would -we hope-show that the design of the surface water management system as described in outline detail would protect the site from flooding. We would wish to work this up into a full philosophy document but it would appear we require additional information re : tidal events to do this properly.

We look forward to receiving your comments.

Simon

**Simon Turton**
**Principal Engineer**

RPS Sherwood House Sherwood Avenue Newark Nottinghamshire NG24 1QQ UK
Tel: +44 (0)1636 605700 Fax: +44 (0)1636 610696 www.rpsgroup.com

# FRA APPENDIX 3

## WinDes Calculations

## Summary of Results for 100 year Return Period (+20%)

| Storm Duration (mins) | Maximum Control (l/s) | Maximum Outflow (l/s) | Maximum Water Level (m OD) | Maximum Depth (m) | Maximum Volume (m³) | Status | |
|---|---|---|---|---|---|---|---|
| 15 Summer | 0.0 | 0.0 | 0.3377 | 0.3377 | 1013.3 | O K | |
| 30 Summer | 0.0 | 0.0 | 0.4437 | 0.4437 | 1331.2 | O K | |
| 60 Summer | 0.0 | 0.0 | 0.5558 | 0.5558 | 1666.5 | O K | |
| 120 Summer | 0.0 | 0.0 | 0.6723 | 0.6723 | 2016.5 | O K | |
| 180 Summer | 0.0 | 0.0 | 0.7418 | 0.7418 | 2224.8 | O K | |
| 240 Summer | 0.0 | 0.0 | 0.7908 | 0.7908 | 2371.7 | O K | |
| 360 Summer | 0.0 | 0.0 | 0.8608 | 0.8608 | 2582.6 | O K | |
| 480 Summer | 0.0 | 0.0 | 0.9148 | 0.9148 | 2744.7 | O K | |
| 600 Summer | 0.0 | 0.0 | 0.9583 | 0.9583 | 2875.2 | O K | |
| 15 Winter | 0.0 | 0.0 | 0.3782 | 0.3782 | 1134.9 | O K | |
| 30 Winter | 0.0 | 0.0 | 0.4972 | 0.4972 | 1490.9 | O K | |
| 60 Winter | 0.0 | 0.0 | 0.6223 | 0.6223 | 1866.5 | O K | |
| 120 Winter | 0.0 | 0.0 | 0.7528 | 0.7528 | 2258.4 | O K | |
| 180 Winter | 0.0 | 0.0 | 0.8308 | 0.8308 | 2491.8 | O K | -Normal spring tide |
| 240 Winter | 0.0 | 0.0 | 0.8853 | 0.8853 | 2656.3 | O K | |
| 360 Winter | 0.0 | 0.0 | 0.9643 | 0.9643 | 2892.6 | O K | |
| 480 Winter | 0.0 | 0.0 | 1.0248 | 1.0248 | 3074.1 | O K | |
| 600 Winter | 0.0 | 0.0 | 1.0733 | 1.0733 | 3220.3 | O K | -Neap tide plus storm surge |

| Storm Duration (mins) | Rain (mm/hr) | Time-Peak (mins) |
|---|---|---|
| 15 Summer | 115.18 | 19 |
| 30 Summer | 75.66 | 34 |
| 60 Summer | 47.36 | 64 |
| 120 Summer | 28.65 | 124 |
| 180 Summer | 21.07 | 184 |
| 240 Summer | 16.85 | 244 |
| 360 Summer | 12.23 | 364 |
| 480 Summer | 9.75 | 484 |
| 600 Summer | 8.17 | 604 |
| 15 Winter | 115.18 | 19 |
| 30 Winter | 75.66 | 34 |
| 60 Winter | 47.36 | 64 |
| 120 Winter | 28.65 | 124 |
| 180 Winter | 21.07 | 184 |
| 240 Winter | 16.85 | 244 |
| 360 Winter | 12.23 | 364 |
| 480 Winter | 9.75 | 484 |
| 600 Winter | 8.17 | 604 |

## Rainfall Details

| | | | |
|---|---|---|---|
| Region | ENG+WAL | Shortest Storm (mins) | 15 |
| Return Period (years) | 100 | Longest Storm (mins) | 600 |
| M5-60 (mm) | 19.500 | Summer Storms | Yes |
| Ratio-R | 0.400 | Winter Storms | Yes |
| Cv (Summer) | 0.750 | Climate Change % | +20 |
| Cv (Winter) | 0.840 | | |

## Time / Area Diagram

Total Area (ha) = 4.692

| Time from: | (mins) to: | Area (ha) |
|---|---|---|
| 0 | 4 | 4.692 |

# FRA APPENDIX 4

## Surface Water Management and

## Foul Drainage Philosophy Statement

# Surface Water Management and Foul Drainage Design Philosophy Statement

Prepared for

Kemsley Sustainable Energy Plant

# Document Details

| | | |
|---|---|---|
| Project Ref | 16315 | |
| Revision | B | |
| Written by | | Simon Turton |
| Reviewed by | | Andy Young |
| Date | October 2009 | |

**Rev A:**

Amended in accordance with Landowners comments in clause 7.2.10

**Rev B:**

Project description fuel stock capacity corrected.

**RPS Group**
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# Contents

**Appendices**

## 1.0 Introduction

The following report outlines the scheme design philosophy with respect to surface water, foul and process drainage for a proposed Sustainable Energy project to be constructed on the Swale Estuary at Sittingbourne in Kent.

## 2.0 Project Description

Set within a development site of 7 ha, the proposed 4.6 ha project will comprise:

- A sustainable energy plant with a fuel stock capacity of 550,000 tpa.
- An ash treatment facility to stabilise 150,000 tpa of boiler ash.

The facility will use combustible non hazardous waste as the fuel source.

In addition to the main fuel store, treatment, boiler and turbine buildings, ancillary development will comprise access roads, parking, weighbridge, maintenance and office areas.

The current site layout is indicated on drawing 16315/A1/0600.

## 3.0 Ground Conditions/Adjacent Land

A phase II site investigation undertaken by RPS in July 2009 indicates that the geological strata beneath the site comprise:

(i) Cohesive made ground to maximum thickness of 4.5m.
(ii) Cohesive alluvium to maximum thickness of 3.5m
(iii) London clays to maximum thickness of 5m.

These deposits overlay the solid geology associated with the Woolwich and Thanet sands and Cretaceous bedrock Chalk.

The site section indicated on drawing 16315/A0/200 shows the geological strata described above.

Historical site investigation information made available by the landowner indicates the following:

(i) The area of land to the north of the site was previously used to store coal. This area is indicated as hatched on the drawings. The made ground in this area retains a residual coal element.

(ii) The area to the south of the site forms the Kemsley Waste Disposal Site (KWDS). This landfill area has recently been capped with clay. An access track forms the northern boundary of the KWDS. It is understood that methane monitoring stations are located along the path. Furthermore it is believed that leachate from the KWDS is discharged to an existing ditch located on the development site.

It is proposed that the path is retained on its present line such that access is maintained post development.

## 4.0 Ground Water

The site investigation groundwater monitoring indicates wide spread seepage within the made ground and alluvium layers. It is likely that this represents a perched system. A deeper groundwater system (most likely in continuity with the Swale estuary) was encountered at a depth of 14m below existing ground level.

The London clay is classified as a non-aquifer. The Woolwich and Thanet sands are minor aquifers and the chalk bedrock is classified as a major aquifer.

## 5.0 Existing Topography and Proposed Finished Levels

The existing site slopes gently from west to east towards the Swale estuary.

The elevation at the western end is approximately 7.0m AOD and at the eastern boundary approximately 4.0m AOD. Finished floor levels for the proposed scheme are anticipated to be set to a level of 5.80m. Thus part of the site will be in cut and part will require upfilling (as indicated on the site section drawing).

## 6.0 Ecological Context

A phase I Habitat and Scoping Survey and assessment was carried out by RPS in June 2009.

Much of the surrounding area to the north-east, east and south of the site is designated as SSSI, SPA and Ramsar notable for coastal grazing and salt marshes and intertidal habitat.

## 7.0 Surface Water Management

### 7.1 Overall Philosophy

The current site generally comprises undeveloped marsh land (together with a stock pile area used by the adjacent paper mill). The construction and operation of the new development will therefore significantly increase the impermeable area of the site and hence the volume of the surface water run-off from the site and potentially the nature of the run-off in terms of its capacity to pollute receiving watercourses/bodies.

The overall philosophy for the design of the surface water drainage system for the site development is therefore to manage surface water discharge sustainably and at source and to ensure that discharged waters do not constitute a pollution risk.

This overall approach is in accordance with the requirements of Appendix F of PPS 25 (Development and Flood Risk). It is anticipated that the pollution risks identified and mitigations proposed in this document will satisfy the requirements of the relevant planning consultees such as the Environment Agency and Natural England.

A preliminary proposed Surface Water Drainage design is shown on drawing 16315/301. As shown on the drawing, it is proposed that all clean surface water from the site is discharged to receiving storage ponds constructed on the northern, eastern and southern perimeters of the site. The storage ponds discharge this water under gravity to the tidal Swale estuary to the north east. The provision of the constructed pond will provide an effective and economic way of conveying water to the receiving swale during normal conditions with the added benefit of protecting the adjacent marsh land habitat from surface water run-off. The pond will also provide protection against flooding of the site during design rainfall and tidal events. This design proposal is assessed in detail below against the following criteria:

- Pollution/Aquifer contamination
- Flooding
- SUD's
- Climate change
- Water reclamation

## 7.2 Pollution/Aquifer Contamination

The operation of the facility exposes the surface water management system to pollution risk. The operations and activities which contribute to this risk together with the proposed mitigation measures to be implemented are outlined below.

### 7.2.1 Potential Polluting Activities/Sources

The following activities/operations require consideration.

(i) Fuel storage/laydown.
(ii) Waste water associated with the process.
(iii) Movement of lorries, loading shovels and cars.
(iv) Storage of fuel and operation of on site re-fuelling facility.
(v) Production of domestic foul waste water.
(vi) Operation of vehicle wash.
(vii) Fire suppression.
(viii) Landscape top soil run-off
(ix) Discharge of leachate from adjacent KWDS land.
(x) Exposure of contaminated land/creation of pathways in areas adjacent to the site.

### 7.2.2 Fuel Storage/Laydown

The process requires the large scale storage of ash/slag in a covered laydown area (UEU) located in the north east of the site. The stored ash will be wet initially and will be moved by loading shovels entering from the adjacent external areas. Thus potential exists for highly contaminated/turbid run off water to enter the surface water system. To address the above the following protective measures are proposed:

(i) A raised concrete bund will be provided on the open sides of the UEU building. This will help to ensure that the majority of potential contaminated water is always contained within the UEU building space.
(ii) The main part of the contaminated run-off described above will be collected in 4No. slot drains and discharged to the foul drainage system.

(iii) Circulation and yard areas immediately adjacent the laydown area will be subject to the regular movement of loading shovel vehicles. These areas are potentially subject to a degree of contamination as the loading shovels convey the ash/slag to the adjacent tipping hall. It is proposed that run-off from these external areas is discharged to the surface water system following pre-treatment (envisaged to be coalescence separation or similar) such that it is of suitable quality (to be agreed with the EA) for discharge to the estuary waters. Full retention oil separators (to deal with loading shovel oil spillage) together with catch pits and silt traps will also be provided.

### 7.2.3 Waste Water associated with the process

Refer to Section 8 for further details.

### 7.2.4 Movement of lorries, loading shovels and cars

**Normal activity**

Minor day to day fuel/oil spillages from car/lorry/loading shovel engines will be flushed into the yard and car park surface water drainage systems and treated through class 1 full retention interceptors.

The full retention interceptors will be alarmed for fuel and silt build up and to indicate when routine maintenance is required.

**Lorry yard accident / exceptional fuel spillage/unloading spillages**

Lorry or loading shovel impact or damage to fuel pumps could result in volumes of fuel/oil released sufficient to exceed the capacity of the interceptors. In these scenarios untreated contaminated water would be discharged directly to the storage pond. In order to deal with this an electrically operated closure valve will be provided so that contaminated water is retained in the storage pond such that it can be pumped to tanker for removal off site.

### 7.2.5 Production of Domestic foul Waste Water

The energy plant will comprise areas of office space with associated welfare facilities. The domestic waste water produced shall be discharged to the foul system as indicated on drawing 16315/300.

### 7.2.6 Operation of Vehicle Wash

The facility will be constructed with an automated vehicle wash as indicated on the drawing. The drainage design assumes that the vehicle wash will operate with a near 100% water reclamation system – but over-flow connection is provided to the foul system.

### 7.2.7 Fire Suppression

In the event of fire, the water required to suppress it will be stored in pits and sumps constructed within each building. Perimeter upstands and ramped access doors will prevent this water escaping to the external areas. Contaminated water contained within the fire water pits and sumps will be tested and disposed of off site.

7.2.8 **Landscape Topsoil run-off**

Surface water run-off from the landscape slopes will be collected by a series of land drains located at the base of the slopes and these will discharge the water into the storage pond.

7.2.9 **Aquifer Contamination**

As indicated in section 7.4, the ground conditions and finished levels effectively proclude the use of infiltration drainage techniques. Thus the project presents no risk of contamination to the underlying aquifers.

7.2.10 **Existing Ditch**

(i) The location of an existing ditch on the western boundary of the site is shown on the drawings. The land owner has indicated that this ditch does not receive any leachate discharge from the adjacent KWDS. In order to accommodate the proposed scheme the ditch will be infilled and a new mitigation ditch constructed – see section 10.

7.2.11 **Adjacent Area Pollution Pathways.**

The construction of the storage ponds will require works (including excavations) in the potentially contaminated areas on the boundaries of the site – in particular the north and south boundaries:
Excavations to the north boundary are likely to encounter the made ground associated with the coal storage area. It is intended however that the storage pond will be lined with clean site won clay placed to a depth of at least 300mm. Thus potential for the pond to act as a pathway for coal residue pollution is removed.

