



**Desk Study and Ground
Investigation at New Lane,
Havant, Hampshire**

Final Report

Prepared by

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for



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EXECUTIVE SUMMARY AND CONCEPTUAL SITE MODEL

SITE INFORMATION & SETTING	Client	Bloor Homes.
	Site	New Lane, Havant, Hampshire.
	Site Location	The site is located at New Lane, Havant Hampshire, at approximate NGR 472397E, 106459N (postcode address of PO9 2RR).
	Current Land Use & Description	The site comprises open playing fields 220m in length and 90m wide (approximately 1.75ha). At the time of the investigation the western part of the site comprised an area of trees fronting onto New Lane and the eastern section of the site comprised a grassed open area occupying the far western part of Warblington School grounds and is between 9.5m AOD and 11m AOD. Slopes 1m to 1.5m high form the northern, eastern and southern boundaries, with the site at a lower elevation than the surrounding sites. In the east, the site levels are approximately the same as New Lane.
	Development	The proposed development is to comprise 61 residential dwellings, infrastructure and associated Public Open Space.
PHASE 1 - CONCEPTUAL SITE MODEL	Site History	Since the earliest mapping, the site has always been an open area cut below the surrounding area. A footpath crossed the site from the northwest to the southeast from prior to 1876 until 1870 and a pond was present in the central west of the site from prior to 1876 until between 1942 and 1953. A former gas works and a current railway located off site to the north and a former railway located off site to the east are the most significant contaminative land uses in the site area.
	Geology and Hydrogeology	River Terrace Deposits (Secondary A aquifer): Sand, clay and gravel. Head (Secondary A aquifer): clay with variable amounts of sand and gravel of flint. Bognor Sand Member of the London Clay (Secondary A aquifer): silty fine and medium sand interbedded with sandy and silty clay. The site is not within a Source Protection Zone (SPZ) and there are no licensed groundwater abstractions within 500m of the site. There are no licenced discharge consents to groundwater within 250m of the site.
	Hydrology	The Lavant (stream) is partially culverted and located approximately 130m to the northwest of the site. Lymbourne (stream) is present 460m to the south of the site. There are no current licenced discharge consents to surface water within 250m of the site. There are no surface water abstractions within 100m of the site.
	Regulatory Enquiries and Waste	There are no Integrated Pollution Controls or Local Authority Pollution Prevention and Controls within 250m of the site. Within 250m of the site there have been 4 Pollution incidents to Controlled Waters, all are Category 3 (minor) incidents and none relate to the site000m. There is a registered waste transfer site approximately 50m to the north (licence number 19986). This has expired and related to a household, industrial and commercial transfer station. There is a current licenced waste management facility approximately 50m to the north (licence number 13/20B). There are no landfill sites (current or historical), with 1000m of the site.

	Possible Pollution Linkages of Moderate or Greater Risk Level - from Phase 1 Study	The possible pollutant linkages on an un-remediated site determined by desk study and walk-over are summarised below.	
	i.e. Basis for Investigation & Generic Risk Assessment	Source(s)	◀ potential Impact on ▶ Receptor(s)
		Metals and metalloids - from fill and uncontrolled tipping.	Future occupiers Groundwater Plant life
		Polynuclear aromatic hydrocarbons (PAH) – from combustion products from fires, creosote on railway sleepers, ash railway ballast, uncontrolled tipping and coal from railway.	Future occupiers Groundwater
		Ground gases (methane & carbon dioxide) from possible biodegradable matter in the Made Ground.	Future occupiers
		Radon	
	Asbestos fibres from insulation or asbestos-containing materials in the Made Ground		
PHASE 2 - GI	Scope of Site Works	One borehole log has been obtained from the BGS borehole archive. This was drilled in the northwest of the site (record no. SU70NW142) in 1972. A previous report was provided to Hydrock for review, "Ashdown Site Investigation Limited. November 2009. Report Number LW20180". The works undertaken in this report comprised: • 8 dynamic sample boreholes; • 5 DPSH Dynamic Probe (Super Heavy) testing; • 3 falling head testing in boreholes; • 3 gas and groundwater monitoring standpipes. Hydrock's investigation in February 2011 comprised: • 1 shell and auger borehole; • 5 dynamic sample boreholes; • 2 soil infiltration rate tests in hand excavated trial pits; • 3 gas and groundwater monitoring standpipes.	
	Findings of the Ground Investigation	The above site investigations have proven: • Made Ground from ground level to between 0.50m bgl and 1.20m bgl, comprising silt or clay, with varying proportions of sand and gravel of flint. Man made constituents of the Made Ground comprised: brick fragments, clinker and coal. • River Terrace Deposits and Head Deposits present from below the Made Ground to a depth of 0.8 to >3.45, but were generally present to depths of approximately 1.5m bgl and comprising: ▪ loose and medium dense clayey, sandy, flint gravel (River Terrace Deposits); and ▪ firm to stiff sandy gravelly clay (Head Deposits). • Bognor Sand Member of the London Clay, comprising loose fine and medium dense sands and silt with subordinate horizons of soft and firm clay, becoming medium dense and dense and partially cemented from approximately 4.0m bgl. • London Clay, from approximately 12.0m bgl which comprises stiff dark grey very silt clay, or very fine sandy clay, with thin partings of fine sand to a depth of 23.75m bgl. Water has been monitored at between 0.81m begl and 1.17m begl. Borehole collapsed at shallow depth when water is present in the borehole.	

ASSESSMENT & CONSIDERATIONS	Flood Risk	The proposed development is in Flood Zone 1.
	Site Preparation, Earthworks & Landscaping	Excavations of shallow soils should not present difficulty for conventional plant and equipment. However, excavations undertaken during site works were unstable and given the soft and loose nature of the shallow natural soils and the high water table, all excavations should be supported. It is recommended that no site personnel enter any trenches unless there is adequate support and this has been assessed by a competent person. Deep excavation will be difficult due to the high water table (as shallow as 0.81m bgl) and trench support (sheet piles) and pumping may be required to undertake excavations greater than 0.8 to 1.0m bgl. Where there is planned excavation below the groundwater table, allowance should be for made for trench sheeting and catering for groundwater inflows and surface water run-off. Sheet piles and trench sheeting may be required for excavations at depth.
	Foundations	The viable foundation solutions for the site are piles or rafts. Piled Foundations In the light of the presence of variable soft clays and loose sands with pockets of dense sand and a high water table, Hydrock believe piled foundations are the most appropriate foundation solution for the site. The piles should be designed to penetrate into the medium dense to dense sands of the Bognor Sand Member. Piles should be installed through the Made Ground and the loose sands into the medium dense and dense sands at depths of between 4 and 5m bgl. Either bored and cast in situ CFA (continuous flight auger) piles, or driven preformed piling techniques are considered suitable for the ground conditions at the site. Care should be taken for bored and cast in situ piles taken through the loose sands where collapse of the pile shaft or running sand conditions could lead to 'necking' of the pile. A specialist piling contractor should be consulted for selection of appropriate piling method. An assessment should be made if driven piles are considered, as these may be subject to excessive noise or vibration which may be unacceptable to neighbouring properties. Preliminary calculations suggest that 6 to 8m piles would be appropriate, subject to confirmation by a specialist contractor. A factor of safety of 2.5 should be applied to the ultimate skin friction and 3.0 to end bearing when calculating the allowable working loads of piles. It is possible that hard bands may be encountered between 2.5m bgl and 4.0m bgl. Piling technique chosen will need to be capable of penetrating these hard bands. A risk assessment may be necessary if there is perceived to be a possibility that piles could lead to creation of new pathways for migration of contamination. The working platform for the tracked piling plant should be designed in accordance with BR470 (BRE 2004). Hydrock can assist in the design if required. Raft Foundations Raft foundations are an alternative foundation solution and should be designed by an engineer and constructed in accordance with the recommendations of the NHBC Standards. The NHBC should be consulted at an early stage if raft foundations are considered. An optimum founding depth of 0.5m or 0.1m into natural soil is recommended. And as Made ground is up to 1.2m deep there may be construction difficulties due to water ingress and collapse of excavations. An engineered granular infill will be required beneath the raft foundations. NHBC Standards Chapter 4.2 should be followed with regards to deepening due to trees and should not exceed 1.25m. An engineering Method Statement and Specification will be required if rafts are to be used.
	Floor Slabs	Suspended floor slabs due to the presence of more than 600mm of Made Ground.

	Roads	A CBR of 5% is proposed, subject to removal of the upper layers and proof rolling. Proof rolling of the formation level will be required and any loose or soft spots to be removed and replaced with an engineered fill. The formation level should also be protected during inclement weather from deterioration and all slopes shall be trimmed to falls to shed rain water and the surface sealed to limit infiltration.
	Soakaways & Drainage	The soils are permeable (permeability in the order of 3×10^{-5} m/s) and BRE364 infiltration rate tests indicate an infiltration rate between 7.2×10^{-6} m/s and 4.12×10^{-4} m/s. However, the water table is shallow, monitored at between 0.81m bgl and 1.17m bgl during March 2011. This will clearly have an impact on the suitability for soakaways and permeable paving.
	Buried Concrete	Design Sulfate Class of DS-1 and ACEC Class of AC-1 for the Made Ground and Bognor Sand Member (up to 10m bgl) and DS3 and AC3 for the London Clay (>10m bgl).
	Results of Generic Risk Assessment Requiring Consideration	Human health: Nil Plant growth: Nil Controlled Waters: Nil Human health / property from ground gases: - radon – basic radon protection; and - landfill gases: Nil, subject to ongoing monitoring and agreement from the regulators.
	Construction Materials & Water Supply Pipework	In accordance with the WRAS information and guidance note 9-04-03, and with respect to the analyses undertaken for this report, Protectaline (or similar) pipework is <u>not</u> required. However, in view of the lack of clear and unambiguous guidance it is strongly recommended that site-specific approval of the materials for underground pipes to be used for water supply be obtained from the water company that will be supplying this site and/or adopting the pipework.
	Unexploded Ordnance	Zetica UXB map shows very low bomb risk. No further consideration of UXO is required.
	Outline Contamination Remediation Strategy	No remediation required.

This Executive Summary forms part of Hydrock Consultants Limited report number R/11051/001 (Issue 1) and should not be used as a separate document.

1.0 INTRODUCTION

1.1 Terms of Reference

In February 2011, Hydrock Consultants Limited (Hydrock) was commissioned by Bloor Homes (Southern) (Order Number AO/CLG/013.2011) to undertake a desk study and initial ground investigation at New Lane, Havant, Hampshire.

The site is located at New Lane, Havant Hampshire, at approximate NGR 472397E, 106459N (nearest postcode address of PO9 2RR).

The site comprises open playing fields 220m in length and 90m wide (approximately 1.75ha).

The proposed development is to comprise 61 residential dwellings, infrastructure and associated Public Open Space.

A site location plan (Drawing 111051-D001), a site layout plan (Drawing 111051-D002), and a proposed development layout are presented in Appendix A.

1.2 Objectives

The objectives of this investigation are to assess the ground and groundwater conditions to provide initial geotechnical design recommendations and to carry out a risk assessment of potential chemical contaminants to establish 'suitability for use' under the current planning regime.

1.3 Scope

The scope of work for this commission comprises:

- a desk study and site walk-over reconnaissance to determine the nature of the site and its surroundings including current and former land uses, geology, hydrogeology, hydrology and geo-environmental data;
- a summary of previous investigations carried out at the site;
- an initial ground investigation including window sampling, gas and groundwater monitoring, laboratory chemical and geotechnical testing;
- reporting on findings of the desk study, ground investigation, geo-environmental assessment of the site conditions and geotechnical interpretation of the ground and groundwater conditions; and
- initial categorisation of geotechnical design requirements for the proposed development in accordance with the three Geotechnical Categories introduced in Eurocode 7 – Geotechnics and, where applicable, preliminary foundation design.

1.4 Report Structure

This report describes a two-staged investigation and assessment of the site. Throughout the report the term 'geotechnical' is used to describe aspects relating to the physical nature of the site (such as foundation requirements) and the term 'geo-environmental' is used to

describe aspects relating to ground-related environmental issues (such as potential contamination). However, it should be appreciated that this is a composite investigation and these two main aspects are inter-related.

The **first stage** is the Phase 1 Study¹ comprising desk study and walk-over survey, which culminates in the Preliminary Risk Assessment. An outline conceptual site model is developed; and from this are identified any geotechnical and geo-environmental hazards and the qualitative degree of risk associated with them. From the geo-environmental perspective, the Hazard Identification process uses professional judgement to evaluate all the hazards in terms of **possible pollution linkages** (of source-pathway-receptor). Possible pollution linkages are potentially unacceptable risks in terms of the current contaminated land regime legal framework and require either remediation or further assessment. These are normally addressed via intrusive ground investigation and generic risk assessment.

The **second stage** is the Ground Investigation, Generic Risk Assessment and Geotechnical Interpretation. This represents the further assessment mentioned above. The Ground Investigation comprises field work and laboratory testing based on the findings of the Preliminary Risk Assessment, to reduce uncertainty in the geotechnical and geo-environmental hazard identification.

The general requirements of Eurocode 7 (BS EN 1997-2: 2007) are to produce a Ground Investigation Report (GIR) which shall form part of the Geotechnical Design Report (GDR). The geotechnical section of this report is intended to fulfil the general requirements of the GIR as outlined in BS EN 1997-2, Section 6.

The GIR contains the factual information including geological features and relevant data, and a geotechnical evaluation of the information stating the assumptions made in the interpretation of the test results.

1.5 Information Sources Provided by the Client

- Ashdown Site Investigation Limited. November 2009. Warblington School, Southleigh Road, Havant, Hampshire - Factual and Interpretative Report on the Ground Investigation. Report Number LW20180.

1.6 Geotechnical Categorization of the Proposed Development

Eurocode 7, Section 2 advocates the use of geotechnical categorization to establish the design requirements. Initial categorisation can be made before site investigation and can be used to define the scope.

The proposed development is considered to be Geotechnical Category 1 (small and relatively simple structures with negligible risk, where qualitative data and experience are adequate), as such the geotechnical design requirements for Geotechnical Category 1 will be satisfied on the basis of experience and qualitative geotechnical investigation, the scope of ground investigation described in Section 4.0 has been designed to do this.

¹ This type of work is commonly referred to as a 'Phase 1 study' and the term is retained in this report in keeping with the industry standard terminology. Please note that it does not refer to a site development phase.

2.0 **PHASE 1 STUDY**

A number of desk study sources have been used to assemble the following information, including a proprietary environmental data report which has been obtained for the site (dated 24th February 2011) and is presented in Appendix D. The environmental data report is the result of searches of a number of regularly updated authoritative databases and is presented as a series of tables and accompanying maps.

2.1 **Site Referencing**

The site is referenced in Table 2.1.

Table 2.1: Site Referencing Information

Item	Brief Description
Site name	New Lane, Havant.
Site address and location	New Lane, Havant Hampshire, PO9 2RR.
National Grid Reference	472397,106459.

A site location plan (Drawing 111051-D001), a site layout plan (Drawing 111051-D002) is provided in Appendix A.

2.2 **Site Description and Walk-Over Survey**

The basic description of the current site conditions is summarised in Table 2.2.

Table 2.2: Site Description

Item	Brief Description
Site access	Via a track off New Lane in the west of the site, or via the Warblington School grounds from the east.
Land area	Approximately 1.75 ha
Elevation, topography etc.	At the time of the investigation the western part of the site comprised an area of trees fronting onto New Lane and the eastern section of the site comprised a grassed open area occupying the far western part of Warblington School grounds. Site elevation is between 9.5m AOD and 11m AOD. Slopes 1.0m to 1.5m high form the northern, eastern and southern boundaries, with the site at a lower elevation than the surrounding sites. In the east, the site levels are approximately the same as New Lane.
Site boundaries	The site is bound to the north by a railway line, to the west by New Road and a cycle path which forms part of the dismantled railway line, to the south by residential houses fronting on to Montgomery Road and to the east by playing fields of Warblington School. Slopes are present along the northern, eastern and southern boundaries with the general site level some 1.0m to 1.5m lower than the playing field to the east and the gardens to the south. Numerous mature trees are present in the far western part of the site and along the southern boundary.

