Phase I & II Geo-Environmental Assessment

Havant Distribution Centre, Stanbridge Road, Havant

For BCP (Havant) LLP

Delta-Simons Project No. 13-0646.01

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PHASE I & II GEO-ENVIRONMENTAL ASSESSMENT SUMMARY TABLE
HAVANT DISTRIBUTION CENTRE, STANBRIDGE ROAD, HAVANT, PO9 2NG
DELTA-SIMONS PROJECT NO. 13-0646.01

EXECUTIVE SUMMARY

Current Site Status	The Site is occupied by a large warehouse building and associated hardstand.
Purpose	The purpose of this Assessment is to undertake an appraisal of environmental and geotechnical ground risk issues with respect to land which may be contaminated, in the context of a proposed acquisition and re-development at the Site.
Proposed Development	It is understood that the proposed development will comprise approximately 120,000 sq ft of industrial/ distribution warehousing (B1, B2 & B8), although the exact layout of the Site has yet to be confirmed. All options include loading/unloading areas, car parking and discrete landscape verge areas.
Environmental Setting	To the north, south and west of the Site are further industrial/commercial properties, while to the east is a railway line with residential properties beyond. The natural geology directly beneath the Site comprises the discontinuous Head Deposits over River Terrace Gravels (*Secondary A Aquifer*), which in turn overlie London Clay Formation (*Unproductive Strata*). The overall environmental sensitivity of the Site is considered to be low to moderate.
Key Historical Uses	Potential sources of contamination have been identified at the Site associated with its former use as a warehouse and associated tanks noted on historical plans. Potential sources of contamination identified within the surrounding area (within 100 m) of the Site include the Site immediately to the south where previous contamination impacts had been recorded and the wide industrial estate to the north and west.
Site Investigation	A Site investigation has been undertaken by Delta-Simons to provide a general coverage of the area of the Site affected by the proposed development, and where possible target the former historical sources identified and to identify the groundwater profile/flow direction (if present). The investigation comprised the advancement of seven cable percussive boreholes to a maximum depth of 10.45 m below ground level (m bgl). Five of the boreholes were installed as 50 mm groundwater and/or ground gas monitoring wells. In-situ California Bearing Ratio (CBR) testing via Transport Research Laboratory (TRL) probe tests were carried out at five of the borehole locations. Soil samples collected from the borehole arisings were selected on the basis of field observations and desk study information to provide both an assessment of the contaminated soils in the key source areas and to provide a general characterisation of the Made Ground and natural soils for geotechnical assessment. Five groundwater samples obtained from the newly installed monitoring wells were also analysed for key contaminants. Groundwater level and ground gas monitoring was undertaken on four occasions at all installed borehole locations.
Ground Conditions	The identified ground conditions across the Site consisted of Made Ground to a maximum depth of 1.50 m bgl, which in turn overlaid non-continuous firm/stiff Head Deposits over River Terrace Deposits (average depth of c.2.0 m bgl) and solid geology comprising London Clay Formation. During drilling works, groundwater strikes were recorded in all boreholes. During post investigation monitoring, groundwater associated with both the River Terrace Gravels and London Clay Formation was recorded beneath the Site, typically c. 4.0 m bgl.
Conclusions & Recommendations	An intrusive investigation has been completed to target the identified potential sources and provide general Site coverage. No significant evidence of soil contamination was observed during the Site investigation. While some elevated contaminants were measured in groundwater, it has been considered that these are likely to be representative of residual historic off Site sources of contamination rather than indicative of an ongoing on-Site contamination source. Based on the proposed commercial/industrial development and depth to groundwater, it is not considered that specific remediation/ mitigation should be required associated with the observed

	underlying groundwater quality in the vicinity of the Site. While widespread or significantly elevated concentrations of potential contaminants have not been identified in the soils at the Site, such localised areas of contamination may exist and an appropriate 'hotspot' protocol should be in place for groundworkers to act upon should such contamination be identified during the construction process. The Made Ground in its current form is not considered to be a suitable founding medium for new building foundations due to its variable nature and strength. However, bearing capacities for a range of strip and pad based foundations have been calculated, where they may be relevant for the firm and stiff Head Deposits or medium dense/ dense River Terrace Deposits with settlements restricted to 25 mm. Subject to appropriate enabling works and thorough proof rolling of the formation, ground bearing floor slabs are expected to be suitable for the development. The results of the TRL CBR testing across the area indicate generally variable but good performance of the sub-grade across the Site. However, given the current developed state of the Site and requirement for in ground demolitions and subsequent disturbance, it is recommended the designer prepares a specification for the minimum performance for CBR/ Modulus of Subgrade Reaction for any Enabling Works/ Building Contactor to achieve through their ground preparations. The results of the investigation should be provided to the local water authority, in order to determine the materials required for water supply pipes as part of the new development. Suitable allowance should be made for any waste disposal.
Overall Statement of Risk	On the basis of available information, Delta-Simons considers that with regard to potential soil and groundwater contamination, ground gas and associated environmental liabilities, for its ongoing commercial use, the Site represents an investment opportunity with a **Low** overall risk status.
This Geo-Environmental Assessment Executive Summary is intended as a summary of the Assessment of the Site based on information received by Delta-Simons at the time of production. No reliance should be placed on any part of the executive summary until the whole of the Report has been read. Other sections of the Report may contain additional information which puts into context the findings which are summarised or provide other pertinent facts/recommendations associated with our assessment.	

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1.0 INTRODUCTION

1.1 Authorisation

Delta-Simons Environmental Consultants Limited ("Delta-Simons") was instructed by BCP (Havant) LLP (the "Client") to carry out a Phase I & II Geo-Environmental Assessment for the property known as Havant Distribution Centre, Stanbridge Road, Havant, (hereafter referred to as the "Site"). A Site location map is included as Figure 1.

1.2 Context and Purpose

The purpose of this Assessment is to undertake an initial appraisal of environmental and geotechnical ground risk issues with respect to land which may be contaminated, in the context of the investment purchase and proposed development at the Site. A series of indicative development schemes being considered are provided as Appendix I.

This Report has been produced in accordance with the current relevant guidance and best practice as set out within British Standard BS10175, Contaminated Land Report 11 and the National Planning Policy Framework (NPPF).

This Report satisfies 'BREEAM New Construction 2011: LE01 – Site Selection: Criterion 2' by detailing the results of Site-investigation works; identifying the degree and sources of contamination; assessing risks to human and environmental health; and providing recommendations for remediation, if deemed necessary.

1.3 Scope

The scope of works relating to Site based activities which have been undertaken by Delta-Simons are provided in Table 1.

Table 1 – Scope of Works

Data Collection	1. Review of Environmental Setting: – Review current use/status of Site; and – Review geology, hydrogeology, hydrology and environmental sensitivity of Site; 2. Review Site history from historical Ordnance Survey (OS) maps obtained from Landmark; 3. Review regulatory information relating to the Site obtained from a Landmark Envirocheck® Report; 4. Search and review planning information held by the Local Authority (LA) as provided on their website and consultation with the LA's Contaminated Land Officer (CLO); 5. Intrusive Ground Investigations comprising: Δ Prepare a Health & Safety Plan concerning the proposed investigations to include preliminary unexploded ordnance risks; Δ On-Site utility services survey and reconnaissance to identify potential underground services at the proposed intrusive investigation locations with x,y,z recorded to National Grid Reference (NGR) and m above ordnance datum (AOD); Δ Seven cable percussive boreholes to a target depth of 10 m below ground level (m bgl); Δ In-situ testing and sampling in all boreholes at generally 1 m intervals for the first 5 m and 1.5 m intervals thereafter to determine soil strength; Δ Installation of monitoring wells in five of the boreholes and future ground gas and groundwater level monitoring and sampling; Δ Falling head permeability test within one borehole to assess the potential for the adoption of soakaway drainage; Δ Five California Bearing Ratio (CBR) tests at borehole locations; and Δ Environmental & geotechnical soils and groundwater laboratory analysis.
Interpretation & Reporting	6. Formulate an initial Conceptual Site Model (CSM) by identifying potential contamination sources, pathways and receptors, in the context of the current and continued use of the Site; 7. Undertake a qualitative risk assessment; 8. Undertake a geotechnical assessment relating to the perceived proposed scheme type; 9. Provide liability and asset impact risk statements; and 10. Prepare a final Report.

1.4 Limitations

This Report provides an assessment of the contamination status of the Site based upon the available information. It does not provide a flood risk assessment and, as such, any comments relating to such matters are for information only.

The Report and risk assessment has been produced in accordance with the principles of BS10175. However, although reference may be made to archaeological and ecological issues, or the potential presence of asbestos containing materials (ACMs), the Report does not constitute an archaeological or ecological assessment,

nor does it constitute an asbestos inspection. Comments with regard to waste classification information should be regarded as preliminary information in advance of a detailed waste classification assessment.

Delta-Simons obtained, reviewed and evaluated information in preparing the Report provided by the Client, Landmark Information Group, Chemtest Limited, Professional Soils Limited and others. Delta-Simons' conclusions, opinions and recommendations are based upon this information. Delta-Simons does not warrant the accuracy of the information provided to it and will not be responsible for any opinions which Delta-Simons has expressed, or conclusions which it has reached in reliance upon information which is subsequently proven to be inaccurate.

2.0 REVIEW OF SITE SETTING, HISTORY AND REGULATORY INFORMATION

Current Site	The Site is located approximately 1.5 km north-east of Havant town centre, within in the Havant North Industrial Estate. The NGR for the Site is 472700, 107330. A location map of the Site is provided as Figure 1. A Site inspection was undertaken on the 4th December 2014. The property occupies approximately 2 hectares (5 acres) and substantially comprised a brick constructed, but vacant warehouse building with a series of loading bays, former chiller store and small office/ amenity facilities at the building's southern elevation. The northern elevation of the main block also accommodated additional three storey office/ amenity space. The Site was also serviced by a number of small annex buildings/ plant rooms (i.e. gas, electrical switch & transformer), as well as sprinkler, modern backup diesel (self-bunded) generator and air handling units (associated with the former chiller room) and a security gate house. A Site Layout Plan showing the main Site features and arrangements are shown on Figure 2. No power or water was available on-Site and it was reported that the building had suffered security issues due to vandalism to the electrical systems. The Site boundary is demarked by a combination of wire mesh/ chain link and steel palisade fencing and security cameras, which also remained operational at the time of the visit. Externally there was no or little formal landscaping/ verge areas, with the exception of a few raised plant beds in the vicinity of the office annexes to the main building. Weeds (possibly Buddleia or Butterfly Bush) were, however, noted to be establishing itself through expansion joints/ cracks in the yard areas and against the existing building. The hardstand comprised a combination of tarmacadam/ asphalt or concrete which was generally regarded as in a satisfactory condition in respect of its performance to resist any localised contamination spills/ leaks should they have occurred when the Site was in use. There was no significant surface staining to any areas of the hardstand noted during the Site inspection survey. Internally, the main building comprised a concrete slab in generally good condition. The loading bays were arranged as a combination of the slab 'at dock level' for 3 bays and an additional 3 bays in which lorries could reverse into for loading/ unloading from which a concrete ramp then rises to meet the internal slab level. The roller shutter doors had been disabled at the time of the visit due to previous security issues. The main warehouse area was otherwise vacant/ given over to (empty) steel racking. Head-room varied within the building from an estimated 3.7 m to 7.5 m; though initial access for plant/ machinery would be restricted to a c.2.5 m high (and wide) sliding wooden door along the western elevation of the building (due to the other larger access points and roller shutter doors having been rendered disabled). A Site layout plan is provided as Figure 2.
Surrounding Area	The Site is immediately surrounded by commercial and industrial land uses in the north, west and south with a railway embankment (c. 2 m high) to the east and residential properties beyond.
Geology	From current British Geological Survey (BGS) online data, the majority of the Site is directly underlain by superficial geology comprising the River Terrace Deposits (undifferentiated sand, silt and clay). Head Deposits (sand/ gravel/ clay) are also mapped off Site but in close proximity to the west of the Site according to the published geology. The bedrock geology is indicated to comprise the London Clay Formation. From BGS Soil Geochemistry data provided within the Envirocheck® Report, the

	Site falls within an area considered to have a range of background concentrations for heavy metals (<15 mg/kg for arsenic, <1.8 mg/kg for cadmium, 60-90 mg/kg for chromium, <150 mg/kg for lead and 15-30 mg/kg for nickel). Given the Site's commercial use, these are not considered to represent a concern for the Site.
Hydrogeology	The superficial deposits underlying the Site are classified as a *Secondary A Aquifer*. The bedrock geology is indicated to comprise *Unproductive Strata*. The Site is not located within a groundwater Source Protection Zone (SPZ). From current data provided within an Envirocheck® Report, the closest groundwater abstraction is located 1.8 km south-west of the Site for public water supply.
Surface Water Features	The nearest surface water feature is a river (Lavant (Hants)) approximately 150 m north-west of the Site that is indicated to flow to the South. According to the Envirocheck® Report, there are no surface water abstractions within 2 km of the Site.
EA Flood Risk	According to the Environment Agency (EA) Flood Risk Map for Planning provided within the Envirocheck® Report, the Site is not located within in a flood risk zone. A Flood Risk Zone II is located approximately 150 m to the north west. The EA website indicates the majority of the Site is at 'very low' (i.e. < 1 in 1000 or < 0.1% chance per year) risk of surface water flooding.
Mining & Ground Stability Hazards	The Envirocheck® Report indicates that the Site is not located within an area that may be affected by coal mining activity. The potential for ground stability hazards (from collapse, ground dissolution or other causes) in the area of the Site is indicated to be very low or no hazard according to the Envirocheck data.
Radon	The Envirocheck® Report indicates that the Site is within both a lower and intermediate probability radon area. As such basic radon protective measures should be considered in the construction of new developments and extensions.
Sensitive Areas	No sensitive land uses are located within c. 1 km of the Site.
Heritage Interest	According to Sketchmap.co.uk, there are no Listed Buildings located in the immediate vicinity of the Site.
Environmental Sensitivity	The environmental sensitivity of the Site setting is considered to be low to moderate, based upon the hydrogeology of the area, the proximity to surface watercourses, and the nature of surrounding land use.
Historical Map Review:	A review of historical maps has been undertaken and copies are included as Appendix II.
Site	The earliest map edition of 1867 shows the Site to be undeveloped forming part of a field. The first development on Site is shown by 1960 with construction of a small minor rectangular structure near the south-west corner of the Site; assumed to be associated with the warehouse to the south. A warehouse is shown in the northern and centre of the Site by 1973 with a tank at the south-east corner. The factory appears to be extended to the south (to include an additional tank) by 1989 and further extension/ alteration also possibly from 2006 to correspond to the current building footprint.
Surrounding Area	The area around the Site was largely undeveloped at the time of the earliest 1867 map apart from the railway embankment immediately adjacent to the eastern boundary, present on the first map of 1867. The wider industrial estate surrounding the Site appears constructed by the early 1960's; labelled variously as factories, works, builders yard and engineering works. A gas holder is also present c.150 m north of the Site from 1963 to current mapping (2014).
Landmark Envirocheck®	From regulatory information listed in the Envirocheck® Report (reproduced as Appendix III), there are no relevant entries located at the Site.

Report Review	The Envirocheck® Report lists the following records within the near vicinity (within 250 m) of the Site: Δ Discharge Consents: The nearest consented discharge to surface water is for the discharge of trade effluent into a freshwater river, approximately 230 m to the west of the Site; Δ Integrated Pollution and Control (IPC) Facilities: Two entries (now revoked) for use of organic chemicals c.220 m south-west of the Site; Δ Local Authority Pollution Prevention and Control (LAPPC) Facilities: One entry (revoked) for general coating processes 150 m west of the Site; Δ Licensed Waste Management Facilities/ waste transfer, treatment or disposal Sites: Four entries; the closest three are assumed operational to Wyeth Laboratories c. 20 m to 80 m south-west of the Site for the storage of special wastes. A historic (lapsed) entry was also present for incineration of paper, cardboard and wood c. 65 m north-west of the Site; Δ Hazardous Substance Controls (COMAH, NIHHS): Two entries; both associated with the Transco Leigh Holder Station c. 160 m north-west of the Site; Δ Planning Hazardous Substance Consents: Three entries; all associated with British Gas Plc for liquefied flammable gas (including LPG) and natural gas c. 150 m to 160 m north of the Site; and Δ Contemporary Trade Directory Entries: 39 entries within 250 m, 18 are active and include: builder's merchants, hydraulic equipment, boiler repair, electronics manufacture, air conditioning servicing, pest control, precision engineering, printers and commercial cleaning services.
Third Party Reports	Two third party reports have been provided via the Client concerning the Site. ***RSK Geotechnical & Environmental Site Investigation (Ref:312375-01 (00); dated April 2013)*** The report was commissioned to identify potential liabilities associated with ownership of the Site and provide information pertaining to the engineering characteristics of the underlying soils to inform geotechnical design of any future redevelopment works. The report comprised desk study assessment and subsequent intrusive ground investigation involving concrete core sampling, four shallow window-sampler boreholes with in-situ testing and return visits gas and ground water monitoring and associated environmental and geotechnical soil sampling and testing. No groundwater was encountered during the investigations or subsequent monitoring visits, due to boreholes not reaching the groundwater surface. The report concluded that unacceptable risks to Human Health, controlled water receptors and plastic water supply pipes were unlikely to be present at the Site. The presence of competent natural soils at relatively shallow depth were considered likely to be a suitable founding medium for light to moderately loaded structures. Classification for Design Sulphate for buried concrete was considered to be consistent with DS-1 AC-1 requirements. ***URS Divestiture Environmental Assessment (DESA) (Ref:47067283; dated July 2013)*** The purpose of the DESA was to assess Site conditions and to provide documentation regarding the presence or otherwise of existing and potential contamination and/or hazardous substances on the Site that may result in material adverse environmental impacts. The DESA was intended to provide information on environmental conditions and recent operating practices as they relate to potential asset divestiture from the remainder of the Pfizer operated

facility.

Available historical maps for the Site indicated that it was initially developed between 1963 and 1973 as a factory. Site representatives reported that the Site was formerly used for the manufacture and storage/distribution of loud speakers operated by a company known as Goodmans. The property was reportedly purchased by Wyeth/John Wyeth Brothers (Wyeth) who was operating at that time on the adjacent facility (i.e., the current PGS – Havant, UK site), in the mid 1980's (specific purchase date not provided to URS), and was then used for the storage, packaging and distribution of sealed Wyeth pharmaceutical products including dried baby milk, clinical trial and nutritional products until the facility closed in August 2011. The facility has not been used since that time. URS understands that Pfizer acquired the Wyeth business, including the Site, in October 2009.

Interviews with Site representatives reported that a spill of aluminium sulphate historically occurred from a storage tank on the adjacent PGS-Havant, UK site to the south, at a location immediately adjacent to the south-east corner of the Site. A report by ERM (Environmental Liability Assessment, dated November 1995), referenced in the URS report but not provided for review, indicated that the spill occurred in the late 1970s or early 1980s and that an unreported quantity of the product reached, and was contained within, the sanitary drainage system. The precise release point and/or affected area was not identified in the ERM report.

The URS report refers to an intrusive soil and groundwater investigation that was undertaken at the Site, as part of a larger investigation of the PGS-Havant, UK site to the south in September and October 1996 (Phase II Site Investigation Report, January 1997, ERM EnviroClean Limited), which was triggered by the demolition of the Fine Chemicals Manufacturing Unit (FCMU) on the adjacent Pfizer site. ERM reported that elevated total PAHs were recorded in the Made Ground near to the assumed location of former oil ASTs (near the eastern boundary) immediately beneath the concrete, however ERM stated that there was no evidence to suggest these organic compounds were impacting the groundwater. Acetone was detected in soils close to the south-east corner of the Site. No groundwater analyses for acetone were undertaken at the Site. ERM reported that trichloroethene (TCE) and its degradation product cis 1,2-dichloroethene, were detected at concentrations in excess of Dutch Intervention groundwater guidance levels (a guideline in common use at the time of the report), at one location (BH1), close to the site of a former solvent store prior to the 1980s. Toluene was also detected at a concentration above what was considered by ERM to be the background groundwater concentration at the same location. Whilst this borehole is identified as being located within the 'North Site'in the ERM report, which corresponds to the area of the subject Site, it is noted that the boundary has changed since that time, and the location of BH1 now lies to the south of the North Site boundary, i.e., on the current PGS-Havant, UK site.

The November 1997 ERM report recommended undertaking a further investigation in the vicinity of BH1 to delineate the impact identified in the groundwater. Site representatives reported that the further investigation was subsequently undertaken and comprised a targeted near-surface Geoprobe survey and additional groundwater monitoring of existing boreholes. Although URS state that this report was not available for review, a report summarizing the findings of a more recent investigation of the adjacent Pfizer property undertaken in 2008 (ERM, project number 0081829, dated June 2008) indicates that a further investigation, which included surface water sampling in the River Lavant was undertaken in 1997 and that no impact from site operations were detected during the 1997 investigation.

Preliminary UXO Risk Assessment	***General*** Given the Site situation; located close to a major port and associated infrastructure, the possibility of encountering Unexploded Ordnance (UXO) cannot be discounted, and, which if triggered during any future ground investigation works or sub-surface ground-works during redevelopment, may detonate and represent Health and Safety risks to personnel, property and public. As such a Preliminary UXO Risk Assessment should be undertaken. The main source of UXO within the UK are from: military activities/sites; explosive manufactories; and bombs dropped during WWI and WWII. In undertaking preliminary assessment, it should be noted that there is usually a lack of publicly available information relating to UXO sources (e.g. some military sites were not shown on historical maps) and to obtain specific information for the Site, even if information is available publicly, could be difficult to find (e.g. within newspaper articles). The following provides an assessment primarily based on the largest threat of UXO - from Unexploded Bombs (UXB) during WWII. It is also recommended that the future demolition/ construction contractors consider independently what sub-surface works they will undertake and should assess their own health and safety risks in accordance with relevant current industry practice. ***Site-Specific Risk Assessment*** From historical information available for the Site, military activities and explosives manufacturing have not been identified at or in the immediate vicinity of the Site. However, due to the Site's proximity to Portsmouth and associated infrastructure, reference to Regional Unexploded Bomb Risk Mapping (provided by Zetica and reproduced in Appendix IV); the Site should be regarded as lying within an area of 'moderate' bomb risk. In accordance with preliminary risk assessment methodology as described by CIRIA 681 (2009): UXO A Guide for the Construction Industry; while the Site was not indicated to have been developed before WWII, extensive post war development has occurred in the form of a number of phases including alterations and extensions; such that the Site is presently substantially covered by a building footprint, hard stand and which will have included the construction of extensive below ground structures in the form of foundations, utility and drainage features. Reference to Table 5.2 (C681), the Site's development history is considered to place the Site as having a 'moderate post war development' status. The Site is regionally local to Portsmouth Harbour (south-west) and railway infrastructure (east) of the Site and regional bomb risk mapping confirms Havant to be at moderate regional risks due to potential UXO. Reference to Table 5.1 (C681) would also place the Site to the centre and right (i.e. increased risk for aerial delivered UXO to be present). The highest risk of encountering aerial delivered UXO is during high density piles and deep/large scale excavations (e.g. basements). Assuming good ground conditions (as predicted by reference to the published geology on Site) and form of current development proposals (i.e. without basements), the risks due to construction activities are considered to range from low ('borehole drilling'), to low to moderate (assuming 'shallow excavations over an extended area' which are currently considered relevant to the perceived demolition/ development scenarios proposed). Following the risk assessment process discussed above; it is considered that

	there would be a **low** risk that UXO will be encountered during proposed intrusive investigation works involving borehole drilling; but that a **low to moderate** risk would apply in a development context; assuming currently perceived extent of likely ground disturbance and construction techniques as anticipated above. It is, therefore, recommended that the contractor review their methods and undertakes appropriate Health and Safety assessment to consider whether detailed specialist UXO assessment should be undertaken. As a minimum, it is recommended Site staff should be made aware of the potential for UXO hazards to be present and that discussion and responses to these risks be included in the Site Health & Safety programme for the duration of the project.
Local Authority Information	Delta-Simons has contacted Havant Borough Council to obtain details of the Site's current status with respect to Part 2A of the Environmental Protection Act (EPA) 1990. A reply was received 23rd January 2015 and a copy of the response is reproduced as Appendix V. In summary, the subject Site has not been specifically prioritised for action under Part 2A duties, however, historic reports relating to the Site (as part of a wider investigation) are known to the Council and acknowledge the existence of some chemical contamination at the wider Wyeth Laboratories site (i.e. now Pfizer premises to the south); but do not consider that the levels are materially significant with respect to off-Site receptors, or Human Health within the current commercial / industrial context. It was noted that previous recommendations (in comments to recent, related planning applications) that in the event that a comprehensive redevelopment of the area were to be proposed that would change the risk sensitivity of the Site, or could either mobilise or make inaccessible any potentially significant contamination source; some intrusive work should be undertaken to confirm the current contamination risk (i.e. characterise any changes in distribution or concentration and mitigate impacts if necessary). References for a Planning Application (Ref: 08/52191/040; dated 2008) requiring the discharge of contaminated land conditions for a new packaging hall extension & electrical intake system cited a number of 2008 reports (combined phase 1 & 2, addendum letter report, and site screening) prepared by ERM, alongside a copy of the remediation completion statement (which was also used at the time to formally complete investigation work). A copy of the location plan associated with the 2008 application is included in Appendix V; which shows the area for the proposed extension for a new packaging hall and switch room to lie off Site (i.e. to the south; on the current Pfizer complex).
Online Planning Information	A search of Havant Borough Council's online planning information has been undertaken to obtain details of the planning history of the Site (post code reference PO9 2NG). The earliest available (decided) applications which are indicated likely to have related to the Site (or included the Site/ wider area associated with this post code); date from circa 1996 to 2011. Notably, recent applications (2011) have included determinations as to whether prior approval be required for demolitions and methods for demolition in which were subsequently approved 'as approval required'. A Planning Application (Ref: 08/52191/040; dated 2008) for a new packaging hall extension & electrical intake system was granted and included requirements for contaminated land assessment as reported by the Environmental Control Officer at Havant Borough Council mentioned above.

	Other historical applications included for variety of alterations, demolition and construction for (among other things) new pallet stores, plant for warehouses, high bay warehouse space, loading bays, cold stores and removal of two oil storage tanks and associated bund walls. Whilst a number of conditions were often applied, none related to requirements for specific contaminated land assessment. Some noise insulation and informative notes were however recommended in respect of nearby Network Rail property/ infrastructure.

3.0 PRELIMINARY CONCEPTUAL SITE MODEL

3.1 Introduction

A CSM represents the relationships between contaminant sources, pathways and receptors, to support the identification and assessment of possible pollutant linkages (PPL) - and an assessment of known pollutant linkages, where identified from existing information.

Where PPLs are identified, a preliminary risk assessment is carried out to assess the likelihood that each possible linkage exists and to decide whether these pose potentially unacceptable risks to identified receptors and require further assessment. Where this linkage is of a form that subsequently leads to land being identified as 'contaminated land' under the terms of Part 2A of the EPA 1990, the linkage is termed a significant pollutant linkage.

At the preliminary risk assessment stage, which is usually based upon desk top information, the decision on whether a PPL poses a potentially unacceptable risk is based upon professional judgement. The significance of the PPL will also be determined dependent on the context of the land use and the purpose of the assessment.

Assessing risks from land contamination underpins the "suitable for use" approach adopted for Part 2A of the EPA 1990 regulatory regime.

3.2 CSM Summary & Risk Assessment

The Site is occupied by a disused distribution centre including warehouse and office space that was understood to have been constructed between 1963 and 1973. It is understood the building has undergone numerous phases of development including various extension and alterations. The Site is predominantly occupied by the warehouse, with hardstanding parking and loading areas to the north, south and west.

Historical tanks have been highlighted present located in the south and central areas of the Site through its development history and spills were also highlighted as having occurred associated with the adjacent site to the south during the late 1970's or early 1980's, which involved a number of organic compounds. However, subsequent investigations did not reveal any significant issues other than potentially elevated

PAHs associated with Made Ground horizons close to former tank locations and that no significant issues to controlled waters receptors or the River Lavant were apparent.

The environmental sensitivity of the Site setting is considered to be low to moderate, given the commercial nature of the surrounding area, the *Secondary A Aquifer* underlying the Site and that the proximity to the nearest surface water feature (the river Lavant 150 m north-west of the Site).

Based on the information reviewed, a preliminary risk assessment using the source-pathway-receptor approach has been formulated, which identifies PPLs at the Site in the context of the continued commercial use of the Site.

Table 2 – Preliminary Conceptual Site Model

Source(s)	Receptor(s)	Pathway(s)	Risk Rating	Justification / Additional Site Investigation Requirements and Other Recommended Actions.
Made Ground and general background concentrations of potential contaminants within the soil and groundwater across the Site.	Future Site users & buildings	Direct contact, ingestion an inhalation of dust and vapours	**Low Risk**	Widespread or significant contamination of the Site has not been identified by previous investigation. The Site will predominately be covered in hardstanding which will create a physical barrier between any potential contamination and future Site users.
	Construction workers	Direct contact, ingestion and inhalation of dust and vapours	**Low Risk**	Widespread or significant contamination of the Site has not generally been identified by previous investigation, as with all Brownfield sites, groundworkers and sub-surface maintenance workers should be made aware of the possibility of encountering contaminated soils and groundwater through toolbox talks. Safe working procedures should be implemented, good standards of personal hygiene should be observed and appropriate levels of personal protective equipment (PPE) provided and utilised. This recommendation should be captured in Site health and safety documentation and in maintenance plans.
	Drinking water supply pipes	Vertical and lateral migration of contaminants and degradation of pipework	**Low Risk**	Hydrocarbons, especially aromatics and chlorinated solvents, are known to permeate plastic pipes. Significant contamination of organic contamination has not been identified in the shallow soils at the Site, however, it is recommended the analytical data associated with the ground investigations is forwarded to the appropriate Statutory Undertakers and the appropriate barrier pipe/design is agreed and used for the proposed development.
	Controlled waters – groundwater and surface water	Vertical and lateral migration	**Low to Moderate Risk**	While significant soil or groundwater contamination has not been identified, recent ground investigations did not encounter groundwater and, therefore, liability risks associated with this receptor have not been recently proven. It is recommended future ground investigations are designed with an objective of confirming prevailing groundwater quality and liability risks. The ground investigations reported through the remainder of this report have therefore been designed to further assess this risk.
Potentially hazardous ground gas	Site buildings and Site users	Vertical and lateral migration of ground gas	**Low to Moderate Risk**	Significant sources of ground gas are not expected based on preliminary ground gas assessment included in the 2013 RSK report. However, basic radon gas protection should be considered and further confirmatory ground gas monitoring and assessment should be completed commensurate with current guidance expectations to confirm likely design requirements ahead of the proposed redevelopment of the Site. It is recommended a further four gas monitoring rounds are undertaken over a one month period to be completed for initial further assessment. The ground investigations reported through the remainder of this report have

Source(s)	Receptor(s)	Pathway(s)	Risk Rating	Justification / Additional Site Investigation Requirements and Other Recommended Actions.
				therefore been designed to further assess this risk.
Potentially unidentified 'hotspots' of contamination, which may be present in areas of the Site that have not been directly investigated	All receptors	All pathways	**Low to Moderate Risk**	From a review of the Site history potential sources of contamination on-Site are limited. However, Site coverage for the purposes of soil/ groundwater analysis has been limited and it is recommended further ground investigations are designed with an objective of confirming prevailing soil and groundwater quality conditions across the Site. The ground investigations reported through the remainder of this report have therefore been designed to further assess this risk.

4.0 SITE INVESTIGATION AND RISK ASSESSMENT

4.1 Intrusive Investigation

4.1.1 Cable Percussive Boreholes

A total of seven cable percussion boreholes (BH1 to BH7) were advanced at the Site from the 8th to 19th of December 2014, to a maximum depth of 10.45 m bgl. Five of the boreholes were installed as 50 mm gas and groundwater monitoring wells.

The ground conditions encountered are discussed within Section 5.1 and are fully detailed on borehole logs included as Appendix VI. In-situ SPT Calibration Certificates for the equipment used and drilling foreman daily record sheets are presented within Appendix VII. Interpretation of geotechnical strength/ density characteristics has been derived upon an SPT energy ratio of 59.42% and 58.16% for the full size (i.e. locations BH1 to BH5 inclusive) and the cut down rig (locations BH6 & BH7) respectively. In-situ CBR testing via Transport Research Laboratory (TRL) probe tests were also carried out at five locations (BH1, BH3, BH4, BH5 & BH7). The TRL sheets are included as Appendix VIII. The positions of the investigation locations are shown on Figure 2 and a graph showing the corrected SPT N Values with depth for each strata is presented on Figure 3. Contingency core locations were also completed at positions 'BH6A' and 'BH7A' as described on Figure 2; however, these positions were not progressed for subsequent drilling as suitable equipment was successfully mobilised to drill the preferred locations (BH6 & BH7) within the main warehouse building.

4.2 Soil Sampling and Analysis

4.2.1 Sampling and Analytical Strategy

Intrusive locations were positioned to provide a general coverage of the area of the Site affected by the proposed development, to target close to the indicated positions of historical tanks (BH5 & BH6) and the existing diesel backup generator equipment on-Site (BH5). Five of the cable percussive boreholes were located outside and two inside the current warehouse structure.

Soil samples collected from the borehole arisings were selected on the basis of field observations and desk study information to provide both an assessment of the contaminated soils in the key source areas and to provide a general characterisation of the Made Ground and natural soils.

The samples were collected by Delta-Simons' on-Site scientist and immediately packed into pre-cleaned containers supplied by the laboratory. A new pair of disposable nitrile gloves was worn for each sample collection to prevent cross contamination between samples. The jars were packed into a cool box and transported, by courier, to an accredited laboratory for chemical analysis.

4.2.2 Soils: Geotechnical Analyses

In-situ testing comprised standard penetration test (SPTs) in all holes at regular intervals in order to establish strength and density properties of the underlying strata. The results of the Uncorrected SPT tests are shown in the borehole logs, which are presented as Appendix V.

A total of 16 soil samples disturbed and undisturbed (U100) were submitted to Professional Soils Laboratory Ltd (PSL) at Doncaster for testing of Atterberg limits, moisture contents, undrained shear strength and particle size distribution. A summary of the location, depth, strata and selected analysis for each sample is presented in Table 3. The geotechnical laboratory results are presented in Appendix IX.

Table 3 – Geotechnical Soil Sample Analysis Summary

Location	Depth (m bgl)	Strata*	Undrained Shear Strength	PSD	Moisture Content	Liquid/ Plastic Limits
BH1	2.50	RTD		✓		
BH1	5.50	LCF			✓	✓
BH1	7.00	LCF			✓	
BH1	7.50	LCF	✓ (@150, 300 & 450 kPa)			
BH1	7.95	LCF			✓	
BH2	6.00	LCF	✓ (@120, 240 & 360 kPa)			
BH2	6.45	LCF			✓	✓
BH3	1.50	HD			✓	✓
BH3	7.95	LCF			✓	✓
BH4	7.50	LCF			✓	✓
BH5	2.00	RTD		✓		
BH5	7.50	LCF	✓ (@150, 300 & 450 kPa)			
BH6	3.50	RTD		✓		
BH6	6.80	LCF			✓	✓
BH7	5.30	LCF			✓	✓
BH7	9.50	LCF			✓	✓
Total			**3**	**3**	**10**	**8**

[**Strata*:** MG = Made Ground, HD = Head Deposits, RTD = River Terrace Deposits, LCF = London Clay Formation]

4.2.3 Soils: Chemical Analyses

A total of 19 soil samples collected from the borehole arisings were submitted to Chemtest Ltd laboratory at Newmarket for a range of analyses. A summary of the location, depth, strata and selected analysis for each sample is presented as Table 4. The environmental soil analytical laboratory results are presented as Appendix X.

Table 4 – Environmental Soil Sample Analysis Summary

Borehole ID	Depth (m bgl)	Strata*	sTPH TPH-CWG & BTEX	TPH	VOC	sPAH	Metals**	Total & Free Cyanide	Phenol	pH	Asbestos	BRE Sulphate SuitesPAH	Water Soluble Sulphate	FOC
BH1	0.5	MG		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
BH1	1.5	RTD		✓			✓			✓			✓	✓
BH1	5.5	LCF					✓			✓		✓		✓
BH2	0.2	MG		✓		✓	✓			✓	✓			
BH2	1.5	RTD		✓						✓				
BH2	5.0	LCF		✓						✓				
BH3	0.5	MG	✓			✓	✓	✓		✓	✓			
BH4	0.5	MG		✓	✓	✓	✓			✓	✓		✓	✓
BH4	2.5	HD	✓							✓				✓
BH4	3.0	RTD		✓						✓				
BH4	5.5	LCF	✓		✓					✓			✓	✓
BH5	0.3	MG	✓		✓	✓	✓	✓		✓	✓			
BH5	5.5	RTD		✓						✓				
BH5	6.5	LCF	✓		✓					✓		✓		
BH6	0.4	MG	✓		✓	✓	✓		✓	✓				
BH6	1.0	MG	✓							✓				
BH6	4.0	RTD	✓		✓	✓	✓	✓	✓	✓				
BH7	0.2	MG	✓		✓	✓	✓	✓		✓	✓		✓	
BH7	0.6	MG								✓	✓			
Total			**9**	**8**	**8**	**8**	**10**	**5**	**3**	**19**	**7**	**2**	**5**	**6**

[**Strata*:** MG = Made Ground, HD = Head Deposits, RTD = River Terrace Deposits, LCF = London Clay Formation]

[**Metals**:** Arsenic, barium, beryllium, cadmium, chromium III, chromium VI, copper, lead, mercury, nickel, selenium, vanadium, zinc]

4.3 Groundwater Monitoring, Sampling and Analysis

4.3.1 Groundwater Monitoring and Sampling

Groundwater level monitoring was carried out on the installed wells over 4 weeks on the 16th and 22nd December 2014, and 6th and 12th January 2015. Measurements of the depth to groundwater within the monitoring wells were taken using an electronic dip meter. The

groundwater level monitoring sheets are included as Appendix XI. A falling head permeability test was also undertaken at location BH5. The results of this test are also included within Appendix XI.

Groundwater samples were collected using dedicated disposable bailers and poured into pre-cleaned bottles provided by the laboratory, packed into a cool box and transported, by courier, to an accredited laboratory for chemical analysis.

4.3.2 Groundwater Sample Analyses

Chemical analyses were conducted, by a UKAS and MCERTs accredited laboratory, on a total of five samples collected from the monitoring wells. A summary of the location, on-Site observations and analysis is provided in Table 5. The environmental water analytical results are presented as Appendix XII.

Table 5 – Groundwater Sample Analysis Summary

Location	Site Observations	Metals	Cyanide	Phenols	W/S Sulphate	pH	Acetone (TIC)	TPH (CWG)	sPAH	VOC
BH1	No odour or sheen	✓	✓	✓	✓	✓	✓	✓	✓	✓
BH2	No odour or sheen	✓	✓	✓	✓	✓	✓	✓	✓	✓
BH4	No odour or sheen	✓	✓	✓	✓	✓	✓	✓	✓	✓
BH5	No odour or sheen	✓	✓	✓	✓	✓	✓	✓	✓	✓
BH7	No odour or sheen	✓	✓	✓	✓	✓	✓	✓	✓	✓

5.0 GROUND CONDITIONS

5.1 Ground Conditions

A summary of the ground conditions encountered at the Site during the intrusive investigation is presented in Table 6.

Table 6 – Ground Conditions Summary

Strata	Description	Minimum and Maximum Depths
Made Ground (Gravelly Clays)	Beneath any surface layer of concrete, Made Ground was identified in all boreholes. Typically, Made Ground comprised firm gravelly clays. Gravel constituents generally comprised brick, concrete and chert/ flint. One SPT was undertaken in this formation (location BH2 at 1.0 m) indicating a corrected SPT N value of 21.8. TRL CBR probe tests for this material indicated variable strength ranges from 9% to 63% (average 25%).	Made Ground was typically proven to depths ranging 0.5 m to 0.8 m bgl, though two locations (BH2 & BH6) recorded Made Ground to 1.4 m and 1.5 m bgl respectively. The average thickness of Made Ground across the Site was approximately 0.90 m bgl.
Made Ground (Hardcore/ Granular Sub-Base)	Three locations (BH1, BH6 & BH7) were found to include distinct layers of more granular sub-base materials (i.e. hardcore/ remnant former hardstand layers) comprising tarmacadam/ asphalt and associated granular sub-bases (BH6) or brick gravel hardcore layers. TRL CBR probe tests for this material indicated variable strength ranges from 68% to >100%.	
Head Deposits (Firm and Stiff Clays)	Residual natural soils comprising firm and stiff brown sandy/ gravelly clays were found below the Made Ground materials at most locations across the Site (absent at only one location BH2). These were typically thin (i.e. less than 1 m thick) in the north of the Site (i.e. BH1, BH2 (absent) & BH7) and between 1.10 m (BH5), 1.60 m (BH6), 1.80 m (BH3) and 2.20 m (BH4) thick in the southern half of the Site. Atterberg limit tests indicated the Head Deposits to be of intermediate plasticity. An assumed design Plasticity Index value of 19% has been assumed for these materials. Corrected SPT N values in the Head Deposits ranged from N = 12.9 to N = 35.7. Based on a design Plasticity Index Value of 19 and a multiplying factor of 5.1 (after Stroud 1975); these results are indicative of shear strengths between 65.8 kPa and 182.1 kPa. TRL CBR probe tests for this material indicated variable strength ranges from 7% to 75% (average 30%).	Deposits, where encountered, were proven between 0.5 m and up to 3 m bgl (average of circa 0.8 m to 2.1 m bgl).

River Terrace Deposits	River Terrance Deposits typically described as medium to very dense sandy gravels (with occasional cobbles) were encountered at all investigation locations across the Site; varying between 2.3 m and 4.6 m thick. Laboratory Particle Size Distribution (PSD) indicated between 1% to 18% fines, 12% to 45% sands and between 54% and 70% gravels for this strata. Corrected SPT N values for the River Terrace Deposits ranged N = 10.7 to N = >50 indicating medium dense to very dense materials.	River Terrace Deposits were identified from between 1.1 m and 6.2 m bgl.
London Clay Formation – (Firm to Very Stiff Clays)	Below the River Terrace Deposits, solid geology comprising the London Clay Formation was proven at all borehole locations. These typically comprised initially firm becoming stiff and very stiff silty sandy gravelly clays. Atterberg limit tests indicated the London Clay Formation to be of low to intermediate plasticity. Based on the range of results reported by the laboratory, a design Plasticity Index value of 17% has been assumed for these materials. Corrected SPT N values in the London Clay Formation ranged from N = 9.9 to N = 55.5. Based on a design Plasticity Index Value of 17 and a multiplying factor of 5.4 (after Stroud 1975); these results are indicative of shear strengths between 53.5 kPa and 299.7 kPa; and corresponding well with the laboratory un-drained shear strengths measured (ranging 43 kPa to 86 kPa at in-situ confining pressures). A plot illustrating interpolated elevations to the top of the London Clay Formation is provided as Figure 4.	The upper extent of the Firm London Clay Formation was encountered at a minimum depth of 5.2 m bgl (BH4) to a maximum depth of 6.2 m bgl (BH5) and proven to the maximum depths of penetration in all boreholes (i.e. up to 10.45 m bgl).

A graph showing the corrected SPT N Values with depth for each strata is presented on Figure 3. The ground conditions identified during the intrusive investigation are considered consistent with the findings of the published geology although the presence of residual Head Deposits which are mapped to the west of the Site are also considered present as a thin mantle underlying Made Ground soils across the Site. The ground conditions are described in detail in the engineer verified borehole logs included as Appendix VI and drilling foreman daily records sheets (Appendix VII).

5.1.1 TRL CBR Testing

TRL, CBR testing was carried out following the coring of concrete/tarmac hardstand prior to Cable tool drilling across the Site (locations BH1, BH3, BH4, BH5 & BH7). The results of the TRL testing are included as Appendix VIII. The subsequent borehole drilling confirmed the material types encountered by the TRL probe tests to include Made Ground (i.e. hardcore sub-base), Made Ground (i.e. gravelly clay sub-soils) and shallow Head Deposits (i.e.

natural gravelly clays). The results and ranges of the equivalent CBR correlations for these materials are summarised in Table 6.

5.2 Visual and Olfactory Evidence of Contamination

During the intrusive Site investigation and return groundwater sampling visits, visual and olfactory evidence of groundwater contamination was not generally recorded. One soil sample associated with the tarmacadam/ asphalt material (recorded at location BH6) did exhibit olfactory odour and an on Site Photo Ionizing Detector (PID) reading of 10 ppm was recorded.

A PID monitor was also utilised during the subsequent post investigation monitoring visits as part of the ground gas monitoring exercise. Generally low but measurable PID responses were recorded during the period and are summarised in Table 7 below. The post investigation field PID readings are recorded with the Ground Gas & Water Level Monitoring Results included as Appendix XI.

Table 7 – Visual and Olfactory Evidence of Contamination

Location	Depth	Impacted Media	Observation/Soil PID screen (ppm)	PID (ppm) Range
BH1	N/A	Ground Gas	Slightly elevated PID	0.0 to 2.5
BH2	N/A	Ground Gas	Slightly elevated PID	0.2 to 2.5
BH4	N/A	Ground Gas	Slightly elevated PID	0.2 to 10
BH5	N/A	Ground Gas	Slightly elevated PID	0.3 to 6.3
BH6	1.0 m	Soil Sample	Olfactory Odour	10
BH7	N/A	Ground Gas	Slightly elevated PID	0.1 to 0.7

As shown in Table 7, low level hydrocarbon odours and PID measurements were recorded in BH6 (associated with a tarmacadam/ asphalt layer during the Site investigation and subsequent post investigation ground gas and groundwater sampling. PID measurements were typically recorded to fall over the monitoring period to values just above the detection limit of the monitoring equipment used. No ‘gross’ contamination or evidence of ‘free-phase’ hydrocarbon contamination was identified or noted during the water sampling event.

5.3 Groundwater Conditions

During drilling works, groundwater strikes were recorded in all boreholes between 5.8 m and 8.70 m bgl (typically within the London Clay Formation). However, water was added during drilling to assist excavation through the overlying River Terrace Deposits and the boreholes cased throughout; which may have masked shallower groundwater strike observations.

During post investigation monitoring, resting water levels ranged from 2.37 m to 7.19 m bgl (BH4 and BH7 respectively); corresponding water levels ranging between 9.60 m to 13.80 m AOD (BH7 & BH5 respectively). Average resting depths to water levels of circa 4.00 m bgl (12.55 m AOD) were experienced through the monitoring period.

Assessment of the data indicates that there is a continuous water body underlying the Site predominantly associated with the gravels (River Terrace Deposits) with the exception of location BH7 in the central northern area of the Site. Groundwater plots (as illustrated on Figure 4) indicate that converging groundwater flow potential patterns are present; arriving from the north-east to south-west in the northern half of the Site and from the south-east to north-west in the southern area of the Site.

A plot of the elevations to the top of the London Clay (also shown on Figure 4), show that groundwater flow potential generally corresponds to the relief of this formation in the north of the Site, although free and easy ‘flow’ may be restricted due to lower permeability London Clay Formation in the vicinity of location BH7 where resting groundwater is recorded below the top of this horizon; effectively rendering the overlying River Gravels as unsaturated in this area.

Conversely in the south, a more dominant (thicker) water body is present within the River Terrace Deposits, while the relief of the underlying London Clay Formation is locally in contrast to the groundwater gradient in this area.

The apparent depression in groundwater levels measured at location BH7 may also be influenced by the presence of the existing building (due to poor recharge) and/or preferential pathways present within the London Clay Formation in the vicinity allowing a groundwater sink and probable flow to the east.

Without the contrast created by the measured groundwater conditions at location BH7, it is noted an otherwise south to north prevailing groundwater potential would be present across the Site as a whole.

A series of falling head tests were undertaken at location BH5 on the 22nd December. The results indicated good drainage characteristics within the River Terrace Deposits and assessed permeability range in the order of $3.76x10^{-4}$ m/s to $4.35x10^{-5}$ m/s (average $1.3x10^{-4}$ m/s).

Copies of the groundwater monitoring sheets and falling head permeability tests are included as Appendix XI.

6.0 CONTAMINATION ASSESSMENT

6.1 Guidance for Analytical Results: Assessment Criteria

A risk assessment approach has been followed for the assessment of the results. This process is defined as a tiered assessment considering the 'pollutant linkages' on the basis of a 'source-pathway-receptor' relationship. Analytical results have been assessed against screening criteria considered protective of Human Health and/or Controlled Waters in the context of the proposed commercial end-use of the Site.

6.1.1 Assessment Criteria Sources

In the absence of a regulatory set of screening values derived using the new Contaminated Land Exposure Assessment (CLEA) Framework, Delta-Simons will refer to the following:

- The new Soil Guidance Values (SGVs) published by the EA;
- Former SGVs for which no updated SGV has been published;
- The 2009 Chartered Institute of Environmental Health (CIEH)/Land Quality Management (LQM) Generic Assessment Criteria (GAC);
- The guidance values produced by the Environmental Industries Commission (EIC), the Association of Geotechnical and Geoenvironmental Specialists (AGS) and Contaminated Land: Application in Real Environments (CL:AIRE) in December 2009; and
- In house Generic Screening Values (HH-GSVs) derived by Delta-Simons and other non UK values where considered relevant.

These guidance values are presented in Appendix XIII.

6.2 Soil Analysis Results

The soil analysis results from the Site investigation undertaken by Delta-Simons have been assessed against the respective GAC for the protection of Human Health. Copies of the laboratory test certificates are included as Appendix X. A total of 19 soil samples were submitted for chemical analysis. A summary of the results is presented in Table 8.

Table 8 – Soil Analysis Results Summary

Parameter	No. of Samples*	Maximum Concentration (mg/kg)	GAC Source	Commercial GAC (saturation limit) (mg/kg)	Samples Exceeding GAC
Metals					
Arsenic	10	27	C4SL	640	All results below the respective GAC.
Barium		800	EIC	22000	
Beryllium		<0.1	LQM	12	
Cadmium		0.81	SGV	410	
Chromium VI		<0.5	C4SL	49	
Copper		430	LQM	68000	
Lead		270	C4SL	2330	
Mercury		0.1	DS-GAC	73	
Nickel		28	LQM	980	
Selenium		<0.2	SGV	12000	
Vanadium		51	LQM	9000	
Zinc		110	LQM	730000	
Hydrocarbons					
sTPH					
Aliphatic >C5-C6	9	<0.1	LQM	3,200	All results below the respective GAC. Aromatic Hydrocarbons >C10-C16 are indicated to exceed the soil saturation limits suggesting the potential presence of free product at location BH6 at 1.0 m; however, this is considered consistent with results from a sample comprising tarmacadam/ asphalt.
Aliphatic >C6-C8		<0.1	LQM	7,800	
Aliphatic >C8-C10		<0.1	LQM	2000 (78)	
Aliphatic >C10-C12		<1.0	LQM	9,700 (48)	
Aliphatic >C12-C16		4.8	LQM	5,9000	
Aliphatic >C16-C35		57	LQM	1,600,000	
Aliphatic >C35-C44		<1.0	LQM	1,600,000	
Aromatic >C5-C7		<0.1	LQM	26,000 (1220)	
Aromatic >C7-C8		<0.1	LQM	56,000 (869)	
Aromatic >C8-C10		14	LQM	3,500 (613)	
Aromatic >C10-C12		230	LQM	16,000 (364)	
Aromatic >C12-C16		490	LQM	36,000 (169)	
Aromatic >C16-C21		2,300	LQM	28,000	
Aromatic >C21-C35		1,600	LQM	28,000	
Aromatic >C35-C44		56	LQM	28,000	
PAHs					
Naphthalene	8	0.64	LQM	190 (76.4)	All results below the respective GAC.
Acenaphthylene		<0.1	LQM	83,000 (86.1)	
Acenaphthene		0.94	LQM	84,000 (57)	
Fluorene		1.60	LQM	63,000 (30.9)	
Phenanthrene		11	LQM	22,000	
Anthracene		2.9	LQM	520,000	

Parameter	No. of Samples*	Maximum Concentration (mg/kg)	GAC Source	Commercial GAC (saturation limit) (mg/kg)	Samples Exceeding GAC
Fluoranthene		12	LQM	23,000	
Pyrene		9.7	LQM	54,000	
Benzo[a]anthracene		4.6	LQM	170	
Chrysene		6.2	LQM	350	
Benzo[b]fluoranthene		5.7	LQM	44	
Benzo[k]fluoranthene		2.1	LQM	1,200	
Benzo[a]pyrene		3.9	LQM	77	
Indeno(1,2,3-c,d)Pyrene		3.2	LQM	500	
Dibenz(a,h)Anthracene		0.73	LQM	3.5	
Benzo[g,h,i]perylene		2.7	LQM	3,900	
VOC (above laboratory detection limit)					
cis 1,2-Dichloroethene	8	0.005	EIC	14	All results below the respective GAC.
Trichloroethene		0.0022	LQM	1.2	
Toluene		0.0012	LQM	56,000 (869)	
m & p-Xylene		0.0012	LQM	6,200 (625)	
1,2,4-Trimethylbenzene		0.0041	EIC	42	
Other Chemical Analyses					
Sulphate 2:1 extract (g/l)	7	0.48	~~GAC~~	~~GAC~~	Analysis to provide geotechnical information and to support future risk assessment if required.
Magnesium (Water Soluble) (g/l)	2	<0.01	~~GAC~~	~~GAC~~	
Sulphate (Acid Soluble) (%)	2	<0.01	~~GAC~~	~~GAC~~	
Total Sulphur (%)	2	0.01	~~GAC~~	~~GAC~~	
Chloride (g/l)	2	<0.01	~~GAC~~	~~GAC~~	
Nitrate (g/l)	2	<0.01	~~GAC~~	~~GAC~~	
Ammonium	2	3.5	~~GAC~~	~~GAC~~	
pH	19	7.8 – 11.7	~~GAC~~	~~GAC~~	
Fraction Organic Carbon	6	0.0018 to 0.0095	~~GAC~~	~~GAC~~	
Asbestos	7	Not detected	~~GAC~~	~~GAC~~	Asbestos fibres were not identified in the soil samples submitted for analysis. As with all Brownfield sites an assumption is made that some asbestos could be present at the Site.

6.3 Soil Analysis: Initial Screening Assessment Summary

As shown in Table 8, and the detailed laboratory results presented as Appendix X, the soil analysis results from site investigation indicate that widespread significant contamination of the soils has not been identified at the Site.

The soil analysis results are considered further in the CSM presented in Section 8.2 with regard to all PPLs.

6.4 Groundwater Analytical Results

The groundwater analysis results have been assessed against GAC based on the Freshwater Environmental Quality Standards (EQS) or UK Drinking Water Quality Standards (DWQS). A summary of the results is presented in Table 9 and copies of the laboratory test certificates are included as Appendix XII.

Table 9 – Groundwater Analysis Results Summary (µg/l unless stated)

Parameter	Maximum Concentration (µg/l)	GAC (µg/l)	Samples Exceeding GAC/Elevated Results
Metals (above laboratory detection limit)			
Arsenic	3.4	50	All results below maximum GAC, marginally elevated Chromium against most stringent EQS criteria across Site.
Barium	93	1000	
Boron	230	2000	
Cadmium	0.12	5	
Chromium	11	5 to 250	
Nickel	170	50 to 200	All results below maximum GAC, marginally elevated Nickel against most stringent EQS criteria at BH5 only.
Selenium	4.9	10	All results below GAC
Vanadium	2	20 to 60	
Zinc	4.4	75 to 500	
Hydrocarbons			
Aliphatic TPH >C8-C10	< 0.10	0.1^{LoD}	All results below GAC
Aliphatic TPH >C10-C12	< 0.10	0.1^{LoD}	
Aliphatic TPH >C12-C16	< 0.10	0.1^{LoD}	
Aliphatic TPH >C16-C21	< 0.10	0.1^{LoD}	
Aromatic TPH >C5-C7	< 0.10	0.1^{LoD}	
Aromatic TPH >C7-C8	< 0.10	0.1^{LoD}	
Aromatic TPH >C8-C10	< 0.10	0.1^{LoD}	
Aromatic TPH >C10-C12	< 0.10	0.1^{LoD}	
Aromatic TPH >C12-C16	< 0.10	0.1^{LoD}	
Aromatic TPH >C16-C21	< 0.10	0.1^{LoD}	
sTPH Total	< 10	10	
VOC & PAH (identified above laboratory detection limits)			
Trichloroethene (TCE)	99	10	BH1; measurable concentrations below GAC also in BH5
cis 1,2-Dichloroethene (DCE)	83	10	BH1, measurable concentrations below GAC also in BH4 & BH7
Trans 1,2-Dichloroethene (DCE)	7.6	10	All results below GAC
Vinyl Chloride (VC)	2.1	0.5	BH1 only.
Toluene	1.6	50	All results below GAC
Total Phenols	0.05	0.03	Marginal exceedance at BH7 only.
Acetone (TIC method)	< 10	~~GAC~~	All results below detection limit
Other			
pH	8 – 8.3	~~GAC~~	-
Sulphate (mg/l)	60 - 89	250	All results below GAC

Notes:
Shaded – Concentration exceeds GAC
0.1^{LoD}= No applicable GAC for individual sTPH bands. Therefore, laboratory detection limit of 0.1 µg/l used as initial screen.
~~GAC~~ – GAC not available for this contaminant/parameter.

6.5 Groundwater Analysis: Initial Screening Assessment Summary

As shown in Table 9 and the detailed laboratory results presented as Appendix XII the groundwater analysis results has indicated generally low levels of contaminants below respective GACs.

Some low concentrations (though in excess of the EQS GAC used) for a number of chlorinated solvents have been detected in water samples; primarily in locations BH1 and BH5 (TCE) as well as degradation (i.e. daughter) compounds (i.e. DCE & VC) recorded at locations BH1, BH4 & BH7.

Based on the hydraulic model discussed in Section 5.3 and also illustrated on Figure 4, it is considered that the measured compounds in the south of the Site are indicative of residual contamination likely to have been associated with a former (pre 1980s) solvent store reported by third party reports (off Site to the south) and thus consistent with previous 1995 investigations reported by URS (July 2013).

Based on the hydraulic model discussed previously and given that no historic on-Site sources are suspected in this area based on the Site history; the elevated results recorded at location BH1 are similarly expected to be indicative of historic contamination which is considered to represent a historic source which has migrated on to Site from the north (e.g. from the former engineering works/ factories identified in this area through the historical review).

Based on this assessment and given the relatively low concentrations recorded, it is not considered specific remediation of the measured contamination should be required on-Site.

The soil and groundwater analysis results are considered further within the risk assessment and CSM presented in Section 8.2.

6.6 Ground Gas Results

6.6.1 Available Guidance

Upon completion of ground gas monitoring, the results of the gas monitoring can be used to assess the level of risk associated with the presence of gas at the Site. From available guidance (CIRIA C665), a classification system has been developed using both the gas concentrations and the borehole flow rates to define a Characteristic Situation for the Site based on the Gas Screening Value (GSV) for methane and carbon dioxide.

The GSV is calculated by multiplying the borehole flow rate (l/hr) by the gas concentration (%), using the maximum recordable concentrations of methane and carbon dioxide and the maximum recordable positive gas flow rate. Once calculated, the GSV can be further assessed using Table 8.5 and Table 8.6 in CIRIA C665, in order to provide typical scopes of protection measures for the proposed development.

6.6.2 Gas Monitoring Results

Four ground gas monitoring rounds were undertaken on monitoring wells; BH1, BH2, BH4, BH5 and BH7. A summary of the results from the ground gas monitoring is presented in Table 10. Ground gas monitoring sheets are included as Appendix XI.

Table 10 – Summary of Ground Gas Monitoring Data

Location	Methane (%v/v)	Carbon Dioxide (%v/v)	Flow Rate l/hr	GSV/CS			
				Methane		Carbon Dioxide	
	Max	Max	Max	GSV	CS	GSV	CS
BH1	<0.1	1.5	-2.1	<0.0015	1	0.03	1
BH2	0.1	0.1	-0.7	0.0007	1	0.0007	1
BH4	<0.1	0.2	-2.4	<0.0024	1	0.0048	1
BH5	0.3	0.8	-2.5	0.0075	1	0.02	1
BH7	0.1	1.5	-1.2	0.0012	1	0.018	1

Note:
GSV = Gas Screening Value

CS = Characteristic Situation (Range: 1 = Very low risk to 6 = Very high risk)

CS1 + = Calculated gas screening value indicates a CS1, but consideration should be given to an increase to CS2 due to methane concentrations >1% v/v and/or carbon dioxide concentrations >5% v/v.

Based on the ground gas monitoring data, the Site should be classified as a CS1 – Low Risk (consistent with the typical source generation material for natural soils with low organic content or 'typical' Made Ground described by C665). It is recommended the Characteristic Situation CS1 be used for this development appropriate to the building type proposed and achieved by selection of the appropriate 'solution score' by the engineer described by BS8485: 2007 (Code of practice for the characterisation and remediation from ground gas in affected developments). As a minimum, basic radon gas protection measures should be included within the design.

7.0 GEOTECHNICAL ASSESSMENT

7.1 Introduction

The proposed development is expected to comprise one of three industrial warehouse schemes as illustrated in Appendix I, which will comprise between one and three industrial warehouse type units with first and second floor office spaces, loading/unloading areas, car parking and discrete landscape buffers. The three concepts generally place the main buildings along the eastern boundary (adjacent to the railway) and associated service areas located to the west. The larger warehouse option, however, occupies a more substantial space with associated service/ parking areas located to the north and south of the main unit.

As described in Section 5.1, the general ground conditions across the Site comprised Made Ground (to between 0.5 m to 1.5 m; though typically in the order of 0.9 m bgl) over firm and stiff gravelly clays (Head Deposits). The Head Deposits were generally thicker towards the south of the Site and it is possible (subject to proposed building configuration and proposed loadings) that this material could provide a suitable founding medium. Beneath the Made Ground and Head Deposits (where present), medium dense and dense River Terrace Deposits are present with depths to the top of this strata ranging from 1.1 m bgl to up to 3.0 m bgl (average depth 2.0 m bgl).

Based on the Stroud Correlation and Corrected SPT N Values, a minimum design undrained Cohesion Value of 65 kPa has been assumed for shallow foundation options considered within the firm Head Deposits at or below 1.5 m bgl or minimum friction angle of 35 degrees for shallow foundations placed at or below 2.0 m bgl in the medium dense River Terrace Deposits.

At this stage, detailed design loads are not known, however, based on the proposals, structural loadings are expected to be moderate. For the purposes of assessment a range of foundation sizes have been considered.

7.2 Foundation Solutions

7.2.1 Traditional Spread Foundations

The Made Ground in its current form is not considered to be a suitable founding medium for new building foundations due to its variable nature and strength. Table 11 below shows a number of pad/strip foundation sizes and available bearing capacities that may be assumed

bearing into firm/stiff Head Deposits or medium dense or dense River Terrace Deposits with settlements restricted to 25 mm.

Table 11 – Shallow Foundation Options and Associated Bearing Capacities

Founding Strata	Footing Dimensions (m)	Allowable Bearing Capacity (kN/m^2)	Max Load
Firm/ Stiff Gravelly Clays (Head Deposits) @≥ 1.5 m	1.00 m wide strip	140	140 kN/m run
	1.50 x 1.50 m pad	160	360 kN
Medium Dense/ Dense River Gravels @≥2.0m bgl	1.0 m wide strip	300	300 kN/m run
	2.00 x 2.00 m pad	450	1,800 kN
	2.50 x 2.50 m pad	350	2,180 kN
	3.00 x 3.00 m pad	300	2,700 kN

Foundations excavations should be checked by a suitably qualified geotechnical engineer prior to casting to ensure the appropriate depth, founding medium and strength characteristics have been achieved.

7.2.2 Volume Change Potential

Atterberg limit tests carried out for the fine soils (Head Deposits and London Clay Formation) indicate that the cohesive soils have low to intermediate volume change potential. The volume change potential should be considered in any foundation schedule for structures and services located within the influence zone of trees or bushes (proposed, existing or to be removed) and appropriate precautions and/or founding depths should be designed accordingly.

7.2.3 Piles

Should higher bearing capacities be required or depth considered uneconomic for traditional spread foundations, structural loads may be transferred to either the River Terrace Deposits and/ or the London Clay Formation using piles.

The precise method of pile installation, depths and safe working loads should be confirmed by discussions with a suitable experienced piling contractor.

7.3 Floor Slab

Assuming maximum unit floor areas of c. 90 m by 100 m; a rigid ground bearing floor slab/raft should be suitable for floor loads up to 50 kN/m^2 with less than 25 mm settlement; provided that the formation is thoroughly proof rolled and any soft spots excavated and replaced with well compacted granular material. Prior to casting it is recommended the formation should be validated to assure its performance characteristics by means of a series of plate load tests to be measured against a suitable specification prepared by the engineer.

Given the current developed state of the Site and thus requirement for in-ground demolitions, it is also recommended that the engineer produce a suitable demolition/ enabling works specification for the appropriate engineering backfill of such in ground demolitions, so as to ensure the overall performance of the subgrade prior to development.

7.4 Roads and Pavements

The results of the TRL CBR testing (Appendix VIII) across the Site area confirmed the following shallow material types and performance characteristics:

- Made Ground (existing Hardcore Sub-bases): CBR from 68% to >100%;
- Made Ground (Gravelly Clay Sub-soils): CBR from 9% to 63% (average 25%); and
- Natural Gravelly Clays (i.e. shallow Head Deposits): CBR from 7% to 75% (average 30%).

Given the current developed state of the Site and requirement for in ground demolitions and inevitable disturbance, while the above CBR ranges can be taken to indicate current performance ranges and capabilities we would recommend the designer also prepare a specification for the minimum performance for CBR/ Modulus of Subgrade Reaction for the Enabling Works/ Building Contactor to achieve through their ground preparations.

Any near surface highly organic soils should be removed and replaced prior to construction of roads/pavements. It should be noted that development works combined with periods of inclement weather can result in the rapid deterioration of the near surface deposits and significantly lower CBRs exhibited due to wet weather working/increased moisture contents especially in fine soils and it is recommended that the final formation be thoroughly proof rolled and checked prior to construction of design capping to ensure the performance of the formation level.

7.5 Drainage

Groundwater was generally present within the underlying River Terrace Deposits typically measured in the order of c.4 m bgl. The top of the River Terrace Deposits typically ranged between 1.1 m and 3.0 m bg,l average 2.0 m bgl). A series of falling head permeability testing was undertaken at one location (BH5), indicating typical permeabilities within the range $3.76x10^{-4}$ m/s to $4.35x10^{-5}$ m/s (average $1.3x10^{-4}$ m/s); indicative of good drainage characteristics. It is recommended once the location and likely design requirements for soak away design are known, the local ground conditions be checked and permeability verified prior to construction.

7.6 Excavations

Excavations taken into the underlying Made Ground and natural deposits are expected to be achievable using a backhoe excavator (following removal of hardstand surfacing). The possibility of encountering obstructions should be considered and hydraulic breaking equipment may also be required.

No excavations should be entered until a full risk assessment is completed to assess the stability requirements and safety issues. Any man-entry into excavations should have full temporary shoring and support.

7.7 Groundwater

Groundwater was encountered at depths ranging between 2.37 m to 7.19 m bgl (BH4 and BH7 respectively); corresponding water levels ranging between 9.60 m to 13.80 m AOD (BH7 & BH5 respectively). Average resting depths to water levels of circa 4.00 m bgl (12.55 m AOD) were experienced through the monitoring period.

Assuming a shallow foundation solution significant groundwater would not be anticipated during the excavations required as part of the proposed development. Should any perched groundwater be encountered, then local dewatering via sump and pump should be suitable, although treatment prior to disposal to sewer may be required.

7.8 Chemical Attack on Buried Concrete

Water soluble sulphate concentrations in soils varied from 20 mg/l to 48 mg/l with soil pH values ranging from 7.8 to 11.7. Sulphate concentrations in the groundwater ranged from 60 mg/l to 89 mg/l with groundwater pH values ranging from 8.0 to 8.3.

In accordance with recommendations of BRE Special Digest 1 ‘Concrete in Aggressive Ground’ 2005, the conditions of the soils at the Site would, therefore, be classified as Design

Sulphate Class DS-1 and ACEC Class AC- 1 for soils and groundwater, when considering the most appropriate type of concrete to be used at the Site in order to resist chemical attack from elevated sulphate present in the shallow soils.

7.9 Earthworks

No specific earthworks materials property testing has been undertaken as part of this Assessment.

8.0 ASSESSMENT OF RISK AND CONCEPTUAL MODEL

8.1 Risk Assessment

The risk assessment procedure which identifies sources, pathways, receptors and pollutant linkages is recognised as an appropriate approach to determining the extent and significance of contamination either within the context of Part 2A of the EPA 1990 (when assessing current Site status or when considering the acquisition of an existing development), or as part of the planning process (for the redevelopment of an existing Site, or when considering the acquisition of a Site for redevelopment purposes). In either context the 'suitable for use' approach is adopted in assessing the risks. As such, the source-pathway-receptor assessment defines a conceptual model for the Site under consideration.

8.2 Qualitative Risk Assessment and Conceptual Site Model

For the purposes of this Assessment, the risk assessment has been undertaken based upon the suitable for use approach in the context of the commercial end-use of the Site with hardstanding/buildings covering the majority of the Site and limited areas of landscaping.

The CSM, presented as Table 12 has been formulated taking into account all of the available data for the Site from Phase I preliminary assessment and Phase II Site investigation completed by Delta-Simons as summarised and discussed in previous sections of this Report, with additional consideration given to the available third party information and site investigation results where available.

Table 12 – Qualitative Risk Assessment: Revised Conceptual Site Model

Source(s)	Receptor(s)	Pathway(s)	Risk Rating	Justification / Additional Site Investigation Requirements and Other Recommended Actions.
Made Ground and general background concentrations of potential contaminants within the soil and groundwater across the Site.	Future Site users & buildings	Direct contact, ingestion an inhalation of dust and vapours	**Low Risk**	Widespread or significant contamination of the Site has not been identified by the ground investigation. The Site will predominately be covered in hardstanding which will create a physical barrier between any potential contamination and future Site users.
	Construction workers	Direct contact, ingestion and inhalation of dust and vapours	**Low Risk**	Widespread or significant contamination of the Site has not generally been identified by this or previous investigation; however, as with all Brownfield sites, groundworkers and sub-surface maintenance workers should be made aware of the possibility of encountering contaminated soils and groundwater through toolbox talks. Safe working procedures should be implemented, good standards of personal hygiene should be observed and appropriate levels of personal protective equipment (PPE) provided and utilised. This recommendation should be captured in Site health and safety documentation and in maintenance plans.
	Drinking water supply pipes	Vertical and lateral migration of contaminants and degradation of pipework	**Low Risk**	Hydrocarbons, especially aromatics and chlorinated solvents, are known to permeate plastic pipes. Significant contamination due to organic contamination has not been identified in the shallow soils at the Site, however, it is recommended the analytical data associated with the ground investigations is forwarded to the appropriate Statutory Undertakers and the appropriate barrier pipe/design is agreed and used for the proposed development.
	Controlled waters – groundwater and surface water	Vertical and lateral migration	**Low Risk**	While some elevated contaminants have been recorded in the groundwater (particularly VOCs), it is known that previous impacts due to solvent contamination had been identified off Site to the south historically. The hydraulic modelling undertaken as part of this investigation would appear to support the conclusion that residual impacts measured on Site may have been derived as a legacy from the nearby off Site sources. No similar impacts were measured in the shallow soil samples recovered during this investigation and it is considered that the presence of a continued on-Site source for contamination is unlikely. Previous third party investigations are reported to have confirmed that no issues to local surface waters have been measured associated with potential contaminants migrating from the south of the Site. Elevated concentrations of VOC are similarly recorded in the far north east of the Site and based on the lack of a historical on-Site source being recognised, combined with the

Source(s)	Receptor(s)	Pathway(s)	Risk Rating	Justification / Additional Site Investigation Requirements and Other Recommended Actions.
				interpolated hydraulic and hydrogeological models it is considered this contamination is more likely than not to represent migration of a historic source from off-Site to the north. Based on the depth of groundwater and relatively low levels of contamination considered to have been sourced from off-Site, it is considered no specific remediation or mitigation should be required in connection with a proposed future commercial/industrial warehouse development. Havant Borough Council have also acknowledged that they are aware of the off-Site contamination and historical reports and do not consider the Site to require further inspection under relevant legislation.
Potentially hazardous ground gas	Site buildings and Site users	Vertical and lateral migration of ground gas	**Low Risk**	Significant sources of ground gas were not recorded based on preliminary ground gas assessment included in the 2013 RSK report and have also been corroborated by the results of the additional ground gas monitoring undertaken as part of the recent ground investigations. It is recommended, basic radon gas protection should be considered and included in future design requirements ahead of the proposed redevelopment of the Site.
Potentially unidentified 'hotspots' of contamination, which may be present in areas of the Site that have not been directly investigated	All receptors	All pathways	**Low Risk**	While localised contamination cannot be ruled out, based on the review of the Site history, potential sources of contamination identified and targeted nature of the investigation design, significant or widespread contamination is considered unlikely to be present on Site.

9.0 ASSESSMENT OF RISKS AND LIABILITIES

This Assessment considers both perceived and actual risks using the Source-pathway-receptor concept, with the principal measure of risk being whether significant harm (to people, animals, property (including buildings, cattle etc.), or ecosystems) or pollution of controlled waters (surface water bodies, aquifers, coastal waters, or territorial waters) is being caused, or whether there is a significant possibility of such harm being caused.

The overall risk classification, based on the Source-pathway-receptor principle, adopted for this preliminary assessment, is defined as follows:

- Low risk – issue unlikely to present a liability or cost;
- Moderate risk – issue may present a liability or cost, but these may be limited; and
- High risk – likely that significant liabilities and/or costs exist.

Based on the available information following the Phase I and II Geo-Environmental Assessment, Delta-Simons considers there is a **low** risk of the following:

- The LA requesting additional investigatory works to determine the contamination status of the Site as part of their Contaminated Land Inspection Strategy;
- Remediation of the Site in its current condition being enforced by the LA under the terms of Part 2A of the EPA Act 1990;
- The Site presenting a risk of pollution to controlled waters and invoke prosecution under the Water Resources Act (WRA);
- Liability under the Environmental Damage (Prevention and Remediation) Regulations 2009 (EDR);
- Legal action from a third party with regard to contamination migration from the Site, although the Site itself is highlighted to be at risk from migration of contamination on to the Site from off-Site sources; and
- Significant adverse impacts on the commercial value of the Site, in relation to contamination issues, in the context of the Site remaining in a commercial use.

Notwithstanding the above, it is likely that contaminated land assessment will be required as a condition to any approved planning decision that will be enforced by the Local Planning Authority (LPA) and it is recommended this assessment be provided to support a relevant planning submission.

9.1 Control of Asbestos at Work Regulations

The Control of Asbestos Regulations 2012 was implemented in April 2012. Under these Regulations, all commercial premises are required to have an Asbestos Management Plan, which should identify the location of all known or suspected ACM within the premises. Any property constructed prior to the complete ban on the use of asbestos in the UK enforced in 1999 may require an asbestos inspection to facilitate the implementation of a Management Plan. In addition, it should be noted that under the Control of Asbestos Regulations 2012, every employer is required to ensure that adequate information, instruction and training is given to those of his employees who are liable to be exposed to asbestos, or who supervise such employees.

The complete ban on the use of asbestos was implemented 1999. Given that the existing buildings on-Site were constructed prior to 1999, it is likely ACMs may be present. It is recommended that the asbestos register reviewed prior to any demolition/ development works undertaken. Any asbestos present should be subject to an appropriate management/ disposal plan.

9.2 Development Risk

No significant contamination issues have been identified which are considered likely to give rise to abnormal development costs and assuming standard practices for brownfield development be adopted. As highlighted by the preliminary UXO assessment; consideration of UXO risk by the contractor and a protocol should also be in place for groundworkers to act upon should such ordnance be identified during the demolition/ construction process.

10.0 CONCLUSIONS AND RECOMMENDATIONS

10.1 Conclusions

Environmental

The Site comprises an approximately rectangular plot of land (c. 2 hectares (5 acres)) and is predominantly occupied by a large vacant warehouse and the remainder of the Site is covered in hardstanding. The current buildings are understood to have been developed from the 1960s, but have included more recent (i.e. post 2000) extensions and alterations.

The Site is surrounded by a mixture of industrial/commercial properties to the north, south and west. The eastern boundary is made with a railway line, beyond which are residential properties.

An intrusive investigation has been completed to target the identified potential sources and provide general Site coverage. Widespread or significantly elevated concentrations of potential contaminants have not been identified in the soils at the Site and while some elevated contaminants have been measured in groundwater, it is considered that these are representative of residual historic off Site sources of contamination. Based on the proposed commercial/industrial development and depth to groundwater, it is not considered that specific remediation/ mitigation should be required associated with the observed underlying groundwater quality in the vicinity of the Site.

A Characteristic Situation CS1 has been concluded with respect to ground gas generation potential at the Site. However, it is recommended that basic radon protection is included as consistent with usual minimum modern design expectations.

Design Sulphate class DS1 AC-1 has been concluded with respect to design requirements for buried concrete.

No further ground investigation, associated risk assessment or mitigation beyond those highlighted in Sections 8 and 9 are expected to be required at this stage in relation to ground contamination risks.

On the basis of available information, Delta-Simons considers that with regard to potential soil and groundwater contamination, ground gas and associated environmental liabilities, for its ongoing commercial use, the Site represents an investment opportunity with a **Low** overall risk status.

Geotechnical

Ground conditions across the Site comprised a variable layer of predominantly Made Ground (up to 1.5 m bgl), overlying a discontinuous layer of firm and stiff gravelly clays interpreted as Head Deposits over medium dense and dense gravels (River Terrace Deposits) and London Clay Formation at depth. A groundwater body associated with both the River Terrace Gravels and London Clay Formation was recorded beneath the Site, typically c. 4.0 m bgl. Drainage characteristics of the River Terrace Deposits have been assessed to be 'good' with associated permeability in the order of $1.3x10^{-4}$ m/s being recorded on-Site.

The Made Ground in its current form is not considered to be a suitable founding medium for new building foundations due to its variable nature and strength. However, bearing capacities for a range of strip and pad based foundations have been calculated, where they may be relevant for the firm and stiff Head Deposits or medium dense/ dense River Terrace Deposits with settlements restricted to 25 mm. Subject to appropriate enabling works and thorough proof rolling of the formation, ground bearing floor slabs are expected to be suitable for the development.

Atterberg limit tests carried out for the fine soils (Head Deposits and London Clay Formation) indicate that the cohesive soils have low to intermediate volume change potential. The volume change potential should be considered in any foundation schedule for structures and services located within the influence zone of trees or bushes (proposed, existing or to be removed) and appropriate precautions and/or founding depths should be designed accordingly.

The results of the TRL CBR testing across the area indicate generally variable but good performance of the sub-grade across the Site. However, given the current developed state of the Site and requirement for in ground demolitions and subsequent disturbance, it is recommended the designer prepares a specification for the minimum performance for CBR/ Modulus of Subgrade Reaction for any Enabling Works/ Building Contactor to achieve through their ground preparations.

10.2 Recommendations

No significant contamination issues have been identified which are considered likely to give rise to abnormal development costs and assuming standard practices for brownfield development be adopted. As highlighted by the preliminary UXO assessment; consideration of UXO risk by the contractor and a protocol should also be in place for groundworkers to act upon should such ordnance be identified during the demolition/ construction process.

11.0 LIMITATIONS TO ENVIRONMENTAL ASSESSMENTS

Delta-Simons obtained, reviewed and evaluated information from the Client, Chemtest, and others. Delta-Simons' conclusions, opinions and recommendations are based on this information and observations made during the Site reconnaissance.

The recommendations contained in this Report represent our professional opinions. These opinions were arrived at in accordance with currently accepted industry practices and hydrological and engineering practices at this time and location and, as such, are not a guarantee that the Site is free of hazardous or potentially hazardous materials or conditions.

This Report was prepared by Delta-Simons Environmental Consultants Limited for our Client. Any third party using this Report does so entirely at their own risk. Delta-Simons makes no warranty or representation whatsoever, express or implied, with respect to the use by a third party of any information contained in this Report or its suitability for any purpose. Delta-Simons assumes no responsibility for any costs, claims, damages or expenses (including any consequential damages) resulting from the use of this Report or any information contained in this Report by a third party.

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Figures

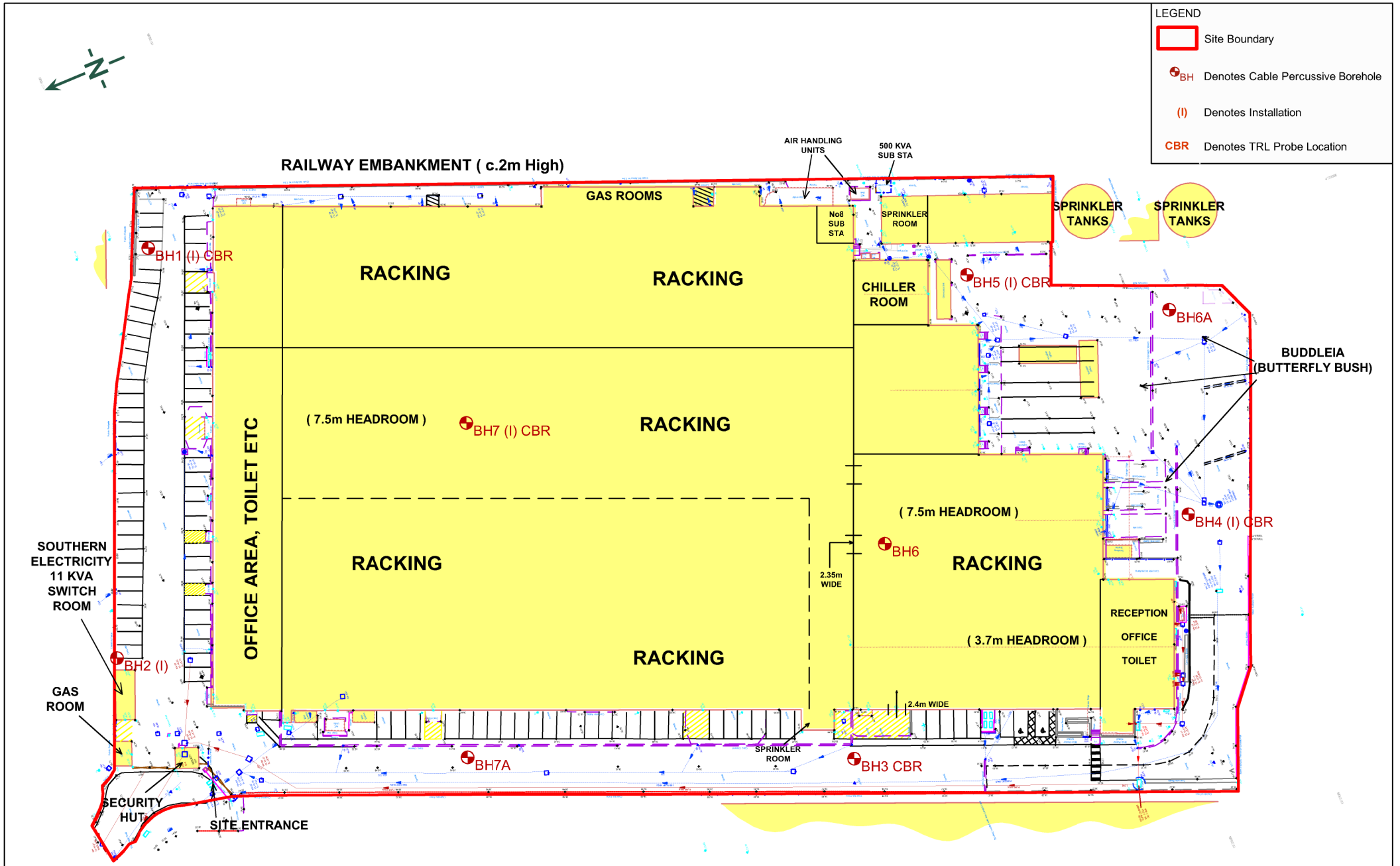


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deltasimons

TITLE:
Site Location Map
Stanbridge Road
Havant

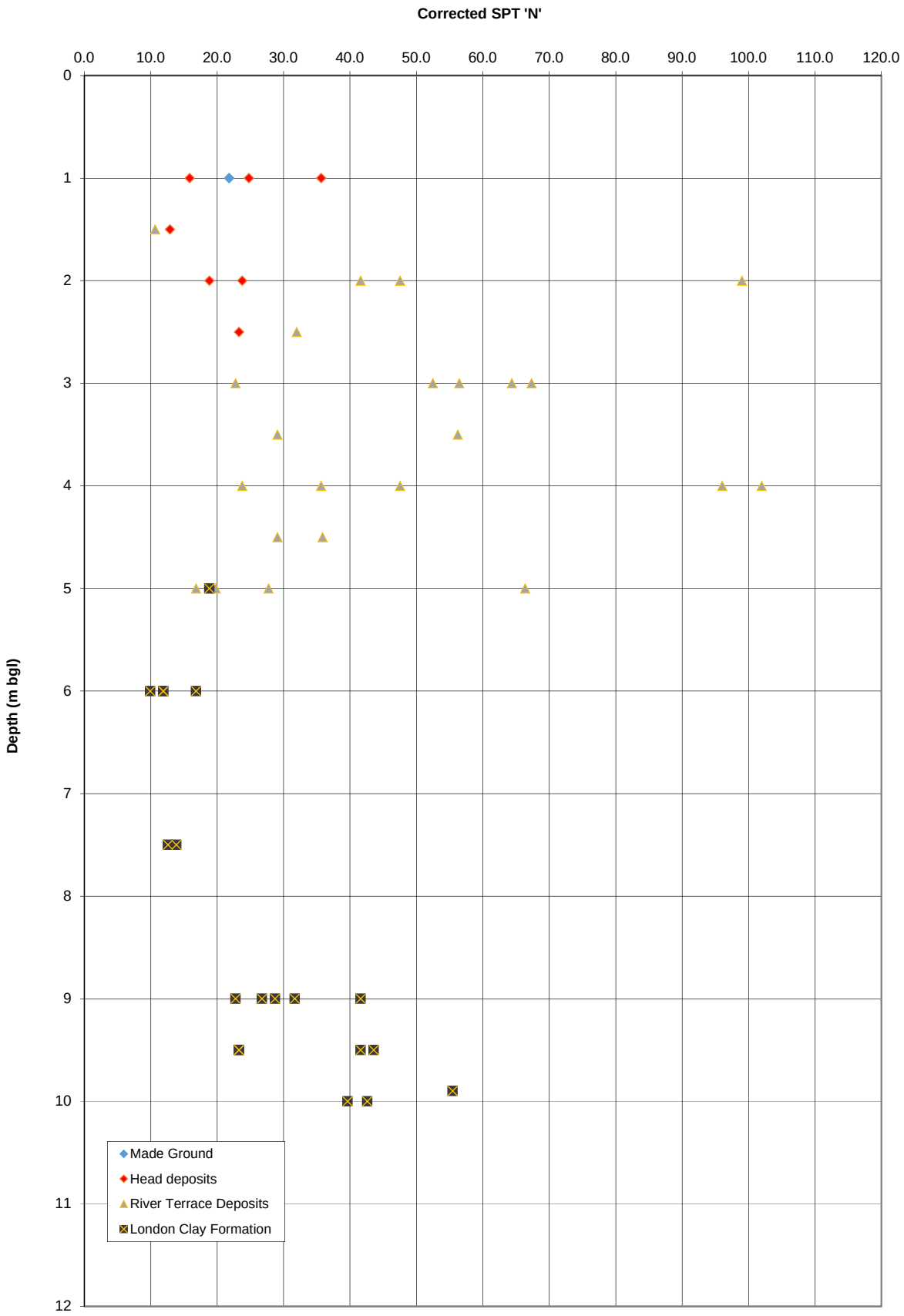
DRAWN BY: DP	SCALE: To Scale@A4	PROJECT NO: 13-0646.01
CHECKED BY: DW	REVISION: 1	FIGURE NO: 1
DATE: 19 January 2015		



deltasimons

TITLE:
Site Layout and Borehole Location Plan
Stanbridge Road
Havant

DRAWN BY: DP	SCALE: Not to Scale	PROJECT NO: 13-0646.01
CHECKED BY: DW	REVISION: 1	FIGURE NO: 2
DATE: 19 January 2015		

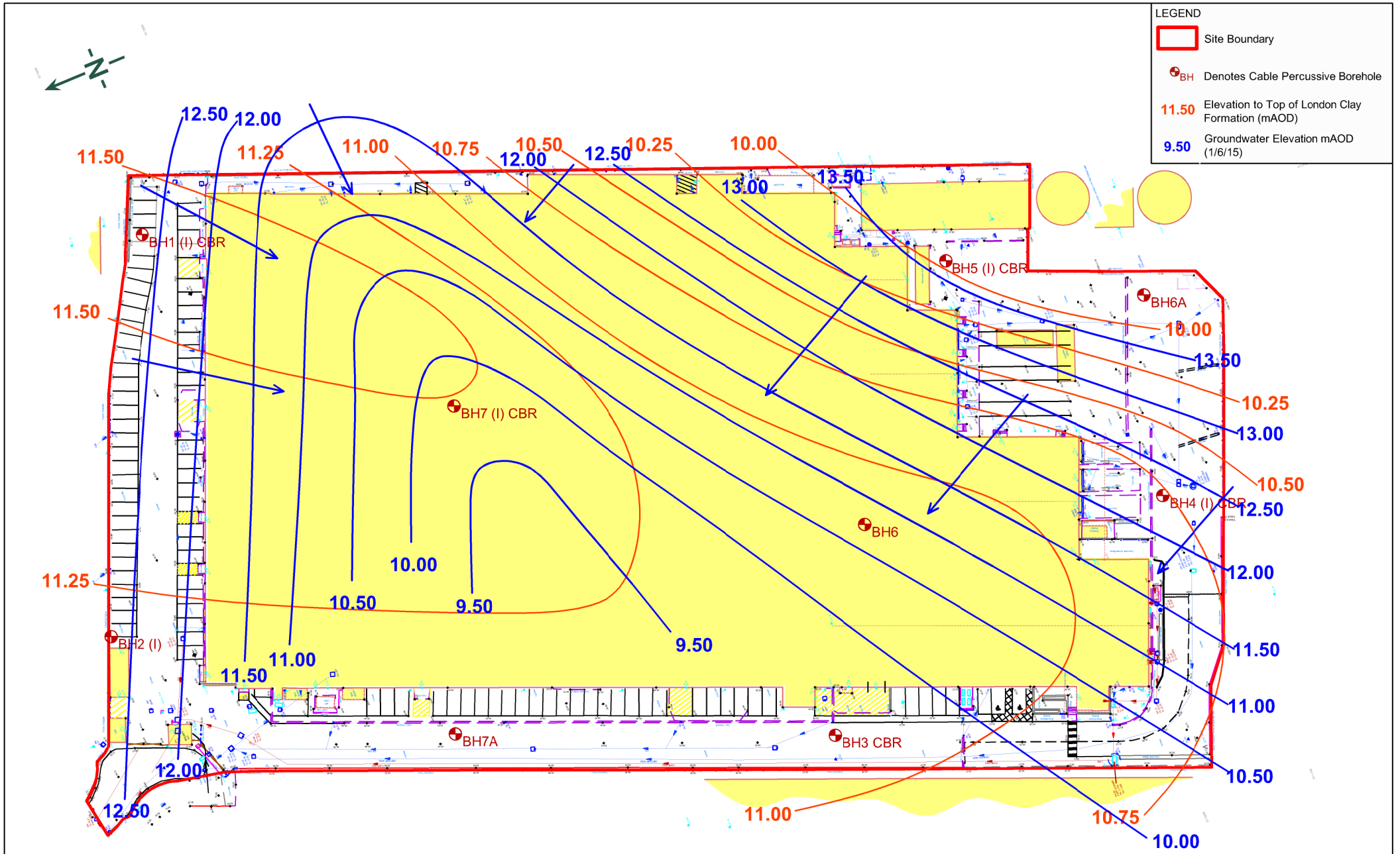


deltasimons

TITLE:

Corrected SPT, Depth and Strata Type
Stanbridge Road, Havant, PO9 2NG

DWN:	PROJECT NO.:
DRW	13-0646.01
DATE:	FIGURE NO.:
Jan-15	3



deltasimons

TITLE:
Interpolated Elevations to the Top of the London Clay Formation & Groundwater Elevations
Stanbridge Road
Havant

DRAWN BY: DP	SCALE: Not to Scale	PROJECT NO: 13-0646.01
CHECKED BY: DW	REVISION: 1	FIGURE NO: 4
DATE: 28 January 2015		

Appendix I



PARKING
Applying blended average standard @:
cars: 1/60sm GEA 5% disabled.
cycles: 1/366 + 1/666

BUILDING 1 GEA- 7363sm
122 cars incl 6 disabled. 33 cycles.