It is not proposed to extend the pond works past the existing path on the southern boundary, as indicated on the drawings, thus removing the potential risk Of encountering potentially contaminated ground.

7.3 **Flooding**

The site will be exposed to the risk of flooding due to the following:

(i) Exceedance of the capacity of the below ground pipework, channel drains storage elements, etc., constructed as part of the works during design rainfall events.
(ii) Failure of the above ground superstructure drainage elements such as siphonic pipework and gutters as a consequence of (i) above.
(iii) Exceedance of available storage capacity as a result of design rainfall events coinciding with tidal events. This situation will result in the site becoming tide locked. Thus discharge to the adjacent Swale estuary or Milton Creek would not be possible during these periods.

(iv) Inundation of the site of seawater during extreme tidal events.

For the purposes of this report, flooding as a result of (i), (ii) and (iii) described above is defined as:

- Rainwater falling on the development site, entering the drainage system and subsequently crossing the site boundary at any location.
- Rainwater falling on the development site, entering the drainage system and subsequently entering buildings on the development site.

### 7.3.1 Capacity Exceedance

#### 7.3.1.1 Basic Criteria for Design

The surface water drainage system shown on drawing 16315/301 will be designed in accordance with the following basic criteria:

(i) All network pipework will be designed for no surcharging above pipe soffit for 1 in 2 year design storms.

(ii) The system shall be designed not to flood (as defined above) for 1 in 100 year design storms.

(iii) The site drainage serving the roofs and external areas will discharge freely to the storage pond for all rainfall events.

(iv) The drainage networks will be designed and flooding simulated using WINDES micro-drainage software. All drainage will generally be designed in accordance with BS EN 752-2008: Drain and Sewer Systems outside buildings and the recommendations outlined in the 6th edition of Sewers for Adoption.

(v) The roof drainage for the various buildings comprising the facility shall be siphonic drainage systems designed to provide category 3 protection (as described in BS EN 12056:3) and a 25-year design life. The siphonic drainage systems and gutters will therefore be designed for 1 in 100 year return period storms.

For the UMA, UHA, UEB and UEW buildings, a primary system shall be provided discharging directly to the below ground network. The primary system shall be designed to deal with run-off from the first 100mm/hour of each design storm. Flows generated on the roofs above this intensity (to a maximum of 177mm/hr) will be taken by a secondary system discharging directly to clean areas of yard.

For the UEU building, a primary only system shall be provided discharging directly to the storage pond. This will ensure that roof water from this building does not add to that requiring pre-treatment. (See 7.2.2).

#### 7.3.1.2 Additional Comments with respect to Capacity Exceedance

In addition to the basic criteria defined above, it should be noted:

- As indicated on the drawing slot, channel and kerb drains constructed close to the surface will be utilised to a considerable extent. This will ensure that the drainage is generally kept shallow thus avoiding expensive and potentially dangerous deep excavations and the perched water table at high level.

- Storage of run-off water in external areas through design of the external levels/provision of raised kerbs, etc., has not been utilised given the nature of the facility (extensive buildings, limited yard areas, potential ash contamination).

The two points above will require that, in effect, the below ground pipework and high level slot and kerb drains are designed to convey 1 in 100 year rainfall volumes (including secondary siphonic roof water) directly to the storage pond.

Preliminary calculations indicate that in order to achieve free discharge of the site drainage pipework to the storage pond for all rainfall events, the water level in the pond must not exceed 3.450m AOD.

### 7.3.2 Coincidence of design rainfall and tidal events

In order to achieve free discharge for the site drainage apparatus discharging into the pond, provide a workable volume and depth of storage and sufficient fall to the swale estuary it is proposed to set the outfall level to 1.75m AOD. Information received from the EA relating to tide levels and storm surge events has been used to assess the storage requirements for the development with the outfall set to the level outlined above:

(i) Design Rainfall and Normal Tidal Events

The mean fortnightly semi-diurnal spring tide high water level is 2.8m AOD. With the outfall set to 1.75m AOD there will be a 3.5 hour (approximately) period when the outfall will be submerged and it is assumed (for the purposes of this report) that no discharge of run off water from the site attenuation ponds will be possible. Thus a storage volume is required should a critical 1 in 100 year rainfall event occur during this period. Preliminary Windes calculations indicated that a volume of 2600 $m^3$ is required to accommodate the critical 3.5 hour rainfall event. The Windes summary calculation sheet is contained in Appendix C. As the spring tide recedes to below the outfall crown level the storage pond will discharge freely and unattenuated to the Swale Estuary. The discharge windows for this tidal cycle are summarised graphically on drawing 16315/A3/201.

(ii) Design Rainfall and Extreme Tidal Events

The Environment Agency have indicated that a storm surge event combined with envisaged climate change effects (considered up to 2070) will raise the static tide levels by an additional 2.40m.

Therefore should the storm surge event occur during a spring tide resulting in a high water level of 5.2m AOD there will be an 8.0 hour (approximately) period when the outfall will be submerged and no discharge from the storage pond can occur.
Should the storm surge event occur during a neap tide resulting in a high water level of 4.1m AOD there will be a 9.5 hour (approximately) period when the outfall will be submerged. Thus the neap tide and storm surge event is critical for determine the required storage volume. Preliminary Windes calculations indicate that a storage volume of 3220 $m^3$ is required to accommodate the critical 1 in 100 year storm occurring during this tidal event. The Windes summary calculation is contained in Appendix C. As the storm surge tide recedes the storage pond will discharge freely and unattenuated to the swale estuary.

As indicated on drawing 16315/A3/204 there will be an approximate 3.5 hour period during this tidal event for the storage pond to empty before the tide levels rise again and discharge would not be possible.

This period is sufficient for the pond to empty to at least half its capacity. Thus suitable protection is provided to accommodate another significant rainfall event occurring in close time proximity to the design rainfall/storm surge event.

The outfall pipe/structure will be constructed in accordance with Environment Agency recommendations and will incorporate a non return/flap valve to prevent water backing up and reducing the available storage volume.

The provision of the above storage will ensure that free discharge conditions exist for the development site drainage water for all rainfall and tide event combinations and that neither fluvial or tidal flooding will therefore not occur on the site.

### 7.3.3 Sea Water Innundation

In order to ensure that the site and storage pond will have protection against sea water innundation during the extreme tide events the seaward bank of the storage pond will be set to a level of 5.80m. (600m free board above the 5.20m storm tide levels).

## 7.4 SUD's

With reference to Appendix F7 of PPS 25 a sustainable approach to the management of surface water drainage is to be adopted:

(i) The perimeter storage pond will be vegetated and will hold, slow down and contribute to treatment of the run-off water. The pond will prevent uncontrolled discharge water entering areas of land adjacent the site.
(ii) The gravel filter strips will slow down and treat run-off water from the perimeter access road indicated on the drawings before it enters the swale.
(iii) The water reclamation systems indicated, represent additional source control in addition to providing a useable resource.

The ground conditions comprising essentially cohesive impermeable strata to considerable depth and the presence of perched water table preclude the use of infiltration devices.

7.5 **Climate Change**

As indicated in preliminary discussions with the EA and as recommended in PPS 25 (table B.2) design peak rainfall intensities will be increased by 20% as a precaution against the effects of climate change.

7.6 **Water Reclamation**

The surface water drainage network will incorporate underground water harvesting tanks and pump arrangements to collect water from the building roofs. This water will be used for fire water purposes, for toilet flushing and landscape irrigation.

## 8.0 Process Drainage

In addition to the specific measures outlined in 7.2.2 related to the fuel laydown area, the following measures will be implemented to deal with waste process water generally:

(i) Areas receiving fuel/slag directly (UEA and UEU buildings) will be provided with internal building drainage discharging to the foul system. Level entry doors will be provided with threshold channel drains discharging to the foul system.

(ii) All other process buildings or equipment areas where waste water is generated or the risk of spillage of fuel, oil, condensate etc. is present will be provided with internal building drainage as necessary. It is envisaged that waste water associated with the boiler process will be recycled for slag cooling purposes.

(iii) As indicated in 7.2.7 all buildings will be provided with perimeter upstands and ramped access to ensure all spillages, leaks, etc. remain with the building footprint.

## 9.0 Foul Drainage

The foul drainage elements described in 7.2 above (production of domestic foul waste, process driven waste water, refuelling and vehicle wash down area run-off etc.) will discharge (to rates agreed with the receiving sewer owners and/or the Water Authority) to the existing foul sewer located within Ridham Avenue.

The new site foul drainage will be designed in accordance with BS EN 752, 6$^{th}$ Edition of Sewers for Adoption and the requirements of the Building Regulations.

The remoteness of some of the areas requiring connection to the foul system (e.g. slag laydown area) will require that a pumping station and rising main are provided to discharge foul water to the receiving sewer at self cleansing velocities.

## 10.0 Ecological Enhancement

In order to compensate for infilling of the existing ditch located on the western boundary (see 7.2.10) it is intended to provide a new ditch cut approximately 1.0 m deep into the marshland north of the pond located on the northern boundary. The ditch is indicated on the drawings.

## 11.0 Construction Phase Pollution Control

Safeguards shall be implemented during the construction phase to minimise the risk of pollution and detrimental effects to the water interests around the site. The following general mitigation measures shall be implemented.

(i) Works on site shall generally follow the best practice guidelines outlined in Section 5 and 6 of CIRIA C532 – Control of Water Pollution from Construction Sites.

(ii) Temporary foul drainage to serve the contractors welfare facilities will be provided at the start of works on site.

(iii) Refuelling and maintenance of machines shall be strictly controlled and oil storage tanks confined to locations remote from the perimeter of the site. All leaking or empty oil drums shall be immediately removed from site.

(iv) Well constructed and designated storage areas shall be provided located more than 20m away from the site perimeter. Chemical or fuel storage shall comprise of impermeable boxes and appropriate bunding.

(v) On site concrete batching plants (if utilised) are to be located more than 20m away from the site perimeter. The washing out of any concrete mixing plant or cleaning of ready mix concrete tankers shall be strictly controlled. The effluent from such cleaning shall be tankered off site or suitably treated using sedimentation tanks before the run-off is discharged.

(vi) A strict waste management system will be incorporated to prevent the disposal of construction or domestic rubbish entering the adjacent marshland areas. Waste materials will be properly stored on site.

(vii) Fill material imported to upfill to site will be sourced with due regard to leachate characteristics to the approval of the EA and Natural England. It is anticipated that the storage pond required for the permanent works will be constructed in advance of the earthworks operations such that construction phase storage and settling pond capabilities are available from the start of the works, and to provide tidal innundation protection to the construction site.

# Appendix A

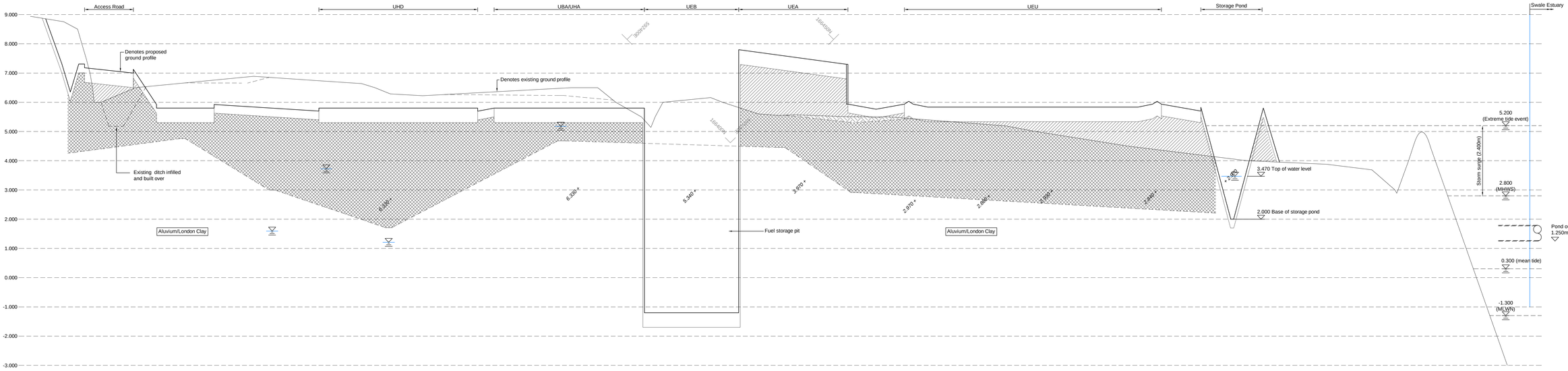
## Ground Investigation Report Extracts/Ground Water Level Extract

# Appendix B

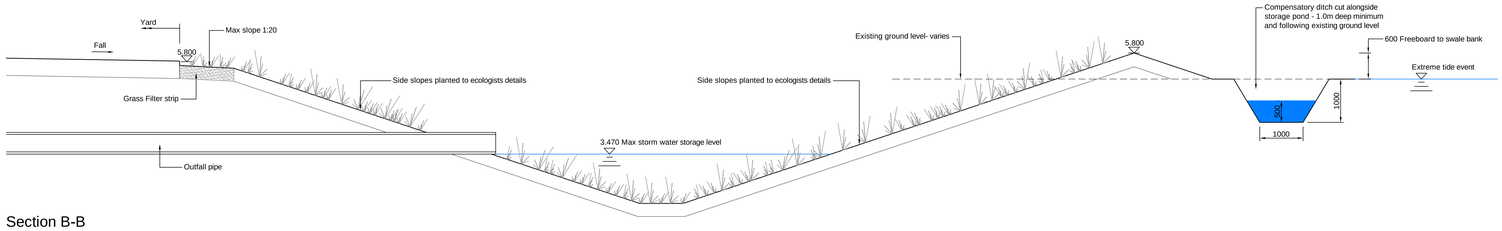
## Drawings

notes :

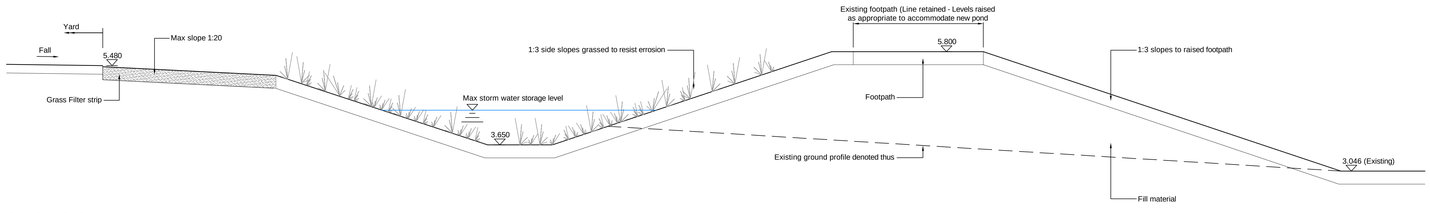
1. If this drawing has been received electronically it is the recipients responsibility to print the document to the correct scale.
2. All dimensions are in millimetres unless stated otherwise. It is recommended that information is not scaled off this drawing.
3. This drawing should be read in conjunction with all other relevant drawings and specifications.