Item	Brief Description
Geomorphic features	Apart from the site being 1.0m to 1.5m lower than the land to the north, east and south, there are no notable geomorphic features present at the site. However, historical activities may have resulted in these being removed.
Present land use	The site is currently open fields, associated with the Warblington School.
Vegetation	Trees and shrubs are present in the western third of the site and trees are present along the southern boundary and sporadically present on the northern boundary.
Surrounding land	The site is surrounded by predominantly residential developments, with a railway present on the northern boundary and an industrial estate present to the immediate north of the railway line.

A walk-over reconnaissance survey was undertaken to confirm the findings of the desk study and assess visually any potential hazards and receptors. Photographs are presented in Appendix B.

A site layout plan (Drawing 111051-D002) and site walkover plan (Drawing 111051-D003), is provided in Appendix A.

2.3 Site History

A study of historical Ordnance Survey maps (Appendix C) has been undertaken to identify any former land uses at the site and surrounding areas which may have geotechnical or geo-environmental implications for the proposed development and is summarised in Table 2.3. Information obtained from the maps and other sources is summarised in the environmental data report (Appendix D). Note that it is common for military sites not to be shown on Ordnance Survey maps and so may not be picked up in this review.

Table 2.3: Historical Development from Map Information

Map Edition and Scale	Key Features on Site	Key Features off Site
1876: 1:2500 1870: 1:10,560	The site is shown as an open area cut below the surrounding <i>agricultural fields</i> . A <i>footpath</i> crosses the site from the northwest to the southeast. A <i>pond</i> and elongated pond extension is located in the central west of the site. The site appears cut below the surrounding areas. This may have been excavated due to borrow pits for the adjacent railway embankments.	<i>Railway lines</i> are present to the immediate north and west of the site. A <i>gas works</i> and <i>Gravel Pit</i> occupies land north of the site and railway line. The <i>village of Havant</i> is located to the southeast of the site.
1897: 1:2500 1898: 1:10,560 1899: 1:10,560	The elongated pond extension is no longer present.	The gravel pit is now marked as <i>Old Gravel Pit</i> occupies land north of the site and railway line. A <i>timber yard</i> is located to the northwest, on the northern side of the railway lines. Increased <i>residential developments</i> are present to the northeast, south and west of the site, including a school noted to the west. A <i>cattle market</i> is located 250m to the west of the site.

Map Edition and Scale	Key Features on Site	Key Features off Site
1932: 1:2500 1909-1910: 1:10,560 1914: 1:10,560 1932: 1:10,560 1938 – 1942: 1:10,560	No significant change.	The cattle market now located 150m to the west of the site. Increased <i>residential developments</i> are present to the northeast, south, east and west of the site. The gas works show progressive replacement of the gas works structures with a depot, control room and substation.
1953: 1:2500 1962: 1:2500 1963: 1:10,000 1966: 1:10,000	The pond present in the central west of the site is no longer present.	A <i>tank</i> is present to the immediate west of the site. Increased <i>residential developments</i> are present to the northeast, south, east and west of the site. The old gravel pit located to the north of the site and railway line is no backfilled and developed. The cattle market 150m to the west of the site has been replaced with residential dwellings.
1973: 1:2500 1975: 1:10,000	No significant change.	The <i>Warblington School</i> has been constructed to the east of the site. The railway line to the west of the site has been dismantled. Increased <i>residential developments</i> are present to the northeast, south, east and west of the site.
1993: 1:2500 1992: 1:10,000 2000: 1:10,000	No significant change.	No significant change.
1993: 1:2500 2006: 1:10,000 2010: 1:10,000	No significant change.	No significant change.

The former railway and the gas works located off site to the north present the most significant contamination hazard to the subject site. Contamination issues are considered in more detail later in this report.

2.4 Unexploded Ordnance

Clients have a legal duty under the CDM 2007 Regulations to provide designers and contractors with project-specific health and safety information needed to identify hazards and risks. This includes the possibility of unexploded ordnance (UXO) being encountered on the site. Further details are given in CIRIA report C681 (Stone *et al* 2009).

A non-UXO specialist screening exercise has been carried out for the site by considering (a) any evidence of UK defence activities on or near the site evident from the gathered desk study information and (b) the unexploded aerial delivered bomb (UXB) regional risk maps produced by Zetica.

There is no indication of former military use from the desk study.

The Zetica UXB map (Hampshire) indicates the site to be in an area where the bomb risk is low (further action to mitigate the risk is considered prudent by Zetica, although not essential). A copy of the map is presented in Appendix D.

This suggests further consideration of UXO is required, but may be prudent.

2.5 **Geology**

The general geology of the site area is shown on the 1:50,000 geological map of Fareham (Sheet 319) and is summarised in Table 2.4.

Table 2.4: Geology

Age	Stratigraphic Name	Description and Characteristics
Recent	Made Ground	Not noted as being present on the BGS maps, but likely to be present as a result of historical activities.
Quaternary	River Terrace Deposits	Sand, clay and gravel almost exclusively of flints with some pebbles of sarsen (silicified sandstone). Occasionally small quantities of older pebbles are also present (including sandstone, quartz and possibly granite).
Quaternary	Head	Generally comprise clay with variable amounts of sand and gravel of flint.
Eocene	Bognor Sand Member of the London Clay	Generally comprises silty fine and medium grey, green and brown sand interbedded with sandy and silty clay. The base of the Member may be marked by a pebble bed, including rounded gravel of flint. It represents a relatively thin stratum, reaching a maximum thickness of approximately 10m.
Eocene	London Clay	Firm to Stiff grey clay.

The general geology of the site area as proven during historical investigations is:

- 0.9m below existing ground level (begl) to 1.2m begl of Made Ground, comprising brown and grey clay with gravel of flint, brick and rare coal and clinker;
- River Terrace /Head Deposits to between 1.3m begl and 1.7m begl, comprising firm to stiff clay and medium dense gravels; and
- loose to medium dense sands and soft to firm clays of the Bognor Sand Member, becoming dense and cemented in places at depth.

2.6 **Ground Stability and Mining / Mineral Extraction**

Potential geotechnical hazards are listed below and are summarised on the Site Zonation Plan (Appendix A), where applicable.

- poorly consolidated, heterogeneous Made Ground;
- shallow groundwater table and “running sands”;
- the presence of varying density of the sands and gravels and strength of the clay.

Supporting documentary evidence is presented in Appendix D.

2.7 Hydrogeology

In accordance with the Water Framework Directive the aquifer designations are given in Table 2.5 based on the Environment Agency interactive aquifer designation map. Additional information on the hydraulic characteristics of the geological units has been abstracted from Allen *et al* (1997) and Jones *et al* (2000).

Table 2.5: Hydraulic Characteristics of Strata

Stratum	Aquifer Designation	Hydraulic Characteristics
Made Ground (Imported Fill)	Unproductive strata	Moderate to high porosity because of unconsolidated nature, but permeability likely to be constrained to low or low to moderate because of poor sorting and clay content.
River Terrace Deposits	Secondary A aquifer	Dominated by high permeability sand and gravel with layers of clay; overall, this unit is likely to be anisotropic in nature with horizontal permeability greater than vertical permeability (i.e. $k_h > k_v$).
Head	Secondary A aquifer	Dominated by low permeability clay, interbedded with moderate to high permeability sand and gravel; overall, this unit is likely to be anisotropic in nature with horizontal permeability greater than vertical permeability (i.e. $k_h > k_v$).
Bognor Sand Member of the London Clay	Secondary A aquifer	Dominated by moderate permeability silt, sand and gravel with layers of clay; overall, this unit is likely to be anisotropic in nature with horizontal permeability greater than vertical permeability (i.e. $k_h > k_v$).
London Clay	No Productive Strata	Dominated by clay and will act as an aquaclude.

The site is not within a Source Protection Zone (SPZ) and there are no licensed groundwater abstractions within 500m of the site. There are no licenced discharge consents to groundwater within 250m of the site.

2.8 Hydrology & Flooding

The nearest significant surface water feature is the Lavant (stream) is partially culverted and located approximately 130m to the northwest of the site. A second surface water feature Lymbourne (stream) is present some 460m to the south of the site.

The site is in Flood Zone 1, although there is a Flood Zone 2 located off site to the northwest. As the development is greater than one hectare, a flood risk assessment (FRA) will be required to accompany the planning application.

Southern Water Services Ltd, historically discharged "Other Matter-Surface Water" to the stream 171m northwest of the site (Licence number H01597). There are no other licenced discharge consents to surface water within 250m of the site.

There are no surface water abstractions within 100m of the site.

2.9 Waste Management and Hazardous Substances

There are no Integrated Pollution Controls or Local Authority Pollution Prevention and Controls within 250m of the site.

Within 250m of the site there have been 4 Pollution incidents to Controlled Waters, all are Category 3 (minor) incidents and the closest, located 67m to the north is related to the discharge of petrol to a drain. None of these are related to the site.

There is a registered waste transfer site approximately 50m to the north (licence number 19986). This has expired and related to a household, industrial and commercial transfer station.

There is a current licenced waste management facility approximately 50m to the north (licence number 13/20B).

There are no landfill sites (current or historical), with 1000m of the site.

2.10 BR 211 Guidance on Radon

Reference to the Annex A maps in BR 211 (Scivyer 2007), based on the indicative atlas of radon in England and Wales (Miles *et al* 2007), indicates that basic radon protection is required for new dwellings at this location in line with current guidance.

2.11 BGS Borehole Archive

One borehole log has been obtained from the BGS borehole archive. This was drilled in the northwest boundary of the site (record no. SU70NW142) in 1972. The borehole recorded the following geology:

- topsoil to 0.3m begl;
- firm gravelly clay to 1.6m begl; overlying
- loose silty sand to 3.3m begl; overlying
- very dense silty sand to 12.2m begl; overlying
- stiff sandy clay to 23.75m begl.

Water was standing at 1.6m begl.

2.12 Previous Site Investigations or Other Reports

A previous ground investigation has been undertaken at the site:

- Ashdown Site Investigation Limited. November 2009. Warblington School, Southleigh Road, Havant, Hampshire - Factual and Interpretative Report on the Ground Investigation. Report Number LW20180.

The previous borehole records which have been made available to Hydrock are presented within Appendix E. Works included:

- 8 boreholes (WS1 to WS5 and S1 to S3) to depths of between 2.7m and 3.0m below existing ground level (begl);
- DPSH Dynamic Probe (Super Heavy) testing adjacent to window sampler boreholes WS1 to WS5 inclusive and S3.
- In situ testing using a hand-held Farnell cone penetrometer (correlated to California Bearing Ratio tests), within boreholes WS1, WS2, WS3, WS4 and WSS;
- falling head testing in boreholes S1, S2 and S3;
- Gas and groundwater monitoring standpipes installed to depths of between 2.8m and 3.0m within boreholes S1, S2 and S3.
- chemical analysis of soils; and
- ground gas monitoring.

The soils beneath the site typically comprised:

- a variable depth of Made Ground (between 0.7m and 1.2m thick); overlying
- loose to medium dense clayey, sandy, flint gravel to depths of between 1.5m and 1.7m below ground level (River Terrace Deposits); and
- sandy gravelly clay (Head Deposits), encountered within WS1, WS3, WS4, S1, S2 and S3; overlying
- loose fine sands with subordinate horizons of firm clay (Bognor Sand Member of the London Clay).

Groundwater was recorded at depths of between 1.0m bgl and 1.5m bgl.

Six soil samples were tested for a range of commonly occurring contaminants at the request of Hampshire County Council. Elevated concentrations of cyanide and extractible petroleum were detected within WS1.

The conclusions of the Ashdown Site Investigation 2009 report are:

- The soils comprise shallow, variable and laterally discontinuous Made Ground, overlying soft to stiff clays and loose to medium dense sands.
- Standing water levels were recorded at shallow depth across the site.
- Running sands were encountered and excavations were unstable.
- Heave protection should be allowed for assuming a medium volume change potential.
- Trench fill foundations with an allowable bearing capacity of no greater than 75N/m² were proposed. (However, it should be noted that Hydrock disagree with this due to potential settlement and buildability issues).
- Ground floors should be suspended.

- A CBR of 3% may be assumed for pavement design and the sub-grade should be assumed to be susceptible to frost heave.
- It was considered that the Bognor Sand Formation soils are suitable to accept surface water runoff via soakaways. However it was noted that storage capacity of soakaways is likely to be significantly restricted by the prevailing high groundwater table.

3.0 PRELIMINARY RISK ASSESSMENT

The findings of the Phase 1 Study have been used to develop an **outline conceptual site model** comprising a **ground model** and an **exposure model**.

The ground model has been used to develop a preliminary list of geotechnical hazards such as poor foundation conditions, flooding, landslip, former mine working and poor or aggressive ground conditions. It will give clarity, rationale and help communicate the required scope of intrusive investigation works for managing the identified geotechnical risks.

The exposure model has been used for geo-environmental hazard identification in line with the Model Procedures of CLR11. The scope is intended primarily to identify potential impacts to human health and construction materials from on-site contaminants, in order to establish suitability of use for the proposed development in terms of the planning control framework. More generalised comments are included with respect to potential impacts to controlled waters and the wider ecosystem, where appropriate to the development.

The main details of the site and potential hazards are summarised on the Site Zonation Plan (Appendix A).

3.1 Preliminary Conceptual Ground Model

The findings of the Phase 1 investigation indicate the site to be a level site at a reduced elevation to the surrounding sites to the north, east and south. The site is currently a playing field (eastern 2/3) and a wooded area (western 1/3).

Historical reports indicate the soils below the site comprise sands, gravels and clays (Head, River Terrace and the Boscombe Sand Member), with the water table close to the surface.

A railway is located to the immediate north and a gas works was present historically to the north of the railway line.

3.2 Geotechnical Hazards

Potential geotechnical hazards are listed below and are summarised on the Site Zonation Plan (Appendix A), where applicable.

- Slope instability - the development has slopes on the north, east and south. There is the potential for instability due to inappropriate cutting at the toe of marginally stable slopes.
- Attack of buried concrete by aggressive ground conditions – the development site contains unknown Made Ground and sulfate bearing soils.
- Low strength, compressible ground – excessive settlement of foundations and infrastructure elements is possible.
- Construction difficulties (instability of excavations), due to the shallow water table and running sands leading to collapse of sands and gravels.
- Obstructions/Cemented sands.

3.3 Geo-Environmental Hazard Identification

With reference to the Phase 1 Study reported above, Table 3.2 lists the possible contaminant sources, receptors and pathways identified, i.e. the possible pollution linkages (this constitutes the exposure model). The degree of risk associated with each of these linkages has been assessed by professional judgement in accordance with guidance in CIRIA Report C552 (Rudland *et al* 2001) but with the addition of a 'no linkage' category. The justification for the decision is recorded in the table.

Some linkages may be identified which constitute a theoretical connection between a source and a receptor, but professional judgement shows them not to be possible for some reason. These are labelled 'no linkage'. Those linkages deemed possible are assessed for their likely level of risk. The methodology is based on an assessment of the *probability* of a particular linkage existing (unlikely to high likelihood), multiplied by the level of *consequence* of the potential effects (minor to severe). Even those assessed as very low level of risk must be considered as possible in the first instance under the precautionary principle. More details are given in Appendix H including descriptions of typical examples of probability and consequences.

This gives an estimation of the level of the perceived level of *risk* based on desk study and walk-over information. The level of risk is subdivided into 5 descriptive categories from very low to very high risk, plus no risk where there is no linkage (see Table 3.1).

