

**Geotechnical and Geo-Environmental Report for a Ground  
Investigation at proposed AD Facility, 2010**

**09-0275**

**GEOTECHNICAL & GEO-ENVIRONMENTAL REPORT ON  
GROUND INVESTIGATION**

**FOR**

**VIRIDOR WASTE MANAGEMENT LTD**

**AT**

**BEDDINGTON ANAEROBIC DIGESTION PLANT**






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## **PREFACE**

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The comments given in this report and the opinions expressed are based on the ground conditions encountered during the site work and on the results of tests made in the field and laboratory. However, there may be special conditions prevailing at the site which have not been disclosed by the investigation and which have not been taken into account in the report. Accordingly, a careful watch should be maintained in any future groundworks and findings and recommendations of this report reviewed, if necessary as work proceeds.

The comments on groundwater conditions are based on observations made at the time the site work was carried out and during any subsequent monitoring period only. It should be noted that groundwater levels vary owing to seasonal and other effects.

## SUMMARY

<b>Client Details</b>	Viridor Waste Management Ltd
<b>Proposed Development</b>	Anaerobic Digestion Plant including portal frame building for warehouse / offices and large cylindrical digestion tanks up to 14m in diameter and 15m height. Access roads and car parking. Slight raising of site levels.
<b>The Site</b>	
Location	3km northwest of central Croydon on land parcel within the existing Beddington Waste Management Facility
National Grid Ref	529370 166610
Topography	Relatively flat lying at elevations of between 29 and 30mAOD
Site Surface Features and Vegetation	Comprises open waste ground on triangular shaped site, much of site surface has been cleared to expose natural sand and gravel at surface. Some areas of exposed organic rich made ground. Some scrub vegetation around site margins. Overhead Electricity cables run along south west margin of site.
Site History	Former sludge beds associated with Beddington Sewage Treatment Works
<b>Environmental Setting</b>	
Geology	2 <sup>nd</sup> River Terrace Gravels overlying London Clay
Hydrology	Nearest water course is ditch along north-east boundary. River Wandle is approx 1km south of site.
Hydro-geology	2nd River Terrace Gravels classed as Minor (Secondary) Aquifer. Soils of high Leaching potential.
Landfills	An operational landfill is approx 287m from the subject site on the wider Waste Management site. Nearest historic landfill is 232m north east of the site.
Contaminative Land Uses	Sludge drying beds, other possible Made Ground associated with Sewage Works/Waste Management site.

<b>Sensitive Land Uses</b>			
Pollution Incidents			There are no especially sensitive land uses in the vicinity of the site. 7 minor incidents to controlled waters recorded within 1km of site; a single incident categorised as significant occurred in 1994 at a distance of 785m from site, but no other details provided.
Radon			The site is in an area where, according to BRE 211 (2007), no Radon protection measures are required to new buildings.
<b>Ground Conditions</b>			
Soils/Rock			Localised shallow Made Ground observable on site, found to maximum depth of 1.1m. Medium dense/dense sand and gravel across whole site to depths of around 5m. Stiff London Clay underlies gravel to 20m+ depths.
Excavations			Immediate collapse below approx 2.5m depth
Groundwater			Monitoring of borehole standpipes suggest water table at shallow depths – approx 0.5-1.0m below existing ground levels
<b>Foundation Design</b>			
Type			Strip/pads for main building (dewatering/water control required). Rafts for large tanks (again dewatering/water control required)– alternatively use piled foundations.
Allowable Pressure	Net	Bearing	125-135kN/m <sup>2</sup> for building strips/pads, 180kN/ m <sup>2</sup> for rafts
Settlement			25mm maximum for building, 35 – 75mm for tanks with net loading of 180kN/ m <sup>2</sup>
Concrete Mix			AC-1, DS-1
<b>Infrastructure Design</b>			
Soakaways			Gravels likely to give good infiltration rate, high water table likely to restrict soakaway capacity – need for testing specific to proposed design
Roads and Hardstandings			Formations in natural gravel likely at least CBR 10% to be confirmed by testing of formation level.

<b>Contamination and Remediation Works</b>	
Soil Contamination	Soils testing indicates no significant contamination.
Water Contamination	Groundwater testing suggests no significant impact to groundwater beneath the site
Gas Contamination	No hazardous gases identified – monitoring programme is on-going – no measures anticipated – to be confirmed upon completion of monitoring.
Remedial Works / Mitigation Measures	None required. Removal of organic Made Ground from below building footprint. Confirmation required upon completion of gas monitoring programme.
Waste Classification	Natural arisings from site are likely to be classified as inert for disposal purposes , made Ground is likely non-hazardous– this should be confirmed with proposed receiving tips.

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## **1. INTRODUCTION**

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Viridor Waste Management Ltd (the client) proposes to construct an anaerobic digestion plant at its existing waste management facility at Beddington, near Croydon, South London. The development is to take place on a triangular parcel of land in the north east of the overall waste management site, which is located approximately 3km northwest of the centre of Croydon.

Rolton Group Ltd (RGL) was requested by the client to undertake geotechnical and geo-environmental investigations at the site in order to facilitate the design of foundations, ground floors and infrastructure and to assess contamination presence at the site in soils, groundwater or soil-gas and any need for remediation or other mitigation measures.

The investigation works comprised: a historical desk study; environmental database review; trial pitting; cable percussive boreholes; soil sampling and laboratory testing undertaken by, or to the instruction of RGL. This report describes the investigation works undertaken and presents an assessment of engineering considerations with respect to the design of the proposed plant. An assessment of any contamination identified in soils, groundwater or soil-gas and any need for remediation or other mitigation measures is also presented.

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## **2. THE SITE**

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### **2.1 LOCATION & DESCRIPTION**

#### **Site Address**

The site to be developed is located in the northeastern part of the Beddington Waste Management and Landfill site which is located approximately 3km northwest of the centre of Croydon in South London (See Figure 1 - Site Location Plan, Appendix A).

#### **National Grid Reference**

The approximate centre of the site may be located by National Grid Reference 529370 166610.

#### **Description of Site Environs**

The site is located within the north eastern part of the Beddington Waste Management Facility, which occupies a large area to the south and west of the site comprising land filled ground and sewage treatment works. Further westwards are areas of sand and gravel extraction, some of which are flooded, and beyond these a railway and residential areas. To the south of the waste management facility is Beddington Park with residential areas beyond. The land to the east and north of the site is mainly given over to industrial or commercial estates.

#### **Site Topography, Description and Area**

The site comprises an open triangular shaped parcel of waste ground (approximately 1.7 hectares in area), in the north eastern corner of the Beddington Waste Management and Landfill site. The site is relatively flat with levels generally of around 29 - 30m AOD. The site has been subject to a recent clearing operation, whereby surface materials appear to have been stripped exposing the natural sand and gravel subsoil over parts of the site. There were some areas of shallow excavation and spoil mounds present in the east of the

site. There are some areas of un-cleared ground with scrub vegetation around the site margins. There are no surface water features on the site itself. For details of the site and surrounding land see Figure 2 in Appendix A.

## 2.2 SITE HISTORY

An Envirocheck® Report was commissioned, for the site, from Landmark Information Group Ltd to provide data from published sources and local agencies, see Appendix E. Table 1 below describes features at the site and in the immediate vicinity indicated on historic maps/air photographs. Not all maps are described if there are no significant changes on maps from one date to the next.

**Table 1 – Site History**

Map Date	Site	Surrounding Land
1868-1885	The site simply forms part of a large featureless field. The eastern boundary of the site coincides with the field boundary along which a ditch is marked.	Mainly comprises similar fields with ditches and sporadic trees along boundaries. There are Orchards/sporadic trees in the neighbouring field to the east, beyond which some residential properties front onto 'Beddington Lane'. A larger property labelled 'Grassmere' is located about 300m south east of the site on Beddington Lane. 'New Road' is present about 200m south of the site. The 'Croydon and Wimbledon Branch' and the 'Peckham and Sutton' Railway lines are present approximately 600m to the north and 600m to the east respectively.
1895 - 1898	The site and surrounding fields are labelled 'Sewage Farm (Croydon Corporation)', but no other features are shown.	Some further residential properties front onto Beddington Lane. 'Grassmere' is now re-named as 'Beddington Farm'.
1913-1914	No significant changes	There is a new field boundary line just to the south of the site. Large gravel pits have been excavated to the east of Beddington Lane with a cement works constructed further eastwards with sidings to the Croydon & Wimbledon railway line. There are a few additional residential properties fronting onto Beddington Lane. Also east of Beddington Lane but further south (approximately 1km from the site) the sewage works are indicated comprising 'Engine Houses' and large areas of tanks. A pumping station (with 'tanks') is shown around 300m SW of the site on the north side of New Road. The site of a Roman Villa is shown approximately 800m south south east of the site.
1932-1935	An electricity pylon is shown adjacent to the central part of the south west boundary of the site	Reed grass is indicated covering the gravel pit areas to the east of Beddington Lane. It is indicated that a ' <i>Neolithic Bowl</i> ' and ' <i>flint axe</i> ' were found here in 1912. New Road is now re-named 'Mile Road'. Water purifying tanks are shown approximately 400m south west of the site.



Map Date	Site	Surrounding Land
1946 – 1949 (Historic Air Photography)	A 1;2,500 scale air photo taken in 1946 indicates a series of parallel lines across the site and wider field area. These appear likely to be only shallow agricultural features such as plant tracks or perhaps shallow land drainage. A smaller scale photo published in 1948/9 does not show these lines.	The 1948/9 photograph shows a power station with 4 large cooling towers to the north of the sewage works and approximately 600m south east of the site.
1954 - 1955	No apparent significant changes to the site.	Some industrial sized buildings, including one labelled as a cardboard factory have been constructed in the former rear gardens to the residential properties on the west side of Beddington Lane.
1965 - 1971	No apparent significant changes to the site.	Industrial buildings including the cardboard factory to the east of the site have continued to expand and include an Engineering works. A second overhead power line is shown with bigger pylons parallel and to the south of the one which runs along the south west margin of the site. The former gravel pit to the east of Beddington lane (approx 300m from the site) is marked as a refuse tip. The power station shown on the historic air photo is first shown on the 1968 map edition and appears to have 6 cooling towers.
1974-1976	No apparent significant changes to the site.	The refuse tip to the east of Beddington Lane is now marked as an oil tanker re-fueling depot with associated tanks. The former large areas of gravel workings east of Beddington Lane are now not indicated and hence may have been backfilled /subject to landfilling. The sewage works have significantly expanded and the nearest tanks are now shown approximately 250m south west of the site. The 'Roman Villa' shown on previous maps approximately 800m south south east of the site is now labelled as a 'Roman Bath House'.
1991-1993	By 1993, the site shows partitioning into approximately rectangular sludge beds	Large sludge beds associated with the sewage works are shown on the 1991 map just to the south of the site and also extending south of Mile Road. Further expansion/modification of industrial buildings to the east of the site is indicated. A lake is shown adjacent to the Peckham and Sutton railway line approximately 500m west of the site. By 1993, sludge beds have extended over a wide area to the north and west of the site. The cardboard factory is now labelled as a warehouse.

Map Date	Site	Surrounding Land
1999 - 2009	The site still has some rectangular partitions, but does not appear to be operational as an area of active sludge beds.	The large sludge beds to the south of the site appear to be acting as lagoons with surrounding banks and sluices. By 2006, the lagoon areas south of the site are marked as a disused refuse tip. Extensive areas to the south west and west have been subject to further gravel workings. Some further areas to the northwest adjacent to the Peckham and Sutton railway line are shown as lakes (possibly flooded gravel workings). Other areas surrounding the site show on-going commercial/industrial developments and re-developments.

### 2.3 LOCAL SEARCHES / ENVIROCHECK

The Envirocheck report also collates environmental database information, from organisations such as the relevant Local Authorities, the Environment Agency and Natural England, within a 1km radius of the centre of the site. Full details of the search are presented in Appendix E; significant findings are:

- There are 4 discharge consents within 250m of the site. These relate mainly to the discharge of final treatment effluent into the Beddington effluent ditch associated with the sewage treatment works
- Eight pollution incidents to Controlled Waters are recorded to have occurred within 1km of the site; all were minor incidents except one significant incident which is recorded to have occurred in 1994 at a distance of 785m from the site – no other details are provided.
- There are 16 listed Water abstraction licenses within 1km of the site – it is not clear if all of these are currently active. The nearest is a groundwater abstraction point 373m to the west of the site used for industrial purposes. The license information includes details of boreholes for public water supply at 3 Hackbridge pumping stations at distances of between 1291m and 1512m to the west of the site. Groundwater source protection zones associated with these public water supplies extend to within 1km of the site.
- There is one historic landfill site recorded within 250m of the site. This is indicated to have been 232m north east of the site and it is recorded that deposited wastes included inert, industrial, household and special waste.
- There is one registered operational landfill at a distance of approximately 287m south west of the site. This is the Beddington Farmlands Landfill which forms a part of the overall waste management site. It is categorised as 'very large' and authorised wastes are listed as; contaminated soil, scrap metal, inert, putrescible, non putrescible and difficult general waste. The waste management site is licensed as Beddington Farmlands Landfill under the category of active household, commercial and industrial waste landfills.
- There is 1 registered waste transfer facility that is still operational located approximately 670m to the east of the site. There are no known restrictions on the source of wastes that the facility is licensed to

handle. There is also a registered operational waste treatment or disposal site approximately 470m north east of the site which handles scrap metal.

- The site is not affected by coal mining.
- There are eight contemporary trade entries within 250m of the site. A fuel station, now closed was located approximately 260m north east of the site. The nearest currently operational fuel station is over 900m north east of the site.
- There is an area recorded as prone to extreme flooding from Rivers or sea without defence at a distance of 7m from the western corner of the site.
- There are no especially sensitive land uses recorded in the vicinity.
- The site is not in a radon affected area

## **2.4 GEOLOGY, HYDRO-GEOLOGY & HYDROLOGY**

### **Geology**

The British Geological Survey map for the area (Geological Sheet 270 – South London – 1:50,000 – Ref 8.1) shows the site to be underlain by Second River Terrace Gravels resting on the London Clay Formation.

### **Hydro-Geology**

The Groundwater Vulnerability Map (National Rivers Authority Sheet 39 – West London – 1:100,000 – Ref 8.2) shows the River Terrace Gravels as a Minor Aquifer with soils of High Leaching Potential. The London Clay is shown to be a Non-Aquifer. The Environment Agency have recently changed Aquifer designations. The new aquifer designation maps are not yet available, however it is considered that, in this case the River Terrace Gravels are likely to be designated as 'Secondary A' and the London Clay as 'Unproductive Strata'.

Secondary A Aquifers are described as permeable strata capable of supporting water supplies at a local rather than strategic scale and in some cases forming an important source of base flow to rivers. Unproductive strata are described as geological strata with low permeability that have negligible significance for water supply or river base flow.

### **Hydrology**

The nearest water course to the site is the former field drain which runs along the north east boundary of the site. There are many drains within the wider waste management facility. The River Wandle is present approximately 1km south of the site and this flows in a westerly direction. The Envirocheck report indicates that in the year 2000, the river quality was grade B.

## **2.5 RADON GAS**

Based on information within BRE 211 (Ref. 8.3) the site falls within an area where no protective measures are required to new buildings with respect to Radon gas.

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### **3. GROUND INVESTIGATION WORKS**

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#### **3.1 FIELDWORKS**

Owing to the easements for underground and overhead services, access was prohibited within a 10m wide stand-off zone around the perimeter boundaries of the site. Coverage provided by the intrusive investigations were therefore limited in this respect.

The First Stage of fieldwork investigation was carried out on 14<sup>th</sup> October 2009 by RGL. This comprised seven trial pits excavated by a tracked mounted excavator to depths of between 2.50m and 3.30m. The depths of samples, descriptions of strata encountered, and other observations are given in general accordance with BS5930 (Ref. 8.4) and are presented on the RGL trial pit records in Appendix B.

As a second stage of work carried out between the 9<sup>th</sup> and 13<sup>th</sup> of November 2009, five cable percussion boreholes were sunk by Geotechnics Ltd of Coventry working to the instruction of RGL. The boreholes were supervised by Geotechnics and taken to depths of between 5.45m and 20.45m below ground level. Sampling and in-situ testing was undertaken in general accordance with BS5930. Dual groundwater and gas monitoring standpipes were installed in each of the boreholes. Full details and the records of the boreholes as logged by Geotechnics are presented in the Geotechnics Factual Report, a copy of which is presented as Appendix C.

The locations of all the exploratory holes (trial pits and boreholes) are shown on the Exploratory Hole Location Plan presented in Appendix A.

#### **3.2 LABORATORY TESTING**

Geotechnical testing of the RGL trial pitting samples was undertaken by UKAS (United Kingdom Accreditation Service) accredited laboratories - Enverity Ltd of Peterborough in accordance with BS 1377:1991 (Ref. 8.5). The testing was scheduled by RGL and was limited to testing for particle size distribution, water soluble sulphate and pH determination.

In addition, chemical laboratory tests were scheduled on selected trial pit soil samples by RGL. Chemical analyses for a broad range of determinands were undertaken on these samples by a UKAS accredited laboratory, Chemtest Ltd of Peterborough.

Chemical Tests included:

- Heavy Metals – Arsenic, Cadmium, Chromium (total and hexavalent), Lead, Nickel, Selenium & Mercury;
- Phytotoxic Metals – Zinc, Copper & Boron;
- Soil Organic Matter;
- Total Petroleum Hydrocarbons (TPH) speciated carbon bands;
- Polycyclic Aromatic Hydrocarbons (PAH) speciated USEPA 16 priority;
- Water Soluble Sulphate;
- pH measurement;
- Phenols (total)

The results of the laboratory tests on the RGL trial pit samples are presented in Appendix D

Selected samples from the boreholes were scheduled for geotechnical testing by RGL. The testing, was undertaken by Geotechnics UKAS accredited laboratory in accordance with BS1377:1991 and comprised the following:

- Moisture Content Determination
- Liquid and Plastic Limit Determination
- Water soluble Sulphate analysis
- pH Determination
- Consolidation Tests
- Shear strength testing

Full details of the laboratory testing carried out on the borehole samples and the results are presented in the Geotechnics Factual Report, Appendix C.

### **3.3 MONITORING**

Two monitoring visits have been undertaken subsequent to the fieldworks to measure the groundwater and gas levels within the standpipes installed within the boreholes. On the first visit samples of groundwater were taken from the standpipes for subsequent laboratory testing to obtain an indication of the quality of the groundwater underlying the site. The results of the groundwater quality testing, which was undertaken by UKAS accredited laboratory Chemtest Ltd are presented in Appendix E. The results of the ground gas and water level monitoring are presented on the monitoring record sheets presented in Appendix F. A minimum of two further visits are planned to complete the monitoring programme – the results of these further visits will be reported in a supplementary letter report to confirm or update the findings presented in this report.

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## **4. GROUND CONDITIONS**

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### **4.1 SUMMARY OF GROUND CONDITIONS**

The ground conditions were found to be consistent with those expected from the published geology with all exploratory holes encountering sand and gravel strata of around 5m in thickness overlying the London Clay at depths of around 5m. Made Ground was positively identified in two trial holes (TP5 and TP6) across the centre of the site to depths of around 1m. These materials contained abundant organic materials and may represent disturbed materials resulting from the sludge drying activities that were undertaken on the site. Groundwater seepages were encountered in some of the exploratory holes at depths ranging from 1.8 to 4.5m below existing ground levels.

More detailed descriptions are provided in the following sections, however, reference should be made to the borehole and trial pit records (Appendices C & D) for full details of the strata and ground conditions encountered beneath the site.

## **4.2 STRATA ENCOUNTERED**

### **Made Ground**

The extent of Made ground was clearly visible on the ground surface, as it was very dark brown and organic in contrast to the lighter coloured natural sand and gravel deposits that had been exposed following the clearance work in some areas of the site. The Made Ground was encountered in two of the trial pits (TP5 and TP6) located in the southern and northern parts of the site centre respectively. The materials were described as dark brown and black clayey gravelly sand with abundant organic material and occasional extraneous materials such as plastic and timber fragments. These extended to a depth of 0.8m in TP5 and 1.05m in TP6. The surface materials encountered at BH4 (located in the south of the site and extending to a depth of 0.6m) were very similarly described and it is considered likely that these are also disturbed/manually reworked soils, hence should be classed as Made ground.

### **2nd River Terrace Gravels**

Beneath the Made Ground materials described above, and from ground surface in the other exploratory holes, natural granular deposits representing the 2<sup>nd</sup> River Terrace Gravels were encountered. The materials comprised brown, grey and orange brown sand and gravel with occasional cobbles. The gravel and cobbles ranged between angular and sub-rounded and composed primarily of flint. All of the trial pits terminated within these deposits as they were generally subject to collapse below depths of around 2.50m, where groundwater was often present. The boreholes proved the base of the deposits to range between depths of 4.5m (BH4) and 5.3m (BH2).

In situ Standard Penetration Tests (SPT) performed at 1.0m intervals in the boreholes throughout this stratum gave very consistent 'N' values ranging between 20 and 43 indicating the materials to be consistently medium dense to dense.

Particle size distribution tests within the materials also gave consistent results - % fines ranging from 2 – 8%, sand from 22 – 35% and gravel from 57 – 76% of the samples tested.

### **London Clay**

The London Clay was encountered beneath the 2<sup>nd</sup> River Terrace Gravels in each of the boreholes across the site. It was described initially as a stiff fissured dark brownish grey slightly micaceous clay. With depth, the materials were generally described as very stiff with some zones of 'very high strength'. A band of weak to medium strong siltstone was encountered from 14.00-14.60m in BH1 and from 13.50-13.80m in BH3. All the boreholes terminated within the London Clay Formation which was encountered to a maximum depth of 20.45m in both BH1 & BH3.

Laboratory testing shows that the London Clay is mildly alkaline with pH in the range 8.0-8.2. Soluble sulphate concentrations were found to range between 0.15 and 0.29g/l.

Atterberg limit tests generally indicated consistent results demonstrating the typically high plasticity of the London Clay. Liquid limit ranged from 66% to 78%, plastic limit from 21% to 34% and plasticity index from 38% to 51%. A single sample taken from a sandy layer at depth in BH3 gave lower results. Natural moisture contents ranged between 25 and 30% and were often near to or below the plastic limit.

Undrained triaxial tests gave values of undrained shear strength of between 77 and 232 kN/m<sup>2</sup> confirming the visually described consistencies as stiff or very stiff.

One dimensional consolidation tests on samples taken from a depth of 6.5m in BH1 and BH3, both demonstrated the materials to be of low compressibility.

#### **4.3 GROUNDWATER**

Groundwater was encountered during the fieldworks in all of the exploratory holes with the exception of BH5. In the trial pits, seepages or wet strata were recorded at depths ranging between 1.8 and 3.0m. The boreholes(except BH5) encountered water strikes at depths of 3.0 to 4.5m in the gravel strata and following the initial water strikes, small rises in level were noted over a 20 minute monitoring period. Deeper water strikes were recorded in BH1 @ 19.0m and BH3 @18.0m, the latter corresponding with a thin sandy band within the clay sequence. Again subsequent small rises were noted following these deeper groundwater strikes. Following the fieldwork, monitoring of the standpipes within the boreholes has showed that groundwater is present at very shallow depths of around 0.5-1.0m below existing ground level.

#### **4.4 HAZARDOUS GASES**

Two rounds of gas testing in the borehole standpipes have been undertaken using a Gas Data GFM Series Meter which measures oxygen, carbon dioxide and explosive gases including methane. The results, which are presented in Appendix F have indicated no detectable concentrations of explosive gases (including methane) and carbon dioxide in the range 0 – 2.8%. Further rounds of monitoring are necessary to complete the monitoring programme and hence the range of results described herein will require a future update.

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### **5. DEVELOPMENT PROPOSALS**

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The proposed development on the 0.5 hectare site is to comprise an anaerobic digestion plant with associated services and structures. The plant consists of; a main building containing offices and warehousing/stores; a number of large cylindrical digestion tanks up to 14m in height and with diameters of 5m, 8m and 14m; areas of hardstanding; and grassed areas under which soakaway drainage is proposed to a depth of 1.5m. The proposed layout is shown on Figure 3, Appendix A.

The building is understood to be a relatively lightly loaded steel portal frame structure – no loading information was available at the time of writing. The 14m high tanks are understood to impose an equivalent uniformly distributed gross load across the foundation base of maximum around 200 kN/m<sup>2</sup>. The smaller 8m high tank is understood to impose a gross load of around 100 kN/m<sup>2</sup>. It is understood that a construction thickness of around 1.5m will be required to facilitate the dimensions of the larger tank bases.

The final proposed ground level and finished floor level is understood to be 30.0m AOD. This will require that levels over the site are slightly raised from the current ground levels which vary between 29.1 and 29.9m AOD.

## 6. ENGINEERING ASSESSMENT

### 6.1 FOUNDATIONS

For the main building comprising single-storey offices and traditional warehousing unit, it is considered that the underlying superficial 2<sup>nd</sup> Terrace gravels will provide suitable bearing strata for conventional strip/trenchfill or pad foundations. However, the density of the gravel strata has only been tested by in-situ standard penetration tests commencing beneath the borehole inspection pits (i.e. depths of 1.2m bgl). This corresponds to ground levels of around 28.5m AOD. The groundwater data suggests that the phreatic surface across the site is at a level of around 28.90m AOD and hence, if conventional foundations are placed at such depths, appropriate dewatering or other form of groundwater control will be required to ensure that dry excavations can be maintained. In addition, it is possible that Made Ground present at the western end of the proposed building footprint will lead to a need for deeper excavation to reach the natural strata below. In any case foundations must be placed a minimum of 750mm below finished ground levels. Based on the SPT data, strip foundations up to 1m in width and placed at a level of 28.5m AOD in natural in situ and competent undisturbed gravel strata may be designed to a maximum net Allowable Bearing Pressure (ABP) of 125kN/m<sup>2</sup>. For pad foundations up to 2.5m in width placed to the same criteria, a maximum net ABP of 135kN/m<sup>2</sup> has been calculated to keep settlements below 25mm. In view of the groundwater occurrence, it may be prudent to keep the building foundations as high as possible, provided that they are placed within the competent in situ natural sand and gravel, below any surface loosened materials and provided they are a minimum of 750mm below finished ground levels.

The proposed cylindrical storage tanks are understood to be of 8m and 14m diameter and up to approximately 15m in height. It is understood that a construction thickness of around 1.5m will be required to facilitate the dimensions of the larger tank bases. Standard bearing capacity analyses indicate that the Terrace Gravel strata are capable of supporting the gross loads (maximum 200 kN/m<sup>2</sup>) of the tanks assuming appropriately designed raft foundations placed at a level of 28.5m AOD (1.5m below proposed final levels) – Again it should be noted that it is likely that dewatering will be required to facilitate construction at this level. Analyses based on the moisture content and strength data available, also indicate that the distribution of load is unlikely to lead to failure of a softened upper horizon of London clay, should this be present immediately beneath the gravel strata at depths of around 5.0m below the existing site levels.

Settlement analyses using the investigation data and one- dimensional consolidation theory for the clay strata and Burland and Burbridge (ref 8.6) for SPT 'N' derived estimates in the gravel strata, suggest that total settlements for the tanks are likely to be in the following ranges:

**Table 2 Range of Predicted Total Settlements**

<b>Tank size</b>	<b>Net Loading (kN/m<sup>2</sup>) @ 28.5m AOD</b>	<b>Total settlements (mm)</b>
14m diam x 15m height	180	50 to 75
8m diam x 15m height	180	35 to 55
8m diam x 8m height	80	15 to 30



It is likely that some of this total settlement (predominantly that occurring within the gravel strata) will occur immediately. Estimates of this, together with possible differential settlements, estimated to be in the order of 50% of the remaining consolidation settlements as a maximum are given in

Table 3 below:

**Table 3 Range of Predicted Immediate and Differential Settlements**

<b>Tank size</b>	<b>Immediate settlements (mm)</b>	<b>Differential settlements (mm)</b>
14m diam x 15m height	15 to 20	15 to 30
8m diam x 15m height	10 to 15	10 to 20
8m diam x 8m height	5 to 10	5 to 10

The highest settlements are likely to occur in the centre of the tanks/bases. The consolidation settlement beneath the tank bases may take some substantial time to fully occur owing to the nature of the London clay. Based on the laboratory information, 90% of the total consolidation settlement beneath the tank bases would be complete within approximately 5 to 15 years.

Raft design should take into account these potential deflections and connecting pipework/services should be fixed using flexible joints or be designed with suitable tolerances for the order of total and differential settlements predicted.

The above calculations do not take account of any cyclic loading due to fluctuating conditions, such as level changes within the tanks. It is also assumed that the loads are evenly distributed across the base of the tanks.

It will be necessary to design the foundations for the effects of buoyancy forces in both temporary works and permanent design cases. In view of the naturally high groundwater levels, it would be prudent to assume that the water level could be at finished ground level.

Any 'loose zones' found during inspection and proof rolling should be removed and replaced by a suitably compacted granular material.

As an alternative to raft foundations for the tanks and in order to reduce the amounts of settlements that might occur, consideration may be given to the use of piled foundation to support the tank bases. Piles would need to be taken through the Terrace Gravels and into the underlying London Clay. Driven piles may have some difficulties in penetrating the gravel strata, especially where very dense or where coarser cobbles or boulders may be present. Continuous Flight Auguring techniques may be suitable to penetrate the gravels and maximise the benefit of shaft resistance in the London Clay. A specialist piling contractor experienced in the ground conditions at the site, should be consulted to advise on the suitability of particular proprietary pile types and design, should it become necessary to further consider the use of piled foundations at the site.

## **6.2 GROUND FLOORS**

The floor slab for the proposed office and warehouse unit on site could be constructed as ground bearing upon a suitable granular blanket placed upon the natural in-situ gravel strata. The formation level of the floor slab should be checked to ensure that it conforms with the expected conditions and proof rolled prior to casting. Any soft or loose zones or organic materials such as those found at the surface at TP5 & TP6 should be removed and replaced with a suitably compacted inert granular material. Based on the information given in BRE 211 (ref 8.3), the site does not fall within an area where radon protection measures are required in new structures.

There is no requirement for Radon protection measures at the site and the risk of other hazardous gases being present has been assessed as low on the basis of the monitoring data obtained thus far, see Section 7.3. Hence there is unlikely to be a requirement to provide gas protection membranes to ground floors. However, the monitoring programme is ongoing and there will need to be a review of the data following completion of the monitoring programme.

## **6.3 EXCAVATIONS, CONTROL OF GROUNDWATER AND EXISTING SERVICES**

Excavations should be readily formed by backhoe excavator, however, based on the trial pit observations, it is likely that excavations below depths of around 2.5m will suffer immediate collapse of the sides. If left open the sides are likely to collapse at increasingly shallow depths as water seepages occur and the groundwater levels recover back to the shallow phreatic surface. It is recommended that prudent allowances are made for supporting all vertically sided excavations or for battering back the sides to a safe angle.

All excavation works carried out during construction at the site (and especially any requiring man access) must strictly adhere to current legislation & guidance (refs. 8.7- 8.10), including, but not limited to, design, inspections, reporting and provision of appropriate support or other safety measures.

Groundwater is present at very shallow depths (approximate level around 28.9m AOD) within the granular strata across the site. It is considered that dewatering or other form of groundwater control will be required to allow excavations for foundations and services placed near to or below this level. An appropriate system of dewatering/groundwater control will be required and this should be designed to prevent the loss of fines which can lead to settlement of the adjacent ground and any structures thereon.

It is known that there is a gas main with associated easement along the northern margin of the site. Additionally overhead electricity services are present along the southern margin. The location of all services should be verified and measures put in place to make these safe prior to undertaking any groundworks at the site.

## **6.4 ROAD AND HARDSTANDING DESIGN**

For sub-bases constructed onto formation levels comprising natural undisturbed sand and gravel strata, a California Bearing Ratio (CBR) of 10% is suggested for preliminary design. This should be verified by inspection and/or in-situ testing, at proposed final formation level.

Any areas of organic, visibly disturbed or other deleterious material encountered should be removed and replaced with a properly compacted 6F1 or 6F2 capping material in general accordance with the Specification for Highway Works.

## **6.5 CHEMICAL ATTACK ON BURIED CONCRETE**

The results of the chemical analysis on soil samples show that soils are neutral or mildly alkaline (pH in the range 7.0-8.2) and with generally low levels of soluble sulphates in the range of 48 - 292mg/l

In accordance with BRE Special Digest 1:2005 Concrete in Aggressive Ground (ref 8.11), the Aggressive Chemical Environment for Concrete Classification is AC-1 with a Design Sulphate Class for the site of DS-1.

## **6.6 SOAKAWAYS**

It is noted that a soakaway drainage system is proposed under grass cover to the south of the main building and beneath the existing overhead power cables. Whilst the gravel strata are likely to be highly permeable affording good rates of infiltration, the storage capacity of any soakaway system is likely to be severely restricted by the very high water table present across the site.

It is recommended that specific in-situ testing is undertaken to establish parameters for use in the design of soakaway drainage. It would also be prudent to take full account of the groundwater levels reported in this document and in future addendums concerning the on-going monitoring programme.

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# **7. CONTAMINATION ASSESSMENT**

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## **7.1 SOIL CONTAMINATION**

UK guidance currently comprises the CLEA (Contaminated Land Exposure Assessment) model (Ref 8.12), although other scientifically derived assessment criteria are available and are considered acceptable within the geo-environmental industry – for example the LQM Nottingham University/CIEH generic assessment criteria (GAC) (Ref 8.13). For the site considered here comparison with the the CLEA Site Guideline Values (SGVs) and LQM GACs for commercial/industrial land use is considered suitable to demonstrate that the site is suitable for the proposed redevelopment without the need for any substantial remediation. Table 4 summarises the results of chemical testing of samples from the site:

**Table 4 – Contamination Test Results on soil samples**

<b>Contaminant</b>	<b>Range of Concentrations (mg/kg)</b>	<b>Average Concentration</b>	<b>SGV/GAC</b>
Arsenic	7.1 to 10	8	640
Cadmium	<0.1 to 0.3	0.14	348
Chromium	18 to 40	25	30400
Chromium VI	<0.5	<0.5	35
Copper	<5 to 140	34	71700

Contaminant	Range of Concentrations (mg/kg)	Average Concentration	SGV/GAC
Lead	<5 to 530	109	750
Mercury	<0.1 to 3.1	0.5	26
Nickel	12 to 23	15	1800
Zinc	15 to 280	80	665000
Selenium	<0.2 to 0.65	0.24	13000
Boron	<0.4 to 5.5	1.6	192000
Phenols	<0.3	<0.3	1100000
Total Petroleum Hydrocarbons	<10 to 740	130	3,400 (worst case GAC for EC5-6, 1%SOM)
Total Poly-aromatic Hydrocarbons	<2.0 to 9.1	3	All individual USEPA 16 PAH compounds substantially below relevant GAC's

The concentrations of all determinands were found to be significantly below the relevant guidance value for commercial/industrial land use and indeed, in all cases except a single Lead concentration, were below the guideline values for residential usage.

The test results appear to demonstrate that the former usage of the site as sludge drying beds has not resulted in any significant contamination from heavy metals. In view of the time that has passed since the site was used for such purposes, it is considered that microbiological activity will have now slowed as the organic material source was used up and not replenished. Potential risk from the presence of microbiological pathogens is considered likely now to be similar to that of a normal topsoil. Such microbiological contamination would not present a risk to the future end-users of the site, given the proposed industrial proposals and will not present a potential risk to site workers during construction provided that standard health and safety practices are followed.

It is concluded that no specific remediation works are required to protect the development or future users from soil contamination presence at the site. Although it is essential that all construction site personnel strictly adhere to current health & safety legislation and best practises for working on Brownfield sites including good hygiene practises.

## 7.2 GROUNDWATER CONTAMINATION

The near-surface soils at the site are classified as a Minor (Secondary) Aquifer with high leaching potential and groundwater is present at very shallow depths. Hence, although no significant soil contamination has been identified at the site, there is a direct pathway for any surface soil contaminants that are present to leach directly to the groundwater.

Testing on groundwater samples, taken from the shallow borehole standpipes during the first monitoring visit, indicates that no significant impact to the water from contaminants has occurred. Nearly all determinands were found to be either below detection limit or below UK Drinking Water Standards (DWS) – the most stringent criteria. Minor exceptions are as follows:

**Table 5 – Groundwater Test Results exceeding DWS**

Determinand	DWS ( µg/l)	EQS (µg/l)	Recorded concentration	Comments
Boron	1000	2000	1100	Below EQS
Nickel	50	50-200	74	Recorded concentration in 1 sample only and probably below EQS, which varied according to water hardness
Selenium	10		11	Marginal to DWS

Test results on the sample of groundwater taken from the deep standpipe installed in BH3b (sampling water from a sand band within the London Clay at around 18m below ground level), gave all results below detection limit or relevant DWS.

The full results of the groundwater testing are presented in Appendix E.

From the above test results and the absence of any identified soil contaminant sources, it is concluded that there is no significant impact either presently existing or being caused to groundwater at the site.

The results suggest that the groundwater may be considered essentially clean in terms of assessing disposal criteria for any de-watering operations that may be undertaken as part of the construction works. The test results should be forwarded to the appropriate regulatory party for their assessment in connection with any application for a discharge consent.

### **7.3 GAS CONTAMINATION**

The site is located in an area where according to BRE Digest 211 no precautions are required to prevent Radon gas entry to new buildings (see Section 2.5).

A thin surface layer of organic rich Made Ground is observable on the surface of the site and is described in the records for TP5 and TP6. Other than this, the exploratory holes did not identify any putrescible or degradable materials which could generate any significant ground gases. This material should be removed from beneath building footprints on the site, so that it does not form a future source of ground gas which could affect the buildings.

The 2<sup>nd</sup> Terrace Gravels underlying the site are highly gas and water permeable and therefore offer the potential for gases to migrate either in gaseous phase or dissolved phase (more likely the latter, given the high water table across the site).

Monitoring of the borehole standpipes on two occasions to date has detected no explosive (methane equivalent) gas and only low steady concentrations of carbon dioxide ranging from 0 to 2.8% with no measurable steady flow. Oxygen levels were found to be normal or slightly depleted at levels ranging between 17.3 and 21.2%. These levels do not suggest that there is a significant ground gas hazard at the site.

From the above it is considered unlikely that any gas protection measures will be necessary for the development of the site. However, the gas monitoring programme is still on-going and at least two further visits are planned in order to assess worst case temporal conditions. It will therefore be necessary to report these monitoring visits and assess the final requirements for gas protection measures, if any, in a future addendum report.

#### **7.4 WATER SUPPLY MAINS**

The absence of elevated levels of contaminants across the site indicates that no special precautions are likely to be required in the construction of the water supply mains to the site. There would appear no reason to use any other material than polyethylene for water supply pipes – however, this should be confirmed with the relevant water supply authority.

#### **7.5 WASTE CLASSIFICATION**

Arisings from the site consisting of natural soils are likely to be classified as inert for disposal purposes. The shallow Made Ground will not be classified as inert owing to its organic content - it is more likely to be classed as 'non-hazardous'.

Final classification of materials for waste disposal is the responsibility of the receiving tip, who may require specific testing of the waste streams.

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## **8. REFERENCES**

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- 8.1 Geological Survey of Great Britain, Geological Sheet 270, 'South London', 1:50,000 scale, Solid & Drift Edition, Ordnance Survey, 1981.
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- 8.3 Building Research Establishment (BRE) Report 211: 2007, 'Radon: Guidance on protective measures for new dwellings'.
- 8.4 British Standard BS 5930, 'Code of Practice for Site Investigations'. HMSO. London. 1999.
- 8.5 British Standard 1377:1990, 'Methods of Test for Soils for Civil Engineering Purposes'. HMSO. London.
- 8.6 Burland, J.B. And Burbridge, M.C., Settlements of Foundations on Sands and Gravels, proceedings of the Institution of Civil Engineers, 78 (1), 1325 – 1381 (1985).
- 8.7 The Management of Health and Safety at Work Regulations, 1999.
- 8.8 The Construction (Design and management) Regulations, 2007.
- 8.9 The Confined Space Regulations, 1997.
- 8.10 Construction Site Safety Guidance – E5, 'Working in and around Excavations'. CITB, January 2007.
- 8.11 Building Research Establishment, BRE Special Digest 1:2005 third edition, Concrete in aggressive ground.
- 8.12 Environment Agency/ DEFRA, 2002, Contaminated Land Exposure Assessment.
- 8.13 Chartered Institute of Environmental Health and Land Quality Management of Nottingham University 2009, Generic Assessment Criteria 2<sup>nd</sup> Edition.

## **APPENDIX A**

### **DRAWINGS & FIGURES**

**FIGURE 01 SITE LOCATION PLAN**

**FIGURE 02 EXPLORATORY HOLE LOCATION PLAN**

**FIGURE 03 PROPOSED LAYOUT PLAN**





**Site Address :**

**Beddington  
Recycling Site,  
Beddington Lane,  
Croydon, Surrey**

**nearest postcode CR0 4TD**  
**approx grid reference 529279 / 166659**

**SITE**





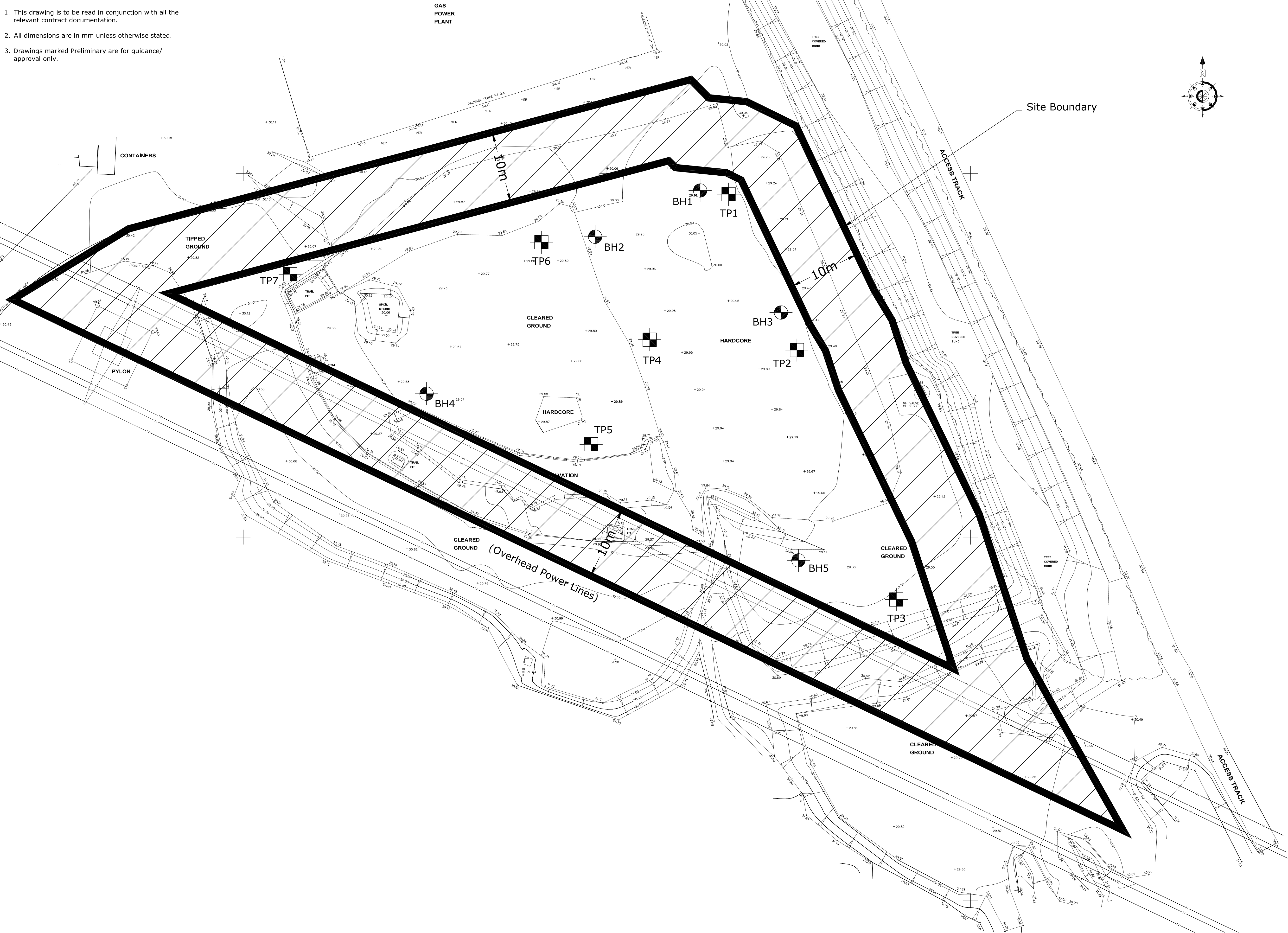
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NOTES

1. This drawing is to be read in conjunction with all the relevant contract documentation.
2. All dimensions are in mm unless otherwise stated.
3. Drawings marked Preliminary are for guidance/ approval only.



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BARLBOROUGH LINKS  
DERBYSHIRE S43 4PZ

KEY

- RGL Trial Pit Locations  
(TP1-TP6) October
- TP1
- /// 10m Easement Zone
- Geotechnics Boreholes  
(BH1-5) November 2009
- BH1

14	05.02.10	Trial pits added & boreholes relocated	JB
13	10.12.09	October Trial Pits removed	JB
Rev.	Date	Description of Issue	Chkd
Revisions			

Issue Purpose:

INFORMATION

Project

AD BIOMASS POWER  
STATION - BEDDINGTON  
LONDON

Drawing Title:

EXPLORATORY  
HOLE LOCATION PLAN

Designer's Risk Assessment Reference:

N/A

Specification Reference:

N/A

Drawn By:

TW

Checked By:

KJN

Scales: 1:250@A1

Date:

1:500@A3

09.10.09

Drawing No.

Rev.

09-0275/GEO/001 I4  
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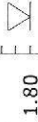


## **APPENDIX B**



### **RGL TRIAL PIT RECORDS**

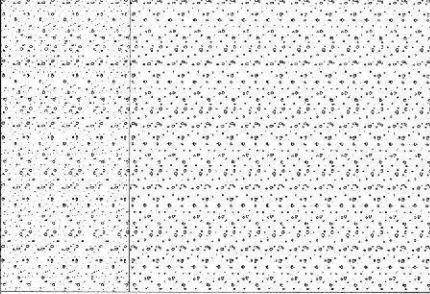
Water		Description of Strata	Depth (mBGL)	Legend	Level (mAOD)	Sampling		Hand vane	
Depth (m)	Depth (m)					Type	Depth (m)	Shear Strength (kN/m <sup>2</sup> )	
<div> <div>2.00</div> <div> </div> </div>	Moderately compact orange brown cobbly gravelly medium to coarse SAND. Gravel and cobbles of angular to sub-rounded flint. (2nd Terrace River Deposits)	1.70			T/J 1				
	. . . below 1.00m depth occasional brown sand pockets of boulder size								
	Moderately compact brown and grey sandy cobbly GRAVEL. Gravel and cobbles of angular to sub-rounded flint. (2nd Terrace River Deposits)	3.00				B 1 T/J 2			
End of Trial Hole at 3.00 m									
<b>Remarks</b> General: No live roots, hole stopped due to unstable sides Stability: Sides stable to 2.50m Groundwater: Medium seepage at 2.00m Weather: Sunny, warm, dry, little breeze		Plant used: CAT 432E		<b>Key</b> Disturbed sample D Bulk Disturbed Sample B Tub / Jar Sample T / J Vial Sample V Water sample W Standing Water Level Depth of waterstrike		Eng. KJN			
<b>Trial Hole Record</b> Project: Beddington - AD Biomass Power Station Client: Viridor Waste Management		Length: 2.30m Date: 14/10/2009 Width: 0.60m Ground Level: - Easting: - Northing: -				Chkd. GPW			
						Job No. 09-0275			
						Hole: TP1			
						Fig.			

Water		Description of Strata	Depth (mBGL)	Legend	Level (mAOD)	Sampling		Hand vane	
Depth (m)	Depth (m)					Type	Depth (m)	Shear Strength (kN/m <sup>2</sup> )	
		Moderately compact orange brown cobbly gravelly medium to coarse SAND. Gravel and cobbles of angular to sub-rounded flint. (2nd Terrace River Deposits)	0.90			T/J 1			
		Moderately compact brown and grey initially slightly cobbly gravelly medium to coarse sand becoming sandy cobbly GRAVEL below 1.40m. Gravel and cobbles of angular to sub-rounded flint. (2nd Terrace River Deposits)				B 1			
		... becoming wet below 2.50m				T/J 2			
		End of Trial Hole at 3.00 m	3.00			B 2			
<b>Remarks</b> General: No live roots, hole stopped due to unstable sides Stability: Sides stable to 2.50m Groundwater: Groundwater not Encountered Weather: Sunny, warm, dry, little breeze		Plant used: CAT 432E  <b>Length:</b> 2.20m <b>Date:</b> 14/10/2009 <b>Width:</b> 0.60m <b>Ground Level:</b> - <b>Easting:</b> - <b>Northing:</b> -		<b>Key</b> Disturbed sample D Bulk Disturbed Sample B Tub / Jar Sample T / J Vial Sample V Water sample W Standing Water Level  Depth of waterstrike 		Eng. KJN			
 <b>Trial Hole Record</b> <b>Project:</b> Beddington - AD Biomass Power Station <b>Client:</b> Viridor Waste Management						Chkd. GPW			
						Job No. 09-0275			
						Hole: TP2			
						Fig.			




Water		Description of Strata	Depth (mBGL)	Legend	Level (mAOD)	Sampling		Hand vane	
Depth (m)	Depth (m)					Type	Depth (m)	Shear Strength (kN/m <sup>2</sup> )	
 1.80		<p>Moderately compact orange brown slightly cobbly gravelly medium to coarse SAND. Gravel and cobbles of angular to sub-rounded flint. (2nd Terrace River Deposits)</p> <p>Moderately compact brown and grey initially cobbly gravelly medium to coarse sand becoming sandy cobbly GRAVEL. Gravel and cobbles of angular to sub-rounded flint. (2nd Terrace River Deposits)</p> <p>End of Trial Hole at 2.50 m</p>	0.75			T/J 1 B 1			
			2.50			T/J 2			

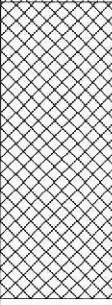
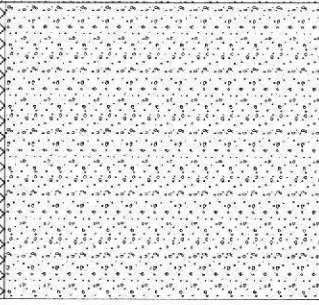



<b>Remarks</b> General: No live roots, hole stopped due to unstable sides Stability: Sides stable to 1.80m Groundwater: Medium seepage at 1.80m Weather: Sunny, warm, dry, little breeze		<b>Key</b> Disturbed sample D Bulk Disturbed Sample B Tub / Jar Sample T / J Vial Sample V Water sample W Standing Water Level  Depth of waterstrike 		Eng. KJN
<b>Trial Hole Record</b> Project: <b>Beddington - AD Biomass Power Station</b> Client: <b>Viridor Waste Management</b>		Length: 2.70m Date: 14/10/2009 Width: 0.60m Ground Level: - Easting: - Northing: -		Chkd. GPW
				Job No. 09-0275
				Hole: TP3
				Fig.

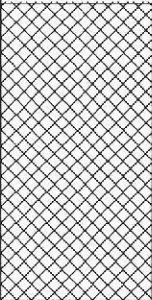
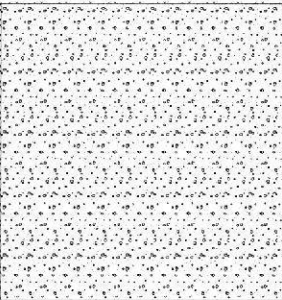



Water		Description of Strata	Depth (mBGL)	Legend	Level (mAOD)	Sampling		Hand vane	
Depth (m)	Depth (m)					Type	Depth (m)	Shear Strength (kN/m <sup>2</sup> )	
		Moderately compact orange brown cobbly gravelly medium to coarse SAND. Gravel and cobbles of angular to sub-rounded flint. (2nd Terrace River Deposits)	0.90			T/J 1			
		Moderately compact grey and brown initially cobbly gravelly medium to coarse sand becoming sandy cobbly GRAVEL. Gravel and cobbles of angular to sub-rounded flint. (2nd Terrace River Deposits)				T/J 2			
		. . . becoming wet below 2.50m				B 1			
		End of Trial Hole at 3.00 m	3.00						

<b>Remarks</b> General: No live roots, hole stopped due to unstable sides Stability: Sides stable to 2.70m Groundwater: Groundwater not Encountered Weather: Sunny, warm, dry, little breeze		<b>Key</b> Disturbed sample D Bulk Disturbed Sample B Tub / Jar Sample T / J Vial Sample V Water sample W Standing Water Level  Depth of waterstrike 		Eng. KJN
Plant used: CAT 432E				Chkd. GPW
<b>Trial Hole Record</b> Project: Beddington - AD Biomass Power Station Client: Viridor Waste Management		Length: 2.30m Date: 14/10/2009 Width: 0.60m Ground Level: - Easting: - Northing: -		Job No. 09-0275
				Hole: TP4
				Fig.



Water		Description of Strata	Depth (mBGL)	Legend	Level (mAOD)	Sampling		Hand vane		
Depth (m)	Depth (m)					Type	Depth (m)	Shear Strength (kN/m <sup>2</sup> )		
		MADE GROUND - Moderately compact dark brown slightly clayey gravelly fine to medium sand with abundant organic material. Gravel consists of sub-angular to sub-rounded flint. (Made Ground)	0.80			T/J 1				
		Moderately compact grey and brown and occasional orange brown, initially cobbly gravelly medium to coarse sand becoming cobbly sandy GRAVEL. Gravel and cobbles of angular to sub-rounded flint. (2nd Terrace River Deposits)				T/J 2 B 1				
		becoming wet below 2.70m	3.00							
		End of Trial Hole at 3.00 m								
<b>Remarks</b> General: No live roots, hole stopped due to unstable sides Stability: Sides stable to 2.50m Groundwater: Groundwater not Encountered Weather: Sunny, warm, dry, little breeze		Plant used: CAT 432E  <b>Length:</b> 2.50m <b>Date:</b> 14/10/2009 <b>Width:</b> 0.60m <b>Ground Level:</b> - <b>Easting:</b> - <b>Northing:</b> -		<b>Key</b> Disturbed sample D Bulk Disturbed Sample B Tub / Jar Sample T / J Vial Sample V Water sample W Standing Water Level  Depth of waterstrike 					Eng. KJN  Chkd. GPW  Job No. 09-0275  Hole: TP5  Fig.	
		<b>Trial Hole Record</b> <b>Project:</b> Beddington - AD Biomass Power Station <b>Client:</b> Viridor Waste Management								

Water		Description of Strata	Depth (mBGL)	Legend	Level (mAOD)	Sampling		Hand vane	
Depth (m)	Depth (m)					Type	Depth (m)	Shear Strength (kN/m <sup>2</sup> )	
		MADE GROUND - Moderately compact dark brown and black slightly clayey gravelly fine to medium sand with abundant organic material and occasional plastic and timber fragments. Gravel consists of sub-angular to sub-rounded flint. (Made Ground)	1.05			T/J 1			
		Moderately compact initially grey becoming brown and occasional orange brown cobbly gravelly medium to coarse SAND. Gravel and cobbles of angular to sub-rounded flint. (2nd Terrace River Deposits)				T/J 2			
		... becoming wet below 2.70m End of Trial Hole at 3.00 m	3.00			B 1			
<b>Remarks</b> General: No live roots, hole stopped due to unstable sides Stability: Sides stable to 2.70m Groundwater: Groundwater not Encountered Weather: Sunny, warm, dry, little breeze		Plant used: CAT 432E		<b>Key</b> Disturbed sample D Bulk Disturbed Sample B Tub / Jar Sample T / J Vial Sample V Water sample W Standing Water Level  Depth of waterstrike 		Eng. KJN			
		<b>Trial Hole Record</b> Project: Beddington - AD Biomass Power Station Client: Viridor Waste Management		Length: 2.40m Date: 14/10/2009 Width: 0.60m Ground Level: - Easting: - Northing: -		Chkd. GPW			
						Job No. 09-0275			
						Hole: TP6			
						Fig.			

Water		Description of Strata	Depth (mBGL)	Legend	Level (mAOD)	Sampling		Hand vane	
Depth (m)	Depth (m)					Type	Depth (m)	Shear Strength (kN/m <sup>2</sup> )	
3.00	<p>Moderately compact orange brown cobbly gravelly medium to coarse SAND. Gravel and cobbles of angular to sub-rounded flint. (2nd Terrace River Deposits)</p> <p>Moderately compact grey and brown initially cobbly gravelly medium to coarse sand becoming cobbly sandy GRAVEL. Gravel and cobbles of angular to sub-rounded flint. (2nd Terrace River Deposits)</p> <p>... becoming wet below 2.30m</p> <p>End of Trial Hole at 3.30 m</p>	0.50		0.40	T/J 1				
		3.30		1.50 1.60	B 1 T/J 2				
<b>Remarks</b> General: No live roots, hole stopped due to unstable sides Stability: Sides stable to 2.70m Groundwater: Medium seepage at 3.00m Weather: Sunny, warm, dry, little breeze		Plant used: CAT 432E Length: 2.50m Date: 14/10/2009 Width: 0.60m Ground Level: - Easting: - Northing: -		<b>Key</b> Disturbed sample D Bulk Disturbed Sample B Tub / Jar Sample T / J Vial Sample V Water sample W Standing Water Level Depth of waterstrike		Eng. KJN Chkd. GPW Job No. 09-0275 Hole: TP7 Fig.			
<b>Trial Hole Record</b> Project: Beddington - AD Biomass Power Station Client: Viridor Waste Management									

# **APPENDIX C**

## **GEOTECHNICS FACTUAL REPORT**



**Ground Investigation  
at**

**Beddington, Croydon**

**Factual Report**

**for  
Rolton Group Limited**

**Engineer : Rolton Group Limited**

**Project Number : PC094054**

**December 2009**

**Issuing office :**

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**DRAFT**

Ground Investigation  
at

Factual Report

**Beddington, Croydon**  
for  
Rolton Group Limited

Engineer :  
Rolton Group Limited

**Project No:**  
**PC094054**  
December 2009

**DRAFT**

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## APPENDICES

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APPENDIX 2	Site Location Plan
APPENDIX 3	Borehole Records
APPENDIX 4	Exploratory Hole Location Plan
APPENDIX 5	Laboratory Test Results - Geotechnical
APPENDIX 6	Investigation Techniques and General Notes

**DRAFT**



Ground Investigation  
at  
**BEDDINGTON, CROYDON**

**DRAFT** Factual Report

Project No: PC094054  
December 2009

## **1.0 INTRODUCTION**

A geotechnical and geoenvironmental investigation was undertaken by Geotechnics Limited at the site of a proposed Biomass Power Station in Beddington, Croydon. The investigation was carried out to the instructions of the Engineer/Client, Rolton Group Limited. This report describes the work undertaken and presents the data obtained.

## **2.0 OBJECT AND SCOPE OF THE INVESTIGATION**

The object of the investigation was to obtain information on the ground and groundwater conditions relating to the design of the proposed works within the limitations posed by trial hole numbers, locations, depths, methods adopted and the scope of approved in situ and laboratory testing. The Brief for the project is included in Appendix 1. The investigation comprised boreholes, in situ and laboratory testing and reporting. A geotechnical and geoenvironmental interpretation and evaluation of the data obtained was not commissioned.

## **3.0 PRESENTATION**

A description of the site and a summary of the procedures followed during the investigation process are presented in Sections 4 to 6. The factual data so obtained are presented in Appendices 2 to 5 of this report.

Attention is drawn to the General Notes and Investigation Procedures presented in Appendix 6 to aid an understanding of the procedures followed and the context in which the report should be read.

## **4.0 THE SITE**

### **4.1 Location**

The site is located approximately 3km northwest of the centre of Croydon and approximately 10km south of central London. The approximate Ordnance Survey National Grid Reference for the centre of the site is TQ 292 666 and an extract from the relevant 1:50,000 Scale O.S. Map (Sheet No. 176) is included as Appendix 2.

### **4.2 Description**

The exploratory hole locations and some details of the existing site layout are presented on the Exploratory Hole Location Plan provided by the Engineers, Appendix 7.

## **5.0 PROCEDURE**

### **5.1 Commissioning**

The work was awarded following submission of a tender for ground investigation of the site in accordance with the Client's requirements (see Appendix 1).

### **5.2 General**

The procedures followed in this site investigation are based on *BS 5930 (1999) - Code of Practice for Site Investigations*. The soils and rocks encountered have been described in accordance with Amendment 1 to BS5930, dated December 2007 and BS EN ISO 14688-1 (2002) and BS EN ISO 14689-1 (2003). The Borehole Records are included in Appendix 6. The Exploratory Hole Location Plan was provided by the Engineer and is included in Appendix 4.

The Exploratory Hole locations were specified by the Engineer.

### 5.3 Boreholes

Five (5 No.), 150mm diameter boreholes (numbered BH1 to BH5) were sunk by Cable Percussion Tool techniques to depths varying between 5.45m (BH4 and 5) and 20.45m (BH1 and 3) below ground level. The work was carried out between the 9th and 13th November 2009. An inspection pit was excavated at each borehole location using hand tools to a depth of 1.20m below ground level to check for the presence of underground services.

Representative disturbed (D and B) and undisturbed (UI00) samples of the soils encountered were obtained at regular intervals and Standard Penetration Tests (SPTs) undertaken in appropriate deposits, in order to allow inspection and obtain a measure of the engineering properties of the proved strata.

On encountering groundwater, boring operations were suspended for a period up to 30 minutes in order to record any rise in water level. Full details of groundwater observations during site work are included on the Borehole Records.

On completion standpipes were installed in all boreholes (see Section 5.4).

### 5.4 Instrumentation and Monitoring

Long term monitoring of the gas and groundwater levels was made possible by the installation of 50mm diameter standpipes as follows:

Exploratory Hole	Standpipe Slotted pipe & Filter Zone (m)
BH1	1.00 to 5.00
BH2	1.00 to 5.00
BH3 (Shallow)	1.00 to 5.00
BH3 (Deep)	16.00 to 19.00
BH4	1.00 to 5.00
BH5	1.00 to 5.00

Post-fieldwork monitoring was undertaken by the Engineer.

## 6.0 LABORATORY TESTING

### 6.1 Geotechnical

The laboratory testing schedule was specified by the Engineer in order to relate to the proposed

development. The tests, where appropriate, conform to BS 1377 - Methods of Test for Soils for Civil Engineering Purposes (1990) and were carried out in Geotechnics Limited's UKAS accredited Laboratory (Testing No. 1365). Any descriptions, opinions and interpretations are outside the scope of UKAS accreditation.

The tests undertaken can be summarised as follows:-

#### BS 1377 (1990)

Test No.		Test Description
<b>Part 2</b>		
3.2	12 No.	Moisture Content Determination
4.3 & 5.3	8 No.	Liquid and Plastic Limit Determination
<b>Part 3</b>		
5.3, 5.5	3 No.	Sulphate Analysis - Water Extract
9.5	3 No.	pH Determination
<b>Part 5</b>		
3	2 No.	One-Dimensional Consolidation Properties Determination. Consolidation Test
<b>Part 7</b>		
9	5 No.	Shear Strength Measurement - 100mm diameter (Single Stage) Quick Undrained Triaxial Compression Test

The results of these tests are presented in Appendix 5.

Signed, for and on behalf of Geotechnics Limited.

H Ur Rehman  
BSc, MSc, FGS  
Senior Engineer

D W Bland  
BSc, MSc, CGeol, FGS  
Principal Engineer

**DRAFT**

## **APPENDIX I**

### **The Brief**

**Habib Rehman**

**From:** Geoff Wiggin [Geoff.Wiggin@Rolton.com]

**Sent:** 02 November 2009 14:12

**To:** Terry Clark

**Cc:** David Bland; Julian Bradbury; 09-0275 : GEO - (AD Biomass Power Station - Beddington, London) Correspondence

**Subject:** Beddington - Instruction to undertake cable percussion boring

**DRAFT**

Dear Terry,

Thank you for your quotation for cable percussion boreholes at the above site. We would like to accept your offer with clarification on requirements and further information as follows:

- The site is secure for storage purposes, however there is no covered storage facility
- Welfare facilities are available on site
- Surveying (location and levelling) of borehole locations is not required - RGL site rep will set out the positions on site
- A skip for disposal of waste is not required - Excess spoil is expected to comprise natural arisings which can be left on site
- Engineering supervision is not required - RGL site rep will set out and instruct. Your technician/vehicle to mobilise/demobilise consumables and samples will therefore be required at the start and end of the works.
- Service plans for the site have been provided by our client and their e-mail, with details, will be forwarded to you shortly.

We enclose our purchase order based on your quotation, with revision of items to reflect the above, to the value of £ + VAT.

We will need a minimum of 4 working days advance notice of the commencement date in order to notify our client. With this in mind, please could you advise your availability to commence the works? Please could you also advise at the same time the names of the rig crew and rig certificate details for us to pass onto the client?

In the meantime, if you require any further information, please do not hesitate to contact us.

Kind regards

Geoff Wiggin

Find out how renewable energy can benefit your business. Watch "[Energy: the challenge, the opportunity](#)"

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01/12/2009

**Habib Rehman**

**From:** Geoff Wiggin [Geoff.Wiggin@Rolton.com]  
**Sent:** 26 October 2009 11:52  
**To:** Terry Clark; David Bland  
**Cc:** Julian Bradbury; 09-0275 : GEO - (AD Biomass Power Station - Beddington, London) Correspondence  
**Subject:** RE: Beddington

**DRAFT**

Terry/Dave,

Thanks for the Beddington prices. Please can you book rig accordingly and let us know availability. We will set out and supervise. We will need to submit a cable percussion borehole method statement/risk assessment and crew names etc beforehand. An order and clarification of details/information to follow later.

Kind regards

Geoff

**From:** Terry Clark [mailto:tclark@geotechnics.co.uk]  
**Sent:** 22 October 2009 14:54  
**To:** Geoff Wiggin  
**Cc:** Julian Bradbury  
**Subject:** Beddington

Geoff/Julian,

Many thanks for meeting us this morning and I am sure that we can provide the level of service you require for your future geotechnical and geoenvironmental work. I will get back to you early next week with the paperwork we discussed for the future but attach a quote for the Beddington job which we can start quite quickly at present.

I have provided rates for site welfare facilities and storage but would hope for one week such facilities might be made available on site (3 persons). Allowance for inductions, inspection pits etc has been included.

I also attach our schedule of rates for laboratory testing etc.

I hope you find this acceptable and await your instructions.

Regards

Terry

&lt;&lt;Beddington.xls&gt;&gt; &lt;&lt;labrates2009.doc&gt;&gt; &lt;&lt;Conditions of Offer 09.doc&gt;&gt;

This email has been scanned for viruses by Netshield MXSweep.

Geotechnics Limited, Registered in England No. 1757790 at The Geotechnical Centre, 203 Torrington Avenue, Tile Hill, Coventry CV4 9AP  
[www.geotechnics.co.uk](http://www.geotechnics.co.uk)

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01/12/2009

**DRAFT****GEOTECHNICAL INVESTIGATION ESTIMATE**

Date : October 22, 2009  
Estimate No : QC090357  
Title : Beddington, Croydon  
Client : Rolton

**geotechnics**

Item No.	Description	Quantity	Unit
<b>General</b>			
	Site store (if not available on site)		Sum
	Welfare Van (if no facilities available on site)		Sun
	Locate and level hole locations		Sun
	Skip for disposal of clean spoil		Sur
<b>Cable Percussion Boring</b>			
	Mobilise cable percussion boring rig, equipment and crew to and from site, including preparation and submission of copies of daily site records.		Su
	Setting up and dismantling cable percussion boring rig at the position of each borehole, including the extraction of casings and backfilling borehole with arisings (total time for above, not exceeding 1 hour).	5	N
	Time related activities not covered by other rates e.g. awaiting further instructions, inductions, hand excavation of inspection pits, reinstatement, etc.	7	h
	Cable percussion boring 150mm dia. through soils and fills, 0-10m below ground level.	40	L
	Cable percussion boring 150mm dia. through soils and fills, 10-20m below ground level.	20	L

**DRAFT**

E.O. Item 6 for advancing borehole through rock or other obstruction.	5	Hr
---	---	----

Grout 150mm borehole	35	Lin.m
----------------------	----	-------

**Sampling and Insitu Testing**

Undisturbed 100mm diameter sample.	12	No
------------------------------------	----	----

Standard Penetration Test (0-20m)	37	No
-----------------------------------	----	----

Small disturbed/groundwater sample.	60	No
-------------------------------------	----	----

Bulk disturbed sample.	15	No
------------------------	----	----

**Well Installation**

Provide and install simple standpipe/standpipe piezometer, c/w gravel filter and bentonite seal.	25	Lin.m
--	----	-------

Provide and install lockable flush cover.	5	No
---	---	----

Monitor Installations	4	Visit
-----------------------	---	-------

Total fieldwork cost based upon estimated quantities above.

**Laboratory Testing**

Suggested allowance for Laboratory Testing (at enclosed Standard Rates April 2009)	Sum
--	-----

Contamination Analysis based on CLR8 guidelines	Suite
---	-------

**Professional Services & Reporting**

Enquiries to Statutory Undertakers	Sum
------------------------------------	-----

Provision of on Site Private Services Information	Sum
---	-----

Engineering supervision on site	5	Day
---------------------------------	---	-----

**DRAFT**

Professional Services for carrying out project management,  
logging and preparation of factual report.

Sum

Undertake interpretation/analysis.

Fees

Estimate Total (exc

Insurance excess to be reimbursed should services not  
disclosed by the client prior to starting contract be  
accidentally damaged during site works (see Clause 4 of our  
Conditions of Offer

Sum





**ROLTON GROUP**  
ENGINEERING THE FUTURE

## **PURCHASE ORDER**

Our Project Ref: **09-0275**  
Our Phase Ref: **GEO**  
Order Number: **22367 / 09-0275**  
Order Date: **29 Oct 2009**

In respect of: **Site Investigation works at Beddington**

Geotechnics Limited  
The Geotechnical Centre  
203 Torrington Avenue

**DRAFT**

Tile Hill  
Coventry  
West Midlands  
CV4 9AP

To carry out site investigation works all in accordance with **£**  
your quotation QC090357 dated 22 October 2009.

Sub Total **£**

VAT @ 15% **£**

Total Order Value (not to exceed) **£**

Approved Supplier: **Yes**

Special Instructions (including delivery name and address if different)

Requisitioner: **Geoff Wiggin**

Authorised By: **Allan Rose**

Payment shall be 90 days following delivery of a valid invoice.

Rolton Group Ltd's Terms & Conditions apply.

Our project ref, phase ref, order no, the order date and purchase description must appear on all related correspondence.