## Section A-A
Scale 1:50 Vertical/1:500 Horizontal




## Section B-B
Scale 1:50




## Section C-C
Scale 1:50

Key

| | |
|---|---|
| ——— | Denotes proposed finished level |
| ——— | Denotes existing ground level |
| | Denotes general fill |
| | Denotes made ground |
| | Denotes proposed construction thickness |
| | Denotes ground water strike |
| MHWS | Denotes mean high water spring tide |
| MLWN | Denotes mean low water neap tide |

10m SCALE 1:500

Drawing for PLANNING purposes only

| rev | amendments | by | ckd | date |
|---|---|---|---|---|
| C | Drawing figure added. Drawing updated to suit revised site layout. | AKC | ST | 24/11/09 |
| B | 1. Existing ditch noted as infilled/culverted 2. Pond outfall pipe added. 3. Minor amendents | JDW | RM | 04/11/09 |
| A | Compensatory ditch indicated. | AKC | ST | 29/10/09 |

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stREGIS

Project: Kemsley Sustainable Energy Plant

Title: Site Sections

| Drawing Status | Date Created | Drawing Scale |
|---|---|---|
| Preliminary | October 2009 | 1:500 |
| Project Leader | Drawn By | Initial Review |
| AWY | AKC | ST |

Drawing Number: 16315 / A0 / 0200 Rev: C

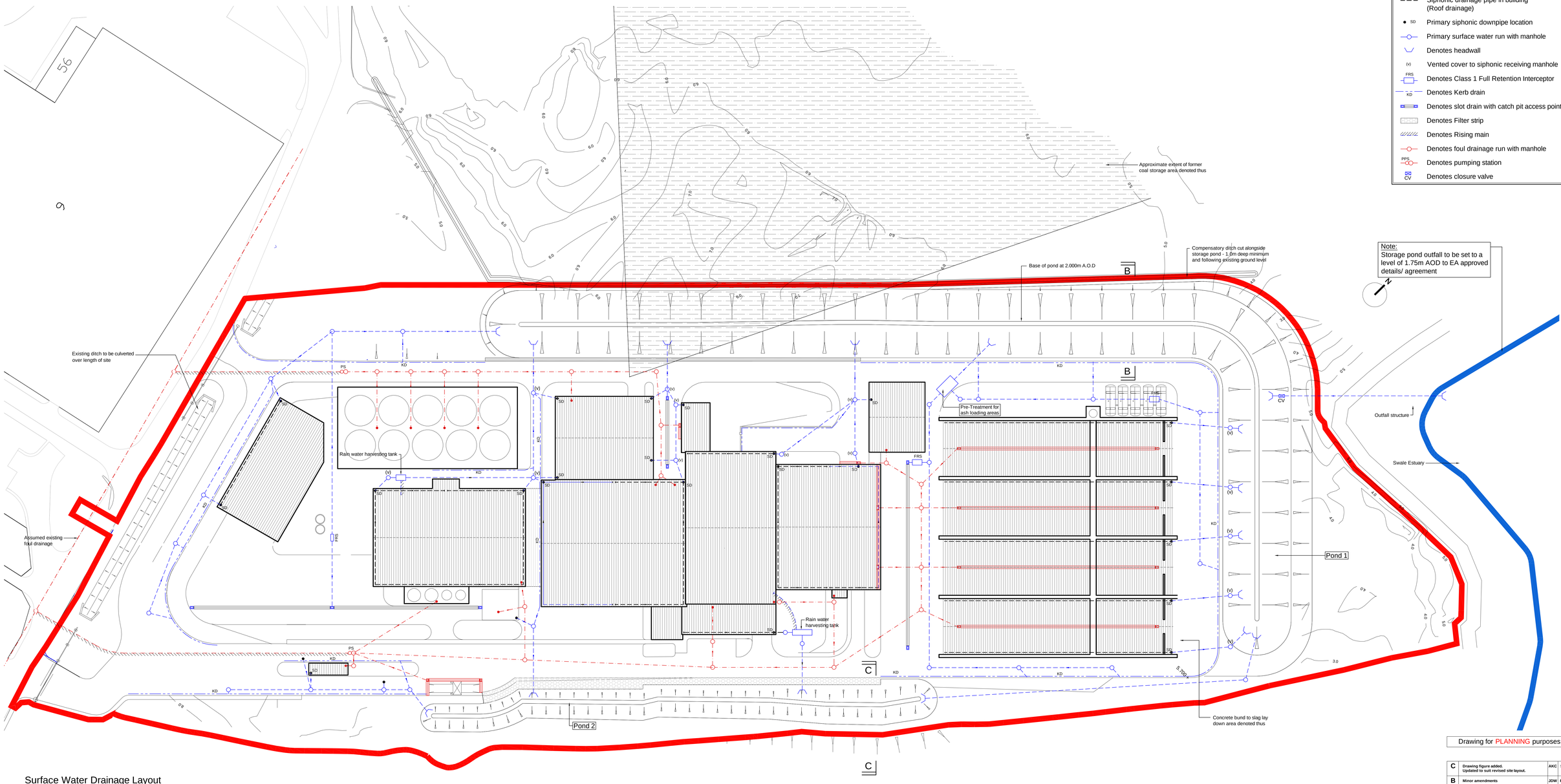
Figure 4.24

notes :

1. If this drawing has been received electronically it is the recipients responsibility to print the document to the correct scale.
2. All dimensions are in millimetres unless stated otherwise. It is recommended that information is not scaled off this drawing.
3. This drawing should be read in conjunction with all other relevant drawings and specifications.

Key:

- Siphonic drainage pipe in building (Roof drainage)
- SD — Primary siphonic downpipe location
- Primary surface water run with manhole
- Denotes headwall
- (v) — Vented cover to siphonic receiving manhole
- FRS — Denotes Class 1 Full Retention Interceptor
- KD — Denotes Kerb drain
- Denotes slot drain with catch pit access point
- Denotes Filter strip
- Denotes Rising main
- Denotes foul drainage run with manhole
- PPS — Denotes pumping station
- CV — Denotes closure valve




Note:
Storage pond outfall to be set to a level of 1.75m AOD to EA approved details/ agreement

Surface Water Drainage Layout
Scale 1:500

KWDS

Total storage volume pond 1 + pond 2 provided = 3200m³

Note:
All drainage inicative/preliminary only - all to be confirmed by detailed deign

Surface Water Drainage Design Assumptions

(i) Site drainage apparatus to discharge freely into storage ponds for all design rainfall events.
(ii) Site drainage designed for no flooding for all design rainfall events up to 1:100 year return periods.
(iii) Storage volume provided is that required for maximum anticipated storm surge spring high tide level of 5.200m A.O.D, storm surge neap high tide level of 4.10m, tide locked discharge period of 9.5 hours Max and maximum storm surge duration of 24 hours.
(iv) Outfall level = 1.75m A.O.D
(v) Drainage layout to be read in conjunction with RPS design philosophy documents

10m SCALE 1:500

Drawing for PLANNING purposes only

| rev | amendments | by | dcd | date |
|---|---|---|---|---|
| C | Drawing figure added. Updated to suit revised site layout. | AKC | ST | 16/12/09 |
| B | Minor amendments | JDW | RM | 04/11/09 |
| A | Compensatory ditch indicated. | AKC | ST | 29/10/09 |

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Client: stREGIS

Project: Kemsley Sustainable Energy Plant

Title: Proposed Drainage Layout

| Drawing Status | Date Created | Drawing Scale |
|---|---|---|
| Preliminary | September 2009 | 1:500 |
| Project Leader | Drawn By | Initial Review |
| AWY | AKC | ST |

Drawing Number: 16315 / A0 / 0301
Rev: C

Figure 4.25

notes :

1. If this drawing has been received electronically it is the recipients responsibility to print the document to the correct scale.
2. All dimensions are in millimetres unless stated otherwise. It is recommended that information is not scaled off this drawing.
3. This drawing should be read in conjunction with all other relevant drawings and specifications.


Proposed Levels
Scale 1:500

Kemsley Waste Disposal Site KWDS

All levels preliminary - TBC by detailed design

Drawing for PLANNING purposes only

Key

- Proposed Level (m A.O.D.)
- Existing Level (m A.O.D.)
- Existing contour
- UEA E.ON building designation
- Fall line
- Slope down

Note:
Existing topographical information obtained from RPS drawing JKK5098-1C

Site layout taken from E.ON drawing: Preliminary 16/09/09

All levels relative to ordinance datum

10m SCALE 1:500

| rev | amendments | by | ckd | date |
|---|---|---|---|---|
| A | BH 1-3 indicated. Ecological ditch position indicated. Drawing figure added. Levels updated to suit revised site layout. | JDW | RM | 16/12/09 |

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Client: stREGIS

Project: Kemsley Sustainable Energy Plant

Title: Proposed Levels/ Site Plan

| Drawing Status | Date Created | Drawing Scale |
|---|---|---|
| Preliminary | September 2009 | 1:500 |
| Project Leader | Drawn By | Initial Review |
| AWY | AKC | ST |

Drawing Number: 16315 / A0 / 0600
Rev: A

Figure 4.26

# Appendix C

**WINDES microdrainage results showing storage volumes associated with zero flow to estuary during design tidal events.**

## Summary of Results for 100 year Return Period (+20%)

| Storm Duration (mins) | Maximum Control (l/s) | Maximum Outflow (l/s) | Maximum Water Level (m OD) | Maximum Depth (m) | Maximum Volume (m³) | Status | |
|---|---|---|---|---|---|---|---|
| 15 Summer | 0.0 | 0.0 | 0.3377 | 0.3377 | 1013.3 | O K | |
| 30 Summer | 0.0 | 0.0 | 0.4437 | 0.4437 | 1331.2 | O K | |
| 60 Summer | 0.0 | 0.0 | 0.5558 | 0.5558 | 1666.5 | O K | |
| 120 Summer | 0.0 | 0.0 | 0.6723 | 0.6723 | 2016.5 | O K | |
| 180 Summer | 0.0 | 0.0 | 0.7418 | 0.7418 | 2224.8 | O K | |
| 240 Summer | 0.0 | 0.0 | 0.7908 | 0.7908 | 2371.7 | O K | |
| 360 Summer | 0.0 | 0.0 | 0.8608 | 0.8608 | 2582.6 | O K | |
| 480 Summer | 0.0 | 0.0 | 0.9148 | 0.9148 | 2744.7 | O K | |
| 600 Summer | 0.0 | 0.0 | 0.9583 | 0.9583 | 2875.2 | O K | |
| 15 Winter | 0.0 | 0.0 | 0.3782 | 0.3782 | 1134.9 | O K | |
| 30 Winter | 0.0 | 0.0 | 0.4972 | 0.4972 | 1490.9 | O K | |
| 60 Winter | 0.0 | 0.0 | 0.6223 | 0.6223 | 1866.5 | O K | |
| 120 Winter | 0.0 | 0.0 | 0.7528 | 0.7528 | 2258.4 | O K | |
| 180 Winter | 0.0 | 0.0 | 0.8308 | 0.8308 | 2491.8 | O K | -Normal spring tide |
| 240 Winter | 0.0 | 0.0 | 0.8853 | 0.8853 | 2656.3 | O K | |
| 360 Winter | 0.0 | 0.0 | 0.9643 | 0.9643 | 2892.6 | O K | |
| 480 Winter | 0.0 | 0.0 | 1.0248 | 1.0248 | 3074.1 | O K | |
| 600 Winter | 0.0 | 0.0 | 1.0733 | 1.0733 | 3220.3 | O K | -Neap tide plus storm surge |

| Storm Duration (mins) | Rain (mm/hr) | Time-Peak (mins) |
|---|---|---|
| 15 Summer | 115.18 | 19 |
| 30 Summer | 75.66 | 34 |
| 60 Summer | 47.36 | 64 |
| 120 Summer | 28.65 | 124 |
| 180 Summer | 21.07 | 184 |
| 240 Summer | 16.85 | 244 |
| 360 Summer | 12.23 | 364 |
| 480 Summer | 9.75 | 484 |
| 600 Summer | 8.17 | 604 |
| 15 Winter | 115.18 | 19 |
| 30 Winter | 75.66 | 34 |
| 60 Winter | 47.36 | 64 |
| 120 Winter | 28.65 | 124 |
| 180 Winter | 21.07 | 184 |
| 240 Winter | 16.85 | 244 |
| 360 Winter | 12.23 | 364 |
| 480 Winter | 9.75 | 484 |
| 600 Winter | 8.17 | 604 |

## Rainfall Details

| | | | |
|---|---|---|---|
| Region | ENG+WAL | Shortest Storm (mins) | 15 |
| Return Period (years) | 100 | Longest Storm (mins) | 600 |
| M5-60 (mm) | 19.500 | Summer Storms | Yes |
| Ratio-R | 0.400 | Winter Storms | Yes |
| Cv (Summer) | 0.750 | Climate Change % | +20 |
| Cv (Winter) | 0.840 | | |

## Time / Area Diagram

Total Area (ha) = 4.692

| Time from: | (mins) to: | Area (ha) |
|---|---|---|
| 0 | 4 | 4.692 |

Emailed to Jonathan Morley

Jonathan.morley@rpsgroup.com

**Our ref:** CSC/2009/0552b.let
**Your ref:**

**Date:** 20 August 2009

Dear Jonathan

**RE: Update of Flood Risk Information For St Regis Paper Mill, Kemsley, Sittingbourne, Kent**

I refer to your information request received in this office on 30 June.