Table 3.1: Geo-environmental Risk Rating

Probability		Consequence			
	<i>product</i>	Severe	Medium	Mild	Minor
	High Likelihood	Very high risk	High risk	Moderate risk	Low risk
	Likely	High risk	Moderate risk	Low risk	Very low risk
	Low Likelihood	Moderate risk	Low risk	Low risk	Very low risk
	Unlikely	Low risk	Very low risk	Very low risk	Very low risk
	No Linkage	No risk			

Table 3.2: Outline Exposure Model – Risk Assessment of Source-Pathway-Receptor Pollution Linkages from Phase 1 Study

Source(s)	Possible Pathway(s)	Receptor(s)	Probability	Consequence	Risk Level	Comments 1	Comments 2
Metals and metalloids - uncontrolled tipping. Cyanide, Acids and bases – from uncontrolled tipping. Sulfates – from ash railway ballast, May also exist naturally in soils. Polynuclear aromatic hydrocarbons (PAH) – from combustion products from fires, creosote on railway sleepers, ash railway ballast, uncontrolled tipping and coal from railway. 6 samples have been tested as part of the previous report.	Ingestion, inhalation or direct contact.	Site workers.	Unlikely	Medium	Very low	No significantly elevated chemicals of potential concern have been found above relevant GACs in the previous report. No visual or olfactory evidence of petroleum hydrocarbons were noted within the soils in the previous investigation. Levels of sulfate found in previous report indicate a design sulfate class of DS-1, AC-1.	NB: general comments only. Contractors will have to consider health and safety risks separately.
	Ingestion, inhalation or direct contact.	End users of the site.	Unlikely	Medium	Very low		
	Inhalation of fugitive dust.	Neighbours.	Unlikely	Medium	Very low		Site is adjacent to a residential area and fugitive dust may be emitted, especially during site preparation work.
	Root uptake.	Landscape planting.	Unlikely	Medium	Very low		There may be landscaping as part of any residential development. It should be noted that the vegetation on site did not show any signs of physical distress.
	Leaching through unsaturated zone.	Groundwater and possible abstractors or aquatic ecosystems.	Unlikely	Medium	Very low		Contaminants could impact the groundwater body.
Asbestos fibres from insulation or asbestos-containing materials in the Made Ground	Fugitive dust.	Site workers.	Unlikely	Severe	Low risk	Made Ground not seen to contain asbestos-containing materials in previous investigations.	
		End users of the site.	Unlikely	Severe	Low risk		
		Neighbours.	Unlikely	Severe	Low risk		
Ground gases (methane & carbon dioxide) from possible biodegradable matter in the Made Ground.	Migration through soils or groundwater to indoor air.	End users of new buildings (asphyxiation or explosion).	Unlikely	Severe	Low risk	Made Ground not seen to contain organic matter, Former pond located on site. No landfills within 1000m	n/a
		Users of off-site properties (asphyxiation or explosion).	Unlikely	Severe	Low risk		Houses are located just to the on all sides of the site.
		New buildings (damage by explosion).	Unlikely	Severe	Low risk		n/a
		Neighbouring properties (damage by explosion).	Unlikely	Severe	Low risk		Houses are located just to the on all sides of the site.
Radon	Migration through soils or groundwater to indoor air.	End users of new buildings.	Likely	Severe	High	BR 211 (2007) radon report indicates basic precautions required.	

3.4 Findings of the Preliminary Risk Assessment

The findings of the preliminary risk assessment are presented in Section 3.2 and Table 3.2 and have allowed key issues at the site to be identified.

There are possible pollution linkages in Table 3.2 which are defined as potentially unacceptable risks in line with guidelines published in CLR 11. Even though the perceived risks are very low, confirmation of this by way of testing is recommended.

4.0 **GROUND INVESTIGATION**

4.1 **Investigation Rationale**

The ground investigation rationale based on the findings of the preliminary risk assessment is summarised in Table 4.1. It should be noted that all sections from this point use all available data, including historical reports.

Table 4.1: Investigation Rationale

Exploratory Holes	Purpose
All boreholes WS1 to WS5, S1 to S3, HWS01 to HWS05 and HBH01	Provide samples for geo-environmental and geotechnical testing.
S1 to S3	Construct groundwater and gas monitoring wells and undertake falling head testing in boreholes S1, S2 and S3.
Adjacent to WS1 to WS5	DPSH Dynamic Probe (Super Heavy) testing
HWS01 to HWS05 and HBH01	Undertake SPT tests to determine geotechnical strength profile.
HHP01 and HHP02	Undertake BRE364 soakaway tests

4.2 **Site Works**

The site works undertaken for this investigation are summarised in Table 4.2.

Table 4.2: Summary of Site Works

Activity	Method	No.	Max. Depth (m)	<i>In situ</i> tests	Installations / Notes
Drilling, pitting & probing					
Boreholes	Cable percussive	1	3.5 (2009 and 2010). 23.75 (1972)	SPT and HSV	Nil
	Dynamic Percussive Sampling (Terrier 2000)	13	3.45	SPT and HSV	63mm HDPE wells with gas taps in 6 holes. HWS01, HWS02, HWS05, S1, S2 and S3
Trial pits	Hand-dug	2	0.75	n/a	
Probes	TRL-DCP	9	n/a	TRL-DCP	TRLDGP01 to TRLDGP09
	DPSH Dynamic Probe (Super Heavy)	6	4.8		
Other <i>in situ</i> testing or monitoring					
Hydrogeological	Falling head	3	Screened 1.0-3.0m bgl	Permeability	S1, S2 and S3

The approximate investigation locations (using a hand-held GPS) are shown on the Ground Investigation Plan in Appendix E. The logs are also presented in Appendix E and these include details including sampling.

The trial pits and boreholes (without installations) were backfilled with the excavated material upon completion.

4.3 Geotechnical Testing

Geotechnical testing has been carried out to provide design parameters for construction and is in line with recommendations given in the NHBC Standards, Chapter 4, Foundations.

4.3.1 *In Situ* Testing

Standard penetration tests (SPTs) were performed in the Hydrock boreholes (HBH01 and HWS01 to HWS05 and Super Heavy Dynamic Probes were undertaken adjacent to WS1, WS2, WS3, WS4 and WS5

Plots showing the (un-adjusted) N-values versus depth are given in Appendix F.

Farnell cone penetrometer tests were performed to assess California Bearing Ratio (CBR) conditions in the near-surface soils (see Table 4.2). The results are given in Appendix F.

4.3.2 Laboratory Testing

In order to address the geotechnical risks identified in Section 3.4 the following geotechnical testing was scheduled on samples retrieved from the above site works. The testing laboratory was UKAS accredited.

- 25 natural moisture contents;
- 8 Atterberg limits;
- 10 analyses for sulfate and aggressive chemical environment classification for buried concrete;
- 18 particle size distribution analyses (sieve);

The geotechnical test results are provided in Appendix F.

4.4 Geo-Environmental Testing

4.4.1 Sampling Strategy and Protocols

There were no features noted in the desk study as present on site requiring targeting and no specific sampling statistics or grid were utilised in this instance. Soil samples were taken in accordance with relevant guidance (e.g. BS 10175: 2001).

4.4.2 Monitoring

Gas monitoring boreholes were on 3 occasions to date. The results are presented in Appendix G.

4.4.3 Laboratory Analyses

The findings of the preliminary risk assessment have been used to scope the analyses of chemicals of potential concern as follows.

The following were performed on samples of **soil or other solids**:

- 10 Hydrock default suite of determinands for solids comprising: As, B (water soluble), Cd, Cr (total), Cr(VI), Cu, Hg, Ni, Pb, Se, V, Zn, cyanide (free), pH, asbestos fibres, speciated polycyclic aromatic hydrocarbons (PAH, by GC-FID), total phenols and fraction of organic carbon. Note: SO₄ is included within the geotechnical testing schedule. See Appendix H for details; and
- 6 Ashdown default suite of determinands for solids comprising: As, B (water soluble), Be, Cd, Cr (total), Cr(VI), Cu, Hg, Ni, Pb, Se, V, Zn, cyanide (free), pH, asbestos fibres, speciated polycyclic aromatic hydrocarbons (PAH, by GC-FID), total phenols total sulphate, total cyanide, free cyanide, sulphide, total sulphur, thiocyanate, exchangeable ammonium, total and organic matter; and
- 2 Waste Acceptance Criteria.

The following were performed on samples of **water or other liquids**:

- 3 Hydrock default waters suite of determinands comprising: Ag, Al, As, B, Ba, Cd, Co, Cr (III), Cr(VI), Cu, Fe, Hg, Mn, Mo, Na, Ni, Pb, Sb, Se, Sn, Zn, V, cyanide (total), phenols (total), ammonium, bromate, chloride, fluoride, nitrate, nitrite, sulfate, PAH (speciated), pH, EC and hardness.

The chemical test results are provided in Appendix I.

5.0 **CONCEPTUAL GROUND MODEL**

The preliminary conceptual ground model defined in Section 3.1 has been updated using the findings of the ground investigation and this is presented in the following sections.

5.1 **Physical Ground Conditions**

The ground conditions over the entire site as proven during the current works were in general accordance with the published geological literature and expectations from the desk study and previous investigation works on the site.

Details are provided in the logs in Appendix E, a summary is presented in Table 5.1 and the individual strata are described in the sections below.

Table 5.1: Strata Encountered

Stratum Description	Depth to Top (m bgl)	Thickness (m)
Made Ground	0.00	0.50 – 1.20
River Terrace Deposits and Head Deposits • loose to medium dense clayey, sandy, flint gravel; and • sandy gravelly clay.	0.50 – 1.20	0 – >2.85
Bognor Sand Member of the London Clay : loose fine sands with subordinate horizons of firm clay, becoming dense with depth	0.8 to >3.45	10.4
London Clay – Stiff clay.	12.2	Not Proven

5.1.1 **Made Ground**

Made Ground was encountered across the site from ground level to between 0.50m bgl and 1.20m bgl. Made Ground generally comprised silt or clay, with varying proportions of sand and gravel of flint. Man made constituents of the Made Ground comprised: brick fragments, clinker and coal

5.1.2 **River Terrace Deposits and Head Deposits**

River Terrace Deposits and Head Deposits are present from below the Made Ground to a depth of 0.8 to >3.45m bgl, but were generally present to depths of approximately 1.5m bgl and comprised:

- loose to medium dense clayey, sandy, flint gravel (River Terrace Deposits); and
- firm to stiff sandy gravelly clay (Head Deposits).

5.1.3 **Bognor Sand Member of the London Clay**

Located from a depth of between 0.8 to >3.45m bgl, but generally present from depths of approximately 1.5m bgl and comprise loose fine sands (sporadically medium dense and dense at shallow depths) with subordinate horizons of soft and firm clay, becoming medium dense and dense with depth and partially cemented.

The shallower loose soils are sporadic across the site and interspersed with medium and dense soils from shallow depth.

5.1.4 London Clay

London Clay has not been encountered in the 2009 and 2010 investigations, but was proven in the 1972 investigation as stiff dark grey very silt clay, or very fine sandy clay, with thin partings of fine sand.

5.2 Geotechnical Testing

Laboratory test results are given in Appendix F and *in situ* field test results are given on the relevant exploratory hole log in Appendix E. The following sections tabulate the main findings and give interpretations where appropriate. **Derived values** of geotechnical parameters and/or coefficients are obtained from test results, by theory, correlation or empiricism in line with BS EN 1997-2:2007, Section 1.6.

Note that where derived geotechnical parameters are to be used in designs in accordance with EC7, there are two further stages of interpretation that will be carried out by the geotechnical designer. The first of these is the selection of **characteristic values** for geotechnical parameters using the derived values and complemented by well-established experience as per EN BS 1997-1:2004, Section 2.4.5.2. The characteristic value is a cautious estimate of the value affecting the occurrence of the limit state. Consequently, any particular material type may have more than one characteristic value for each parameter because there may be more than one limit state depending what is being designed.

The second stage is the selection of **design values** as per EN BS 1997-1:2004, Section 2.4.6.2. The design values are either derived from the characteristic value by applying the relevant partial factor or are assessed directly. Similarly, there can be several design values for the same material type.

In the event that geotechnical designs are included in this report, selection of the characteristic and design values is included in Section 7.0. Otherwise, it is the duty of the geotechnical designer to determine these within a separate design report.

5.2.1 Plasticity Index

The volume change potentials in terms of NHBC Standard (Chapter 4.2) with respect to building near trees have been determined from the results of plasticity index tests on samples of cohesive soils. These are summarised in Table 5.2.

Table 5.2: Volume Change Potential

Stratum	No. Tests	Volume Change Potential
River Terrace Deposits	1	Non-Plastic
Head Deposits	1	Low
Bognor Sand Member of the London Clay	6	Low to Medium

5.2.2 Soil Strength

Table 5.3 summarises information pertaining to the shear strength of the soils according to geological stratum and, if applicable, weathering zones or other variations within particular strata. Factual results are summarised for laboratory tests, field tests (e.g. hand shear vane) and uncorrected Standard Penetration Tests (SPT). SPT or shear strength versus depth profiles are presented in Appendix F, where applicable.

This report discusses the results of the tests undertaken in the context of the soil descriptions and other observations, and presents derived geotechnical parameters and coefficients. These take into consideration correlations such as the relationship between undrained shear strength and SPT N-value as described by Stroud (1975) and outlined in text books such as Tomlinson (2001).

Table 5.3: Derived Soil Strength

Stratum	SPT (N-value) (Range)	Shear Strength (Range)			Method
		c _u (kPa)	c' (kPa)	phi' (°)	
River Terrace Deposits	4-50	-	-	29 -41	SPT correlation and Dynamic probe "n" value conversion
Head Deposits	14 - 30	70 -150	-	-	
Bognor Sand Member of the London Clay	2 - 100	-	-	29 -41	
London Clay – Stiff clay	52 - 69	>250	-	-	

5.2.3 California Bearing Ratio (CBR)

The CBR results are summarised in Table 5.4 including recommended values that can be assumed for preliminary design purposes within the scope of this report.

Table 5.4: Derived CBR

Stratum	Method	No. Tests	CBR (%) (Range)	Recommended CBR for Preliminary Design (%)
Made Ground	TRL DCP	9	2 - 19	<2.5
Natural Soils		9	8 - 71	5

5.2.4 Sulfate Content

Sulfate and complimentary analyses indicate Design Sulfate (DS) classification and Aggressive Chemical Environment for Concrete (ACEC) classification according to BRE Special Digest 1 as shown in Table 5.5 and shows the Designated Concrete (DC) class for an intended working life of 50 years.

Refer to BS 8500 for full details and notes to Table A.9, including any Additional Protective Measures (APMs).

Table 5.5: Aggressive Chemical Environment Concrete Classification

Stratum	No. Tests	DS	ACEC	DC-Class
Made Ground	5	DS1	AC-1	DC-1
Head	1	DS1	AC-1	DC-1
Bognor Sand Member of the London Clay	5	DS1	AC-1	DC-1
London Clay – Stiff clay	-	DS3	AC-3	DC-3

5.3 Groundwater and Hydrogeology

Groundwater strikes encountered during the investigation are summarised in Table 5.6.

Table 5.6: Groundwater Strikes

Borehole	Date	Depth to Groundwater (m bgl)
WS1	13/10/09	1.5
WS2	13/10/09	1.3
WS3	13/10/09	1.0
WS4	13/10/09	1.3
WS5	13/10/09	1.2
WSS1	13/10/09	1.3
WSS2	13/10/09	1.1
WSS3	13/10/09	1.0
HBH1	14/02/11	1.0
HWS1	14/02/11	0.9
HWS2	14/02/11	0.7
HWS3	14/02/11	1.0
HWS4	14/02/11	0.9
HWS5	14/02/11	0.9

Groundwater strikes encountered during the investigation are summarised in Table 5.7.

Table 5.7: Groundwater Monitoring

Borehole	Date	Depth to Groundwater (m bgl)
WS 1	10.03.2011	1.06
WS 4	10.03.2011	0.81
WS 5	10.03.2011	1.05
WS 1	25.03.2011	1.15
WS 4	25.03.2011	0.90
WS 5	25.03.2011	1.09
WS 1	31.03.2011	1.17
WS 4	31.03.2011	0.91
WS 5	31.03.2011	1.11

5.3.1 Infiltration Tests

The results of soakaway testing are summarised in Table 5.8. The results sheets are given in Appendix F.

Table 5.8: Infiltration Test Results

Stratum	Trial Pit No.	Infiltration Rate (m/s)
Made Ground	HHP01	7.2×10^{-6}
River Terrace Gravels	HHP02	4.12×10^{-4}

5.3.2 Permeability Tests

The results of permeability testing using falling head analysis are summarised in Table 5.9.

Table 5.9: Permeability Test Results

Stratum	Borehole No.	Details of Screened Section	Hydraulic Conductivity (m/s)
River Terrace and Bognor Sand Member	S1	1.0m to 3.0m	3.1×10^{-5}
	S2	1.0m to 3.0m	3.9×10^{-5}
	S3	1.0m to 3.0m	4.1×10^{-5}

Note this is permeability, not infiltration rate.