BUILDING 2 GEA- 3076 sm
51 cars incl 3 disabled. 13 cycles.

TOTAL 173 cars 46 cycles.

Subject to Statutory approvals& design development

SCALE 1:1000 @ A3

2014 / SK / 001

0 35 m

cornisharchitects July 2014

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SITE PLAN SCHEME 1

STANBRIDGE ROAD
HAVANT

FOR INFORMATION



PARKING
Applying blended average standard @:
cars: 1/60sm GEA 5% disabled.
cycles: 1/366 + 1/666

BUILDING 1 GEA- 4747.7 sm
79 cars incl 4 disabled. 20 cycles.

BUILDING 2 GEA- 2454 sm
41 cars incl 2 disabled. 11 cycles.

BUILDING 3 GEA- 3195 sm
53 cars incl 3 disabled. 14 cycles.

TOTAL 173 cars 45 cycles.

Subject to Statutory approvals& design development

SCALE 1:1000 @ A3

2014 / SK / 002

0 35 m

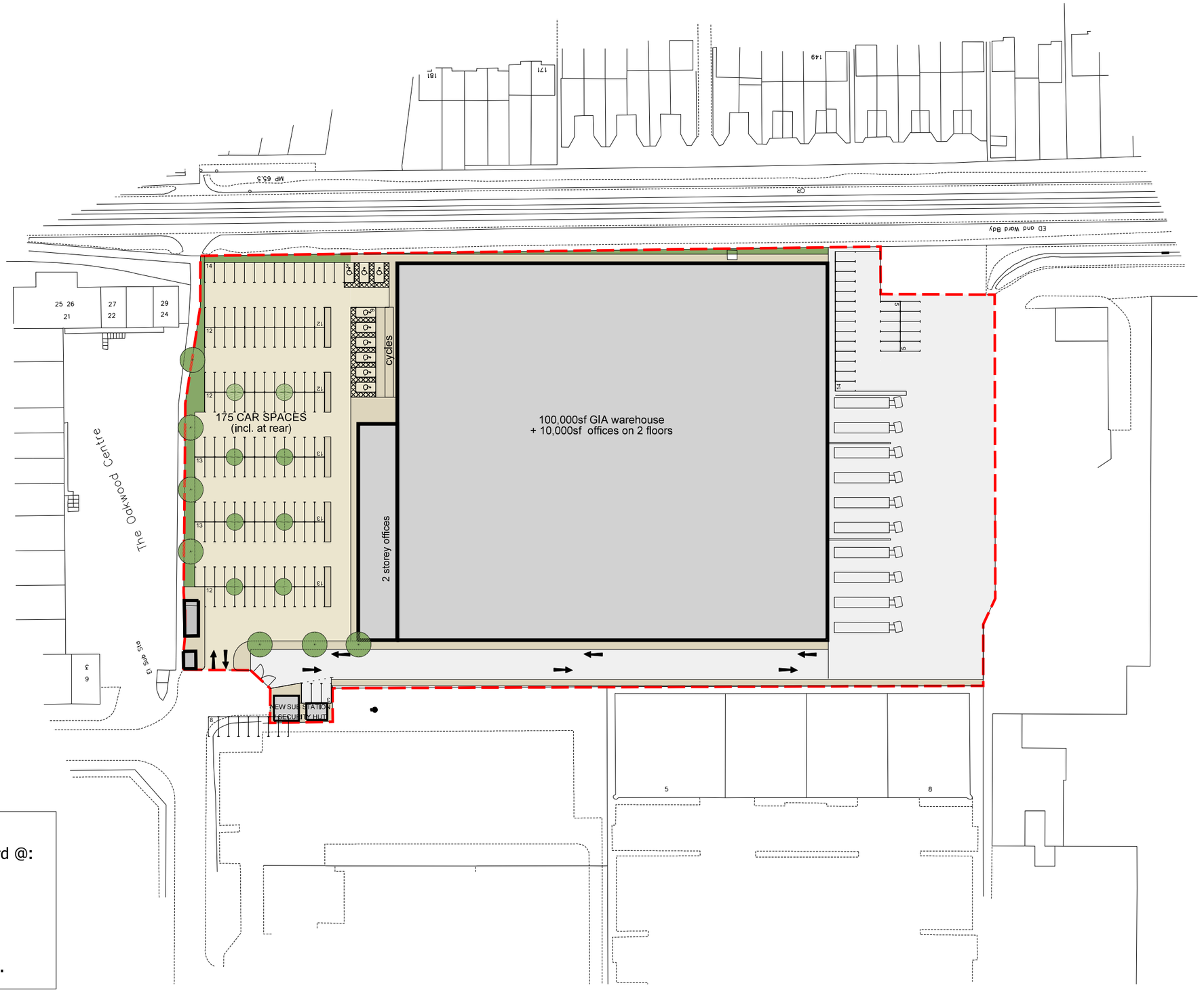
cornisharchitects July 2014

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SITE PLAN SCHEME 2

STANBRIDGE ROAD
HAVANT

FOR INFORMATION



PARKING
Applying blended average standard @:
cars: 1/60sm GEA 5% disabled.
cycles: 1/366 + 1/666

BUILDING GEA- 10,471sm
175 cars incl 9 disabled. 45 cycles.

Rev A - Offices repositioned ED 14.07.14

Subject to Statutory approvals& design development

SCALE 1:1000 @ A3

2014 / SK / 003A

0 35 m

cornisharchitects July 2014

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SITE PLAN SCHEME 3

STANBRIDGE ROAD
HAVANT

FOR INFORMATION

Appendix II

Historical Mapping Legends

Ordnance Survey County Series 1:10,560

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

Ordnance Survey Plan 1:10,000

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

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

1:10,000 Raster Mapping

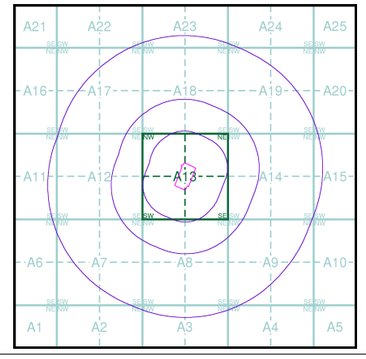
Gravel Pit
Refuse tip or slag heap
Rock
Rock (scattered)
Boulders
Boulders (scattered)
Shingle
Mud
Sand
Sand Pit
Slopes
Top of cliff
General detail
Underground detail
Overhead detail
Narrow gauge railway
Multi-track railway
Single track railway
County boundary (England only)
Civil, parish or community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

deltasimons

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Hampshire & Isle Of Wight	1:10,560	1870	3
Sussex	1:10,560	1879 - 1880	4
Hampshire & Isle Of Wight	1:10,560	1898	5
Sussex	1:10,560	1899	6
Hampshire & Isle Of Wight	1:10,560	1910	7
Sussex	1:10,560	1914	8
Sussex	1:10,560	1914	9
Sussex	1:10,560	1914	10
Sussex	1:10,560	1932	11
Hampshire & Isle Of Wight	1:10,560	1932	12
Sussex	1:10,560	1932	13
Hampshire & Isle Of Wight	1:10,560	1932	14
Sussex	1:10,560	1932	15
Hampshire & Isle Of Wight	1:10,560	1933	16
Hampshire & Isle Of Wight	1:10,560	1933	17
Hampshire & Isle Of Wight	1:10,560	1938 - 1942	18
Ordnance Survey Plan	1:10,000	1963	19
Ordnance Survey Plan	1:10,000	1966	20
Ordnance Survey Plan	1:10,000	1975	21
Havant	1:25,000	1983	22
Portsmouth	1:10,000	1988	23
Ordnance Survey Plan	1:10,000	1992	24
10K Raster Mapping	1:10,000	2006	25
VectorMap Local	1:10,000	2014	26

Historical Map - Slice A



Order Details

Order Number: 62539150_1_1
Customer Ref: 13-0646.01
National Grid Reference: 472700, 107330
Slice: A
Site Area (Ha): 1.99
Search Buffer (m): 1000

Site Details

Stanbridge Road, Havant, PO9 2NL

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

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

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
- 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
- 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

SU70_Havant

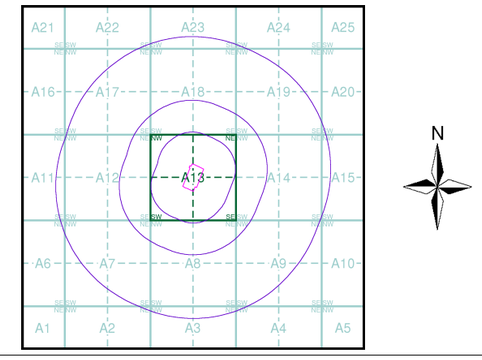
No.	Description
3	Factories (Radio Electronics, Metal Works, Electrical Appliances, Chemicals And Machinery)

deltasimons

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Hampshire & Isle Of Wight	1:10,560	1870	3
Sussex	1:10,560	1879 - 1880	4
Hampshire & Isle Of Wight	1:10,560	1898	5
Sussex	1:10,560	1899	6
Hampshire & Isle Of Wight	1:10,560	1910	7
Sussex	1:10,560	1914	8
Sussex	1:10,560	1914	9
Sussex	1:10,560	1914	10
Sussex	1:10,560	1932	11
Hampshire & Isle Of Wight	1:10,560	1932	12
Sussex	1:10,560	1932	13
Hampshire & Isle Of Wight	1:10,560	1932	14
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Hampshire & Isle Of Wight	1:10,560	1933	16
Hampshire & Isle Of Wight	1:10,560	1933	17
Hampshire & Isle Of Wight	1:10,560	1938 - 1942	18
Ordnance Survey Plan	1:10,000	1963	19
Ordnance Survey Plan	1:10,000	1966	20
Ordnance Survey Plan	1:10,000	1975	21
Havant	1:25,000	1983	22
Portsmouth	1:10,000	1988	23
Ordnance Survey Plan	1:10,000	1992	24
10K Raster Mapping	1:10,000	2006	25
VectorMap Local	1:10,000	2014	26

Russian Map - Slice A



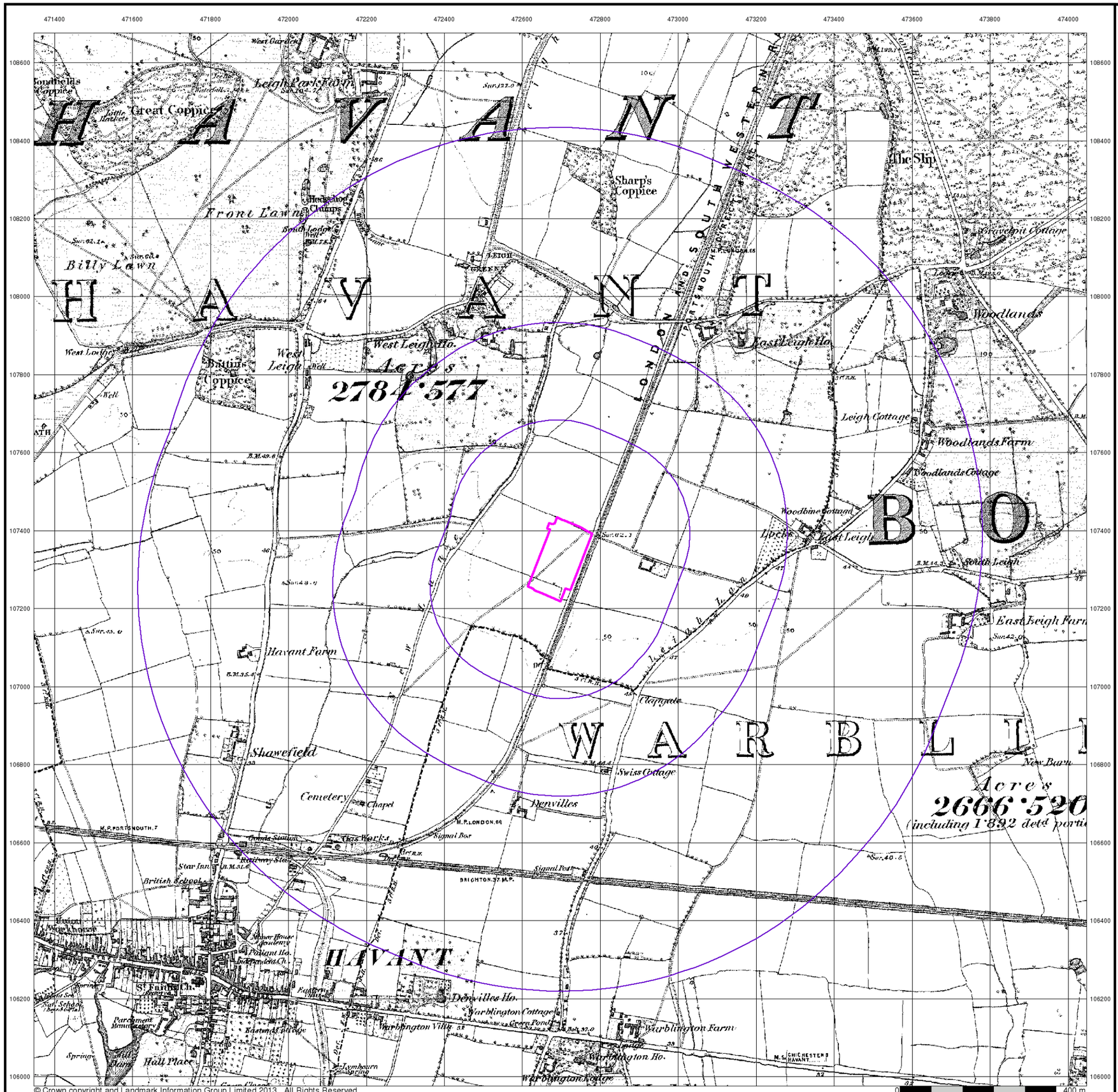
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Site Area (Ha): 1.99
Search Buffer (m): 1000

Site Details

Stanbridge Road, Havant, PO9 2NL

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



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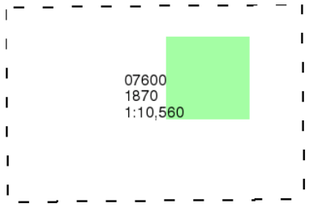
Hampshire & Isle Of Wight

Published 1870

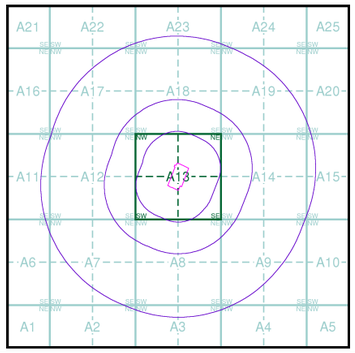
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The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps.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

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

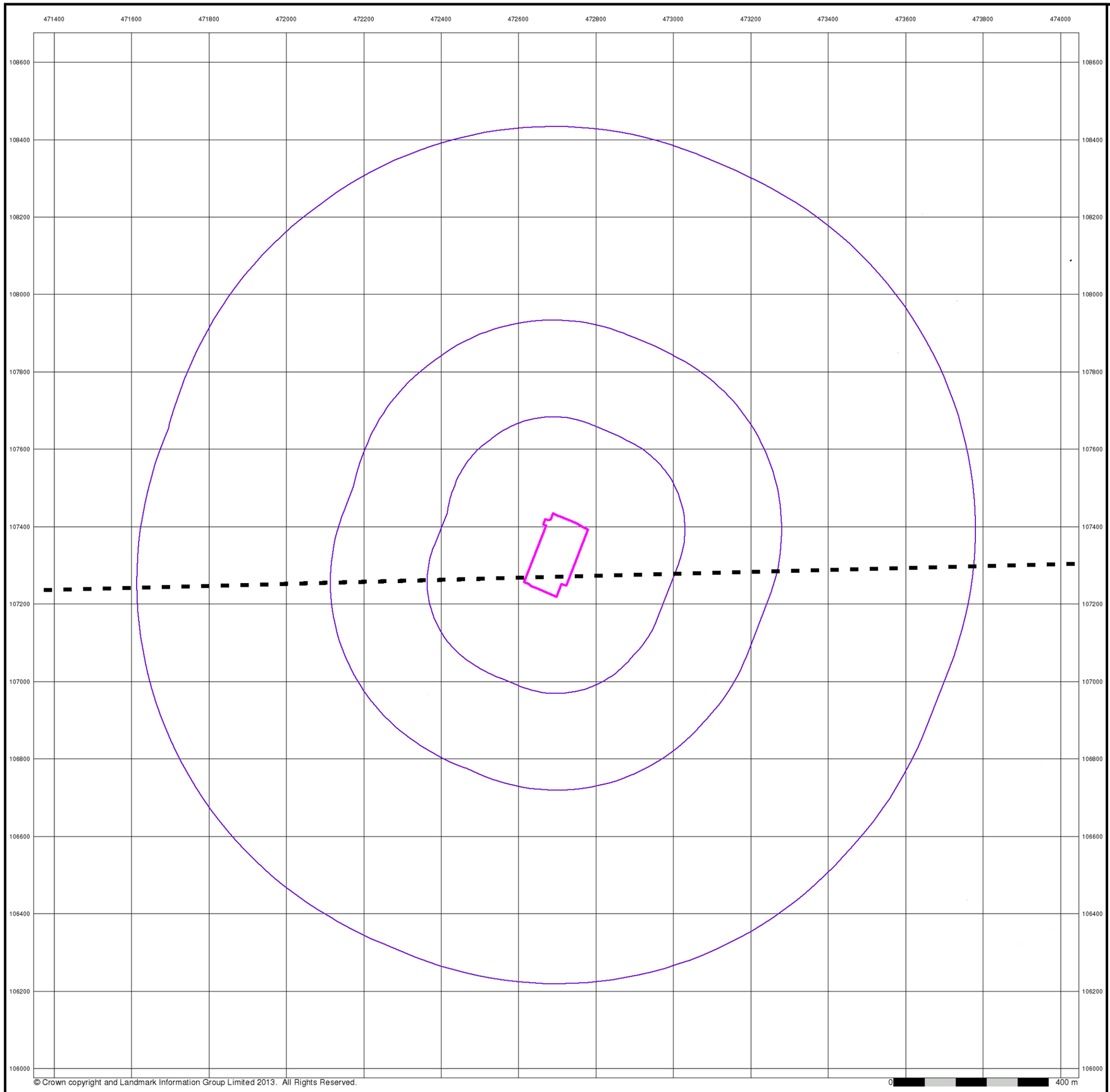
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Search Buffer (m):	1000

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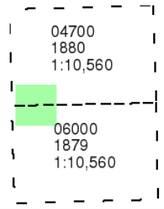
Sussex

Published 1879 - 1880

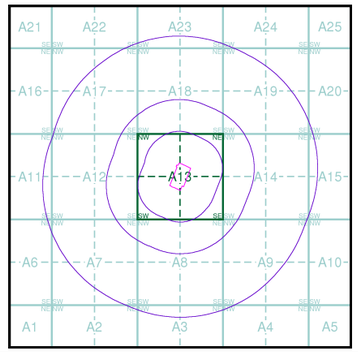
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Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

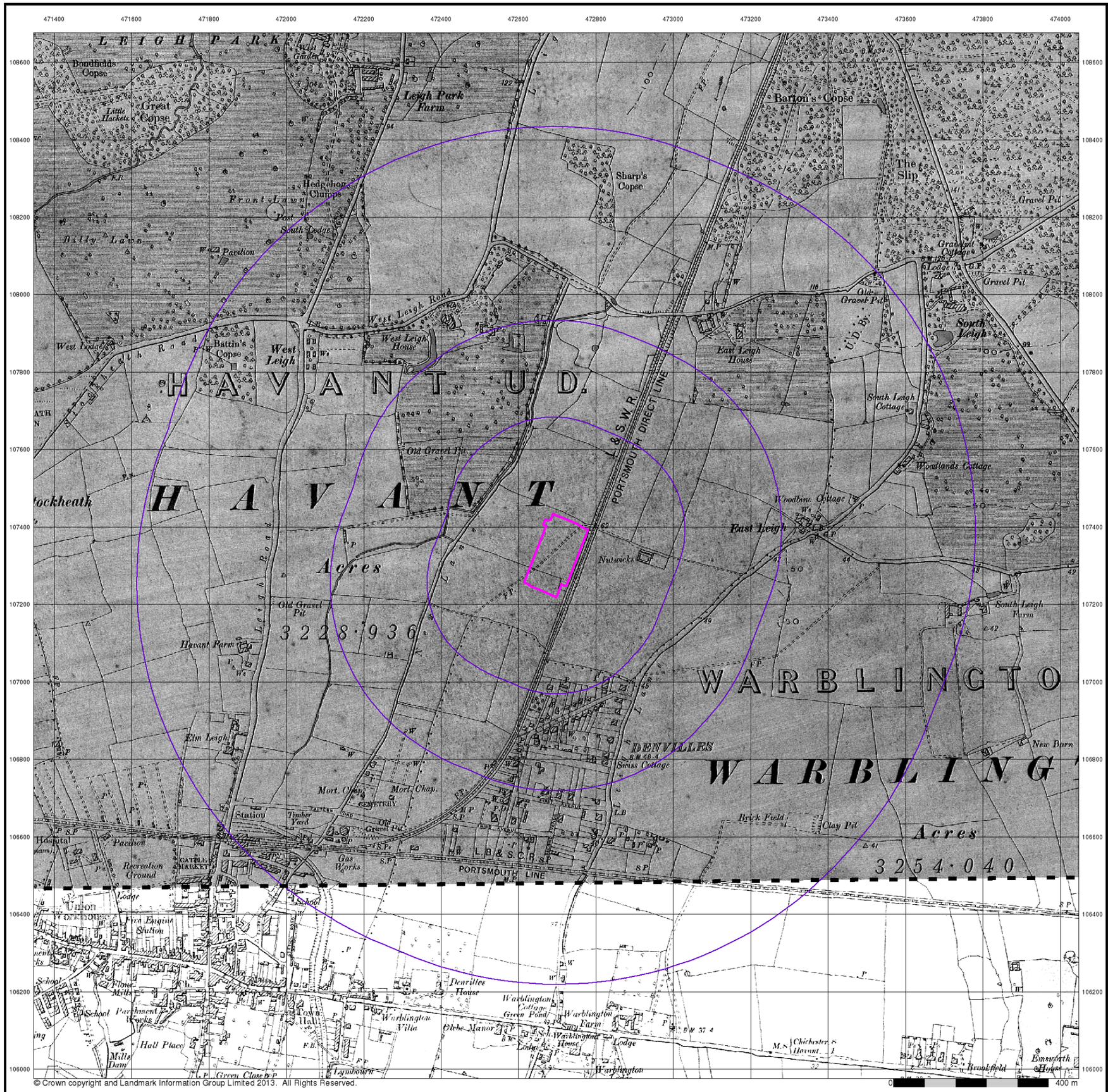
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Search Buffer (m):	1000

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Hampshire & Isle Of Wight

Published 1898

Source map scale - 1:10,560

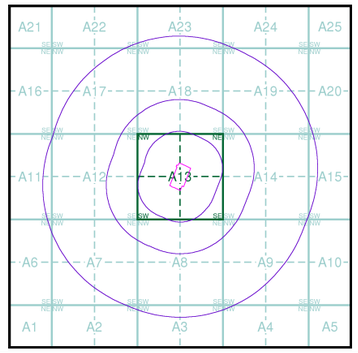
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Map Name(s) and Date(s)

076NE
1898
1:10,560

076SE
1898
1:10,560

Historical Map - Slice A



Order Details

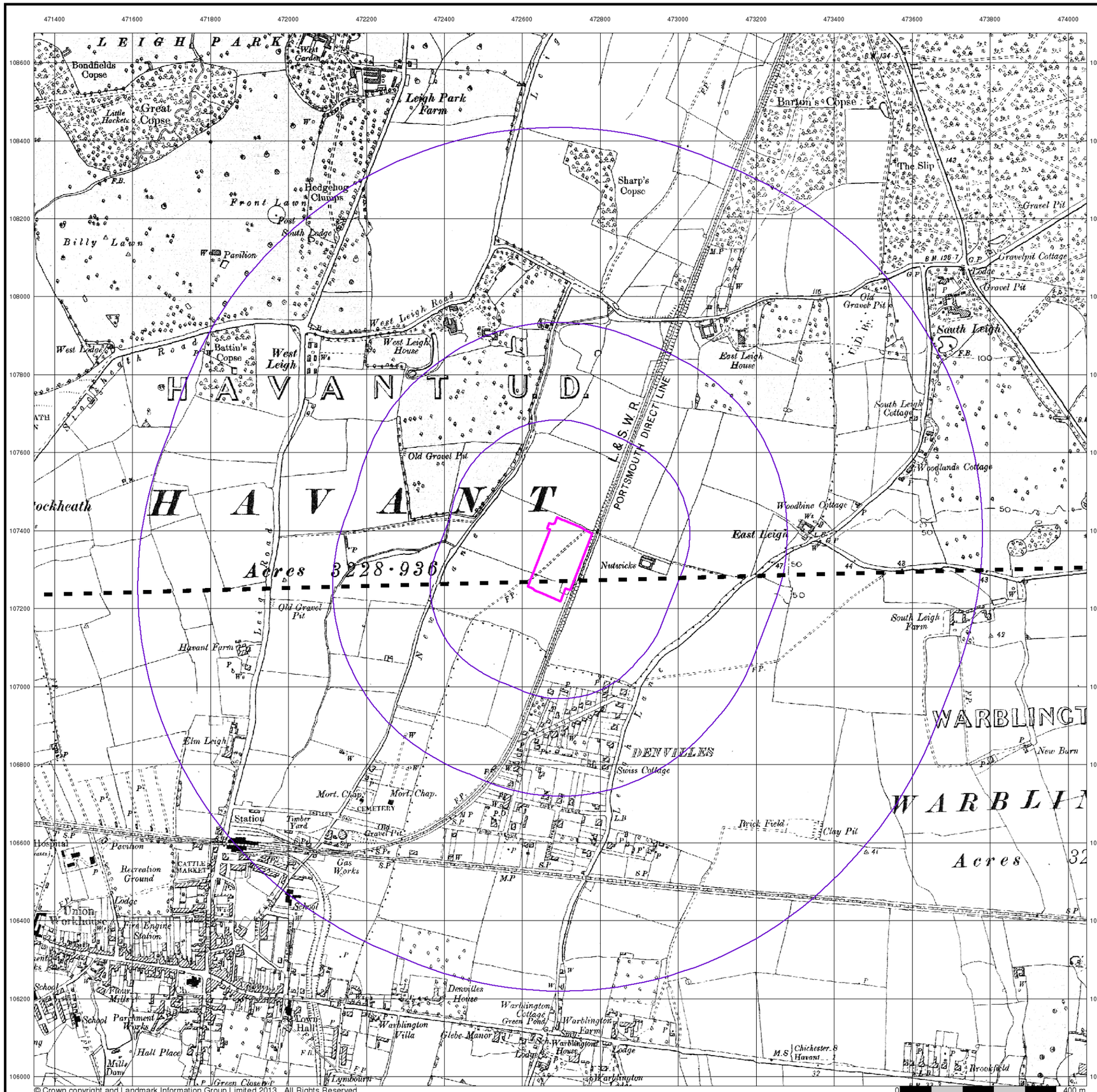
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Search Buffer (m):	1000

Site Details

Stanbridge Road, Havant, PO9 2NL

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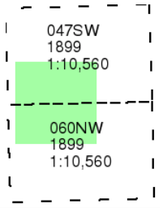
Sussex

Published 1899

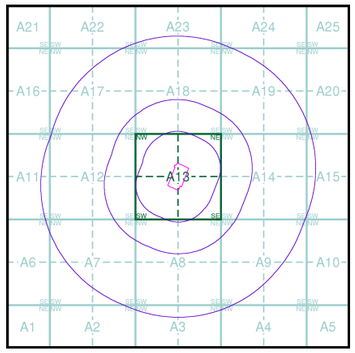
Source map scale - 1:10,560

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

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

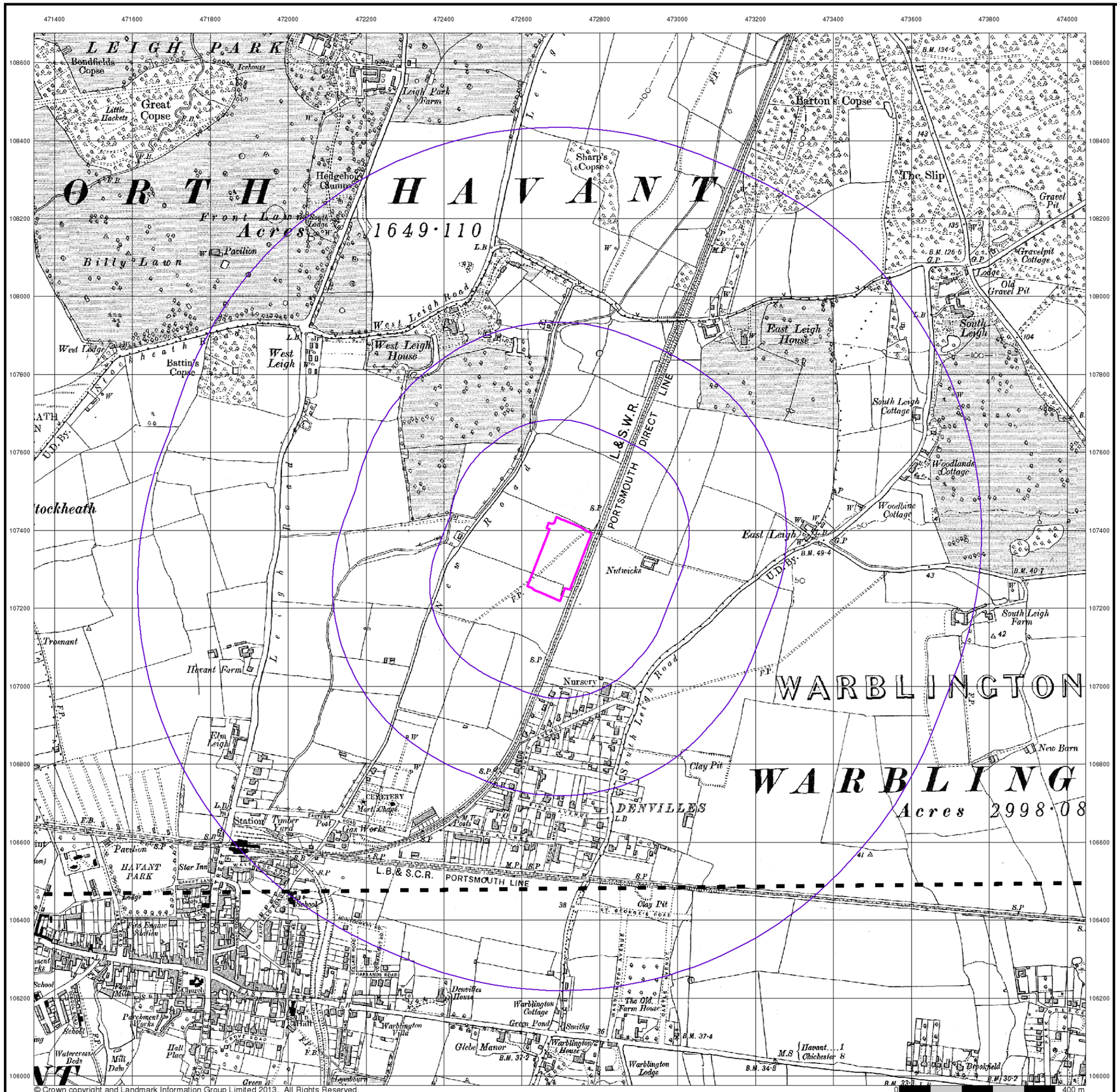
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Search Buffer (m):	1000

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Hampshire & Isle Of Wight

Published 1910

Source map scale - 1:10,560

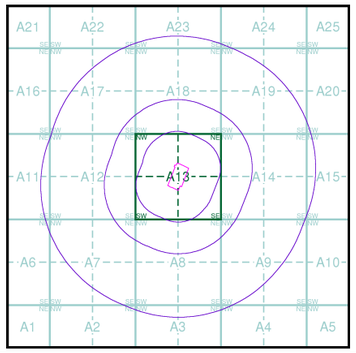
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Map Name(s) and Date(s)

076NE
1910
1:10,560

076SE
1910
1:10,560

Historical Map - Slice A



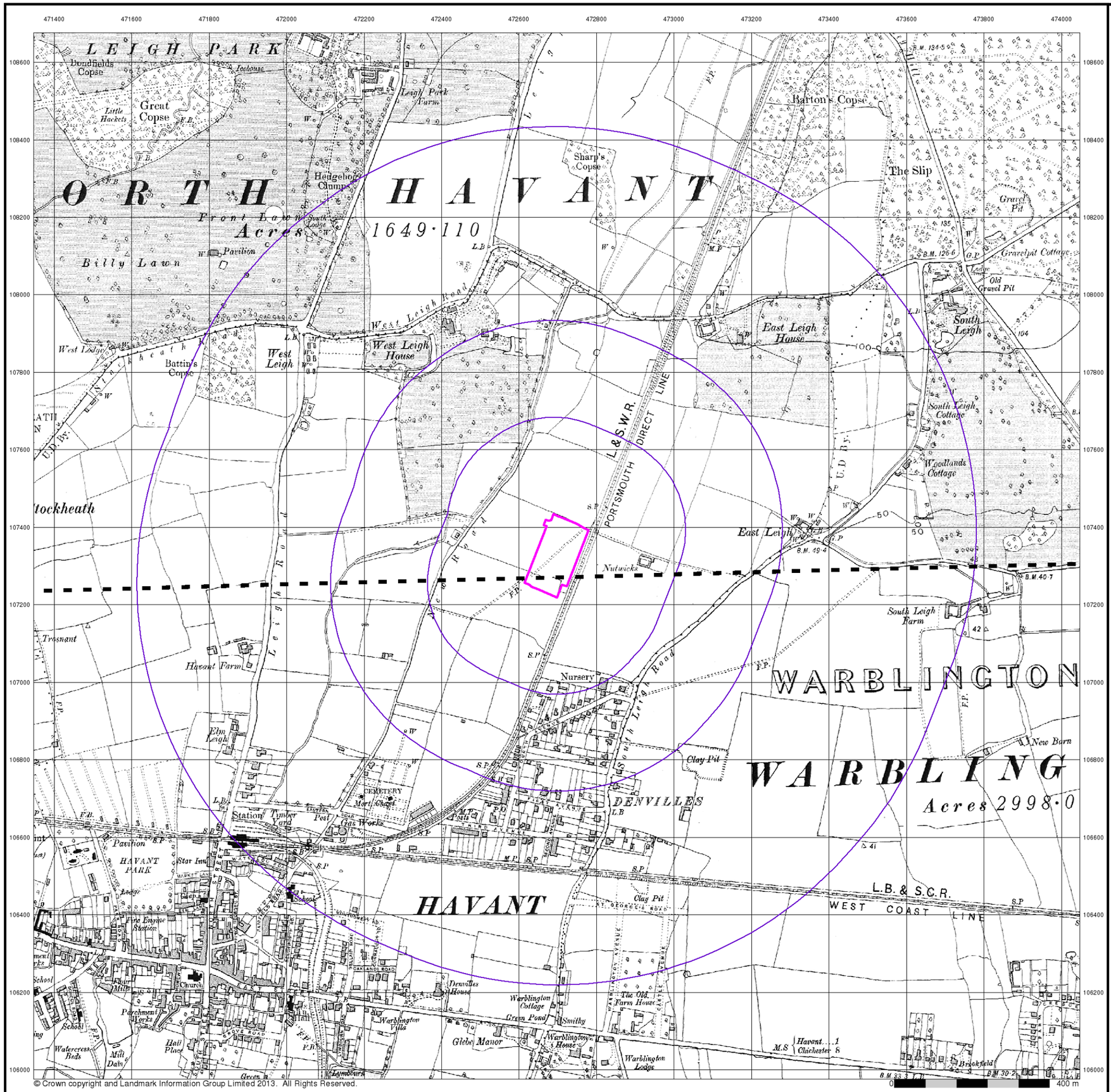
Order Details

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Customer Ref:	13-0646.01
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Slice:	A
Site Area (Ha):	1.99
Search Buffer (m):	1000

Site Details

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Sussex

Published 1914

Source map scale - 1:10,560

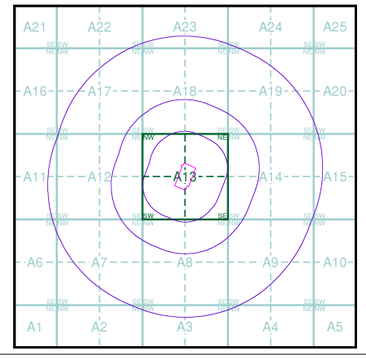
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Map Name(s) and Date(s)

047SW
1914
1:10,560

060NW
1914
1:10,560

Historical Map - Slice A



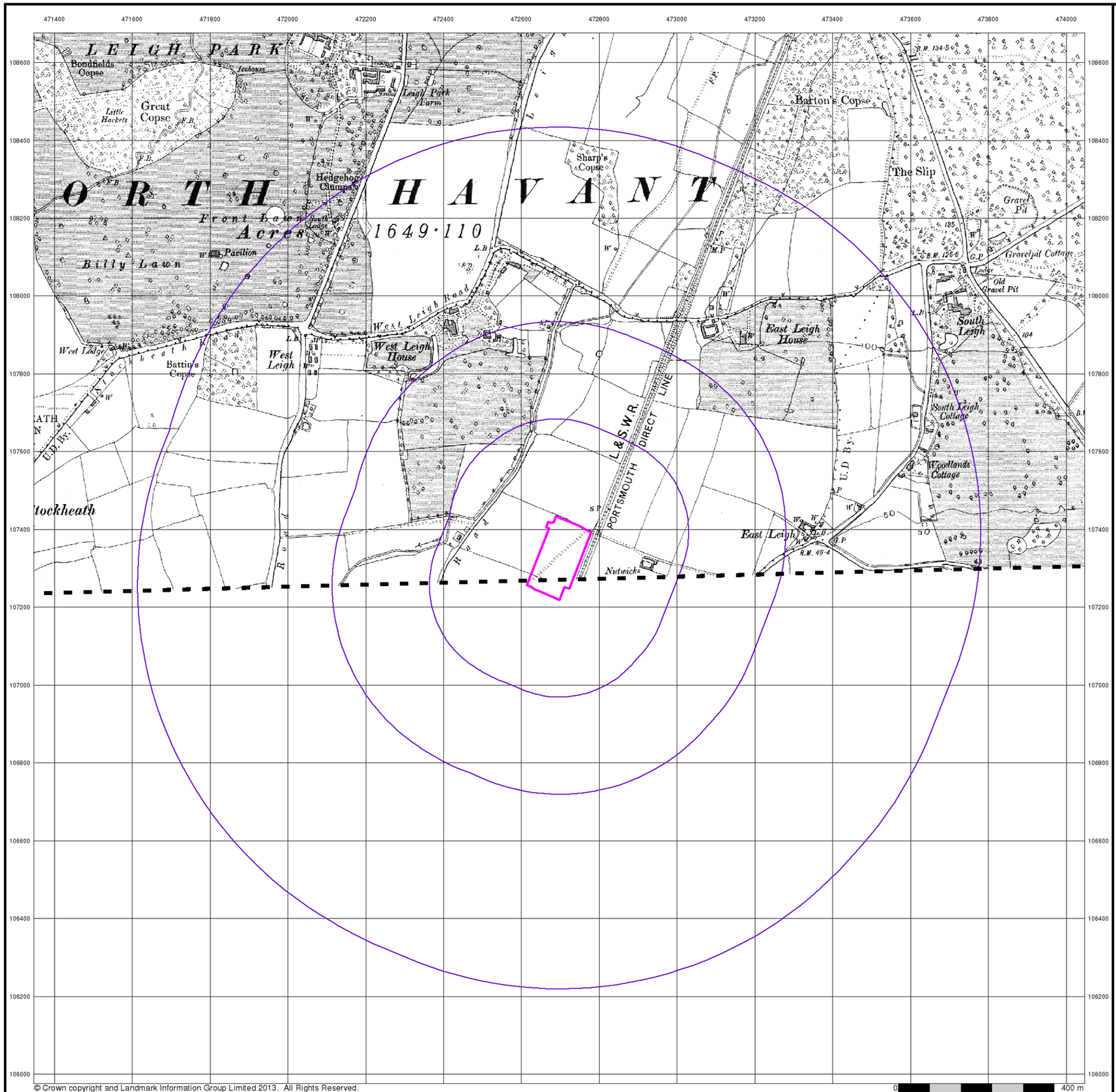
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Search Buffer (m):	1000

Site Details

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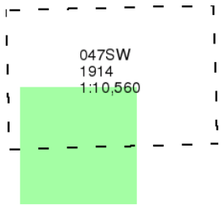
Sussex

Published 1914

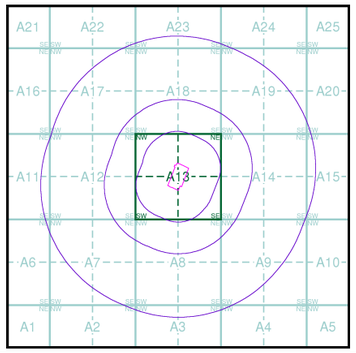
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Map Name(s) and Date(s)



Historical Map - Slice A



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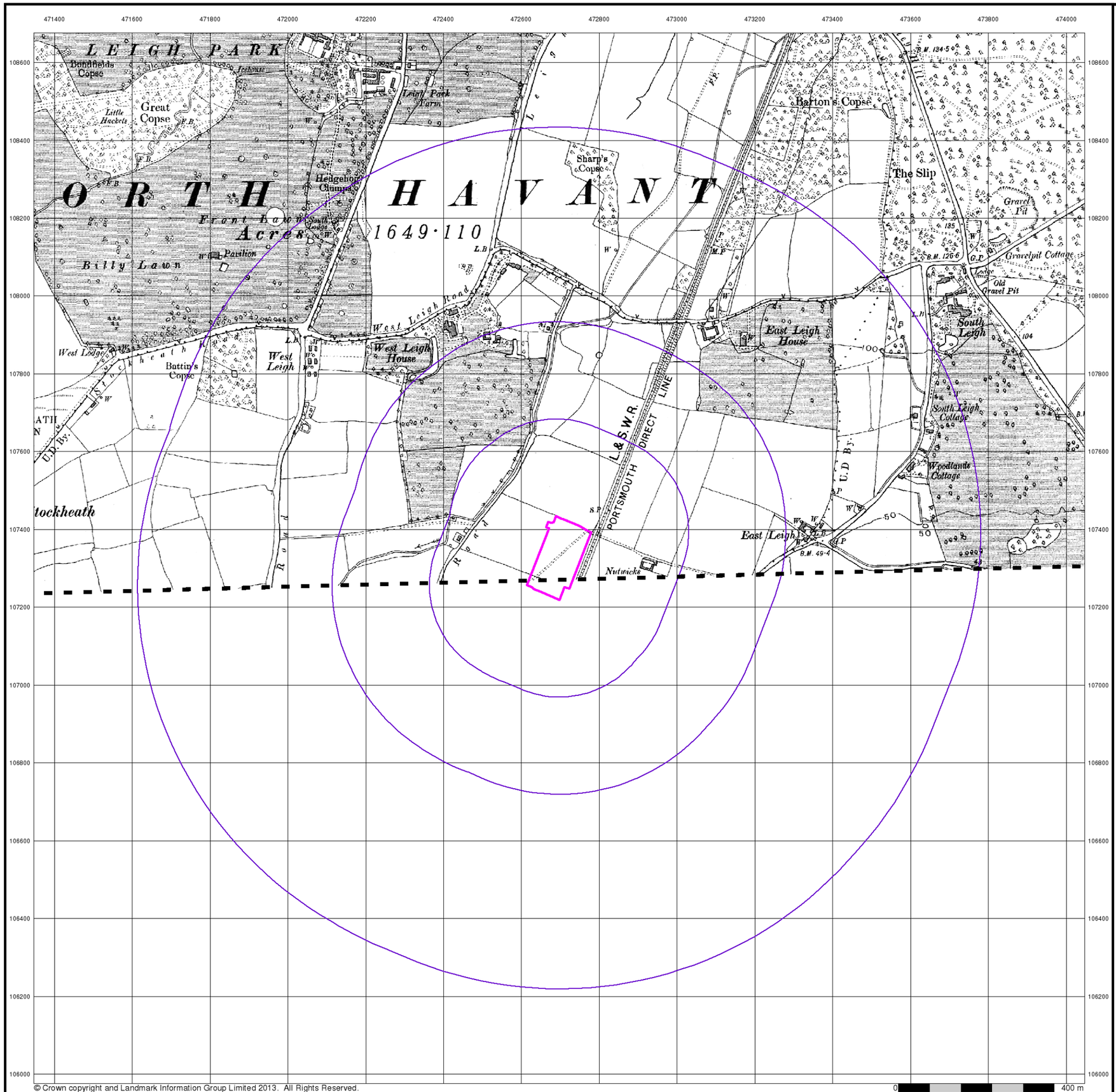
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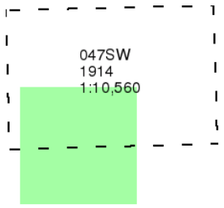
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Published 1914

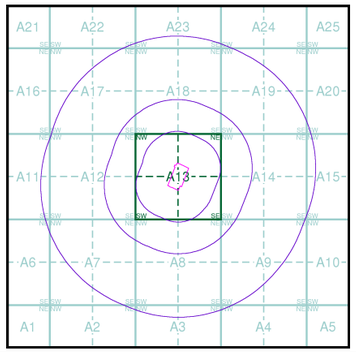
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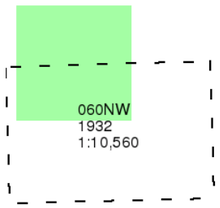
Sussex

Published 1932

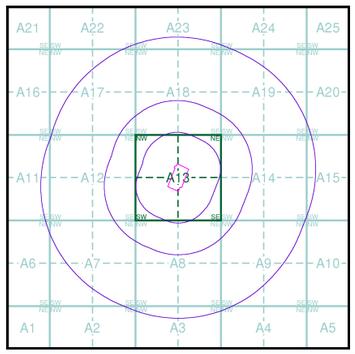
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Map Name(s) and Date(s)



Historical Map - Slice A

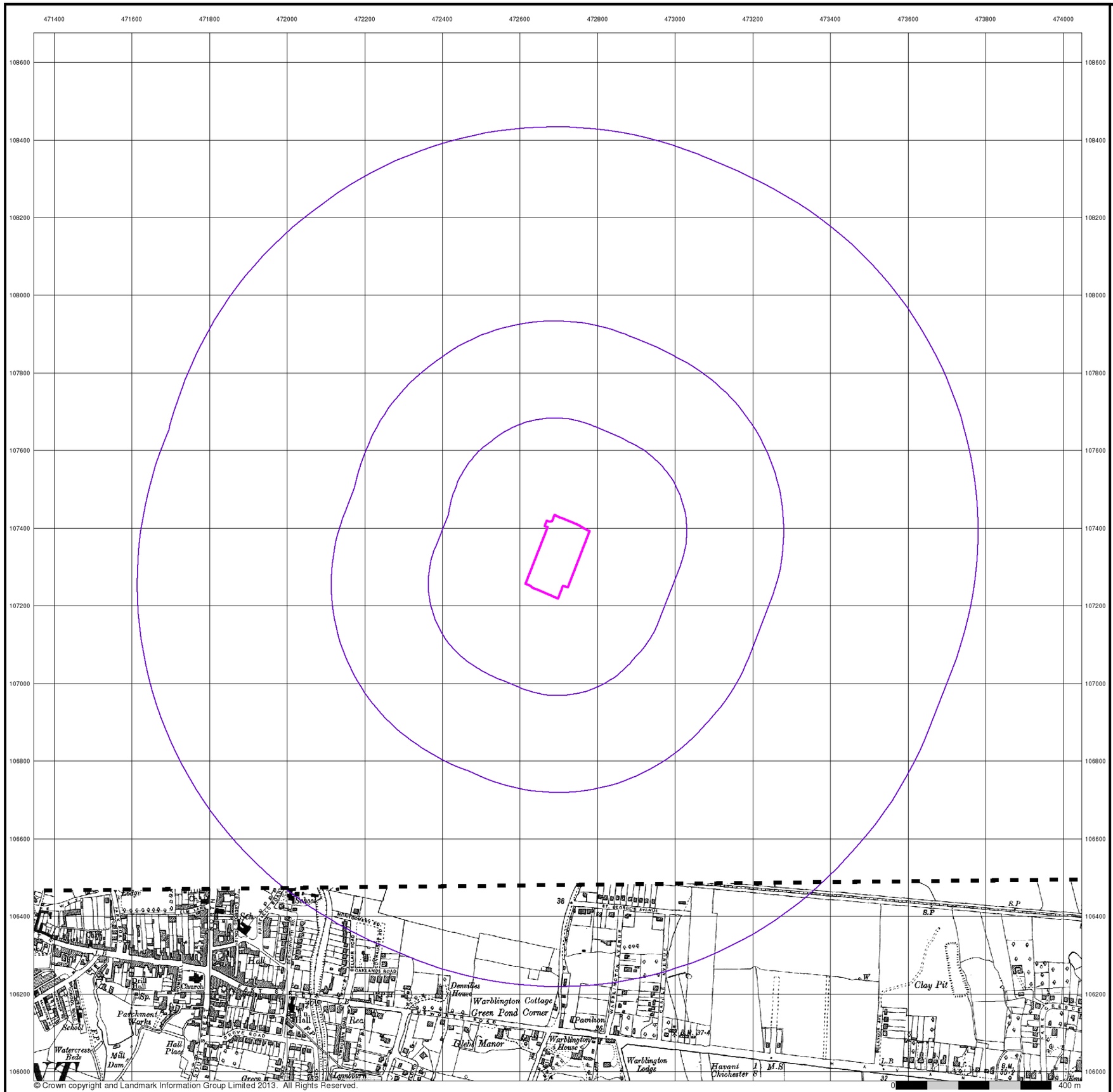


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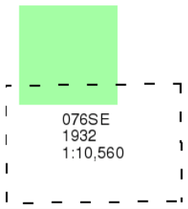
Hampshire & Isle Of Wight

Published 1932

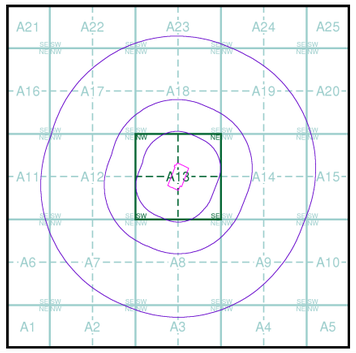
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Map Name(s) and Date(s)



Historical Map - Slice A

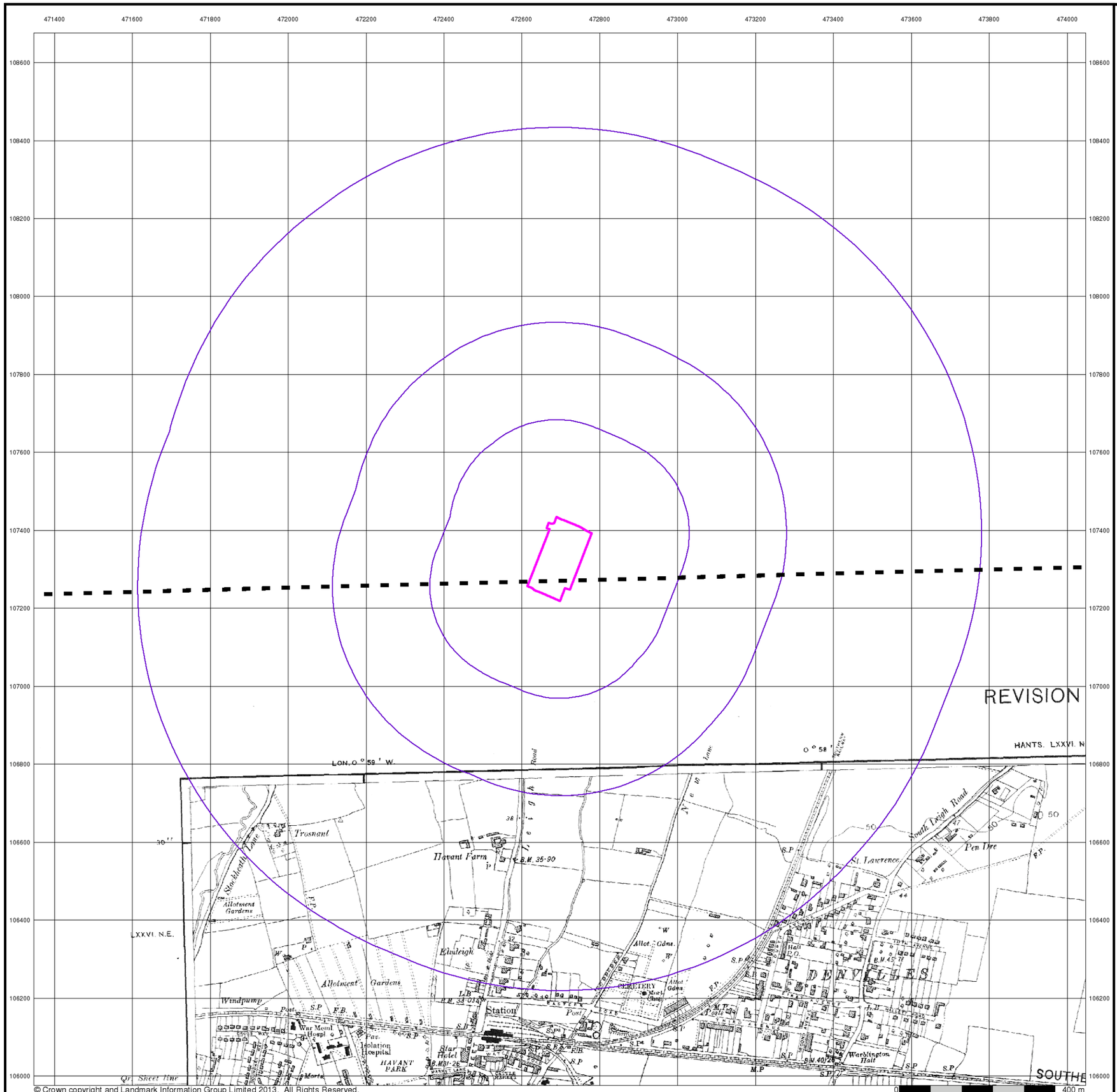


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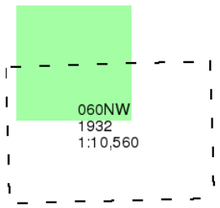
Sussex

Published 1932

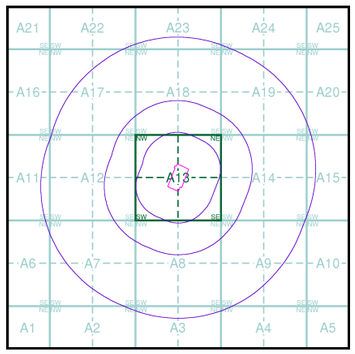
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Map Name(s) and Date(s)



Historical Map - Slice A



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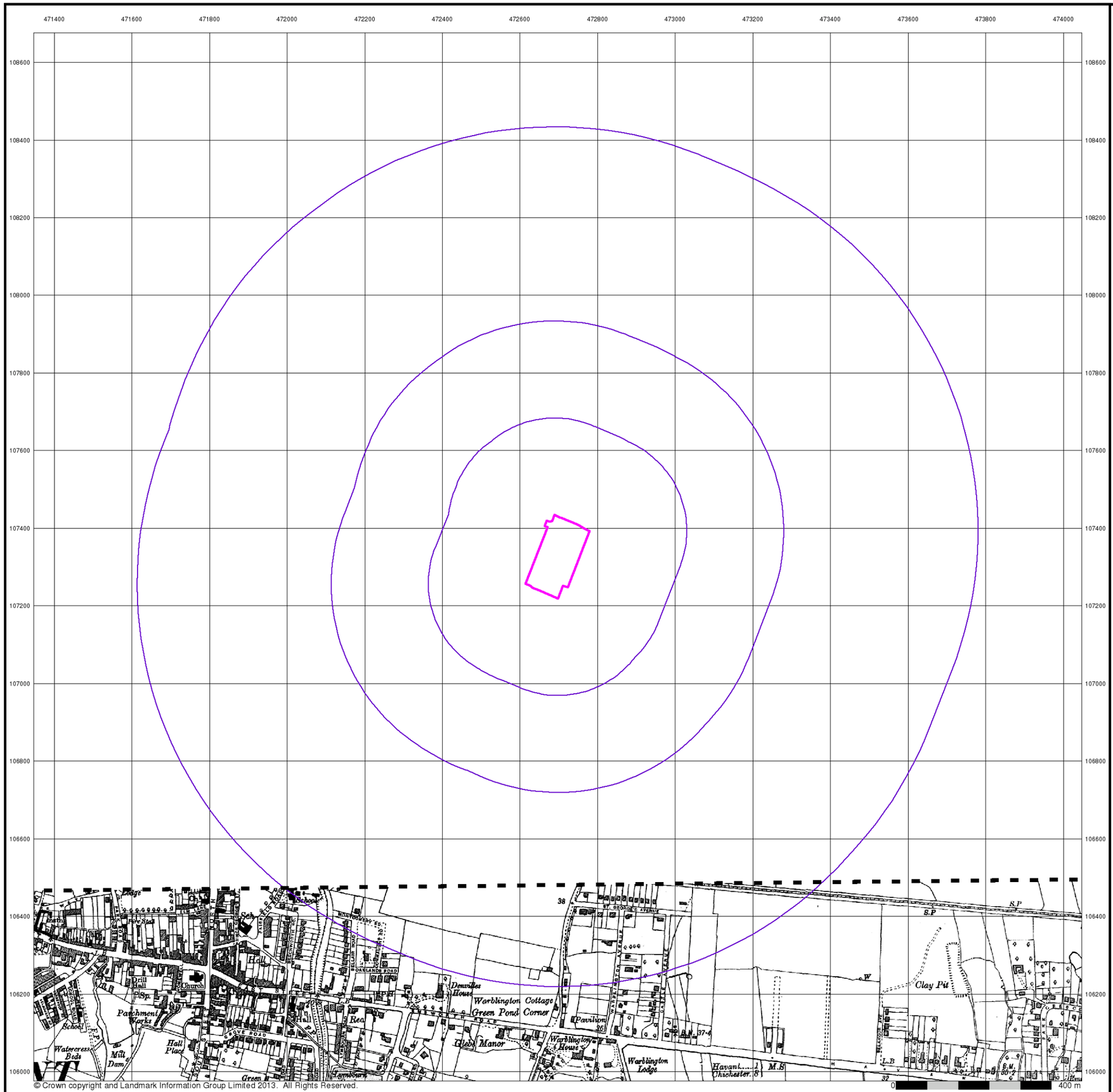
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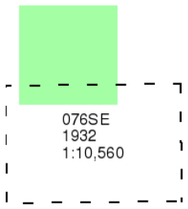
Hampshire & Isle Of Wight

Published 1932

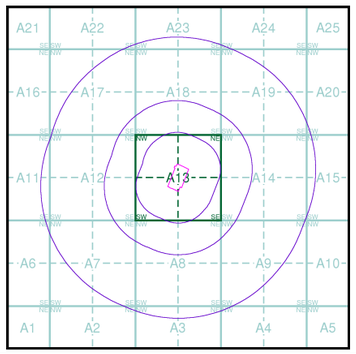
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Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

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Site Details

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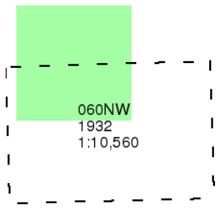
Sussex

Published 1932

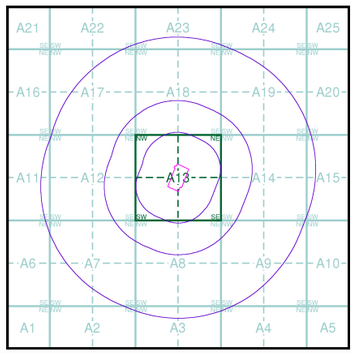
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Historical Map - Slice A

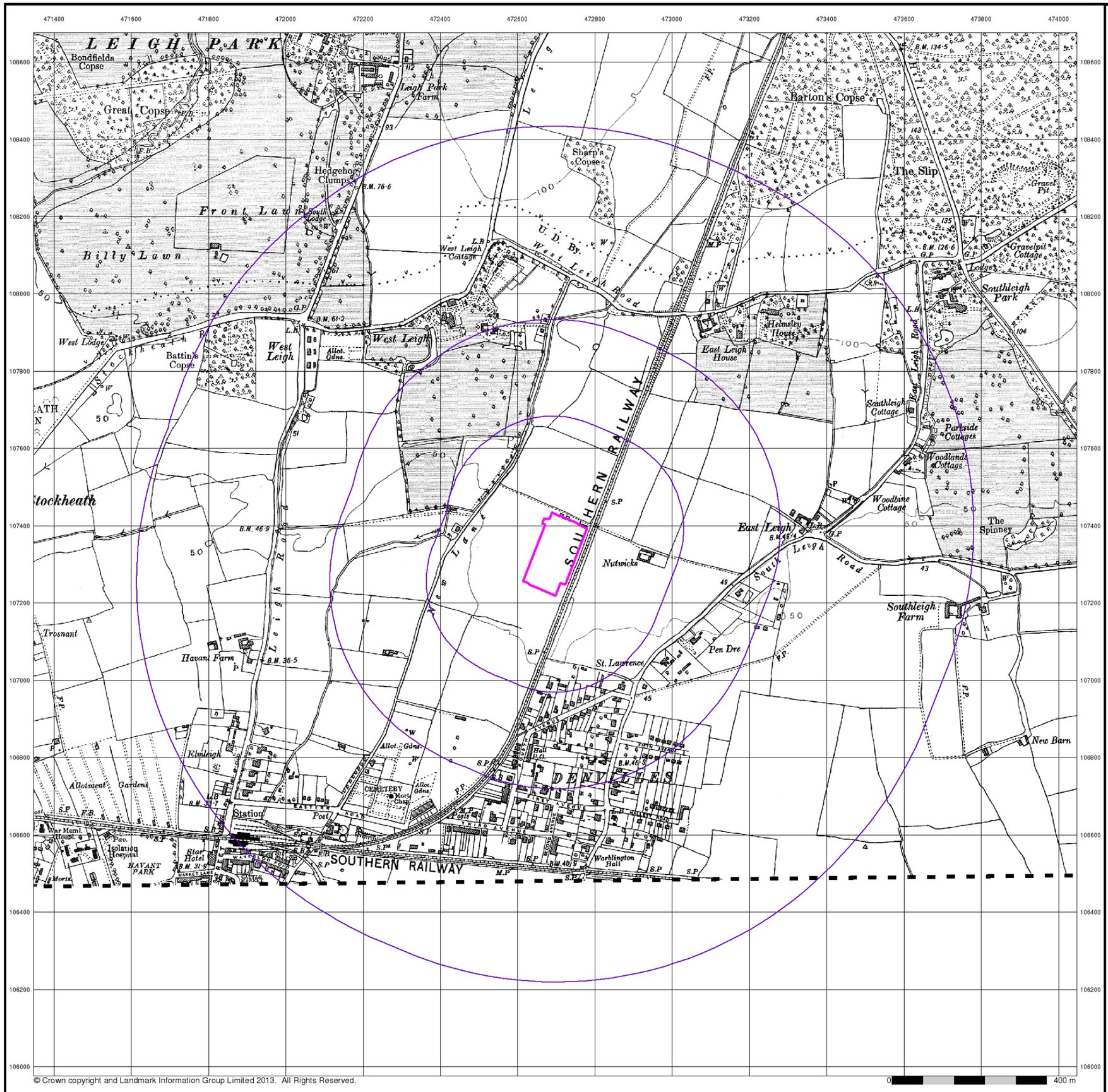


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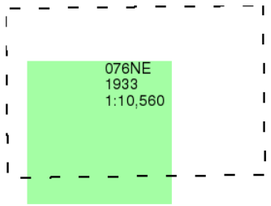
Hampshire & Isle Of Wight

Published 1933

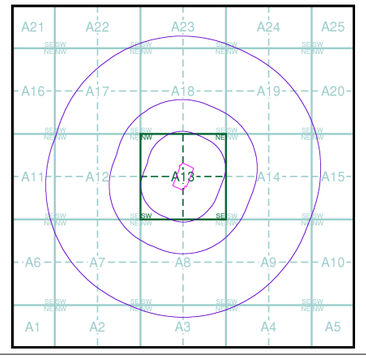
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Map Name(s) and Date(s)



Historical Map - Slice A



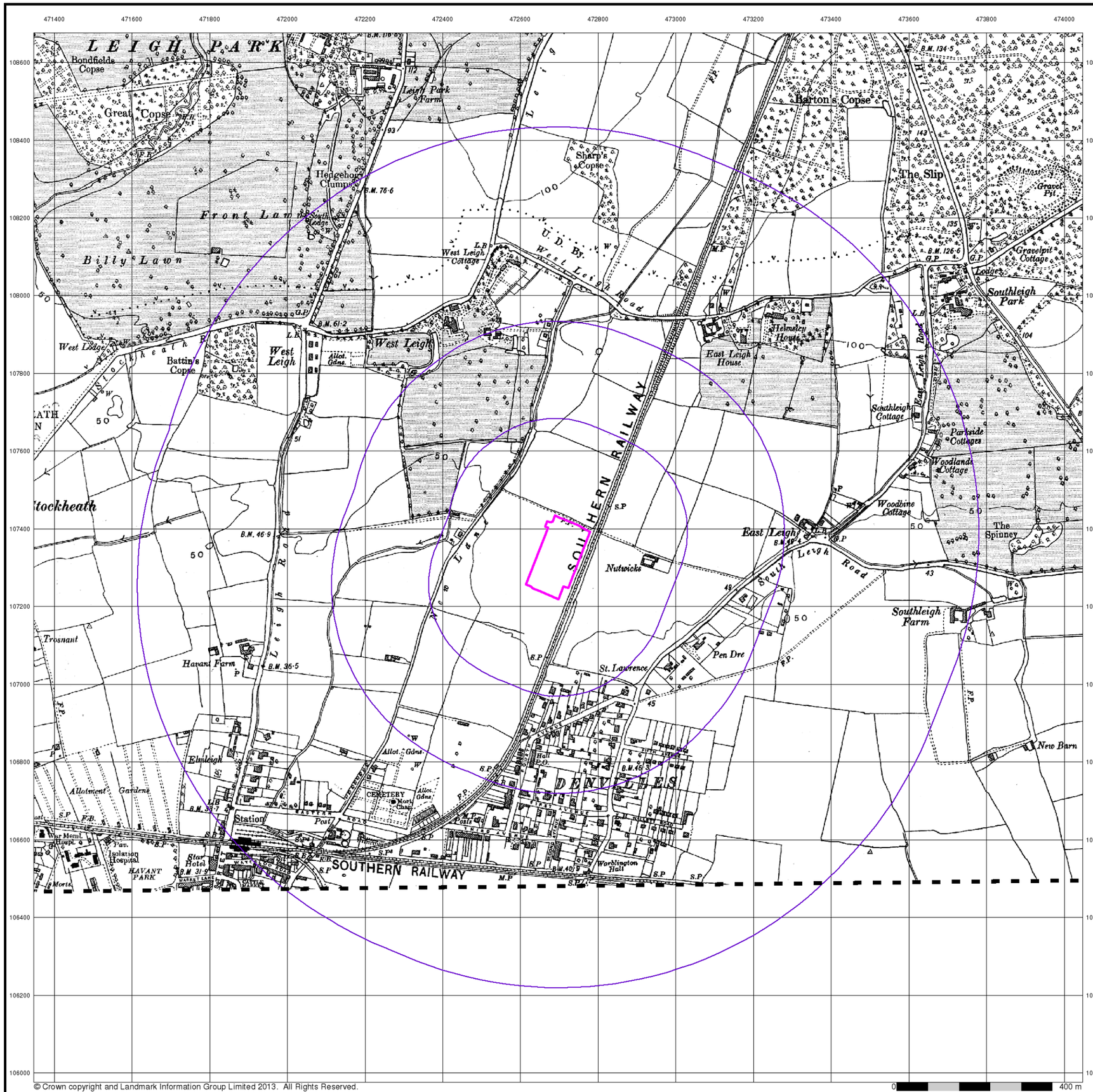
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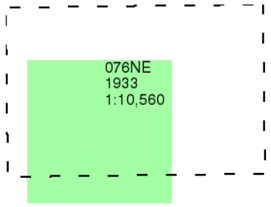
Hampshire & Isle Of Wight

Published 1933

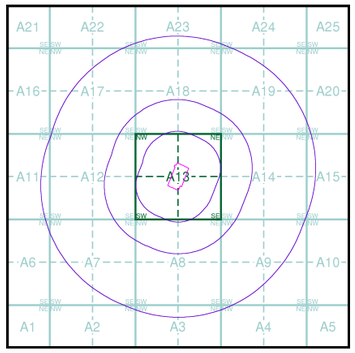
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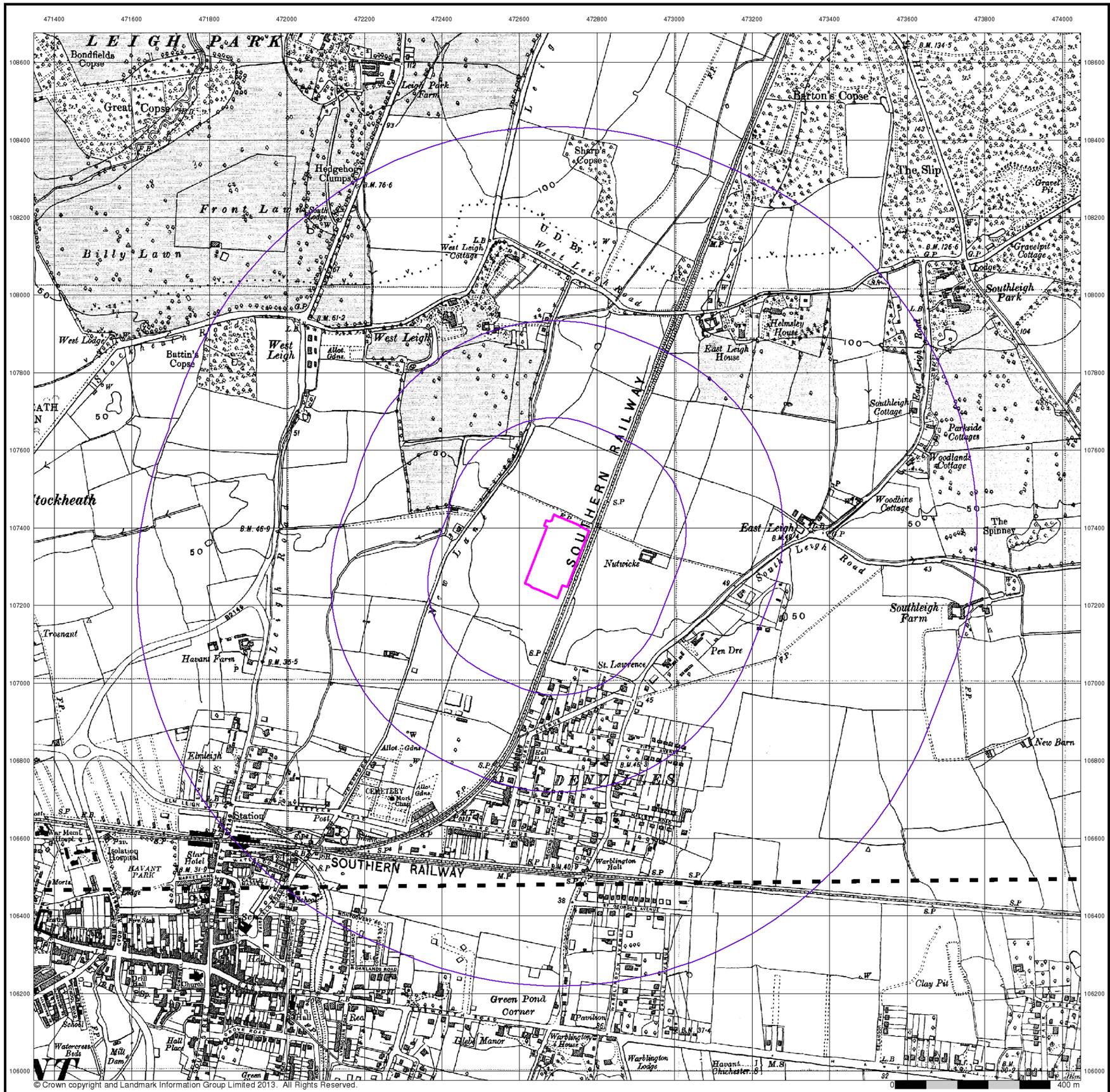
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Hampshire & Isle Of Wight

Published 1938 - 1942

Source map scale - 1:10,560

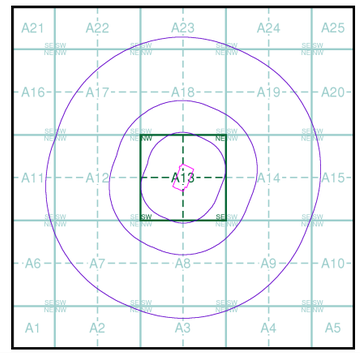
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Map Name(s) and Date(s)

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1938
1:10,560

076SE
1942
1:10,560

Historical Map - Slice A



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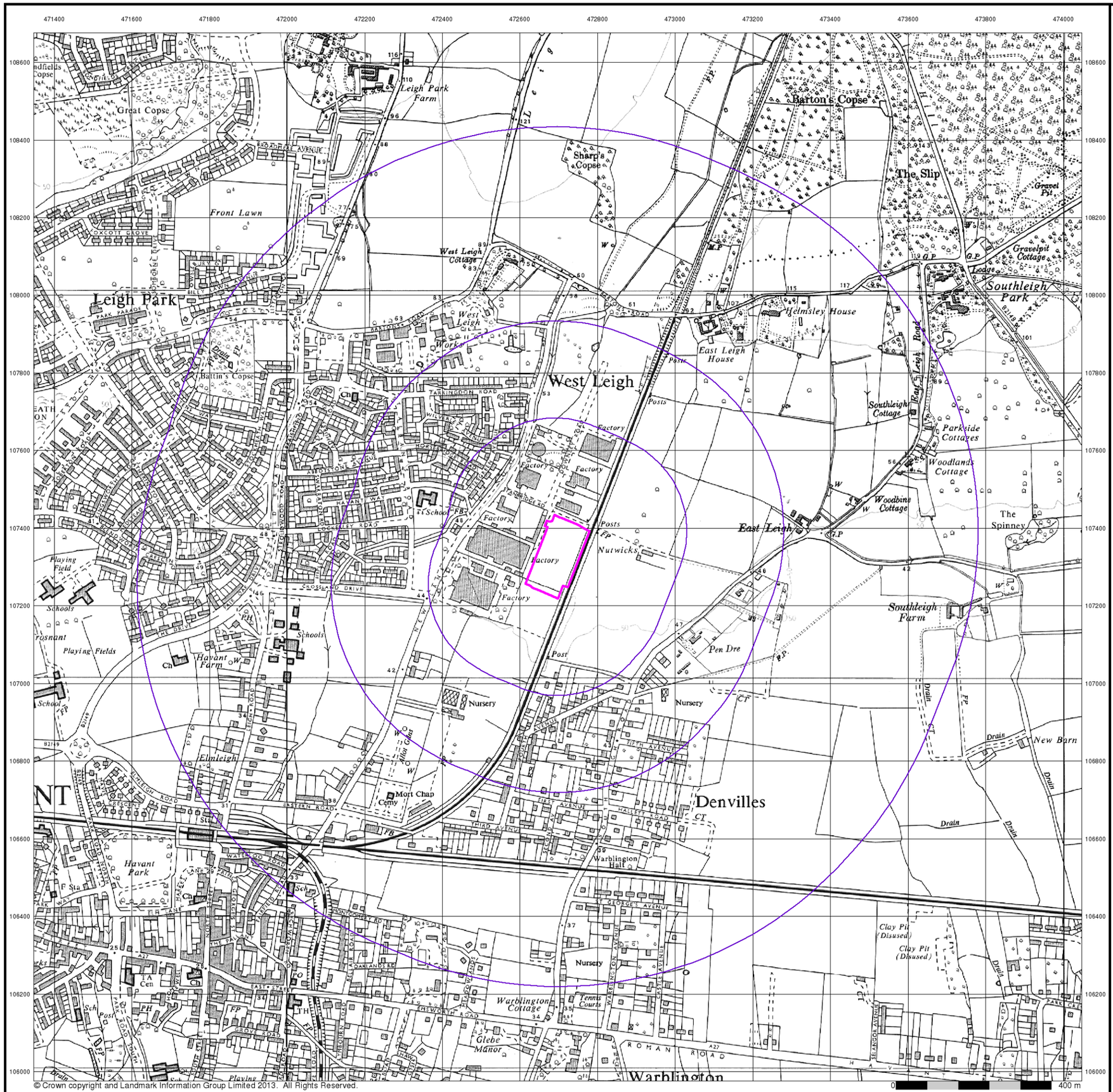
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Ordnance Survey Plan

Published 1963

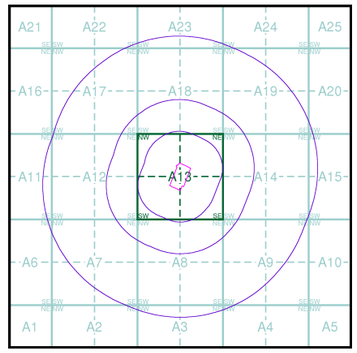
Source map scale - 1:10,000

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)

SU70NW
1963
1:10,560

Historical Map - Slice A



Order Details

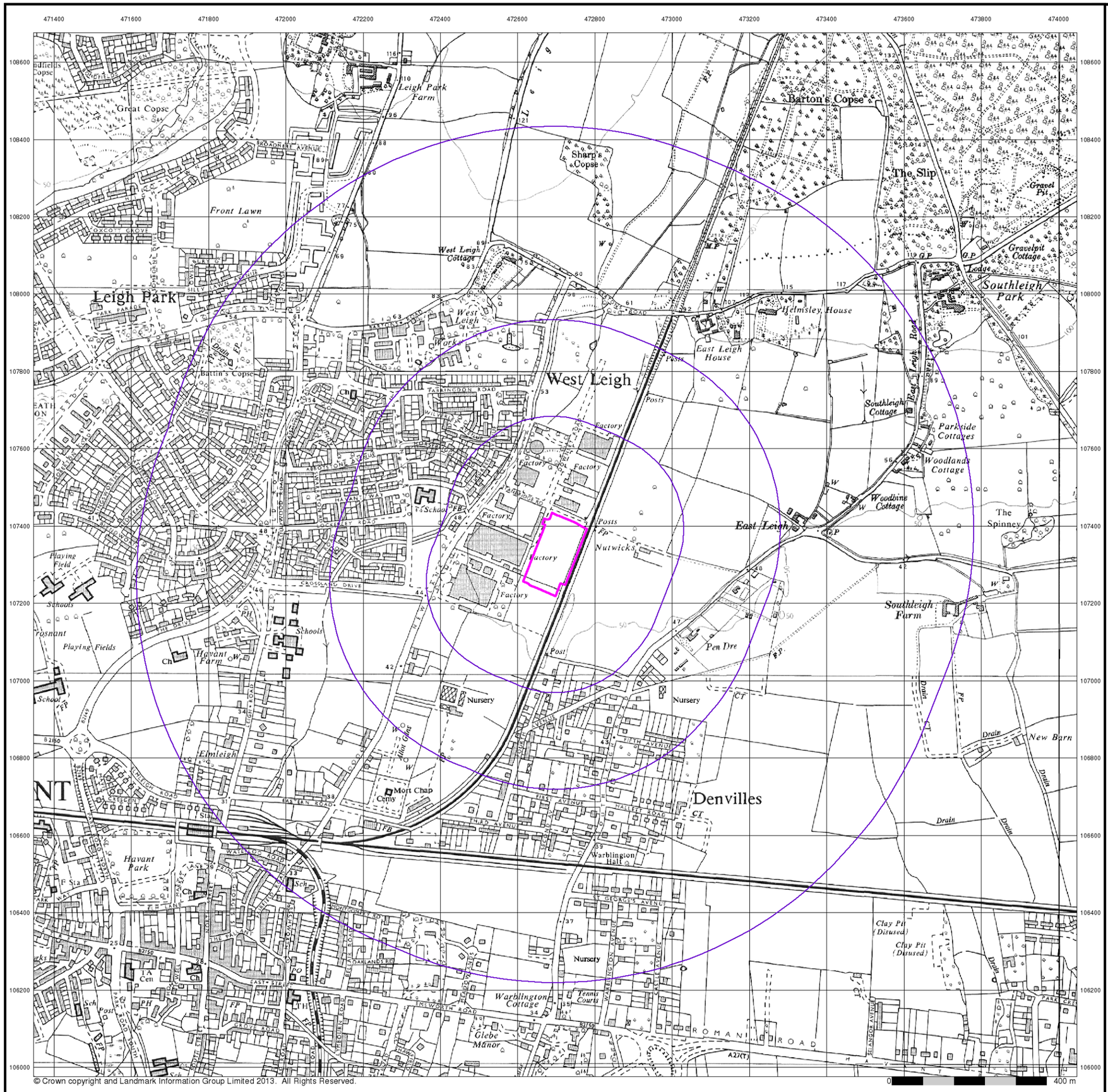
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Customer Ref:	13-0646.01
National Grid Reference:	472700, 107330
Slice:	A
Site Area (Ha):	1.99
Search Buffer (m):	1000

Site Details

Stanbridge Road, Havant, PO9 2NL

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Ordnance Survey Plan

Published 1966

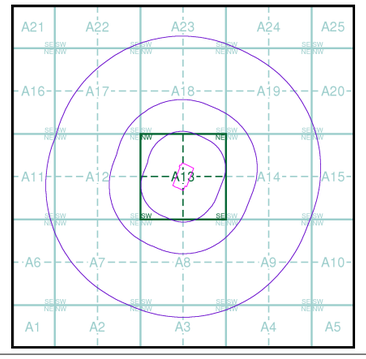
Source map scale - 1:10,000

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

Map Name(s) and Date(s)

SU70NW
1966
1:10,560

Historical Map - Slice A



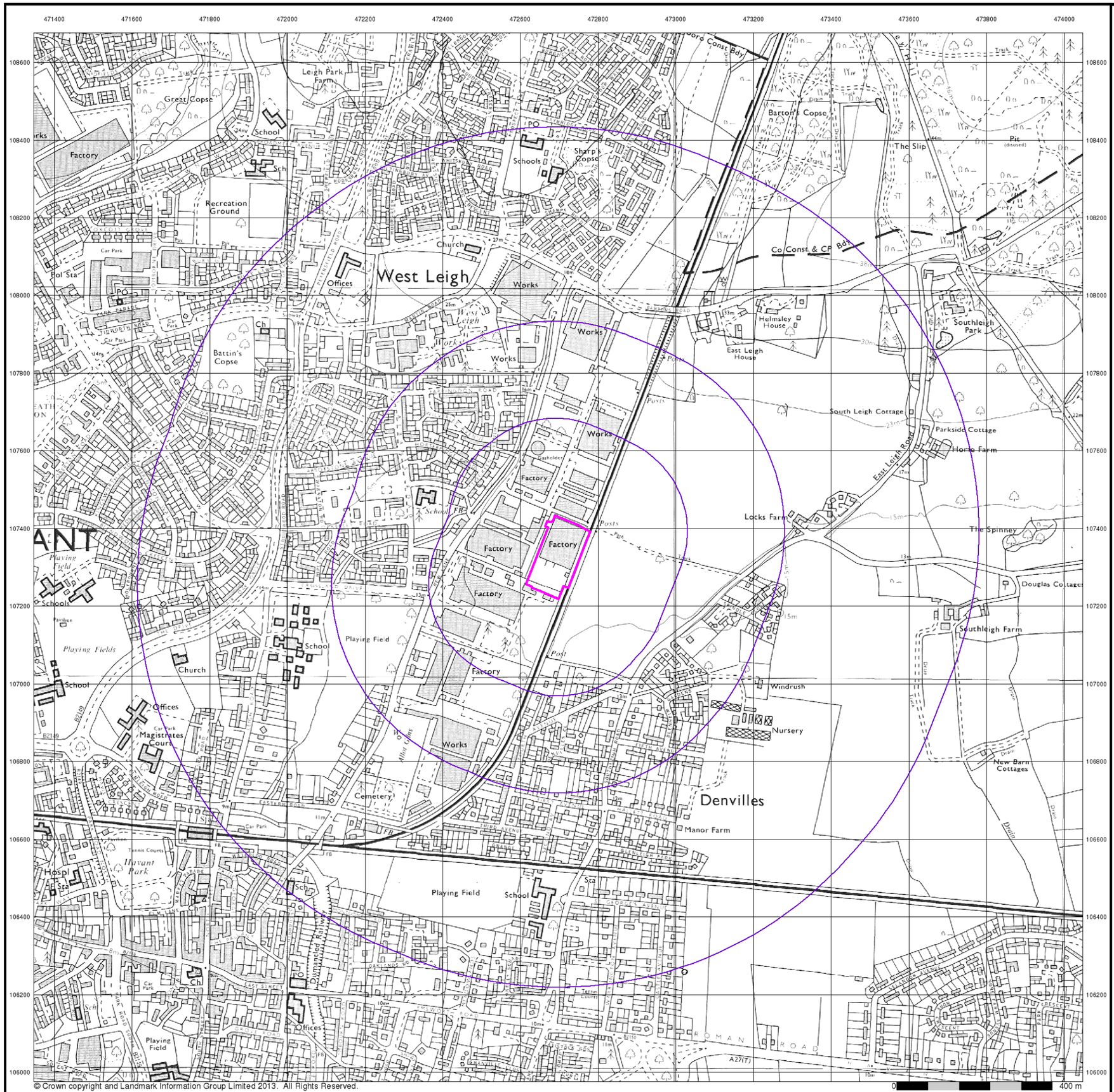
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National Grid Reference:	472700, 107330
Slice:	A
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Search Buffer (m):	1000

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Ordnance Survey Plan

Published 1975

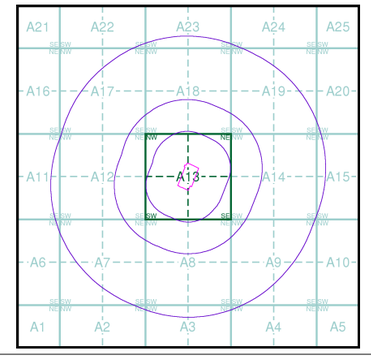
Source map scale - 1:10,000

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)

SU70NW
1975
1:10,000

Historical Map - Slice A



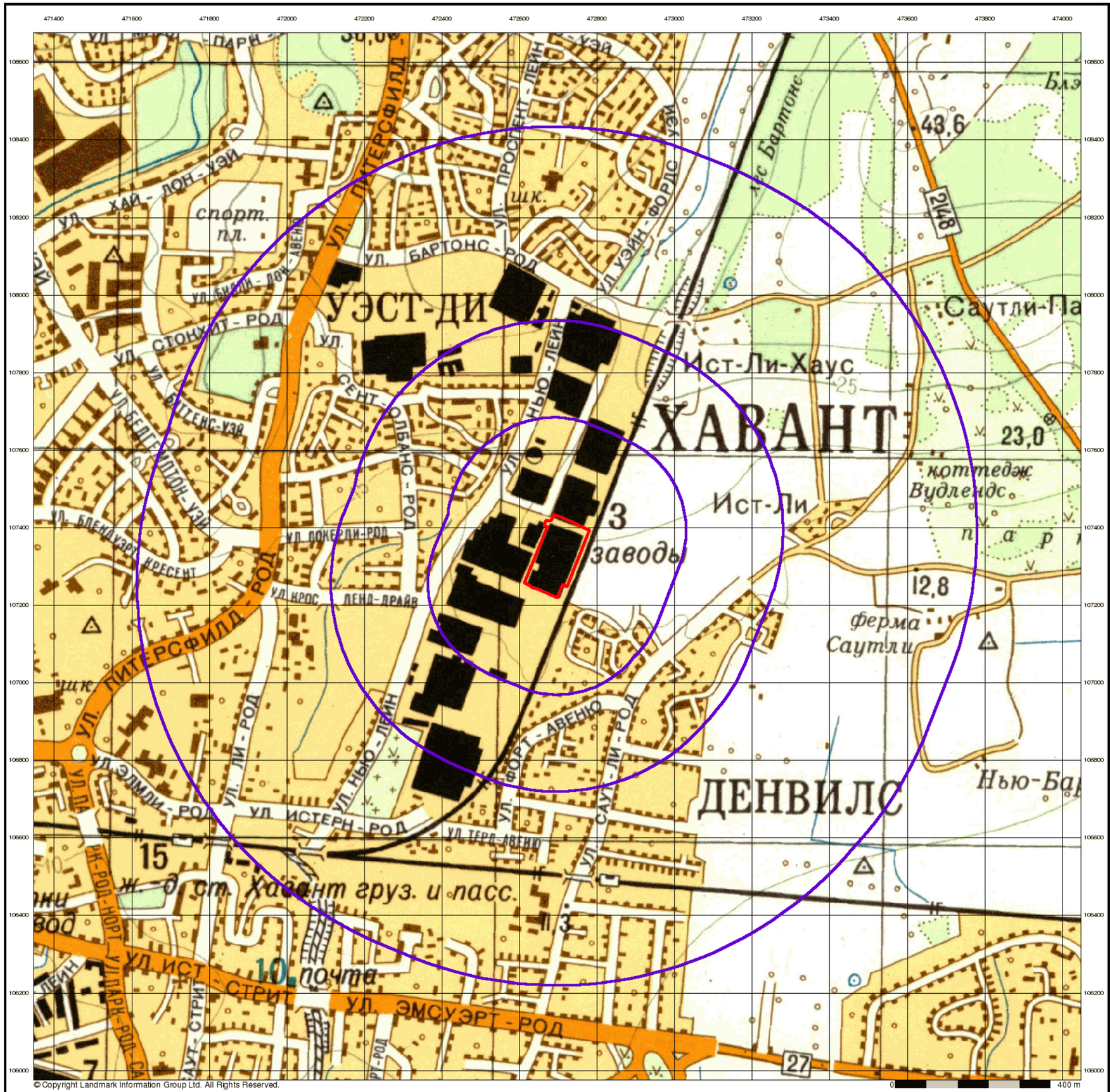
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Customer Ref:	13-0646.01
National Grid Reference:	472700, 107330
Slice:	A
Site Area (Ha):	1.99
Search Buffer (m):	1000

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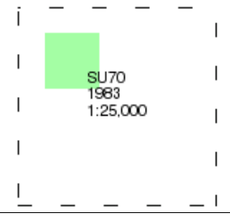
Havant