Having consulted with various team, I am now in a position to provide you with the following information,

Our Flood Map shows the natural floodplain ignoring the presence and effect of defences for England and Wales, and therefore the areas potentially at risk of flooding from rivers or the sea.

The map indicates an area with a 1 in 100 (1%) chance of flooding from rivers in any given year and an area with a 1 in 200 (0.5%) chance of flooding in any given year from the sea. The map also shows:

- The area with a 1 in 1000 (0.1%) chance of flooding from rivers and/or the sea in any given year. This is also known as the Extreme Flood Outline (EFO).
- The location of some flood defences and the areas that benefit from them;
- Information on the likelihood of flooding at any location taking account of the presence and effect of flood defences.

Further to your recent enquiry an extract of our Flood Map is enclosed for your information. It shows that property/site partially lies within the outline of the area with a 1 in 200 (0.5%) chance of flooding in any given year from the sea. The majority of the site however, is out side of the Extreme Flood Outline.

Orchard House, Endeavour Park, London Road, Addington, West Malling, Kent, ME19 5SH.
Customer services line: 08708 506 506
Email: enquiries@environment-agency.gov.uk
www.environment-agency.gov.uk

The Flood Map is intended to act as a guide to indicate the potential risk of flooding. When producing it we use the best data available to us at the time and also take into account historic flooding and local knowledge. The Flood Map is then updated on a quarterly basis to account for any amendments required. These amendments are then displayed on the internet.

The Flood Map only indicates the floodplain, as it would exist without defences present. This is because although flood defences reduce the risk of flooding they cannot completely remove that risk.

You should note that this information is based on that currently available as of the date of this letter. You may feel it is appropriate to contact our office at regular intervals, to check whether any amendments/ improvements have been made. Should you re-contact us after a period of time, please quote the above reference in order to help us deal with your query.

The groundwater level data is held by the Monitoring and Data team and I am waiting for a response,

As far as groundwater vulnerability goes, the site is underlain by the London Clay, which is an unproductive strata and thus the groundwater vulnerability is low. Risks to controlled waters are mainly concerning drainage getting into the wetlands and rivers in the locality. You can gather a lot of information by referring to the "whats in your backyard" on our website.

http://www.environment-agency.gov.uk/homeandleisure/default.aspx

I also enclose a copy of the Environment Agency's Notice. Please note the conditions listed and let me know if you consider that you may require a special data licence. This information is provided subject to the enclosed notice, which you should read.

I hope the enclosed information is sufficient for your current requirements. If you require any further assistance please do not hesitate to get in touch.

Yours sincerely

Karen Rigg

**External Relations Assistant**

Direct dial 01732 223224
Direct fax 01732 223289
E-mail sokes@environment-agency.gov.uk

Cont/d..

## Jonathan Morley

**From:** Williamson, Joseph [joseph.williamson@environment-agency.gov.uk]
**Sent:** 13 July 2009 14:46
**To:** Jonathan Morley
**Subject:** RE: Regis Paper Mill, Kemsley, Sittingbourne, Kent.
**Attachments:** Regis Paper Mill, Kemsley, Sittingbourne, Kent..pdf

Good afternoon Jonathan.

Please find attached a copy of the flood map for the area referred to in your e-mail. As can be seen, the site lies partially within Flood Zones 2 & 3.

Any application for development on this site would therefore need to be accompanied by a Flood Risk Assessment (this would still be the case if it weren't within the Flood Zones as the site is over 1 ha in area).

As it likely that it is intended to discharge the surface water directly to the tidal creek, it is unlikely that we will require attenuation of the surface water to reduce the rate at which water flows to this watercourse. However, we would advise that SuDS are utilised and that space is made available for the attenuation of water should an extreme rainfall event coincide with an extreme tidal event, resulting in the site becoming tide-locked (and therefore unable to drain). We would advise that the 100yr rainfall event (with an additional 20% allowance for climate change) be investigated as the critical event. For information, the maximum predicted tide level for this area (to the year 2070) is approximately 5.2maODN.

Please contact me if I can be of further assistance.

Kind regards,

**Joseph Williamson**
Development and Flood Risk Officer

☎ 01732 222905
Joseph.williamson@environment-agency.gov.uk
✉ Orchard House, Endeavour Park, London Road, Addington, West Malling, Kent, ME19 5SH

Have a look at the Environment Agency's Guide for Developers for advice on how to add value to a site, and make developments better for people and the environment.

---

**From:** Jonathan Morley [mailto:jonathan.morley@rpsgroup.com]
**Sent:** 30 June 2009 13:45
**To:** Williamson, Joseph
**Subject:**



Dear Joseph,

***Data enquiry regarding flood information for St Regis Paper Mill, Sittingbourne, Kent.***

Further to our conversation last week please find information outlining the proposed development on a site in Kemsley. The address of the site is ***St Regis Paper Mill, Kemsley, Sittingbourne, Kent.*** The grid reference of the site is 592070 166551. I have attached a map showing the location of the site.

In summary, the proposed development incorporates:

- A Sustainable Energy Plant with a fuel stock capacity of 500,000 tonnes per annum
- An ash treatment facility to stabilise up to 150,00 tpa of boiler ash;
- Ancillary development including internal roads, oarking, weighbridge, water treatment tanks, fuel tanks, fencing, landscaping and offices;
- The facility will use combustible non hazardous waste including solid recovered fuel (SRF) as the fuel source.

Following a review of the EA's website it is my understanding that the site is located within flood zone 1 and not affected by fluvial or tidal flood events. Therefore please could you confirm the EA run-off rate requirements for the proposed development?

Kind regards

**Jonathan Morley BSc (Hons) - Consultant Geo-Environmental Engineer**

**RPS Planning & Development Ltd, 3rd Floor, 34 Lisbon Street, Leeds LS1 4LX**

**☎ switchboard: 0113 220 6190 ☎: 07920 566 017 🖷 0113 243 9161 ✉ jonathan.morley@rpsgroup.com**

## Jonathan Morley

**From:** Williamson, Joseph [joseph.williamson@environment-agency.gov.uk]
**Sent:** 16 October 2009 13:51
**To:** Jonathan Morley
**Subject:** RE: Regis Paper Mill, Kemsley, Sittingbourne, Kent.
**Follow Up Flag:** Follow up
**Flag Status:** Red

Good afternoon Jonathan.

I can confirm that the below will be acceptable provided my previous e-mail is referred to with regard to SuDS and surface-water storage during extreme tidal events. It must also be ensured that the runoff to the creek is uncontaminated by any of the processes/materials from the site.

Any works whatsoever within 15m of the top of the bank of the creek or from the landward toe of any flood defence (if one exists) requires the consent of the Environment Agency. I am the consenting officer in this area for any such works; if you let me know of the nature and scale of these, we can start that process.

Kind regards,

**Joseph Williamson**
Development and Flood Risk Officer

☎ 01732 222905
Joseph.williamson@environment-agency.gov.uk
✉ Orchard House, Endeavour Park, London Road, Addington, West Malling, Kent, ME19 5SH

Have a look at the Environment Agency's Guide for Developers for advice on how to add value to a site, and make developments better for people and the environment.

---

**From:** Jonathan Morley [mailto:jonathan.morley@rpsgroup.com]
**Sent:** 05 October 2009 15:17
**To:** Williamson, Joseph
**Cc:** Paul Hardwick
**Subject:** Regis Paper Mill, Kemsley, Sittingbourne, Kent.
**Importance:** High

Good Afternoon Joseph,

Thank you for the telephone conversation last week.

Just to confirm, that we are now looking to raise the Kemsley Development at St Regis Paper Mill to a constructional level of 5.8mODN.

This will elevate the site above the extreme tidal flood level of 5.2mODN with 0.6m left for freeboard.

We are then looking to discharge any runoff from the site including 1 in 100 year storm event water directly into the Swale.

Please can you confirm that this will be acceptable to the Environment Agency?

Furthermore, I understand that the EA will require a consent application for constructional works within 15m of flood defences, please can you provide me with further information how we would proceed with the application.

Thank you in advance

Kind regards

**Jonathan Morley BSc (Hons) - Consultant Geo-Environmental Engineer**

**RPS Planning & Development Ltd, 3rd Floor, 34 Lisbon Street, Leeds LS1 4LX**

**☎ switchboard: 0113 220 6190 ☎: 07920 566 017 🖹 0113 243 9161 ✉ jonathan.morley@rpsgroup.com**



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Any application for development on this site would therefore need to be accompanied by a Flood Risk Assessment (this would still be the case if it weren't within the Flood Zones as the site is over 1 ha in area).

As it likely that it is intended to discharge the surface water directly to the tidal creek, it is unlikely that we will require attenuation of the surface water to reduce the rate at which water flows to this watercourse. However, we would advise that SuDS are utilised and that space is made available for the attenuation of water should an extreme rainfall event coincide with an extreme tidal event, resulting in the site becoming tide-locked (and therefore unable to drain). We would advise that the 100yr rainfall event (with an additional 20% allowance for climate change) be investigated as the critical event. For information, the maximum predicted tide level for this area (to the year 2070) is approximately 5.2maODN.

Please contact me if I can be of further assistance.

Kind regards,

**Joseph Williamson**
Development and Flood Risk Officer

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Joseph.williamson@environment-agency.gov.uk
✉ Orchard House, Endeavour Park, London Road, Addington, West Malling, Kent, ME19 5SH

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---

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**Sent:** 30 June 2009 13:45
**To:** Williamson, Joseph
**Subject:**

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- Ancillary development including internal roads, oarking, weighbridge, water treatment tanks, fuel tanks, fencing, landscaping and offices;
- The facility will use combustible non hazardous waste including solid recovered fuel (SRF) as the fuel source.

Following a review of the EA's website it is my understanding that the site is located within flood zone 1 and not affected by fluvial or tidal flood events. Therefore please could you confirm the EA run-off rate requirements for the proposed development?

Kind regards

**Jonathan Morley BSc (Hons) - Consultant Geo-Environmental Engineer**

**RPS Planning & Development Ltd, 3rd Floor, 34 Lisbon Street, Leeds LS1 4LX**

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please don't print this e-mail unless you really need to.

www.environment-agency.gov.uk

## Jonathan Morley

**From:** Simon Turton
**Sent:** 27 October 2009 11:44
**To:** Jonathan Morley
**Subject:** FW: Regis Paper Mill, Kemsley, Sittingbourne Kent-surface water drainage.
**Attachments:** kemsleysummary.pdf

Jonathan-

My e-mail correspondence with the EA – PLUS Windes summary sheet.

Simon

**Simon Turton**
**Principal Engineer**

RPS
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Tel: +44 (0)1636 605700 • Fax: +44 (0)1636 610696 • www.rpsgroup.com

---

**From:** Williamson, Joseph [mailto:joseph.williamson@environment-agency.gov.uk]
**Sent:** 14 October 2009 12:15
**To:** Simon Turton
**Subject:** RE: Regis Paper Mill, Kemsley, Sittingbourne Kent-surface water drainage.

Good afternoon Simon.

I have the following information for you. Of greatest relevance are the levels relative to Ordnance Datum (as this is the datum which the predicted maximum surge tide levels are measured against). As you can see, the present day MHWS at Milton Creek is 2.8maODN. The combined effects of a storm-surge and climate change is likely to raise this to a static-tide level of 5.2maODN by 2070. Assuming a storm-surge may last in the region of 2 tidal cycles (approx 24hrs), the additional 2.4m would result in a low-water level of 0.2maODN. We would recommend that a certain amount of freeboard is also incorporated in your outfall design to account for wave action.

Please contact me if I can be of further assistance.

Kind regards,

**Joseph Williamson**
Development and Flood Risk Officer

☎ 01732 222905
💻 Joseph.williamson@environment-agency.gov.uk
✉ Orchard House, Endeavour Park, London Road, Addington, West Malling, Kent, ME19 5SH

Have a look at the Environment Agency's Guide for Developers for advice on how to add value to a site, and make developments better for people and the environment.

Tide Levels In Milton Creek Relative To **Ordnance Datum**

Mean High Water Springs (MHWS) 2.8 m

Mean High Water Neaps (MHWN) 1.7 m

Mean Tide Level 0.3 m

Mean Low Water Neaps (MLWN) -1.3 m

Mean Low Water Springs (MLWS) -2.2 m

Tide Levels In Milton Creek Relative to **Chart Datum**

Mean High Water Springs (MHWS 5.6 m

Mean High Water Neaps (MHWN) 4.5 m

Mean Tide Level 3.1 m

Mean Low Water Neaps (MLWN)1.5 m

Mean Low Water Springs (MLWS) 0.6 m

---

**From:** Simon Turton [mailto:simon.turton@rpsgroup.com]
**Sent:** 09 October 2009 10:10
**To:** Simon Turton; Williamson, Joseph
**Cc:** Andy Young; Richard Smyth
**Subject:** RE: Regis Paper Mill, Kemsley, Sittingbourne Kent-surface water drainage.