5.4 Soil Chemistry

The chemical test results are given in Appendix I. There is no particular spatial distribution of chemicals of potential concern that requires explanation.

5.5 Asbestos

The presence of asbestos was not detected during laboratory analysis on the soil samples. Therefore no further consideration of asbestos is necessary.

5.6 Ground Gases

Records from the gas monitoring boreholes are summarised in Appendix G.

The gas monitoring records indicate that no methane is present at the site, with carbon dioxide present at concentrations up to a maximum of 0.8%.

Concentrations of oxygen were above 18% and gas flow measurements indicated emission rates of <1l/hr.

5.7 Conceptual Site Model

The conceptual site model initially developed from the desk study and walk-over survey (Section 3.1) has been confirmed.

The site is underlain by a layer of Made Ground between 0.50m and 1.20m thick, which comprises predominantly re-worked natural soils, with inclusions of brick, coal and clinker.

Below the Made Ground are River Terrace Deposits and Head Deposits, with the River Terrace Deposits, comprising loose to medium dense clayey, sandy, flint gravel and the Head Deposits comprising firm to stiff sandy gravelly clay.

Below the River Terrace Deposits and Head Deposits the Bognor Sand Member of the London Clay is present. This is encountered from depths of between 0.8 to >3.45, but generally present to depths of approximately 1.5m bgl loose fine sands with subordinate horizons of soft and firm clay are present. These become medium dense and dense with depth (by 4.0m bgl all tests indicate medium dense), although the location of soft spots is sporadic across the site and interspersed with medium and dense soils from shallow depth.

The London Clay has not been encountered in the 2009 and 2010 investigations, but was proven in the 1972 investigation as stiff dark grey very silt clay, or very fine sandy clay, with thin partings of fine sand.

Groundwater is present at depths of between 0.81m bgl and 1.06m bgl and instability of excavations is associated with the groundwater.

This model forms the basis of the generic risk assessment described in the next section and the geotechnical recommendations made in Section 7.0.

6.0 GENERIC QUANTITATIVE RISK ASSESSMENT

Generic risk assessment is a two stage process. Firstly, the measured contaminant concentrations are compared to the relevant GACs. This is the Risk Estimation stage. Where there is a suitable dataset, this is done after carrying out statistical analysis to determine the upper confidence limit on the true mean. Otherwise, maximum or specific data points are compared directly.

The second stage, Risk Evaluation, comprises an authoritative review of the findings with other pertinent information, in cases where the GACs are exceeded, in order to consider if exceedance may be acceptable in the particular circumstances.

6.1 Scope

The purpose of this risk assessment is to determine the potential contamination risks at the site for the proposed development. The aspects of risk from substances in the ground considered below are as follows:

- human health;
- plant life;
- pollution of Controlled Waters; and
- ground gases.

The possible pollution linkages initially identified in Table 3.2 have been re-assessed in the light of the results of the ground investigation, to define those linkages which are considered in more detail in the generic risk assessment that follows.

Note, those linkages for which the receptors are demolition and site redevelopment workers are specifically excluded from the following assessment since this should be covered by method statements required under the relevant health and safety regulations.

6.2 Human Health and Plant Life

This is a Tier 2 assessment using soil screening values and involves generic human health risk assessment for the following standard CLEA land use scenario:

- residential with plant uptake; and
- a check on levels of priority phytotoxic chemicals to determine the likely risk to plant growth.

The soil chemical analysis results have been screened against guideline soil concentrations to provide an assessment of potential risks associated with contamination at the site. Justification for the criteria adopted for this risk assessment are given in Appendix H. It has been assumed in this report that the exposure conditions are within the generic conditions used to derive Soil Guideline Values (SGVs). Where no SGVs are published, or where the published values require modification, a number of Generic Assessment Criteria (GAC) have been developed for certain chemicals of potential concern. These GAC have been developed using largely generic assumptions about the characteristics and behaviour of

sources, pathways and receptors, i.e. similar to those used by the Environment Agency in the derivation of SGVs.

The legal test for land contamination under the statutory guidance of Part IIA of the Environment Protection Act 1990 is **unacceptable** intake or direct bodily contact. DEFRA (2005) has made it clear that exceedance of a GAC does not necessarily meet this legal test, i.e. exceedance of a GAC does not necessarily equate to unacceptable risk. Consequently, the GACs must be considered as screening values only and further consideration and judgement is required in setting any remedial targets.

Therefore, in the following assessment it should be noted that the term “further assessment required” is used to denote soil concentrations that are equal to, or exceed, a GAC. This does not automatically mean that the soil is “contaminated”.

6.2.1 Risk Estimation (Including Statistical Testing)

The ‘averaging area’ used in this report is the upper 600mm of soil across the entire site and is based on the conceptual model and the proposed development and is taken to be the entire area of the site.

Initial Data Review

The data set for each chemical determinand has been assessed for the presence of potential outliers (based on the conceptual model) and to determine if the data are normally or non-normally distributed, in line with the methods described in Appendix H. No outliers have been removed.

Statistical Testing

A suitable data set is available for statistical testing for the Hydrock default suite of determinands.

In line with the guidance provided by the CIEH (May 2008) the 95th upper confidence level on the true mean (US_{95}) has been calculated from the sample data. This means that there is a 95% probability that the true mean concentration does not exceed this value, based on the information given by the samples analysed.

A one-sample t-test has been used for data which do not depart significantly from a normal distribution or the one-sided Chebychev Theorem has been used for non-normally distributed data.

Under the land use planning system the aim is to demonstrate ‘suitability for use’. In statistical language, a null hypothesis is stated; that the level of contamination is the same as, or higher than, some critical concentration (in this case the GAC). The alternative hypothesis is that the level of contamination is lower than the critical concentration. The statistical test is used to decide whether or not the null hypothesis is rejected.

If it is rejected, it is concluded that the alternative hypothesis is more likely to be true, i.e. that contaminant concentrations are low relative to the critical concentration and that, potentially,

the land is suitable for use. Conversely, if the null hypothesis is not rejected, the assessor should conclude that contaminant concentrations may be the same as or higher than, the critical concentration and further measures may be needed.

Appendix I contains the detailed results of the statistical assessment for each chemical of potential concern, together with summary sheets for human health and plant life. Note that some chemicals reported as being below the limit of detection may also be included in the appendix even though they have been discounted in Section 0. They can be ignored.

Those chemicals of potential concern for which further assessment is required are summarised in Table 6.1 for human health and Table 6.2 for plant growth.

Table 6.1: Chemicals of Potential Concern for Which Further Assessment is Required (Human Health)

Chemical of Potential Concern	Generic Criterion (mg/kg)	Basis for Generic Criterion	No. Samples	Min. (mg/kg)	Max. (mg/kg)	No. Samples Exceeding Generic Criterion	US ₉₅ (mg/kg)
Benzo(a)pyrene	0.94	LQM/CIEH + CLEA 1.06	16	0.01	1.9	2	0.67

Table 6.2: Chemicals of Potential Concern for Which Further Assessment is Required (Risk to Plants)

Chemical of Potential Concern	Generic Criterion (mg/kg)	Basis for Generic Criterion	No. Samples	Min. (mg/kg)	Max. (mg/kg)	No. Samples Exceeding Generic Criterion	US ₉₅ (mg/kg)
No Exceedances of the GAC. No additional consideration required.							

6.2.2 Risk Evaluation

Where there is no exceedance of a GAC, the risks are deemed to be insignificant and the site is suitable for use without further consideration.

However, DEFRA (2005) has made it clear that exceedance of a GAC does not necessarily meet the legal test of contaminated land, i.e. exceedance of a GAC does not necessarily equate to unacceptable risk. Consequently, the GACs must be considered as screening values only.

Within the context of the conceptual site model, the slight exceedances of benzo(a)pyrene in isolated boreholes WS1 (1.9mg/kg at 0.4m bgl) and WS2 (1.1mg/kg at 0.5m bgl), are not considered significant at this site as the US₉₅ for the Made Ground averaging area is 0.67mg/kg which is less than the GAC. No further consideration is considered necessary.

6.3 Pollution of Controlled Waters

No significantly elevated Chemicals of Concern have been detected in the soils at the site. As a result Hydrock do not believe the site poses a significant risk to Controlled Waters.

6.4 Ground Gases

The risks associated with the ground gases methane (CH₄) and carbon dioxide (CO₂) are assessed using BS 8485:2007 and guidelines from CIRIA (Wilson *et al* 2007) and the NHBC (Boyle and Witherington 2007).

In the above guidance, 'Situation B' is defined as the specific development of low-rise (1 or 2 storey) housing with beam and block floors, vented sub-floor void and gardens. Initial risk classification can be made according to NHBC Table 8.1. This determines the appropriate risk strategy for protection, including the need to progress to generic quantitative risk assessment (GQRA). Even where no risk assessment is recommended by this table, one may be carried out if so desired. The GQRA is known as the 'NHBC traffic light classification' as it uses red, amber and green designations to portray levels of risk.

'Situation A' covers all other forms of development. This uses a modified version of the Wilson and Card (1999) methodology.

[The NHBC 'traffic light' assessment can be used by comparing the maximum gas concentrations and gas screening values (GSV²) in Appendix G with the published table (NHBC Table 14.1 or CIRIA Table 8.7).

One of the assumptions in using the published table is that the worst-case ground gas regime has been identified on the site, for either CH₄ or CO₂, at the worst-case temporal conditions that the site may be expected to encounter (such as immediately following rapid changes in atmospheric pressure or prolonged rainfall).

The idealised frequency of monitoring is suggested in CIRIA Tables 5.5a and 5.5b. These tables are adapted from Wilson and Haines (2005) Table 3 which gives examples of ground conditions with the various gas generation potentials, ranging from inert Made Ground (very low potential) to post 1960s domestic landfill (very high potential). It is judged from the available evidence that the gas generation potential at the site is very low (low organic Made Ground present at the site and a lack of landfills in the vicinity of the site) and the sensitivity of the development is high (residential development). Consequently, an appropriate minimum monitoring regime is 6 readings over 3 months, provided other monitoring requirements are also met, such as prevailing atmospheric pressure conditions (for example, BS 8485:2007 suggests monitoring shall include a period of falling atmospheric pressure).

The monitoring undertaken to date reported in Appendix G may not have detected the worst-case conditions because of the temporal limitations of this investigation. The data gathered to date indicates the site could be Green.

It is recommended that the proposed monitoring be completed and the available information be discussed with the Environmental Health Officer, Building Control and the NHBC to determine if additional confirmatory monitoring is required, which would be reported separately.

² Note: GSV is synonymous with 'site characteristic hazardous gas flow rate' (Q_{hgs}) of BS 8485:2007.

6.5 Findings of the Generic Risk Assessment

The findings of the generic risk assessment are that the substances listed in Table 6.3 will require further consideration.

Table 6.3: Summary of Unacceptable Pollution Linkages

Receptor Group	Unacceptable Pollution Source	
	Hotspots	Pervasive
Human Health	Nil	Nil
Plant Life	Nil	Nil
Controlled Waters	Nil	
Human health / property (from ground gases)	Basic radon protection required. No landfill gas protection measures required, subject to ongoing monitoring and agreement by the NHBC and regulators.	

7.0 GEOTECHNICAL INTERPRETATION AND RECOMMENDATIONS

Geotechnical aspects of the site are discussed in the following sections. Specific areas of potential concern are indicated on the Site Zonation Plan in Appendix A with site-wide issues listed in the notes.

7.1 Geotechnical Aspects of the Development

The proposed development is to comprise 61 residential dwellings with associated gardens, infrastructure and Public Open Space.

7.2 Flooding

The following preliminary statements are based on the Environment Agency flood risk map described in Section 2.8. Confirmation should be sought with the Local Planning Authority and/or the Environment Agency as these regulators refer to more detailed mapping as part of the planning application process.

The proposed development is in Flood Zone 1 but as the area is greater than 1 ha consultation with the Environment Agency is required with a Flood Risk Assessment (FRA) in line with FRA Guidance Note 1 (see <http://www.pipernetworking.com/floodrisk/fra1.html>).

7.3 Site Preparation, Earthworks, Groundworks and Landscaping

There have been no historical construction activities on the site and no buried obstructions were encountered by this investigation. Excavations of shallow soils should not present difficulty for conventional plant and equipment. However, excavations undertaken during site works were unstable and given the soft and loose nature of the shallow natural soils and the high water table, all excavations should be supported.

It is recommended that no site personnel enter any trenches unless there is adequate support and this has been assessed by a competent person.

Deep excavation will be difficult due to the high water table (as shallow as 0.81m bgl) and trench support (sheet piles) and pumping may be required to undertake excavations greater than 0.8 to 1.0m bgl. Where there is planned excavation below the groundwater table, allowance should be made for trench sheeting and catering for groundwater inflows and surface water run-off. Groundwater levels may vary from those at the time of the investigation, for example in response to seasonal fluctuations.

Topsoil and unsuitable Made Ground should be removed from beneath all building and hard standing areas.

Spoil resulting from excavations within the Made Ground will not be suitable for reuse as engineered fill and may either be used for landscaping (subject to the necessary approvals/consents) or disposed of off-site.

It is noted that concentrations of carbon dioxide (an asphyxiant) exceed HSE recommendations for personnel in the working environment of 0.5% for 8 hours exposure. Where entry to trenches is unavoidable, gas monitoring should be undertaken and entry

should be made if safe to do so. In addition entry should be restricted to the absolute minimum time necessary depending on the monitoring and assessment by a competent person.

7.4 Foundations

The proposed development is to comprise standard 2/3 storey residential dwellings. The preliminary foundation designs in this section are based on the parameters given in Section 5.2 and follow the NHBC Standards 2101 Chapter 4.2.

In response to the ground conditions that have been identified at the site (between 0.5m and 1.2m of Made Ground, overlying variable (soft and loose to firm and medium dense) sands and clays), it is considered that a raft or piled foundation solution is likely to be appropriate.

A foundation options assessment for the site is presented in Table 7.1.

Table 7.1: Foundation Options Assessment

Foundation Type	Rationale	Appropriateness	Comments
Strip / Trench Fill	Would need to be emplaced on firm to stiff clays or medium dense sands and gravels. Whilst medium dense sands are present at shallow depth in part of the site, this is sporadic and interspersed with loose sands and soft clays. Differential settlement would be likely. There would also be construction difficulties as minimum foundation depth of 0.9m bgl places foundations below the water table in places.	Not suitable for this site	Unsuitable due to: - the elevated water table; - the presence of soft and loose soils with potential for differential settlement.
Raft Foundations	Found on shallow clays of the Head Deposits or sands of the River Terrace Deposits. May be construction difficulties with regards to the depth of groundwater. Can only be used subject to detailed settlement calculations.	Suitable, with some construction difficulties	Would need CPT testing and detailed settlement calculations to confirm able to be used.
Piles	Would need to be emplaced through the soft clays and loose sands into the medium dense and dense sands and gravels (possibly cemented in places).	Suitable	
Vibro Stone Columns (VSC)	Would need to be emplaced through the soft clays and loose sands onto medium dense sands and gravels. Whilst medium dense sands are present at shallow depth in part of the site, this is sporadic and interspersed with loose sands and soft clays. There may be difficulties emplacing vibroflot, or obtaining sufficient embedment.	Not suitable for this site	Unsuitable due to the sporadic and interspersed nature of denser sands and gravels with loose sands and soft clays.
Vibro Concrete Columns (VCC)		Not suitable for this site	

7.4.1 Raft Foundations

Raft foundations can be used to reduce the settlement risks where total and differential predicted settlements are not excessive. They should be designed to bridge across areas where loss of support could occur. Raft foundations should be designed by an engineer and constructed in accordance with the recommendations of the NHBC Standards. The NHBC should be consulted at an early stage if raft foundations are considered.

For a raft size of 8m by 8m a design allowable bearing pressure of 50kN/m² is recommended in order to limit the estimated total consolidation settlement to less than 25mm.

An optimum founding depth of 0.9m bgl or 0.1m into natural soil is recommended.

An engineered granular infill will be required beneath the raft foundations where they are located within the zone of influence of existing or proposed trees.

The infill should not be less than 50% of the foundation depth derived in accordance with NHBC Standards Chapter 4.2 and should not exceed 1.25m thick.

An engineering Method Statement and Specification will be required if rafts are to be used.