Published 1983

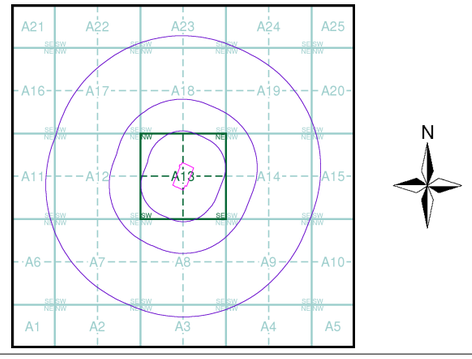
Source map scale - 1:25,000

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



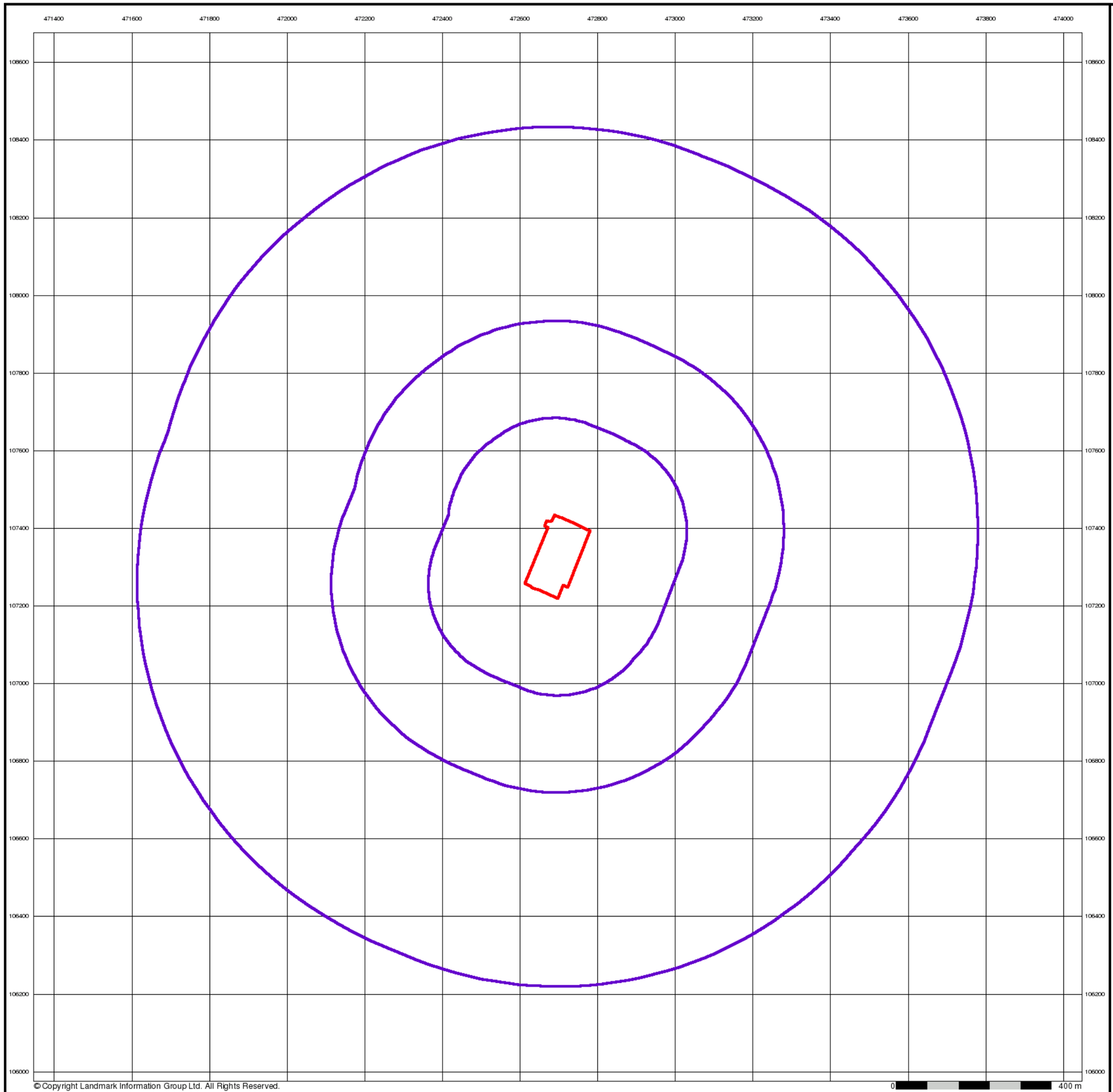
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National Grid Reference:	472700, 107330
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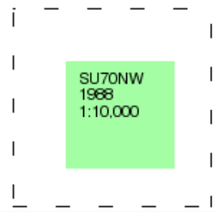
Portsmouth

Published 1988

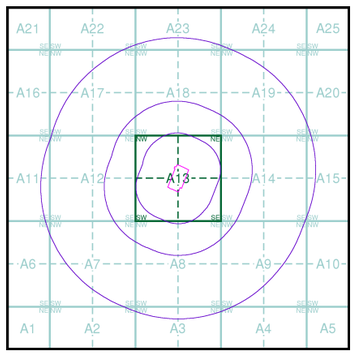
Source map scale - 1:10,000

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



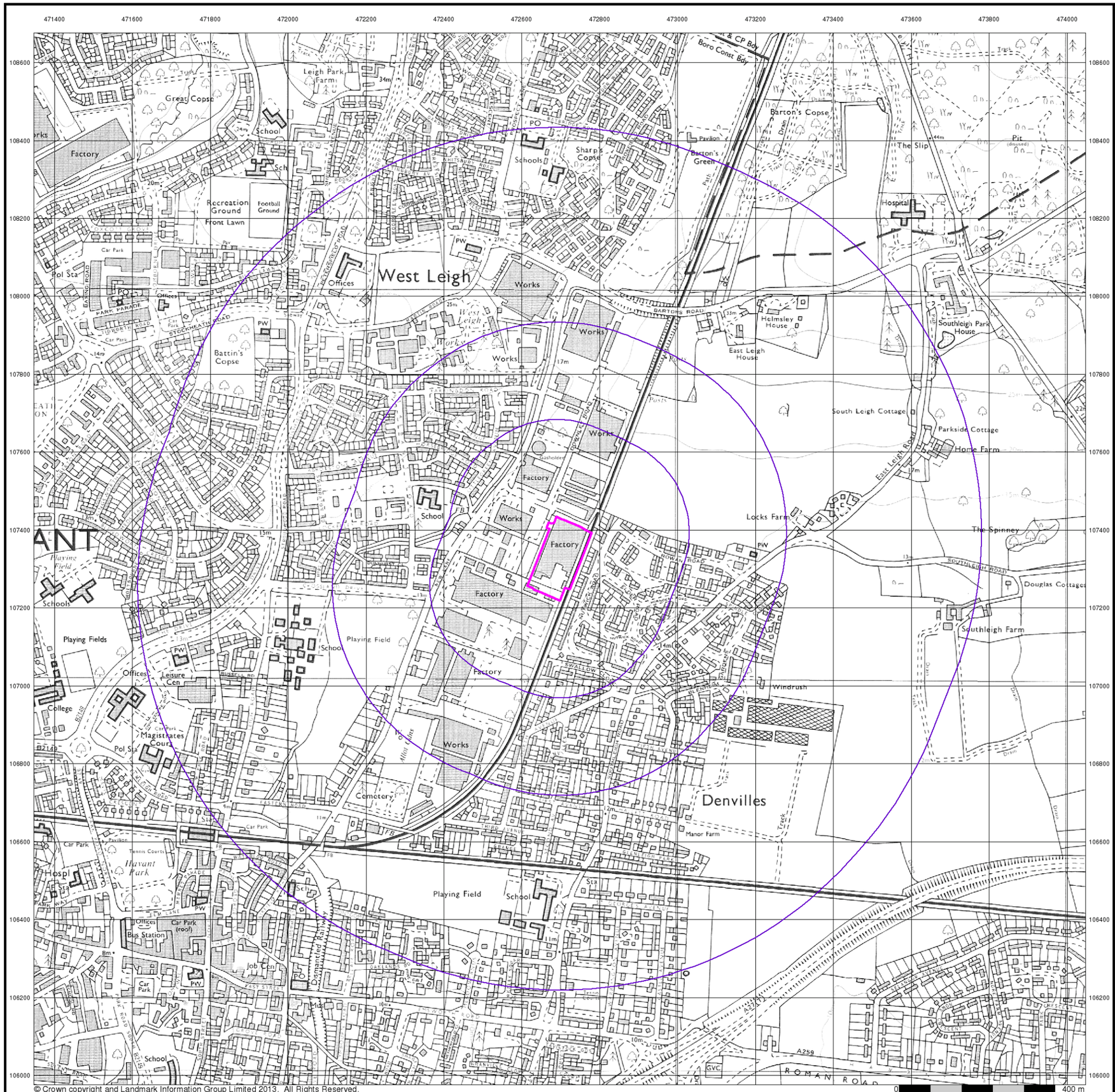
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Ordnance Survey Plan

Published 1992

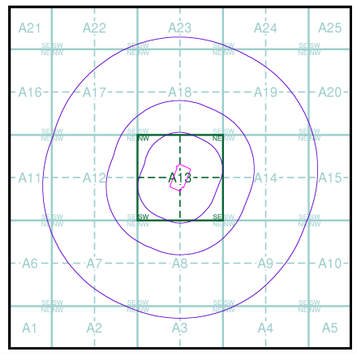
Source map scale - 1:10,000

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Map Name(s) and Date(s)

SU70NW
1992
1:10,000

Historical Map - Slice A



Order Details

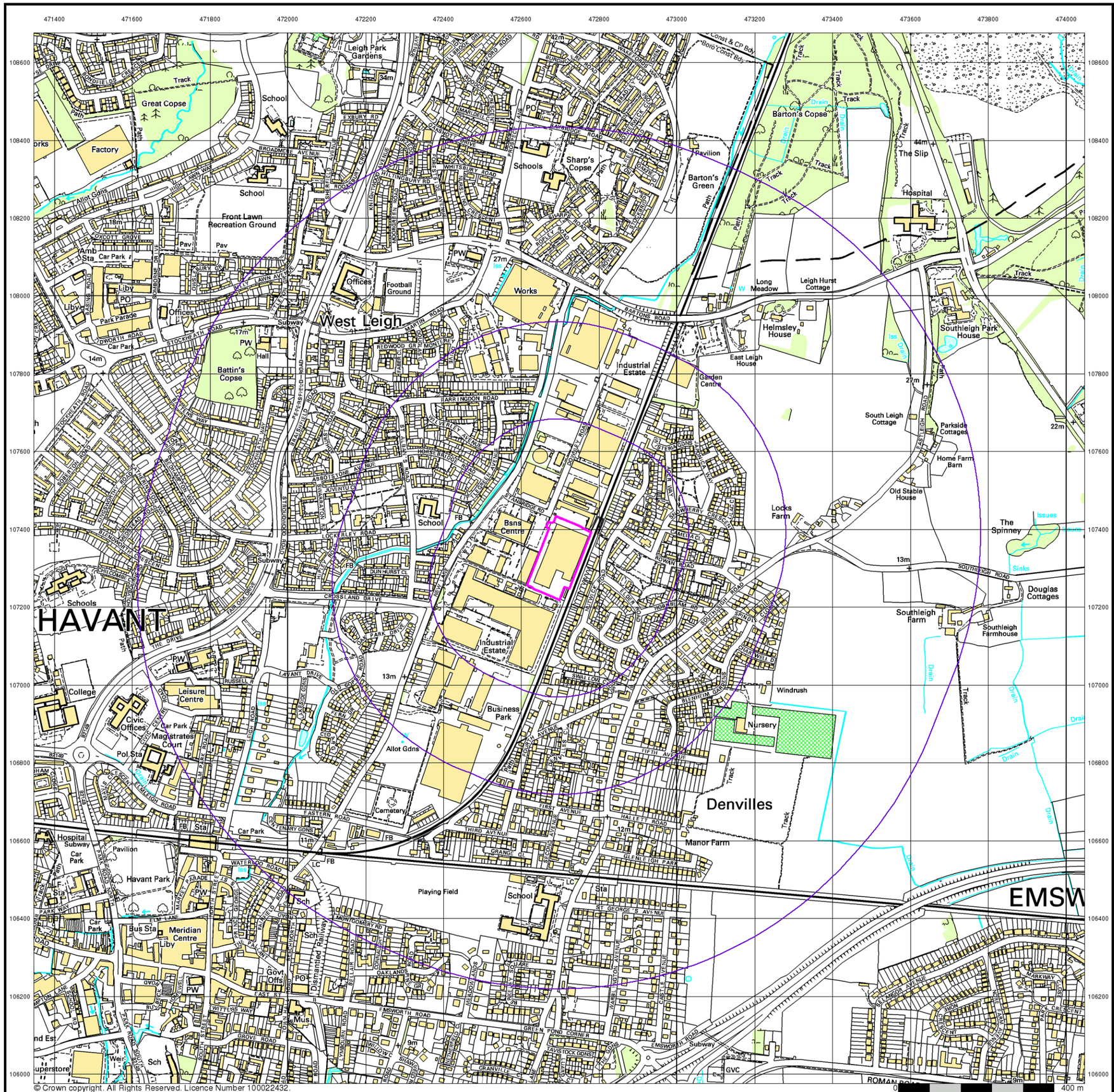
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Customer Ref:	13-0646.01
National Grid Reference:	472700, 107330
Slice:	A
Site Area (Ha):	1.99
Search Buffer (m):	1000

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10k Raster Mapping

Published 2006

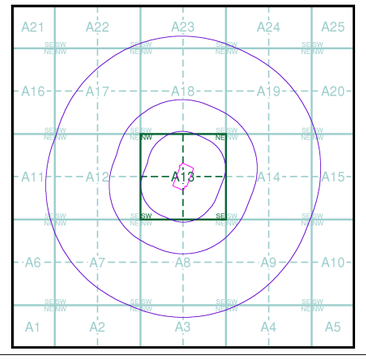
Source map scale - 1:10,000

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)

SU70NW
2006
1:10,000

Historical Map - Slice A



Order Details

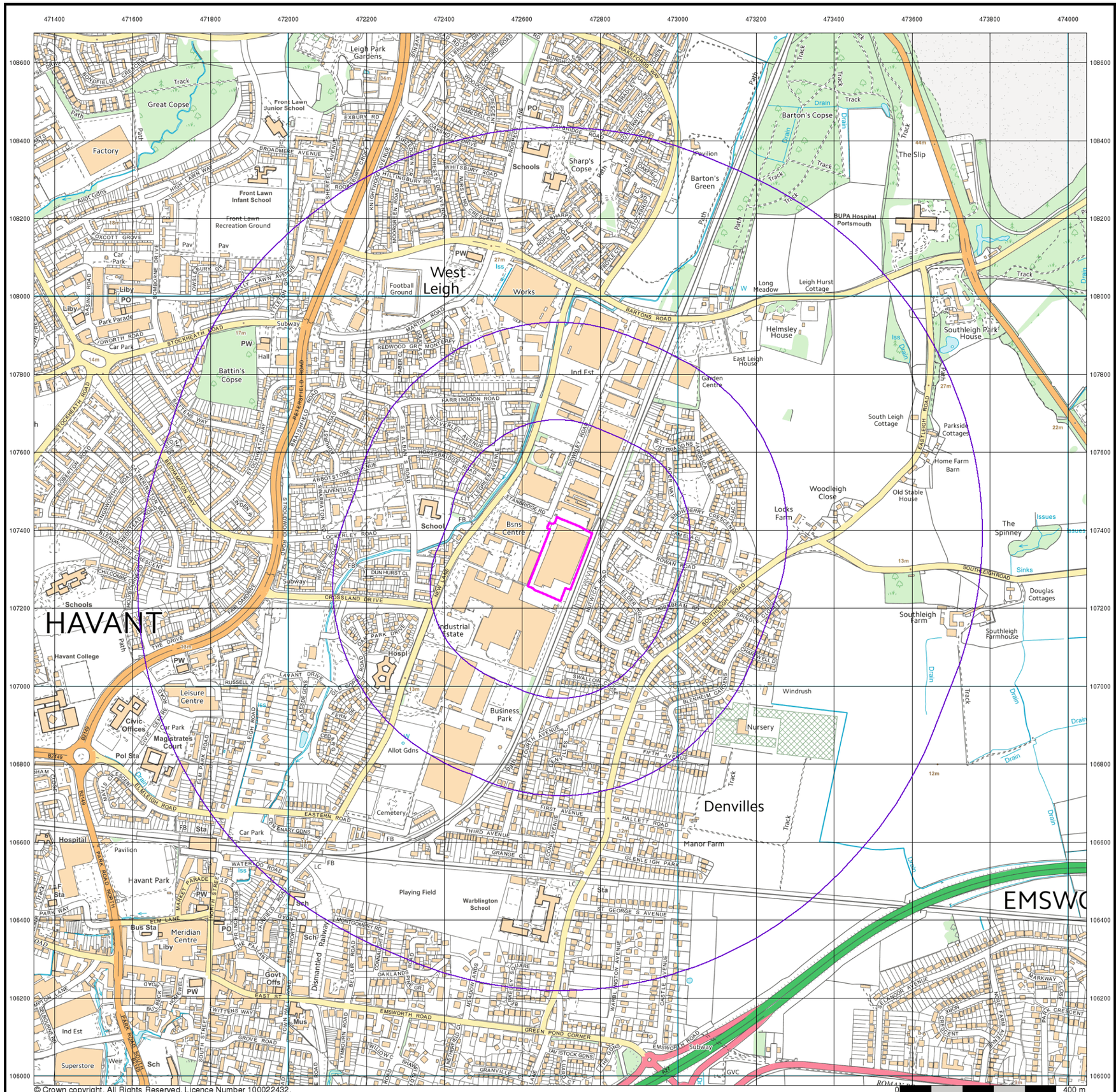
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National Grid Reference:	472700, 107330
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Search Buffer (m):	1000

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VectorMap Local

Published 2014

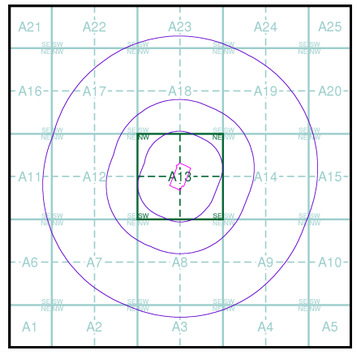
Source map scale - 1:10,000

VectorMap Local (Raster) is Ordnance Survey's highest detailed 'backdrop' mapping product. These maps are produced from OS's VectorMap Local, a simple vector dataset at a nominal scale of 1:10,000, covering the whole of Great Britain, that has been designed for creating graphical mapping. OS VectorMap Local is derived from large-scale information surveyed at 1:1250 scale (covering major towns and cities),1:2500 scale (smaller towns, villages and developed rural areas), and 1:10 000 scale (mountain, moorland and river estuary areas).

Map Name(s) and Date(s)

SU70NW
2014
Variable

Historical Map - Slice A



Order Details

Order Number:	62539150_1_1
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National Grid Reference:	472700, 107330
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Site Details

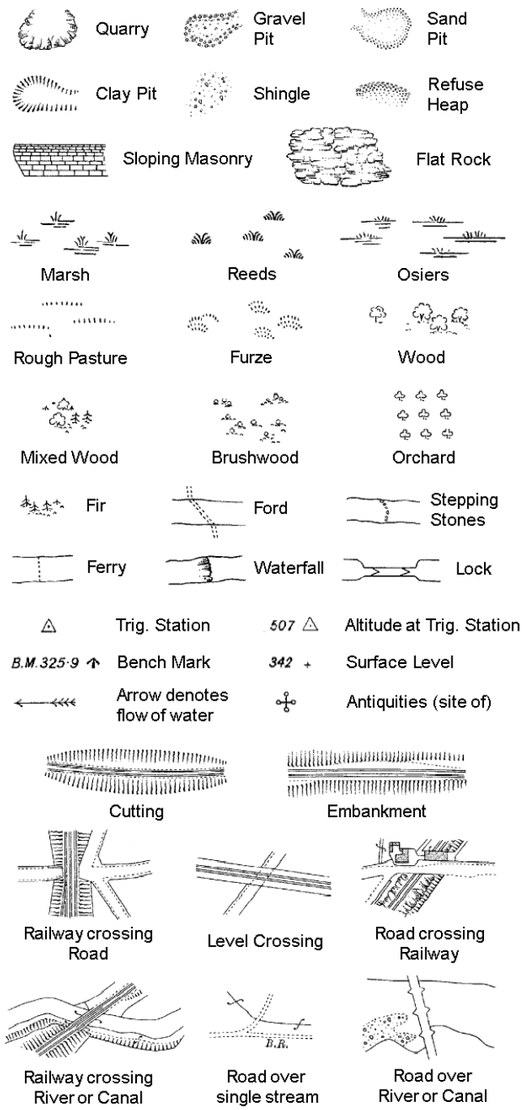
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Historical Mapping Legends

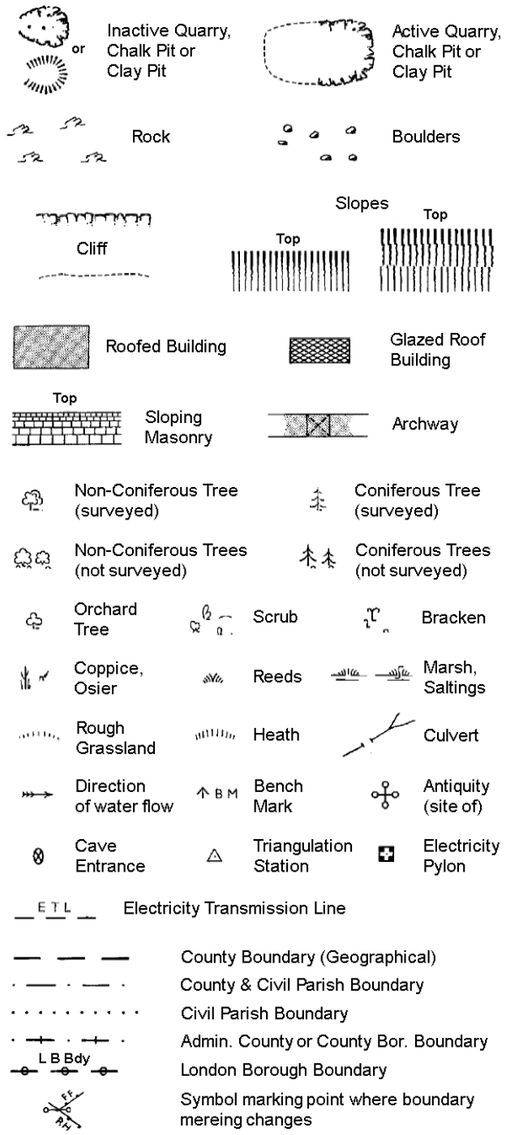
Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



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

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

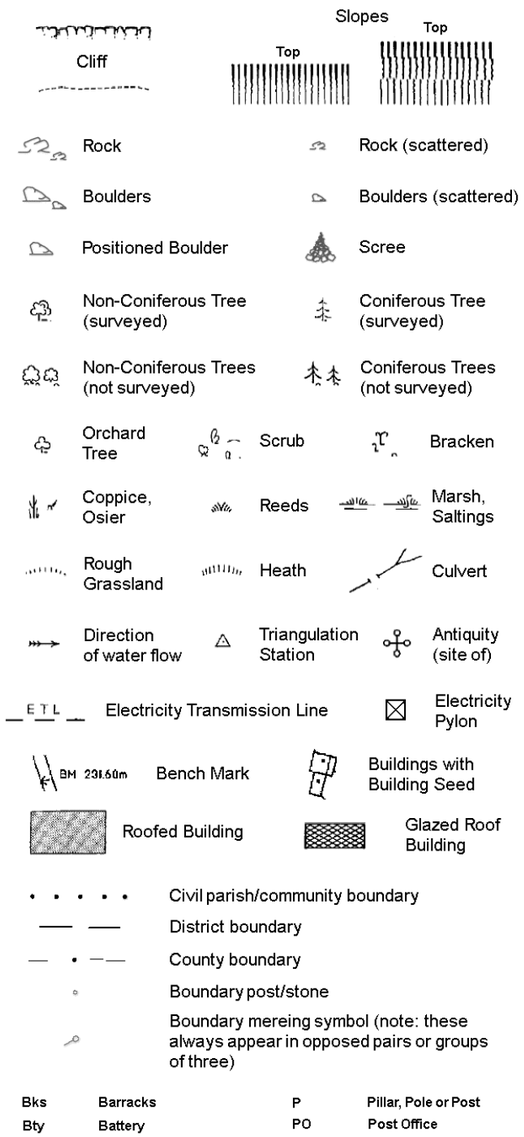
Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250



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

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

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



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

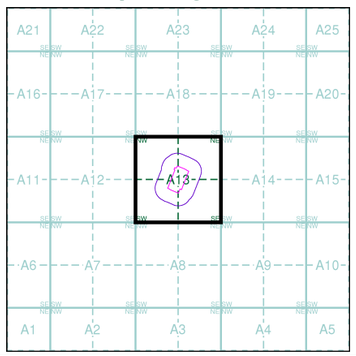
Bks	Barracks	P	Pillar, Pole or Post
Bty	Battery	PO	Post Office
Cemy	Cemetery	PC	Public Convenience
Chy	Chimney	Pp	Pump
Cis	Cistern	Ppg Sta	Pumping Station
Dismtd Rly	Dismantled Railway	PW	Place of Worship
El Gen Sta	Electricity Generating Station	Sewage Ppg Sta	Sewage Pumping Station
El P	Electricity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

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Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Hampshire & Isle Of Wight	1:2,500	1866	2
Hampshire & Isle Of Wight	1:2,500	1867	3
Hampshire & Isle Of Wight	1:2,500	1868	4
Hampshire & Isle Of Wight	1:2,500	1897	5
Hampshire & Isle Of Wight	1:2,500	1909	6
Hampshire & Isle Of Wight	1:2,500	1932	7
Ordnance Survey Plan	1:2,500	1952 - 1972	8
Ordnance Survey Plan	1:1,250	1960 - 1978	9
Ordnance Survey Plan	1:2,500	1964 - 1972	10
Ordnance Survey Plan	1:1,250	1969 - 1983	11
Supply of Unpublished Survey Information	1:1,250	1973	12
Ordnance Survey Plan	1:2,500	1974	13
Additional SIMs	1:1,250	1978 - 1991	14
Ordnance Survey Plan	1:1,250	1980	15
Additional SIMs	1:2,500	1990	16
Large-Scale National Grid Data	1:1,250	1993	17
Large-Scale National Grid Data	1:1,250	1995	18
Large-Scale National Grid Data	1:1,250	1996	19

Historical Map - Segment A13



Order Details

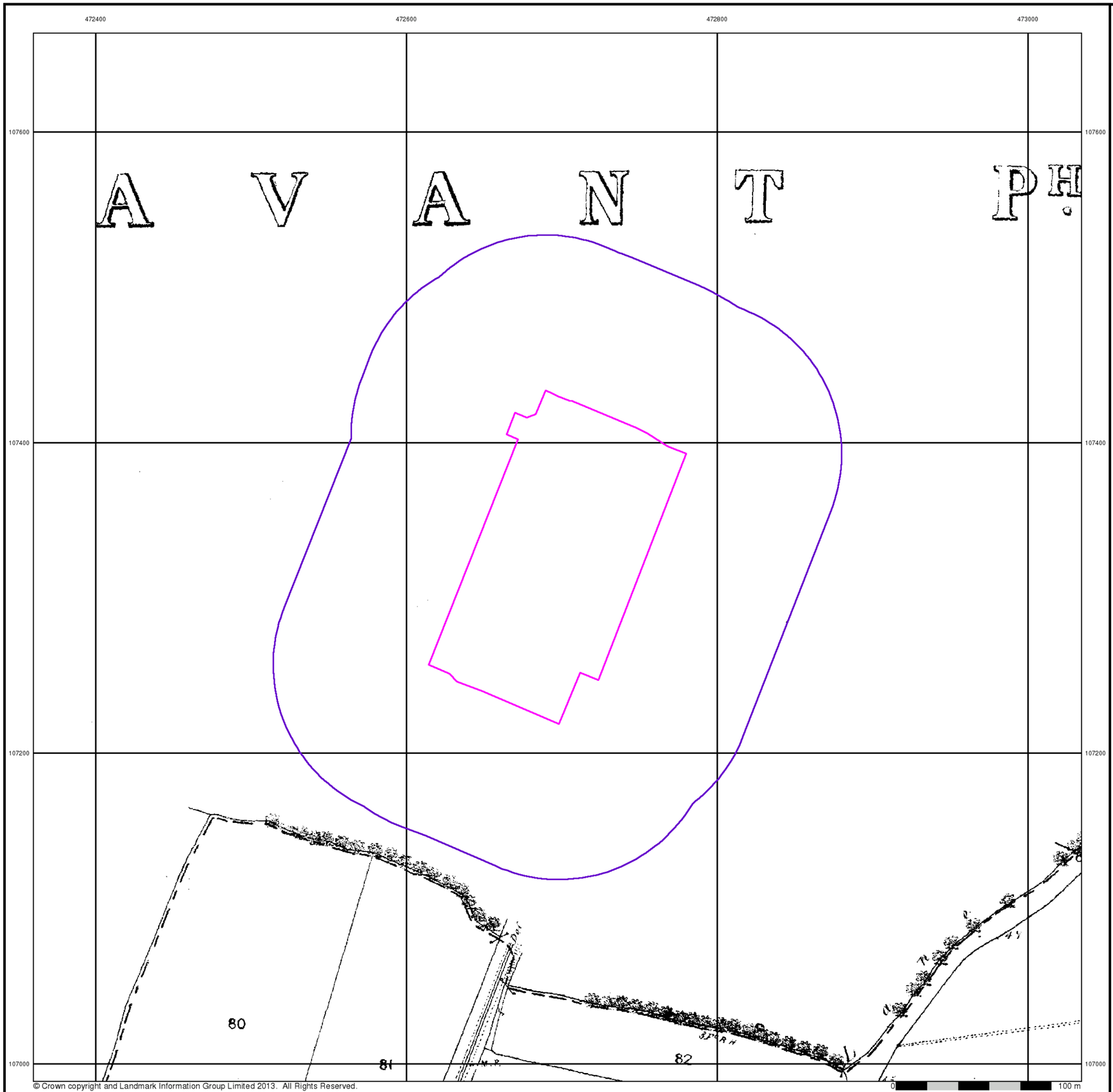
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Customer Ref:	13-0646.01
National Grid Reference:	472700, 107330
Slice:	A
Site Area (Ha):	1.99
Search Buffer (m):	100

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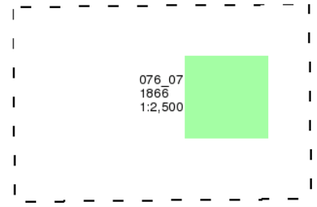
Hampshire & Isle Of Wight

Published 1866

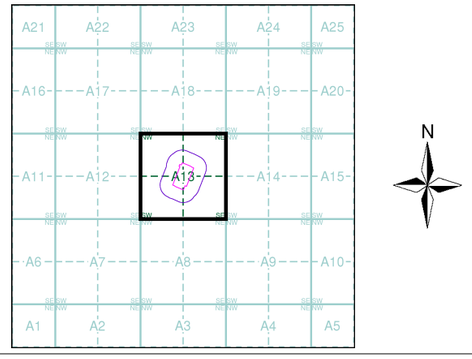
Source map scale - 1:2,500

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



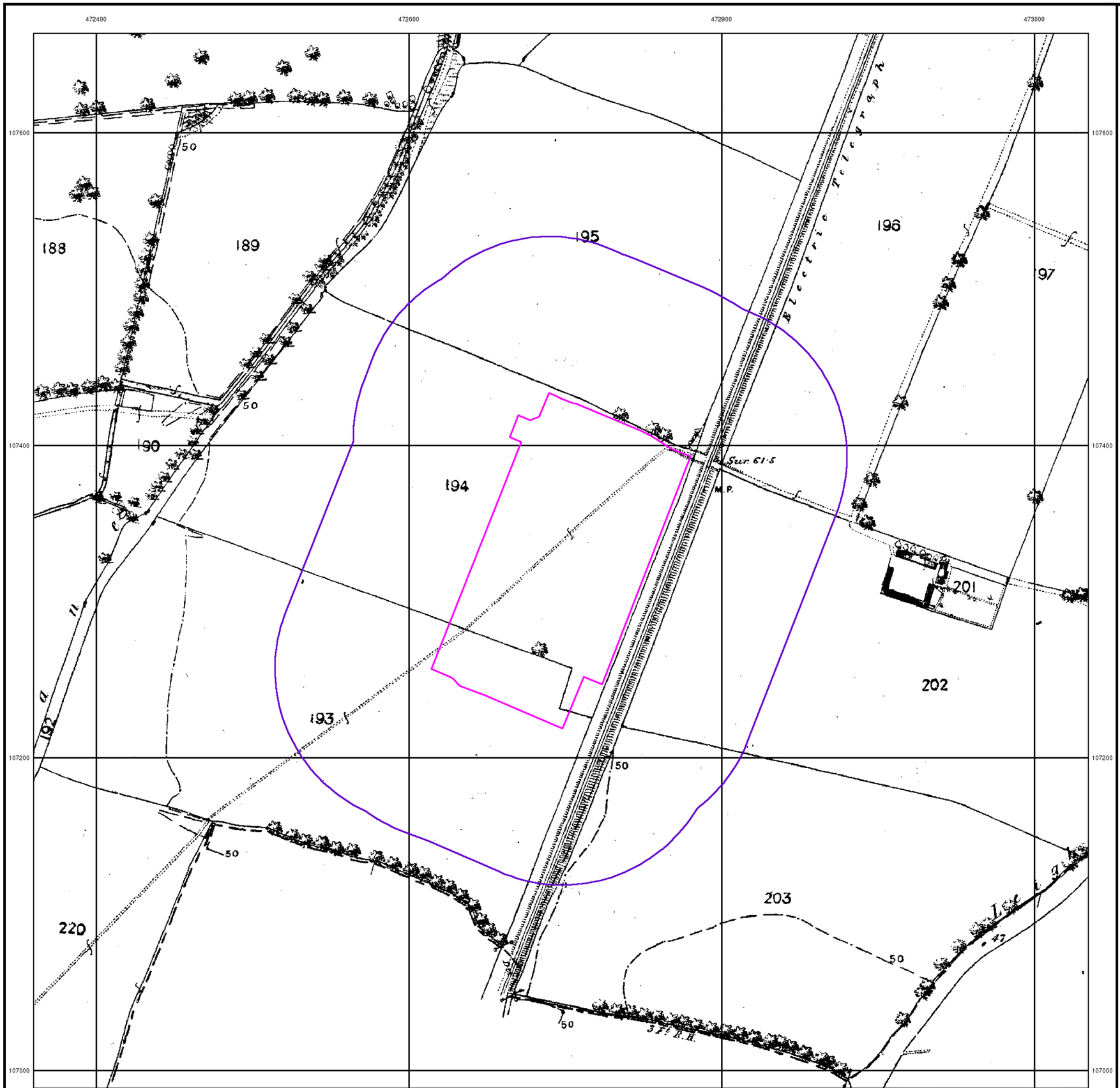
Order Details

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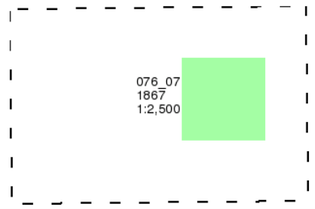
Hampshire & Isle Of Wight

Published 1867

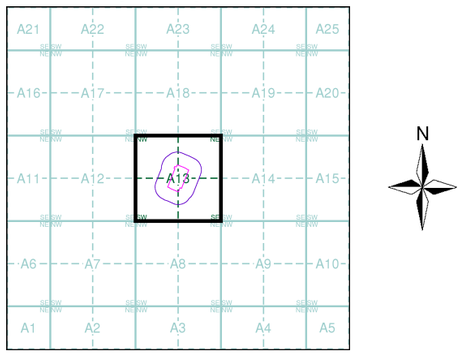
Source map scale - 1:2,500

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



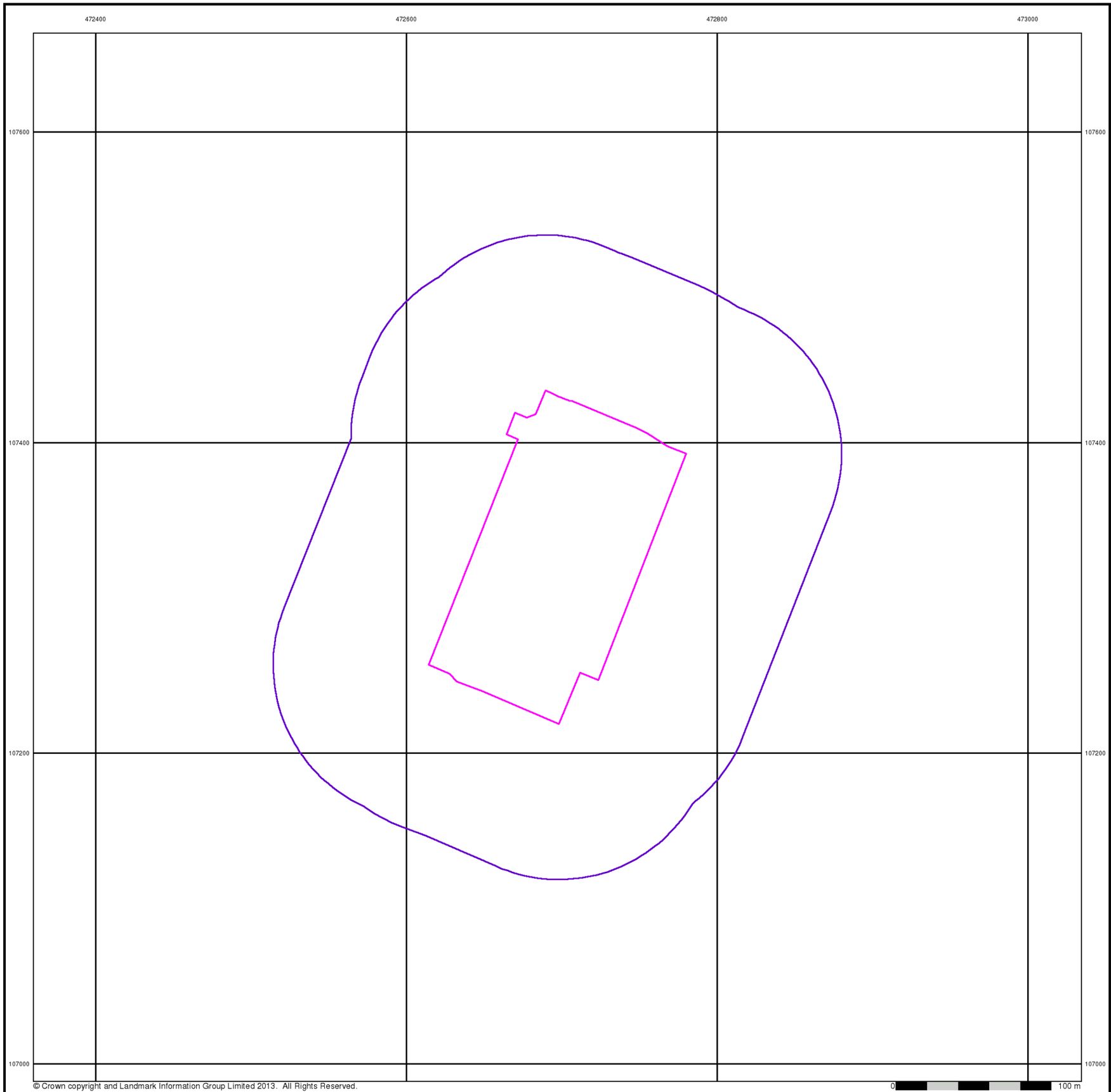
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Customer Ref:	13-0646.01
National Grid Reference:	472700, 107330
Slice:	A
Site Area (Ha):	1.99
Search Buffer (m):	100

Site Details

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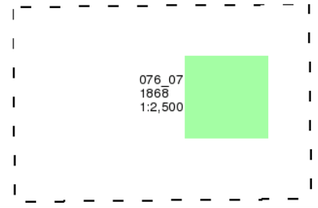
Hampshire & Isle Of Wight

Published 1868

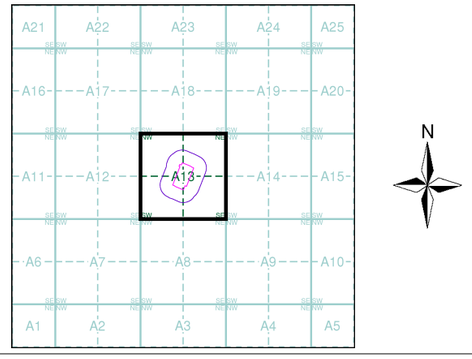
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Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

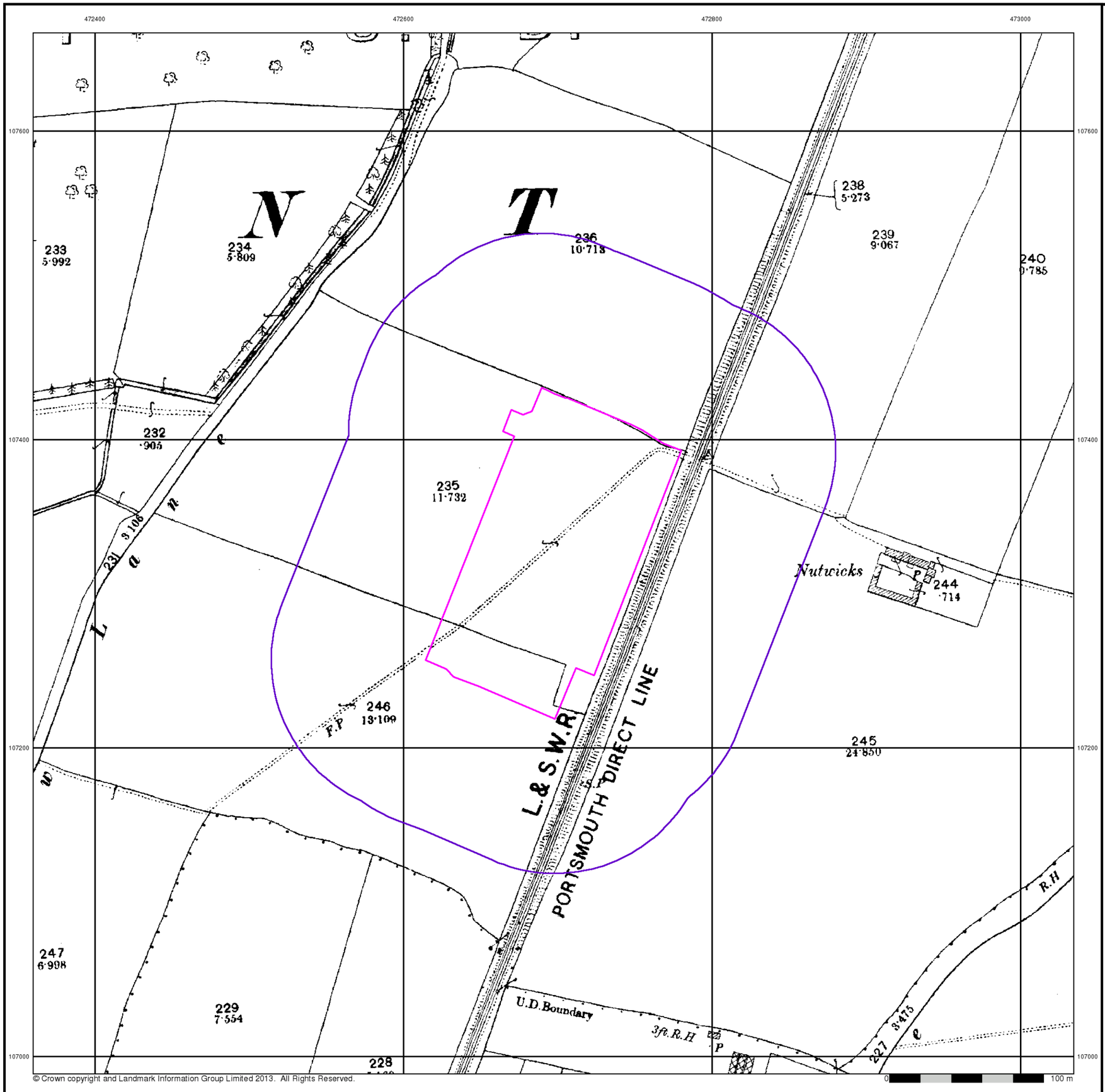
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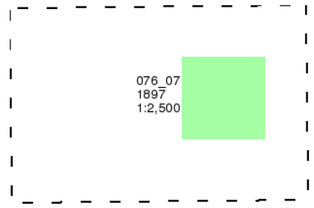
Hampshire & Isle Of Wight

Published 1897

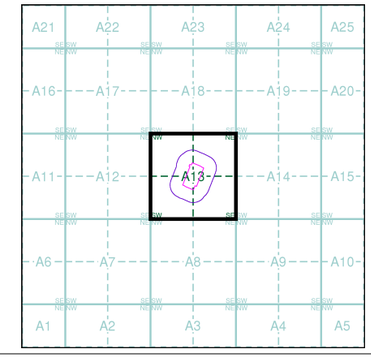
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Map Name(s) and Date(s)



Historical Map - Segment A13



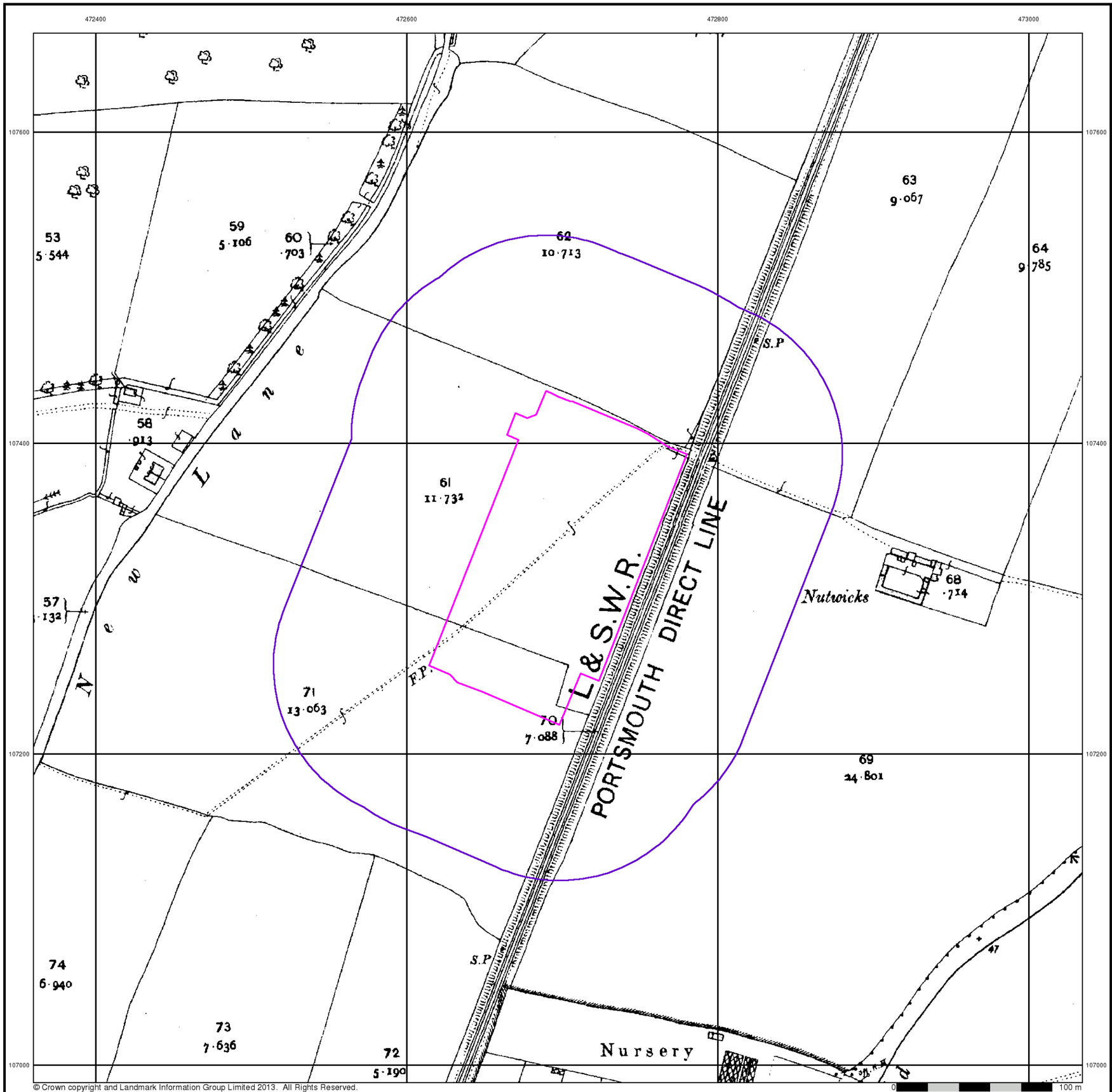
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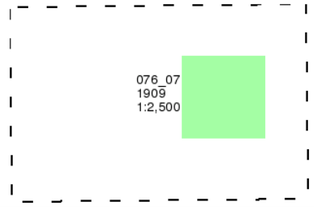
Hampshire & Isle Of Wight

Published 1909

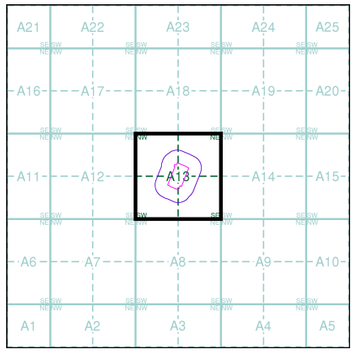
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A13



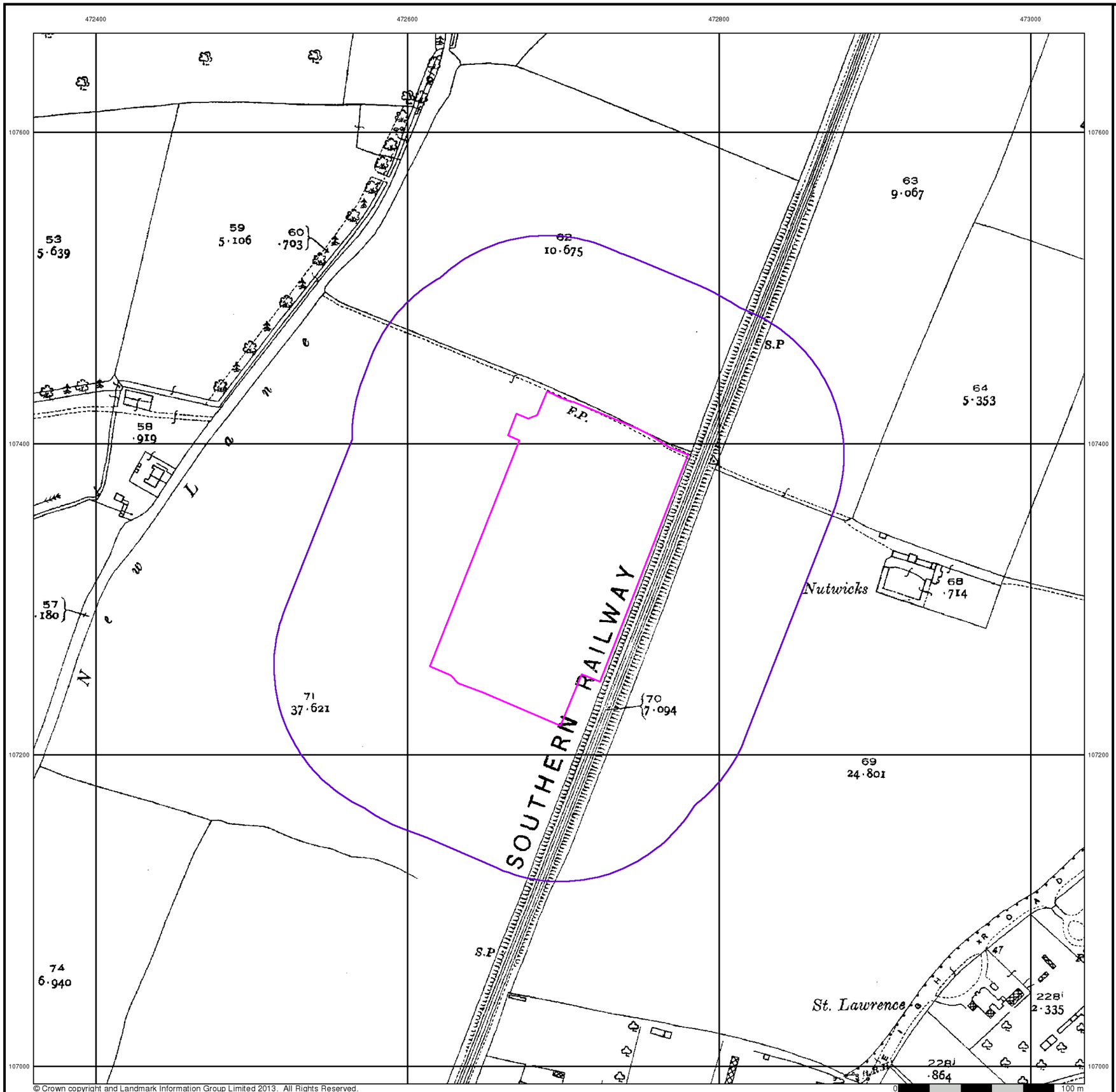
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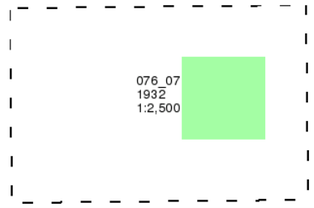
Hampshire & Isle Of Wight

Published 1932

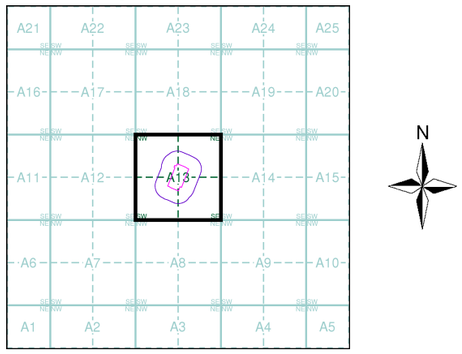
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A13



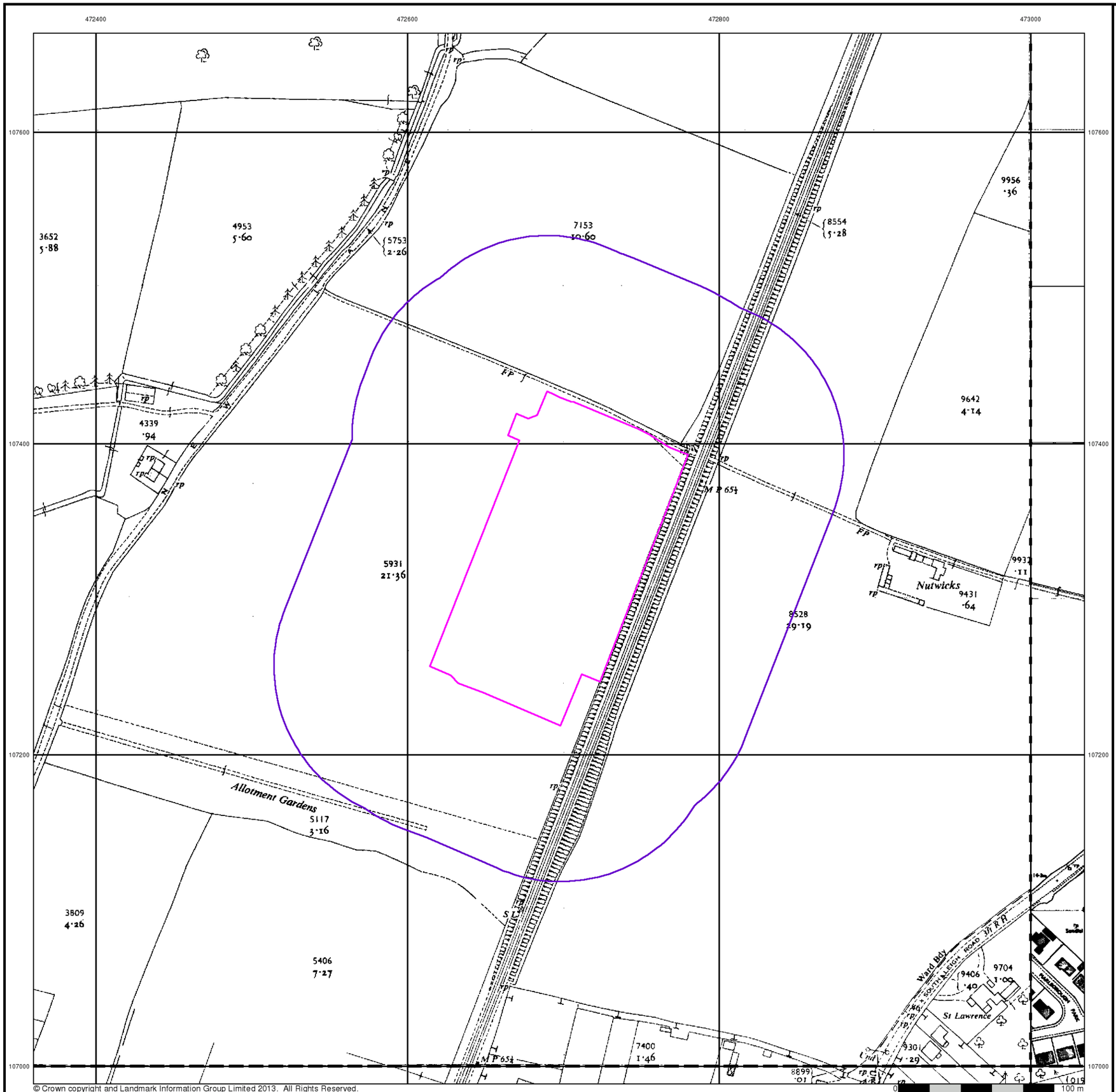
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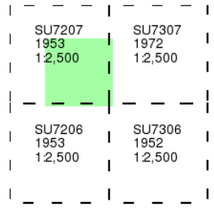
Ordnance Survey Plan

Published 1952 - 1972

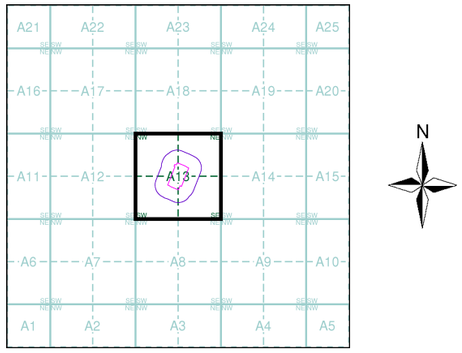
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Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

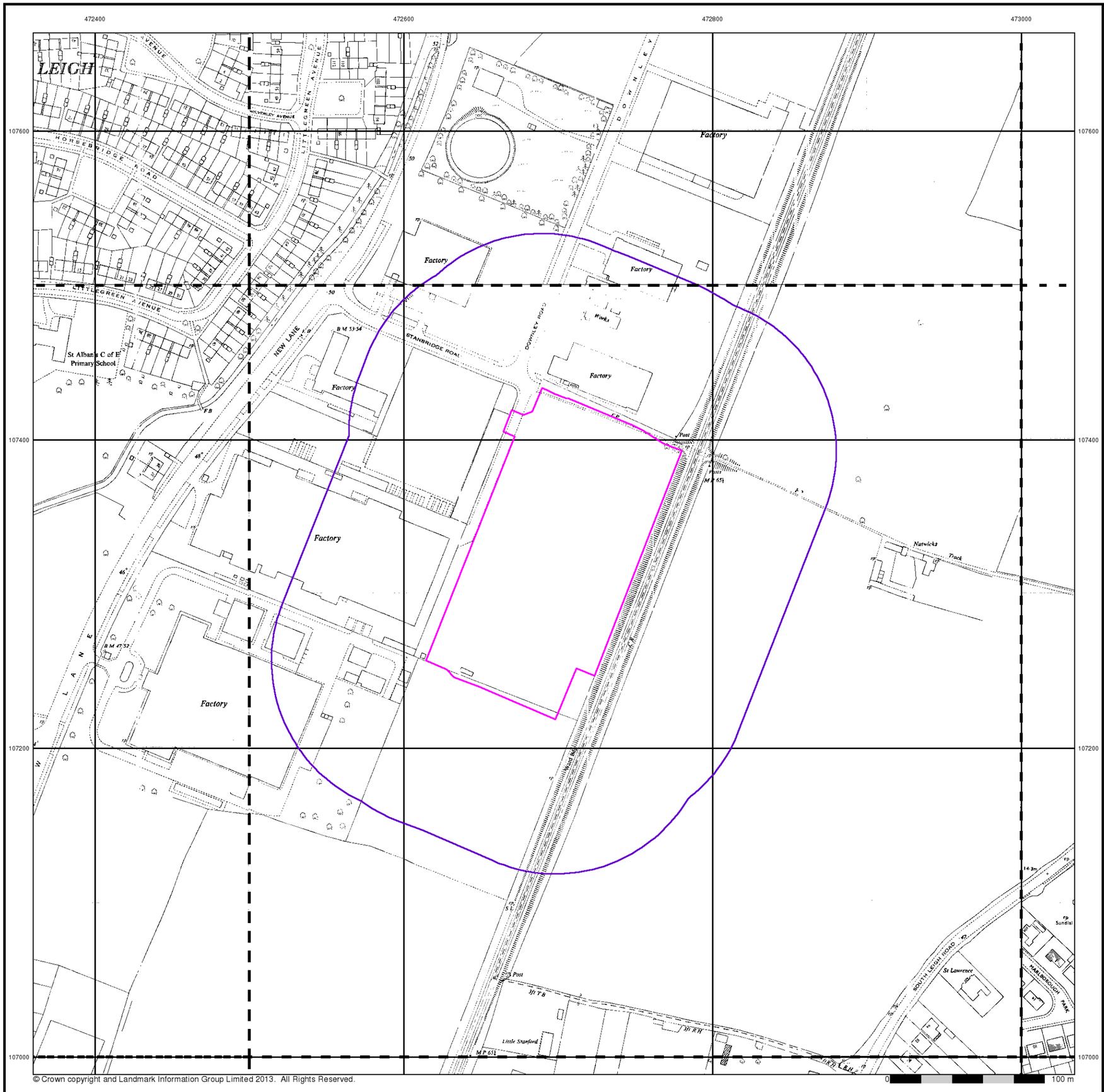
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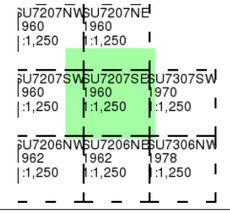
Ordnance Survey Plan

Published 1960 - 1978

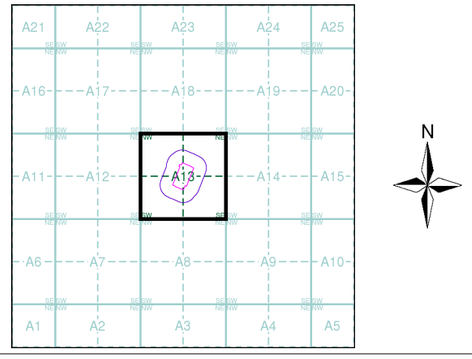
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Map Name(s) and Date(s)



Historical Map - Segment A13



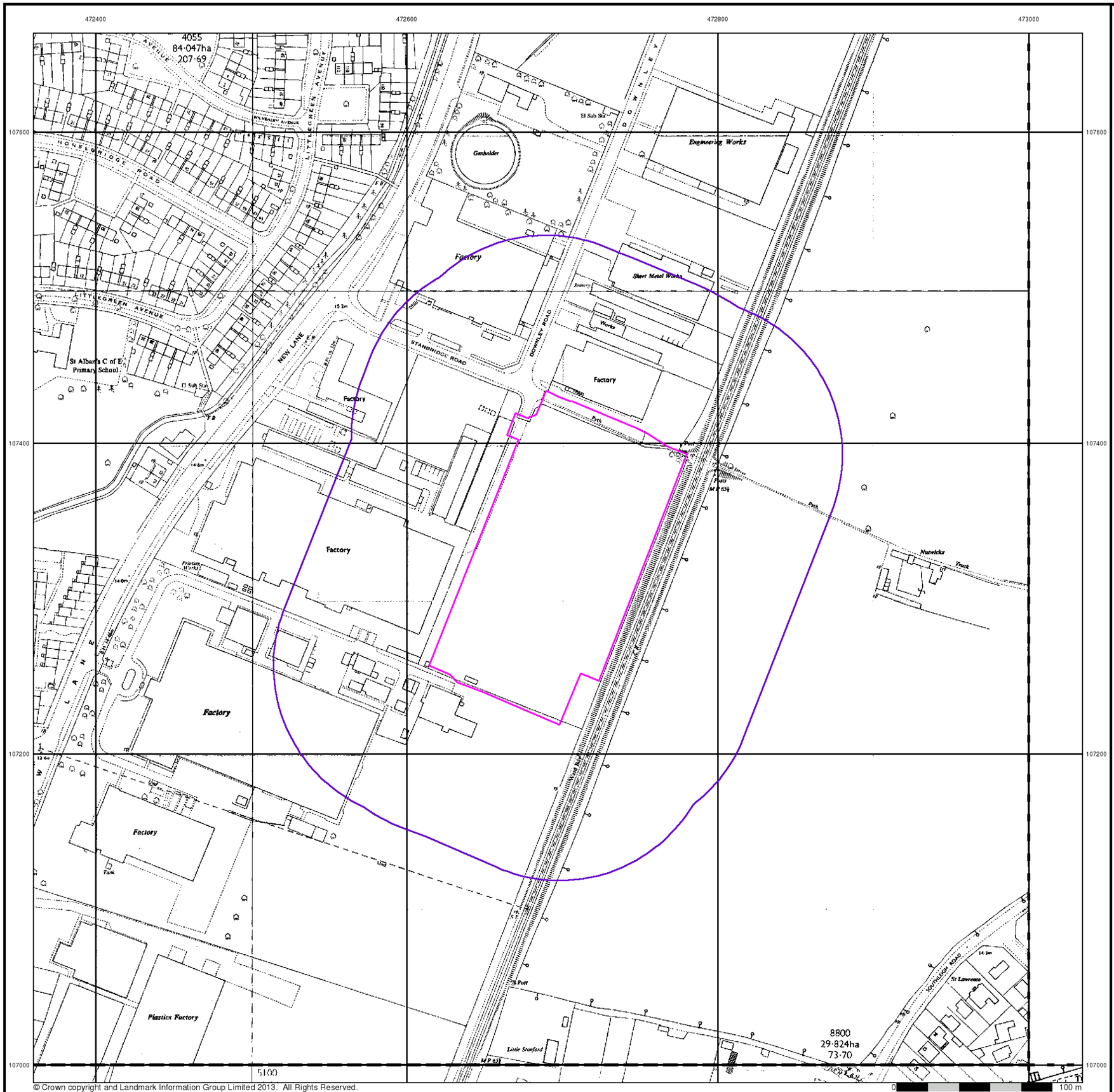
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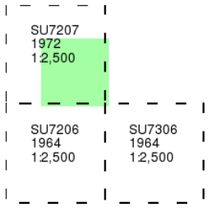
Ordnance Survey Plan

Published 1964 - 1972

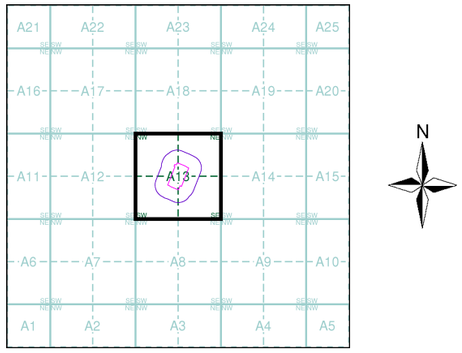
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

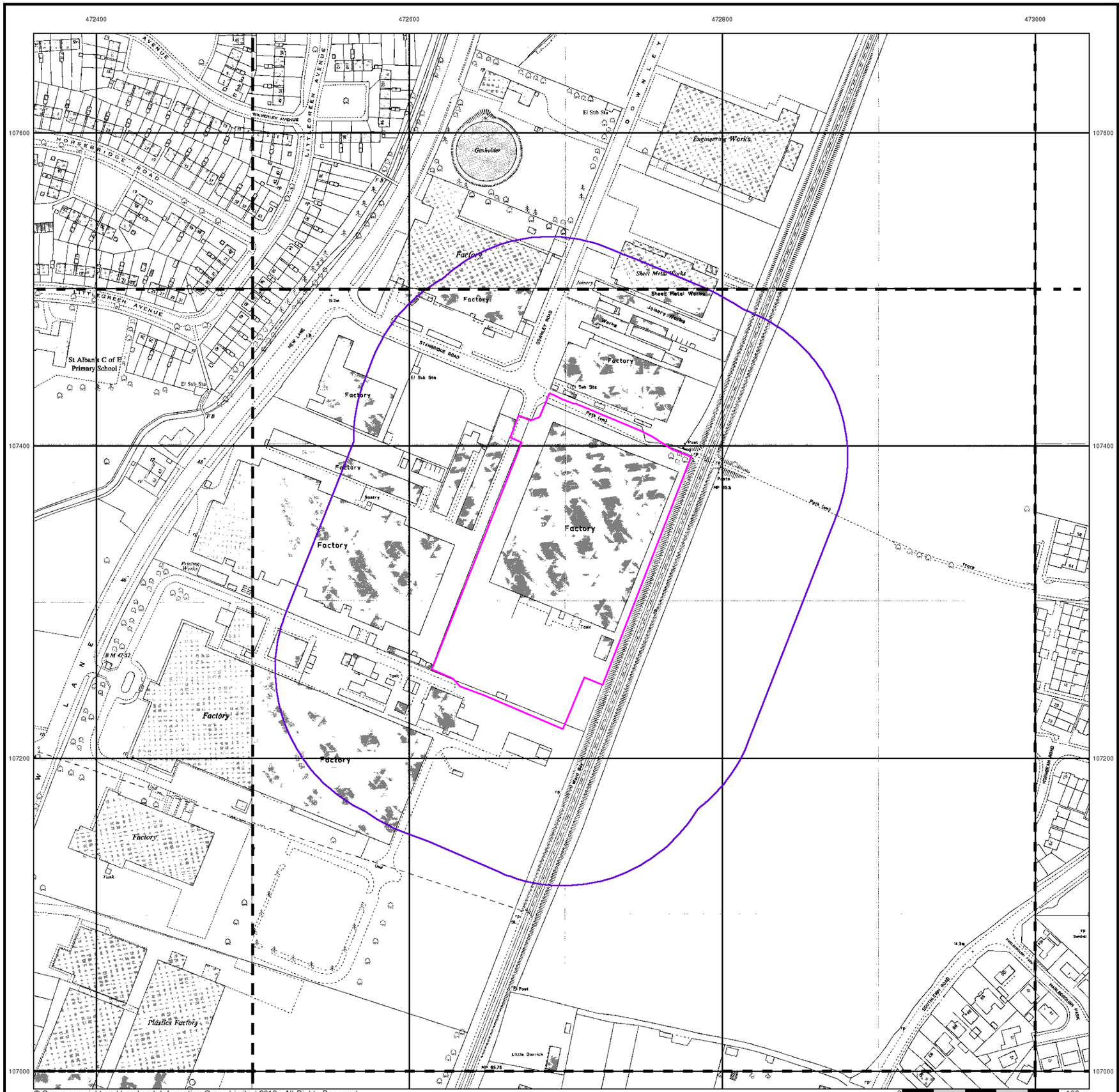
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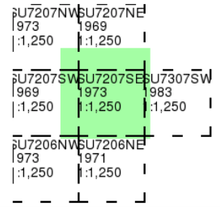
Ordnance Survey Plan

Published 1969 - 1983

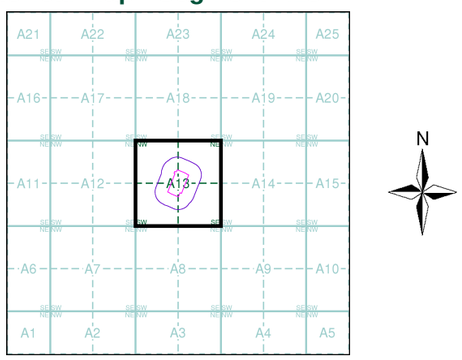
Source map scale - 1:1,250

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Map Name(s) and Date(s)



Historical Map - Segment A13



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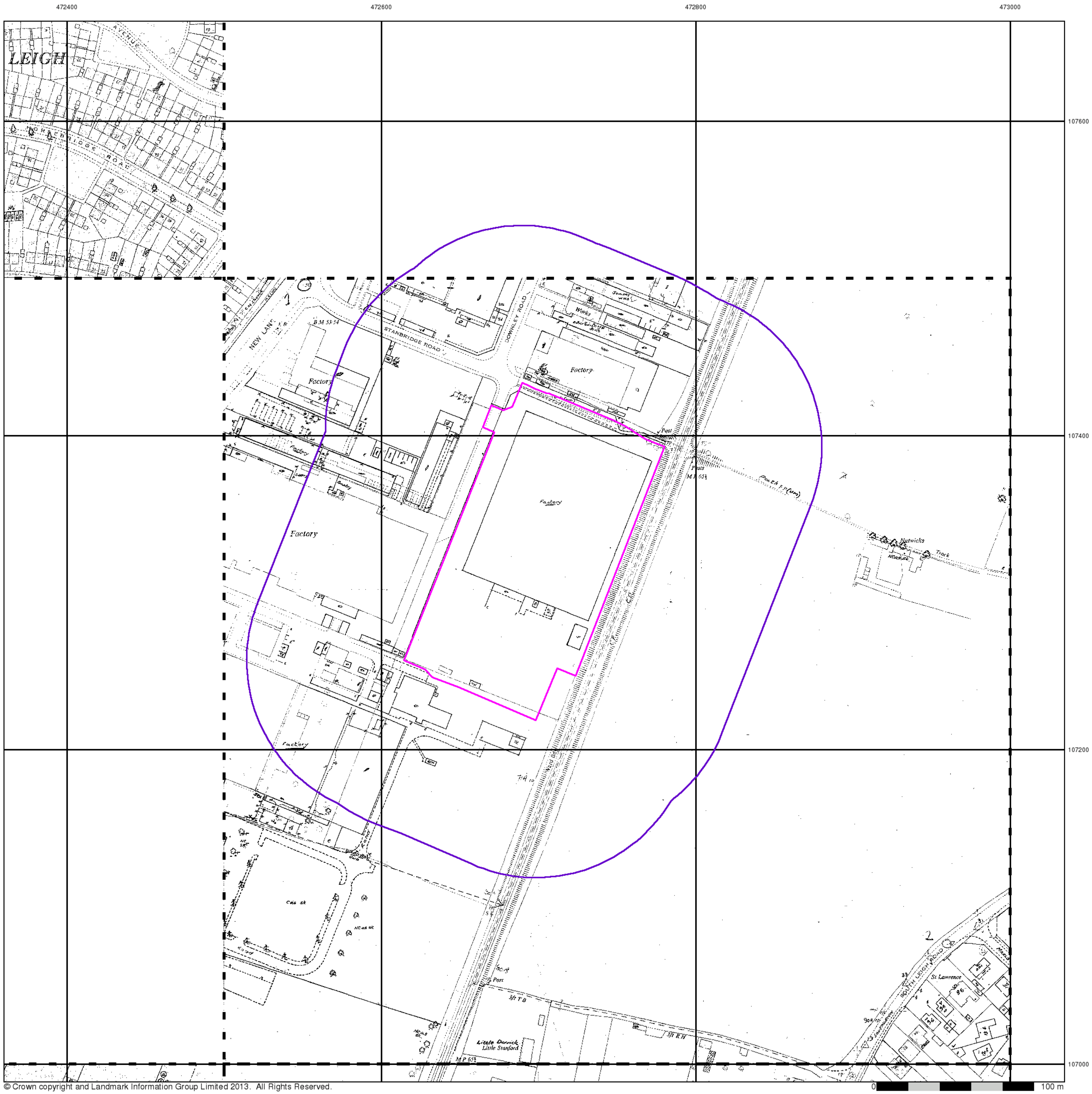
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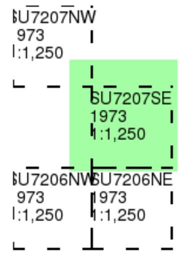
Supply of Unpublished Survey Information

Published 1973

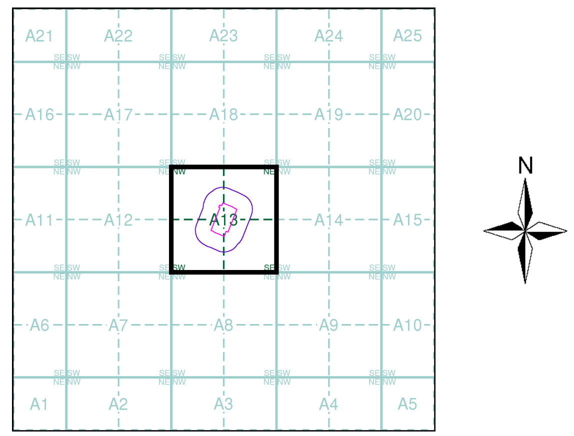
Source map scale - 1:1,250

SUSI maps (Supply of Unpublished Survey Information) were produced between 1972 and 1977, mainly for internal use at Ordnance Survey. These were more of a `work-in-progress' plan as they showed updates of individual areas on a map. These maps were unpublished, and they do not represent a single moment in time. They were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A13



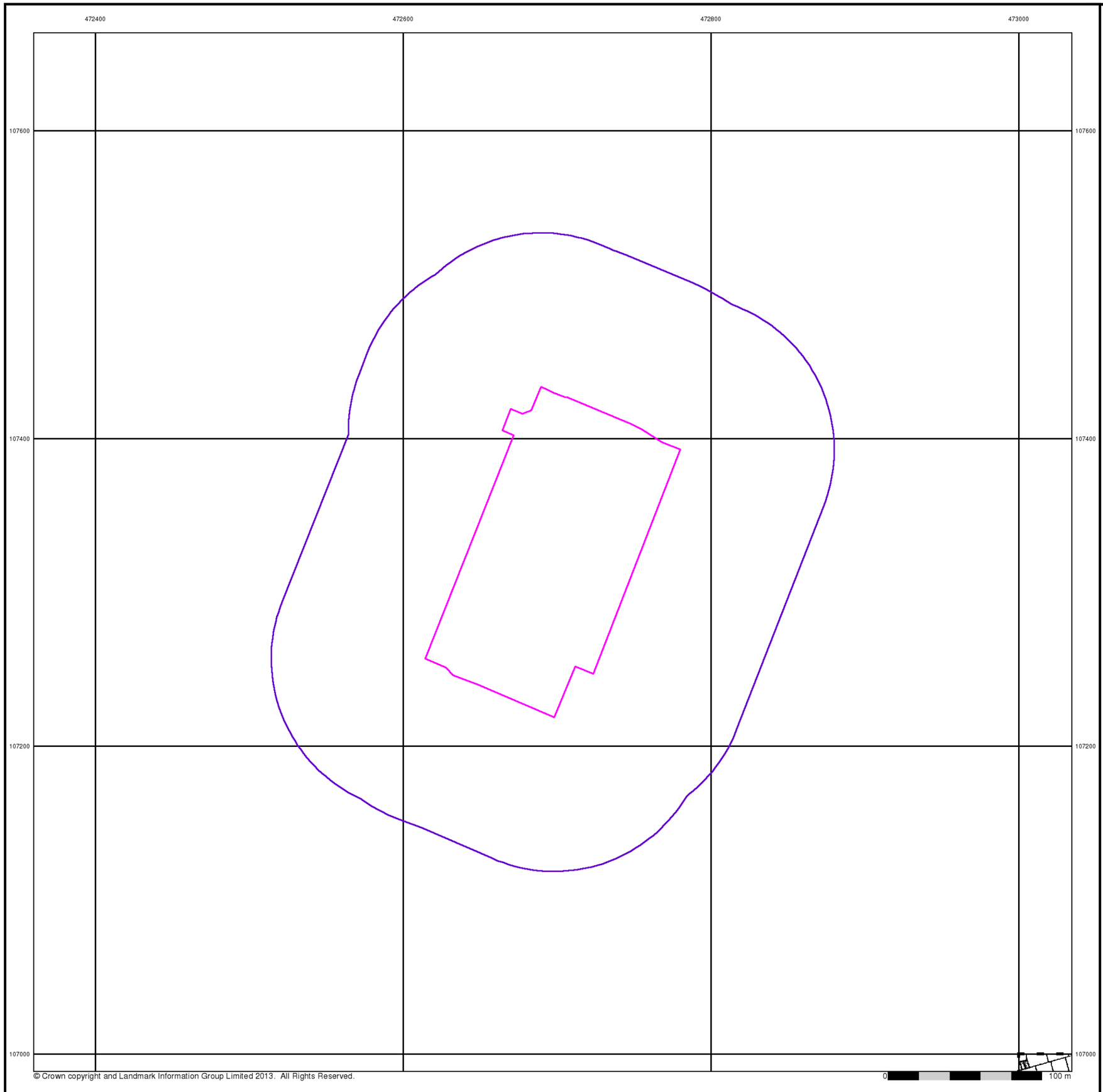
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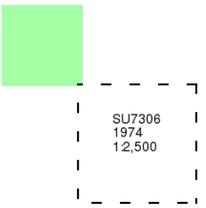
Ordnance Survey Plan

Published 1974

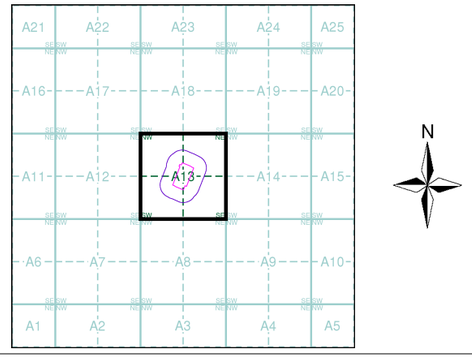
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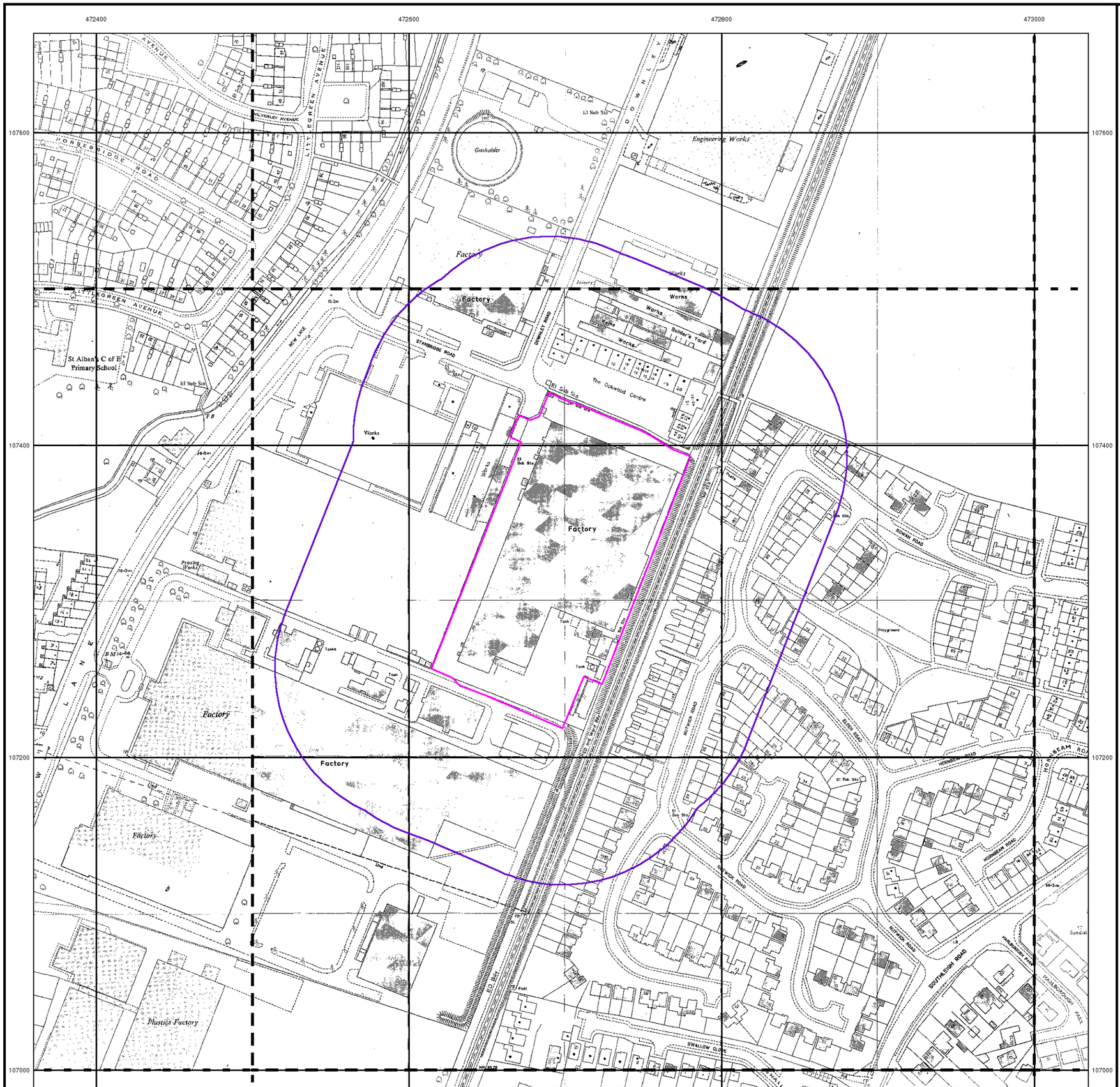
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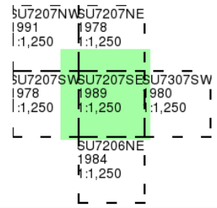
Additional SIMs

Published 1978 - 1991

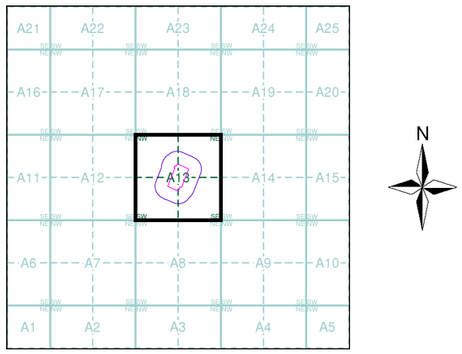
Source map scale - 1:1,250

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)



Historical Map - Segment A13



Order Details

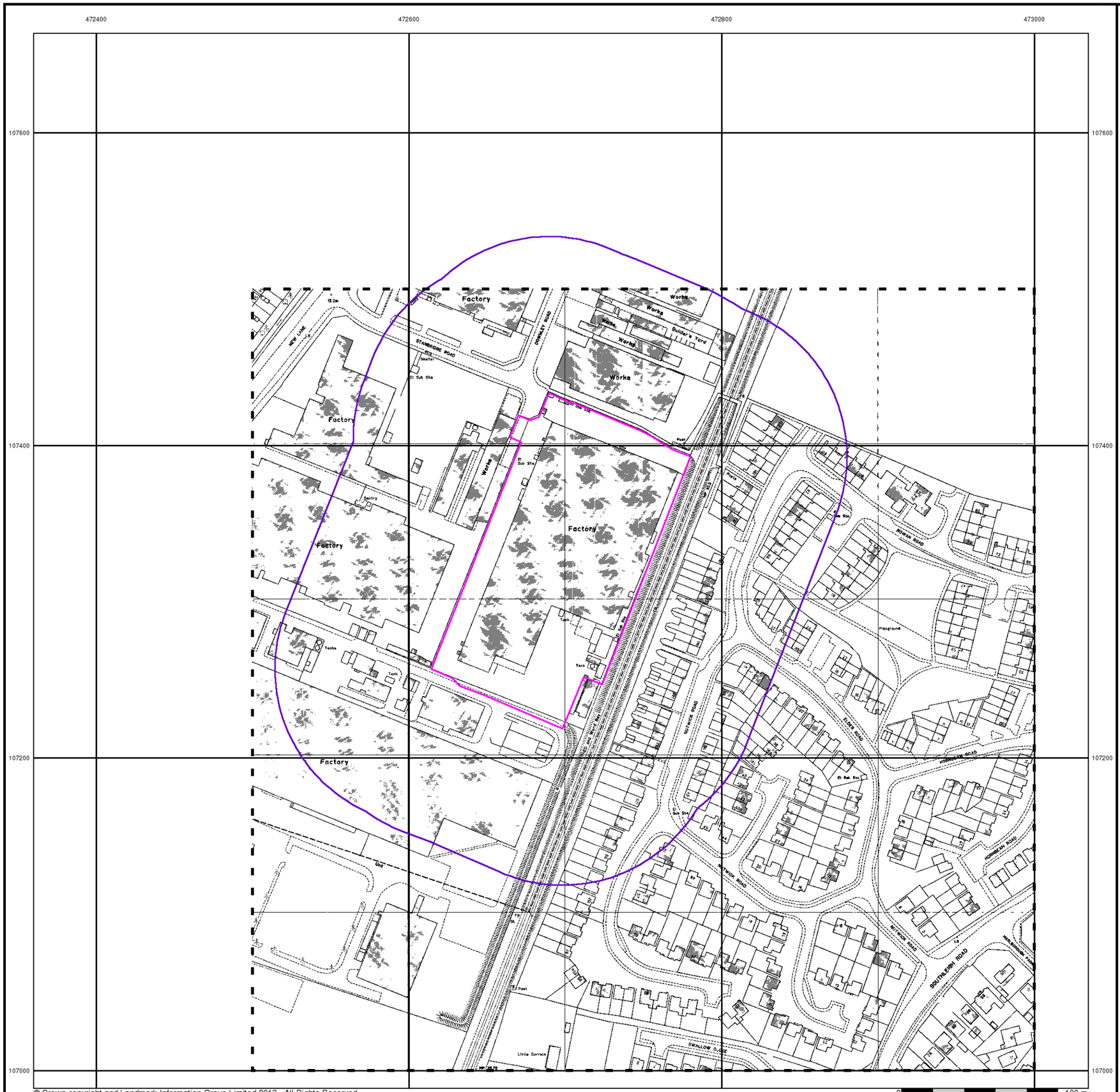
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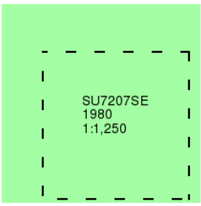
Ordnance Survey Plan

Published 1980

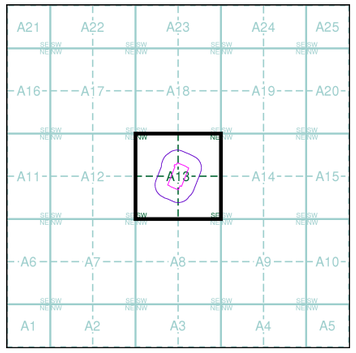
Source map scale - 1:1,250

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)