Invoices should be sent for the attention of:

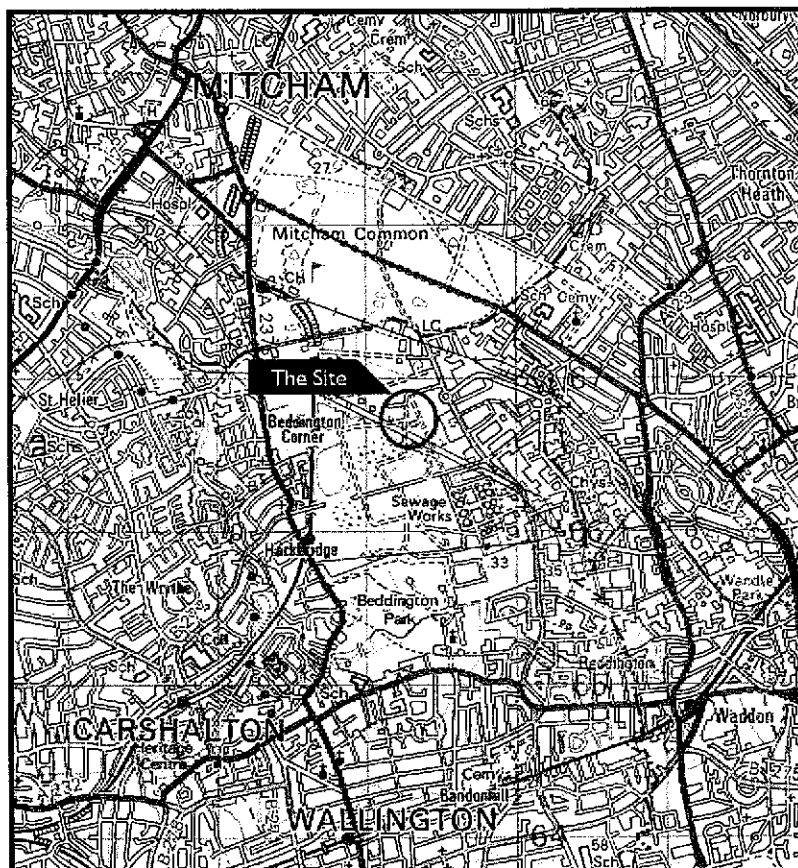
The Accounts Department  
Rolton Group Ltd  
The Charles Parker Building  
Midland Road  
Higham Ferrers  
Northants NN10 8DN

**DRAFT**

**APPENDIX 2**  
**Site Location Plan**

# SITE LOCATION PLAN

**DRAFT**



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Ground Investigation  
at  
Beddington, Croydon  
for  
Rolton Group Limited



**DRAFT**

**APPENDIX 3**  
**Borehole Records**

# DATA SHEET - Symbols and Abbreviations used on Records

## Sample Types

B	Bulk disturbed sample
BLK	Block sample
C	Core sample
D	Small disturbed sample (tub/jar)
E	Environmental test sample
ES	Environmental soil sample
EW	Environmental water sample
G	Gas sample
L	Liner sample
P	Piston sample (PF - failed piston sample)
TW	Thin walled push in sample
U -	Open Tube - 102mm diameter with blows to take sample. (UF - failed U sample)
V	Vial sample
W	Water sample
#	Sample Not Recovered

## Insitu Testing / Properties

S	Standard Penetration Test (SPT)
C	SPT with cone
VN	Strength from Insitu Vane
HV	Strength from Hand Vane
PP	Strength from Pocket Penetrometer
	(All other strengths from undrained triaxial testing)
w%	Water content
N	SPT Result
-/-	Blows/penetration (mm) after 150mm seating.
.*/- (mm)	Total blows/penetration
( )	Extrapolated value

## Rotary Core

RQD	Rock Quality Designation (% of intact core > 100mm)
FRACTURE INDEX	Fractures/metre
FRACTURE SPACING (mm)	Maximum Minimum
NI	Non-intact core
NR	No core recovery
(where core recovery is unknown it is assumed to be at the base of the run)	

## Groundwater

Water Strike	
Depth Water Rose To	

## Instrumentation

Seal

Filter

Seal

## Strata

Made Ground Type 1

Type 2

Topsoil

Cobbles and Boulders

Gravel

Sand

Silt

Clay

Peat

Note: Composite soil types shown by combined symbols

Chalk

Limestone

Sandstone

Coal

## Strata, Continued

Mudstone

Siltstone

## Metamorphic Rock

Fine Grained

Medium Grained

Coarse Grained

## Igneous Rock

Fine Grained

Medium Grained

Coarse Grained

## Backfill Materials

Arisings

Bentonite Seal

Concrete

Fine Gravel Filter

General Fill

Gravel Filter

Grout

Sand Filter

Tarmacadam

# BOREHOLE RECORD - Cable Percussion

Project BEDDINGTON, CROYDON

Engineer ROLTON GROUP

Borehole BH1  
Project No PC094054

Client ROLTON GROUP

Sampling			Properties			Strata		Scale 1:50
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT	Description	Legend	
0.30 0.50	D B					Brown SAND and GRAVEL. Gravel is angular to subrounded fine to coarse flint and quartzite.	G.L.	
1.20- 1.65 1.20- 1.65	B	1.20 (DRY)			C32	Dense brown sandy angular and subrounded fine to coarse GRAVEL of flint and occasionally quartzite.		1.00
1.75	D							
2.00- 2.45 2.00- 2.45	B	2.00 (DRY)			C36			
2.75	D							
3.00- 3.45 3.00- 3.45	B	3.00 (2.90)			C35	Below 2.75m, gravel is fine to coarse and slightly sandy. (Possible loss of ..... due to water ingress).		
3.70 3.75 4.00- 4.45 4.00- 4.45	W D B	4.00			C37			
4.75	D							
5.00- 5.45 5.00- 5.45	B	5.00 (4.50)			C17	Stiff fissured dark grey slightly micaceous CLAY. Fissures are extremely to very closely spaced, inclined at 30 to 60 degrees, planar, smooth, randomly orientated, tight.		5.10
6.00	D							
6.50- 6.95	U25	6.00 (DRY)		28				
7.00	D					Below 7.00m, fissures are very closely spaced.		
8.00- 8.45	D	6.00 (DRY)			S24	Below 8.00m, becoming stiff to very stiff.		
9.00	D							
9.50- 9.95	U25	6.00 (DRY)	133	28		At 9.50m, high strength		
10.00	D							

Boring				Progress					Groundwater							
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater		
1.20	0.15	Inspection Pit Cable Percussion	TY TY	G.L.	5.00	4.50	09/11/09	08:00	3.00	3.00	2.90	20	5.50	Slow inflow. Slow inflow.		
20.45				5.50			09/11/09	18:00	19.00						6.00	18.70
				5.50			10/11/09	08:00								
				20.45			10/11/09	18:00								

Remarks Inspection pit hand excavated to 1.20m depth. A 50mm standpipe was installed to 5.00m with a slotted section from 1.00m to 5.00m with flush lockable protective cover. Detail as follows from base of hole: arisings up to 6.00m, bentonite seal up to 5.00m, gravel filter up to 1.00m, bentonite seal up to 0.30m, concrete up to ground level. Chiselling: 14.00-14.60m for 30 minutes.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with Amendment 1 published December 2007 to BS5930:1999

Logged by TZ  
Checked by DWB  
Figure 1 of 3  
15/12/2009

geotechnics

# BOREHOLE RECORD - Cable Percussion

Project BEDDINGTON, CROYDON


Engineer ROLTON GROUP

Borehole BH1  
Project No PC094054

Client ROLTON GROUP

Sampling			Properties			Strata		Scale 1:50	
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT	Description		Depth	Legend
11.00-11.45	D	6.00 (DRY)			S29				
12.00	D								
12.50-12.95	U30	6.00 (DRY)	201	28		At 12.50m, very high strength			
13.00	D								
14.00-14.06	D	6.00 (DRY)			S50/10	Weak to medium strong light grey SILTSTONE, recovered as clayey angular fine to coarse gravel.		14.00	
15.00	D					Very stiff fissured dark brownish grey slightly micaceous CLAY. Fissures are very closely to closely spaced, inclined at 30 to 60 degrees, planar, smooth.		14.60	
15.50-15.95	U40	6.00 (DRY)							
16.00	D					Below 16.00m, fissures are extremely closely spaced.			
17.00-17.45	D	6.00 (DRY)			S36				
18.00	D								
18.50-18.95	U40	6.00 (DRY)							
19.00	D								
19.50	D					Below 19.50m, with occasional laminae and lenses of light grey silt.			
20.00-20.45	D	6.00 (DRY)			S40				

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks 

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with Amendment 1 published December 2007 to BS5930:1999

Logged by TZ  
Checked by DWB  
Figure 2 of 3  
15/12/2009

**geotechnics**

# BOREHOLE RECORD - Cable Percussion

Project BEDDINGTON, CROYDON

Engineer ROLTON GROUP


Borehole BH1  
Project No PC094054

Client ROLTON GROUP

Sampling			Properties			Strata		Scale	1:50
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT	Description		Legend	
						End of Borehole	20.45		

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Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	In Mins	Depth Sealed	Remarks on Groundwater

Remarks 

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with Amendment 1 published December 2007 to BS5930:1999

Logged by  
Checked by  
Figure

TZ  
DWB  
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15/12/2009

**geotechnics**



# BOREHOLE RECORD - Cable Percussion

Project BEDDINGTON, CROYDON

Engineer ROLTON GROUP

Borehole BH2  
Project No PC094054

Client ROLTON GROUP

Sampling		Properties			Strata	Scale 1:50
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT	
0.30 0.50	D B					G.L.
1.20- 1.65 1.20- 1.65	B	1.00 (DRY)			C24	
1.75	D					1.75
2.00- 2.45 2.00- 2.45	B	2.00 (DRY)			C39	
2.75	D					
3.00- 3.45 3.00- 3.45	B	3.00 (DRY)			C33	
3.70 3.70 3.70 3.75 4.00- 4.45 4.00- 4.45	W W W D B					
4.75	D	4.00 (3.50)			C34	
5.00- 5.45 5.00- 5.45	B	5.00 (4.00)			C16	5.30
6.00	D			28		
6.50- 6.95	U30	6.00	77	30		
7.00	D					
8.00- 8.45	D	6.00 (DRY)			S27	
9.00	D					
9.50- 9.95	U32	6.00				
10.00	D					
End of Borehole						10.00

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	In Mins	Depth Sealed	Remarks on Groundwater
1.20	0.15	Inspection Pit	TY	G.L.			10/11/09	08:00	4.00	4.00	3.70	20	6.00	slow inflow.
10.00		Cable Percussion	TY	6.00	6.00	4.00	10/11/09	18:00						
				6.00	6.00	4.00	11/11/09	08:00						
				10.00	6.00	DRY	11/11/09	18:00						

Remarks Inspection pit hand excavated to 1.20m depth. A 50mm standpipe was installed to 5.00m with a slotted section from 1.00m to 5.00m with flush lockable protective cover. Detail as follows from base of hole: arisings up to 6.00m, bentonite seal up to 5.00m, gravel filter up to 1.00m, bentonite seal up to 0.30m, concrete up to ground level.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with Amendment 1 published December 2007 to BS5930:1999

Logged by  
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Figure

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# BOREHOLE RECORD - Cable Percussion

Project BEDDINGTON, CROYDON

Engineer ROLTON GROUP

Borehole BH3  
Project No PC094054

Client ROLTON GROUP

Sampling			Properties			Strata	Scale 1:50	
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT	Description	Legend	
0.30 0.30 0.50	D D B					Orangish brown SAND and GRAVEL of angular and subrounded fine to coarse flint.	G.L.	
1.20- 1.65 1.20- 1.65	B	1.00 (DRY)			C43	Dense brown sandy GRAVEL of angular and subrounded fine to coarse flint.	1.20	
1.75	D							
2.00- 2.65 2.00- 2.45	B	2.00 (DRY)			C36			
2.75	D							
3.00- 3.65 3.00- 3.45	B	3.00 (DRY)			C32			
3.70 3.70 3.75 4.00- 4.45 4.00- 4.45	W W D B	4.00 (3.70)		7.5	C33			
4.75	D			26				
5.00- 5.45	D	5.00 (4.00)			S20	Stiff fissured dark brownish grey slightly micaceous CLAY. Fissures are very closely spaced, inclined at 30 to 60 degrees, planar, smooth, tight.	4.70	
6.00	D							
6.50- 6.95	U25	6.00 (DRY)		25				
7.00	D					Below 7.00m, becoming stiff to very stiff.		
8.00- 8.45	D	6.00 (DRY)			S27			
9.00	D							
9.70 9.75 10.00-10.45	D D U30	6.00 (DRY)	147	26		At 10.00m, high strength		

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	In Mins	Depth Sealed	Remarks on Groundwater
1.20	0.15	Inspection Pit Cable Percussion	TY TY	G.L.	6.00	DRY	11/11/09	08:00	4.50	4.30	3.70	20	6.00	Medium inflow.
20.45				9.00			11/11/09	18:00	18.00	6.00	17.20	20	N/S	Medium inflow.
9.00				12/11/09			08:00							
20.45				12/11/09			18:00							

Remarks: Inspection pit hand excavated to 1.20m depth. A 50mm standpipe was installed to 5.00m with a slotted section from 1.00m to 5.00m with flush lockable protective cover and a 50mm standpipe was installed to 19.00m with a slotted section from 16.00m to 19.00m with flush lockable protective cover. Detail as follows from base of hole: bentonite seal up to 19.00m, gravel filter up to 15.00m, bentonite seal up to 11.00m, arisings up to 6.00m, bentonite seal up to 5.00m, gravel filter up to 1.00m, bentonite seal up to 0.30m, concrete up to ground level. Chiselling: 13.50-13.90m for 30 minutes.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with Amendment 1 published December 2007 to BS5930:1999

Logged by T2  
Checked by DWB  
Figure 1 of 3  
15/12/2009

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# BOREHOLE RECORD - Cable Percussion

Project BEDDINGTON, CROYDON


Engineer ROLTON GROUP

Borehole BH3  
Project No PC094054

Client ROLTON GROUP

Sampling			Properties			Strata	Scale 1:50	
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT	Description	Depth	Legend
10.50	D							
11.50	D							
12.00-12.45	D	6.00 (DRY)			S30			
13.00	D					Below 13.00m, becoming very stiff and fissures are less apparent.		
13.75	D					Weak to medium strong light grey SILTSTONE, recovered as clayey angular fine to coarse gravel.	13.50	xxxxx
14.00-14.45	U35	6.00 (DRY)				Very stiff fissured dark brownish grey CLAY. Fissures are extremely closely spaced, inclined at 10 to 60 degrees, planar, smooth, tight.	13.80	xxxxx
14.50	D							
						Below 15.00m, fissures not noted.		
15.50	D							
16.00-16.45	D	6.00 (DRY)			S33			
17.00	D							
						Dark brownish grey clayey fine SAND with occasional lenses of light grey silt.	17.00	
18.00-18.45	U40	6.00 (DRY)	232	21			18.00	
18.50	D					Very stiff dark brownish grey slightly sandy CLAY with occasional laminae of fine sand. At 18.00m, very high strength		
19.50	D							
20.00-20.45	D	6.00 (DRY)			S40			

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	In Mins	Depth Sealed	Remarks on Groundwater

Remarks 

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with Amendment 1 published December 2007 to BS5930:1999

Logged by TZ  
Checked by DWB  
Figure 2 of 3  
15/12/2009

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**BOREHOLE RECORD** - Cable Percussion

Project **BEDDINGTON, CROYDON**

Engineer ROLTON GROUP

**Borehole**  
Project No

**BH3**  
PC094054

Client ROLTON GROUP

Sampling			Properties			Strata		Scale 1:50						
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT	Description		Depth	Legend					
						End of Borehole		20.45						
Boring			Progress			Groundwater								
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	In Mins	Depth Sealed	Remarks on Groundwater
Remarks										Logged by TZ Checked by DWB Figure 3 of 3 15/12/2009				

DRAFT

Symbols and abbreviations are explained on the accompanying key sheet.  
 All dimensions

Logged in accordance with Amendment 1 published December 2007 to BS5930:1999

# BOREHOLE RECORD - Cable Percussion

Project BEDDINGTON, CROYDON

Engineer ROLTON GROUP

Borehole BH4  
Project No PC094054

Client ROLTON GROUP

Sampling			Properties			Strata		Scale 1:50	
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT	Description	Legend	G.L.	
0.30 0.50	D B					Dark grey slightly gravelly organic clayey SAND. Gravel is angular to rounded fine to coarse flint and quartzite.			
1.20- 1.65 1.20- 1.65	B	2.00 (DRY)			C20	Medium dense brown sandy GRAVEL of angular to subrounded fine to coarse flint and occasional quartzite.		0.60	
1.75	D								
2.00- 2.45 2.00- 2.45	B	2.00 (DRY)			C36	Below 2.00m, becoming dense and slightly sandy.			
2.75	D								
3.00- 3.45 3.00- 3.45	B	3.00 (DRY)			C35				
3.75	D								
4.00- 4.45 4.00 4.00 4.00- 4.45 4.50	B W W D	4.00 (4.00)		32	C30			4.50	
4.75	D					Stiff dark brownish grey slightly micaceous CLAY.			
5.00- 5.45	D	4.50 (4.00)			S16			5.45	
						End of Borehole			

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	In Mins	Depth Sealed	Remarks on Groundwater
1.20 5.45	0.15	Inspection Pit Cable Percussion	TY TY	G.L. 5.45	4.50	4.00	09/11/09 09/11/09	08:00 18:00	3.00	3.00		20	N/S	Slow inflow.

Remarks: Inspection pit hand excavated to 1.20m depth. A 50mm standpipe was installed to 5.00m with a slotted section from 1.00m to 5.00m with flush lockable protective cover. Detail as follows from base of hole: gravel filter up to 1.00m, bentonite seal up to 0.30m, concrete up to ground level.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with Amendment 1 published December 2007 to BS5930:1999

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Figure

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DWB  
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# BOREHOLE RECORD - Cable Percussion

Project BEDDINGTON, CROYDON


Engineer ROLTON GROUP

Borehole BH5  
Project No PC094054

Client ROLTON GROUP

Sampling			Properties			Strata		Scale 1:50	
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT	Description	Depth	Legend	
0.30 0.50	D B					Brown SAND and GRAVEL of angular to rounded fine to coarse flint.	G.L.		
1.20- 1.65 1.20- 1.65	B	1.00 (DRY)			C23	Medium dense grey sandy GRAVEL of angular fine to coarse flint and occasionally subrounded quartzite.	1.00		
1.75	D								
2.00- 2.45 2.00- 2.45	B	2.00 (DRY)			C22				
2.75	D								
3.00- 3.45 3.00- 3.45	B	3.00 (DRY)			C27				
3.75	D								
4.00- 4.45 4.00- 4.45	B W	3.00 (DRY)			C26				
4.75	D			31			4.70		
5.00- 5.45	D	3.00 (DRY)			S20	Stiff dark brown CLAY.			
						End of Borehole	5.45		

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	In Mins	Depth Sealed	Remarks on Groundwater
1.20 5.45	0.15	Inspection Pit Cable Percussion	TY TY	G.L. 3.45 3.45 5.45	3.00 3.00 3.00	DRY DRY DRY	12/11/09 12/11/09 13/11/09 13/11/09	08:00 18:00 08:00 18:00						None encountered during boring.

Remarks  Inspection pit hand excavated to 1.20m depth.  
A 50mm standpipe was installed to 5.00m with a slotted section from 1.00m to 5.00m with flush lockable protective cover. Detail as follows from base of hole: gravel filter up to 1.00m, bentonite seal up to 0.30m, concrete up to ground level.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

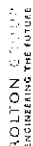
Logged in accordance with Amendment 1 published December 2007 to BS5930:1999

Logged by TZ  
Checked by DWB  
Figure 1 of 1  
15/12/2009

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**APPENDIX 4**  
**Exploratory Hole Location Plan**

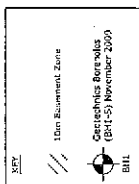


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www.fq-ben.com

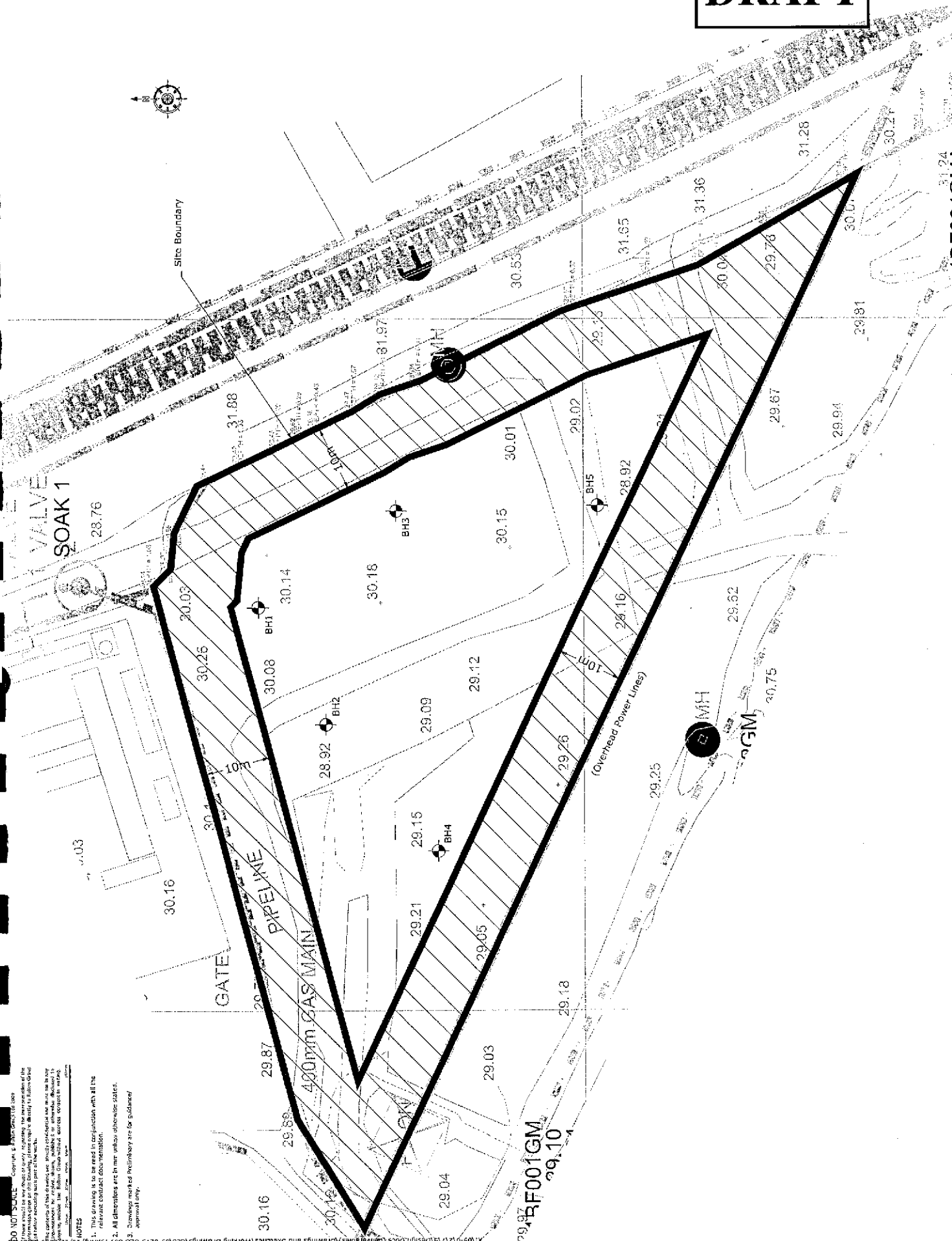
THE CHARLES PARKER BUILDING  
MIDLAND ROAD, HIGHAM FERRERS  
NATUNTS NH10 8DW

LOC: MINERVA BUSINESS PARK  
LYNCHWOOD

NO 6 THE COURTYARD  
WAINWICK ROAD, SOLIHULL

NO 16 NAHIE COUNTY  
BALSBOUGH LINKS[illegible]

Transmitting No.	09-0275/GEO/001 I3
Receiving No.	09-10.09
Transmitting Date	09.10.09
Receiving Date	09.10.09
Transmitting Time	1:25@A1
Receiving Time	1:50@A3
Transmitting Station	TW
Receiving Station	KIN





**DRAFT**

## **APPENDIX 5**

### **Laboratory Test Results - Geotechnical**

### Classification and Strength

Symbol	C - Clay (0 - containing organic matter)	M - Silt
Plasticity		L - Low I - Intermediate H - High V - Very High E - Extremely High

$I_p$	Plasticity Index
%	% Retained on 425 $\mu$ m sieve, shown under $I_p$ value
$w_L$	Liquid Limit
$w_p$	Plastic Limit
NP	Non-Plastic
w	Moisture Content
$P_d$	Particle Density
Test	<b>Quick undrained triaxial tests</b>
SS	Single stage - 102mm diameter.
S3	Single stage - set of 3 38mm diameter.
MS	Multistage - 102mm diameter.
D	Drained Test
HV	Hand Vane
PP	Pocket Penetrometer (kg/cm <sup>2</sup> )
UT	Unsuitable for Test
$\gamma_b$	Bulk Density
$\sigma_3$	Triaxial Cell Pressure
$\sigma_1 - \sigma_3$	Deviator Stress
##	Excessive Strain
$c_u$	Undrained Cohesion
c	Cohesion Intercept
$\phi$	Angle of Shearing Resistance
Linear Shrink	Linear Shrinkage

### Consolidation

$m_v$	Coefficient of Volume Compressibility
$C_{v50}$	Coefficient of Consolidation - Log t
$C_{v90}$	Coefficient of Consolidation - $\sqrt{t}$

### Chemical Analysis

Acid Soluble	Total sulphate in specimen expressed as SO <sub>3</sub> %, value in brackets expressed as SO <sub>4</sub> %
Water Soluble	Soluble sulphate in 2:1 water : soil extract, expressed as SO <sub>3</sub> g/l, value in brackets expressed as SO <sub>4</sub> g/l
In Water	Sulphate content of groundwater, expressed as SO <sub>3</sub> g/l, value in brackets expressed as SO <sub>4</sub> g/l
pH	pH value
Organic content	Organic content expressed as a percentage of dry weight
Chloride	Chloride Ion content expressed as a percentage of dry weight

### MCV, Compaction, CBR

MCV	Moisture Condition Value at natural moisture content
MCC	Moisture Condition Calibration
CCV	Chalk Crushing Value

### Compaction

Type	2.5 = BS 2.5 kg Rammer
	4.5 = BS 4.5 kg Rammer
	V = BS Vibrating Hammer
$\gamma_b$	Bulk Density
$\gamma_d$	Dry Density

### CBR California Bearing Ratio

Type	2.5 = Test on Specimen Recompacted using BS 2.5 kg Rammer
	4.5 = As above but using BS 4.5 kg Rammer
	V = As above but using BS Vibrating Hammer
M	= Test on open drive mould specimen cut in field
S	= Soaked Specimen
Top	CBR at top of mould
Bottom	CBR at bottom of mould
ND	None Detected

All tests performed in accordance with BS 1377 : Parts 1-9 : 1990 incorporating amendments where appropriate.

## Classification and Strength

Symbol	C - Clay (0 - containing organic matter)	M - Silt
Plasticity	L - Low	I - Intermediate
		H - High
		V - Very High
		E - Extremely High

$I_p$	Plasticity Index
%	% Retained on 425 $\mu$ m sieve, shown under $I_p$ value
$w_L$	Liquid Limit
$w_p$	Plastic Limit
NP	Non-Plastic
w	Moisture Content
$P_d$	Particle Density
Test	<b>Quick undrained triaxial tests</b>
SS	Single stage - 102mm diameter.
S3	Single stage - set of 3 38mm diameter.
MS	Multistage - 102mm diameter.
D	Drained Test
HV	Hand Vane
PP	Pocket Penetrometer ( $\text{kg}/\text{cm}^2$ )
UT	Unsuitable for Test
$\gamma_b$	Bulk Density
$\sigma_3$	Triaxial Cell Pressure
$\sigma_1 - \sigma_3$	Deviator Stress
##	Excessive Strain
$c_u$	Undrained Cohesion
c	Cohesion Intercept
$\phi$	Angle of Shearing Resistance
Linear Shrink	Linear Shrinkage

## Consolidation

$m_v$	Coefficient of Volume Compressibility
$C_{v50}$	Coefficient of Consolidation - Log t
$C_{v90}$	Coefficient of Consolidation - $\sqrt{t}$

## Chemical Analysis

Acid Soluble	Total sulphate in specimen expressed as $\text{SO}_3$ %, value in brackets expressed as $\text{SO}_4$ %
Water Soluble	Soluble sulphate in 2:1 water : soil extract, expressed as $\text{SO}_3$ g/l, value in brackets expressed as $\text{SO}_4$ g/l
In Water	Sulphate content of groundwater, expressed as $\text{SO}_3$ g/l, value in brackets expressed as $\text{SO}_4$ g/l
pH	pH value
Organic content	Organic content expressed as a percentage of dry weight
Chloride	Chloride Ion content expressed as a percentage of dry weight

## MCV, Compaction, CBR

MCV	Moisture Condition Value at natural moisture content
MCC	Moisture Condition Calibration
CCV	Chalk Crushing Value

## Compaction

Type	2.5 = BS 2.5 kg Rammer
	4.5 = BS 4.5 kg Rammer
	V = BS Vibrating Hammer
$\gamma_b$	Bulk Density
$\gamma_d$	Dry Density

## CBR California Bearing Ratio

Type	2.5 = Test on Specimen Recompacted using BS 2.5 kg Rammer
	4.5 = As above but using BS 4.5 kg Rammer
	V = As above but using BS Vibrating Hammer
M	= Test on open drive mould specimen cut in field
S	= Soaked Specimen
Top	CBR at top of mould
Bottom	CBR at bottom of mould
ND	None Detected

All tests performed in accordance with BS 1377 : Parts 1-9 : 1990 incorporating amendments where appropriate.

# LABORATORY RESULTS - Classification and Strength

Project BEDDINGTON, CROYDON

Project No: PC094054

**DRAFT**

Sample					Classification					Strength					
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Symbol	$I_p$ ( $>425$ ) %	$w_L$ %	$w_p$ %	$w$ ( $p_d$ ) %	Test	$\gamma_d$ ( $\gamma_d$ ) Mg/m <sup>3</sup>	$\sigma_3$ kN/m <sup>2</sup>	$\sigma_1$ kN/m <sup>2</sup>	$\sigma_3$ kN/m <sup>2</sup>	$C_{Avg}$ kN/m <sup>2</sup>
BH1	6.50- 6.95 (6.50)	U	C32081	Dark grey fissured CLAY.	CV	40 (NAT 0%)	72	32	28						
BH1	9.50- 9.95 (9.50)	U	C32080	Brown laminated fissured CLAY. PP = $>4.5$ , $>4.5$ kg/square cm	CV	51 (NAT 0%)	78	27	28	SS	1.98	200	265	133	133
BH1	12.50- 12.95 (12.50)	U	C32084	Dark grey laminated fissured CLAY. PP = $>4.5$ , $>4.5$ kg/square cm	CV	41 (NAT 0%)	75	34	28	SS	1.98	250	402	201	201
BH2	6.00 (6.00)	D	C31486	Dark brownish grey CLAY.					28						
BH2	6.50- 6.95 (6.50)	U	C32086	Dark brownish grey laminated fissured slightly sandy CLAY. PP 3.50, 3.00 kg/square cm	CV	49 (NAT 0%)	73	24	30	SS	1.96	125	153	77 ##	77
BH3	4.00- 4.45 (4.00)	B	C32099	Brown sandy GRAVEL.					7.5						
BH3	4.75 (4.75)	D	C31484	Dark brownish grey slightly gravelly CLAY.	CH	45 (31%)	66	21	26						
BH3	6.50- 6.95 (6.50)	U	C32088	Dark brownish grey fissured slightly sandy CLAY.	CH	38 (NAT 0%)	68	30	25						
BH3	10.00- 10.45 (10.00)	U	C32089	Dark brownish grey laminated fissured CLAY. PP = $>4.5$ , $>4.5$ kg/square cm	CV	39 (NAT 0%)	73	34	26	SS	1.98	200	295	147	147
BH3	18.00- 18.45 (18.00)	U	C32087	Dark brownish grey fissured slightly sandy CLAY. PP = $>4.5$ , $>4.5$ kg/square cm	CH	36 (NAT 0%)	56	20	21	SS	1.99	350	463	232 ##	232
BH4	4.50 (4.50)	D	C31481	Brownish grey slightly gravelly CLAY.					32						
BH5	4.75 (4.75)	D	C31482	Brownish grey slightly gravelly CLAY.					31						

Remarks Tests performed in accordance with BS 1377: 1990

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# LABORATORY RESULTS - Consolidation e/loge Plot

Project BEDDINGTON

Project No PC094054

Borehole BH1

Sample Depth 6.50 - 6.65 m

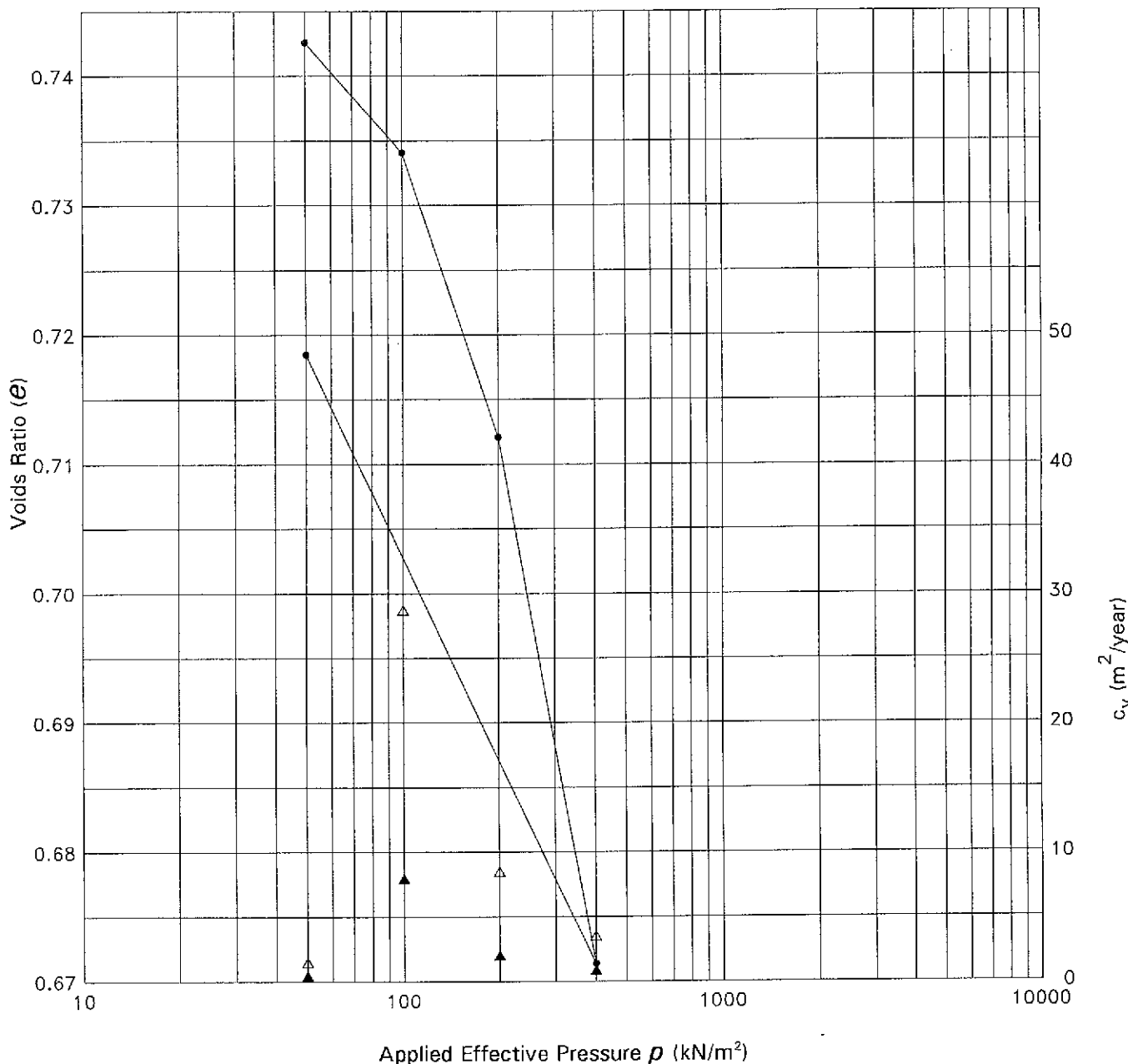
Sample Type A

Client

**DRAFT**

The determination of one dimensional consolidation properties in accordance with Clause 3 of BS1377: Part 5: 1990

Symbols: Voids Ratio  $\bullet$ ,  $c_{v50}$   $\blacktriangle$ ,  $c_{v90}$   $\triangle$



Applied Pressure $\text{kN/m}^2$	0-50	50-100	100-200	200-400	400-50					
$m_v$ $\text{m}^2/\text{MN}$	0.07	0.10	0.13	0.12	0.08					
$c_{v50}$ Log Time $\text{m}^2/\text{yr}$	-	7.94	2.00	0.84	0.43					
$c_{v90}$ Root Time $\text{m}^2/\text{yr}$	-	28.71	8.49	3.50	1.48					
Voids Ratio	0.743	0.734	0.712	0.671	0.718					
Description		Specimen Diameter 75.060 mm				Initial Water Content 27.79 %				
C32081 Brown laminated fissured CLAY		Initial Height 18.940 mm				Final Water Content 29.31 %				
		Particle Density 2.65 Assumed				Initial Saturation 98.32 %				
		Initial Voids Ratio 0.749				Initial Bulk Density 1.94 $\text{Mg/m}^3$				
						Initial Dry Density 1.52 $\text{Mg/m}^3$				

Remarks Laboratory temperature  $20^\circ\text{C} \pm 4^\circ\text{C}$   
Specimen cut vertically from base of sample

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# LABORATORY RESULTS - Consolidation $e/\log p$ Plot

Project BEDDINGTON

Project No PC094054

Borehole BH5

Sample Depth 6.58 m

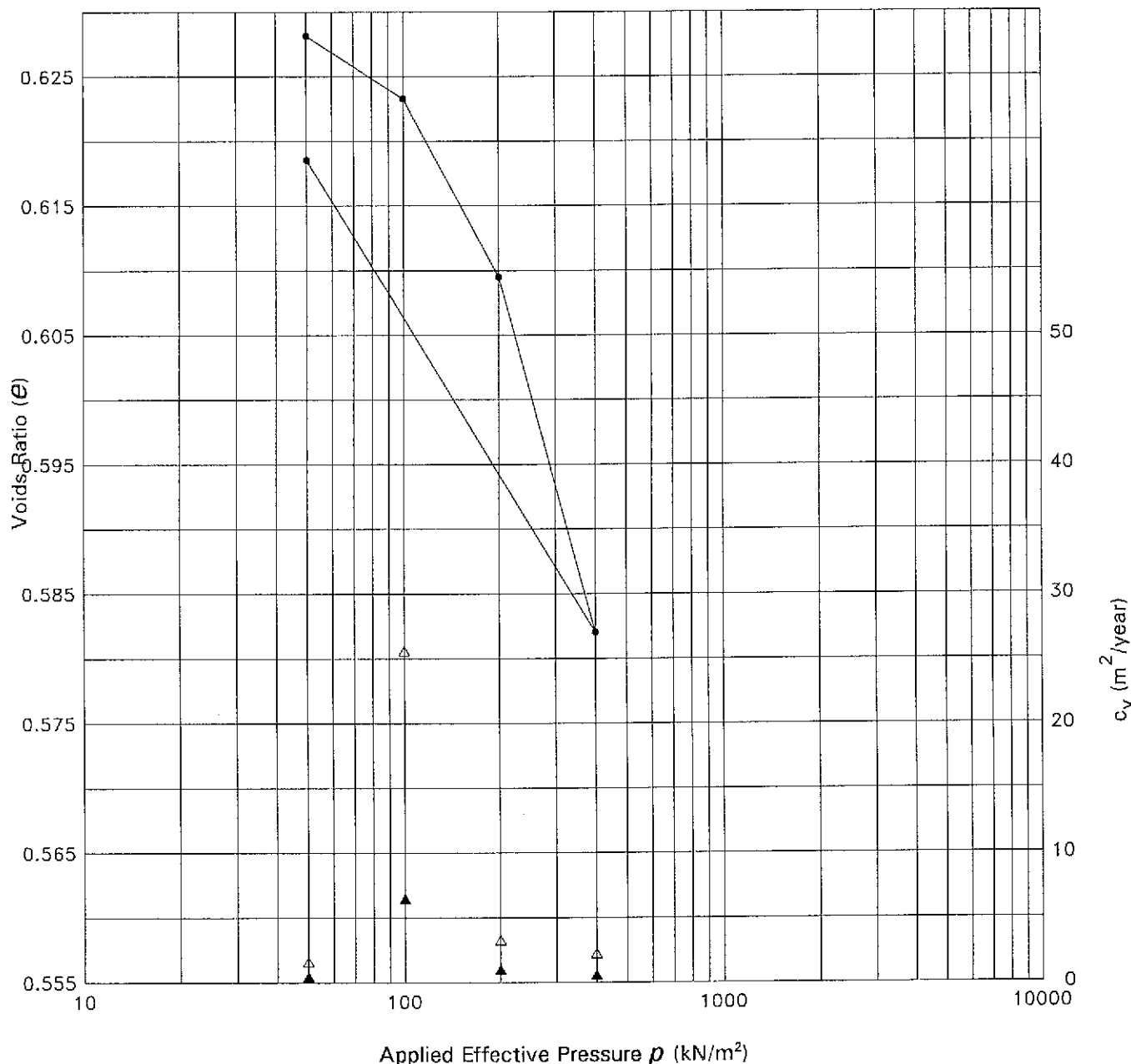
Sample Type

Client

**DRAFT**

The determination of one dimensional consolidation properties in accordance with Clause 3 of BS1377: Part 5: 1990

Symbols: Voids Ratio •,  $c_{v50}$  ▲,  $c_{v90}$  △



Applied Pressure $kN/m^2$	0-50	50-100	100-200	200-400	400-50					
$m_v$ $m^2/MN$	0.03	0.06	0.09	0.09	0.07					
$c_{v50}$ Log Time $m^2/yr$	-	6.45	0.99	0.56	0.43					
$c_{v90}$ Root Time $m^2/yr$	-	25.58	3.27	2.23	1.58					
Voids Ratio	0.628	0.623	0.609	0.582	0.619					
Description C32088 Brown laminated fissured slightly sandy CLAY			Specimen Diameter		74.650	mm	Initial Water Content		24.91	%
			Initial Height		18.890	mm	Final Water Content		25.72	%
			Particle Density		2.65 Assumed		Initial Saturation		100	%
			Initial Voids Ratio		0.630		Initial Bulk Density		2.03	Mg/m³
							Initial Dry Density		1.63	Mg/m³

Remarks Laboratory temperature  $20^\circ C \pm 4^\circ C$   
Specimen cut vertically from base of sample

geotechnics



**DRAFT**

## **APPENDIX 6**

### **Investigation Techniques and General Notes**



# INVESTIGATION TECHNIQUES

## INTRODUCTION

The following brief review of Ground Investigation techniques, generally used as part of most Site Investigations in the UK, summarises their methodology, advantages and limitations. Detailed descriptions of the techniques are available and can be provided on request. This review should be read in conjunction with the accompanying General Notes.

## TRIAL PITS

The trial pit is amongst the most simple yet effective means of identifying shallow ground conditions on a site. Its advantages include simplicity, speed, potential accuracy and cost-effectiveness. The trial pit is most commonly formed using a backhoing excavator which can typically determine ground conditions to some 4 metres below ground level. Hand excavation is often used to locate, expose and detail existing foundations, features or services. In general, it is difficult to extend pits significantly below the water table in predominantly granular soils, where flows can cause instability. Unless otherwise stated, the trial pits will not have been provided with temporary side support during their construction. Under such circumstances ground conditions to some 1.20 metres can be closely inspected, subject to stability assessment, but below this depth, entrance into the pit is not permitted in the absence of shoring and hence observations will have been made from ground surface and samples taken from the excavator bucket.

Trends in strata type, level and thickness can be determined, shear surfaces identified and the behaviour of plant, excavation sides and excavated materials can be related to the construction process. They are particularly valuable in land slip investigations. Some types of insitu test can be undertaken in such pits and large disturbed or block samples obtained.

## CABLE PERCUSSION BORING

The light Cable Percussion technique of soft ground boring, typically at a diameter of 150mm, is a well established simple and flexible method of boring vertical holes and generally allows data to be obtained in respect of strata conditions other than rock. A tubular cutter (for cohesive soils) or shell with a flap valve (for granular soils) is repeatedly lifted and dropped using a winch and rope operating from an "A" frame. Soil which enters these tools is regularly removed and either sampled for subsequent examination or test, or laid to one side for backfilling. Steel casing will have been used to prevent collapse of the borehole sides where necessary. A degree of disturbance of soil and mixing of layers is inevitable and the presence of very thin layers of different soils within a particular stratum may not be identified. Changes in strata type can only be detected on recognition of a change in soil samples at surface, after the interface has been passed. For the foregoing reasons, depth measurements should not be considered to be more accurate than 0.10 metre.

In cohesive soils cylindrical samples are retrieved by driving or pushing in 100mm nominal diameter tubes. In soft soils, piston sampling or vane testing may be undertaken. In granular soils and often in cohesive materials, insitu Standard Penetration Tests (SPT's) are performed. The SPT records the number of standard blows required to drive a 50mm diameter open or cone ended probe for 300mm after an initial 150mm penetration. A modified method of recording is used in more dense strata. Small disturbed samples are obtained throughout.

The technique can determine ground conditions to depths in excess of 30 metres under suitable circumstances and usually causes less surface disturbance than trial pitting.

## ROTARY DRILLING

Rotary Drilling to produce cores by rotating an annular diamond-impregnated tube or barrel into the ground is the technique most appropriate to the forming of site investigation boreholes through rock or other hard strata. It has the advantage of being able to be used vertically or at an angle. Core diameters of less than 100mm are most common for site investigation purposes. Core is normally retrieved in plastic lining tubes. A flushing fluid such as air, water or foam is used to cool the bit and carry cuttings to the surface.

Examination of cores allows detailed rock description and generally enables angled discontinuity surfaces to be observed. However, vertical holes do not necessarily reveal the presence of vertical or near-vertical fissures or joint discontinuities. The core type and/or techniques used. Where open hole rotary drilling is employed, descriptions of strata result from examination at surface of small particles ejected from the borehole in the flushing medium. In consequence, no indication of fissuring, bedding, consistency or degree of weathering can be obtained. Small scale plant can be used for auger drilling to limited depths where access is constrained.

Depths in excess of 60 metres can be achieved under suitable circumstances using rotary techniques, with minimal surface disturbance.

## WINDOW SAMPLING

**DRAFT**

This technique involves the driving of a cone-ended tube into the ground and retrieval of the soil which enters the tube. The term "window sample" arose from the original device which had a "window" or slot cut into the side of the tube through which samples were taken. This has now been superseded by the use of a thin-walled plastic liner within a sampler which has a solid wall. Diameters range from 36 to 86mm. Such samples can be used for qualitative logging, selection of samples for classification and chemical analysis and for obtaining a rudimentary assessment of strength.

Driving devices can be hand-held or machine mounted and the drive tubes are typically in 1m lengths. The hole formed is not cased, however, and hence the success of this technique is limited when soils and groundwater conditions are such that the sides of the hole collapse on withdrawal of the sampler. Obstructions within the ground, the density of the material or its strength can also limit the depth and rate of penetration of this light-weight investigation technique. Nevertheless, it is a valuable tool where access is constrained such as within buildings or on embankments. Depths of up to 8m can be achieved in suitable circumstances but depths of 4m to 6m are more common.

## EXPLORATORY HOLE RECORDS

The data obtained by these techniques are generally presented on Trial Pit, Borehole, Drillhole or Window Sample Records. The descriptions of strata result from information gathered from a number of sources which may include published geological data, preliminary field observations and descriptions, insitu test results, laboratory test results and specimen descriptions. A key to the symbols and abbreviations used accompanies the records. The descriptions on the exploratory hole records accommodate but may not necessarily be identical to those on any preliminary records or the laboratory summaries.

The records show ground conditions at the exploratory hole locations. The degree to which they can be used to represent conditions between or beyond such holes, however, is a matter for geological interpretation rather than factual reporting and the associated uncertainties must be recognised.

## DYNAMIC PROBING

This technique typically measures the number of blows of a standard weight falling over a standard height to advance a cone-ended rod over sequential standard distances (typically 100mm). Some devices measure the penetration of the probe per standard blow. It is essentially a profiling tool and is best used in conjunction with other investigation techniques where site-specific correlation can be used to delineate the distribution of soft or loose soils or the upper horizon of a dense or strong layer such as rock.

Both machine-driven and hand-driven equipment is available, the selection depending upon access restrictions and the depth of penetration required. It is particularly useful where access for larger equipment is not available, disturbance is to be minimised or where there are cost constraints. No samples are recovered and some techniques leave a sacrificial cone head in the ground. As with other lightweight techniques, progress is limited in strong or dense soils. The results are presented both numerically and graphically. Depths of up to 10m are commonly achieved in suitable circumstances.

The hand-driven DCP probing device has been calibrated by the TRL to provide a profile of CBR values over a range of depths of up to 1.50m.

## INSTRUMENTATION

The most common form of instrument used in site investigation is either the standpipe or else the standpipe piezometer which can be installed in investigation holes. They are used to facilitate monitoring of groundwater levels and water sampling over a period of time following site work. Normally a standpipe would be formed using rigid plastic tubing which has been perforated or slotted over much of its length whilst a standpipe piezometer would have a filter tip which would be placed at a selected level and the hole sealed above and sometimes below to isolate the zone of interest. Groundwater levels are determined using an electronic "dipmeter" to measure the depth to the water surface from ground level. Piezometers can also be used to measure permeability. They are simple and inexpensive instruments for long term monitoring but response times can limit their use in tidal areas and access to the ground surface at each instrument is necessary. Remote reading requires more sophisticated hydraulic, electronic or pneumatic equipment.

Settlement can be monitored using surface or buried target plates whilst lateral movement over a range of depths is monitored using slip indicator or inclinometer equipment.

## GENERAL NOTES

1. The report is prepared for the exclusive use of the Client named in the document and copyright subsists with Geotechnics Limited. Prior written permission must be obtained to reproduce all or part of the report. It is prepared on the understanding that its contents are only disclosed to parties directly involved in the current investigation, preparation and development of the site.
2. Further copies may be obtained with the Client's written permission, from Geotechnics Limited with whom the master copy of the document will be retained.
3. The report and/or opinion is prepared for the specific purpose stated in the document and in relation to the nature and extent of proposals made available to Geotechnics Limited at that time. Re-consideration will be necessary should those details change. The recommendations should not be used for other schemes on or adjacent to the site without further reference to Geotechnics Limited.
4. The assessment of the significance of the factual data, where called for, is provided to assist the Client and his Engineer and/or Advisers in the preparation of their designs.
5. The report is based on the ground conditions encountered in the exploratory holes together with the results of field and laboratory testing in the context of the proposed development. The data from any commissioned desk study and site reconnaissance are also drawn upon. There may be special conditions appertaining to the site, however, which are not revealed by the investigation and which may not be taken into account in the report.
6. Methods of construction and/or design other than those proposed by the designers or referred to in the report may require consideration during the evolution of the proposals and further assessment of the geotechnical and any geoenvironmental data would be required to provide discussion and evaluations appropriate to these methods.
7. The accuracy of results reported depends upon the technique of measurement, investigation and test used and these values should not be regarded necessarily as characteristics of the strata as a whole (see accompanying notes on Investigation Techniques). Where such measurements are critical, the technique of investigation will need to be reviewed and supplementary investigation undertaken in accordance with the advice of the Company where necessary.
8. The samples selected for laboratory test are prepared and tested in accordance with the relevant Clauses of BS 1377 Parts 1 to 8, where appropriate, in Geotechnics Limited's UKAS accredited Laboratory, where possible. A list of tests is given.
9. Tests requiring the use of another laboratory having UKAS accreditation where possible are identified.
10. Any unavoidable variations from specified procedures are identified in the report.
11. Specimens are cut vertically, where this is relevant and can be identified, unless otherwise stated.
12. All the data required by the test procedures are recorded on individual test sheets but the results in the report are presented in summary form for understanding and assimilation for design purposes. Where all details are required, these can be made available.
13. Whilst the report may express an opinion on possible configurations of strata between or beyond exploratory holes, or on the possible presence of features based on either visual, verbal, written, cartographical, photographic or published evidence, this is for guidance only and no liability can be accepted for its accuracy.
14. Classification of materials as Made Ground is based on the inspection of retrieved samples or exposed excavations. Where it is obvious that foreign matter such as paper, plastic or metal is present, classification is clear. Frequently, however, for fill materials that arise from the adjacent ground or from the backfilling of excavations, their visual characteristics can closely resemble those of undisturbed ground. Other evidence such as site history, exploratory hole location or other tests may need to be drawn upon to provide clarification. For these reasons, classification of soils on the exploratory hole records as either Made Ground or naturally occurring strata, the boundary between them and any interpretation that this gives rise to should be regarded as provisional and subject to re-evaluation in the light of further data.
15. The classification of materials as Topsoil is generally based on visual description and should not be interpreted to mean that the material so described complies with the criteria for Topsoil used in BS 3882 (1994). Specific testing would be necessary where such definition is a requirement.
16. Ground conditions should be monitored during the construction of the works and the report should be re-evaluated in the light of these data by the supervising geotechnical engineers.
17. Any comments on groundwater conditions are based on observations made at the time of the investigation, unless specifically stated otherwise. It should be noted, however, that the observations are subject to the method and speed of boring, drilling or excavation and that groundwater levels will vary due to seasonal or other effects.
18. Any bearing capacities for conventional spread foundations which are given in the report and interpreted from the investigation are for bases at a minimum depth of 1m below finished ground level in naturally occurring strata and at broadly similar levels throughout individual structures, unless otherwise stated. The foundations should be designed in accordance with the good practice embodied in BS 8004:1986 - Foundations, supplemented for housing by NHBC Standards. Foundation design is an iterative process and bearing pressures may need adjustment or other measures may need to be taken in the context of final layouts and levels prior to finalisation of proposals.
19. Unless specifically stated, the investigation does not take account of the possible effects of mineral extraction or of gases from fill or natural sources within, below or outside the site.
20. The costs or economic viability of the proposals referred to in the report, or of the solutions put forward to any problems encountered, will depend on very many factors in addition to geotechnical or geoenvironmental considerations and hence their evaluation is outside the scope of the report.

## **APPENDIX D**

# **RGL LABORATORY SOIL TEST RESULTS**

**GEOTECHNICAL TEST RESULTS**  
**CHEMICAL TEST RESULTS**

## TEST CERTIFICATE

### Determination of Sulphate Content and pH Value

Tested in accordance with BS 1377-3: 1990: Clause 5.3 & 9

Client: Rolton Group  
Client Address: The Charles Parker Building  
Midland Road  
Higham Ferrers  
Northants NN10 8DN  
Contact: Karl Nursey  
Site Name: Beddington  
Site Address:

Certificate Number: PL2410-1/1/741

Client Reference: 09-0275  
Job Number: PL2410-1  
Date Sampled: Unknown  
Date Received: 21.10.2009  
Date Tested: 12.11.2009

Certificate of Sampling: N/A  
Sampling Certificate No.: N/A

### Test Results:

Material: Brown slightly clayey SAND and GRAVEL

Laboratory Reference	Client Reference	Location	Depth [m]	% Passing 2mm Sieve	Water Soluble Sulfate Content of Soil as mg/l	pH Value
PL2410-1/1	B1	TP1	0.80m	24	49	7.5

Comments: Sulfate Content expressed as  $\text{SO}_4$   
Actual % passing 2mm taken from separate grading analysis

Approved Signatory: ☒ M. Hartnup - Laboratory Manager  
☐ G. Meadows - Team Leader

Signed:



for and behalf of Enverity Ltd

Date Reported: 16.11.2009  
Form Number: EN/C/741 Version 14

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Reg Office: Diasma, Willie Snaithe  
Rd  
Newmarket, Suffolk, CB8 7SQ

## TEST CERTIFICATE

### Determination of Sulphate Content and pH Value

Tested in accordance with BS 1377-3: 1990: Clause 5.3 & 9

Client: Rolton Group  
Client Address: The Charles Parker Building  
Midland Road  
Higham Ferrers  
Northants NN10 8DN  
Contact: Karl Nursey  
Site Name: Beddington  
Site Address:

Certificate Number: PL2410-1/4/741

Client Reference: 09-0275  
Job Number: PL2410-1  
Date Sampled: Unknown  
Date Received: 21.10.2009  
Date Tested: 12.11.2009

Certificate of Sampling: N/A  
Sampling Certificate No.: N/A

### Test Results:

Material: Brown SAND and GRAVEL

Laboratory Reference	Client Reference	Location	Depth [m]	% Passing 2mm Sieve	Water Soluble Sulfate Content of Soil as mg/l	pH Value
PL2410-1/4	B2	TP2	2.70m	35	91	7.7

Comments: Sulfate Content expressed as  $\text{SO}_4$   
Actual % passing 2mm taken from separate grading analysis

Approved Signatory: ☒ M. Hartnup - Laboratory Manager  
☐ G. Meadows - Team Leader

Signed:



for and behalf of Enverity Ltd

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Rd  
Newmarket, Suffolk, CB8 7SQ

## TEST CERTIFICATE

Newark Road Peterborough  
t: 01733 555525 f: 01733 315280

### Determination of Sulphate Content and pH Value

e: peterborough@enverity.co.uk

Tested in accordance with BS 1377-3: 1990: Clause 5.3 & 9

Client: Rolton Group  
Client Address: The Charles Parker Building  
Midland Road  
Higham Ferrers  
Northants NN10 8DN  
Contact: Karl Nursey  
Site Name: Beddington  
Site Address:

Certificate Number: PL2410-1/7/741

Client Reference: 09-0275  
Job Number: PL2410-1  
Date Sampled: Unknown  
Date Received: 21.10.2009  
Date Tested: 12.11.2009

Certificate of Sampling: N/A  
Sampling Certificate No.: N/A

#### Test Results:

Material: Brown slightly clayey SAND and GRAVEL

Laboratory Reference	Client Reference	Location	Depth [m]	% Passing 2mm Sieve	Water Soluble Sulfate Content of Soil as mg/l	pH Value
PL2410-1/7	B1	TP5	1.00m	43	132	7.0

Comments: Sulfate Content expressed as  $\text{SO}_4$   
Actual % passing 2mm taken from separate grading analysis

Approved Signatory: ☒ M. Hartnup - Laboratory Manager  
☐ G. Meadows - Team Leader

Signed:



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Rd  
Newmarket, Suffolk, CB8 7SQ



2304

**TEST CERTIFICATE****Enverity**Newark Road Peterborough  
t: 01733 555525 f: 01733 315280

e: peterborough@enverity.co.uk

**Determination of Particle Size Distribution**Tested in Accordance with BS 1377-2: 1990: Clause 9.2 & 9.4  
Sieved Grading and Sedimentation by PipetteClient: Rolton Group  
Client Address: The Charles Parker Building  
Midland Road  
Higham Ferrers  
Northants NN10 8DN  
Contact: Karl NurseyCertificate Number: PL2410-1/1/710-2  
Client Reference: 09-0275  
Lab Job Number: PL2410-1  
Date Sampled: Unknown  
Date Received: 21.10.2009  
Date Tested: 05.11.2009  
Certificate of Sampling: N/A  
Sampling Certificate No.: N/A  
Sampled By: ClientSite Name: Beddington  
Site Address:**TEST RESULTS**

Laboratory Reference: PL2410-1/1

Pre-treatment for  
organic material:

Client Reference: B1

Sample Description: Brown slightly clayey SAND and GRAVEL

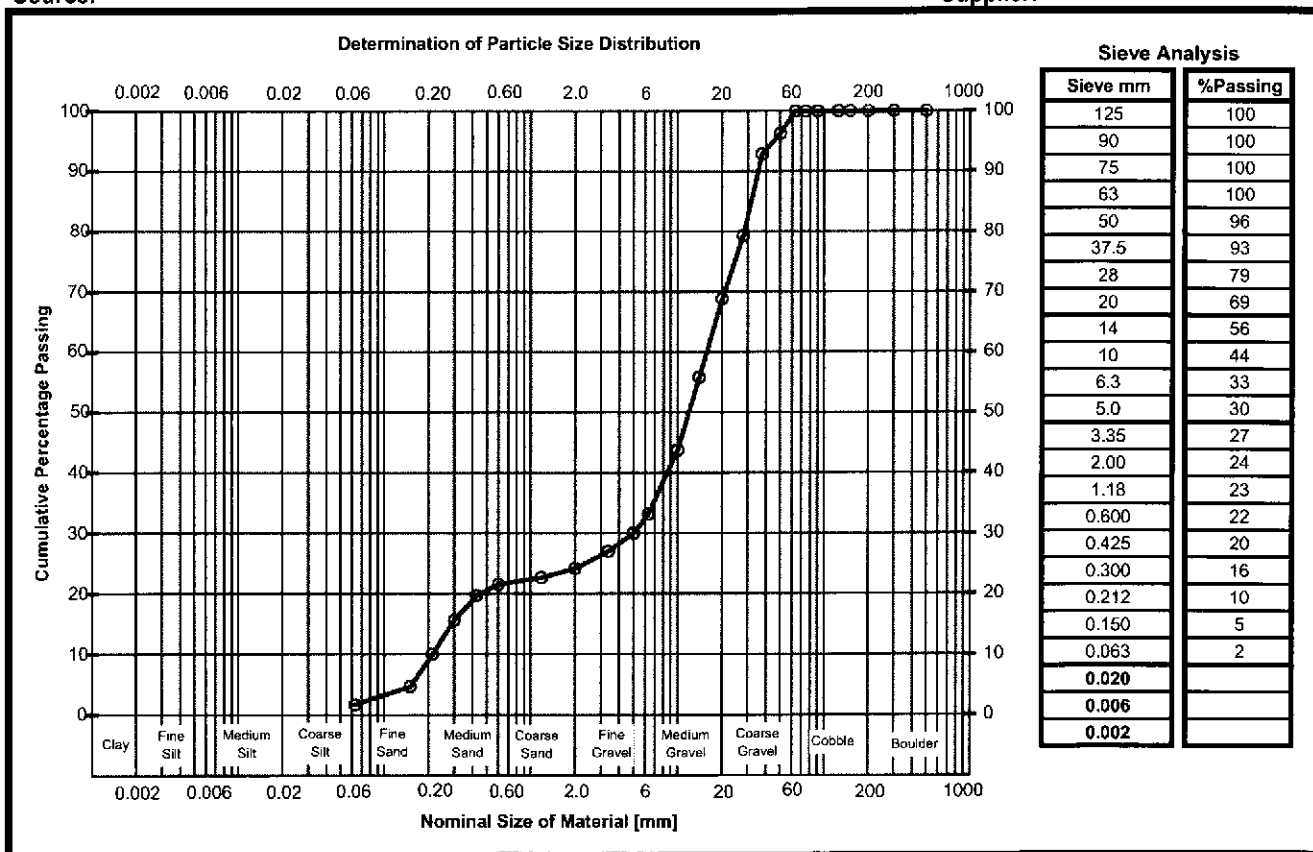
Material Specification: Not Required

Depth: 0.80m

Location: TP1

Source:

Supplier:



Comments: Data relevant to material below 63 microns is outside the current scope of UKAS accreditation

Approved Signatory: ☒ M. Hartnup - Laboratory Manager  
☐ G. Meadows - Team Leader

Signed:

for and on behalf of Enverity Ltd

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e: peterborough@enverity.co.uk

**Determination of Particle Size Distribution**Tested in Accordance with BS 1377-2: 1990: Clause 9.2 & 9.4  
Sieved Grading and Sedimentation by PipetteClient: Rolton Group  
Client Address: The Charles Parker Building  
Midland Road  
Higham Ferrers  
Northants NN10 8DN  
Contact: Karl NurseyCertificate Number: PL2410-1/4/710-2  
Client Reference: 09-0275  
Lab Job Number: PL2410-1  
Date Sampled: Unknown  
Date Received: 21.10.2009  
Date Tested: 05.11.2009  
Certificate of Sampling: N/A  
Sampling Certificate No.: N/A  
Sampled By: ClientSite Name: Beddington  
Site Address:**TEST RESULTS**

Laboratory Reference: PL2410-1/4

Pre-treatment for  
organic material:

Client Reference: B2

Sample Description: Brown SAND and GRAVEL

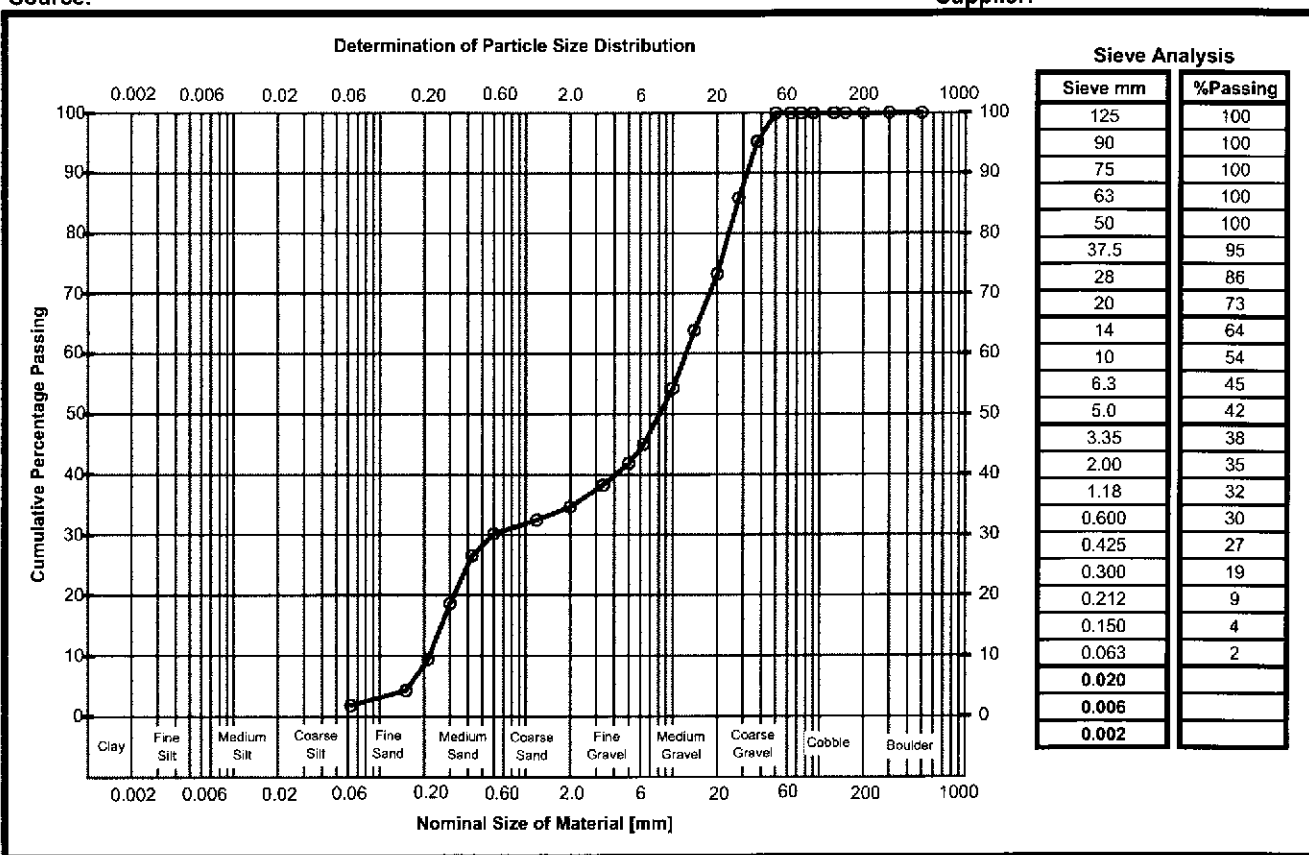
Material Specification: Not Required

Depth: 2.70m

Location: TP2

Source:

Supplier:



Comments: Data relevant to material below 63 microns is outside the current scope of UKAS accreditation

Approved Signatory: ☒ M. Hartnup - Laboratory Manager  
☐ G. Meadows - Team Leader

Signed:

for and on behalf of Enverity Ltd

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**Determination of Particle Size Distribution**Tested in Accordance with BS 1377-2: 1990: Clause 9.2 & 9.4  
Sieved Grading and Sedimentation by PipetteClient: Rolton Group  
Client Address: The Charles Parker Building  
Midland Road  
Higham Ferrers  
Northants NN10 8DN  
Contact: Karl NurseyCertificate Number: PL2410-1/5/710-2  
Client Reference: 09-0275  
Lab Job Number: PL2410-1  
Date Sampled: Unknown  
Date Received: 21.10.2009  
Date Tested: 05.11.2009  
Certificate of Sampling: N/A  
Sampling Certificate No.: N/A  
Sampled By: ClientSite Name: Beddington  
Site Address:**TEST RESULTS**

Laboratory Reference: PL2410-1/5

Pre-treatment for  
organic material:

Client Reference: B1

Sample Description: Brown slightly clayey SAND and GRAVEL

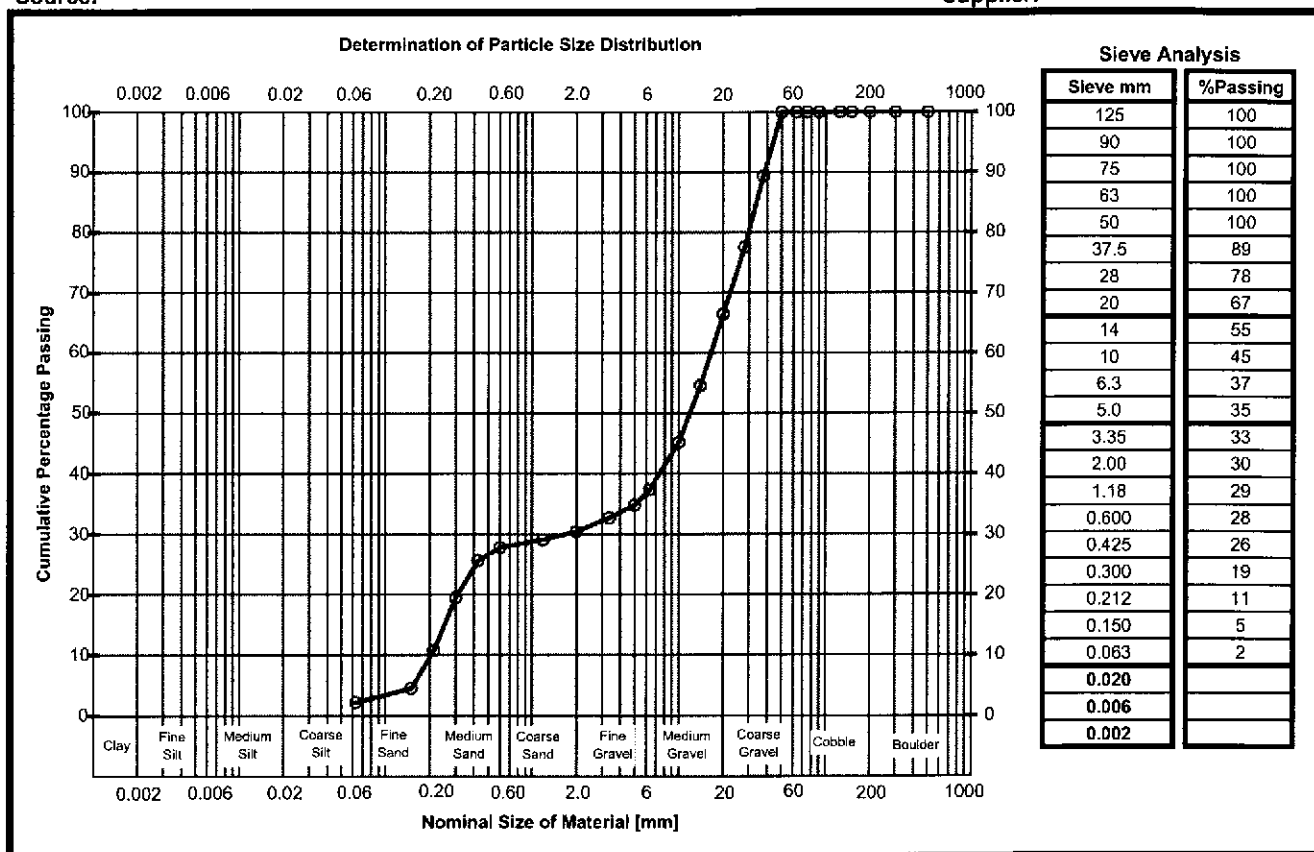
Material Specification: Not Required

Depth: 0.60m

Location: TP3

Source:

Supplier:



Comments: Data relevant to material below 63 microns is outside the current scope of UKAS accreditation

Approved Signatory: ☒ M. Hartnup - Laboratory Manager  
☐ G. Meadows - Team Leader

Signed:

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**Determination of Particle Size Distribution**Tested in Accordance with BS 1377-2: 1990: Clause 9.2 & 9.4  
Sieved Grading and Sedimentation by PipetteClient: Rolton Group  
Client Address: The Charles Parker Building  
Midland Road  
Higham Ferrers  
Northants NN10 8DN  
Contact: Karl Nursey

Certificate Number: PL2410-1/7/710-2

Client Reference: 09-0275

Lab Job Number: PL2410-1

Date Sampled: Unknown

Date Received: 21.10.2009

Date Tested: 05.11.2009

Certificate of Sampling: N/A

Sampling Certificate No.: N/A

Sampled By: Client

Site Name: Beddington

Site Address:

**TEST RESULTS**

Laboratory Reference: PL2410-1/7

Client Reference: B1

Pre-treatment for

organic material:

Sample Description: Brown slightly clayey SAND and GRAVEL

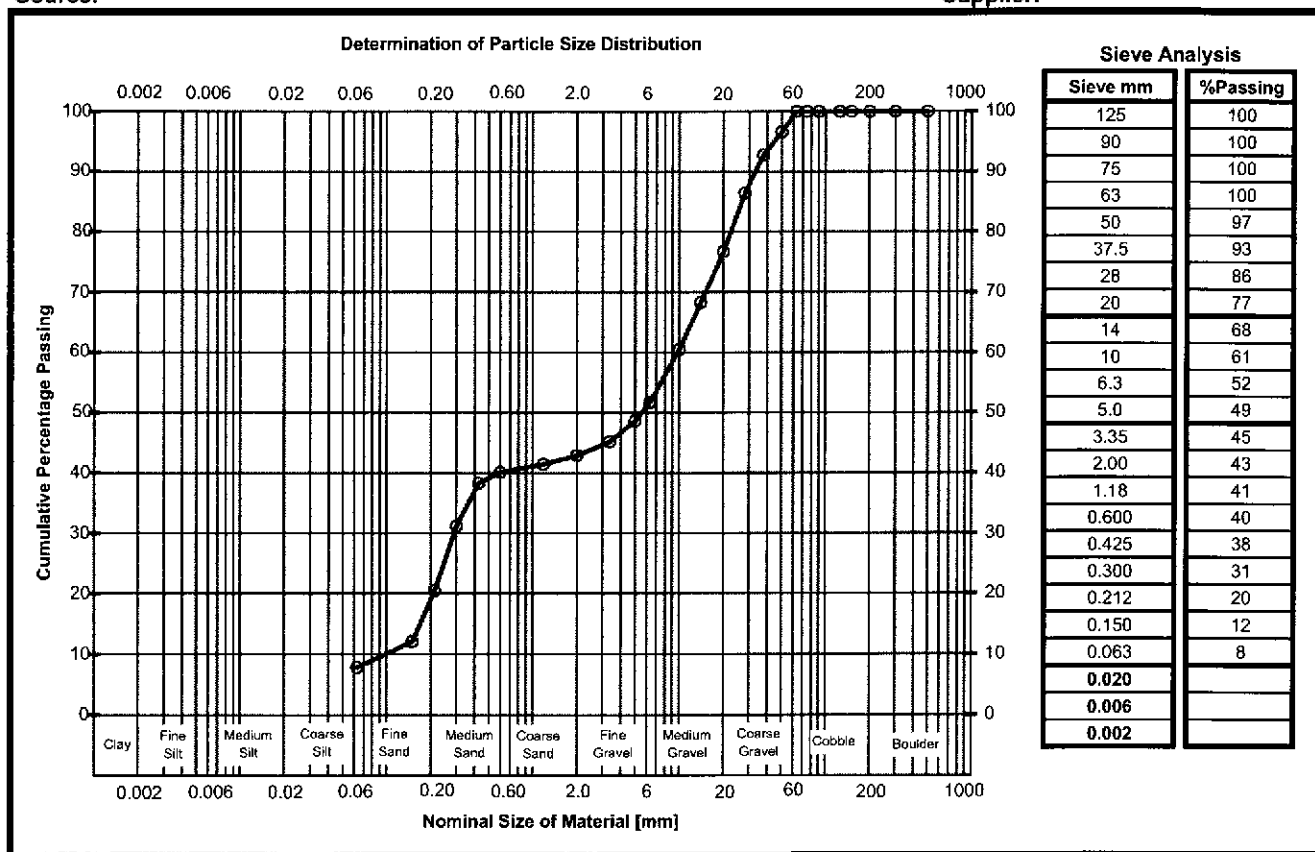
Material Specification: Not Required

Depth: 1.00m

Location: TP5

Source:

Supplier:



Comments: Data relevant to material below 63 microns is outside the current scope of UKAS accreditation

Approved Signatory: ☒ M. Hartnup - Laboratory Manager  
☐ G. Meadows - Team Leader

Signed:

for and on behalf of Enverity Ltd

Date Reported: 16.11.2009

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e: peterborough@enverity.co.uk

**Determination of Particle Size Distribution**Tested in Accordance with BS 1377-2: 1990: Clause 9.2 & 9.4  
Sieved Grading and Sedimentation by PipetteClient: Rolton Group  
Client Address: The Charles Parker Building  
Midland Road  
Higham Ferrers  
Northants NN10 8DN  
Contact: Karl NurseyCertificate Number: PL2410-1/9/710-2  
Client Reference: 09-0275  
Lab Job Number: PL2410-1  
Date Sampled: Unknown  
Date Received: 21.10.2009  
Date Tested: 05.11.2009  
Certificate of Sampling: N/A  
Sampling Certificate No.: N/A  
Sampled By: ClientSite Name: Beddington  
Site Address:**TEST RESULTS**

Laboratory Reference: PL2410-1/9

Pre-treatment for  
organic material:

Client Reference: B1

Sample Description: Brown slightly clayey SAND and GRAVEL

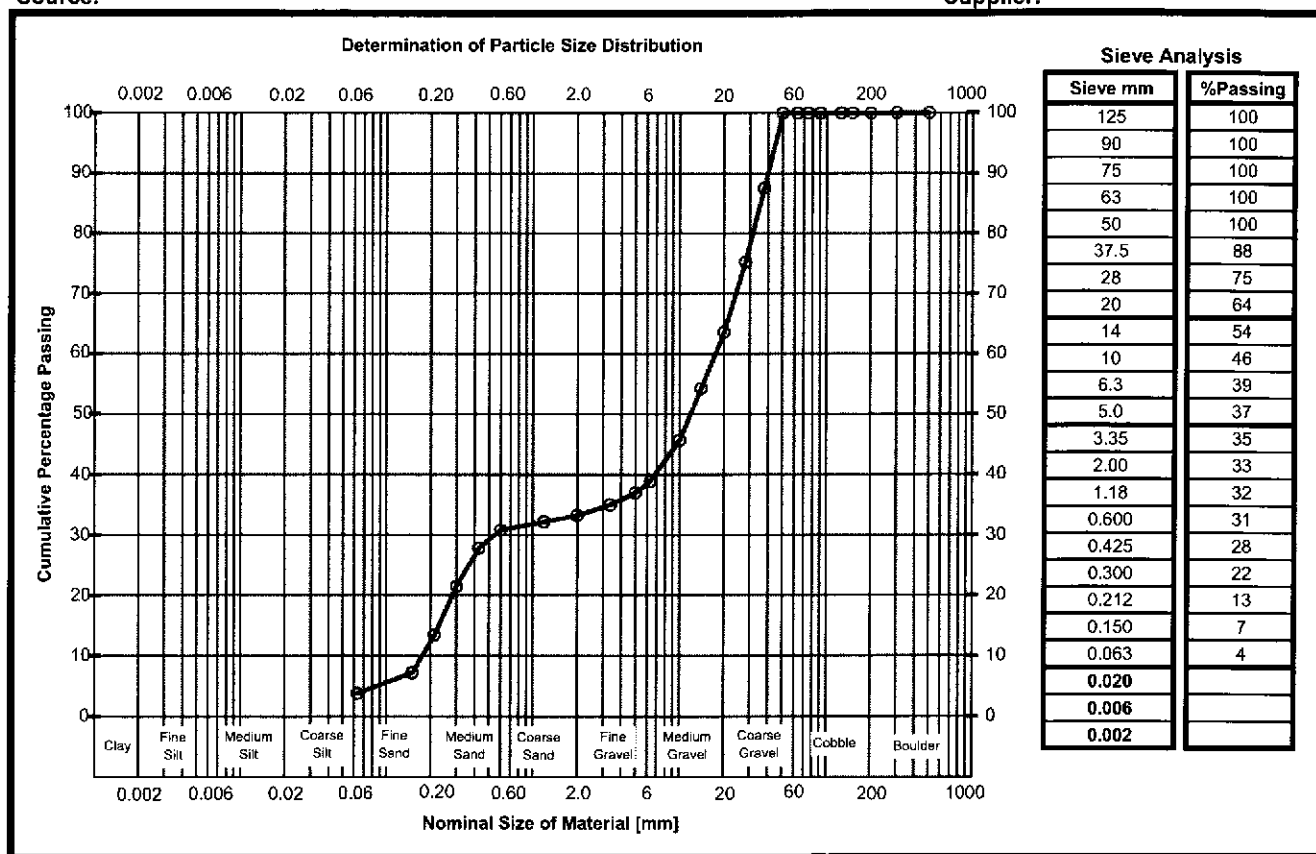
Material Specification: Not Required

Depth: 1.50m

Location: TP7

Source:

Supplier:



Comments: Data relevant to material below 63 microns is outside the current scope of UKAS accreditation

Approved Signatory: ☒ M. Hartnup - Laboratory Manager  
☐ G. Meadows - Team Leader

Signed:

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Newmarket, Suffolk, CB8 7SQ

# LABORATORY RESULTS - Consolidation e/log p Plot

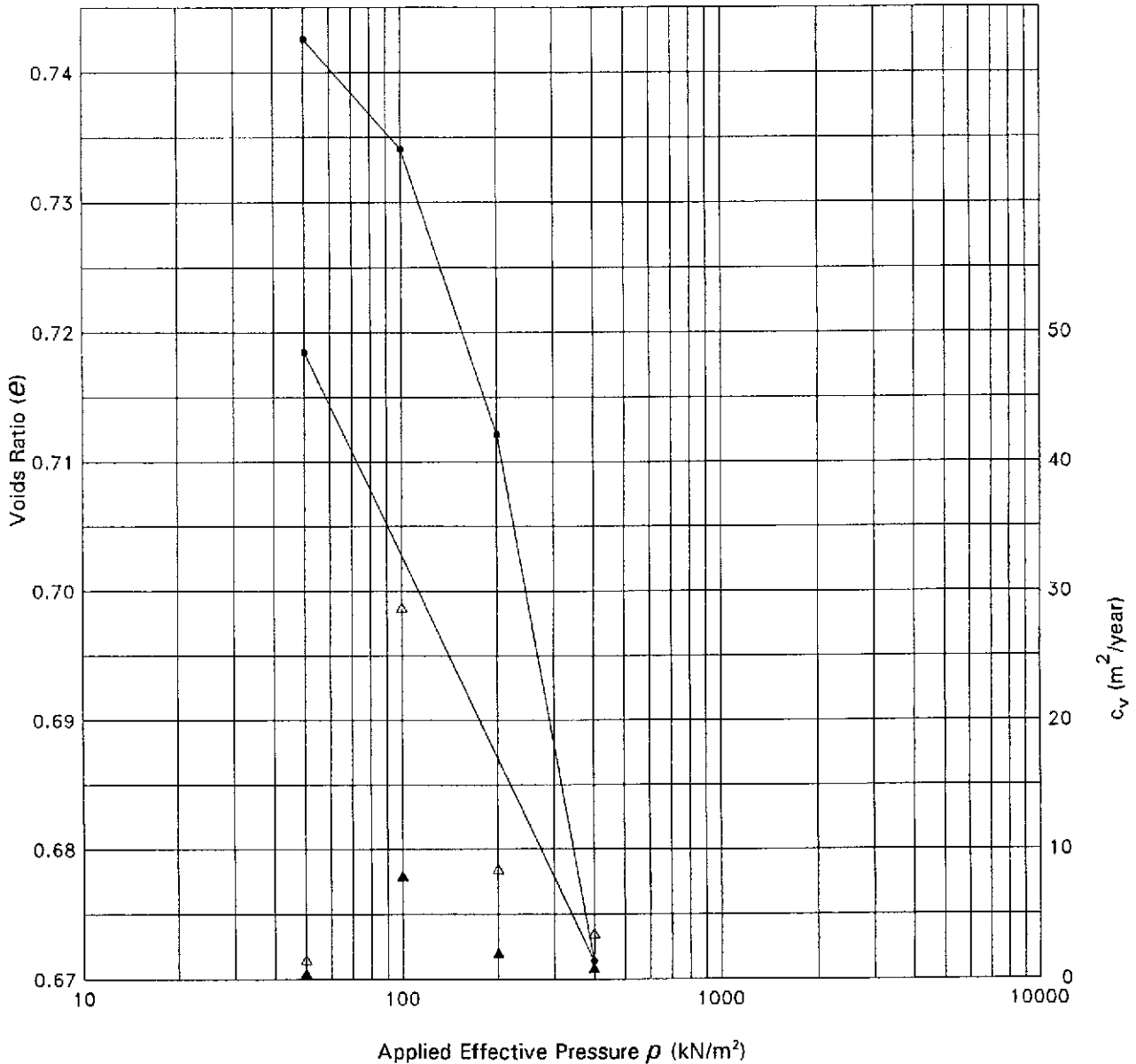
Project **BEDDINGTON**

Project No **PC094054**  
 Borehole **BH1**  
 Sample Depth **6.50 - 6.95 m**  
 Sample Type **U**

Client

The determination of one dimensional consolidation properties in accordance with Clause 3 of BS1377: Part 5: 1990

Symbols: Voids Ratio  $\bullet$ ,  $c_{v50}$   $\blacktriangle$ ,  $c_{v90}$   $\triangle$



Applied Pressure $kN/m^2$	0-50	50-100	100-200	200-400	400-50					
$m_v$ $m^2/MN$	0.07	0.10	0.13	0.12	0.08					
$c_{v50}$ Log Time $m^2/yr$	-	7.94	2.00	0.84	0.43					
$c_{v90}$ Root Time $m^2/yr$	-	28.71	8.49	3.50	1.48					
Voids Ratio	0.743	0.734	0.712	0.671	0.718					
Description C32081 Brown laminated fissured CLAY		Specimen Diameter 75.060 mm				Initial Water Content 27.79 %				
		Initial Height 18.940 mm				Final Water Content 29.31 %				
		Particle Density 2.65 Assumed				Initial Saturation 98.32 %				
		Initial Voids Ratio 0.749				Initial Bulk Density 1.94 Mg/m³				
						Initial Dry Density 1.52 Mg/m³				

Remarks Laboratory temperature  $20^\circ C \pm 4^\circ C$   
 Specimen cut vertically from base of sample

**geotechnics**

# LABORATORY RESULTS - Consolidation e/loge Plot

Project BEDDINGTON

Project No PC094054

Borehole BH3

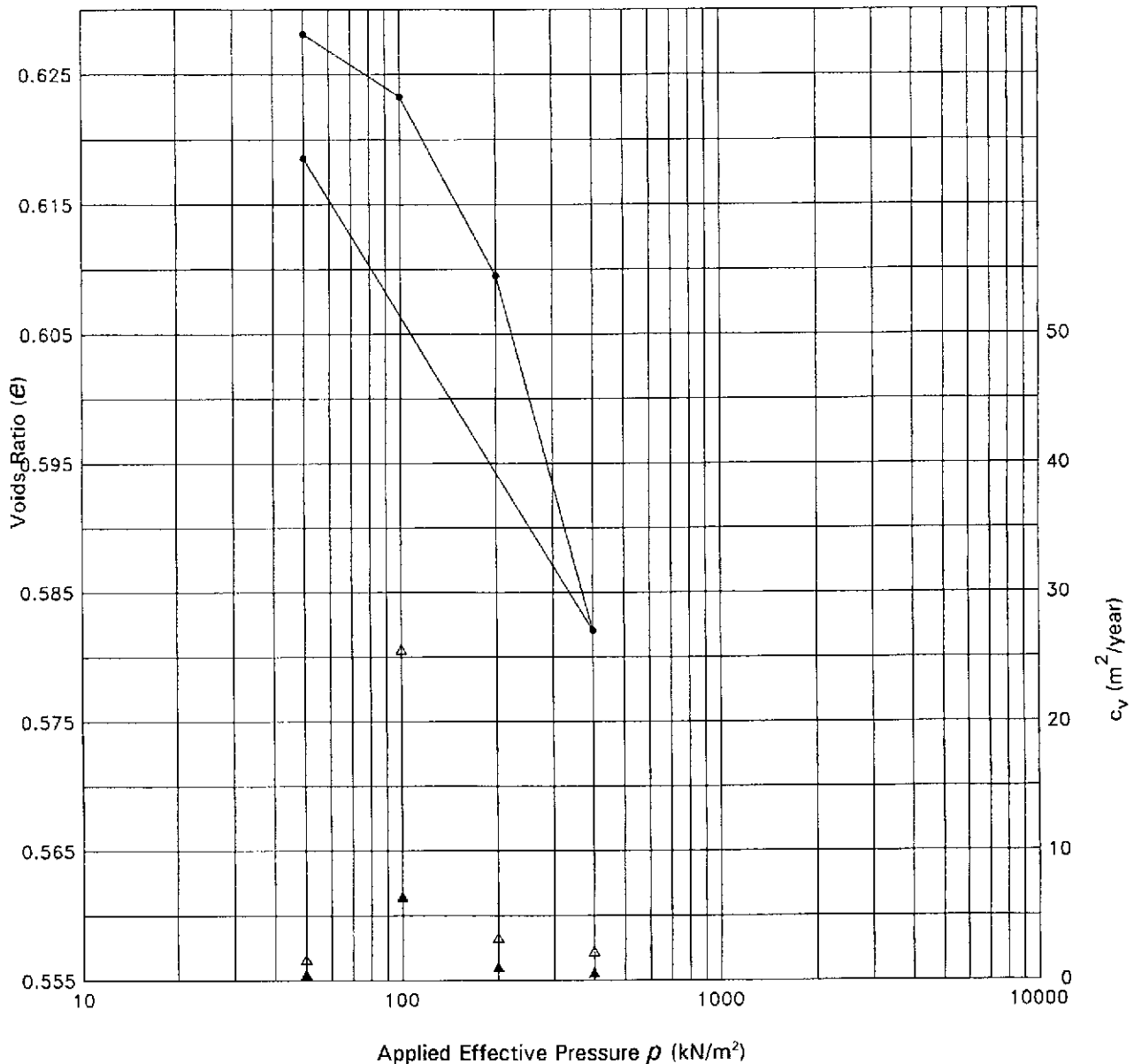
Sample Depth 6.50 - 6.95 m

Sample Type U


Client

The determination of one dimensional consolidation properties in accordance with Clause 3 of BS1377: Part 5: 1990

Symbols: Voids Ratio  $\bullet$ ,  $c_{v50}$   $\blacktriangle$ ,  $c_{v90}$   $\triangle$



Applied Pressure	kN/m <sup>2</sup>	0-50	50-100	100-200	200-400	400-50					
m <sub>v</sub>	m <sup>2</sup> /MN	0.03	0.06	0.09	0.09	0.07					
c <sub>v50</sub> Log Time	m <sup>2</sup> /yr	-	6.45	0.99	0.56	0.43					
c <sub>v90</sub> Root Time	m <sup>2</sup> /yr	-	25.58	3.27	2.23	1.58					
Voids Ratio		0.628	0.623	0.609	0.582	0.619					
Description C32088 Brown laminated fissured slightly sandy CLAY				Specimen Diameter		74.650	mm	Initial Water Content		24.91	%
				Initial Height		18.890	mm	Final Water Content		25.72	%
				Particle Density		2.65	Assumed	Initial Saturation		100	%
				Initial Voids Ratio		0.630		Initial Bulk Density		2.03	Mg/m <sup>3</sup>
								Initial Dry Density		1.63	Mg/m <sup>3</sup>
Remarks		Laboratory temperature 20°C ± 4°C Specimen cut vertically from base of sample									




geotechnics

### LABORATORY RESULTS - Chemical Analysis

**Project** BEDDINGTON, CROYDON

**Project No:** PC094054

[illegible]

**Remarks**  Tests performed in accordance with BS 1377: Part 3: 1990  
Sulphate reported as SO<sub>3</sub>, results in brackets reported as SO<sub>4</sub>

**geotechnics**

**Project No:** PC094054

geotechnics

Rolton Group  
The Charles Parker Building  
Higham Ferrers  
Northants  
NN10 8DN

FAO Karl Nursey  
30 October 2009

Dear Karl Nursey

**Test Report Number** 97355  
**Your Project Reference** Beddington - 09-0275

Please find enclosed the results of analysis for the samples received 22 October 2009.

All soil samples will be retained for a period of one month and all water samples will be retained for 7 days following the date of the test report. Should you require an extended retention period then please detail your requirements in an email to [customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk). Please be aware that charges may be applicable for extended sample storage.

If you require any further assistance, please do not hesitate to contact the Customer Services team.

Yours sincerely

  
Authorised Signatory

<input type="checkbox"/> Darrell Hall	Laboratory Manager
<input type="checkbox"/> Phil Hellier	Operations Director
<input type="checkbox"/> Keith Jones	Technical Development Manager
<input type="checkbox"/> John Crawford	Quality Manager
<input type="checkbox"/> Malcolm Avis	Technical Director



*Notes to accompany report:*

- The sign < means 'less than'
- Tests marked 'U' hold UKAS accreditation
- Tests marked 'M' hold MCertS (and UKAS) accreditation
- Tests marked 'N' do not currently hold UKAS accreditation
- Tests marked 'S' were subcontracted to an approved laboratory
- n/e means 'not evaluated'
- i/s means 'insufficient sample'
- u/s means 'unsuitable sample'
- Comments or interpretations are beyond the scope of UKAS accreditation
- The results relate only to the items tested

Test Report 97355 Cover Sheet





Rolton Group  
The Charles Parker Building  
Higham Ferrers  
Northants  
NN10 8DN

FAO Karl Nursey

# LABORATORY TEST REPORT

Results of analysis of 7 samples  
received 22 October 2009

Beddington - 09-0275



Report Date  
30 October 2009

97355

	AE41883	AE41884	AE41885	AE41886	AE41887	AE41888	AE41889
	TP1	TP3	TP5	TP5	TP6	TP6	TP7
	T1/J1	T2/J2	T1/J1	T2/J2	T1/J1	T2/J2	T2/J2
	0.3m	1m	0.2m	0.9m	0.5m	1.2m	1.6m
	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
2700 Dibenzo[a,h]anthracene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno[1,2,3-cd]pyrene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo[g,h,i]perylene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total (of 16) PAHs	< 2	< 2	< 2	< 2	9.1	< 2	< 2
2920 Phenols (total)	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
2010 pH	9.1	8.2	7.3	7.7	7.5	8.2	8.2

All tests undertaken between 23-Oct-2009 and 30-Oct-2009

\* Accreditation status

This report should be interpreted in conjunction with the notes on the accompanying cover page

Column page 1

Report page 2 of 2

Report sample ID range AE41883 to AE41889

# **APPENDIX E**

## **RGL LABORATORY GROUNDWATER TEST RESULTS**

Depot Road  
Newmarket  
CB8 0AL  
Tel: 01638 606070

Rolton Group  
The Charles Parker Building  
Higham Ferrers  
Northants  
NN10 8DN

FAO Joe Pickering  
19 January 2010

Dear Joe Pickering

**Test Report Number**      **110039**  
**Your Project Reference**    **Beddington AD Plant**

Please find enclosed the results of analysis for the samples received 11 December 2009.

All soil samples will be retained for a period of one month and all water samples will be retained for 7 days following the date of the test report. Should you require an extended retention period then please detail your requirements in an email to [customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk). Please be aware that charges may be applicable for extended sample storage.

If you require any further assistance, please do not hesitate to contact the Customer Services team.

Yours sincerely



Authorised Signatory

<input type="checkbox"/> Darrell Hall	Laboratory Manager
<input type="checkbox"/> Phil Hellier	Operations Director
<input checked="" type="checkbox"/> Keith Jones	Technical Development Manager
<input type="checkbox"/> John Crawford	Quality Manager
<input type="checkbox"/> Malcolm Avis	Technical Director



*Notes to accompany report:*

- The sign < means 'less than'
- Tests marked 'U' hold UKAS accreditation
- Tests marked 'M' hold MCertS (and UKAS) accreditation
- Tests marked 'N' do not currently hold UKAS accreditation
- Tests marked 'S' were subcontracted to an approved laboratory
- n/e means 'not evaluated'
- i/s means 'insufficient sample'
- u/s means 'unsuitable sample'
- Comments or interpretations are beyond the scope of UKAS accreditation
- The results relate only to the items tested

Test Report 110039 Cover Sheet

Rolton Group  
The Charles Parker Building  
Higham Ferrers  
Northants  
NN10 8DN

FAO Joe Pickering

Report Date  
19 January 2010

# LABORATORY TEST REPORT

Results of analysis of 4 samples  
received 11 December 2009

Beddington AD Plant

Login Batch No

**Chemtest LIMS ID**

Sample ID

Sample No

Depth

Matrix

SOP ↓ Determinand ↓

1010 pH

1090 Biochemical Oxygen Demand (ATU)

1100 Chemical Oxygen Demand

1220 Ammonia (free)

1300 Cyanide (total)

1325 Sulfide

1220 Sulfate

1450 Arsenic

Boron

Cadmium

Chromium (total)

Copper

Mercury

Nickel

Lead

Selenium

Zinc

1490 Chromium (hexavalent)

1673 TPH >C6-C10

TPH >C10-C21

TPH >C21-C40

TPH (Aqueous Phase)

1700 Naphthalene

Acenaphthylene

Acenaphthene

Fluorene

Phenanthrene

Anthracene

Fluoranthene

Pyrene

Benzo[a]anthracene

CAS No ↓

PH

BOD

COD

7664417

57125

18496258

14808798

7440382

7440428

7440439

7440473

7440508

7439976

7440020

7439921

7782492

7440666

18540299

91203

208968

83329

86737

85018

120127

206440

129000

56553

Units ↓

-

mg O<sub>2</sub> l<sup>-1</sup>

mg O<sub>2</sub> l<sup>-1</sup>

mg l<sup>-1</sup>

mg l<sup>-1</sup>

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µg l<sup>-1</sup>

µg l<sup>-1</sup>

µg l<sup>-1</sup>

110039

**Chemtest LIMS ID**

Sample ID

Sample No

Depth

Matrix

SOP ↓ Determinand ↓

1010 pH

1090 Biochemical Oxygen Demand (ATU)

1100 Chemical Oxygen Demand

1220 Ammonia (free)

1300 Cyanide (total)

1325 Sulfide

1220 Sulfate

1450 Arsenic

Boron

Cadmium

Chromium (total)

Copper

Mercury

Nickel

Lead

Selenium

Zinc

1490 Chromium (hexavalent)

1673 TPH >C6-C10

TPH >C10-C21

TPH >C21-C40

TPH (Aqueous Phase)

1700 Naphthalene

Acenaphthylene

Acenaphthene

Fluorene

Phenanthrene

Anthracene

Fluoranthene

Pyrene

Benzo[a]anthracene

BH1

4.8m

WATER

7.3

<3

50

0.07

<0.05

<0.05

130

1.9

1100

<0.080

10

7.4

<0.50

22

<1.0

4.2

8.3

<50

<0.1

<0.1

<0.1

<0.1

<10

<0.01

<0.01

<0.01

<0.01

<0.01

<0.01

<0.01

<0.01

<0.01

<0.01

<0.01

<0.01

<0.01

BH3a

18.3m

WATER

7.5

<3

19

0.03

<0.05

<0.05

130

1.7

360

<0.080

7.9

4.3

<0.50

17

<1.0

11

8.1

<50

<0.1

<0.1

<0.1

<0.1

<10

<0.01

<0.01

<0.01

<0.01

<0.01

<0.01

<0.01

<0.01

<0.01

<0.01

<0.01

<0.01

<0.01

BH3b

4.35m

WATER

7.2

<3

53

0.07

<0.05

<0.05

210

2.2

1000

<0.080

8.4

17

<0.50

37

<1.0

7.3

<50

<0.1

<0.1

<0.1

<0.1

<10

<0.01

<0.01

<0.01

<0.01

<0.01

<0.01

<0.01

<0.01

<0.01

<0.01

<0.01

<0.01

<0.01

<0.01

BH4

5.2m

WATER

6.9

<3

100

0.05

<0.05

<0.05

220

4.5

1100

<0.080

11

21

<0.50

74

<1.0

9.5

<50

<0.1

<0.1

<0.1

<0.1

<10

<0.01

<0.01

<0.01

<0.01

<0.01

<0.01

<0.01

<0.01

<0.01

<0.01

<0.01

<0.01

<0.01

<0.01

All tests undertaken between 14-Dec-2009 and 18-Dec-2009

\* Accreditation status

This report should be interpreted in conjunction with the notes on the accompanying cover page

Column page 1

Report page 1 of 2

Report sample ID range

AE55505 to AE55508

Rolton Group  
The Charles Parker Building  
Higham Ferrers  
Northants  
NN10 8DN

FAO Joe Pickering

# LABORATORY TEST REPORT

Results of analysis of 4 samples  
received 11 December 2009

Beddington AD Plant



Report Date  
19 January 2010

		110039			
		AE55505	AE55506	AE55507	AE55508
		BH1	BH3a	BH3b	BH4
		4.8m	18.3m	4.35m	5.2m
		WATER	WATER	WATER	WATER
1700	Chrysene	218019	<0.01	<0.01	<0.01
	Benzofluoranthene	205992	<0.01	<0.01	<0.01
	Benzokifluoranthene	207089	<0.01	<0.01	<0.01
	Benzofluorene	50328	<0.01	<0.01	<0.01
	Dibenzofluoranthene	53703	<0.01	<0.01	<0.01
	Indeno[1,2,3-cd]pyrene	193395	<0.01	<0.01	<0.01
	Benzofluorene	191242	<0.01	<0.01	<0.01
	Total (of 16) PAHs		<0.2	<0.2	<0.2
1920	Phenols (total)		<0.03	<0.03	<0.03
		µg l <sup>-1</sup>	µg l <sup>-1</sup>	µg l <sup>-1</sup>	µg l <sup>-1</sup>
		N	N	N	N

All tests undertaken between 14-Dec-2009 and 18-Dec-2009

\* Accreditation status

This report should be interpreted in conjunction with the notes on the accompanying cover page

Column page 1

Report page 2 of 2

Report sample ID range AE55505 to AE55508

# **APPENDIX F**

## **RGL GAS AND GROUNDWATER MONITORING RECORDS**



<b>PROJECT No. / SITE :</b>	Virridor AD Plant, Beddington (09-0275)			<b>INSTRUMENT DETAILS :</b>	Gas Data GFM Series (S/N: 10123) & Dip Meter 2				
<b>DATE :</b>	01.12.09	<b>OPERATIVE :</b>	JMP	<b>AMBIENT AIR LEVELS :</b>	CH <sub>4</sub>	0.0%	CO <sub>2</sub>	0.0%	O <sub>2</sub> 20.9%
<b>WEATHER CONDITIONS :</b>	Cold (5 degrees C) but dry/sunny			<b>BAROMETRIC PRESSURE :</b>	Start	1011mb	During	1009mb	End 1009mb
<b>GROUND SURFACE CONDITIONS :</b>	Damp			<b>BAROMETRIC TREND :</b>	Pressure reducing steadily				

Monitoring Point			Gas Concentrations								Comments
Ref :	GWL : (m)	Hole base : (m)	Flow : (l/hr)	CH <sub>4</sub>			CO <sub>2</sub>		O <sub>2</sub>		
				LEL : (%)	Peak : (%)	Steady : (%)	Peak : (%)	Steady : (%)	Peak : (%)	Steady : (%)	
BH 1	0.650	4.800	0.0	0.0	-	0.0	-	2.8	-	17.3	
BH 2	1.000	5.350	0.0	0.0	-	0.0	0.7	0.5	20.2	20.5	
BH 3a	0.950	18.300	0.0	0.0	-	0.0	-	0.4	-	19.5	
BH 3b	0.600	4.350	0.0	0.0	-	0.0	-	0.2	-	20.6	
BH 4	0.700	5.200	0.0	0.0	-	0.0	4.2	1.2	18.0	20.5	
BH 5	0.550	4.950	0.0	0.0	-	0.0	2.2	0.9	18.6	19.8	

NOTE: (GWL) Ground Water Level to Ground Level.





# **GAS & WATER MONITORING RECORD SHEET**

<b>PROJECT No. / SITE :</b>	Virridor AD Plant, Beddington (09-0275)		<b>INSTRUMENT DETAILS :</b>	Gas Data GFM Series (S/N: 10123) & Dip Meter 2			
<b>DATE :</b>	12.01.10	<b>OPERATIVE :</b>	JMP	<b>AMBIENT AIR LEVELS :</b>	CH <sub>4</sub> 0.0%	CO <sub>2</sub> 0.0%	O <sub>2</sub> 20.9%
<b>WEATHER CONDITIONS :</b>	Cold (5 degrees C) but dry/sunny			<b>BAROMETRIC PRESSURE :</b>	Start 1008mb	During 1004mb	End 1004mb
<b>GROUND SURFACE CONDITIONS :</b>	Snow covered/Icy			<b>BAROMETRIC TREND :</b>	Pressure reducing steadily		

Monitoring Point			Gas Concentrations								Comments
Ref :	GWL : (m)	Hole base : (m)	Flow : (l/hr)	CH <sub>4</sub>			CO <sub>2</sub>		O <sub>2</sub>		
				LEL : (%)	Peak : (%)	Steady : (%)	Peak : (%)	Steady : (%)	Peak : (%)	Steady : (%)	
BH 1	0.70	4.800	0.0	0.0	-	0.0	2.2	2.1	-	18.2	
BH 2	1.10	5.350	1.8 to 0.0	0.0	-	0.0	-	0.0	-	21.2	
BH 3a	1.45	18.300	0.0	0.0	-	0.0	0.7	0.1	20.5	20.7	
BH 3b	0.60	4.350	0.3 to 0.0	0.0	-	0.0	-	-	20.9	20.8	
BH 4	0.80	5.200	0.0	0.0	-	0.0	2.2	0.8	20.7	20.7	
BH 5	0.57	4.950	0.0	0.0	-	0.0	2.6	0.4	18.4	20.3	

NOTE: (GWL) Ground Water Level to Ground Level.

# **APPENDIX G**

## **ENVIROCHECK REPORT**

## Envirocheck<sup>®</sup> Report:

### Datasheet

#### Order Details:

**Order Number:**

29017796\_1\_1

**Customer Reference:**

09-0075 Beddington

**National Grid Reference:**

529370, 166610

**Slice:**

A

**Site Area (Ha):**

0.95

**Search Buffer (m):**

1000

**Site Details:**

Site at 529300, 166800

#### Client Details:

Mr K Nursery  
Rolton Group  
The Charles Parker Building  
Midland Road  
Higham Ferrers  
Northamptonshire  
NN10 8DN

<b>Report Section</b>	<b>Page Number</b>
<b>Summary</b>	<b>-</b>
<b>Agency &amp; Hydrological</b>	<b>1</b>
<b>Waste</b>	<b>25</b>
<b>Hazardous Substances</b>	<b>34</b>
<b>Geological</b>	<b>35</b>
<b>Industrial Land Use</b>	<b>37</b>
<b>Sensitive Land Use</b>	<b>49</b>
<b>Data Currency</b>	<b>50</b>
<b>Data Suppliers</b>	<b>56</b>
<b>Useful Contacts</b>	<b>57</b>

**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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**Peter Brett Associates Copyright Notice**

The cavity data presented has been extracted from the PBA enhanced version of the original DEFRA national cavity databases. PBA/DEFRA retain the copyright & intellectual property rights in the data. Whilst all reasonable efforts are made to check that the information contained in the cavity databases is accurate we do not warrant that the data is complete or error free. The information is based upon our own researches and those collated from a number of external sources and is continually being augmented and updated by PBA. In no event shall PBA/DEFRA or Landmark be liable for any loss or damage including, without limitation, indirect or consequential loss or damage arising from the use of this data.

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**Report Version v42.0**

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
<b>Agency &amp; Hydrological</b>					
Contaminated Land Register Entries and Notices					
Discharge Consents	pg 1		4		8
Enforcement and Prohibition Notices					
Integrated Pollution Controls					
Integrated Pollution Prevention And Control	pg 4		3		1
Local Authority Integrated Pollution Prevention And Control					
Local Authority Pollution Prevention and Controls	pg 5		1	8	10
Local Authority Pollution Prevention and Control Enforcements					
Nearest Surface Water Feature	pg 7		Yes		
Pollution Incidents to Controlled Waters	pg 7		2	2	4
Prosecutions Relating to Authorised Processes					
Prosecutions Relating to Controlled Waters					
Registered Radioactive Substances					
River Quality	pg 9				1
River Quality Biology Sampling Points					
River Quality Chemistry Sampling Points					
Substantiated Pollution Incident Register	pg 9				1
Water Abstractions	pg 9			12	4 (*43)
Water Industry Act Referrals					
Groundwater Vulnerability	pg 24	Yes	n/a	n/a	n/a
Source Protection Zones	pg 24				3
Extreme Flooding from Rivers or Sea without Defences	pg 24		Yes	n/a	n/a
Flooding from Rivers or Sea without Defences	pg 24		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
<b>Waste</b>					
BGS Recorded Landfill Sites					
Historical Landfill Sites	pg 25		1		3
Integrated Pollution Control Registered Waste Sites					
Licensed Waste Management Facilities (Landfill Boundaries)	pg 25	1			1
Licensed Waste Management Facilities (Locations)	pg 26		2	1	8
Local Authority Recorded Landfill Sites	pg 28		1		
Registered Landfill Sites	pg 29			1	1
Registered Waste Transfer Sites	pg 30			1	8
Registered Waste Treatment or Disposal Sites	pg 33			1	1

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
<b>Hazardous Substances</b>					
Control of Major Accident Hazards Sites (COMAH)	pg 34				1
Explosive Sites					
Notification of Installations Handling Hazardous Substances (NIHHS)	pg 34				1
Planning Hazardous Substance Consents	pg 34				1
Planning Hazardous Substance Enforcements					
<b>Geological</b>					
BGS Recorded Mineral Sites	pg 35			2	3
BGS 1:625,000 Solid Geology	pg 35	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				n/a	n/a
Potential for Compressible Ground Stability Hazards	pg 35	Yes	Yes	n/a	n/a
Potential for Ground Dissolution Stability Hazards				n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 36	Yes		n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 36	Yes		n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 36	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
<b>Industrial Land Use</b>					
Contemporary Trade Directory Entries	pg 37		8	26	93
Fuel Station Entries	pg 48			1	1

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
<b>Sensitive Land Use</b>					
Areas of Adopted Green Belt					
Areas of Unadopted Green Belt					
Areas of Outstanding Natural Beauty					
Environmentally Sensitive Areas					
Forest Parks					
Local Nature Reserves					
Marine Nature Reserves					
National Nature Reserves					
National Parks					
Nitrate Sensitive Areas					
Nitrate Vulnerable Zones	pg 49	1			
Ramsar Sites					
Sites of Special Scientific Interest					
Special Areas of Conservation					
Special Protection Areas					

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	<b>Discharge Consents</b> Operator: Thames Water Utilities Limited. Property Type: Sewage Disposal Works - Water Company Location: Beddington Stw Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Csvg.0382 Permit Version: 4 Effective Date: 1st April 2009 Issued Date: 28th January 2009 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Water Company Discharge: Freshwater Stream/River Environment: Receiving Water: Beddington Effluent Ditch <b>Status:</b> <b>Modified (Water Resources Act 1991, Schedule 10 as amended by Environment Act 1995)</b> Positional Accuracy: Located by supplier to within 10m	A13SE (SE)	237	1	529520 166318
1	<b>Discharge Consents</b> Operator: Thames Water Utilities Limited. Property Type: Sewage Disposal Works - Water Company Location: Beddington Stw Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Csvg.0382 Permit Version: 2 Effective Date: 21st December 2000 Issued Date: 21st December 2000 Revocation Date: 31st March 2005 Discharge Type: Sewage Discharges - Final/Treated Effluent - Water Company Discharge: Freshwater Stream/River Environment: Receiving Water: Beddington Effluent Ditch <b>Status:</b> <b>Modified (Water Resources Act 1991, Schedule 10 as amended by Environment Act 1995)</b> Positional Accuracy: Located by supplier to within 10m	A13SE (SE)	237	1	529520 166318
1	<b>Discharge Consents</b> Operator: Thames Water Utilities Limited. Property Type: Sewage Disposal Works - Water Company Location: Beddington Stw Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Csvg.0382 Permit Version: 3 Effective Date: 1st April 2005 Issued Date: 21st December 2000 Revocation Date: 31st March 2009 Discharge Type: Sewage Discharges - Final/Treated Effluent - Water Company Discharge: Freshwater Stream/River Environment: Receiving Water: Beddington Effluent Ditch <b>Status:</b> <b>Modified (Water Resources Act 1991, Schedule 10 as amended by Environment Act 1995)</b> Positional Accuracy: Located by supplier to within 10m	A13SE (SE)	237	1	529520 166318
1	<b>Discharge Consents</b> Operator: Thames Water Utilities Limited. Property Type: Sewage Disposal Works - Water Company Location: Beddington Stw Authority: Environment Agency, Thames Region Catchment Area: Not Given Reference: CSSV.0382 Permit Version: 1 Effective Date: 31st January 1985 Issued Date: 19th June 1979 Revocation Date: 20th December 2000 Discharge Type: Sewage Discharges - Final/Treated Effluent - Water Company Discharge: Freshwater Stream/River Environment: Receiving Water: Beddington Effluent Ditch <b>Status:</b> <b>Varied by Application - (Water Resources Act 1991, Schedule 10 as amended by Environment Act 1995)</b> Positional Accuracy: Located by supplier to within 10m	A13SE (SE)	237	1	529520 166318



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
2	<b>Discharge Consents</b> Operator: Peninsula Water Limited Property Type: Domestic Property (Multiple) Location: Bedzed Development London Road Hackbridge Surrey Sm6 7hp Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Casm.0477 Permit Version: 1 Effective Date: 3rd December 2001 Issued Date: 20th February 2002 Revocation Date: 5th May 2007 Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge: Onto Land/Into Watercourse Environment: Hgravel Over Lclay/Oily Ditch Receiving Water: Hgravel Over Lclay/Oily Ditch <b>Status: Consent revoked: Discharge ceased (Section 37(1))</b> Positional Accuracy: Located by supplier to within 10m	A12SW (W)	855	1	528430 166460
3	<b>Discharge Consents</b> Operator: Peninsula Water Limited Property Type: Domestic Property (Multiple) Location: Bedzed Development London Road Hackbridge Surrey Sm6 7hp Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Casm.0477 Permit Version: 1 Effective Date: 3rd December 2001 Issued Date: 20th February 2002 Revocation Date: 5th May 2007 Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge: Onto Land/Into Watercourse Environment: Hgravel Over Lclay/Oily Ditch Receiving Water: Hgravel Over Lclay/Oily Ditch <b>Status: Consent revoked: Discharge ceased (Section 37(1))</b> Positional Accuracy: Located by supplier to within 10m	A12SW (W)	856	1	528450 166380
3	<b>Discharge Consents</b> Operator: Peninsula Water Limited Property Type: Domestic Property (Multiple) Location: Bedzed Development London Road Hackbridge Surrey Sm6 7hp Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Casm.0477 Permit Version: 1 Effective Date: 3rd December 2001 Issued Date: 20th February 2002 Revocation Date: 5th May 2007 Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge: Onto Land/Into Watercourse Environment: Hgravel Over Lclay/Oily Ditch Receiving Water: Hgravel Over Lclay/Oily Ditch <b>Status: Consent revoked: Discharge ceased (Section 37(1))</b> Positional Accuracy: Located by supplier to within 10m	A12SW (W)	887	1	528420 166370
4	<b>Discharge Consents</b> Operator: Quest Environmental Services & Technologies Ltd. Property Type: Petroleum Refining Location: Hackbridge Distillate Depot, Hackbridge, Surrey, UK Authority: Environment Agency, Thames Region Catchment Area: Not Given Reference: CASM.0044 Permit Version: 1 Effective Date: 14th May 1999 Issued Date: 26th May 1999 Revocation Date: 4th September 2000 Discharge Type: Trade Discharge - Mineral Workings Discharge: Into Land Environment: Land Receiving Water: Land <b>Status: Revoked (Water Resources Act 1991, Section 88 &amp; Schedule 10 as amended by Environment Act 1995)</b> Positional Accuracy: Located by supplier to within 10m	A7NW (SW)	886	1	528560 166100

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
5	<b>Discharge Consents</b> Operator: Peninsula Water Limited Property Type: Domestic Property (Multiple) Location: Bedzed Development London Road Hackbridge Surrey Sm6 7hp Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Casm.0477 Permit Version: 1 Effective Date: 3rd December 2001 Issued Date: 20th February 2002 Revocation Date: 5th May 2007 Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge: Onto Land/Into Watercourse Environment: Hgravel Over Lclay/Oily Ditch Receiving Water: Hgravel Over Lclay/Oily Ditch <b>Status: Consent revoked: Discharge ceased (Section 37(1))</b> Positional Accuracy: Located by supplier to within 10m	A12SW (W)	922	1	528390 166350
6	<b>Discharge Consents</b> Operator: Peninsula Water Limited Property Type: Domestic Property (Multiple) Location: Bedzed Development London Road Hackbridge Surrey Sm6 7hp Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Casm.0477 Permit Version: 1 Effective Date: 3rd December 2001 Issued Date: 20th February 2002 Revocation Date: 5th May 2007 Discharge Type: Non Water Company (Private) Sewage Discharge: Onto Land/Into Watercourse Environment: Hgravel Over Lclay/Oily Ditch Receiving Water: Hgravel Over Lclay/Oily Ditch <b>Status: Consent revoked: Discharge ceased (Section 37(1))</b> Positional Accuracy: Located by supplier to within 10m	A12SW (W)	935	1	528350 166450
7	<b>Discharge Consents</b> Operator: Thames Water Utilities Ltd Property Type: Sewage Disposal Works - Water Company Location: Beddington Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Temp.2381 Permit Version: 2 Effective Date: 14th April 2009 Issued Date: 14th April 2009 Revocation Date: Not Supplied Discharge Type: Public Sewage: Storm Sewage Overflow Discharge: Freshwater Stream/River Environment: Beddington Effluent Carrier/Wa Receiving Water: Beddington Effluent Carrier/Wa <b>Status: Temporary Consents (Water Act 1989, Section 113)</b> Positional Accuracy: Located by supplier to within 100m	A11NE (W)	981	1	528300 166800
7	<b>Discharge Consents</b> Operator: Thames Water Utilities Ltd Property Type: Sewage Disposal Works - Water Company Location: Beddington Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Temp.2381 Permit Version: 1 Effective Date: 2nd November 1989 Issued Date: 2nd November 1989 Revocation Date: 13th April 2009 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge: Freshwater Stream/River Environment: Beddington Effluent Carrier/Wa Receiving Water: Beddington Effluent Carrier/Wa <b>Status: Temporary Consents (Water Act 1989, Section 113)</b> Positional Accuracy: Located by supplier to within 100m	A11NE (W)	981	1	528300 166800

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
8	<b>Integrated Pollution Prevention And Control</b> Name: Viridor Waste Management Ltd Location: 105, Beddington Lane, CROYDON, CR0 4TD Authority: Environment Agency, Thames Region Permit Reference: ZP3233MG Original Permit Ref: Vp3039sw Effective Date: 20th February 2007 <b>Status: Effective</b> Application Type: Variation App. Sub Type: Minor Positional Accuracy: Automatically positioned to the address Activity Code: 5.2 A(1) (A) Activity Description: Waste Landfilling; Greater Than 10 T/D With Capacity Greater Than 25,000T Excluding Inert Waste Primary Activity: Y Activity Code: 1.1 A(1) (B) (I) Activity Description: Combustion; Recovered Oil Greater Or Equal To 3Mw But Less Than 50Mw Primary Activity: N	A13NW (NW)	71	1	529301 166722
8	<b>Integrated Pollution Prevention And Control</b> Name: Viridor Location: Beddington Farmlands Landfill Site, 105, Beddington Lane, Sutton, Surrey, CR0 4TD Authority: Environment Agency, Thames Region Permit Reference: Vp3039sw Original Permit Ref: Vp3039sw Effective Date: 9th November 2005 <b>Status: Superseded By Variation</b> Application Type: Application App. Sub Type: New Positional Accuracy: Automatically positioned to the address Activity Code: 1.1 A(1) (B) (I) Activity Description: Combustion; Recovered Oil Greater Or Equal To 3Mw But Less Than 50Mw Primary Activity: N Activity Code: 5.2 A(1) (A) Activity Description: Waste Landfilling; Greater Than 10 T/D With Capacity Greater Than 25,000T Excluding Inert Waste Primary Activity: Y	A13NW (NW)	71	1	529301 166722
8	<b>Integrated Pollution Prevention And Control</b> Name: Viridor Waste Management Ltd Location: Beddington Farmlands Landfill Site, 105, Beddington Lane,,, Sutton, Surrey, CR0 4TD Authority: Environment Agency, Thames Region Permit Reference: CP3035GS Original Permit Ref: Vp3039sw Effective Date: Not Supplied <b>Status: Valid</b> Application Type: Variation App. Sub Type: Standard Positional Accuracy: Automatically positioned to the address Activity Code: 1.1 A(1) (B) (I) Activity Description: Combustion; Recovered Oil Greater Or Equal To 3Mw But Less Than 50Mw Primary Activity: N Activity Code: 5.2 A(1) (A) Activity Description: Waste Landfilling; Greater Than 10 T/D With Capacity Greater Than 25,000T Excluding Inert Waste Primary Activity: Y Activity Code: 0.0 Associated Process Activity Description: Associated Process Primary Activity: N	A13NW (NW)	71	1	529301 166722
9	<b>Integrated Pollution Prevention And Control</b> Name: Thames Water Utilities Ltd Location: Beddington Combined Heat & Power Plant, Beddington Stw, Beddington Lane, Croydon, Surrey, CR0 4TH Authority: Environment Agency, Thames Region Permit Reference: YP3430LL Original Permit Ref: Yp3430ll Effective Date: 20th December 2006 <b>Status: Effective</b> Application Type: Application App. Sub Type: New Positional Accuracy: Manually positioned to the address or location Activity Code: 1.1 A(1) (B) (III) Activity Description: Combustion; Waste Derived Fuel Greater Or Equal To 3Mw But Less Than 50Mw Primary Activity: Y	A9NW (SE)	733	1	530005 166068

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
10	<b>Local Authority Pollution Prevention and Controls</b> Name: Ready Mix Concrete (South East) Ltd Location: Beddington Lane, CROYDON, Surrey, CR0 4TG Authority: London Borough of Sutton, Environmental Health Department Permit Reference: 12 Dated: 24th March 1993 Process Type: Local Authority Pollution Prevention and Control Description: PG3/1 Blending, packing, loading and use of bulk cement <b>Status: Permitted</b> Positional Accuracy: Manually positioned to the address or location	A13NE (NE)	181	2	529570 166710
11	<b>Local Authority Pollution Prevention and Controls</b> Name: Country Waste Recycling Ltd Location: 79-83 Beddington Lane, Croydon, Cr0 4th Authority: London Borough of Sutton, Environmental Health Department Permit Reference: 58 Dated: Not Supplied Process Type: Local Authority Pollution Prevention and Control Description: PG3/16 Mobile screening and crushing processes <b>Status: Transferred to IPPC</b> Positional Accuracy: Manually positioned to the address or location	A14SW (SE)	316	2	529748 166450
11	<b>Local Authority Pollution Prevention and Controls</b> Name: Body Matters Croyden Location: Unit 1, 136-138 Beddington Lane, CROYDON, SURREY, CR Authority: London Borough of Sutton, Environmental Health Department Permit Reference: 21 Dated: 5th August 1998 Process Type: Local Authority Pollution Prevention and Control Description: PG6/34 Respraying of road vehicles <b>Status: Permitted</b> Positional Accuracy: Manually positioned to the address or location	A14SW (E)	353	2	529787 166453
12	<b>Local Authority Pollution Prevention and Controls</b> Name: King Concrete Location: 154 Beddington Lane, Croydon, CR0 4te Authority: London Borough of Sutton, Environmental Health Department Permit Reference: 78 Dated: 14th March 2008 Process Type: Local Authority Pollution Prevention and Control Description: PG3/1 Blending, packing, loading and use of bulk cement <b>Status: Permitted</b> Positional Accuracy: Manually positioned to the address or location	A18SE (N)	344	2	529501 167002
13	<b>Local Authority Pollution Prevention and Controls</b> Name: United Asphalt (Croydon) Ltd Location: Coomber Way, CROYDON, CR0 4TQ Authority: London Borough of Sutton, Environmental Health Department Permit Reference: 52 Dated: 4th January 2001 Process Type: Local Authority Pollution Prevention and Control Description: PG3/15 Mineral drying and roadstone coating processes <b>Status: Permitted</b> Positional Accuracy: Manually positioned to the road within the address or location	A13NE (NE)	359	2	529625 166945
14	<b>Local Authority Pollution Prevention and Controls</b> Name: 777 Demolition Location: 158 Beddington Lane, Croydon, CR0 4te Authority: London Borough of Sutton, Environmental Health Department Permit Reference: 77 Dated: 17th March 2008 Process Type: Local Authority Pollution Prevention and Control Description: PG3/16 Mobile screening and crushing processes <b>Status: Permitted</b> Positional Accuracy: Manually positioned to the address or location	A18SE (N)	419	2	529492 167083
15	<b>Local Authority Pollution Prevention and Controls</b> Name: Cemex UK Operations Ltd Location: Coomber Way, Croydon, CR0 4tg Authority: London Borough of Sutton, Environmental Health Department Permit Reference: 12 Dated: 6th February 2007 Process Type: Local Authority Pollution Prevention and Control Description: PG3/1 Blending, packing, loading and use of bulk cement <b>Status: Permitted</b> Positional Accuracy: Manually positioned to the road within the address or location	A19SW (NE)	449	2	529699 166999

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
16	<b>Local Authority Pollution Prevention and Controls</b> Name: Spraytech Location: Unit 7 Brookmead Industrial Estate, Jessops Way, Off Beddington Lane, CROYDON, CR0 4TS Authority: London Borough of Sutton, Environmental Health Department Permit Reference: LBS20 Dated: 3rd May 1996 Process Type: Local Authority Air Pollution Control Description: PG6/34 Respraying of road vehicles <b>Status: Authorisation revokedRevoked</b> Positional Accuracy: Manually positioned to the address or location	A18SE (N)	465	2	529387 167142
17	<b>Local Authority Pollution Prevention and Controls</b> Name: Thames Water Utilities Ltd Location: Beddington Sewage Treatment Works, Beddington Lane, CROYDON, Surrey, CR0 4TH Authority: London Borough of Sutton, Environmental Health Department Permit Reference: LBS2/VAR1 Dated: 28th February 1992 Process Type: Local Authority Air Pollution Control Description: PG1/1Waste oil burners, less than 0.4MW net rated thermal input <b>Status: Authorisation revokedRevoked</b> Positional Accuracy: Manually positioned to the address or location	A9NW (SE)	489	2	529775 166181
18	<b>Local Authority Pollution Prevention and Controls</b> Name: Universal Powder Paints Location: Unit 11, Endeavour Way, CROYDON, CR0 4TR Authority: London Borough of Sutton, Environmental Health Department Permit Reference: LBS17 Dated: 18th August 1993 Process Type: Local Authority Air Pollution Control Description: PG6/31 Powder coating processes ( including sheradizing ) <b>Status: Authorisation revokedRevoked</b> Positional Accuracy: Manually positioned to the address or location	A14NW (E)	547	2	529923 166815
19	<b>Local Authority Pollution Prevention and Controls</b> Name: Chandler Stewart Ltd Location: Unit 2 Beddington Cross, Beddington Farm Road, CROYDON, Surrey, CR0 4XH Authority: London Borough of Sutton, Environmental Health Department Permit Reference: LBS48 Dated: 29th April 1999 Process Type: Local Authority Air Pollution Control Description: PG6/34 Respraying of road vehicles <b>Status: Authorisation has varied</b> Positional Accuracy: Manually positioned to the address or location	A14SE (E)	647	2	530090 166600
20	<b>Local Authority Pollution Prevention and Controls</b> Name: Snowcem Location: Therapia Lane, CROYDON, CR0 3DH Authority: London Borough of Sutton, Environmental Health Department Permit Reference: LBS8/VAR1 Dated: 16th March 1993 Process Type: Local Authority Air Pollution Control Description: PG3/1Blending, packing, loading and use of bulk cement <b>Status: Authorisation revokedRevoked</b> Positional Accuracy: Manually positioned to the road within the address or location	A14NE (E)	662	2	530074 166753
21	<b>Local Authority Pollution Prevention and Controls</b> Name: Cobra Coachworks Location: Red House Road, CROYDON, CR0 3AQ Authority: London Borough of Sutton, Environmental Health Department Permit Reference: Lbs44 Dated: 21st August 2000 Process Type: Local Authority Air Pollution Control Description: PG6/34 Respraying of road vehicles <b>Status: Authorisation has varied</b> Positional Accuracy: Manually positioned to the road within the address or location	A19NW (NE)	803	2	529796 167368
22	<b>Local Authority Pollution Prevention and Controls</b> Name: Brett Concrete Ltd Location: 2 Beddington Farm Road, CROYDON, Surrey, CR0 4XB Authority: London Borough of Sutton, Environmental Health Department Permit Reference: 7 Dated: 15th February 1993 Process Type: Local Authority Pollution Prevention and Control Description: PG3/1Blending, packing, loading and use of bulk cement <b>Status: Permitted</b> Positional Accuracy: Manually positioned to the road within the address or location	A14SE (E)	841	2	530271 166377

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
23	<b>Local Authority Pollution Prevention and Controls</b> Name: Bedzed Location: 24 Helios Way, CROYDON, SM6 7BZ Authority: London Borough of Sutton, Environmental Health Department Permit Reference: Lbs59 Dated: Not Supplied Process Type: Local Authority Air Pollution Control Description: PG1/8 Wood combustion processes between 0.4 and 3MW net rated thermal input <b>Status: Authorised</b> Positional Accuracy: Manually positioned to the address or location	A12SW (W)	876	2	528419 166413
24	<b>Local Authority Pollution Prevention and Controls</b> Name: Trafalgar House Construction Location: 681 Mitcham Road, CROYDON, Surrey, CR9 3AP Authority: London Borough of Croydon, Environmental Health Department Permit Reference: Lbc30 Dated: 3rd October 1994 Process Type: Local Authority Air Pollution Control Description: PG3/1Blending, packing, loading and use of bulk cement <b>Status: Authorisation revokedRevoked</b> Positional Accuracy: Manually positioned to the address or location	A19NW (NE)	880	3	529973 167333
25	<b>Local Authority Pollution Prevention and Controls</b> Name: Fernside Connect Location: 702 Mitchan Road, CROYDON, Surrey, CR0 3AB Authority: London Borough of Croydon, Environmental Health Department Permit Reference: LBCVR009 Dated: 16th November 1998 Process Type: Local Authority Pollution Prevention and Control Description: PG1/14 Petrol filling station <b>Status: Permitted</b> Positional Accuracy: Manually positioned to the address or location	A19NW (NE)	928	3	529959 167408
26	<b>Local Authority Pollution Prevention and Controls</b> Name: Hackbridge Dry Cleaners Location: 29 London Road, Hackbridge, Sm6 7hw Authority: London Borough of Sutton, Environmental Health Department Permit Reference: 69 Dated: 6th December 2007 Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning <b>Status: Permitted</b> Positional Accuracy: Manually positioned to the address or location	A7NW (SW)	962	2	528490 166067
27	<b>Local Authority Pollution Prevention and Controls</b> Name: Hansons Premix Location: Beddington Farm Road, CROYDON, CR0 4XB Authority: London Borough of Sutton, Environmental Health Department Permit Reference: 11 Dated: 16th March 1993 Process Type: Local Authority Pollution Prevention and Control Description: PG3/1Blending, packing, loading and use of bulk cement <b>Status: Permitted</b> Positional Accuracy: Manually positioned to the address or location	A15SW (E)	989	2	530415 166343
	<b>Nearest Surface Water Feature</b>	A13NE (NE)	3	-	529411 166630
28	<b>Pollution Incidents to Controlled Waters</b> Property Type: Not Given Location: Beddington Stw Authority: Environment Agency, Thames Region Pollutant: Unknown Sewage Note: Not Supplied Incident Date: 14th March 1989 Incident Reference: SE890085 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A13SE (SE)	244	1	529520 166310



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
28	<b>Pollution Incidents to Controlled Waters</b> Property Type: Not Given Location: BEDDINGTON Authority: Environment Agency, Thames Region Pollutant: Unknown Sewage Note: Not Supplied Incident Date: 25th January 1996 Incident Reference: SE960038 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A13SE (SE)	249	1	529500 166300
29	<b>Pollution Incidents to Controlled Waters</b> Property Type: Not Given Location: Therapia Lane Authority: Environment Agency, Thames Region Pollutant: Oils - Unknown Note: Confirmed As A Pollution Incident Incident Date: 24th February 1989 Incident Reference: SE890064 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A13NE (NE)	256	1	529630 166760
30	<b>Pollution Incidents to Controlled Waters</b> Property Type: Not Given Location: Beddington Stw Authority: Environment Agency, Thames Region Pollutant: Oils - Unknown Note: Confirmed As A Pollution Incident Incident Date: 3rd May 1989 Incident Reference: SE890136 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A12SE (SW)	428	1	529000 166300
31	<b>Pollution Incidents to Controlled Waters</b> Property Type: Not Given Location: Wandle Beddington Authority: Environment Agency, Thames Region Pollutant: Oils - Unknown Note: Confirmed As A Pollution Incident Incident Date: 19th November 1994 Incident Reference: SE940386 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A9NW (SE)	640	1	529750 165980
32	<b>Pollution Incidents to Controlled Waters</b> Property Type: Not Given Location: Ditch Under Mile Road Authority: Environment Agency, Thames Region Pollutant: Miscellaneous - Unknown Note: Confirmed As A Pollution Incident Incident Date: 20th February 1990 Incident Reference: SE900036 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A12SW (W)	707	1	528600 166400
33	<b>Pollution Incidents to Controlled Waters</b> Property Type: Not Given Location: MITCHAM Authority: Environment Agency, Thames Region Pollutant: Miscellaneous - Unknown Note: Confirmed As A Pollution Incident Incident Date: 19th May 1994 Incident Reference: SE940147 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A12NW (W)	785	1	528500 166800

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
34	<b>Pollution Incidents to Controlled Waters</b> Property Type: Not Given Location: BEDDINGTON Authority: Environment Agency, Thames Region Pollutant: Oils - Unknown Note: Oils - Unknown; Confirmed As A Pollution Incident Incident Date: Not Supplied Incident Reference: SE960065 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A15SW (E)	965	1	530400 166400
	<b>River Quality</b> Name: Wandle (Beddington Arm) GQA Grade: River Quality B Reach: Wandle Park - Wandle Estimated Distance (km): 4.4 Flow Rate: Flow less than 0.31 cumecs Flow Type: River Year: 2000	A8SE (S)	753	1	529411 165791
35	<b>Substantiated Pollution Incident Register</b> Authority: Environment Agency - Thames Region, South East Area Incident Date: 3rd January 2002 Incident Reference: 83260 Water Impact: Category 4 - No Impact Air Impact: Category 4 - No Impact Land Impact: Category 1 - Major Incident Positional Accuracy: Located by supplier to within 10m Pollutant: Inert : Construction / Demolition Material Pollutant: Specific Waste Materials: Household Waste	A14NW (E)	594	1	529985 166792
36	<b>Water Abstractions</b> Operator: Cemex Uk Materials Limited Licence Number: 28/39/41/0085 Permit Version: 1 Location: Croydon Quarry, Beddington Lane - Wetpit Authority: Environment Agency, Thames Region Abstraction: Mineral Products: General Washing/Process Washing Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Croydon Quarry, 107 Beddington Road, Croydon Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 31st July 2007 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A12NE (W)	373	1	528900 166700
36	<b>Water Abstractions</b> Operator: Cemex Uk Materials Limited Licence Number: 28/39/41/0085 Permit Version: 1 Location: Croydon Quarry, Beddington Lane - Wetpit Authority: Environment Agency, Thames Region Abstraction: Mineral Products: Mineral Washing Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Croydon Quarry, 107 Beddington Lane, Croydon Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 31st July 2007 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A12NE (W)	373	1	528900 166700



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
36	<b>Water Abstractions</b> Operator: Cemex Uk Materials Limited Licence Number: 28/39/41/0085 Permit Version: 1 Location: Croydon Quarry, Beddington Lane - Wetpit Authority: Environment Agency, Thames Region Abstraction: Mineral Products: Dust Suppression Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Croydon Quarry, 107 Beddington Lane, Croydon Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 31st July 2007 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A12NE (W)	373	1	528900 166700
36	<b>Water Abstractions</b> Operator: Rmc Materials Limited Licence Number: 28/39/41/0073 Permit Version: 103 Location: Beddington Farm, Croydon, Borehole 'A' Authority: Environment Agency, Thames Region Abstraction: Mineral Products: Dust Suppression Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Beddington Farm, Croydon Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 20th April 2005 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A12NE (W)	373	1	528900 166700
36	<b>Water Abstractions</b> Operator: Rmc Materials Limited Licence Number: 28/39/41/0073 Permit Version: 103 Location: Beddington Farm, Croydon, Borehole 'A' Authority: Environment Agency, Thames Region Abstraction: Mineral Products: General Washing/Process Washing Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Beddington Farm, Croydon Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 20th April 2005 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A12NE (W)	373	1	528900 166700
36	<b>Water Abstractions</b> Operator: Rmc Materials Limited Licence Number: 28/39/41/0073 Permit Version: 103 Location: Beddington Farm, Croydon, Borehole 'A' Authority: Environment Agency, Thames Region Abstraction: Mineral Products: Mineral Washing Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Beddington Farm, Croydon Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 20th April 2005 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A12NE (W)	373	1	528900 166700

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
36	<b>Water Abstractions</b> Operator: Rmc Aggregates (Greater London) Ltd Licence Number: 28/39/41/0073 Permit Version: 102 Location: Beddington Farm, Croydon, Borehole 'A' Authority: Environment Agency, Thames Region Abstraction: Mineral Products: Dust Suppression Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Beddington Farm, Croydon Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 18th September 2000 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A12NE (W)	373	1	528900 166700
36	<b>Water Abstractions</b> Operator: Rmc Aggregates (Greater London) Ltd Licence Number: 28/39/41/0073 Permit Version: 102 Location: Beddington Farm, Croydon, Borehole 'A' Authority: Environment Agency, Thames Region Abstraction: Mineral Products: General Washing/Process Washing Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Beddington Farm, Croydon Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 18th September 2000 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A12NE (W)	373	1	528900 166700
36	<b>Water Abstractions</b> Operator: Rmc Aggregates (Greater London) Ltd Licence Number: 28/39/41/0073 Permit Version: 102 Location: Beddington Farm, Croydon, Borehole 'A' Authority: Environment Agency, Thames Region Abstraction: Mineral Products: Mineral Washing Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Beddington Farm, Croydon Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 18th September 2000 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A12NE (W)	373	1	528900 166700
36	<b>Water Abstractions</b> Operator: Rmc Aggregates (Greater London) Ltd Licence Number: 28/39/41/0073 Permit Version: 101 Location: Beddington Farm, Croydon, Borehole 'A' Authority: Environment Agency, Thames Region Abstraction: Mineral Products: Dust Suppression Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): 6000 Yearly Rate (m3): 196350 Details: Beddington Farm, Croydon Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st January 1999 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A12NE (W)	373	1	528900 166700

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
36	<b>Water Abstractions</b> Operator: Rmc Aggregates (Greater London) Ltd Licence Number: 28/39/41/0073 Permit Version: 101 Location: Beddington Farm, Croydon, Borehole 'A' Authority: Environment Agency, Thames Region Abstraction: Mineral Products: General Washing/Process Washing Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Beddington Farm, Croydon Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st January 1999 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A12NE (W)	373	1	528900 166700
36	<b>Water Abstractions</b> Operator: Rmc Aggregates (Greater London) Ltd Licence Number: 28/39/41/0073 Permit Version: 101 Location: Beddington Farm, Croydon, Borehole 'A' Authority: Environment Agency, Thames Region Abstraction: Mineral Products: Mineral Washing Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Beddington Farm, Croydon Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st January 1999 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A12NE (W)	373	1	528900 166700
37	<b>Water Abstractions</b> Operator: Bxl Plastics Ltd Licence Number: 28/39/41/0007 Permit Version: Not Supplied Location: 675 Mitcham Road, CROYDON Authority: Environment Agency, Thames Region Abstraction: Cooling Abstraction Type: Not Supplied Source: Groundwater Daily Rate (m3): 68 Yearly Rate (m3): 14547 Details: Chalk (Undifferentiated). Status: Revoked; Lapsed Or Cancelled Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A19SW (NE)	733	1	529900 167200
38	<b>Water Abstractions</b> Operator: Hanson Quarry Prod Europe Ltd Licence Number: 28/39/41/0084 Permit Version: 1 Location: Beddington Farm Road Croydon Cro - Borehole Authority: Environment Agency, Thames Region Abstraction: Mineral Products: General use relating to Secondary Category (High Loss) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Beddington Farm Road Croydon Surrey Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 31st August 2006 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A14NE (E)	843	1	530256 166776

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
39	<b>Water Abstractions</b> Operator: Totalfina Great Britain Limited Licence Number: 28/39/41/0076 Permit Version: 1 Location: Hackbridge Distillate Wells Authority: Environment Agency, Thames Region Abstraction: Petrochemicals: General Use (Low Loss) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Hackbridge Distillate Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 2nd November 1999 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A7NW (SW)	874	1	528560 166120
40	<b>Water Abstractions</b> Operator: Totalfina Great Britain Limited Licence Number: 28/39/41/0076 Permit Version: 1 Location: Hackbridge Distillate Trenches Authority: Environment Agency, Thames Region Abstraction: Petrochemicals: General Use (Low Loss) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Hackbridge Distillate Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 2nd November 1999 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A7NW (SW)	886	1	528600 166050
	<b>Water Abstractions</b> Operator: Lemman Bros T/A Southdown Licence Number: 28/39/41/0017 Permit Version: Not Supplied Location: Wandle Road, HACKBRIDGE Authority: Environment Agency, Thames Region Abstraction: Laundering Abstraction Type: Not Supplied Source: Groundwater Daily Rate (m3): 182 Yearly Rate (m3): 36368 Details: Chalk (Undifferentiated); Licence Status: Revoked; Lapsed Or Cancelled Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A7SW (SW)	1068	1	528600 165800
	<b>Water Abstractions</b> Operator: Sutton & East Surrey Water Plc Licence Number: 28/39/41/0079 Permit Version: 4 Location: Hackbridge Pumping Station 'B' Authority: Environment Agency, Thames Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: S46(4) Water Resources Act 1991 Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 1st August 2008 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A6NE (W)	1291	1	528070 166150

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	<b>Water Abstractions</b> Operator: Sutton & East Surrey Water Plc Licence Number: 28/39/41/0079 Permit Version: 3 Location: Hackbridge Pumping Station 'B' Authority: Environment Agency, Thames Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: S46(4) Water Resources Act 1991 Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 26th April 2007 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A6NE (W)	1291	1	528070 166150
	<b>Water Abstractions</b> Operator: Sutton & East Surrey Water Plc Licence Number: 28/39/41/0079 Permit Version: 2 Location: Hackbridge Pumping Station 'B' Authority: Environment Agency, Thames Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: S46(4) Water Resources Act 1991 Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 25th October 2006 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A6NE (W)	1291	1	528070 166150
	<b>Water Abstractions</b> Operator: Sutton & East Surrey Water Plc Licence Number: 28/39/41/0079 Permit Version: 1 Location: Hackbridge Pumping Station 'B' Authority: Environment Agency, Thames Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: S46(4) Water Resources Act 1991 Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st January 2005 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A6NE (W)	1291	1	528070 166150
	<b>Water Abstractions</b> Operator: Sutton & East Surrey Water Plc Licence Number: 28/39/41/0014 Permit Version: 103 Location: Hackbridge Pumping Station 'B' Authority: Environment Agency, Thames Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 16th January 2003 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A6NE (W)	1291	1	528070 166150

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	<b>Water Abstractions</b> Operator: Sutton & East Surrey Water Plc Licence Number: 28/39/41/0014 Permit Version: 102 Location: Hackbridge Pumping Station 'B' Authority: Environment Agency, Thames Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st January 2002 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A6NE (W)	1291	1	528070 166150
	<b>Water Abstractions</b> Operator: Sutton & East Surrey Water Plc Licence Number: 28/39/41/0014 Permit Version: 101 Location: Hackbridge Pumping Station 'B' Authority: Environment Agency, Thames Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 16th March 2001 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A6NE (W)	1291	1	528070 166150
	<b>Water Abstractions</b> Operator: Sutton & East Surrey Water Plc Licence Number: 28/39/41/0014 Permit Version: 100 Location: Hackbridge Pumping Station 'B' Authority: Environment Agency, Thames Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 23rd April 1997 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A6NE (W)	1291	1	528070 166150
	<b>Water Abstractions</b> Operator: Mitcham Golf Club Limited Licence Number: 28/39/41/0087 Permit Version: 1 Location: Mitcham Golf Club, Mitcham Junction - Borehole Authority: Environment Agency, Thames Region Abstraction: Golf Courses: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Mitcham Golf Club, Mitcham Junction, Surrey Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 31st July 2008 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A17NW (NW)	1300	1	528420 167620

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	<b>Water Abstractions</b> Operator: Sutton & East Surrey Water Plc Licence Number: 28/39/41/0079 Permit Version: 4 Location: Hackbridge Pumping Station 'A' Authority: Environment Agency, Thames Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: S46(4) Water Resources Act 1991 Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 1st August 2008 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A6NE (W)	1317	1	528010 166240
	<b>Water Abstractions</b> Operator: Sutton & East Surrey Water Plc Licence Number: 28/39/41/0079 Permit Version: 3 Location: Hackbridge Pumping Station 'A' Authority: Environment Agency, Thames Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: S46(4) Water Resources Act 1991 Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 26th April 2007 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A6NE (W)	1317	1	528010 166240
	<b>Water Abstractions</b> Operator: Sutton & East Surrey Water Plc Licence Number: 28/39/41/0079 Permit Version: 2 Location: Hackbridge Pumping Station 'A' Authority: Environment Agency, Thames Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: S46(4) Water Resources Act 1991 Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 25th October 2006 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A6NE (W)	1317	1	528010 166240
	<b>Water Abstractions</b> Operator: Sutton & East Surrey Water Plc Licence Number: 28/39/41/0079 Permit Version: 1 Location: Hackbridge Pumping Station 'A' Authority: Environment Agency, Thames Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: S46(4) Water Resources Act 1991 Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st January 2005 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A6NE (W)	1317	1	528010 166240



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	<b>Water Abstractions</b> Operator: Sutton & East Surrey Water Plc Licence Number: 28/39/41/0014 Permit Version: 103 Location: Hackbridge Pumping Station 'A' Authority: Environment Agency, Thames Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 16th January 2003 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A6NE (W)	1317	1	528010 166240
	<b>Water Abstractions</b> Operator: Sutton & East Surrey Water Plc Licence Number: 28/39/41/0014 Permit Version: 102 Location: Hackbridge Pumping Station 'A' Authority: Environment Agency, Thames Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st January 2002 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A6NE (W)	1317	1	528010 166240
	<b>Water Abstractions</b> Operator: Sutton & East Surrey Water Plc Licence Number: 28/39/41/0014 Permit Version: 101 Location: Hackbridge Pumping Station 'A' Authority: Environment Agency, Thames Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 16th March 2001 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A6NE (W)	1317	1	528010 166240
	<b>Water Abstractions</b> Operator: Sutton & East Surrey Water Plc Licence Number: 28/39/41/0014 Permit Version: 100 Location: Hackbridge Pumping Station 'A' Authority: Environment Agency, Thames Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): 8000 Yearly Rate (m3): 1825000 Details: Additional Purposes - Industrial (86374) Welfare (50006). Chalk (Undifferentiated) Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 23rd April 1997 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A6NE (W)	1317	1	528010 166240



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	<b>Water Abstractions</b> Operator: Sutton & East Surrey Water Plc Licence Number: 28/39/41/0079 Permit Version: 4 Location: Hackbridge Pumping Station 'C' Authority: Environment Agency, Thames Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: S46(4) Water Resources Act 1991 Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 1st August 2008 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A11SW (W)	1428	1	527870 166340
	<b>Water Abstractions</b> Operator: Sutton & East Surrey Water Plc Licence Number: 28/39/41/0079 Permit Version: 3 Location: Hackbridge Pumping Station 'C' Authority: Environment Agency, Thames Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: S46(4) Water Resources Act 1991 Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 26th April 2007 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A11SW (W)	1428	1	527870 166340
	<b>Water Abstractions</b> Operator: Sutton & East Surrey Water Plc Licence Number: 28/39/41/0079 Permit Version: 2 Location: Hackbridge Pumping Station 'C' Authority: Environment Agency, Thames Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: S46(4) Water Resources Act 1991 Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 25th October 2006 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A11SW (W)	1428	1	527870 166340
	<b>Water Abstractions</b> Operator: Sutton & East Surrey Water Plc Licence Number: 28/39/41/0079 Permit Version: 1 Location: Hackbridge Pumping Station 'C' Authority: Environment Agency, Thames Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: S46(4) Water Resources Act 1991 Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st January 2005 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A11SW (W)	1428	1	527870 166340

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	<b>Water Abstractions</b> Operator: Sutton & East Surrey Water Plc Licence Number: 28/39/41/0014 Permit Version: 103 Location: Hackbridge Pumping Station 'C' Authority: Environment Agency, Thames Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 16th January 2003 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A11SW (W)	1428	1	527870 166340
	<b>Water Abstractions</b> Operator: Sutton & East Surrey Water Plc Licence Number: 28/39/41/0014 Permit Version: 102 Location: Hackbridge Pumping Station 'C' Authority: Environment Agency, Thames Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st January 2002 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A11SW (W)	1428	1	527870 166340
	<b>Water Abstractions</b> Operator: Sutton & East Surrey Water Plc Licence Number: 28/39/41/0014 Permit Version: 101 Location: Hackbridge Pumping Station 'C' Authority: Environment Agency, Thames Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 16th March 2001 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A11SW (W)	1428	1	527870 166340
	<b>Water Abstractions</b> Operator: Sutton & East Surrey Water Plc Licence Number: 28/39/41/0014 Permit Version: 100 Location: Hackbridge Pumping Station 'C' Authority: Environment Agency, Thames Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 23rd April 1997 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A11SW (W)	1428	1	527870 166340

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	<b>Water Abstractions</b> Operator: Sutton & East Surrey Water Plc Licence Number: 28/39/41/0079 Permit Version: 4 Location: Goatbridge Works, Middleton Road, Beddington Corner Authority: Environment Agency, Thames Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: S46(4) Water Resources Act 1991 Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 1st August 2008 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A16SW (W)	1437	1	527870 166970
	<b>Water Abstractions</b> Operator: Sutton & East Surrey Water Plc Licence Number: 28/39/41/0079 Permit Version: 3 Location: Goatbridge Works, Middleton Road, Beddington Corner Authority: Environment Agency, Thames Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: S46(4) Water Resources Act 1991 Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 26th April 2007 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A16SW (W)	1437	1	527870 166970
	<b>Water Abstractions</b> Operator: Sutton & East Surrey Water Plc Licence Number: 28/39/41/0079 Permit Version: 2 Location: Goatbridge Works, Middleton Road, Beddington Corner Authority: Environment Agency, Thames Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: S46(4) Water Resources Act 1991 Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 25th October 2006 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A16SW (W)	1437	1	527870 166970
	<b>Water Abstractions</b> Operator: Sutton & East Surrey Water Plc Licence Number: 28/39/41/0079 Permit Version: 1 Location: Goatbridge Works, Middleton Road, Beddington Corner Authority: Environment Agency, Thames Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: S46(4) Water Resources Act 1991 Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st January 2005 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A16SW (W)	1437	1	527870 166970