7.4.2 Piled Foundations

In the light of the presence of variable soft clays and loose silts and sands with pockets of dense sand cemented sand and a high water table, Hydrock believe piled foundations are the most appropriate foundation solution for the site.

The piles should be designed to penetrate into the medium dense to dense sands of the Bognor Sand Member. Piles should be installed through the Made Ground and the loose sands into the medium dense and dense sands at depths of between 4 and 5m bgl.

Either bored and cast in situ CFA (continuous flight auger) piles, or driven preformed piling techniques are considered suitable for the ground conditions at the site. Care should be taken for bored and cast in situ piles taken through the loose sands where collapse of the pile shaft or running sand conditions could lead to 'necking' of the pile.

A specialist piling contractor should be consulted for selection of appropriate piling method. An assessment should be made if driven piles are considered, as these may be subject to excessive noise or vibration which may be unacceptable to neighbouring properties.

Preliminary calculations suggest that 8m piles (450mm diameter) would be appropriate, subject to confirmation by a specialist contractor.

It is possible that hard bands may be encountered between 2.5m bgl and 4.0m bgl. Piling technique chosen will need to be capable of penetrating these hard bands.

Appropriate partial factors of safety should be applied in accordance with BSEN1997 Part 1 when calculating the allowable working loads of piles. However, for the above assessment, due to the uncertainties of pile layout and applied loads, a global factor of safety of 3.0 has been applied.

A risk assessment may be necessary if there is perceived to be a possibility that piles could lead to creation of new pathways for migration of contamination.

7.5 Ground Floor Slabs

In accordance with NHBC Standards, as there is greater than 600mm of Made Ground present at the site, fully suspended ground floor slabs should be used.

Ground floor slabs should be designed to incorporate any gas mitigation measures that may be required as discussed within the previous sections of this report.

7.6 Roads

A CBR of 5% should be used for preliminary design, subject to proof rolling of the upper poor quality soils and removal of soft spots.

Proof rolling of the formation level will be required and any loose or soft spots to be removed and replaced with an engineered fill, in accordance with a suitable Specification. The formation level will also need to be protected during inclement weather from deterioration; all slopes shall be trimmed to falls to shed rain water and the surface sealed to limit infiltration.

Prior to the placement of the founding materials and the construction of the road pavement, the sub-formation and formation will need to be inspected and checked in accordance with a suitable Specification to ensure the ground conditions are as expected. All testing should be carried out in accordance with DMRB IAN 73/06 and confirm that the ground conditions at time of construction are consistent with the previous design parameters.

Where the CBR is found to be less than 2.5%, the sub-grade may be unsuitable for both the trafficking of site plant and as support for a permanent foundation, without improvement works being undertaken. Where this is identified on site, this should be carried out in accordance with DMRB IAN 73/06 Rev 1 Chapter 5. In summary, consideration may be given to the following potential remedial techniques:

- excavation and re-engineering or replacement of weaker soils; or
- the inclusion of geosynthetic reinforcement within the unbound layers of the capping and sub-grade.

7.7 Soakaways and Drainage

Infiltration rates for the ground investigation are presented in Appendix F and are summarised in Section 5.

The soils are permeable (permeability in the order of 3×10^{-5} m/s) m/s and BRE364 infiltration rate tests indicate an infiltration rate between 7.2×10^{-6} m/s and 4.12×10^{-4} m/s. However, the water table is shallow, monitored at between 0.81 m bgl and 1.17m bgl during March 2011. This will clearly have an impact on the suitability for soakaways and permeable paving.

7.8 Buried Concrete

Buried concrete classification is based on guidelines provided in BRE Special Digest 1.

The results of sulfate concentrations and pH values presented in Section 5.3.1 suggest Design Sulfate Class of DS-1 and ACEC Class of AC-1 for the Made Ground and Bognor Sand Member (up to 10m bgl) and DS3 and AC3 for the London Clay (>10m bgl).

This equates to Designated Concrete class DC-1 for the Made Ground and Bognor Sand Member and DC-3 for the London Clay (>10m bgl), for a 50 year design life (see BS 8500-1 for details).

7.9 Working Platform for Tracked Plant

The working platform for the tracked piling plant should be designed in accordance with BR470 (BRE 2004). Hydrock can assist in the design if required.

7.10 Party Wall Issues

The site is located to the north of existing residential properties, to the south of a railway line, to the west of playing fields and to the east of New Road. The neighbouring properties to the north, south and east are set 1.0 to 1.5m above the site.

Excavations in close proximity of neighbouring land or structures must not undermine the existing foundations or cause potential instability of land and temporary support may be required for existing walls or on site excavations depending on final development proposals and site works.

Appropriate discussions and approval must be sought from network rail with regards to the railway line.

It is advised that the relevant authority is contacted with regards to potential party wall issues at an early stage.

8.0 GEO-ENVIRONMENTAL CONCLUSIONS AND RECOMMENDATIONS

8.1 Human Health

The soils at the site do not present a risk to human health and shallow soils can be re-used on site.

8.2 Controlled Waters

The soils at the site do not present a risk to Controlled Waters.

8.3 Plant Life

The soils at the site do not present a risk to plant life and shallow soils can be re-used on site.

8.4 Water Pipelines

The current guidance on selection of materials for water supply pipes to be laid in contaminated land is contained in WRAS guidance note 9-04-03 (October 2002) which sets out in Table 1 of that document threshold levels for a selection of contaminants based on a previous (1994) document.

UKWIR Report 10/WM/03/02 (2010) recommends a mandatory analytical suite in its Table G1 comprising five groups of substances as follows: extended VOC suite, extended SVOC suite, mineral oil C11-C20, mineral oil C21-C40 and corrosive suite. A sixth group, amines, is recommended on a site-specific basis.

The UKWIR document contains a number of technical errors and inconsistencies and to date has not been universally accepted. For example, it requires a desk study, but then gives a mandatory list of determinands that would negate the need for a desk study. The analyses required for all the determinands listed would involve a great many laboratory techniques; many are not routine. The cost would be significant and so these suites have not been analysed as part of this report.

Some water suppliers (e.g. Anglian, United Utilities, Wessex and Yorkshire) specify their own soil threshold concentrations and material design requirements; however these are currently not nationally recognised. The Association of Geotechnical and Geoenvironmental Specialists (AGS, 9 July 2009) has stated that the current guidance is out of date and should be withdrawn and that the internal guidance adopted by water companies is inconsistent in some respects.

However, in accordance with the WRAS information and guidance note 9-04-03, and with respect to the analyses undertaken for this report, the following are noted.

- Whilst arsenic is in excess of the WRAS guideline values, this should not affect pipe material selection as the guideline values was originally intended to protect workers. However, this is covered by health and safety legislation and is now redundant.
- There are no organic substances in excess of the respective WRAS trigger values.

- Care should be taken to avoid corrosion through galvanic action between different metallic materials. Pipe materials used for systems that will be adopted by the water supplier must be listed in the WRAS Water Fittings and Materials Directory and approved under Regulation 25 of the Water Supply (Water Quality) Regulations.

In view of the lack of clear and unambiguous guidance it is **strongly recommended** that site-specific approval of the materials for underground pipes to be used for water supply be obtained from the water company that will be supplying this site and/or adopting the pipework.

8.5 Precautions Against Ground Gases

8.5.1 Radon

Current advice based on the BR 211 Report states that basic radon protection is required for new dwellings at this location.

8.5.2 Landfill Gases

The ground gas readings and gas regime conceptual model derived from the current works are considered to be sufficiently rigorous to assess the scope of protection measures in accordance with CIRIA Report C665 (Wilson *et al* (2007)).

The ground gas readings derived from the current works are not sufficiently comprehensive to provide a full understanding of the ground gas regime. The data to date puts the site in Green (no special precautions required), however, monitoring is ongoing.

Planning Policy Statement 23 (DCLG November 2004) requires that a site should be incapable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990. This includes the potential for off-site migration of ground gases that may impact adjacent properties. Consequently, it may be necessary to consider the imposition of measures to protect adjacent, off-site receptors. In this case the site does not pose a risk to adjacent sites with regards to ground gas.

8.6 Unexploded Ordnance

An initial screening indicates the site to be in an area where the available records of aerial bombing are interpreted by Zetica as very low bomb risk and this suggests no further consideration of UXO is required.

8.7 Waste Management

Any material excavated on site may be classified as waste and it is the responsibility of the holder of a material to form their own view on whether or not it is waste. This includes determining when waste that has been treated in some way can cease to be classed as waste for a particular purpose.

One of the ways this can be achieved is set out in the Development Industry Code of Practice (CoP) (CL:AIRE, September 2008, update anticipated in 2010).

The handling, re-use or disposal of waste is regulated by the Environment Agency. The Agency will take into account the use of the CoP in deciding whether to regulate materials as waste. If materials are dealt with in accordance with the CoP, the Agency considers that those materials are unlikely to be waste at the point when they are to be used for the purpose of land development. This may be because the materials were never discarded in the first place, or because they have been submitted to a recovery operation and have been completely recovered so that they have ceased to be waste.

Further details of the CoP and the classification of waste are presented in Appendix J.

9.0 UNCERTAINTIES AND LIMITATIONS

This report details the findings of work carried out in February and March 2011. The report has been prepared by Hydrock on the basis of available information obtained during the study period. Although every reasonable effort has been made to gather all relevant information, all potential environmental constraints or liabilities associated with the site may not have been revealed.

The report has been prepared for the exclusive benefit of Bloor Homes and those parties designated by them for the purpose of providing geotechnical and geo-environmental recommendations for the site. The report contents should only be used in that context. Furthermore, new information, changed practices or new legislation may necessitate revised interpretation of the report after the date of its submission.

Hydrock has used reasonable skill, care and diligence in the design of the investigation of the site. The inherent variation of ground conditions allows only definition of the actual conditions at the locations and depths of trial pits and boreholes at the time of the investigation. At intermediate locations, conditions can only be inferred. Groundwater findings described are only representative of the dates on which they were made and levels may vary. Information provided by third parties has been used in good faith and is taken at face value; however Hydrock cannot guarantee its accuracy or completeness.

Different chemical testing laboratories may use different preparation and analytical methods that may lead to variation in the results quoted (for example, removing larger particles or crushing them and including them). In some instances a compromise is required, such as when minimum preparation is preferred so as to minimise loss of volatiles. Unless otherwise stated, Hydrock has not specified particular methodologies, but has relied on the standard procedures developed by the laboratory. Note that differences may be more evident in cases where data from more than one laboratory has been used in the assessment.

The work has been carried out in general accordance with recognised best practice as detailed in guidance documents such as PPS23, the CLR 11 Model Procedures (Environment Agency 2004), BS5930:1999 and BS10175:2001. Important aspects of the risk assessment process are transparency and justification.

Unless otherwise stated, no assessment has been made for the presence of radioactive substances or unexploded ordnance.

Where the phrase “suitable for use” is used in this report, it is in keeping with the terminology used in PPS23, Paragraph 25 with respect to one of the aims of planning policy and does not imply any specific warranty or guarantee offered by Hydrock.

The chemical analyses reported were scheduled for the purposes of risk assessment with respect to human health, plant life, ecosystems and controlled waters as discussed in the report. Whilst the results may be useful in applying the Hazardous Waste Assessment Methodology given in Environment Agency Technical Guidance WM2, they are not primarily intended for that purpose and additional analysis may be required should waste classification be required for consideration of off-site disposal of contaminated soils. Separate analyses will be required to meet the Waste Acceptance Criteria for specific landfill sites.

Unless otherwise stated, the chemical testing carried out for this report was not scoped to comply with the requirements of the water supply company and further work may be required.

The preliminary risk assessment process may identify potential risks to site demolition and redevelopment workers (see Table 3.2). However, consideration of occupational health and safety issues is beyond the scope of this report.

Please note that notwithstanding any site observations concerning the presence or otherwise of archaeological sites, asbestos-containing materials or invasive weeds such as Japanese knotweed, this report does not constitute a formal survey of these potential hazards.

Any site boundary line depicted on plans does not imply legal ownership of land.

The eastern section of the site could not be accessed due to vegetation.

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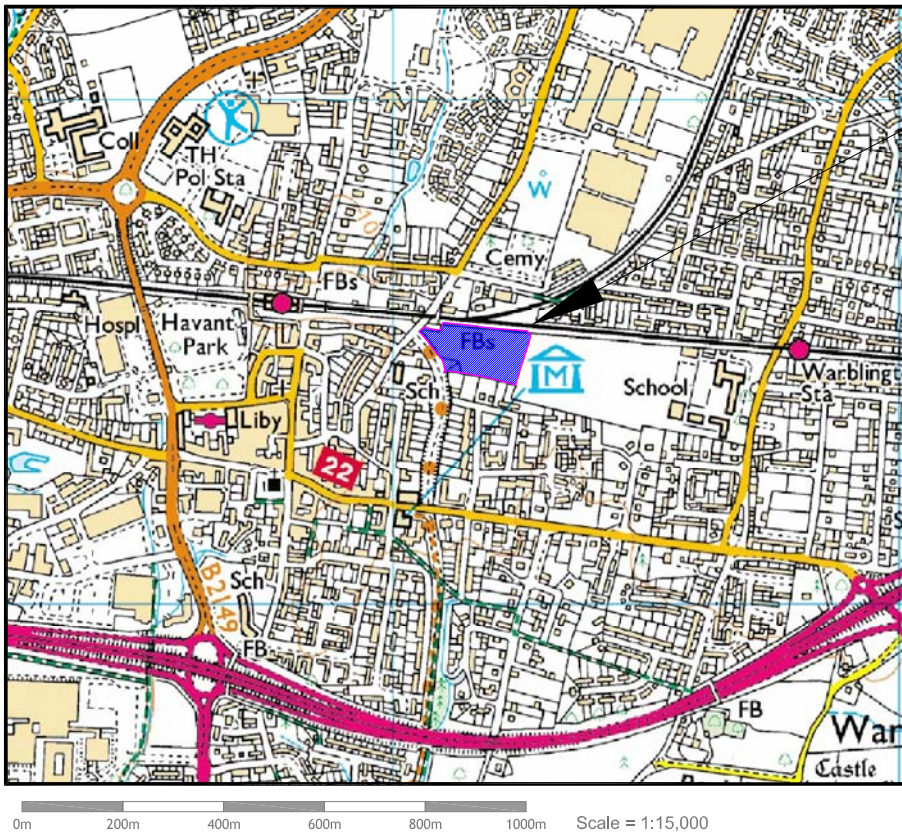
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Appendix A

PLANS



THE SITE



THE SITE



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Project

NEW LANE, HAVANT,
HAMPSHIRE

Title

Site Location Plan

Client

BLOOR HOMES

Drawing Status

INFORMATION

Job No.