Historical Map - Segment A13



Order Details

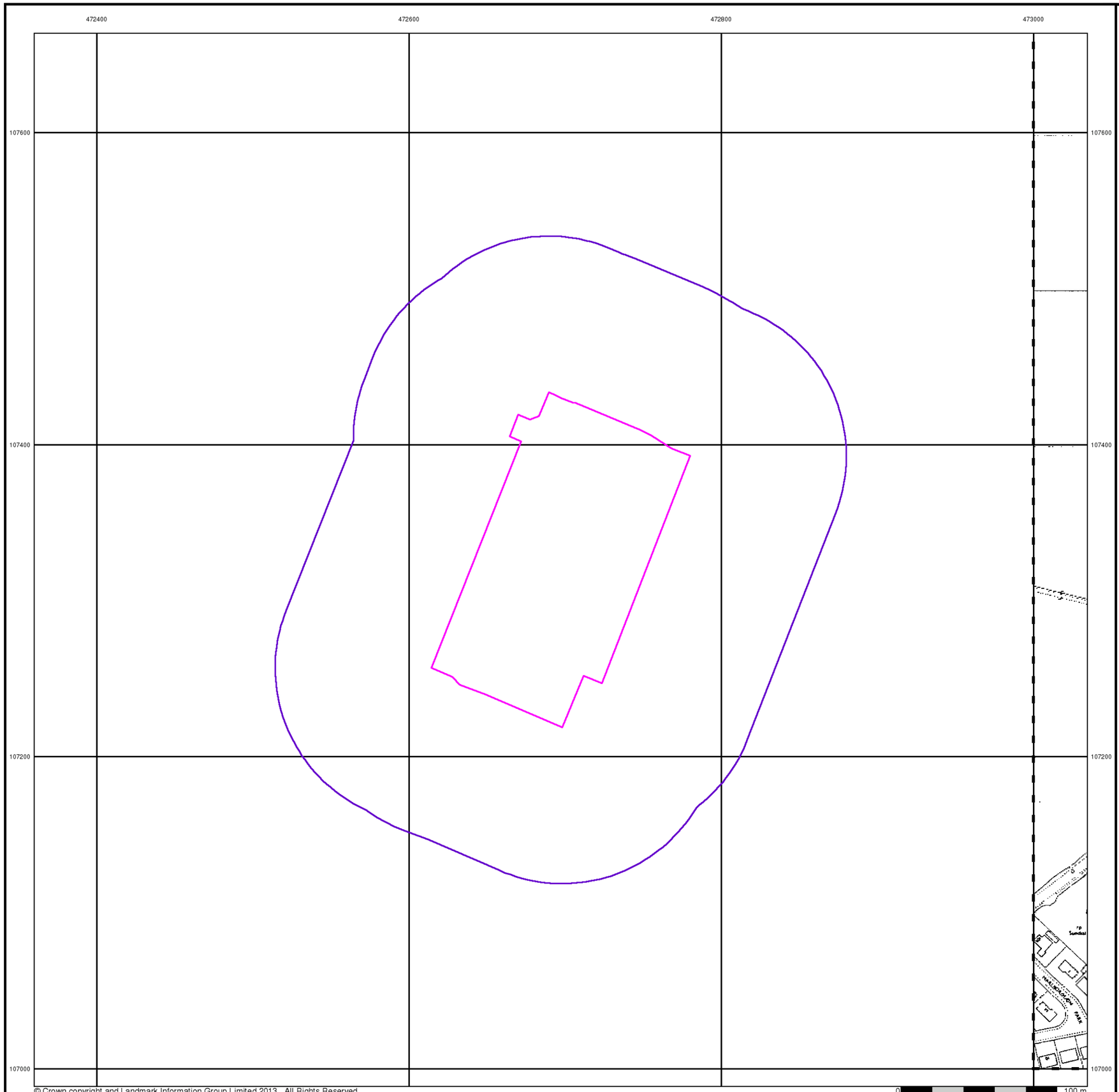
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Customer Ref:	13-0646.01
National Grid Reference:	472700, 107330
Slice:	A
Site Area (Ha):	1.99
Search Buffer (m):	100

Site Details

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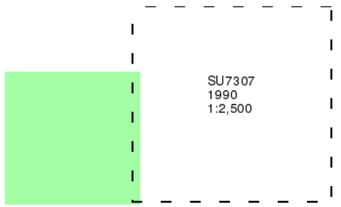
Additional SIMs

Published 1990

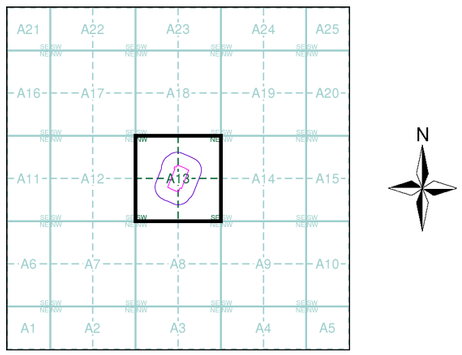
Source map scale - 1:2,500

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

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

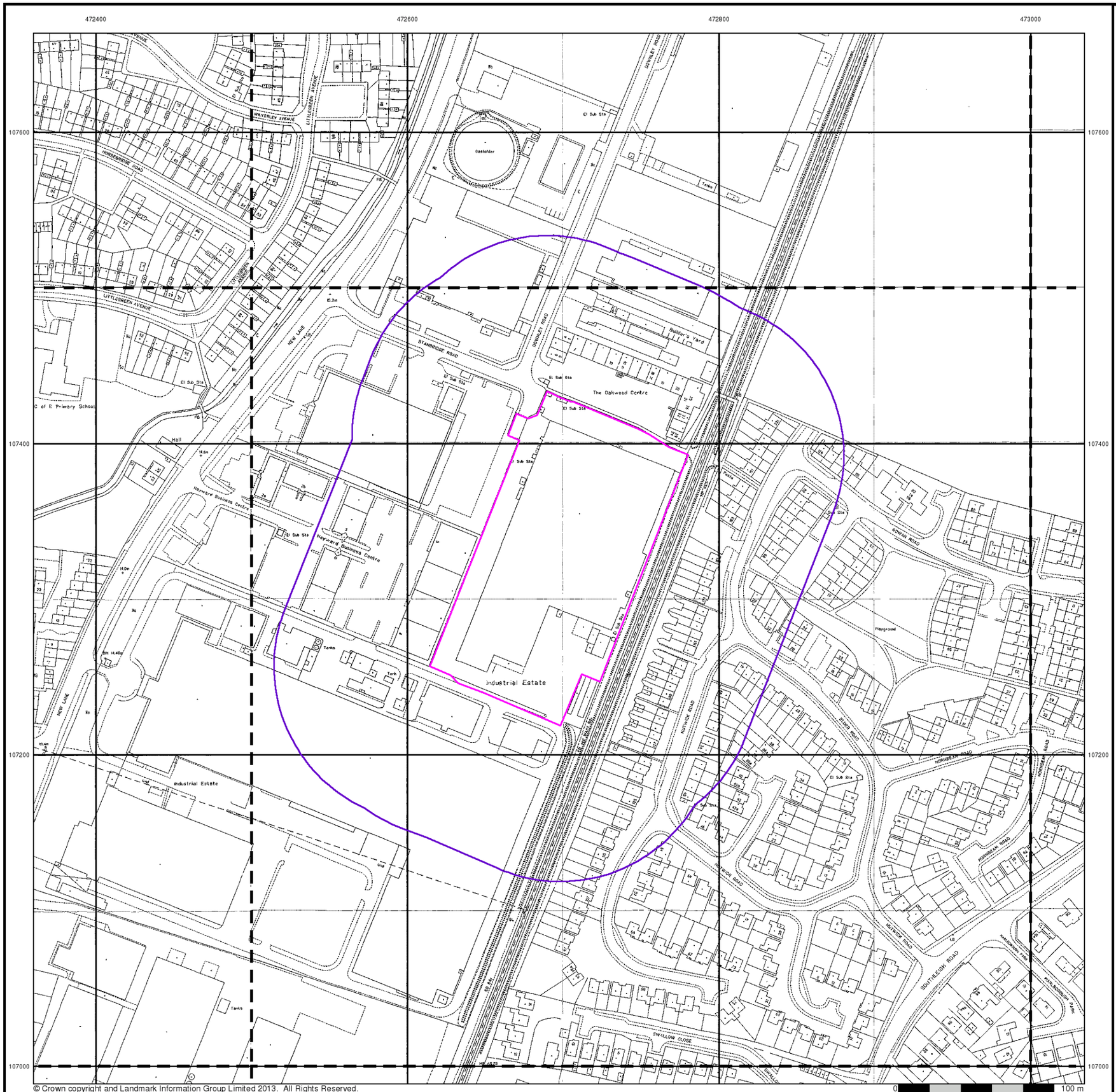
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Customer Ref:	13-0646.01
National Grid Reference:	472700, 107330
Slice:	A
Site Area (Ha):	1.99
Search Buffer (m):	100

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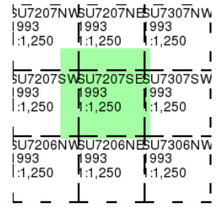
Large-Scale National Grid Data

Published 1993

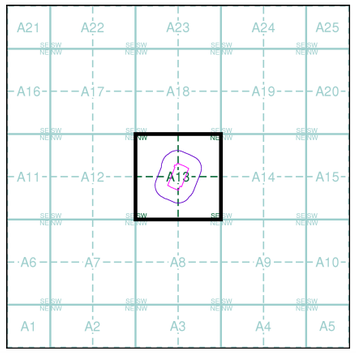
Source map scale - 1:1,250

'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

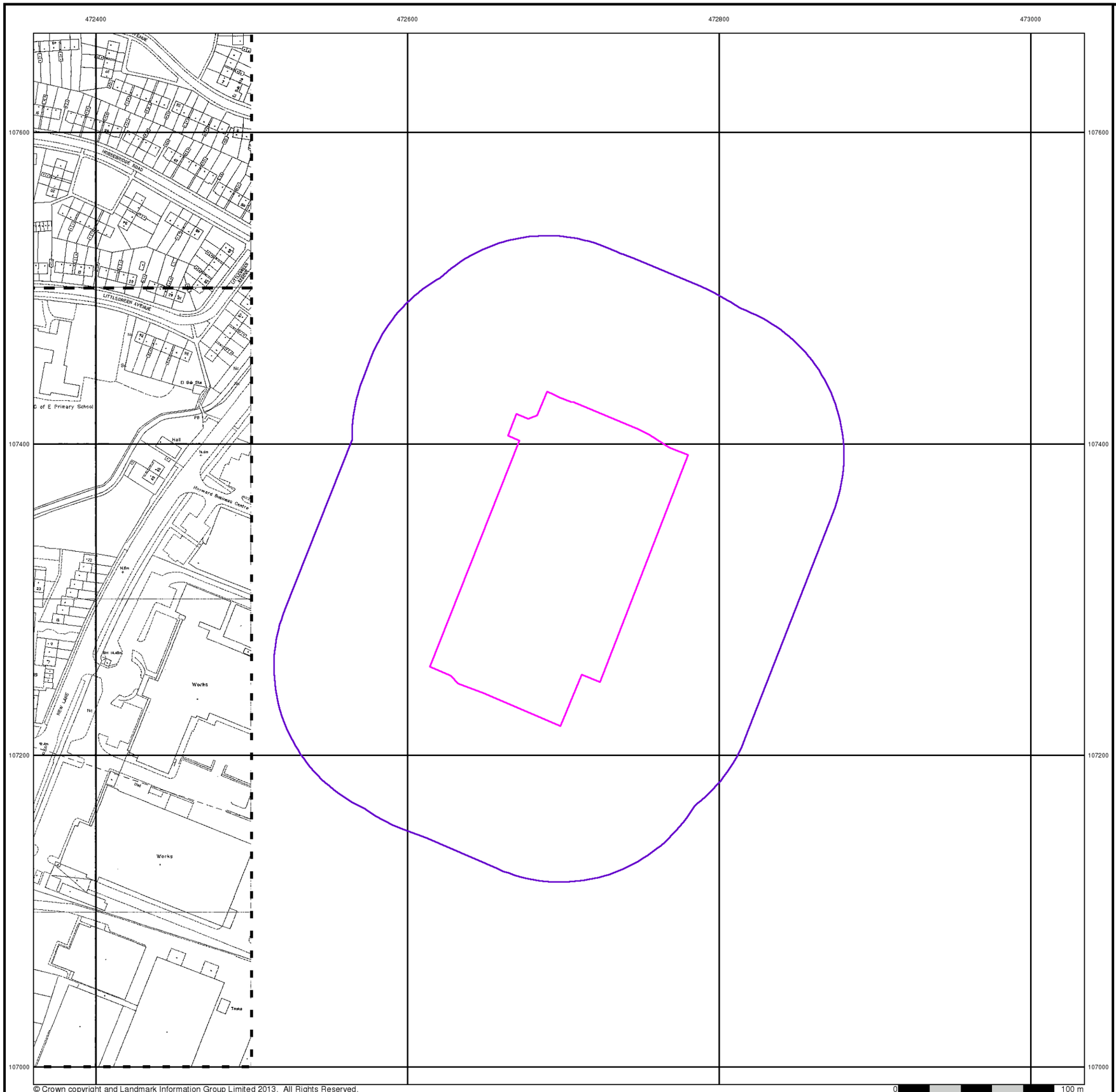
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Customer Ref:	13-0646.01
National Grid Reference:	472700, 107330
Slice:	A
Site Area (Ha):	1.99
Search Buffer (m):	100

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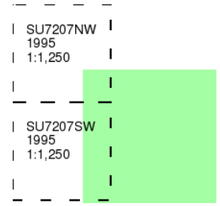
Large-Scale National Grid Data

Published 1995

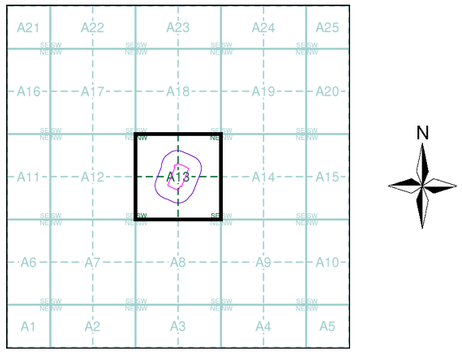
Source map scale - 1:1,250

'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

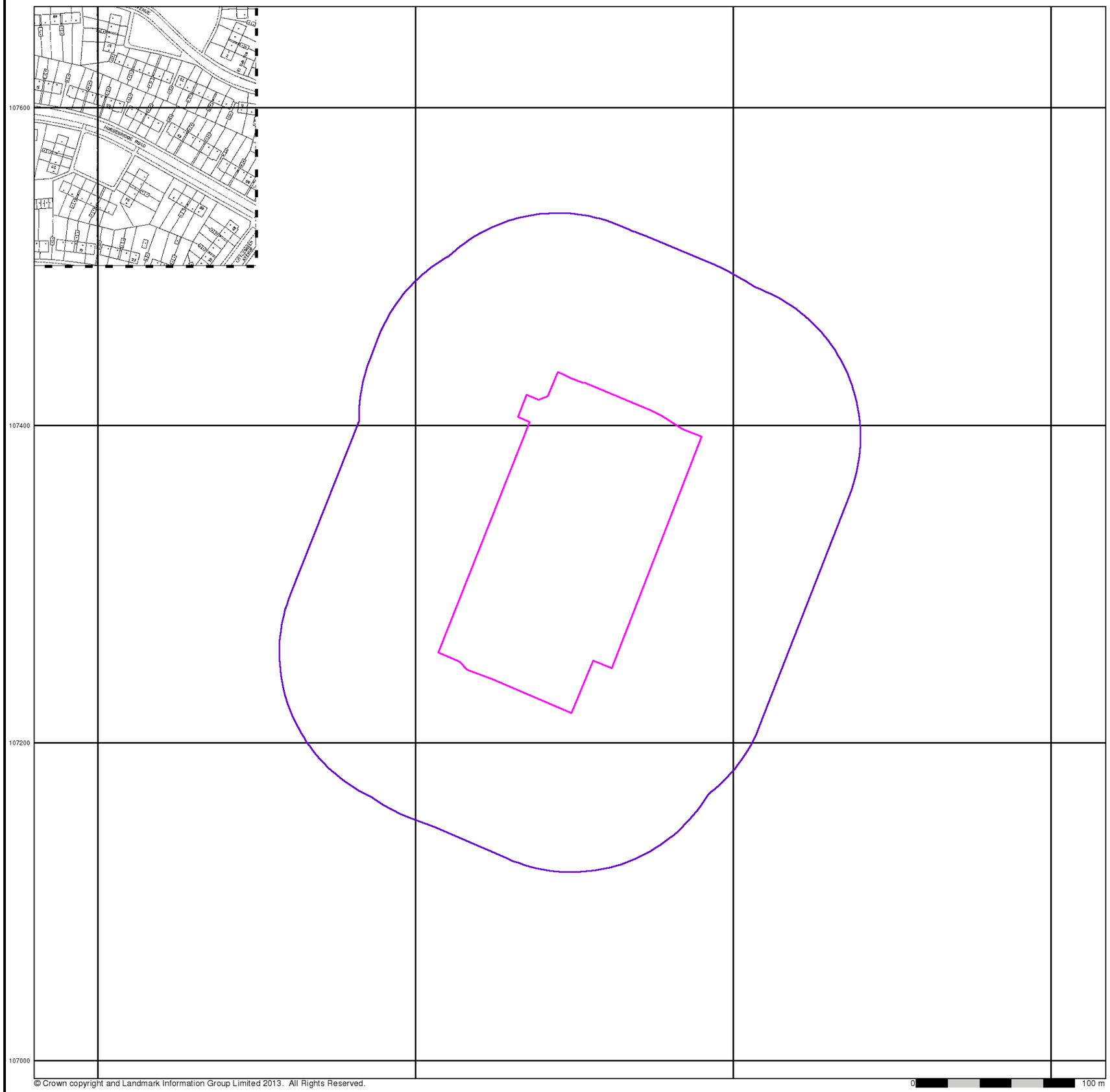
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Customer Ref:	13-0646.01
National Grid Reference:	472700, 107330
Slice:	A
Site Area (Ha):	1.99
Search Buffer (m):	100

Site Details

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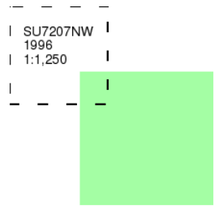
Large-Scale National Grid Data

Published 1996

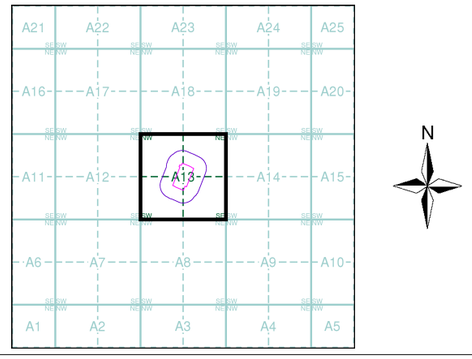
Source map scale - 1:1,250

'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

Order Number:	62539150_1_1
Customer Ref:	13-0646.01
National Grid Reference:	472700, 107330
Slice:	A
Site Area (Ha):	1.99
Search Buffer (m):	100

Site Details

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Appendix III

Envirocheck® Report:

Datasheet

Order Details:

Order Number:
62539150_1_1

Customer Reference:
13-0646.01

National Grid Reference:
472700, 107330

Slice:
A

Site Area (Ha):
1.99

Search Buffer (m):
1000

Site Details:

Stanbridge Road
Havant
PO9 2NL

Client Details:

Ms J Trevelyan
Delta Simons
3 Henley Office Park
Doddington Road
Lincoln
LN6 3QR

Contents

Report Section	Page Number
Summary	-
Agency & Hydrological	1
Waste	10
Hazardous Substances	13
Geological	14
Industrial Land Use	26
Sensitive Land Use	34
Data Currency	35
Data Suppliers	41
Useful Contacts	42

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/Natural Resources Wales 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

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Radon Potential dataset Copyright Notice

Information supplied from a joint dataset compiled by The British Geological Survey and Public Health England.

Report Version v49.0

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Agency & Hydrological					
Contaminated Land Register Entries and Notices					
Discharge Consents	pg 1		1	2	4
Enforcement and Prohibition Notices					
Integrated Pollution Controls	pg 2		2	3	
Integrated Pollution Prevention And Control	pg 3			6	
Local Authority Integrated Pollution Prevention And Control	pg 5			1	1
Local Authority Pollution Prevention and Controls	pg 5		1	4	2
Local Authority Pollution Prevention and Control Enforcements	pg 6			1	
Nearest Surface Water Feature	pg 6		Yes		
Pollution Incidents to Controlled Waters	pg 6			3	5
Prosecutions Relating to Authorised Processes					
Prosecutions Relating to Controlled Waters					
Registered Radioactive Substances					
River Quality	pg 7		1		1
River Quality Biology Sampling Points					
River Quality Chemistry Sampling Points					
Substantiated Pollution Incident Register					
Water Abstractions	pg 8				(*3)
Water Industry Act Referrals	pg 8		1		
Groundwater Vulnerability	pg 8	Yes	n/a	n/a	n/a
Bedrock Aquifer Designations	pg 9	Yes	n/a	n/a	n/a
Superficial Aquifer Designations	pg 9	Yes	n/a	n/a	n/a
Source Protection Zones					
Extreme Flooding from Rivers or Sea without Defences	pg 9		Yes	n/a	n/a
Flooding from Rivers or Sea without Defences	pg 9		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
Detailed River Network Lines	pg 9		Yes		n/a
Detailed River Network Offline Drainage					n/a

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Waste					
BGS Recorded Landfill Sites					
Historical Landfill Sites					
Integrated Pollution Control Registered Waste Sites					
Licensed Waste Management Facilities (Landfill Boundaries)					
Licensed Waste Management Facilities (Locations)	pg 10		1		1
Local Authority Recorded Landfill Sites					
Registered Landfill Sites					
Registered Waste Transfer Sites	pg 10		1		1
Registered Waste Treatment or Disposal Sites	pg 11		2		
Hazardous Substances					
Control of Major Accident Hazards Sites (COMAH)	pg 13		1		
Explosive Sites					
Notification of Installations Handling Hazardous Substances (NIHHS)	pg 13		1		
Planning Hazardous Substance Consents	pg 13		3		
Planning Hazardous Substance Enforcements					
Geological					
BGS 1:625,000 Solid Geology	pg 14	Yes	n/a	n/a	n/a
BGS Estimated Soil Chemistry	pg 14	Yes	Yes	Yes	Yes
BGS Recorded Mineral Sites	pg 23			1	5
BGS Urban Soil Chemistry					
BGS Urban Soil Chemistry Averages					
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
Man-Made Mining Cavities					
Natural Cavities					
Non Coal Mining Areas of Great Britain				n/a	n/a
Potential for Collapsible Ground Stability Hazards	pg 25	Yes	Yes	n/a	n/a
Potential for Compressible Ground Stability Hazards				n/a	n/a
Potential for Ground Dissolution Stability Hazards				n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 25	Yes		n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 25	Yes		n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 25	Yes	Yes	n/a	n/a
Radon Potential - Radon Affected Areas	pg 25	Yes	n/a	n/a	n/a
Radon Potential - Radon Protection Measures			n/a	n/a	n/a

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Industrial Land Use					
Contemporary Trade Directory Entries	pg 26		39	18	33
Fuel Station Entries	pg 33				1
Sensitive Land Use					
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 34	1	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	**Discharge Consents** Operator: Mr K Harvey, Maintenance Manager Property Type: Undefined Or Other Location: New Lane, Havant, Hampshire Authority: Environment Agency, Southern Region Catchment Area: Not Supplied Reference: P01349 Permit Version: 1 Effective Date: 4th February 1988 Issued Date: 4th February 1988 Revocation Date: 6th April 1992 Discharge Type: Trade Effluent Discharge Environment: Freshwater Stream/River Receiving Water: Freshwater River **Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 10m	A13NW (W)	232	2	472430 107420
2	**Discharge Consents** Operator: Gec-Plessey Avionics Ltd. Property Type: Undefined Or Other Location: Gec-Plessey Avionics Ltd., Martin Road, West Leigh, Havant, Hampshire Authority: Environment Agency, Southern Region Catchment Area: Not Given Reference: P01759 Permit Version: 1 Effective Date: 14th July 1988 Issued Date: 14th July 1988 Revocation Date: 8th March 1996 Discharge Type: Discharge Of Other Matter-Surface Water Discharge Environment: Freshwater Stream/River Receiving Water: Freshwater River **Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 100m	A18SW (N)	367	2	472690 107800
3	**Discharge Consents** Operator: Gec-Plessey Avionics Ltd. Property Type: Undefined Or Other Location: Gec-Plessey Avionics Ltd., Martin Road, West Leigh, Havant, Hampshire Authority: Environment Agency, Southern Region Catchment Area: Not Given Reference: P01759 Permit Version: 1 Effective Date: 14th July 1988 Issued Date: 14th July 1988 Revocation Date: 8th March 1996 Discharge Type: Discharge Of Other Matter-Surface Water Discharge Environment: Freshwater Stream/River Receiving Water: Freshwater River **Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 100m	A18SW (N)	485	2	472500 107880
4	**Discharge Consents** Operator: Thermofil Polymers (Uk) Ltd Property Type: Water Treatment Works Location: New Lane, Havant, Hampshire Authority: Environment Agency, Southern Region Catchment Area: Not Supplied Reference: Ao0598 Permit Version: 1 Effective Date: 28th November 1994 Issued Date: 28th November 1994 Revocation Date: 6th September 2005 Discharge Type: Discharge Of Other Matter-Surface Water Discharge Environment: Freshwater Stream/River Receiving Water: Freshwater River **Status: Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 10m	A18SE (N)	531	2	472810 107950

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
4	**Discharge Consents** Operator: Vickers Systems Ltd. Property Type: Water Treatment Works Location: New Lane, Havant, Hampshire Authority: Environment Agency, Southern Region Catchment Area: Not Given Reference: H01208 Permit Version: 1 Effective Date: 15th April 1965 Issued Date: 15th April 1965 Revocation Date: 27th February 2006 Discharge Type: Trade Effluent Discharge Environment: Freshwater Stream/River Receiving Water: Freshwater River **Status: Consent revoked: Discharge ceased (Water Resources Act 1991, Schedule 10 & 6)** Positional Accuracy: Located by supplier to within 100m	A18SE (N)	531	2	472810 107950
5	**Discharge Consents** Operator: Southern Water Services Ltd (H) Property Type: Sewerage Network - Sewers - Water Company Location: Eastleigh Road, Denvilles Hampshire Authority: Environment Agency, Southern Region Catchment Area: Not Given Reference: A00327 Permit Version: 1 Effective Date: 1st April 1991 Issued Date: 1st April 1991 Revocation Date: 6th March 1996 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Freshwater River **Status: Post National Rivers Authority Legislation where issue date > 31/08/1989** Positional Accuracy: Located by supplier to within 100m	A19SE (NE)	692	2	473400 107700
6	**Discharge Consents** Operator: Southern Water Services Ltd (H) Property Type: Undefined Or Other Location: Eastern Road, Havant, Hampshire Authority: Environment Agency, Southern Region Catchment Area: Lavant Reference: H01597 Permit Version: 1 Effective Date: 18th January 1963 Issued Date: 18th January 1963 Revocation Date: 23rd February 2010 Discharge Type: Discharge Of Other Matter-Surface Water Discharge Environment: Freshwater Stream/River Receiving Water: Freshwater Stream Or River **Status: Revoked (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A7NW (SW)	894	2	471940 106670
7	**Integrated Pollution Controls** Name: John Wyeth And Brother Ltd Location: New Lane, HAVANT, Hampshire, PO9 2NG Authority: Environment Agency, Southern Region Permit Reference: AK5458 Dated: 24th February 1994 Process Type: IPC application for process that was regulated by HMIP for air releases under previous legislation Description: 4.2 A (D) Manufacture and use of Organic Chemicals within the Chemical Industry **Status: Authorisation revokedRevoked** Positional Accuracy: Unknown	A13SW (SW)	222	2	472400 107200
7	**Integrated Pollution Controls** Name: Wyeth Research (uk) Ltd Location: New Lane, HAVANT, Hampshire, PO9 2NG Authority: Environment Agency, Southern Region Permit Reference: AK5571 Dated: 24th February 1994 Process Type: IPC new application Description: 4.2 A (D) Manufacture and use of Organic Chemicals within the Chemical Industry **Status: Authorisation revokedRevoked** Positional Accuracy: Unknown	A13SW (SW)	223	2	472400 107195

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
8	**Integrated Pollution Controls** Name: Asahi Thermofil (Uk) Ltd Location: 28 New Lane, HAVANT, Hampshire, PO9 2NQ Authority: Environment Agency, Southern Region Permit Reference: BG1861 Dated: 16th February 2000 Process Type: IPC major (substantial) variation Description: 4.5 A (F) Inorganic Chemical processes within the Chemical Industry **Status: Revoked - Now IPPC** Positional Accuracy: Automatically positioned to the address	A13SW (SW)	280	2	472412 107064
8	**Integrated Pollution Controls** Name: Asahi Thermofil (Uk) Ltd Location: 28 New Lane, HAVANT, Hampshire, PO9 2NQ Authority: Environment Agency, Southern Region Permit Reference: AO0598 Dated: 18th November 1994 Process Type: IPC application for process that was regulated by HMIP for air releases under previous legislation Description: 4.5 A (F) Inorganic Chemical processes within the Chemical Industry **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Automatically positioned to the address	A13SW (SW)	280	2	472407 107069
8	**Integrated Pollution Controls** Name: Asahi Thermofil (Uk) Ltd Location: 28 New Lane, HAVANT, Hampshire, PO9 2NQ Authority: Environment Agency, Southern Region Permit Reference: BC9461 Dated: 24th November 1998 Process Type: IPC minor (non-substantial) variation to previous variation Description: 4.5 A (F) Inorganic Chemical processes within the Chemical Industry **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Automatically positioned to the address	A13SW (SW)	284	2	472407 107064
9	**Integrated Pollution Prevention And Control** Name: Sumika Polymer Compounds (Uk) Ltd Location: Havant Plastics Compounder, 28, New Lane,,, Havant, Hampshire, PO9 2NQ Authority: Environment Agency - South East Region, Solent & South Downs Area Permit Reference: MP3431KV Original Permit Ref: Bx8076ix Effective Date: 15th April 2010 **Status: Surrender Effective** Application Type: Surrender App. Sub Type: Whole Positional Accuracy: Automatically positioned to the address Activity Code: 4.2 A(1) (D) Activity Description: Inorganic Chemicals; Using Etc Of Antimony Etc (Unless Otherrwise Prescrined) (Unless Glazing Etc) Primary Activity: Y Activity Code: 0.0 Associated Process Activity Description: Associated Process Primary Activity: N	A13SW (SW)	280	2	472407 107069
9	**Integrated Pollution Prevention And Control** Name: Sumika Polymer Compounds (Uk) Ltd Location: Havant Plastics Compounder, 28, New Lane,,, Havant, Hampshire, PO9 2NQ Authority: Environment Agency, Southern Region Permit Reference: MP3431KV Original Permit Ref: Bx8076ix Effective Date: 15th April 2010 **Status: Surrender Effective** Application Type: Surrender App. Sub Type: Whole Positional Accuracy: Automatically positioned to the address Activity Code: 0.0 Associated Process Activity Description: Associated Process Primary Activity: N Activity Code: 4.2 A(1) (D) Activity Description: Inorganic Chemicals; Using Etc Of Antimony Etc (Unless Otherrwise Prescrined) (Unless Glazing Etc) Primary Activity: Y	A13SW (SW)	280	2	472407 107069

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
9	**Integrated Pollution Prevention And Control** Name: Sumika Polymer Compounds (Uk) Ltd Location: Havant Plastics Compounder, 28, New Lane,,, Havant, Hampshire, PO9 2NQ Authority: Environment Agency - South East Region, Solent & South Downs Area Permit Reference: QP3235GD Original Permit Ref: Bx8076ix Effective Date: 17th June 2009 **Status:** **Superseded By Variation** Application Type: Variation App. Sub Type: Simple Standard Variation Positional Accuracy: Automatically positioned to the address Activity Code: 4.2 A(1) (D) Activity Description: Inorganic Chemicals; Using Etc Of Antimony Etc (Unless Otherrwise Prescrined) (Unless Glazing Etc) Primary Activity: Y Activity Code: 0.0 Associated Process Activity Description: Associated Process Primary Activity: N	A13SW (SW)	280	2	472407 107069
9	**Integrated Pollution Prevention And Control** Name: Sumika Polymer Compounds (Uk) Ltd Location: Havant Plastics Compounder, 28, New Lane,,, Havant, Hampshire, PO9 2NQ Authority: Environment Agency, Southern Region Permit Reference: QP3235GD Original Permit Ref: Bx8076ix Effective Date: 17th June 2009 **Status:** **Superseded By Variation** Application Type: Variation App. Sub Type: Simple Standard Variation Positional Accuracy: Automatically positioned to the address Activity Code: 4.2 A(1) (D) Activity Description: Inorganic Chemicals; Using Etc Of Antimony Etc (Unless Otherrwise Prescrined) (Unless Glazing Etc) Primary Activity: Y Activity Code: 0.0 Associated Process Activity Description: Associated Process Primary Activity: N	A13SW (SW)	280	2	472407 107069
9	**Integrated Pollution Prevention And Control** Name: Asahi Thermofil Uk Ltd Location: Havant Plastics Compounder, 28, New Lane,,, Havant, Hampshire, PO9 2NQ Authority: Environment Agency - South East Region, Solent & South Downs Area Permit Reference: BX8076IX Original Permit Ref: Bx8076ix Effective Date: 7th September 2005 **Status:** **Superseded By Variation** Application Type: Application App. Sub Type: New Positional Accuracy: Automatically positioned to the address Activity Code: 4.2 A(1) (D) Activity Description: Inorganic Chemicals; Using Etc Of Antimony Etc (Unless Otherrwise Prescrined) (Unless Glazing Etc) Primary Activity: Y Activity Code: 0.0 Associated Process Activity Description: Associated Process Primary Activity: N	A13SW (SW)	280	2	472407 107069
9	**Integrated Pollution Prevention And Control** Name: Asahi Thermofil Uk Ltd Location: Plastics Compounder - Havant, 28, New Lane, Havant, Hampshire, PO9 2NQ Authority: Environment Agency, Southern Region Permit Reference: Bx8076ix Original Permit Ref: Bx8076ix Effective Date: 7th September 2005 **Status:** **Superseded By Variation** Application Type: Application App. Sub Type: New Positional Accuracy: Automatically positioned to the address Activity Code: 4.2 A(1) (D) Activity Description: Inorganic Chemicals; Using Etc Of Antimony Etc (Unless Otherrwise Prescrined) (Unless Glazing Etc) Primary Activity: Y Activity Code: 0.0 Associated Process Activity Description: Associated Process Primary Activity: N	A13SW (SW)	280	2	472407 107069

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
10	**Local Authority Integrated Pollution Prevention And Control** Name: Sumika Polymer Compounds Ltd Location: 28 New Lane, Havant, PO9 2NQ Authority: Havant Borough Council, Environmental Health Department Permit Reference: EA/EPR/BX8076IX Dated: 7th September 2005 Process Type: Other Activities Description: Not Supplied **Status: Permit Issued** Positional Accuracy: Located by supplier to within 10m	A13SW (SW)	257	3	472549 107004
11	**Local Authority Integrated Pollution Prevention And Control** Name: Motorwork Ltd Location: Westleigh Service Station, Petersfield Road, Havant, Hampshire, PO9 5HA Authority: Havant Borough Council, Environmental Health Department Permit Reference: HBC/IPPC/05/00267 Dated: Not Supplied Process Type: Energy Industries Description: PG1/1 Waste Oil And Recovered Oil Burnersless than 0.4W **Status: Permit Issued** Positional Accuracy: Manually positioned to the address or location	A17SE (NW)	783	3	472081 107934
12	**Local Authority Pollution Prevention and Controls** Name: Wyeth Laboratories Location: New Lane, HAVANT, Hampshire, PO9 2NG Authority: Havant Borough Council, Environmental Health Department Permit Reference: 4 Dated: 15th January 1997 Process Type: Local Authority Air Pollution Control Description: Part B - General Coating Process (No Specific Reference) **Status: Authorisation revokedRevoked** Positional Accuracy: Manually positioned to the address or location	A13SW (W)	151	3	472465 107236
13	**Local Authority Pollution Prevention and Controls** Name: Thermofil Polymers (Uk) Ltd Location: 28 New Lane, HAVANT, Hampshire, PO9 2NQ Authority: Havant Borough Council, Environmental Health Department Permit Reference: Ao0598 Dated: 28th November 1994 Process Type: Local Authority Air Pollution Control Description: PG4/2 Processes for the manufacture of fibre reinforced plastics **Status: Authorised** Positional Accuracy: Manually positioned to the address or location	A13SW (SW)	282	3	472403 107071
14	**Local Authority Pollution Prevention and Controls** Name: Vision Travel International Limited Location: Unit 11 Kenwood Business Park, New Lane, Havant, PO9 2NH Authority: Havant Borough Council, Environmental Health Department Permit Reference: HBC/IPPC/07/08915 Dated: 2nd January 2008 Process Type: Local Authority Pollution Prevention and Control Description: PG1/1Waste oil burners, less than 0.4MW net rated thermal input **Status: Permitted** Positional Accuracy: Located by supplier to within 10m	A8NW (S)	340	3	472578 106901
15	**Local Authority Pollution Prevention and Controls** Name: Kenwood Ltd Location: New Lane, Havant, Po9 2nh Authority: Havant Borough Council, Environmental Health Department Permit Reference: EPA/1/2/94 Dated: 22nd October 1993 Process Type: Local Authority Air Pollution Control Description: PG2/6 Aluminium and aluminium alloy processes **Status: Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 10m	A8NW (SW)	467	3	472437 106823
16	**Local Authority Pollution Prevention and Controls** Name: Thermofil Polymers (Uk) Ltd Location: New Lane, HAVANT, Hampshire, PO9 2NH Authority: Havant Borough Council, Environmental Health Department Permit Reference: Epa1/1/97 Dated: 15th January 1997 Process Type: Local Authority Air Pollution Control Description: PG6/10 Coating manufacturing **Status: Authorised** Positional Accuracy: Manually positioned to the road within the address or location	A7NE (SW)	475	3	472274 106926

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
17	**Local Authority Pollution Prevention and Controls** Name: Westleigh Service Station Location: Petersfield Road, HAVANT, Hampshire, PO9 5HA Authority: Havant Borough Council, Environmental Health Department Permit Reference: HBC/IPPC/05/00323 Dated: 9th December 1998 Process Type: Local Authority Pollution Prevention and Control Description: PG1/14 Petrol filling station **Status: Permitted** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	784	3	472079 107933
17	**Local Authority Pollution Prevention and Controls** Name: Westleigh Service Station Location: Petersfield Road, Havant, Po9 5ha Authority: Havant Borough Council, Environmental Health Department Permit Reference: HBC/IPPC/05/00314 Dated: 22nd March 2006 Process Type: Local Authority Pollution Prevention and Control Description: PG1/1Waste oil burners, less than 0.4MW net rated thermal input **Status: Permitted** Positional Accuracy: Located by supplier to within 10m	A17SE (NW)	791	3	472087 107953
18	**Local Authority Pollution Prevention and Control Enforcements** Location: New Lane, Havant, Hampshire, Po9 2nq Type: Air Pollution Control Enforcement Notice Reference: AO 0598 Date Issued: 25th November 1998 Enforcement Date: Not Supplied Details: Not Supplied Positional Accuracy: Manually positioned to the address or location	A13SW (SW)	282	3	472403 107071
	Nearest Surface Water Feature	A13NW (NW)	154	-	472554 107521
19	**Pollution Incidents to Controlled Waters** Property Type: Domestic/Residential Location: Lockerley Road, HAVANT Authority: Environment Agency, Southern Region Pollutant: Oils - Petrol Note: 20L Petrol To Drain Incident Date: 10th July 1992 Incident Reference: 198 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Oils/Related Products Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A12NE (W)	345	2	472300 107400
20	**Pollution Incidents to Controlled Waters** Property Type: Water Company Sewage: Other Location: Hipley Road, HAVANT Authority: Environment Agency, Southern Region Pollutant: Unknown Sewage Note: Pipe Pouring Out Soapy White Water; Water Company Sewage: Surface Water Outfall Incident Date: 13th June 1995 Incident Reference: 1890 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Plc Sewage Other Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A12SE (W)	417	2	472200 107300
21	**Pollution Incidents to Controlled Waters** Property Type: Industrial: Other Location: Eastern Road, HAVANT Authority: Environment Agency, Southern Region Pollutant: Chemicals - Other Organic Note: Stream Polluted; Chemical Industry Incident Date: 9th June 1995 Incident Reference: 1884 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Organic Industrial Waste Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A7NE (SW)	476	2	472300 106900

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
22	**Pollution Incidents to Controlled Waters** Property Type: Domestic/Residential Location: Crosslands Drive, HAVANT Authority: Environment Agency, Southern Region Pollutant: Rubble/Litter Or Solids Note: Rubbish & Pollution Of Stream Incident Date: 8th May 1992 Incident Reference: 73 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Miscellaneous/Other Pollution Type Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A7NE (SW)	626	2	472100 106900
23	**Pollution Incidents to Controlled Waters** Property Type: Road (Road Traffic Accident) Location: New Road, HAVANT Authority: Environment Agency, Southern Region Pollutant: Oils - Petrol Note: 5 Litres Of Petrol To Drain Incident Date: 29th May 1997 Incident Reference: 797267 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Oils/Related Products Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A7SE (SW)	727	2	472300 106600
24	**Pollution Incidents to Controlled Waters** Property Type: Miscellaneous Premises: Other Location: Surface Water Outfall, Eastern Road, HAVANT Authority: Environment Agency, Southern Region Pollutant: Oils - Other Oil Note: Oil Irridescence Entering Stream Incident Date: 15th March 1997 Incident Reference: 797138 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Oils/Related Products Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A7NW (SW)	894	2	471940 106670
24	**Pollution Incidents to Controlled Waters** Property Type: Water Company Sewage: Surface Water Outfall Location: Lavant Stream, Eastern Road, HAVANT Authority: Environment Agency, Southern Region Pollutant: Oils - Gas Oil Note: Oil Poured Into Hermitage Stream Incident Date: 11th March 1997 Incident Reference: 797171 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Oils/Related Products Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A7NW (SW)	898	2	471940 106665
25	**Pollution Incidents to Controlled Waters** Property Type: WSC Sewage, Sewerage & Supply Location: Eastern Road Outfall, HAVANT Authority: Environment Agency, Southern Region Pollutant: General Biodegradable : Sewage & Sewerage Material: Grey Water Note: Not Supplied Incident Date: 18th October 1999 Incident Reference: 3189 Catchment Area: Lavant Receiving Water: Potential River Cause of Incident: Deliberate Action Incident Severity: Category 3 - Minor Incident Positional Accuracy: Approximate location provided by supplier	A7SW (SW)	935	2	471950 106600
	River Quality Name: Lavant (Hants) GQA Grade: River Quality A Reach: Tidal Limit - Source Estimated Distance (km): 6.5 Flow Rate: Flow less than 0.31 cumecs Flow Type: River Year: 2000	A13NW (NW)	182	2	472506 107511

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	River Quality Name: Southleigh Strm GQA Grade: River Quality D Reach: Tidal Limit - Source Estimated Distance (km): 2.2 Flow Rate: Flow less than 0.31 cumecs Flow Type: River Year: 2000	A19SE (NE)	735	2	473385 107810
	Water Abstractions Operator: Portsmouth Water Ltd Licence Number: 11/42/36.2/1 Permit Version: 101 Location: Bedhampton Ps Spring No 2 Authority: Environment Agency, Southern 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: See Licence Map Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 11th June 2009 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A6SW (SW)	1825	2	471020 106370
	Water Abstractions Operator: Portsmouth Water Ltd Licence Number: 11/42/36.2/1 Permit Version: 102 Location: Bedhampton Ps Spring No 2 Authority: Environment Agency, Southern 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: See Licence Map Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 9th June 2009 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A6SW (SW)	1825	2	471020 106370
	Water Abstractions Operator: Portsmouth Water Co Licence Number: 11/42/36.2/1 Permit Version: 100 Location: Bedhampton Ps Spring No 2 Authority: Environment Agency, Southern 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: See Licence Map Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 26th September 1977 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A6SW (SW)	1825	2	471020 106370
26	**Water Industry Act Referrals** Name: Ac Stubbings Location: Wyeth Laboratories, 32 New Lane, HAVANT, Hampshire, PO9 2NG Authority: Environment Agency, Southern Region Permit Reference: AJ2917 Dated: 6th July 1993 Process Type: Permissions or amendments to discharge under the Water Industry Act 1991 Description: Processes which result in the discharge of Special Category effluents under The Trade Effluents (Prescribed Processes and Substances) Regulations **Status:** **Application has been authorised and any conditions apply to the operatorAuthorised** Positional Accuracy: Automatically positioned to the address	A13SW (W)	151	2	472466 107236
	Groundwater Vulnerability 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 45 West Sussex and Surrey Scale: 1:100,000	A13NW (W)	0	2	472696 107327

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Drift Deposits None				
	Bedrock Aquifer Designations Aquifer Designation: Unproductive Strata	A13NW (W)	0	4	472696 107327
	Superficial Aquifer Designations Aquifer Designation: Secondary Aquifer - A	A13NW (W)	0	4	472696 107327
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13NW (NW)	129	2	472560 107487
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13NW (W)	217	2	472432 107383
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13NW (W)	234	2	472417 107391
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13NW (NW)	152	2	472514 107439
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13NW (NW)	181	2	472496 107471
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13NW (W)	224	2	472428 107392
	Areas Benefiting from Flood Defences None				
	Flood Water Storage Areas None				
	Flood Defences None				
27	**Detailed River Network Lines** River Type: Primary River River Name: Not Supplied Hydrographic Area: D007 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk Management Status: Other Rivers Water Course Name: Lavant Stream Water Course Reference: S601	A13NW (NW)	156	2	472509 107465
	Detailed River Network Offline Drainage None				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
28	**Licensed Waste Management Facilities (Locations)** Licence Number: 19987 Location: 32 New Lane, Havant, Hampshire, PO9 2NG Operator Name: John Wyeth And Brother Ltd Operator Location: Not Supplied Authority: Environment Agency - South East Region, Solent & South Downs Area Site Category: In-house Storage Facilities **Licence Status: Issued** Issued: 13th September 1991 Last Modified: 11th June 2001 Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A13SW (SW)	80	2	472550 107210
29	**Licensed Waste Management Facilities (Locations)** Licence Number: 19986 Location: 8 New Lane, Havant, Hampshire, PO9 2JH Operator Name: Wessex Construction And Plant Ltd Operator Location: Not Supplied Authority: Environment Agency - Southern Region, Hampshire and Isle of Wight Area Office Site Category: Household, Commercial And Industrial Transfer Stations **Licence Status: Expired** Issued: 5th December 1991 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	A7SE (SW)	808	2	472130 106610
	Local Authority Landfill Coverage Name: Havant Borough Council - Has supplied landfill data		0	3	472696 107327
	Local Authority Landfill Coverage Name: Hampshire County Council - Had landfill data but passed it to the relevant environment agency		0	10	472696 107327
	Local Authority Landfill Coverage Name: East Hampshire District Council - Has no landfill data to supply		691	11	473032 108040
30	**Registered Waste Transfer Sites** Licence Holder: John Wyeth & Brother Ltd Licence Reference: 13/ 22 Site Location: New Lane, HAVANT, Hampshire, PO9 2NG Operator Location: Huntercombe Lane South, Taplow, MAIDENHEAD, Berkshire, SL6 0PH Authority: Environment Agency - Southern Region, Hampshire Area Site Category: Storage Max Input Rate: Very Small (Less than 10,000 tonnes per year) Waste Source Restrictions: Waste produced/controlled by licence holder Licence Status: Operational as far as is knownOperational Dated: 11th June 2001 Preceded By Licence: 13/ 22 Superseded By Licence: Not Given Positional Accuracy: Manually positioned to the address or location Boundary Quality: Not Supplied Authorised Waste: Special Waste (As In Epa 1990:S62 Of 1996 Regs) & Other Waste In Working Plan Prohibited Waste: Degradable Household/Commercial/Industrial Waste (As In Post'98 E.A.Lics And Equivalent To 22.09.00) Metal Waste/Scrap Metal (As In Post'98 E.A.Lics And Equivalent To 23.00.00) Other Waste / Waste Not Otherwise Specified	A13SW (SW)	16	2	472630 107230

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
31	**Registered Waste Transfer Sites** Licence Holder: Wessex Construction Plant & Hire Co Ltd Licence Reference: 13/ 20B Site Location: New Lane, HAVANT, Hampshire, PO9 2JH Operator Location: As Site Address Authority: Environment Agency - Southern Region, Hampshire 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 Restrictions: No known restriction on source of waste Licence Status: Operational as far as is knownOperational Dated: 1st February 1990 Preceded By Licence: Not Given Superseded By Licence: Not Given Positional Accuracy: Manually positioned to the address or location Boundary Quality: Not Supplied Authorised Waste: Adhesive Wastes Ash,Clinker Clay,Pottery,China,Enamel,Ceramic,Mica Coal,Coke,Carbon,Graphite Construction And Demolition Wastes Cork Ferrous & Non-Ferrous Metal Scrap Glass/Cullet Max.Storage Permitted By Licence Oiled/Tarred Paper < 5% Of Daily Input Paper/Pack'G Ex Com./Ind. Premises Prods Of Complete Polymerisation Sand,Chalk,Gravel,Nat.Occ.Earth Spoils Sawdust/Sanderdust Solid Rubber Timber,Wood Offcuts, Hardboard Vehicle Tyres To Be < 5% Daily Input Waste Ex Const'N/Maint. Of Highways Prohibited Waste: All Clinical Wastes In Wmp 25 All Fibrous Forms Of Asbestos Food/Veg/Readily Biodegradable Waste Liq/Slurry/Sludge Waste - Except Above Mat'L Ex Oil Fired Boilers Mat'Ls Contain. Phenols Or Derivs. Old Cars/Vehicles/Trailers Poisonous, Noxious, Polluting Wastes Potentially Haz. Or Polluting Wastes Special Wastes Waste N.O.S.	A7SE (SW)	822	2	472120 106600
32	**Registered Waste Treatment or Disposal Sites** Licence Holder: Wyeth Laboratories Licence Reference: 13/ 22 Site Location: New Lane, HAVANT, Hampshire, PO9 2NG Operator Location: As Site Address Authority: Environment Agency - Southern Region, Hampshire Area Site Category: Storage Max Input Rate: Small (Equal to or greater than 10,000 and less than 25,000 tonnes per year) Waste Source Restrictions: Waste produced/controlled by licence holder Licence Status: Record supersededSuperseded Dated: 13th September 1991 Preceded By Licence: Not Given Superseded By Licence: 13/ 22 Positional Accuracy: Manually positioned to the address or location Boundary Quality: Not Supplied Authorised Waste: Special Wastes As In Application	A13SW (SW)	16	2	472630 107230

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
33	**Registered Waste Treatment or Disposal Sites** Licence Holder: Vinatex Ltd Licence Reference: 13/ 2 Site Location: New Lane, Havant, Hampshire Operator Location: As Site Address Authority: Environment Agency - Southern Region, Hampshire Area Site Category: Incineration Max Input Rate: Undefined Waste Source Restrictions: Waste produced/controlled by licence holder Licence Status: Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled Dated: 17th June 1977 Preceded By Licence: Not Given Superseded By Licence: Not Given Positional Accuracy: Approximate location provided by supplier Boundary Quality: Not Supplied Authorised Waste: Paper/Cardboard Waste Wood Waste/Timber Environment Agency must give specific authorisation for this waste to be acceptedWaste requires prior approval: Waste N.O.S	A13NW (NW)	65	2	472600 107400

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
34	**Control of Major Accident Hazards Sites (COMAH)** Name: Transco Plc Location: Leigh Holder Station, Leigh Park, New Lane, HAVANT, Hampshire, PO9 2NF Reference: Not Supplied Type: Lower Tier **Status: Active** Positional Accuracy: Manually positioned to the address or location	A13NW (N)	162	5	472651 107590
35	**Notification of Installations Handling Hazardous Substances (NIHHS)** Name: Transco Location: Leigh Holder Station, New Lane, Leigh Park, Havant, Hants, Po9 2Ns **Status: Active** Positional Accuracy: Manually positioned to the address or location	A13NW (N)	160	5	472648 107588
36	**Planning Hazardous Substance Consents** Name: British Gas Plc Location: Gas Holder Station, Downley Road, New Lane, HAVANT, Hampshire, PO9 2NJ Authority: Havant Borough Council, Commercial Team Application Ref: 92/53844/001 Hazardous Substance: Liquefied extremely flammable gas (including LPG) and natural gas (whether liquefied or not) Maximum Quantity: 42 Application date: 28th October 1992 **Decision: Unknown at time of reportUnknown** Positional Accuracy: Automatically positioned to the address	A13NE (N)	148	6	472701 107580
37	**Planning Hazardous Substance Consents** Name: British Gas Plc Location: Land Between New Lane, And Downley Road, Havant , Hampshire, Po9 Authority: Havant Borough Council, Commercial Team Application Ref: 01/53844/004 Hazardous Substance: Liquefied extremely flammable gas (including LPG) and natural gas (whether liquefied or not) Maximum Quantity: 21 Application date: 18th January 2001 **Decision: Deemed Consent GrantedGranted** Positional Accuracy: Manually positioned to the address or location	A13NW (N)	160	6	472652 107589
37	**Planning Hazardous Substance Consents** Name: British Gas Plc Location: Gas Holder Station, New Lane, Downley Road, Havant, Hampshire, Po9 2nj Authority: Havant Borough Council, Commercial Team Application Ref: 00/53844/003 Hazardous Substance: Liquefied extremely flammable gas (including LPG) and natural gas (whether liquefied or not) Maximum Quantity: 21 Application date: 6th June 2000 **Decision: Deemed Consent GrantedGranted** Positional Accuracy: Manually positioned to the address or location	A13NW (N)	161	6	472651 107589

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS 1:625,000 Solid Geology Description: London Clay	A13NW (W)	0	4	472696 107327
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13NW (W)	0	7	472696 107327
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13NW (NW)	60	7	472588 107405
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SW (S)	219	7	472696 107000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13NE (E)	220	7	473000 107327
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SE (NE)	370	7	472921 107736
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SE (SE)	371	7	473000 107000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SW (NW)	379	7	472414 107698
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12SE (SW)	381	7	472333 107000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SW (NW)	388	7	472382 107679
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SE (NE)	429	7	473000 107761
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A19SW (NE)	482	7	473102 107751
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SW (N)	537	7	472454 107916

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SW (N)	567	7	472696 108000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SW (N)	573	7	472606 108000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SW (N)	590	7	472527 108000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12SW (W)	610	7	472012 107159
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12NW (W)	615	7	472000 107327
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18NE (N)	617	7	472923 108004

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SE (N)	618	7	472936 108000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12SW (W)	618	7	472000 107193
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12NE (NW)	618	7	472100 107658
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12NE (NW)	618	7	472096 107648
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A17SE (NW)	625	7	472142 107753
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SE (N)	626	7	472956 108000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A17SE (NW)	634	7	472136 107760
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SE (NE)	636	7	472983 108000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SE (NE)	642	7	473000 108000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12SW (W)	646	7	472000 107059
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12SW (SW)	666	7	472000 107000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18NE (NE)	670	7	472997 108031

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18NE (NE)	674	7	473000 108034
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18NE (NE)	676	7	473000 108036
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12NW (W)	680	7	472000 107552
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A17SE (NW)	683	7	472308 108000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12SW (SW)	686	7	471979 107000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12NW (W)	700	7	471942 107450

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A17SE (NW)	719	7	472246 108000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12NW (W)	730	7	471946 107551
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A8SW (S)	736	7	472431 106533
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A17SE (NW)	741	7	472210 108000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A19SW (NE)	766	7	473302 107953
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A19SW (NE)	784	7	473276 108000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18NE (N)	794	7	472987 108170
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SE (E)	795	7	473568 107293
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18NE (N)	800	7	473000 108170
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A7SE (SW)	803	7	472257 106537
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18NE (N)	814	7	472879 108225
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A19SE (NE)	820	7	473534 107714

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A7SE (SW)	823	7	472081 106631
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12NW (W)	852	7	471788 107464
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A7NW (SW)	857	7	472000 106659
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18NE (N)	859	7	472872 108273
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A17SW (NW)	887	7	472000 108000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A7SE (SW)	948	7	472109 106455

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A7SE (SW)	956	7	472079 106465
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A7SW (SW)	957	7	472000 106523
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A7SW (SW)	983	7	472000 106490
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A3NE (S)	988	7	472977 106271
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A7SW (SW)	990	7	471981 106496
38	**BGS Recorded Mineral Sites** Site Name: Havant Farm Gravel Pit Location: , West Leigh, Havant, Hampshire Source: British Geological Survey, National Geoscience Information Service Reference: 163105 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Quaternary Geology: River Terrace Deposits (Undifferentiated) Commodity: Sand and Gravel Positional Accuracy: Located by supplier to within 10m	A12NE (NW)	419	4	472295 107606

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
39	**BGS Recorded Mineral Sites** Site Name: Denvilles Clay Pit Location: , Denvilles, Havant, Hampshire Source: British Geological Survey, National Geoscience Information Service Reference: 163110 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Quaternary Geology: River Terrace Deposits (Undifferentiated) Commodity: Common Clay and Shale Positional Accuracy: Located by supplier to within 10m	A9NW (SE)	572	4	473079 106793
40	**BGS Recorded Mineral Sites** Site Name: Havant Farm Gravel Pit Location: , West Leigh, Havant, Hampshire Source: British Geological Survey, National Geoscience Information Service Reference: 163106 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Quaternary Geology: River Terrace Deposits (Undifferentiated) Commodity: Sand and Gravel Positional Accuracy: Located by supplier to within 10m	A12SW (W)	652	4	471964 107213
41	**BGS Recorded Mineral Sites** Site Name: Havant Park Gravel Pit Location: , Havant, Hampshire Source: British Geological Survey, National Geoscience Information Service Reference: 163108 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Quaternary Geology: River Terrace Deposits (Undifferentiated) Commodity: Sand and Gravel Positional Accuracy: Located by supplier to within 10m	A7SE (SW)	770	4	472198 106610
42	**BGS Recorded Mineral Sites** Site Name: Denvilles Brick Field Location: , Denvilles, Havant, Hampshire Source: British Geological Survey, National Geoscience Information Service Reference: 163107 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Quaternary Geology: River Terrace Deposits (Undifferentiated) Commodity: Common Clay and Shale Positional Accuracy: Located by supplier to within 10m	A9SW (SE)	885	4	473364 106637
43	**BGS Recorded Mineral Sites** Site Name: South Leigh Gravel Pit Location: , Emsworth, Hampshire Source: British Geological Survey, National Geoscience Information Service Reference: 163102 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Quaternary Geology: Head Commodity: Sand and Gravel Positional Accuracy: Located by supplier to within 10m	A19NE (NE)	971	4	473504 108040
	BGS Measured Urban Soil Chemistry No data available				
	BGS Urban Soil Chemistry Averages No data available				
	Coal Mining Affected Areas In an area that might not be affected by coal mining				
	Non Coal Mining Areas of Great Britain No Hazard				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NW (W)	0	4	472696 107327
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	60	4	472588 107405
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NW (W)	0	4	472696 107327
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NW (W)	0	4	472696 107327
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NW (W)	0	4	472696 107327
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NW (W)	0	4	472696 107327
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	60	4	472588 107405
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NW (W)	0	4	472696 107327
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (W)	148	4	472468 107238
	Radon Potential - Radon Protection Measures Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A13NW (W)	0	4	472696 107327
	Radon Potential - Radon Affected Areas Affected Area: The property is in an intermediate probability radon area, as between 1 and 3% of homes are above the action level Source: British Geological Survey, National Geoscience Information Service	A13NW (W)	0	4	472696 107327

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
44	**Contemporary Trade Directory Entries** Name: Howdens Joinery Location: 7-8, Hayward Business Centre, New Lane, Havant, Hampshire, PO9 2NL Classification: Builders' Merchants **Status: Active** Positional Accuracy: Automatically positioned to the address	A13SW (SW)	5	-	472622 107288
45	**Contemporary Trade Directory Entries** Name: Sytec Ltd Location: 28, The Oakwood Centre, Downley Road, Havant, Hampshire, PO9 2NP Classification: Electronic Engineers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NE (NE)	14	-	472777 107409
45	**Contemporary Trade Directory Entries** Name: S G Design & Print Location: 22, The Oakwood Centre, Downley Road, Havant, Hampshire, PO9 2NP Classification: Printers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NE (NE)	22	-	472780 107416
45	**Contemporary Trade Directory Entries** Name: Oakwood Cold Transport Ltd Location: 7, The Oakwood Centre, Downley Road, Havant, Hampshire, PO9 2NP Classification: Distribution Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NE (N)	39	-	472710 107467
45	**Contemporary Trade Directory Entries** Name: Macdonald Engineering Location: 10, The Oakwood Centre, Downley Road, Havant, Hampshire, PO9 2NP Classification: Precision Engineers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NE (N)	39	-	472735 107457
45	**Contemporary Trade Directory Entries** Name: Fluid Power Components Ltd Location: 13-14, The Oakwood Centre, Downley Road, Havant, Hampshire, PO9 2NP Classification: Hydraulic Equipment & Accessories - Sales & Service **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NE (NE)	40	-	472755 107450
45	**Contemporary Trade Directory Entries** Name: Uni-Guard Fire Protection Ltd Location: 12, The Oakwood Centre, Downley Road, Havant, Hampshire, PO9 2NP Classification: Firefighting Equipment **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NE (NE)	40	-	472748 107452
45	**Contemporary Trade Directory Entries** Name: Williamsons Industrial Supplies Ltd Location: 19, The Oakwood Centre, Downley Road, Havant, Hampshire, PO9 2NP Classification: Abrasive Products - Manufacturers & Distributors **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NE (NE)	40	-	472767 107445
45	**Contemporary Trade Directory Entries** Name: Hampshire Heating Components Location: 12, The Oakwood Centre, Downley Road, Havant, Hampshire, PO9 2NP Classification: Boilers - Servicing, Replacements & Repairs **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NE (NE)	40	-	472748 107452
45	**Contemporary Trade Directory Entries** Name: Wavemar Electronics Ltd Location: 21, The Oakwood Centre, Downley Road, Havant, Hampshire, PO9 2NP Classification: Electronic Equipment - Manufacturers & Assemblers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NE (NE)	42	-	472787 107435
46	**Contemporary Trade Directory Entries** Name: Snell Ltd Location: 1, Downley Road, Havant, Hampshire, PO9 2NJ Classification: Electronic Equipment - Manufacturers & Assemblers **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NE (N)	39	-	472698 107472
46	**Contemporary Trade Directory Entries** Name: Closewood Air-Conditioning Location: Unit 1 Downley Rd, Havant, Hampshire, PO9 2NJ Classification: Air Conditioning & Refrigeration Contractors **Status: Active** Positional Accuracy: Manually positioned to the road within the address or location	A13NW (N)	57	-	472692 107490

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
47	**Contemporary Trade Directory Entries** Name: Ahmarra Ltd Location: Zullard House, 4, Downley Road, Havant, Hampshire, PO9 2NJ Classification: Joinery Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NE (N)	77	-	472727 107501
47	**Contemporary Trade Directory Entries** Name: Tqm Chemicals Location: Zullard House, 4, Downley Road, Havant, Hampshire, PO9 2NJ Classification: Chemicals & Allied Products **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NE (N)	77	-	472727 107501
47	**Contemporary Trade Directory Entries** Name: Webb Location: Zullard House, 4, Downley Road, Havant, Hampshire, PO9 2NJ Classification: Joinery Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NE (N)	77	-	472727 107501
47	**Contemporary Trade Directory Entries** Name: Martin Parr Location: Unit 5, Downley Road, Havant, Hampshire, PO9 2NJ Classification: Packaging & Wrapping Equipment & Supplies **Status: Inactive** Positional Accuracy: Automatically positioned in the proximity of the address	A13NE (N)	95	-	472720 107524
47	**Contemporary Trade Directory Entries** Name: Havant Sheet Metal Co Ltd Location: 6, Downley Road, Havant, Hampshire, PO9 2NN Classification: Sheet Metal Work **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NE (N)	97	-	472754 107512
47	**Contemporary Trade Directory Entries** Name: Santric Ltd Location: 6, Downley Road, Havant, Hampshire, PO9 2YD Classification: Hygiene & Sanitary Appliance Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NE (N)	97	-	472754 107512
47	**Contemporary Trade Directory Entries** Name: A & B Precision Engineeering Location: Downley Point,Downley Rd, Havant, Hampshire, PO9 2NA Classification: Tool Design, Manufacturers & Makers **Status: Inactive** Positional Accuracy: Manually positioned within the geographical locality	A13NE (N)	124	-	472776 107532
47	**Contemporary Trade Directory Entries** Name: Monolution Ltd Location: Unit 3, Downley Point, Downley Road, Havant, Hampshire, PO9 2NA Classification: Precision Engineers **Status: Active** Positional Accuracy: Manually positioned to the address or location	A13NE (N)	145	-	472769 107557
48	**Contemporary Trade Directory Entries** Name: Active Location: 80, Nutwick Road, Havant, Hampshire, PO9 2UL Classification: Pest & Vermin Control **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NE (E)	79	-	472853 107362
49	**Contemporary Trade Directory Entries** Name: Senator Press Location: 4, Hayward Business Centre, New Lane, Havant, Hampshire, PO9 2NL Classification: Printers **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NW (W)	81	-	472569 107363
49	**Contemporary Trade Directory Entries** Name: Spur Electron Ltd Location: Hayward House, 2a-2b, Hayward Business Centre, New Lane, Havant, Hampshire, PO9 2NL Classification: Manufacturers **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NW (W)	117	-	472537 107380

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
50	**Contemporary Trade Directory Entries** Name: Big Fish Ltd Location: 10, Hayward Business Centre, New Lane, Havant, Hampshire, PO9 2NL Classification: Printers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13SW (W)	81	-	472548 107308
50	**Contemporary Trade Directory Entries** Name: Long & Marshall Ltd Location: 1, Hayward Business Centre, New Lane, Havant, Hampshire, PO9 2NL Classification: Precision Engineers **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NW (W)	127	-	472509 107334
50	**Contemporary Trade Directory Entries** Name: Westover Flight Technology Ltd Location: Hayward Ho,Hayward Business Centre,New La, Havant, Hampshire, PO9 2NL Classification: Printed Circuit Services **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A13NW (W)	135	-	472516 107374
51	**Contemporary Trade Directory Entries** Name: Formaplex Location: 1, Downley Road, Havant, Hampshire, PO9 2NJ Classification: Machine Tools - Manufacturers & Distributors **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	90	-	472624 107496
51	**Contemporary Trade Directory Entries** Name: Butterick Co Ltd Location: 38, New Lane, HAVANT, Hampshire, PO9 2ND Classification: Pattern Makers - Industrial **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	90	-	472624 107496
51	**Contemporary Trade Directory Entries** Name: Pencol Location: Buttricks Building,Unit H New Lane, Havant, Hampshire, PO9 2ND Classification: Electrical Engineers **Status: Active** Positional Accuracy: Manually positioned within the geographical locality	A13NW (NW)	90	-	472624 107496
51	**Contemporary Trade Directory Entries** Name: Diamond Leisure Location: Unit L,Buttericks Building,38 New La, Havant, Hampshire, PO9 2ND Classification: Catering Equipment **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A13NW (NW)	90	-	472624 107496
51	**Contemporary Trade Directory Entries** Name: Park Life Location: 38, New Lane, Havant, Hampshire, PO9 2ND Classification: Cycle Accessories, Manufacturers & Wholesalers **Status: Active** Positional Accuracy: Manually positioned to the address or location	A13NW (NW)	90	-	472624 107496
51	**Contemporary Trade Directory Entries** Name: Car Call (Uk) Ltd Location: 1, Downley Road, Havant, Hampshire, PO9 2NJ Classification: Car Body Repairs **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	90	-	472624 107496
52	**Contemporary Trade Directory Entries** Name: Westover Metal Spinning Ltd Location: 8 Downley Point,Downley Rd, Havant, Hampshire, PO9 2NA Classification: Metal Spinners **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A13NE (NE)	138	-	472822 107526
52	**Contemporary Trade Directory Entries** Name: Window Sash Co Location: Unit 6, Downley Point, Downley Road, Havant, Hampshire, PO9 2NA Classification: Windows - Sash **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A13NE (NE)	146	-	472798 107547
53	**Contemporary Trade Directory Entries** Name: Aggregates & Soil Direct Location: New La, Havant, Hampshire, PO9 2JH Classification: Sand, Gravel & Other Aggregates **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A13NW (NW)	145	-	472577 107530

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
54	**Contemporary Trade Directory Entries** Name: Pfizer Location: 32, New Lane, Havant, Hampshire, PO9 2NG Classification: Pharmaceutical Manufacturers & Distributors **Status: Active** Positional Accuracy: Automatically positioned to the address	A13SW (W)	151	-	472466 107236
55	**Contemporary Trade Directory Entries** Name: Happy Days General Cleaning Co Location: 80, Rowan Road, Havant, Hampshire, PO9 2UU Classification: Commercial Cleaning Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NE (E)	188	-	472965 107360
56	**Contemporary Trade Directory Entries** Name: Dunham-Bush Ltd Location: 8, Downley Road, Havant, Hampshire, PO9 2JD Classification: Heating Equipment - Sales & Service **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NE (N)	214	-	472809 107616
57	**Contemporary Trade Directory Entries** Name: Cool Breeze Services Ltd Location: Unit 8,Downley Point,Downley Rd, Havant, Hampshire, PO9 2NA Classification: Air Conditioning & Refrigeration Contractors **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A13NE (N)	217	-	472752 107641
58	**Contemporary Trade Directory Entries** Name: L Kattenhorn & Partners Ltd Location: New Lane, Havant, Hampshire, PO9 2NE Classification: Asphalt & Coated Macadam Laying Contractors **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SE (N)	263	-	472708 107695
58	**Contemporary Trade Directory Entries** Name: Hfms Ltd Location: 7, Downley Road, Havant, Hampshire, PO9 2NJ Classification: Mechanical Engineers **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SE (N)	277	-	472749 107704
58	**Contemporary Trade Directory Entries** Name: Rapid Response Solutions Ltd Location: 44a, New Lane, Havant, Hampshire, PO9 2NF Classification: Machinery - Industrial & Commercial **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SE (N)	286	-	472711 107719
59	**Contemporary Trade Directory Entries** Name: Sumika Polymer Compounds (Uk) Ltd Location: 28, New Lane, Havant, Hampshire, PO9 2NQ Classification: Plastics - Raw Materials **Status: Active** Positional Accuracy: Automatically positioned to the address	A13SW (SW)	280	-	472407 107069
60	**Contemporary Trade Directory Entries** Name: Domestic Heaven Location: Horsebridge Rd, Havant, Hampshire, PO9 2LH Classification: Cleaning Services - Domestic **Status: Inactive** Positional Accuracy: Manually positioned within the geographical locality	A13NW (NW)	307	-	472422 107599
61	**Contemporary Trade Directory Entries** Name: Portsmouth Surgical Equipment Ltd Location: 44, New Lane, Havant, Hampshire, PO9 2NF Classification: Medical Equipment Manufacturers **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SE (N)	321	-	472710 107753
62	**Contemporary Trade Directory Entries** Name: B Justice Location: Unit 4,10 Downley Rd, Havant, Hampshire, PO9 2NJ Classification: French Polishing **Status: Active** Positional Accuracy: Manually positioned to the address or location	A18SE (N)	336	-	472843 107733
63	**Contemporary Trade Directory Entries** Name: Portbury Logistics Location: 1-3, Kenwood Business Park, New Lane, Havant, Hampshire, PO9 2NH Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8NW (SW)	375	-	472470 106908

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
64	**Contemporary Trade Directory Entries** Name: P & I Generators Ltd Location: Unit 8, Dakota Business Park, 14, Downley Road, Havant, Hampshire, PO9 2NJ Classification: Generators - Sales & Service **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SE (NE)	394	-	472910 107769
64	**Contemporary Trade Directory Entries** Name: Formaplex Location: Unit 1, Dakota Business Park, 14, Downley Road, Havant, Hampshire, PO9 2NJ Classification: Precision Engineers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SE (N)	424	-	472889 107809
64	**Contemporary Trade Directory Entries** Name: Beacon Design & Engineering Ltd Location: Unit 11, Dakota Business Park, 14, Downley Road, Havant, Hampshire, PO9 2NJ Classification: Refrigeration Equipment Manufacturers & Distributors **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SE (NE)	433	-	472918 107807
65	**Contemporary Trade Directory Entries** Name: Marsh Plant Hire Ltd Location: 67, New Lane, Havant, Hampshire, PO9 2LZ Classification: Crane Hire, Sales & Service **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SW (N)	403	-	472628 107831
66	**Contemporary Trade Directory Entries** Name: Barry'S Carpet Cleaning Services Location: Flat 47, Chichester House, Lockerley Road, Havant, Hampshire, PO9 2LD Classification: Carpet, Curtain & Upholstery Cleaners **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12NE (W)	417	-	472235 107432
67	**Contemporary Trade Directory Entries** Name: Matkins Location: 42, Lockerley Road, Havant, Hampshire, PO9 2HE Classification: Washing Machines - Servicing & Repairs **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12NE (W)	434	-	472191 107347
68	**Contemporary Trade Directory Entries** Name: Outsource Electronics Ltd Location: Unit 600, Nest Business Park, Martin Road, Havant, Hampshire, PO9 5TL Classification: Electronic Equipment - Manufacturers & Assemblers **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SW (NW)	440	-	472488 107824
69	**Contemporary Trade Directory Entries** Name: Allport Packaging Ltd Location: 4, Kenwood Business Park, New Lane, Havant, Hampshire, PO9 2NT Classification: Packaging & Wrapping Equipment & Supplies **Status: Active** Positional Accuracy: Automatically positioned to the address	A8NW (SW)	444	-	472431 106852
70	**Contemporary Trade Directory Entries** Name: Eaton Location: 46, New Lane, Havant, Hampshire, PO9 2NB Classification: Hydraulic Equipment & Accessories - Sales & Service **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SE (N)	460	-	472782 107884
71	**Contemporary Trade Directory Entries** Name: Park Life Location: New La, Havant, Hampshire, PO9 2ND Classification: Cycle Accessories, Manufacturers & Wholesalers **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A18SW (N)	471	-	472696 107904
72	**Contemporary Trade Directory Entries** Name: Mydreamclean Location: 18, Juventu Close, Havant, Hampshire, PO9 2HW Classification: Cleaning Services - Domestic **Status: Active** Positional Accuracy: Automatically positioned to the address	A12NE (W)	513	-	472154 107487

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
73	**Contemporary Trade Directory Entries** Name: Fischer Connectors Location: 200,250 Nest Business Pk,Martin Rd, Havant, Hampshire, PO9 5TL Classification: Electronic Component Manufacturers & Distributors **Status: Active** Positional Accuracy: Manually positioned to the address or location	A18SW (N)	520	-	472508 107920
74	**Contemporary Trade Directory Entries** Name: Colt International Ltd Location: New Lane, Havant, Hampshire, PO9 2LY Classification: Ventilators & Ventilation Systems **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SW (N)	537	-	472670 107970
74	**Contemporary Trade Directory Entries** Name: Colt Service Ltd Location: New Lane, Havant, Hampshire, PO9 2LY Classification: Ventilators & Ventilation Systems **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SW (N)	537	-	472670 107970
74	**Contemporary Trade Directory Entries** Name: Colt International Location: New Lane, Havant, Hampshire, PO9 2LY Classification: Ventilators & Ventilation Systems **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SW (N)	537	-	472670 107970
74	**Contemporary Trade Directory Entries** Name: Colt International Ltd Location: New Lane, Havant, Hampshire, PO9 2LY Classification: Manufacturers **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SW (N)	537	-	472670 107970
75	**Contemporary Trade Directory Entries** Name: Itk Services Location: 6, Fern Drive, Havant, Hampshire, PO9 2YH Classification: T-Shirts **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A7NE (SW)	554	-	472155 106948
75	**Contemporary Trade Directory Entries** Name: Itk Services Location: 6, Fern Drive, Havant, Hampshire, PO9 2YH Classification: T-Shirts **Status: Active** Positional Accuracy: Automatically positioned to the address	A7NE (SW)	554	-	472155 106948
76	**Contemporary Trade Directory Entries** Name: Scottish Hydro Electric Gas Location: Bartons Rd, Havant, Hampshire, PO9 5JB Classification: Electricity Companies **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A18SE (NE)	573	-	472959 107942
76	**Contemporary Trade Directory Entries** Name: Southern Electric Location: Bartons Rd, Havant, Hampshire, PO9 5JB Classification: Electricity Companies **Status: Active** Positional Accuracy: Manually positioned to the road within the address or location	A18SE (NE)	573	-	472959 107942
77	**Contemporary Trade Directory Entries** Name: 1st Aat Location: 15, Abbotstone Avenue, Havant, Hampshire, PO9 2HL Classification: Domestic Appliances - Servicing, Repairs & Parts **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12NE (W)	592	-	472091 107550
78	**Contemporary Trade Directory Entries** Name: Sperry Rail Ltd Location: 100 Nest Business Pk,Martin Rd, Havant, Hampshire, PO9 5TL Classification: Ultrasonic Equipment Manufacturers **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A18SW (N)	595	-	472493 107995
79	**Contemporary Trade Directory Entries** Name: Havant Mower Services Location: Bartons Rd, Havant, Hampshire, PO9 5NA Classification: Lawnmowers & Garden Machinery - Sales & Service **Status: Active** Positional Accuracy: Manually positioned to the road within the address or location	A19SW (NE)	693	-	473166 107968

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
80	**Contemporary Trade Directory Entries** Name: Autotek Mobile Services Location: 3, Bedhampton Way, Havant, Hampshire, PO9 2DJ Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12NW (W)	703	-	471916 107338
81	**Contemporary Trade Directory Entries** Name: Aquila Location: Flat 4, Helmsley House, Bartons Road, Havant, Hampshire, PO9 5NB Classification: Pest & Vermin Control **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A19SW (NE)	729	-	473256 107945
81	**Contemporary Trade Directory Entries** Name: Aquila Location: Flat 4, Helmsley House, Bartons Road, Havant, Hampshire, PO9 5NB Classification: Pest & Vermin Control **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A19SW (NE)	729	-	473256 107945
82	**Contemporary Trade Directory Entries** Name: T & L'S Clean Team Location: 33, Sharps Road, Havant, Hampshire, PO9 5QJ Classification: Cleaning Services - Domestic **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NE (N)	747	-	472796 108173
82	**Contemporary Trade Directory Entries** Name: Domestic Cleaning Location: 33, Sharps Road, Havant, Hampshire, PO9 5QJ Classification: Cleaning Services - Domestic **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NE (N)	747	-	472796 108173
83	**Contemporary Trade Directory Entries** Name: West Leigh Service Station Location: Petersfield Road, Havant, Hampshire, PO9 5HA Classification: Petrol Filling Stations **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	784	-	472079 107933
83	**Contemporary Trade Directory Entries** Name: Motorwork Location: Petersfield Rd, Havant, Hampshire, PO9 5HA Classification: Mot Testing Centres **Status: Active** Positional Accuracy: Manually positioned to the road within the address or location	A17SE (NW)	809	-	472064 107954
84	**Contemporary Trade Directory Entries** Name: Scottish Hydro Electric Plc Location: Bartons Rd, Havant, Hampshire, PO9 5JB Classification: Electrical Goods Sales, Manufacturers & Wholesalers **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A17NE (NW)	798	-	472254 108102
85	**Contemporary Trade Directory Entries** Name: A1 Recovery Ltd Location: 8, New Lane, Havant, Hampshire, PO9 2JH Classification: Car Breakdown & Recovery Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A7SE (SW)	813	-	472114 106616
85	**Contemporary Trade Directory Entries** Name: A1 Garage Services Location: 8, New Lane, Havant, Hampshire, PO9 2JH Classification: Breakdown and Recovery **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A7SE (SW)	813	-	472114 106616
85	**Contemporary Trade Directory Entries** Name: Wessex Building Supplies Location: 8, New Lane, Havant, Hampshire, PO9 2JH Classification: Builders' Merchants **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A7SE (SW)	834	-	472103 106598
86	**Contemporary Trade Directory Entries** Name: Stockheath Pest Control Location: 15, Stockheath Way, Havant, Hampshire, PO9 2DR Classification: Pest & Vermin Control **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12NW (W)	823	-	471824 107485

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
86	**Contemporary Trade Directory Entries** Name: Ornemental-Plus Location: 9, Stockheath Way, Havant, Hampshire, PO9 2DR Classification: Cleaning Services - Domestic **Status: Active** Positional Accuracy: Automatically positioned to the address	A12NW (W)	835	-	471808 107473
87	**Contemporary Trade Directory Entries** Name: Indust Klen Location: 11, Woodlands Way, Havant, Hampshire, PO9 2EA Classification: Carpet, Curtain & Upholstery Cleaners **Status: Active** Positional Accuracy: Automatically positioned to the address	A12NW (W)	896	-	471782 107589
88	**Contemporary Trade Directory Entries** Name: Prospect Machinery Moving Location: 42, Oakshott Drive, Havant, Hampshire, PO9 5SN Classification: Machinery - Industrial & Commercial **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A23SW (N)	941	-	472507 108356
89	**Contemporary Trade Directory Entries** Name: Tinkers Location: 64, Billy Lawn Avenue, Havant, Hampshire, PO9 5HJ Classification: Scrap Metal Merchants **Status: Active** Positional Accuracy: Automatically positioned to the address	A17NW (NW)	948	-	472005 108094
90	**Contemporary Trade Directory Entries** Name: Stephen Anthony Design Ltd Location: Unit 4,Southleigh Farm,Southleigh Rd, Havant, Hampshire, PO9 2NX Classification: Cabinet Makers **Status: Active** Positional Accuracy: Manually positioned to the address or location	A14SE (E)	949	-	473700 107162
91	**Contemporary Trade Directory Entries** Name: Pub & Restaurant Supplies Location: Waterloo Rd, Havant, Hampshire, PO9 1BH Classification: Janitorial Equipment - Servicing & Repairs **Status: Inactive** Positional Accuracy: Manually positioned within the geographical locality	A7SW (SW)	961	-	471982 106534
91	**Contemporary Trade Directory Entries** Name: The Starjammer Group Location: 2, Steyning Terrace, Waterloo Road, Havant, Hampshire, PO9 1BJ Classification: Engineers - General **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A7SW (SW)	970	-	471955 106547
92	**Contemporary Trade Directory Entries** Name: B S Services Location: 5, Sherfield Avenue, Havant, Hampshire, PO9 5HS Classification: Washing Machines - Servicing & Repairs **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17NE (NW)	978	-	472092 108208
93	**Fuel Station Entries** Name: Westleigh Service Station Location: Petersfield Road, HAVANT, Hampshire, PO9 5HA Brand: Unbranded Premises Type: Not Applicable **Status: Obsolete** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	784	-	472079 107933

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
94	**Nitrate Vulnerable Zones** Name: Not Supplied Description: Eutrophic Water Source: Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	A13NW (W)	0	9	472696 107327
95	**Nitrate Vulnerable Zones** Name: Not Supplied Description: Surface Water Source: Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	A13NE (E)	220	9	473000 107341

Agency & Hydrological	Version	Update Cycle
Contaminated Land Register Entries and Notices		
East Hampshire District Council - Environmental Health Department	April 2013	Annual Rolling Update
Havant Borough Council - Environmental Health Department	April 2013	Annual Rolling Update
Chichester District Council - Environmental Health Department	July 2013	Annual Rolling Update
Portsmouth City Council - Health and Trading Standards	October 2014	Annual Rolling Update
Winchester City Council - Environmental Health Department	September 2014	Annual Rolling Update
Discharge Consents		
Environment Agency - Southern Region	November 2014	Quarterly
Enforcement and Prohibition Notices		
Environment Agency - Southern Region	March 2013	As notified
Integrated Pollution Controls		
Environment Agency - Southern Region	October 2008	Not Applicable
Integrated Pollution Prevention And Control		
Environment Agency - South East Region - Solent & South Downs Area	November 2014	Quarterly
Environment Agency - Southern Region	November 2014	Quarterly
Local Authority Integrated Pollution Prevention And Control		
Winchester City Council - Environmental Health Department	April 2013	Annual Rolling Update
Portsmouth City Council - Environmental Health Department	August 2014	Annual Rolling Update
East Hampshire District Council - Environmental Health Department	March 2013	Annual Rolling Update
Havant Borough Council - Environmental Health Department	October 2012	Annual Rolling Update
Chichester District Council - Environmental Health Department	October 2014	Annual Rolling Update
Local Authority Pollution Prevention and Controls		
Winchester City Council - Environmental Health Department	April 2013	Annual Rolling Update
Portsmouth City Council - Environmental Health Department	August 2014	Annual Rolling Update
East Hampshire District Council - Environmental Health Department	March 2013	Annual Rolling Update
Havant Borough Council - Environmental Health Department	October 2012	Annual Rolling Update
Chichester District Council - Environmental Health Department	October 2014	Annual Rolling Update
Local Authority Pollution Prevention and Control Enforcements		
Winchester City Council - Environmental Health Department	April 2013	Annual Rolling Update
Portsmouth City Council - Environmental Health Department	August 2014	Annual Rolling Update
East Hampshire District Council - Environmental Health Department	March 2013	Annual Rolling Update
Havant Borough Council - Environmental Health Department	October 2012	Annual Rolling Update
Chichester District Council - Environmental Health Department	October 2014	Annual Rolling Update
Nearest Surface Water Feature		
Ordnance Survey	July 2012	Quarterly
Pollution Incidents to Controlled Waters		
Environment Agency - Southern Region	December 1999	Not Applicable
Prosecutions Relating to Authorised Processes		
Environment Agency - Southern Region	March 2013	As notified
Prosecutions Relating to Controlled Waters		
Environment Agency - Southern Region	March 2013	As notified
Registered Radioactive Substances		
Environment Agency - Southern Region	November 2014	Quarterly
River Quality		
Environment Agency - Head Office	November 2001	Not Applicable
River Quality Biology Sampling Points		
Environment Agency - Head Office	July 2012	Annually
River Quality Chemistry Sampling Points		
Environment Agency - Head Office	July 2012	Annually
Substantiated Pollution Incident Register		
Environment Agency - Southern Region - Hampshire and Isle of Wight Area Office	November 2014	Quarterly
Environment Agency - Southern Region - Solent and South Downs	November 2014	Quarterly
Environment Agency - Southern Region - Sussex Area	November 2014	Quarterly

Agency & Hydrological	Version	Update Cycle
Water Abstractions Environment Agency - Southern Region	October 2014	Quarterly
Water Industry Act Referrals Environment Agency - Southern Region	November 2014	Quarterly
Groundwater Vulnerability Environment Agency - Head Office	January 2011	Not Applicable
Drift Deposits Environment Agency - Head Office	January 1999	Not Applicable
Bedrock Aquifer Designations British Geological Survey - National Geoscience Information Service	October 2012	Annually
Superficial Aquifer Designations British Geological Survey - National Geoscience Information Service	October 2012	Annually
Source Protection Zones Environment Agency - Head Office	August 2014	Quarterly
Extreme Flooding from Rivers or Sea without Defences Environment Agency - Head Office	August 2014	Quarterly
Flooding from Rivers or Sea without Defences Environment Agency - Head Office	August 2014	Quarterly
Areas Benefiting from Flood Defences Environment Agency - Head Office	August 2014	Quarterly
Flood Water Storage Areas Environment Agency - Head Office	August 2014	Quarterly
Flood Defences Environment Agency - Head Office	August 2014	Quarterly
Detailed River Network Lines Environment Agency - Head Office	March 2012	Annually
Detailed River Network Offline Drainage Environment Agency - Head Office	March 2012	Annually

Waste	Version	Update Cycle
BGS Recorded Landfill Sites		
British Geological Survey - National Geoscience Information Service	June 1996	Not Applicable
Historical Landfill Sites		
Environment Agency - Southern Region - Hampshire and Isle of Wight Area Office	August 2014	Quarterly
Environment Agency - Southern Region - Solent and South Downs	August 2014	Quarterly
Environment Agency - Southern Region - Sussex Area	August 2014	Quarterly
Integrated Pollution Control Registered Waste Sites		
Environment Agency - Southern Region	October 2008	Not Applicable
Licensed Waste Management Facilities (Landfill Boundaries)		
Environment Agency - Southern Region - Hampshire and Isle of Wight Area Office	August 2014	Quarterly
Environment Agency - Southern Region - Solent and South Downs	August 2014	Quarterly
Environment Agency - Southern Region - Sussex Area	August 2014	Quarterly
Licensed Waste Management Facilities (Locations)		
Environment Agency - South East Region - Solent & South Downs Area	November 2014	Quarterly
Environment Agency - Southern Region - Hampshire and Isle of Wight Area Office	November 2014	Quarterly
Environment Agency - Southern Region - Solent and South Downs	November 2014	Quarterly
Environment Agency - Southern Region - Sussex Area	November 2014	Quarterly
Local Authority Landfill Coverage		
Chichester District Council - Environmental Health Department	May 2000	Not Applicable
East Hampshire District Council	May 2000	Not Applicable
Hampshire County Council - Minerals and Waste Planning	May 2000	Not Applicable
Havant Borough Council - Environmental Health Department	May 2000	Not Applicable
Portsmouth City Council - Environmental Health Department	May 2000	Not Applicable
West Sussex County Council - Environment & Development	May 2000	Not Applicable
Winchester City Council - Environmental Health Department	May 2000	Not Applicable
Local Authority Recorded Landfill Sites		
Chichester District Council - Environmental Health Department	May 2000	Not Applicable
East Hampshire District Council	May 2000	Not Applicable
Hampshire County Council - Minerals and Waste Planning	May 2000	Not Applicable
Havant Borough Council - Environmental Health Department	May 2000	Not Applicable
Portsmouth City Council - Environmental Health Department	May 2000	Not Applicable
West Sussex County Council - Environment & Development	May 2000	Not Applicable
Winchester City Council - Environmental Health Department	May 2000	Not Applicable
Registered Landfill Sites		
Environment Agency - Southern Region - Hampshire Area	March 2003	Not Applicable
Environment Agency - Southern Region - Sussex Area	March 2003	Not Applicable
Registered Waste Transfer Sites		
Environment Agency - Southern Region - Hampshire Area	March 2003	Not Applicable
Environment Agency - Southern Region - Sussex Area	March 2003	Not Applicable
Registered Waste Treatment or Disposal Sites		
Environment Agency - Southern Region - Hampshire Area	March 2003	Not Applicable
Environment Agency - Southern Region - Sussex Area	March 2003	Not Applicable

Hazardous Substances	Version	Update Cycle
Control of Major Accident Hazards Sites (COMAH)		
Health and Safety Executive	August 2014	Bi-Annually
Explosive Sites		
Health and Safety Executive	October 2014	Bi-Annually
Notification of Installations Handling Hazardous Substances (NIHHS)		
Health and Safety Executive	November 2000	Not Applicable
Planning Hazardous Substance Enforcements		
Havant Borough Council - Commercial Team	April 2013	Annual Rolling Update
Portsmouth City Council - Planning Office	August 2013	Annual Rolling Update
West Sussex County Council - Environment & Development	October 2006	Annual Rolling Update
Hampshire County Council - Minerals and Waste Planning	September 2013	Annual Rolling Update
Chichester District Council - Planning Department	September 2014	Annual Rolling Update
East Hampshire District Council	September 2014	Annual Rolling Update
Winchester City Council - Planning Department	September 2014	Annual Rolling Update
Planning Hazardous Substance Consents		
Havant Borough Council - Commercial Team	April 2013	Annual Rolling Update
Portsmouth City Council - Planning Office	August 2013	Annual Rolling Update
West Sussex County Council - Environment & Development	October 2006	Annual Rolling Update
Hampshire County Council - Minerals and Waste Planning	September 2013	Annual Rolling Update
Chichester District Council - Planning Department	September 2014	Annual Rolling Update
East Hampshire District Council	September 2014	Annual Rolling Update
Winchester City Council - Planning Department	September 2014	Annual Rolling Update

Geological	Version	Update Cycle
BGS 1:625,000 Solid Geology British Geological Survey - National Geoscience Information Service	August 1996	Not Applicable
BGS Estimated Soil Chemistry British Geological Survey - National Geoscience Information Service	January 2010	Annually
BGS Recorded Mineral Sites British Geological Survey - National Geoscience Information Service	October 2014	Bi-Annually
Brine Compensation Area Cheshire Brine Subsidence Compensation Board	August 2011	Not Applicable
Coal Mining Affected Areas The Coal Authority - Mining Report Service	December 2013	As notified
Mining Instability Ove Arup & Partners	October 2000	Not Applicable
Non Coal Mining Areas of Great Britain British Geological Survey - National Geoscience Information Service	July 2014	Not Applicable
Potential for Collapsible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2014	Annually
Potential for Compressible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2014	Annually
Potential for Ground Dissolution Stability Hazards British Geological Survey - National Geoscience Information Service	June 2014	Annually
Potential for Landslide Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2014	Annually
Potential for Running Sand Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2014	Annually
Potential for Shrinking or Swelling Clay Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2014	Annually
Radon Potential - Radon Affected Areas British Geological Survey - National Geoscience Information Service	July 2011	Annually
Radon Potential - Radon Protection Measures British Geological Survey - National Geoscience Information Service	July 2011	Annually
Industrial Land Use	**Version**	**Update Cycle**
Contemporary Trade Directory Entries Thomson Directories	August 2014	Quarterly
Fuel Station Entries Catalist Ltd - Experian	November 2014	Quarterly

Sensitive Land Use	Version	Update Cycle
Areas of Outstanding Natural Beauty Natural England	August 2014	Bi-Annually
Environmentally Sensitive Areas Natural England	August 2014	Annually
Forest Parks Forestry Commission	April 1997	Not Applicable
Local Nature Reserves Natural England	October 2014	Bi-Annually
Marine Nature Reserves Natural England	July 2013	Bi-Annually
National Nature Reserves Natural England	September 2014	Bi-Annually
National Parks Natural England	August 2014	Bi-Annually
Nitrate Sensitive Areas Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	February 2012	Not Applicable
Nitrate Vulnerable Zones Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	July 2014	Annually
Ramsar Sites Natural England	March 2014	Bi-Annually
Sites of Special Scientific Interest Natural England	September 2014	Bi-Annually
Special Areas of Conservation Natural England	March 2014	Bi-Annually
Special Protection Areas Natural England	September 2014	Bi-Annually

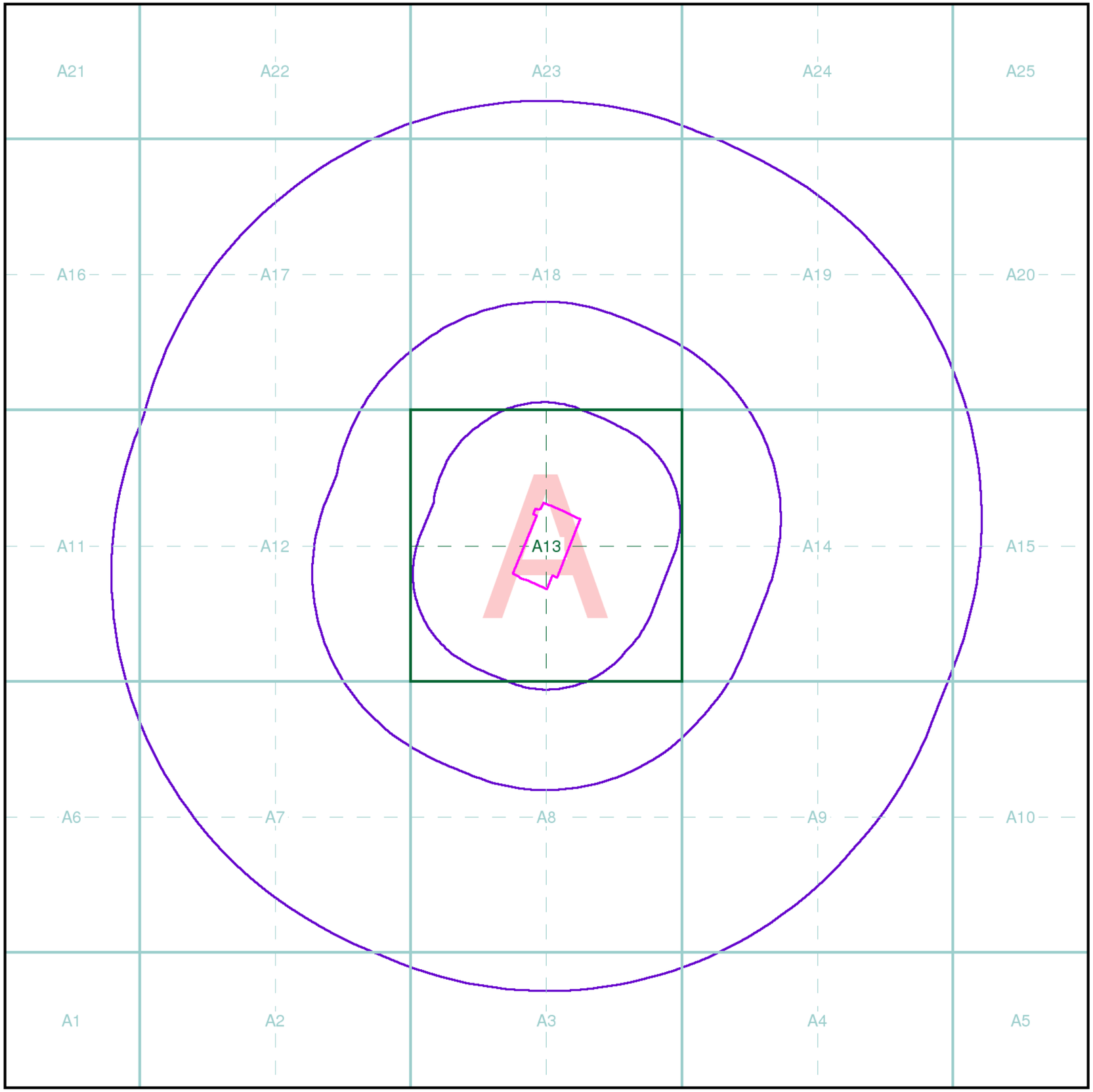
Data Suppliers

A selection of organisations who provide data within this report

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

Contact	Name and Address	Contact Details
2	**Environment Agency - National Customer Contact Centre (NCCC)** PO Box 544, Templeborough, Rotherham, S60 1BY	Telephone: 08708 506 506 Email: enquiries@environment-agency.gov.uk
3	**Havant Borough Council - Environmental Health Department** Public Service PLaza, Civic Centre Road, Havant, Hampshire, PO9 2AX	Telephone: 023 9244 6677 Email: env.services@havant.gov.uk Website: www.havant.gov.uk
4	**British Geological Survey - Enquiry Service** British Geological Survey, Kingsley Dunham Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG	Telephone: 0115 936 3143 Fax: 0115 936 3276 Email: enquiries@bgs.ac.uk Website: www.bgs.ac.uk
5	**Health and Safety Executive** 5S.2 Redgrave Court, Merton Road, Bootle, L20 7HS	Website: www.hse.gov.uk
6	**Havant Borough Council - Commercial Team** Civic Offices, Civic Centre Road, Havant, Hampshire, PO9 2AX	Telephone: 02392 474174 Fax: 02392 446659 Website: www.havant.gov.uk
7	**Landmark Information Group Limited** Imperium, Imperial Way, Reading, Berkshire, RG2 0TD	Telephone: 0844 844 9952 Fax: 0844 844 9951 Email: customerservices@landmark.co.uk Website: www.landmarkinfo.co.uk
8	**Natural England** Suite D, Unex House, Bourges Boulevard, Peterborough, Cambridgeshire, PE1 1NG	Telephone: 0845 600 3078 Email: enquiries@naturalengland.org.uk Website: www.naturalengland.org.uk
9	**Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)** Government Buildings, Otley Road, Lawnswood, Leeds, West Yorkshire, LS16 5QT	Telephone: 0113 2613333 Fax: 0113 230 0879
10	**Hampshire County Council - Minerals and Waste Planning** Room 130, Ashburton Court West, The Castle, Winchester, Hampshire, SO23 8UD	Telephone: 01962 841841 Fax: 01962 847055 Website: www.hants.gov.uk
11	**East Hampshire District Council** Penns Place, Petersfield, Hampshire, GU31 4EX	Telephone: 01730 266551 Fax: 01730 267366 Website: www.easthants.gov.uk
-	**Public Health England - Radon Survey, Centre for Radiation, Chemical and Environmental Hazards** Chilton, Didcot, Oxfordshire, OX11 0RQ	Telephone: 01235 822622 Fax: 01235 833891 Email: radon@phe.gov.uk Website: www.ukradon.org
-	**Landmark Information Group Limited** Imperium, Imperial Way, Reading, Berkshire, RG2 0TD	Telephone: 0844 844 9952 Fax: 0844 844 9951 Email: customerservices@landmarkinfo.co.uk Website: www.landmarkinfo.co.uk

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



Index Map

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

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

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

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

A selection of organisations who provide data within this report:

Ordnance Survey Licensed Partner

British Geological Survey, Natural Environment Research Council

Environment Agency

Natural England

Envirocheck reports are compiled from 136 different sources of data.