Joseph-

Many thanks for getting back to me the other day – as discussed we would be very grateful if you could look into the question of the normal high and low tide levels.

Additionally –and having thought about this some more following our discussion of the nature of the storm surge tide :

We note your comments that the storm surge event will follow a diurnal tidal timescale –which I think makes life easier for us in determining the storage requirements. However we would need to know the low tide level associated with the storm surge event in addition to the 5.2 m high tide level already provided. Again if this information is known to the EA it would be much appreciated if it could be made available to us.

Simon

**Simon Turton**
**Principal Engineer**

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---

**From:** Simon Turton
**Sent:** 23 September 2009 17:42
**To:** 'joseph.williamson@environment-agency.gov.uk'
**Cc:** Andy Young; Richard Smyth

**Subject:** Regis Paper Mill, Kemsley, Sittingbourne Kent-surface water drainage.

Joseph-

Further to our discussions yesterday and your e-mail to my colleague Jonathan Morley on 13th July.

Basically, I will be producing a surface water drainage design philosophy document which we envisage will be a stand alone document but will read with the FRA.

We intend to investigate discharge of the surface water unattenuated to the tidal creek. We understand the requirement to accommodate the co-incidence of an extreme rainfall event with an extreme tidal event by the provision of suitable storage –all as per your e-mail. In order to progress this envisaged approach however we would be very grateful if you could provide the additional information and clarifications outlined below. Obviously any further comments the EA may have as a result of this discussion would of course also be welcome.

1. Our overall approach to the surface water management of the site is as follows. Run off from the buildings and hard surfaces is to be discharged freely into a storage swale or pond constructed as part of the works –which we envisage to be located on the northwest boundary of the site. The pond would represent a SUDS approach in terms of source control and would also contribute to treatment of the stored water. A review of the available ground information data would appear to rule out any infiltration techniques. Under normal tidal conditions the volume of water in the pond will be discharged unattenuated into the Swale estuary. Our initial thoughts are that we would propose to set the level of the storage pond outfall to just above the normal low tide level. Thus the pond would drain at low tides but would be subject to submerged discharge conditions under normal high tide –which would lead to water being retained in the pond during the high tide periods. We would have more than enough storage capacity to do this –as explained below- and we think this approach could be considered as a likely habitat enhancement –as a wetland type environment would be created in the pond. Habitat enhancement of this type is recommended in the Habitat scoping survey prepared by RPS. However the required outfall level may also be influenced by the tidal coincident storage requirements outlined below.

   It would therefore be appreciated if you could provide us with information relating to the mean estuary water level and the normal high and low tide levels. It is our assumption that the 5.2m AOD 'maximum predicted tide level' indicated in your e-mail is the tide event co-incident with a storm surge –and thus a rather exceptional event.

2. In order to accommodate the 1 in 100 year rainfall event coinciding with an extreme tide event we would anticipate the following approach : Under this condition we would not be able to discharge any run-off water to the Swale estuary and would have to store all the water associated with 1 in 100 year events on site-this will amount to a volume of several thousand cubic meters. We would wish to minimise this volume as much as possible – not least because even under this condition we would wish to discharge the site freely at all times into the pond such that we don't cause flooding on the site. The lower the surface level of this storage volume the easier this becomes. This calls into question the determination of **duration**. Clearly we need to consider the time period(s) that the critical tide event would make discharge possible/impossible. The required storage could then be rationally designed for the full range of 1 in 100 year storms as we would know when the periods of unattenuated discharge would be available within the critical tidal event. We do not know whether the storm tide event you refer to follows the normal diurnal tide periods or whether completely different timescales are involved. We would appreciate your advise in this matter –because as you can see it will be fundamental in determining a workable storage volume.

   It would be greatly appreciated if the time –level data related to the maximum predicted tide could be made available to us-would this be possible ?

   The bank level to the constructed swale or pond would be set to 5.80 m AOD to ensure that the maximum tide did not inundate the site. We would also look to ensure that in normal tidal conditions the pond could empty to half full within 24 hours –which is the normal practice- in order that protection against a significant rainfall event occurring soon after the design event.

   The above would -we hope-show that the design of the surface water management system as described in outline detail would protect the site from flooding. We would wish to work this up into a full philosophy document –but it would appear we require additional information re : tidal events to do this properly.

We look forward to receiving your comments.

Simon

**Simon Turton**
**Principal Engineer**

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# Appendix 11.1 – Legislation and Planning Context

**Legislation**

Through the Town and Country Planning Act 1991 the Environment Agency will seek to ensure that Planning Permission contains conditions designed to protect water resources through planning obligations with developers and Local Authorities for the identification and remediation of contaminated land.

In England, Part IIA of the EPA, as introduced by Section 57 of the Environment Act 1995 came into effect in England in April 2000 with the implementation of the Contaminated Land Regulations 2000 and now superseded by The Contaminated Land Regulations 2006. Under Part IIA of the EPA, sites are identified as 'contaminated land' if they are causing, or if there is a significant possibility of causing significant harm, or if the site is causing or could cause pollution of controlled waters, which are, defined as including both surface waters and groundwater. This regime is implemented by the Local Authorities and the Environment Agency and is subject to statutory guidance. The Water Act 2003 introduced a revision to the wording of the EPA, which now states that in order to be determined as 'Contaminated Land' a site must be causing, or could cause, significant pollution of controlled waters. The Water Resource Act 1991 gives the Environment Agency powers to take action to prevent or remedy the pollution of controlled waters.

Once a site is determined to be "Contaminated Land" then remediation is required to render significant pollutant linkages (i.e. the source-pathway-receptor relationships that are associated with significant harm and/or significant pollution of controlled waters) insignificant, subject to a test of reasonableness.

The Building Act 1984 and the Building Regulations 2000 are the two key legislative drivers when considering structural and design aspects of a development in terms of geotechnical properties of the ground and the presence of gas. As such these regulations may require measures to be undertaken to protect the fabric of a new building and its future occupants from the effects of contamination. Furthermore, the Regulations also require that buildings are constructed so that ground movement caused by swelling, shrinkage, freezing, landslip or subsidence of the sub-soils will not impair the stability of any part of the building.

*National Guidance*

Guidance on the implementation of the regime defined in The Contaminated Land (England) Regulations 2006 is provided in DETR Circular 01/2006.

The Model Procedures for the Management of Land Contamination (CLR11) (Environment Agency, 2005) have been developed to provide the technical framework for applying a risk management process when dealing with land affected by contamination. The process involves identifying, making decisions on and taking appropriate action to deal with land contamination in a way that is consistent with government policies and legislation within the UK.

The Groundwater Protection: Policy and Practice (2007) sets out the Environment Agency's framework for the regulation and management of groundwater in a series of four documents. Part 1 provides an overview of the EAs Core Policy and describes their aims and objectives for groundwater for policy makers, planners and the public. Part 2 provides the technical basis underpinning groundwater management, monitoring and risk assessment. Part 3 describes the tools used by specialists in the assessment and management of groundwater issues, with detailed policies for different sectors and activities provided in Part 4.

**National Planning Policy**

*Planning Policy Statement 23: Planning and Pollution Control*

Land contamination and its risk to health is a material consideration under planning and development control and applies to the intended use of the site. Existing guidance on assessing risks to health under the Town and Country Planning Acts is limited to the amended Planning Policy Statement (PPS23): 'Planning and Pollution Control'. The guidance states that "*The LPA should satisfy itself that the potential for contamination and any risks arising should be properly assessed and that the development incorporates any necessary remediation and subsequent management measures to deal with unacceptable risks*". The guidance also states that "*as a minimum, after carrying out development and commencement of its use, the land should not be capable of being determined as contaminated land under Part IIA of the EPA 1990.*"

Both of the above mentioned regimes are based on the Government's 'suitable for use' approach. This approach recognises that the risks associated with a site 'affected by ground contamination' will vary depending on the use of the site and its environmental setting. This approach consists of three elements:

- Ensuring that land is suitable for its current use;
- Ensuring that land is made suitable for any new use, as planning permission is given for that new use; and
- Limiting requirements for remediation to the works necessary to prevent unacceptable risks to human health or the environment in relation to the current or future use of the land for which planning permission is being sought.

It is the Government's intention that both these regimes should encourage voluntary action to address risks associated with ground contamination and that the statutory powers available under the Part IIA regime should only be utilised if voluntary action is not forthcoming.

*Planning Policy Guidance 14: Development on Unstable Land*

National Planning Policy Guidance (PPG) on the geotechnical condition of soils is PPG 14: 'Development on Unstable Land' (Ref 7-39). PPG14 identifies the situations that can result in and arise from the development of unstable ground. The guidance aims to:

- Minimise the risks and effects of land instability on property, infrastructure and the public;
- Help to ensure that various types of development are not placed in unstable locations without appropriate precautions;
- Bring unstable land, wherever possible, back into productive use; and
- Assist in safeguarding public and private investment through a full appreciation of site conditions and necessary precautionary measures;

**Regional Planning Policy**

The South East Plan was adopted as the Regional Spatial Strategy for the South of England in May 2009 and replaced the Regional Planning Guidance for the South East (RPG9). This document provides general guidance for development planning throughout the Region and identifies the role that local authorities and key agencies can play in improving the local environment and public health and safety, including restoring derelict and contaminated land. Individual policies include relevant to hydrogeology and ground conditions include: Policy NRM1 (Sustainable Water Resources and Groundwater Quality) - Water supply and ground water will be maintained and enhanced through avoiding adverse effects of development on the water environment; Policy NRM2 (water Quality) - Water quality will be maintained and enhanced through avoiding adverse effects of development on the water environment; and Policy NRM5 (Conservation and Improvement of Biodiversity) - Local planning authorities and other bodies shall avoid a net loss of biodiversity, and actively pursue opportunities to achieve a net gain across the region.

The Kent Waste Local Plan was adopted in March 1998. It is due for replacement in the form of a new-style Waste Development Framework. Policy W21 sets out that before planning permission for a waste management proposal the planning authority will need to be satisfied that the earth science and ecological interests of the site and its surroundings have been established and provision made for the safeguarding of irreplaceable and other important geological and geomorphological features.

**Local Planning Policy**

The proposed development is located within the Swale Borough Local Plan, which was adopted in 2008. Policy E3 set out the Development Control Policy for Land Contamination, as follows: on sites known, or suspected, to be contaminated, the Borough Council will only grant planning permission for development proposals if the developer agrees to undertake effective investigation and remediation work to overcome any identified hazard.

# Phase 1 Environmental Site Assessment

## Kemsley Paper Mill, Sittingbourne, Kent

## On behalf of E.ON

This document is Printed on FSC certified, 100% post-consumer recycled paper, bleached using an elemental chlorine- free process.

# Quality Management

| | | |
|---|---|---|
| **Prepared by:** | Liz Willmott | |
| **Reviewed by:** | Mike Willis | |
| **Authorised by:** | John Gallimore | |
| **Date:** | March 2010 | |
| **Revision:** | 2 | |
| **Project Number:** | JER3773 | |
| **Document Reference:** | JER3773 R 100316 LW Kemsley Paper Mill P1 | |



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| **915-001** | **Proposed Site Layout** |

# Appendices

## Executive Summary

RPS Planning and Development, Chepstow were commissioned by E.ON to undertake a Phase 1 Environmental Site Assessment Report at Kemsley Paper Mill in Sittingbourne, Kent. The Phase 1 report will support the preparation of the Environmental Impact Assessment (EIA) for the site. It is proposed that a sustainable energy plant will be constructed on the site. The purpose of this report is to assess current site operations and determine the historical development and use of the site.

| | |
|---|---|
| **Site Details** | The 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. |
| **Site Use** | Currently the site for proposed Sustainable Energy Plant (SEP) has been used as a laydown area associated with the Phase 2 extension to an existing fluidised combustion plant associated with the existing CHP (combined Heat and Power) plant. There is also a large area of stockpiled material in the south-west of the site together with areas of marsh land. |
| **Site History** | 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 waste 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. |
| **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. |
| **Hydrogeology/Hydrology** | The London Clay is classified as a Non Aquifer; however the Chalk is classified as a Major Aquifer. The Swale estuary lies approximately 0.2km to the north-east of the site. |

It is recommended that in order to support the technical appendix of the Environmental Impact Assessment (EIA) intrusive site investigation works are undertaken at the site. A number of boreholes would be advanced to determine the shallow and deeper geotechnical and geoenvironmental nature of the site geology. Subsequent gas and groundwater sampling and analysis will be undertaken in order to inform the technical appendices.

# 1 Introduction

## 1.1 Background

RPS Planning and Development, Chepstow were commissioned by E.ON to undertake a Phase 1 Environmental Site Assessment Report and site walkover at Kemsley Paper Mill, Sittingbourne, Kent. The site is centred at National Gird Reference (NGR) 592170, 166640. 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.

## 1.2 Objectives

The objectives of this report are to:

- Determine the historical use of the site and of adjacent properties;
- Determine the likely existing environmental ground conditions, including geological, hydrogeological and hydrological settings together with any contamination issues;
- Undertake a thorough review of statutory and published environmental information currently available through a Landmark Envirocheck Report.

## 1.3 Limitations of the Desk Study

The report is limited to the information available at the time of enquiry from a Landmark Envirocheck Report, published environmental and geological data and visible features observed during the site walkover.

# 2 Methodology

## 2.1 Introduction

The environmental sensitivity of the site and surrounding areas together with potential risks to sensitive receptors associated with the site have been assessed using the maps, information databases and other literature resources available.