C/11051

Drawn

CV

Checked

AB

Scale at A4

AS SHOWN

Date

23/03/11

Issue Date

23/03/11

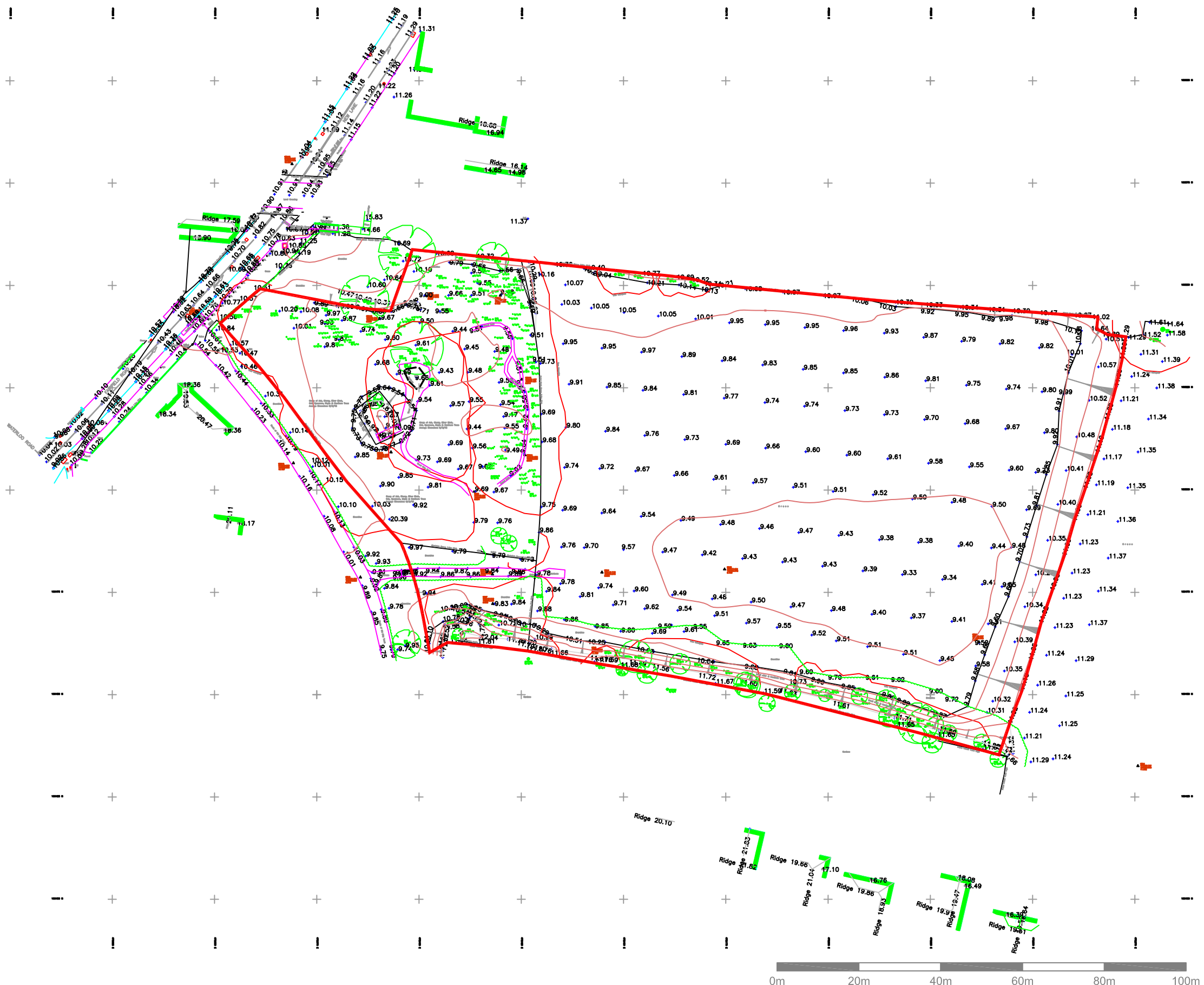
Drawing No.

C11051/D001

Revision

-

Hydrock
Unit 3, Hawthorn Park
Holdenby Road
Spratton
Northampton NN6 8LD
TEL: 01604 842 888
FAX: 01604 842 666
E-Mail: northampton@hydrock.com
or visit www.hydrock.com



Notes:

1. This drawing has been produced using a survey supplied by the client.

Legend

— Approximate Site Boundary

Rev	Date	Description	Ckd	By
-----	------	-------------	-----	----

Hydrock

Unit 3, Hawthorn Park
Holdenby Road
Spratton
Northampton NN6 8LD
TEL: 01604 842 888
FAX: 01604 842 886
E-Mail: northampton@hydrock.com
or visit www.hydrock.com

Client

BLOOR HOMES

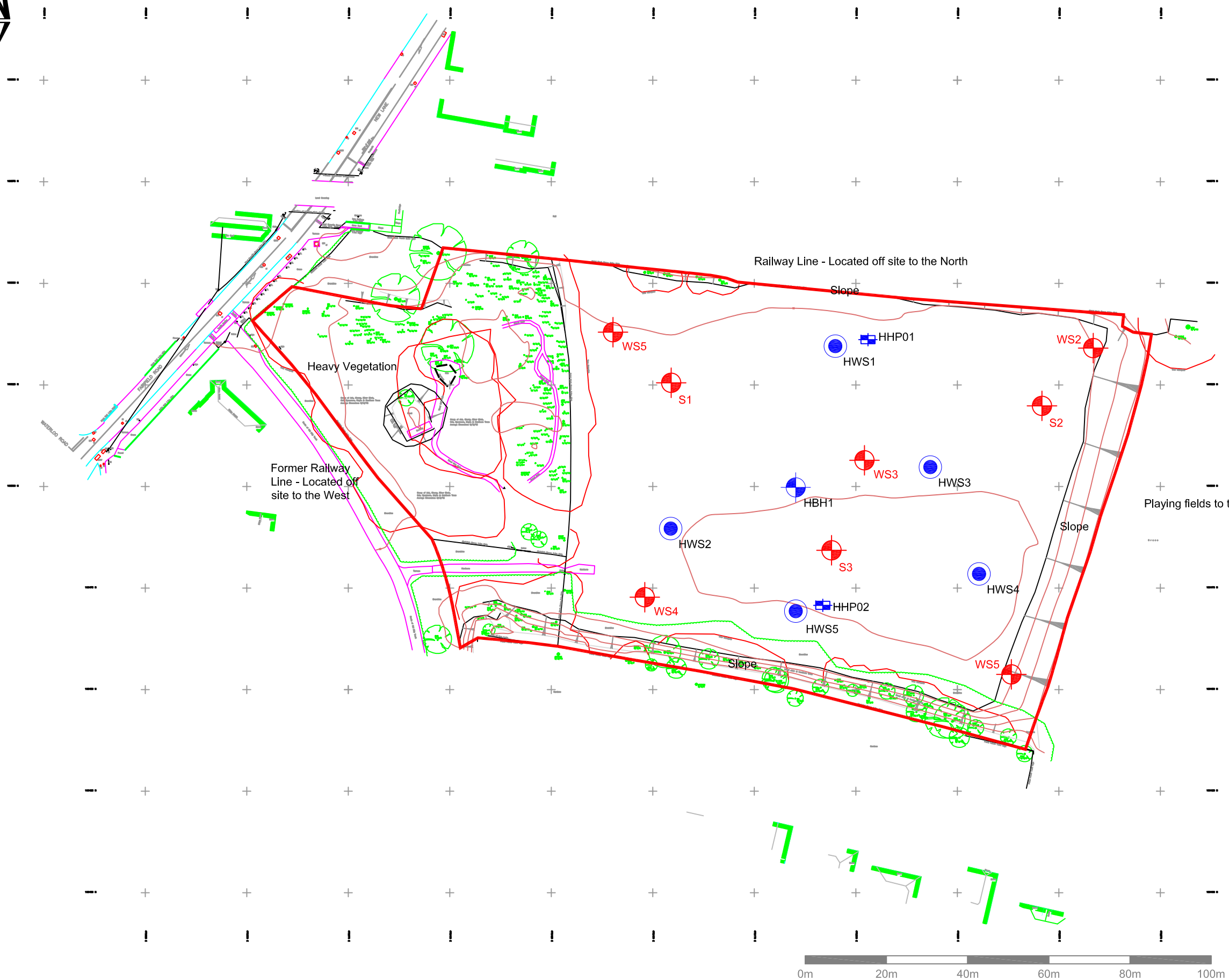
Project

NEW LANE, HAVANT,
HAMPSHIRE

Title

Site Survey Plan

Drawing Status				
INFORMATION				
Job No. C/11051				
Drawn CV	Checked AB	Scale at A3 1:1000	Date 23/03/11	Issue Date 23/03/11
Drawing No. 11051/D002				Revision -



Notes:

1. This drawing has been produced using a survey supplied by the client.

Legend

- Approximate Site Boundary
- Borehole Location (Hydrock)
- Window Sample Location (Hydrock)
- Window Sample Location (Ashdown)
- Soak away Location (Hydrock)

Rev	Date	Description	Ckd	By
-----	------	-------------	-----	----

Hydrock

Unit 3, Hawthorn Park
Holdenby Road
Spratton
Northampton NN6 8LD
TEL: 01604 842 888
FAX: 01604 842 666
E-Mail: northampton@hydrock.com
or visit www.hydrock.com

Client

BLOOR HOMES

Project

**NEW LANE, HAVANT,
HAMPSHIRE**

Title

Site Zonation Plan

Drawing Status

INFORMATION

Job No.

C/11051

Drawn	Checked	Scale at A3	Date	Issue Date
CV	AB	1:1000	23/03/11	23/03/11

Drawing No.	Revision
11051/D004	-

Appendix B

PHOTOGRAPHS



Figure 1: Aerial Photograph of the Site



Figure 2: Site Entrance from new Street

Appendix C

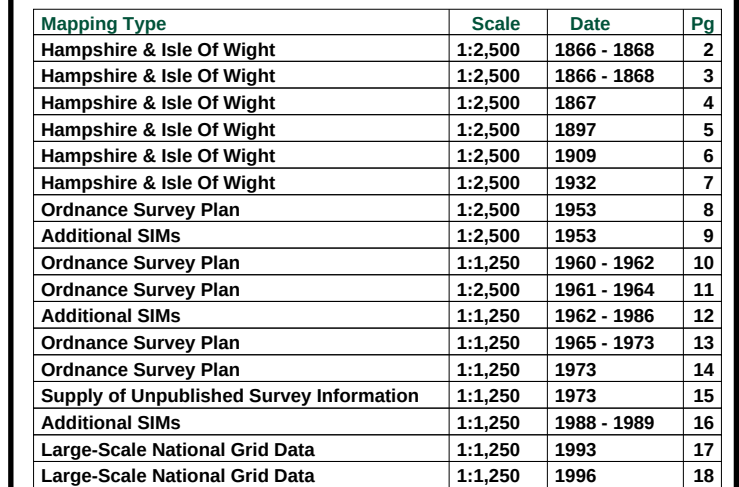
HISTORICAL ORDNANCE SURVEY MAPS

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

	Quarry		Gravel Pit		Sand Pit
	Clay Pit		Shingle		Refuse Heap
	Sloping Masonry		Flat Rock		
	Marsh		Reeds		Osiers
	Rough Pasture		Furze		Wood
	Mixed Wood		Brushwood		Orchard
	Fir		Ford		Stepping Stones
	Ferry		Waterfall		Lock
	Trig. Station	507		Altitude at Trig. Station	
B.M. 325.9	Bench Mark	342		Surface Level	
	Arrow denotes flow of water		Antiquities (site of)		
	Cutting		Embankment		
	Railway crossing Road		Level Crossing		Road crossing Railway
	Railway crossing River or Canal		Road over single stream		Road over River or Canal
-----	County Boundary (Geographical)				
- . - . - .	County & Civil Parish Boundary				
+ . + . + .	Administrative County & Civil Parish Boundary				
Co. Boro. Bdy.	County Borough Boundary (England)				
Co. Burgh Bdy.	County Burgh Boundary (Scotland)				
B.P.	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	Sl.	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		

	Inactive Quarry, Chalk Pit or Clay Pit		Active Quarry, Chalk Pit or Clay Pit
	Rock		Boulders
	Cliff		Slopes
	Roofed Building		Glazed Roof Building
	Sloping Masonry		Archway
	Non-Coniferous Tree (surveyed)		Coniferous Tree (surveyed)
	Non-Coniferous Trees (not surveyed)		Coniferous Trees (not surveyed)
	Orchard Tree		Scrub
	Coppice, Osier		Reeds
	Rough Grassland		Heath
	Direction of water flow		Bench Mark
	Cave Entrance		Triangulation Station
	Electricity Transmission Line		Antiquity (site of)
	County Boundary (Geographical)		Electricity Pylon
	County & Civil Parish Boundary		Symbol marking point where boundary mereing changes
	Civil Parish Boundary		
	Admin. County or County Bor. Boundary		
	London Borough Boundary		
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
EI 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, W rT	Water Point, Water Tap
MS	Mile Stone	W	Well
NTL	Normal Tidal Limit	Wd Pp	Wind Pump

	Cliff		Slopes		Top
	Rock		Rock (scattered)		Boulders (scattered)
	Boulders		Positioned Boulder		Scree
	Non-Coniferous Tree (surveyed)		Coniferous Tree (surveyed)		Non-Coniferous Trees (not surveyed)
	Non-Coniferous Trees (not surveyed)		Coniferous Trees (not surveyed)		Orchard Tree
	Orchard Tree		Scrub		Bracken
	Coppice, Osier		Reeds		Marsh, Saltings
	Rough Grassland		Heath		Culvert
	Direction of water flow		Triangulation Station		Antiquity (site of)
	Electricity Transmission Line		Electricity Pylon		Bench Mark
	Bench Mark		Buildings with Building Seed		Roofed Building
	Roofed Building		Glazed Roof Building		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		
Dismted 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 Governor	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		



Order Number: 33986877_1_1
Customer Ref: C11051
National Grid Reference: 472170, 106510
Slice: A
Site Area (Ha): 1.74
Search Buffer (m): 100

Southleigh Road, HAVANT, Hampshire, PO9 2RR



Hampshire & Isle Of Wight

Published 1866 - 1868

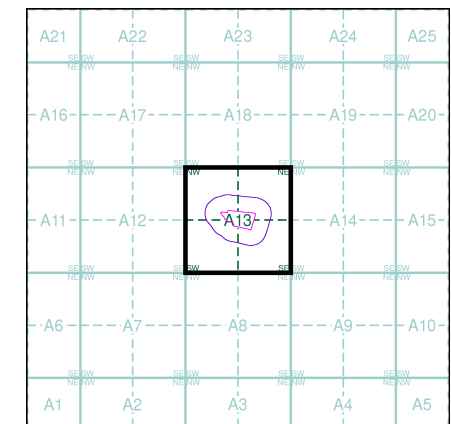
Source map scale - 1:2,500

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

Map Name(s) and Date(s)

076 07
1866
1:2,500
076 11
1868
1:2,500

Historical Map - Segment A13

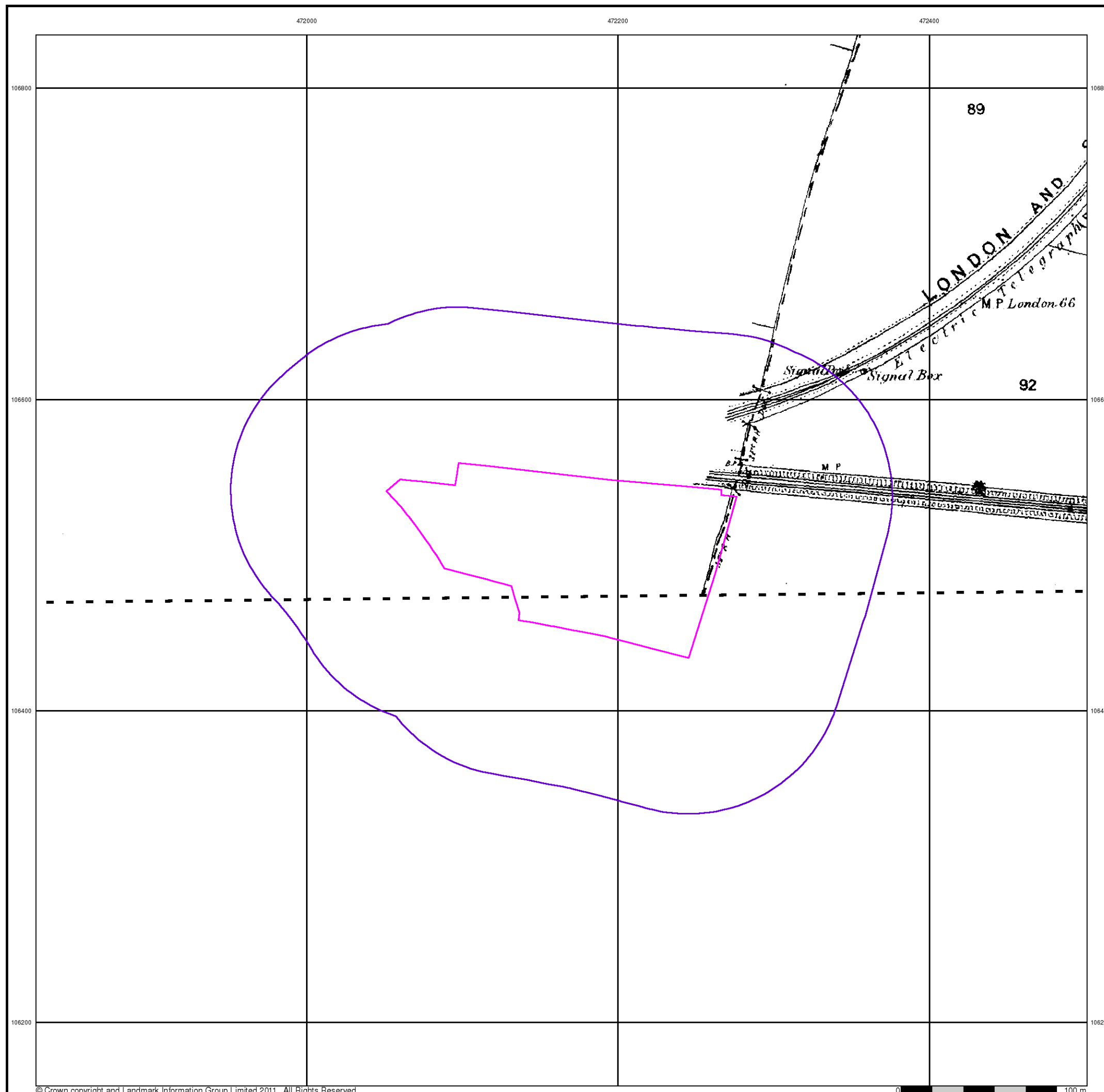


Order Details

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 Customer Ref: C11051
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 Search Buffer (m): 100