Client Details

Ms J Trevelyan, Delta Simons, 3 Henley Office Park, Doddington Road, Lincoln, LN6 3QR

Order Details

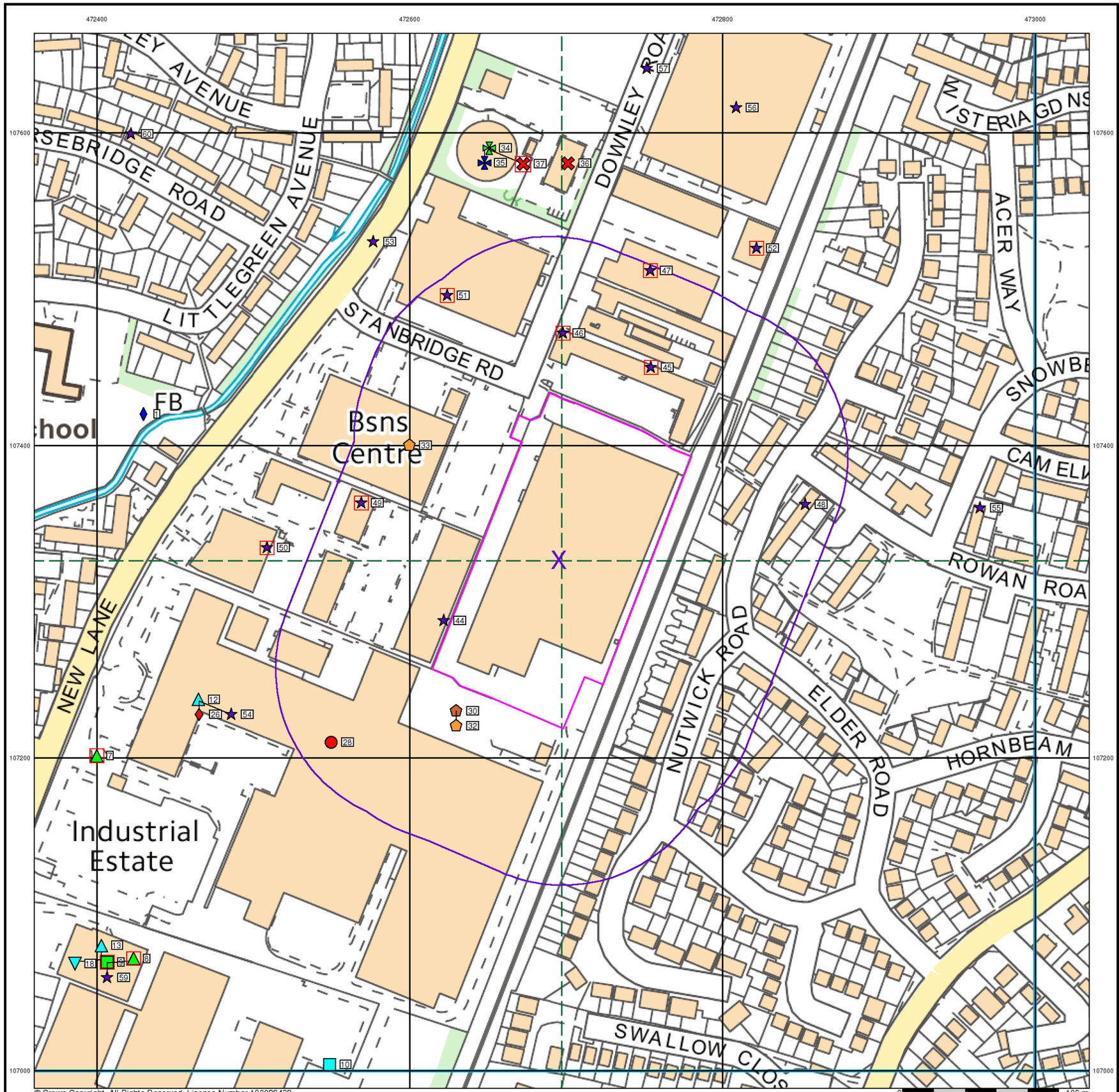
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Customer Ref:	13-0646.01
National Grid Reference:	472700, 107330
Site Area (Ha):	1.99
Search Buffer (m):	1000

Site Details

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General

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

Several of Type at Location

Agency and Hydrological

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

Geological

- BGS Recorded Mineral Site

Industrial Land Use

- Contemporary Trade Directory Entry
- Fuel Station Entry

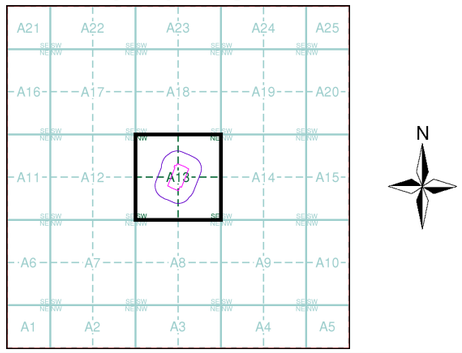
Waste

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

Hazardous Substances

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

Site Sensitivity Map - Segment A13



Order Details

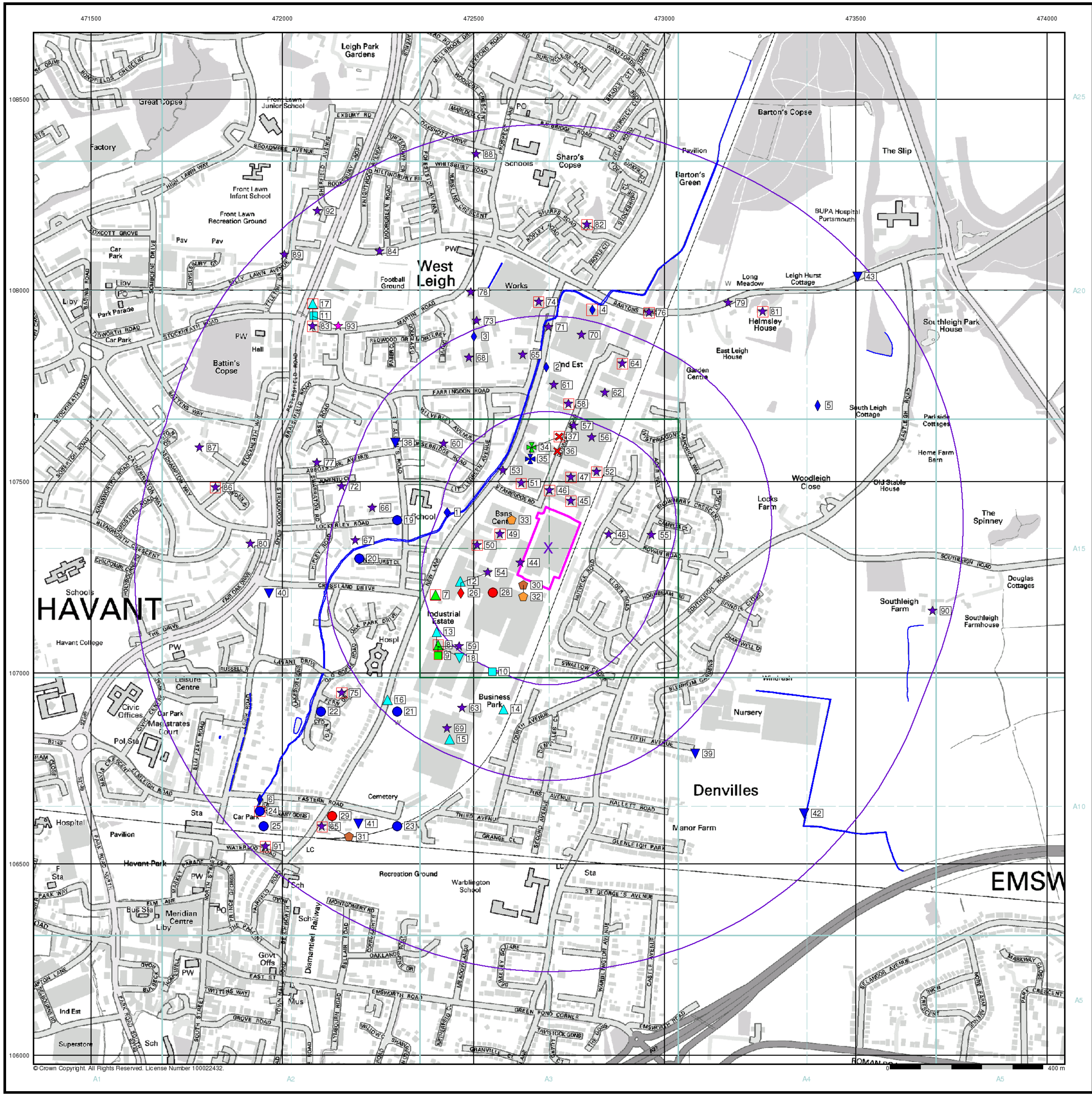
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National Grid Reference:	472700, 107330
Slice:	A
Site Area (Ha):	1.99

Site Details

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General

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

Agency and Hydrological

- Contaminated Land Register Entry or Notice (Location)
- Contaminated Land Register Entry or Notice
- Discharge Consent
- Enforcement or Prohibition Notice
- Integrated Pollution Control
- Integrated Pollution Prevention Control
- Local Authority Integrated Pollution Prevention and Control
- Local Authority Pollution Prevention and Control
- Local Authority Pollution Prevention and Control Enforcement
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- River Quality Sampling Point
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- Water Abstraction
- Water Industry Act Referral

Geological

- BGS Recorded Mineral Site

Industrial Land Use

- Contemporary Trade Directory Entry
- Fuel Station Entry

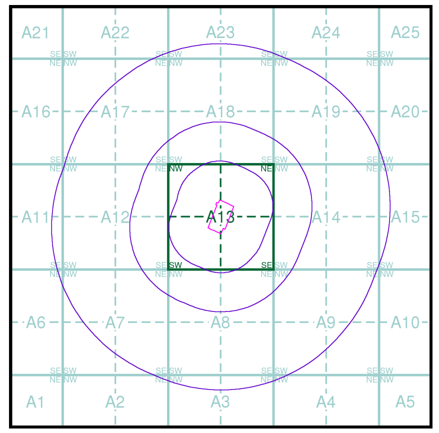
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- BGS Recorded Landfill Site (Location)
- BGS Recorded Landfill Site
- EA Historic Landfill (Buffered Point)
- EA Historic Landfill (Polygon)
- Integrated Pollution Control Registered Waste Site
- Licensed Waste Management Facility (Landfill Boundary)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

Hazardous Substances

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

Site Sensitivity Map - Slice A



N

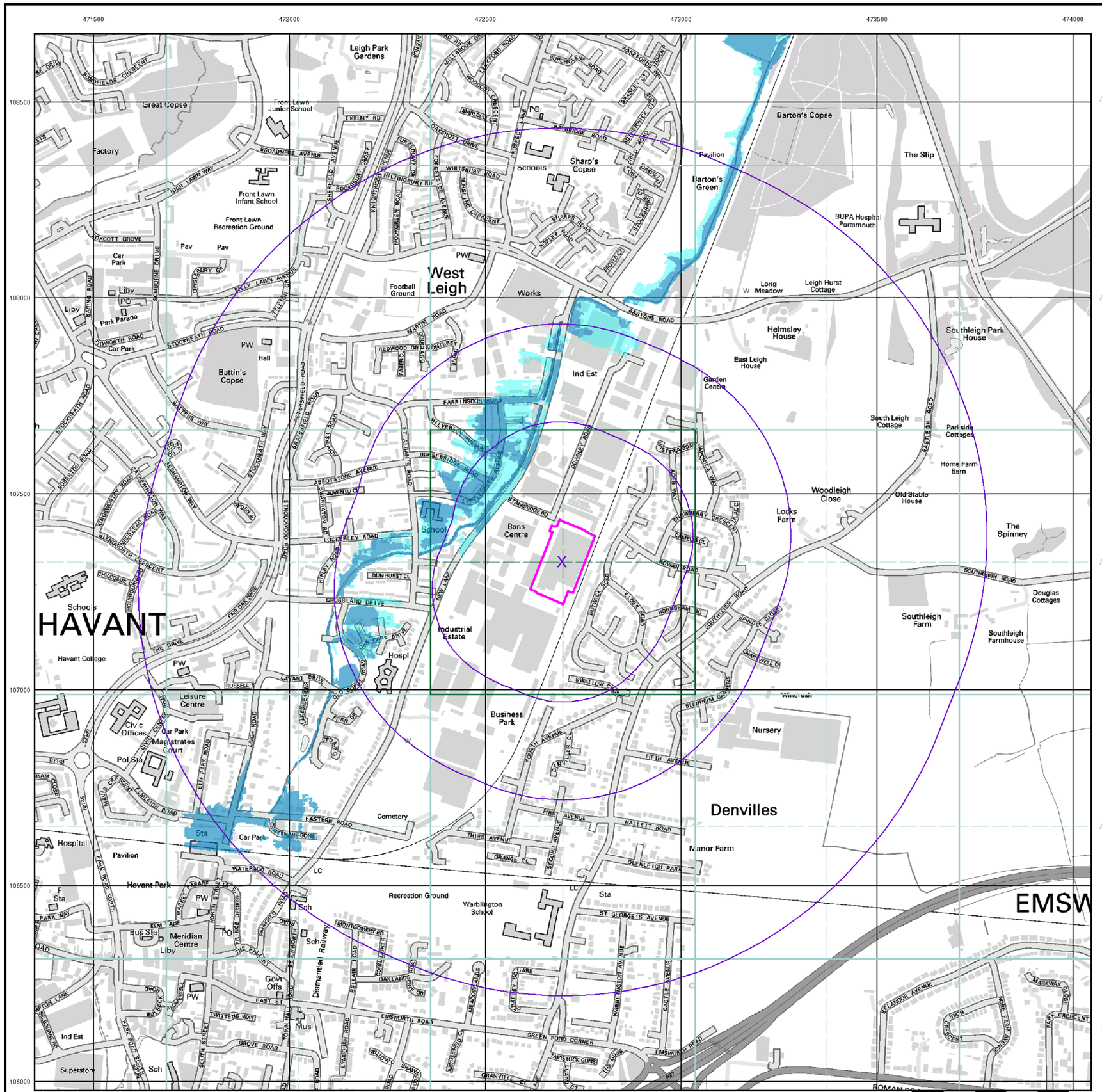
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Customer Ref:	13-0646.01
National Grid Reference:	472700, 107330
Slice:	A
Site Area (Ha):	1.99
Search Buffer (m):	1000

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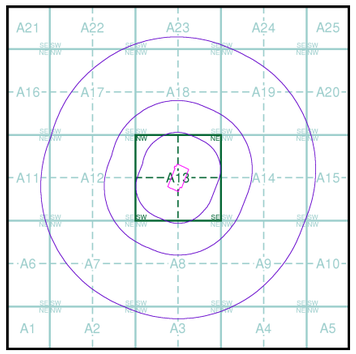
General

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

Agency and Hydrological (Flood)

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

Flood Map - Slice A



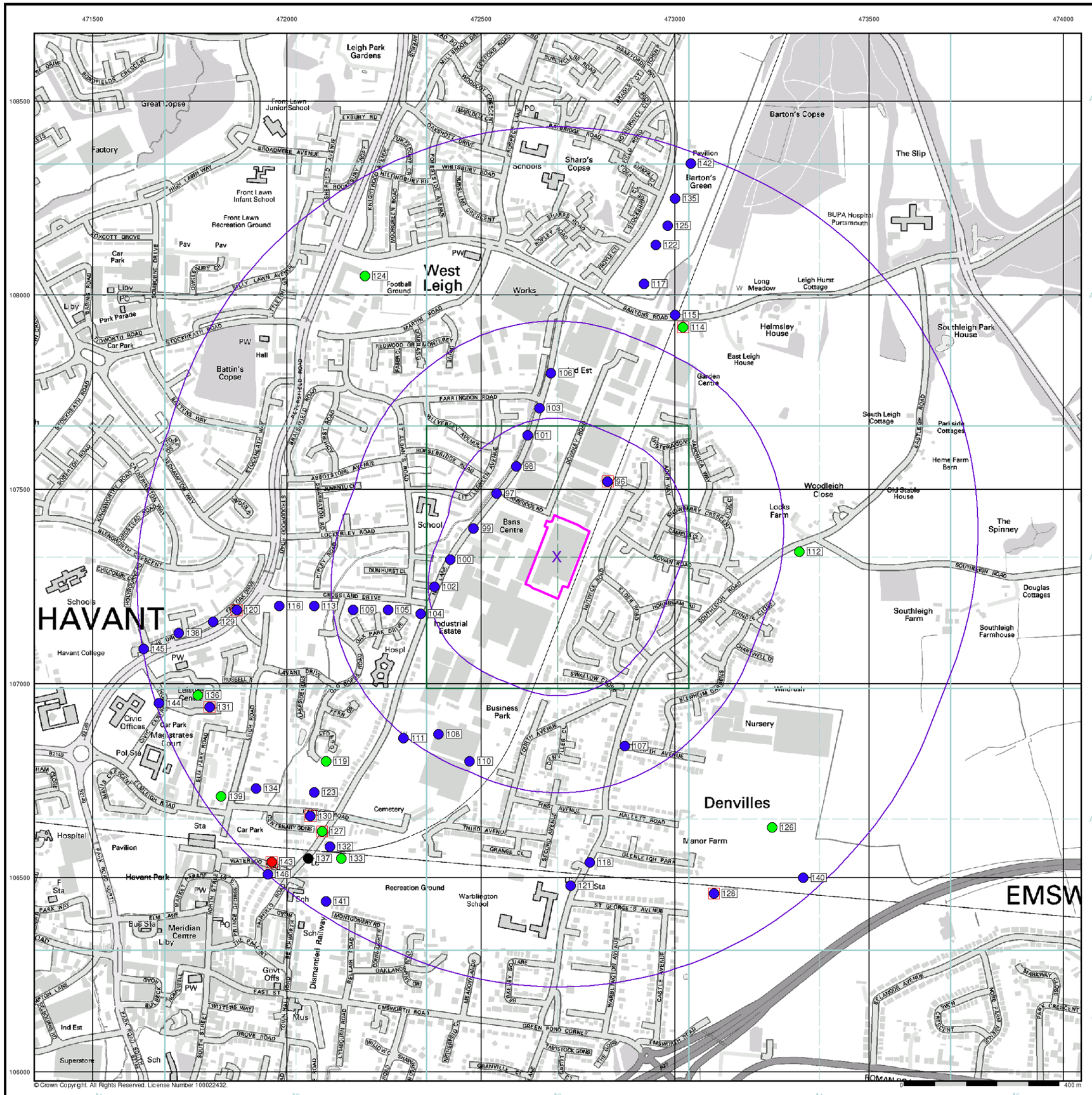
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Customer Ref:	13-0646.01
National Grid Reference:	472700, 107330
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Site Area (Ha):	1.99
Search Buffer (m):	1000

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General

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

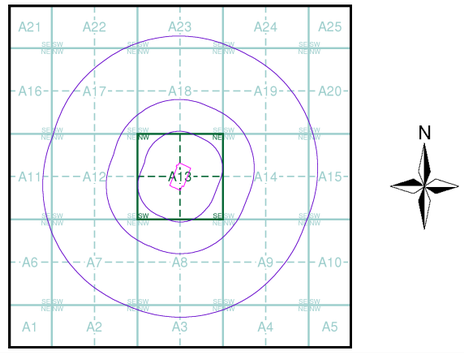
Agency and Hydrological (Boreholes)

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

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

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

Borehole Map - Slice A



Order Details

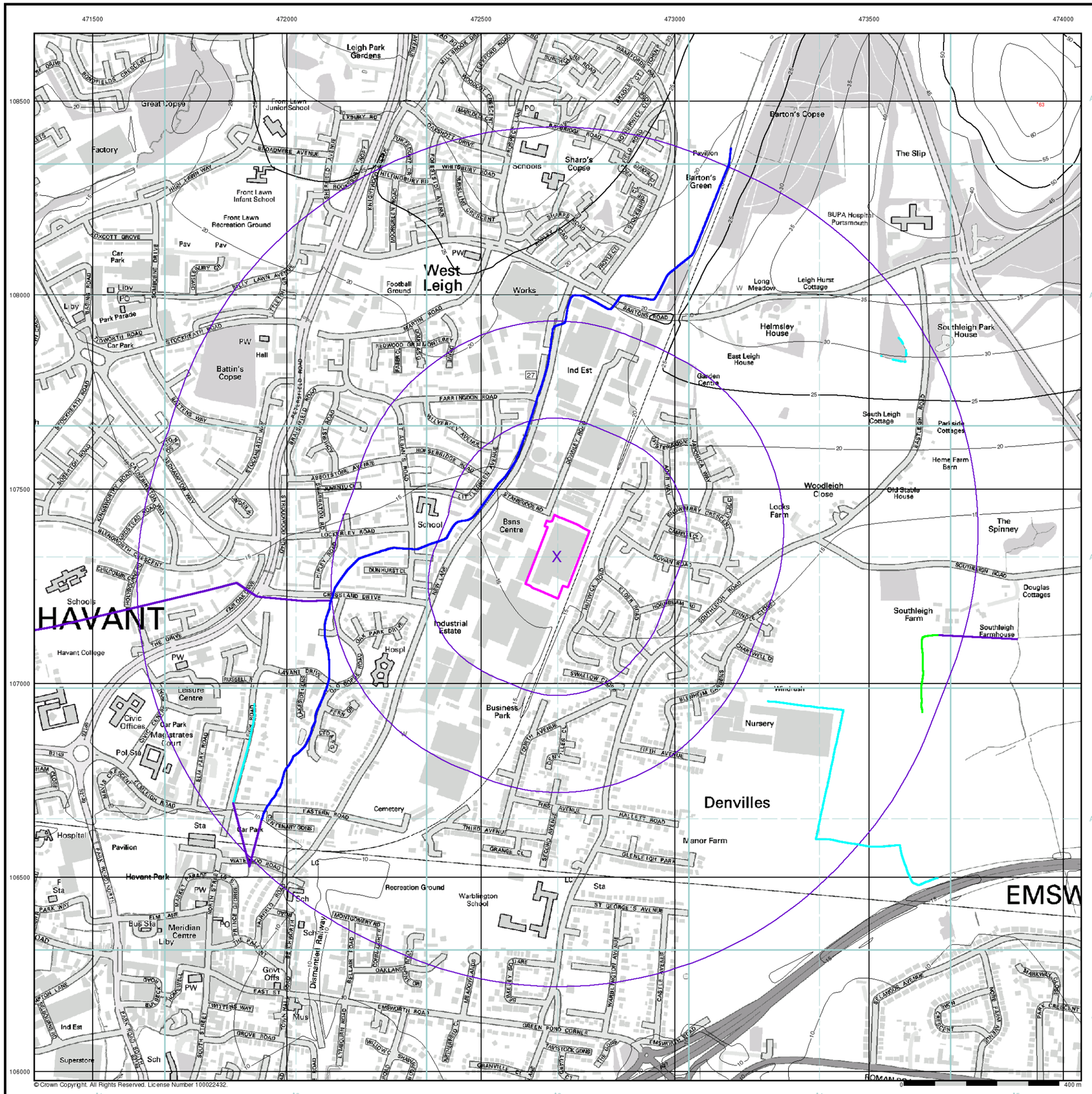
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National Grid Reference:	472700, 107330
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Site Area (Ha):	1.99
Search Buffer (m):	1000

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General

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

Detailed River Network Data

- Primary River
- Secondary River
- Tertiary River
- Canal
- Canal Tunnel
- Undefined River
- Lake/Reservoir
- Offline Drainage Feature
- Extended Culvert (greater than 50m)
- Underground River (inferred)
- Underground River (local knowledge)
- Downstream of High Water Mark
- Downstream of Seaward Extension
- Not assigned River feature

Contours (height in metres)

Standard Contour 105 100 95

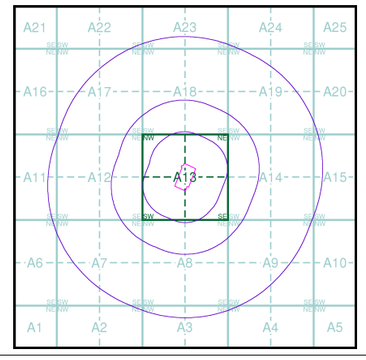
Master Contour

Spot Height *167.3

MLW Mean Low Water

MHW Mean High Water

EA/NRW Detailed River Network Map - Slice A



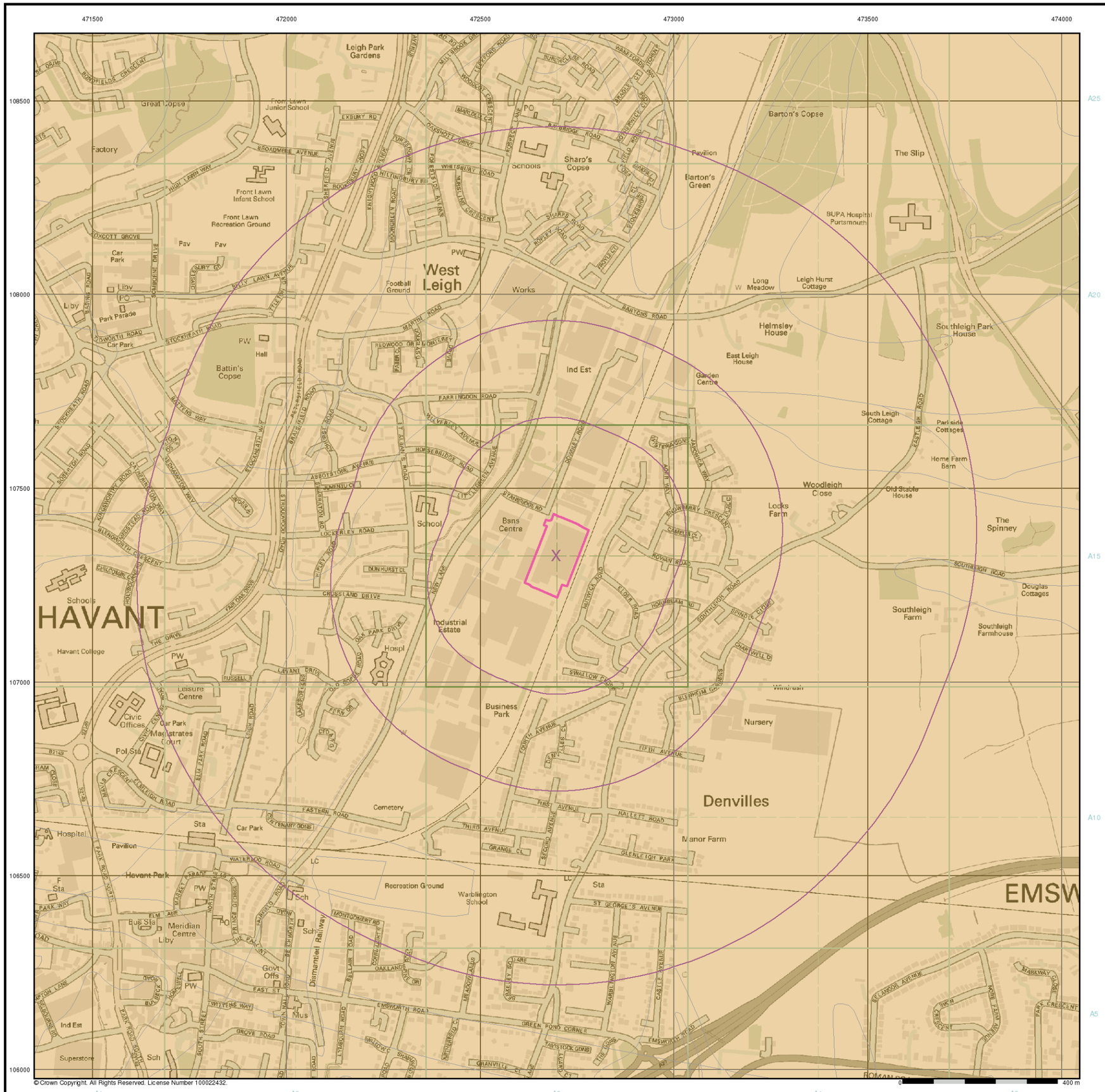
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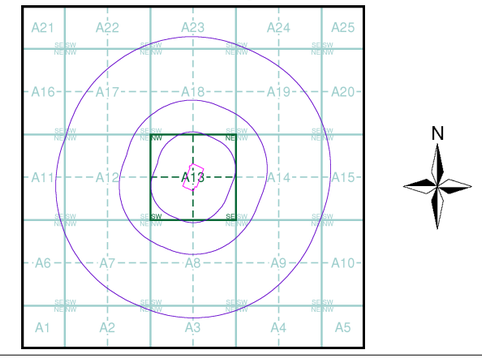
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Arsenic

Arsenic Concentrations mg/kg

- < 15
- 15 - 25
- 25 - 35
- 35 - 45
- 45 - 60
- 60 - 120
- > 120

Estimated Soil Chemistry Arsenic - Slice A



Order Details

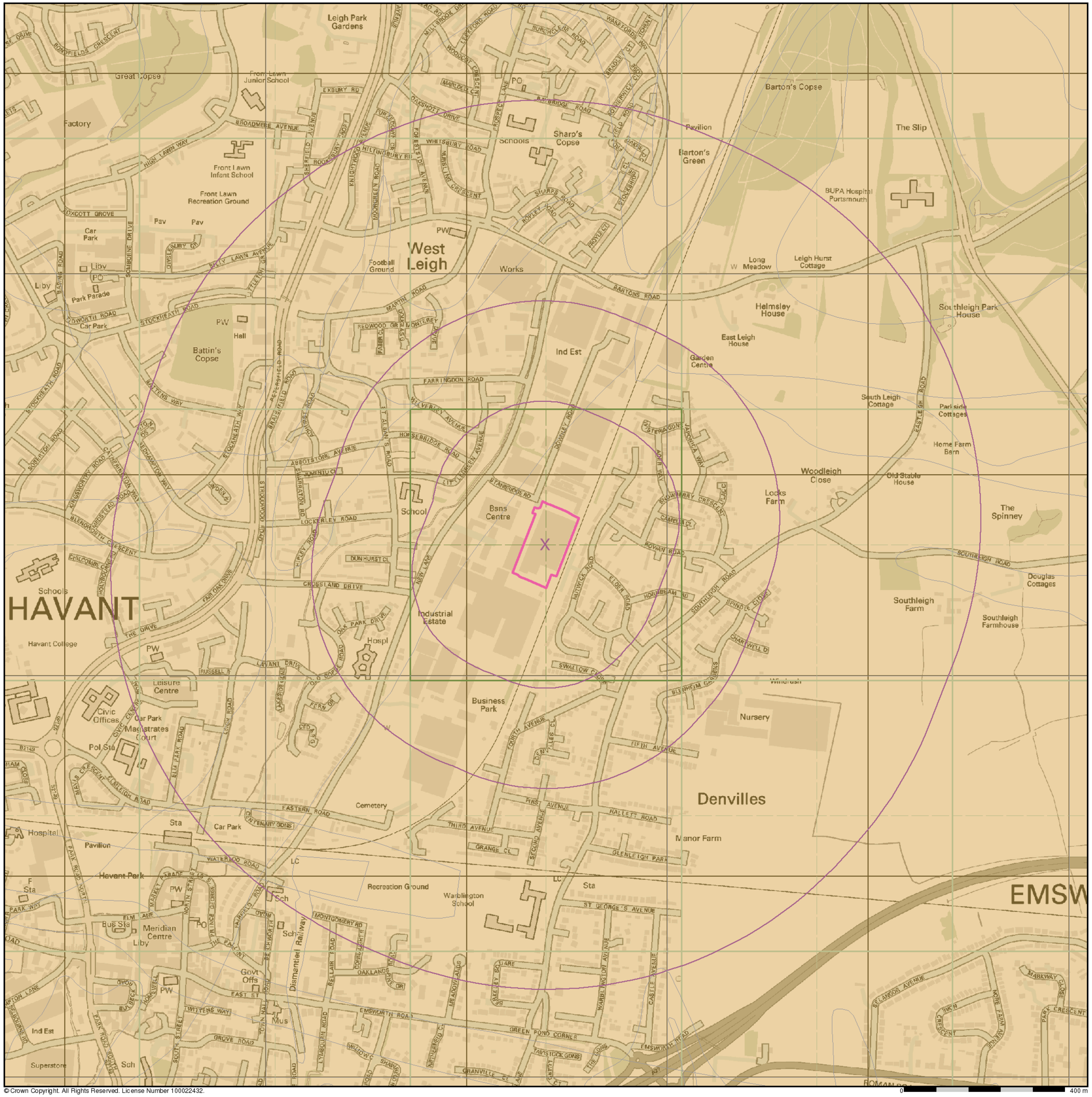
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Customer Ref:	13-0646.01
National Grid Reference:	472700, 107330
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General

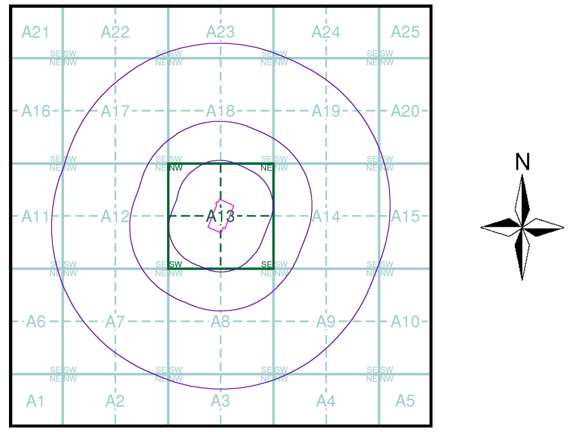
Specified Site   Specified Buffer(s)   X Bearing Reference Point

Estimated Soil Chemistry Cadmium

Cadmium Concentrations mg/kg

- < 1.8
- 1.8 - 2.2
- 2.2 - 3.0
- > 3.0

Estimated Soil Chemistry Cadmium - Slice A



Order Details

Order Details:	62539150_1_1
Customer Ref:	13-0646.01
National Grid Reference:	472700, 107330
Slice:	A
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Web: www.envirocheck.co.uk



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General

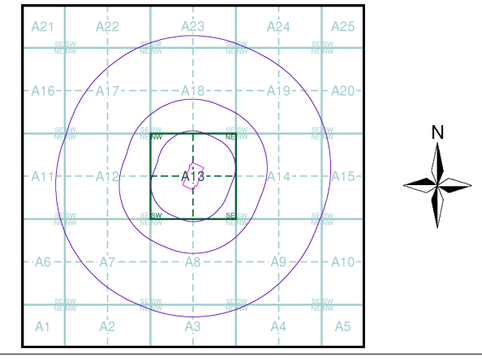
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Chromium

Chromium Concentrations mg/kg

- < 20
- 20 - 40
- 40 - 60
- 60 - 90
- 90 - 120
- 120 - 180
- > 180

Estimated Soil Chemistry Chromium - Slice A



Order Details

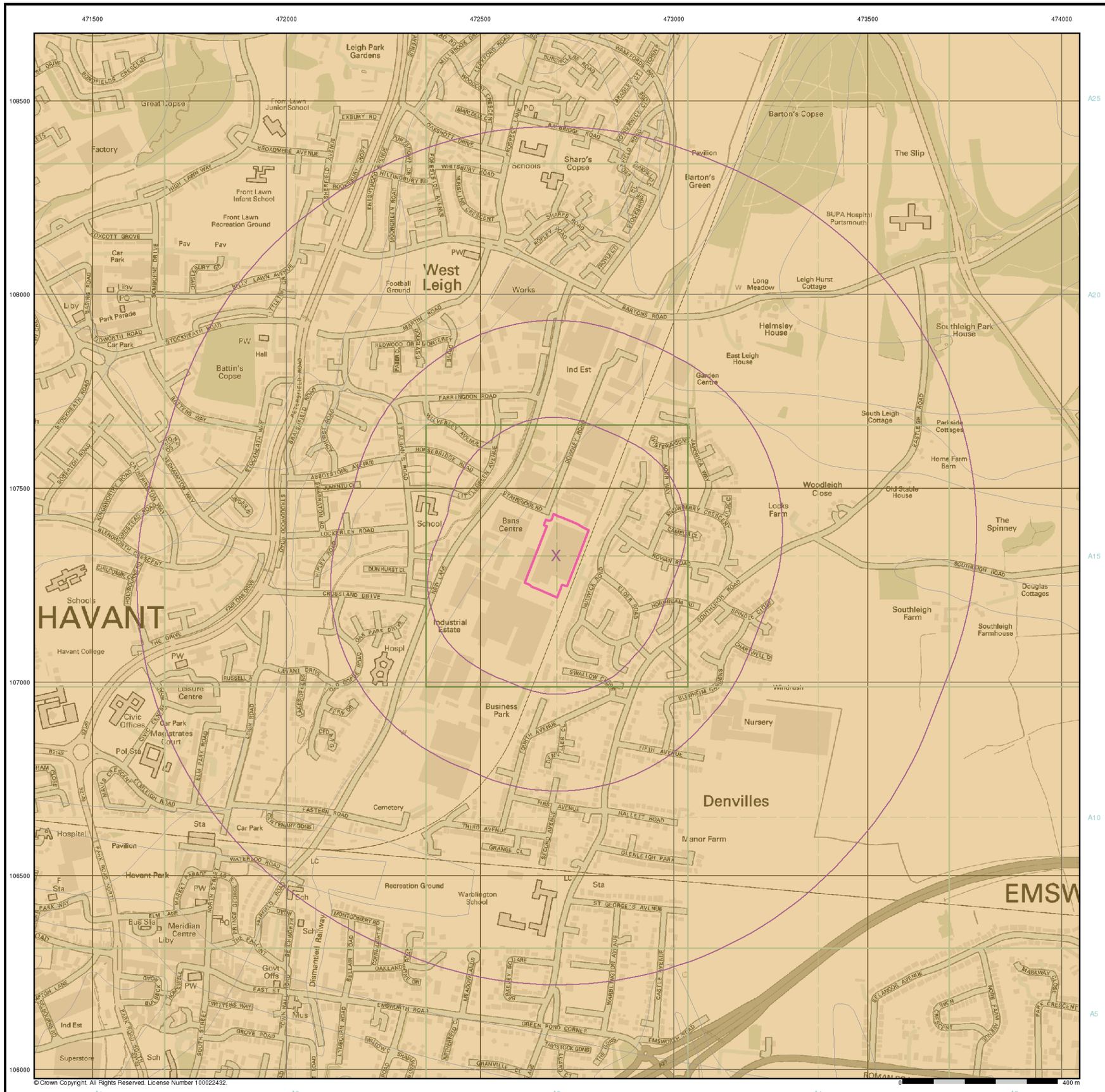
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Customer Ref:	13-0646.01
National Grid Reference:	472700, 107330
Slice:	A
Site Area (Ha):	1.99
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Site Details

Stanbridge Road, Havant, PO9 2NL

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General

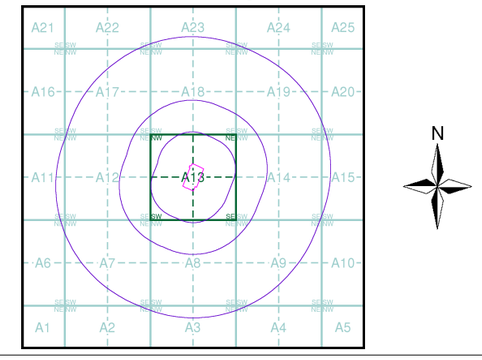
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Lead

Lead Concentrations mg/kg

- < 150
- 150 - 300
- 300 - 600
- 600 - 900
- > 900

Estimated Soil Chemistry Lead - Slice A



Order Details

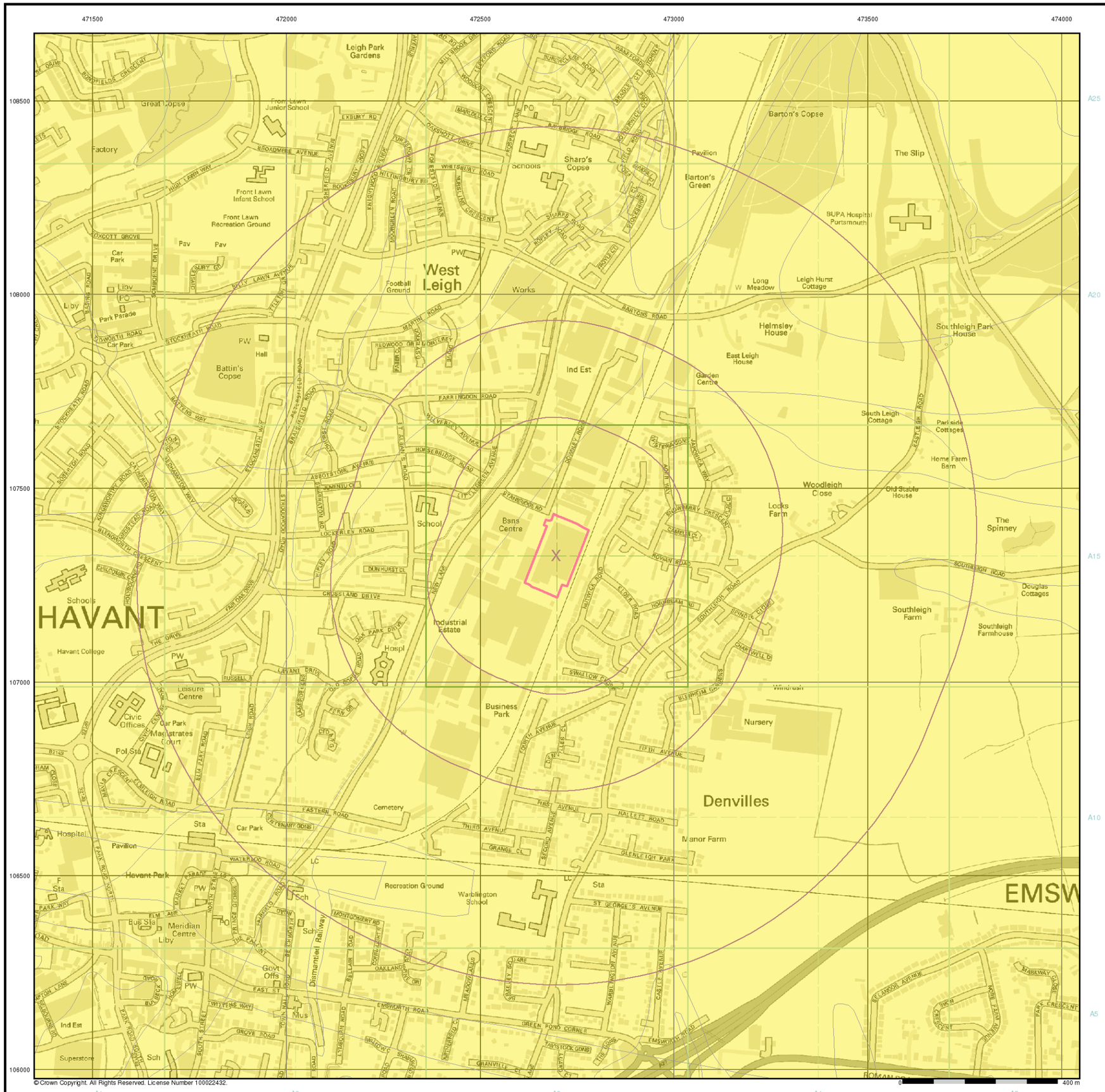
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Web: www.envirocheck.co.uk



deltasimons

General

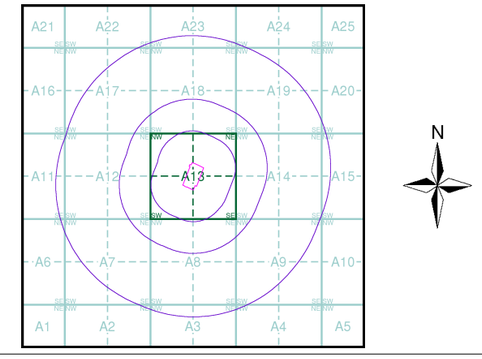
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Nickel

Nickel Concentrations mg/kg

- < 15
- 15 - 30
- 30 - 45
- 45 - 60
- 60 - 80
- 80 - 100
- > 100

Estimated Soil Chemistry Nickel - Slice A



Order Details

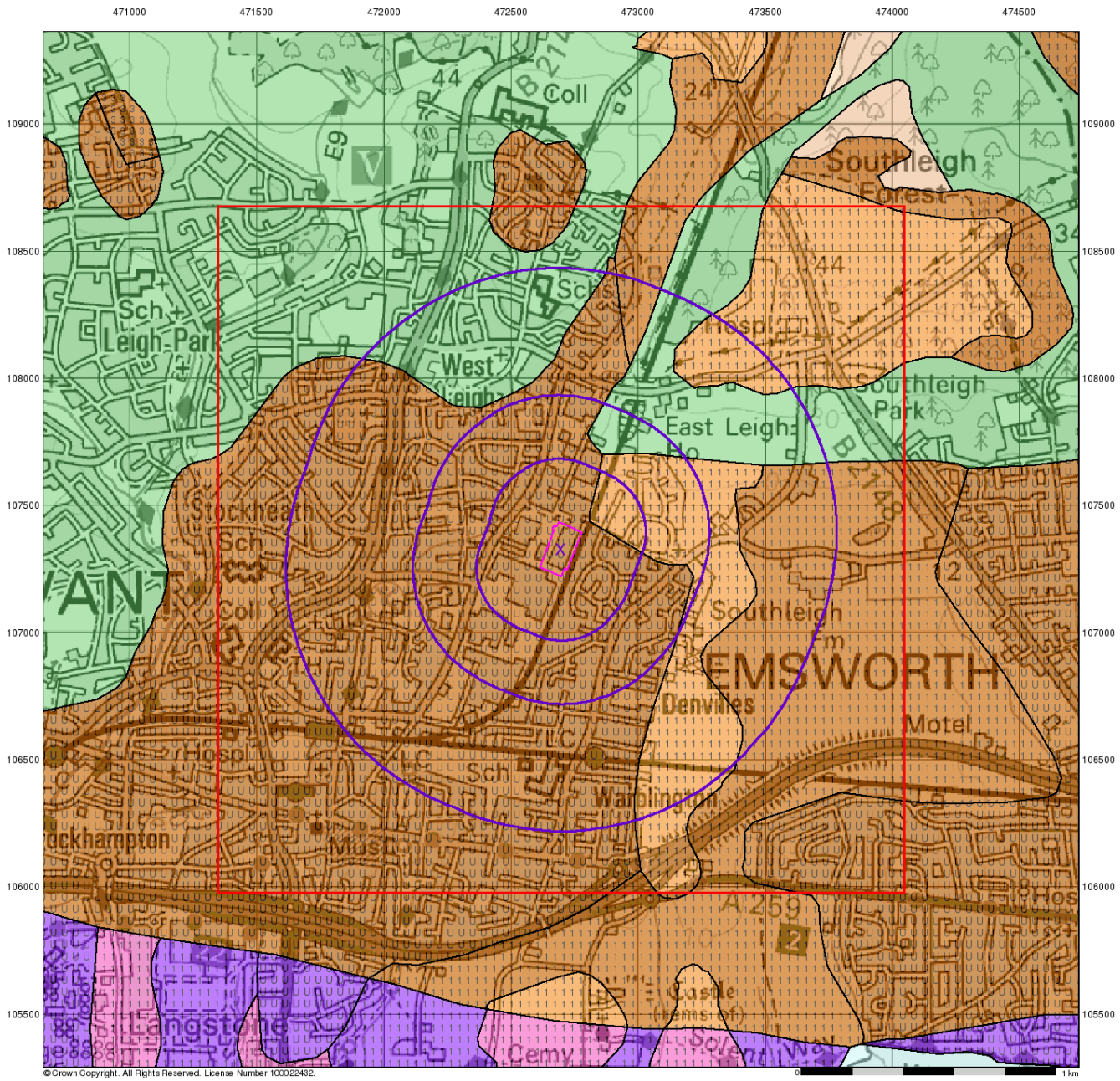
Order Details:	62539150_1_1
Customer Ref:	13-0646.01
National Grid Reference:	472700, 107330
Slice:	A
Site Area (Ha):	1.99
Search Buffer (m):	1000

Site Details

Stanbridge Road, Havant, PO9 2NL

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Groundwater Vulnerability

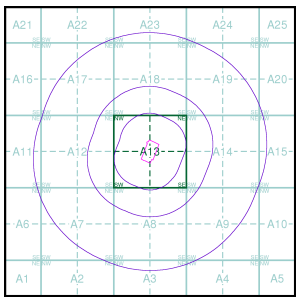
General

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

Agency and Hydrological

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

Site Sensitivity Context Map - Slice A



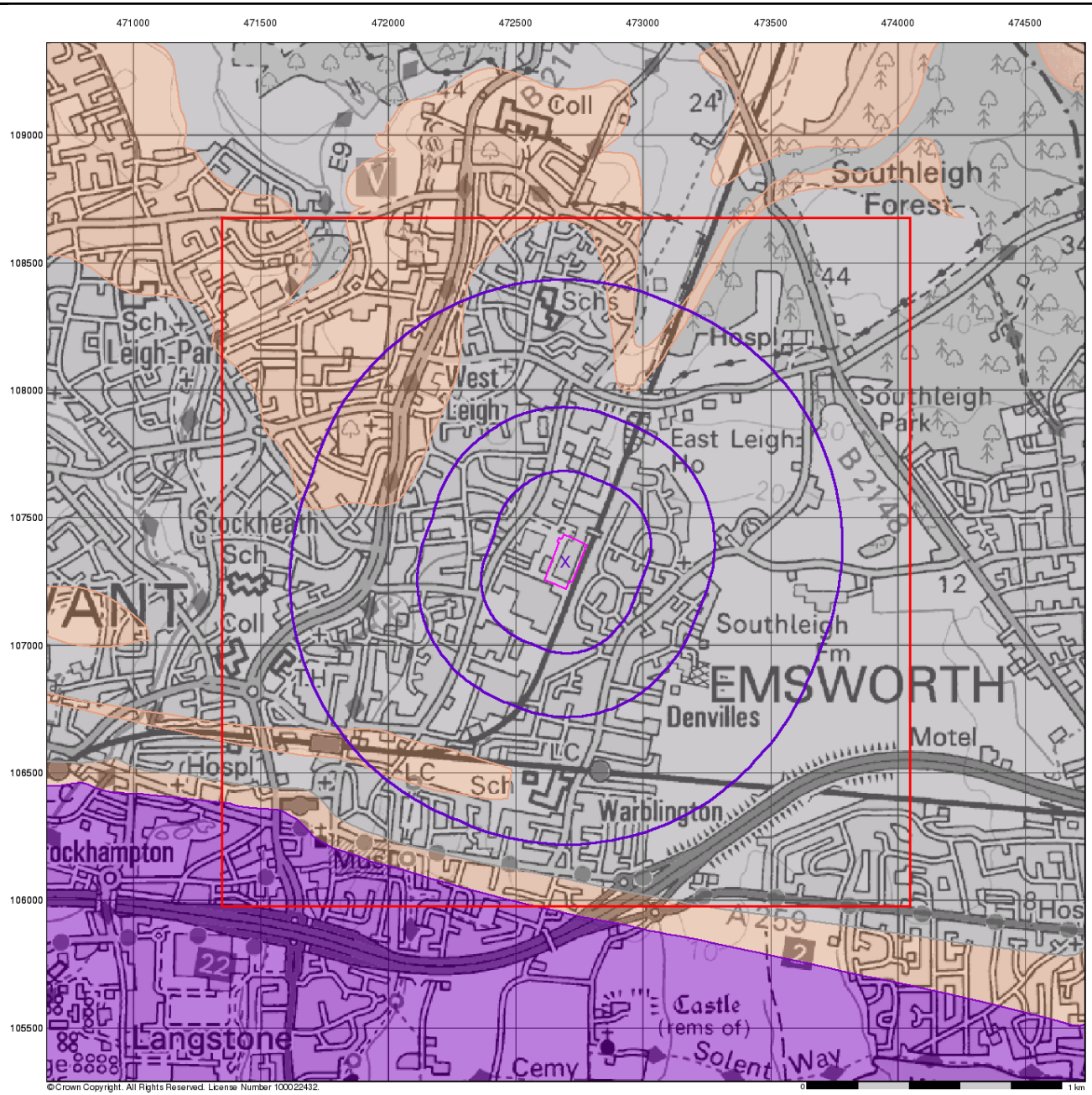
Order Details

Order Number:	62539150_1_1
Customer Ref:	13-0646.01
National Grid Reference:	472700, 107330
Slice:	A
Site Area (Ha):	1.99
Search Buffer (m):	1000

Site Details

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Web: www.envirocheck.co.uk



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Bedrock Aquifer Designation

General

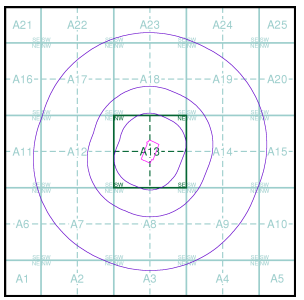
Specified Site | Specified Buffer(s) | Bearing Reference Point
Slice | Map ID

Agency and Hydrological

Geological Classes

- Principal Aquifer
- Secondary A Aquifer
- Secondary B Aquifer
- Secondary Undifferentiated
- Unproductive Strata
- Unknown

Site Sensitivity Context Map - Slice A



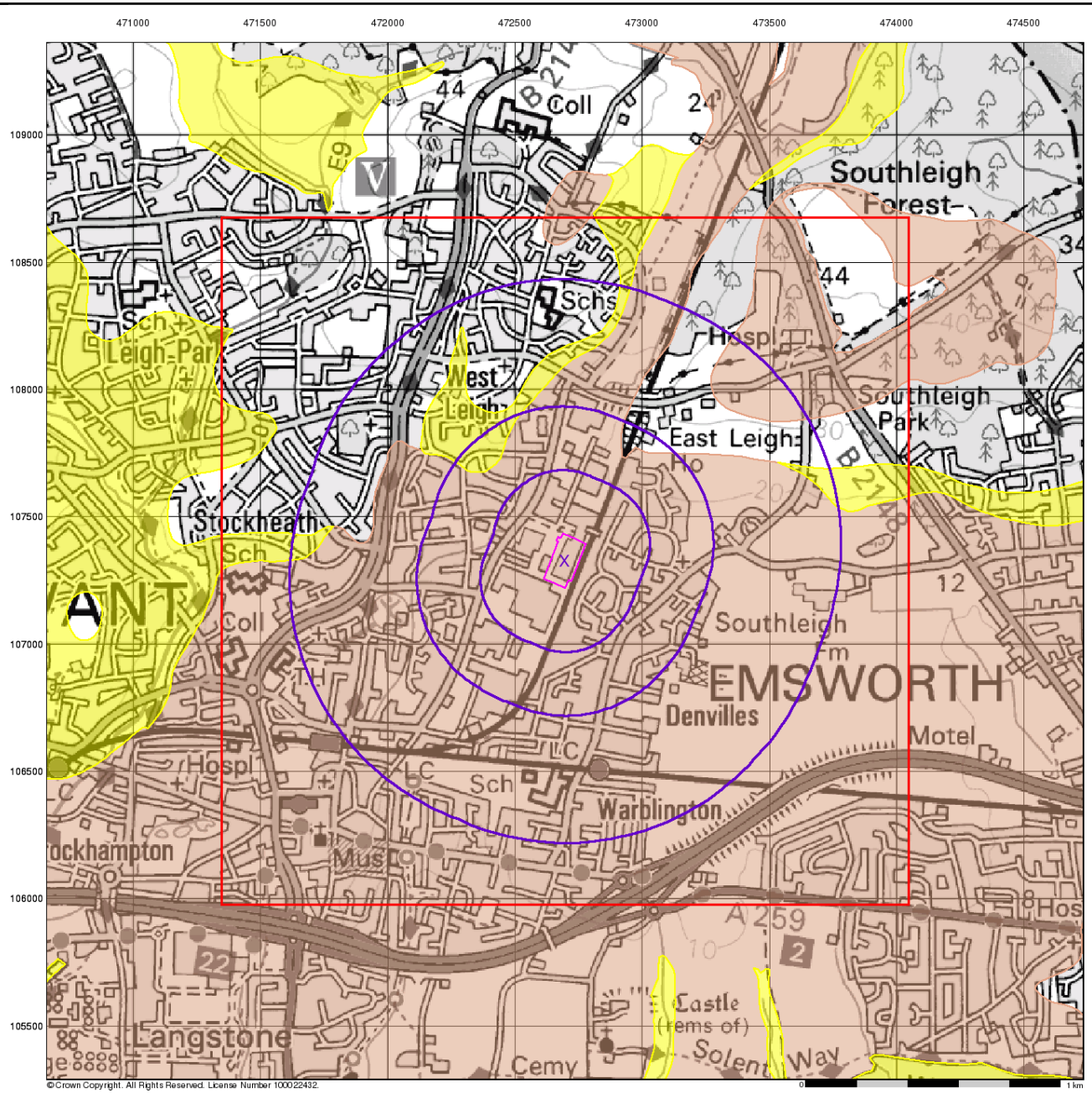
Order Details

Order Number:	62539150_1_1
Customer Ref:	13-0646.01
National Grid Reference:	472700, 107330
Slice:	A
Site Area (Ha):	1.99
Search Buffer (m):	1000

Site Details

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Superficial Aquifer Designation

General

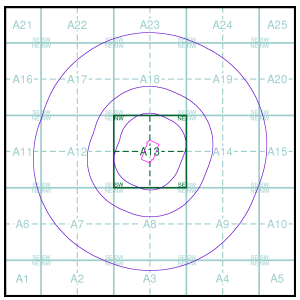
Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Agency and Hydrological

Geological Classes

- Principal Aquifer
- Secondary A Aquifer
- Secondary B Aquifer
- Secondary Undifferentiated
- Unproductive Strata
- Unknown

Site Sensitivity Context Map - Slice A

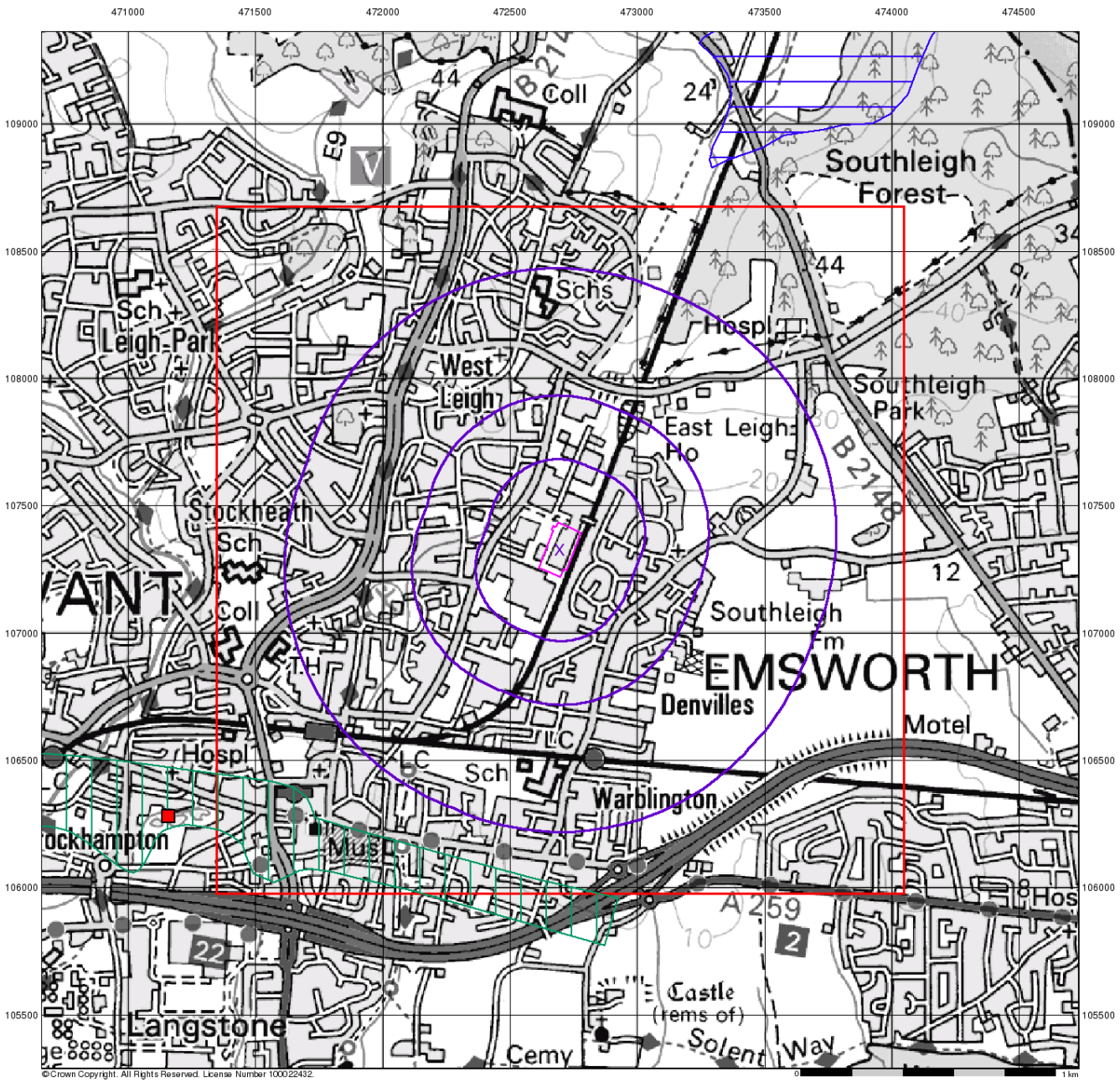


Order Details

Order Number:	62539150_1_1
Customer Ref:	13-0646.01
National Grid Reference:	472700, 107330
Slice:	A
Site Area (Ha):	1.99
Search Buffer (m):	1000

Site Details

Stanbridge Road, Havant, PO9 2NL



deltasimons

Source Protection Zones

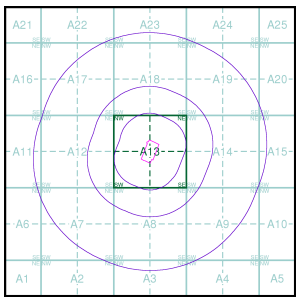
General

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

Agency and Hydrological

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

Site Sensitivity Context Map - Slice A



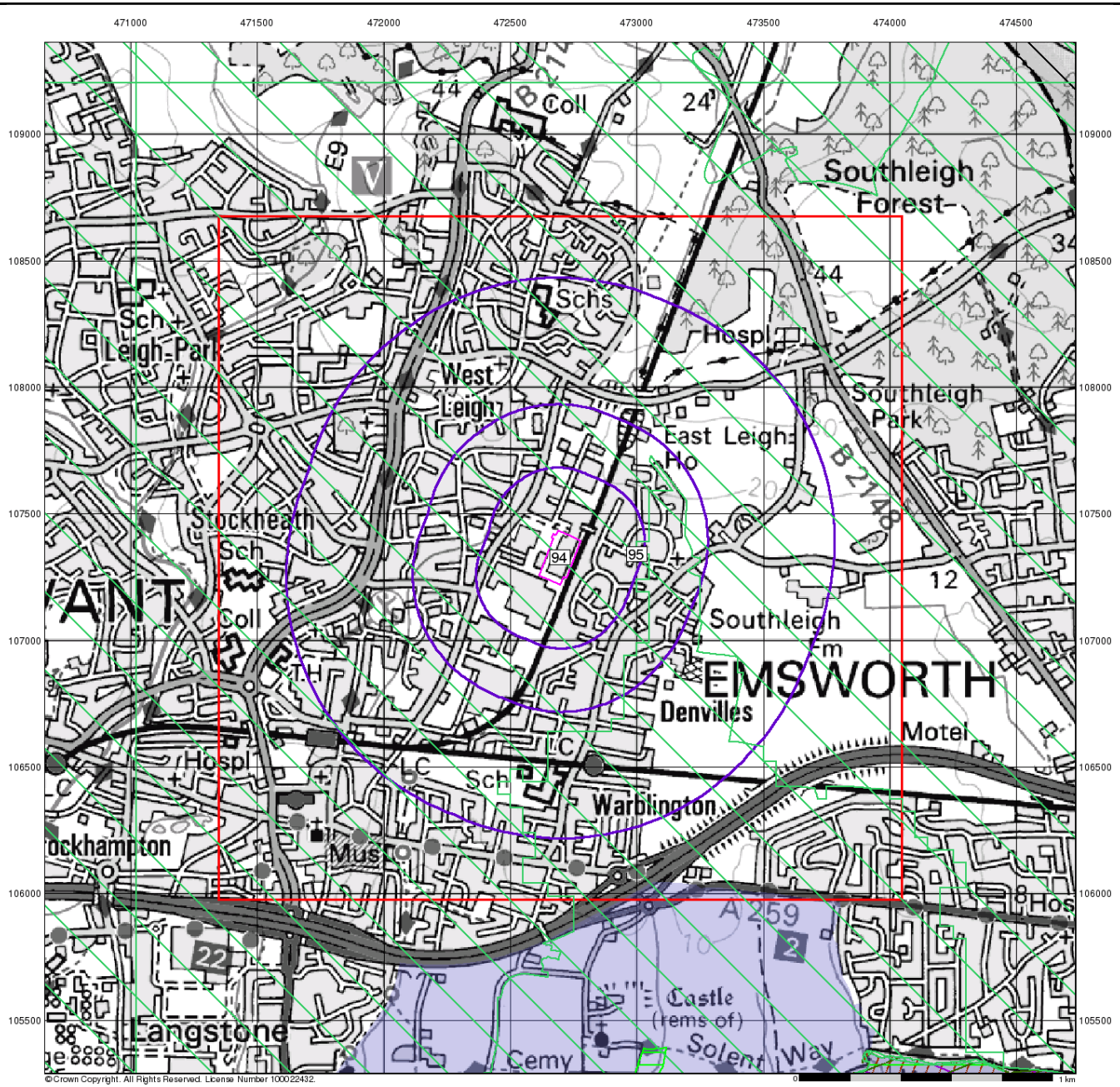
Order Details

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Slice:	A
Site Area (Ha):	1.99
Search Buffer (m):	1000

Site Details

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Sensitive Land Uses

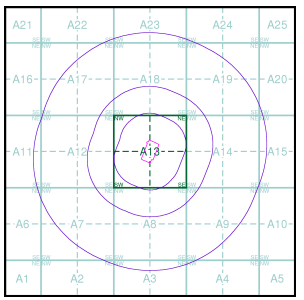
General

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:	62539150_1_1
Customer Ref:	13-0646.01
National Grid Reference:	472700, 107330
Slice:	A
Site Area (Ha):	1.99
Search Buffer (m):	1000

Site Details

Stanbridge Road, Havant, PO9 2NL

Appendix IV

REGIONAL UNEXPLODED BOMB RISK

HAMPSHIRE

DENSITY OF BOMBS PER BOROUGH

Borough	High explosive	Anti-personnel	Incendiary
Aldershot	57	0	8
Bournemouth	266	5	16
Christchurch	166	0	8
Eastleigh	160	10	3
Fareham	447	11	22
Gosport	587	4	10
Havant & Waterlooville	375	39	13
Lymington	177	0	9
Portsmouth	1221	34	40
Southampton	2510	30	12

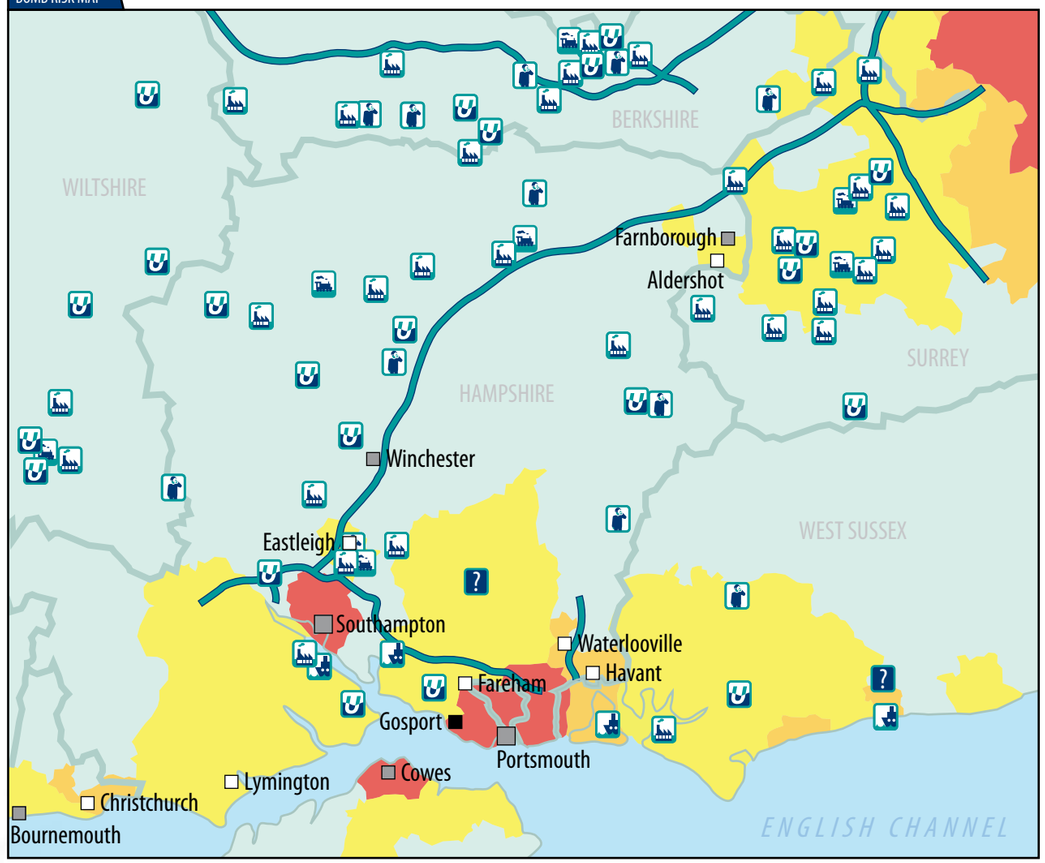
On average, 10% of high explosive and 50% of incendiary bombs failed to explode.

OTHER WWII TARGETS
- military
- transport
- utilities
- industry
- docks
- other

BOMB TONNAGE
- >1000
- >500
- >100
- >0
- unverified

BOMB RISK
- high
- moderate
- low

BOMB RISK MAP



The information in this regional UXB risk map is derived from a number of sources and should be read in conjunction with the "Users' Guide" (printed overleaf). Zetica cannot guarantee the accuracy or completeness of the information or data.

This map covers regions of coast with beaches, estuaries and alike. Further consideration of the bomb risk is required in these areas. The often inaccessible nature and changing ground conditions (e.g. movement of silt that may contain ordnance) means that historical bombing records for these areas are often poor or inaccurate and further assessment of the bomb risk may be required as part of a site specific study.

A FOUR-STEP PROCESS

Risk assessment and method statement from a qualified explosive ordnance clearance (EOC) operative.

Surface geophysical survey to allow shallow groundwork.

MAGCONE detects UXBs and obstructions on piling layout to the no-risk depth.

Detected UXBs can be dealt with by our EOC engineers and a Clearance Certificate issued for the site.

zetica

For more details on this and related services, telephone: +44 (0) 1993 886682 or visit our website: www.zetica.com

BOMB MAP USERS' GUIDE

Sources of information and explanation of bomb risk

Why?

Unexploded bombs (UXB) still present a risk to construction projects long after the end of the Second World War (WWII). UXBs often entered the ground unnoticed at high velocity and penetrated to a depth of several metres. Here they remain – vulnerable to disturbances from construction work. Beyond the depth of shallow excavation work, the greatest risk is to piling, drilling and probing crews. A piling rig could repeatedly hit a UXBs with considerable force before the crew realises an obstruction has been impacted. It could then be up to 72 hours before the detonator activates.

Who?

The responsibility for avoiding UXB risk usually lies with construction companies or house builders particularly those who are redeveloping urban sites. In addition, project engineering or environmental consultants are expected to advise their clients of a site's history. Other interested parties include those organisations whose employees are physically at most risk from intrusive works, normally piling companies, drillers or probing operators.

How?

UXB risk should be assessed for every site, but especially those in known heavily bombed areas or those situated near war-time strategic installations that were priority targets for enemy aircraft, for example, airfields. Zetica's regional bomb risk map is therefore a first point of reference from which the relative, potential abundance of UXBs can be judged. Consultants then advise their clients that an ordnance-risk desk study is required, which they may obtain from external sources. Construction companies or house builders who assess their own risk could choose to come direct to Zetica.

When?

Do not wait for the piling or drilling company to be on site before thinking about UXB risk – it will inevitably cause delays and higher costs. Request the regional bomb risk map from Zetica as soon as a site is being considered, and then use it to help you or your clients to decide if an ordnance-risk desk study is required.

Where?

Maps can be obtained for any county in England, Scotland, Wales or Northern Ireland – or for any London borough. They can help determine the areas that were most heavily bombed – but no part of the country should be considered 100% safe from UXB risk. Even remote rural areas can have a high risk if, for example, they were locations for decoy airfields or beacons that were lit to fool enemy pilots into thinking they had located a burning city that had been successfully hit by others in the raid.

How to use this regional map

This map is designed to give you an indication of the potential risk from UXBs in your area. If you are conducting work that involves excavation, piling or other disturbance of the ground, then you should use the map to identify the category of risk for your site.

The risk boundaries are a guide, compiled from data based on the political areas for which records are held; being just outside a high-risk area does not mean there is no UXB risk. You should use the map to assist in your decision of whether to investigate the UXB risk further.

Information on the regional risk remaining from UXBs in the UK

Zetica has built the largest UXB database of its kind in the UK. It includes a unique digital library of bomb census data, and maps showing key strategic points and bombing densities from the First and Second World Wars. The main sources of information include records from central government (Public Records Office), the Ministry of Defence, and the German Luftwaffe.

Using information from this database, Zetica has published maps of UXB risk on a regional, county and borough scale. The maps indicate relative degrees of UXB risk based on available records for bombing densities and known targeted areas for regions within the UK. The risk is broken down into individual boroughs, towns or cities. The data are based on the historical boroughs and are then overlaid onto the modern map. It is important to note that more-detailed research may be required for individual sites, particularly where proximity to a potential WWII target means the local risk may be higher.

High risk

Areas designated as high risk are those that show a high density of bombing hits (50+ bombs per 1000 acres) and abundant potential WWII targets. In high-risk regions, further action to mitigate UXB risk is considered essential.

Moderate risk

Moderate-risk regions are those that show a bomb density of between 11 and 50 bombs per 1000 acres and that may contain potential WWII targets. Action to mitigate the risk is considered essential, albeit more likely that a reduced scope of work is required compared with that needed for high-risk regions.

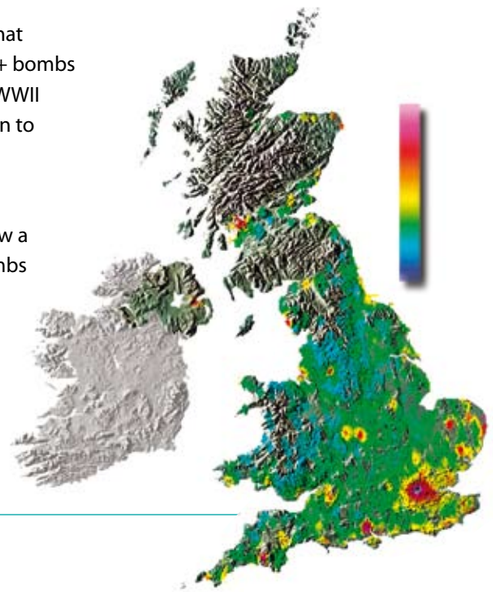
Low risk

Low-risk regions are those with a bombing density of up to 10 bombs per 1000 acres. These areas are considered to have a significant but low UXB risk. In general, further action to mitigate the risk is considered prudent, although not essential. Care is required when assessing the risk for specific sites where the risk may be higher because of local wartime activity.

Other WWII targets

Other regions with the risk of UXBs are key strategic points as defined by the government during WWII as representing potential enemy targets. Where these exist outside areas mapped as high, moderate or low risk, a site-specific assessment of the UXB risk may be required.

Relative UXB risk across UK



What to do if…

…you have a site that has a potential UXB risk

In the absence of current legislation requiring you to address the risk from UXBs, your responsibilities under health and safety legislation and regulations such as construction design and management require that you address all identified risks. The first stage is to request further advice from a professional adviser such as Zetica, or to gain more site-specific information by commissioning an ordnance-risk desk study. Then a strategy to deal with the risk can be established that is tailored to your proposed work.

…you find a suspect item or require advice

If during site works you find a suspect (ordnance-related) item, it is very important that you do not touch or move it (even if it has already been moved by an excavator). If it is clearly ordnance related, then dial 999 and ask for the police. Ensure that the area around the item is kept as clear as possible without placing yourself at risk. If you are unsure and do not wish to cause undue alarm, or you just require some advice, then you can call Zetica. We have experienced qualified UXB specialists on hand who can offer support and advice during any site works.

More-detailed procedures should be established in advance if you are in an area where the risk of finding a UXB is shown to be significant (moderate to high).

Site-specific desktop studies

Zetica is able to provide high-quality, site-specific UXB risk information for any residential, industrial or commercial property in the UK. These desktop studies provide details of the bombing density within an area and for the site itself, in order to indicate the risks of UXBs still being present. A risk assessment is provided to facilitate informed decision making on whether any further risk mitigation measures are required.

Appendix V

From: Jonathan Driver
Sent: 23/01/2015 17:30
To: Alex Cutts
Subject: RE: Contaminated Land Enquiry - Stanbridge Road, Havant, Hampshire, PO9 2NL

Dear Mr. Cutts,

Please accept my apologies for the delay in responding to your query, it has been a busy start to the year. I can confirm that the subject site has not been specifically prioritised for action under Part 2A duties.

The site has formed part of a wider site investigation relating to the former Wyeth / Fluor / Pfizer site; dating back to 1996. In addition, a surface water sampling / monitoring programme was undertaken in 1997 to determine whether any demonstrable operational impact could be identified within the river Lavant (no impacts identified), and a decommissioning investigation was undertaken in 2005 prior to the demolition of the tableting area. The latter investigation included a screen for pharmaceutical compounds within soils. Additional investigation was undertaken in 2008 adjacent to the southern boundary of the subject site, specifically targeting a solvent store, tableting & dispensary areas. Some of the earlier reports are described as being limited to external areas, with limited or no access to areas within the footprint of structures which were operational at the time of the investigation.

It is unclear whether either physical or scanned copies of the 1996/1997/2005 reports are still held by the Council – I have not been able to locate any of these documents, though they may exist within the planning archives. References for the 2008 reports (combined phase 1 & 2, addendum letter report, and site screening) are attached (copies are held), alongside a copy of the remediation completion statement (which was also used at the time to formally complete investigation work).

Some elevated concentrations of contaminants are considered likely to remain within soils at or within the immediate vicinity of the subject site, including DEHP, PAH, TPH, Toluene & Acetone. Groundwater abstractions at allotments to the south of the site (~450m) have been formally decommissioned & replaced with a permanent mains water supply (circa 2010), and so are no longer considered a particularly sensitive receptor.

At present, Havant Borough Council acknowledge the existence of some chemical contamination at the wider Wyeth Laboratories site, and in the vicinity of the subject site – but do not consider that the levels are materially significant with respect to off-site receptors, or human health within the current commercial / industrial context. It has been previously recommended (in comments to recent, related planning applications) that in the event that a comprehensive redevelopment of this site were to be proposed that would change the risk sensitivity of the site, or could either mobilise or make inaccessible any potentially significant contamination source; some intrusive work should be undertaken to confirm the current contamination risk (i.e. characterise any changes in distribution or concentration, & mitigate impacts if necessary).

I trust that this meets with your requirements,

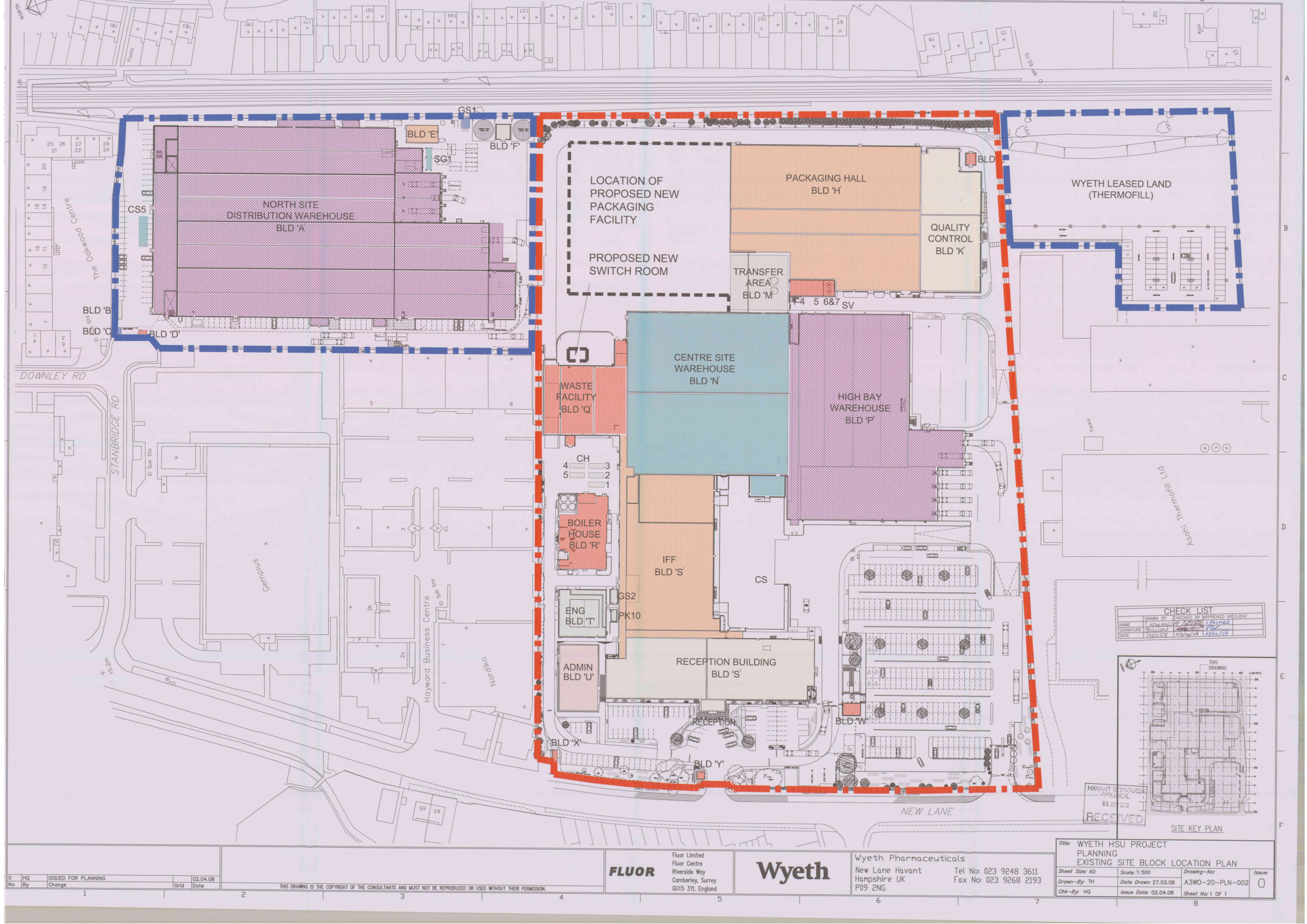
Best Regards,

Jon

Jonathan Driver

Environmental Control Officer

Environmental Health, Public Service Plaza, Civic Centre Road, Havant, Hants PO9 2AX
Email: jonathan.driver@havant.gov.uk
Tel (Direct Dial): 023 9244 6677
Tel (Team Admin): 023 9244 6670



No	By	Change	Grid	Date
0	HQ	ISSUED FOR PLANNING		02.04.08

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FLUOR
Fluor Limited
Fluor Centre
Riverside Way
Camberley, Surrey
GU15 3YL England

Wyeth

Wyeth Pharmaceuticals
New Lane Havant
Hampshire UK
PO9 2NG
Tel No: 023 9248 3611
Fax No: 023 9268 2193

Title: WYETH HSU PROJECT
PLANNING
EXISTING SITE BLOCK LOCATION PLAN

Sheet Size: A0	Scale: 1:500	Drawing-No:	Issue:
Drawn-By: TH	Date Drawn: 27.03.08	A3W0-20-PLN-002	0
Chk-By: HQ	Issue Date: 02.04.08	Sheet No: 1 OF 1	

Havant
BOROUGH COUNCIL

Civic Offices
Havant
Hampshire
PO9 2AX

T. 023 9247 4174
F. 023 9248 0263
DX 50005 Havant
www.havant.gov.uk

Site Assessment & Remediation Completion Statement

Proposal: New Packaging Hall extension and new electrical intake ~~switchboard~~ switchroom at ~~Flour Manufacturing & Life Sciences,~~ Wyeth, 32 New Lane, Havant, PO9 2NG

Planning Application Number: 08/52191/040

Undertaken between the dates of: 3 APRIL 2008 and 29 SEPT 2008

Notes:

1. Please complete Part A in Full.
2. If no risks were identified go straight to Part D and E if appropriate.
3. If risks were identified complete Part B and E and Parts C and D if appropriate

Part A

This is to confirm that the above named development was subject to an approved scheme* of investigation prior to development to assess the presence and significance of potential ground contamination as detailed in:

Title:	Ref:	Author:	Date:	(List all Relevant Documents In full)
WYETH - ASSESSMENT OF GROUND CONDITIONS PRIOR TO REDEVELOPMENT PHASE I AND II ENVIRONMENTAL SITE ASSESSMENT. TARGETTING POTENTIAL AREAS, WYETH, NEW LANE, HAVANT	ERM REPORT NO. 008/829.04	ERM CONSULTANT: LINDSAY PEPPERELL	REPORT DATE: JUNE '08	FURTHER INVESTIGATION OF SOIL CONDITION TO SATISFY CONDITION 23 [08/52191/040] ERM LETTER REPORT 28 OCT 08

X

Part B

To afford protection from those risks identified a scheme of remediation was implemented between the dates of.....and.....in accordance with best practice and the agreed specification* detailed in:

Title:	Ref:	Author:	Date:	(List all Relevant Documents In full)

X

Part C

Satisfactory implementation/post completion monitoring of the scheme is detailed in:

Title:	Ref:	Author:	Date:	(List all Relevant Documents In full)

✓

Part D

Soils imported during the development are certified as being clean of contamination in the document/documents...