The methods of determining the environmental conditions and sensitivity of the site and neighbouring areas, from desk-based sources, are detailed in the following sections, with the results of the findings presented in Section 3.

## 2.2 Information Sources

The sources of information used to determine environmental conditions, site sensitivity and site use (current and historical) are detailed below. Sources of guidance followed are also referenced below:

- Landmark Envirocheck Report, 13th March 2009. Reference number 27464042. The full report is included in *Appendix 10.1*.
- Ordnance Survey (OS). 2002. Landranger Sheet 178, Thames Estuary – Rochester & Southend-on-Sea, 1:50,000.
- British Geological Survey (BGS), 1977. Chatham, England and Wales Sheet 272. Solid and Drift Geology 1:50,000.
- British Geological Survey (BGS), GeoIndex - http://www.bgs.ac.uk/GeoIndex/.
- Environment Agency (EA) website for floodplains maps and Source Protection Zones (SPZs), General Quality Assessment (GQA) data for river – www.environment-agency.gov.uk/maps/.
- Magic website, used for measuring distances from site to surface waters – www.magic.gov.uk.

## 2.3 Ground Conditions

### 2.3.1 Geology

The superficial (drift) and solid geology beneath the site was determined from BGS Sheet 272 – Chatham. A borehole log was purchased from the British Geological Survey (BGS) GeoIndex website; this borehole is located approximately 550m from the edge of the southern boundary of the site. A full appraisal of the anticipated superficial deposits and geological strata is provided in Section 3.7.

### 2.3.2 Geotechnical Issues / Mining instability

Potential geotechnical issues or mining affected areas, which may potentially impact current and future developments at the site, relating to stability (subsidence, landslips, mine workings, etc) are indicated in the Envirocheck Report (Ref. no. 27464042).

## 2.4 Hydrogeology

### 2.4.1 Regional and Area Hydrogeology

The hydrogeology of the area is an important factor in determining the sensitivity of the site and surrounding areas. Detailed information is provided in Section 3.8.

### 2.4.2 Groundwater Abstractions

Groundwater abstractions in the vicinity of the site could represent potential receptors to processes impacting groundwater at the site, such as contaminant leaching from soils in to groundwater and contamination already in groundwater beneath the site.

Licensed groundwater abstractions are detailed within the Envirocheck Report (Ref. no. 27464042) and are summarised in Section 3.8.3.

### 2.4.3 Groundwater Source Protection Zones

The proximity of an activity to a groundwater abstraction is one of the most important factors in assessing the risk to an existing groundwater resource. The orientation, shape and size of the zones are determined by the hydrogeological characteristics of the strata and the direction of groundwater flow. The zones identified by this classification are outlined below.

- Zone I (Inner Source Protection Zone)
- Zone II (Outer Source Protection Zone)
- Zone III (Total Catchment Zone)

The site location was checked against the Environment Agency (EA) Source Protection Zone (SPZ) maps to confirm whether the site is within the Inner (I), Outer (II) or Total Catchment (III) Zones of any public water supplies. An extract of the Groundwater Source Protection Zones of the area is included in the Envirocheck Report (Ref. no. 27464042).

### 2.4.4 Groundwater Vulnerability

Groundwater Vulnerability refers to potential impacts on groundwater from activities undertaken and contamination in soils etc. The Groundwater Vulnerability maps classify the geological units as Major, Minor and Non-Aquifers depending on their capacity for the storage of and ability to transmit groundwater. The classifications are described below.

Major Aquifer (highly permeable) – These are highly permeable formations usually with a known or probable presence of significant fracturing. They may be highly productive and able to support large abstractions for public supply and other purposes.

Minor Aquifer (variably permeable) – These can be fractured or potentially fractured rocks, which do not have a high primary permeability, or other formations of variable permeability including unconsolidated deposits. Although these aquifers will seldom produce large quantities of water for abstraction, they are important both for local supplies and in supplying base flow to rivers.

Non Aquifer (negligibly permeable) – Formations which are generally regarded as containing insignificant quantities of groundwater form a third group. However, groundwater flow through such rocks, although imperceptible, does take place and needs to be considered in assessing the risks associated with persistent pollutants. Some non-aquifers can yield water in sufficient quantities for domestic use.

In addition to the aquifer classification, soil vulnerability groups divide soils into three soil vulnerability classes and six sub-classes. Each is based on soil physical and chemical properties that affect the downward passage of water and contaminants.

Soils of High Leaching Potential (H) 1, 2, 3, U – Soils with little ability to attenuate diffuse source pollutants and in which non-adsorbed diffuse source pollutants and liquid discharges have the potential to move rapidly to underlying strata or to shallow groundwater.

Soils with Intermediate Leaching Potential (I) 1, 2 – Soils that have a moderate ability to attenuate diffuse source pollutants or in which it is possible that some non-adsorbed diffuse source pollutants and liquid discharges could penetrate the soil layer.

Soils with Low Leaching Potential – Soils in which pollutants are unlikely to penetrate the soil layer because either water movement is largely horizontal or they have the ability to attenuate diffuse pollutants. Lateral flow from these soils may contribute to groundwater recharge elsewhere in the catchment. These generally have a high clay content.

The Groundwater Vulnerability map of the area was used to identify the sensitivity of the aquifer unit beneath the site and the soils leaching potential. An extract of the Groundwater Vulnerability Map of the area is included in the Envirocheck Report (ref. no. 27464042). Further detail on groundwater issues is presented in Section 3.8.

## 2.5 Hydrology

### 2.5.1 Surface Waters

The proximity of surface waters is important to determine potential flood risk issues and potential receptors for migration of contaminants in groundwater or surface water discharges from the site.

The presence of surface water features, including streams, rivers, ditches, ponds and coastal waters has been determined from Ordnance Survey maps and the site walkover. A summary of relevant hydrological issues is provided in Section 3.9.

### 2.5.2 Flood Risk

A floodplain is the natural ‘overspill’ area when a river rises above its banks or when high tides or stormy seas cause flooding of low-lying coastal areas. Floodplains may therefore be fluvial or coastal.

The floodplain maps show the extent of flooding for a 1:100 (1 %) chance of flooding each year.

Planning Policy Statement 25 (PPS25) sets out government policy on development and flood risk. Its aims are to ensure that flood risk is taken into account at all stages in the planning process to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas of highest risk. Where new development is necessary in such areas, the policy aims to make it safe, without increasing flood risk elsewhere and where possible reduce flood risk overall.

This replaces Planning Policy Guidance Note 25: Development and Flood Risk (PPG25), published July 2001.

The Environment Agency floodplain data (www.environment-agency.gov.uk/maps/) was used to assess whether the site was in the floodplain, or within 100 m of a floodplain. An extract of the floodplain map of the area is included in the Envirocheck Report (ref. no. 27464042).

## 2.6 Land Use

The current and historical land use of the site and adjacent areas is important in determining potential risks associated with activities undertaken on or near the site.

### 2.6.1 Historical Land-Use

The Landmark Envirocheck Report (Ref. no. 27464042) includes a series of historical Ordnance Survey maps. These have been used to provide information about the history of the site and surrounding area, and to determine the presence of any potentially contaminating activities. A full summary of site history is provided in Section 3.5.

### 2.6.2 Conservation Areas and Sensitive Land Use

The Landmark Envirocheck Report (Ref. no. 27464042) was used to determine any Conservation Areas within a 2 km radius of the site. These areas may limit activities undertaken within their boundaries, or reflect the general sensitivity of an area.

# 3 Background Information

## 3.1 Site Location

The site is located on land adjacent to and immediately north-east of the existing Kemsley Paper Mill at NGR 592170, 166640 as shown on Drawing JER3773-001. It lies 3km to the north of the centre of Sittingbourne and 1.3km to the north-east of Kemsley town centre. The village of Iwade is located approximately 2.5km to the north-west beyond the A249 which links the town of Sheerness (8km to the north) on the Isle of Sheppey with Sittingbourne.

The proposed Sustainable Energy Plant (SEP) site occupies an area of approximately 5 hectares as shown on Drawing 915-001. The topography of the site and surrounding area is generally flat; the elevation of the site is approximately 5m Above Ordnance Datum (AOD).

A site walkover was undertaken on 17th March 2009 to view and photograph any existing structures and land uses. Plates are presented in *Appendix A* detailing the site walkover and site setting.

## 3.2 Current Site Use

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

The site for proposed Sustainable Energy Plant (SEP) has recently been used as a laydown area associated with the Phase 2 extension to the existing fluidised combustion plant associated with the existing CHP (combined Heat and Power) plant.

Plate 9 within *Appendix A* shows a number of paper recycling skips stored in the laydown area of the site, the laydown area also contains a variety of building materials, tanks and drums (Plate 14). Plate 10 shows a makeshift bund structure which contains various full drums and other containers. There are a number of decommissioned storage tanks from the St. Regis Paper Mill stored on the site (Plate 15) together with various storage vessels, drums and gas cylinders strewn across the area (Plates 16 and 18).

Plates 3 and 5 in *Appendix A* show that there is a large extent of stockpiled materials in the south-west of the development site associated with the recent CHP plant construction phase.

The access track that runs along the southern boundary of the site can be seen on Plates 1 and 2, beyond the access road to the south is a landfill. Plate 2 shows that the site has been raised up with Made Ground by approximately 2.5m above the flood plain. Further north-east along the access track there is ponding of surface water as shown on Plate 6.

The north-eastern area of the proposed Sustainable Energy Plant (SEP) site is largely deserted land with sparse vegetative cover. The ground is Made Ground with an estimated thickness of 2 – 2.5 m.

## 3.3 Sustainable Energy Plant (SEP)

E.ON is proposing to develop a sustainable energy plant (SEP) which will use municipal solid waste (MSW), commercial waste and Solid Recovered Fuel (SRF) as the fuel.

The proposed Sustainable Energy Plant (SEP) will comprise:

- A Combined Heat and Power Plant with a fuel stock capacity of up to approximately 500,000 tonnes per annum (tpa);
- An ash treatment facility to stabilise up to 150,000 tpa of boiler ash;
- Ancillary development including internal roads, parking, weighbridge, water treatment tanks, fuel tanks, fencing, landscaping and offices;
- The facility will predominantly use combustible non hazardous waste including solid recovered fuel (SRF) as the fuel source.

The sustainable energy plant (SEP) will be comprised of up to three individual but identical process lines. Each line will consist of a combustion zone, heat recovery zone and a flue gas treatment area before the cleaned gasses are released to atmosphere via a stack.

All fuel feedstock will be delivered pre-treated to the plant by means of bulk transporters. No processing of waste fuel stock will take place on site. The fuel stock storage bunker and tipping floor will be enclosed within the main Plant building. Air will continuously be drawing into the main combustion plant to enhance ventilation and minimise the escape of any odours.

Two automated overhead grabbing cranes will feed the fuel stock into the combustion units via an inclined feed chute. The feed chute exits onto the combustion grate.

A preferred site for the sustainable energy plant (SEP) was chosen and is located to the north east and adjacent to the existing paper mill, as shown on Drawing 915-001.

## 3.4 Land Use of Adjacent Areas

The Kemsley Mill site currently comprises a paper mill and associated infrastructure, including access, car parks, and administration buildings.

Ridham Avenue is the main access road for the paper mill and runs in an east to west direction along the southern boundary of the paper mill complex and feeds directly into the site.

Coldharbour Marshes and Ridham Dock lie to the north of the site together with an area of land occupied by industrial works. A series of lagoons and drains also exist to the north and an electricity sub station is located to the west of the site from which pylons run northwards across the landscape.

To the immediate north, east and south of the site are Kemsley Marshes with the main mill complex occupying land to the south-west and west. An outfall and three large settlement lagoons are located just to the south of the site together with the railway head for the Sittingbourne and Kemsley Light Railway. The area to the north-east of the site is bounded by a sea wall which protects the land from the tidal effects of the Swale estuary.

The Swale lies to the north-east of the site separating it from the Isle of Sheppey to the north. Milton Creek is to the south of the site and flows north-east into The Swale. The route of a dismantled railway bisects the western and south-western wedge of the site as it runs southwards from Ridham Dock.

## 3.5 Historical Land Use

Land use indicated in the historical Ordnance Survey maps, included within the Envirocheck Report (Ref. no. 27464042) is summarised in *Table 3.1*.

***Table 3.1 Historical Land Use of the Site and Adjacent Areas***

| Date / Scale | Site History | History of Adjacent Areas |
|---|---|---|
| 1885, 1: 2,500 | One minor and two major roads cross through the site. A number of streams cross under the roads. A sheepfold is located along the north-western boundary. The north-western boundary banks up and then down to The Swale. | To the east and north-east the ground banks up and then slopes down to marshland and The Swale. The rest of the surrounding area is greenfield. |
| 1896-1898, 1: 2,500 and 1:10,000 | Footpath marked through the site. | Marshland is no longer shown and the high water mark of ordinary tides is shown to the north east. Brickworks to the south-east. |
| 1908-1909, 1: 2,500 and 1:10,000 | Sheepfold has been replaced by a sheepwash. | Brickworks are now disused. |
| 1939, 1: 2,500 | A tramway runs along the south-west boundary of the site and another through the centre of the site. Area of boulders around the tramway. Area of non-Coniferous trees in the far north-west. | An area of Saltings and a building exists to the north-east of the site. Area of trees to south. Large building marked as a Paper Mill to the south-west with sludge beds and filter tanks. A number of tramways run to the paper mill building. |
| 1964-1978, 1: 2,500 and 1:10,000 | Site is now denoted as Kemsley Marshes. A road runs along the north-west of site. A conveyer runs through the site from the paper mill to a jetty on The Swale. | Ponds and reeds exist to the north-west. To the east is an area of mud and boulders with an outfall, slipway and navigation light to The Swale. To the south are a number of ponds and drains, the buildings to the south-west have increased in size. To the north a pipeline runs from the end of a dismantled railway north-east towards The Swale. |
| 1978-1989, 1: 2,500 | A refuse tip is now marked in the northern and eastern areas of the site. | The ponds and reeds to the north-west have increased in size. The south-west comprises a number of lagoons and drains. There is also a large spoil heap to the south. |
| 1993, 1: 2,500 | Track marked along the south-west boundary of the site. | No significant change |

Anecdotal evidence suggests that the tramway that runs into the site, first observed in 1939, led to area of stockpiled coal that was held on the site providing the energy source for the site power generation.