Site Details

Southleigh Road, HAVANT, Hampshire, PO9 2RR



Hampshire & Isle Of Wight

Published 1867

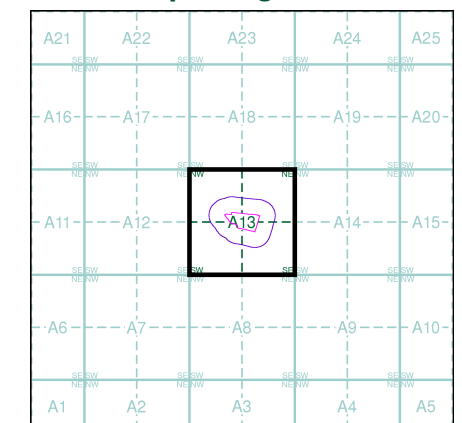
Source map scale - 1:2,500

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)

076 07	1867	12,500
076 11	1867	12,500

Historical Map - Segment A13

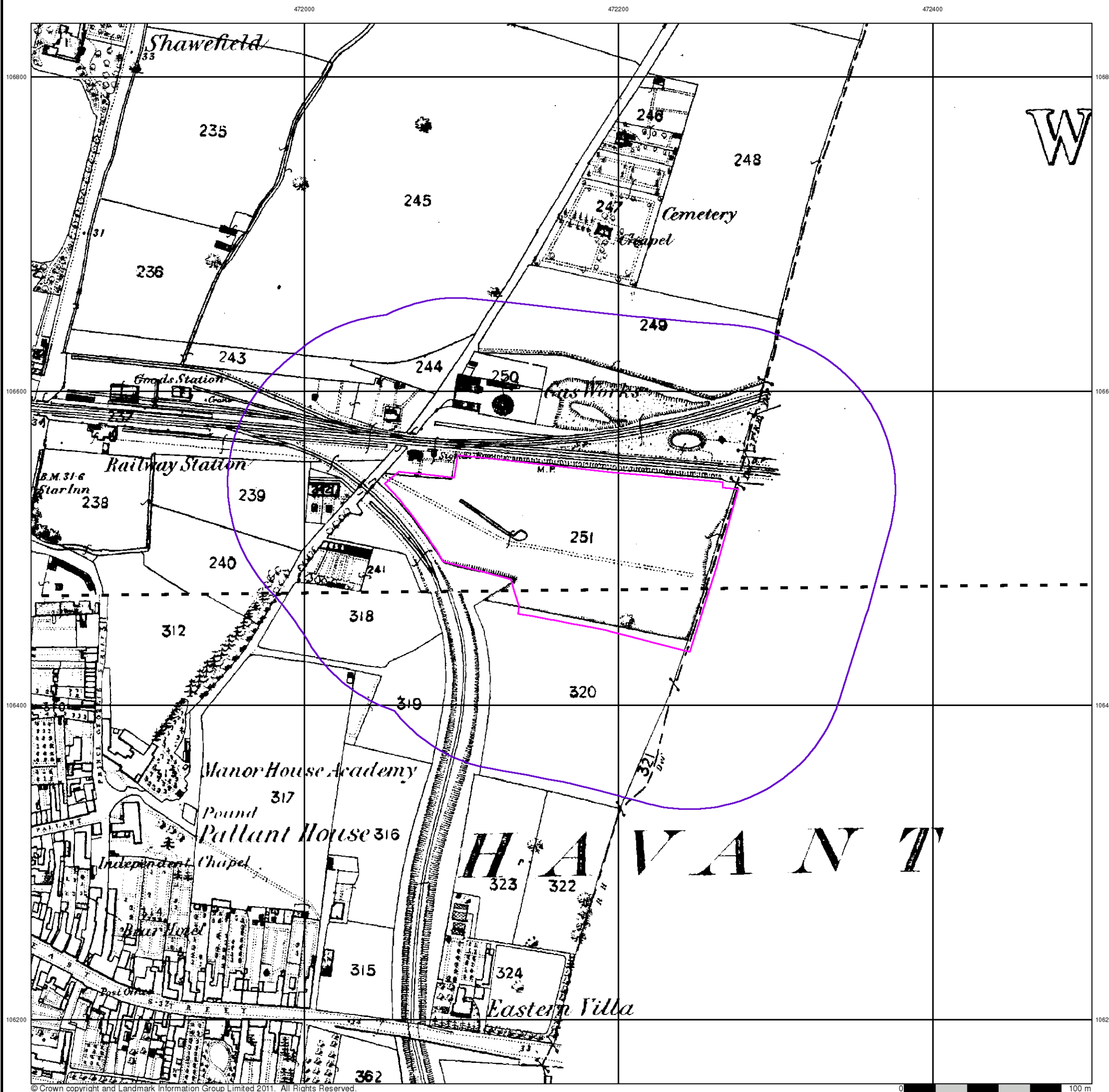


Order Details

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 National Grid Reference: 472170, 106510
 Slice: A
 Site Area (Ha): 1.74
 Search Buffer (m): 100

Site Details

Southleigh Road, HAVANT, Hampshire, PO9 2RR



Hampshire & Isle Of Wight

Published 1909

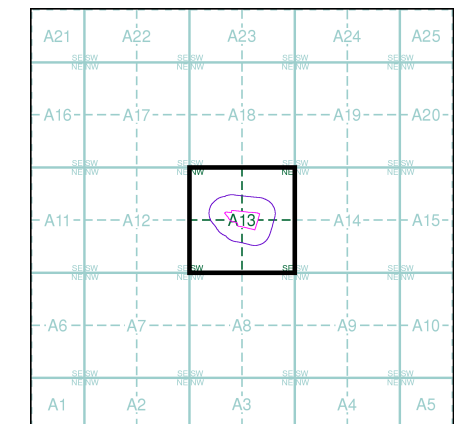
Source map scale - 1:2,500

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)

076_07	1909	12,500
076_11	1909	12,500

Historical Map - Segment A13

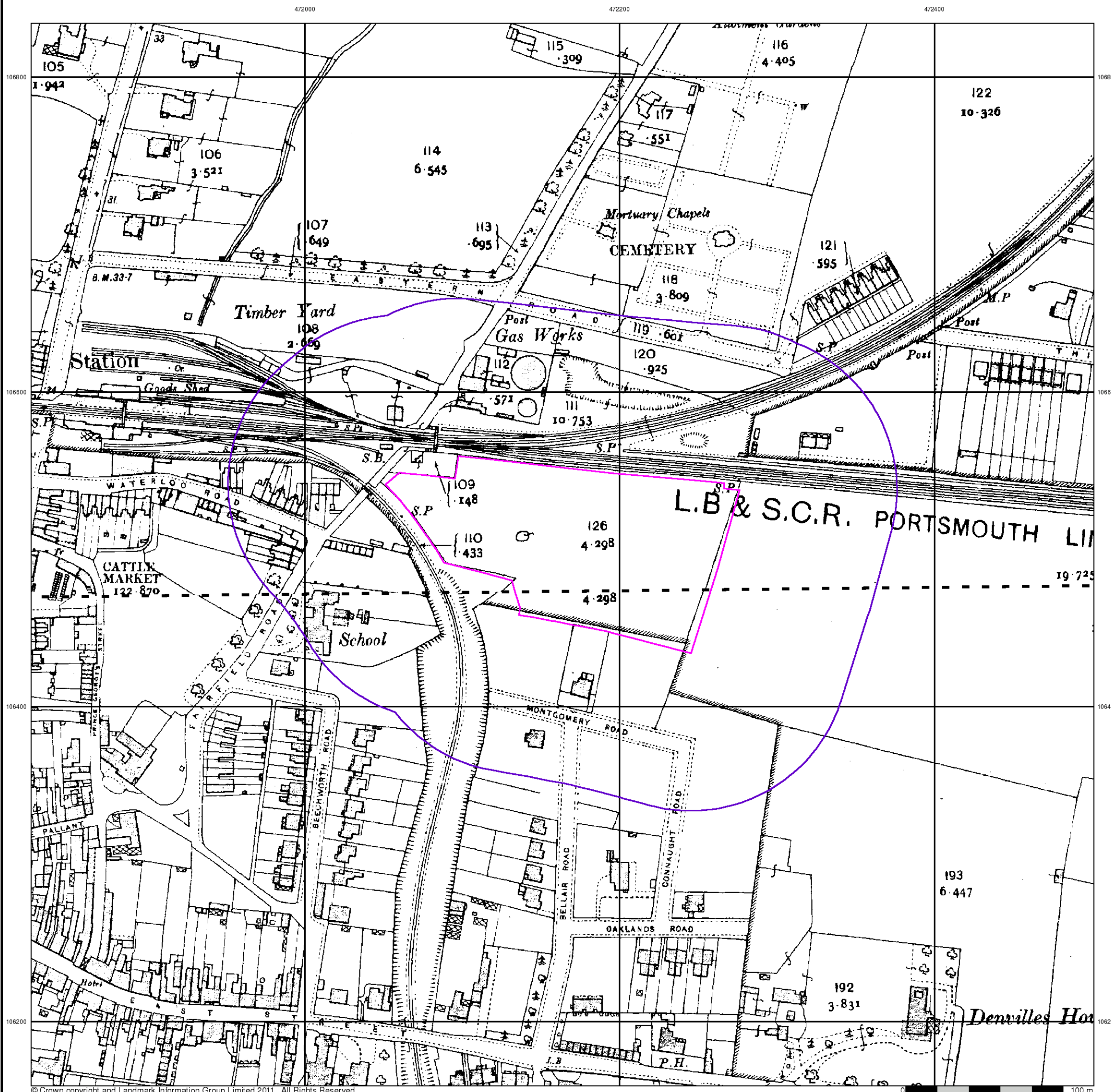


Order Details

Order Number: 33986877_1_1
 Customer Ref: C11051
 National Grid Reference: 472170, 106510
 Slice: A
 Site Area (Ha): 1.74
 Search Buffer (m): 100

Site Details

Southleigh Road, HAVANT, Hampshire, PO9 2RR



Hampshire & Isle Of Wight

Published 1932

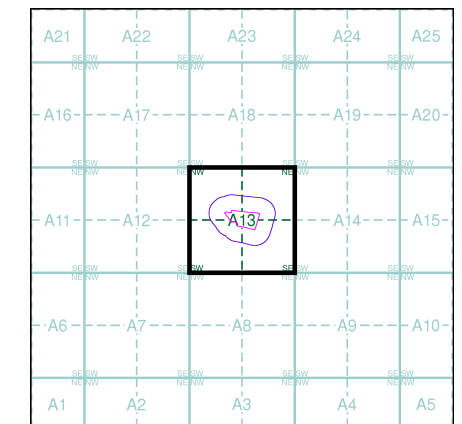
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Map Name(s) and Date(s)

076 07
1932
12,500
076 11
1932
12,500

Historical Map - Segment A13

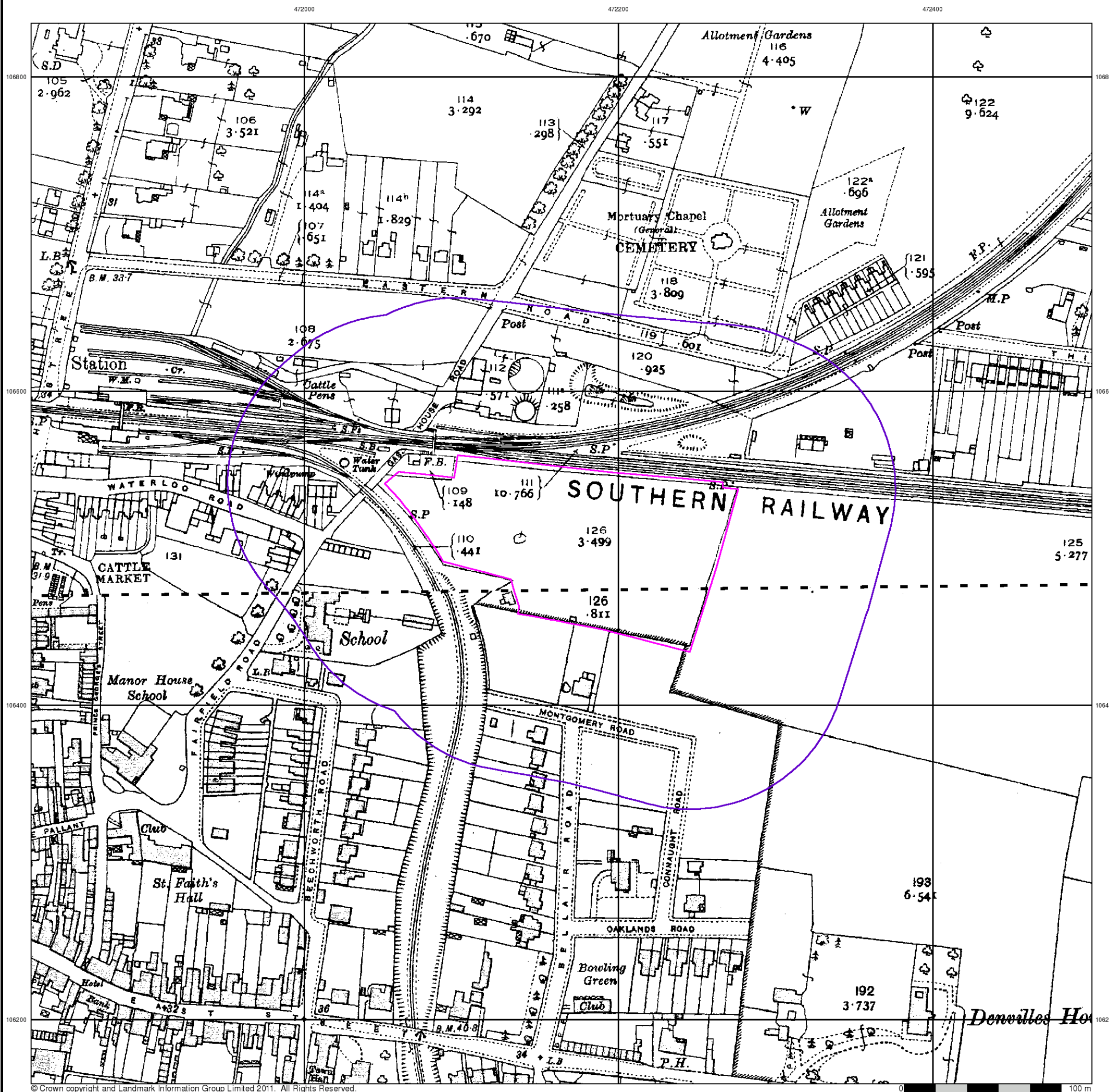


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Site Details

Southleigh Road, HAVANT, Hampshire, PO9 2RR



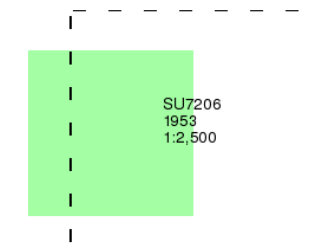
Ordnance Survey Plan

Published 1953

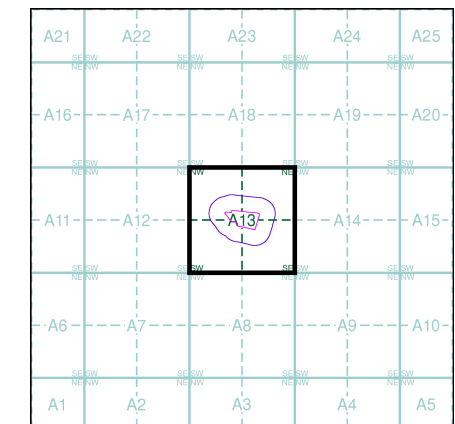
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Map Name(s) and Date(s)