Title:	Ref:	Author:	Date:	(List all Relevant Documents In full)
NO SOILS IMPORTED TO DATE				

✓

Part E

All contractors employed by WYETH (the developer) were required to monitor for, and report, any evidence of further unsuspected contamination found during construction. (Delete as appropriate)

- None was reported.
- Further, unsuspected contamination was found. Actions taken are detailed in:

Title:	Ref:	Author:	Date:	(List all Relevant Documents In full)
AS AGREED WITH JONATHAN DENNET NOT REQUIRED AT THIS STAGE ON-GOING MONITORING IS IN PLACE; RESULTS TO DATE REFERRED IN LETTER REPORT OF 28 OCT 08 [SEE PARA 4]			30/10/08	

Part F

Signed: Date: 30 OCTOBER 2008

CHARLES WORCESTER, CONSTRUCTION MANAGER, FLUOR MANUFACTURING AND LIFE SCIENCES, FLUOR CENTRE, RIVERSIDE WAY, CAMBERLEY, SURREY GU15 3YL

Appointed person supervising the works
(Enter name, company, address and position)

Signed: Date: 30 OCTOBER 2008

WILLIAM JEFFREY, PROJECT MANAGER, WYETH, 32, NEW LANE, HAVANT PO9 2NG

For the Developer
(Enter name, company, address and position)

***Approved In writing by the Local Planning Authority**

Appendix VI

Delta-Simons
3 Henley Office Park, Doddington Road,
Lincoln, LN6 3QR
Tel: +44 (0) 870 0400 012
Fax: +44 (0) 1522 698393
Email: info@deltasimons.com

deltasimons

Project:	Project No:	Hole ID:
Stanbridge Road, Havant	**13-0646.01**	**BH1**
CABLE PERCUSSION BOREHOLE LOG	Date From / To: 10/12/2014 - 11/12/2014	Client: **BCP (Havant) LLP**

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	*REDUCED LEVEL* / DEPTH (Thickness)	Sample Details TYPE	Sample Details REF	Sample Details Depth	Test Results SPT N Value/Drive mm	Backfill Details
Concrete.				*16.92* 0.15					
MADE GROUND: Hardcore.				*16.77* 0.30					
MADE GROUND: Brown sandy gravelly CLAY. Gravel is fine to coarse chert and brick.				*16.57* 0.50	D		0.50		
				(0.90)			1.00 - 1.45	CPT N=36 3,5/5,8,11,12	
Firm brown mottled grey slightly sandy, slightly gravelly CLAY with occasional cobbles. Sand is fine to coarse. Gravel is angular to subangular fine to medium grained flint. [HEAD DEPOSITS]				*15.67* 1.40	D		1.50		
Medium dense to very dense light brown sandy GRAVEL. Sand is fine to coarse, gravel is sub-angular fine to medium grained with occasional cobbles of chert/ flint. No soil returns from 3.0m to 4.5m bgl). [RIVER TERRACE DEPOSITS]							2.00 - 2.45	CPT N=50/150mm (8,17/70mm/23,27)	
					B		2.50		
				(3.10)			3.00 - 3.45	CPT N=23 6,4/5,5,6,7	
							4.00 - 4.45	CPT N=36 10,7/6,10,8,12	
				12.57 4.50					
NO RECOVERY (Possible Driving Cobble). [RIVER TERRACE DEPOSITS].			(150mm)	(1.00)			5.00 - 5.45	CPT N=20 7,11/8,4,4,4	
				11.57 5.50	D		5.50		
Firm brown silty gravelly CLAY. Gravel is angular to sub-angular fine to medium grained chert. [LONDON CLAY FORMATION]		1		(1.10)			6.00 - 6.45	CPT N=12 3,3/2,3,3,4	
				10.47 6.60					
Firm and stiff brown slightly silty CLAY with occassional fine silty partings. [LONDON CLAY FORMATION]					D		7.00		
					U		7.50 - 7.95	U=60/450mm	
				(2.10)					
		1		*8.37* 8.70					
Stiff grey silty CLAY with occasional organic laminations. [LONDON CLAY FORMATION]				(0.60)			9.00 - 9.45	SPT N=29 4,5/6,7,7,9	
				7.77 9.30					
Very stiff grey silty gravelly CLAY. Gravel is angular to sub-angular, fine to coarse chert, flint and occasional siltstone. [LONDON CLAY FORMATION]					D		9.50		
				(1.15)			10.00 - 10.45		

REMARKS :

1. Engineer verified logged in general accordance to BS 5930:2010.
2. Area CAT scanned prior to excavation.
3. Water added from 2.00m bgl.
4. Groundwater encountered at 8.70m bgl.
5. Installed with a HDPE standpipe to 9.50m bgl.

CHISELLING

Depth From	Depth To	Time Taken
1.40	2.80	03:00
3.50	4.50	02:30

WATER LEVEL OBSERVATIONS

	Date	Time	Water Strike	Standing Level	Casing Depth
1	11-12-14		8.70	6.10	6.00

BOREHOLE DIAMETER	CASING DIAMETER	DEPTH SEALED
	150mm to 10.45m	

All measurements in metres unless otherwise stated	10m/page Scale: 1:62.50	Coordinates to National Grid Ground Level to Ordnance Datum	Page 1 of 2

Plant Used:	Coordinates / Level (mAOD):	Logged By:	Checked By:	Approved By:
Dando 2000	E: 472768 N: 107394 Level: 17.07	ML	AC	DW

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Project: **Stanbridge Road, Havant**

Project No: **13-0646.01**

Hole ID: **BH1**

CABLE PERCUSSION BOREHOLE LOG

Date From / To: 10/12/2014 - 11/12/2014

Client: **BCP (Havant) LLP**

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	*REDUCED LEVEL/* DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
								SPT N=43 8,8/9,11,11,12	
			10.45	*6.62* 10.45					
Borehole complete at 10.45m bgl.									

REMARKS :

1. Engineer verified logged in general accordance to BS 5930:2010.
2. Area CAT scanned prior to excavation.
3. Water added from 2.00m bgl.
4. Groundwater encountered at 8.70m bgl.
5. Installed with a HDPE standpipe to 9.50m bgl.

CHISELLING

Depth From	Depth To	Time Taken
1.40	2.80	03:00
3.50	4.50	02:30

WATER LEVEL OBSERVATIONS

	Date	Time	Water Strike	Standing Level	Casing Depth
1	11-12-14		8.70	6.10	6.00

BOREHOLE DIAMETER	CASING DIAMETER	DEPTH SEALED
	150mm to 10.45m	

All measurements in metres unless otherwise stated

10m/page Scale: 1:62.50

Coordinates to National Grid
Ground Level to Ordnance Datum

Plant Used:	Coordinates / Level (mAOD):	Logged By:	Checked By:	Approved By:
Dando 2000	E: 472768 N: 107394 Level: 17.07	ML	AC	DW

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Project: **Stanbridge Road, Havant**

Project No: **13-0646.01**

Hole ID: **BH2**

CABLE PERCUSSION BOREHOLE LOG

Date From / To: 08/12/2014 - 09/12/2014

Client: **BCP (Havant) LLP**

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	*REDUCED LEVEL* / DEPTH (Thickness)	Sample Details TYPE	Sample Details REF	Sample Details Depth	Test Results SPT N Value/Drive mm	Backfill Details
Concrete.				*16.62* 0.20					
MADE GROUND: Brown sandy gravelly CLAY. Gravel is angular to sub-rounded fine to coarse with occasional brick cobbles. Gravels comprise brick concrete and chert.				*16.32* 0.50	D		0.50		
				(0.90)			1.00 - 1.45	CPT N=22 5,4/3,4,7,8	
MADE GROUND: Firm brown mottled grey, slightly sandy, slightly gravelly CLAY. Sand is fine to coarse, gravel is angular to sub-rounded fine to coarse flint and brick.				*15.42* 1.40	B		1.50		
Dense to very dense light brown slightly sandy GRAVEL. Sand is fine to coarse, gravel is angular to sub-angular chert/ flint. [RIVER TERRACE DEPOSITS]							2.00 - 2.45	CPT N=48 13,11/12,11,13,12	
					B		2.50		
							3.00 - 3.45	CPT N=50/230mm (12,13/15,16,16,3/5mm)	
				(4.20)	B		3.50		
							4.00 - 4.45	CPT N=50/155mm (12,13/65mm/22,23,5/5mm)	
					B		4.50		
		1	(150mm)				5.00 - 5.45	CPT N=50/225mm (12,13/60mm/15,17,18)	
				11.22 5.60	D		5.50		
Firm brown blue slightly silty CLAY with occasional fine silty partings. [LONDON CLAY FORMATION]		1		(0.70)	U		6.00 - 6.45	U=40/450mm	
				10.52 6.30					
Firm green grey silty sandy CLAY. [LONDON CLAY FORMATION]				(2.00)			7.50 - 7.95	SPT N=14 2,2/3,3,4,4	
					D		8.00		
				8.52 8.30					
Very stiff grey silty gravelly CLAY. Gravel is fine to coarse sub-angular to rounded chert/ flint. [LONDON CLAY FORMATION]							9.00 - 9.45	SPT N=42 3,4/9,10,11,12	
				(1.87)					
							9.90 - 10.35	SPT N=50/270mm	

REMARKS :

1. Engineer verified logged in general accordance to BS 5930:2010.
2. Area CAT scanned prior to excavation.
3. Water added from 1.50m bgl.
4. Groundwater encountered at 5.90m bgl.
5. Installed with a HDPE standpipe to 9.00m bgl.

CHISELLING

Depth From	Depth To	Time Taken
1.80	2.80	02:30
3.00	4.00	03:00
4.00	5.50	03:00

WATER LEVEL OBSERVATIONS

	Date	Time	Water Strike	Standing Level	Casing Depth
1	09-12-14		5.90	5.10	5.50

BOREHOLE DIAMETER	CASING DIAMETER	DEPTH SEALED
	150mm to 10.17m	

All measurements in metres unless otherwise stated

10m/page Scale: 1:62.50

Coordinates to National Grid
Ground Level to Ordnance Datum

Plant Used:	Coordinates / Level (mAOD):	Logged By:	Checked By:	Approved By:
Dando 2000	E: 472710 N: 107423 Level: 16.82	ML	AC	DW

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Project: **Stanbridge Road, Havant**

Project No: **13-0646.01**

Hole ID: **BH2**

CABLE PERCUSSION BOREHOLE LOG

Date From / To: 08/12/2014 - 09/12/2014

Client: **BCP (Havant) LLP**

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	*REDUCED LEVEL/* DEPTH (Thickness)	Sample Details TYPE	Sample Details REF	Sample Details Depth	Test Results SPT N Value/Drive mm	Backfill Details
Borehole complete at 10.17m bgl.			10.17	6.65 10.17				(9,13/13,14,14,9/45mm)	

REMARKS :

1. Engineer verified logged in general accordance to BS 5930:2010.
2. Area CAT scanned prior to excavation.
3. Water added from 1.50m bgl.
4. Groundwater encountered at 5.90m bgl.
5. Installed with a HDPE standpipe to 9.00m bgl.

CHISELLING

Depth From	Depth To	Time Taken
1.80	2.80	02:30
3.00	4.00	03:00
4.00	5.50	03:00

WATER LEVEL OBSERVATIONS

	Date	Time	Water Strike	Standing Level	Casing Depth
1	09-12-14		5.90	5.10	5.50

BOREHOLE DIAMETER	CASING DIAMETER	DEPTH SEALED
	150mm to 10.17m	

All measurements in metres unless otherwise stated

10m/page Scale: 1:62.50

Coordinates to National Grid
Ground Level to Ordnance Datum

Plant Used:	Coordinates / Level (mAOD):	Logged By:	Checked By:	Approved By:
Dando 2000	E: 472710 N: 107423 Level: 16.82	ML	AC	DW

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Project:	Project No:	Hole ID:
Stanbridge Road, Havant	**13-0646.01**	**BH3**
CABLE PERCUSSION BOREHOLE LOG	Date From / To: 16/12/2014 - 17/12/2014	Client: **BCP (Havant) LLP**

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	*REDUCED LEVEL* / DEPTH (Thickness)	Sample Details TYPE	REF	Depth	Test Results SPT N Value/Drive mm	Backfill Details
Concrete.				*16.12* 0.25					
MADE GROUND: Very gravelly CLAY. Gravel is fine to coarse, sub-angular to sub-rounded brick and chert.				(0.55) *15.57* 0.80	D		0.50		
Firm becoming stiff light brown, slightly gravelly CLAY. Gravel is fine to coarse sub-angular to sub-rounded chert/ flint. Becoming coarser with depth. [HEAD DEPOSITS]							1.00 - 1.45	CPT N=16 2,3/4,4,3,5	
				(1.80)	D		1.50		
							2.00 - 2.45	CPT N=19 6,3/3,7,4,5	
				13.77 2.60	D		2.50		
Very dense light brown sandy GRAVEL with occasional cobbles. Gravel is fine to coarse, angular to sub-angular chert/ flint becoming coarser with depth. [RIVER TERRACE DEPOSITS]							3.00 - 3.45	CPT N=50/220mm (13,12/55mm/17,17,16/70mm)	
					D		3.50		
				(2.70)			4.00 - 4.45	CPT N=24/70mm (25,26/24/70mm)	
					D		4.50		
							5.00 - 5.45	CPT N=17 11,7/4,4,4,5	
			(150mm)	*11.07* 5.30					
Firm grey brown gravelly CLAY. Gravel is fine to coarse angular to sub-angular flint/ chert. [LONDON CLAY FORMATION]				*10.87* 5.50	D		5.50		
Firm becoming stiff (from c.8m) grey silty CLAY. [LONDON CLAY FORMATION]		1					6.00 - 6.45	SPT N=12 2,3/3,3,3,3	
		1			D		7.00		
				(3.40)	U		7.50 - 7.95	U=32/315mm	
				7.47 8.90					
Stiff grey sandy gravelly CLAY. Sand is fine to coarse, gravel is fine to coarse, angular to sub-angular flint/ chert. [LONDON CLAY FORMATION]							9.00 - 9.45	SPT N=23 3,4/5,6,6,6	
					D		9.50		
				(1.55)			10.00 - 10.45		

REMARKS :

1. Engineer verified logged in general accordance to BS 5930:2010.
2. Area CAT scanned prior to excavation.
3. Water added from 3.00m bgl.
4. Groundwater encountered at 6.90m bgl.
5. Backfilled with arisings.

CHISELLING

Depth From	Depth To	Time Taken
2.50	3.00	01:45
3.00	4.00	02:15

WATER LEVEL OBSERVATIONS

	Date	Time	Water Strike	Standing Level	Casing Depth
1	17-12-14		6.90	5.90	6.00

BOREHOLE DIAMETER	CASING DIAMETER	DEPTH SEALED
	150mm to 10.45m	

All measurements in metres unless otherwise stated	10m/page Scale: 1:62.50	Coordinates to National Grid Ground Level to Ordnance Datum		Page 1 of 2
Plant Used: Dando 2000	Coordinates / Level (mAOD): E: 472642 N: 107311 Level: 16.37	Logged By: ML	Checked By: AC	Approved By: DW

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Project: **Stanbridge Road, Havant**

Project No: **13-0646.01**

Hole ID: **BH3**

CABLE PERCUSSION BOREHOLE LOG

Date From / To: 16/12/2014 - 17/12/2014

Client: **BCP (Havant) LLP**

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	*REDUCED LEVEL/* DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
								SPT N=40 5,7/8,9,11,12	
			10.45	5.92 10.45					
Borehole complete at 10.45m bgl.									

REMARKS :

1. Engineer verified logged in general accordance to BS 5930:2010.
2. Area CAT scanned prior to excavation.
3. Water added from 3.00m bgl.
4. Groundwater encountered at 6.90m bgl.
5. Backfilled with arisings.

CHISELLING

Depth From	Depth To	Time Taken
2.50	3.00	01:45
3.00	4.00	02:15

WATER LEVEL OBSERVATIONS

	Date	Time	Water Strike	Standing Level	Casing Depth
1	17-12-14		6.90	5.90	6.00

BOREHOLE DIAMETER	CASING DIAMETER	DEPTH SEALED
	150mm to 10.45m	

All measurements in metres unless otherwise stated

10m/page Scale: 1:62.50

Coordinates to National Grid
Ground Level to Ordnance Datum

Plant Used:	Coordinates / Level (mAOD):	Logged By:	Checked By:	Approved By:
Dando 2000	E: 472642 N: 107311 Level: 16.37	ML	AC	DW

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Project: **Stanbridge Road, Havant**

Project No: **13-0646.01**

Hole ID: **BH4**

CABLE PERCUSSION BOREHOLE LOG

Date From / To: 12/12/2014 - 15/12/2014

Client: **BCP (Havant) LLP**

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	*REDUCED LEVEL* / DEPTH (Thickness)	Sample Details TYPE	Sample Details REF	Sample Details Depth	Test Results SPT N Value/Drive mm	Backfill Details
Concrete.				*15.74* 0.25					
MADE GROUND: Firm brown gravelly CLAY. Gravel is fine to coarse, sub-angular to sub-rounded chert and brick.				*15.29* 0.70	D		0.50		
Stiff Brown slightly gravelly CLAY. Gravel is fine to medium, angular to sub-angular chert. [HEAD DEPOSITS].				(2.20)			1.00 - 1.45	CPT N=25 3,5/5,7,8,5	
					D		1.50		
							2.00 - 2.45	CPT N=24 5,7/4,6,7,7	
					D		2.50		
				13.09 2.90			3.00 - 3.45	CPT N=50/265mm (11,14/11,14,15,10/40mm)	
Very dense and dense light brown sandy GRAVEL. Sand is fine to coarse, gravel is fine to medium, angular to sub-angular chert. [RIVER TERRACE DEPOSITS]					D		3.50		
				(2.30)			4.00 - 4.45	CPT N=48 7,9/12,9,13,14	
					D		4.50		
			(150mm)				5.00 - 5.45	CPT N=19 7,6/5,4,5,5	
				10.79 5.20					
Stiff brown silty gravelly CLAY. Gravel is fine to medium angular to sub-angular chert. [LONDON CLAY FORMATION]		1		(0.60)	D		5.50		
				10.19 5.80					
Stiff grey silty CLAY. [LONDON CLAY FORMATION]							6.00 - 6.45	SPT N=17 2,3/4,4,4,5	
					D		7.00		
				(2.60)					
					U		7.50 - 7.95	U=28/450mm	
				7.59 8.40					
Stiff to very stiff gravelly CLAY. Gravel is fine to medium, sub-angular to sub-rounded chert. [LONDON CLAY FORMATION]							9.00 - 9.45	SPT N=32 4,5/7,8,8,9	
				(1.55)	D		9.50		
							9.50 - 9.95	SPT N=44 6,8/10,10,12,12	
			9.95	*6.04* 9.95					

REMARKS :

1. Engineer verified logged in general accordance to BS 5930:2010.
2. Area CAT scanned prior to excavation.
3. Water added from 3.00m bgl.
4. Groundwater encountered at 5.80m bgl.
5. Installed with a HDPE standpipe to 9.00m bgl.

CHISELLING		
Depth From	Depth To	Time Taken
3.20	4.00	01:45
4.00	4.90	02:15

WATER LEVEL OBSERVATIONS				
	Date	Time	Water Strike	Standing Level	Casing Depth
1	15-12-14		5.80	5.40	5.50

BOREHOLE DIAMETER	CASING DIAMETER	DEPTH SEALED
	150mm to 9.95m	

All measurements in metres unless otherwise stated

10m/page Scale: 1:62.50

Coordinates to National Grid
Ground Level to Ordnance Datum

Plant Used: Dando 2000

Coordinates / Level (mAOD): E: 472661 N: 107247 Level: 15.99

Logged By: ML

Checked By: AC

Approved By: DW

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Project: **Stanbridge Road, Havant**

Project No: **13-0646.01**

Hole ID: **BH4**

CABLE PERCUSSION BOREHOLE LOG

Date From / To: 12/12/2014 - 15/12/2014

Client: **BCP (Havant) LLP**

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	*REDUCED LEVEL/* DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
Borehole complete at 9.95m bgl.									

REMARKS :

1. Engineer verified logged in general accordance to BS 5930:2010.
2. Area CAT scanned prior to excavation.
3. Water added from 3.00m bgl.
4. Groundwater encountered at 5.80m bgl.
5. Installed with a HDPE standpipe to 9.00m bgl.

CHISELLING

Depth From	Depth To	Time Taken
3.20	4.00	01:45
4.00	4.90	02:15

WATER LEVEL OBSERVATIONS

	Date	Time	Water Strike	Standing Level	Casing Depth
1	15-12-14		5.80	5.40	5.50

BOREHOLE DIAMETER	CASING DIAMETER	DEPTH SEALED
	150mm to 9.95m	

All measurements in metres unless otherwise stated

10m/page Scale: 1:62.50

Coordinates to National Grid
Ground Level to Ordnance Datum

Plant Used:	Coordinates / Level (mAOD):	Logged By:	Checked By:	Approved By:
Dando 2000	E: 472661 N: 107247 Level: 15.99	ML	AC	DW

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Project: **Stanbridge Road, Havant**

Project No: **13-0646.01**

Hole ID: **BH5**

CABLE PERCUSSION BOREHOLE LOG

Date From / To: 11/12/2014 - 12/12/2014

Client: **BCP (Havant) LLP**

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	*REDUCED LEVEL* / DEPTH (Thickness)	Sample Details TYPE	Sample Details REF	Sample Details Depth	Test Results SPT N Value/Drive mm	Backfill Details
Concrete.				*15.88* 0.30					
MADE GROUND: Firm brown gravelly CLAY. Gravel is fine to medium grained brick.				*15.68* 0.50	D		0.50		
Firm brown gravelly CLAY. Gravel is fine to medium sub-angular to sub-rounded chert. [HEAD DEPOSITS]				(1.10)			1.00 - 1.45	CPT N=13 3,2/2,3,4,4	
				14.58 1.60	D		1.50		
Medium dense and dense light brown sandy GRAVEL. Gravel is fine to medium angular to sub-angular chert. [RIVER TERRACE DEPOSITS]					B		2.00 2.00 - 2.45	CPT N=42 5,6/8,8,12,14	
					D		3.00 3.00 - 3.45	CPT N=50/285mm (9,11/12,11,15,12/60mm)	
				(4.60)	D		4.00 4.00 - 4.45	CPT N=24 5,5/6,5,6,7	
			(150mm)		D		5.00 5.00 - 5.45	CPT N=28 9,12/8,7,7,6	
							6.00 - 6.45	CPT N=10 4,3/2,2,3,3	
				9.98 6.20					
Firm brown slightly silty CLAY with occasional chert gravel. [LONDON CLAY FORMATION]				(0.70)					
				9.28 6.90	D		7.00		
Stiff brown slightly silty CLAY with occasional silty partings. [LONDON CLAY FORMATION]				(1.20)	U		7.50 - 7.95	U=70/450mm	
				8.08 8.10					
Stiff slightly gravelly CLAY. Gravel is fine to medium sub-angular to sub-rounded chert. [LONDON CLAY FORMATION]				(1.85)			9.00 - 9.45	SPT N=27 5,5/5,7,7,8	
					D		9.50 9.50 - 9.95	SPT N=42 5,7/8,11,11,12	
			9.95	*6.23* 9.95					

REMARKS :

1. Engineer verified logged in general accordance to BS 5930:2010.
2. Area CAT scanned prior to excavation.
3. Water added from 1.50m bgl.
4. Groundwater encountered at 6.90m bgl.
5. Installed with a HDPE standpipe to 9.00m bgl.

CHISELLING		
Depth From	Depth To	Time Taken
2.20	3.00	01:30
3.00	3.70	01:15

WATER LEVEL OBSERVATIONS				
	Date	Time	Water Strike	Standing Level	Casing Depth
1	12-12-14		6.90	5.20	6.00

BOREHOLE DIAMETER	CASING DIAMETER	DEPTH SEALED
	150mm to 9.95m	

All measurements in metres unless otherwise stated

10m/page Scale: 1:62.50

Coordinates to National Grid
Ground Level to Ordnance Datum

Plant Used:	Coordinates / Level (mAOD):	Logged By:	Checked By:	Approved By:
Dando 2000	E: 427712 N: 107265 Level: 16.18	ML	AC	DW

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Project: **Stanbridge Road, Havant**

Project No: **13-0646.01**

Hole ID: **BH5**

CABLE PERCUSSION BOREHOLE LOG

Date From / To: 11/12/2014 - 12/12/2014

Client: **BCP (Havant) LLP**

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	*REDUCED LEVEL/* DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
Borehole complete at 9.95m bgl.									

REMARKS :

1. Engineer verified logged in general accordance to BS 5930:2010.
2. Area CAT scanned prior to excavation.
3. Water added from 1.50m bgl.
4. Groundwater encountered at 6.90m bgl.
5. Installed with a HDPE standpipe to 9.00m bgl.

CHISELLING

Depth From	Depth To	Time Taken
2.20	3.00	01:30
3.00	3.70	01:15

WATER LEVEL OBSERVATIONS

	Date	Time	Water Strike	Standing Level	Casing Depth
1	12-12-14		6.90	5.20	6.00

BOREHOLE DIAMETER	CASING DIAMETER	DEPTH SEALED
	150mm to 9.95m	

All measurements in metres unless otherwise stated

10m/page Scale: 1:62.50

Coordinates to National Grid
Ground Level to Ordnance Datum

Plant Used:	Coordinates / Level (mAOD):	Logged By:	Checked By:	Approved By:
Dando 2000	E: 427712 N: 107265 Level: 16.18	ML	AC	DW

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Project:	Project No:	Hole ID:
Stanbridge Road, Havant	**13-0646.01**	**BH6**
CABLE PERCUSSION BOREHOLE LOG	Date From / To: 18/12/2014 - 22/12/2014	Client: **BCP (Havant) LLP**

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	*REDUCED LEVEL* / DEPTH (Thickness)	Sample Details TYPE	Sample Details REF	Sample Details Depth	Test Results SPT N Value/Drive mm	Backfill Details
Concrete.				*16.49* 0.30	B		0.30 - 0.60		
MADE GROUND: Orange brown slightly sandy very gravelly CLAY. Sand is fine to medium, gravel is sub-angular.				(0.60)					
				15.89 0.90	B		0.90 - 1.30		
MADE GROUND: Dense black silty sandy GRAVEL of tarmacadam/ asphalt.				*15.49* 1.30	B		1.30 - 1.60		
MADE GROUND: Gravel sub-base.				*15.29* 1.50			1.50 - 1.95	CPT N=24 2,3/4,6,6,8	
Stiff light brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse, gravel is fine to coarse angular to sub-angular flint/ chert. Becoming very gravelly at base. [HEAD DEPOSITS]				(1.50)			2.50 - 2.95	CPT N=33 3,5/7,8,8,10	
				13.79 3.00					
Dense and very dense light brown sandy, cobbly GRAVEL. Gravel is fine to coarse angular to sub-angular flint/ chert. [RIVER TERRACE DEPOSITS]							3.50 - 3.95	CPT N=58 1,4/9,15,21,13	
			(200mm)	(2.50)			4.50 - 4.95	CPT N=37 2,7/7,8,11,11	
				11.29 5.50					
Firm brown gravelly CLAY. [LONDON CLAY FORMATION]				(1.30)					
				9.99 6.80	B		6.80 - 7.20		
Firm grey CLAY with rare orange mottling and slightly organic partings and rare sub-angular flint gravel. [LONDON CLAY FORMATION]				(1.20)	U		7.50 - 7.95	U=40/450mm	
				8.79 8.00	D		8.00 - 8.00		
Stiff light and dark grey slightly gravelly CLAY. Slightly organic traces at top of strata. Gravel is fine to medium, sub-angular to subrounded chert. [LONDON CLAY FORMATION]				(1.95)	U		9.00 - 9.45	U=55/450mm	
					D		9.50 - 9.95		
							9.50 - 9.95	SPT N=24 2,3,4,6,6,8	
			9.95	*6.84* 9.95					

REMARKS :

1. Engineer verified logged in general accordance to BS 5930:2010.
2. Area CAT scanned prior to excavation.
3. Water added from 3.00m - 6.00m bgl.
4. Groundwater encountered at 7.00m bgl.
5. Backfilled with arisings.

CHISELLING		
Depth From	Depth To	Time Taken
0.90	1.30	02:30
3.00	5.00	02:00

WATER LEVEL OBSERVATIONS					
	Date	Time	Water Strike	Standing Level	Casing Depth
1	19-12-14		7.00		6.00

BOREHOLE DIAMETER	CASING DIAMETER	DEPTH SEALED
	200mm to 9.95m	

All measurements in metres unless otherwise stated	10m/page Scale: 1:62.50	No Coordinate Data Available Ground Level to Ordnance Datum	Page 1 of 2

Plant Used:	Coordinates / Level (mAOD):	Logged By:	Checked By:	Approved By:
Pilcon Cut Down	Level: 16.79	SB	AC	DW

Delta-Simons
3 Henley Office Park, Doddington Road,
Lincoln, LN6 3QR
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Fax: +44 (0) 1522 698393
Email: info@deltasimons.com

Project: **Stanbridge Road, Havant**

Project No: **13-0646.01**

Hole ID: **BH6**

CABLE PERCUSSION BOREHOLE LOG

Date From / To: 18/12/2014 - 22/12/2014

Client: **BCP (Havant) LLP**

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	*REDUCED LEVEL*/ DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
Borehole complete at 9.95m bgl.									

REMARKS :

1. Engineer verified logged in general accordance to BS 5930:2010.
2. Area CAT scanned prior to excavation.
3. Water added from 3.00m - 6.00m bgl.
4. Groundwater encountered at 7.00m bgl.
5. Backfilled with arisings.

CHISELLING			WATER LEVEL OBSERVATIONS					
Depth From	Depth To	Time Taken		Date	Time	Water Strike	Standing Level	Casing Depth
0.90 3.00	1.30 5.00	02:30 02:00	1	19-12-14		7.00		6.00

BOREHOLE DIAMETER	CASING DIAMETER	DEPTH SEALED
	200mm to 9.95m	

All measurements in metres unless otherwise stated

10m/page Scale: 1:62.50

No Coordinate Data Available
Ground Level to Ordnance Datum

Plant Used:	Coordinates / Level (mAOD):	Logged By:	Checked By:	Approved By:
Pilcon Cut Down	Level: 16.79	SB	AC	DW

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Email: info@deltasimons.com

deltasimons

Project:	Project No:	Hole ID:
Stanbridge Road, Havant	**13-0646.01**	**BH7**
CABLE PERCUSSION BOREHOLE LOG	Date From / To: 12/12/2014 - 17/12/2014	Client: **BCP (Havant) LLP**

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	*REDUCED LEVEL* / DEPTH (Thickness)	Sample Details TYPE	Sample Details REF	Sample Details Depth	Test Results SPT N Value/Drive mm	Backfill Details
Concrete.				*16.59* 0.20					
MADE GROUND: Hardcore GRAVEL sub-base.				*16.29* 0.50					
MADE GROUND: Fine to coarse brick GRAVEL.				*15.99* 0.80					
Red brown gravelly CLAY. [HEAD DEPOSITS]				*15.69* 1.10					
Medium dense and dense clayey sandy GRAVEL. Sand is medium to coarse, gravel is fine to coarse, sub-angular to sub-rounded chert. [RIVER TERRACE DEPOSITS]				(4.20)			1.50 - 1.95	CPT N=11 2,4/3,3,3,2	
							2.50 - 2.95	CPT N=33 3,6/7,8,8,10	
							3.50 - 3.95	CPT N=30 2,4/8,6,7,9	
							4.50 - 4.95	CPT N=30 5,7/8,8,7,7	
			(200mm)						
				11.49 5.30	D		5.30		
Firm brown sandy gravelly CLAY. Gravel is fine to medium, angular to sub-angular chert. [LONDON CLAY FORMATION]				(0.50) *10.99* 5.80	D		5.80		
					U		6.00 - 6.45	U=20/450mm	
Firm grey CLAY becoming silty towards base. [LONDON CLAY FORMATION]					D		6.50		
				(2.00)					
							7.50 - 7.95	SPT N=13 1,2/2,3,3,5	
				8.99 7.80					
Stiff dark grey silty CLAY. [LONDON CLAY FORMATION]				(2.15)					
					D		9.50		
							9.50 - 9.95	SPT N=24 3,5/5,5,7,7	
			9.95	*6.84* 9.95					

REMARKS :

1. Engineer verified logged in general accordance to BS 5930:2010.
2. Area CAT scanned prior to excavation.
3. Groundwater encountered at 5.80m bgl.
4. Installed with a HDPE standpipe to 9.50m bgl.

CHISELLING		
Depth From	Depth To	Time Taken
1.10	3.00	03:30
3.00	4.50	03:30
4.50	5.30	01:00

WATER LEVEL OBSERVATIONS					
	Date	Time	Water Strike	Standing Level	Casing Depth
1	16-12-14		5.80		

BOREHOLE DIAMETER	CASING DIAMETER	DEPTH SEALED
	200mm to 9.95m	

All measurements in metres unless otherwise stated	10m/page Scale: 1:62.50	No Coordinate Data Available Ground Level to Ordnance Datum		Page 1 of 2
Plant Used: Pilcon Cut Down	Coordinates / Level (mAOD): Level: 16.79	Logged By: SB	Checked By: AC	Approved By: DW

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Lincoln, LN6 3QR
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Email: info@deltasimons.com

Project: **Stanbridge Road, Havant**

Project No: **13-0646.01**

Hole ID: **BH7**

CABLE PERCUSSION BOREHOLE LOG

Date From / To: 12/12/2014 - 17/12/2014

Client: **BCP (Havant) LLP**

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	*REDUCED LEVEL/* DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
Borehole complete at 9.95m bgl.									

REMARKS :

1. Engineer verified logged in general accordance to BS 5930:2010.
2. Area CAT scanned prior to excavation.
3. Groundwater encountered at 5.80m bgl.
4. Installed with a HDPE standpipe to 9.50m bgl.

CHISELLING

Depth From	Depth To	Time Taken
1.10	3.00	03:30
3.00	4.50	03:30
4.50	5.30	01:00

WATER LEVEL OBSERVATIONS

	Date	Time	Water Strike	Standing Level	Casing Depth
1	16-12-14		5.80		

BOREHOLE DIAMETER	CASING DIAMETER	DEPTH SEALED
	200mm to 9.95m	

All measurements in metres unless otherwise stated

10m/page Scale: 1:62.50

No Coordinate Data Available
Ground Level to Ordnance Datum

Plant Used: Pilcon Cut Down

Coordinates / Level (mAOD): Level: 16.79

Logged By: SB

Checked By: AC

Approved By: DW

Appendix VII

SPT Calibration Report

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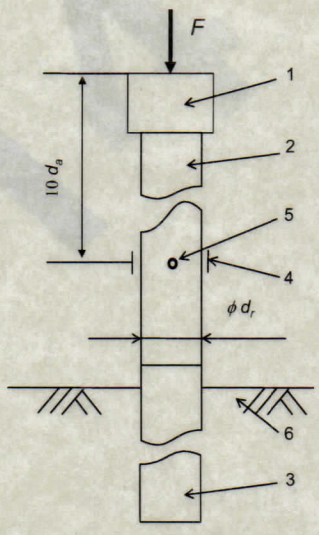
Hammer Energy Measurement Report

Type of Hammer	SPT HAMMER
Client	JACKSON DRILLING
Test No	EQU1006
Test Depth (m)	8.76
Date of Test	21 March 2014
Valid until	21 March 2015
Hammer ID	JD05

Mass of the hammer	m =	63.5kg
Falling height	h =	0.76m
E_{theor} =	$m \times g \times h$ =	473J

Characteristics of the instrumented rod

Diameter	d_r =	0.052 m
Length of the instrumented rod		0.558 m
Area	A =	11.61 cm^2
Modulus	E_a =	206843 MPa

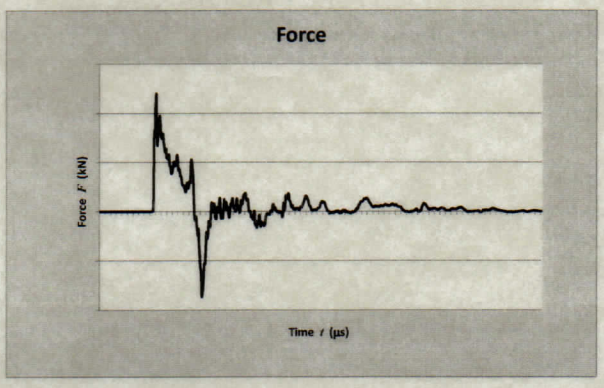


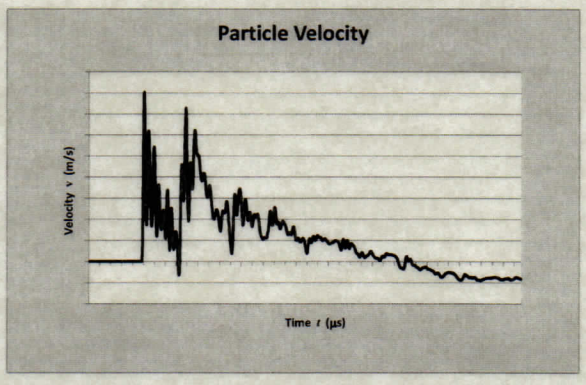
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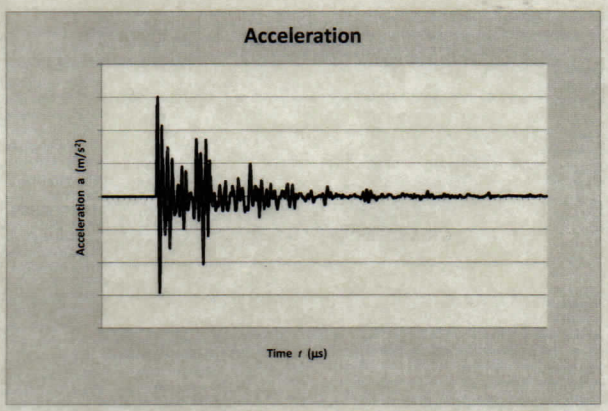
1 Anvil
2 Part of instrumented rod
3 Drive Rod
4 Strain Gauge
5 Accelerometer
6 Ground

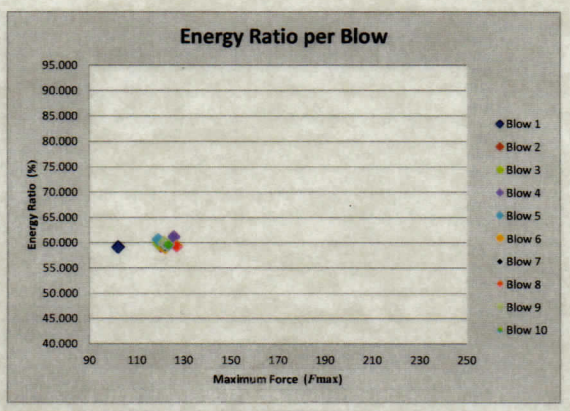
F Force
d_r Diameter of rod

Fig. B.1 and B.2 BS EN ISO 22476-3 : 2005 + A1 : 2011









Observations:
1.

E_{meas} = **0.281** kN-m

E_{theor} = **0.473** kN-m

Energy Ratio $(E_r) = \frac{E_{meas}}{E_{theor}} =$ **59.42%**

Equipe SPT Analyzer Operators: JML

Prepared by: **Checked by:** **Date** 25/03/2014

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SPT Calibration Report

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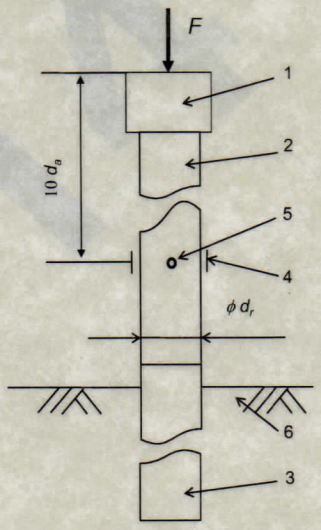
Hammer Energy Measurement Report

Type of Hammer	SPT HAMMER
Client	JACKSON DRILLING
Test No	EQU1005
Test Depth (m)	8.58
Date of Test	21 March 2014
Valid until	21 March 2015
Hammer ID	JD03

Mass of the hammer	m =	63.5kg
Falling height	h =	0.76m
E_{theor} =	$m \times g \times h$ =	473J

Characteristics of the instrumented rod

Diameter	d_r =	0.052 m
Length of the instrumented rod		0.558 m
Area	A =	11.61 cm^2
Modulus	E_a =	206843 MPa

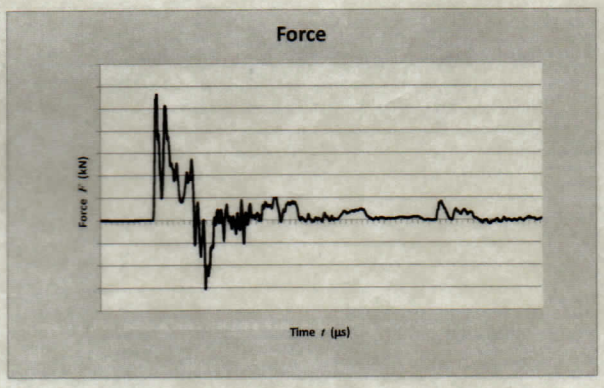


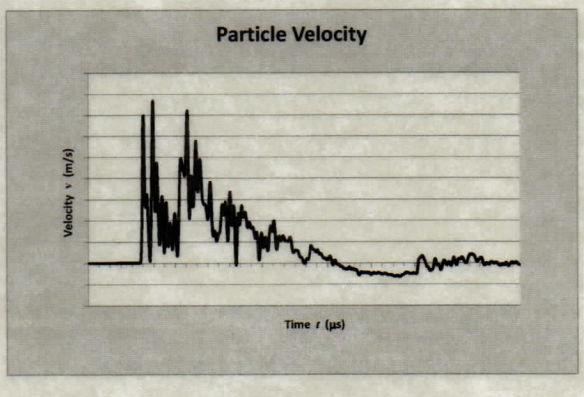
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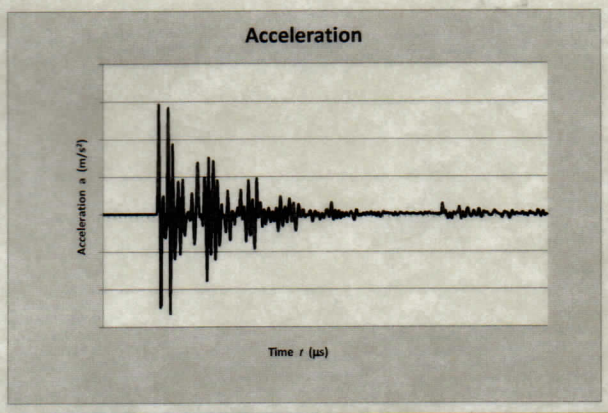
1 Anvil
2 Part of instrumented rod
3 Drive Rod
4 Strain Gauge
5 Accelerometer
6 Ground

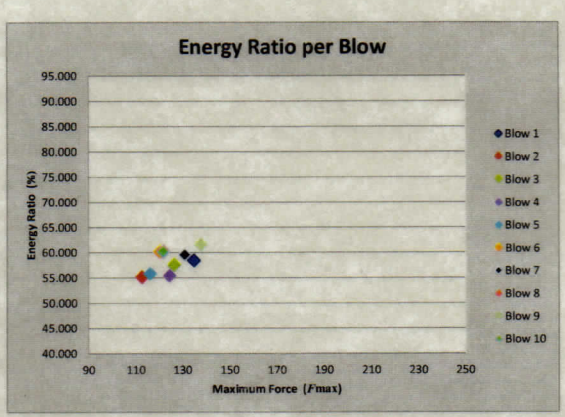
F Force
d_r Diameter of rod

Fig. B.1 and B.2 BS EN ISO 22476-3 : 2005 + A1 : 2011









Observations:
1.

E_{meas} = **0.275** kN-m

E_{theor} = **0.473** kN-m

Energy Ratio $(E_r) = \frac{E_{meas}}{E_{theor}} =$ **58.16%**

Equipe SPT Analyzer Operators: JML

Prepared by: **Checked by:** **Date** 25/03/2014

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JACKSON DRILLING LTD.

Email: info@jacksondrilling.co.uk • Telephone: 01458 851276 • Fax: 01458 850544

DRILLER'S LOG

Site Name: STANBRIDGE RD | Job No: 8690 | Date: 10.12.14 | Sheet 1 of | Borehole No. 1

Depth (m)	Soil Description	Sample/Test Type	Sample/Test No.	Depth (m) From	Depth (m) To	U100s Blows	U100s Length	Standard Penetration Tests 1	2	3	4	5	6	Pen	Casing Depth (m)	Water Level (m)
	Start of Shift	D	1	0	5											
GL	CONCRETE	CPT	2	1.	1.45			3	5	5	8	11	12		1.0	D
		D	3	1.5	0											
0.15	HARDCORE	CPT	4	2.	2.45			8	12		23		27		2.0	ADDED
		BK	5	2.5	0				10				35m			
0.3	BRICK CLAY FILL	CPT	6	3.	3.45			6	4	5	5	6	7		3.0	
		CPT	7	4.	4.45			10	7	6	10	8	12		4.0	
0.5	BROWN GRAVELEY CLAY	CPT	8	5.	5.45			7	11	8	4	4	4		5.0	
	WITH FLINTS															
1.4	VERY DENSE GRAVEL FLINTS															
	FROM 3 – 4.5 NO SOIL RETURN (FLINT GRAVEL)															
	End of Shift - Borehole Complete/Incomplete															

Chiselling

Depth (m) From	Depth (m) To	Time From	Time To	Hours
1.4	2.8			3 1/2 hr.
3.5	4.5			2 1/2

Water Entries	1	2	3
Depth Struck			
Casing Depth			
Depth 5 mins			
Depth 10 mins			
Depth 20 mins			
Cut off at			

Water Added	From	To
Water Added		
Borehole kept Full		

Piezometer/Standpipe	From	To
Plain Pipe		
Slotted Pipe		
Filter		
Bentonite Seal		
Grout/Backfill		
Borehole Diameter (mm)		

Piezo / Standpipe

Remarks: (Standing time, day works, visitors, weather etc.)

1/2 TO TIDY UP BIT2

1/2 TO FILL UP BOWSER

Driller: M LOCKE

Rig: DANDO 2000

Crew: S WHITTON

Additional Equipment:

Excavation: | Backfill:

Total Number of Samples					
SPT	U	D	B	W	P

BH No.

Driller's Name	Driller's Signature	Client's Signature	Received:	Approved:
		A. [illegible]		

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DRILLER'S LOG

Site Name: STANBRIDGE RD | Job No: 8690 | Date: 11.12.14 | Sheet 2 of 2 | Borehole No. 1

Depth (m)	Soil Description	Sample/Test Type	Sample/Test No.	Depth (m) From	Depth (m) To	U100s Blows	U100s Length	Standard Penetration Tests 1	2	3	4	5	6	Pen	Casing Depth (m)	Water Level (m)
	Start of Shift	D	9	5.50												
		CPT	10	6.00	6.45			3	3	2	3	3	4		6.0	D
	NO RETURN FROM 4.5 - 5.5	D	11	7.00												
5.5	BROWN GRAVELLY SILT CLAY	U4	12	7.5	7.95		60		1	0	0	0			6.0	D
		SJ	13	7.95	8.											
6.6	GREY SILT CLAY	SPT	14	9.00	9.45			4	5	6	7	7	9		6.0	6.9
6.7	BLOCK: GREY SILT CLAY WITH FLINTS	D	15	9.50												
		SPT	16	10.00	10.45			5	6	9	11	11	12		6.0	7.8
9.3	GREY CLAY WITH FLINTS															

End of Shift - Borehole Complete/Incomplete 10.00

Chiselling

Depth (m) From	Depth (m) To	Time From	Time To	Hours

Water Entries	1	2	3
Depth Struck	6.7		
Casing Depth	6.0		
Depth 5 mins	6.9		
Depth 10 mins	6.3		
Depth 20 mins	6.1		
Cut off at	NO		

Water Added	From	To	Piezo / Standpipe
Water Added			
Borehole kept Full			

Piezometer/Standpipe	From	To
Plain Pipe	GL	1
Slotted Pipe	1	7.5
Filter	9.5	10.9
Bentonite Seal	7.9	8.1
Grout/Backfill	8.1	GL - Concrete
Borehole Diameter (mm)		

CONCRETE GNS TMP

Remarks: (Standing time, day works, visitors, weather etc.)

½ TO CLEAR AUGER SPOIL

20 MIN WAITING FOR WATER TO RISE

Driller: M LOCKE

Rig: DANDO 2000

Crew: S WALTON

Additional Equipment:

Excavation: | Backfill:

Total Number of Samples

SPT	U	D	B	W	P

BH No.

Driller's Name	Driller's Signature	Client's Signature	Received:	Approved:
		A. Clark		

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DRILLER'S LOG

Site Name: STANBRIDGE RD | Job No: 5690 | Date: 8/12/14 | Sheet 1 of | Borehole No. 2

Depth (m)	Soil Description	Sample/Test Type	Sample/Test No.	Depth (m) From	Depth (m) To	U100s Blows	U100s Length	Standard Penetration Tests 1	2	3	4	5	6	Pen	Casing Depth (m)	Water Level (m)
	Start of Shift	D	1	0.5												
GL	concrete	CT	2	1.	1.45			5	4	3	4	7	8		1.0	D
0.2	BRICK CLAY GRAVEL FILL	B/S	3	1.5	2.5											WATER ADDED
		CT	4	2	2.45			13	11	12	11	13	12		2.0	
0.6	BROWN CLAY WITH															
	GRAVEL + BRICK	B/S	5	2.50	3											
	FRAGMENT															
1.4	VERY DENSE GRAVEL															

End of Shift - Borehole Complete/Incomplete 3.0

Chiselling

Depth (m) From	Depth (m) To	Time From	Time To	Hours
1.8	2.8			2 1/2

Water Entries	1	2	3
Depth Struck			
Casing Depth			
Depth 5 mins			
Depth 10 mins			
Depth 20 mins			
Cut off at			

Water Added	From	To
Water Added		
Borehole kept Full		

Piezometer/Standpipe	From	To
Plain Pipe		
Slotted Pipe		
Filter		
Bentonite Seal		
Grout/Backfill		
Borehole Diameter (mm)		

Piezo / Standpipe

Remarks: (Standing time, day works, visitors, weather etc.)

9-10 SITE WALK OVER AND H/S TALK

10-10.45 WAITING FOR BH1 TO BE CORED OUT

12-2 GETTING BOWSER FROM PORTSMOUTH AND FILLING UP

Driller: M LOCKE

Crew: S WALTON

Rig: DANDO 2000

Additional Equipment:

Excavation: | Backfill:

Total Number of Samples

SPT	U	D	B	W	P

BH No

Driller's Name | Driller's Signature | Client's Signature

Received: | Approved:

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DRILLER'S LOG

Site Name: STANBRIDGE RD | Job No: 8690 | Date: 9.12.14 | Sheet 2 of | Borehole No. 2

Depth (m)	Soil Description	Sample/Test Type	Sample/Test No.	Depth (m) From	Depth (m) To	U100s Blows	U100s Length	Standard Penetration Tests 1	2	3	4	5	6	Pen	Casing Depth (m)	Water Level (m)
	Start of Shift	CPT	6	3	3.45			12	13	15	16	16	3/5M		3.0	ADDED
		B/S	7	3.50												
2.5	DENSE GRAVEL WITH FLINTS	CPT	8	4.4	4.5			12	13/65		22	23	5/5		4.0	
		B/S	9	4.50												
5.6	BLUE SILT CLAY	CPT	10	5.5	5.45			12	13/60		15	17	18/75M		5.0	
6.3	GREENISH GREY SILT SANDY CLAY	D	11	5.50												
		U4	12	6	6.45	40	100	30							6.0	5.8
8.3	STIFF CLAY WITH FLINTS	SH	13	6.45	6.50											
		SPT	14	7.5	7.95			2	2	3	3	4	4		6.0	6.3
		D	15	8.0												
		SPT	16	9.0	9.45			3	4	9	10	11	12		6.0	8.1
		SPT	17	9.9	10.3			9	13	13	14	14	9/45M		6.0	7.6

End of Shift - Borehole Complete/Incomplete 9.9

Chiselling

Depth (m) From	Depth (m) To	Time From	Time To	Hours
3	4			3HR
4	5.5			3HR

Water Entries	1	2	3
Depth Struck	5.9		
Casing Depth	5.5		
Depth 5 mins	6.6		
Depth 10 mins	5.1		
Depth 20 mins	5.1		
Cut off at	NIL		

Water Added	From	To
Water Added		
Borehole kept Full		

Piezometer/Standpipe	From	To
Plain Pipe	GL	1
Slotted Pipe	1	9
Filter	9	09
Bentonite Seal	09	0.1
Grout/Backfill	0.1	GL
Borehole Diameter (mm)	6"	

Piezo / Standpipe

COVER
GPS TOP
- CONCRETE

Remarks: (Standing time, day works, visitors, weather etc.)
20 MIN WAITING FOR WATER TO RISE
20 MIN CLEARING UP SPOIL.

Driller: M LOCKE

Rig: DANDO 2000

Crew: S WALTON

Additional Equipment:

Excavation: | Backfill:

Total Number of Samples

SPT	U	D	B	W	P

BH No.

Driller's Name | Driller's Signature | Client's Signature: D. [illegible]

Received: | Approved:

JACKSON DRILLING LTD.

Email: info@jacksondrilling.co.uk • Telephone: 01458 851276 • Fax: 01458 850544

DRILLER'S LOG

Site Name: STANBRIDGE RD | Job No: 8670 | Date: 16 12 14 | Sheet 1 of | Borehole No. 3

Depth (m)	Soil Description	Sample/Test Type	Sample/Test No.	Depth (m) From	Depth (m) To	U100s Blows	U100s Length	Standard Penetration Tests 1	2	3	4	5	6	Pen	Casing Depth (m)	Water Level (m)
	Start of Shift	D	1	0.5												
GL	Concrete	CJT	2	1-	1.45			2	3	4	4	3	5		1.0	D
0.25	Clay Gravel Stone Fill	D	3	1.50												
		CJT	4	2-	2.45			6	3	3	7	4	5		2.0	D
0.8	Orange Gravelly Clay with Flint	D	5	2.50												WATER
		CJT	6	3	3.45			13	8	11	11	16			3-	ADDED
									55			70				
2.6	Dense Flint Gravels	D	7	3.50												
		CJT	8	4-	4.45			25		26		24			4-	
								75				70				
5.3	Yellow Grey Silt Sandy Clay	D	9	4.50												
		CJT	10	5	5.45			11	7	4	4	4	5		5-	
5.5	Grey Silt Clay	D	11	5.50												
		SJT	12	6-	6.45			2	3	3	3	3	3		6-	D

End of Shift - Borehole Complete/Incomplete

Chiselling Depth (m) From	To	Time From	To	Hours
2.5	3.0			1.45
3.0	4-			2.15

Water Entries	1	2	3
Depth Struck			
Casing Depth			
Depth 5 mins			
Depth 10 mins			
Depth 20 mins			
Cut off at			

Water Added	From	To
Water Added		
Borehole kept Full		

Piezometer/Standpipe	From	To
Plain Pipe		
Slotted Pipe		
Filter		
Bentonite Seal		
Grout/Backfill		
Borehole Diameter (mm)		

Piezo / Standpipe

Remarks: (Standing time, day works, visitors, weather etc.)

1/2 TO FILL BOWSER

CHIS CONT 4m – 5m 2HR

Driller: M Locke

Crew: S Walton

Rig: Dando 2000

Additional Equipment:

Excavation: | Backfill:

Total Number of Samples

SPT	U	D	B	W	P

BH No.

Driller's Name	Driller's Signature	Client's Signature	Received:	Approved:
		M. Gu		

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DRILLER'S LOG

Site Name: STANBRIDGE RD | Job No: 6690 | Date: 17.12.14 | Sheet 2 of 2 | Borehole No. 3

Depth (m)	Soil Description	Sample/Test Type	Sample/Test No.	Depth (m) From	Depth (m) To	U100s Blows	U100s Length	SPT 1	SPT 2	SPT 3	SPT 4	SPT 5	SPT 6	SPT Pen	Casing Depth (m)	Water Level (m)
	Start of Shift	D	13	7.0												
		U4	14	7.5	7.95	32	—	7.95			BRK				7.5	6.6
8.9	GREY SANDY CLAY with FLINTS	SH	15	7.95	8											
		SPT	16	9	9.45			3	4	5	6	6	6		7.5	7.3
		D	17	9.50												
		SPT	18	10	10.45			5	7	8	9	11	12		7.5	6.2
	End of Shift - Borehole Complete/Incomplete															

Chiselling Depth (m) From	To	Time From	To	Hours

Water Entries	1	2	3
Depth Struck	6.9		
Casing Depth	6.0		
Depth 5 mins	6.2		
Depth 10 mins	5.9		
Depth 20 mins	5.9		
Cut off at	/		

Water Added	From	To
Water Added		
Borehole kept Full		

Piezometer/Standpipe	From	To
Plain Pipe		
Slotted Pipe		
Filter		
Bentonite Seal		
Grout/Backfill		
Borehole Diameter (mm)		

Piezo / Standpipe

Remarks: (Standing time, day works, visitors, weather etc.)

20 MIN WAITING FOR WATER TO RISE

20 MIN CLEAN UP B\H.

Driller: M LOCKE

Crew: S WALTON

Rig: DANDO 2000

Additional Equipment:

Excavation: | Backfill:

Total Number of Samples					
SPT	U	D	B	W	P

BH No.

Driller's Name	Driller's Signature	Client's Signature	Received:	Approved:

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DRILLER'S LOG

Site Name: STAN BRIDGE RD | Job No: 8690 | Date: 12.12.14 | Sheet 1 of | Borehole No. 4

Depth (m)	Soil Description	Sample/Test Type	Sample/Test No.	Depth (m) From	Depth (m) To	U100s Blows	U100s Length	Standard Penetration Tests 1	2	3	4	5	6	Pen	Casing Depth (m)	Water Level (m)
	Start of Shift	D	1	0.5												
GL	CONCRETE															
		CT	2	1-	1.45			3	5	5	7	8	5		1-	D
0.25	BROWNISH CLAY GRAVEL															
	BRICK STONE FILL	D	3	1.5	0											
0.7	BROWNISH CLAY WITH	CT	4	2-2.45				5	7	4	6	7	7		2-	D
	FLINT															

CONT SHEET 2

End of Shift - Borehole Complete/Incomplete

Chiselling Depth (m) From	Depth (m) To	Time From	Time To	Hours

Water Entries	1	2	3
Depth Struck			
Casing Depth			
Depth 5 mins			
Depth 10 mins			
Depth 20 mins			
Cut off at			

Water Added	From	To
Water Added		
Borehole kept Full		

Piezometer/Standpipe	From	To
Plain Pipe		
Slotted Pipe		
Filter		
Bentonite Seal		
Grout/Backfill		
Borehole Diameter (mm)		

Piezo / Standpipe

Remarks: (Standing time, day works, visitors, weather etc.)

Driller: M LOCKE

Rig: DANDO 2000

Crew: S WALTERS

Additional Equipment:

Excavation:

Backfill:

Total Number of Samples

SPT	U	D	B	W	P

BH No.

Driller's Name | Driller's Signature | Client's Signature

Received:

Approved:

JACKSON DRILLING LTD.

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DRILLER'S LOG

Site Name: STANBRIDGE PD | Job No: 8690 | Date: 15.12.14 | Sheet 2 of | Borehole No. 4

Depth (m)	Soil Description	Sample/Test Type	Sample/Test No.	Depth (m) From	Depth (m) To	U100s Blows	U100s Length	Standard Penetration Tests 1	2	3	4	5	6	Pen	Casing Depth (m)	Water Level (m)
	Start of Shift	D	5	2.50												
2.9	DENSE GRAVEL	CPT	6	3.	3.45			11	14	11	14	15	19/40mm		3.0	D
5.2	BROWNISH CLAY WITH GRAVEL	D	7	3.50												WATER ADDED
		CPT	8	4	4.45			7	9	12	9	13	14		4.0	
5.8	GREY SILT SANDY CLAY	D	9	4.50												
		CPT	10	5	5.45			7	6	5	4	5	5		5.0	
6.4	GREY SAND CLAY WITH FLINTS	D	11	~~5.50~~ 6												
		SPT	12	6-	6.45			2	3	4	4	4	5		6.0	5.5
		D	13	7	—											
		CPT	14	7.5	7.95	25		10	0	7					6.0	6.1
		SPT	15	9.	9.45			4	5	7	8	8	9		7.5	5.7
		D	16	9.50												
		SPT	17	9.5	9.95			6	8	10	10	12	12		7.5	5.5

End of Shift - Borehole Complete/Incomplete 9.5

Chiselling Depth (m) From	To	Time From	To	Hours
3.2	4.0			1.45
4-	4.9			2 1/4

Water Entries	1	2	3
Depth Struck	5.8		
Casing Depth	5.5		
Depth 5 mins	5.4		
Depth 10 mins	↓		
Depth 20 mins			
Cut off at			

Water Added	From	To
Water Added		
Borehole kept Full		

Piezometer/Standpipe	From	To
Plain Pipe	GL	1
Slotted Pipe	1	9
Filter	9	09
Bentonite Seal	0.9	01
Grout/Backfill	0.1	GL
Borehole Diameter (mm)	6"	

Piezo / Standpipe: GAS TAP COVER SOLK. CONCRETE

Remarks: (Standing time, day works, visitors, weather etc.)

20 m - WAITING FOR WATER TO RISE.

1/2 TO BAG UP SPOIL

Driller: M LOCKE

Crew: S WALTON

Rig: DANDO 2000

Additional Equipment:

Excavation: | Backfill:

Total Number of Samples

SPT	U	D	B	W	P

BH No.

Driller's Name | Driller's Signature | Client's Signature

Received: | Approved:

JACKSON DRILLING LTD.

Email: info@jacksondrilling.co.uk • Telephone: 01458 851276 • Fax: 01458 850544

DRILLER'S LOG

Site Name: STANBRIDGE RD | Job No: 8690 | Date: 11.12.14 | Sheet 1 of | Borehole No. 5

Depth (m)	Soil Description	Sample/Test Type	Sample/Test No.	Depth (m) From	Depth (m) To	U100s Blows	U100s Length	SPT 1	SPT 2	SPT 3	SPT 4	SPT 5	SPT 6	SPT Pen	Casing Depth (m)	Water Level (m)
	Start of Shift	D	1	0.5												
GL	CONCRETE.															
		CPT	2	1	1.45			3	2	2	3	4	4		1.0	D
0.3	BROWN GRAVELLY CLAY WITH BRICK	D	3	1.50												ADDED
																↓
0.5	BROWNISH YELLOW CLAY WITH GRAVEL.	CPT	4	2.245				5	6	8	8	12	14		2.0	
		B/S	5	2	3											
1.6	DENSE GRAVEL.															
		CPT	6	3	3.45			9	11	12	11	15	12/60		3.0	
		D	7	3.50												
		CPT	8	4	4.45			5	5	6	5	6	7		4.0	
		D	9	4.50												
		CPT	10	5	5.45			9	12	8	7	7	6		5.0	
	End of Shift - Borehole Complete/Incomplete															

Chiselling Depth (m) From	To	Time From	To	Hours
2.2	3.0			1 1/2
3.0	3.7			1. 1/4

Water Entries	1	2	3
Depth Struck			
Casing Depth			
Depth 5 mins			
Depth 10 mins			
Depth 20 mins			
Cut off at			

Water Added	From	To
Water Added		
Borehole kept Full		

Piezometer/Standpipe	From	To
Plain Pipe		
Slotted Pipe		
Filter		
Bentonite Seal		
Grout/Backfill		
Borehole Diameter (mm)		

Piezo / Standpipe

Remarks: (Standing time, day works, visitors, weather etc.)

1/2 TO FILL UP BOWSER.

Driller: M LOCKE

Rig: DANDO 2000

Crew: S HALTON

Additional Equipment:

Excavation: | Backfill:

Total Number of Samples					
SPT	U	D	B	W	P

BH No.

Driller's Name | Driller's Signature | Client's Signature

Received: | Approved:

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DRILLER'S LOG

Site Name: STANBRIDGE RD | Job No: | Date: 12 12 14 | Sheet 2 of | Borehole No. 5

Depth (m)	Soil Description	Sample/Test Type	Sample/Test No.	Depth (m) From	Depth (m) To	U100s Blows	U100s Length	Standard Penetration Tests 1	2	3	4	5	6	Pen	Casing Depth (m)	Water Level (m)
	Start of Shift	D	11	5	50											
		CT	12	6	6.45			4	3	2	2	3	3		6.0	
6.7	Grey SILT SAND															
		D	13	7.0												
6.9	Yellow Sandy Grey SILT CLAY	U4	14	7.5	7.95	70		100	50						6.0	5.9
		ST	15	7.95	8—											
8.1	Grey SANDY CLAY with FLINT	ST	16	9-	9.45			5	5	5	7	7	8		6.0	7.3
		D	17	9	50											
		ST	18	9	95	9.95		5	7	8	11	11	12		6.0	7.1
	End of Shift - Borehole Complete/Incomplete	9	5													

Chiselling

Depth (m) From	Depth (m) To	Time From	Time To	Hours

Water Entries	1	2	3
Depth Struck	6.9		
Casing Depth	6.0		
Depth 5 mins	5.5		
Depth 10 mins	5.2		
Depth 20 mins	5.2		
Cut off at	WD		

Water Added	From	To
Water Added		
Borehole kept Full		

Piezometer/Standpipe	From	To
Plain Pipe	GL	1
Slotted Pipe	1	9
Filter	9	09
Bentonite Seal	09	02
Grout/Backfill	0.2	GL
Borehole Diameter (mm)	6"	

Piezo / Standpipe: COVER, GAS TAP, SOCK, concrete

Remarks: (Standing time, day works, visitors, weather etc.)

20MIN WAITING FOR WATER TO RISE

1/2 TO BAG UP SPOIL

1/2 TO FILL BOWSER

Driller: M LOCKE

Crew: S WALTON

Rig: DANDO 2000

Additional Equipment:

Excavation: | Backfill:

Total Number of Samples

SPT	U	D	B	W	P

BH No.

Driller's Name | Driller's Signature | Client's Signature: A. Cox

Received: | Approved:

JACKSON DRILLING LTD.

Email: www.jacksondrilling.co.uk • Telephone: 01749 330063 • Fax: 01749 344410

DRILLER'S LOG

Site Name: Stambridge Rd, Havant | Job No: 8690 | Date: 18.12.14 | Sheet 1 of | Borehole No. 6

Depth (m)	Soil Description	Sample/Test Type	Sample/Test No.	Depth (m) From	Depth (m) To	UCOs Blows	UCOs Length	Standard Penetration Tests 1	2	3	4	5	6	Pen	Casing Depth (m)	Water Level (m)
	Start of Shift	B	1	.30	.60											
9L	Concrete	B	2	.90	1.30											
.30	Brown gravelly clay	B	3	1.30	1.60											
.90	Very hard tarmac type material															
1.30	Gravel.															
	EOS 1.30															
	End of Shift - Borehole Complete/Incomplete															

Chiselling

Depth (m) From	Depth (m) To	Time From	Time To	Hours
.90	1.30	1.00	3.30	2½

Water Entries

	1	2	3
Depth Struck			
Casing Depth			
Depth 5 mins			
Depth 10 mins			
Depth 20 mins			
Cut off at			

Water Added: From To

Piezo / Standpipe

Water Added

Borehole kept Full

Piezometer/Standpipe	From	To
Plain Pipe		
Slotted Pipe		
Filter		
Bentonite Seal		
Grout/Backfill		

Borehole Diameter (mm)

Remarks: (Standing time, day works, visitors, weather etc.)

Drop rig, move + set up B/H 6 9.30-12.30 - 3hrs. Fill bowser ½hr

Driller: S. BIRCHALL

Rig: PILCON - cut down

Crew: J. COLLINS

Additional Equipment:

Excavation: | Backfill:

Total Number of Samples

SPT	U	D	B	W	P
			3		

Driller's Name | Driller's Signature: S. Birchall | Client's Signature

Received: | Approved:

SHEET 6

FROM : FAX NO. : 22 Dec. 2014 22:32 P2

JACKSON DRILLING LTD.

Email: www.jacksondrilling.co.uk • Telephone: 01749 330063 • Fax: 01749 344410

DRILLER'S LOG

Site Name: Stanbridge Rd, Havant | Job No: 8690 | Date: 19.12.14 | Sheet 2 of | Borehole No. 6

Depth (m)	Soil Description	Sample/Test Type	No.	Depth (m) From	Depth (m) To	U100s Blows	U100s Length	Standard Penetration Tests 1	2	3	4	5	6	Pen	Casing Depth (m)	Water Level (m)
Start of Shift																
1.30	Gravel.	CB	4	1.50	1.95			2	3	4	6	6	8		1.50	DRY
1.50	Brown graveley clay	CB	5	2.50	2.95			3	5	7	8	8	10		2.50	
3.00	Very large gravel cobbles.	CB	6	3.50	3.95			1	4	9	15	21	13		3.50	
		CB	7	4.50	4.95			2	7	7	8	11	11		4.50	
		UB	8	6.00	6.45	No rec									6.00	
		B	9	6.80	7.20											
5.50	Brown graveley clay	U	10	7.50	7.95	40									7.50	
		D	11	8.00												
6.80	Soft grey silty clay	U	12	9.00	9.45	55									8.40	
		D	13	9.50												
8.00	Stiff dark grey sandy clay	S	14	9.50	9.95			2	3	4	6	6	8			
	B/H complete 10.00															

End of Shift - Borehole Complete/Incomplete

Casing

Depth (m) From	Depth (m) To	Time From	Time To	Hours
3.00	5.00	8.30	11.30	2

Water Entries

Depth Struck	7.00
Casing Depth	6.00
Depth 5 mins	
Depth 10 mins	
Depth 20 mins	
Cut off at	/

Water Added	From	To
Water Added	3.00	6.00
Borehole kept Full		

Piezo / Standpipe

Piezometer/Standpipe	From	To
Plain Pipe		
Slotted Pipe		
Filter		
Bentonite Seal		
Grout/Backfill		
Borehole Diameter (mm)		

Remarks: (Standing time, day works, visitors, weather etc.)

Bring diesel for generator = £25.00

Driller: S. BIRCHALL

Crew: J. Collins

Rig: Pilcon – cut down

Additional Equipment:

Excavation:

Backfill:

Total Number of Samples

SPT	U	D	B	W	P
5	3	2	6		

BH No. 6

Driller's Name

Driller's Signature: S. Birchall

Client's Signature

Received:

Approved:

FROM : FAX NO. : 22 Dec. 2014 22:32 P3

JACKSON DRILLING LTD.

Email: www.jacksondrilling.co.uk • Telephone: 01749 330063 • Fax: 01749 344410

DRILLER'S LOG

Site Name: Stanbridge Rd Havant | Job No: 8690 | Date: 22.12.14 | Sheet 3 of | Borehole No. 6

Depth (m)	Soil Description	Sample/Test Type	Sample/Test No.	Depth (m) From	Depth (m) To	UCSs Blows	UCSs Length	SPT 1	2	3	4	5	6	Pen	Casing Depth (m)	Water Level (m)
	Start of Shift															
	Backfill with arrisings to 3.00,															
	Install bentonite seal from 3.00 up to .80															
	Backfill with arrisings .80 — .30															
	Make good with concrete from .30 to G.L.															
	End of Shift - Borehole Complete/Incomplete															

Chiselling

Depth (m) From	Depth (m) To	Time From	Time To	Hours

Water Entries	1st	2nd	3rd
Depth Struck			
Casing Depth			
Depth 5 mins			
Depth 10 mins			
Depth 20 mins			
Cut off at			

Water Added	From	To	Piezo / Standpipe
Water Added			
Borehole kept Full			

Piezometer/Standpipe	From	To
Plain Pipe		
Slotted Pipe		
Filter		
Bentonite Seal		
Grout/Backfill		
Borehole Diameter (mm)		

Remarks: (Standing time, day works, visitors, weather etc.)

Dismantle rig to load onto trailer to demob. reinstate b/hole area, take excess spoil to skip, make good 2 positions outside with concrete, wrap up ducting etc.

8.30 – 3.30 total. 7 hrs.

Driller: S. BIRCHALL

Rig: PILCON

Crew: J. COLLINS

Additional Equipment:

Excavation: | Backf:

Total Number of Samples					
SPT	U	D	B	W	P

BH No. 6

Driller's Name | Driller's Signature: S. Birchall. | Client's Signature

Received: | Approved:

FROM : FAX NO. : 22 Dec. 2014 22:33 P4

JACKSON DRILLING LTD.

Email: www.jacksondrilling.co.uk • Telephone: 01749 330063 • Fax: 01749 344410

DRILLER'S LOG

Site Name: Stanbridge Rd, Havant | Job No: 8690 | Date: Thurs 11.12.18 | Sheet 1 of | Borehole No. 7

Depth (m)	Soil Description	Sample/Test		Depth (m)		U100s		Standard Penetration Tests							Casing	Water
		Type	No.	From	To	Blows	Length	1	2	3	4	5	6	Pen	Depth (m)	Level (m)
	Start of Shift															
	End of Shift - Borehole Complete/Incomplete															

Chiselling				
Depth (m)		Time		Hours
From	To	From	To	

Water Entries	1	2	3
Depth Struck			
Casing Depth			
Depth 5 mins			
Depth 10 mins			
Depth 20 mins			
Cut off at			

Water Added	From	To	Piezo / Standpipe
Water Added			
Borehole kept Full			

Piezometer/Standpipe	From	To
Plain Pipe		
Slotted Pipe		
Filter		
Bentonite Seal		
Grout/Backfill		
Borehole Diameter (mm)		

Remarks: (Standing time, day works, visitors, weather etc.)

Mobilise to site. 10.00 A.M.
Getting rig & equipment ~~at~~ to
B/H possition EOS 4.00 PM
6 hrs daywork.

Driller: S. BIRCHALL

Rig: PILCON – cutdown

Crew: J. COLLINS

Additional Equipment:

Excavation: | Backfill:

Total Number of Samples					
SPT	U	D	B	W	P

BH No. 7

Driller's Name | Driller's Signature: S. Birchall | Client's Signature | Received: | Approved:

JACKSON DRILLING LTD.

Email: www.jacksondrilling.co.uk • Telephone: 01749 330063 • Fax: 01749 344410

DRILLER'S LOG

Site Name: Stanbridge Rd Havant | Job No: 8690 | Date: 12.12.14 | Sheet 2 of | Borehole No. 7

Depth (m)	Soil Description	Sample/Test Type	Sample/Test No.	Depth (m) From	Depth (m) To	U100s Blows	U100s Length	SPT 1	SPT 2	SPT 3	SPT 4	SPT 5	SPT 6	SPT Pen	Casing Depth (m)	Water Level (m)
	Start of Shift	D	1	.50	.80											
GL	Concrete	D	2	.80	1.00											
.20	Hardcore	CB	3	1.50	1.95			2	4	3	3	3	2			
.50	Brickfill	CB	4	2.50	2.95			3	6	7	8	8	10			
.80	Red/brown gravelly clay															
1.10	Dense gravel															

End of Shift - Borehole Complete/Incomplete

Chiselling

Depth (m) From	Depth (m) To	Time From	Time To	Hours
1.10	3.00	11.00	12.30	1½
		1.00	3.00	2

	1	2	3
Water Entries			
Depth Struck			
Casing Depth			
Depth 5 mins			
Depth 10 mins			
Depth 20 mins			
Cut off at			

Water Added	From	To
Water Added		
Borehole kept Full		

Piezometer/Standpipe	From	To
Plain Pipe		
Slotted Pipe		
Filter		
Bentonite Seal		
Grout/Backfill		
Borehole Diameter (mm)		

Piezo / Standpipe

Remarks: (Standing time, day works, visitors, weather etc.)
Erect and secure rig 1½hrs.
Fill bowser ½hr

Driller: S. BIRCHALL
Crew: J. COLLINS
Rig: PILCON - eutodown
Additional Equipment:
Excavation:
Backfill:

Total Number of Samples					
SPT	U	D	B	W	P
2		2	2		

BH No. 1

Driller's Name	Driller's Signature	Client's Signature	Received:	Approved:
	S. Burchall.			

JACKSON DRILLING LTD.

Email: www.jacksondrilling.co.uk • Telephone: 01749 330063 • Fax: 01749 344410

DRILLER'S LOG

Site Name: Stanbridge Rd, Havant | Job No: 8690 | Date: 15.12.14 | Sheet 3 of | Borehole No. 7

Depth (m)	Soil Description	Sample/Test Type	Sample/Test No.	Depth (m) From	Depth (m) To	U100s Blows	U100s Length	SPT 1	SPT 2	SPT 3	SPT 4	SPT 5	SPT 6	SPT Pen	Casing Depth (m)	Water Level (m)
	Start of Shift															
3.00	Dense gravel	CB	5	3.50	3.95			2	4	8	6	7	9			

Chiselling Depth (m) From	Chiselling Depth (m) To	Chiselling Time From	Chiselling Time To	Hours
3.00	4.50	12.30	4.00	3½

	1	2	3
Water Entries			
Depth Struck			
Casing Depth			
Depth 5 mins			
Depth 10 mins			
Depth 20 mins			
Cut off at			

Water Added	From	To
Water Added		
Borehole kept Full		

Piezometer/Standpipe	From	To
Plain Pipe		
Slotted Pipe		
Filter		
Bentonite Seal		
Grout/Backfill		
Borehole Diameter (mm)		

Piezo / Standpipe

End of Shift - Borehole Complete/Incomplete

Remarks: (Standing time, day works, visitors, weather etc.)

load generator onto trailer, take to garage for fuel. 3/4hr

Driller: S. BRACHALL

Crew: J. COLLINS

Rig: PILCON - cut down

Additional Equipment:

Excavation:

Backfill:

Total Number of Samples					
SPT	U	D	B	W	P
1			1		

BH No. 1

Driller's Name

Driller's Signature: S Burchall

Client's Signature

Received:

Approved:

JACKSON DRILLING LTD.

Email: www.jacksondrilling.co.uk • Telephone: 01749 330063 • Fax: 01749 344410

DRILLER'S LOG

Site Name: Stanbridge Rd, Havant | Job No: 8690 | Date: 16.12.14 | Sheet 4 of | Borehole No. 7

Depth (m)	Soil Description	Sample/Test Type	Sample/Test No.	Depth (m) From	Depth (m) To	U100s Blows	U100s Length	Standard Penetration Tests 1	2	3	4	5	6	Pen	Casing Depth (m)	Water Level (m)
	Start of Shift															
4.50	Dense gravel	CB	6	4.50	4.95			5	7	8	8	7	7			
		D	7	5.30												
5.30	Brown sandy clay	D	8	5.80												
		U	9	6.00	6.45	20										
5.80	Grey silty clay	D	10	6.50												
	EOS 7.00															

End of Shift - Borehole Complete/Incomplete

Chiselling

Depth (m) From	Depth (m) To	Time From	Time To	Hours
4.50	5.30	8.30	9.30	1

Water Entries	1	2	3
Depth Struck	5.80	Heavy seepage	
Casing Depth			
Depth 5 mins			
Depth 10 mins			
Depth 20 mins			
Cut off at			

Water Added	From	To
Water Added		
Borehole kept Full		

Piezometer/Standpipe	From	To
Plain Pipe		
Slotted Pipe		
Filter		
Bentonite Seal		
Grout/Backfill		

Piezo / Standpipe

Borehole Diameter (mm)

Remarks: (Standing time, day works, visitors, weather etc.)

Driller: S. BIRCHALL

Rig: PILCON - cut down

Crew: J. COLLINS

Additional Equipment:

Excavation:

Backfill:

Total Number of Samples

SPT	U	D	B	W	P
1	1	3	1		

BH No. 1

Driller's Name

Driller's Signature: S. Birchall

Client's Signature

Received:

Approved:

JACKSON DRILLING LTD.

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DRILLER'S LOG

Site Name: Stanbridge Rd, Havant | Job No: 8690 | Date: 17.12.14 | Sheet 5 of | Borehole No. 7

Depth (m)	Soil Description	Sample/Test Type	Sample/Test No.	Depth (m) From	Depth (m) To	U100s Blows	U100s Length	Standard Penetration Tests 1	2	3	4	5	6	Pen	Casing Depth (m)	Water Level (m)
	Start of Shift	S	11	7.50	7.95			1	2	2	3	3	5			
7.00	Soft grey silty clay	U	12	9.00	9.45											
		D	13	9.50												
7.80	Stiffer dark grey sandy clay	S	14	9.50	9.95			3	5	5	5	7	7			
	B/H Complete 10.00															

End of Shift - Borehole Complete/Incomplete

Chiselling

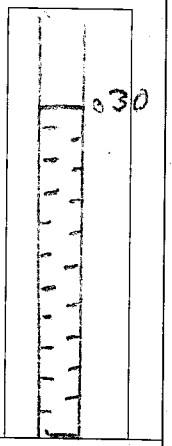
Depth (m) From	Depth (m) To	Time From	Time To	Hours

	1	2	3
Water Entries			
Depth Struck			
Casing Depth			
Depth 5 mins			
Depth 10 mins			
Depth 20 mins			
Cut off at			

Water Added	From	To
Water Added		
Borehole kept Full		

Piezometer/Standpipe	From	To
Plain Pipe	GL	.30
Slotted Pipe	.30	9.50
Filter	.40	9.50
Bentonite Seal	.20	.40
Grout/Backfill		
Borehole Diameter (mm)	150	

Piezo / Standpipe



Remarks: (Standing time, day works, visitors, weather etc.)
Install standpipe to 9.50

Driller: S. Burchall
Crew: J. Collins
Rig: Pilcon cut down
Additional Equipment:
Excavation:
Backfill:

Total Number of Samples					
SPT	U	D	B	W	P
2	1	1			

BH No. 1

Driller's Name	Driller's Signature	Client's Signature	Received:	Approved:
	S. Burchall			

JACKSON DRILLING LTD.

Email: www.jacksondrilling.co.uk • Telephone: 01749 330063 • Fax: 01749 344410

DRILLER'S LOG

Site Name: Stanbridge Rd, Havant | Job No: 8690 | Date: 17.12.14 | Sheet 6 of | Borehole No. 7

Depth (m)	Soil Description	Sample/Test Type	Sample/Test No.	Depth (m) From	Depth (m) To	U100s Blows	U100s Length	Standard Penetration Tests 1	2	3	4	5	6	Pen	Casing Depth (m)	Water Level (m)
	Start of Shift															
	End of Shift - Borehole Complete/Incomplete															

Chiselling

Depth (m) From	Depth (m) To	Time From	Time To	Hou

Water Entries	1	2
Depth Struck		
Casing Depth		
Depth 5 mins		
Depth 10 mins		
Depth 20 mins		
Cut off at		

Water Added	From	To	Piezo / Standpipe

Water Added

Borehole kept Full

Piezometer/Standpipe	From	To
Plain Pipe		
Slotted Pipe		
Filter		
Bentonite Seal		
Grout/Backfill		

Borehole Diameter (mm)

Remarks: (Standing time, day works, visitors, weather etc.)