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	<b>Water Abstractions</b> Operator: Sutton & East Surrey Water Plc Licence Number: 28/39/41/0014 Permit Version: 103 Location: Goatbridge Works, Middleton Road, Beddington Corner Authority: Environment Agency, Thames Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 16th January 2003 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A16SW (W)	1437	1	527870 166970
	<b>Water Abstractions</b> Operator: Sutton & East Surrey Water Plc Licence Number: 28/39/41/0014 Permit Version: 102 Location: Goatbridge Works, Middleton Road, Beddington Corner Authority: Environment Agency, Thames Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st January 2002 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A16SW (W)	1437	1	527870 166970
	<b>Water Abstractions</b> Operator: Sutton & East Surrey Water Plc Licence Number: 28/39/41/0014 Permit Version: 101 Location: Goatbridge Works, Middleton Road, Beddington Corner Authority: Environment Agency, Thames Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 16th March 2001 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A16SW (W)	1437	1	527870 166970
	<b>Water Abstractions</b> Operator: Sutton & East Surrey Water Plc Licence Number: 28/39/41/0051 Permit Version: 100 Location: River Wandle At Mitcham Junction Authority: Environment Agency, Thames Region Abstraction: Public Water Supply: General Use (Low Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): 6819 Yearly Rate (m3): 2495754 Details: Mitcham Junction Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 15th December 1975 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A16SW (W)	1512	1	527800 167000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	<b>Water Abstractions</b> Operator: Slough Industrial Estates Limited Licence Number: 28/39/41/0030 Permit Version: 104 Location: Commerce Way, Purley Way, Croydon, - Borehole A Authority: Environment Agency, Thames Region Abstraction: Machinery And Electronics: Non-Evaporative Cooling Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Commerce Way, Purley Way, Croydon Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 15th December 2004 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A5NW (SE)	1640	1	530660 165440
	<b>Water Abstractions</b> Operator: Slough Industrial Estates Limited Licence Number: 28/39/41/0030 Permit Version: 104 Location: Commerce Way, Purley Way, Croydon, - Borehole A Authority: Environment Agency, Thames Region Abstraction: Machinery And Electronics: Process Water Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Commerce Way, Purley Way, Croydon Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 15th December 2004 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A5NW (SE)	1640	1	530660 165440
	<b>Water Abstractions</b> Operator: Ravensett Industrial Estates Limited Licence Number: 28/39/41/0030 Permit Version: 103 Location: Commerce Way, Purley Way, Croydon, - Borehole A Authority: Environment Agency, Thames Region Abstraction: Machinery And Electronics: Process Water Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Commerce Way, Purley Way, Croydon Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 15th September 2001 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A5NW (SE)	1640	1	530660 165440
	<b>Water Abstractions</b> Operator: Ravensett Industrial Estates Limited Licence Number: 28/39/41/0030 Permit Version: 103 Location: Commerce Way, Purley Way, Croydon, - Borehole A Authority: Environment Agency, Thames Region Abstraction: Machinery And Electronics: Non-Evaporative Cooling Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Commerce Way, Purley Way, Croydon Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 15th September 2001 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A5NW (SE)	1640	1	530660 165440

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	<b>Water Abstractions</b> Operator: Aik Electronics (Uk) Limited Licence Number: 28/39/41/0030 Permit Version: 102 Location: Commerce Way, Purley Way, Croydon, - Borehole A Authority: Environment Agency, Thames Region Abstraction: Machinery And Electronics: Non-Evaporative Cooling Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): 1005 Yearly Rate (m3): 222754 Details: Commerce Way, Purley Way, Croydon Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st June 1999 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A5NW (SE)	1640	1	530660 165440
	<b>Water Abstractions</b> Operator: Aik Electronics (Uk) Limited Licence Number: 28/39/41/0030 Permit Version: 102 Location: Commerce Way, Purley Way, Croydon, - Borehole A Authority: Environment Agency, Thames Region Abstraction: Machinery And Electronics: Process Water Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Commerce Way, Purley Way, Croydon Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st June 1999 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A5NW (SE)	1640	1	530660 165440
	<b>Water Abstractions</b> Operator: London Borough Of Sutton Licence Number: 28/39/41/0067 Permit Version: 101 Location: London Road ,Wallington, Surrey Authority: Environment Agency, Thames Region Abstraction: Amenity: Make-Up Or Top Up Water Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: London Road , Wallington, Surrey Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 30th September 2002 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A2SW (SW)	1795	1	528620 164950
	<b>Water Abstractions</b> Operator: London Borough Of Sutton Licence Number: 28/39/41/0067 Permit Version: 101 Location: London Road, Wallington, Surrey, - Borehole 'A' Authority: Environment Agency, Thames Region Abstraction: Amenity: Make-Up Or Top Up Water Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: London Road, Wallington, Surrey Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 30th September 2002 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A2SW (SW)	1795	1	528620 164950

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	<b>Water Abstractions</b> Operator: London Borough Of Sutton Licence Number: 28/39/41/0067 Permit Version: 100 Location: London Road, Wallington, Surrey, - Borehole 'A' Authority: Environment Agency, Thames Region Abstraction: Amenity: Make-Up Or Top Up Water Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): 1 Yearly Rate (m3): 29 Details: London Road, Wallington, Surrey Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 4th February 1993 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	(SW)	1848	1	528600 164900
	<b>Groundwater Vulnerability</b> Geological Classification: 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 not producing large quantities of water for abstraction, they are important for local supplies and in supplying base flow to rivers Soil Classification: Soils of High Leaching Potential (U) - Soil information for restored mineral workings and urban areas is based on fewer observations than elsewhere. A worst case vulnerability classification (H) assumed, until proved otherwise Map Sheet: Sheet 39 West London Scale: 1:100,000	A14SW (E)	0	1	530000 166609
	<b>Drift Deposits</b> None				
41	<b>Source Protection Zones</b> Name: Various Source: Environment Agency, Head Office Reference: Not Supplied Type: Zone II (Outer Protection Zone): Either 25% of the source area or a 400 day travel time whichever is greater.	A7NW (SW)	810	1	528617 166148
42	<b>Source Protection Zones</b> Name: Various Source: Environment Agency, Head Office Reference: Not Supplied Type: Zone III (Total Catchment): The total area needed to support the discharge from the protected groundwater source.	A7NW (SW)	818	1	528617 166131
43	<b>Source Protection Zones</b> Name: Hackbridge Source: Environment Agency, Head Office Reference: Th303 Type: Zone I (Inner Protection Zone): Travel time of 50 days or less to the groundwater source.	A12SW (W)	863	1	528482 166275
	<b>Extreme Flooding from Rivers or Sea without Defences</b> Flood Plain Type: Fluvial Boundary Accuracy: As Supplied	A13SW (W)	7	1	529260 166610
	<b>Flooding from Rivers or Sea without Defences</b> Flood Plain Type: Fluvial Boundary Accuracy: As Supplied	A13NW (W)	7	1	529260 166620
	<b>Areas Benefiting from Flood Defences</b> None				
	<b>Flood Water Storage Areas</b> None				
	<b>Flood Defences</b> None				



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
44	<b>Historical Landfill Sites</b> Licence Holder: Not Supplied Location: Beddington, Sutton, London Name: Therapia Lane Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD11044 First Input Date: Not Supplied Last Input Date: 31st December 1965 Specified Waste: Deposited Waste included Inert, Industrial, Commercial, Household and Type: Special Waste EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 5780/0002 BGS Ref: Not Supplied Other Ref: 8SU002, SUT002, 5870/0037	A13NE (NE)	232	1	529617 166730
45	<b>Historical Landfill Sites</b> Licence Holder: A and J Bull Location: Mitcham, Merton, London Name: Mitcham Common Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD11503 First Input Date: 25th January 1980 Last Input Date: 15th September 1984 Specified Waste: Deposited Waste included Inert, Commercial and Household Waste Type: EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 5720/0002 BGS Ref: Not Supplied Other Ref: 8ME002, MER002	A18NE (N)	628	1	529367 167305
46	<b>Historical Landfill Sites</b> Licence Holder: D and H Reclamation Limited Location: Mitcham, Merton, London Name: Mitcham Common Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD11501 First Input Date: 25th January 1980 Last Input Date: 17th September 1984 Specified Waste: Deposited Waste included Industrial Waste Type: EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 5720/0001 BGS Ref: Not Supplied Other Ref: DL064, 8ME008, DL448	A19NW (N)	903	1	529716 167518
47	<b>Historical Landfill Sites</b> Licence Holder: Lanfrac School Location: Thornton, Heath, Croydon, London Name: Lanfrac School Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD11012 First Input Date: 31st December 1939 Last Input Date: 31st December 1947 Specified Waste: Deposited Waste included Inert, Commercial and Household Waste Type: EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 5240/0007 BGS Ref: Not Supplied Other Ref: 8CR007	A19NE (NE)	966	1	530062 167367
48	<b>Licensed Waste Management Facilities (Landfill Boundaries)</b> Name: Beddington Farmlands Landfill, Cr0 4td Licence Number: 83212 Location: Thames Water Services Ltd, Beddington Farmlands Landfill, Beddington Lane, Croydon, Surrey, CR0 4TD Licence Holder: Thames Waste Management Ltd Authority: Environment Agency - Thames Region, South East Area Site Category: Household, Commercial And Industrial Waste Landfills Max Input Rate: Not Supplied <b>Licence Status:</b> Active Issued: 23rd January 1998 Positional Accuracy: Positioned by the supplier Boundary Accuracy: As Supplied	A13NE (NE)	0	1	529407 166628



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
49	<b>Licensed Waste Management Facilities (Landfill Boundaries)</b> Name: Beddington Corner, Mitcham, Cr4 Licence Number: 83211 Location: A & J Bull (Southern) Ltd, Beddington Corner, London Road, Mitcham, Surrey, CR4 Licence Holder: S I T A Southern Ltd Authority: Environment Agency - Thames Region, South East Area Site Category: Landfills Taking Other Wastes (Construction, Demolition, Dredgings) Max Input Rate: Not Supplied <b>Licence Status: Active</b> Issued: 19th May 1993 Positional Accuracy: Positioned by the supplier Boundary Accuracy: As Supplied	A12NW (W)	691	1	528616 166866
50	<b>Licensed Waste Management Facilities (Locations)</b> Licence Number: 83419 Location: 105 Beddington Lane, Croydon, Surrey, CR0 4TD Operator Name: Thames Waste Management Ltd Operator Location: Not Supplied Authority: Environment Agency - Thames Region, South East Area Site Category: Metal Recycling Sites (Mixed) <b>Licence Status: Surrendered</b> Issued: 31st March 2003 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: 3rd November 2005 IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 100m	A13NW (N)	145	1	529300 166800
51	<b>Licensed Waste Management Facilities (Locations)</b> Licence Number: 83441 Location: 105 Beddington Lane, Beddington, Croydon, Surrey, CR0 4TD Operator Name: Viridor Waste ( Thames ) Ltd Operator Location: Not Supplied Authority: Environment Agency - Thames Region, South East Area Site Category: Material Recycling Treatment Facilities <b>Licence Status: Modified</b> Issued: 8th September 2003 Last Modified: 6th October 2006 Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 100m	A13NW (NW)	180	1	529200 166800
52	<b>Licensed Waste Management Facilities (Locations)</b> Licence Number: 83473 Location: 777 Recycling Centre Coomber Way, Beddington, Sutton, Surrey, CR0 4TE Operator Name: 777 Demolition & Haulage Co Ltd Operator Location: Not Supplied Authority: Environment Agency - Thames Region, South East Area Site Category: Material Recycling Treatment Facilities <b>Licence Status: Modified</b> Issued: 16th September 2004 Last Modified: 16th November 2007 Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A18SE (N)	420	1	529493 167083
53	<b>Licensed Waste Management Facilities (Locations)</b> Licence Number: 83210 Location: Plot 8, Beddington Farm, Beddington Lane, Croydon, Surrey, CR0 4TH Operator Name: Brophy Organic Products Ltd Operator Location: Not Supplied Authority: Environment Agency - Thames Region, South East Area Site Category: Physical Treatment Facilities <b>Licence Status: Surrendered</b> Issued: 18th November 1992 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: 4th June 2001 IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A8NW (S)	555	1	529301 166008

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
54	<b>Licensed Waste Management Facilities (Locations)</b> Licence Number: 83314 Location: European Metal Recycling Ltd, Therapia Lane, Croydon, Surrey, CR0 3DH Operator Name: European Metal Recycling Ltd Operator Location: Not Supplied Authority: Environment Agency - Thames Region, South East Area Site Category: Metal Recycling Sites (Mixed) <b>Licence Status: Modified</b> Issued: 28th March 2000 Last Modified: 11th January 2005 Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A14NW (E)	568	1	529975 166750
55	<b>Licensed Waste Management Facilities (Locations)</b> Licence Number: 100718 Location: 124 Beddington Lane, Croydon, Surrey, CR0 4YZ Operator Name: Beddington Transfer Services Ltd Operator Location: Not Supplied Authority: Environment Agency - Thames Region, South East Area Site Category: Household, Commercial And Industrial Transfer Stations <b>Licence Status: Issued</b> Issued: 21st November 2008 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 100m	A14SW (SE)	605	1	530000 166300
56	<b>Licensed Waste Management Facilities (Locations)</b> Licence Number: 83214 Location: Croydon Transfer Station, Endeavour Way, Beddington Farm Road, Sutton, Surrey, CR0 4XB Operator Name: Veolia E S Cleanaway ( U K ) Ltd Operator Location: Not Supplied Authority: Environment Agency - Thames Region, South East Area Site Category: Household, Commercial And Industrial Transfer Stations <b>Licence Status: Modified</b> Issued: 21st July 1992 Last Modified: 19th June 1996 Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A14NE (E)	673	1	530048 166844
57	<b>Licensed Waste Management Facilities (Locations)</b> Licence Number: 83213 Location: Endeavour Way, Beddington Farm Road, Croydon, Surrey, CR0 4XB Operator Name: D Withers Plc Operator Location: Not Supplied Authority: Environment Agency - Thames Region, South East Area Site Category: Household, Commercial And Industrial Transfer Stations <b>Licence Status: Part Revoked</b> Issued: 16th May 1994 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A14NE (E)	713	1	530106 166811

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
58	<b>Licensed Waste Management Facilities (Locations)</b> Licence Number: 83212 Location: 105 Beddington Lane, Croydon, Surrey, CR0 4TD Operator Name: Thames Waste Management Ltd Operator Location: Not Supplied Authority: Environment Agency - Thames Region, South East Area Site Category: Household, Commercial And Industrial Waste Landfills <b>Licence Status: IPPC</b> Issued: 23rd January 1998 Last Modified: 8th October 1999 Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: VP3039SW Positional Accuracy: Located by supplier to within 10m	A9NW (SE)	733	1	530006 166069
59	<b>Licensed Waste Management Facilities (Locations)</b> Licence Number: 83335 Location: 79-83 Beddington Lane, Croydon, Surrey, CR0 4TH Operator Name: Country Skip Hire Operator Location: Not Supplied Authority: Environment Agency - Thames Region, South East Area Site Category: Transfer Stations Taking Non-biodegradable Wastes <b>Licence Status: Modified</b> Issued: 22nd July 2002 Last Modified: 20th February 2009 Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 100m	A8SE (S)	759	1	529600 165800
60	<b>Licensed Waste Management Facilities (Locations)</b> Licence Number: 83211 Location: Beddington Corner, London Road, Mitcham, Surrey, CR4 Operator Name: S I T A Southern Ltd Operator Location: Not Supplied Authority: Environment Agency - Thames Region, South East Area Site Category: Landfills Taking Other Wastes (Construction, Demolition, Dredgings) <b>Licence Status: Closed</b> Issued: 19th May 1993 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 100m	A17SW (NW)	850	1	528500 167000
	<b>Local Authority Landfill Coverage</b> Name: London Borough of Sutton - Has supplied landfill data		0	2	529385 167223
	<b>Local Authority Landfill Coverage</b> Name: London Borough of Merton - Has no landfill data to supply		545	9	529385 167223
	<b>Local Authority Landfill Coverage</b> Name: London Borough of Croydon - Has no landfill data to supply		770	3	530211 166455
61	<b>Local Authority Recorded Landfill Sites</b> Location: Beddington Lane, Beddington, Surrey Reference: Not Supplied Authority: London Borough of Sutton, Environmental Health Department <b>Last Reported Status: Closed</b> Types of Waste: Not Supplied Date of Closure: 31/12/1965 Positional Accuracy: Positioned by the supplier Boundary Quality: Moderate	A13NE (NE)	236	2	529622 166729

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
62	<b>Registered Landfill Sites</b> Licence Holder: Thames Waste Management Ltd Licence Reference: T/SE/THA046 Site Location: Beddington Farmlands Landfill, 105 Beddington Lane, Beddington, SUTTON, Surrey, CR0 0TD Licence Easting: 529100 Licence Northing: 166400 Operator Location: Gainsborough House, Manor Farm Road, READING, Berkshire, RG2 0JN Authority: Environment Agency - Thames Region, South East Area Site Category: Landfill Max Input Rate: Very Large (Equal to or greater than 250,000 tonnes per year) Waste Source: No known restriction on source of waste Restrictions: Status: Operational as far as is known Dated: 23rd January 1998 Preceded By: Not Given Licence: Superseded By: Not Given Licence: Positional Accuracy: Manually positioned to the address or location Boundary Accuracy: Not Applicable Authorised Waste Lwra Cat Bii Gen. Scrap Metal Waste Lwra Cat. A = Inert Wastes Lwra Cat. Bi Gen.Non-Putresc Lwra Cat. C 'Putresc' Lwra Cat. E = Difficult Gen.W Maximum Waste Permitted By Licence Prohibited Waste Clinical Wastes Horticultural Chemicals Liquid Wastes Special Waste (As In Epa 1990:S62 Of 1996 Regs) Waste N.O.S.	A13SW (SW)	287	1	529100 166400
63	<b>Registered Landfill Sites</b> Licence Holder: A & J Bull (Southern) Ltd Licence Reference: DL448 Site Location: Beddington Corner, London Road, Mitcham, Surrey Licence Easting: 528500 Licence Northing: 167100 Operator Location: 4 London Wall Buildings, Blomfield Street, LONDON, Greater London, EC2M 5UQ Authority: Environment Agency - Thames Region, South East Area Site Category: Landfill Max Input Rate: Very Large (Equal to or greater than 250,000 tonnes per year) Waste Source: No known restriction on source of waste Restrictions: Status: Site Closed Dated: 19th May 1993 Preceded By: Not Given Licence: Superseded By: Not Given Licence: Positional Accuracy: Manually positioned to the address or location Boundary Accuracy: Not Applicable Authorised Waste Lwra Cat. A = Inert Wastes Lwra Cat. Bi Gen.Non-Putresc (Some) Max.Waste Permitted By Licence Prohibited Waste Clinical - As In Coll/Disp.Reg. Of '88 Special Wastes	A17SW (NW)	898	1	528500 167100

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
64	<b>Registered Waste Transfer Sites</b> Licence Holder: Underground (Civ Eng) Services Ltd Licence Reference: DL572 Site Location: 154A Beddington Lane, CROYDON, Surrey, CR9 4QD Operator Location: Estate Chambers, 12 Ross Parade, WELLINGTON, Surrey, SM6 8QG Authority: Environment Agency - Thames Region, South East Area Site Category: Transfer Max Input Rate: Medium (Equal to or greater than 25,000 and less than 75,000 tonnes per year) Waste Source: No known restriction on source of waste Restrictions: Licence Status: Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled Dated: 29th September 1994 Preceded By: Not Given Licence: Superseded By: Not Given Licence: Positional Accuracy: Manually positioned to the address or location Boundary Quality: Not Supplied Authorised Waste: Lwra Cat. A = Inert Wastes Lwra Cat. Bi Gen.Non-Putresc Lwra Cat. E = Diff.Gen.W Some Of Max.Waste Permitted By Licence Prohibited Waste: Clinical - As In Coll/Disp.Reg's Of '88 Liquid/Slurry/Sludge Wastes Special Wastes Waste N.O.S.	A18SE (N)	385	1	529540 167030
65	<b>Registered Waste Transfer Sites</b> Licence Holder: Alex Reid Ltd Licence Reference: DL547 Site Location: Ashworth House, 128-130 Beddington Lane, CROYDON, Surrey, CR0 4YZ Operator Location: As Site Address Authority: Environment Agency - Thames Region, South East Area Site Category: Transfer Max Input Rate: Very Small (Less than 10,000 tonnes per year) Waste Source: No known restriction on source of waste Restrictions: Licence Status: Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled Dated: 1st April 1994 Preceded By: Not Given Licence: Superseded By: Not Given Licence: Positional Accuracy: Manually positioned to the address or location Boundary Quality: Not Supplied Authorised Waste: Max.Waste Permitted By Licence Mixed Sludges Ex Launder/Dry Cleaning Mixed Solvent Ex Launder/Dry Cleaning Prohibited Waste: Waste N.O.S.	A14SW (E)	586	1	530000 166350
66	<b>Registered Waste Transfer Sites</b> Licence Holder: Cleanaway Ltd Licence Reference: DL026 Site Location: Croydon Transfer Station, Endeavour Way, CROYDON, Surrey, CR0 4XB Operator Location: The Drive, Warley, BRENTWOOD, Essex, CM13 3BE Authority: Environment Agency - Thames Region, South East Area Site Category: Transfer Max Input Rate: Large (Equal to or greater than 75,000 and less than 250,000 tonnes per year) Waste Source: No known restriction on source of waste Restrictions: Licence Status: Operational as far as is knownOperational Dated: 21st July 1992 Preceded By: DL026 Licence: Superseded By: Not Given Licence: Positional Accuracy: Manually positioned to the address or location Boundary Quality: Not Supplied Authorised Waste: Lwra Cat. A = Inert Wastes Lwra Cat. Bi Gen.Non-Putresc Lwra Cat. C 'Putresc' Max.Waste Permitted By Licence- Stated Maximum Waste Permitted By Licence Prohibited Waste: Clinical - As In Coll/Disp.Reg's Of '88 Shotblast Res/Silicate Slag/Boil.Scale Special Wastes	A14NE (E)	673	1	530050 166840

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
66	<b>Registered Waste Transfer Sites</b> Licence Holder: Cleanaway Ltd Licence Reference: DL026 Site Location: Beddington Farm Road Transfer Station, CROYDON, Surrey, CR0 4XB Operator Location: As Site Address Authority: Environment Agency - Thames Region, South East Area Site Category: Transfer Max Input Rate: Large (Equal to or greater than 75,000 and less than 250,000 tonnes per year) Waste Source: No known restriction on source of waste Restrictions: Licence Status: Record supersededSuperseded Dated: 1st November 1977 Preceded By: Not Given Licence: Superseded By: DL026 Licence: Positional Accuracy: Manually positioned to the address or location Boundary Quality: Not Supplied Authorised Waste: Household + Commercial Waste Ind. Non-Haz. Inert, Non-Flammable Ind. Non-Haz. Potentially Combustible Prohibited Waste: Biodegradable/Putrescible Waste Clinical Wastes Notifiable Wastes Special Wastes	A14NE (E)	673	1	530050 166840
67	<b>Registered Waste Transfer Sites</b> Licence Holder: D Withers & Sons Ltd Licence Reference: DL219 Site Location: Endeavour Way, Beddington Farm Road, CROYDON, Surrey, CR0 4XB Operator Location: As Site Address Authority: Environment Agency - Thames Region, South East Area Site Category: Transfer Max Input Rate: Medium (Equal to or greater than 25,000 and less than 75,000 tonnes per year) Waste Source: No known restriction on source of waste Restrictions: Licence Status: Record supersededSuperseded Dated: 1st November 1985 Preceded By: Not Given Licence: Superseded By: DL373 Licence: Positional Accuracy: Manually positioned to the road within the address or location Boundary Quality: Not Supplied Authorised Waste: Construction Ind. Waste Prohibited Waste: Clinical Wastes Notifiable Wastes Putrescible Waste Special Wastes	A14NE (E)	703	1	530100 166800
67	<b>Registered Waste Transfer Sites</b> Licence Holder: D Withers Building Foundations Ltd Licence Reference: DL373 Site Location: Endeavour Way, Beddington Farm Road, CROYDON, Surrey, CR0 4XB Operator Location: As Site Address Authority: Environment Agency - Thames Region, South East Area Site Category: Transfer Max Input Rate: Small (Equal to or greater than 10,000 and less than 25,000 tonnes per year) Waste Source: No known restriction on source of waste Restrictions: Licence Status: Site closed (licence partially revoked)Site Closed Dated: 16th May 1994 Preceded By: DL373 Licence: Superseded By: Not Given Licence: Positional Accuracy: Located by supplier to within 100m Boundary Quality: Not Supplied Authorised Waste: Lwra Cat. A = Inert Wastes Lwra Cat. Bi Gen.Non-Putresc Max.Waste Permitted By Licence Prohibited Waste: Clinical - As In Coll/Disp.Regis Of '88 Liquid/Slurry/Sludge Wastes Poisonous, Noxious, Polluting Wastes Special Wastes Waste N.O.S.	A14NE (E)	716	1	530110 166810

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
67	<b>Registered Waste Transfer Sites</b> Licence Holder: D Withers Building Foundations Ltd Licence Reference: DL373 Site Location: Endeavour Way, Beddington Farm Road, CROYDON, Surrey, CR0 4XB Operator Location: As Site Address Authority: Environment Agency - Thames Region, South East Area Site Category: Transfer Max Input Rate: Medium (Equal to or greater than 25,000 and less than 75,000 tonnes per year) Waste Source: No known restriction on source of waste Restrictions: Licence Status: Record supersededSuperseded Dated: 1st February 1992 Preceded By: DL219 Licence: Superseded By: DL373 Licence: Positional Accuracy: Located by supplier to within 100m Boundary Quality: Not Supplied Authorised Waste: Lwra Cat. A = Inert Wastes Lwra Cat. Bi Gen.Non-Putresc Max.Waste Permitted By Licence-States Prohibited Waste: Ash/Clinker/Incinerator Residues Clinical - As In Coll/Disp.Reg's Of '88 Liquid/Sludge Wastes Poisonous, Noxious, Polluting Wastes Shotblast Res/Silicate Slag/Boil.Scale	A14NE (E)	716	1	530110 166810
68	<b>Registered Waste Transfer Sites</b> Licence Holder: C.E.G.B. Licence Reference: DL017 Site Location: Croydon Power Station, Beddington Power Road, Croydon, Surrey Operator Location: As Site Address Authority: Environment Agency - Thames Region, South East Area Site Category: Transfer Max Input Rate: Small (Equal to or greater than 10,000 and less than 25,000 tonnes per year) Waste Source: No known restriction on source of waste Restrictions: Licence Status: Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled Dated: 1st November 1977 Preceded By: Not Given Licence: Superseded By: Not Given Licence: Positional Accuracy: Manually positioned to the road within the address or location Boundary Quality: Not Supplied Authorised Waste: Pulverised Fuel Ash	A14SE (E)	866	1	530300 166400
69	<b>Registered Waste Transfer Sites</b> Licence Holder: Starr (Wimbledon) Ltd Licence Reference: DL176 Site Location: Station Depot, London Road, Hackbridge, Wallington, Surrey Operator Location: As Site Address Authority: Environment Agency - Thames Region, South East Area Site Category: Transfer Max Input Rate: Medium (Equal to or greater than 25,000 and less than 75,000 tonnes per year) Waste Source: No known restriction on source of waste Restrictions: Licence Status: Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled Dated: 1st October 1984 Preceded By: Not Given Licence: Superseded By: Not Given Licence: Positional Accuracy: Manually positioned to the address or location Boundary Quality: Not Supplied Authorised Waste: Construction And Demolition Wastes Household + Commercial Waste Ind. Non-Haz. Potentially Combustible Prohibited Waste: Biodegradable/Putrescible Waste Clinical Wastes Notifiable Wastes Special Wastes	A7NW (SW)	911	1	528560 166060



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
70	<b>Registered Waste Treatment or Disposal Sites</b> Licence Holder: European Metal Recycling Ltd Licence Reference: WML83314 Site Location: Therapia Lane, Beddington, CROYDON, Surrey, CR0 3DH Operator Location: Alexandra Building, Alexandra Dock 1, Bootle, LIVERPOOL, Merseyside, L20 1BX Authority: Environment Agency - Thames Region, South East Area Site Category: Scrapyard Max Input Rate: Medium (Equal to or greater than 25,000 and less than 75,000 tonnes per year) Waste Source: No known restriction on source of waste Restrictions: Licence Status: Operational as far as is knownOperational Dated: 28th March 2000 Preceded By: Not Given Licence: Superseded By: Not Given Licence: Positional Accuracy: Positioned by the supplier Boundary Quality: Good Authorised Waste: Maximum Waste Permitted By Licence Metal Waste/Scrap Metal (As In Post'98 E.A.Lics And Equivalent To 23.00.00) Prohibited Waste: Other Waste/Waste Not Otherwise Specified Special Waste Other Than Batteries/Oil As Normal/Necessary Part Of Vehicles	A14NW (NE)	471	1	529833 166832
71	<b>Registered Waste Treatment or Disposal Sites</b> Licence Holder: Brophy Organic Projects Ltd Licence Reference: DL415 Site Location: Plot 8 Beddington Farm, Beddington Lane, CROYDON, Surrey, CR0 4TH Operator Location: Gainsborough House, Manor Farm Road, READING, Berkshire, RG2 0JN Authority: Environment Agency - Thames Region, South East Area Site Category: Transfer - with treatment Max Input Rate: Large (Equal to or greater than 75,000 and less than 250,000 tonnes per year) Waste Source: No known restriction on source of waste Restrictions: Licence Status: Licence has completion certificateSurrendered Dated: 18th November 1992 Preceded By: Not Given Licence: Superseded By: Not Given Licence: Positional Accuracy: Manually positioned to the address or location Boundary Quality: Not Supplied Authorised Waste: Sewage Sludge (Dried) Sub/Topsoil,Hardcore,Clay,Sand Prohibited Waste: Clinical - As In Control.Waste Regs'92 Special Wastes Waste N.O.S.	A8NW (S)	553	1	529300 166010



## Hazardous Substances

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
72	<b>Control of Major Accident Hazards Sites (COMAH)</b> Name: Starr (Fuel Oils) Limited Location: Station Depot, London Road, WALLINGTON, Surrey, SM6 7BJ Reference: Not Supplied Type: Lower Tier <b>Status: Record Ceased To Be Supplied Under COMAH Regulations</b> Positional Accuracy: Automatically positioned in the proximity of the address	A7SW (SW)	987	4	528578 165927
73	<b>Notification of Installations Handling Hazardous Substances (NIHHS)</b> Name: Starr (Fuel Oils) Ltd. Location: Station Depot, London Road, WALLINGTON, Surrey, SM6 7BJ <b>Status: Active</b> Positional Accuracy: Automatically positioned in the proximity of the address	A7SW (SW)	991	4	528578 165922
74	<b>Planning Hazardous Substance Consents</b> Name: Calor Gas Ltd Location: Unit 2 Station Goods Yard, London Road, Hackbridge, Surrey, Sm6 7bj Authority: London Borough of Sutton Application Ref: D2005-53913-Haz Hazardous Substance: Flammable (flammable liquids with flash point >=21C and <=55C supporting combustion) Maximum Quantity: 49.9 Application date: Not Supplied <b>Decision: Unknown at time of report</b> Positional Accuracy: Manually positioned within the geographical locality	A7NW (SW)	954	5	528574 165978

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
75	<b>BGS Recorded Mineral Sites</b> Site Name: Croydon Quarry Location: 107 Beddington Lane, Sutton, Surrey Source: British Geological Survey, National Geoscience Information Service Reference: 4347 Type: Opencast <b>Status: Active</b> Operator: Cemex Uk Materials Ltd Operator Location: Cemex House, Coldharbour Lane, Thorpe, Egham, Surrey, Tw20 8td Periodic Type: Quaternary Geology: Hackney Gravel Member Commodity: Sand and Gravel Positional Accuracy: Located by supplier to within 10m	A12NE (W)	271	6	529010 166720
76	<b>BGS Recorded Mineral Sites</b> Site Name: Beddington Farmlands Location: Beddington Lane, Hackbridge, Sutton, Surrey Source: British Geological Survey, National Geoscience Information Service Reference: 19871 Type: Opencast <b>Status: Dormant</b> Operator: Cemex Uk Materials Ltd Operator Location: Cemex House, Coldharbour Lane, Thorpe, Egham, Surrey, Tw20 8td Periodic Type: Quaternary Geology: Hackney Gravel Member Commodity: Sand and Gravel Positional Accuracy: Located by supplier to within 100m	A8NE (S)	445	6	529400 166100
77	<b>BGS Recorded Mineral Sites</b> Site Name: Beddington Location: Riverscroftchertsey Road, Shepperton, Sutton Source: British Geological Survey, National Geoscience Information Service Reference: 4346 Type: Opencast <b>Status: Ceased</b> Operator: A & J Bull Ltd Operator Location: Benedict Wharf, Benedict Road, Mitcham, Surrey, Cr4 3bq Periodic Type: Quaternary Geology: River Thames Gravel Commodity: Sand and Gravel Positional Accuracy: Located by supplier to within 100m	A12SE (W)	613	6	528700 166400
78	<b>BGS Recorded Mineral Sites</b> Site Name: Croydon Location: Beddington Lane, Hackbridge, Sutton, Surrey Source: British Geological Survey, National Geoscience Information Service Reference: 19869 Type: Opencast <b>Status: Active</b> Operator: Cemex Uk Materials Ltd Operator Location: Cemex House, Coldharbour Lane, Thorpe, Egham, Surrey, Tw20 8td Periodic Type: Quaternary Geology: Hackney Gravel Member Commodity: Sand and Gravel Positional Accuracy: Located by supplier to within 10m	A7NE (SW)	691	6	528990 166000
79	<b>BGS Recorded Mineral Sites</b> Site Name: Beddington Farmlands Location: Beddington Lane, Hackbridge, Sutton, Surrey Source: British Geological Survey, National Geoscience Information Service Reference: 19870 Type: Opencast <b>Status: Dormant</b> Operator: Cemex Uk Materials Ltd Operator Location: Cemex House, Coldharbour Lane, Thorpe, Egham, Surrey, Tw20 8td Periodic Type: Quaternary Geology: Hackney Gravel Member Commodity: Sand and Gravel Positional Accuracy: Located by supplier to within 10m	A17SW (NW)	940	6	528435 167070
	<b>BGS 1:625,000 Solid Geology</b> Description: London Clay	A3NE (S)	0	6	529461 165500
	<b>Coal Mining Affected Areas</b> In an area which may not be affected by coal mining				
	<b>Potential for Collapsible Ground Stability Hazards</b> No Hazard				
	<b>Potential for Compressible Ground Stability Hazards</b> Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (SE)	0	6	529400 166550

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	<b>Potential for Compressible Ground Stability Hazards</b> Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (SE)	0	6	529400 166550
	<b>Potential for Compressible Ground Stability Hazards</b> Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	193	6	529425 166350
	<b>Potential for Compressible Ground Stability Hazards</b> Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	238	6	529625 166725
	<b>Potential for Ground Dissolution Stability Hazards</b> No Hazard				
	<b>Potential for Landslide Ground Stability Hazards</b> Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A14SW (E)	0	6	530000 166609
	<b>Potential for Running Sand Ground Stability Hazards</b> Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (SE)	0	6	529400 166550
	<b>Potential for Running Sand Ground Stability Hazards</b> Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (SE)	0	6	529400 166550
	<b>Potential for Running Sand Ground Stability Hazards</b> Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	193	6	529425 166350
	<b>Potential for Shrinking or Swelling Clay Ground Stability Hazards</b> Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (SE)	0	6	529400 166550
	<b>Potential for Shrinking or Swelling Clay Ground Stability Hazards</b> Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (SE)	0	6	529400 166550
	<b>Potential for Shrinking or Swelling Clay Ground Stability Hazards</b> Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	101	6	529275 166775
	<b>Potential for Shrinking or Swelling Clay Ground Stability Hazards</b> Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	193	6	529425 166350
	<b>Potential for Shrinking or Swelling Clay Ground Stability Hazards</b> Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (SE)	229	6	529625 166400
	<b>Potential for Shrinking or Swelling Clay Ground Stability Hazards</b> Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	230	6	529366 166325
	<b>Potential for Shrinking or Swelling Clay Ground Stability Hazards</b> Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SE (SE)	245	6	529625 166375
	<b>Radon Potential - Radon Affected Areas</b> Affected Area: The property is not in a radon affected area, as less than 1% of homes are above the action level Source: British Geological Survey, National Geoscience Information Service	A14SW (E)	0	6	530000 166609
	<b>Radon Potential - Radon Protection Measures</b> Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A14SW (E)	0	6	530000 166609
	<b>Shallow Mining Hazards</b> No Hazard				

## Industrial Land Use

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
80	<b>Contemporary Trade Directory Entries</b> Name: Thames Waste Management Location: 105, Beddington Lane, Croydon, Surrey, CR0 4TD Classification: Waste Disposal Services <b>Status:</b> Inactive Positional Accuracy: Automatically positioned to the address	A13NW (NW)	71	-	529301 166722
81	<b>Contemporary Trade Directory Entries</b> Name: Gold Hawk Print Services Ltd Location: Unit 1, Goldhawk, 87, Beddington Lane, Croydon, CR0 4TD Classification: Printers <b>Status:</b> Inactive Positional Accuracy: Automatically positioned to the address	A13NE (E)	203	-	529630 166630
81	<b>Contemporary Trade Directory Entries</b> Name: Five Ways Motor Services Location: Unit 4, 87 Beddington La, Croydon, Surrey, CR0 4TD Classification: Car Body Repairs <b>Status:</b> Active Positional Accuracy: Manually positioned to the address or location	A13NE (E)	203	-	529629 166630
81	<b>Contemporary Trade Directory Entries</b> Name: Goldhawk Reprographics Ltd Location: Unit 1, Goldhawk, 87, Beddington Lane, Croydon, Surrey, CR0 4TD Classification: Copying & Duplicating Services <b>Status:</b> Inactive Positional Accuracy: Automatically positioned to the address	A13NE (E)	204	-	529630 166630
82	<b>Contemporary Trade Directory Entries</b> Name: Morgan Elliott Ltd Location: 93, Beddington Lane, Croydon, CR0 4TD Classification: Commercial Vehicle Dealers <b>Status:</b> Active Positional Accuracy: Automatically positioned to the address	A13NE (E)	205	-	529599 166703
82	<b>Contemporary Trade Directory Entries</b> Name: Morgan Elliott Daf Trucks Location: 93, Beddington Lane, Croydon, CR0 4TD Classification: Commercial Vehicle Dealers <b>Status:</b> Active Positional Accuracy: Automatically positioned to the address	A13NE (E)	205	-	529599 166703
83	<b>Contemporary Trade Directory Entries</b> Name: Centra Location: 85, Beddington Lane, Croydon, CR0 4TH Classification: Bus & Coach Operators & Stations <b>Status:</b> Inactive Positional Accuracy: Automatically positioned to the address	A13SE (E)	230	-	529676 166557
84	<b>Contemporary Trade Directory Entries</b> Name: Builder Center Location: Beddington La, Croydon, Surrey, CR9 4NH Classification: Builders' Merchants <b>Status:</b> Active Positional Accuracy: Manually positioned to the road within the address or location	A13NE (NE)	234	-	529556 166838
85	<b>Contemporary Trade Directory Entries</b> Name: Mulberry Service Station Location: 148-148a, Beddington Lane, Croydon, CR0 4TD Classification: Petrol Filling Stations <b>Status:</b> Inactive Positional Accuracy: Automatically positioned to the address	A13NE (NE)	259	-	529619 166791
86	<b>Contemporary Trade Directory Entries</b> Name: Mitcham Building Supplies Location: 152, Beddington Lane, Croydon, Surrey, CR0 4TE Classification: Builders' Merchants <b>Status:</b> Active Positional Accuracy: Automatically positioned to the address	A13NE (NE)	302	-	529521 166947
86	<b>Contemporary Trade Directory Entries</b> Name: Mitcham Building Supplies Location: 152, Beddington Lane, Croydon, CR0 4TE Classification: Builders' Merchants <b>Status:</b> Active Positional Accuracy: Automatically positioned to the address	A13NE (NE)	302	-	529521 166947
86	<b>Contemporary Trade Directory Entries</b> Name: Mitcham Builders Merchants Location: 152, Beddington Lane, Croydon, CR0 4TE Classification: Builders' Merchants <b>Status:</b> Active Positional Accuracy: Automatically positioned to the address	A13NE (NE)	302	-	529521 166947

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
87	<b>Contemporary Trade Directory Entries</b> Name: Country Waste Recycling Ltd Location: 79, Beddington Lane, Croydon, CR0 4TH Classification: Waste Merchants <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A14SW (E)	316	-	529749 166453
88	<b>Contemporary Trade Directory Entries</b> Name: Advance Fuel (London) Ltd Location: 154, Beddington Lane, Croydon, CR9 4QD Classification: Oil Fuel Distributors <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A18SE (N)	335	-	529504 166990
88	<b>Contemporary Trade Directory Entries</b> Name: Advance On Site Concrete Ltd Location: 154, Beddington Lane, Croydon, CR9 4QD Classification: Concrete & Mortar Ready Mixed <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A18SE (N)	335	-	529504 166990
88	<b>Contemporary Trade Directory Entries</b> Name: Advance On Site Concrete Ltd Location: 154, Beddington Lane, Croydon, CR9 4QD Classification: Concrete & Mortar Ready Mixed <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A18SE (N)	335	-	529504 166990
88	<b>Contemporary Trade Directory Entries</b> Name: Advance Fuels Location: 154, Beddington Lane, Croydon, Surrey, CR9 4QD Classification: Oil Fuel Distributors <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A18SE (N)	335	-	529504 166990
88	<b>Contemporary Trade Directory Entries</b> Name: Cobra Concrete Ltd Location: 154, Beddington Lane, Croydon, Surrey, CR9 4QD Classification: Concrete & Mortar Ready Mixed <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A18SE (N)	335	-	529504 166990
88	<b>Contemporary Trade Directory Entries</b> Name: Cobra Concrete Location: 154, Beddington Lane, Croydon, CR9 4QD Classification: Concrete & Mortar Ready Mixed <b>Status: Active</b> Positional Accuracy: Manually positioned to the address or location	A18SE (N)	347	-	529499 167005
89	<b>Contemporary Trade Directory Entries</b> Name: Balmoral Group Ltd Location: Unit 2, Coomber Way, Croydon, Surrey, CR0 4TQ Classification: Tanks, Vats & Cisterns <b>Status: Inactive</b> Positional Accuracy: Manually positioned to the address or location	A18SE (NE)	335	-	529578 166952
89	<b>Contemporary Trade Directory Entries</b> Name: P F Whitehead Transport Services Ltd Location: Unit 4, Coomber Way, Croydon, Surrey, CR0 4TQ Classification: Distribution Services <b>Status: Active</b> Positional Accuracy: Manually positioned to the address or location	A18SE (NE)	345	-	529562 166974
89	<b>Contemporary Trade Directory Entries</b> Name: Pf Whitehead Logistics Location: Unit 4, Coomber Way, Croydon, CR0 4TQ Classification: Road Haulage Services <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A18SE (NE)	345	-	529562 166974
90	<b>Contemporary Trade Directory Entries</b> Name: Bombardier Transportation Location: Coomber Way, Croydon, Surrey, CR0 4TQ Classification: Transport Equipment - Manufacturers <b>Status: Inactive</b> Positional Accuracy: Manually positioned to the road within the address or location	A13NE (NE)	345	-	529614 166936
90	<b>Contemporary Trade Directory Entries</b> Name: Dms Truckwash Location: Coomber Way, Croydon, Surrey, CR0 4TQ Classification: Steam Cleaning Services <b>Status: Inactive</b> Positional Accuracy: Manually positioned to the road within the address or location	A13NE (NE)	359	-	529627 166944

## Industrial Land Use

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
91	<b>Contemporary Trade Directory Entries</b> Name: Travel London Location: Unit 10, Beddington Cross, 136-138, Beddington Farm Road, Croydon, Surrey, CR0 4XH Classification: Bus & Coach Operators & Stations <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A14SW (E)	376	-	529822 166534
92	<b>Contemporary Trade Directory Entries</b> Name: Pullen Pumps Location: 158-160, Beddington Lane, Croydon, CR9 4PT Classification: Pumps - Sales, Servicing & Repairs <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A18SE (N)	420	-	529493 167083
93	<b>Contemporary Trade Directory Entries</b> Name: Advance On Site Concrete Ltd Location: 154, Beddington Lane, Croydon, CR0 4TE Classification: Concrete Manufacturers & Distributors <b>Status: Inactive</b> Positional Accuracy: Automatically positioned in the proximity of the address	A18SE (N)	442	-	529452 167114
94	<b>Contemporary Trade Directory Entries</b> Name: Crystal Transport Services Location: Unit 7, 2, Brookmead Industrial Estate, Jessops Way, Croydon, CR0 4TS Classification: Road Haulage Services <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A18SE (N)	465	-	529388 167142
94	<b>Contemporary Trade Directory Entries</b> Name: Crystal Logistics Location: Unit 7, 2, Brookmead Industrial Estate, Jessops Way, Croydon, Surrey, CR0 4TS Classification: Road Haulage Services <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A18SE (N)	465	-	529388 167142
95	<b>Contemporary Trade Directory Entries</b> Name: Cff Ltd Location: Unit 15, Beddington Cross, 136-138, Beddington Farm Road, Croydon, Surrey, CR0 4XH Classification: Builders' Merchants <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A14SW (E)	476	-	529918 166606
96	<b>Contemporary Trade Directory Entries</b> Name: Bedington Accident Repair Service Location: Unit 1, 2, Brookmead Industrial Estate, Jessops Way, Croydon, CR0 4TS Classification: Car Body Repairs <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A18SW (N)	477	-	529302 167146
97	<b>Contemporary Trade Directory Entries</b> Name: Fans & Spares Ltd Location: Unit 6, 2, Brookmead Industrial Estate, Jessops Way, Croydon, CR0 4TS Classification: Ventilators & Ventilation Systems <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A18SE (N)	482	-	529385 167159
97	<b>Contemporary Trade Directory Entries</b> Name: Fans & Spares Location: Unit 6, 2, Brookmead Industrial Estate, Jessops Way, Croydon, Surrey, CR0 4TS Classification: Ventilators & Ventilation Systems <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A18SE (N)	482	-	529385 167159
97	<b>Contemporary Trade Directory Entries</b> Name: Cafe Deli Location: Unit 6, 2, Brookmead Industrial Estate, Jessops Way, Croydon, Surrey, CR0 4TS Classification: Food Products - Manufacturers <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A18SE (N)	482	-	529385 167159
97	<b>Contemporary Trade Directory Entries</b> Name: Chubb Safe Equipment Co Location: Unit 5, 2, Brookmead Industrial Estate, Jessops Way, Croydon, CR0 4TS Classification: Safes & Vaults - Suppliers & Installers <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A18SE (N)	522	-	529363 167199



## Industrial Land Use

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
98	<b>Contemporary Trade Directory Entries</b> Name: Metrobus-London Transport Location: 134 Beddington La, Croydon, Surrey, CR9 4ND Classification: Bus & Coach Operators & Stations <b>Status: Active</b> Positional Accuracy: Manually positioned to the address or location	A14SW (E)	518	-	529947 166410
99	<b>Contemporary Trade Directory Entries</b> Name: Surrey Laminators Location: Unit 9, Tramsheds Industrial Estate, Coomber Way, Croydon, CR0 4TQ Classification: Print Finishers <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A14NW (NE)	538	-	529884 166881
99	<b>Contemporary Trade Directory Entries</b> Name: S P F Ltd Location: Unit 9, Tramsheds Industrial Estate, Coomber Way, Croydon, CR0 4TQ Classification: Print Finishers <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A14NW (NE)	538	-	529884 166881
100	<b>Contemporary Trade Directory Entries</b> Name: Impakt Mmd Ltd Location: Unit 12, Endeavour Way, Croydon, Surrey, CR0 4TR Classification: Printers <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A14NW (E)	559	-	529933 166823
100	<b>Contemporary Trade Directory Entries</b> Name: Quality Plastic Supplies Location: Unit 14, Endeavour Way, Croydon, Surrey, CR0 4TR Classification: Plastic Products - Manufacturers <b>Status: Active</b> Positional Accuracy: Manually positioned to the address or location	A14NW (E)	575	-	529947 166832
100	<b>Contemporary Trade Directory Entries</b> Name: Flooring Distributors Location: Unit 13/16, Endeavour Way, Croydon, Surrey, CR0 4TR Classification: Floorcoverings - Manufacturers & Wholesalers <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A14NW (E)	576	-	529948 166832
101	<b>Contemporary Trade Directory Entries</b> Name: European Metal Recycling Ltd Location: Therapia Lane, Croydon, Surrey, CR0 3DH Classification: Scrap Metal Merchants <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A14NW (E)	568	-	529975 166750
101	<b>Contemporary Trade Directory Entries</b> Name: W J Sims Ltd Location: 8-9 Endeavour Way, Beddington Farm Rd, Croydon, Surrey, CR0 4TR Classification: Road Haulage Services <b>Status: Inactive</b> Positional Accuracy: Manually positioned to the address or location	A14NW (E)	593	-	529984 166792
102	<b>Contemporary Trade Directory Entries</b> Name: Gifford Holloways Location: Unit 4, Beddington Cross, 136-138, Beddington Farm Road, Croydon, Surrey, CR0 4XH Classification: Joinery Manufacturers <b>Status: Inactive</b> Positional Accuracy: Manually positioned to the address or location	A14SW (E)	571	-	530016 166574
103	<b>Contemporary Trade Directory Entries</b> Name: Alex Reid Ltd Location: 128-130, Beddington Lane, Croydon, CR0 4YZ Classification: Chemicals - Distributors & Wholesalers <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A14SW (E)	573	-	529996 166381
103	<b>Contemporary Trade Directory Entries</b> Name: Dave Deadman Location: 124, Beddington Lane, Croydon, Surrey, CR0 4YZ Classification: Road Haulage Services <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A14SW (E)	612	-	530024 166342

## Industrial Land Use

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
104	<b>Contemporary Trade Directory Entries</b> Name: Burbridge Packaging Ltd Location: 115, Beddington Lane, Croydon, CR0 4TD Classification: Packaging & Wrapping Equipment & Supplies <b>Status:</b> Active Positional Accuracy: Automatically positioned to the address	A18SW (N)	614	-	529271 167280
105	<b>Contemporary Trade Directory Entries</b> Name: Avon Chem-Dry Location: Unit 14, Tramsheds Industrial Estate, Coomber Way, Croydon, CR0 4TQ Classification: Carpet, Curtain & Upholstery Cleaners <b>Status:</b> Inactive Positional Accuracy: Automatically positioned to the address	A14NW (NE)	621	-	529961 166913
105	<b>Contemporary Trade Directory Entries</b> Name: Capital Chem Dry Location: Unit 14, Tramsheds Industrial Estate, Coomber Way, Croydon, Surrey, CR0 4TQ Classification: Carpet, Curtain & Upholstery Cleaners <b>Status:</b> Active Positional Accuracy: Automatically positioned to the address	A14NW (NE)	621	-	529961 166913
105	<b>Contemporary Trade Directory Entries</b> Name: Capital Chem-Dry Location: Unit 14, Tramsheds Industrial Estate, Coomber Way, Croydon, Surrey, CR0 4TQ Classification: Carpet, Curtain & Upholstery Cleaners <b>Status:</b> Inactive Positional Accuracy: Automatically positioned to the address	A14NW (NE)	621	-	529961 166913
105	<b>Contemporary Trade Directory Entries</b> Name: Capital Chemdry Location: Unit 14, Tramsheds Industrial Estate, Coomber Way, Croydon, Surrey, CR0 4TQ Classification: Carpet, Curtain & Upholstery Cleaners <b>Status:</b> Inactive Positional Accuracy: Automatically positioned to the address	A14NW (NE)	621	-	529961 166913
105	<b>Contemporary Trade Directory Entries</b> Name: Balmoral Group Ltd Location: Unit 2, Tramsheds Industrial Estate, Coomber Way, Croydon, Surrey, CR0 4TQ Classification: Tanks, Vats & Cisterns <b>Status:</b> Active Positional Accuracy: Automatically positioned to the address	A14NW (NE)	660	-	530008 166903
106	<b>Contemporary Trade Directory Entries</b> Name: Chandler Stewart Location: Unit 14, Beddington Cross, Beddington Farm Rd, Croydon, Surrey, CR0 4XH Classification: Car Body Repairs <b>Status:</b> Inactive Positional Accuracy: Manually positioned within the geographical locality	A14NE (E)	637	-	530078 166624
106	<b>Contemporary Trade Directory Entries</b> Name: Eagle Star Accident Repair Centre Ltd Location: Unit 1, Beddington Cross, 136-138, Beddington Farm Road, Croydon, CR0 4XH Classification: Garage Services <b>Status:</b> Inactive Positional Accuracy: Automatically positioned to the address	A14NE (E)	673	-	530114 166632
107	<b>Contemporary Trade Directory Entries</b> Name: Hydrapower Ltd Location: 3, Endeavour Way, Croydon, CR0 4TR Classification: Hydraulic Equipment & Accessories - Sales & Service <b>Status:</b> Inactive Positional Accuracy: Automatically positioned to the address	A14NE (E)	638	-	530040 166776
107	<b>Contemporary Trade Directory Entries</b> Name: Surrey Pallitz Location: Unit 3, Endeavour Way, Croydon, Surrey, CR0 4TR Classification: Freight Forwarders <b>Status:</b> Active Positional Accuracy: Manually positioned to the address or location	A14NE (E)	638	-	530040 166776
107	<b>Contemporary Trade Directory Entries</b> Name: Data Mail Systems Location: Unit 4, Endeavour Way, Croydon, Surrey, CR0 4TR Classification: Printers <b>Status:</b> Active Positional Accuracy: Manually positioned to the address or location	A14NE (E)	650	-	530050 166782



## Industrial Land Use

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
107	<b>Contemporary Trade Directory Entries</b> Name: Wilgrove Express Forms Ltd Location: Unit 5, Endeavour Way, Croydon, CR0 4TR Classification: Printers <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A14NE (E)	664	-	530062 166789
107	<b>Contemporary Trade Directory Entries</b> Name: Aurora Press Location: Unit 5, Endeavour Way, Croydon, Surrey, CR0 4TR Classification: Printers <b>Status: Active</b> Positional Accuracy: Manually positioned to the address or location	A14NE (E)	664	-	530062 166789
108	<b>Contemporary Trade Directory Entries</b> Name: Ckn Panelcraft Ltd Location: Redhouse Road, Croydon, CR0 3AQ Classification: Garage Services <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A19SW (NE)	660	-	529756 167224
109	<b>Contemporary Trade Directory Entries</b> Name: Kavanagh Motors Location: Unit 18, Beddington Cross, 136-138 Beddington Farm Rd, Croydon, Surrey, CR0 4XH Classification: Commercial Vehicle Breakdown & Recovery Services <b>Status: Active</b> Positional Accuracy: Manually positioned to the address or location	A14NE (E)	662	-	530086 166712
109	<b>Contemporary Trade Directory Entries</b> Name: Kavanagh Auto Centres Ltd Location: Unit 18, Beddington Cross, 136-138, Beddington Farm Road, Croydon, CR0 4XH Classification: Mot Testing Centres <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A14NE (E)	662	-	530086 166712
110	<b>Contemporary Trade Directory Entries</b> Name: Serco Location: 123-127, Beddington Lane, Croydon, CR9 4NX Classification: Disability Equipment - Manufacturers & Suppliers <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A18NW (N)	668	-	529177 167312
110	<b>Contemporary Trade Directory Entries</b> Name: European Motor Services Ltd Location: 123-127, Beddington Lane, Croydon, CR9 4NX Classification: Car Washing & Polishing Equipment & Supplies <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A18NW (N)	668	-	529177 167312
110	<b>Contemporary Trade Directory Entries</b> Name: Kye Systems Ltd Location: Unit 4, 131, Beddington Lane, Croydon, Surrey, CR0 4TD Classification: Computer Manufacturers <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A18NW (N)	695	-	529132 167324
111	<b>Contemporary Trade Directory Entries</b> Name: Rentokil Pest Control Location: Unit 1, Tramsheds Industrial Estate, Coomber Way, Croydon, CR0 4TQ Classification: Pest & Vermin Control <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A14NW (NE)	679	-	530024 166913
112	<b>Contemporary Trade Directory Entries</b> Name: Leader Trucks Ltd Location: Unit 6/7, Endeavour Way, Croydon, CR0 4TR Classification: Commercial Vehicle Servicing, Repairs, Parts & Accessories <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A14NE (E)	688	-	530083 166803
113	<b>Contemporary Trade Directory Entries</b> Name: South London Vw Location: Sidney House, Beddington Farm Road, Croydon, Surrey, CR0 4XB Classification: Classic Car Specialists <b>Status: Active</b> Positional Accuracy: Manually positioned to the address or location	A14SE (E)	692	-	530138 166530

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
114	<b>Contemporary Trade Directory Entries</b> Name: Scorpion Crash Repairs Ltd Location: Redhouse Road, Croydon, Surrey, CR0 3AQ Classification: Car Body Repairs <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A19SW (NE)	695	-	529765 167260
114	<b>Contemporary Trade Directory Entries</b> Name: Coachcraft Location: Red House Road, Croydon, CR9 3AN Classification: Car Body Repairs <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A19SW (NE)	701	-	529739 167283
114	<b>Contemporary Trade Directory Entries</b> Name: Autotec Location: Red House Road, Croydon, CR9 3AN Classification: Car Body Repairs <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A19SW (NE)	701	-	529739 167283
114	<b>Contemporary Trade Directory Entries</b> Name: R & M Coachcraft Location: Red House Road, Croydon, CR9 3AN Classification: Car Body Repairs <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A19SW (NE)	701	-	529739 167283
114	<b>Contemporary Trade Directory Entries</b> Name: Benhill Coachworks Location: Unit A, Redhouse Road, Croydon, CR0 3AQ Classification: Car Body Repairs <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A19NW (NE)	716	-	529715 167313
115	<b>Contemporary Trade Directory Entries</b> Name: Wells Commercial Vehicle Services Ltd Location: Redhouse Road, Croydon, CR0 3AQ Classification: Commercial Vehicle Servicing, Repairs, Parts & Accessories <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A18NE (NE)	710	-	529689 167319
115	<b>Contemporary Trade Directory Entries</b> Name: Wells Commercial Vehicle Services Ltd Location: Redhouse Road, Croydon, CR0 3AQ Classification: Commercial Vehicle Dealers <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A18NE (NE)	710	-	529689 167319
116	<b>Contemporary Trade Directory Entries</b> Name: P F Whitehead Transport Services Ltd Location: Beddington Lane, Croydon, CR9 4ND Classification: Road Haulage Services <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A9NE (SE)	711	-	530085 166232
116	<b>Contemporary Trade Directory Entries</b> Name: European Recycling Co Ltd Location: 120, Beddington Lane, Croydon, CR0 4TD Classification: Recycling Centres <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A9NE (SE)	711	-	530085 166232
116	<b>Contemporary Trade Directory Entries</b> Name: Goldheart (Petcare) Ltd Location: Beddington Lane, Croydon, Surrey, CR9 4ND Classification: Pet Foods & Animal Feeds <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A9NE (SE)	711	-	530085 166232
116	<b>Contemporary Trade Directory Entries</b> Name: Zassco Location: Beddington Lane, Croydon, Surrey, CR9 4ND Classification: Distribution Services <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A9NE (SE)	711	-	530085 166232
117	<b>Contemporary Trade Directory Entries</b> Name: Cleanaway Ltd Location: Beddington Farm Road, Croydon, CR0 4XB Classification: Waste Disposal Services <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A14NE (E)	712	-	530072 166889

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Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
117	<b>Contemporary Trade Directory Entries</b> Name: Cleanaway Ltd Location: Beddington Farm Road, Croydon, CR0 4XB Classification: Waste Disposal Services <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A14NE (E)	712	-	530072 166889
118	<b>Contemporary Trade Directory Entries</b> Name: Five Star (Croydon) Location: 687, Mitcham Road, Croydon, CR9 3AE Classification: Print Finishers <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A19SW (NE)	735	-	529821 167270
118	<b>Contemporary Trade Directory Entries</b> Name: Benchmarx Location: Unit 5, Mitcham House, 681, Mitcham Road, Croydon, Surrey, CR0 3YH Classification: Kitchen Furniture Manufacturers <b>Status: Active</b> Positional Accuracy: Manually positioned to the address or location	A19SW (NE)	736	-	529860 167241
119	<b>Contemporary Trade Directory Entries</b> Name: Pork Farms Ltd Location: Beddington Farm Rd, Croydon, Surrey, CR0 4XB Classification: Meat Product Manufacturers & Wholesalers <b>Status: Inactive</b> Positional Accuracy: Manually positioned to the road within the address or location	A14NE (E)	747	-	530178 166690
119	<b>Contemporary Trade Directory Entries</b> Name: Speedy Lifting Location: Unit C Beddington Farm Rd, Croydon, Surrey, CR0 4XB Classification: Lifting Equipment <b>Status: Active</b> Positional Accuracy: Manually positioned to the road within the address or location	A14NE (E)	750	-	530178 166704
119	<b>Contemporary Trade Directory Entries</b> Name: Curzon Components Ltd Location: Unit 3, Stirling Way Industrial Estates, Stirling Way, Croydon, CR0 4XN Classification: Central Heating Supplies & Equipment <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A14NE (E)	767	-	530195 166705
119	<b>Contemporary Trade Directory Entries</b> Name: Direct Install Location: Unit 2, Stirling Way, Croydon, CR0 4XN Classification: Distribution Services <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A14NE (E)	772	-	530198 166718
120	<b>Contemporary Trade Directory Entries</b> Name: K M C Crash Repair Centre Ltd Location: Redhouse Rd, Croydon, Surrey, CR0 3AQ Classification: Car Body Repairs <b>Status: Inactive</b> Positional Accuracy: Manually positioned to the road within the address or location	A19NW (NE)	748	-	529737 167338
120	<b>Contemporary Trade Directory Entries</b> Name: E & E Motors Location: Unit 1A, Redhouse Rd, Croydon, Surrey, CR0 3AQ Classification: Car Body Repairs <b>Status: Active</b> Positional Accuracy: Manually positioned to the road within the address or location	A19NW (NE)	757	-	529748 167342
121	<b>Contemporary Trade Directory Entries</b> Name: W J Simms Ltd Location: Unit 14, Valley Point Industrial Estate, Beddington Farm Road, Croydon, CR0 4WP Classification: Road Haulage Services <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A14NE (E)	761	-	530203 166625
122	<b>Contemporary Trade Directory Entries</b> Name: Arriva London Location: Beddington Farm Road, Croydon, CR0 4XB Classification: Bus & Coach Operators & Stations <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A14SE (E)	765	-	530184 166342

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Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
122	<b>Contemporary Trade Directory Entries</b> Name: Foil Ribbon & Impact Printing Ltd Location: Unit D, Pioneers Industrial Park, Beddington Farm Road, Croydon, CR0 4XY Classification: Printers <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A14SE (E)	777	-	530203 166365
123	<b>Contemporary Trade Directory Entries</b> Name: D T Crash Repairs Location: Unit B2, Redhouse Rd, Croydon, Surrey, CR0 3AQ Classification: Car Body Repairs <b>Status: Active</b> Positional Accuracy: Manually positioned to the road within the address or location	A19NW (NE)	777	-	529768 167354
123	<b>Contemporary Trade Directory Entries</b> Name: Autocare Bodyworks Ltd Location: Unit 1A, Redhouse Rd, Croydon, Surrey, CR0 3AQ Classification: Garage Services <b>Status: Active</b> Positional Accuracy: Manually positioned to the road within the address or location	A19NW (NE)	797	-	529790 167365
123	<b>Contemporary Trade Directory Entries</b> Name: Aztec Aerosols Ltd Location: Redhouse Rd, Croydon, Surrey, CR0 3AQ Classification: Aerosols <b>Status: Inactive</b> Positional Accuracy: Manually positioned to the road within the address or location	A19NW (NE)	802	-	529794 167368
123	<b>Contemporary Trade Directory Entries</b> Name: Adhesive Paper Products Ltd Location: Redhouse Rd, Croydon, Surrey, CR0 3AQ Classification: Paper & Cardboard Manufacturers <b>Status: Inactive</b> Positional Accuracy: Manually positioned to the road within the address or location	A19NW (NE)	803	-	529795 167369
123	<b>Contemporary Trade Directory Entries</b> Name: Jps & Cg Car Sales Location: Redhouse Rd, Croydon, Surrey, CR0 3AQ Classification: Car Dealers <b>Status: Active</b> Positional Accuracy: Manually positioned to the road within the address or location	A19NW (NE)	822	-	529814 167379
124	<b>Contemporary Trade Directory Entries</b> Name: Hanson Premix Location: Beddington Farm Rd, Croydon, Surrey, CR0 4XB Classification: Concrete & Mortar Ready Mixed <b>Status: Active</b> Positional Accuracy: Manually positioned to the road within the address or location	A14SE (E)	783	-	530221 166434
124	<b>Contemporary Trade Directory Entries</b> Name: Hcl Fluid Power Location: Beddington Farm Rd, Croydon, Surrey, CR0 4XB Classification: Hydraulic Engineers <b>Status: Active</b> Positional Accuracy: Manually positioned to the road within the address or location	A14SE (E)	800	-	530236 166416
125	<b>Contemporary Trade Directory Entries</b> Name: Zotefomas Plc Location: 675, Mitcham Road, Croydon, CR9 3AL Classification: Foam Products - Rubber & Plastics <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A19SW (NE)	805	-	529971 167231
126	<b>Contemporary Trade Directory Entries</b> Name: M R Supplies Ltd Location: Unit 1, Beddington Trading Estate, Bath House Road, Croydon, CR0 4TT Classification: Electric Motor Sales & Service <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A9NE (SE)	811	-	530123 166096
126	<b>Contemporary Trade Directory Entries</b> Name: Savage Finishers Location: Unit 2, Beddington Trading Estate, Bath House Road, Croydon, Surrey, CR0 4TT Classification: Print Finishers <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A9NE (SE)	824	-	530142 166102

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
127	<b>Contemporary Trade Directory Entries</b> Name: Cutbush & Lemmer Ltd Location: Unit 7, Stirling Way, Croydon, CR0 4XN Classification: Mechanical Engineers <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A14NE (E)	823	-	530250 166721
127	<b>Contemporary Trade Directory Entries</b> Name: Radnes Services Location: Unit 6, Stirling Way, Beddington Farm Rd/, Croydon, Surrey, CR0 4XN Classification: Fork Lift Trucks <b>Status: Active</b> Positional Accuracy: Manually positioned to the address or location	A14NE (E)	824	-	530248 166732
128	<b>Contemporary Trade Directory Entries</b> Name: J A Glover Ltd Location: Unit A, Pioneers Industrial Park, Beddington Farm Road, Croydon, CR0 4XY Classification: Ventilators & Ventilation Systems <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A14SE (E)	829	-	530255 166361
128	<b>Contemporary Trade Directory Entries</b> Name: Brett Concrete Ltd Location: Beddington Farm Rd, Croydon, Surrey, CR0 4XB Classification: Concrete & Mortar Ready Mixed <b>Status: Active</b> Positional Accuracy: Manually positioned to the road within the address or location	A14SE (E)	854	-	530281 166364
129	<b>Contemporary Trade Directory Entries</b> Name: Scope Packaging Location: Unit 3, Brazil Close, Beddington, Croydon, CR0 4XQ Classification: Paper & Cardboard Products & Packaging - Manufacturers <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A14SE (E)	835	-	530281 166550
130	<b>Contemporary Trade Directory Entries</b> Name: Anker Data Systems Location: Anker House, 689, Mitcham Road, Croydon, CR0 3AF Classification: Cash Registers & Check-Out Equipment <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A19NW (NE)	845	-	529891 167356
131	<b>Contemporary Trade Directory Entries</b> Name: Selco The Builders' Warehouse Location: Unit 1-2, Mitcham House, 681, Mitcham Road, Croydon, CR0 3YH Classification: Builders' Merchants <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A19NW (NE)	853	-	529947 167321
132	<b>Contemporary Trade Directory Entries</b> Name: Volvo Truck & Bus Centre London Location: Beddington Farm Road, Croydon, CR0 4XB Classification: Commercial Vehicle Dealers <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A14SE (E)	863	-	530273 166294
133	<b>Contemporary Trade Directory Entries</b> Name: Scrap Removals Location: Flat 2, 10, Violet Close, Wallington, Surrey, SM6 7HH Classification: Waste Disposal Services <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A7NW (SW)	883	-	528476 166240
134	<b>Contemporary Trade Directory Entries</b> Name: Sjb Recovery (Croydon) Ltd Location: Station Depot, London Road, Wallington, Surrey, SM6 7BJ Classification: Car Breakdown & Recovery Services <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A7NW (SW)	888	-	528591 166059
134	<b>Contemporary Trade Directory Entries</b> Name: The Test Station Ltd Location: Station Depot, London Road, Wallington, Surrey, SM6 7BJ Classification: Mot Testing Centres <b>Status: Active</b> Positional Accuracy: Manually positioned to the address or location	A7NW (SW)	888	-	528591 166059
135	<b>Contemporary Trade Directory Entries</b> Name: Bioregional Charcoal Co Ltd Location: 24, Helios Road, Wallington, Surrey, SM6 7BZ Classification: Wood Products, Except Furniture - Manufacturers <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A12SW (W)	897	-	528401 166404

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Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
135	<b>Contemporary Trade Directory Entries</b> Name: Bioregional Charcoal Co Location: 24, Helios Road, Wallington, Surrey, SM6 7BZ Classification: Charcoal Suppliers <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A12SW (W)	897	-	528401 166404
136	<b>Contemporary Trade Directory Entries</b> Name: Aspex Furniture Ltd Location: Unit 1 Soho Mills, London Rd, Wallington, Surrey, SM6 7HN Classification: Office Furniture & Equipment <b>Status: Inactive</b> Positional Accuracy: Manually positioned to the address or location	A7NW (SW)	916	-	528521 166102
136	<b>Contemporary Trade Directory Entries</b> Name: Hackbridge Cleaners Ltd Location: 29, London Road, Wallington, Surrey, SM6 7HW Classification: Dry Cleaners <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A7NW (SW)	964	-	528488 166066
137	<b>Contemporary Trade Directory Entries</b> Name: M R Pest Control Location: 132, Kelvin Gardens, Croydon, CR0 4US Classification: Pest & Vermin Control <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A14NE (E)	921	-	530353 166705
138	<b>Contemporary Trade Directory Entries</b> Name: Bp Express Shopping Location: 702 Mitcham Rd, Croydon, Surrey, CR0 3AB Classification: Petrol Filling Stations - 24 Hour <b>Status: Inactive</b> Positional Accuracy: Manually positioned to the address or location	A19NW (NE)	928	-	529959 167408
138	<b>Contemporary Trade Directory Entries</b> Name: Fernside Motor Co Location: 702, Mitcham Road, Croydon, Surrey, CR0 3AB Classification: Car Dealers <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A19NW (NE)	933	-	529975 167401
138	<b>Contemporary Trade Directory Entries</b> Name: Fernside Motor Co Location: 702, Mitcham Road, Croydon, CR0 3AB Classification: Car Dealers - Used <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A19NW (NE)	933	-	529975 167401
138	<b>Contemporary Trade Directory Entries</b> Name: Motorvation Of Croydon Location: 702, Mitcham Road, Croydon, Surrey, CR0 3AB Classification: Car Dealers - Used <b>Status: Active</b> Positional Accuracy: Manually positioned to the address or location	A19NW (NE)	933	-	529975 167401
138	<b>Contemporary Trade Directory Entries</b> Name: Bp Connect Location: 702, Mitcham Road, Croydon, CR0 3AB Classification: Petrol Filling Stations - 24 Hour <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A19NW (NE)	933	-	529959 167414
139	<b>Contemporary Trade Directory Entries</b> Name: H C L Fluid Power Location: Beddington Farm Rd, Croydon, Surrey, CR0 4XB Classification: Hydraulic Systems & Equipment Manufacturers <b>Status: Inactive</b> Positional Accuracy: Manually positioned to the road within the address or location	A14SE (E)	938	-	530349 166287
140	<b>Contemporary Trade Directory Entries</b> Name: Mad Mops Agency (Domestic Cleaning) Ltd Location: 78, London Road, Mitcham Junction, Mitcham, Surrey, CR4 4JB Classification: Cleaning Services - Domestic <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A11SE (W)	965	-	528306 166554
141	<b>Contemporary Trade Directory Entries</b> Name: Wallington Motor Salvage Location: Station Depot, London Road, Hackbridge, Wallington, Surrey, SM6 7BJ Classification: Car Breakers & Dismantlers <b>Status: Inactive</b> Positional Accuracy: Automatically positioned in the proximity of the address	A7NW (SW)	967	-	528574 165960

## Industrial Land Use

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
141	<b>Contemporary Trade Directory Entries</b> Name: Autogas Location: M S A House, London Road, Wallington, Surrey, SM6 7BJ Classification: Garage Services <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A7SW (SW)	987	-	528578 165927
142	<b>Fuel Station Entries</b> Name: Mulberry Service Station Location: 148 BEDDINGTON LANE, BEDDINGTON, CROYDON, Surrey, CR0 4TD Brand: Murco Premises Type: Petrol Station <b>Status: Closed</b> Positional Accuracy: Automatically positioned to the address	A13NE (NE)	259	-	529619 166791
143	<b>Fuel Station Entries</b> Name: Fernside Connect Location: 702 Mitcham Road, CROYDON, Surrey, CR0 3AB Brand: BP Premises Type: Petrol Station <b>Status: Open</b> Positional Accuracy: Manually positioned to the address or location	A19NW (NE)	928	-	529959 167408



## Sensitive Land Use

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
144	<b>Nitrate Vulnerable Zones</b> Name: Not Supplied Description: Surface Water - Designated 2006 Source: Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	A21SE (NW)	0	8	528184 167629



Agency & Hydrological	Version	Update Cycle
<b>Contaminated Land Register Entries and Notices</b> London Borough of Sutton - Environmental Health Department London Borough of Lambeth - Environmental Health Department London Borough of Wandsworth - Environmental Health Department Royal Borough of Kingston upon Thames - Environmental Health Department Reigate And Banstead Borough Council - Environmental Health Department London Borough of Merton - Environmental Health Department London Borough of Croydon - Environmental Health Department London Borough of Bromley - Environmental Health Department	December 2008 January 2009 January 2009 January 2009 July 2009 June 2009 March 2009 October 2008	Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update
<b>Discharge Consents</b> Environment Agency - Thames Region	July 2009	Quarterly
<b>Enforcement and Prohibition Notices</b> Environment Agency - Thames Region	September 2009	As notified
<b>Integrated Pollution Controls</b> Environment Agency - Thames Region	October 2008	Not Applicable
<b>Integrated Pollution Prevention And Control</b> Environment Agency - Thames Region	July 2009	Quarterly
<b>Local Authority Integrated Pollution Prevention And Control</b> London Borough of Bromley - Environmental Health Department London Borough of Croydon - Environmental Health Department London Borough of Merton - Environmental Health Department London Borough of Sutton - Environmental Health Department Royal Borough of Kingston upon Thames - Environmental Health Department London Borough of Lambeth - Environmental Health Department Reigate And Banstead Borough Council - Environmental Health Department London Borough of Wandsworth - Environmental Health Department	August 2009 August 2009 August 2009 June 2009 March 2006 November 2007 October 2008 September 2009	Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update
<b>Local Authority Pollution Prevention and Controls</b> London Borough of Bromley - Environmental Health Department London Borough of Croydon - Environmental Health Department London Borough of Merton - Environmental Health Department London Borough of Lambeth - Environmental Health Department Royal Borough of Kingston upon Thames - Environmental Health Department London Borough of Sutton - Environmental Health Department London Borough of Wandsworth - Environmental Health Department Reigate And Banstead Borough Council - Environmental Health Department	August 2009 August 2009 August 2009 December 2008 February 2006 June 2009 October 2008 October 2008	Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update
<b>Local Authority Pollution Prevention and Control Enforcements</b> London Borough of Bromley - Environmental Health Department London Borough of Croydon - Environmental Health Department London Borough of Merton - Environmental Health Department London Borough of Sutton - Environmental Health Department Royal Borough of Kingston upon Thames - Environmental Health Department London Borough of Lambeth - Environmental Health Department Reigate And Banstead Borough Council - Environmental Health Department London Borough of Wandsworth - Environmental Health Department	August 2009 August 2009 August 2009 June 2009 March 2006 November 2007 October 2008 September 2009	Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update
<b>Nearest Surface Water Feature</b> Ordnance Survey	May 2009	Quarterly
<b>Pollution Incidents to Controlled Waters</b> Environment Agency - Thames Region	September 1999	Not Applicable
<b>Prosecutions Relating to Authorised Processes</b> Environment Agency - Thames Region	September 2009	As notified
<b>Prosecutions Relating to Controlled Waters</b> Environment Agency - Thames Region	September 2009	As notified
<b>Registered Radioactive Substances</b> Environment Agency - Thames Region	July 2009	Quarterly