## 3.6 Previous Investigations

### 3.6.1 Introduction

Two previous site investigations have been undertaken in the vicinity of the site.

The following information was provided during the site visit undertaken on 17th March 2009:

- Ground Solutions Group Ltd. Kemsley Mill Sittingbourne, IPPC Initial Site Report (Ground Condition Survey), December 2001, (*Ref. 1*)
- Enviros, Quarterly reports for September and November 2008 for Kemsley Landfill Monitoring (*Ref. 2*)

### 3.6.2 Ground Solutions Group Ltd. Report

Ground Solutions Group Ltd undertook a ground condition survey in December 2001. Their report comprised a total area of approximately 16 hectares and forms part of the Kemsley Mill complex. The proposed Sustainable Energy Plant (SEP) site falls within Area E of their report. At the time Area E comprised a Temporary Sludge Storage Plant. Ground cover comprised locally vegetated open ground with no formal hardstanding.

Their report describes that previous intrusive investigations have indicated the presence of a perched water table within the alluvium. Due to the sites proximity to The Swale and associated tidal influences, groundwater is likely to be brackish.

Area E is described to consist of temporary storage of effluent treatment sludge. Up until the 1960s raw effluent produced on site was discharged directly to Milton Creek. Milton Creek is approximately 300m south of the proposed Sustainable Energy Plant (SEP) area. During the mid 1960's a series of lagoons were constructed for solids settlement prior to discharge. The intrusive works undertaken in Area E include two trial pits (TP1 and TP2) and one hand auger hole (HA1).

The results of the intrusive investigations are summarised below:

- TP1 consists of Made Ground to 2.40m depth (end of borehole). Made Ground consist of a top layer of desiccated sludge cake (0.10m) underlain by a 1m of black gravelly sandy ash and clinker and coal fragments. This was then underlain by firm blue green brown clay with black organic speckling including fine rootlets. Flint gravel was present at 1.7m. At 1.6m depth a steady seepage of water was observed.
- TP2 consists of Made Ground up to 2.60m depth underlain by 0.40m of clay (end of borehole at 3.00m). Made Ground consists of a top layer of desiccated clay/sludge cake underlain by black very organic clay with abundant reed remnants, lead pipe was also found within this layer. The 0.40m of clay is believed to consist of natural alluvium.
- HA1 consists of Made Ground to 0.90m (end of borehole); this borehole was terminated due to very dense material. Made Ground consists of a top layer of desiccated sludge cake (0.05m) underlain by black gravelly sand/ sandy gravel.

Results from the analysis of samples taken in all three boreholes showed no evidence of significant contamination.

Across the entire 16 hectare site the deepest borehole advanced was to a depth of 5m, in which natural alluvium was found. Made Ground was found to a maximum depth of 2.9m within this exploratory position.

### 3.6.3 Enviros Reporting

To the south east of the site are proposed works for gas and leachate development which are associated with the site landfill. Along the access track between the site and the proposed works are four leachate and gas monitoring points (GP5, GP6, GTP7 and GP8). Results for these monitoring points have been provided for every month between April and September 2008. Table 3.2 details the maximum and minimum recorded values of methane, oxygen and carbon dioxide over the monitoring period.

***Table 3.2 Maximum and minimum values of ground gases recorded***

| Methane % | | Oxygen % | | Carbon Dioxide % | |
|---|---|---|---|---|---|
| Maximum | Minimum | Maximum | Minimum | Maximum | Minimum |
| 0.1 (GP5 and GP8) | 0% (in all monitoring points) | 21.3 (in GP7) | 0.8 (in GP5) | 19.9 (in GP5) | 0 (in GP6, GP7 and GP8) |

## 3.7 Geology

### 3.7.1 Introduction

The geology of the site has been determined from the BGS Geological Map of Chatham, England and Wales, Sheet 272 (Solid and Drift Geology 1:50,000), borehole logs from a previous investigation by Ground Solutions Group Ltd (*Ref. 1*) and a borehole log (ref. no.TQ96NW42) from the BGS GeoIndex website (*Appendix B*).

The deepest borehole advanced by Ground Solutions Group Ltd was 5m; therefore a deeper borehole log was purchased from the BGS. This borehole (TQ96NW42) is located 550m south of the southern site boundary and was advanced in June 1975 to a depth of 15m. Water strikes occurred at 4.3m and 6.0m below ground level (bgl) and standing water was then recorded at 1.7mbgl. The log shows layers of silt and clay to a depth of approximately 6.5m. Beneath this is a sandy flint gravel to approximately 10.3m depth. From 10.3m to 15m a silty sand was recorded. This suggests that possibly the Woolwich or Thanet Beds have been reached at this depth.

### 3.7.2 Regional Setting

The region is situated on Eocene strata which comprises London Clay. The Woolwich and Thanet Beds are shown to outcrop to the south and south-west of the site together with the Upper Cretaceous Chalk. These formations are therefore likely to underlie the site at depth.

### 3.7.3 Drift / Superficial Deposits

#### *Made Ground*

A previous investigation by Ground Solution Group Ltd (*Ref. 1*) shows that Made Ground at the site exists to 2.4m depth (end of borehole) at the site.

***Superficial Deposits***

The geological map illustrates that most of the site is situated on alluvial deposits from The Swale and Milton Creek. The previous investigation showed that alluvium was present in one of the trial pits at a depth of 2.4m.

### 3.7.4 Solid Geology

The solid geology is shown to comprise London Clay. The geological map shows that in the far south-east of the site it is likely to be exposed at the surface. The London Clay is described as a fine, sandy, silty clay/silty clay which are glauconitic at the base. Underlying the London Clay are the Woolwich Beds which comprise sands and clays and beneath these are the Thanet Beds, which comprise sands. This is underlain by chalk beds of Upper Cretaceous age.

### 3.7.5 Geotechnical Issues

The Landmark Envirocheck Report comments that there is a moderate risk of potential for collapsible ground at the site.

There is no hazard that the site is at risk from ground dissolution. The hazard potential for compressible ground stability on site ranges from no hazard to moderate.

The potential for landslides on site is very low to low, 10m from the edge of the site boundary there is a moderate hazard of landslides.

The potential for running sand hazards on site varies from no hazard to very low.

There is a moderate potential for shrinking or swelling clay on the site.

### 3.7.6 Mining Issues

The Landmark Envirocheck Report indicates that the site is not located in an area that may be affected by coal mining activities. There is no hazard potential of shallow mining at the site.

### 3.7.7 Radon

The Health Protection Agency reports that the property is not in an area affected by Radon. Less than 1% of homes in the area are affected above the Action Level for radon, hence no radon protective measures are considered necessary for any new development.

## 3.8 Regional Hydrogeology

The London Clay underlying the site is classified as a Non Aquifer with negligible permeability. Below the London Clay are the Woolwich and Thanet Beds, these are classified as Minor Aquifers. The Upper Cretaceous Chalk lies beneath these and is classed as a Major Aquifer.

The report by Ground Solutions Group Ltd (*Ref. 1*) found that a perched water layer existed in the alluvium.

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.

### 3.8.1 Groundwater Vulnerability

The Groundwater Vulnerability map from the Landmark Envirocheck Report was used to identify the sensitivity of the unit beneath the site and the soils leaching potential. The map shows that the site lies on a Non Aquifer with negligible permeability.

The map shows that Minor Aquifers exist 250m from the edge of the site boundary and relate to the Thanet Beds and Head Brickearth. These Minor Aquifers have variable permeability and the soils have been classified with an intermediate to high leaching potential.

### 3.8.2 Groundwater Source Protection Zones

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.

### 3.8.3 Groundwater Abstractions

There are ten licensed groundwater abstraction within 2km of the site. Table 3.3 summarises the details of these licensed groundwater abstractions. Further details of these abstractions are supplied within the Envirocheck Report, *Appendix 10.1*.

***Table 3.3 Summary of Groundwater Abstractions***

| Operator | Recorded Distance and Direction from site | Abstraction | Annual Rate $m^3$ |
|---|---|---|---|
| Wienerberger Limited | 1127m south | Construction: Process Water | Not Supplied |
| Wienerberger Limited | 1127m south | Extractive: Non-Evaporative Cooling | Not Supplied |
| Thebrickbusiness Ltd | 1127m south | Extractive: Non-Evaporative Cooling | Not Supplied |
| Thebrickbusiness Ltd | 1127m south | Construction: Process Water | Not Supplied |
| The Brick Business | 1127m south | Construction: Process Water | Not Supplied |
| The Brick Business | 1127m south | Extractive: Non-Evaporative Cooling | Not Supplied |
| Chelwood Brick Ltd | 1127m south | Extractive: Non-Evaporative Cooling | Not Supplied |
| Chelwood Brick Ltd | 1127m south | Construction: Process Water | Not Supplied |
| Blue Circle Industries Ltd | 1127m south | Industrial Cooling (Miscellaneous) | 22727 |
| United Marine Aggregates Ltd | 1962m north | Extractive: Mineral Washing | Not Supplied |

## 3.9 Hydrology

### 3.9.1 Surface Waters

The eastern boundary of the site is approximately 180m from The Swale. The Swale is a 13 mile estuary that separates the Isle of Sheppey from the mainland of north Kent. The Swale's eastern end joins the River Thames estuary three miles west of Whitstable, while its western end flows into the River Medway at Sheerness. The Swale is tidal with tides flooding from both end and meeting about halfway off Milton Creek. The southern boundary of the site is approximately 300m from Milton Creek.

During the site walkover a drainage ditch was observed within the proposed Sustainable Energy Plant (SEP) site. The ditch runs along western boundary of the site in a north to south direction towards Milton Creek. It is considered that the waters are captured by the site surface water treatment system. The ditch was poorly maintained being heavily silted.

## 3.10 Surface Water Abstractions

There are four active surface water abstractions within 2km of the site. These are detailed in Table 3.4.

***Table 3.4 Summary of Surface Water Abstractions***

| Operator | Distance and Direction from Site | Abstraction | Annual Rate $m^3$ |
|---|---|---|---|
| Grovehurst Energy Limited | 43m north-east | Amenity: Spray Irrigation -Direct | Not supplied |
| Mr L F Harding | 1791m west | General Agriculture: Spray Irrigation – Storage | Not Supplied |
| F T Holt & Son (Farm) Ltd | 1988 south-east | General Agriculture: Spray Irrigation – Direct | 18182 |
| F T Holt & Son (Farm) Ltd | 1988 south-east | General Agriculture: Spray Irrigation – Storage | Not Supplied |

## 3.11 Tidal Water Abstractions

There is one tidal water abstraction within 2km of the site; this is detailed below in Table 3.5.

*Table 3.5 Summary of Tidal Water Abstractions*

| Operator | Distance and Direction from Site | Abstraction | Annual Rate $m^3$ |
|---|---|---|---|
| Mr J John Russell T/A Ridham Sea Terminals Limited | 1713m north | Refuse and Recycling: General use relating to Secondary Category (High Loss) | Not supplied |

## 3.12 Discharge Consents

There are eleven discharge consents within 350m of the site as summarised in Table 3.6. There are a further ten discharges consents 350m to 1km from the site. Further details of these can be found in the Envirocheck Report, *Appendix 10.1*.

### *Table 3.6 Summary of Discharge Consents*

| Operator | Distance and Direction from Site | Discharge Type | Receiving Water | Status |
|---|---|---|---|---|
| Grovehurst Energy Ltd | On site | Trade Discharges – Cooling Water | Saline Estuary | Pre National Rivers Authority Legislation. Issue date <01/09/1989 |
| Grovehurst Energy Ltd (Hmip) | 65m south-west | Trade Discharge – Process Water | Saline Estuary | Authorisation Revoked |
| Grovehurst Energy Ltd | 273m south | Trade Effluent | Saline Estuary | Pre National Rivers Authority Legislation. Issue date <01/09/1989 |
| Grovehurst Energy Ltd | 273m south | Trade Discharge-Process Water | Saline Estuary | Pre National Rivers Authority Legislation. Issue date <01/09/1989 |
| Grovehurst Energy Ltd | 273m south | Sewage Discharges – Final/Treated Effluent – Not Water Company | Saline Estuary | Revoked and replaced by IPC Authorisation |
| Grovehurst Energy Ltd | 273m south | Trade Effluent | Saline Estuary | Revoked and replaced by IPC Authorisation |
| Grovehurst Energy Ltd | 273m south | Trade Discharge – Process Water | Saline Estuary | Revoked and replaced by IPC Authorisation |
| Grovehurst Energy Ltd | 275m north | Trade Discharge – Process Water | The Swale | Revoked (Water Resources Act 1991, Section 88 & Schedule 10 as amended by the Environment Act 1995) |
| St. Regis Paper Co. | 288m north | Trade Effluent | Freshwater Stream/River | Pre National Rivers Authority Legislation. Issue date <01/09/1989 |
| Southern Water Services Ltd (K) | 315m south | Public Sewage: Storm Sewage Overflow | Saline Estuary | Post National Rivers Authority Legislation. Issue date >31/08/1989 |
| Southern Water Services Ltd (K) | 315m south | Sewage Discharges – unspecified – Water Company | Saline Estuary | Revoked (Water Resources Act 1991, Section 88 & Schedule 10 as amended by the Environment Act 1995) |

## 3.13 Flood Risk

The Environment Agency published Flood Risk maps show that the north-east part of the site is indicated to be within an area at risk of extreme flooding from Rivers or Sea without Defences (Zone 2). The north-eastern edge of the site is shown to be at risk of flooding from Rivers or Sea without Defences (Zone 3).