Moving tools & casing to B/H 6, 2.30 - 4.00 1/2hr

Driller: S. BIRCHALL

Rig: PILCON - cut down

Crew: J. COLLINS

Additional Equipment:

Excavation:

Backfill:

Total Number of Samples

SPT	U	D	B	W	P

BH No. 7

Driller's Name

Driller's Signature: S Birchall

Client's Signature

Received:

Approved:

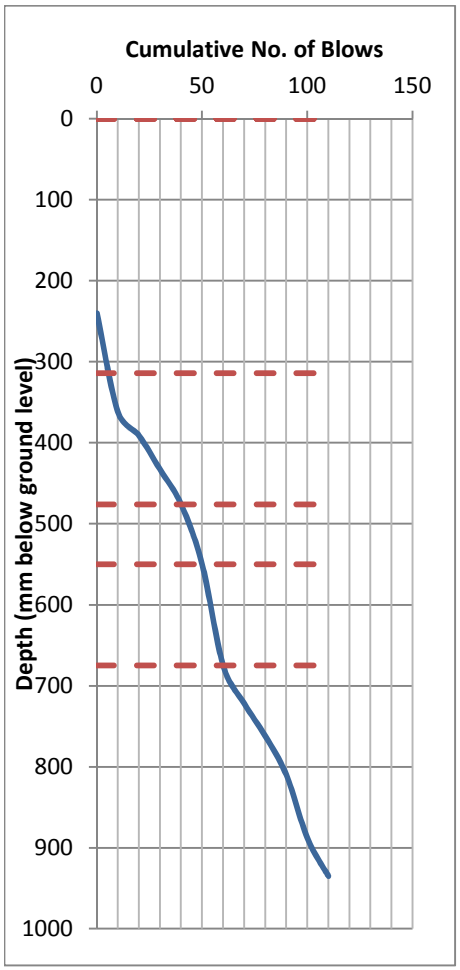
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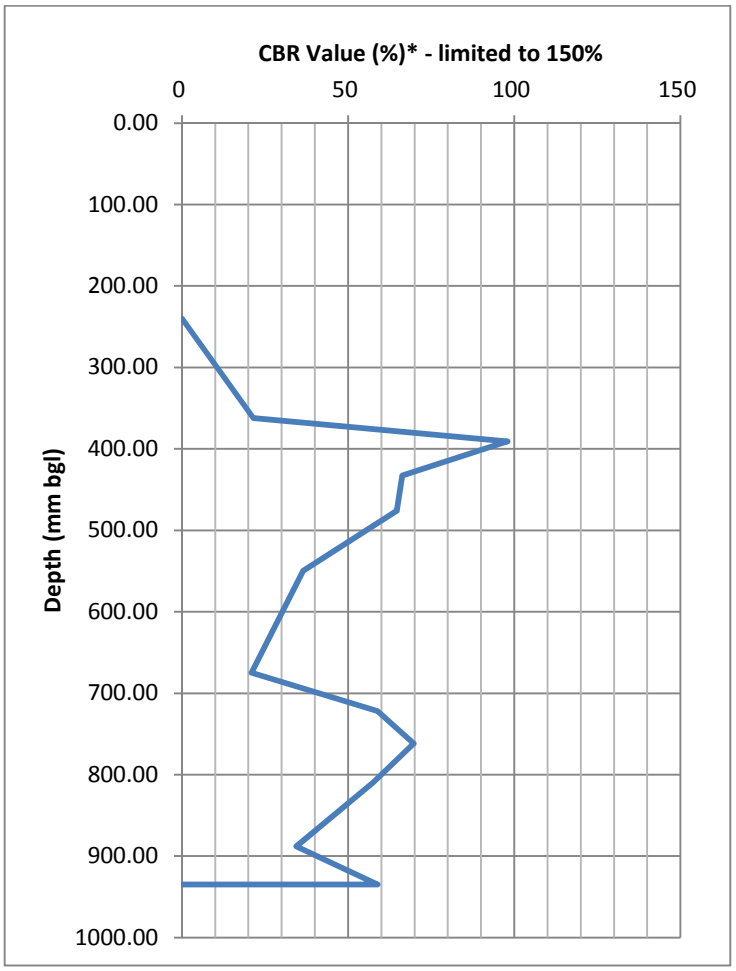
Appendix VIII

TRL Dynamic Cone Penetrometer - Determination of CBR Value (%)*

Site Name	Havant	**Starting Depth (mm bgl)**	240
Job Number	13-0646.01	**Surface Level (m AOD)**	17.7
Test No.	BH1	**Easting**	472767.93
Date of Test	09-Dec-14	**Northing**	107394.32

Layer	Blows	Cumulative Blows	Layer Thickness (mm)	Total Depth (mm bgl)	CBR (%)*
1	0	0	74	314	**N/A**
2	40	40	162	476	**68.9**
3	10	50	74	550	**36.4**
4	10	60	125	675	**20.9**
5	50	110	260	935	**52.9**



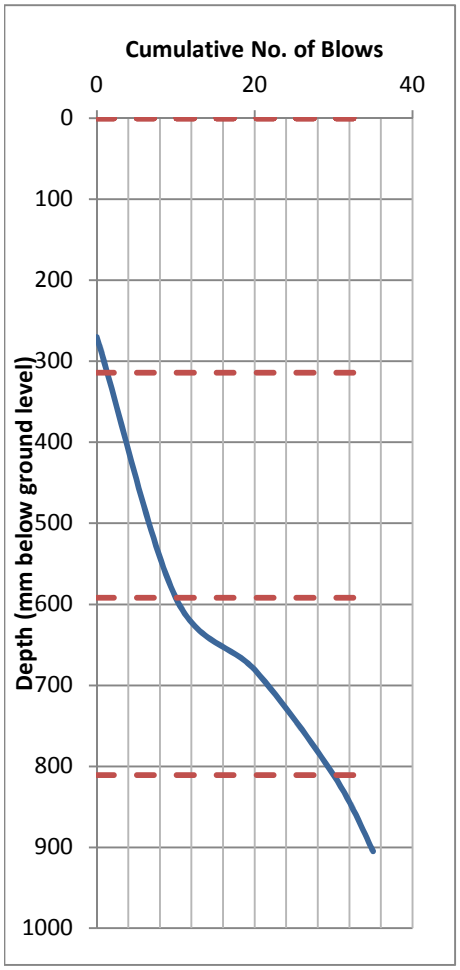


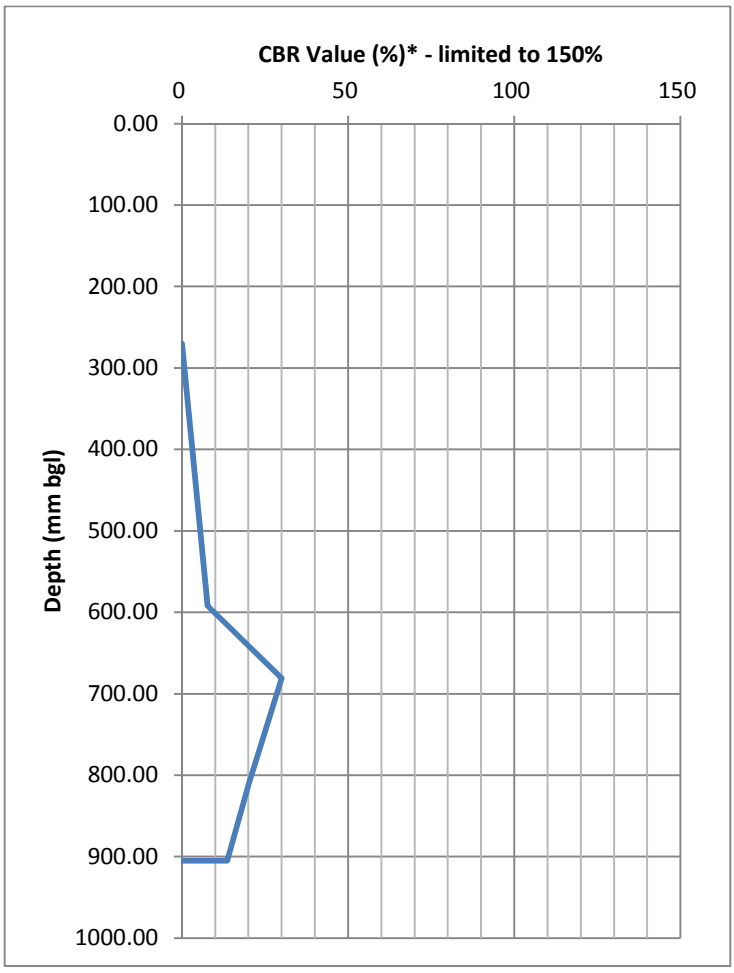
* CBR Interpretation based on the TRRL Road Note 8 equation: $Log_{10}(CBR) = 2.48 - [1.057 \times Log_{10}(mm/blow)]$

TRL Dynamic Cone Penetrometer - Determination of CBR Value (%)*

Site Name	Havant	**Starting Depth (mm bgl)**	270
Job Number	13-0646.01	**Surface Level (m AOD)**	16.37
Test No.	BH3	**Easting**	472641.95
Date of Test	09-Dec-14	**Northing**	107311.33

Layer	Blows	Cumulative Blows	Layer Thickness (mm)	Total Depth (mm bgl)	CBR (%)*
1	0	0	44	314	**N/A**
2	10	10	278	592	**9.0**
3	20	30	219	811	**24.1**
4	5	35	94	905	**13.6**



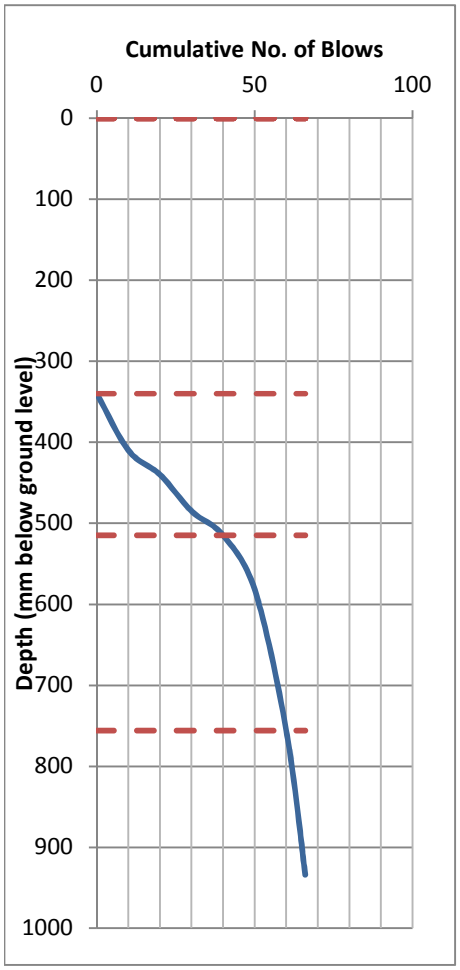


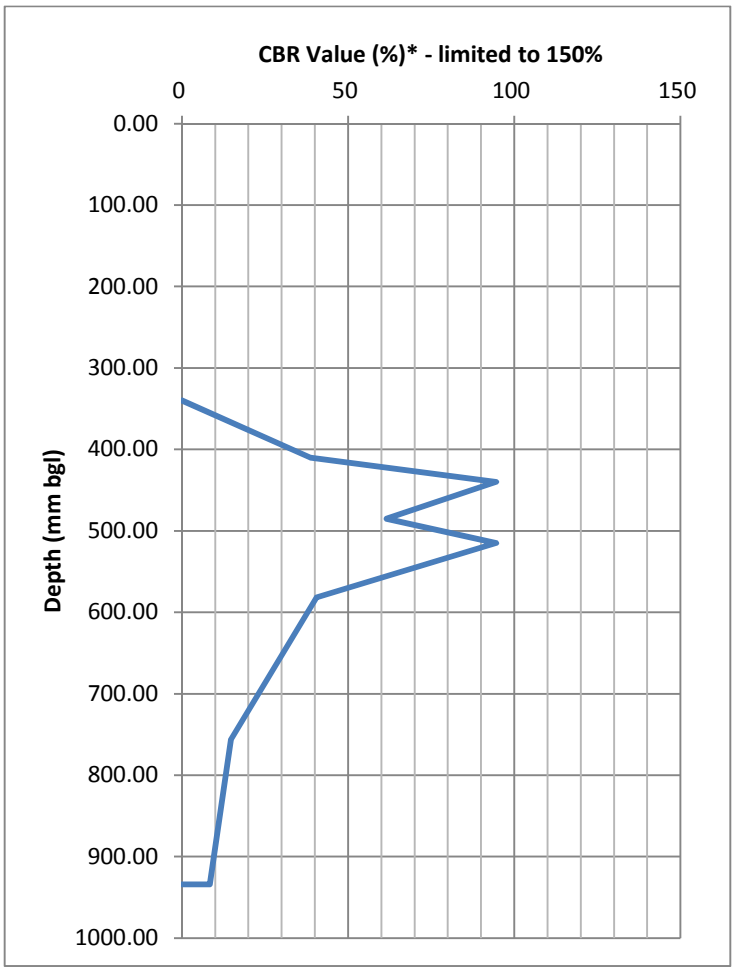
* CBR Interpretation based on the TRRL Road Note 8 equation: $Log_{10}(CBR) = 2.48 - [1.057 \times Log_{10}(mm/blow)]$

TRL Dynamic Cone Penetrometer - Determination of CBR Value (%)*

Site Name	Havant	**Starting Depth (mm bgl)**	340
Job Number	13-0646.01	**Surface Level (m AOD)**	15.99
Test No.	BH4	**Easting**	472660.90
Date of Test	09-Dec-14	**Northing**	107247.25

Layer	Blows	Cumulative Blows	Layer Thickness (mm)	Total Depth (mm bgl)	CBR (%)*
1	0	0	0	340	**N/A**
2	40	40	175	515	**63.5**
3	20	60	241	756	**21.7**
4	6	66	178	934	**8.4**



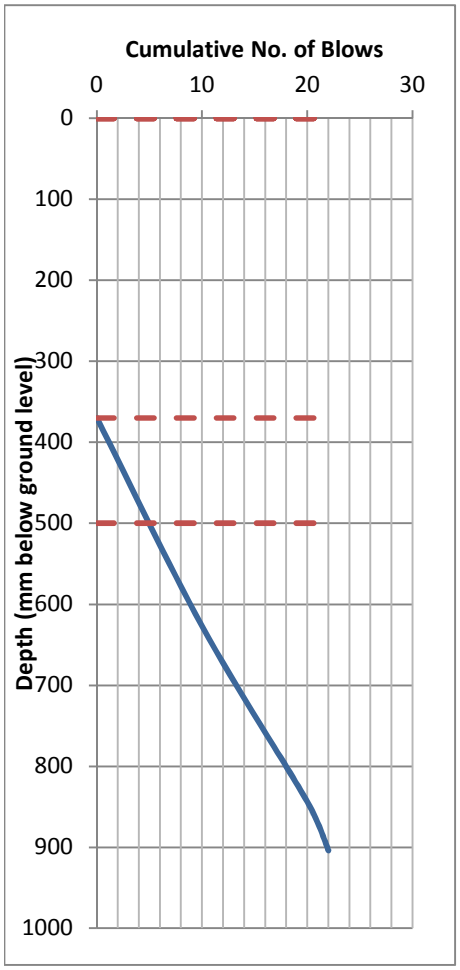


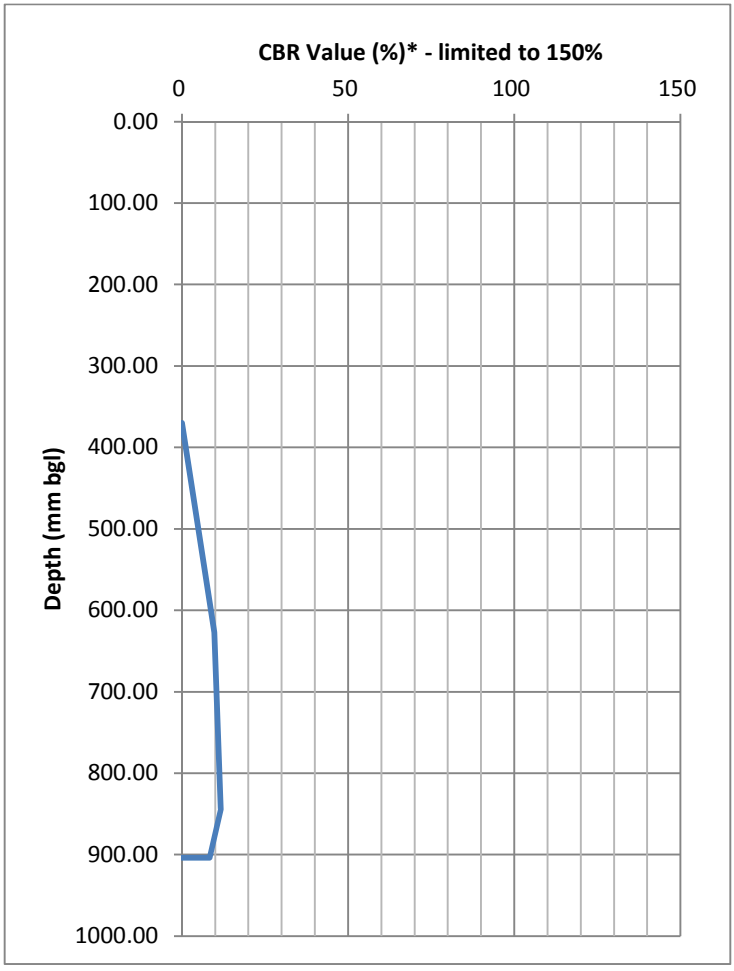
* CBR Interpretation based on the TRRL Road Note 8 equation: $Log_{10}(CBR) = 2.48 - [1.057 \times Log_{10}(mm/blow)]$

TRL Dynamic Cone Penetrometer - Determination of CBR Value (%)*

Site Name	Havant	**Starting Depth (mm bgl)**	370
Job Number	13-0646.01	**Surface Level (m AOD)**	16.18
Test No.	BH5	**Easting**	472712.36
Date of Test	09-Dec-14	**Northing**	107265.40

Layer	Blows	Cumulative Blows	Layer Thickness (mm)	Total Depth (mm bgl)	CBR (%)*
1	0	0	0	370	**N/A**
2	10	10	257	627	**9.8**
3	12	22	404	904	**7.3**



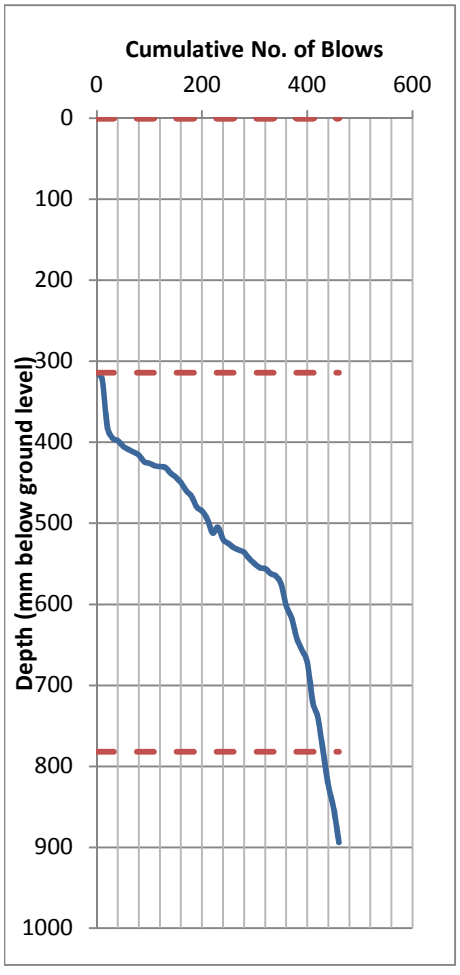


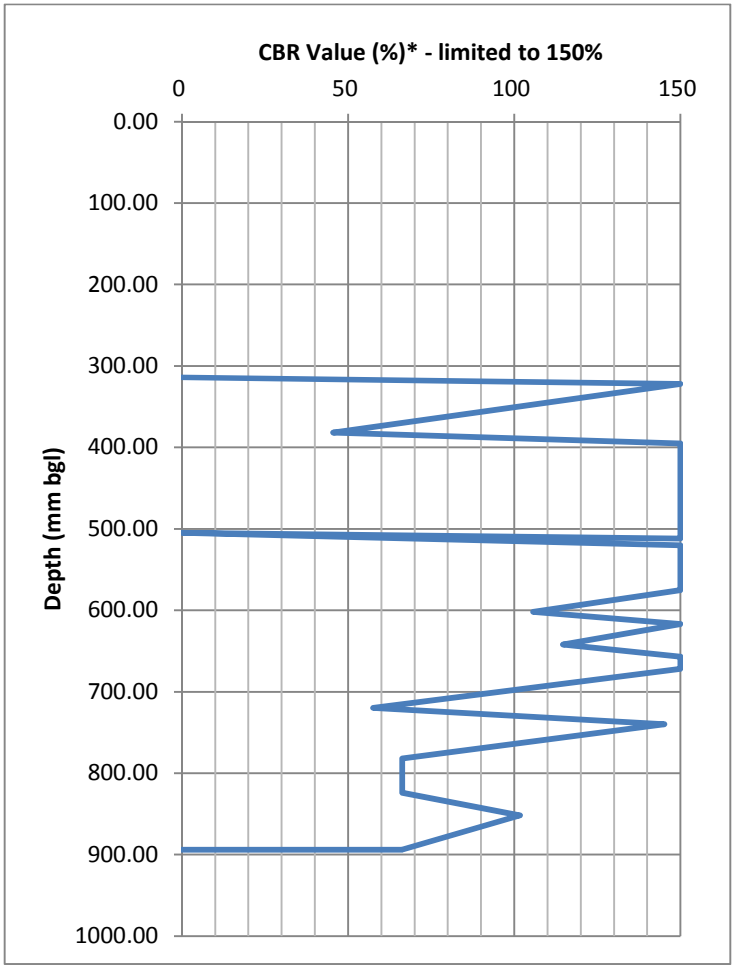
* CBR Interpretation based on the TRRL Road Note 8 equation: $Log_{10}(CBR) = 2.48 - [1.057 \times Log_{10}(mm/blow)]$

TRL Dynamic Cone Penetrometer - Determination of CBR Value (%)*

Site Name	Havant	**Starting Depth (mm bgl)**	314
Job Number	13-0646.01	**Surface Level (m AOD)**	c. 16.79
Test No.	BH7	**Easting (approx.)**	520258
Date of Test	12-Dec-14	**Northing (approx.)**	183332

Layer	Blows	Cumulative Blows	Layer Thickness (mm)	Total Depth (mm bgl)	CBR (%)*
1	0	0	0	314	**N/A**
2	430	430	468	782	**>100**
3	30	460	112	894	**75.0**





* CBR Interpretation based on the TRRL Road Note 8 equation: $Log_{10}(CBR) = 2.48 - [1.057 \times Log_{10}(mm/blow)]$

Appendix IX

PSL
Professional Soils Laboratory

LABORATORY REPORT

UKAS TESTING
4043

Contract Number: PSL15/0077

Client's Reference: Report Date: 16 January 2015

Client Name: Delta Simons Environmental Consultant
3 Henley Office Park
Doddington Road
Lincoln

LN6 3QR

For the attention of: Dan Webb

Contract Title: Stanbridge Rd, Havant

Date Received: 7/1/2015
Date Commenced: 7/1/2015
Date Completed: 16/1/2015

Notes: **Opinions and Interpretations are outside the UKAS Accreditation**

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

R Gunson (Director)
A Watkins (Director)
M Beastall (Laboratory Manager)

D Lambe (Senior Technician)
S Royle (Senior Technician)

5 – 7 Hexthorpe Road, Hexthorpe,
Doncaster DN4 0AR
tel: +44 (0)844 815 6641
fax: +44 (0)844 815 6642
e-mail: rgunson@prosoils.co.uk
awatkins@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Depth m	Description of Sample
BH1	5	B	2.50	Brown very sandy slightly silty GRAVEL.
BH1	9	D	5.50	Brown gravelly very sandy very silty CLAY.
BH1	11	D	7.00	Brown slightly gravelly sandy very silty CLAY.
BH1	12	U	7.50-7.95	Stiff brown slightly gravelly sandy very silty CLAY.
BH1	13	D	7.95-8.00	Brown slightly gravelly sandy very silty CLAY.
BH2	12	U	6.00-6.45	Stiff brown sandy very silty CLAY.
BH2	13	D	6.45-6.50	Brown sandy very silty CLAY.
BH3	3	D	1.50	Brown gravelly sandy very silty CLAY.
BH3	15	D	7.95-8.00	Brown slightly gravelly sandy very silty CLAY.
BH4	14	U	7.50-7.95	Brown sandy very silty CLAY.
BH5	5	B	2.00-3.00	Brown very sandy slightly silty GRAVEL.
BH5	14	U	7.50-7.95	Stiff brown slightly gravelly very sandy very silty CLAY.
BH6	6	D	3.50-3.95	Brown sandy clayey silty GRAVEL.
BH6	9	D	6.80	Brown slightly gravelly sandy very silty CLAY.
BH7	7	D	5.30	Brown gravelly sandy very silty CLAY.
BH7	13	D	9.50	Brown sandy very silty CLAY.

PSL
Professional Soils Laboratory

Compiled by	Date	Checked by	Date	Approved by	Date
	16/01/15		16/01/15		16/01/15

STANBRIDGE ROAD, HAVANT.

Contract No:	PSL15/0077
Client Ref:	13-0646.01

SUMMARY OF SOIL CLASSIFICATION TESTS

(B.S. 1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Depth m	Moisture Content % Clause 3.2	Bulk Density Mg/m^3 Clause 7.2	Dry Density Mg/m^3 Clause 7.2	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4.4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	% Passing .425mm	Remarks
BH1	9	D	5.50	24				33	19	14	82	Low plasticity CL.
BH1	11	D	7.00	24								
BH1	13	D	7.95-8.00	20								
BH2	13	D	6.45-6.50	25				38	21	17	100	Intermediate plasticity CI.
BH3	3	D	1.50	26				41	22	19	81	Intermediate plasticity CI.
BH3	15	D	7.95-8.00	21				37	21	16	94	Intermediate plasticity CI.
BH4	14	U	7.50-7.95	24				37	20	17	100	Intermediate plasticity CI.
BH6	9	D	6.80	23				36	21	15	95	Intermediate plasticity CI.
BH7	7	D	5.30	20				35	20	15	82	Intermediate plasticity CI.
BH7	13	D	9.50	20				36	20	16	100	Intermediate plasticity CI.

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

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Compiled by	Date	Checked by	Date	Approved by	Date
	16/01/15		16/01/15		16/01/15

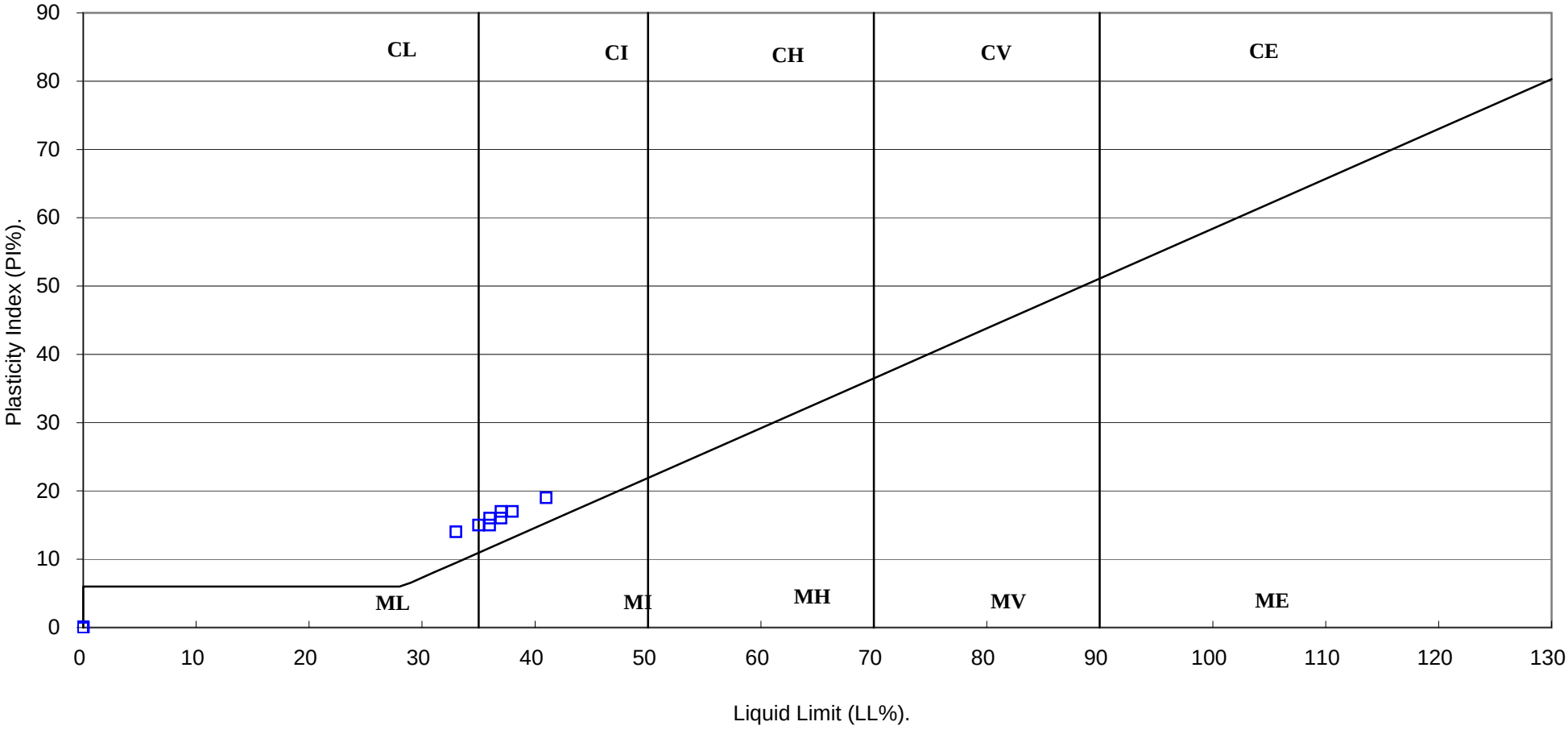
STANBRIDGE ROAD, HAVANT.

Contract No: **PSL15/0077**

Client Ref: **13-0646.01**

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.

(B.S.5930 : 1999)



PSL Professional Soils Laboratory	Compiled by	Date	Checked by	Date	Approved by	Date
		16/01/15		16/01/15		16/01/15
	STANBRIDGE ROAD, HAVANT.				Contract No:	PSL15/0077
					Client Ref:	13-0646.01

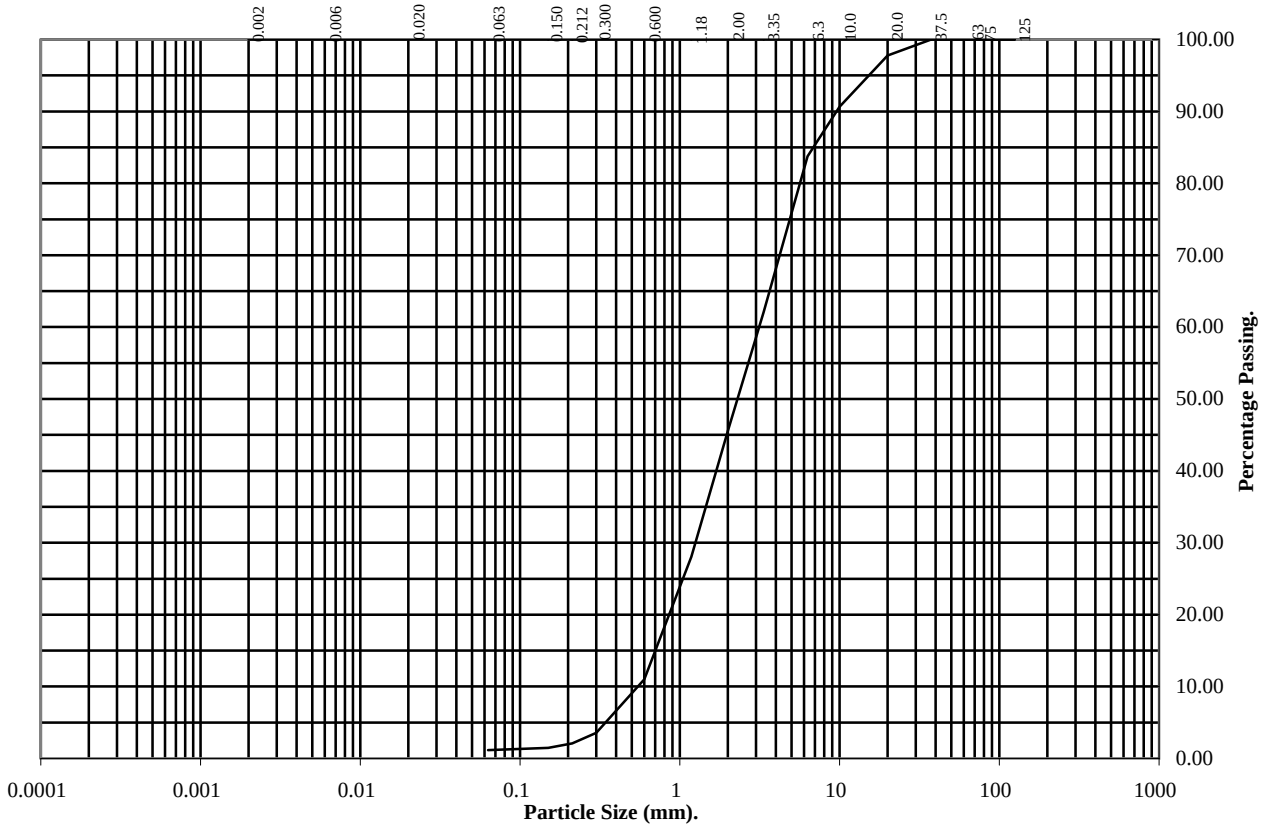
Particle Size Distribution Test

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH1** **Depth (m):** **2.50**

Sample Number: **5** **Sample Type:** **B**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
37.5	100
20	98
10	91
6.3	84
3.35	62
2	46
1.18	28
0.6	11
0.3	4
0.212	2
0.15	1
0.063	1

Soil Fraction	Total Percentage
Cobbles	0
Gravel	54
Sand	45
Silt / Clay	1

Remarks:
See summary of soil descriptions.

Checked By	Date	Approved By	Date
	16/01/15		16/01/15

PSL Professional Soils Laboratory	**STANBRIDGE ROAD, HAVANT.**	**Contract No.: PSL15/0077**

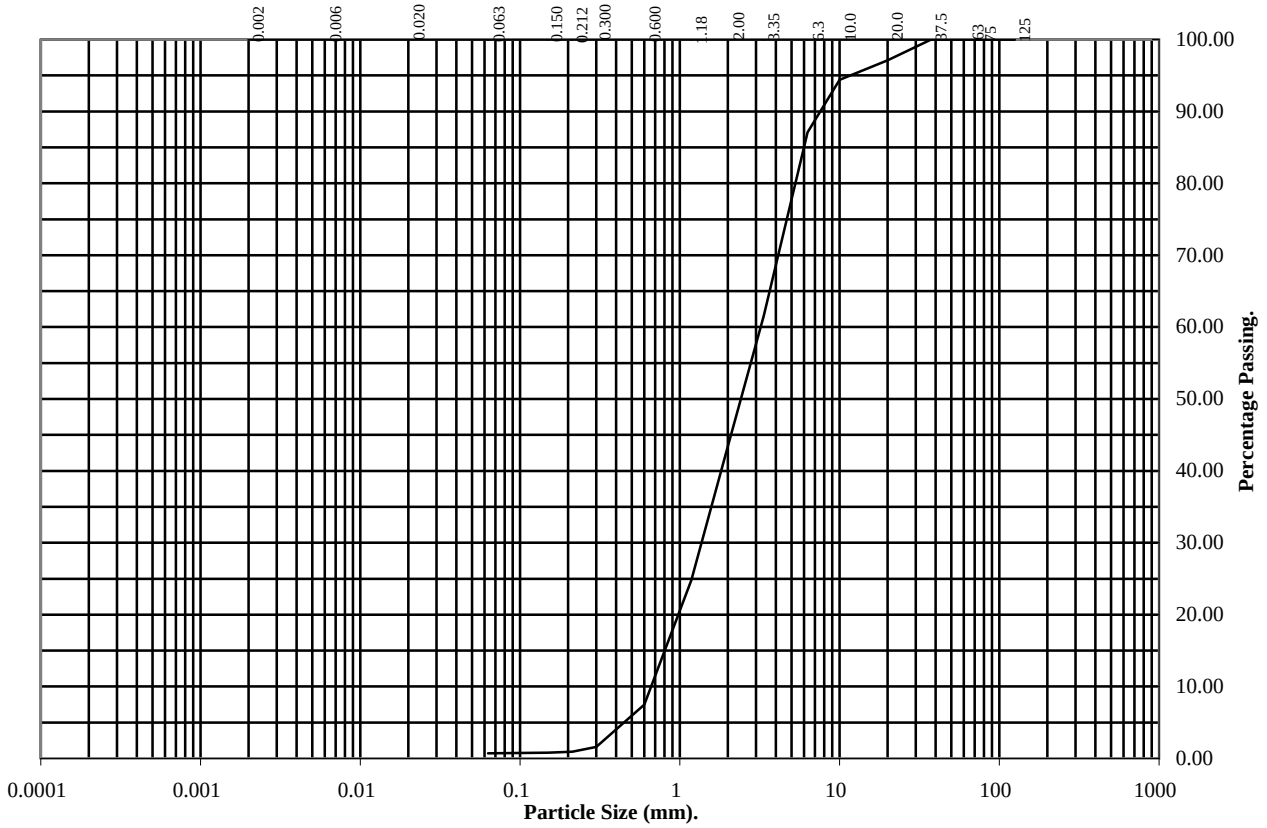
Particle Size Distribution Test

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH5** **Depth (m):** **2.00-3.00**

Sample Number: **5** **Sample Type:** **B**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
37.5	100
20	97
10	94
6.3	87
3.35	62
2	43
1.18	25
0.6	7
0.3	2
0.212	1
0.15	1
0.063	1

Soil Fraction	Total Percentage
Cobbles	0
Gravel	57
Sand	42
Silt / Clay	1

Remarks:
See summary of soil descriptions.

Checked By	Date	Approved By	Date
	16/01/15		16/01/15

PSL Professional Soils Laboratory	**STANBRIDGE ROAD, HAVANT.**	**Contract No.: PSL15/0077**

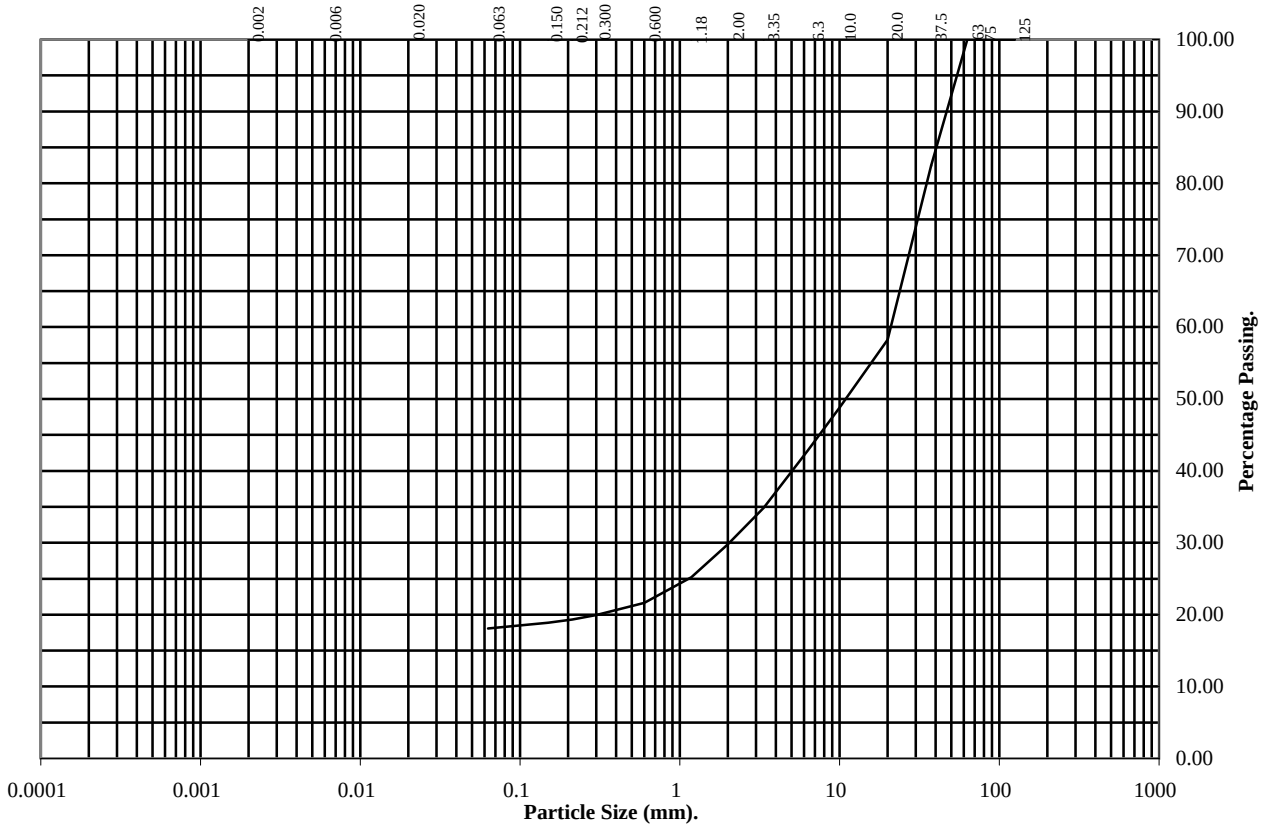
Particle Size Distribution Test

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH6** **Depth (m):** **3.50-3.95**

Sample Number: **6** **Sample Type:** **D**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
37.5	82
20	58
10	49
6.3	43
3.35	35
2	30
1.18	25
0.6	22
0.3	20
0.212	19
0.15	19
0.063	18

Soil Fraction	Total Percentage
Cobbles	0
Gravel	70
Sand	12
Silt / Clay	18

Remarks:
See summary of soil descriptions.

Checked By	Date	Approved By	Date
	16/01/15		16/01/15

PSL Professional Soils Laboratory	**STANBRIDGE ROAD, HAVANT.**	**Contract No.: PSL15/0077**

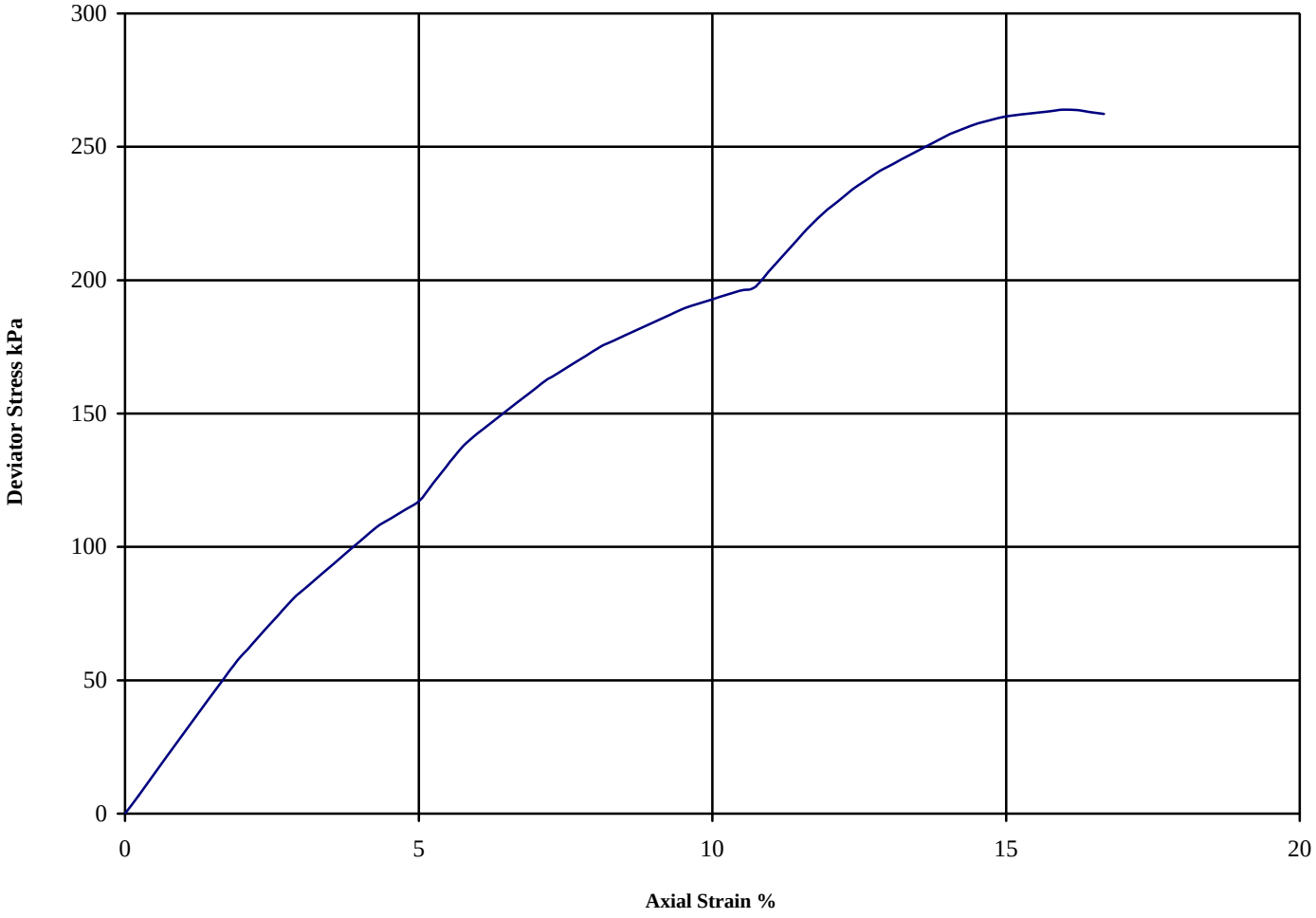
Undrained Shear Strength in Triaxial Compression

without measurement of Pore Pressure

B.S. 1377 : Part7 : Clause 9 : 1990

Hole Number: BH1 **Depth (m):** 7.50-7.95

Sample Number: 12 **Sample Type:** U



Diameter (mm):		102	Height (mm):		210	Test:	100mm Multistage		
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Remarks
									Sample taken from top of tube
									Rate of strain = 1.9 %/min
									Latex Membrane used 0.2 mm thickness
									Membrane Correction applied (kPa)
A	22	2.03	1.66	150	117	59	5.0	Plastic	0.36 0.35 0.34
				300	196	98	10.5		See summary of soil descriptions.
				450	264	132	16.0		**Checked** **Date** **Approved** **Date**
									16/01/15 16/01/15

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Contract No: PSL15/0077

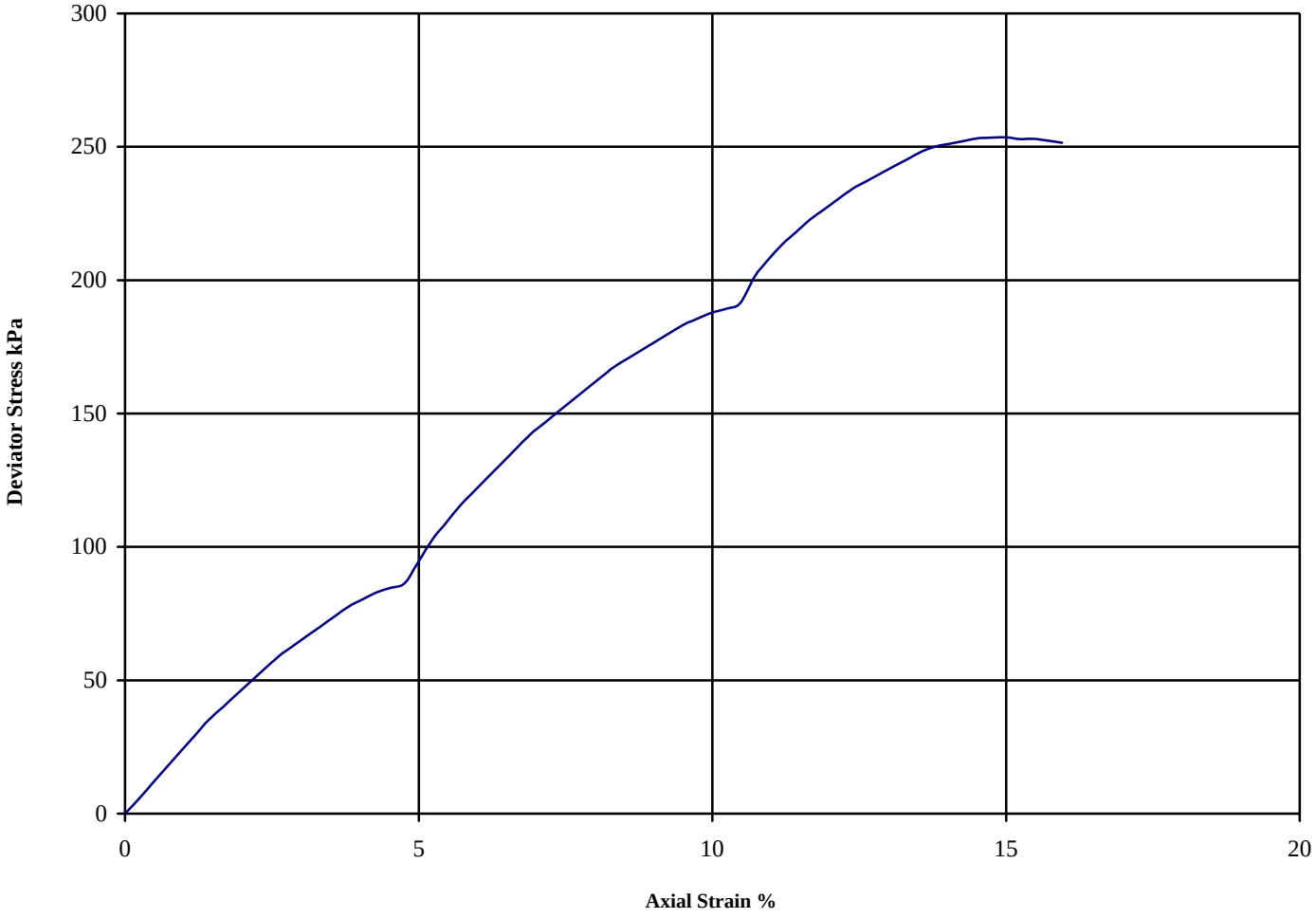
Undrained Shear Strength in Triaxial Compression

without measurement of Pore Pressure

B.S. 1377 : Part7 : Clause 9 : 1990

Hole Number: BH2 **Depth (m):** 6.00-6.45

Sample Number: 12 **Sample Type:** U



Diameter (mm):		102	Height (mm):		210	Test:	100mm Multistage		
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Remarks
									Sample taken from top of tube
									Rate of strain = 1.9 %/min
									Latex Membrane used 0.2 mm thickness
									Membrane Correction applied (kPa)
A	21	2.07	1.70	120	86	43	4.8	Plastic	0.36 0.35 0.34
				240	191	96	10.5		See summary of soil descriptions.
				360	254	127	15.0		

Checked	Date	Approved	Date
	16/01/15		16/01/15

PSL Professional Soils Laboratory

STANBRIDGE ROAD, HAVANT.

Contract No: PSL15/0077

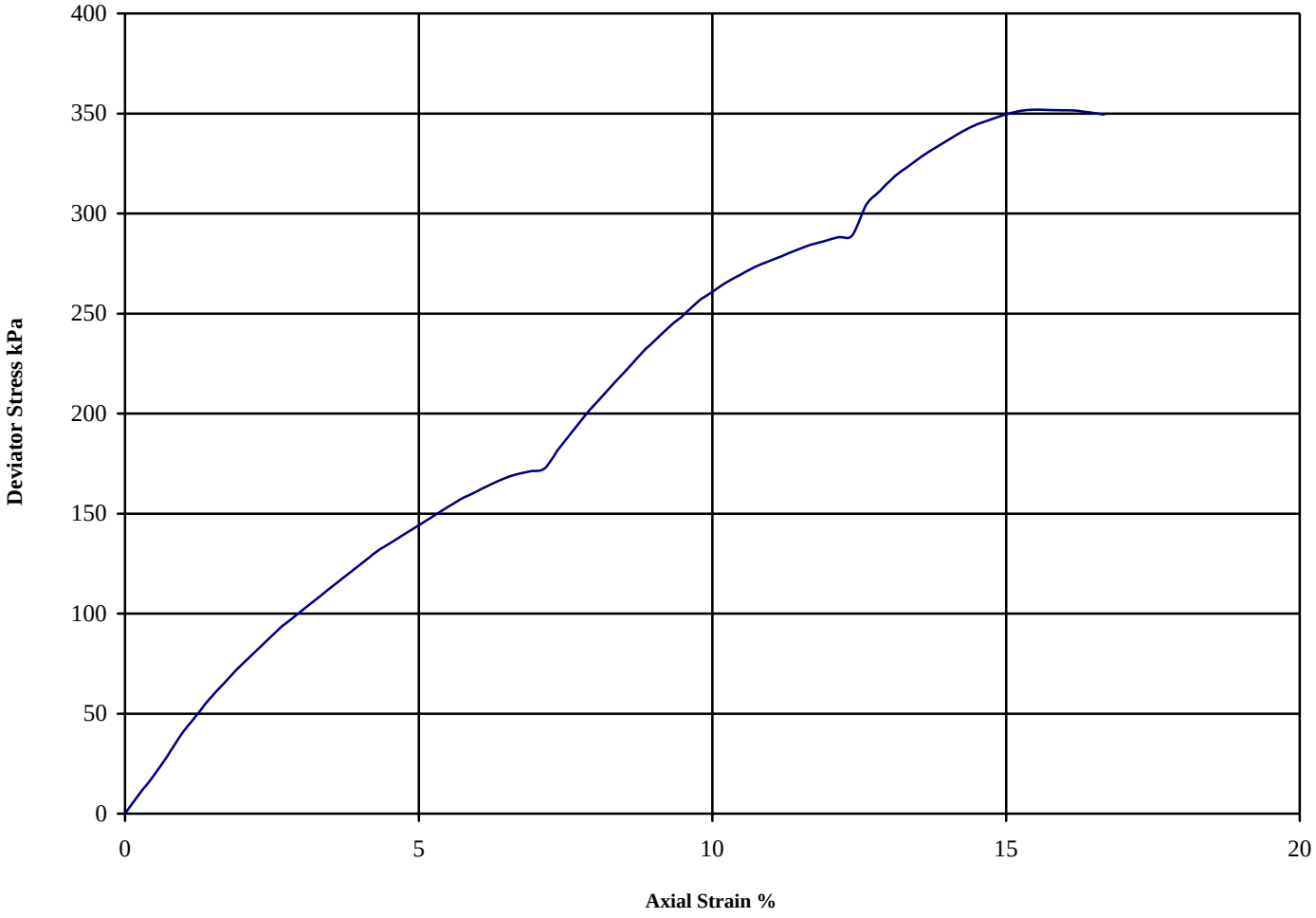
Undrained Shear Strength in Triaxial Compression

without measurement of Pore Pressure

B.S. 1377 : Part7 : Clause 9 : 1990

Hole Number: BH5 **Depth (m):** 7.50-7.95

Sample Number: 14 **Sample Type:** U



Diameter (mm):		102	Height (mm):		210	Test:	100mm Multistage		
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Remarks
									Sample taken from top of tube
									Rate of strain = 1.9 %/min
									Latex Membrane used 0.2 mm thickness
									Membrane Correction applied (kPa)
A	19	2.20	1.85	150	173	86	7.1	Plastic	0.36 0.35 0.34
				300	289	145	12.4		See summary of soil descriptions.
				450	352	176	15.5		**Checked** **Date** **Approved** **Date**
									16/01/15 16/01/15

PSL Professional Soils Laboratory	**STANBRIDGE ROAD, HAVANT.**	**Contract No: PSL15/0077**

Appendix X

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report Number:	14-17407 Issue-1
Initial Date of Issue:	12-Jan-15
Client:	Delta Simons
Client Address:	3 Henley Office Park Doddington Road Lincoln Lincolnshire LN6 3QR
Contact(s):	John Rhoades Alex Cutts
Project:	13-0646.01 - Havant

Quotation No.:		**Date Received:**	24-Dec-14
Order No.:	DS23302	**Date Instructed:**	24-Dec-14
No. of Samples:	19	**Results Due:**	09-Jan-15
Turnaround: (Weekdays)	10		
Date Approved:	12-Jan-15		

Approved By:



Details: Keith Jones, Technical Manager

Chemtest
The right chemistry to deliver results

Results Summary - Soil

Project: 13-0646.01 - Havant

Client: Delta Simons					Chemtest Job No.:	14-17407	14-17407	14-17407	14-17407	14-17407	14-17407	14-17407	14-17407	14-17407	14-17407
Quotation No.:					Chemtest Sample ID.:	85702	85703	85704	85705	85706	85707	85708	85709	85710	85711
Order No.: DS23302					Client Sample Ref.:										
					Client Sample ID.:	BH1	BH1	BH1	BH2	BH2	BH2	BH3	BH4	BH4	BH4
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.5	1.5	5.5	0.2	1.5	5.0	0.5	0.5	2.5	3.0
					Bottom Depth(m):				0.6		5.2		0.6		
					Date Sampled:	10-Dec-14	10-Dec-14	11-Dec-14	08-Dec-14	08-Dec-14	09-Dec-14	16-Dec-14	15-Dec-14	17-Dec-14	15-Dec-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**											
ACM Type	U	2192				-			-			-	-		
Asbestos Identification	U	2192	%	0.001		No Asbestos Detected			No Asbestos Detected			No Asbestos Detected	No Asbestos Detected		
Moisture	N	2030	%	0.02		14	8.9	18	11	16	14	13	11	12	9.0
Soil Colour	N					Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown
Other Material	N					Stones	Stones	NONE	Stones	Stones	Stones	Stones	Stones	Stones	Stones
Soil Texture	N					Sand	Sand	Clay	Clay	Sand	Sand	Clay	Clay	Sand	Sand
pH	M	2010				8.5	8.2	8.5	8.1	8.8	8.9	9.8	8.4	7.9	8.4
Magnesium (Water Soluble)	N	2120	g/l	0.01				< 0.010							
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.01		0.48	0.38	0.023					0.11		
Total Sulphur	M	2175	%	0.01				0.010							
Chloride (Extractable)	U	2220	g/l	0.01				< 0.010							
Nitrate (Extractable)	N	2220	g/l	0.01				< 0.010							
Cyanide (Total)	M	2300	mg/kg	0.5		< 0.50						< 0.50			
Cyanide (Free)	M	2300	mg/kg	0.5		< 0.50						< 0.50			
Ammonium	M	2425	mg/kg	2				2.9							
Sulphate (Acid Soluble)	M	2430	%	0.01				< 0.010							
Arsenic	M	2450	mg/kg	1		15	13	14	9.3			27	19		
Barium	M	2450	mg/kg	10		98	57	29	65			800	230		
Beryllium	U	2450	mg/kg	1		< 1.0	< 1.0	< 1.0	< 1.0			< 1.0	< 1.0		
Cadmium	M	2450	mg/kg	0.1		0.18	0.16	0.37	0.21			0.81	0.36		
Copper	M	2450	mg/kg	0.5		26	17	11	19			16	23		
Mercury	M	2450	mg/kg	0.1		< 0.10	< 0.10	0.10	< 0.10			0.10	< 0.10		
Nickel	M	2450	mg/kg	0.5		28	23	20	23			13	17		
Lead	M	2450	mg/kg	0.5		49	27	9.8	22			270	49		
Selenium	M	2450	mg/kg	0.2		< 0.20	< 0.20	< 0.20	< 0.20			< 0.20	< 0.20		
Vanadium	U	2450	mg/kg	5		51	48	33	36			23	24		
Zinc	M	2450	mg/kg	0.5		88	52	35	50			110	72		
Chromium (Trivalent)	N	2490	mg/kg	5		37	37	22	34			16	19		
Chromium (Hexavalent)	N	2490	mg/kg	0.5		< 0.50	< 0.50	< 0.50	< 0.50			< 0.50	< 0.50		
Fraction of Organic Carbon	M	2625		0.001		0.0058	0.0034	0.0018					0.0095	0.0034	
Total TPH >C6-C40	M	2670	mg/kg	10		< 10	< 10		B < 10	B < 10	B < 10		< 10		< 10
Aliphatic TPH >C5-C6	N	2675	mg/kg	0.1								< 0.10		< 0.10	

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Results Summary - Soil

Project: 13-0646.01 - Havant

Client: Delta Simons					Chemtest Job No.:	14-17407	14-17407	14-17407	14-17407	14-17407	14-17407	14-17407	14-17407	14-17407	14-17407
Quotation No.:					Chemtest Sample ID.:	85702	85703	85704	85705	85706	85707	85708	85709	85710	85711
Order No.: DS23302					Client Sample Ref.:										
					Client Sample ID.:	BH1	BH1	BH1	BH2	BH2	BH2	BH3	BH4	BH4	BH4
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.5	1.5	5.5	0.2	1.5	5.0	0.5	0.5	2.5	3.0
					Bottom Depth(m):				0.6		5.2		0.6		
					Date Sampled:	10-Dec-14	10-Dec-14	11-Dec-14	08-Dec-14	08-Dec-14	09-Dec-14	16-Dec-14	15-Dec-14	17-Dec-14	15-Dec-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**											
Aliphatic TPH >C6-C8	N	2675	mg/kg	0.1								< 0.10		< 0.10	
Aliphatic TPH >C8-C10	M	2675	mg/kg	0.1								< 0.10		< 0.10	
Aliphatic TPH >C10-C12	M	2675	mg/kg	1								< 1.0		< 1.0	
Aliphatic TPH >C12-C16	M	2675	mg/kg	1								< 1.0		< 1.0	
Aliphatic TPH >C16-C21	M	2675	mg/kg	1								< 1.0		< 1.0	
Aliphatic TPH >C21-C35	M	2675	mg/kg	1								< 1.0		< 1.0	
Aliphatic TPH >C35-C44	M	2675	mg/kg	1								< 1.0		< 1.0	
Total Aliphatic Hydrocarbons	M	2675	mg/kg	5								< 5.0		< 5.0	
Aromatic TPH >C5-C7	N	2675	mg/kg	0.1								< 0.10		< 0.10	
Aromatic TPH >C7-C8	N	2675	mg/kg	0.1								< 0.10		< 0.10	
Aromatic TPH >C8-C10	M	2675	mg/kg	0.1								< 0.10		< 0.10	
Aromatic TPH >C10-C12	M	2675	mg/kg	1								1.5		< 1.0	
Aromatic TPH >C12-C16	M	2675	mg/kg	1								3.9		< 1.0	
Aromatic TPH >C16-C21	M	2675	mg/kg	1								22		< 1.0	
Aromatic TPH >C21-C35	M	2675	mg/kg	1								28		< 1.0	
Aromatic TPH >C35-C44	N	2675	mg/kg	1								1.9		< 1.0	
Total Aromatic Hydrocarbons	M	2675	mg/kg	5								58		< 5.0	
Total Petroleum Hydrocarbons	M	2675	mg/kg	10								58		< 10	
Naphthalene	M	2700	mg/kg	0.1	< 0.10				< 0.10			< 0.10	< 0.10		
Acenaphthylene	M	2700	mg/kg	0.1	< 0.10				< 0.10			< 0.10	< 0.10		
Acenaphthene	M	2700	mg/kg	0.1	< 0.10				< 0.10			< 0.10	< 0.10		
Fluorene	M	2700	mg/kg	0.1	< 0.10				< 0.10			< 0.10	< 0.10		
Phenanthrene	M	2700	mg/kg	0.1	0.54				< 0.10			11	0.83		
Anthracene	M	2700	mg/kg	0.1	0.14				< 0.10			2.9	0.20		
Fluoranthene	M	2700	mg/kg	0.1	1.0				< 0.10			12	1.4		
Pyrene	M	2700	mg/kg	0.1	1.1				< 0.10			9.7	1.2		
Benzo[a]anthracene	M	2700	mg/kg	0.1	0.41				< 0.10			4.6	0.60		
Chrysene	M	2700	mg/kg	0.1	0.64				< 0.10			6.2	0.83		
Benzo[b]fluoranthene	M	2700	mg/kg	0.1	0.42				< 0.10			5.7	0.90		
Benzo[k]fluoranthene	M	2700	mg/kg	0.1	0.25				< 0.10			2.1	0.40		
Benzo[a]pyrene	M	2700	mg/kg	0.1	0.57				< 0.10			3.9	0.59		
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.1	0.69				< 0.10			3.2	0.54		
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.1	0.42				< 0.10			0.73	< 0.10		

Chemtest
The right chemistry to deliver results

Results Summary - Soil

Project: 13-0646.01 - Havant

Client: Delta Simons					**Chemtest Job No.:**	14-17407	14-17407	14-17407	14-17407	14-17407	14-17407	14-17407	14-17407	14-17407	14-17407
Quotation No.:					**Chemtest Sample ID.:**	85702	85703	85704	85705	85706	85707	85708	85709	85710	85711
Order No.: DS23302					Client Sample Ref.:										
					Client Sample ID.:	BH1	BH1	BH1	BH2	BH2	BH2	BH3	BH4	BH4	BH4
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.5	1.5	5.5	0.2	1.5	5.0	0.5	0.5	2.5	3.0
					Bottom Depth(m):				0.6		5.2		0.6		
					Date Sampled:	10-Dec-14	10-Dec-14	11-Dec-14	08-Dec-14	08-Dec-14	09-Dec-14	16-Dec-14	15-Dec-14	17-Dec-14	15-Dec-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**											
Benzo[g,h,i]perylene	M	2700	mg/kg	0.1		0.62			< 0.10			2.7	0.58		
Total Of 16 PAH's	M	2700	mg/kg	2		6.8			< 2.0			65	8.1		
Dichlorodifluoromethane	U	2760	µg/kg	1		< 1.0							< 1.0		
Chloromethane	M	2760	µg/kg	1		< 1.0							< 1.0		
Vinyl Chloride	M	2760	µg/kg	1		< 1.0							< 1.0		
Bromomethane	M	2760	µg/kg	20		< 20							< 20		
Chloroethane	U	2760	µg/kg	2		< 2.0							< 2.0		
Trichlorofluoromethane	M	2760	µg/kg	1		< 1.0							< 1.0		
1,1-Dichloroethene	M	2760	µg/kg	1		< 1.0							< 1.0		
Trans 1,2-Dichloroethene	M	2760	µg/kg	1		< 1.0							< 1.0		
1,1-Dichloroethane	M	2760	µg/kg	1		< 1.0							< 1.0		
cis 1,2-Dichloroethene	M	2760	µg/kg	1		< 1.0							< 1.0		
Bromochloromethane	U	2760	µg/kg	5		< 5.0							< 5.0		
Trichloromethane	M	2760	µg/kg	1		< 1.0							< 1.0		
1,1,1-Trichloroethane	M	2760	µg/kg	1		< 1.0							< 1.0		
Tetrachloromethane	M	2760	µg/kg	1		< 1.0							< 1.0		
1,1-Dichloropropene	U	2760	µg/kg	1		< 1.0							< 1.0		
Benzene	M	2760	µg/kg	1		< 1.0							< 1.0		
1,2-Dichloroethane	M	2760	µg/kg	2		< 2.0							< 2.0		
Trichloroethene	M	2760	µg/kg	1		< 1.0							< 1.0		
1,2-Dichloropropane	M	2760	µg/kg	1		< 1.0							< 1.0		
Dibromomethane	M	2760	µg/kg	1		< 1.0							< 1.0		
Bromodichloromethane	M	2760	µg/kg	5		< 5.0							< 5.0		
cis-1,3-Dichloropropene	N	2760	µg/kg	10		< 10							< 10		
Toluene	M	2760	µg/kg	1		< 1.0							1.2		
Trans-1,3-Dichloropropene	N	2760	µg/kg	10		< 10							< 10		
1,1,2-Trichloroethane	M	2760	µg/kg	10		< 10							< 10		
Tetrachloroethene	M	2760	µg/kg	1		< 1.0							< 1.0		
1,3-Dichloropropane	U	2760	µg/kg	2		< 2.0							< 2.0		
Dibromochloromethane	U	2760	µg/kg	10		< 10							< 10		
1,2-Dibromoethane	M	2760	µg/kg	5		< 5.0							< 5.0		
Chlorobenzene	M	2760	µg/kg	1		< 1.0							< 1.0		
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2		< 2.0							< 2.0		

Results Summary - Soil

Project: 13-0646.01 - Havant

Client: Delta Simons					Chemtest Job No.:	14-17407	14-17407	14-17407	14-17407	14-17407	14-17407	14-17407	14-17407	14-17407	14-17407
Quotation No.:					Chemtest Sample ID.:	85702	85703	85704	85705	85706	85707	85708	85709	85710	85711
Order No.: DS23302					Client Sample Ref.:										
					Client Sample ID.:	BH1	BH1	BH1	BH2	BH2	BH2	BH3	BH4	BH4	BH4
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.5	1.5	5.5	0.2	1.5	5.0	0.5	0.5	2.5	3.0
					Bottom Depth(m):				0.6		5.2		0.6		
					Date Sampled:	10-Dec-14	10-Dec-14	11-Dec-14	08-Dec-14	08-Dec-14	09-Dec-14	16-Dec-14	15-Dec-14	17-Dec-14	15-Dec-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**											
Ethylbenzene	M	2760	µg/kg	1	< 1.0								< 1.0		
m & p-Xylene	M	2760	µg/kg	1	< 1.0								1.2		
o-Xylene	M	2760	µg/kg	1	< 1.0								< 1.0		
Styrene	M	2760	µg/kg	1	< 1.0								< 1.0		
Tribromomethane	U	2760	µg/kg	1	< 1.0								< 1.0		
Isopropylbenzene	M	2760	µg/kg	1	< 1.0								< 1.0		
Bromobenzene	M	2760	µg/kg	1	< 1.0								< 1.0		
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50								< 50		
N-Propylbenzene	U	2760	µg/kg	1	< 1.0								< 1.0		
2-Chlorotoluene	M	2760	µg/kg	1	< 1.0								< 1.0		
1,3,5-Trimethylbenzene	M	2760	µg/kg	1	< 1.0								< 1.0		
4-Chlorotoluene	U	2760	µg/kg	1	< 1.0								< 1.0		
Tert-Butylbenzene	U	2760	µg/kg	1	< 1.0								< 1.0		
1,2,4-Trimethylbenzene	M	2760	µg/kg	1	< 1.0								< 1.0		
Sec-Butylbenzene	U	2760	µg/kg	1	< 1.0								< 1.0		
1,3-Dichlorobenzene	M	2760	µg/kg	1	< 1.0								< 1.0		
4-Isopropyltoluene	U	2760	µg/kg	1	< 1.0								< 1.0		
1,4-Dichlorobenzene	M	2760	µg/kg	1	< 1.0								< 1.0		
N-Butylbenzene	U	2760	µg/kg	1	< 1.0								< 1.0		
1,2-Dichlorobenzene	M	2760	µg/kg	1	< 1.0								< 1.0		
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50								< 50		
1,2,4-Trichlorobenzene	M	2760	µg/kg	1	< 1.0								< 1.0		
Hexachlorobutadiene	U	2760	µg/kg	1	< 1.0								< 1.0		
1,2,3-Trichlorobenzene	U	2760	µg/kg	2	< 2.0								< 2.0		
Methyl Tert-Butyl Ether	M	2760	µg/kg	1	< 1.0								< 1.0		
Total Phenols	M	2920	mg/kg	0.3	< 0.30										

Chemtest
The right chemistry to deliver results

Results Summary - Soil

Project: 13-0646.01 - Havant

Client: Delta Simons													
Quotation No.:					**Chemtest Job No.:**	14-17407	14-17407	14-17407	14-17407	14-17407	14-17407	14-17407	14-17407	14-17407
Order No.: DS23302					**Chemtest Sample ID.:**	85712	85713	85714	85715	85716	85717	85718	85719	85720
					Client Sample Ref.:									
					Client Sample ID.:	BH4	BH5	BH5	BH5	BH6	BH6	BH6	BH7	BH7
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	5.5	0.3	5.5	6.5	0.4	1.0	4.0	0.2	0.6
					Bottom Depth(m):		0.5					4.5	0.5	
					Date Sampled:	17-Dec-14	11-Dec-14	12-Dec-14	12-Dec-14	18-Dec-14	18-Dec-14	19-Dec-14	12-Dec-14	12-Dec-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**										
ACM Type	U	2192					-						-	-
Asbestos Identification	U	2192	%	0.001			No Asbestos Detected						No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.02	17	15	8.8	17	22	12	18	13	7.8	
Soil Colour	N				Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	
Other Material	N				Stones	NONE	Sand	Sand	Sand	Sand	Sand	Sand	Sand	
Soil Texture	N				Clay	Clay	Sand	Clay	Sand	Clay	Clay	Sand	Clay	
pH	M	2010			8.4	7.8	8.4	8.4	11.7	9.7	9.8	9.7	8.3	
Magnesium (Water Soluble)	N	2120	g/l	0.01				< 0.010						
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.01	0.057			0.020				0.30		
Total Sulphur	M	2175	%	0.01				0.010						
Chloride (Extractable)	U	2220	g/l	0.01				< 0.010						
Nitrate (Extractable)	N	2220	g/l	0.01				< 0.010						
Cyanide (Total)	M	2300	mg/kg	0.5		< 0.50					< 0.50	< 0.50		
Cyanide (Free)	M	2300	mg/kg	0.5		< 0.50					< 0.50	< 0.50		
Ammonium	M	2425	mg/kg	2				3.5						
Sulphate (Acid Soluble)	M	2430	%	0.01				< 0.010						
Arsenic	M	2450	mg/kg	1		12			12		10	11		
Barium	M	2450	mg/kg	10		83			100		30	59		
Beryllium	U	2450	mg/kg	1		< 1.0			< 1.0		< 1.0	< 1.0		
Cadmium	M	2450	mg/kg	0.1		0.18			< 0.10		0.24	0.25		
Copper	M	2450	mg/kg	0.5		24			430		20	23		
Mercury	M	2450	mg/kg	0.1		< 0.10			< 0.10		< 0.10	< 0.10		
Nickel	M	2450	mg/kg	0.5		25			13		16	14		
Lead	M	2450	mg/kg	0.5		30			12		8.4	37		
Selenium	M	2450	mg/kg	0.2		< 0.20			< 0.20		< 0.20	< 0.20		
Vanadium	U	2450	mg/kg	5		42			22		30	27		
Zinc	M	2450	mg/kg	0.5		65			43		32	73		
Chromium (Trivalent)	N	2490	mg/kg	5		32			15		21	18		
Chromium (Hexavalent)	N	2490	mg/kg	0.5		< 0.50			< 0.50		< 0.50	< 0.50		
Fraction of Organic Carbon	M	2625		0.001	0.0026									
Total TPH >C6-C40	M	2670	mg/kg	10			< 10						< 10	
Aliphatic TPH >C5-C6	N	2675	mg/kg	0.1	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		

Chemtest
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Results Summary - Soil

Project: 13-0646.01 - Havant

Client: Delta Simons					Chemtest Job No.:	14-17407	14-17407	14-17407	14-17407	14-17407	14-17407	14-17407	14-17407	14-17407
Quotation No.:					Chemtest Sample ID.:	85712	85713	85714	85715	85716	85717	85718	85719	85720
Order No.: DS23302					Client Sample Ref.:									
					Client Sample ID.:	BH4	BH5	BH5	BH5	BH6	BH6	BH6	BH7	BH7
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	5.5	0.3	5.5	6.5	0.4	1.0	4.0	0.2	0.6
					Bottom Depth(m):		0.5					4.5	0.5	
					Date Sampled:	17-Dec-14	11-Dec-14	12-Dec-14	12-Dec-14	18-Dec-14	18-Dec-14	19-Dec-14	12-Dec-14	12-Dec-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**										
Aliphatic TPH >C6-C8	N	2675	mg/kg	0.1		< 0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Aliphatic TPH >C8-C10	M	2675	mg/kg	0.1		< 0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Aliphatic TPH >C10-C12	M	2675	mg/kg	1		< 1.0	< 1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Aliphatic TPH >C12-C16	M	2675	mg/kg	1		< 1.0	< 1.0		< 1.0	< 1.0	4.8	< 1.0	< 1.0	
Aliphatic TPH >C16-C21	M	2675	mg/kg	1		< 1.0	< 1.0		< 1.0	< 1.0	19	< 1.0	< 1.0	
Aliphatic TPH >C21-C35	M	2675	mg/kg	1		< 1.0	< 1.0		< 1.0	< 1.0	38	< 1.0	< 1.0	
Aliphatic TPH >C35-C44	M	2675	mg/kg	1		< 1.0	< 1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Total Aliphatic Hydrocarbons	M	2675	mg/kg	5		< 5.0	< 5.0		< 5.0	< 5.0	62	< 5.0	< 5.0	
Aromatic TPH >C5-C7	N	2675	mg/kg	0.1		< 0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Aromatic TPH >C7-C8	N	2675	mg/kg	0.1		< 0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Aromatic TPH >C8-C10	M	2675	mg/kg	0.1		< 0.10	< 0.10		< 0.10	< 0.10	14	< 0.10	< 0.10	
Aromatic TPH >C10-C12	M	2675	mg/kg	1		< 1.0	< 1.0		< 1.0	1.7	230	< 1.0	< 1.0	
Aromatic TPH >C12-C16	M	2675	mg/kg	1		< 1.0	< 1.0		< 1.0	4.0	490	2.6	< 1.0	
Aromatic TPH >C16-C21	M	2675	mg/kg	1		< 1.0	< 1.0		< 1.0	10	2300	2.6	2.7	
Aromatic TPH >C21-C35	M	2675	mg/kg	1		< 1.0	< 1.0		< 1.0	15	1600	5.5	3.7	
Aromatic TPH >C35-C44	N	2675	mg/kg	1		< 1.0	< 1.0		< 1.0	< 1.0	56	< 1.0	< 1.0	
Total Aromatic Hydrocarbons	M	2675	mg/kg	5		< 5.0	< 5.0		< 5.0	31	4700	11	6.4	
Total Petroleum Hydrocarbons	M	2675	mg/kg	10		< 10	< 10		< 10	31	4700	11	< 10	
Naphthalene	M	2700	mg/kg	0.1			< 0.10			< 0.10		0.64	< 0.10	
Acenaphthylene	M	2700	mg/kg	0.1			< 0.10			< 0.10		< 0.10	< 0.10	
Acenaphthene	M	2700	mg/kg	0.1			< 0.10			< 0.10		0.94	< 0.10	
Fluorene	M	2700	mg/kg	0.1			< 0.10			< 0.10		1.6	< 0.10	
Phenanthrene	M	2700	mg/kg	0.1			1.6			3.9		10	< 0.10	
Anthracene	M	2700	mg/kg	0.1			0.33			0.93		2.2	< 0.10	
Fluoranthene	M	2700	mg/kg	0.1			2.1			4.2		8.8	0.40	
Pyrene	M	2700	mg/kg	0.1			1.7			3.3		6.6	0.35	
Benzo[a]anthracene	M	2700	mg/kg	0.1			0.83			1.5		2.9	< 0.10	
Chrysene	M	2700	mg/kg	0.1			1.1			2.6		3.5	< 0.10	
Benzo[b]fluoranthene	M	2700	mg/kg	0.1			0.96			1.9		3.4	< 0.10	
Benzo[k]fluoranthene	M	2700	mg/kg	0.1			0.32			1.1		1.2	< 0.10	
Benzo[a]pyrene	M	2700	mg/kg	0.1			0.56			1.3		2.2	< 0.10	
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.1			0.57			1.1		1.9	< 0.10	
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.1			< 0.10			< 0.10		0.40	< 0.10	

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Results Summary - Soil

Project: 13-0646.01 - Havant

Client: Delta Simons					Chemtest Job No.:	14-17407	14-17407	14-17407	14-17407	14-17407	14-17407	14-17407	14-17407	14-17407
Quotation No.:					Chemtest Sample ID.:	85712	85713	85714	85715	85716	85717	85718	85719	85720
Order No.: DS23302					Client Sample Ref.:									
					Client Sample ID.:	BH4	BH5	BH5	BH5	BH6	BH6	BH6	BH7	BH7
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	5.5	0.3	5.5	6.5	0.4	1.0	4.0	0.2	0.6
					Bottom Depth(m):		0.5					4.5	0.5	
					Date Sampled:	17-Dec-14	11-Dec-14	12-Dec-14	12-Dec-14	18-Dec-14	18-Dec-14	19-Dec-14	12-Dec-14	12-Dec-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**										
Benzo[g,h,i]perylene	M	2700	mg/kg	0.1		0.51			0.93		1.7	< 0.10		
Total Of 16 PAH's	M	2700	mg/kg	2		11			23		48	< 2.0		
Dichlorodifluoromethane	U	2760	µg/kg	1	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0		
Chloromethane	M	2760	µg/kg	1	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0		
Vinyl Chloride	M	2760	µg/kg	1	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0		
Bromomethane	M	2760	µg/kg	20	< 20	< 20		< 20	< 20		< 20	< 20		
Chloroethane	U	2760	µg/kg	2	< 2.0	< 2.0		< 2.0	< 2.0		< 2.0	< 2.0		
Trichlorofluoromethane	M	2760	µg/kg	1	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0		
1,1-Dichloroethene	M	2760	µg/kg	1	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0		
Trans 1,2-Dichloroethene	M	2760	µg/kg	1	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0		
1,1-Dichloroethane	M	2760	µg/kg	1	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0		
cis 1,2-Dichloroethene	M	2760	µg/kg	1	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	5.0		
Bromochloromethane	U	2760	µg/kg	5	< 5.0	< 5.0		< 5.0	< 5.0		< 5.0	< 5.0		
Trichloromethane	M	2760	µg/kg	1	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0		
1,1,1-Trichloroethane	M	2760	µg/kg	1	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0		
Tetrachloromethane	M	2760	µg/kg	1	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0		
1,1-Dichloropropene	U	2760	µg/kg	1	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0		
Benzene	M	2760	µg/kg	1	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0		
1,2-Dichloroethane	M	2760	µg/kg	2	< 2.0	< 2.0		< 2.0	< 2.0		< 2.0	< 2.0		
Trichloroethene	M	2760	µg/kg	1	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	2.2		
1,2-Dichloropropane	M	2760	µg/kg	1	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0		
Dibromomethane	M	2760	µg/kg	1	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0		
Bromodichloromethane	M	2760	µg/kg	5	< 5.0	< 5.0		< 5.0	< 5.0		< 5.0	< 5.0		
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10		< 10	< 10		< 10	< 10		
Toluene	M	2760	µg/kg	1	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0		
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10		< 10	< 10		< 10	< 10		
1,1,2-Trichloroethane	M	2760	µg/kg	10	< 10	< 10		< 10	< 10		< 10	< 10		
Tetrachloroethene	M	2760	µg/kg	1	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0		
1,3-Dichloropropane	U	2760	µg/kg	2	< 2.0	< 2.0		< 2.0	< 2.0		< 2.0	< 2.0		
Dibromochloromethane	U	2760	µg/kg	10	< 10	< 10		< 10	< 10		< 10	< 10		
1,2-Dibromoethane	M	2760	µg/kg	5	< 5.0	< 5.0		< 5.0	< 5.0		< 5.0	< 5.0		
Chlorobenzene	M	2760	µg/kg	1	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0		
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2	< 2.0	< 2.0		< 2.0	< 2.0		< 2.0	< 2.0		

Chemtest
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Results Summary - Soil

Project: 13-0646.01 - Havant

Client: Delta Simons					Chemtest Job No.:	14-17407	14-17407	14-17407	14-17407	14-17407	14-17407	14-17407	14-17407	14-17407
Quotation No.:					Chemtest Sample ID.:	85712	85713	85714	85715	85716	85717	85718	85719	85720
Order No.: DS23302					Client Sample Ref.:									
					Client Sample ID.:	BH4	BH5	BH5	BH5	BH6	BH6	BH6	BH7	BH7
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	5.5	0.3	5.5	6.5	0.4	1.0	4.0	0.2	0.6
					Bottom Depth(m):		0.5					4.5	0.5	
					Date Sampled:	17-Dec-14	11-Dec-14	12-Dec-14	12-Dec-14	18-Dec-14	18-Dec-14	19-Dec-14	12-Dec-14	12-Dec-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**										
Ethylbenzene	M	2760	µg/kg	1		< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0	
m & p-Xylene	M	2760	µg/kg	1		< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0	
o-Xylene	M	2760	µg/kg	1		< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0	
Styrene	M	2760	µg/kg	1		< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0	
Tribromomethane	U	2760	µg/kg	1		< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0	
Isopropylbenzene	M	2760	µg/kg	1		< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0	
Bromobenzene	M	2760	µg/kg	1		< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0	
1,2,3-Trichloropropane	N	2760	µg/kg	50		< 50	< 50		< 50	< 50		< 50	< 50	
N-Propylbenzene	U	2760	µg/kg	1		< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0	
2-Chlorotoluene	M	2760	µg/kg	1		< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0	
1,3,5-Trimethylbenzene	M	2760	µg/kg	1		< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0	
4-Chlorotoluene	U	2760	µg/kg	1		< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0	
Tert-Butylbenzene	U	2760	µg/kg	1		< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0	
1,2,4-Trimethylbenzene	M	2760	µg/kg	1		< 1.0	< 1.0		< 1.0	4.1		< 1.0	< 1.0	
Sec-Butylbenzene	U	2760	µg/kg	1		< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0	
1,3-Dichlorobenzene	M	2760	µg/kg	1		< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0	
4-Isopropyltoluene	U	2760	µg/kg	1		< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0	
1,4-Dichlorobenzene	M	2760	µg/kg	1		< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0	
N-Butylbenzene	U	2760	µg/kg	1		< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0	
1,2-Dichlorobenzene	M	2760	µg/kg	1		< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0	
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50		< 50	< 50		< 50	< 50		< 50	< 50	
1,2,4-Trichlorobenzene	M	2760	µg/kg	1		< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0	
Hexachlorobutadiene	U	2760	µg/kg	1		< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0	
1,2,3-Trichlorobenzene	U	2760	µg/kg	2		< 2.0	< 2.0		< 2.0	< 2.0		< 2.0	< 2.0	
Methyl Tert-Butyl Ether	M	2760	µg/kg	1		< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0	
Total Phenols	M	2920	mg/kg	0.3						< 0.30		< 0.30		

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Chemtest Sample ID:	Sample Ref:	Sample ID:	Sampled Date:	Containers Received:	Deviation Code(s):
85705		BH2	08-Dec-2014	Amber Glass 250ml	B
85705		BH2	08-Dec-2014	Amber Glass 60ml	B
85705		BH2	08-Dec-2014	Plastic Tub 500g	B
85706		BH2	08-Dec-2014	Amber Glass 250ml	B
85706		BH2	08-Dec-2014	Amber Glass 60ml	B
85706		BH2	08-Dec-2014	Plastic Tub 500g	B
85707		BH2	09-Dec-2014	Amber Glass 250ml	B
85707		BH2	09-Dec-2014	Amber Glass 60ml	B
85707		BH2	09-Dec-2014	Plastic Tub 500g	B

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVCOs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at our Coventry laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container

Sample Retention and Disposal

All soil samples will be retained for a period of 60 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Appendix XI

GROUNDWATER AND GROUND GAS MONITORING RECORD SHEET

Sheet: 1 of 1

Project Name:	Havant	Weather Conditions:	Cloud cover, light rain, 4 degrees. Wind speed 1.8 m/s.
Project Number:	13-0646.01	Gas Kit Model:	GAS KIT 5
Personnel:	Alex Cutts	Gas Kit Serial No:	

Date: 16/12/2014 & 18/12/2014

LOCATION	Flow Peak (L/hr)	Flow Steady (L/hr)	CH_4 Peak (%v/v)	CH_4 Steady (%v/v)	CO_2 Peak (%v/v)	CO_2 Steady (%v/v)	O_2 Min. (%v/v)	O_2 Steady (%v/v)	Atmospheric Pressure (mb)	PID (ppm)	Well I.D. (mm)	Depth to Product (DTP) (m)	Product Thickness (m)	Depth to Water (DTW) (m)	Depth to Base (DTB) (m)	Height of Water Column (m)	NOTES
BH1	-2.1	-2.1	<0.1	<0.1	1.5	1.4	19.9	19.9	1014	2.5				4.240	7.640	3.400	
BH2	-0.7	-0.7	<0.1	<0.1	0.1	0.1	20.3	20.3	1014	2.5				4.460	7.100	2.640	
BH4	-2.4	-2.0	<0.1	<0.1	0.2	0.2	19.9	19.9	1016	10.0				3.320	7.780	4.460	
BH5	-2.5	-2.1	<0.1	<0.1	<0.1	<0.1	19.9	19.9	1017	6.3				2.590	8.160	5.570	
BH7	-1.2	-1.2	<0.1	<0.1	<0.1	<0.1	20.1	20.1	1014	0.3				4.190	8.250	4.060	

GUIDE TO PURGING VOLUMES

To calculate the number of litres to be purged from a well with a different diameter, use the formula $3\pi r^2 h$ (where r = radius of the well and h = height of the water column). Use the formula $\pi r^2 h$ to calculate the volume of a bailer. Please note that the standard bailers Delta-Simons use are typically 0.95 m in length.

Diameter of Casing (mm	19	35	50	50	75	100
Diameter of Bailer (mm)	18	19	19	38	38	38
No. bails per m	4	12	22	6	13	23

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GROUNDWATER AND GROUND GAS MONITORING RECORD SHEET

Sheet:		
1	of	1

Project Name:	Havant	Weather Conditions:	Cloud cover, light rain, high winds 4*c , 12 m/s
Project Number:	13-0646.01	Gas Kit Model:	GAS KIT 4
Personnel:	SR	Gas Kit Serial No:	

Date: 22/12/2014

LOCATION	Flow Peak (L/hr)	Flow Steady (L/hr)	CH_4 Peak (%v/v)	CH_4 Steady (%v/v)	CO_2 Peak (%v/v)	CO_2 Steady (%v/v)	O_2 Min. (%v/v)	O_2 Steady (%v/v)	Atmospheric Pressure (mb)	PID (ppm)	Well I.D. (mm)	Depth to Product (DTP) (m)	Product Thickness (m)	Depth to Water (DTW) (m)	Depth to Base (DTB) (m)	Height of Water Column (m)	NOTES
BH1	<0.1	<0.1	<0.1	<0.1	0.0	0.0	20.0	20.1	1016	0.1				4.356	7.640	3.284	
BH2	<0.1	<0.1	<0.1	0.1	0.1	0.0	18.9	20.1	1016	1.3				4.191	7.100	2.909	
BH4	<0.1	<0.1	<0.1	<0.1	0.1	0.1	19.5	19.7	1015	0.9				2.368	8.160	5.792	
BH5	<0.1	<0.1	0.3	0.1	0.8	0.6	18.9	19.2	1015	0.4				3.399	7.780	4.381	
BH7	<0.1	<0.1	<0.1	0.1	1.5	0.7	17.3	17.6	1015	0.7				6.902	8.250	1.348	

GUIDE TO PURGING VOLUMES

To calculate the number of litres to be purged from a well with a different diameter, use the formula $3\pi r^2 h$ (where r = radius of the well and h = height of the water column). Use the formula $\pi r^2 h$ to calculate the volume of a bailer. Please note that the standard bailers Delta-Simons use are typically 0.95 m in length.

Diameter of Casing (mm	19	35	50	50	75	100
Diameter of Bailer (mm)	18	19	19	38	38	38
No. bails per m	4	12	22	6	13	23

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GROUNDWATER AND GROUND GAS MONITORING RECORD SHEET

Sheet:		
1	of	1

Project Name:	Havant	Weather Conditions:	Cloud cover, light rain, Approx 9*c - (no windspeedAnemometer
Project Number:	13-0646.01	Gas Kit Model:	GAS KIT 4
Personnel:	Alex Cutts	Gas Kit Serial No:	

Date: 06/01/2015

LOCATION	Flow Peak (L/hr)	Flow Steady (L/hr)	CH_4 Peak (%v/v)	CH_4 Steady (%v/v)	CO_2 Peak (%v/v)	CO_2 Steady (%v/v)	O_2 Min. (%v/v)	O_2 Steady (%v/v)	Atmospheric Pressure (mb)	PID (ppm)	Well I.D. (mm)	Depth to Product (DTP) (m)	Product Thickness (m)	Depth to Water (DTW) (m)	Depth to Base (DTB) (m)	Height of Water Column (m)	NOTES
BH1	<0.1	<0.1	<0.1	<0.1	0.0	0.0	20.0	20.2	1014	0.0				4.440	7.640	3.200	
BH2	<0.1	<0.1	<0.1	<0.1	0.0	0.0	19.7	19.7	1014	0.3				4.210	7.100	2.890	
BH4	<0.1	<0.1	<0.1	<0.1	0.1	0.1	19.7	19.7	1017	0.2				2.440	8.160	5.720	
BH5	<0.1	<0.1	<0.1	<0.1	0.6	0.6	19.4	19.4	1016	0.3				3.570	7.780	4.210	
BH7	<0.1	<0.1	<0.1	<0.1	1.2	1.2	17.0	17.0	1014	0.4				7.190	8.250	1.060	

GUIDE TO PURGING VOLUMES

To calculate the number of litres to be purged from a well with a different diameter, use the formula $3\pi r^2 h$ (where r = radius of the well and h = height of the water column). Use the formula $\pi r^2 h$ to calculate the volume of a bailer. Please note that the standard bailers Delta-Simons use are typically 0.95 m in length.

Diameter of Casing (mm)	19	35	50	50	75	100
Diameter of Bailer (mm)	18	19	19	38	38	38
No. bails per m	4	12	22	6	13	23

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GROUNDWATER AND GROUND GAS MONITORING RECORD SHEET

Sheet:		
1	of	1

Project Name:	Havant	Weather Conditions:	Overcast, light rain, **12°c** Wind speed 2.5 m/s Gust 4.0 m/s.
Project Number:	13-0646.01	Gas Kit Model:	GAS KIT 4
Personnel:	Alex Cutts	Gas Kit Serial No:	

Date: 12/01/2015

LOCATION	Flow Peak (L/hr)	Flow Steady (L/hr)	CH_4 Peak (%v/v)	CH_4 Steady (%v/v)	CO_2 Peak (%v/v)	CO_2 Steady (%v/v)	O_2 Min. (%v/v)	O_2 Steady (%v/v)	Atmospheric Pressure (mb)	PID (ppm)	Well I.D. (mm)	Depth to Product (DTP) (m)	Product Thickness (m)	Depth to Water (DTW) (m)	Depth to Base (DTB) (m)	Height of Water Column (m)	NOTES
BH1	<0.1	<0.1	<0.1	<0.1	0.9	0.9	19.7	19.7	1007	0.0				4.230	7.640	3.410	
BH2	<0.1	<0.1	<0.1	<0.1	0.0	0.0	20.2	20.2	1007	0.2				3.940	7.100	3.160	
BH5	<0.1	<0.1	<0.1	<0.1	0.1	0.1	19.9	19.9	1006	0.3				3.210	8.160	4.950	
BH4	<0.1	<0.1	<0.1	<0.1	0.5	0.5	19.5	19.5	1007	0.3				3.330	7.780	4.450	
BH7	<0.1	<0.1	<0.1	<0.1	1.5	1.5	17.4	17.4	1006	0.1				3.910	8.250	4.340	

GUIDE TO PURGING VOLUMES

To calculate the number of litres to be purged from a well with a different diameter, use the formula $3\pi r^2 h$ (where r = radius of the well and h = height of the water column). Use the formula $\pi r^2 h$ to calculate the volume of a bailer. Please note that the standard bailers Delta-Simons use are typically 0.95 m in length.