<b>Agency &amp; Hydrological</b>	<b>Version</b>	<b>Update Cycle</b>
<b>River Quality</b> Environment Agency - Head Office	November 2001	Not Applicable
<b>River Quality Biology Sampling Points</b> Environment Agency - Head Office	January 2009	Annually
<b>River Quality Chemistry Sampling Points</b> Environment Agency - Head Office	January 2009	Annually
<b>Substantiated Pollution Incident Register</b> Environment Agency - Thames Region - South East Area	July 2009	Quarterly
<b>Water Abstractions</b> Environment Agency - Thames Region	July 2009	Quarterly
<b>Water Industry Act Referrals</b> Environment Agency - Thames Region	July 2009	Quarterly
<b>Groundwater Vulnerability</b> Environment Agency - Head Office	January 1999	Not Applicable
<b>Drift Deposits</b> Environment Agency - Head Office	January 1999	Not Applicable
<b>Source Protection Zones</b> Environment Agency - Head Office	May 2009	Variable
<b>Extreme Flooding from Rivers or Sea without Defences</b> Environment Agency - Head Office	September 2009	Quarterly
<b>Flooding from Rivers or Sea without Defences</b> Environment Agency - Head Office	September 2009	Quarterly
<b>Areas Benefiting from Flood Defences</b> Environment Agency - Head Office	September 2009	Quarterly
<b>Flood Water Storage Areas</b> Environment Agency - Head Office	September 2009	Quarterly
<b>Flood Defences</b> Environment Agency - Head Office	September 2009	Quarterly

Waste	Version	Update Cycle
<b>BGS Recorded Landfill Sites</b> British Geological Survey - National Geoscience Information Service	June 1996	Not Applicable
<b>Historical Landfill Sites</b> Environment Agency - Thames Region - South East Area	August 2009	Quarterly
<b>Integrated Pollution Control Registered Waste Sites</b> Environment Agency - Thames Region	October 2008	Not Applicable
<b>Licensed Waste Management Facilities (Landfill Boundaries)</b> Environment Agency - Thames Region - South East Area	July 2009	Quarterly
<b>Licensed Waste Management Facilities (Locations)</b> Environment Agency - Thames Region - South East Area	July 2009	Quarterly
<b>Local Authority Landfill Coverage</b> London Borough of Bromley - Environmental Health Department London Borough of Croydon - Environmental Health Department London Borough of Lambeth - Environmental Health Department London Borough of Merton - Environmental Health Department London Borough of Sutton - Environmental Health Department London Borough of Wandsworth - Environmental Health Department Reigate And Banstead Borough Council - Environmental Health Department Royal Borough of Kingston upon Thames - Environmental Health Department Surrey County Council	May 2000 May 2000 May 2000 May 2000 May 2000 May 2000 May 2000 May 2000 May 2000 May 2000	Not Applicable Not Applicable Not Applicable Not Applicable Not Applicable Not Applicable Not Applicable Not Applicable Not Applicable Not Applicable
<b>Local Authority Recorded Landfill Sites</b> London Borough of Wandsworth - Environmental Health Department London Borough of Bromley - Environmental Health Department London Borough of Croydon - Environmental Health Department London Borough of Lambeth - Environmental Health Department London Borough of Merton - Environmental Health Department London Borough of Sutton - Environmental Health Department Reigate And Banstead Borough Council - Environmental Health Department Royal Borough of Kingston upon Thames - Environmental Health Department Surrey County Council	April 2003 June 2003 May 2000 May 2000 May 2000 May 2000 May 2000 May 2000 September 2003 September 2003	Not Applicable Not Applicable Not Applicable Not Applicable Not Applicable Not Applicable Not Applicable Not Applicable Not Applicable Not Applicable
<b>Registered Landfill Sites</b> Environment Agency - Thames Region - South East Area	March 2003	Not Applicable
<b>Registered Waste Transfer Sites</b> Environment Agency - Thames Region - South East Area	March 2003	Not Applicable
<b>Registered Waste Treatment or Disposal Sites</b> Environment Agency - Thames Region - South East Area	March 2003	Not Applicable













<b>Hazardous Substances</b>	<b>Version</b>	<b>Update Cycle</b>
<b>Control of Major Accident Hazards Sites (COMAH)</b> Health and Safety Executive	April 2009	Bi-Annually
<b>Explosive Sites</b> Health and Safety Executive	January 2009	Bi-Annually
<b>Notification of Installations Handling Hazardous Substances (NIHHS)</b> Health and Safety Executive	November 2000	Not Applicable
<b>Planning Hazardous Substance Enforcements</b> London Borough of Merton Surrey County Council London Borough of Wandsworth - Technical Services London Borough of Sutton London Borough of Croydon Royal Borough of Kingston upon Thames London Borough of Lambeth - Planning Department Reigate And Banstead Borough Council - Planning Department - Advice Centre London Borough of Bromley	August 2009 August 2009 January 2009 July 2009 June 2009 June 2009 March 2009 March 2009 October 2008	Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update
<b>Planning Hazardous Substance Consents</b> London Borough of Merton Surrey County Council London Borough of Wandsworth - Technical Services London Borough of Sutton London Borough of Croydon Royal Borough of Kingston upon Thames London Borough of Lambeth - Planning Department Reigate And Banstead Borough Council - Planning Department - Advice Centre London Borough of Bromley	August 2009 August 2009 January 2009 July 2009 June 2009 June 2009 March 2009 March 2009 October 2008	Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update

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

<b>Sensitive Land Use</b>	<b>Version</b>	<b>Update Cycle</b>
<b>Areas of Adopted Green Belt</b> London Borough of Sutton Reigate And Banstead Borough Council - Planning Department - Advice Centre Royal Borough of Kingston upon Thames London Borough of Bromley London Borough of Croydon	April 2003 April 2005 August 2005 July 2006 July 2006	As notified As notified As notified As notified As notified
<b>Areas of Unadopted Green Belt</b> London Borough of Sutton Royal Borough of Kingston upon Thames Reigate And Banstead Borough Council - Planning Department - Advice Centre London Borough of Croydon London Borough of Bromley	April 2003 February 2002 March 2009 November 2003 September 2002	As notified As notified As notified As notified As notified
<b>Areas of Outstanding Natural Beauty</b> Natural England	June 2009	Bi-Annually
<b>Environmentally Sensitive Areas</b> Natural England	June 2009	Annually
<b>Forest Parks</b> Forestry Commission	April 1997	Not Applicable
<b>Local Nature Reserves</b> Natural England	June 2009	Bi-Annually
<b>Marine Nature Reserves</b> Natural England	September 2009	Bi-Annually
<b>National Nature Reserves</b> Natural England	June 2009	Bi-Annually
<b>National Parks</b> Natural England	June 2009	Bi-Annually
<b>Nitrate Sensitive Areas</b> Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	December 2003	Not Applicable
<b>Nitrate Vulnerable Zones</b> Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	February 2009	Annually
<b>Ramsar Sites</b> Natural England	June 2009	Bi-Annually
<b>Sites of Special Scientific Interest</b> Natural England	June 2009	Bi-Annually
<b>Special Areas of Conservation</b> Natural England	June 2009	Bi-Annually
<b>Special Protection Areas</b> Natural England	June 2009	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	 <b>British Geological Survey</b> NATURAL ENVIRONMENT RESEARCH COUNCIL
Centre for Ecology and Hydrology	 <b>Centre for Ecology &amp; Hydrology</b> NATURAL ENVIRONMENT RESEARCH COUNCIL
Countryside Council for Wales	 CYNGOR CEFN GWLAD CYMRU 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	<b>Environment Agency - National Customer Contact Centre (NCCC)</b> PO Box 544, Templeborough, Rotherham, S60 1BY	Telephone: 08708 506 506 Email: <a href="mailto:enquiries@environment-agency.gov.uk">enquiries@environment-agency.gov.uk</a>
2	<b>London Borough of Sutton - Environmental Health Department</b> 24 Denmark Road, Carshalton, Surrey, SM5 2JG	Telephone: 020 8770 5527 Fax: 020 8770 5540 Website: <a href="http://www.sutton.gov.uk">www.sutton.gov.uk</a>
3	<b>London Borough of Croydon - Environmental Health Department</b> Taberner House, Park Lane, Croydon, Surrey, CR9 3BT	Telephone: 020 8760 5417 Fax: 020 8760 5406 Website: <a href="http://www.croydon.gov.uk">www.croydon.gov.uk</a>
4	<b>Health and Safety Executive</b> HSE Infoline, Caerphilly Business Park, Caerphilly, CF83 3GG	Telephone: 08701 545500 Fax: 02920 859260 Email: <a href="mailto:hseinformationservices@natbrit.com">hseinformationservices@natbrit.com</a> Website: <a href="http://www.hse.gov.uk">www.hse.gov.uk</a>
5	<b>London Borough of Sutton</b> 24 Denmark Road, Carshalton, Surrey, SM5 2JG	Telephone: 0181 770 5000 Fax: 0181 770 6201 Website: <a href="http://www.sutton.gov.uk">www.sutton.gov.uk</a>
6	<b>British Geological Survey - Enquiry Service</b> British Geological Survey, Kingsley Dunham Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG	Telephone: 0115 936 3143 Fax: 0115 936 3276 Email: <a href="mailto:enquiries@bgs.ac.uk">enquiries@bgs.ac.uk</a> Website: <a href="http://www.bgs.ac.uk">www.bgs.ac.uk</a>
7	<b>Natural England</b> Northminster House, Northminster Road, Peterborough, Cambridgeshire, PE1 1UA	Telephone: 0845 600 3078 Fax: 01733 455103 Email: <a href="mailto:enquiries@naturalengland.org.uk">enquiries@naturalengland.org.uk</a> Website: <a href="http://www.naturalengland.org.uk">www.naturalengland.org.uk</a>
8	<b>Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)</b> Government Buildings, Otley Road, Lawnswood, Leeds, West Yorkshire, LS16 5QT	Telephone: 0113 2613333 Fax: 0113 230 0879
9	<b>London Borough of Merton - Environmental Health Department</b> Merton Civic Centre, London Road, Morden, Surrey, SM4 5DX	Telephone: 020 8543 2222 Fax: 020 8545 4025 Website: <a href="http://www.merton.gov.uk">www.merton.gov.uk</a>
-	<b>Health Protection Agency - Radon Survey, Centre for Radiation, Chemical and Environmental Hazards</b> Chilton, Didcot, Oxfordshire, OX11 0RQ	Telephone: 01235 822622 Fax: 01235 833891 Email: <a href="mailto:radon@hpa.org.uk">radon@hpa.org.uk</a> Website: <a href="http://www.hpa.org.uk">www.hpa.org.uk</a>
-	<b>Landmark Information Group Limited</b> The Smith Centre, Henley On Thames, Oxfordshire, RG9 6AB	Telephone: 0844 844 9952 Fax: 0844 844 9951 Email: <a href="mailto:customerservices@landmarkinfo.co.uk">customerservices@landmarkinfo.co.uk</a> Website: <a href="http://www.landmarkinfo.co.uk">www.landmarkinfo.co.uk</a>

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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:

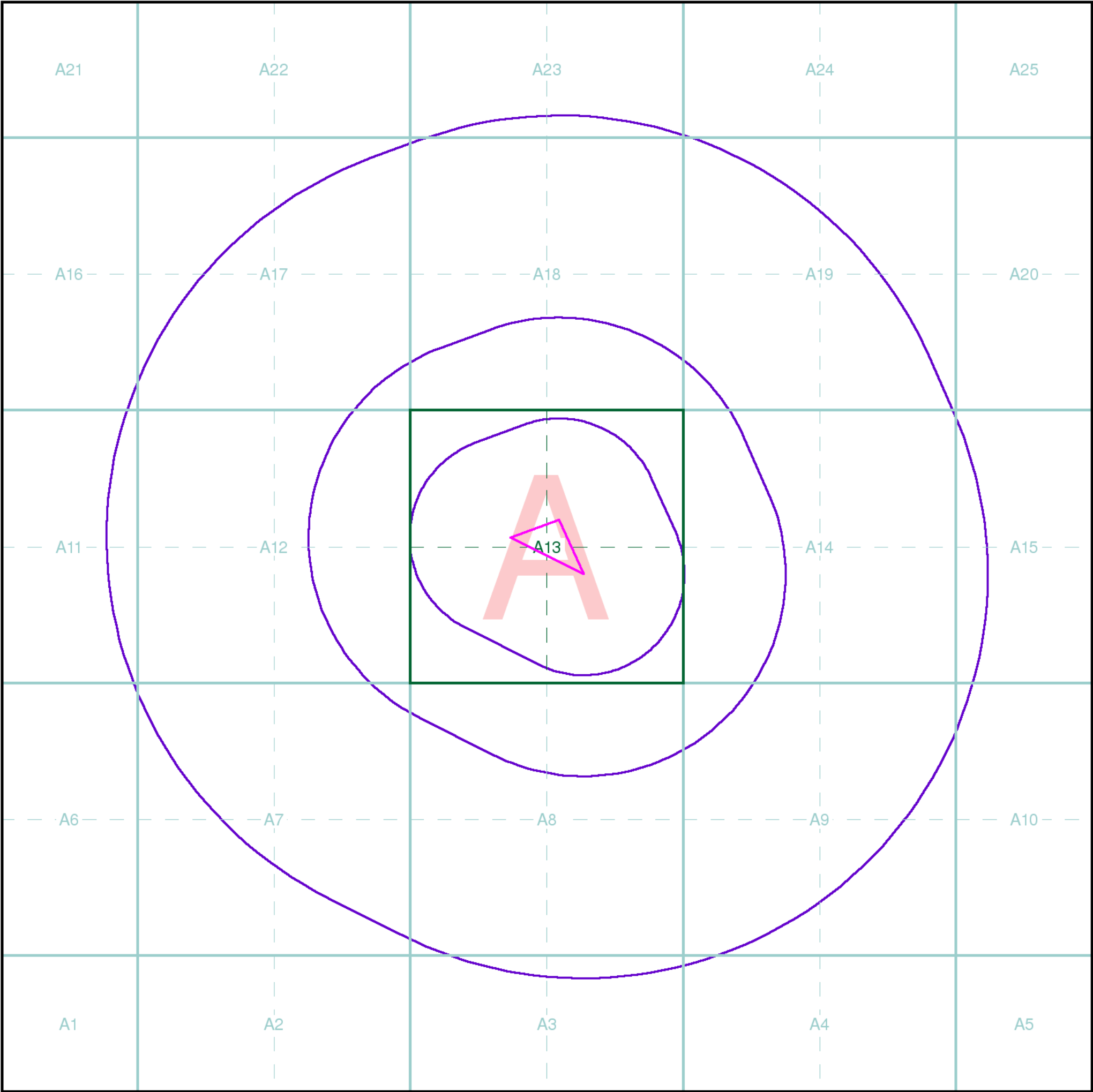


Envirocheck reports are compiled from 136 different sources of data.

**Client Details**  
Mr K Nursery, Rolton Group, The Charles Parker Building, Midland Road, Higham Ferrers, Northamptonshire, NN10 8DN

**Order Details**  
Order Number: 29017796\_1\_1  
Customer Ref: 09-0075 Beddington  
National Grid Reference: 529370, 166620  
Site Area (Ha): 0.95  
Search Buffer (m): 1000

**Site Details**  
Site at 529300, 166800



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  - any person for whom You act in a professional or commercial capacity,
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- 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:-
  - effect or attempt to effect any modification, merger or change to the Service, nor permit any other person to do so; or
  - 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
  - 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.
  - create any product which is derived directly or indirectly from the data contained in the Services
- 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.
- 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

- 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.
- 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.
- 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.
- 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

- Landmark may suspend or terminate Your rights under these Terms without any liability to You with immediate effect if at any time:-
    - You fail to make any payment due in accordance with clause 4;
    - You repeatedly breach or commit or cause to be committed any material breach of these Terms; or
    - 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.
  - 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.
  - Landmark reserves the right to refuse to supply any or all Services to You without notice or reason.
- 6. Liability**
- We provide warranties and accept liability only to the extent stated in this clause 6 and clause 7.
  - 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.
  - 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 wilful 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.
  - 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.
  - 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.
  - 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.
  - You acknowledge that:-
    - 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;
    - 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;
    - 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.
    - 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.

- 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.
- 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;
- Landmark offer no warranty for the performance of any linked internet service not operated by Landmark;
- 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;
- Any support or assistance provided to You in connection with these Terms is at Your risk;
- 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.
- 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.
- In any event no person may rely on a Service more than 12 months after its original date.
- 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.
- Time shall not be of the essence with respect to the provision of the Services.
- 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.
- 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.
- 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

- 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.
- 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")
- 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:
  - the Contribution shall only apply to contamination or a pollution incident present or having occurred prior to the date of the Report;
  - 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;
  - the Contribution is strictly limited to the cost of works at the Property Site and at no other site.
  - 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.
- 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.
- Landmark shall only pay a Contribution where the Notice is served within 36 months of the date of the Report.
- 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.
- 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.

- 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.
- 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

- 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

- 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.

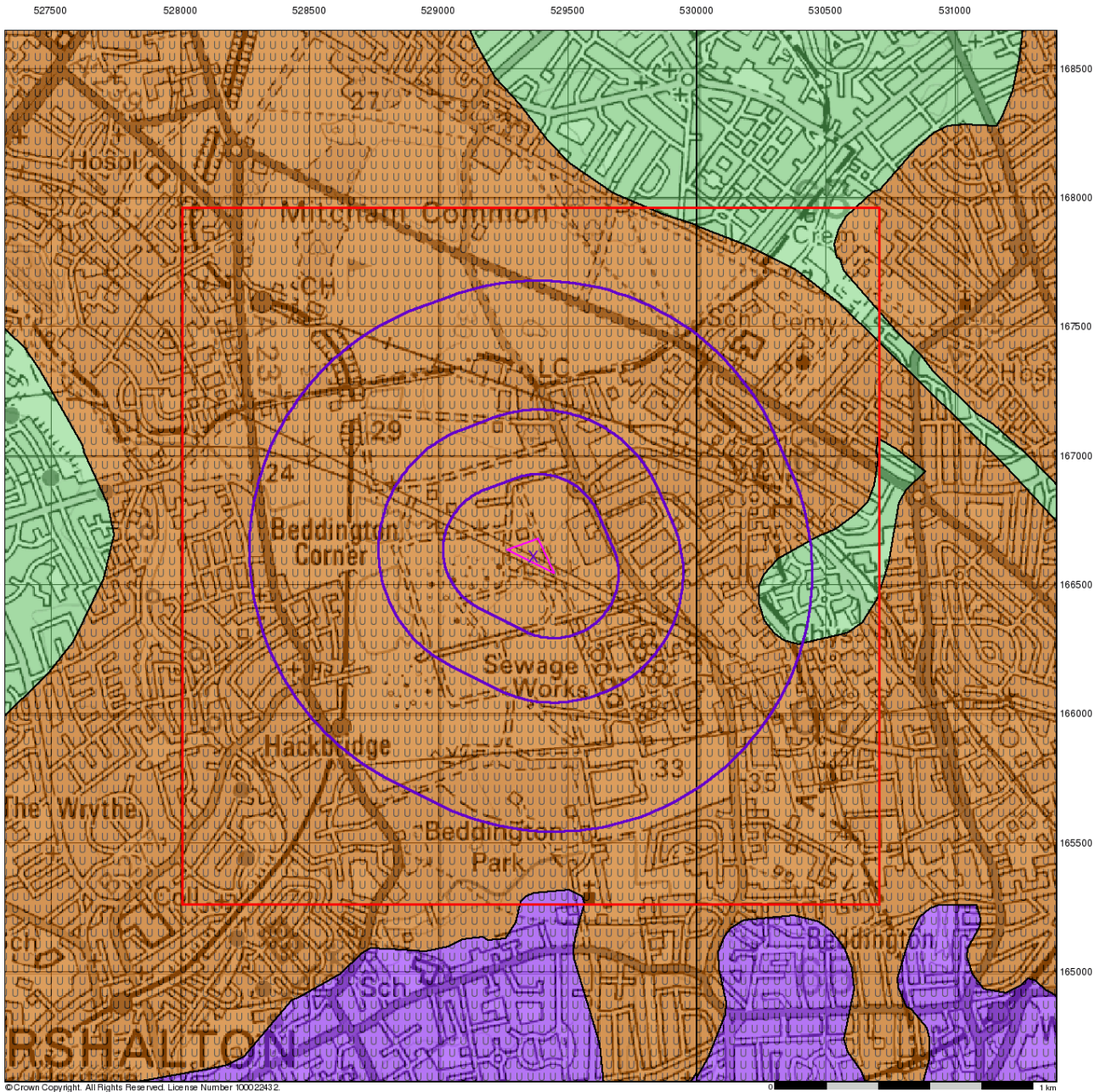
10. Governing Law

- 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

- Landmark may assign its rights and obligations under these Terms without prior notice or any limitation.
- 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.
- 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.
- 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.
- 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 practicable possible.
- 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.
- Landmark's Privacy Policy as displayed on the Website governs the use made of any information You supply to Landmark.





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0 1 km



## Groundwater Vulnerability

### General

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

### Agency and Hydrological

#### Geological Classes

Major Aquifer  
(Highly Permeable)

Minor Aquifer  
(Variably Permeable)

Non Aquifer  
(Negligibly Permeable)

Water or Sea

Drift Deposit

#### Soil Classes

High (H) 1, 2, 3, U

Intermediate (I) 1, 2

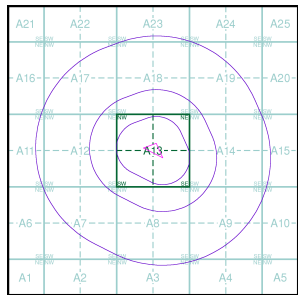
Low

High (H) 1, 2, 3, U

Intermediate (I) 1, 2

Low

### Site Sensitivity Context Map - Slice A



### Order Details

Order Number: 29017796\_1.1  
Customer Ref: 09-0075 Beddington  
National Grid Reference: 529370, 166610  
Slice: A  
Site Area (Ha): 0.95  
Search Buffer (m): 1000

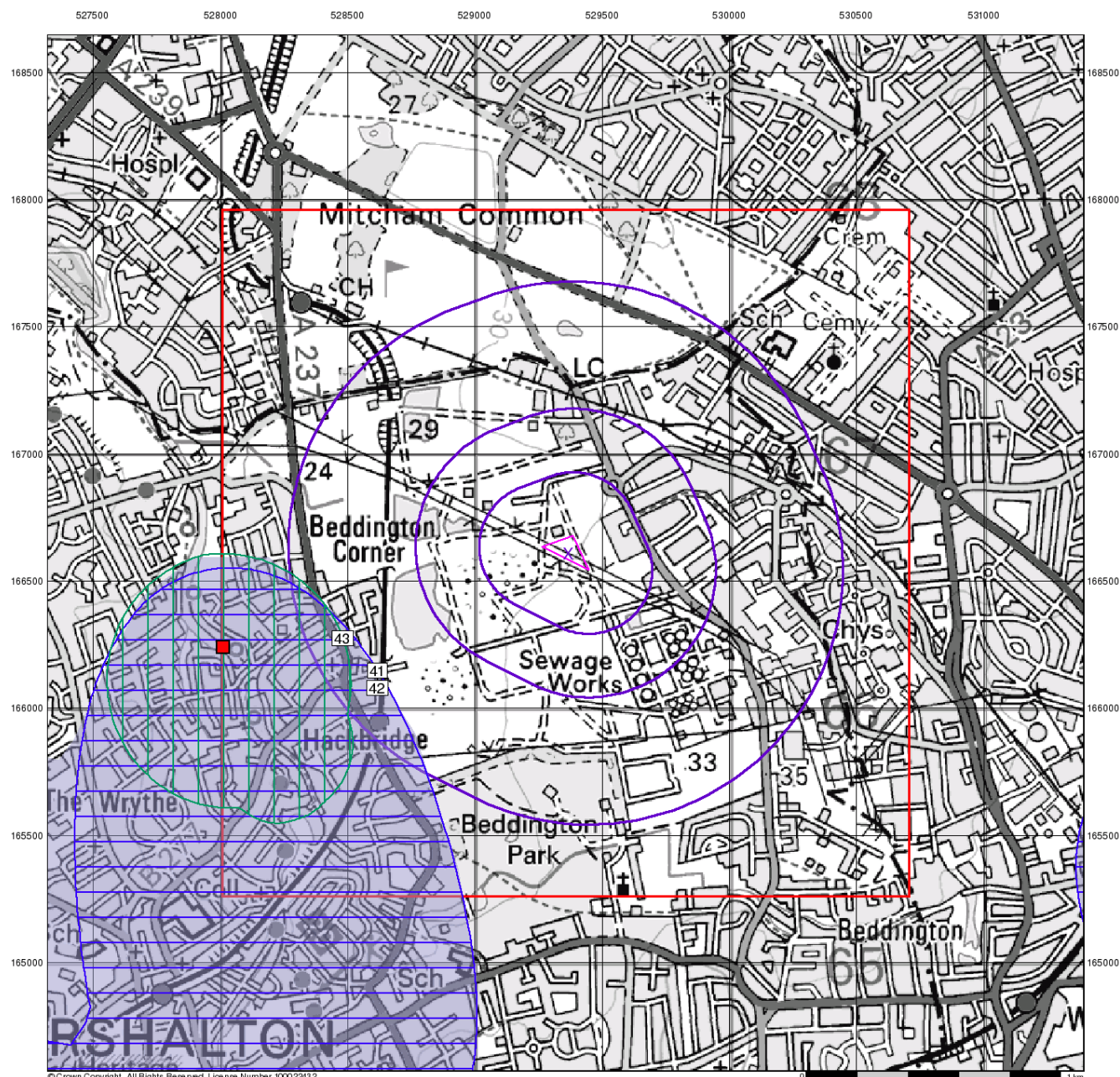
### Site Details

Site at 529300, 166800



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





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## Source Protection Zones

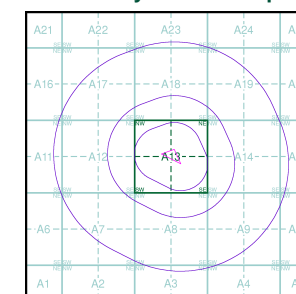
### General

- 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

Order Number: 29017796\_1\_1  
 Customer Ref: 09-0075 Beddington  
 National Grid Reference: 529370, 166610  
 Slice: A  
 Site Area (Ha): 0.95  
 Search Buffer (m): 1000

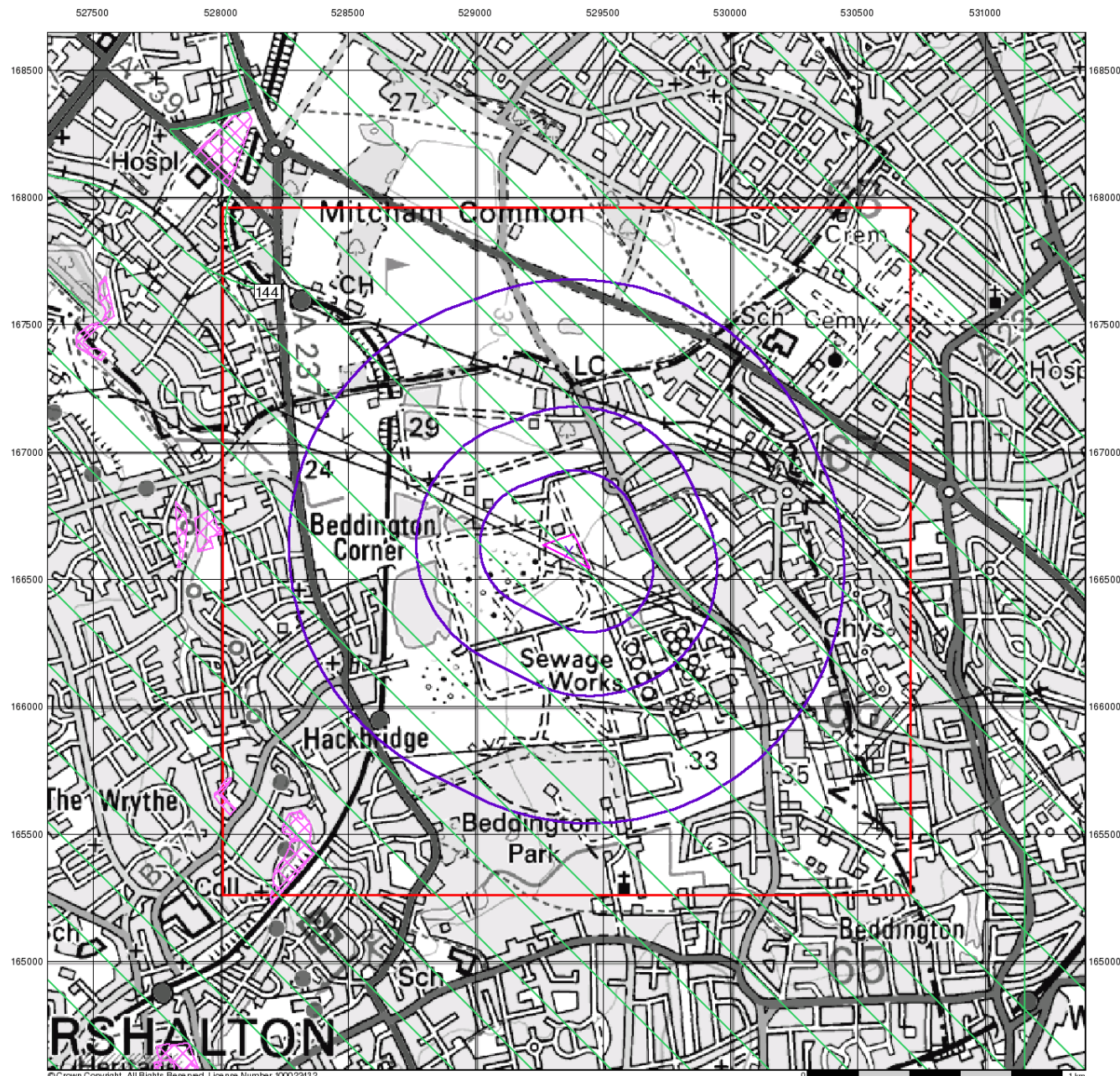
### Site Details

Site at 529300, 166800



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 Fax: 0844 844 9951  
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## Sensitive Land Uses

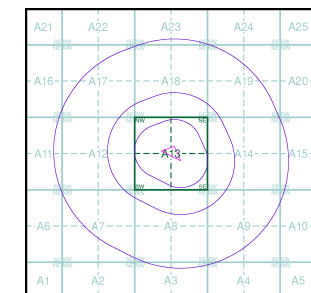
### General

- 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: 29017796\_1.1  
 Customer Ref: 09-0075 Beddington  
 National Grid Reference: 529370, 166610  
 Slice: A  
 Site Area (Ha): 0.95  
 Search Buffer (m): 1000

### Site Details





Site at 529300, 166800



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




















**General**

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






**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



**Hazardous Substances**

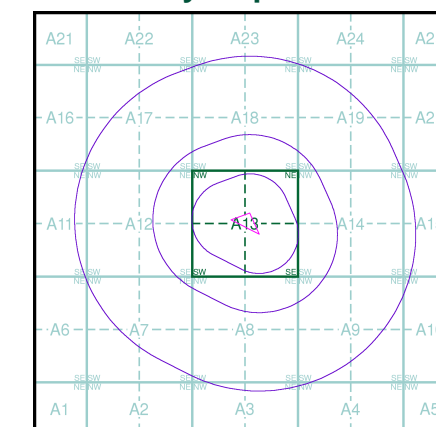
-  COMAH Site  
  Explosive Site  
  NIHHS Site  
  Planning Hazardous Substance Consent  
  Planning Hazardous Substance Enforcement

**Geological**

-  BGS Recorded Mineral Site

**Industrial Land Use**

-  Contemporary Trade Directory Entry  
  Fuel Station Entry

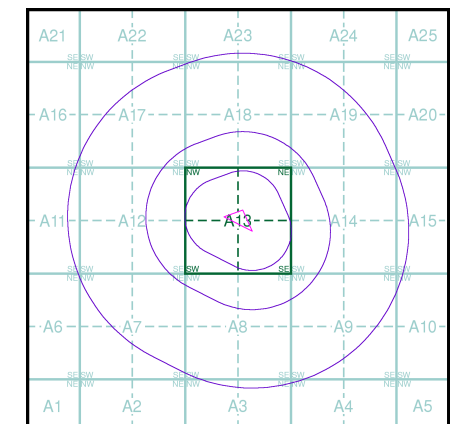
**Site Sensitivity Map - Slice A****Order Details**

Order Number: 29017796\_1\_1  
 Customer Ref: 09-0075 Beddington  
 National Grid Reference: 529370, 166610  
 Slice: A  
 Site Area (Ha): 0.95  
 Search Buffer (m): 1000

**Site Details**

Site at 529300, 166800



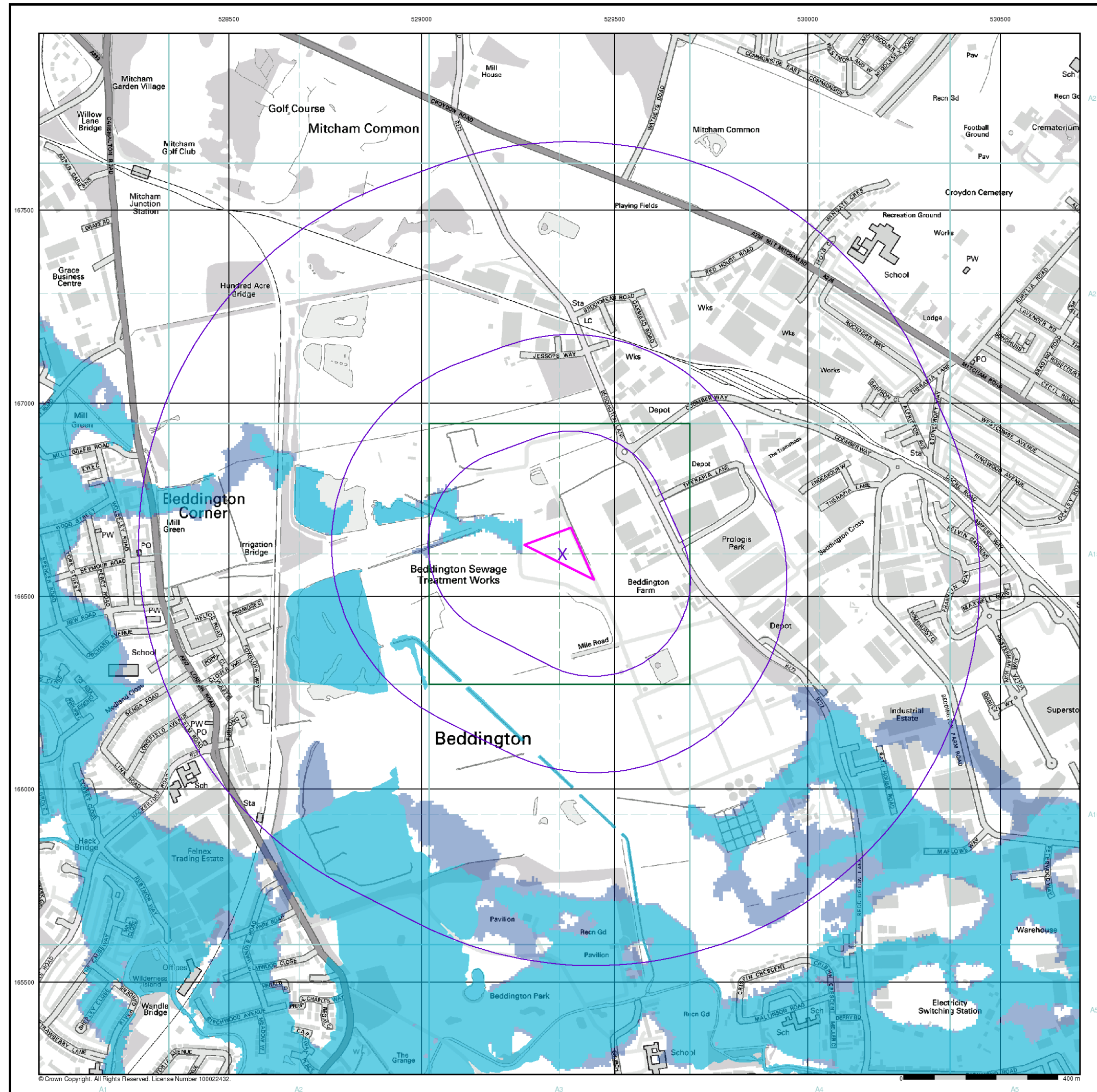


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Customer Ref: 09-0075 Beddington  
National Grid Reference: 529370, 166610  
Slice: A  
Site Area (Ha): 0.95  
Search Buffer (m): 1000

Site at 529300, 166800








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





**General**

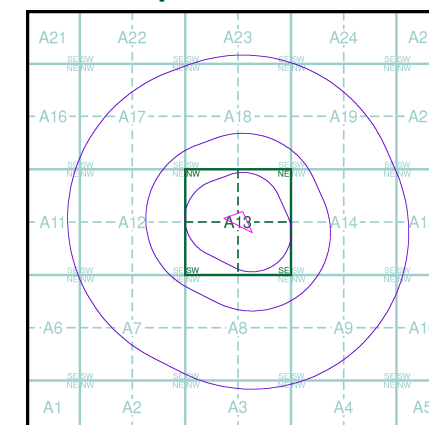
-  Specified Site
-  Specified Buffer(s)
-  Bearing Reference Point
-  Map ID
-  Several of Type at Location

**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.

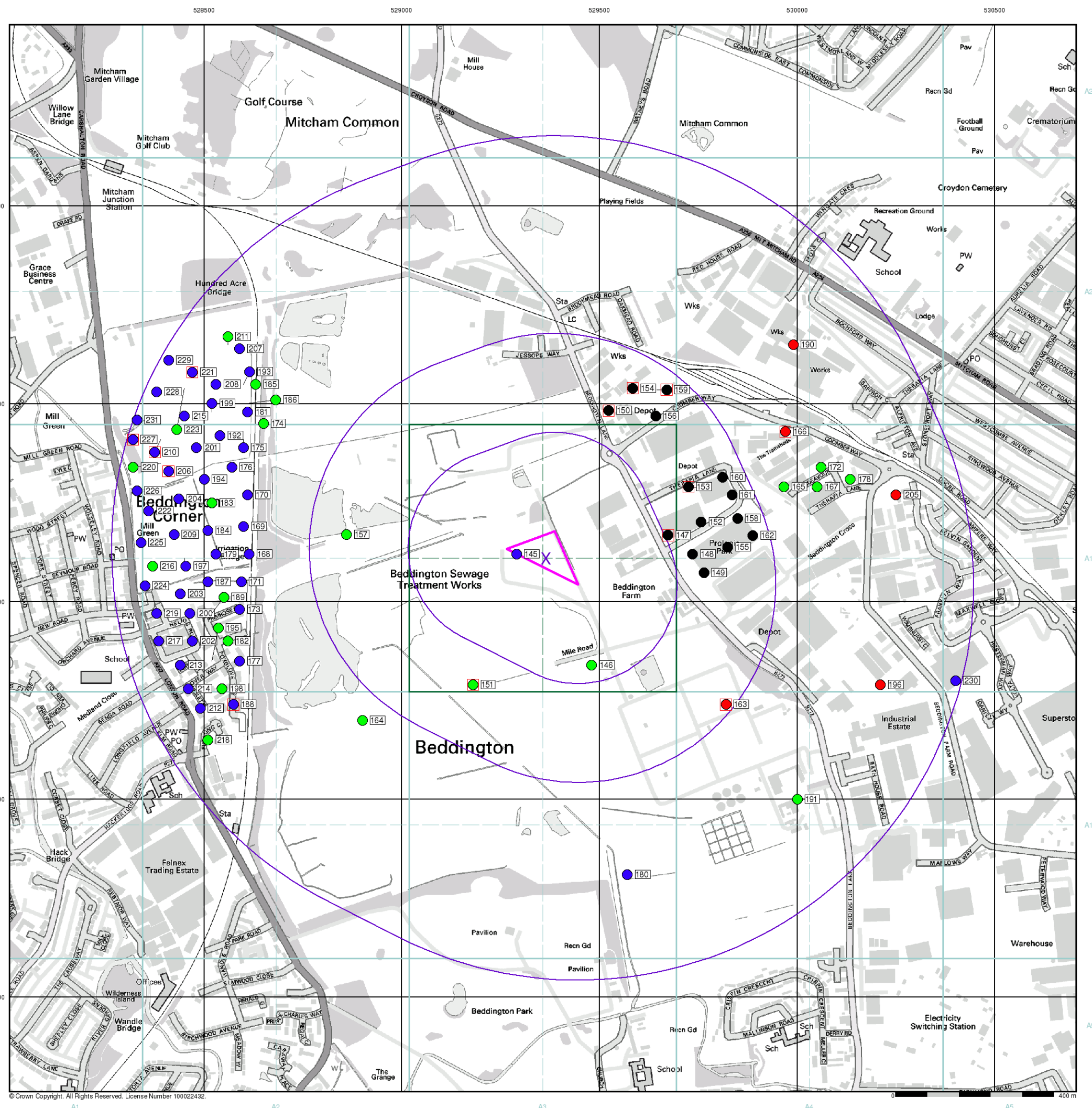
A copy of the BGS Borehole Ordering Form is available to download from the Support section of [www.envirocheck.co.uk](http://www.envirocheck.co.uk).

**Borehole Map - Slice A****Order Details**

Order Number: 29017796\_1\_1  
 Customer Ref: 09-0075 Beddington  
 National Grid Reference: 529370, 166610  
 Slice: A  
 Site Area (Ha): 0.95  
 Search Buffer (m): 1000

**Site Details**

Site at 529300, 166800







### 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
- 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

### 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

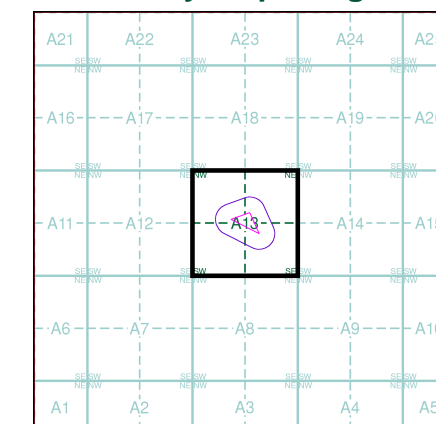
### Geological

- BGS Recorded Mineral Site

### Industrial Land Use

- Contemporary Trade Directory Entry
- Fuel Station Entry

### Site Sensitivity Map - Segment A13



### Order Details

Order Number: 29017796\_1\_1  
 Customer Ref: 09-0075 Beddington  
 National Grid Reference: 529370, 166610  
 Slice: A  
 Site Area (Ha): 0.95  
 Plot Buffer (m): 100

### Site Details

Site at 529300, 166800



Tel: 0844 844 9952  
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 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		Minor Roads		
	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				
	County Borough Boundary (England)				
	County Burgh Boundary (Scotland)				
	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
	Bracken		Heath
	Marsh		Reeds
	Building		Glasshouse
	Sloping Masonry		Pylon
	Cutting		Embankment
	Road Under		Road Over
	Level Crossing		Foot Bridge
	Standard Gauge Multiple Track		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
	Civil Parish		
	BP, BS Boundary Post or Stone		Police Station
	Church		Post Office
	Club House		Public Convenience
	Fire Engine Station		Public House
	Foot Bridge		Signal Box
	Fountain		Spring
	Guide Post		Telephone Call Box
	Mile Post		Telephone Call Post
	Mile Stone		Well

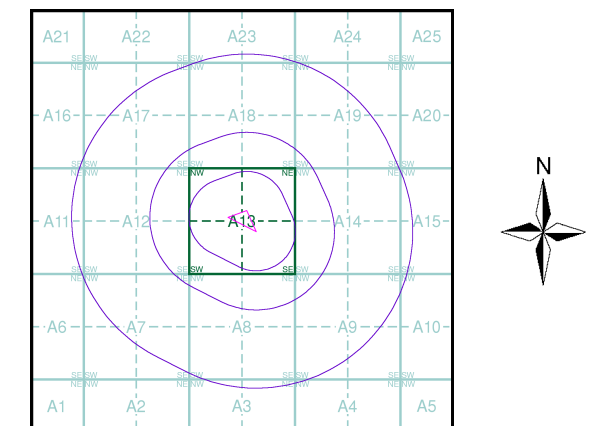
## 1:10,000 Raster Mapping

	Gravel Pit		Refuse tip or slag heap
	Rock		Rock (scattered)
	Boulders		Boulders (scattered)
	Shingle		Mud
	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
	Mean high water (springs)		Mean low water (springs)
	Telephone line (where shown)		Electricity transmission line (with poles)
	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

## Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Surrey	1:10,560	1871 - 1872	3
London	1:10,560	1896	4
Surrey	1:10,560	1897 - 1898	5
Surrey	1:10,560	1914	6
London	1:10,560	1919	7
Surrey	1:10,560	1932 - 1934	8
Surrey	1:10,560	1938	9
Surrey	1:10,560	1938	10
Ordnance Survey Plan	1:10,000	1940 - 1951	11
Historical Aerial Photography	1:10,560	1948 - 1949	12
Ordnance Survey Plan	1:10,000	1958	13
Ordnance Survey Plan	1:10,000	1968	14
Ordnance Survey Plan	1:10,000	1974 - 1976	15
Ordnance Survey Plan	1:10,000	1983	16
London	1:25,000	1985	17
Ordnance Survey Plan	1:10,000	1993	18
10K Raster Mapping	1:10,000	1999	19
10K Raster Mapping	1:10,000	2006	20
10K Raster Mapping	1:10,000	2009	21

## Historical Map - Slice A



## Order Details

Order Number: 29017796\_1\_1  
Customer Ref: 09-0075 Beddington  
National Grid Reference: 529370, 166610  
Slice: A  
Site Area (Ha): 0.95  
Search Buffer (m): 1000

## Site Details

Site at 529300, 166800

Russian Military Mapping Legends

1:5,000 and 1:10,000 mapping

a. Not drawn to scale    b. Drawn to scale

Government and Administrative Buildings    Military and Industrial Buildings

Military and Communication Areas    Subway Entrance

Fireproof Building    Prominent Fireproof Building

Non-fireproof Building    Non-fireproof Building (non-dwelling)

Factory, mill, and flour mill, with chimneys    Factory, mill, and flour mill, without chimneys

Power Station, drawn to scale    Hydroelectric Power Station

Radio Station, drawn to scale    Telephone Station, drawn to scale

Abandoned Open-pit Mine or Quarry    Open-pit Salt Mine

Pit    Oil Deposit or Well    Oil Seepage

Tailings Pile    Fuel Storage Tanks    Natural Gas Tank

Bench Mark    Drill Hole    Burial Mound    Triangulation Point on Burial Mound

Single-track Railroad    Double-track Railroad and Station Building

Coniferous Forest    Deciduous Forest    Mixed Forest

Lawns    Citrus Orchard    Wet Ground    Scattered Vegetation

243.8    Values for prominent elevations

186.0    Numbers for spot elevations, depth soundings, contour lines, etc.

0.2    Velocity of the current, width of river bed, depth of river

180/12    Fractional terms: length and capacity of bridges; depth of fords and condition of the river bottom; height of forest and the diameter of trees

Russian Alphabet (For reference and phonetic interpretation of map text)

А а (A)	З з (Z)	П п (P)	Ч ч (CH)
Б б (B)	И и (I)	Р р (R)	Ш ш (SH)
В в (V)	Й й (Y)	С с (S)	Щ щ (SHCH)
Г г (G)	К к (K)	Т т (T)	Ъ (-)
Д д (D)	Л л (L)	У у (U)	Ы (Y)
Е е (E)	М м (M)	Ф ф (F)	Ь (')
Ё ё (YO)	Н н (N)	Х х (KH)	Э э (E)
Ж ж (ZH)	О о (O)	Ц ц (TS)	Ю ю (YU or IU)
			Я я (YA or IA)

1:25,000 mapping

a. Not drawn to scale    b. Drawn to scale

Government and Administrative Buildings    Military and Industrial Buildings

Military and Communication Areas    Subway Entrance

Partly Demolished Buildings    Demolished Buildings

Built-Up Area with Fireproof Buildings Predominant    Built-Up Area with Non-Fireproof Buildings Predominant

Individual Fireproof Building    Prominent Industrial Building

Individual Dwelling, Fireproof    Ruins of an Individual Dwelling

Factory or Mill Chimney    Factory or Mill with Chimney    Factory or Mill without Chimney    Mine or Open Pit Mine

Operating Shaft or Mine    Non-Operating Shaft or Mine    Salt Mine    Tailings Pile

Pit    Stone Quarry    Gas Pump or Service Station    Fuel Storage or Natural Gas Tank

Oil or Natural Gas Derrick    Small Hydroelectric Power Station    Power Station    Transformer Station

Cemetery    Burial Mound (height in metres)    Triangulation Point on Burial Mound    Triangulation Point

Bench Mark    Bench Mark (monumented)    Telegraph Office    Telephone Station

Radio Station    Radio Tower    Airfield or Seaplane Base    Landing Strip

Telegraph/Telephone Lines    Main Highway    Highway under Construction    Improved Dirt Road (former truck road)

Double-track Railroad with First Class Station    Dismantled Railroad    Railroad Under Construction

Shore Embankment    River or Ditch with Embankment    Direction and velocity of current    Water Gauge    Water Level Mark

Well    Water Reservoir or Rain Water Pit    Spring    Isobath with value

Heavy (Index) Contour Line    Contour Line and Value    Half Contour Line    Spot Elevation Value

Coniferous    Deciduous    Mixed    Scrub

Key to Numbers on Mapping

TQ36\_London

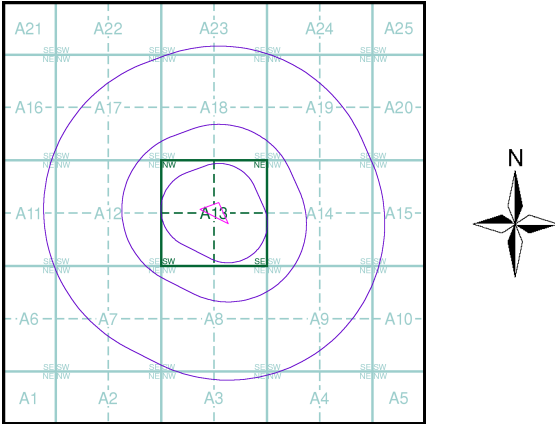
No.	Description
319	Sewage Works



Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Surrey	1:10,560	1871 - 1872	3
London	1:10,560	1896	4
Surrey	1:10,560	1897 - 1898	5
Surrey	1:10,560	1914	6
London	1:10,560	1919	7
Surrey	1:10,560	1932 - 1934	8
Surrey	1:10,560	1938	9
Surrey	1:10,560	1938	10
Ordnance Survey Plan	1:10,000	1940 - 1951	11
Historical Aerial Photography	1:10,560	1948 - 1949	12
Ordnance Survey Plan	1:10,000	1958	13
Ordnance Survey Plan	1:10,000	1968	14
Ordnance Survey Plan	1:10,000	1974 - 1976	15
Ordnance Survey Plan	1:10,000	1983	16
London	1:25,000	1985	17
Ordnance Survey Plan	1:10,000	1993	18
10K Raster Mapping	1:10,000	1999	19
10K Raster Mapping	1:10,000	2006	20
10K Raster Mapping	1:10,000	2009	21

Russian Map - Slice A



Order Details

Order Number: 29017796\_1\_1  
Customer Ref: 09-0075 Beddington  
National Grid Reference: 529370, 166610  
Slice: A  
Site Area (Ha): 0.95  
Search Buffer (m): 1000

Site Details

Site at 529300, 166800



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Web: www.envirocheck.co.uk





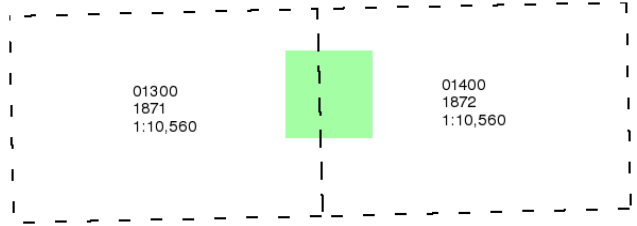
Surrey

Published 1871 - 1872

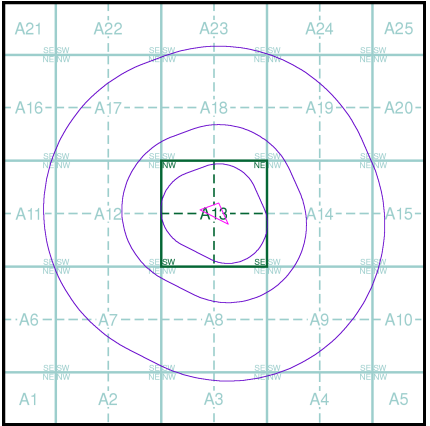
Source map scale - 1:10,560

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

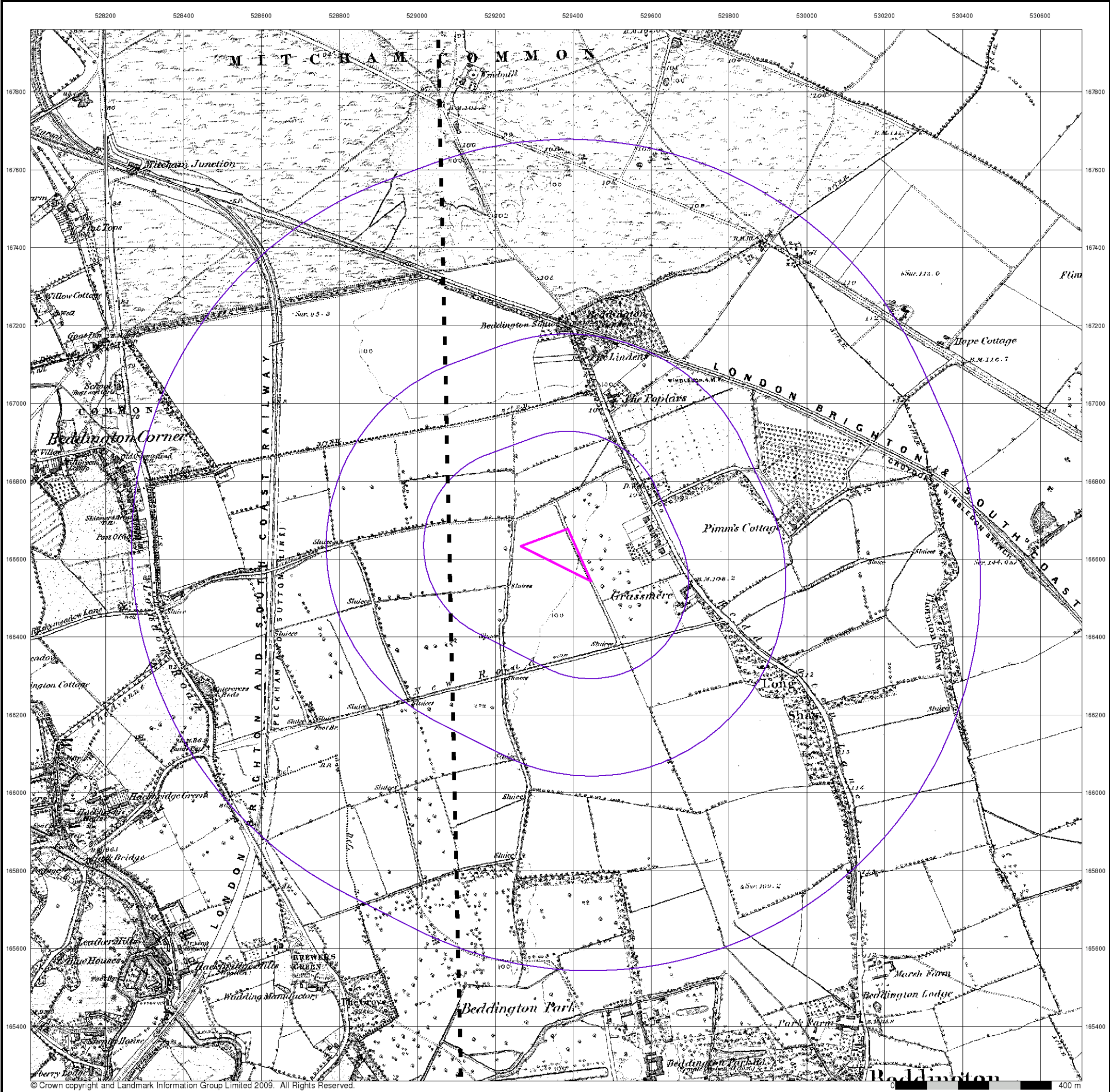
Order Number: 29017796\_1\_1  
Customer Ref: 09-0075 Beddington  
National Grid Reference: 529370, 166610  
Slice: A  
Site Area (Ha): 0.95  
Search Buffer (m): 1000

Site Details

Site at 529300, 166800



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London

Published 1896

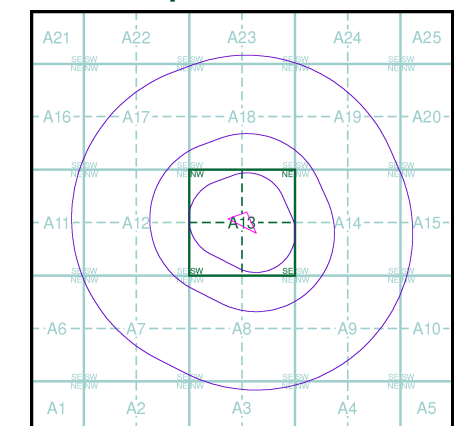
Source map scale - 1:10,560

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)

015SW
1896
1:10,560
017NW
1896
1:10,560

## Historical Map - Slice A



## Order Details

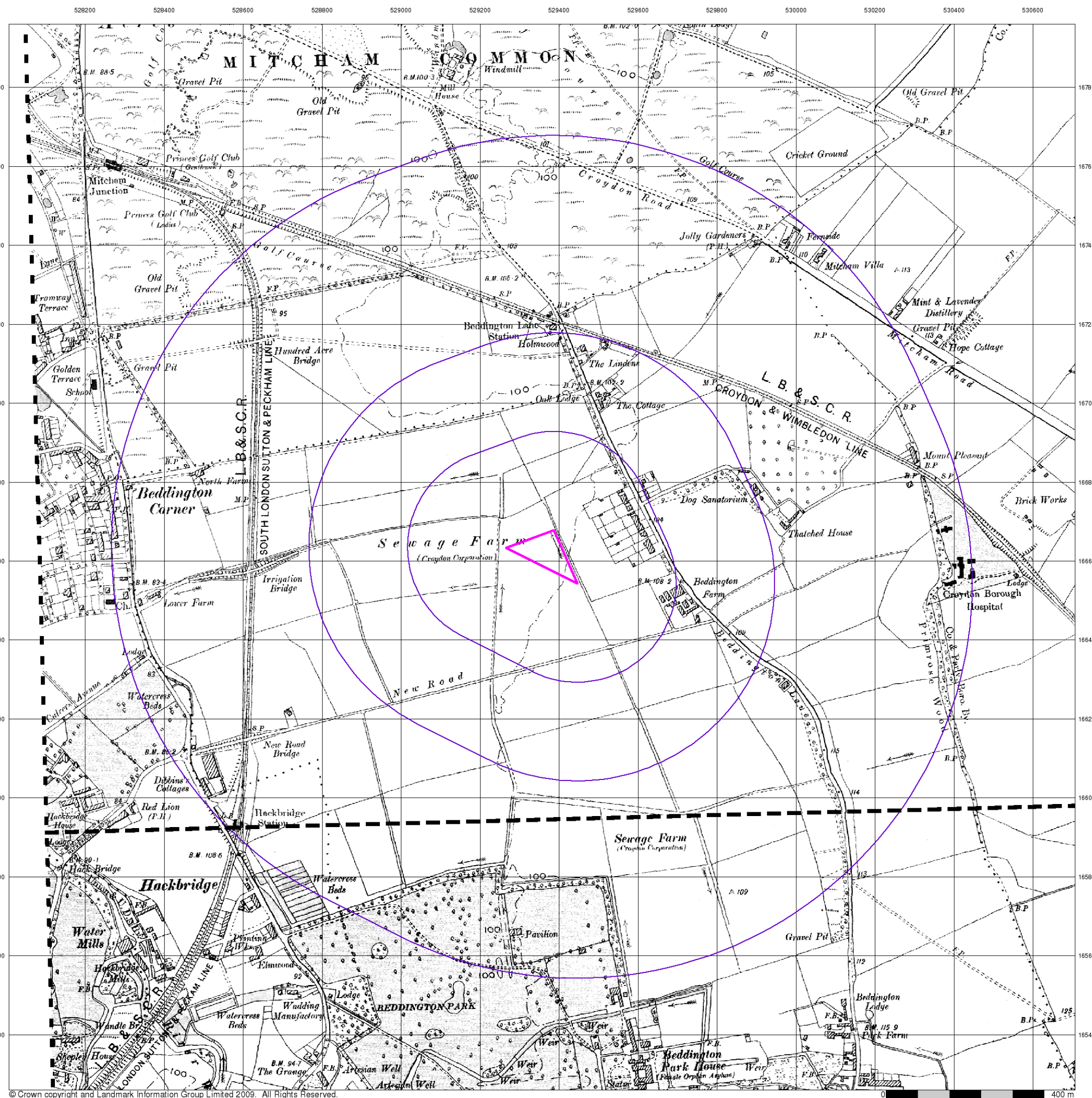
Order Number: 29017796\_1\_1  
 Customer Ref: 09-0075 Beddington  
 National Grid Reference: 529370, 166610  
 Slice: A  
 Site Area (Ha): 0.95  
 Search Buffer (m): 1000

## Site Details

Site at 529300, 166800



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 Fax: 0844 844 9951  
 Web: [www.envirocheck.co.uk](http://www.envirocheck.co.uk)







## Surrey

Published 1897 - 1898

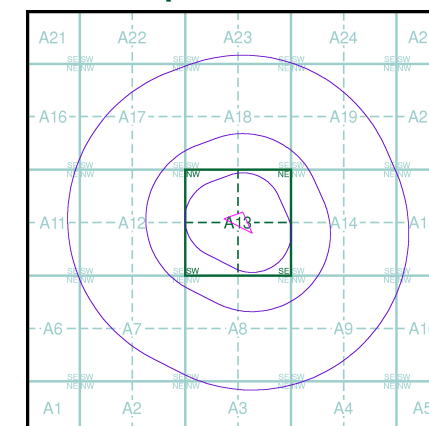
Source map scale - 1:10,560

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)

013NE 1897 1:10,560	014NW 1898 1:10,560
013SE 1898 1:10,560	014SW 1898 1:10,560

## Historical Map - Slice A



## Order Details

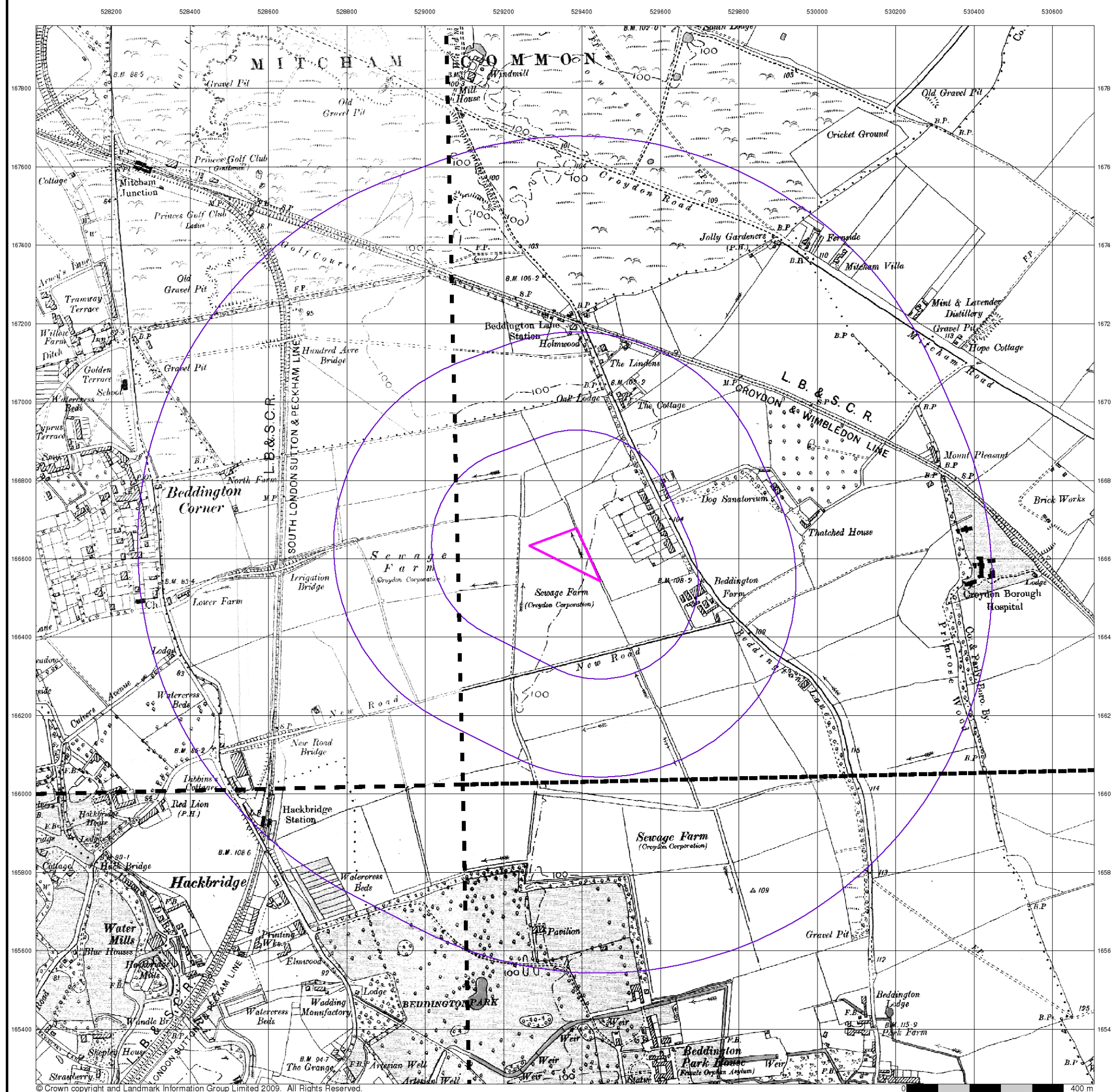
Order Number: 29017796\_1\_1  
 Customer Ref: 09-0075 Beddington  
 National Grid Reference: 529370, 166610  
 Slice: A  
 Site Area (Ha): 0.95  
 Search Buffer (m): 1000

## Site Details

Site at 529300, 166800



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 Fax: 0844 844 9951  
 Web: [www.envirocheck.co.uk](http://www.envirocheck.co.uk)







## Surrey

Published 1914

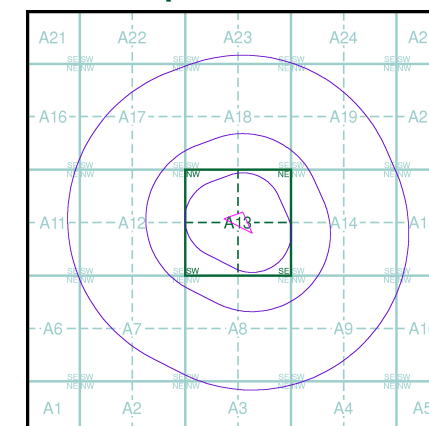
Source map scale - 1:10,560

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)

013NE 1914 1:10,560	014NW 1914 1:10,560
013SE 1914 1:10,560	014SW 1914 1:10,560

## Historical Map - Slice A



## Order Details

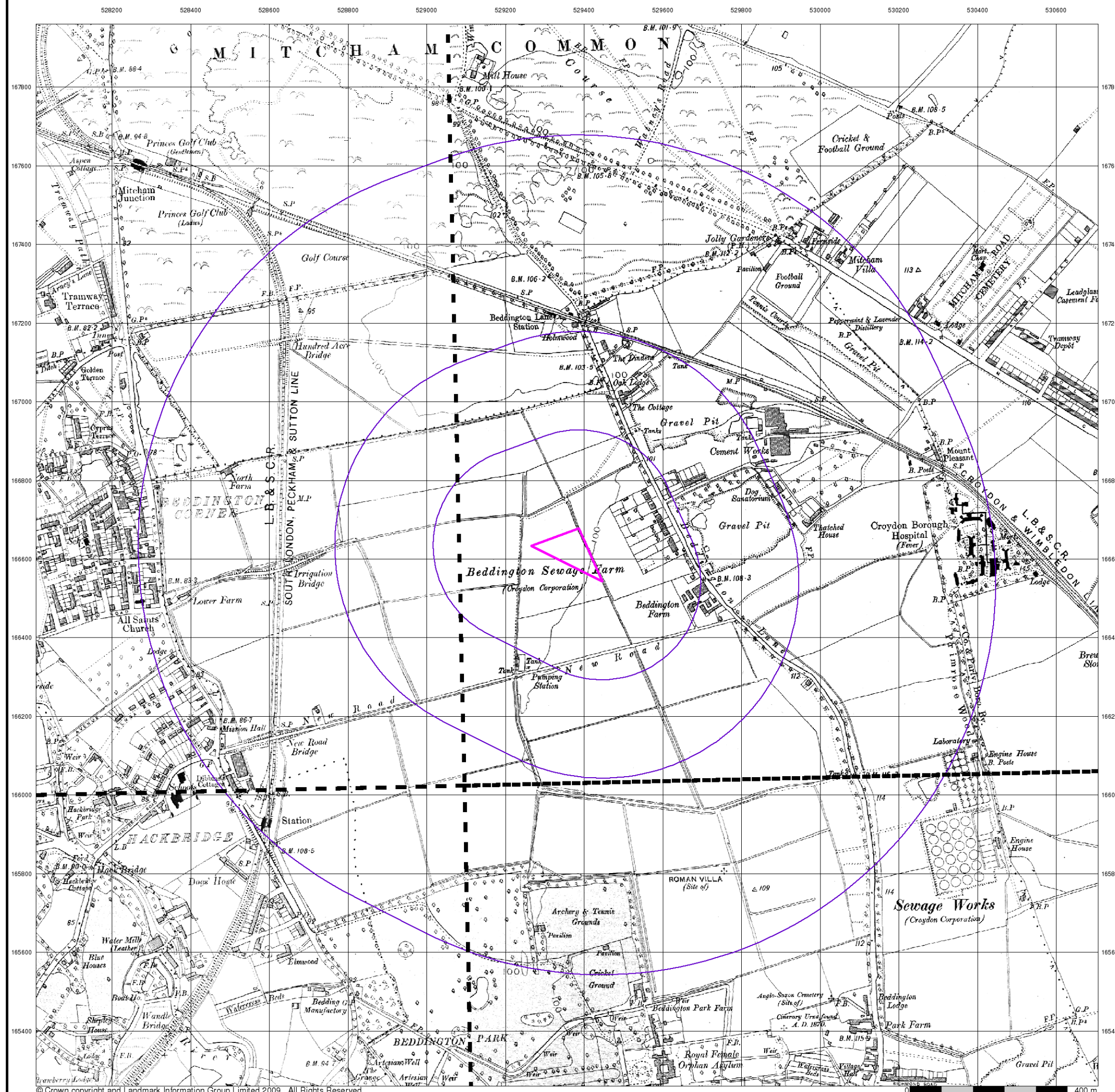
Order Number: 29017796\_1\_1  
 Customer Ref: 09-0075 Beddington  
 National Grid Reference: 529370, 166610  
 Slice: A  
 Site Area (Ha): 0.95  
 Search Buffer (m): 1000

## Site Details

Site at 529300, 166800



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 Web: [www.envirocheck.co.uk](http://www.envirocheck.co.uk)