## 3.14 Conservation Areas and Sensitive Land Uses

The North Kent Marshes are an environmentally sensitive area which is situated to the north-east, south and north-west of the site between 396 and 516m away.

Elmley Island is classed as a National Nature Reserve (NNR) and is situated 399m to the north-east of the site on the Isle of Sheppey.

The Swale is an internationally designated Ramsar site and is situated 138m north-east of the site. The Swale is designated as a Site of Special Scientific Interest (SSSI) and a special protection area.

## 3.15 Recorded Pollution Incidents

The Envirocheck Report records 25 pollution incidents to controlled waters within a 1km radius of the site. Seventeen of the pollution incidents were classified with a category 3, minor severity and are detailed in *Appendix 10.1*.

There are seven incidents of significant severity, classified as category 2; these are detailed in Table 3.7.

***Table 3.7 Summary of Recorded Pollution Incidents***

| Property Type | Location | Date of incident | Distance and direction from site | Pollutant |
|---|---|---|---|---|
| Paper Industry | Kemsley Mill, Kemsley, Sittingbourne | 27th October 1997 | 58m north-east | Organic Wastes: Other |
| Manufacturing | Old effluent discharge pipe adjacent to sludge production | 17th December 1999 | 268m south | General Biodegradable : Biological / Non Sewage Microbiological Effluent |
| Ships/Boats | Grovehurst Energy, Kemsley Mill | 29th September 1998 | 273m south | Organic Wastes: Other |
| Ships/Boats | Grovehurst Energy, Kemsley Mill | 3rd November 1998 | 277m south | Organic Wastes: Other |
| Manufacturing | Kemsley Mill, Sittingbourne, Kent | 21st March 1999 | 276m north | Other pollutant |
| Manufacturing | Kemsley Mill, Sittingbourne, Kent | 21st March 1999 | 281m north | Other pollutant |
| Manufacturing | Kemsley Mill, Sittingbourne | 10th May 1999 | 295m west | Contaminated Water: Fire Fighting Run Off |
| Ships/Boats | Not Available | 30th December 1998 | 375m north | Organic Wastes: Other |

## 3.16 Industrial Land Use / Registered Sites

Previously there have been fifteen Integrated Pollution Controls (IPCs) within 550m of the site.

Nineteen Integrated Pollution Prevention and Controls (IPPCs) have been registered within 510m of the site.

There have been two Integrated Pollution Control Registered Waste Sites within the vicinity of the site. Both were issued for E.On Uk Chp Ltd. The first is for Kemsley Mill for the incineration within the waste disposal industry, this was dated November 1998, and it has now been revoked and is an IPPC. The second was also for Kemsley Mill for the incineration within the waste disposal facility industry; authorisation was superseded by a substantial or non substantial variation.

## 3.17 Landfills and other Waste Facilities

### 3.17.1 Historical Landfill Sites

There have been six historical sites within 1km of the site. Kemsley Paper Mill had a landfill on the site which deposited wastes including inert waste. Bowaters UK had a landfill 9m from the site, deposited waste included inert, industrial, commercial and household waste and liquid sludge between 1977 and 1993. Milton Creek Works had a landfill 511m to the south of the site; no further information has been supplied within the Landmark Envirocheck Report.

Licence holders Paper Mill had a landfill situated 547m north of the site and deposited waste included inert waste. Paper Mill also had a landfill 743m north of the site which included inert waste.

Kent County Council had a landfill situated 914m south of the site and accepted inert, industrial, commercial and household waste, the landfill closed in 1991.

### 3.17.2 Registered Landfill Sites

The Envirocheck Report details two registered landfill sites within 1km of the site. The details are provided in Table 3.8.

***Table 3.8 Summary of Registered Landfill Sites***

| Licence Holder | Location | Maximum Input Rate | Distance and direction from site | Status |
|---|---|---|---|---|
| Grovehurst Energy Ltd | Kemsley Mill Extension, Kemsley, Sittingbourne, Kent | Large (equal to or greater than 75,000 and less than 250,000 tonnes per year) | 169m south-east | Operational as far as known |
| New Thames Paper Co Ltd | Kemsley Mill, Kemsley, Sittingbourne, Kent, ME10 3ET | Medium (Equal to greater than 25,000 and less than 75,000 tonnes per year) | 172m south-east | Recorded Superseded |

### 3.17.3 Licensed Waste Management Facilities

The Envirocheck Report details the presence of three licensed waste management facilities within 1km of the site. Table 3.9 below provides the details.

***Table 3.9 Summary of Licensed Waste Management Facilities***

| Operator Name | Location | Site Category | Distance and direction from site | Status / Date |
|---|---|---|---|---|
| Grovehurst Energy Limited | Kemsley, Sittingbourne, Kent, ME10 2SG | Industrial Waste Landfills | 9m south-east | Active<br>Issued (1994) |
| Grovehurst Energy Limited | Kemsley, Sittingbourne, Kent, ME10 2SG | Industrial Waste Landfills | 169m south-east | Issued (1994) |
| Countrystyle Recycling Ltd | Countrystyle Recycling Ltd, Ridham Dock Rd, Iwade, Sittingbourne, Kent, ME9 8SR | Composing | 500m north | Issued (2006)<br>Modified (2008) |

# 4 Conclusions and Recommendations

RPS Planning and Development, Chepstow were commissioned by E.ON to undertake a Phase 1 Environmental Site Assessment Report. The Phase 1 report will support the preparation of the Environmental Impact Assessment (EIA) for the site.

The site for the proposed Sustainable Energy Plant (SEP) of a sustainable energy plant 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.

Currently the site for proposed Sustainable Energy Plant (SEP) has been used as a contractor laydown area containing building materials, tanks and drums; there is also a large extent of stockpiled materials in the south-western area of the site together with areas of marsh land.

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. The London Clay is classified as a Non Aquifer, the Woolwich and Thanet Beds are classed as a minor aquifer and the Chalk is classified as a Major Aquifer. The Swale estuary lies approximately 0.2km to the north-east of the site and it is likely that any groundwater encountered at the site would be brackish.

It is recommended that in order to support the technical appendix of the Environmental Impact Assessment (EIA) intrusive site investigation works are undertaken at the site. A number of boreholes would be advanced to determine the shallow and deeper geotechnical and geoenvironmental nature of the site geology. Subsequent gas and groundwater sampling and analysis will be undertaken in order to inform the technical appendices.

## References

1. Ground Solutions Group Ltd. Kemsley Mill Sittingbourne, IPPC Initial Site Report (Ground Condition Survey), December 2001, Ref. 44361_1/AMM/SJC.

2. Enviros, Kemsley Landfill Environmental Monitoring, September and November 2008, GR0020003a/ Quarterly report and GR0020003a/lcl/Quarterly report.

# Drawings

## Legend

Site Location


| Rev: | Date: | Amendment: | Name: | Checked: |
|---|---|---|---|---|
| | | | | |

Data Source: RPS 2007

Status: PRELIMINARY

RPS
Conrad House Beaufort Square Chepstow Monmouthshire NP16 5EP
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Client: GEL

Project: Kemsley Mill, Sittingbourne

Title: Site Area

Scale: A3 @ 1:50,000

0 0.5 1 km

N

Date: 18/10/2007 Datum: OSGB36 Projection: BNG

Drawn: AW Checked: LH Job Ref: JER3773

Figure No: **JER3773-001** Revision: **0**

Project Ref. J:\Drawings\JER3773


| Scale: | Original Size |
|---|---|
| 1: 2000 DO NOT SCALE | A3 |
| Drawn By: RK | Date: 26.10.07 |
| Checked By: RR | |
| CAD Ref.: 915–001–A3 | |

| Rev. | Amendment | By | Chkd | Date |
|---|---|---|---|---|
| A1 | PRELIMINARY | RK | RR | 29.10.07 |
| A2 | GEN UPDATE. PRELIMINARY | RK | RR | 06.11.07 |
| A3 | GEN UPDATE. PRELIMINARY | RK | RR | 17.12.07 |

NOTE:
TOTAL SITE AREA – 61900m²

| | |
|---|---|
| Client | GROVEHURST ENERGY LTD. |
| Site | SITTINGBOURNE |
| Project | GROVEHURST SRF CHP PLANT |
| Title | PROPOSED SITE LAYOUT 500ktpa PLANT |
| Office of Issue | STOCKPORT |
| Telephone No. | 0161–476 0032 |

**FICHTNER**
CONSULTING ENGINEERS LIMITED
Kingsgate, Wellington Road North
Stockport, Cheshire SK4 1LW
Tel: 0161–476 0032 Fax: 0161–474 0618

| Drawing No. | Revision |
|---|---|
| 915–001 | A3 |

# Appendices

# Appendix A

## Photographic Record

**Plate 1 : View North East Along Access Track To The South East Of The Proposed Development**

**Plate 2 : Further North East Along Access Track, Notable Depth Of Made Ground**

Client:

Project:

Date: Checked: Job Ref:

RPS

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**Plate 3 :View Towards  The South West From Mid Development Area, Showing Recent Stockpiled Materials, St. Regis Mill**

**Plate 4 : View Mid Development Area Towards The West**

Client:

Project:

Date: Checked: Job Ref:

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**Plate 5 : Further Images Showing The Extent Of Stockpile Material In The South West Development Area**

**Plate 6 : Further North East Along Access Track, Ponding Of Surface Water**

Client:

Project:

Date: Checked: Job Ref:

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**Plate 9 : South Western Area Of The Proposed Development, Storage Of Paper Recycling Skips**


**Plate 10 : Makeshift Bund Structure, Various Full Drums, Containers**

Client:

Project:

Date: Checked: Job Ref:

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**Plate 11 : Photograph Showing Nature Of Drums Stored Within Makeshift Bund**

**Plate 12 : IBC Noted Within The Storage Yard**

Client:

Project:

Date: Checked: Job Ref:

RPS

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**Plate 13 : Image To Show IBC, Water / Chemicals Noted, Lid Was Not Present On The IBC**

**Plate 14 : South West Area Of Storage Yard, Building Materials, Tanks, Drums**

Client:

Project:

Date: Checked: Job Ref:

RPS

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**Plate 15 : Decommissioned Storage Tanks From The St. Regis Paper Mill**

**Plate 16 : Various Building Materials / Storage Vessels, Drums**

Client:

Project:

Date: Checked: Job Ref:

RPS

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**Plate 17 : Container Of Oil Observed Within Storage Yard**

**Plate 18 : Various Gas Cylinders Stored, Old 45 Gallon Drum In The Foreground**

Client:

Project:

Date: Checked: Job Ref:

RPS

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**Plate 19 : Image Looking NNW From The Access Track To The South East Of The Proposed Development**

**Plate 20 : Photograph Taken of Drainage Ditch South West Of Development**

Client:

Project:

Date: Checked: Job Ref:

RPS

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**Plate 21 From NW Boundary Of Proposed Development Looking NE:**

**Plate 22 : From NW Boundary Of Proposed Development Looking SE**

Client:

Project:

Date: Checked: Job Ref:

RPS

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# Appendix B

## Borehole Log

1:272 TQ 96 NW 42
9207.6588

BOREHOLE LOG SHEET

Job No. STL 754 Name MILTON & KEMSLEY ~~B~~P./B.H. No. 7
O.G.L. 2.75 Water Level Struck 4.30 6.00 B.H. Dia 150
Date JUNE 1975 standing 1.70m

| Description | Depth | thick-ness | Key | Sampl. type | Pen. No. | Samp No. |
|---|---|---|---|---|---|---|
| Soft grey clay SILT | 200 | 200 | | | | |
| Very soft brown and grey organic silty sandy CLAY | 1.60 | 1.40 | | B | | 1.00 |
| Very soft grey organic clayey SILT | 2.80 | 1.20 | | B | | 1.00 |
| Soft dark grey and brown organic CLAY SILT | 4.00 | | | | 23 | 3.00 |
| Soft to firm light grey and brown mottled sandy silty CLAY | 6.50 | 2.50 | | | 56 | 4.5 |
| | | | | | 1.28 | 6.0 |
| Very dense medium grained sandy flint GRAVEL becoming coarse from 8.00m | | | | B | 43 | 7.00 |
| | | 3.80 | | B | 60 | 8.5 |
| Medium dense grey fine silty SAND | 10.30 | 1.20 | | | | |
| Cont'd @ 11.50 | | | | | | |

Disturbed sample ○ Undisturbed sample □ Water table
Penetration Test (Standard) ▽ Water sample &

Remarks .....Large flint blocked hole driven from 9.50m to 12.50m.....
.....No penetration tests could be taken.....
.....

Signed .....

1":272 TQ96NW/42 9207:6588

# BOREHOLE LOG SHEET

Job No. STL 754 ..... Name ..MILTON & KEMSLEY..... T.P./B.H. No. 7cont
O.G.L. 2.76 ..... Water Level Struck 4.30.....6.00.. B.H. Dia ..150....
Date .....JUNE 1975..... standing .....1.70.....

| Description | Depth | thick-ness | Key | Sampl. type | Pen. No. | Samp No. |
|---|---|---|---|---|---|---|
| | 11.50 | | | | | |
| Medium dense grey fine SILTY SAND | | | | | | |
| | | | | ○ ▽ | 20 | 13.00 |
| | 13.50 | | | | | |
| | | | | ○ ▽ | 29 | 14.50 |
| | 15.0 | | | | | |

Disturbed sample ○ Undisturbed sample □ Water table
Penetration Test (Standard) ▽ Water sample &
Remarks .....
.....
.....
Signed .....