Diameter of Casing (mm)	19	35	50	50	75	100
Diameter of Bailer (mm)	18	19	19	38	38	38
No. bails per m	4	12	22	6	13	23

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PIEZOMETER VARIABLE HEAD PERMEABILITY TEST

PROJECT NUMBER	**13-0646.01**
PROJECT TITLE	**Standbridge Rd, Havant**
BOREHOLE REF	**BH5**
DATE	22-Dec-14
BOREHOLE DIAMETER (mm)	150
STATIC WATER LEVEL (m bd)	3.39
"L" LENGTH SLOTTED SCREEN (m)	9.00
BASE OF STANDPIPE (m)	10.00
STRATA TYPE	Sand and Gravel
"D" BOREHOLE DIAMETER (m)	1.50E-01
" SCENARIO (a,b,c,d1,d2,e or f - case sensitive)	d2
"F" VALUE	1.35E+01
"A" AREA OF BOREHOLE (m^2)	1.77E-02

TIME (mins	Hi(mbd)	H(head)	H/Ho
0.08	1.200	2.190	1.000
0.12	1.600	1.790	0.817
0.17	2.100	1.290	0.589
0.20	3.000	0.390	0.178
0.25	3.200	0.190	0.087
0.33	3.300	0.090	0.041
0.50	3.390	0.000	0.000
		3.390	1.548
		3.390	1.548
		3.390	1.548
		3.390	1.548
		3.390	1.548
		3.390	1.548
		3.390	1.548
		3.390	1.5479
		3.390	1.548
		3.390	1.548
		3.390	1.548
		3.390	1.548
		3.390	1.548
		3.390	1.548

BASIC TIME LAG METHOD (after BS5930:1999

K= A/(F*T)

T= TIME FOR H/Ho:0.37

T= 0.18 (min)

T= 11.09 (sec)

K= 1.18E-04 (m/s)

K= 10.201 (m/d)

GENERAL METHOD (after BS5930:1999)

$$k = \frac{A}{F(t_2 - t_1)} \log_e \frac{H_1}{H_2}$$

t1= 0.12 (min)

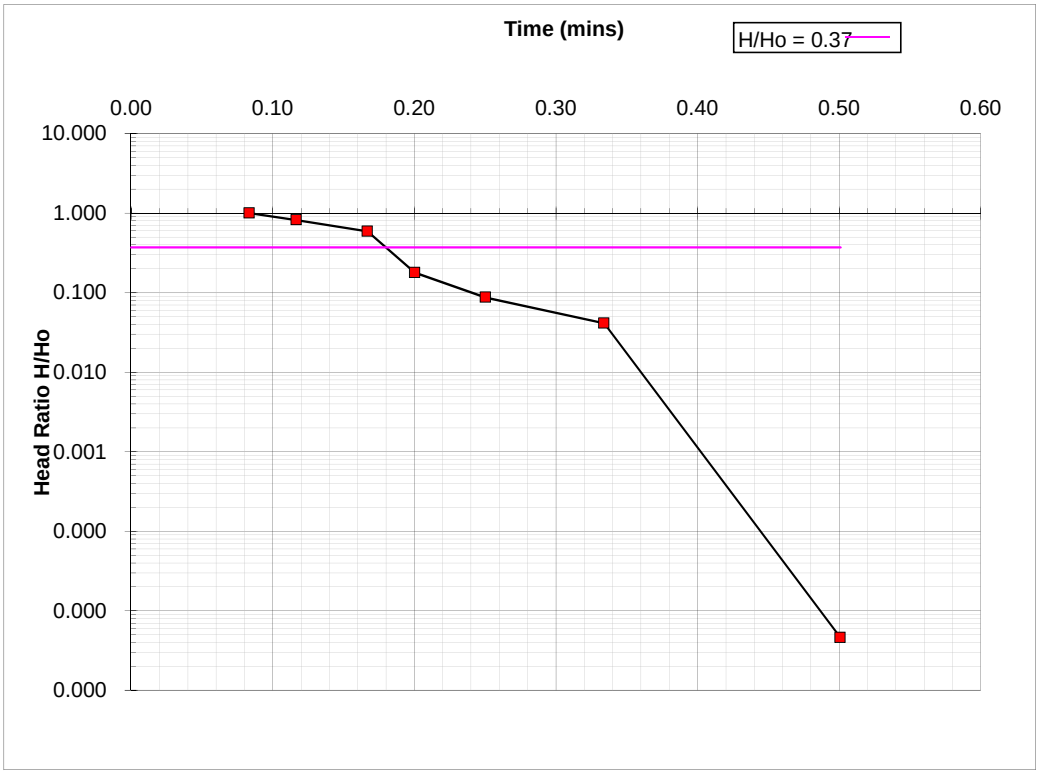
t2= 0.25 (min)

H(head)1= 1.79 (m)

H(head)2= 0.19 (m)

K= 3.76E-04 (m/s)

K= 32.524 (m/d)



PIEZOMETER VARIABLE HEAD PERMEABILITY TEST

PROJECT NUMBER	**13-0646.01**
PROJECT TITLE	**Standbridge Rd, Havant**
BOREHOLE REF	**BH5**
DATE	22-Dec-14
BOREHOLE DIAMETER (mm)	150
STATIC WATER LEVEL (m bd)	3.39
"L" LENGTH SLOTTED SCREEN (m)	9.00
BASE OF STANDPIPE (m)	10.00
STRATA TYPE	Sand and Gravel
"D" BOREHOLE DIAMETER (m)	1.50E-01
" SCENARIO (a,b,c,d1,d2,e or f - case sensitive)	d2
"F" VALUE	1.35E+01
"A" AREA OF BOREHOLE (m^2)	1.77E-02

TIME (mins	Hi(mbd)	H(head)	H/Ho
0.03	0.150	3.240	1.000
0.08	0.860	2.530	0.781
0.17	1.230	2.160	0.667
0.20	1.440	1.950	0.602
0.25	1.980	1.410	0.435
0.33	2.300	1.090	0.336
0.43	2.800	0.590	0.182
0.53	3.050	0.340	0.105
0.75	3.130	0.260	0.080
0.92	3.210	0.180	0.056
1.15	3.280	0.110	0.034
1.25	3.280	0.110	0.034
1.45	3.290	0.100	0.031
2.10	3.310	0.080	0.0247
2.45	3.310	0.080	0.025
3.15	3.320	0.070	0.022
3.45	3.340	0.050	0.015
4.00	3.350	0.040	0.012
		3.390	1.046
		3.390	1.046

BASIC TIME LAG METHOD (after BS5930:1999

K= A/(F*T)

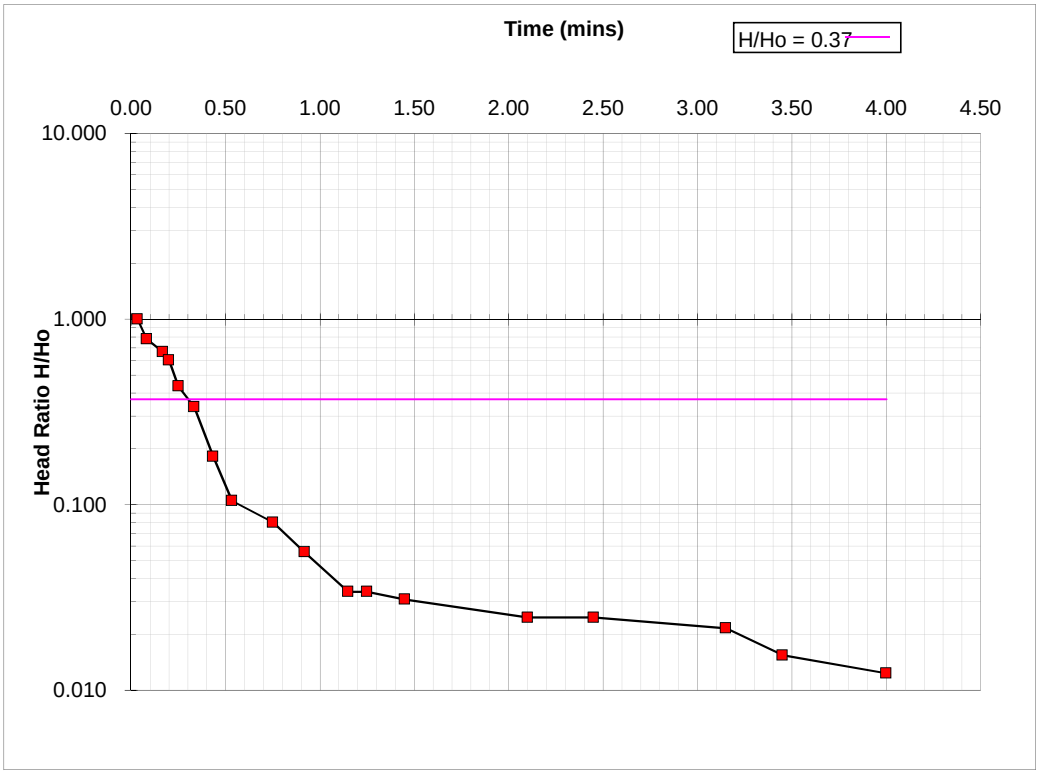
T= TIME FOR H/Ho:0.37

T=	0.31	(min)
T=	18.34	(sec)
K=	**7.14E-05**	**(m/s)**
K=	**6.168**	**(m/d)**

GENERAL METHOD (after BS5930:1999)

$$k = \frac{A}{F(t_2 - t_1)} \log_e \frac{H_1}{H_2}$$

t1=	0.17	(min)
t2=	0.53	(min)
H(head)1=	2.16	(m)
H(head)2=	0.34	(m)
K=	**1.12E-04**	**(m/s)**
K=	**9.682**	**(m/d)**



PIEZOMETER VARIABLE HEAD PERMEABILITY TEST

PROJECT NUMBER	**13-0646.01**
PROJECT TITLE	**Standbridge Rd, Havant**
BOREHOLE REF	**BH5**
DATE	22-Dec-14
BOREHOLE DIAMETER (mm)	150
STATIC WATER LEVEL (m bd)	3.39
"L" LENGTH SLOTTED SCREEN (m)	9.00
BASE OF STANDPIPE (m)	10.00
STRATA TYPE	Sand and Gravel
"D" BOREHOLE DIAMETER (m)	1.50E-01
" SCENARIO (a,b,c,d1,d2,e or f - case sensitive)	d2
"F" VALUE	1.35E+01
"A" AREA OF BOREHOLE (m^2)	1.77E-02

TIME (mins	Hi(mbd)	H(head)	H/Ho
0.01	0.210	3.180	1.000
0.17	0.930	2.460	0.774
0.25	1.180	2.210	0.695
0.42	1.960	1.430	0.450
0.58	2.460	0.930	0.292
0.75	2.890	0.500	0.157
1.00	3.130	0.260	0.082
1.25	3.170	0.220	0.069
2.00	3.220	0.170	0.053
3.00	3.260	0.130	0.041
4.00	3.300	0.090	0.028
5.00	3.340	0.050	0.016
		3.390	1.066
		3.390	1.0660
		3.390	1.066
		3.390	1.066
		3.390	1.066
		3.390	1.066
		3.390	1.066
		3.390	1.066
		3.390	1.066

BASIC TIME LAG METHOD (after BS5930:1999

K= A/(F*T)

T= TIME FOR H/Ho:0.37

T= 0.50 (min)

T= 30.13 (sec)

K= 4.35E-05 (m/s)

K= 3.754 (m/d)

GENERAL METHOD (after BS5930:1999)

$$k = \frac{A}{F(t_2 - t_1)} \log_e \frac{H_1}{H_2}$$

t1= 0.42 (min)

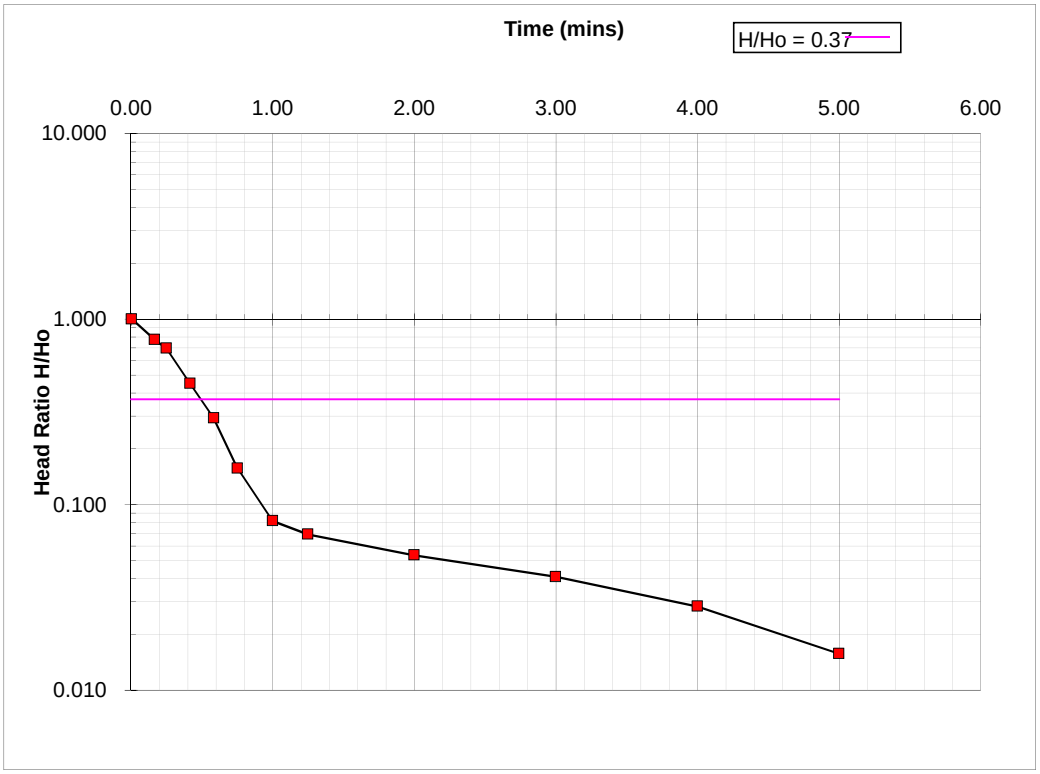
t2= 1.00 (min)

H(head)1= 1.43 (m)

H(head)2= 0.26 (m)

K= 6.41E-05 (m/s)

K= 5.541 (m/d)



Appendix XII

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report Number:	14-17119 Issue-1
Initial Date of Issue:	06-Jan-15
Client:	Delta Simons
Client Address:	3 Henley Office Park Doddington Road Lincoln Lincolnshire LN6 3QR
Contact(s):	Stacey Ragsdale Alex Cutts
Project:	13-0646.01- Stanbridge Road, Havant
Quotation No.:	Q14-00919
Order No.:	DS23286
No. of Samples:	5
Turnaround: (Weekdays)	10
Date Approved:	06-Jan-15
Approved By:	
Details:	Phil Hellier, Project Director

Date Received:	19-Dec-14
Date Instructed:	19-Dec-14
Results Due:	06-Jan-15

Chemtest
The right chemistry to deliver results

Results Summary - Water

Project: 13-0646.01- Stanbridge Road, Havant

Client: Delta Simons		Chemtest Job No.:			14-17119	14-17119	14-17119	14-17119	14-17119
Quotation No.: Q14-00919		Chemtest Sample ID.:			83781	83782	83783	83784	83785
Order No.: DS23286		Client Sample Ref.:							
		Client Sample ID.:			BH1	BH2	BH4	BH5	BH7
		Sample Type:			WATER	WATER	WATER	WATER	WATER
		Top Depth (m):							
		Bottom Depth(m):							
		Date Sampled:			16-Dec-14	16-Dec-14	17-Dec-14	16-Dec-14	18-Dec-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
pH	U	1010			8.1	8.3	8.3	8.2	8.0
Sulphate	U	1220	mg/l	1	60	89	74	66	72
Cyanide (Total)	U	1300	mg/l	0.05	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.05	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Cyanide (Complex)	U	1300	mg/l	0.05	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1	1.9	2.2	1.3	1.3	3.4
Barium (Dissolved)	U	1450	µg/l	5	93	64	49	33	93
Beryllium (Dissolved)	U	1450	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Boron (Dissolved)	U	1450	µg/l	20	230	190	110	130	160
Cadmium (Dissolved)	U	1450	µg/l	0.08	0.12	< 0.080	< 0.080	< 0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1	8.9	9.0	6.3	8.6	11
Copper (Dissolved)	U	1450	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Mercury (Dissolved)	U	1450	µg/l	0.5	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1	4.9	3.5	2.6	170	15
Lead (Dissolved)	U	1450	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1	4.3	4.1	2.3	2.9	4.9
Vanadium (Dissolved)	U	1450	µg/l	1	1.3	1.7	< 1.0	1.6	2.0
Zinc (Dissolved)	U	1450	µg/l	1	1.8	< 1.0	< 1.0	4.4	2.2
Total Organic Carbon	N	1610	mg/l	1	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Aliphatic TPH >C5-C6	N	1675	µg/l	0.1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Chemtest
The right chemistry to deliver results

Results Summary - Water

Project: 13-0646.01- Stanbridge Road, Havant

Client: Delta Simons					Chemtest Job No.:	14-17119	14-17119	14-17119	14-17119	14-17119
Quotation No.: Q14-00919					Chemtest Sample ID.:	83781	83782	83783	83784	83785
Order No.: DS23286					Client Sample Ref.:					
					Client Sample ID.:	BH1	BH2	BH4	BH5	BH7
					Sample Type:	WATER	WATER	WATER	WATER	WATER
					Top Depth (m):					
					Bottom Depth(m):					
					Date Sampled:	16-Dec-14	16-Dec-14	17-Dec-14	16-Dec-14	18-Dec-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Aromatic TPH >C16-C21	N	1675	µg/l	0.1		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.1		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.1		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	U	1675	µg/l	10		< 10	< 10	< 10	< 10	< 10
Naphthalene	U	1700	µg/l	0.1		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.1		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.1		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	1700	µg/l	0.1		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.1		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	1700	µg/l	0.1		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.1		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	1700	µg/l	0.1		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.1		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	1700	µg/l	0.1		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.1		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.1		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.1		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.1		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.1		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.1		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dichlorodifluoromethane	U	1760	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	1760	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1		2.1	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	1760	µg/l	5		< 5	< 5	< 5	< 5	< 5
Chloroethane	U	1760	µg/l	2		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1		3.5	< 1.0	1.2	< 1.0	7.6
1,1-Dichloroethane	U	1760	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1		83	< 1.0	1.6	< 1.0	6.2
Bromochloromethane	U	1760	µg/l	5		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

Chemtest
The right chemistry to deliver results

Results Summary - Water

Project: 13-0646.01- Stanbridge Road, Havant

Client: Delta Simons					Chemtest Job No.:	14-17119	14-17119	14-17119	14-17119	14-17119
Quotation No.: Q14-00919					Chemtest Sample ID.:	83781	83782	83783	83784	83785
Order No.: DS23286					Client Sample Ref.:					
					Client Sample ID.:	BH1	BH2	BH4	BH5	BH7
					Sample Type:	WATER	WATER	WATER	WATER	WATER
					Top Depth (m):					
					Bottom Depth(m):					
					Date Sampled:	16-Dec-14	16-Dec-14	17-Dec-14	16-Dec-14	18-Dec-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Trichloromethane	U	1760	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	U	1760	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	N	1760	µg/l	1		99	< 1.0	< 1.0	2.3	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	1760	µg/l	10		< 10	< 10	< 10	< 10	< 10
Bromodichloromethane	U	1760	µg/l	5		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	1760	µg/l	10		< 10	< 10	< 10	< 10	< 10
Toluene	U	1760	µg/l	1		< 1.0	< 1.0	1.2	1.6	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10		< 10	< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10		< 10	< 10	< 10	< 10	< 10
Tetrachloroethene	U	1760	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	U	1760	µg/l	2		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10		< 10	< 10	< 10	< 10	< 10
1,2-Dibromoethane	U	1760	µg/l	5		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	N	1760	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	1760	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	1760	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	U	1760	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	U	1760	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	U	1760	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50		< 50	< 50	< 50	< 50	< 50
N-Propylbenzene	U	1760	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results Summary - Water

Project: 13-0646.01- Stanbridge Road, Havant

Client: Delta Simons									
Quotation No.: Q14-00919				**Chemtest Job No.:**	14-17119	14-17119	14-17119	14-17119	14-17119
Order No.: DS23286				**Chemtest Sample ID.:**	83781	83782	83783	83784	83785
				Client Sample Ref.:					
				Client Sample ID.:	BH1	BH2	BH4	BH5	BH7
				Sample Type:	WATER	WATER	WATER	WATER	WATER
				Top Depth (m):					
				Bottom Depth(m):					
				Date Sampled:	16-Dec-14	16-Dec-14	17-Dec-14	16-Dec-14	18-Dec-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
1,2,4-Trimethylbenzene	U	1760	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50	< 50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Phenols	U	1920	mg/l	0.03	< 0.030	< 0.030	< 0.030	< 0.030	0.050

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVCOs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at our Coventry laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container

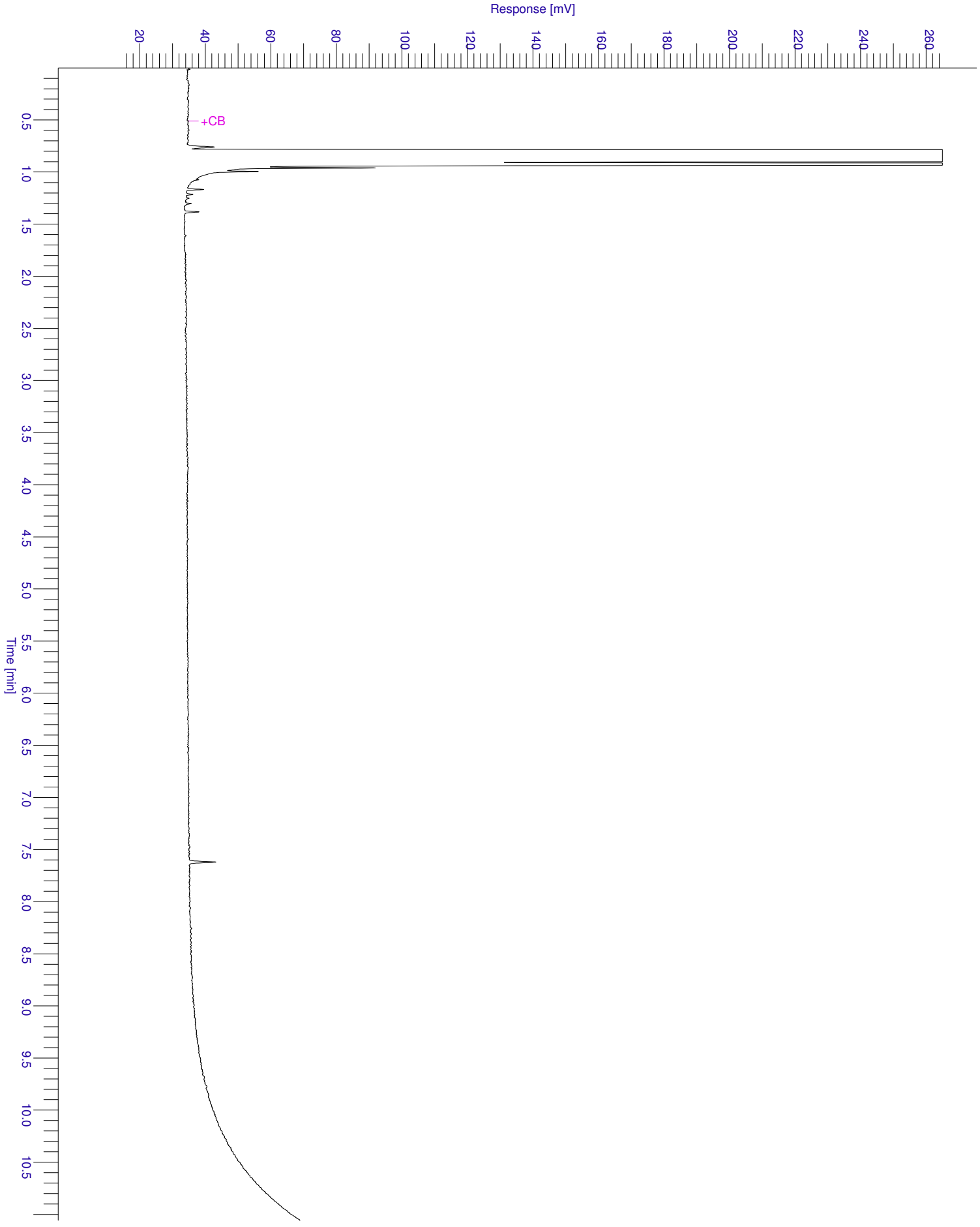
Sample Retention and Disposal

All soil samples will be retained for a period of 60 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

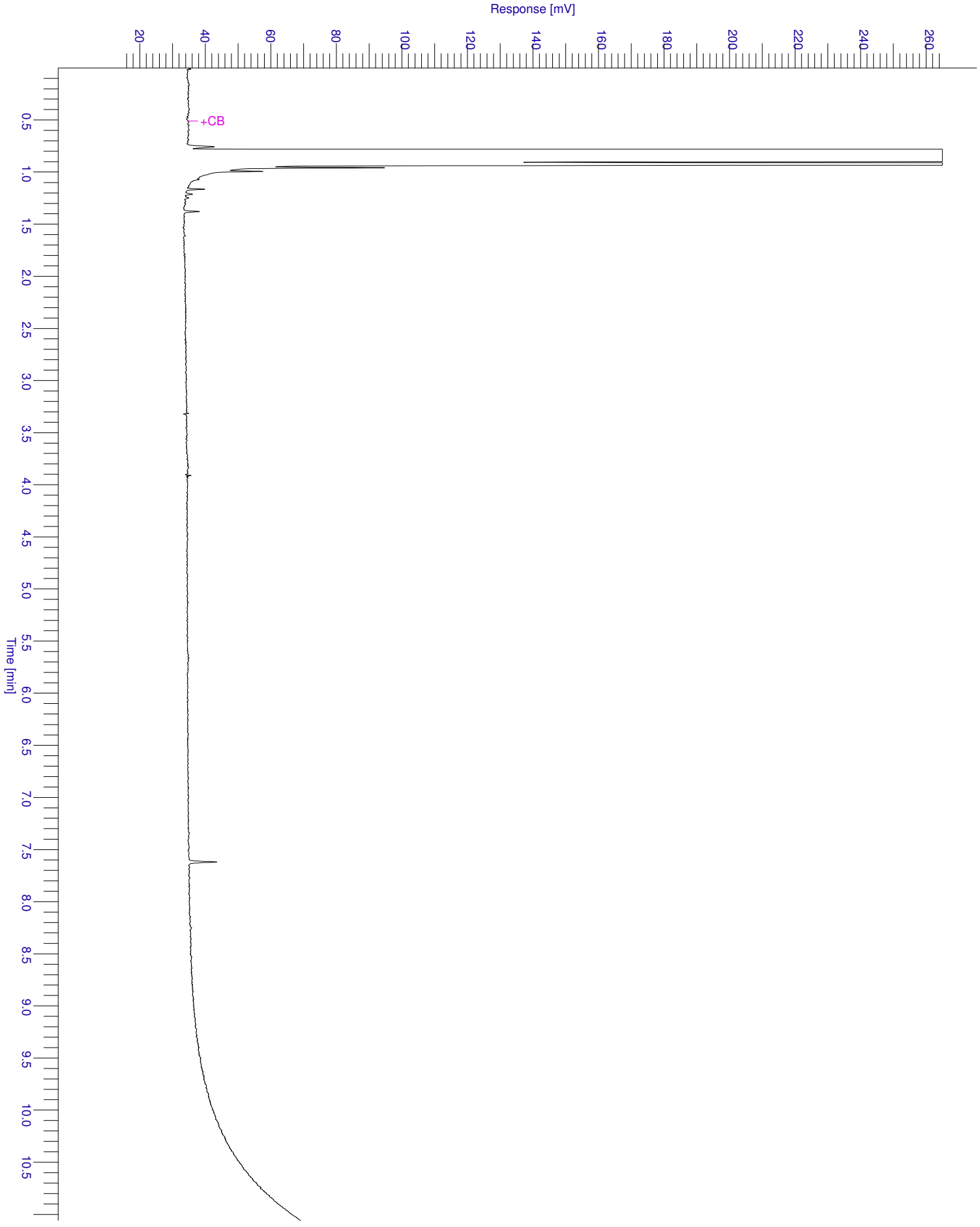
Chromatogram

Sample Name : 83781_wx1-14-17119 Sample #: 036
FileName : T:\2014\GC15\\Dec\WATER0304\WATER0304_A036.raw
Date : 27/01/2015 09:53:00
Method : Time of Injection: 23/12/2014 09:07:40
Start Time : 0.00 min End Time : 11.06 min Low Point : 15.00 mV High Point : 265.00 mV
Plot Offset: 15.00 mV Plot Scale: 250.0 mV



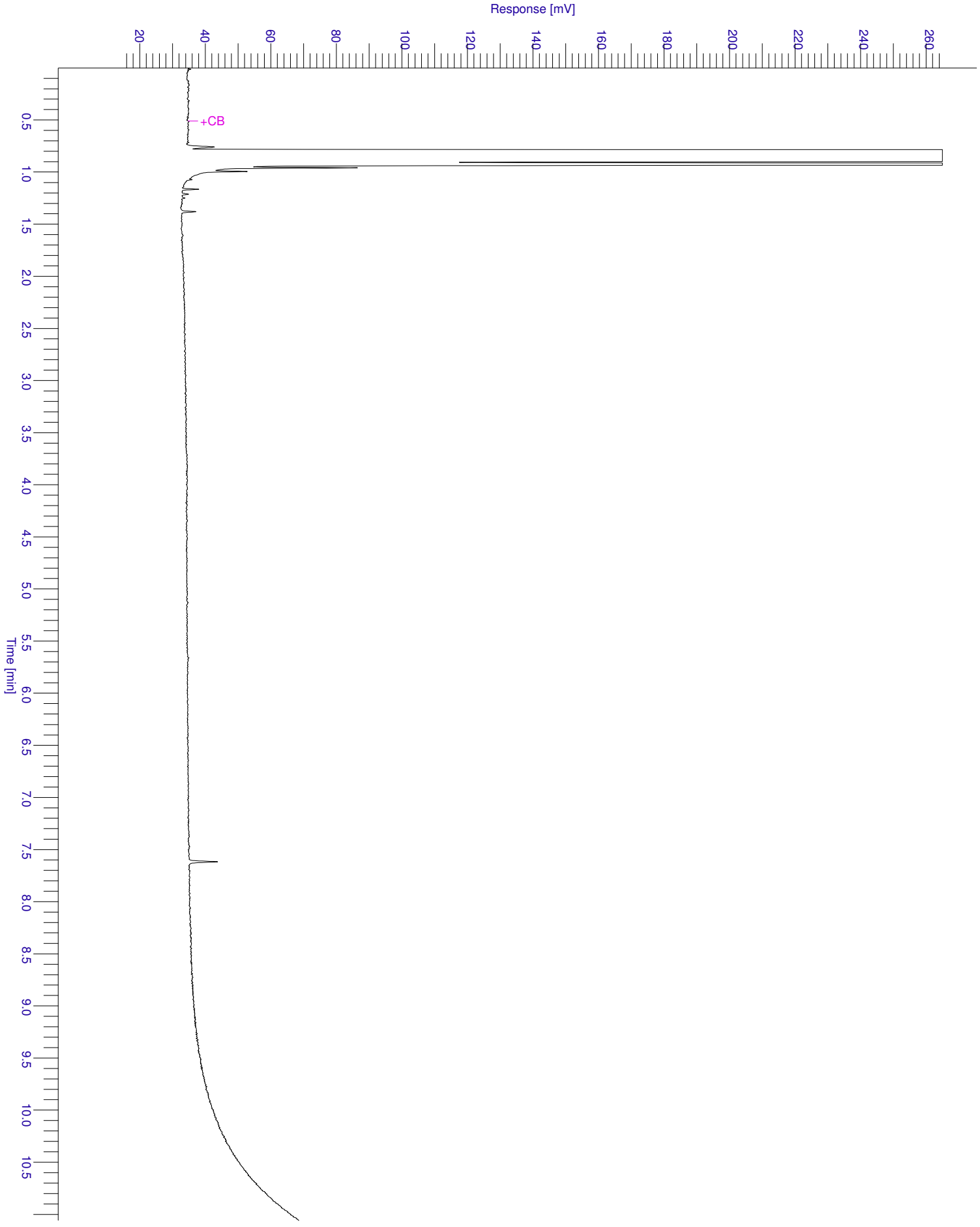
Chromatogram

Sample Name : 83782_wx1-14-17119 Sample #: 037 Page 1 of 1
FileName : T:\2014\GC15\\Dec\WATER0304\WATER0304_A037.raw
Date : 27/01/2015 09:53:53
Method : Time of Injection: 23/12/2014 09:35:43
Start Time : 0.00 min End Time : 11.06 min Low Point : 15.00 mV High Point : 265.00 mV
Plot Offset: 15.00 mV Plot Scale: 250.0 mV



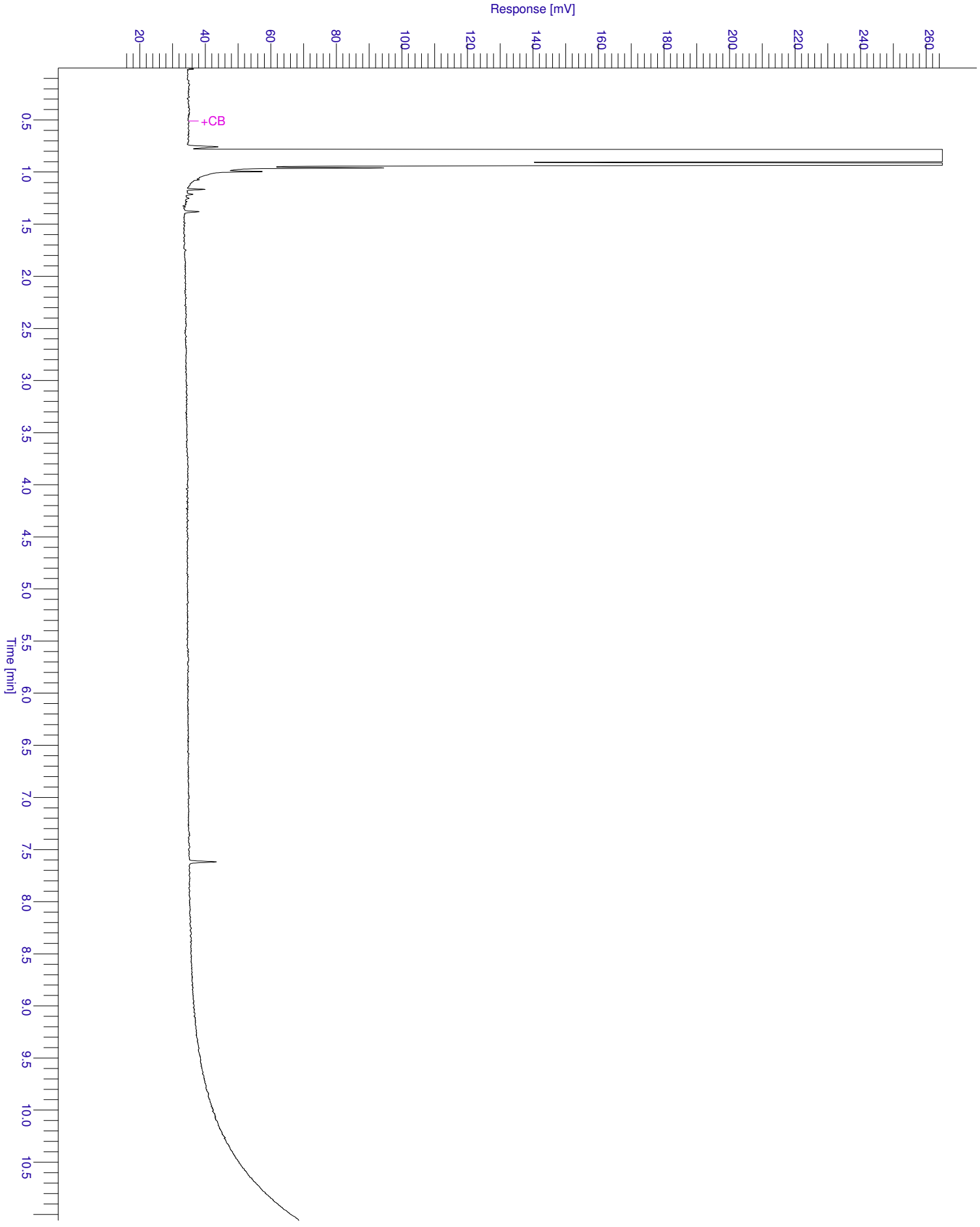
Chromatogram

Sample Name : 83783_wx1-14-17119 Sample #: 038
FileName : T:\2014\GC15\\Dec\WATER0304\WATER0304_A038.raw
Date : 27/01/2015 09:54:20
Method : Time of Injection: 23/12/2014 10:04:01
Start Time : 0.00 min End Time : 11.06 min Low Point : 15.00 mV High Point : 265.00 mV
Plot Offset: 15.00 mV Plot Scale: 250.0 mV



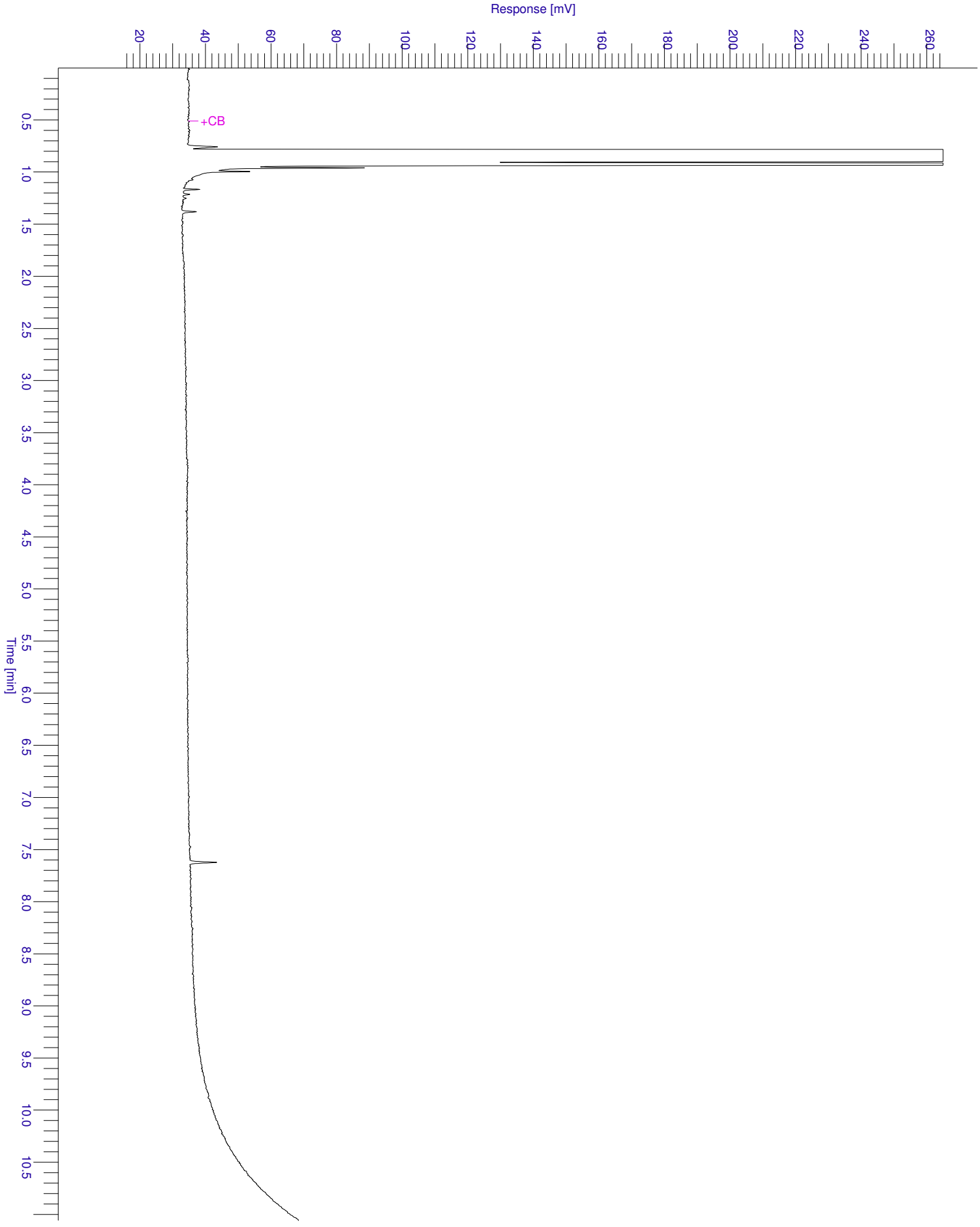
Chromatogram

Sample Name : 83784_wx1-14-17119 Sample #: 039
FileName : T:\2014\GC15\\Dec\WATER0304\WATER0304_A039.raw
Date : 27/01/2015 09:55:00
Method : Time of Injection: 23/12/2014 10:32:09
Start Time : 0.00 min End Time : 11.06 min Low Point : 15.00 mV High Point : 265.00 mV
Plot Offset: 15.00 mV Plot Scale: 250.0 mV



Chromatogram

Sample Name : 83785_wx1-14-17119 Sample #: 040 Page 1 of 1
FileName : T:\2014\GC15\\Dec\WATER0304\WATER0304_A040.raw
Date : 27/01/2015 09:55:42
Method : Time of Injection: 23/12/2014 11:00:32
Start Time : 0.00 min End Time : 11.06 min Low Point : 15.00 mV High Point : 265.00 mV
Plot Offset: 15.00 mV Plot Scale: 250.0 mV



Dan Webb

From: Glynn Harvey <Glynn.Harvey@chemtest.co.uk>
Sent: 27 January 2015 12:12
To: Dan Webb
Subject: FW: 13-0646 - Stanbridge Road, Havant - Groundwater Testing
Attachments: 83781.pdf; 83782.pdf; 83783.pdf; 83784.pdf; 83785.pdf

Hello Dan,

As discussed, I have attached the TPH chromatograms for Job 14-17119.

In addition the VOC data has been reviewed for Acetone by our Tentatively Identified Compounds method. All samples within job 14-17119 report Acetone to below method limit of detection of 10ug/L.

I hope this helps, and if you have any questions please don't hesitate to contact me directly.

Kind regards,

Glynn

Glynn Harvey
Divisional Manager Organics
www.chemtest.co.uk

This email has been scanned for email related threats and delivered safely by Mimecast.
For more information please visit http://www.mimecast.com

Appendix XIII



Delta-Simons Adopted Human Health Generic Assessment Criteria

For

Commercial End Use

Version 4.0 – January 2015

Guidance Notes – Using Human Health Soil Screening Values

A tiered risk assessment approach is used for the assessment of soil analysis results considering the 'pollutant linkages' on the basis of a 'source-pathway-receptor' relationship.

The following tables present conservative Tier 1 generic screening assessment criteria (GAC) used by Delta-Simons to provide an initial assessment of risk to Human Health in the context of the proposed redevelopment of the Site.

GACs are intended to assess:

- Chronic (long-term) on-site exposure risk to contaminants in the soil to future users and occupiers of the Site.
- Concentrations below the GAC considered tolerable or to pose a minimal risk to human health, or low risk in relation to the Category 4 Screening Levels (C4SLs).

GACs are not relevant for assessing:

- Acute (short-term) exposure risks (e.g. construction workers during development);
- Non-human receptors such as controlled waters, ecosystems, buildings and services, animals, domestic pets or plants;
- Aesthetic issues which may render a soil unsuitable for use such as odour or colour;
- GACs do not take account of other non-soil based sources of contamination such as contamination in groundwater or surface waters; and
- GACs are not suitable for assessing whether a soil provides a suitable growing medium for crops or plants.

Exceedences of Generic Assessment Criteria

An exceedence of a GAC:

- Is not an indicator of a significant risk to human health;
- Is an indication that the contaminant *may* pose a possibility harm to human health and, therefore, further consideration is required.

In assessing the significance of an exceedence consideration should be given to:

- The *nature* of the contaminant (e.g. volatile or non-volatile contaminants)
- Site design and potential exposure *pathways* (e.g. hard cover, buildings, landscaping)
- The *distribution* of exceedences (widespread or localised, numerous or few exceedences – ***NB: Consider data limitations – site coverage and gaps in data.***
- The *margin* of the exceedence(s);
- The *duration* and *frequency* of exposure; and
- Any other *site specific* factors.

Generic Assessment Criteria used by Delta-Simons

In the absence of a complete regulatory set of screening values derived using the CLEA Framework, Delta-Simons screening values are based on the following:

- The current Soil Guidance Values (SGVs) published by the EA;
- Category 4 Screening Levels (C4SLs) published by DEFRA;
- The 2014 Land Quality Management (LQM) / Chartered Institute of Environmental Health (CIEH) Suitable for Use Levels for Human Health Risk Assessment (S4ULs);
- The guidance values produced by the Environmental Industries Commission (EIC), the Association of Geotechnical and Geoenvironmental Specialists (AGS) and Contaminated Land: Application in Real Environments (CL:AIRE) in December 2009; and
- In house Generic Screening Values (DS-GACs) derived by Delta-Simons.

Contaminants for which Generic Assessment Criteria are Unavailable

Insufficient toxicological data is available to derive GAC for a number of potential contaminants of concern and GAC cannot be derived for derived for mixtures of compounds (e.g. total petroleum hydrocarbons). In such cases Delta-Simons will endeavour to use conservative surrogate GAC values to provide an initial screening assessment based on the known chemical and physical properties of the contaminant.

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Notes and References used in the Tables

Generic Assessment Criteria Source	
SGV	Soil Guidance Values published by the EA
DS-GAC	Delta-Simons Generic Assessment Criteria derived using CLEA V.1.06.
C4SL	Category 4 Screening Levels, DEFRA December 2014
SGV v.1.05	Environment Agency Soil Guideline Values for dioxins, furans and dioxin-like PCBs calculated within CLEA V.1.05.
LQM	LQM/CIEH Suitable for Use Levels for Human Health Risk Assessment (S4UL), November 2014. (*Copyright Land Quality Management Limited, reduced with permission; Publication Number S4UL3087. All rights reserved*).
EIC	EIC/AGS/CL:AIRE Soil Generic Assessment Criteria for Human Health Risk Assessment derived using CLEA V.1.06.
Abbreviations	
Units	All values mg/kg unless otherwise stated.
SOM	Soil Organic Matter – GAC have been derived for a range of soil organic matter content – 1%, 2.5 or 3% and 6%. In the absence of site specific data or robust soil characterisation the most conservative value of 1% soil organic matter should be used as the initial screening value.
(##)	GAC exceed saturation/vapour concentration (given in brackets). Soil concentrations above the soil saturation may indicate that non-aqueous phase liquid (NAPL) is present. Risks from NAPL may need to be considered separately. Reference should always be made to the site investigation observations and soil logs were available.

Use of C4SLs as Screening Criteria

Only the lead C4SL should be used as an initial screening level, as there is no 'minimal risk' screening value available. Though primarily designed for assessing the risk of land being determined as 'contaminated' under Part 2A, Defra have confirmed[1] that the C4SL could be used under the planning regime. Where applicable, the 'minimal risk' level should be used as the initial screening level and where exceedances are identified reference to, and consideration of the C4SL levels may be made in the risk assessment process.

[1] Defra/Lord de Mauley letter to all Local Authorities dated 3rd September 2014.

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Metals

Compound	1% SOM	Source	2.5 - 3% SOM	Source	6% SOM	Source
Antimony	*7500*	*EIC*	*7500*	*EIC*	7500	EIC
Arsenic	*640*	*SGV*	*640*	*SGV*	640	SGV
Arsenic	*640*	*LQM*	*640*	*LQM*	640	LQM
Arsenic	*640*	*C4SL*	*640*	*C4SL*	640	C4SL
Barium	*22000*	*EIC*	*22000*	*EIC*	22000	EIC
Beryllium	*12*	*LQM*	*12*	*LQM*	12	LQM
Boron	*240000*	*LQM*	*240000*	*LQM*	240000	LQM
Cadmium	*230*	*SGV*	*230*	*SGV*	230	SGV
Cadmium	*190*	*LQM*	*190*	*LQM*	190	LQM
Cadmium	*410*	*C4SL*	*410*	*C4SL*	410	C4SL
Chromium III	*8600*	*LQM*	*8600*	*LQM*	8600	LQM
Chromium VI	*33*	*LQM*	*33*	*LQM*	33	LQM
Chromium (VI)	*49*	*C4SL*	*49*	*C4SL*	49	C4SL
Copper	*68000*	*LQM*	*68000*	*LQM*	68000	LQM
Lead	*2300*	*C4SL*	*2300*	*C4SL*	2300	C4SL
Mercury (elemental)	(4.3)	DS-GAC	(13)	DS-GAC	(26)	SGV
Mercury (elemental)	-	-	-	-	58 (25.8)	LQM
Mercury (inorganic)	3600	DS-GAC	3600	DS-GAC	3600	SGV
Mercury (inorganic)	*1100*	*LQM*	*1100*	*LQM*	1100	LQM
Mercury (methyl)	(73)	DS-GAC	400	DS-GAC	410	SGV
Mercury (methyl)	-	-	-	-	320	LQM
Molybdenum	17000	EIC	17000	EIC	17000	EIC
Nickel	*1800*	*SGV*	*1800*	*SGV*	1800	SGV
Nickel	*980*	*LQM*	*980*	*LQM*	980	LQM
Selenium	*13000*	*SGV*	*13,000*	*SGV*	13000	SGV
Selenium	*12000*	*LQM*	*12000*	*LQM*	12000	LQM
Vanadium	*9000*	*LQM*	*9000*	*LQM*	9000	LQM
Zinc	*730000*	*LQM*	*730000*	*LQM*	730000	LQM

Italics– These values were derived based on a 6% SOM, however, the supporting documentation indicates that SOM has a negligible influence for these metals.

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Petroleum Hydrocarbons

Compound	1% SOM	Source	2.5 - 3% SOM	Source	6% SOM	Source
Aliphatic EC5-EC6	3200 (304)	LQM	5900 (558)	LQM	12000 (1150)	LQM
Aliphatic >EC6-EC8	7800 (144)	LQM	17000 (322)	LQM	40000 (736)	LQM
Aliphatic >EC8-EC10	2000 (78)	LQM	4800 (190)	LQM	11000 (451)	LQM
Aliphatic >EC10-EC12	9700 (48)	LQM	23000 (118)	LQM	47000 (283)	LQM
Aliphatic >EC12-EC16	59000 (24)	LQM	82000 (59)	LQM	90000 (142)	LQM
Aliphatic >EC16-EC35	1600000	LQM	1700000	LQM	1800000	LQM
Aliphatic >EC35-EC44	1600000	LQM	1700000	LQM	1800000	LQM
Aromatic >EC5-EC7	26000 (1220)	LQM	46000 (2260)	LQM	86000 (4710)	LQM
Aromatic >EC7-EC8	56000 (869)	LQM	110000 (1920)	LQM	180000 (4360)	LQM
Aromatic >EC8-EC10	3500 (613)	LQM	8100 (1500)	LQM	17000 (3580)	LQM
Aromatic >EC10-EC12	16000 (364)	LQM	28000 ^{S}(899)	LQM	34000 (2150)	LQM
Aromatic >EC12-EC16	36000 (169)	LQM	37000	LQM	38000	LQM
Aromatic >EC16-EC21	28000	LQM	28000	LQM	28000	LQM
Aromatic >EC21-EC35	28000	LQM	28000	LQM	28000	LQM
Aromatic >EC35-EC44	28000	LQM	28000	LQM	28000	LQM
Aromatic and Aliphatic >EC44-EC70	28000	LQM	28000	LQM	28000	LQM

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Polycyclic Aromatic Hydrocarbons (PAH)

Compound	1% SOM	Source	2.5 - 3% SOM	Source	6% SOM	Source
Naphthalene	190 (76.4)	LQM	460 (183)	LQM	1100 (432)	LQM
Acenaphthylene	83000 (86.1)	LQM	97000 (212)	LQM	100000	LQM
Acenaphthene	84000 (57)	LQM	97000 (141)	LQM	100000	LQM
Fluorene	63000 (30.9)	LQM	68000	LQM	71000	LQM
Phenanthrene	22000	LQM	22000	LQM	23000	LQM
Anthracene	520000	LQM	540000	LQM	540000	LQM
Fluoranthene	23000	LQM	23000	LQM	23000	LQM
Pyrene	54000	LQM	54000	LQM	54000	LQM
Benzo[a]anthracene	170	LQM	170	LQM	180	LQM
Chrysene	350	LQM	350	LQM	350	LQM
Benzo[b]fluoranthene	44	LQM	44	LQM	45	LQM
Benzo[k]fluoranthene	1200	LQM	1200	LQM	1200	LQM
Benzo[a]pyrene	35	LQM	35	LQM	36	LQM
Benzo[a]pyrene	*77*	*C4SL*	*77*	*C4SL*	77	C4SL
Indeno[123-cd]pyrene	500	LQM	510	LQM	510	LQM
Dibenz[ah]anthracene	3.5	LQM	3.6	LQM	3.6	LQM
Benzo[ghi]perylene	3900	LQM	4000	LQM	4000	LQM

C4SL for benzo(a)pyrene is based on 6% SOM only, however, the published C4SL Final Project Report indicates that SOM has a negligible influence for this compound.

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Volatile Organic Compounds (VOC)

Compound	1% SOM	Source	2.5 - 3% SOM	Source	6% SOM	Source
BTEX/MTBE						
Benzene					95	SGV
Benzene	27	LQM	47	LQM	90	LQM
Benzene	27	C4SL	-	-	98	C4SL
Toluene					(4400)	SGV
Toluene	56000 (869)	LQM	110000 (1920)	LQM	180000 (4360)	LQM
Ethylbenzene					(2,800)	SGV
Ethylbenzene	5700 (518)	LQM	13000 (1220)	LQM	27000 (2840)	LQM
Xylene – m					(3500)	SGV
Xylene – m	6200 (625)	LQM	14000 (1470)	LQM	31000 (3460)	LQM
Xylene – o					(2,600)	SGV
Xylene – o	6600 (478)	LQM	15000 (1120)	LQM	33000 (2620)	6600 (478)
Xylene – p					(3,200)	SGV
Xylene – p	5900 (576)	LQM	14000 (1350)	LQM	30000 (3170)	LQM
Methyl *tert*-butyl ether	7900	EIC	13000	EIC	24000	EIC
Chlorinated Solvents						
Vinyl Chloride (Chloroethene)	0.059	LQM	0.077	LQM	0.12	LQM
Trichloromethane (Chloroform)	99	LQM	170	LQM	350	LQM
1,2-Dichloroethane (1,2-DCA)	0.67	LQM	0.97	LQM	1.7	LQM
Trichloroethene (TCE)	1.2	LQM	2.6	LQM	5.7	LQM
1,1,1-Trichloroethane	660	LQM	1300	LQM	3000	LQM
Tetrachloroethene (PCE)	19	LQM	42	LQM	95	LQM
1,1,1,2-Tetrachlroroethanes	110	LQM	250	LQM	560	LQM
1,1,2,2-Tetrachlroroethane	270	LQM	550	LQM	1100	LQM
Tetrachloromethane	2.9	LQM	6.3	LQM	14	LQM
1,1,2 Trichloroethane	94	EIC	190	EIC	400	EIC
1,1-Dichloroethane	280	EIC	450	EIC	850	EIC
1,1-Dichloroethene	26	EIC	46	EIC	92	EIC
Cis 1,2-Dichloroethene	14	EIC	24	EIC	47	EIC
Trans 1,2-dichloroethene	22	EIC	40	EIC	81	EIC
Benzenes						
Chlorobenzene	56	LQM	130	LQM	290	LQM
1,2,4-Trimethylbenzene	42	EIC	99	EIC	220	EIC
Iso-propylbenzene	1400 (390)	EIC	3300 (950)	EIC	7700 (2250)	EIC
Propylbenzene	4100 (402)	EIC	9700 (981)	EIC	21000 (2330)	EIC
Other						
Bromobenzene	97	EIC	220	EIC	520	EIC
Bromodichloromethane	2.1	EIC	3.7	EIC	7.6	EIC

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Compound	1% SOM	Source	2.5 - 3% SOM	Source	6% SOM	Source
Carbon Disulphide	11	LQM	22	LQM	47	LQM
Chloroethane	960	EIC	1300	EIC	2100	EIC
Chloromethane	1	EIC	1.2	EIC	1.6	EIC
Dichloromethane	270	EIC	360	EIC	560	EIC
1,2-Dichloropropane	3.3	EIC	5.9	EIC	12	EIC
Hexachlorobutadiene	31	LQM	66	LQM	120	LQM
Styrene	3300 (626)	EIC	6500 (1440)	EIC	11000 (3350)	EIC

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Semi-Volatile Organic Compounds (SVOC) and Other Organic Compounds

Compound	1% SOM	Source	2.5 - 3% SOM	Source	6% SOM	Source
Chlorobenzenes						
1,2-Dichlorobenzene	2000 (571)	LQM	4800 (1370)	LQM	11000 (3240)	LQM
1,3-Dichlorobenzene	30	LQM	73	LQM	170	LQM
1,4-Dichlorobenzene	4400 (224)	LQM	10000 (540)	LQM	25000 (1280)	LQM
1,2,3-Trichlorobenzene	102	LQM	250	LQM	590	LQM
1,2,4-Trichlorobenzene	220	LQM	530	LQM	1300	LQM
1,3,5-Trichlorobenzene	23	LQM	55	LQM	130	LQM
1,2,3,4-Tetrachlorobenzene	1700 (122)	LQM	3080 (304)	LQM	4400 (728)	LQM
1,2,3,5-Tetrachlorobenzene	49 (39.4)	LQM	120 (98.1)	LQM	240 (235)	LQM
1,2,4,5-Tetrachlorobenzene	42 (19.7)	LQM	72 (49.1)	LQM	96	LQM
Pentachlorobenzene	640 (43)	LQM	770 (107)	LQM	830	LQM
Hexachlorobenzene	110 (0.2)	LQM	120	LQM	120	LQM
Pthtalates						
Bis (2-ethylhexyl)phthalate	85,000 (8.68)	EIC	86,000 (21.6)	EIC	86,000 (51.7)	EIC
Diethyl phthalate	150,000 (13.7)	EIC	220,000 (29.1)	EIC	290,000 (65)	EIC
Di-*n*-butyl phthalate	15,000 (4.65)	EIC	15,000 (11.4)	EIC	15,000 (27.3)	EIC
Di-*n*-octyl phthalate	89,000 (32.6)	EIC	89,000 (81.5)	EIC	89,000 (196)	EIC
Butyl benzyl phthalate	940,000 (26.3)	EIC	940,000 (64.7)	EIC	950,000 (154)	EIC
Phenols						
Phenol	760	LQM	1500	LQM	3200	LQM
2,4-Dimethylphenol	16000 (1380)	EIC	24000 (3140)	EIC	30000 (7240)	EIC
Total Cresols (2-, 3- and 4-methylphenol)	160000 (15000)	EIC	180000 (32500)	EIC	180000 (73300)	EIC
Chlorophenols						
Chlorophenols (except Pentachlorophenol)	3500	LQM	4000	LQM	4300	LQM
Pentachlorophenol	400	LQM	400	LQM	400	LQM
Other						
Biphenyl	18000 (34.4)	EIC	33000 (84.3)	EIC	48000 (201)	EIC
Bromoform	760	EIC	1500	EIC	3100	EIC
2-Chloronaphthalene	390 (114)	EIC	960 (280)	EIC	2,200 (669)	EIC
2,4-Dinitrotoluene	3,700 (141)	EIC	3,700 (299)	EIC	3,800 (669)	EIC
2,6-Dinitrotoluene	1,900 (287)	EIC	1,900 (622)	EIC	1,900 (1400)	EIC
Hexachloroethane	22 (8.17)	EIC	53 (20.1)	EIC	120 (48.1)	EIC
Tributyl tin oxide	130 (41.3)	EIC	180 (101)	EIC	200 (241)	EIC

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PCBs, Furans and Dioxins

Compound	1% SOM	Source	2.5 - 3% SOM	Source	6% SOM	Source
Sum of PCDDs, PCDFs and dioxin-like PCBs	-	-	-	-	0.24	SGV v.1.05

Pesticides and Herbicides

Compound	1% SOM	Source	2.5 - 3% SOM	Source	6% SOM	Source
Aldrin	170	LQM	170	LQM	170	LQM
Dieldrin	170	LQM	170	LQM	170	LQM
Atrazine	9300	LQM	9400	LQM	9400	LQM
Dichlorvos	140	LQM	140	LQM	140	LQM
Endosulfan (alpha)	5600 (0.003)	LQM	7400 (0.007)	LQM	8400 (0.016)	LQM
Endosulfan (beta)	6300 (0.00007)	LQM	7800 (0.0002)	LQM	8700	LQM
alpha-Hexachlorocyclohexanes	170	LQM	180	LQM	180	LQM
beta-Hexachlorocyclohexanes	65	LQM	65	LQM	65	LQM
gamma-Hexachlorocyclohexanes (inc. Lindane)	67	LQM	69	LQM	70	LQM

Explosives

Compound	1% SOM	Source	2.5 - 3% SOM	Source	6% SOM	Source
2,4,6 Trinitrotoluene (TNT)	1000	LQM	1000	LQM	1000	LQM
RDX	210000	LQM	210000	LQM	210000	LQM
HMX	110000	LQM	110000	LQM	110000	LQM

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Available Guidance – Groundwater

Version 4-1/02/07

The Freshwater Environmental Quality Standards (FEQS),

UK Drinking Water Quality Standards (DWQS) or

World Health Organisation Drinking Water Guidelines (WHO DWG)

Dutch Intervention Value ‘Circular on Target Values and Intervention Values for Soil Remediation’, 2000.

USEPA Preliminary Remediation Goals, Region 9, October 2004 for tap water

Table 1. – Water Quality Standards for Common Contaminants of Concern.

Contaminants of Concern	Water Supply Regs 2000 amended 2001 [A] (mg/l)	EQS Freshwater (mg/l)	Coastal and Estuarine EQS (mg/l)	Water Supply (Water Quality) Regs 1989 (mg/l)	Surface Waters Regs 1996 (mg/l)	WHO Guidelines for drinking water quality 2004 (mg/l)	DIV (mg/l)	USEPA PRG Tap Water (mg/l)
Arsenic	0.01	0.05	0.025	0.05	0.05 or 0.1 see Table 7	0.01	0.06	
Boron	1	2	7	2		0.5		
Cadmium	0.005	0.005	0.005 Estuary 0.0025 Marine	0.005	0.005	0.003	0.006	
Chromium	0.05	0.005 to 0.25 (see table 10)	0.015	0.05	0.05 (Total Cr)	0.05	0.03	
Copper	2	0.001 to 0.028 (see table 10)	0.005	3	0.05	2	0.075	
Cyanide	0.05				0.05	0.07	1.5	
Nickel	0.02	0.05 to 0.2 (see table 10)	0.03	0.05		0.02	0.075	
Zinc		0.008 to 0.125 (see table 10)	0.04	5	3		0.8	
Selenium	0.01			0.01	0.01	0.01		
Lead	0.025 until 2013	0.004 to 0.25 (see table 10)	0.025	0.05	0.05	0.01	0.075	
Mercury	0.001	0.001	0.0005 Estuary 0.0003 Marine	0.001	0.001	0.001	0.0003	
Ammonium	0.5 indicator parameter not requirement	0.015 (ammonia NH_3 as N)	0.021 (ammonia NH_3 as N)	0.5 (NH_3 and NH_4 ions)	1.5 or 4 see Table 7	Not of health concern at levels in drinking water		
Tetrachloroethene	0.01	0.01	0.01	0.01		0.04	0.04	
Vinyl Chloride	0.0005					0.0003	0.005	
Sulphate	250 Indicator parameter not requirement	400	250	250	250	Not of health concern at levels in drinking water		
Benzene (and aromatics C6-C7)	0.001	0.03	0.03			0.01	0.03	
Ethylbenzene						0.3	0.150	

Table 1. – Water Quality Standards for Common Contaminants of Concern.

Contaminants of Concern	Water Supply Regs 2000 amended 2001 [A] (mg/l)	EQS Freshwater (mg/l)	Coastal and Estuarine EQS (mg/l)	Water Supply (Water Quality) Regs 1989 (mg/l)	Surface Waters Regs 1996 (mg/l)	WHO Guidelines for drinking water quality 2004 (mg/l)	DIV (mg/l)	USEPA PRG Tap Water (mg/l)
Toluene (and aromatics >C7-C8)		0.05	0.04			0.7	1	
Xylene (s)						0.5	0.07	
Xylene – o		0.03	0.03					
Xylene –m/p		0.03	0.03					
MTBE							9.2 [a]	0.011
Dissolved/ emulsified hydrocarbons				0.01~	0.05 if DW1* 0.2 if DW2 1 if DW3			
Polycyclic aromatic hydrocarbons	0.0001^			0.0002 @	0.0002 if DW1 0.0002 if DW2 0.001 if DW3			
Mineral Oil							0.6[D]	
Naphthalene		0.01	0.005				0.07	
Phenanthrene							0.005	
Anthracene							0.005	
Fluoranthene							0.001	
Benz(a)anthracene							0.0005	
Chrysene							0.0002	
Benzo(ghi)perylene							0.00005	
Benzo(k)fluoranthene							0.00005	
Benzo(a)pyrene	0.00001					0.0007	0.0005	
Indeno(123cd)pyrene							0.00005	
Trichloromethane		0.012	0.012			0.2	0.4	
1,1,1-Trichloroethane		0.1	0.1				0.3	
Carbon Tetrachloride		0.012	0.012					
Trichloroethene		0.01	0.01			0.07	0.5	
1,2-Dichloroethane		0.01	0.01			0.03	0.4	
Phenol (s)		0.03	0.03	0.0005	0.001		2	
PCBs							0.00001	
Pesticides	0.0001[(			0.0001[)	0.001[p]		Various Listed	

Table 1. – Water Quality Standards for Common Contaminants of Concern.

Contaminants of Concern	Water Supply Regs 2000 amended 2001 [A] (mg/l)	EQS Freshwater (mg/l)	Coastal and Estuarine EQS (mg/l)	Water Supply (Water Quality) Regs 1989 (mg/l)	Surface Waters Regs 1996 (mg/l)	WHO Guidelines for drinking water quality 2004 (mg/l)	DIV (mg/l)	USEPA PRG Tap Water (mg/l)
Dibenzofuran								0.012

REFERENCES

[A] The Water Supply (Water Quality) Regulations 2000, which were amended by the Water Supply (Water Quality) (Amendment) Regulations 2001 and which apply in England. The values are also those of The Water Supply (Water Quality) Regulations 2001 (Wales), which applies in Wales.

The Water Supply (Water Quality) Regulations 2000, The Water Supply (Water Quality) (Amendment) Regulations 2001, The Water Supply (Water Quality) Regulations 2001 (Wales), The Water Supply (Water Quality) Regulations 1989 and The Surface Waters (Abstraction for Drinking Water) (Classification) Regulations 1996 can be accessed via:
http://www.dwi.gov.uk/regs/regulations.shtm

DIV – Circular on Target Values and Intervention Values for Soil Remediation. DBO/199226863, Ministry of Housing, Spatial Planning and Environment Directorate –General for Environmental Protection. Published in the Netherlands Government Gazette no. 39 on 4th February 2000. [a] Dutch Intervention Value for MTBE is the Dutch Indicative level for Serious Groundwater Contamination

http://international.vrom.nl/pagina.html?id=7445

USEPA PRG Region 9 October 2004
http://www.epa.gov/region09/waste/sfund/prg/files/04prgtable.pdf

EA – Environment Agency technical advice to third parties on Pollution of Controlled Waters for Part IIA of the EPA 1990. No. 07-02, V.2. May 2002.
EQS freshwater, Estuary and Marine are from the Environment Agency Web Site 9 Feb 2005:
http://www.environment-agency.gov.uk/yourenv/eff/water/213902/290690/290939/?version=1&lang=_e

WHO Guidelines for drinking water quality, 3rd Edition, 2004
http://www.who.int/water_sanitation_health/dwq/gdwq3/en/

^ The Water Supply (Water Quality) Regulations 2000. The parametric Value applies to the sum of the concentrations of the individual compounds detected and quantified in the monitoring process. The specified compounds are benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(ghi)perylene and indeno(1,2,3-cd)pyrene.
(Pesticides. Aldrin, Dieldrin, Heptachlor and Heptachlor epoxide are 0.00003 mg/l each. Other pesticides are 0.0001. Total pesticides are 0.0005 mg/l.

~The Water Supply (Water Quality) Regulations 1989 value for dissolved/ emulsified hydrocarbons (after extraction with petroleum ether); mineral oils
@ Water Supply Regulations 1989 value for polycyclic aromatic hydrocarbons. The sum of the detected concentrations of fluoranthene, benzo (b)fluoranthene, benzo (k) fluoranthene, benzo (a) pyrene, benzo (g,h,I) perylene and indeno(1,2,3-cd-pyrene)

[)] Pesticides. Water Supply Regs 1989 for individual pesticides. Is 0.0005 mg/l for total pesticides.

[P] The Surface Waters (Abstraction for Drinking Water) (Classification Regulations) 1996 for total pesticides (parathion, hexachloro-cyclohexane, dieldrin).

[D] DIV. Mineral Oil is the sum of all alkanes (both straight and branch-chain). When contamination is due to mixtures (eg petrol or heating oil), then the content of aromatic and/or polycyclic aromatic hydrocarbons must also be determined.

*DW1= Surface water of Category A1, to be treated by simple physical treatment and disinfection e.g. rapid filatration and disinfection, in order to be transformed into drinking water.
DW2= Surface water of Category A2, to be treated by Normal physical treatment, chemical treatment and disinfection, e.g. pre-chlorination, coagulation, flocculation, decantation, filtration, disinfection (final chlorination)in order to be transformed into drinking water.
DW3= Surface water of Category A3, to be treated by Intensive physical and chemical treatment, extended treatment and disinfection e.g. chlorination to break-point, coagulation, flocculation, decantation, filtration, adsorption (activated carbon), disinfection (ozone, final chlorination) in order to be transformed into drinking water.
Information on A1, A2, A3 from http://rod.eionet.eu.int/show.jsv?id=202&mode=S

Table 2. Water Supply (Water Quality) Regulations 2000. Table B Chemical Parameters. Part I Directive requirements

Parameters	Concentration or Value maximum	Units of measurement
Acrylamide	0.1	µg/l
Antimony	5.0	µg Sb/l
Arsenic	10	µg As/l
Benzene	1.0	µg/l
Benzo(a)pyrene	0.010	µg/l
Boron	1000	µg B/l
Bromate	10	µgBrO_3/l
Cadmium	5.0	µg Cd/l
Chromium	50	µg Cr/l
Copper	2000	µg Cu/l
Cyanide	50	µgCN/l
1,2-dichloroethane	3	µg/l
Epichlorohydrin	0.1	µg/l
Fluoride	1500	µg F/l
Lead – from 25th Dec 2003 to 25th Dec 2013	25	µg Pb/l
Lead – on and after 25th Dec 2013	10	µg Pb/l
Mercury	1.0	µg Hg/l
Nickel	20	µg Ni/l
Nitrate	50,000	µg NO_3/l
Nitrite	500	µg NO_2/l
Pesticides		
Aldrin	0.03	µg/l
Dieldrin	0.03	µg/l
Heptachlor	0.03	µg/l
Heptachlor epoxide	0.03	µg/l
Other pesticides	0.1	µg/l
Pesticides: Total (i)	0.5	µg/l
Polycyclic aromatic hydrocarbons (ii)	0.1	µg/l
Selenium	10	µg Se/l
Tetrachloroethene and Trichloroethene(iii)	10	µg/l
Trihalomethanes: Total(iv)	100	µg/l
Vinyl Chloride	0.5	µg/l

(i) Pesticides: Total means the sum of the concentrations of the individual pesticides detected and quantified in the monitoring procedure.

(ii) The specified compounds are;benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(ghi)perylene, indeno(1,2,3-cd)pyrene. The parametric value applies to the sum of the concentrations of the individual compounds detected and quantified in the monitoring process.

(iii) The parametric value applies to the sum of the concentrations of the individual compounds detected and quantified in the monitoring process.

(iv) The specified compounds are:chloroform, bromoform, dibromomethane, bromodichloromethane. The parametric value applies to the sum of the concentrations of the individual compounds detected and quantified in the monitoring process.

Table 3. Water Supply (Water Quality) Regulations 2000. Table B Chemical Parameters. Part II National requirements

Parameters	Concentration or Value (maximum unless otherwise stated)	Units of measurement
Aluminium	200	μg Al/l
Colour	20	mg/l Pt/Co
Hydrogen ion	10 6.5 (minimum)	pH value
Iron	200	μg Fe/l
Manganese	50	μg Mn/l
Odour	3 at 25 °C	Dilution number
Sodium	200	mg Na/l
Taste	3 at 25 °C	Dilution number
Tetrachloromethane	3	μg/l
Turbidity	4	NTU

Table 4. Water Supply (Water Quality) Regulations 1989 (as amended and with references amended to refer to the consolidation Act). Prescribed Concentrations or Values. Table A.

Parameters	Concentration or Value (maximum unless otherwise stated)	Units of measurement
Colour	20	mg/l Pt/Co scale
Turbidity (including suspended solids)	4	Formazin turbidity units
Odour (including hydrogen sulphide)	3 at 25 °C	Dilution number
Taste	3 at 25 °C	Dilution number
Temperature	25	°C
Hydrogen ion	9.5 5.5 (minimum)	pH value
Sulphate	250	mg SO_4/l
Magnesium	50	mg M/l
Sodium	150	mg Na/l
Potassium	12	mg K/l
Dry residues	1500 (after drying at 180°C	mg/l
Nitrate	50	mg NO_3/l
Nitrite	0.1	mg NO_2/l
Ammonium (ammonia and ammonium ions)	0.5	mg NH_4/l
Kjeldahl nitrogen	1	mg N/l
Oxidizability (permanganate value)	5	mg/O_2/l
Total organic carbon	No significant increase over that normally observed	mg C/l
Dissolved or emulsified hydrocarbons (after extraction with petroleum ether); mineral oils	10	μg/l
Phenols	0.5	μg C_6H_5OH/l
Surfectants	200	μg/l (as lauryl sulphate)
Aluminium	200	μg Al/l
Iron	200	μg Fe/l
Manganese	50	μg Mn/l
Copper	3000	μg Cu/l
Zinc	5000	μg Zn/l
Phosphorus	2200	μg P/l
Fluoride	1500	μg F/l
Silver	10	μg Ag/l

Table 5. Water Supply (Water Quality) Regulations 1989 (as amended and with references amended to refer to the consolidation Act). Prescribed Concentrations or Values. Table B

Parameters	Concentration or Value (maximum unless otherwise stated)	Units of measurement
Arsenic	50	µg Asl/l
Cadmium	5	µg Cd/l
Cyanide	50	µg CN/l
Chromium	50	µg Cr/l
Mercury	1	µg Hg/l
Nickel	50	µg Ni/l
Lead	50	µg Pb/l
Antimony	10	µg Sb/l
Selenium	10	µg Se/l
Pesticides and related products: (a) individual substances (b) total substances (i)	 0.1 0.5	 µg/l µg/l
Polycyclic aromatic hydrocarbons (ii)	0.2	µg/l

(i) The sum of the detected concentrations of individual substances

(ii) The sum of the detected concentrations of fluoranthene, benzo (b)fluoranthene, benzo(k)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, benzo(ghi)perylene and indeno(1,2,3-cd)pyrene.

Table 6. Water Supply (Water Quality) Regulations 1989 (as amended and with references amended to refer to the consolidation Act). Prescribed Concentrations or Values. Table D

Parameters	Concentration or Value (maximum unless otherwise stated)	Units of measurement
Conductivity	1500 at 20°C	µS/cm
Chloride	400	mg Cl/l
Calcium	250	mg Ca/l
Substances extractable in chloroform	1	mg/l dry residue
Boron	2000	µg B/l
Barium	1000	µg Ba/l
Benzo 3,4 pyrene	10	ng/l
Tetrachloromethane	3	µg/l
Trichloroethene	30	µg/l
Tetrachloroethene	10	µg/l

Table 7. The Surface Waters (Abstraction for Drinking Water) (Classification) Regulations 1996. Criteria for Classification of waters. The limits set out below are maxima

Parameters	Units	Limits		
		DW1	DW2	DW3
Coloration (after simple filtration)	mg/l Pt Scale	20	100	200
Temperature	°C	25	25	25
Nitrates	mg/l NO_3	50	50	50
Fluorides	mg/l F	1.5		
Dissolved iron	mg/l Fe	0.3	2	
Copper	mg/l Cu	0.05		
Zinc	mg/l Zn	3	5	5
Arsenic	mg/l As	0.05	0.05	0.1
Cadmium	mg/l Cd	0.005	0.005	0.005
Total chromium	mg/l Cr	0.05	0.05	0.05
Lead	mg/l Pb	0.05	0.05	0.05
Selenium	mg/l Se	0.01	0.01	0.01
Mercury	mg/l Hg	0.001	0.001	0.001
Barium	mg/l Ba	0.1	1	1
Cyanide	mg/l CN	0.05	0.05	0.05
Sulphates	mg/l SO_4	250	250	250
Phenols (phenol index) paranitraniline 4-aminoantipyrine	mg/l C_6H_5OH	0.001	0.005	0.1
Dissolved or emulsified hydrocarbons	mg/l	0.05	0.2	1
Polycyclic aromatic hydrocarbons	mg/l	0.0002	0.0002	0.001
Total pesticides (parathion, hexachloro-cyclohexane, dieldrin)	mg/l	0.001	0.0025	0.005
Ammonium	mg/l NH_4		1.5	4

*DW1= Surface water of Category A1, to be treated by simple physical treatment and disinfection e.g. rapid filatration and disinfection, in order to be transformed into drinking water.
DW2= Surface water of Category A2, to be treated by Normal physical treatment, chemical treatment and disinfection, e.g. pre-chlorination, coagulation, flocculation, decantation, filtration, disinfection (final chlorination)in order to be transformed into drinking water.
DW3= Surface water of Category A3, to be treated by Intensive physical and chemical treatment, extended treatment and disinfection e.g. chlorination to break-point, coagulation, flocculation, decantation, filtration, adsorption (activated carbon), disinfection (ozone, final chlorination) in order to be transformed into drinking water.

Information on A1, A2, A3 from http://rod.eionet.eu.int/show.jsv?id=202&mode=S

Table 8. Dangerous Substances. Table 1: Environmental Quality Standards (EQS) for List 1 dangerous substances, EC Dangerous Substances Directive (76/464/EEC)

Substance	Sediment0	EQS (annual average, µg/l) All total, except (D) dissolved		
		Freshwater	Estuary	Marine
Mercury	Standstill (no deterioration)	1	0.5 (D)	0.3 (D)
Cadmium	Standstill (no deterioration)	5	5 (D)	2.5 (D)
Hexachlorocyclohexane	Standstill (no deterioration)	0.1	0.02	0.02
Carbon tetrachloride	Standstill (no deterioration)	12	12	12
Total DDT	Standstill (no deterioration)	0.025	0.025	0.025
pp DDT	Standstill (no deterioration)	0.01	0.01	0.01
Pentachlorophenol	Standstill (no deterioration)	2	2	2
Dieldrin	Standstill (no deterioration)	0.01	0.01	0.01
Isodrin	Standstill (no deterioration)	0.005	0.005	0.005
Aldrin	Standstill (no deterioration)	0.01	0.01	0.01
Endrin	Standstill (no deterioration)	0.005	0.005	0.005
Total ‘Drins	Standstill (no deterioration)	0.03	0.03	0.03
Hexachlorobenzene	Standstill (no deterioration)	0.03	0.03	0.03
Hexachlorobutadiene	Standstill (no deterioration)	0.1	0.1	0.1
Chloroform	Standstill (no deterioration)	12	12	12
1,2-dichloroethane	Standstill (no deterioration)	10	10	10
Trichloroethylene	Standstill (no deterioration)	10	10	10
Perchlorethylene	Standstill (no deterioration)	10	10	10
Trichlorobenzene	Standstill (no deterioration)	0.4	0.4	0.4

Table 9. Environmental Quality Standards (EQS) for List 2 dangerous substances, EC Dangerous Substances Directive (76/464/EEC)Table 2a

Substance	EQS Type	All Freshwater EQS (µg/l)	Coastal and Estuarine EQS (µg/l)
1,1,1-Trichloroethane	Annual average	100	100
1,1,2-Trichloroethane	Annual average	400	300
2,4-D (ester)	Annual average	1	1
2,4-D (non-ester)	Annual average	40	40
2,4-Dichlorophenol	Annual average	20	20
2-Chlorophenol	Annual average	50	50
4-Chloro-3-methyl-phenol	Annual average	40	40
Arsenic (dissolved)	Annual average	50	25
Atrazine & Simazine	Annual average	2	2
Azinphos-methyl	Annual average	0.01	0.01
Bentazone	Annual average	500	500
Benzene	Annual average	30	30
Biphenyl	Annual average	25	25
Boron (dissolved)	Annual average	2000	7000
Chloronitrotoluenes	Annual average	10	10
Chromium (dissolved)	Annual average	Hardness related	15
Copper (dissolved)	Annual average	Hardness related	5
Cyfluthrin	95th percentile	0.001	0.001
Demeton	Annual average	0.5	0.5
Dichlorvos	Annual average	0.001	0.04
Dichlorvos	Maximum concentration	-	0.6
Dimethoate	Annual average	1	1
Endosulphan	Annual average	0.003	0.003
Fenitrothion	Annual average	0.01	0.01
Flucofuron	95th percentile	1	1
Iron (dissolved)	Annual average	1000	1000
Lead (dissolved)	Annual average	Hardness related	25
Linuron	Annual average	2	2
Malathion	Annual average	0.01	0.02
Mecoprop	Annual average	20	20
Mevinphos	Maximum concentration	0.02	-
Naphthalene	Annual average	10	5
Nickel (dissolved)	Annual average	Hardness related	30
Omethoate	Annual average	0.01	-
PCSDs	95th percentile	0.05	0.05
Permethrin	95th percentile	0.01	0.01
pH	95th percentile	6-9	6-8.5
Sulcofuron	95th percentile	25	25
Toluene	Annual average	50	40
Triazaphos	Annual average	0.005	0.005
Tributyltin	Maximum concentration	0.02	0.002
Trifluralin	Annual average	0.1	0.1
Triphenyltin	Maximum concentration	0.02	0.008
Vanadium (dissolved)	Annual average	Hardness related	100
Xyelene (m and p, o)	Annual average	30	30
Zinc (total)	Annual average	Hardness related	40

Table 10. Dangerous Substances. Table 2b: Environmental Quality Standards (EQS) for hardness related List 2 dangerous substances, EC Dangerous Substances Directive (76/464/EEC)

Substance	EQS type	EQS (µg/l) for Hardness bands (mg/l $CaCO_3$)					
		0-50	>50-100	>100-150	>150-200	>200-250	>250
Freshwaters, suitable for all fishlife							
Copper (dissolved)	Annual average	1	6	10	10	10	28
Copper (dissolved)	95th percentile	5	22	40	40	40	112
Nickel (dissolved)	Annual average	50	100	150	150	200	200
Vanadium (dissolved)	Annual average	20	20	20	20	60	60
Freshwaters, suitable for Salmonid (game) fish							
Chromium (dissolved)	Annual average	5	10	20	20	50	50
Lead (dissolved)	Annual average	4	10	10	20	20	20
Zinc (total)	Annual average	8	50	75	75	75	125
Zinc (total)	95th percentile	30	200	300	300	300	500
Freshwaters, suitable for Cyprinid (coarse) fish							
Chromium (dissolved)	Annual average	150	175	200	200	250	250
Lead (dissolved)	Annual average	20	125	125	250	250	250
Zinc (total)	Annual average	75	175	250	250	250	500
Zinc (total)	95th percentile	300	700	1000	1000	1000	200

Table 11. World Health Organisation Guidelines for Drinking Water quality, 3rd Edition 2004. Guideline values for chemicals that are of health significance in drinking-water.

Chemical	Guideline value (mg/litre)	Remarks
Acrylamide	0.0005[b]	
Alachlor	0.02[b]	
Aldicarb	0.01	Applies to aldicarb sulfoxide and aldicarb sulfone
Aldrin and dieldrin	0.00003	For combined aldrin plus dieldrin
Antimony	0.02	
Arsenic	0.01(P)	
Atrazine	0.002	
Barium	0.7	
Benzene	0.01[b]	
Benzo(a)pyrene	0.0007[b]	
Boron	0.5 (T)	
Bromate	0.01[b] (A, T)	
Bromodichloromethane	0.06[b]	
Bromoform	0.1	
Cadmium	0.003	
Carbofuran	0.007	
Carbon tetrachloride	0.004	
Chloral hydrate (trichloroacetaldehyde)	0.01 (P)	
Chlorate	0.7 (D)	
Chlordane	0.0002	
Chlorine	5 (C)	For residual disinfection, there should be a residual concentration of free chlorine of ≥0.5 mg/litre after at least 30 min contact time at pH <8.0
Chlorite	0.7 (D)	
Chloroform	0.2	
Chlorotoluron	0.03	
Chlorpyrifos	0.03	
Chromium	0.05 (P)	For total chromium
Copper	2	Staining of laundry and sanitary ware may occur below guideline value
Cyanazine	0.0006	
Cyanide	0.07	
Cyanogen chloride	0.07	For cyanide as total cyanogenic compounds
2,4-D (2,4-dichlorophenoxyacetic acid)	0.03	Applies to free acid
2,4-DB	0.09	
DDT and metabolites	0.001	
Di(2-ethylhexyl)phthalate	0.008	
Dibromoacetonitrile	0.07	
Dibromochloromethane	0.1	
1,2-Dibromo-3-chloropropane	0.001[b]	
1,2-Dibromoethane	0.0004[b] (P)	
Dichloroacetate	0.05 (T,D)	
Dichloroacetonitrile	0.02 (P)	
Dichlorobenzene, 1,2-	1 (C)	

Table 11. World Health Organisation Guidelines for Drinking Water quality, 3rd Edition 2004. Guideline values for chemicals that are of health significance in drinking-water.

Chemical	Guideline value (mg/litre)	Remarks
Dichlorobenzene,1,4-	0.3 (C)	
Dichloroethane,1,2-	0.03[b]	
Dichloroethene, 1,1-	0.03	
Dichloroethene, 1,2-	0.05	
Dichloromethane	0.02	
1,2-Dichloropropane (1,2-DCP)	0.04 (P)	
1,3-Dichloropropene	0.02[b]	
Dichloroprop	0.1	
Dimethoate	0.006	
Edetic acid (EDTA)	0.6	Applies to the free acid
Endrin	0.0006	
Epichlorohydrin	0.0004 (P)	
Ethylbenzene	0.3 (C)	
Fenoprop	0.009	
Fluoride	1.5	Volume of water consumed and intake from other sources should be considered when setting national standards
Formaldehyde	0.9	
Hexachlorobutadiene	0.0006	
Isoproturon	0.009	
Lead	0.01	
Lindane	0.002	
Manganese	0.4 (C)	
MCPA	0.002	
Mecoprop	0.01	
Mercury	0.001	For total mercury (inorganic plus organic)
Methoxychlor	0.02	
Metolachlor	0.01	
Microcystin-LR	0.001 (P)	For total microcystin-LR (free plus cell-bound)
Molinate	0.006	
Molybdenum	0.07	
Monochloramine	3	
Monochloracetate	0.02	
Nickel	0.02 (P)	
Nitrate (as NO_3^-)	50	Short-term exposure
Nitrilotriacetic acid (NTA)	0.2	
Nitrite (as NO_2^-)	3 0.2 (P)	Short-term exposure Long-term exposure
Pendimethalin	0.02	
Pentachlorophenol	0.009[b] (P)	
Pyriproxyfen	0.3	
Selenium	0.01	
Simazine	0.002	
Styrene	0.02 (C)	
2,4,5-T	0.009	
Terbuthylazine	0.007	
Tetrachloroethene	0.04	
Toluene	0.7 (C)	

Table 11. World Health Organisation Guidelines for Drinking Water quality, 3rd Edition 2004. Guideline values for chemicals that are of health significance in drinking-water.

Chemical	Guideline value (mg/litre)	Remarks
Trichloroacetate	0.2	
Trichloroethene	0.07 (P)	
Trichlorophenol,2,4,6-	0.2[b] (C)	
Trifluralin	0.02	
Trihalomethanes		The sum of the ratio of the concentration of each to its respective guideline value should not exceed 1
Uranium	0.015 (P,T)	Only chemical aspects of uranium addressed
Vinyl chloride	0.0003[b]	
Xylenes	0.5 (C)	

[a] P = provisional guideline value, as there is evidence of a hazard, but the available information on health effects is limited; T= provisional guideline value because calculated guideline value is below the level that can be achieved through practical treatment methods, source protection, etc.; A= provisional guideline value because calculated guideline value is below the achievable quantification level; D= provisional guideline value because disinfection is likely to result in the guideline value being exceeded; C= concentrations of the substance at or below the health-based guideline value may affect the appearance, taste or odour of the water, leading to consumer complaints.

[b] For substances that are considered to be carcinogenic, the guideline value is the concentration in drinking-water associated with an upper-bound excess lifetime cancer risk of 10^{-5} (one additional cancer per 100 000 of the population ingesting drinking-water containing the substance at the guideline value for 70 years). Concentrations associated with upper-bound estimated excess lifetime cancer risks of 10^{-4} and 10^{-6} can be calculated by multiplying and dividing, respectively, the guideline value by 10.

Table 12. Dutch Intervention Values for Groundwater

Substance	Intervention Value (µg/l in solution)
Metals	
Antimony	20
Arsenic	60
Barium	625
Cadmium	6
Chromium	30
Cobalt	100
Copper	75
Mercury	0.3
lead	75
Molybdenum	300
Nickel	75
Zinc	800
Inorganic Compounds	
Cyanides – free	1500
Cyanides – complex (pH <5)	1500
Cyanides – complex (pH ≥ 5)	1500
Thiocyanates (sum)	1500
Aromatic Compounds	
Benzene	30
Ethylbenzene	150
Toluene	1000
Xylenes	70
Styrene (vinyl benzene)	300
phenol	2000
Cresols (sum)	200
Catechol(o-dihydroxybenzene)	1250
Resorcinol(m-dihydroxybenzene)	600
Hydroquinone(p-dihydroxybenzene)	800
Polycyclic Aromatic Hydrocarbons (PAH)	
Naphthalene	70
Anthracene	5
Phenanthrene	5
Fluoranthene	1
Benzo(a)anthracene	0.5
Chrysene	0.2
Benzo(a)pyrene	0.05
Benzo(ghi)perylene	0.05
Benzo(k)fluoranthene	0.05
Indeno(1,2,3-cd)pyrene	0.05
Chlorinated Hydrocarbons	
Vinyl Chloride	5
Dichloromethane	1000
1,1-dichloroethane	900
1,2-dichloroethane	400
1,1-dichloroethene	10
1,2-dichloroethene (cis and trans)	20
Dichloropropane	80
Trichloromethane (chloroform)	400
1,1,1-trichloroethane	300
1,1,2-trichloroethane	130
Trichloroethene (Tri)	500
Tetrachloromethane (Tetra)	10

Substance	Intervention Value (µg/l in solution)
Tetrachloroethene (per)	40
Monochlorobenzene	180
Dichlorobenzenes	50
Trichlorobenzenes	10
Tetrachlorobenzenes	2.5
Pentachlorobenzene	1
Hexachlorobenzene	0.5
Monochlorophenols (sum)	100
Dichlorophenols	30
Trichlorophenols	10
Tetrachlorophenols	10
Pentachlorophenol	3
Chloronaphthalene	6
Monochloroaniline	30
Polychlorobiphenyls (sum 7)[1]	0.01
Pesticides	
DDT,DDE andDDD (sum)	0.01
Drins (sum of aldrin, dieldrin and endrin)	0.1
HCH-compounds (sum of a-HCHs)	1
Atrazine	150
Carbaryl	50
Carbofuran	100
Chlorodane	0.2
Endosulfan	5
Heptachloro	0.3
Heptachloro-epoxide	3
Maneb	0.1
MCPA	50
Organotin compounds [2]	0.7
Other contaminants	
Cyclohexanone	15000
Phthalates (sum) [3]	5
Mineral oil [4]	600
Pyridine	30
Tetrahydrofuran	300
Tetrahydrothiophene	5000
Tribromomethane	630

1 'polychlorobiphenyls (sum 7)' means the total of PCB 28, 52, 101, 118, 138, 153 and 180.
2 The value applies to the sum of the concentrations of organotin compounds encountered.
3 'Phthalates (sum)' means the total of all phthalates.
4 'Mineral oil' is defined in the analysis standard. Where the contamination is due to mixtures (e.g. gasoline or domestic heating oil), then not only the alkane content but also the content of aromatic and/or polycyclic aromatic hydrocarbons must be determined. This aggregate parameter has been adopted for practical reasons. Further toxicological and chemical disaggregation is under study.

Table 13. Dutch Indicative levels for Serious Groundwater Contamination

Substance	Indicative level Serious Contamination (µg/l in solution)
Metals	
Beryllium	15
Selenium	160
Tellurium	70
Thallium	7
Tin	50
Vanadium	70
Silver	40
Aromatic Compounds	
Dodecylbenzene	0.02
Aromatic solvents[1]	150
Chlorinated Hydrocarbons	
Dichloroaniline	100
Trichloroaniline	10
Tetrachloroaniline	10
Pentachloroaniline	1
4-chloromethylphenols	350
Dioxin[2]	0.001 ng/l
Pesticides	
Azinphos-methyl	2
Other Contaminants	
Acrylonitrile	5
Butanol	5600
1,2-butylacetate	6300
Ethylacetate	15000
Diethylene glycol	13000
Ethylene glycol	5500
Formaldehyde	50
Isopropanol	31000
Methanol	24000
Methyl-tert-butyl ether (MTBE)	9200
Methylethylketone	6000

1 Aromatic Solvents are defined as a standard mixture of substances referred to as 'C9-aromatic naptha' as defined by the International Research and Development Corporation: o-xylene 3.2%, I-isopropylbenzene 2.74%, n-propylbenzene 3.97%, 1-methyl-4 ethyk benzene 7.05%, 1-methyl-3-ethyl benzene 15.1%, 1-methyl-2-ethyl benzene 5.44%, 1,3,5-trimethylbenzene 8.37%, 1,2,4-trimethylbenzene 40.5%, 1,2,3-trimethylbenzene 6.18% and alkylbenzenes 6.19%.
2 The indicative level is expressed on the basis of toxicity equivalents based on the most toxic compound.