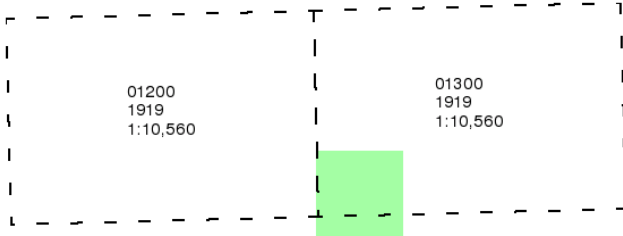
London

Published 1919

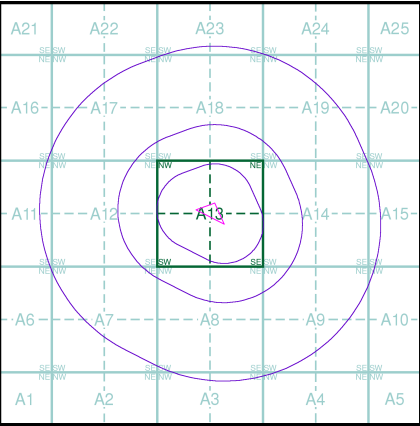
Source map scale - 1:10,560

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

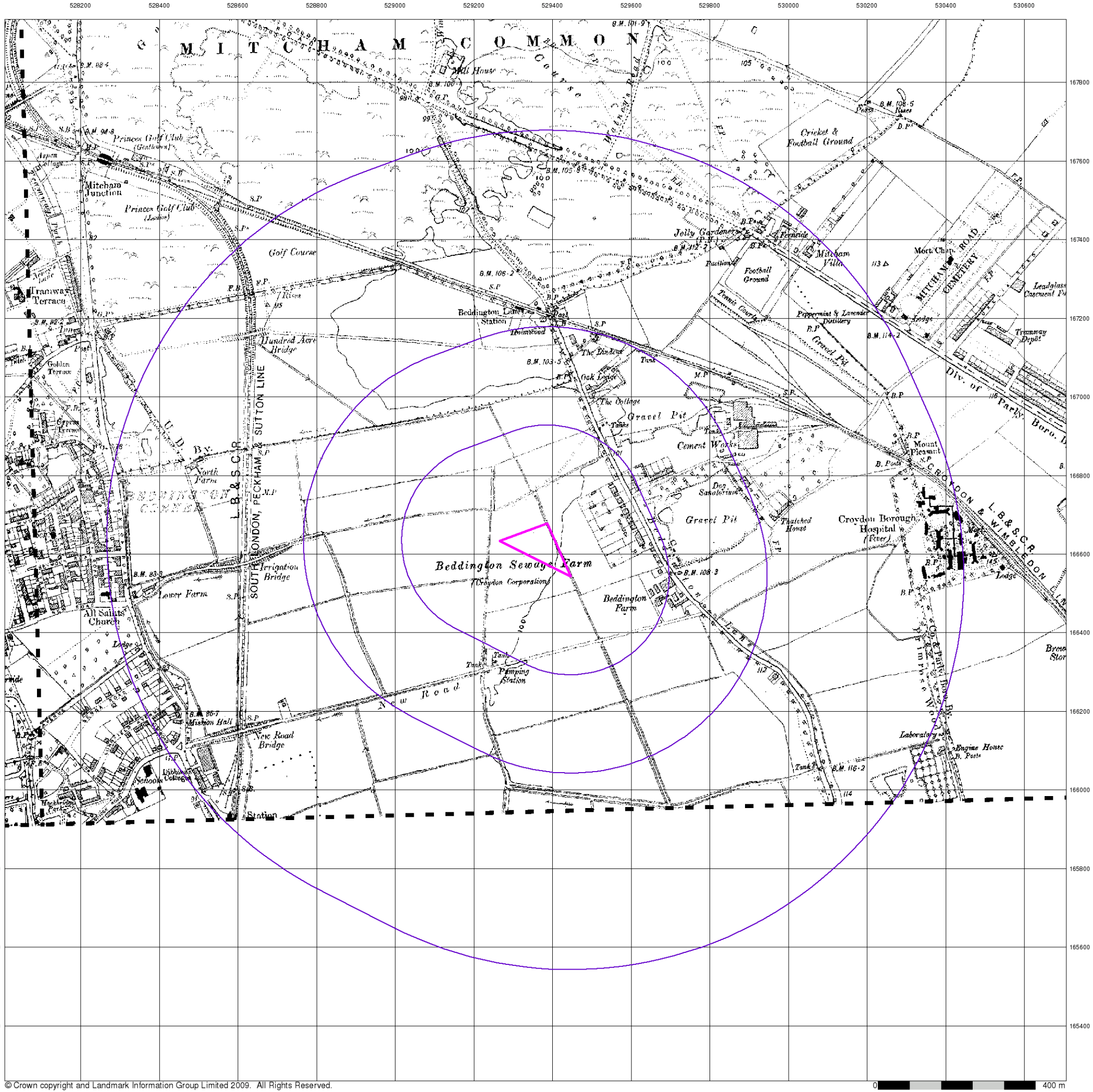
Order Number: 29017796\_1\_1  
Customer Ref: 09-0075 Beddington  
National Grid Reference: 529370, 166610  
Slice: A  
Site Area (Ha): 0.95  
Search Buffer (m): 1000

Site Details

Site at 529300, 166800



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**Published 1932 - 1934**

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

Map Name(s) and Date(s)

013NE  
1933  
1:10,560

014NW  
1932  
1:10,560

013SE  
1934  
1:10,560

014SW  
1933  
1:10,560



Order Number: 29017796\_1\_1  
Customer Ref: 09-0075 Beddington  
National Grid Reference: 529370, 166610  
Slice: A  
Site Area (Ha): 0.95  
Search Buffer (m): 1000

Site at 529300, 166800



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Fax: 0844 844 9951  
Web: [www.envirocheck.co.uk](http://www.envirocheck.co.uk)





## Surrey

Published 1938

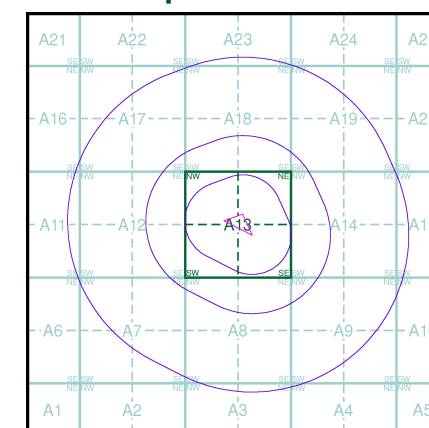
Source map scale - 1:10,560

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)

013NE 1938 1:10,560	014NW 1938 1:10,560
013SE 1938 1:10,560	014SW 1938 1:10,560

## Historical Map - Slice A



## Order Details

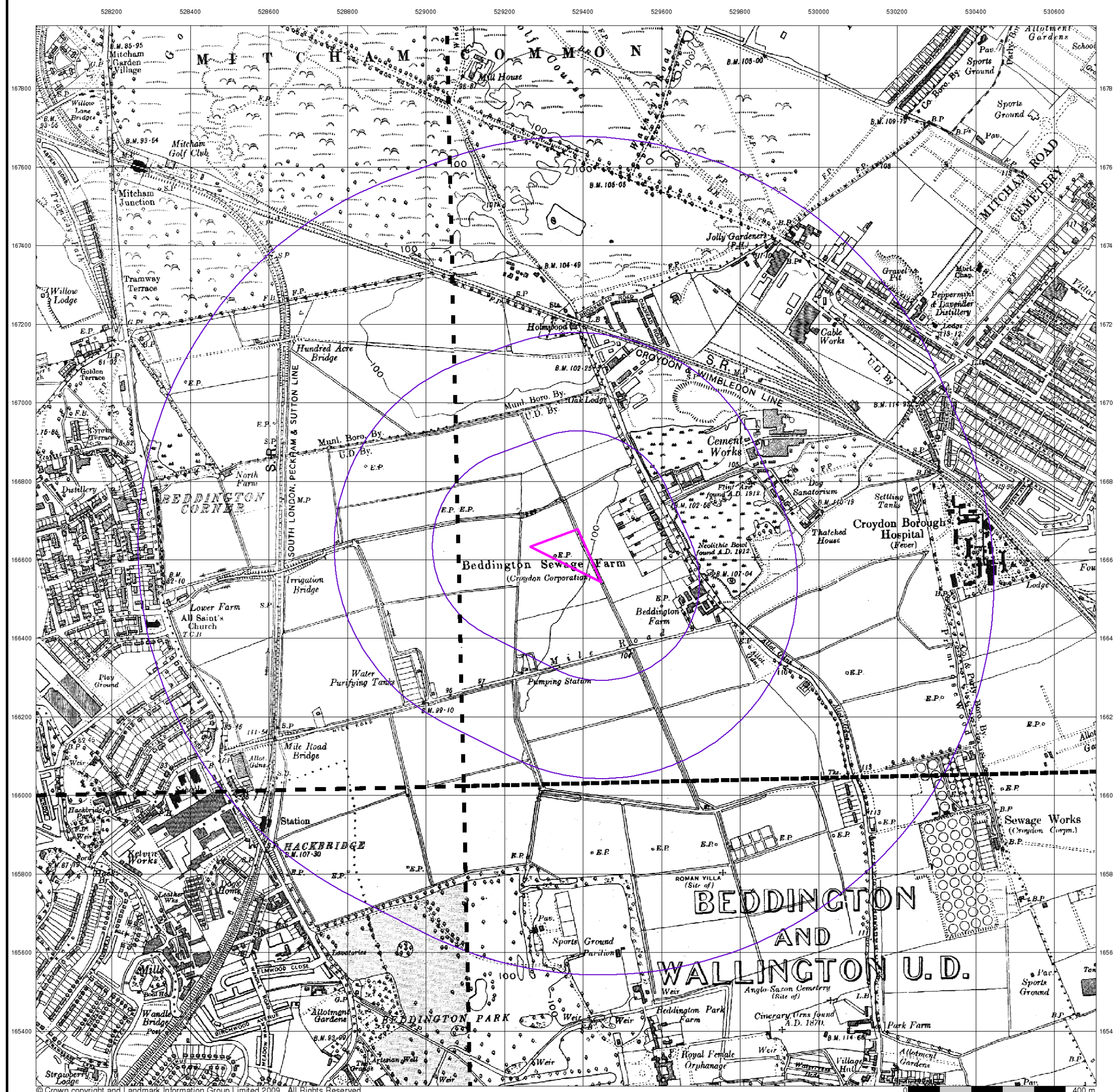
Order Number: 29017796\_1\_1  
 Customer Ref: 09-0075 Beddington  
 National Grid Reference: 529370, 166610  
 Slice: A  
 Site Area (Ha): 0.95  
 Search Buffer (m): 1000

## Site Details

Site at 529300, 166800



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 Fax: 0844 844 9951  
 Web: [www.envirocheck.co.uk](http://www.envirocheck.co.uk)







## Surrey

Published 1938

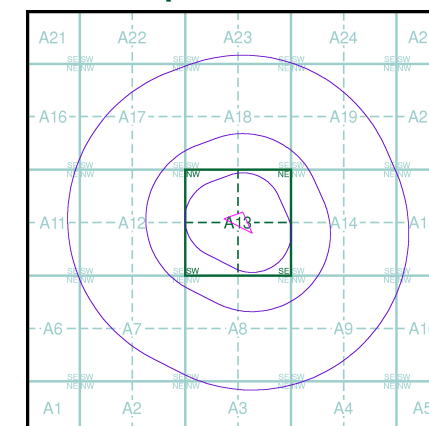
Source map scale - 1:10,560

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)

013NE 1938 1:10,560	014NW 1938 1:10,560
013SE 1938 1:10,560	014SW 1938 1:10,560

## Historical Map - Slice A



## Order Details

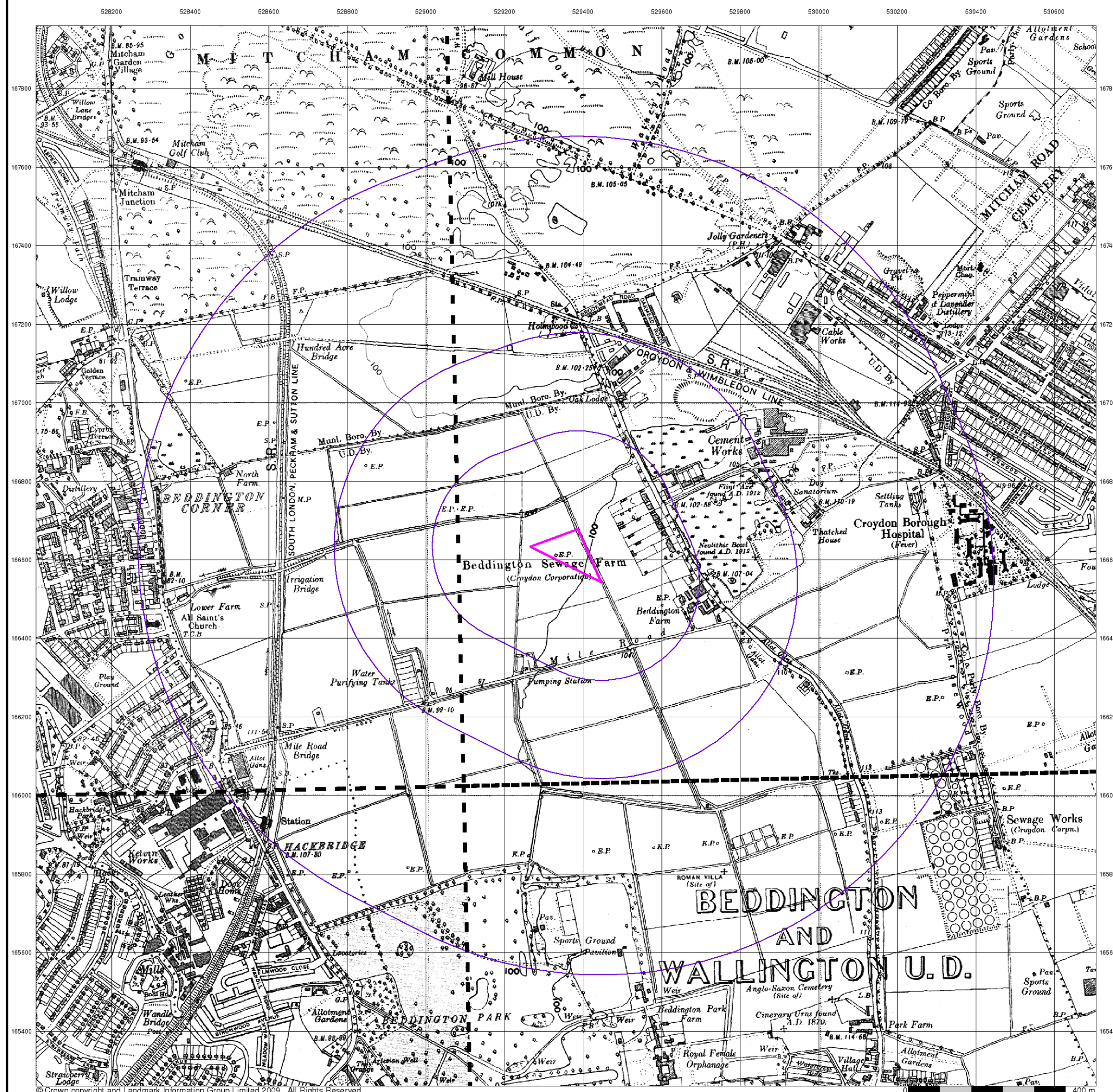
Order Number: 29017796\_1\_1  
 Customer Ref: 09-0075 Beddington  
 National Grid Reference: 529370, 166610  
 Slice: A  
 Site Area (Ha): 0.95  
 Search Buffer (m): 1000

## Site Details

Site at 529300, 166800



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







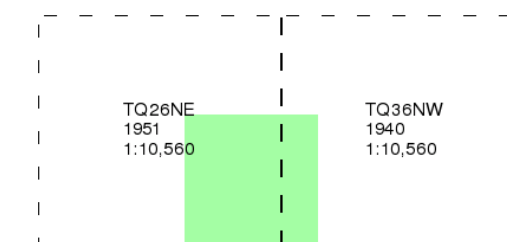
## Ordnance Survey Plan

Published 1940 - 1951

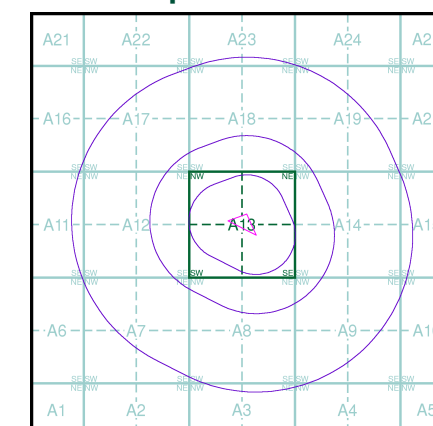
Source map scale - 1:10,000

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

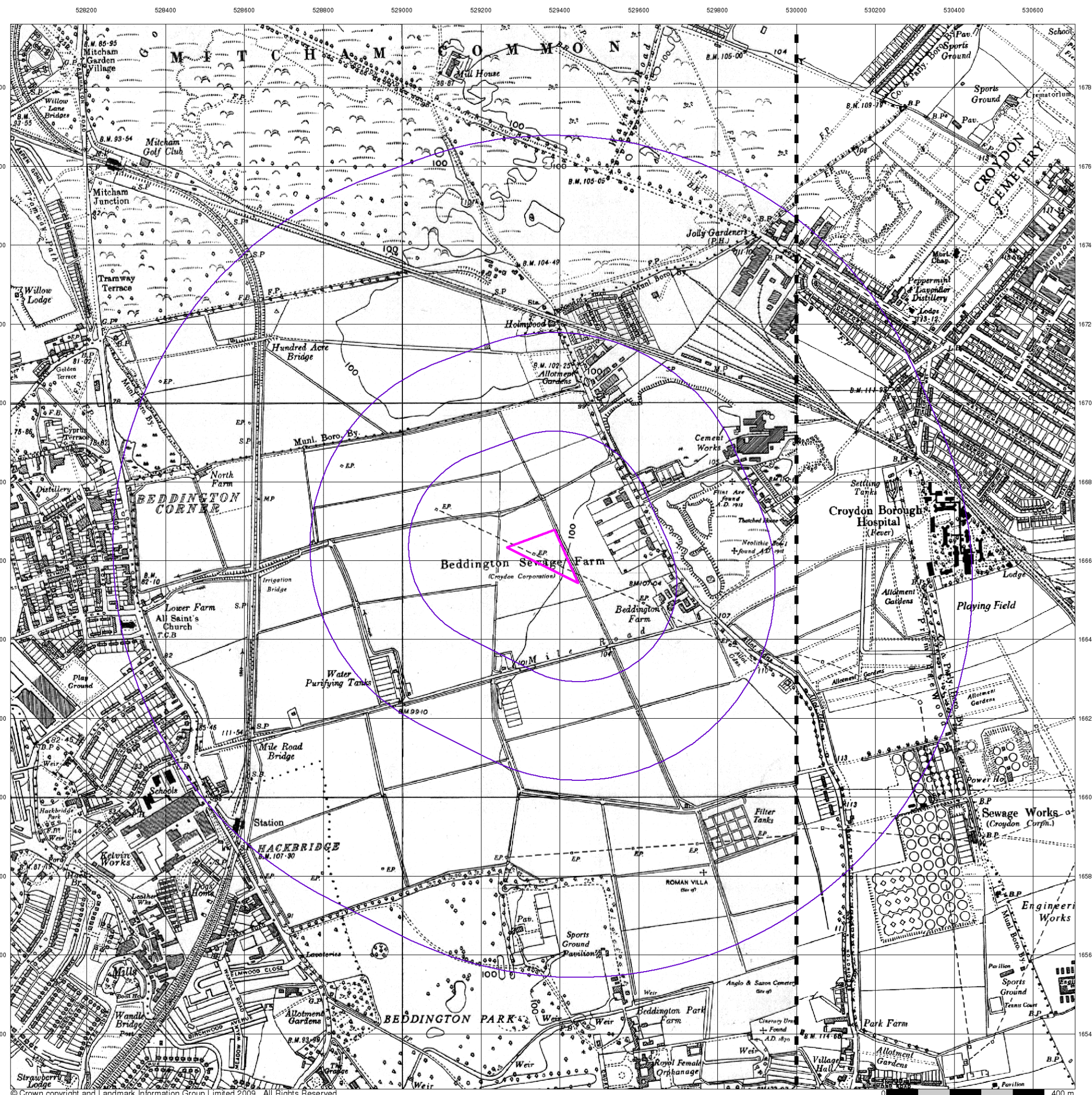
Order Number: 29017796\_1\_1  
 Customer Ref: 09-0075 Beddington  
 National Grid Reference: 529370, 166610  
 Slice: A  
 Site Area (Ha): 0.95  
 Search Buffer (m): 1000

## Site Details

Site at 529300, 166800



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Historical Aerial Photography

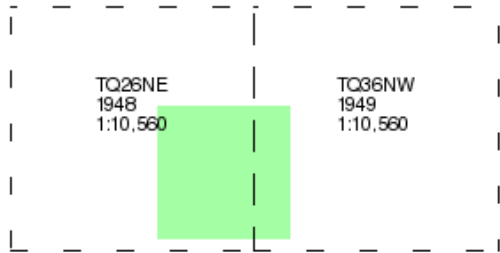
Published 1948 - 1949

Source map scale - 1:10,560

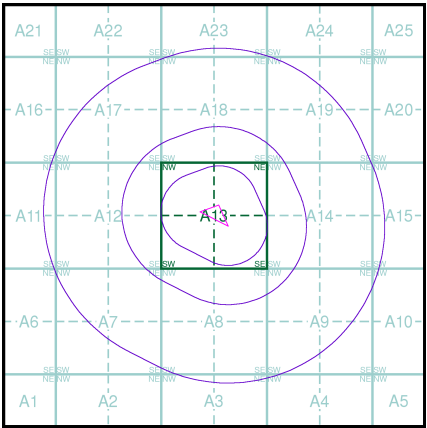
The Historical Aerial Photos were produced by the Ordnance Survey at a scale of 1:1,250 and 1:10,560 from Air Force photography. They were produced between 1944 and 1951 as an interim measure, pending preparation of conventional mapping, due to post war resource shortages. New security measures in the 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.

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Map Name(s) and Date(s)



Historical Aerial Photography - Slice A



Order Details

Order Number: 29017796\_1\_1  
Customer Ref: 09-0075 Beddington  
National Grid Reference: 529370, 166610  
Slice: A  
Site Area (Ha): 0.95  
Search Buffer (m): 1000

Site Details

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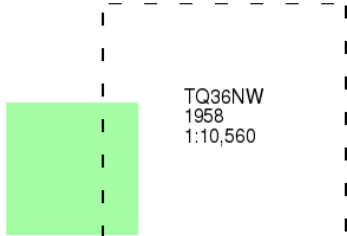




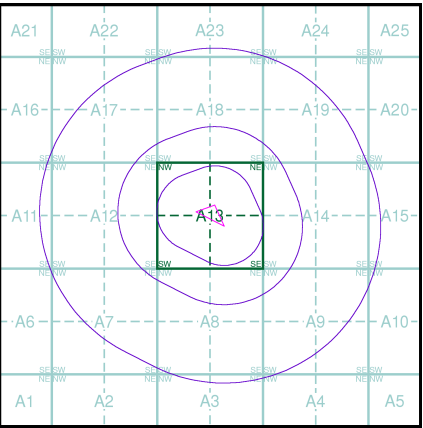
Ordinance Survey Plan  
Published 1958  
Source map scale - 1:10,000

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

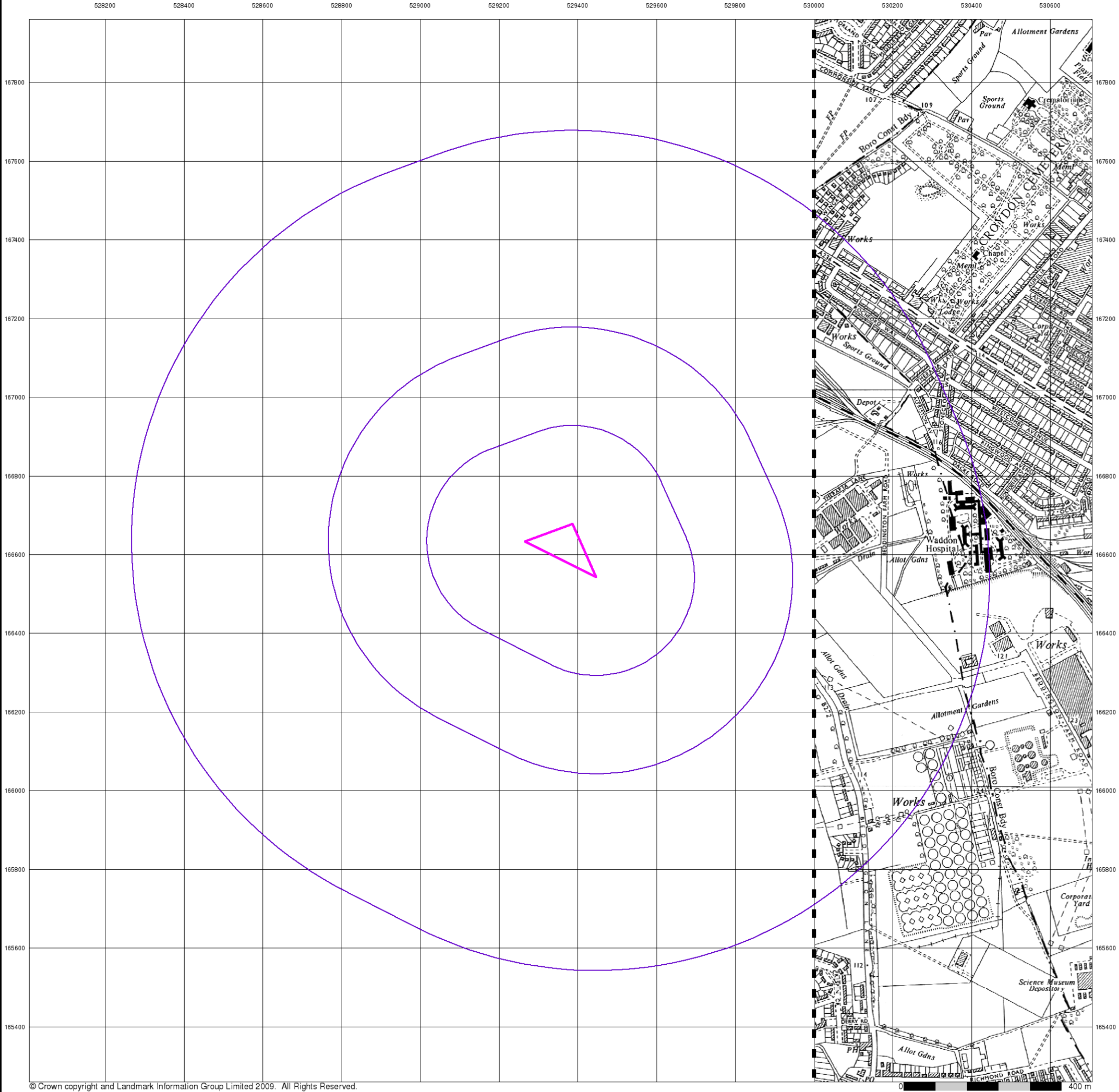
Order Number: 29017796\_1\_1  
Customer Ref: 09-0075 Beddington  
National Grid Reference: 529370, 166610  
Slice: A  
Site Area (Ha): 0.95  
Search Buffer (m): 1000

Site Details

Site at 529300, 166800



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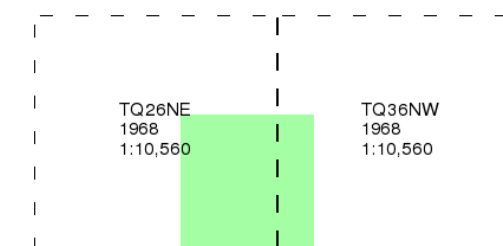
## Ordnance Survey Plan

Published 1968

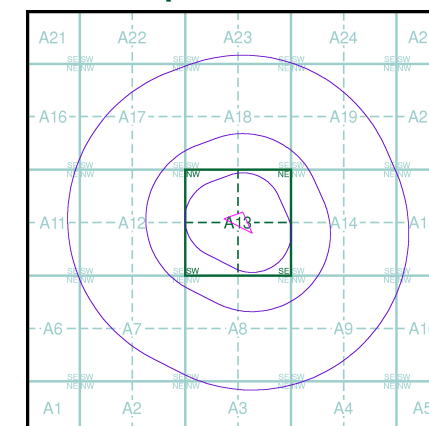
Source map scale - 1:10,000

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

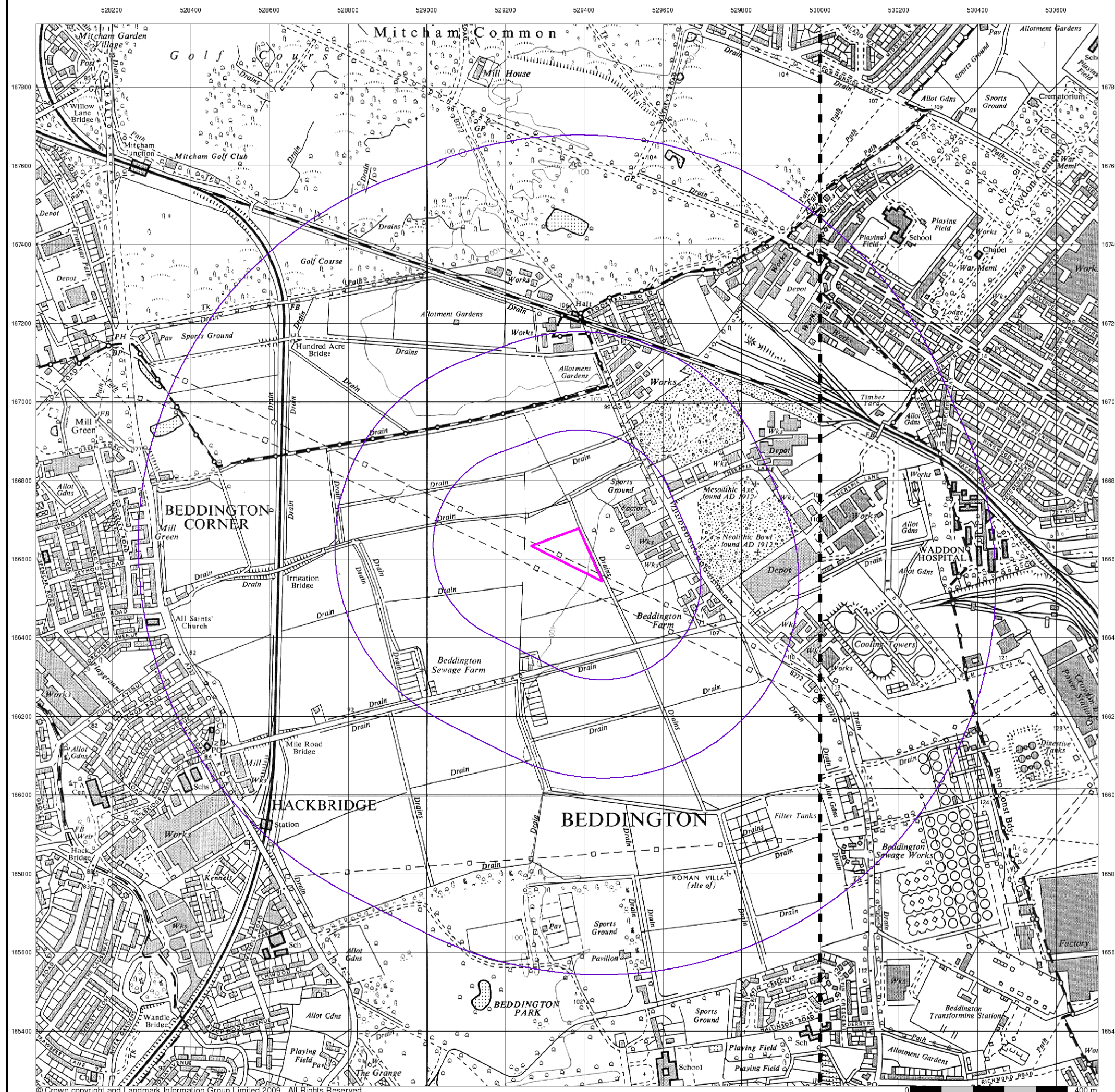
Order Number: 29017796\_1\_1  
 Customer Ref: 09-0075 Beddington  
 National Grid Reference: 529370, 166610  
 Slice: A  
 Site Area (Ha): 0.95  
 Search Buffer (m): 1000

## Site Details

Site at 529300, 166800



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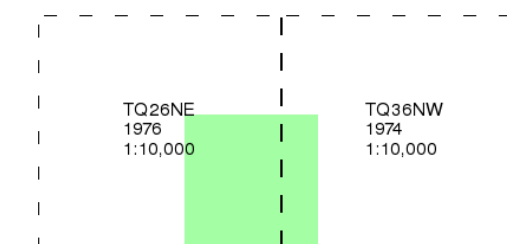
## Ordnance Survey Plan

Published 1974 - 1976

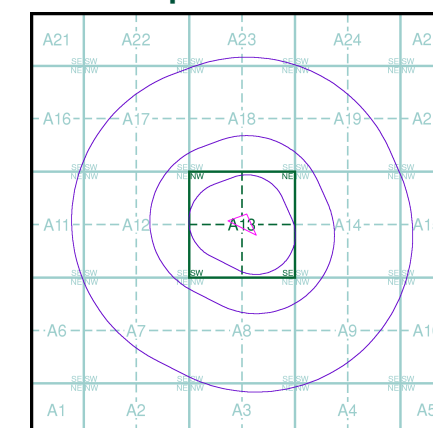
Source map scale - 1:10,000

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

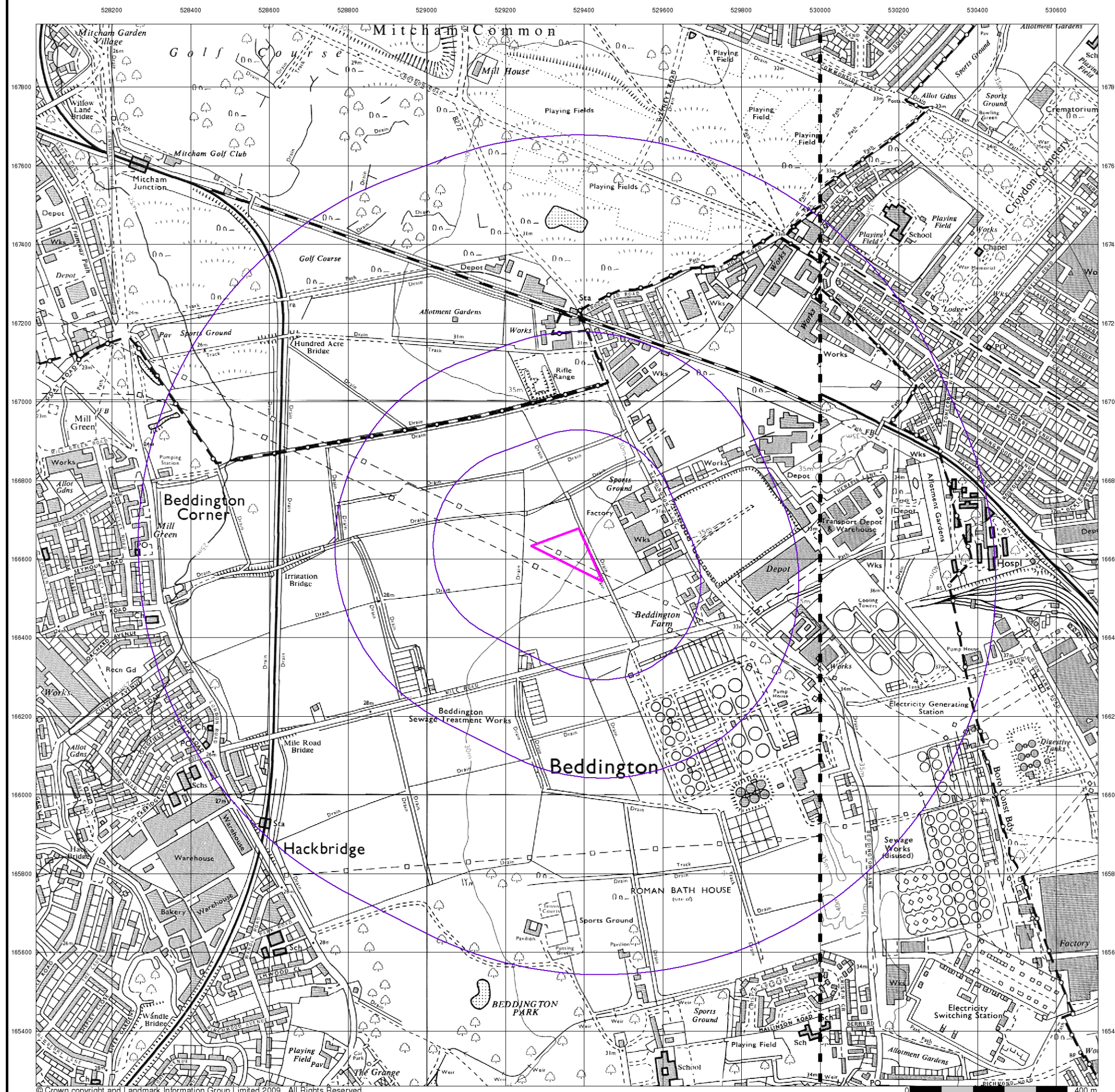
Order Number: 29017796\_1\_1  
 Customer Ref: 09-0075 Beddington  
 National Grid Reference: 529370, 166610  
 Slice: A  
 Site Area (Ha): 0.95  
 Search Buffer (m): 1000

## Site Details

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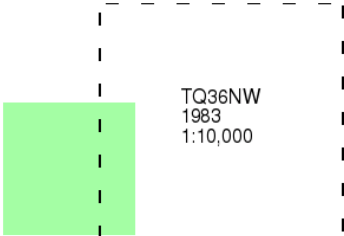




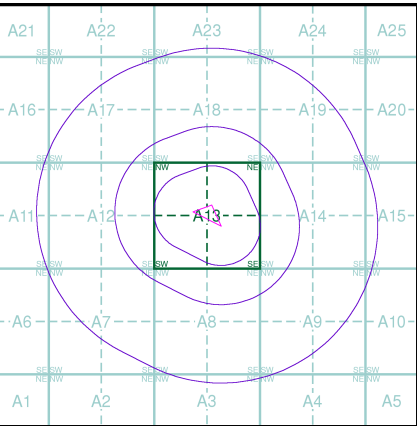
**Ordnance Survey Plan**  
**Published 1983**  
**Source map scale - 1:10,000**

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**

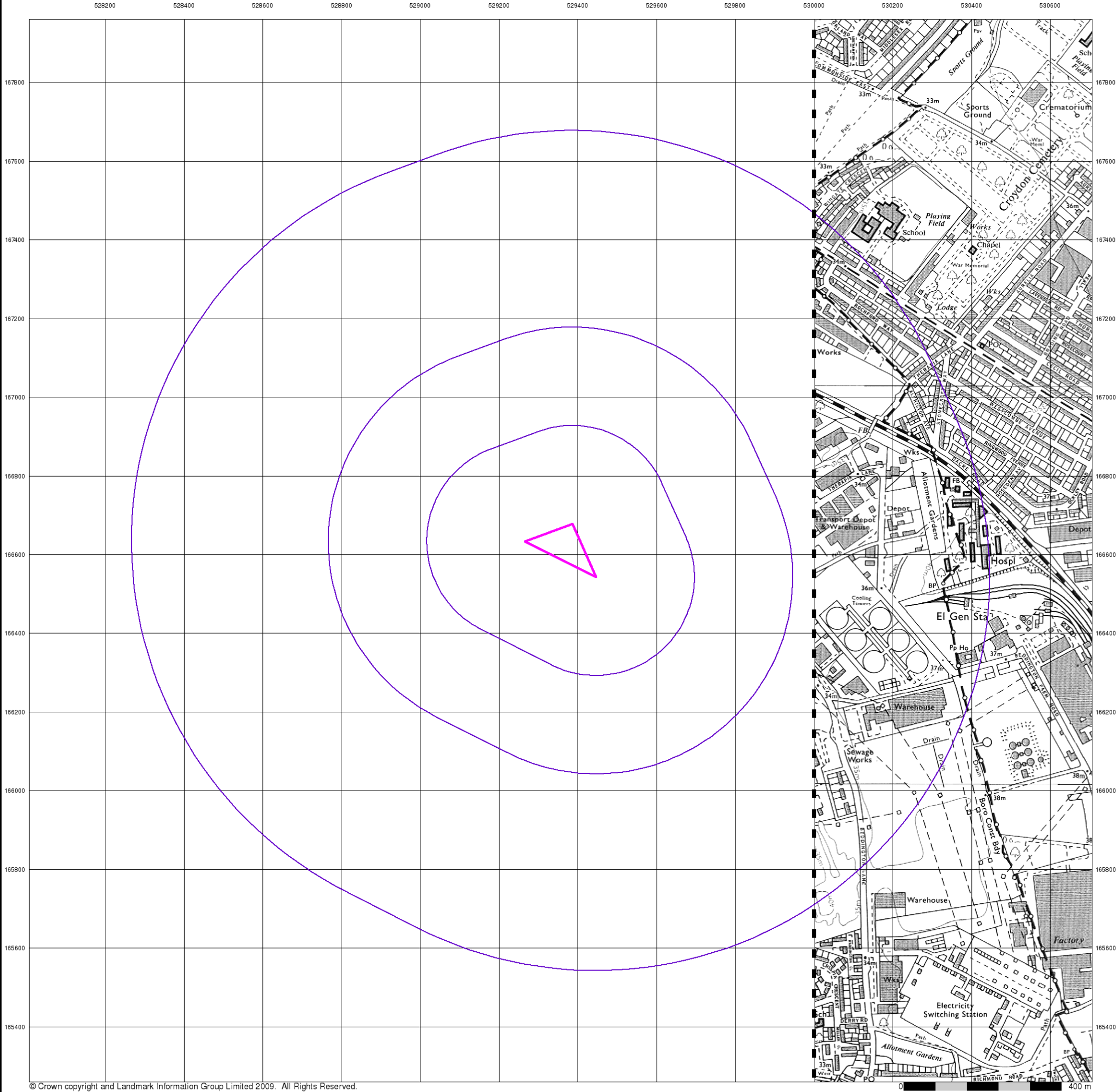
Order Number: 29017796\_1\_1  
Customer Ref: 09-0075 Beddington  
National Grid Reference: 529370, 166610  
Slice: A  
Site Area (Ha): 0.95  
Search Buffer (m): 1000

**Site Details**

Site at 529300, 166800



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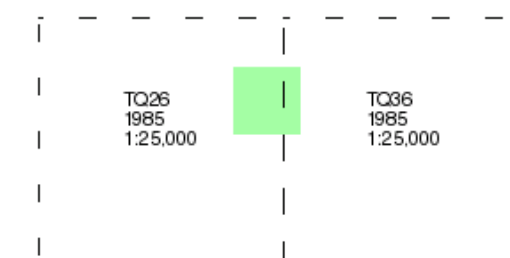
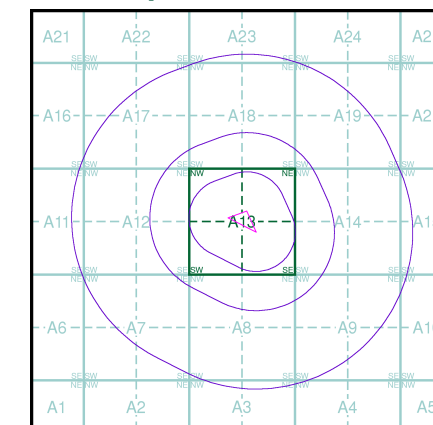




**London****Published 1985****Source map scale - 1:25,000**

These maps were produced by the Russian military during the Cold War between 1950 and 1997, and cover 103 towns and cities throughout the U.K. The maps are produced at 1:25,000, 1:10,000 and 1:5,000 scale, and show detailed land use, with colour-coded areas for development, green areas, and non-developed areas. Buildings are coloured black and important building uses (such as hospitals, post offices, factories etc.) are numbered, with a numbered key describing their use.

They were produced by the Russians for the benefit of navigation, as well as strategic military sites and transport hubs, for use if they were to have invaded the U.K. The detailed information provided indicates that the areas were surveyed using land-based personnel, on the ground, in the cities that are mapped.

**Map Name(s) and Date(s)****Russian Map - Slice A****Order Details**

Order Number: 29017796\_1\_1  
 Customer Ref: 09-0075 Beddington  
 National Grid Reference: 529370, 166610  
 Slice: A  
 Site Area (Ha): 0.95  
 Search Buffer (m): 1000

**Site Details**

Site at 529300, 166800

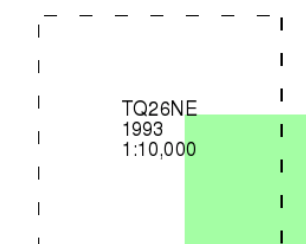




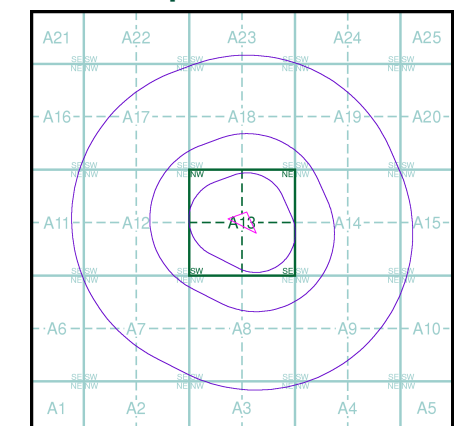
## Published 1993

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

Map Name(s) and Date(s)



### Historical Map - Slice A



## Order Details

Order Number: 29017796\_1\_1  
Customer Ref: 09-0075 Beddington  
National Grid Reference: 529370, 166610  
Slice: A  
Site Area (Ha): 0.95  
Search Buffer (m): 1000

## Site Details

Site at 529300, 166800



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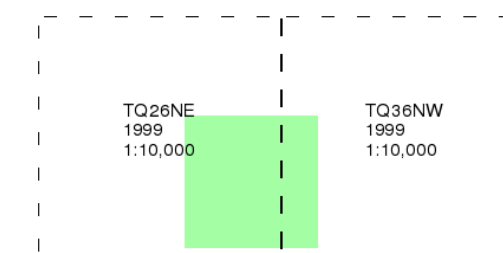
## 10k Raster Mapping

Published 1999

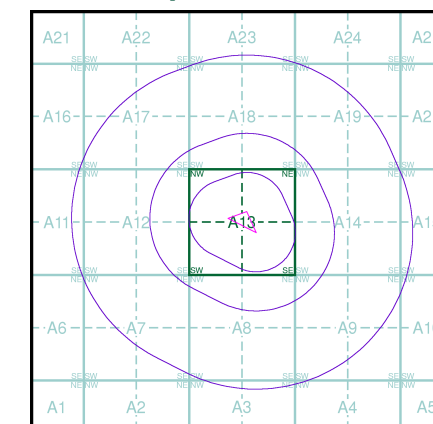
Source map scale - 1:10,000

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

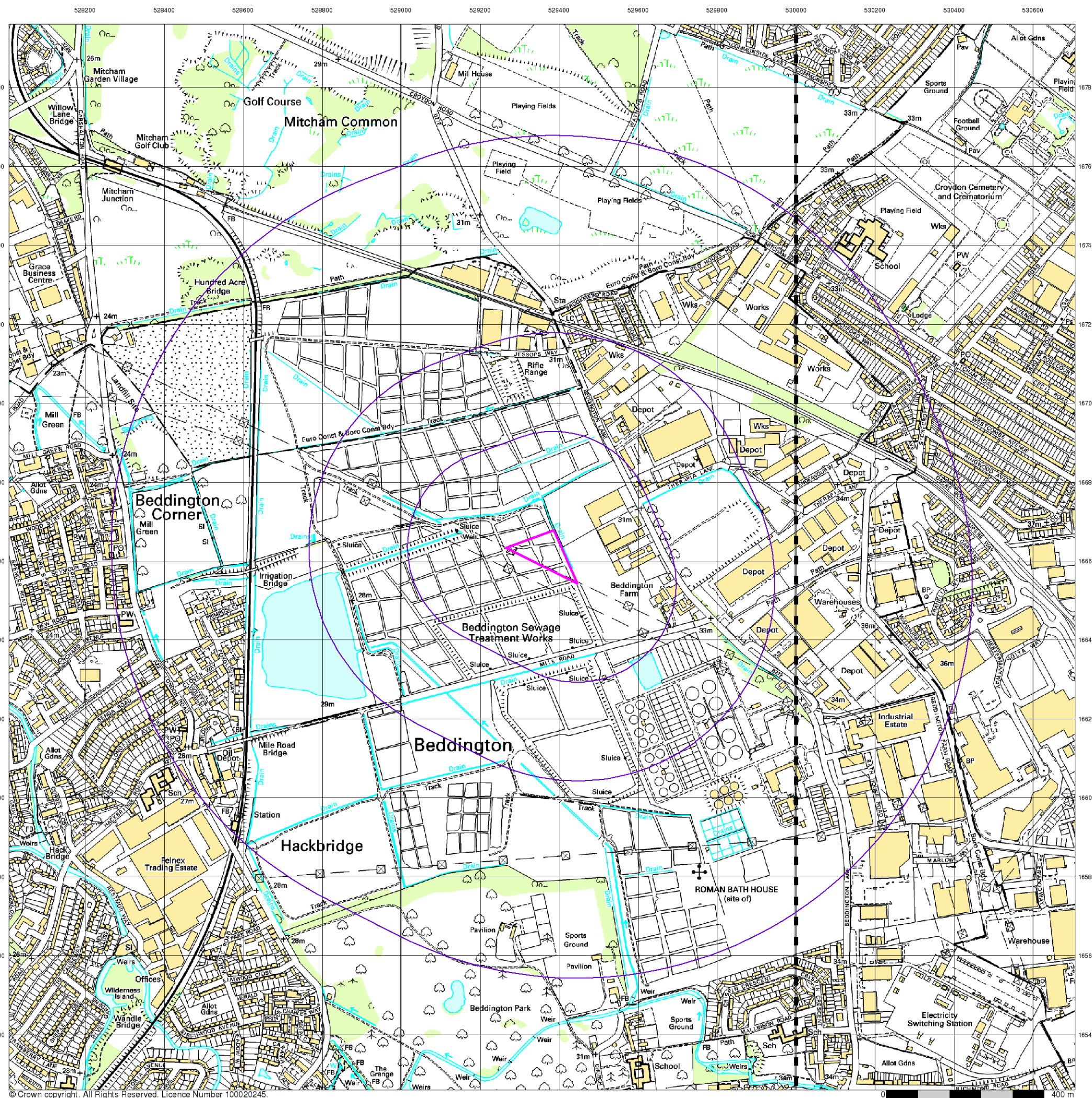
Order Number: 29017796\_1\_1  
 Customer Ref: 09-0075 Beddington  
 National Grid Reference: 529370, 166610  
 Slice: A  
 Site Area (Ha): 0.95  
 Search Buffer (m): 1000

## Site Details

Site at 529300, 166800



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 Web: [www.envirocheck.co.uk](http://www.envirocheck.co.uk)







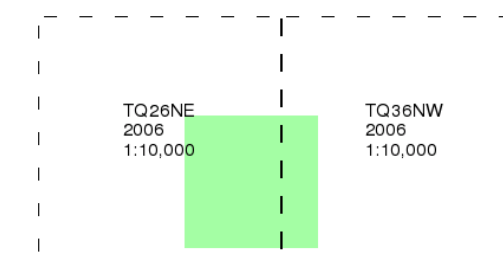
## 10k Raster Mapping

Published 2006

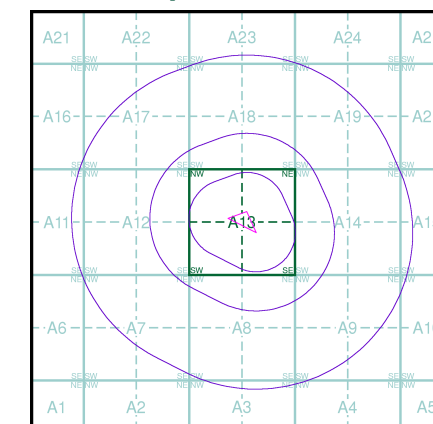
Source map scale - 1:10,000

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

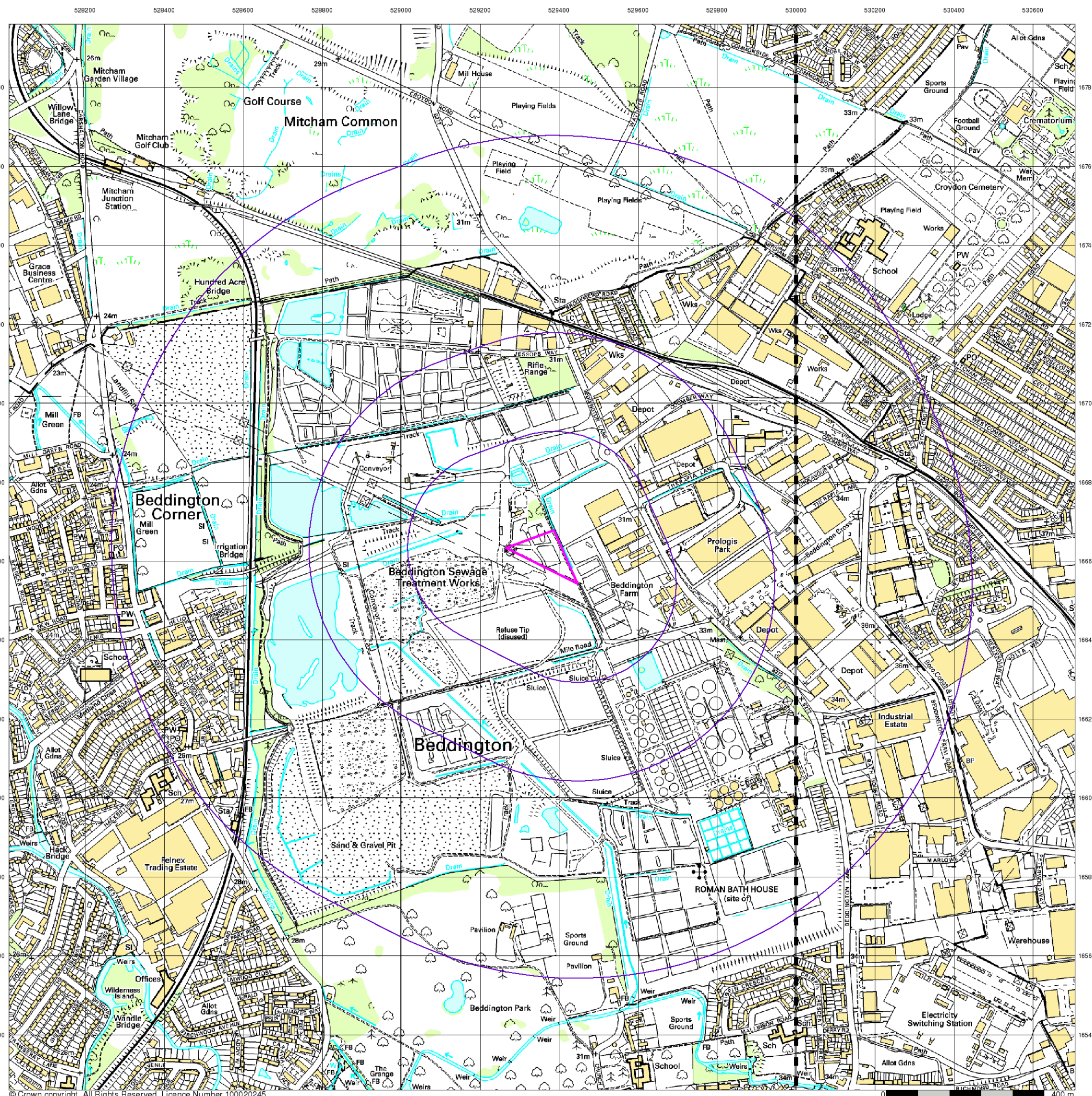
Order Number: 29017796\_1\_1  
 Customer Ref: 09-0075 Beddington  
 National Grid Reference: 529370, 166610  
 Slice: A  
 Site Area (Ha): 0.95  
 Search Buffer (m): 1000

### Site Details

Site at 529300, 166800



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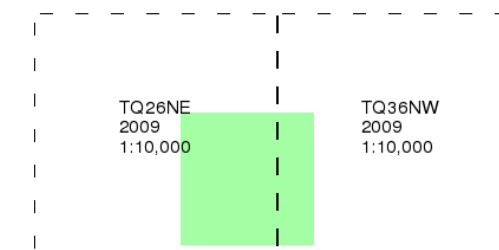
## 10k Raster Mapping

Published 2009

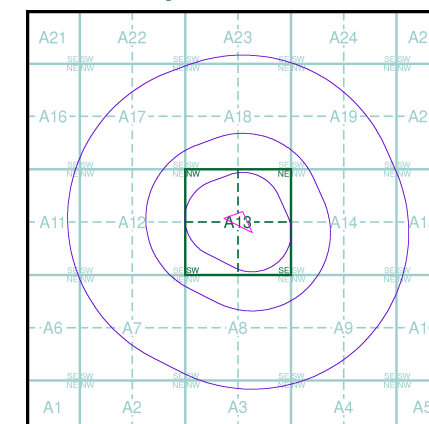
Source map scale - 1:10,000

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

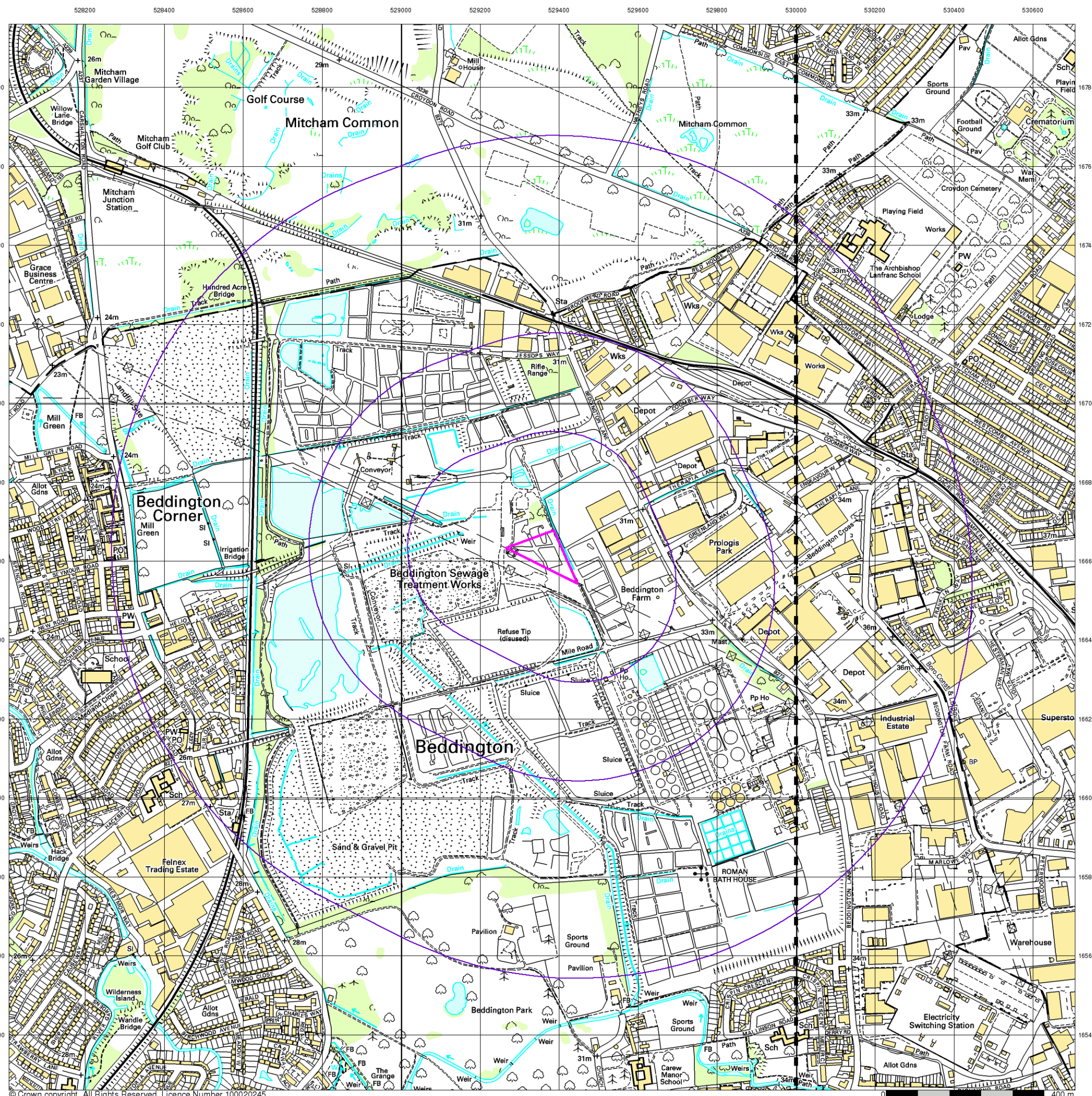
Order Number: 29017796\_1\_1  
 Customer Ref: 09-0075 Beddington  
 National Grid Reference: 529370, 166610  
 Slice: A  
 Site Area (Ha): 0.95  
 Search Buffer (m): 1000

### Site Details

Site at 529300, 166800



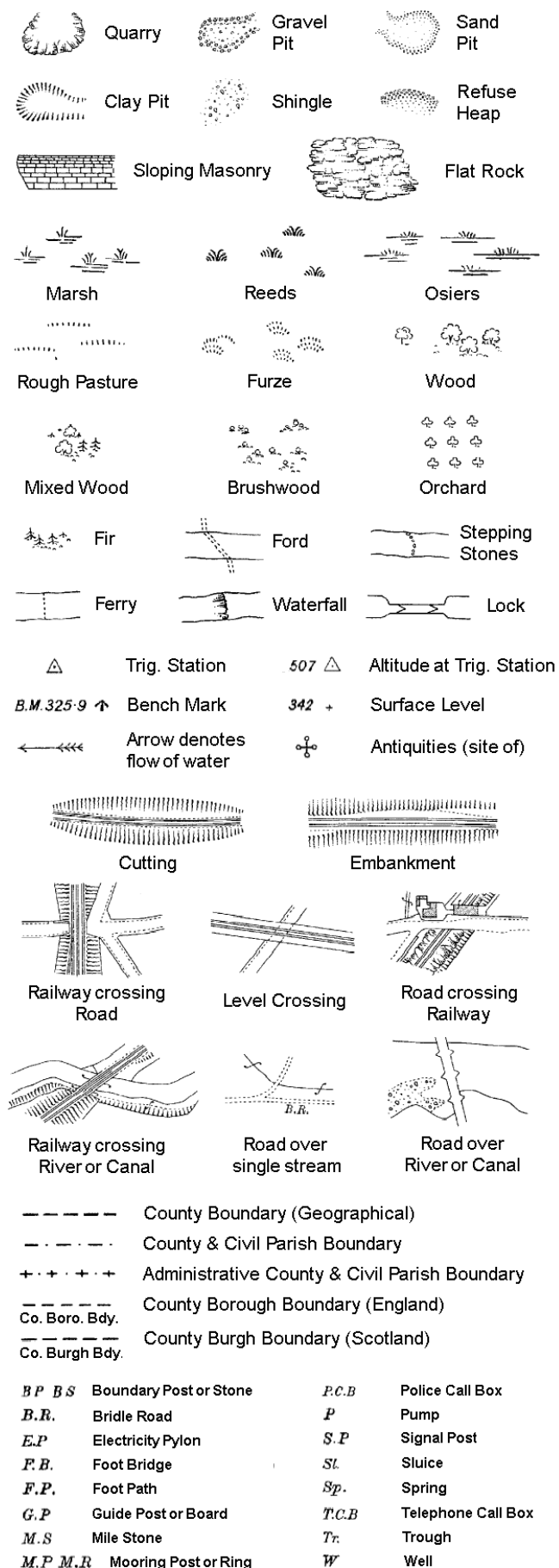
Tel: 0844 844 9952  
 Fax: 0844 844 9951  
 Web: [www.envirocheck.co.uk](http://www.envirocheck.co.uk)



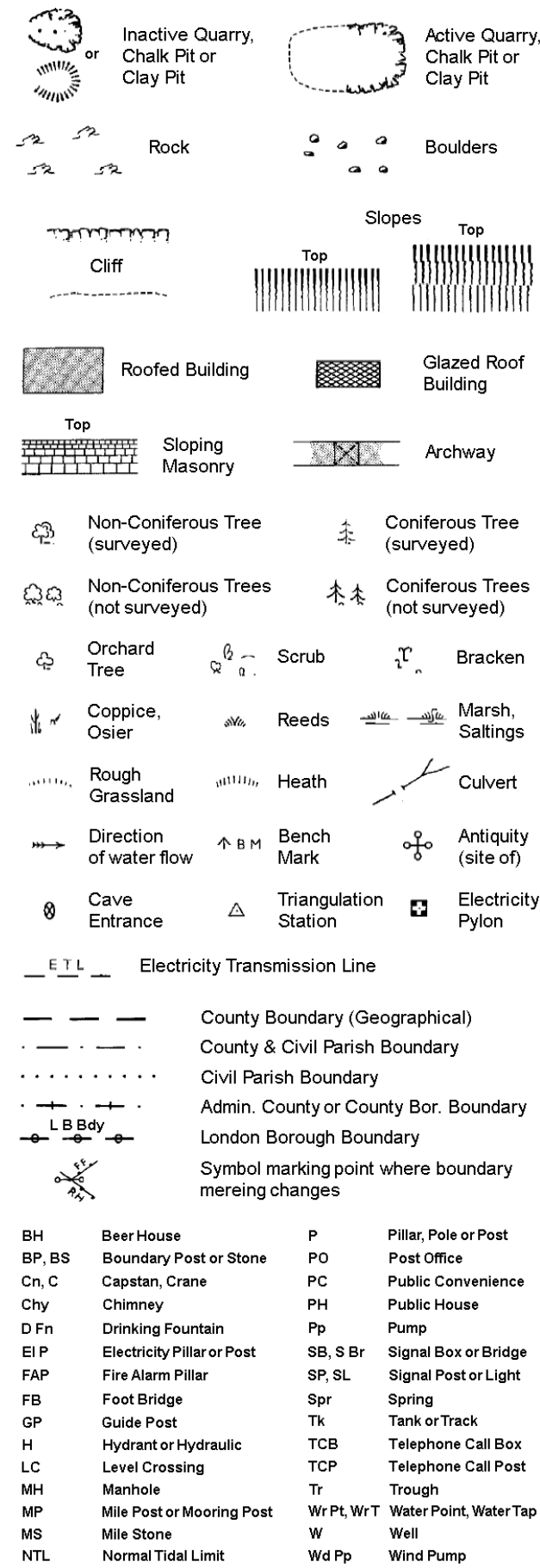


# Historical Mapping Legends

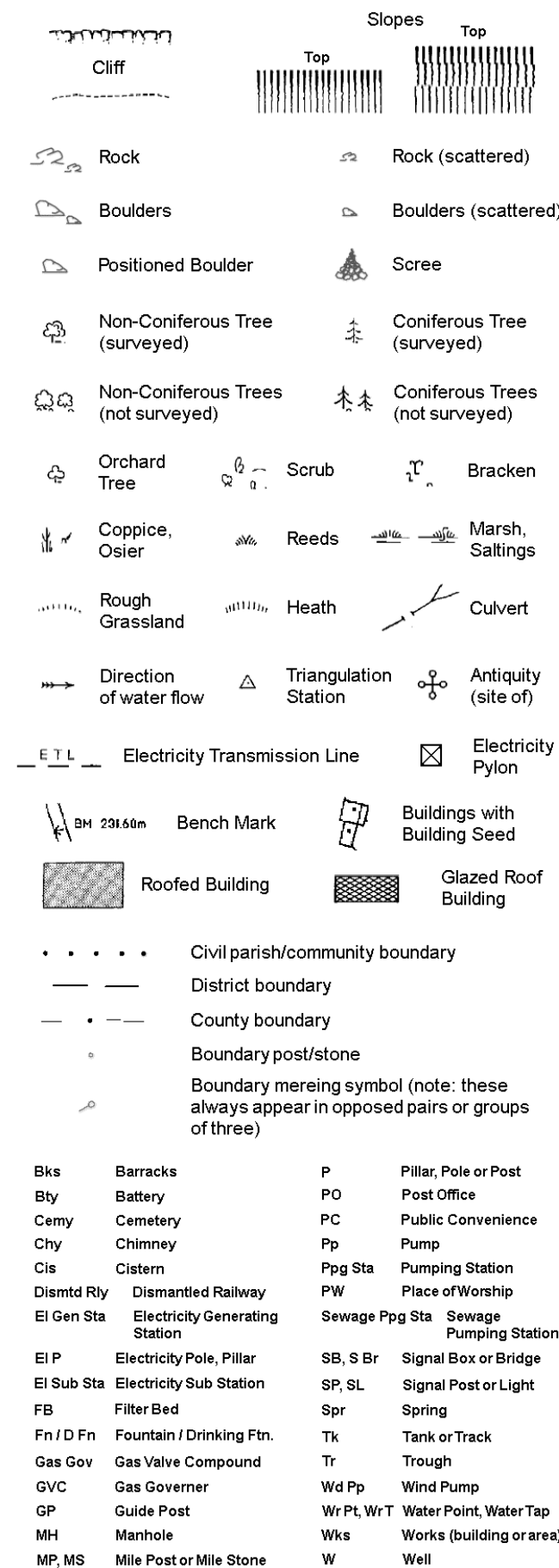
## Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



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



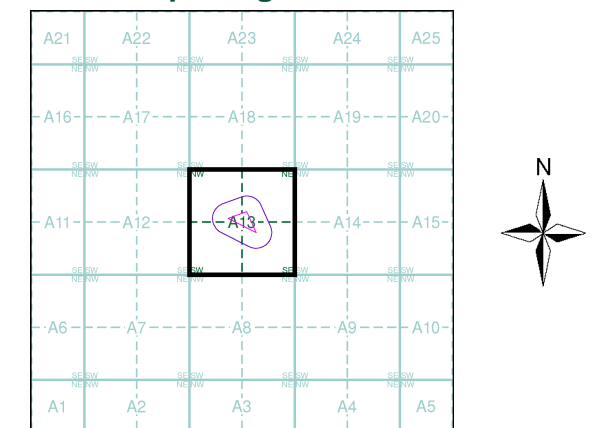
## Large-Scale National Grid Data 1:2,500 and 1:1,250



## Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Surrey	1:2,500	1867	2
Surrey	1:2,500	1868 - 1885	3
Surrey	1:2,500	1868	4
Surrey	1:2,500	1895 - 1898	5
Surrey	1:2,500	1913	6
Surrey	1:2,500	1935	7
Historical Aerial Photography	1:1,250	1946	8
Ordnance Survey Plan	1:1,250	1954	9
Additional SIMs	1:1,250	1954 - 1980	10
Ordnance Survey Plan	1:2,500	1955	11
Ordnance Survey Plan	1:1,250	1965 - 1971	12
Supply of Unpublished Survey Information	1:1,250	1975	13
Large-Scale National Grid Data	1:1,250	1991	14
Large-Scale National Grid Data	1:1,250	1992 - 1993	15
Large-Scale National Grid Data	1:1,250	1995	16

## Historical Map - Segment A13

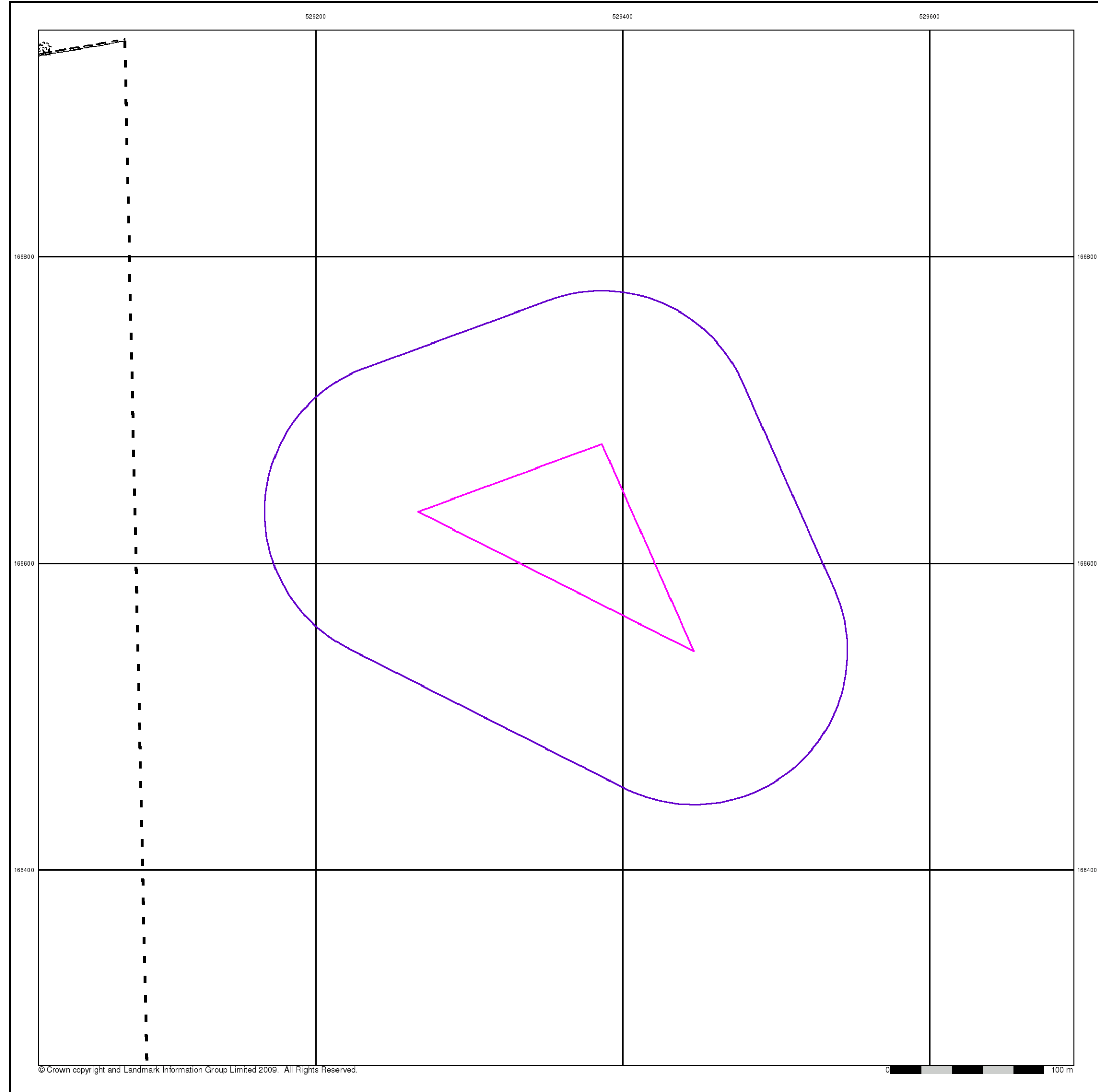


## Order Details

Order Number: 29017796\_1\_1  
Customer Ref: 09-0075 Beddington  
National Grid Reference: 529370, 166610  
Slice: A  
Site Area (Ha): 0.95  
Search Buffer (m): 100

## Site Details

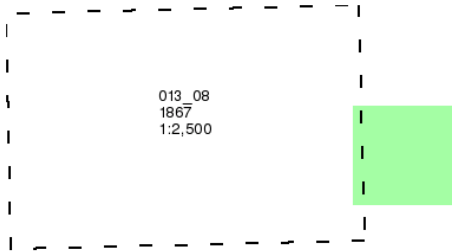
Site at 529300, 166800



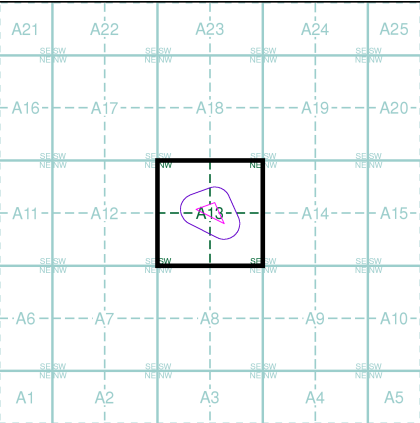
**Surrey**  
**Published 1867**  
**Source map scale - 1:2,500**

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: 29017796\_1\_1  
Customer Ref: 09-0075 Beddington  
National Grid Reference: 529370, 166610  
Slice: A  
Site Area (Ha): 0.95  
Search Buffer (m): 100

**Site Details**  
Site at 529300, 166800



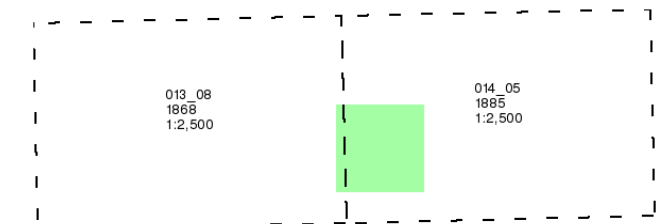
## Surrey

Published 1868 - 1885

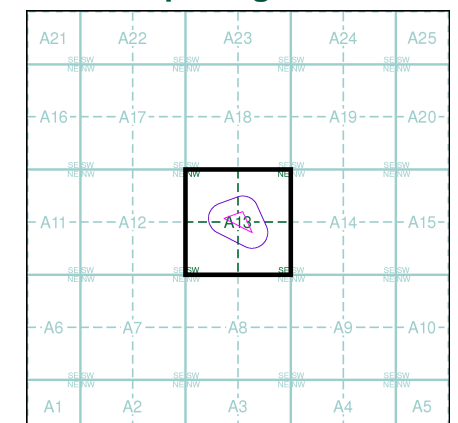
Source map scale - 1:2,500

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

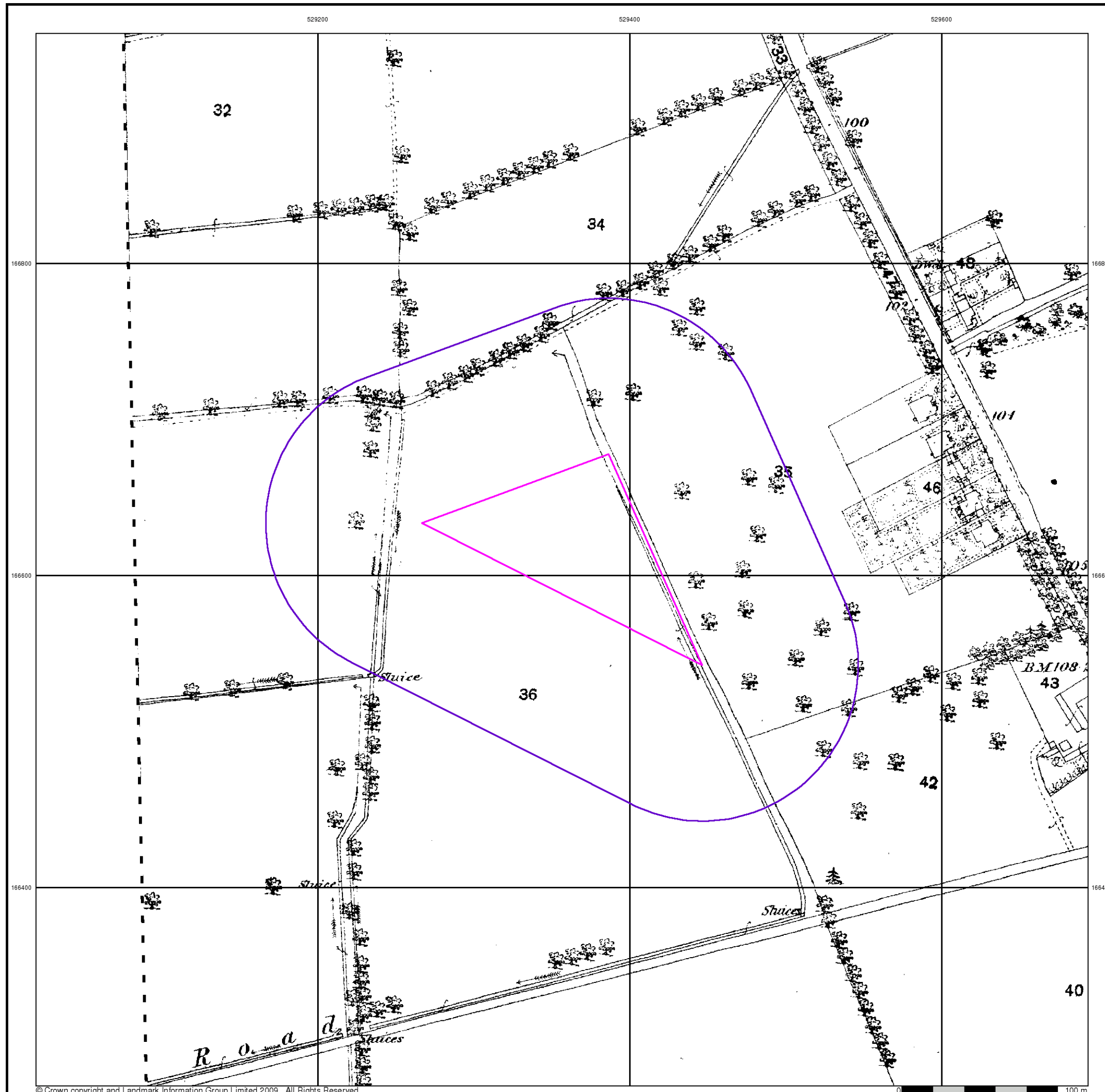


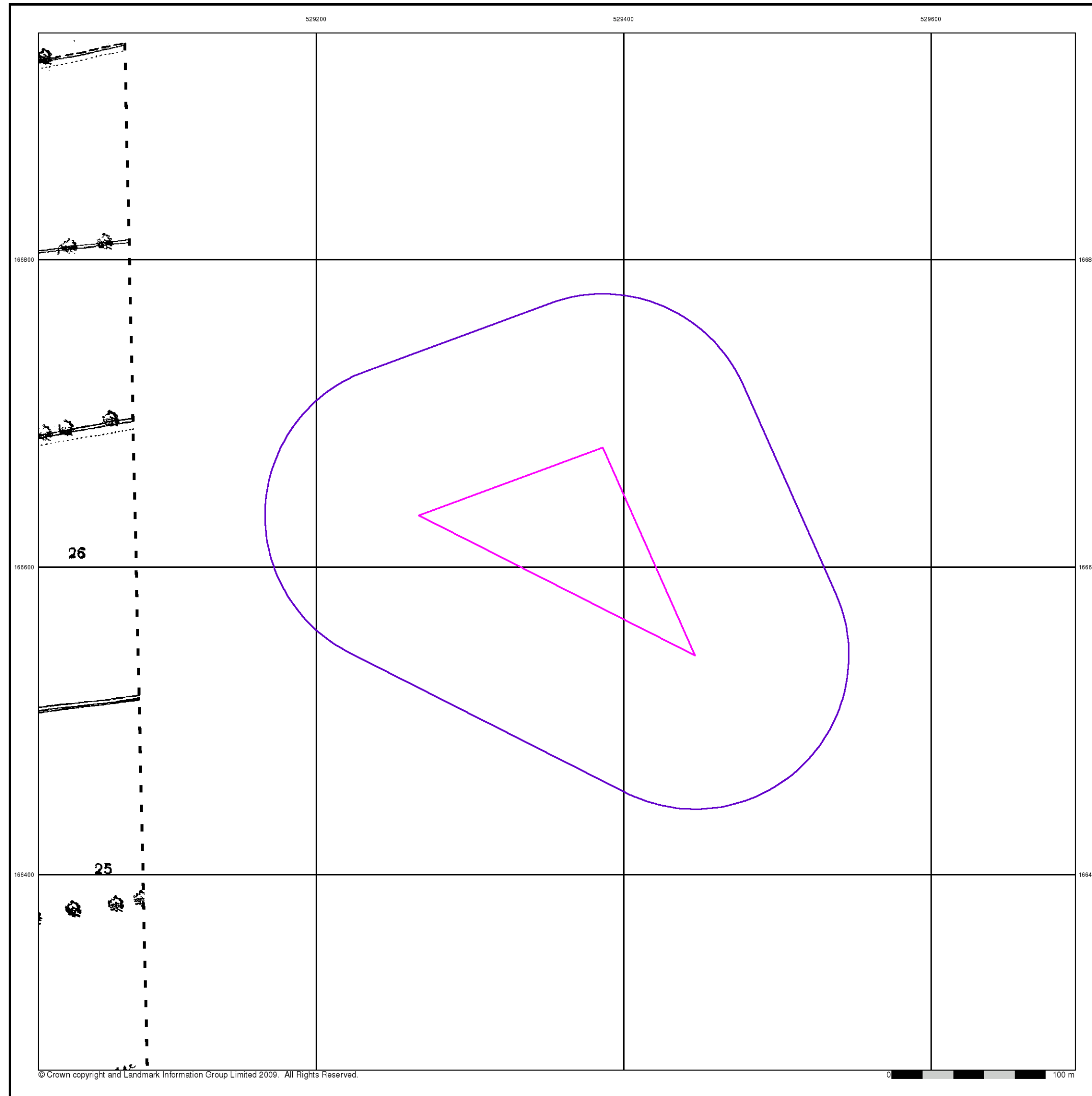
## Order Details

Order Number: 29017796\_1\_1  
 Customer Ref: 09-0075 Beddington  
 National Grid Reference: 529370, 166610  
 Slice: A  
 Site Area (Ha): 0.95  
 Search Buffer (m): 100

## Site Details

Site at 529300, 166800





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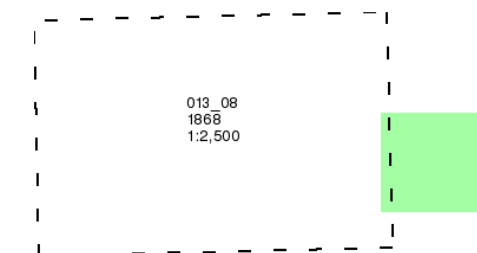
Surrey

Published 1868

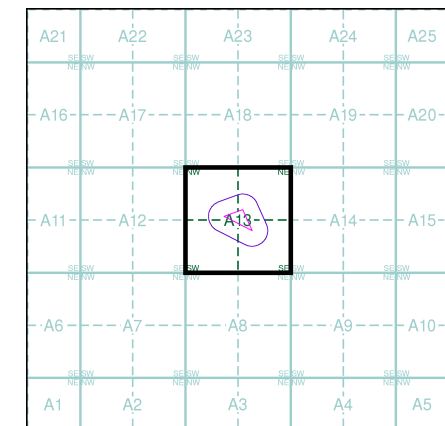
Source map scale - 1:2,500

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: 29017796\_1\_1  
Customer Ref: 09-0075 Beddington  
National Grid Reference: 529370, 166610  
Slice: A  
Site Area (Ha): 0.95  
Search Buffer (m): 100

Site Details

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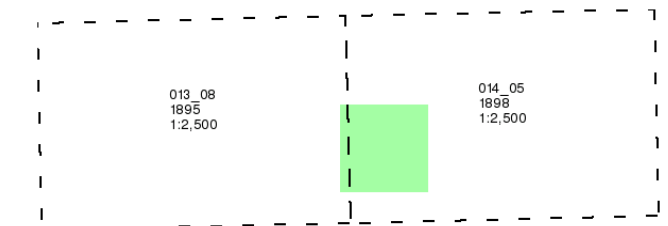
## Surrey

Published 1895 - 1898

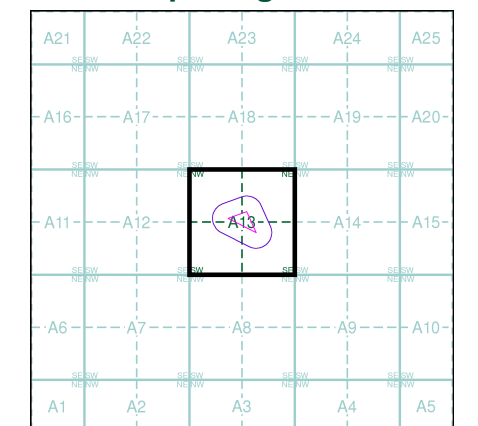
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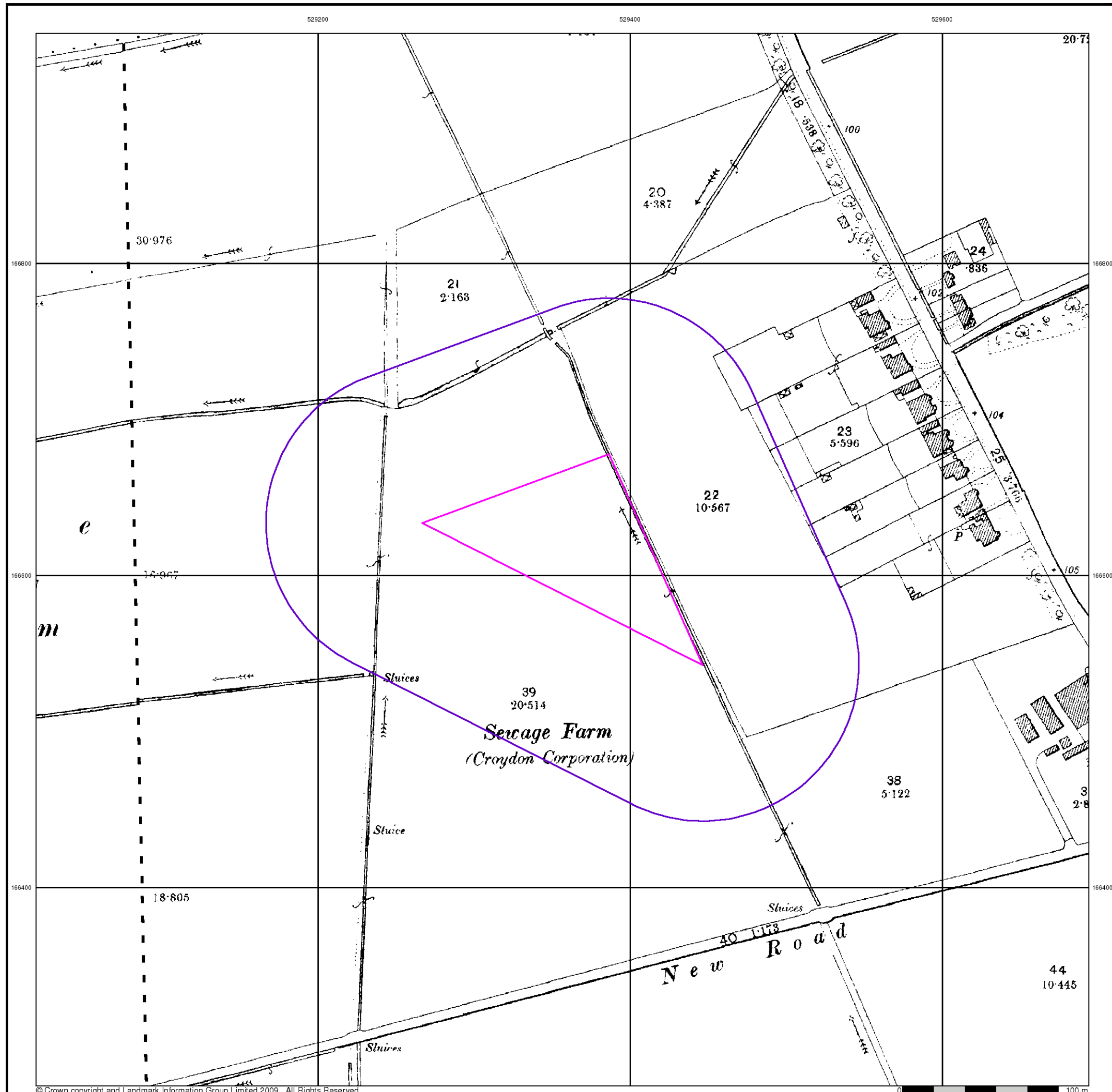


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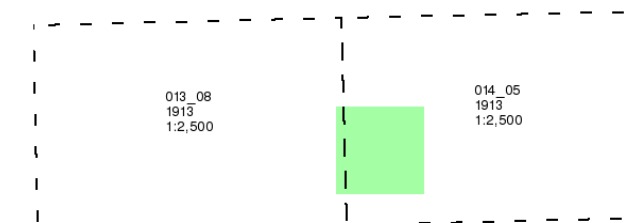
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Published 1913

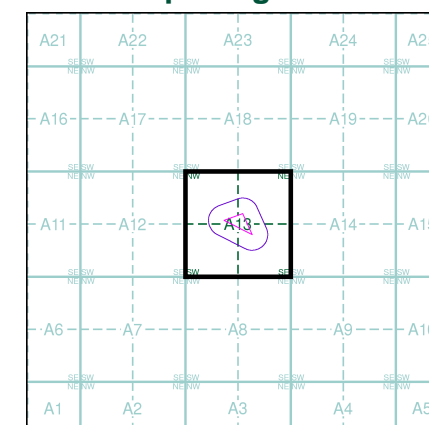
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## Map Name(s) and Date(s)



## Historical Map - Segment A13

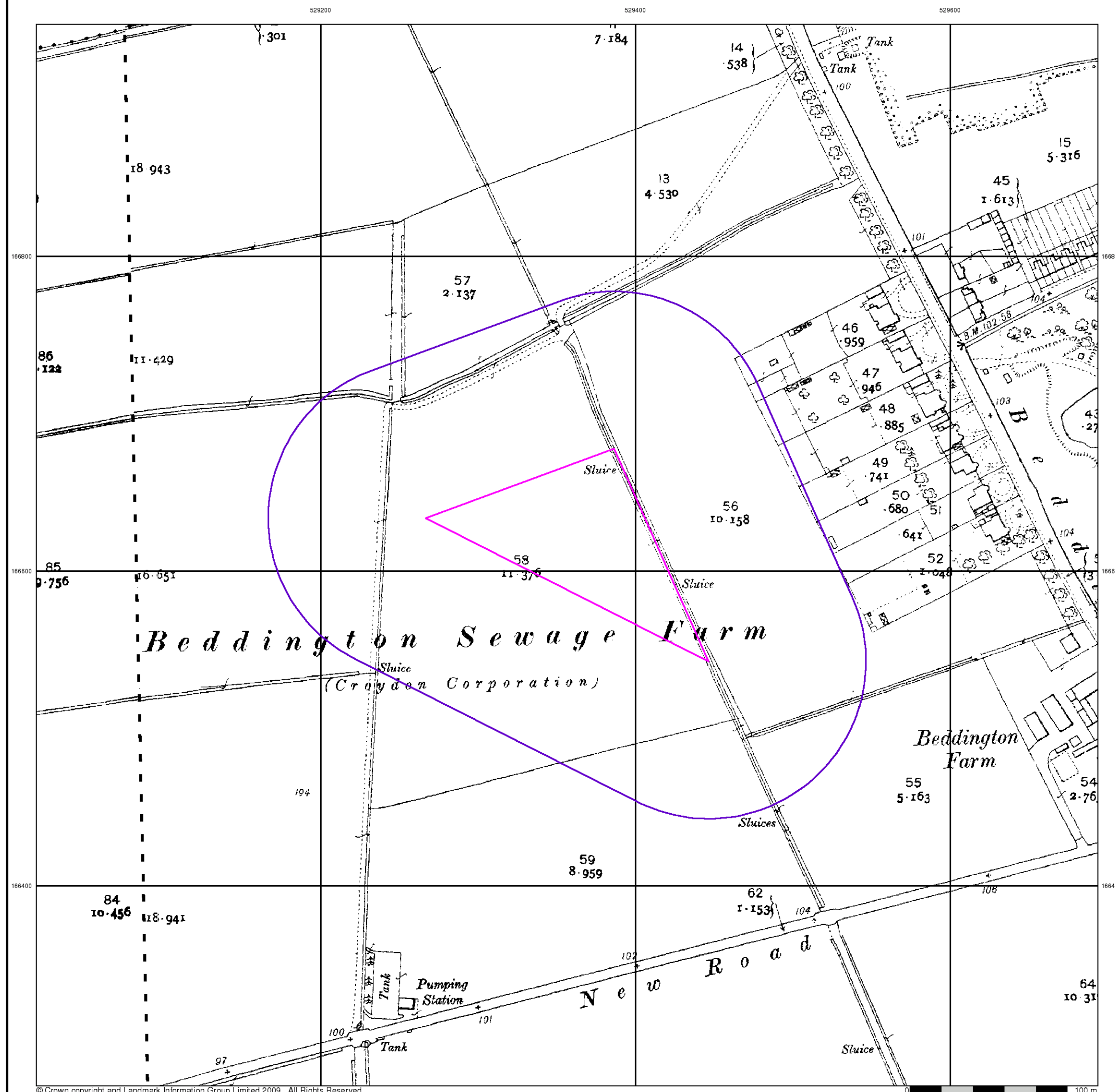


## Order Details

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 National Grid Reference: 529370, 166610  
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 Site Area (Ha): 0.95  
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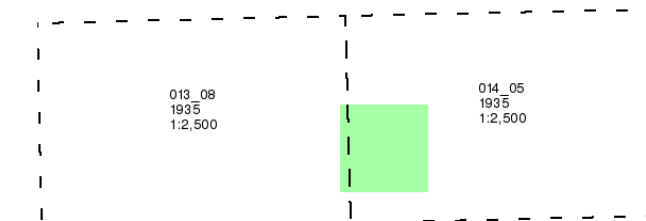
## Surrey

Published 1935

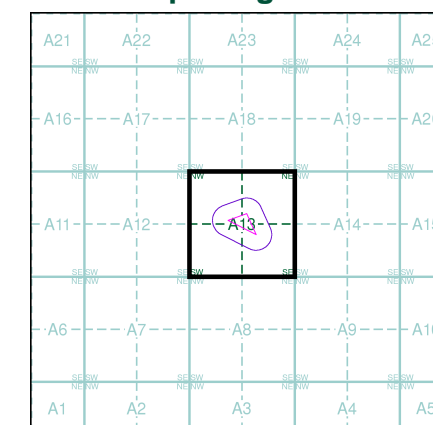
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## Map Name(s) and Date(s)



## Historical Map - Segment A13



## Order Details

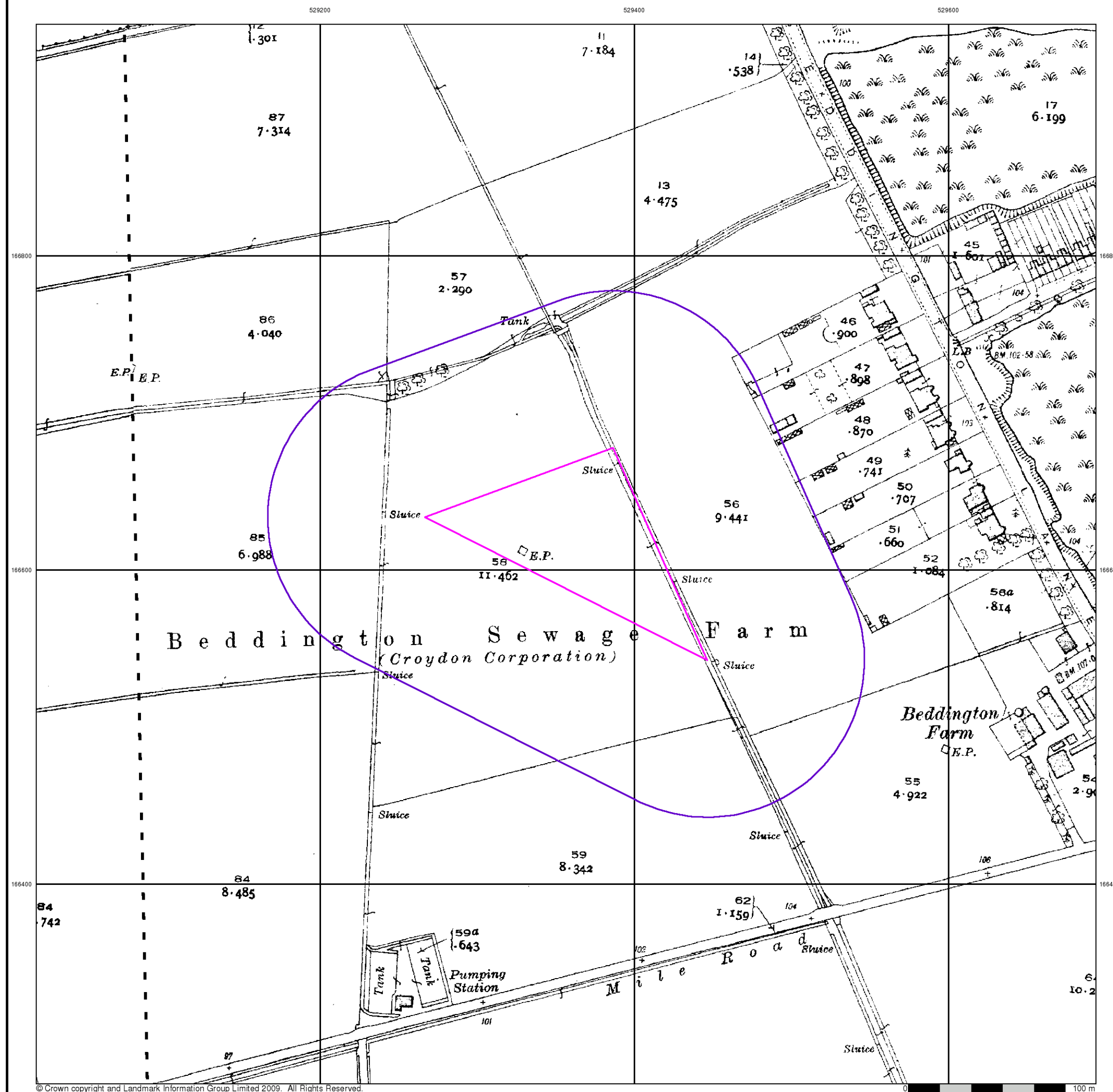
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 Customer Ref: 09-0075 Beddington  
 National Grid Reference: 529370, 166610  
 Slice: A  
 Site Area (Ha): 0.95  
 Search Buffer (m): 100

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Historical Aerial Photography

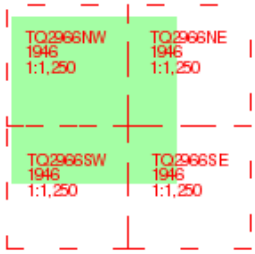
Published 1946

Source map scale - 1:1,250

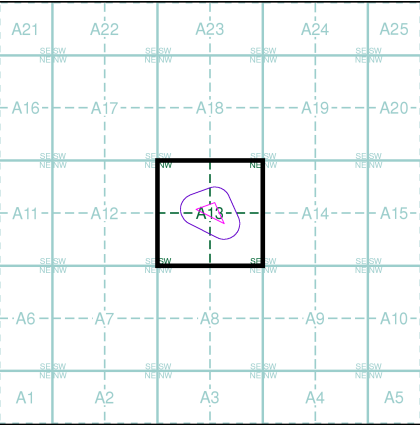
The Historical Aerial Photos were produced by the Ordnance Survey at a scale of 1:1,250 and 1:10,560 from Air Force photography. They were produced between 1944 and 1951 as an interim measure, pending preparation of conventional mapping, due to post war resource shortages. New security measures in the 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.

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Map Name(s) and Date(s)



Historical Aerial Photography - Segment A13



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0 100 m





## Ordnance Survey Plan

Published 1954

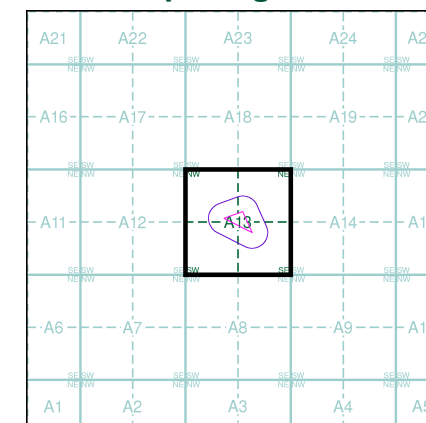
Source map scale - 1:1,250

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)

TQ2966NW	TQ2966NE
1954	1954
1:1,250	1:1,250
TQ2966SW	TQ2966SE
1954	1954
1:1,250	1:1,250

## Historical Map - Segment A13



## Order Details

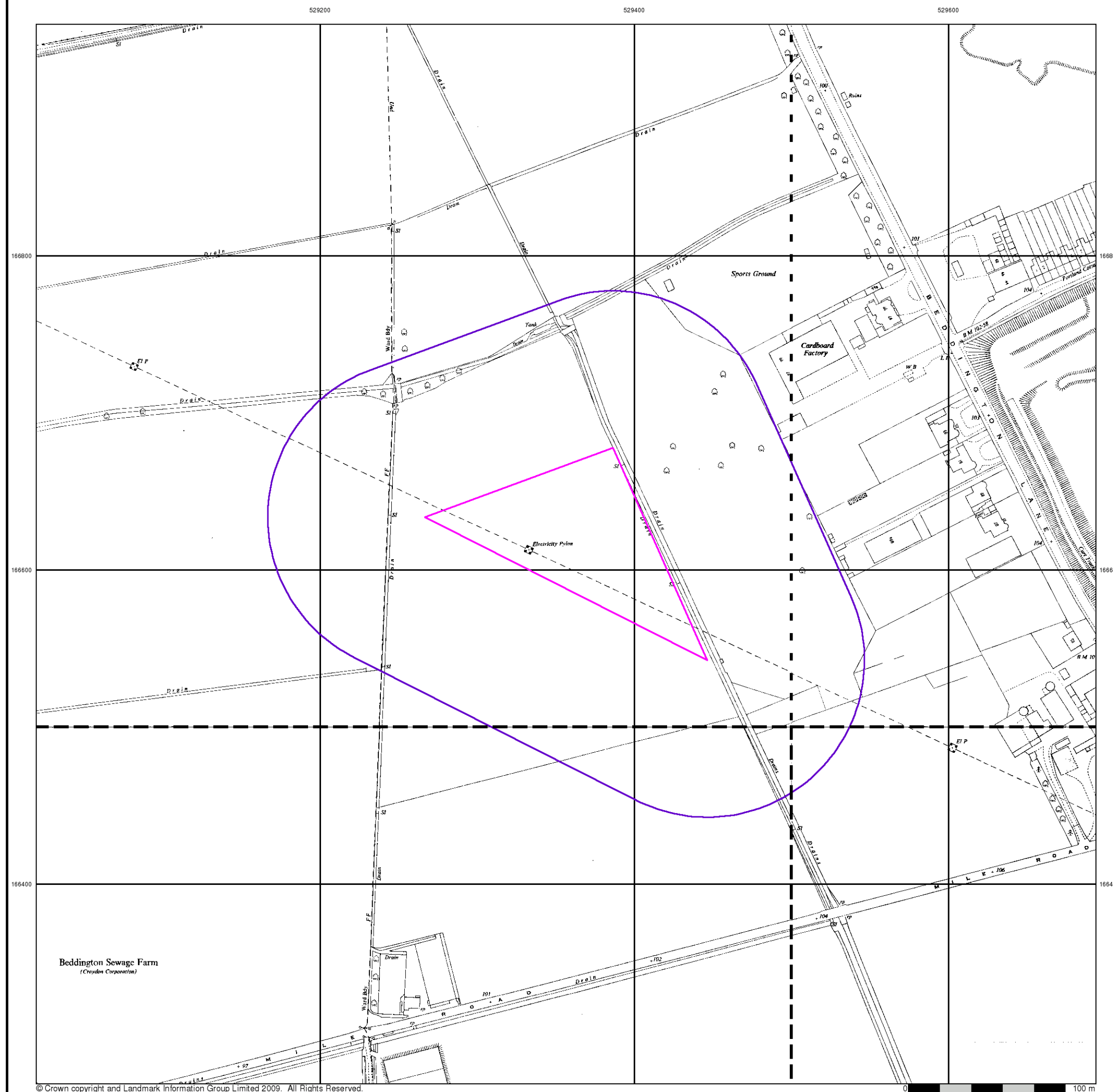
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 National Grid Reference: 529370, 166610  
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 Site Area (Ha): 0.95  
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## Additional SIMs

Published 1954 - 1980

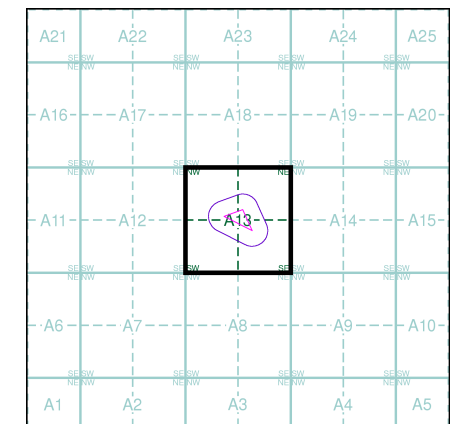
Source map scale - 1:1,250

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)

TQ2966NE	
1977	
1:1,250	
TQ2966SW	TQ2966SE
1954	1980
1:1,250	1:1,250

## Historical Map - Segment A13

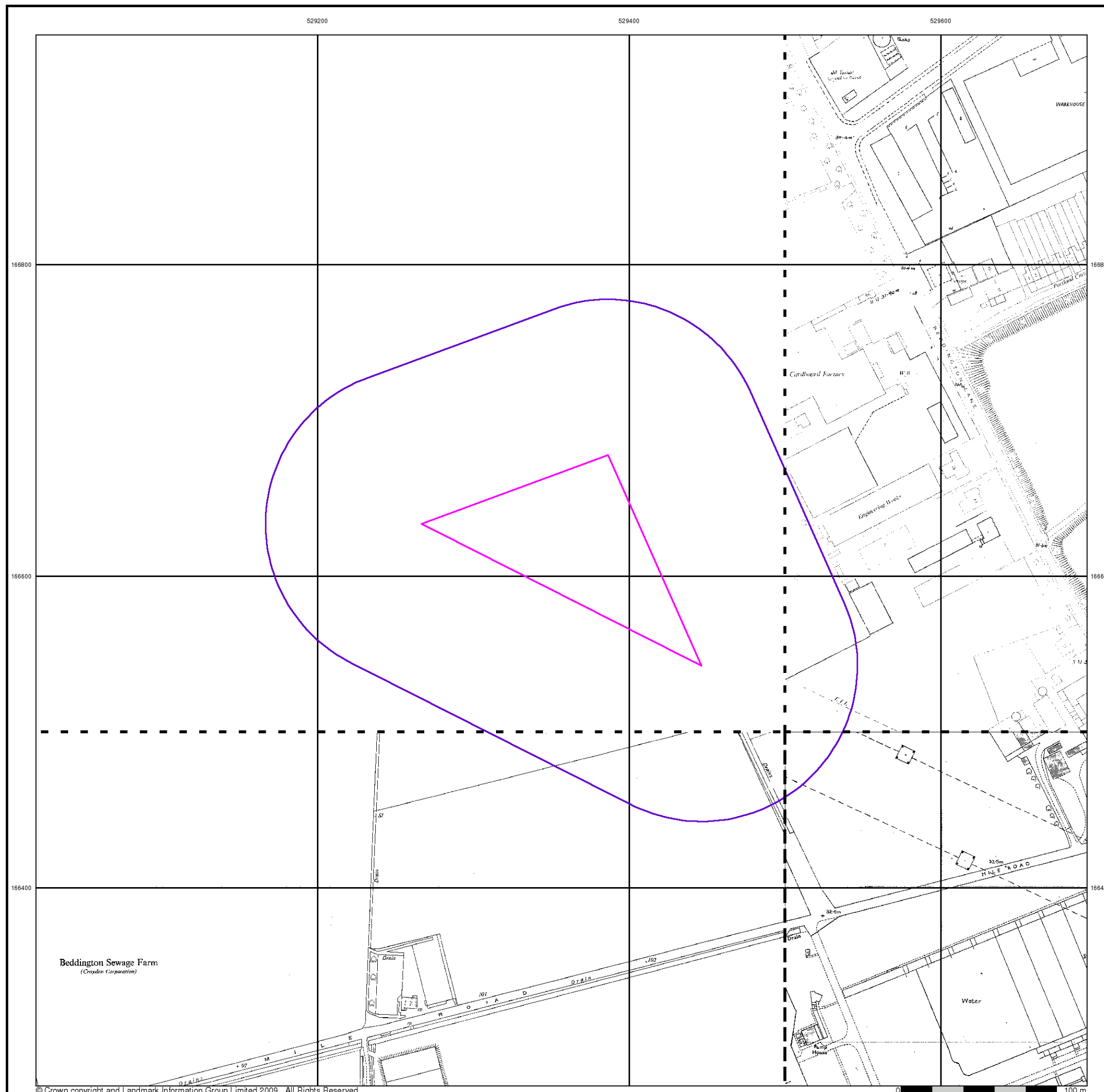


## Order Details

Order Number: 29017796\_1\_1  
Customer Ref: 09-0075 Beddington  
National Grid Reference: 529370, 166610  
Slice: A  
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Search Buffer (m): 100

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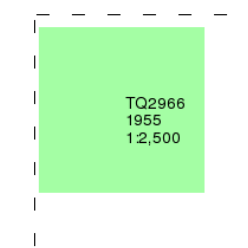
## Ordnance Survey Plan

Published 1955

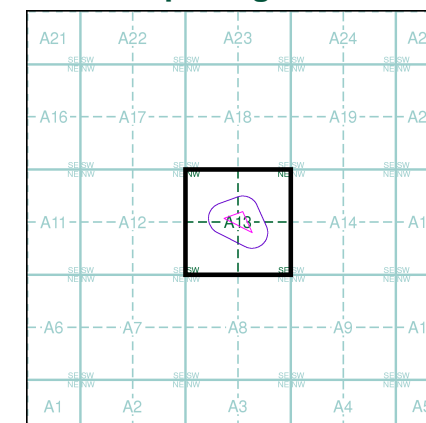
Source map scale - 1:2,500

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

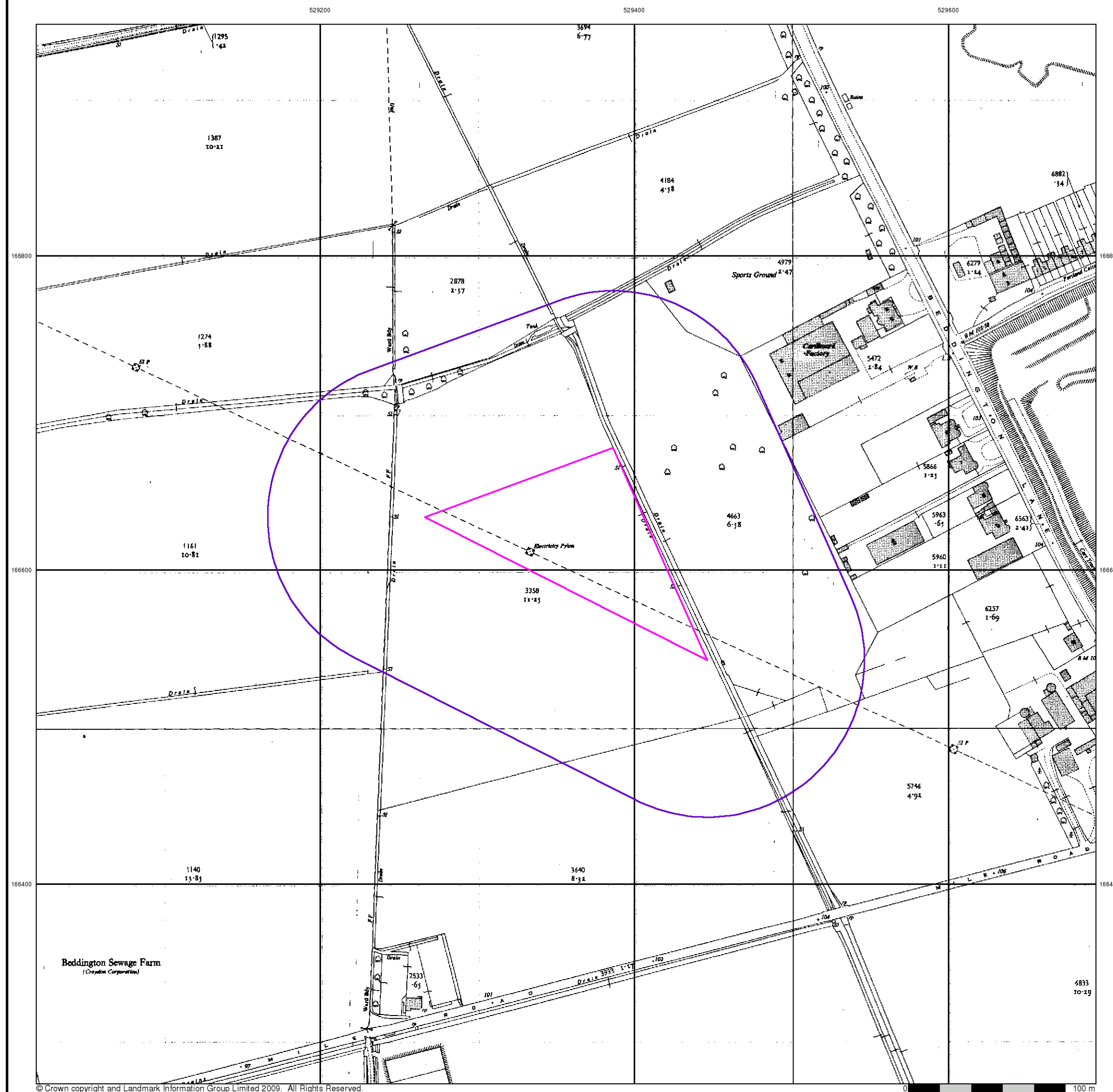
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 Search Buffer (m): 100

## Site Details

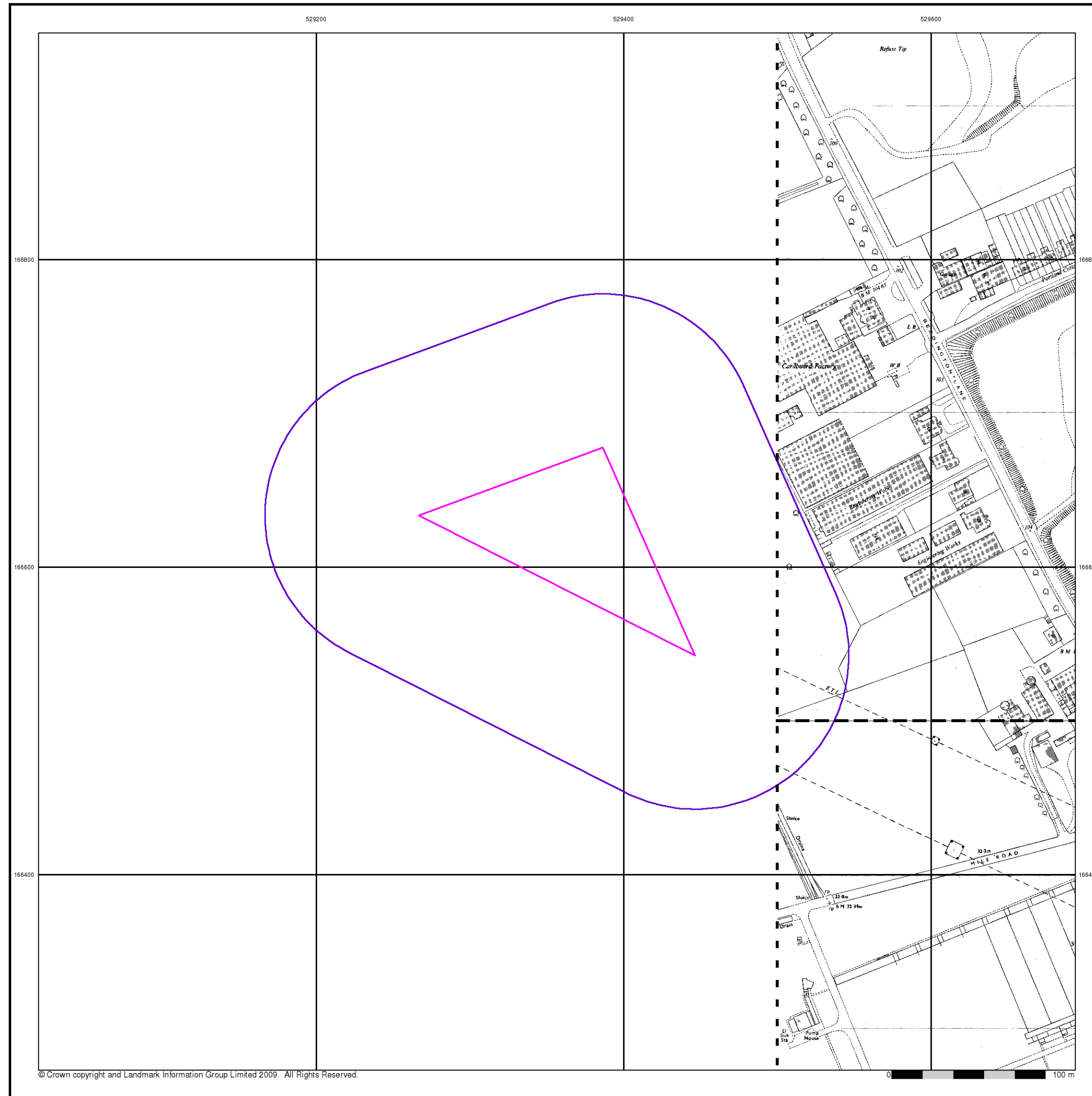
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## Ordnance Survey Plan

Published 1965 - 1971

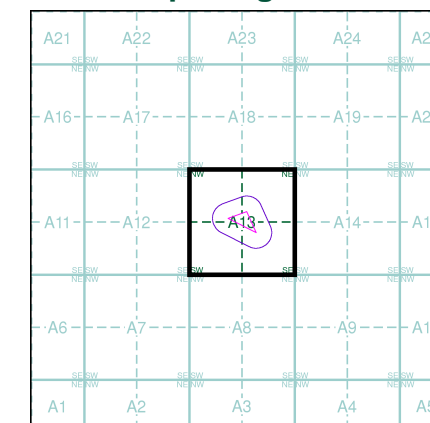
Source map scale - 1:1,250

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)

TQ2966NE
1965
1:1,250
TQ2966SE
1971
1:1,250

### Historical Map - Segment A13



### Order Details

Order Number: 29017796\_1\_1  
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## Large-Scale National Grid Data

**Published 1991**

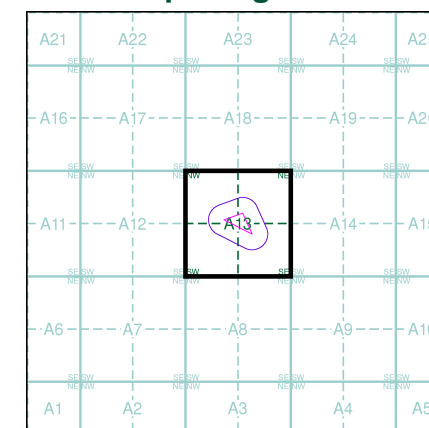
**Source map scale - 1:1,250**

'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)

TQ2966NW 1991 1:1,250	TQ2966NE 1991 1:1,250
TQ2966SW 1991 1:1,250	TQ2966SE 1991 1:1,250

## Historical Map - Segment A13



## Order Details

Order Number:	29017796_1_1
Customer Ref:	09-0075 Beddington
National Grid Reference:	529370, 166610
Slice:	A
Site Area (Ha):	0.95
Search Buffer (m):	100

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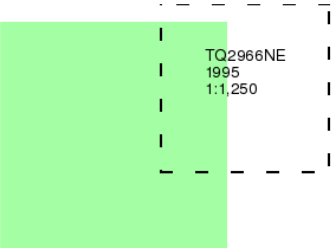
Large-Scale National Grid Data

Published 1995

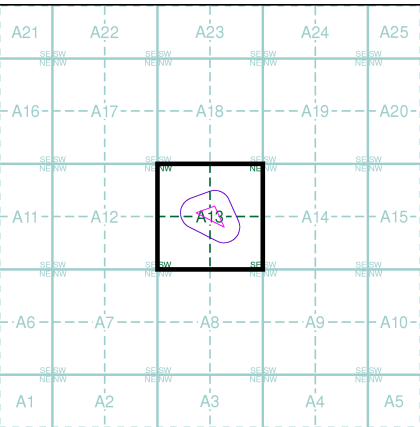
Source map scale - 1:1,250

'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

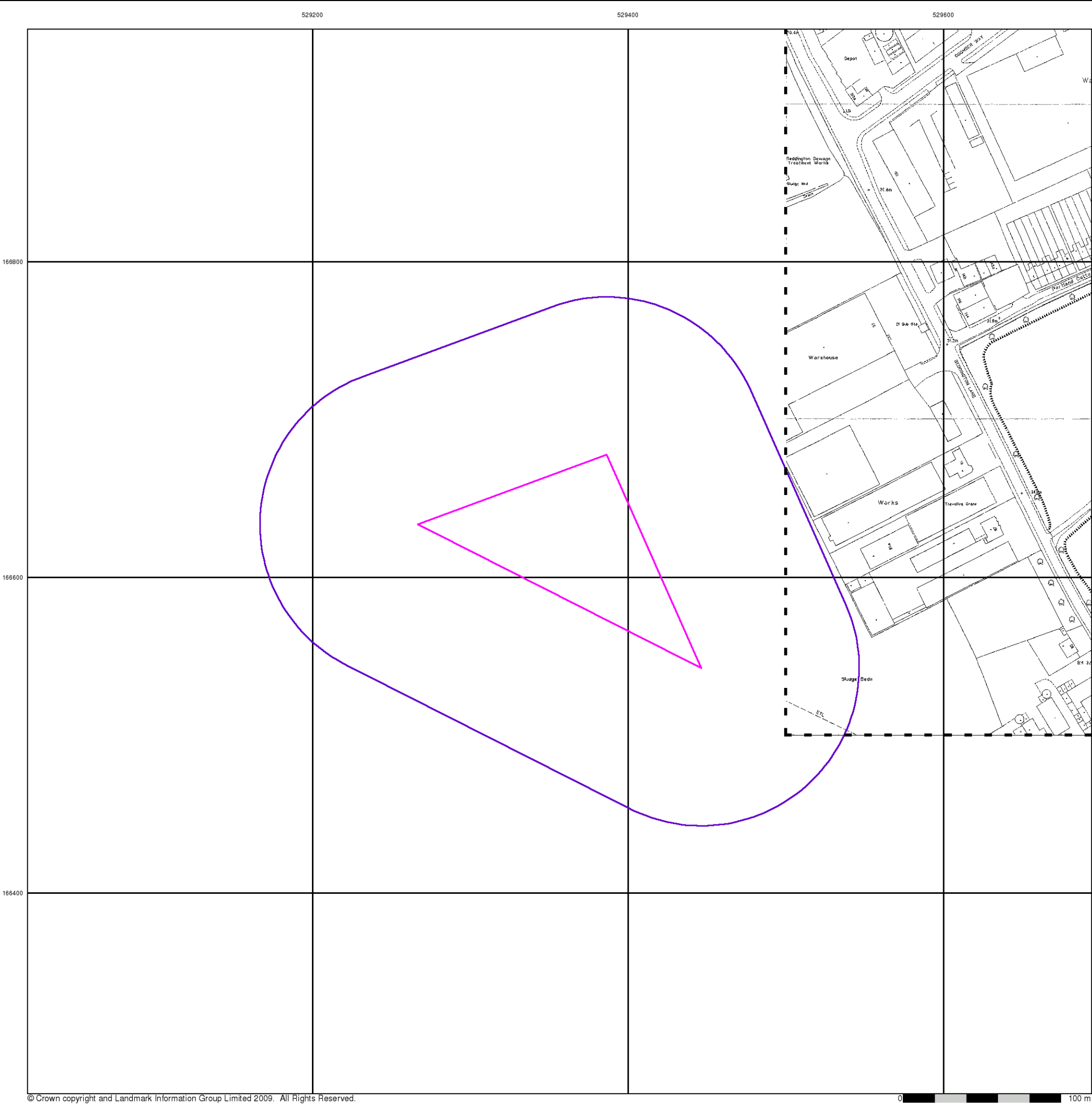
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National Grid Reference: 529370, 166610  
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Site Area (Ha): 0.95  
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# **APPENDIX H**

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**Beddington Waste  
Management Facility, Sutton.**

**Anaerobic Digestion Facility**

**Appendix 8 – Contaminated Land Assessment**

**Viridor**

**January 2010**

**SLR ref 402.0006.00048**



solutions for today's environment



# CONTAMINATED LAND ASSESSMENT 8

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## INTRODUCTION

- 8.1 Section 4 of the Environmental Statement discussed Geology, Hydrogeology and Hydrology. This section is related to its predecessor as it too discusses ground conditions, but is restricted to commenting on the quality of soils and near surface geological deposits to be found at the application site and surrounding area. Whilst factual repetition is kept to a minimum, some duplication has been unavoidable in the description of baseline conditions. The potential impacts of the proposed development on land quality are identified and, where appropriate, mitigation measures are discussed.
- 8.2 This section draws on a significant body of archive information relating to ground conditions over the Beddington Farmlands application site, records of a recent walkover inspection of the proposed location of the anaerobic digestion plant and some recent intrusive investigation adjacent to the proposed anaerobic digestion plant.

## METHODOLOGY

- 8.3 The baseline derived from historical ground investigation data is augmented by the results of some shallow ground investigation adjacent to the location of the proposed anaerobic digestion plant and a visual inspection of the proposed anaerobic digestion plant location.
- 8.4 This section also references the assessment techniques and remediation criteria established in the risk assessment derived for the existing landfill operation. It is understood that this pre-existing sampling and analysis regime will be extended to the land parcels involved in this phase of development. Excavated soils will therefore be assessed against the risk assessment framework that has, to date, been successfully implemented elsewhere on site. If, following the assessment, soils are shown to be unsuitable the intention would be to remediate them.

## BASELINE CONDITIONS

### Information Sources

- 8.5 The following sources of information have been reviewed in order to determine the superficial geology of the application site and surrounding area:
- SLR Consulting Limited, November 2004, Beddington Farmlands Landfill Site, PPC Permit Application, including the Environmental Setting and Installation Design Report. These documents formed the basis of the background and environmental site setting information.
  - Roger Miles Planning Limited, 'Section 6: Land' of the Beddington Farmlands Recycling Centre planning application which sets out previously acquired land quality data.

## CONTAMINATED LAND ASSESSMENT 8

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- SLR Consulting Limited, November 2003, trial pit logs for eight trial pits (TP1 to TP8 inclusive) excavated on land adjacent to the proposed anaerobic digestion plant.
- SLR Consulting Limited, January 2004, Certificates of Analysis prepared by ALcontrol Geochem for samples taken from trial pits TP1 to TP8.

### Regional Geology

- 8.6 The regional geological setting is comprehensively described in Appendix 4 – Hydrogeology and Hydrology, which uses published sources of information and the results of numerous site investigations undertaken during the development of the Beddington Farmlands Landfill site to determine the nature and properties of the geological materials at the application site.
- 8.7 The key geological units considered in this section on land quality are soils and the near surface River Terrace Gravels. Although the solid geology is not discussed further, it should be understood that the sandy, well sorted flint River Terrace Gravels are underlain by London Clay across all but the south-eastern corner where the gravels rest directly upon the Woolwich and Reading Beds. The thickness of London Clay varies from 0m in the south-eastern corner to 45m (beneath Phase 9A), with the sandy clay of the Woolwich and Reading Beds varying between 10 and 16m.

### Composition of Soils and Near Surface Geological Deposits

- 8.8 As indicated in paragraph 8.7, the site is located upon River Terrace Deposits. The Terrace Gravels vary in thickness from 1.5m to 5.5m, being generally thicker across the middle of the site. The gravels consist predominantly of orange, brown and black, fine to coarse, sub-angular to rounded flint gravel in a matrix of red and grey quartzitic sand. Occasional cobbles occur in the centre and southern half of the site, becoming orange brown sub-angular to rounded sandy gravel with some cobbles and clay pockets towards the western and northern edges of the site.
- 8.9 The logs from the groundwater monitoring boreholes and gas wells indicate that the base of this superficial material lies at between 24 and 27mAOD in the immediate vicinity of Bedding Farmlands landfill. The entire thickness of the River Terrace Gravels has been removed in areas of landfill development.

### Quality of Soils and Near Surface Geological Deposits

- 8.10 Following a description of baseline land quality and land contamination across the entire Beddington Farmlands site, this sub-section makes specific reference to the results of recent shallow ground investigation adjacent to the location of the proposed anaerobic digestion plant. The description of baseline conditions borrows heavily from 'Section 6: Land' of the Beddington Farmlands Recycling Centre planning application by Roger Miles Planning Limited (RMPL).
- 8.11 RMPL constructed their land quality baseline with reference to:

## CONTAMINATED LAND ASSESSMENT 8

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- soil contamination testing undertaken as part of the initial planning application and environmental statement for gravel extraction and infilling in 1993;
- a contamination risk assessment undertaken in 1997 prior to the commencement of operations on the application site; and
- subsequent detailed soil strip reports prepared for each phase of the development ahead of stripping operations being carried out. (Six such reports had been completed).

- 8.12 Significant testing and characterisation of the soil at Beddington Farmlands was undertaken in 1992-93 as part of the environmental assessment of the gravel extraction and landfilling proposals. This work tested for a wide range of potential contaminants across the application site. It found elevated concentrations of certain heavy metals, particularly cadmium. These were attributed to the long-term management of sewage at Beddington Farmlands. In all cases heavy metals were limited to the soils and had not leached out into the sand and gravel layer beneath. Further testing of the organic content of the soil was recommended. Subsequently, a Risk Assessment Sampling and Analysis plan was produced in 1997, pursuant to a condition on the extraction and landfill permission. Its objective was to evaluate the degree of risk posed by in situ soils to human and environmental targets and to develop a set of site specific remediation thresholds, which are suitably protective of health and the environment. This document is included at Appendix 8/1 with some commentary designed to direct users towards current guidance on contaminated land.
- 8.13 Informed by the work undertaken in 1993, the risk assessment identified four metals as contaminants of potential concern and hence requiring investigation. These were cadmium, copper, nickel and zinc. Of these, cadmium was assessed in terms of health and environmental effects, whereas the other three were assessed only in terms of their environmental effects. This is because copper, nickel and zinc do not have the potential to be of harm to human health in the concentrations at which they exist on the application site.
- 8.14 A health protective remedial threshold for cadmium was developed using site-specific exposure scenarios and up to date toxicological information. A figure of 135 mg/kg was set for the oral exposure route and 1,000mg/kg for inhalation. The former, being the more stringent of the two, was therefore set as the health protective threshold for the Beddington Farmlands site. The maximum recorded concentration in 1993 site investigations was approximately 50% of the remedial threshold and the average concentration less than 10%. It should be noted that the recently published Environment Agency Soil Guideline Value (SGV) for cadmium is 290mg/kg for a commercial site; confirming that the previous figure of 135/mg/kg provides a conservative health protection threshold.
- 8.15 In terms of environmental risk, the impact arising from this site was considered to be limited. Only the planting of sensitive tree and shrub species was therefore deemed to be an issue requiring further testing.



## CONTAMINATED LAND ASSESSMENT 8

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- 8.16 A detailed sampling and analysis plan was subsequently agreed with LB Sutton as the basis for future soil testing prior to soil stripping within each phase of the development. This included not only testing for the four metals referred to above, but also a range of Group 3 parameters comprising arsenic, chromium, lead, mercury, selenium, total petroleum hydrocarbons, volatile organic compounds and semi-volatile organic compounds.
- 8.17 By the time the Beddington Farmlands Recycling Centre application was submitted, sampling and analysis pursuant to the plan had been carried out on seven separate occasions. Tests for the Group 3 determinands referred to in paragraph 8.16 above were carried out on the first four occasions. No significant concentrations of these parameters were found. Thereafter it was agreed with LB Sutton that Group 3 determinands would not be included within subsequent sampling and analysis unless any of the parameters in Group 1 or 2, as referred to above, showed significantly greater concentrations than had been found within the first three phases of soil stripping or where visual or olfactory evidence of contamination by Group 3 determinands is reported. This did not occur in the three sampling rounds undertaken following that change. In all cases, the concentration of cadmium detected was significantly below the agreed remedial threshold and correlated well with the concentrations predicted and discussed within the Risk Assessment. Maximum concentrations detected within each phase ranged from 4.3 - 33 mg/kg, compared with the agreed remedial threshold of 135 mg/kg. The average concentration in all cases was around or below 10% of the remedial threshold (135 mg/kg). It is interesting to note that the average concentration is below the Soil Guideline Value of 30 mg/kg for residential gardens without plant uptake published by the Environment Agency 2009.
- 8.18 With regard to the other metals tested, only isolated results had been detected in excess of the threshold for public safety protection established using Soil Guideline Values derived by Defra. This occurred within a single trial pit from which samples of copper, nickel and zinc were taken and were found to exceed the relevant standard. Average concentrations, however, remained well below public safety protection levels. The results therefore serve to verify the hypothesis stated in the risk assessment that the contaminants are only of potential significance in landscaping terms.

### *Recent Land Quality Testing Adjacent to the Location of the Proposed Anaerobic Digestion Plant*

- 8.19 In November 2003 SLR Consulting Limited completed an investigation of a parcel of land approximately 50m to the south-east of the location of the proposed anaerobic digestion plant. The investigation used eight trial pits to inspect the uppermost 2.5m of the ground. Soil and shallow groundwater samples were collected and submitted to ALcontrol Geochem Analytical Services for testing; the laboratory was instructed to test for a broad range of common contaminants including cadmium, copper, nickel and zinc and Group 3 parameters comprising arsenic, chromium, lead, mercury, selenium, total petroleum hydrocarbons, volatile organic compounds and semi-volatile organic compounds.

## CONTAMINATED LAND ASSESSMENT 8

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- 8.20 The trial pit exercise served to re-confirm the composition of near surface soils and geological deposits. As expected the excavation encountered between 0.1m and 0.55m of dark brown slightly sandy clay with frequent coarse flint gravels overlying fine to coarse flint gravel - River Terrace Gravels.
- 8.21 Groundwater was found to be approximately 2m below ground level.
- 8.22 The chemical testing laboratory, ALcontrol Geochem, provided the Certificate of Soil Analysis presented in Appendix 8/2. Seven of the samples tested were taken from between 0.1m and 0.9m below ground level, with the eighth from 2m below ground level.
- 8.23 The maximum and average cadmium concentrations were 10 mg/kg and <5 mg/kg respectively; this is well below the site-specific health protective remedial threshold of 135 mg/kg (and Environment Agency 2009 Soil Guideline Values of 290 mg/kg for commercial sites and 30 mg/kg for residential gardens without plant uptake).
- 8.24 Arsenic, nickel, chromium and selenium concentrations were similarly low, below the new 2009 Environment Agency Soil Guideline Values of 640 mg/kg, 1800 mg/kg, 330 mg/kg and 13,000 mg/kg respectively, assigned for commercial land uses.
- 8.25 All of the lead concentrations were below the Soil Guideline Values of 5700mg/kg assigned for commercial premises. The average lead concentration of 255mg/kg was below the national Soil Guideline Values of 290mg/kg assigned for residential gardens with plant uptake.
- 8.26 All of the mercury concentrations were below the Soil Guideline Values of 3600 mg/kg assigned for commercial premises and 240 mg/kg assigned to residential premises without plant uptake. The average mercury concentration of 4 mg/kg was below the national Soil Guideline Values of 170 mg/kg assigned for residential gardens with plant uptake.
- 8.27 Tests targeting hydrocarbon compounds did not identify petrol range organics, benzene, toluene, ethylbenzene or xylene above laboratory detection limits. Long chain aliphatic compounds were, however, detected in samples from 0.1m to 0.3m below ground level, averaging 2,350 mg/kg. Those positive results may indicate the presence of organic materials such as rootlets, peat or sewage works sludge. This is supported by the physical description of the soil as 'Dark brown organic clay with occasional rootlets' and the fact that concentrations of polyaromatic hydrocarbons, including benzo(a)pyrene, were either low or below detection.
- 8.28 It seems likely, from an inspection of the site carried out in June 2005 that the ground conditions immediately to the south-east of the location of the proposed anaerobic digestion plant can be taken to be indicative of those at the proposed location itself. If this is the case, it would be fair to conclude that the proposed location will be of similar quality with little or no land contamination save that associated with organic Made Ground materials (e.g. degraded sewage works sludge).

# CONTAMINATED LAND ASSESSMENT 8

## ASSESSMENT OF POTENTIAL IMPACTS

- 8.29 This discussion of the potential physical and chemical impacts of the proposed development on soils and near surface geological deposits will focus on the potential for erosion, disaggregation, compaction and pollution. The text below indicates whether impacts associated with these processes are more relevant to the construction or operational phase of works.

## SUMMARY OF PROPOSED DEVELOPMENT

- 8.30 The proposed development is described in detail in the Planning Supporting Statement. However, for ease of reference the main features are summarised below:

*Construction and operation of an Anaerobic Digestion Plant (AD Plant) and associated infrastructure. The plant would have an annual throughput of approximately 30,000 tonnes.*

## LEGISLATIVE CONTEXT

- 8.31 The Local Authority will have policies and provisions against which the impact of development upon ground conditions will be considered. These policies will include clauses concerning developing derelict and contaminated land. These clauses should be in line with Planning Policy Statement 23: Planning and Pollution Control, Annex 2 Development on Land Affected by Contamination published by the Office of the Deputy Prime Minister in 2004. That document references Part IIA of the Environmental Protection Act 1990 (introduced by the Environment Act, 1995) and the accompanying regulations and Statutory Guidance contained in DETR (now Defra) Circular 01/2006.

## POTENTIAL IMPACTS TO SOILS AND NEAR SURFACE GEOLOGICAL DEPOSITS

- 8.32 During the construction phase it is envisaged that the main impact will be removal, and redistribution of in-situ geological deposits. Such movement of soil has an impact on vegetation and generally leads to increased erosion via wind and water. Stockpiles and any un-vegetated slopes, which may be part of the permanent works, are particularly prone to erosion. The adverse effect leading from soil erosion are nutrient loss and loss of fine soil particles, both of these can affect local watercourses (increasing turbidity and siltation and raising nutrient concentrations).
- 8.33 Disaggregation is a term describing the mixing of soils when disturbed by excavation. This impact changes the physical and chemical composition of the soil, which can later cause problems when re-establishing vegetation or when contaminants from one soil are released into others. Again this impact would generally occur during the construction stages.
- 8.34 Large earthworks projects, such as this, also tend to cause compaction of soil; again this occurs predominantly during the construction phase. The consequence of vehicle movements compacting soil is the reduction in the

## CONTAMINATED LAND ASSESSMENT 8

ability of plants to form roots and a reduction of the capacity for water infiltration. The hardening of the soil surface can lead to increased runoff, erosion and surface water ponding.

- 8.35 The last potential impact is that of pollution of the soil. The introduction of construction plant and later introduction of waste and waste management processes increases the chance for contamination of the soil by elements and compounds associated with vehicles (e.g. oils, fuels, de-icing salts) and waste management processes.
- 8.36 A qualitative, and in part semi-quantitative, risk assessment methodology has been applied, in which both the probability of impacts occurring and the magnitude of the impact, if it were to occur, are considered. This approach provides a mechanism for identifying the areas where mitigation measures are required, and for identifying mitigation measures appropriate to the risk presented by the development. This approach allows effort to be focussed on reducing risk where the greatest benefit may result. The assessment of risk is outlined in Table 8-1.

**Table 8-1**  
**Matrix used to Estimate Risk**

Probability of occurrence	Magnitude of potential Impacts			
	Severe	Moderate	Mild	Negligible
High	High	High	Medium	Low
Medium	High	Medium	Low	Near Zero
Low	Medium	Low	Low	Near Zero
Negligible	Low	Near Zero	Near Zero	Near Zero

**Table 8-2**  
**Summary of Potential Impacts**

Potential Impact	Spatial and Temporal Impact	Probability of Occurrence	Magnitude of Impact	Significance of Impact	Mitigation Required
<b>Soils and Near Surface Geological Deposits</b>					
<b>Pollution including spillage of fuels, etc.</b>	Local, Short term to Medium term	Low	Severe	Medium	Yes
<b>Erosion of slopes and unvegetated areas</b>	Local, Short to Long term	High	Mild	Medium	Yes
<b>Compaction of haul roads and land to be built upon</b>	Local, Short to Long term	High	Mild	Medium	Yes
<b>Disaggregation of soils</b>	Local, Short term	Medium to High	Mild	Low to Medium	Yes

## IDENTIFICATION OF APPROPRIATE MITIGATION MEASURES

- 8.37 Table 8-2 identifies the potential impacts of the proposed development on soils and near surface geological deposits. It also identifies whether



## CONTAMINATED LAND ASSESSMENT 8

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mitigation measures are required to reduce these potential impacts to acceptable levels.

- 8.38 Proposed mitigation measures to alleviate the potential impacts are identified below. These measures either reduce the likelihood of an event occurring, or reduce the magnitude of the consequences if the event does occur. It should be noted that several of the mitigation measures proposed below would have a positive effect on more than one potential impact.
- 8.39 Table 8-3 summarises the mitigation measures applied to each potential impact.

**TABLE 8-3**  
**Summary of Mitigation and Residual Impacts: Soils and Near Surface Geological Deposits**

Potential Impact	Spatial and Temporal Impact	Probability of Occurrence	Magnitude of Impact	Significance of Impact	Mitigation Required?	Mitigation Measures	Mitigated Probability of Occurrence	Mitigated Magnitude of Impact	Residual Magnitude of Impact
<b>Pollution including spillage of fuels, etc.</b>	Local, Short term to Medium term	Low	Severe	Medium	Yes	<p>Institute procedures and facilities for the re-fuelling of vehicles and storage of fuels.</p> <p>Institute procedures for the storage of hazardous materials and make spill response kits available.</p> <p>Cover areas of soil that will be at risk with impermeable materials e.g. place concrete pads across areas where waste will be stockpiled.</p>	Low	Moderate to Severe	Low to Medium

## LAND QUALITY 8

Potential Impact	Spatial and Temporal Impact	Probability of Occurrence	Magnitude of Impact	Significance of Impact	Mitigation Required?	Mitigation Measures	Mitigated Probability of Occurrence	Mitigated Magnitude of Impact	Residual Magnitude of Impact
Erosion of slopes and unvegetated areas	Local, Short to Long term	High	Mild	Medium	Yes	<p>Removal of as little vegetation as possible and re-establishment of vegetation on bare areas as soon as possible.</p> <p>Create shallow gradients and avoid steep slopes.</p> <p>Direct water away from slopes using a surface water drainage system.</p> <p>Avoid creating large areas of bare soil exposed to the wind and use wind breaks.</p> <p>Install siltation traps in local watercourses.</p>	Medium	Mild	Low

## LAND QUALITY 8

Potential Impact	Spatial and Temporal Impact	Probability of Occurrence	Magnitude of Impact	Significance of Impact	Mitigation Required?	Mitigation Measures	Mitigated Probability of Occurrence	Mitigated Magnitude of Impact	Residual Magnitude of Impact
<b>Compaction of haul roads and land to be built upon</b>	Local, Short to Long term	High	Mild	Medium	Yes	<p>Use wide tyres/tracks on construction plant.</p> <p>Limit the site road network to a few main tracks.</p> <p>Till compacted areas once activities have ceased.</p>	Medium	Mild	Low
<b>Disaggregation of soils</b>	Local, Short term	Medium to High	Mild	Low to Medium	Yes	<p>Excavate soil in order of horizons and keep each horizon in separate piles.</p> <p>If piles are to be stored for any length of time they may need to be grassed over or covered to prevent erosion.</p> <p>Demarcate areas of known contamination and avoid mixing it with other soils.</p>	Medium	Mild	Low



### CONCLUSIONS

- 8.40 The baseline information and land quality specifically in the vicinity of the proposed anaerobic digestion plant does not appear to differ in its characteristics from areas previously tested and stripped prior to gravel extraction and infilling. In light of the similar characteristics, it is proposed to continue to approach land quality matters in accordance with the existing agreed protocol for the site.
- 8.41 In relation to the interpretation of results, the proposed uses impose no greater remediation requirement than the end use for which the risk assessment was initially undertaken, namely the use of land for public open space. Indeed, open space still forms the intended final use for the application site and hence guides the standard to which remediation will be required. The risks to human health and to the environment can therefore be assessed against the same site specific land quality thresholds as developed previously for the Beddington Farmlands site.
- 8.42 Subject to sampling and analysis and where necessary, remediation in line with agreed protocol, the impact of development will be beneficial and result in a continuing improvement in ground conditions within the area of the application. Whilst improvements will be recorded by adherence to the agenda of dealing with the most harmful contamination, preventative measures must be developed to lessen the risk of the development introducing pollutants to the soil environment and negatively impacting the physical quality of soils via erosion, disaggregation and compaction. These measures are not only protective of the soil quality but also of local air and water quality.

# Appendix 8/1

8

**Commentary on Appendix 12/1 – A sampling and analysis plan for contaminated soils at the Beddington Farmlands site.**

Section 3.1.12 of this appendix, produced by Rust Environmental in June 1997, states that:

*"The results of analyses for **Group 3** contaminants will be compared to the Revised Dutch Intervention Values (Human Toxicological Values), as shown in Appendix F (of that document), corrected for soil type or, preferentially, the forthcoming Risk Based UK guidance values – if available for each contaminant at the time of analyses".*

The **Group 3** elements and compounds include:

- arsenic;
- mercury;
- selenium;
- lead;
- chromium;
- total petroleum hydrocarbons; and
- volatile organic compounds and semi-volatile organic compounds.

It should be noted that "*Risk Based UK guidance values*", or Soil Guideline Values as they are more properly called, are now available for:

- arsenic;
- inorganic mercury;
- selenium;
- lead; and
- chromium.

Soil Guideline Value reports, published by Defra and the EA, are available on the internet from: [www.environment-agency.gov.uk/subjects/landquality](http://www.environment-agency.gov.uk/subjects/landquality) .

Further Soil Guideline Reports have been prepared for cadmium, nickel, toluene and ethylbenzene. Cadmium is the **Group 1** metal in Rust Environmental's sampling and analysis plan, nickel is within **Group 2**.

The EA have also published "*The UK approach for evaluating the human health risks from petroleum hydrocarbons in soils*". That document presents a summary of the responses to the 2003 consultation and the findings of an expert workshop in February 2004 at which the various issues were discussed. The information is used to develop the finalised framework, laying out the EA's intentions for development of health criteria values and SGVs for petroleum hydrocarbons constituents in soils.

## 1.0 INTRODUCTION

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- 1.1 Rust Environmental has been commissioned by Thames Waste Management Limited to formulate a sampling and analysis plan for contaminated soils at the Beddington Farmlands site.
- 1.2 The objective of the plan is to provide sufficient information to characterise the site soils with respect to their contaminant loading. This will enable an assessment to be made on the need for remedial treatment of the soils during landfill development.
- 1.3 This document should be considered in conjunction with the preceding contamination risk assessment prepared by Rust Consulting Limited () on behalf of Thames Waste Management Limited. Together these documents address the Beddington Farmlands Development Planning Condition 3.2a. In view of the evolving nature of contamination assessment criteria, and the fact that more site specific data will continually become available, it should be noted that the risk assessment and the sampling and analysis plan will be updated on a regular basis. Any changes proposed to the sampling and analysis plan will be submitted to and agreed in writing with the local planning authority. Their form at any one time will be consistent with what is considered to be best available practice.
- 1.4 The Planning Authority and the Environment Agency will be contacted to discuss the implications of the analytical data obtained. In respect of each phase there will be submitted to the Planning Authority a comprehensive report containing amongst other matters the following sampling and analyses details:
- results of analyses on all samples;
  - trial pit and borehole logs as appropriate;
  - sample location plan;
  - an indication of depth at which samples were taken noting whether they were discrete or composite samples;



## 1.0 INTRODUCTION

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- revised risk assessment on the basis of the results in respect of human, ecological, animal and aquatic receptors;
- sample methodology; and
- soil profile information.

The above information will be provided a minimum of six weeks prior to soil stripping (for the first area) reducing to four weeks for subsequent phases unless otherwise agreed in writing with the Planning Authority. In addition notice of intention to submit will be provided to the Planning Authority a minimum of 4 weeks prior to the report being issued.

- 1.5 No upward revision of the remediation thresholds and no derivation of remediation thresholds for new determinands will be made for use in the revised risk assessment without the prior agreement of the local planning authority.
- 1.6 This sampling and analysis plan first considers the contaminants of concern (both those noted at elevated concentrations in previous investigations and those of noted interest to the Environment Agency and the Planning Authority). It then details the sampling and analysis requirements for these contaminants. Further to this, details are provided on how the results are interpreted in the context of the overall development strategy. The final section addresses the issue of soil treatment, paying consideration to the relevant health and safety aspects and environmental concerns.

## 2.0 CONTAMINANTS OF POTENTIAL CONCERN

- 2.1 The superficial soils at the Beddington Farmlands site have become contaminated from one principle source, namely the sewage sludge which has been distributed across the site.
- 2.2 Previous investigations, both inside and outside the application area, have provided information which characterises the sludge in terms of the principal contaminants of potential concern. All of the potentially toxic elements included in the EC Directive on sewage sludge (86/278/EEC) have been analysed for, and the concentration distribution plots for each has been produced (Rust Contamination Risk Assessment, 1996). These plots will be updated as more data is obtained. They will then be compared to their respective screening criteria as described in sections 3.1.10 - 3.1.12 (ie. the site specific remedial threshold for cadmium derived in the Contamination Risk Assessment (350mg/kg) and the Revised Dutch Intervention Values for other contaminants).
- 2.3 The list of contaminants of potential concern can be categorised into four groups as shown below (however it should be noted that Group 4 compounds are more appropriately termed biological hazards rather than contaminants):

Group 1 - principally human toxic contaminants identified in previous investigations at elevated concentrations.

Group 2 - principally phytotoxic contaminants identified in previous investigations at elevated concentrations

Group 3 - contaminants of noted interest to the Environment Agency and/or the Planning Authority not identified at significant concentrations in previous investigations as determined in Section 4 of the Risk Assessment.

Group 4 - pathogenic organisms of potential concern related to sewage sludge.

## 2.0 CONTAMINANTS OF POTENTIAL CONCERN

2.4 On the basis of the available data, prior to landfill development, the sub-divisions are as follows:

Group 1 - cadmium

Group 2 - zinc, copper, and nickel

Group 3 - arsenic, mercury, selenium, lead, chromium, total petroleum hydrocarbons (TPH), volatile organic compounds (VOC) and semi volatile organic compounds (SVOC's)

Group 4 - bacterial enteropathogens (eg. salmonella and shigellae)

2.5 Compounds of Group 3 status will be elevated to Group 1 if the site investigative data and the most up-to-date risk assessment suggest that this is prudent.

2.6 Compounds in any of the four groups will be omitted from subsequent analyses if, at any stage, the data suggest that they are of no further concern - as described in Section 3.1.10.

### 3.0 SAMPLING AND ANALYSES STRATEGY

#### 3.1 Sampling and Analysis of Non-Biological Contaminants

3.1.1 In view of the large site area and the prolonged period of site development the frequency of sampling and analyses will be dependent upon numerous factors, including:

- the ground conditions in each area to be stripped;
- the data available before each sampling episode; and
- the up-to-date guidance on contamination sampling and assessment.

3.1.2 Notwithstanding this, at the outset, the following sampling will be undertaken prior to soil stripping. The minimum area of any one phase for the basis of sampling will be one hectare:

- 1 sample every 625m<sup>2</sup> (25m x 25m) for metals and organic content and no less than 4 for each soil type within any area to be stripped.
- 1 sample every 625m<sup>2</sup> (25m x 25m) for VOC's, SVOC's and TPH - no less than 2 for each soil type within any area to be stripped.
- 1 sample every 625m<sup>2</sup> (25m x 25m) for leachable metals (for each soil type).
- 2 samples for percentage clay evaluation from each area occupied by a particular 'soil type'.

Information on the 'soil strip' phasing is provided in the Minerals Scheme documents.



### 3.0 SAMPLING AND ANALYSES STRATEGY

Each sample shall be obtained from the top 0.50m of the soil profile, which is the region that has been shown to be contaminated on the evidence of previous investigations. If the soil extends to a greater depth than 0.75m then additional samples will be taken from 0.75m or below.

3.1.3 Table 1 shown below shows the requirements of the sampling programme. It should be noted that the organic content and percentage clay content are required in order to assign appropriate contaminant thresholds (as described in section 3.1.6 below).

Table 1 : Sampling Requirements

	Metals, % Organic Matter and Leachables	VOC and TPH	% Clay Content
Containers	Snap lid plastic bucket	Glass vial with Teflon lid	PVC 'bulk' bag
Approximate Volume	1kg	60 - 100g	10 kg
Preservatives	None Required	None Required	None Required
Storage	Sealed and kept cool	<4 °C in iced cool box	Sealed
Maximum holding time	6 months (26 days for Mercury)	14 days	N/A

3.1.4 Any changes proposed to the sampling and analysis plan will be submitted to and approved by the local planning authority.

3.1.5 All soil samples obtained from the Beddington Farmlands site will be dispatched immediately to the relevant laboratory. Full chain of custody records shall be maintained and all laboratories will be NAMAS accredited (see Table 2 for a list of required test methods). On receipt at the laboratory all samples shall be prepared and stored in conditions suitable for the intended analyses.

### 3.0 SAMPLING AND ANALYSES STRATEGY

3.1.6 The list of parameters scheduled will include Group 1, Group 2 and Group 3 contaminants as well as percentage clay content and percentage organic matter. The inclusion of the last two categories will enable an assessment to be made on the bio-availability of the contaminants. Soils with a high clay content and/or high organic content can support higher concentration of contaminants without posing increased levels of risk to environmental or human targets.

3.1.7 With respect to the metals, total and available concentrations will be analysed for, as described in the following sections.

3.1.8 Examples of the test methods that will be utilised are presented in Table 2:

Table 2 : Analytical Methods

	Technique	Method Reference	Limit of Detection (ppm)
Cadmium (total)	Nitric/Perchloric acid digestion/Flame AAS	Any NAMAS approved	0.5
Arsenic (total)	Sulphuric/nitric acid digestion/Hydride ICP	Any NAMAS approved	1
Mercury (total)	Sulphuric/nitric acid digestion/Cold Vapour AAS	Any NAMAS approved	0.1
Lead (total)	Nitric/Perchloric acid digestion/FLame AAS	Any NAMAS approved	5
Selenium (total)	Nitric/sulphuric Acid digestion/hydride ICP	NAMAS approved or proficiency scheme	0.5
Chromium (total)	Nitric/Perchloric acid digestion/Flame AAS	Any NAMAS approved	5
TPH	DCM extraction/capillary GC-FID	Any NAMAS approved	10
VOC	"Purge and Trap" GCMS	USEPA Method 8240 modified	0.002
SVOC	DCM extraction/GCMS	Any NAMAS approved	1
Organic Matter	Digestion/Titration	BS 1377	1000
Clay Content	Sieving/Sedimentation	BS1377	-

### 3.0 SAMPLING AND ANALYSES STRATEGY

Table 2 (Cont.) : Analytical Methods

	Technique	Method Reference	Limit of Detection (ppm)
Available Metals	EDTA extraction/Flame ASS	MEWAM Book 71	1
Leachable Metals	Leachability with water	NRA Method	N/A

3.1.9 The initial frequency of analyses will be as follows:

Group 1 - 50% of the samples obtained for this type of analysis will be analysed for total concentrations

Group 2 - 50% of the samples obtained for this type of analysis will be analysed for available concentrations

Group 3 - 50% of the samples obtained for this type of analysis will be analysed. TPH, VOC and SVOC's samples will be selected on olfactory and/or visual evidence. Metals will be analysed for total concentrations

3.1.10 If at any stage, it is apparent particular Group 2 or Group 3 contaminants are not present at levels that warrant further concern, then the sampling frequency will be decreased, or the contaminant removed from sampling schedules. This will not, however, be done without the agreement of the regulatory authorities.

3.1.11 The results of analyses for Group 1 contaminants will be compared to the most up to date remediation threshold derived on a site-specific basis from a quantitative risk assessment.

### 3.0 SAMPLING AND ANALYSES STRATEGY

- If, for each particular soil type all samples contain total concentrations of contaminants less than 50% of their respective remediation threshold (eg. 67 mg/kg for cadmium) then the soil will be deemed acceptable (in terms of this particular contaminant) for use without treatment.
- If, for each particular soil type, any sample contains a total concentration of a Group 1 contaminant in excess of 50% of its respective remediation threshold, then the remaining 50% of the samples will be analysed for total and available concentrations. The samples recovered for leachable tests will also be analysed.
- If after supplementary testing, the average of the total concentrations for samples taken, for each particular soil type, is below the remediation threshold, (eg. below 135 mg/kg for cadmium) then that area of soil shall (with respect to this contaminant) be deemed acceptable for use without treatment (providing that the 'available' concentrations and leachability data suggest this is prudent).
- If, after supplementary testing the average concentration of all samples taken (for each particular soil type) is in excess of the remediation threshold, then that area of soil shall be deemed unacceptable for use without treatment.

The results of analyses for Group 2 contaminants will be used to characterise the soil in terms of suitability for use in particular areas of the site (with respect to their potential influence on plant growth).

3.1.12 The result of analyses for Group 3 contaminants will be compared to the Revised Dutch Intervention Values (Human Toxicological Values), as shown in Appendix F, corrected for soil type or, preferentially, the forthcoming Risk Based UK guidance values - if available for each contaminant at the time of analyses.



### 3.0 SAMPLING AND ANALYSES STRATEGY

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- If after initial testing, for each particular soil type, the results indicate insignificant concentrations of Group 3 contaminants (i.e. average concentrations below 50% of the Dutch/DoE Values and all single values below 100% of the Dutch/DoE Values) then the soil shall be deemed acceptable with respect to the contaminants of concern.
- If after initial testing, for each particular soil type, the results indicate potentially significant concentrations of Group 3 contaminants (i.e. average concentrations equal to or in excess of 50% of the Dutch/DoE Values, or single values above 100% of the Dutch/DoE Value) then the additional 50% of the samples will be analysed for the contaminant of concern.
- If after supplementary analyses, the average concentration of any Group 3 contaminant is in excess of the Dutch/DoE values then a site specific, quantitative risk assessment based, remediation threshold will be derived for the contaminant of concern. If the average concentration is greater than 50% of the Dutch/DoE Value, but less than 100% of the Dutch/DoE Value then the potential need for a risk assessment will be kept under review (and agreed with Regulatory Authorities).
- If after supplementary testing, for each particular soil type, the results do not indicate significant concentrations of Group 3 contaminants then the soil shall be deemed acceptable with respect to these contaminants.

3.1.13 A copy of each set of factual and interpretative data will be made available to the Planning Authority a minimum of 4 weeks prior to each phase of soil stripping as discussed in Section 1.4. How the results effect the hypotheses described in the risk assessment will be made clear in each report.

### 3.0 SAMPLING AND ANALYSES STRATEGY

#### 3.2 Sampling and Analysis of Biological Hazards

3.2.1 In view of the history of the site it is considered possible that pathogenic organisms are present in areas where sludge has been deposited within the last few weeks. With this in mind any soils that are to be handled which are thought to be less than 1 year old will be sampled at a frequency of: one sample every 625m<sup>2</sup> (25m x 25m) for Salmonella and Shigella. The selection of these two is based on information contained in 'Substances Hazardous to Health; biological hazards (Croner's Guide). Hepatitis A will also be vaccinated against in line with this guidance. In addition at the request of the Planning Authority 'tubercle bacilli' and 'ascaris ova' will be tested for within these soils at the same frequency. Testing for pathogens will also be undertaken within the first sampling area at the request of the Local Planning Authority, irrespective of the age of the sewage sludge. Where the soil to be tested is over 1 year old, sampling will be on a reduced frequency and will comprise a total of 10 samples.

3.2.2 The sample requirements and analytical methods for Salmonella and Shigella are presented in Table 3. The requirements for 'tubercle bacilli' and ascaris ova are specialised and very few laboratories undertake them on a regular basis. Obtaining method descriptions and testing protocols is therefore difficult. Nonetheless details have been requested and will be made available to the Planning Authority prior to soil stripping.

### 3.0 SAMPLING AND ANALYSES STRATEGY

Table 3 : Biological Hazards - Sampling and Analysis Requirements

	Salmonella	Shigella
Analytical Procedure	1. Enrichment in BPW 2. Selective enrichment in RV Broth 3. Selective plating to XLD 4. ID to Genus by biochemical & Serological methods	1. Enrichment in Gram negative Broth. 2. Selective plating to XLD and MacConkeys agars. 4. ID to Genus by biochemical & Serological methods
Method code	W2	Not accredited
References	BS 5760 Part IV (1990)	The Microbiology of Water 1994 - Report 71
Sampling procedures	Composite sample from numerous points within the sample matrix	Composite sample from numerous points within the sample matrix
Volume of sample required	50g Composite	50g Composite
Type of sample containers	Wide necked sterile glass or plastic - 250ml	Wide necked sterile glass or plastic - 250ml
Preservatives	None	None
Storage requirements	Below 10°C in dark and analyse within 24 hours	Below 10°C in dark and analyse within 24 hours
Transist time	No greater than 24 hours	No greater than 24 hours
Laboratory holding time	7 day analysis 10 day turnaround	7 day analysis 10 day turnaround

3.2.3 All soil samples obtained will be dispatched immediately to the NAMAS accredited laboratory for the tests shown in Table 3 above and for those requested by the Planning Authority. Full chain of custody records shall be maintained. On receipt at the laboratory all samples shall be prepared and stored in conditions suitable for the intended analyses.

3.2.4 Anthrax is also considered to be a biological hazard of potential concern at some sewage works when either or both of the following conditions are realised:

- when there are some significant discharges (10% of flows received at sewage treatment works) from animal or poultry processing plants; and

- when significant quantities of waste are handled of hides imported from countries where anthrax is endemic, ie. Central America, Southern America (except Columbia, Venezuela, Chile), Africa, the Middle East, India or Sri Lanka.

Records held by Thames Water show that neither of these conditions has been realised throughout their operations. It is therefore reasonable to assume that anthrax in the sewage sludge as a result of liquid discharge is not a problem at the Beddington site.

Notwithstanding this, it has been suggested by the local authority that animal burial pits are suspected to be present at the site. If any are encountered during investigations then the Ministry of Agriculture, Food and Fisheries (MAFF) will be contacted immediately. Their advice will then be followed accordingly.

#### 3.3 Health and Safety During Investigation

3.3.1 Prior to any sampling being carried out a Health and Safety Plan will be compiled and distributed to all those involved with sitework. A copy will also be held by the Project Manager responsible for co-ordinating investigative works. As a minimum the plan will include the following:

- client details and project background information;
- contact numbers (including emergency number);
- details of work and responsibility;
- detailed scope of work;
- services information;
- PPE required;
- COSHH data for the contaminants of concern;



### 3.0 SAMPLING AND ANALYSES STRATEGY

---

- welfare facility information;
- proposed sequence method of works;
- hazard assessment;
- client health and safety requirements.

The content of the plan shall be consistent with what considered to be best industry standard. It shall also be made available for approval by the regulatory authorities.

#### 3.4 Sampling Protocols

- 3.4.1 The sampling positions will be established on a grid basis as detailed in 3.1.2 and 3.2.1. Excavations will then be made either with an excavator or else by borehole drilling (whichever is deemed to be the most appropriate on the evidence available at the time of investigation).
- 3.4.2 Samples will be obtained by an experienced environmental scientist from the side of the excavations or from arisings. Clean stainless steel sampling equipment will be used at all times. The curriculum vitae of the environmental scientist or appropriate details of the company retained to undertake the sampling will be submitted to the local planning authority for their approval prior to sampling commencing. A decision shall be issued by the local planning authority within five working days of receipt. If no decision is issued within this timescale then the company or individual proposed will be deemed to have been approved.
- 3.4.3 For metals analysis samples will be taken at discreet locations within the top 0.5m of the soil profile (and at greater depths if soils are shown to extend further). This will also be the case for those samples intended for volatile, semi-volatile and petroleum hydrocarbon analysis.

### 3.0 SAMPLING AND ANALYSES STRATEGY

- 3.4.4 For biological contaminants, composite samples will be taken from each location. This is a requirement of the pathogen test methods.
- 3.4.5 All samples will be placed in containers suitable to the intended analysis and all will be stored under appropriate conditions for subsequent dispatch to the laboratory.
- 3.4.6 The position of each sampling point will be recorded along with a description of the ground conditions encountered.
- 3.4.7 A detailed breakdown of the sampling protocols will be included in the Health and Safety Plan which will be made available to all site personnel.

#### 3.5 Soil Gas Testing

- 3.5.1 Background monitoring for soil gases will be undertaken during the twelve months prior to landfilling commencing. The purpose of this background monitoring will be to identify the natural soil gas content present at the site, in order to enable any potential impact of landfill gas to be identified. In the event that this background monitoring identifies elevated levels of soil gases, the potential for risk from these will be assessed and appropriate monitoring and amelioration procedures adopted. This will include similar testing of any soil stockpiles which are formed from soil stripping activities during or prior to the background testing being undertaken.

## Appendix 8/2



20 JAN 2004

Chester Street,  
Chester CH4 8RD  
tel: (01244) 671121  
fax: (01244) 683306  
email: mkt@alcontrol.co.uk

SLR Consulting Ltd  
Treenwood House  
Rowden Lane  
Bradford-on-Avon  
Wiltshire  
BA15 2AU

ATTN: David Craze

## CERTIFICATE OF ANALYSIS

**Date:** 19 January, 2004

**Our Reference:** 03/16275/02/01

**Your Reference:** 4B/006/049

**Location:** BEDDINGTON

A total of 23 samples was received for analysis on Tuesday, 23 December 2003. Accredited laboratory tests are defined in the log sheet, but opinions interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation. We are pleased to enclose our final report, it was a pleasure to be of service to you, and we look forward to our continuing association.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Signed

**Hazel Davidson**  
Operations Manager  
Analytical Services

Compiled By

  
*Eric Fletcher*



## ALcontrol Geochem TEST SCHEDULE

**JOB NUMBER : 03/16275/02**

**CLIENT : SLR Consulting Ltd**

**CONTACT :** David Craze

**DATE OF RECEIPT : 23/12/03**

**LOCATION : BEDDINGTON**

**BATCH NUMBER : 1**

**CLIENT REF/CODE : 4B/006/049**

**ORDER NUMBER : 4BCS3385**

**TURNAROUND : 7 days**

Numeric values indicate additional scheduling

\* Indicates test subcontracted

[illegible]

# ALcontrol Geochem TEST SCHEDULE

**JOB NUMBER :** 03/16275/02  
**CLIENT :** SLR Consulting Ltd  
**CONTACT :** David Craze  
**DATE OF RECEIPT :** 23/12/03  
**LOCATION :** BEDDINGTON

**BATCH NUMBER :** 1  
**CLIENT REF/CODE :** 4B/006/049  
**ORDER NUMBER :** 4BCS3385  
**TURNAROUND :** 7 days

Numeric values indicate  
 additional scheduling  
 \* Indicates test subcontracted

ISO 17025 Accredited ?					✓	✓	✓	✓	✓	✓	✓	✓																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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**GEOCHEM ANALYTICAL SERVICES**

C 5 - C 35 Speciated TPH

By GC

Geochem Job No: 03/16275/02/01

Client: SLR Consulting Ltd

Matrix: SOIL

Location: BEDDINGTON

Units: µg/kg

Sample Number	002+003	008+009	013+014	016+017	019+020					
Client Ref:	TP1	TP3	TP5	TP6	TP7					
Depth	2.0	0.1	0.1	0.2	0.3					
<b>Aliphatics</b>										
C5-C6	<10	<10	<10	<10	<10					
>C6-C8	<10	<10	<10	<10	<10					
>C8-C10	<10	<10	<10	<10	<10					
>C10-C12	<10	<10	<10	<10	<10					
>C12-C16	<100	50882	39294	2757	23588					
>C16-C21	<100	380374	452423	23588	261075					
>C21-C35	<100	2187933	3020757	170914	1840301					
<b>Total Aliphatics</b>	<100	2619189	3512474	197259	2124964					
<b>Aromatics</b>										
C6-C7	<10	<10	<10	<10	<10					
>C7-C8	<10	<10	<10	<10	<10					
>C8-C10	<10	<10	<10	<10	<10					
>C10-C12	<10	<10	<10	<10	<10					
>C12-C16	<100	671523	111288	2736	57139					
>C16-C21	<100	232019	375118	6794	208840					
>C21-C35	<100	379540	766101	6766	461898					
<b>Total Aromatics</b>	<100	1283082	1252507	16296	727877					
<b>PRO</b>	<10	<10	<10	<10	<10					
<b>TPH</b>	<100	3902271	4764981	213555	2852841					
<b>MTBE</b>	<10	<10	<10	<10	<10					
<b>Benzene</b>	<10	<10	<10	<10	<10					
<b>Toluene</b>	<10	<10	<10	<10	<10					
<b>Ethylbenzene</b>	<10	<10	<10	<10	<10					
<b>Xylene</b>	<10	<10	<10	<10	<10					

\*TPH is the sum of Aliphatics and Aromatics (C5-C35)

☒

11

<sup>#</sup> ISO 17025 accredited

**Matrix:** SOLID  
**Location:** BEDDINGTON  
**Client Contact:** David Craze

**Date** 15.01.2004



Validated ☒  
Preliminary ☐

# ALcontrol Geochem Analytical Services

## Table Of Results

# ISO 17025 accredited

\* Subcontracted test

Job Number: 03/16275/02

Client: SLR Consulting Ltd

Client Ref. No.: 4B/006/049

Matrix: SOLID

Location: BEDDINGTON

Client Contact: David Craze

Sample Identity	TP1	TP2	TP3	TP4	TP5	TP6	TP7	TP8		Method Code	Lod/Units
Depth (m)	2.0	0.2	0.1	0.5	0.1	0.2	0.3	0.9			
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL			
Sampled Date	11.12.03	11.12.03	11.12.03	11.12.03	11.12.03	11.12.03	11.12.03	11.12.03			
Sample Received Date	23.12.03	23.12.03	23.12.03	23.12.03	23.12.03	23.12.03	23.12.03	23.12.03			
Batch	1	1	1	1	1	1	1	1			
Sample Number(s)	1-3	4-6	7-9	10-11	12-14	15-17	18-20	21-23			
<b>SVOC</b>											
Phenol (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
2-Chlorophenol (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
2-Methylphenol (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
4-Methylphenol (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
2-Nitrophenol (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
4-Nitrophenol (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
2,4-Dichlorophenol (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
2,4-Dimethylphenol (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
4-Chloro-3-methylphenol (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
2,4,6-Trichlorophenol (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
2,4,5-Trichlorophenol (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
Pentachlorophenol (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
1,3-Dichlorobenzene (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
1,4-Dichlorobenzene (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
1,2-Dichlorobenzene (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
1,2,4-Trichlorobenzene (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
Nitrobenzene (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
Azobenzene (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
Hexachlorobenzene (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
Naphthalene (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
Acenaphthylene (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
Acenaphthene (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
Fluorene (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
Phenanthrene (Soil)	<100	-	121	-	-	<100	-	<100		TM143	<100 µg/kg
Anthracene (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
Fluoranthene (Soil)	<100	-	166	-	-	<100	-	<100		TM143	<100 µg/kg
Pyrene (Soil)	<100	-	143	-	-	<100	-	<100		TM143	<100 µg/kg
Benzo(a)anthracene (Soil)	<100	-	187	-	-	<100	-	<100		TM143	<100 µg/kg
Chrysene (Soil)	<100	-	304	-	-	<100	-	<100		TM143	<100 µg/kg
Benzo(b)fluoranthene (Soil)	<100	-	598	-	-	<100	-	<100		TM143	<100 µg/kg

Date 15.01.2004

Validated



Preliminary



# ALcontrol Geochem Analytical Services

## Table Of Results

# ISO 17025 accredited

\* Subcontracted test

Job Number: 03/16275/02

Client: SLR Consulting Ltd

Client Ref. No.: 4B/006/049

Matrix: SOLID

Location: BEDDINGTON

Client Contact: David Craze

Sample Identity	TP1	TP2	TP3	TP4	TP5	TP6	TP7	TP8		Method Code	LoD/Units
Depth (m)	2.0	0.2	0.1	0.5	0.1	0.2	0.3	0.9			
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL			
Sampled Date	11.12.03	11.12.03	11.12.03	11.12.03	11.12.03	11.12.03	11.12.03	11.12.03			
Sample Received Date	23.12.03	23.12.03	23.12.03	23.12.03	23.12.03	23.12.03	23.12.03	23.12.03			
Batch	1	1	1	1	1	1	1	1			
Sample Number(s)	1-3	4-6	7-9	10-11	12-14	15-17	18-20	21-23			
<b>SVOC (cont)</b>											
Benzo(k)fluoranthene (Soil)	<100	-	202	-	-	<100	-	<100		TM143	<100 µg/kg
Benzo(a)pyrene (Soil)	<100	-	297	-	-	<100	-	<100		TM143	<100 µg/kg
Indeno(1,2,3-cd)pyrene (Soil)	<100	-	368	-	-	<100	-	<100		TM143	<100 µg/kg
Dibenzo(a,h)anthracene (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
Benzo(ghi)perylene (Soil)	<100	-	334	-	-	<100	-	<100		TM143	<100 µg/kg
2-Chloronaphthalene (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
2-Methylnaphthalene (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
Carbazole (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
Isophorone (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
Dibenzofuran (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
Dimethyl phthalate (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
Diethyl phthalate (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
Di-n-butyl phthalate (Soil)	<100	-	549	-	-	188	-	<100		TM143	<100 µg/kg
Di-n-Octyl phthalate (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
Bis(2-ethylhexyl) phthalate (Soil)	588	-	2353	-	-	727	-	<100		TM143	<100 µg/kg
Butylbenzyl phthalate (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
4-Chloroaniline (Soil)	<100	-	100	-	-	<100	-	<100		TM143	<100 µg/kg
2-Nitroaniline (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
3-Nitroaniline (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
4-Nitroaniline (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
2,4-Dinitrotoluene (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
2,6-Dinitrotoluene (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
Bis(2-chloroethyl)ether (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
4-Bromophenylphenylether (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
4-Chlorophenylphenylether (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
Hexachloroethane (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
Hexachlorobutadiene (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
Hexachlorocyclopentadiene (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
Bis(2-chloroethoxy)methane (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg
N-nitrosodi-n-propylamine (Soil)	<100	-	<100	-	-	<100	-	<100		TM143	<100 µg/kg

Date 15.01.2004

Validated ☒  
Preliminary ☐

# ALcontrol Geochem Analytical Services

## Table Of Results

# ISO 17025 accredited

\* Subcontracted test

**Job Number:** 03/16275/02  
**Client:** SLR Consulting Ltd  
**Client Ref. No.:** 4B/006/049

**Matrix:** SOLID  
**Location:** BEDDINGTON  
**Client Contact:** David Craze

Sample Identity	TP1	TP2	TP3	TP4	TP5	TP6	TP7	TP8		Method Code	LoD/Units
Depth (m)	2.0	0.2	0.1	0.5	0.1	0.2	0.3	0.9			
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL			
Sampled Date	11.12.03	11.12.03	11.12.03	11.12.03	11.12.03	11.12.03	11.12.03	11.12.03			
Sample Received Date	23.12.03	23.12.03	23.12.03	23.12.03	23.12.03	23.12.03	23.12.03	23.12.03			
Batch	1	1	1	1	1	1	1	1			
Sample Number(s)	1-3	4-6	7-9	10-11	12-14	15-17	18-20	21-23			
<b>VOC</b>											
Dichlorodifluoromethane	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
Chloromethane	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
Vinyl Chloride	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
Bromomethane	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
Chloroethane	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
Trichlorofluoromethane	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
trans-1-2-Dichloroethene	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
Dichloromethane	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
Carbon Disulphide	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
1,1-Dichloroethene	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
1,1-Dichloroethane	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
MTBE GCMS	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
cis-1-2-Dichloroethene	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
Bromochloromethane	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
Chloroform	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
2,2-Dichloropropane	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
1,2-Dichloroethane	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
1,1,1-Trichloroethane	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
1,1-Dichloropropene	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
Benzene	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
Carbontetrachloride	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
Dibromomethane	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
1,2-Dichloropropane	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
Bromodichloromethane	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
Trichloroethene	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
cis-1-3-Dichloropropene	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
trans-1-3-Dichloropropene	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
1,1,2-Trichloroethane	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
Toluene	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
1,3-Dichloropropane	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg

Date 15.01.2004

Validated ☒  
Preliminary ☐

# ALcontrol Geochem Analytical Services

## Table Of Results

# ISO 17025 accredited

\* Subcontracted test

Job Number: 03/16275/02  
Client: SLR Consulting Ltd  
Client Ref. No.: 4B/006/049

Matrix: SOLID  
Location: BEDDINGTON  
Client Contact: David Craze

Sample Identity	TP1	TP2	TP3	TP4	TP5	TP6	TP7	TP8		Method Code	LoD/Units
Depth (m)	2.0	0.2	0.1	0.5	0.1	0.2	0.3	0.9			
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL			
Sampled Date	11.12.03	11.12.03	11.12.03	11.12.03	11.12.03	11.12.03	11.12.03	11.12.03			
Sample Received Date	23.12.03	23.12.03	23.12.03	23.12.03	23.12.03	23.12.03	23.12.03	23.12.03			
Batch	1	1	1	1	1	1	1	1			
Sample Number(s)	1-3	4-6	7-9	10-11	12-14	15-17	18-20	21-23			
<b>VOC (cont)</b>											
Dibromochloromethane	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
1,2-Dibromoethane	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
Tetrachloroethene	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
1,1,1,2-Tetrachloroethane	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
Chlorobenzene	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
Ethylbenzene	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
p/m-Xylene	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
Bromoform	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
Styrene	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
1,1,2,2-Tetrachloroethane	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
o-Xylene	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
1,2,3-Trichloropropane	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
Isopropylbenzene	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
Bromobenzene	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
2-Chlorotoluene	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
Propylbenzene	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
4-Chlorotoluene	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
1,2,4-Trimethylbenzene	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
4-Isopropyltoluene	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
1,3,5-Trimethylbenzene	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
1,2-Dichlorobenzene	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
1,4-Dichlorobenzene	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
sec-Butylbenzene	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
tert-Butylbenzene	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
1,3-Dichlorobenzene	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
m-Butylbenzene	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
1,2-Dibromo-3-chloropropane	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
1,2,4-Trichlorobenzene	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
Naphthalene	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg
1,2,3-Trichlorobenzene	<1	<1	-	-	<1	-	<1	-		TM116 <sup>#</sup>	<1 ug/kg

Date 15.01.2004





## Table Of Results - Appendix

**Job Number:** 03/16275/02  
**Client:** SLR Consulting Ltd  
**Client Ref. No.:** 4B/006/049

### **Summary of Method Codes contained within report :**

[illegible]

\*Applies to Solid samples only. **DRY** indicates samples have been dried at 30°C. **NA** = not applicable.

## **APPENDIX**

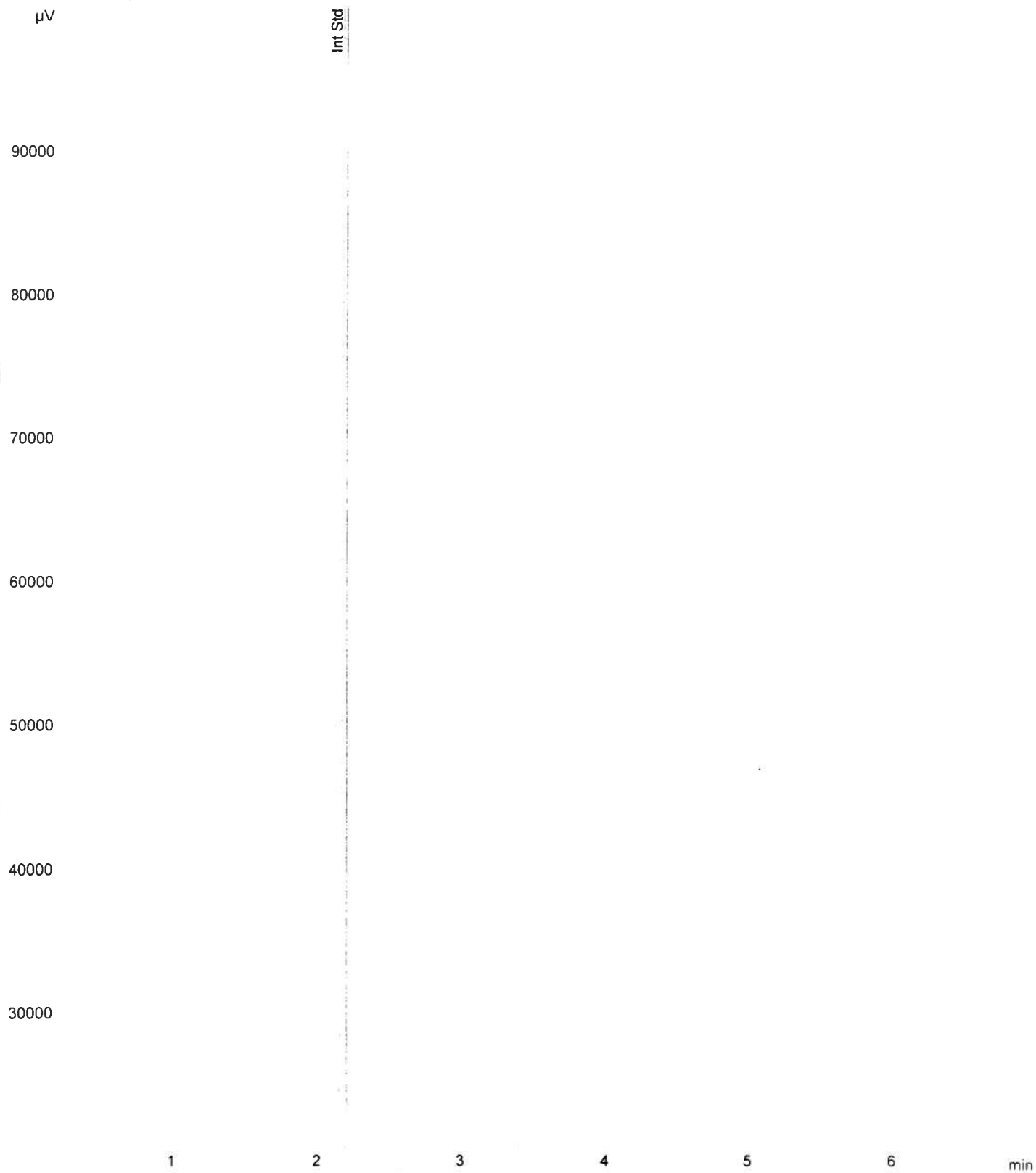
1. Results are expressed as mg/kg dry weight (dried at 30°C) on all soil analyses except for the following:  
Leach tests, hexavalent chrome, flash point, acid soluble sulphides, SVOC's TPH by IR and volatiles are expressed as mg/kg wet soil as received, although these are currently under review.  
Phenol, ammoniacal nitrogen and cyanide are performed on wet samples as received, but the results are expressed as mg/kg dry weight.
2. Samples will be run in duplicate upon request, but an additional charge may be incurred.
3. A sub sample of all samples received will be retained free of charge for two months for soils and one month for waters (sample size permitting), but may then be discarded unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage.
4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.
5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.
6. Asbestos screen is done in-house on soils and if no fibres are found will be reported as NFD – no fibres detected. If asbestos is detected, then identification and quantification is carried out by ALcontrol Technichem. If a sample is suspected of containing asbestos, then drying and crushing will be suspended on that sample until the asbestos results is known. If asbestos is present, then no analysis requiring dry sample will be undertaken.
7. If no separate volatile sample is supplied by the client, the integrity of the data may be compromised if the laboratory is required to create a sub-sample from the bulk sample – similarly, if a headspace is present in the volatile sample.
8. NDP – No determination possible due to insufficient/unsuitable sample.
9. Metals in water are performed on a filtered sample, and therefore represent dissolved metals – total metals must be requested separately.
10. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.

## APPENDIX

Alcontrol/Geochem Analytical Services  
Gasoline Range Organics

Sample Identity: 200316275-3/S  
Date Acquired : 05/01/04  
Units : ppb  
Dilution : 1

ADC1 A, ADC1 CHANNEL A (040105CH\GREEN006.D)



Alcontrol/Geochem Analytical Services  
Gasoline Range Organics

Sample Identity: 200316275-9/S  
Date Acquired : 05/01/04  
Units : ppb  
Dilution : 1

ADC1 A, ADC1 CHANNEL A (040105CH\GREEN007.D)

μV

90000

80000

70000

60000

50000

40000

30000

MTBE

Int Std

1

2

3

4

5

6

min



Alcontrol/Geochem Analytical Services  
Gasoline Range Organics

Sample Identity: 200316275-14/S  
Date Acquired : 05/01/04  
Units : ppb  
Dilution : 1

ADC1 A, ADC1 CHANNEL A (040105CH\GREEN008.D)

$\mu$ V

90000

80000

70000

60000

50000

40000

30000

MTBE

Int Std

1

2

3

4

5

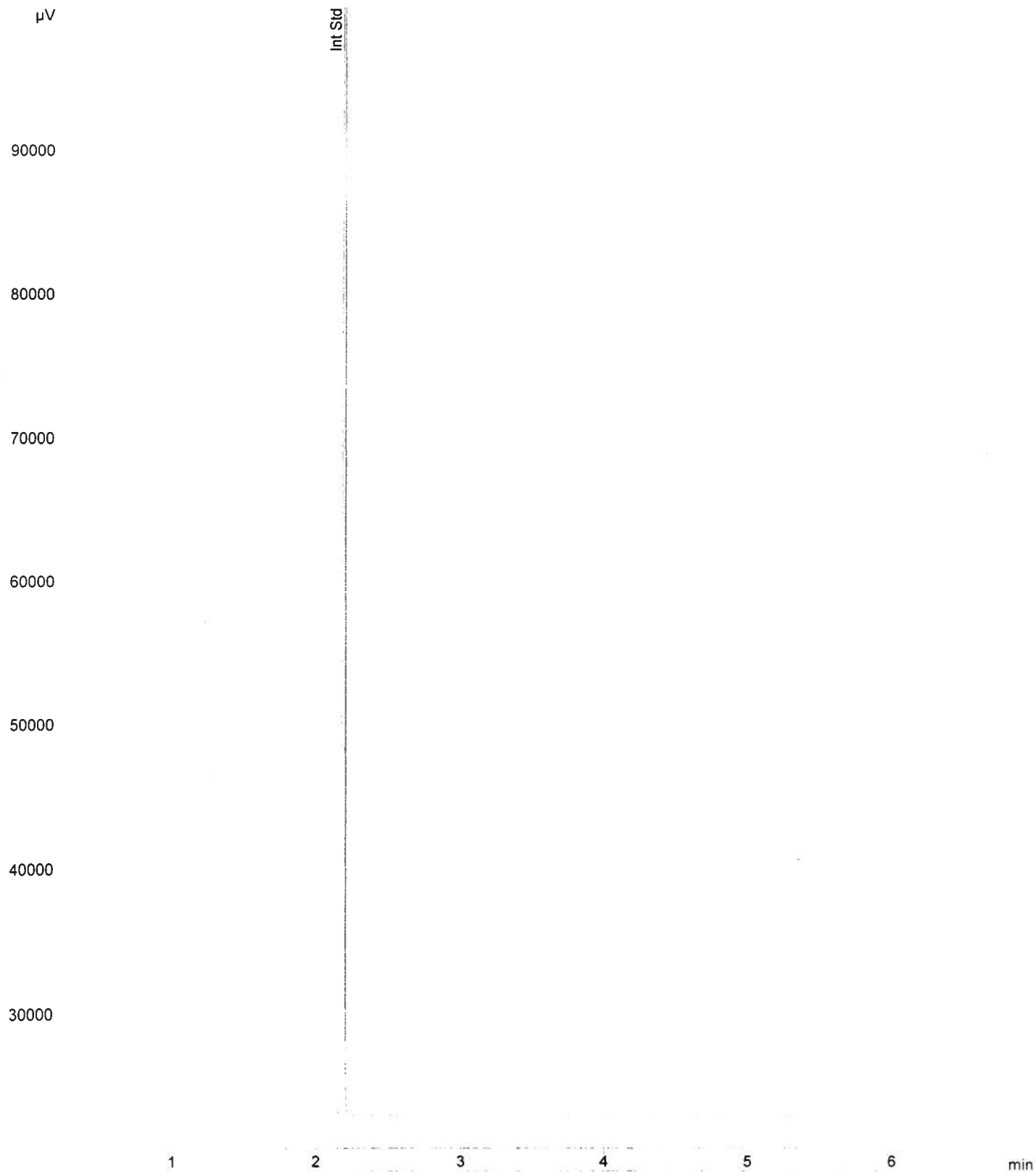
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min

Alcontrol/Geochem Analytical Services  
Gasoline Range Organics

Sample Identity: 200316275-17/S  
Date Acquired : 06/01/04  
Units : ppb  
Dilution : 1

ADC1 A, ADC1 CHANNEL A (040105CH\GREEN078.D)



Alcontrol/Geochem Analytical Services  
Gasoline Range Organics

Sample Identity: 200316275-20/S  
Date Acquired : 05/01/04  
Units : ppb  
Dilution : 1

ADC1 A, ADC1 CHANNEL A (040105CH\GREEN009.D)

μV

90000

80000

70000

60000

50000

40000

30000

Int Std

1

2

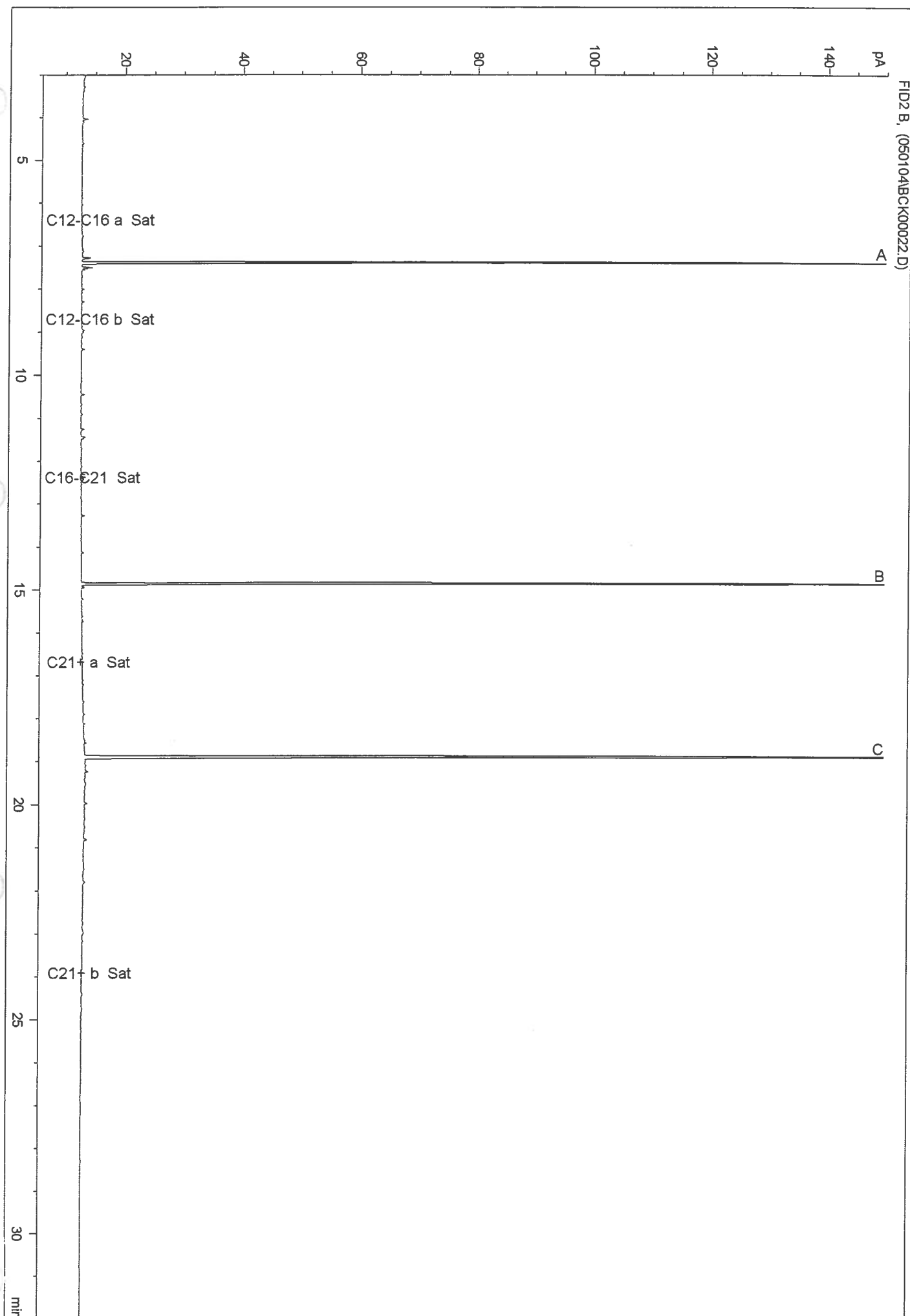
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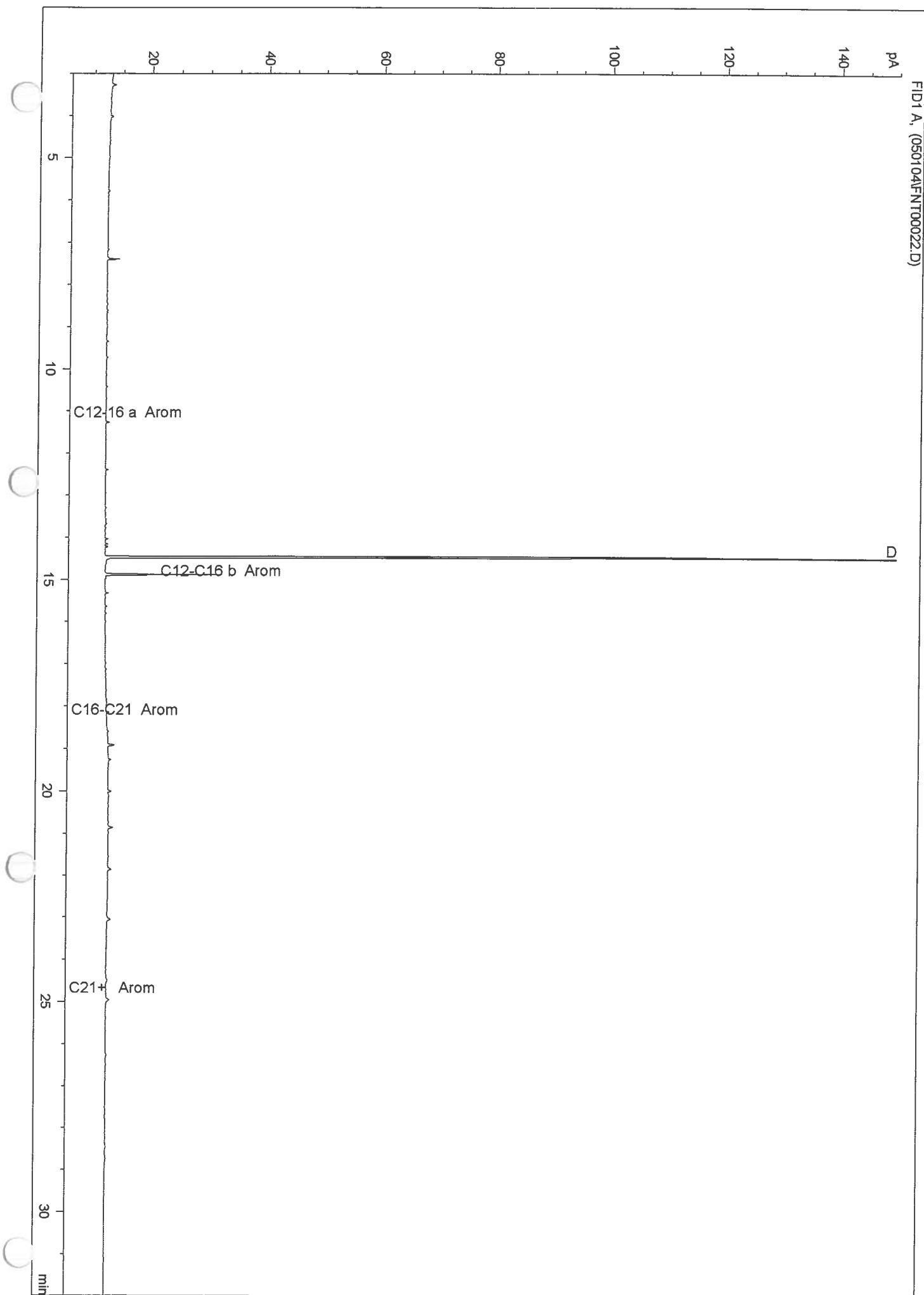
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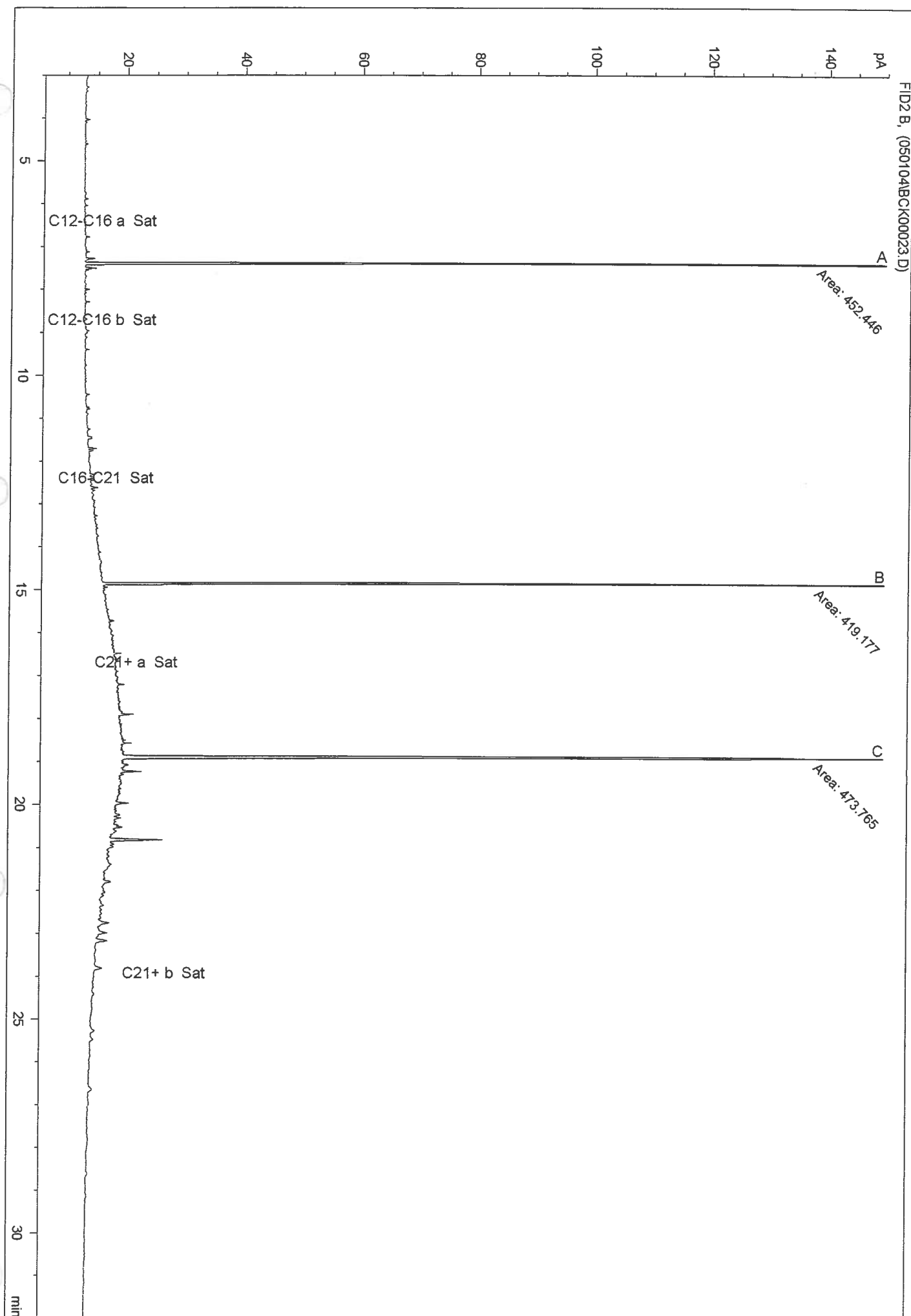
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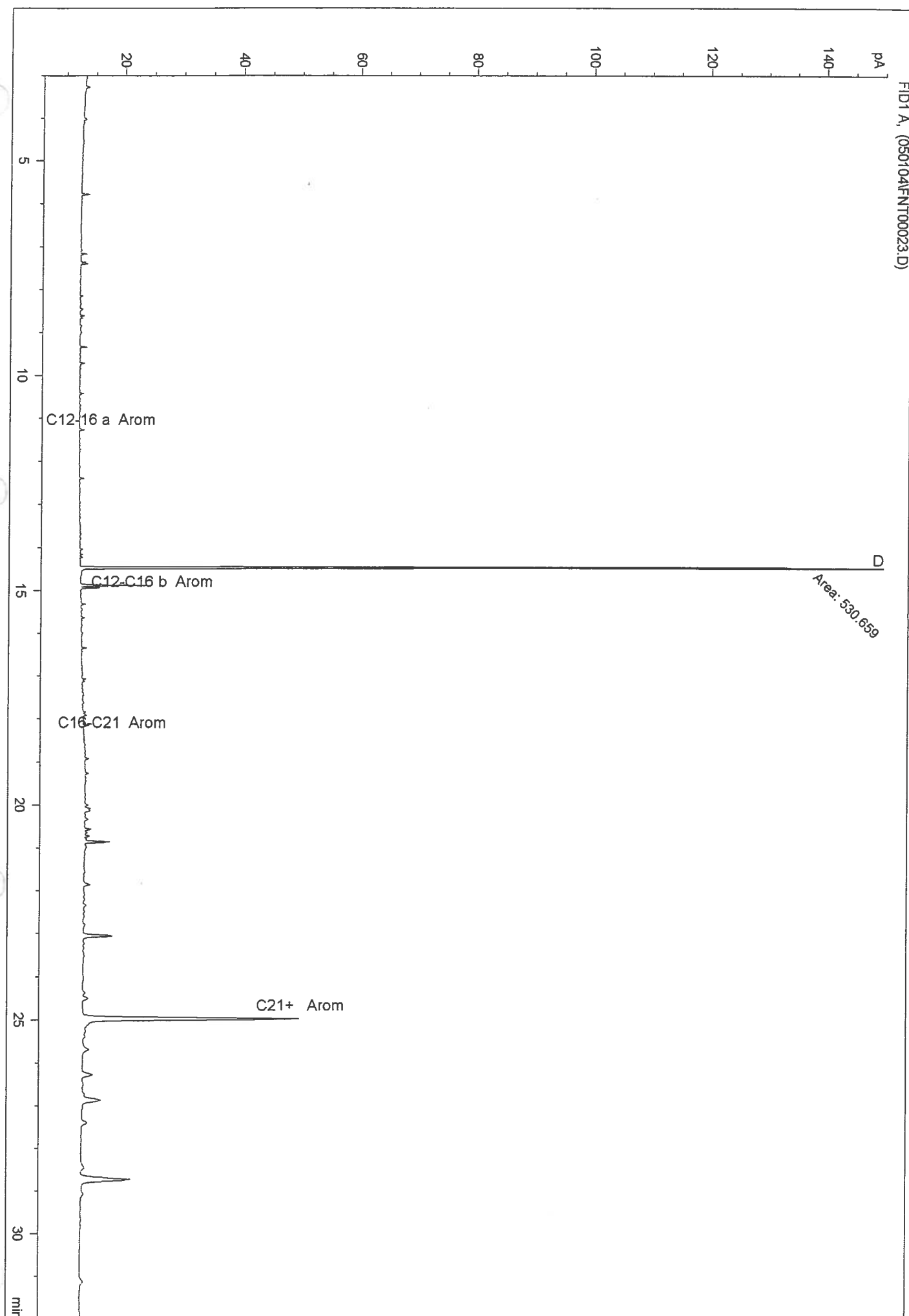
min

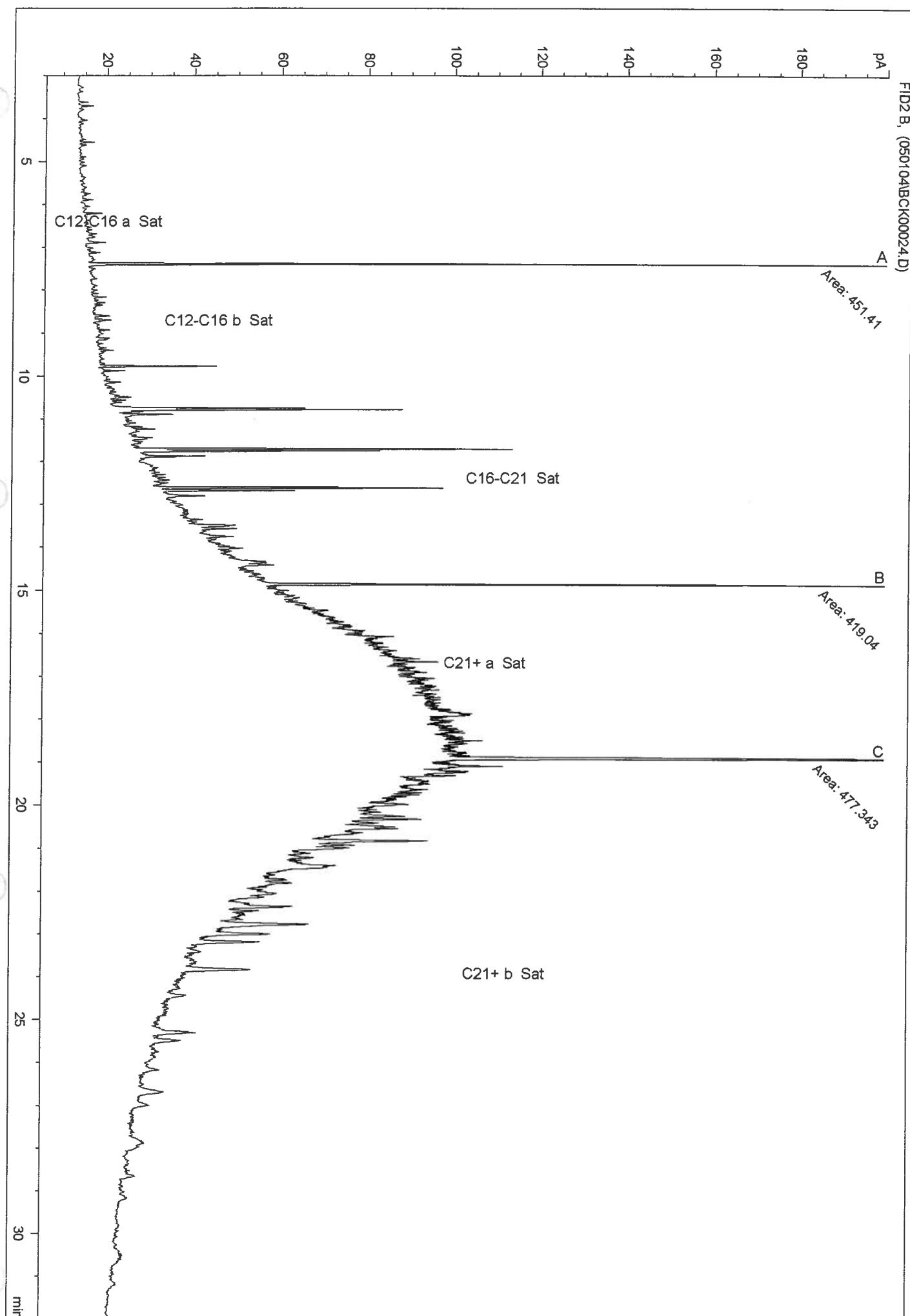


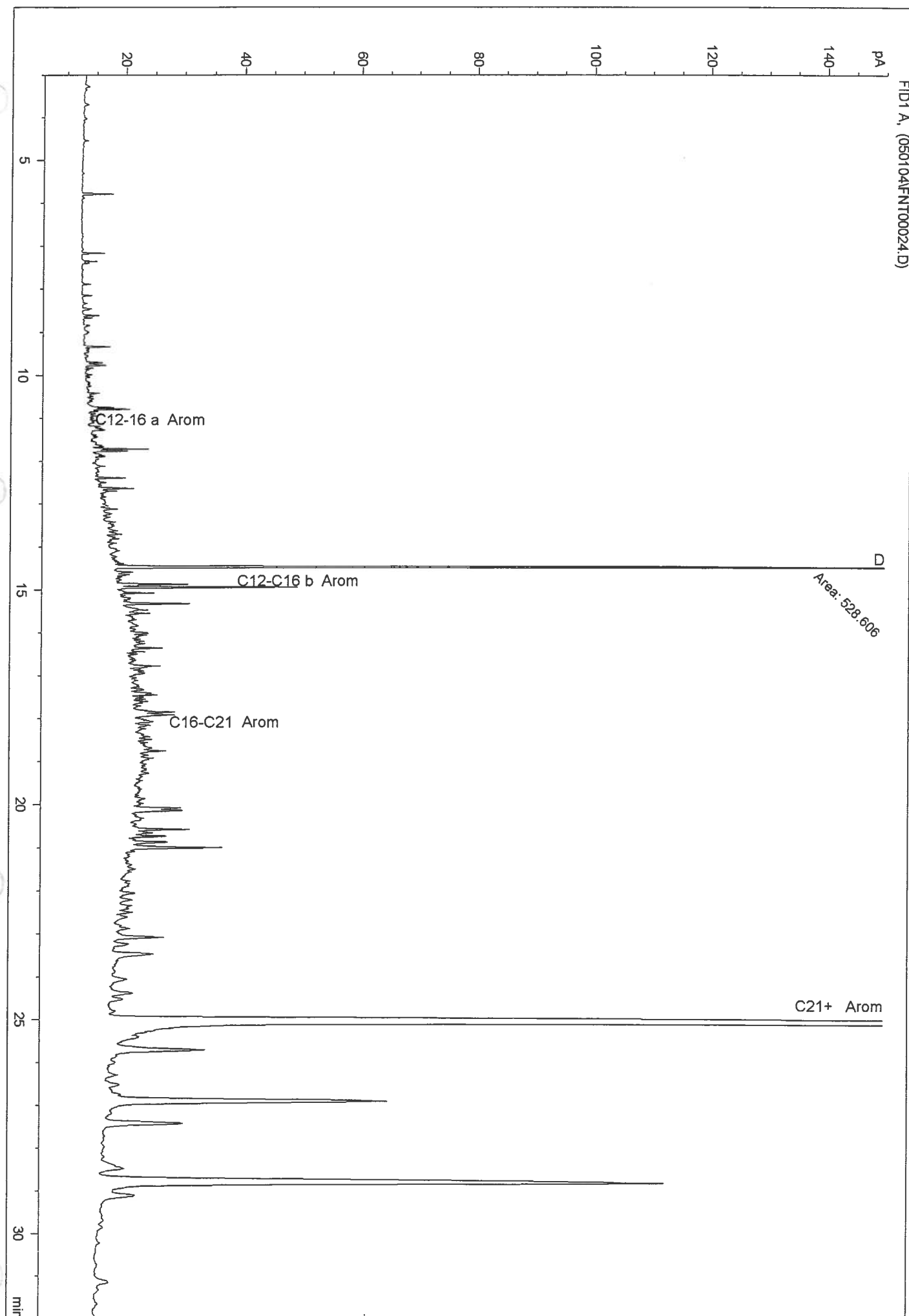


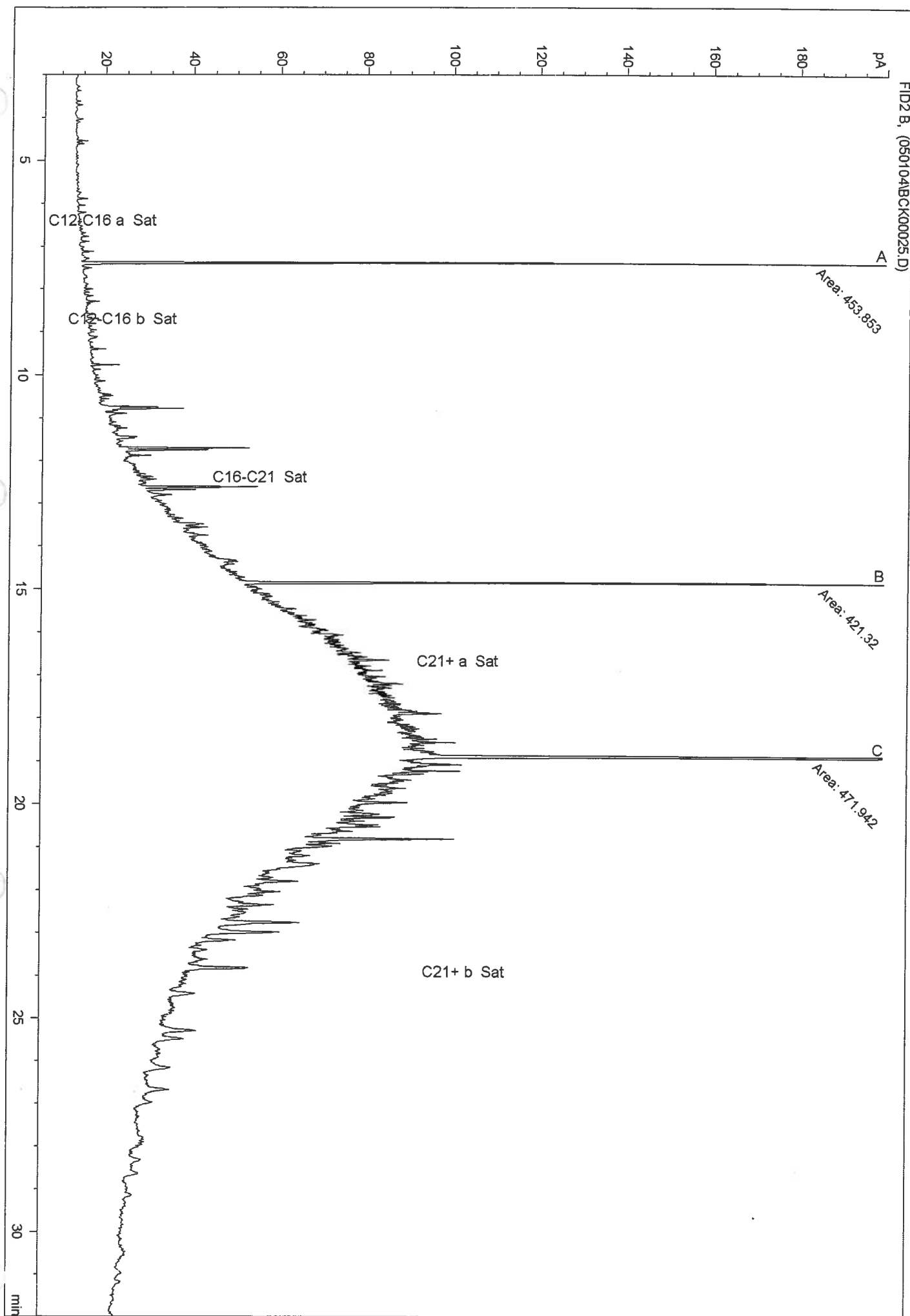




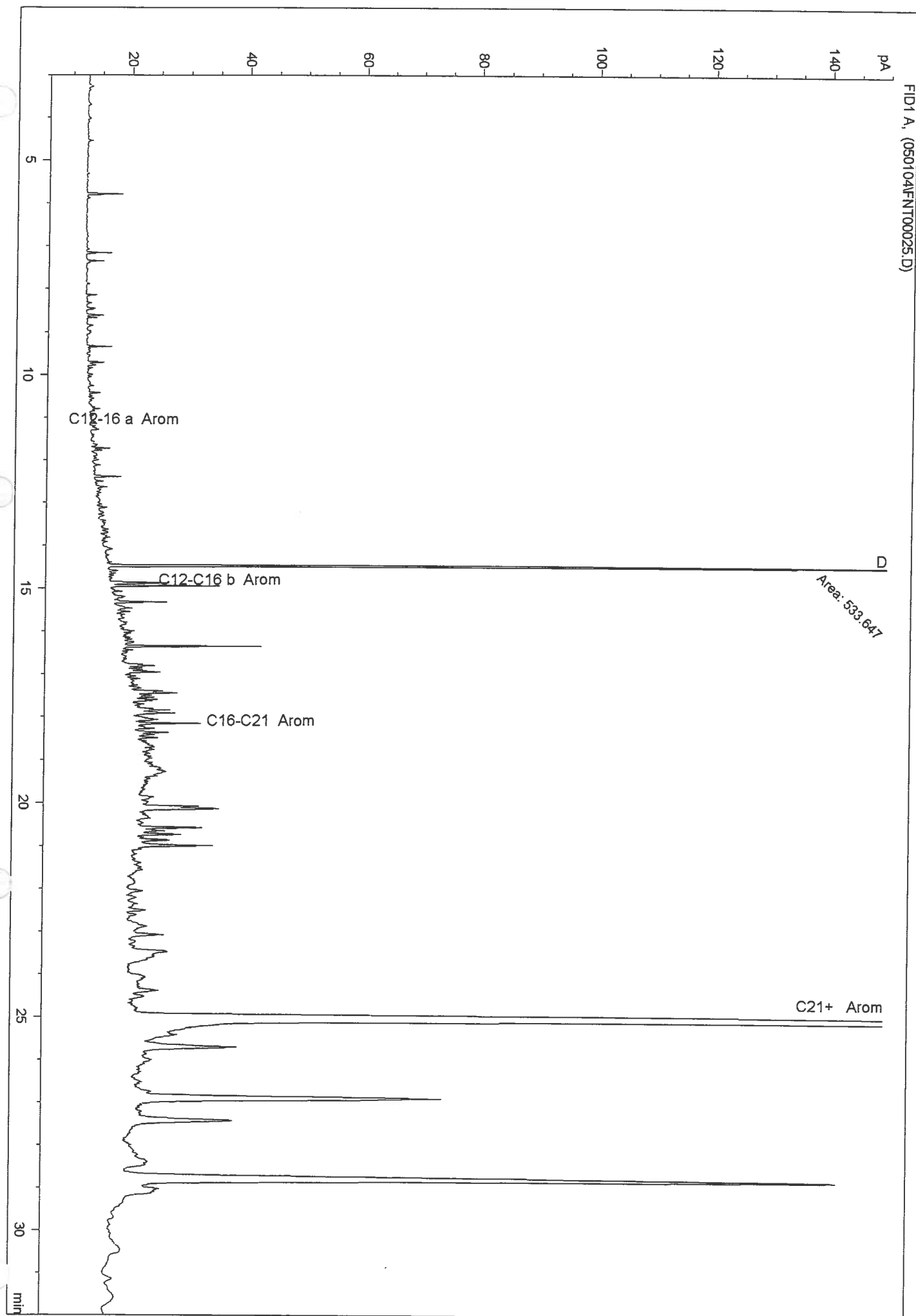


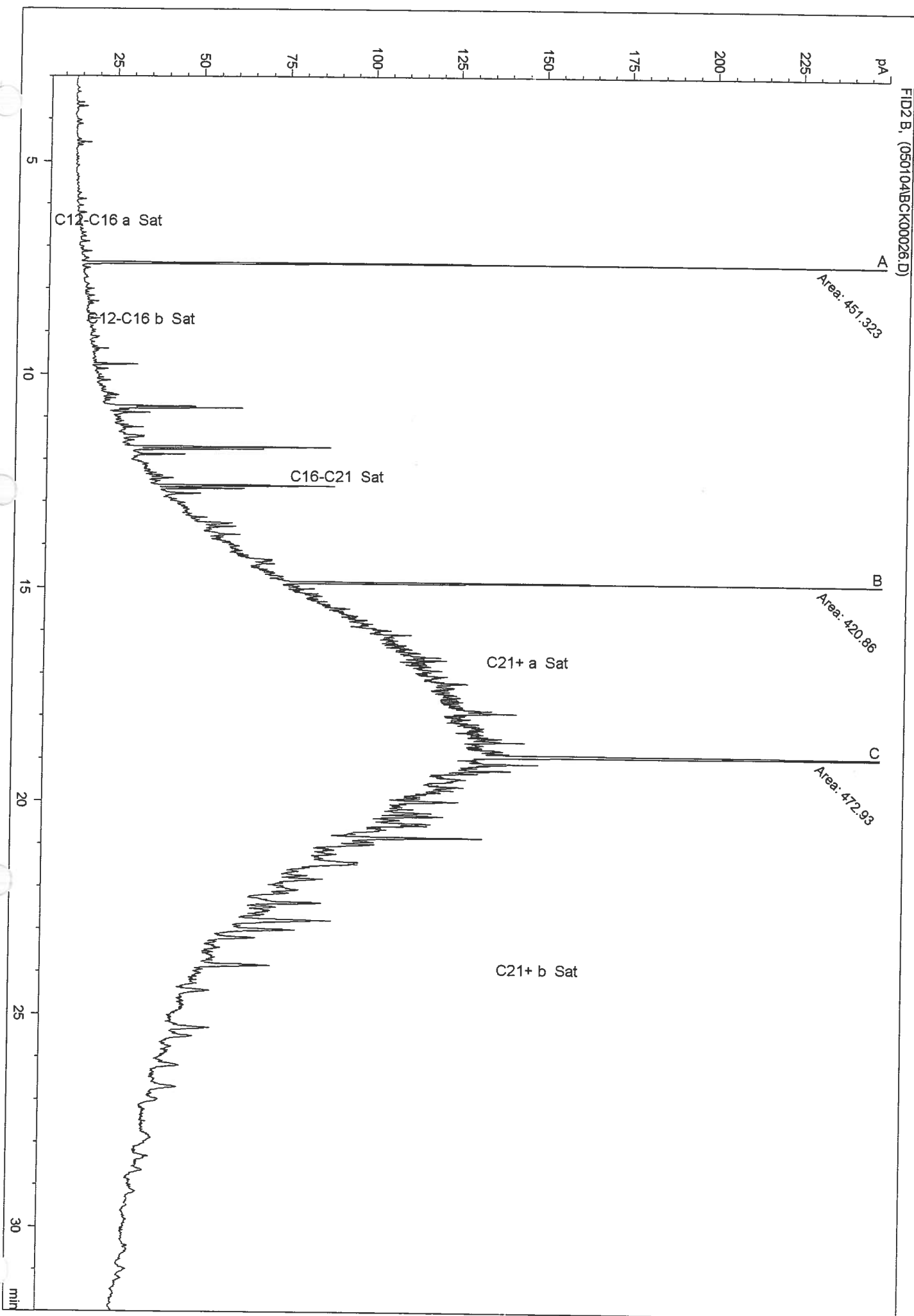












FID1 A, (050104FENI00026.D)