Historical Map - Segment A13

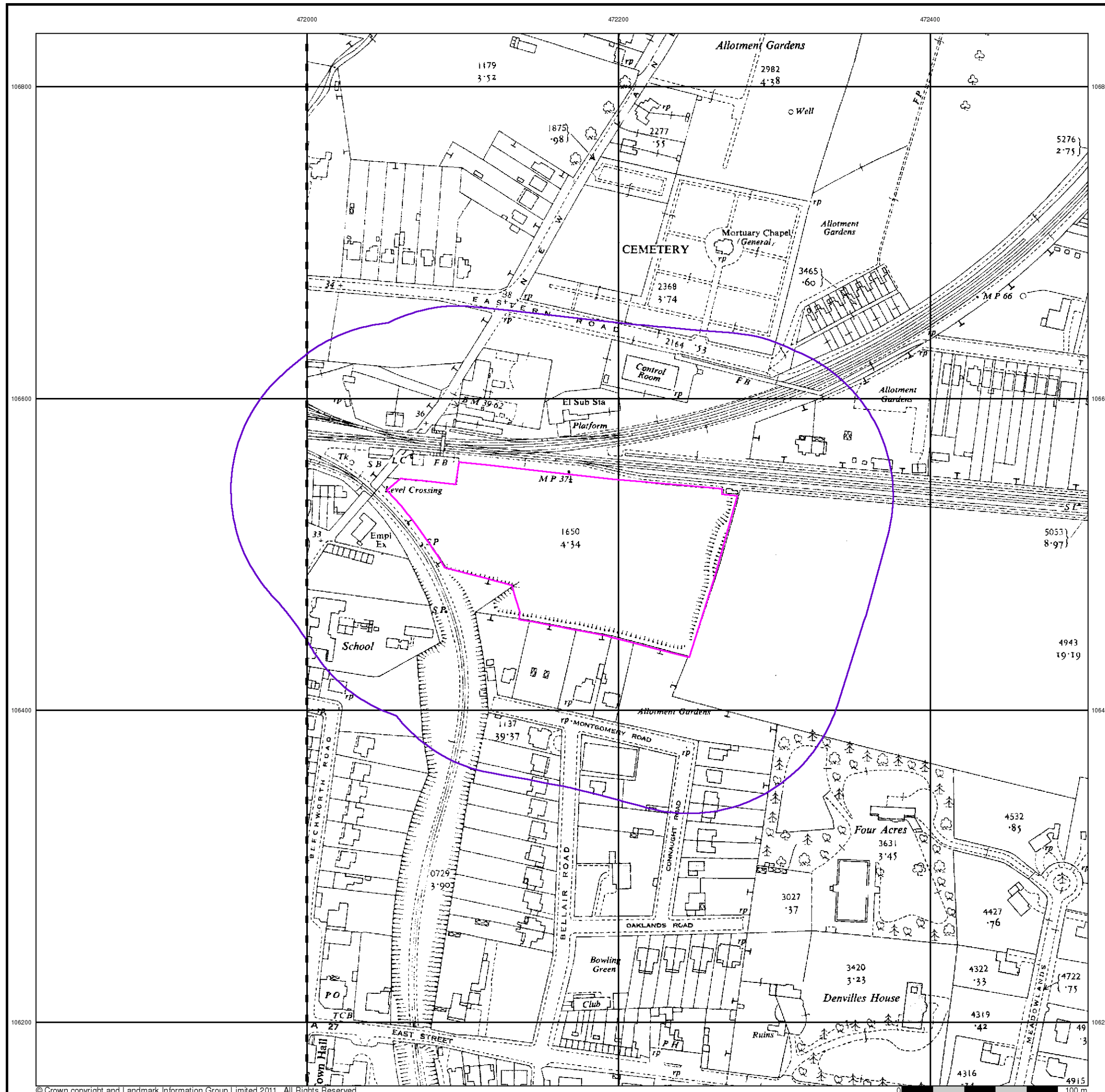


Order Details

Order Number: 33986877_1_1
Customer Ref: C11051
National Grid Reference: 472170, 106510
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Search Buffer (m): 100

Site Details

Southleigh Road, HAVANT, Hampshire, PO9 2RR



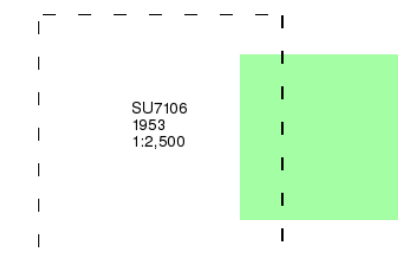
Additional SIMs

Published 1953

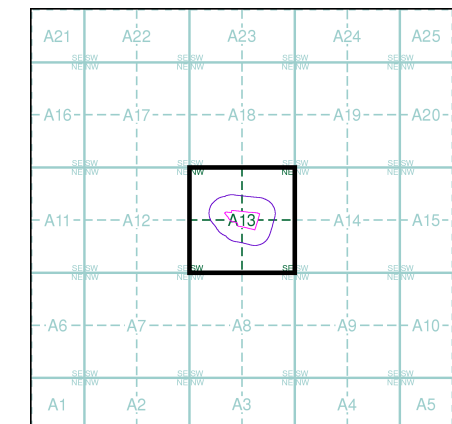
Source map scale - 1:2,500

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

Map Name(s) and Date(s)



Historical Map - Segment A13

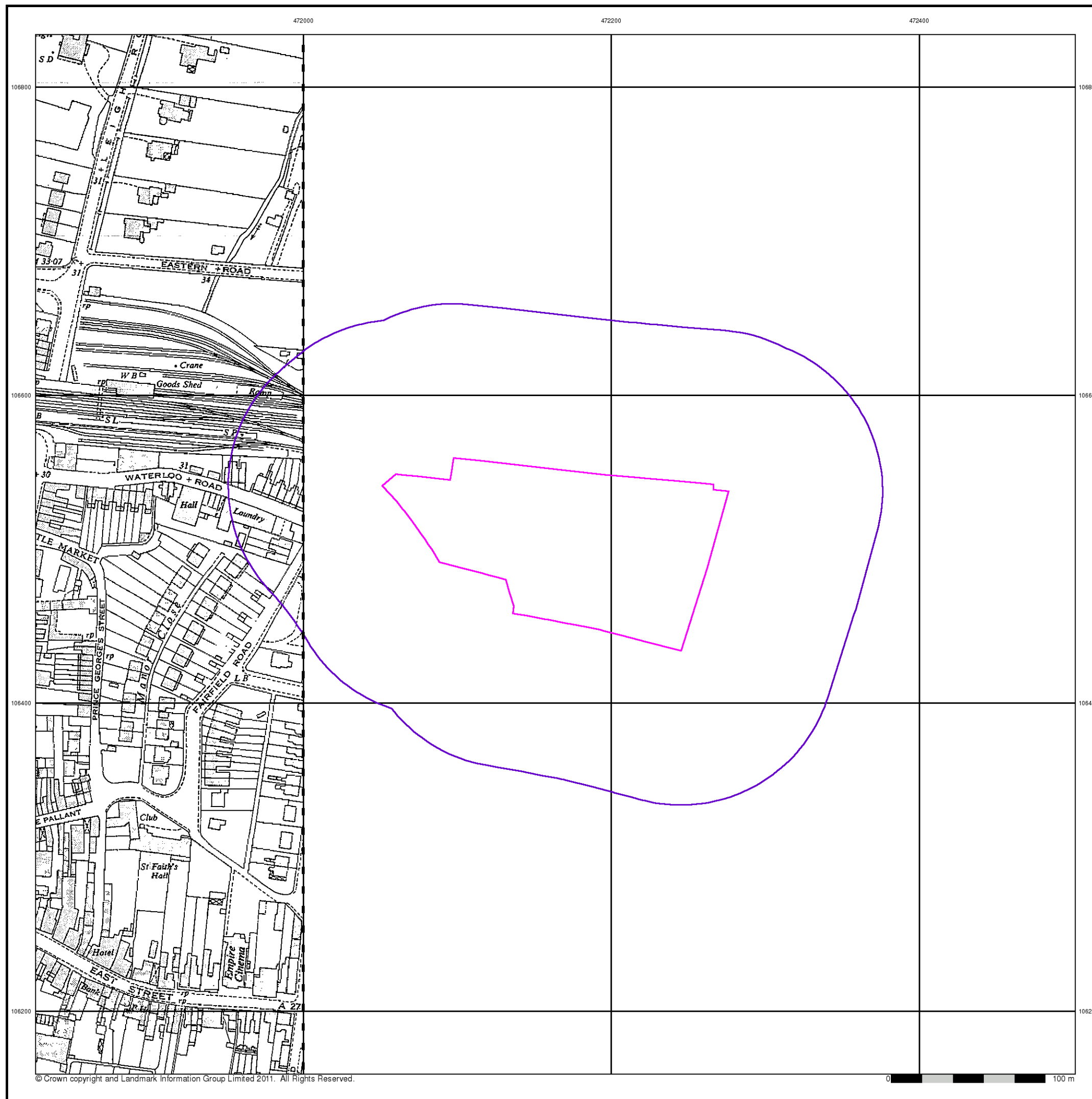


Order Details

Order Number: 33986877_1_1
 Customer Ref: C11051
 National Grid Reference: 472170, 106510
 Slice: A
 Site Area (Ha): 1.74
 Search Buffer (m): 100

Site Details

Southleigh Road, HAVANT, Hampshire, PO9 2RR



Ordnance Survey Plan

Published 1960 - 1962

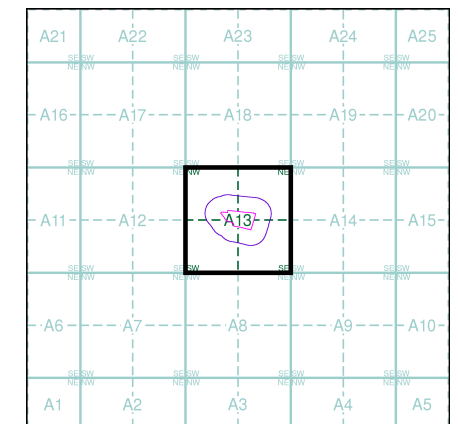
Source map scale - 1:1,250

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Map Name(s) and Date(s)

SU7106NE 1960 1:1,250	SU7206NW 1962 1:1,250	SU7206NE 1962 1:1,250
SU7106SE 1960 1:1,250	SU7206SW 1962 1:1,250	SU7206SE 1962 1:1,250

Historical Map - Segment A13

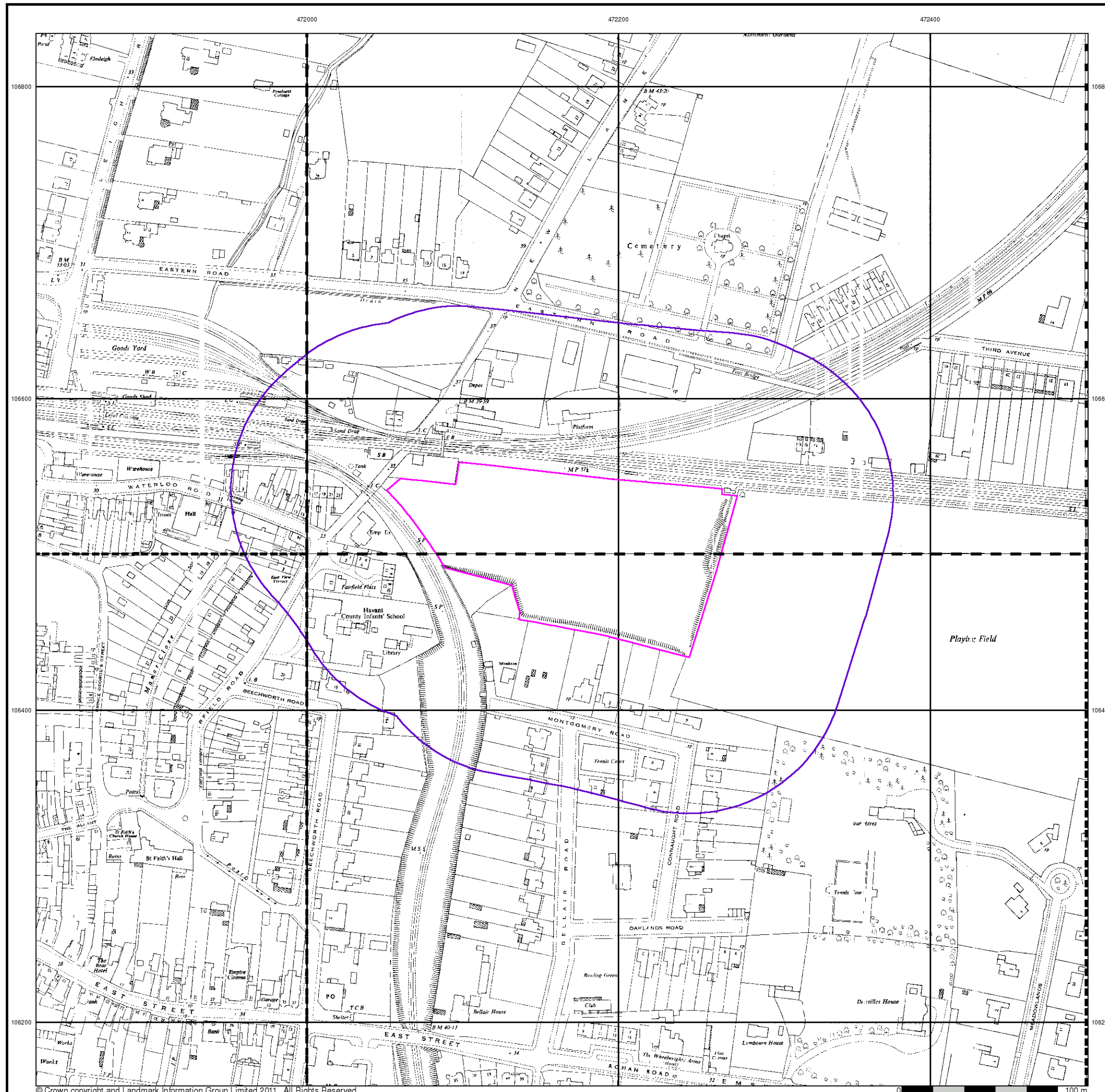


Order Details

Order Number: 33986877_1_1
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 Search Buffer (m): 100

Site Details

Southleigh Road, HAVANT, Hampshire, PO9 2RR



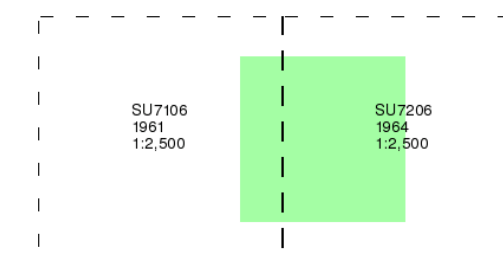
Ordnance Survey Plan

Published 1961 - 1964

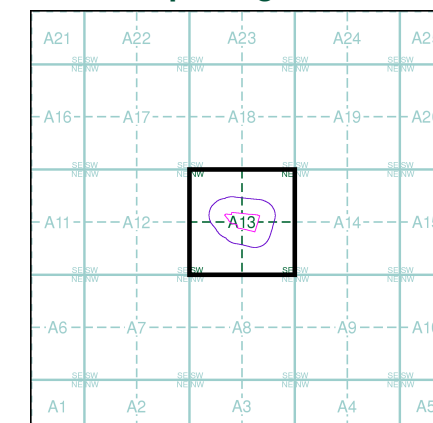
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Map Name(s) and Date(s)



Historical Map - Segment A13

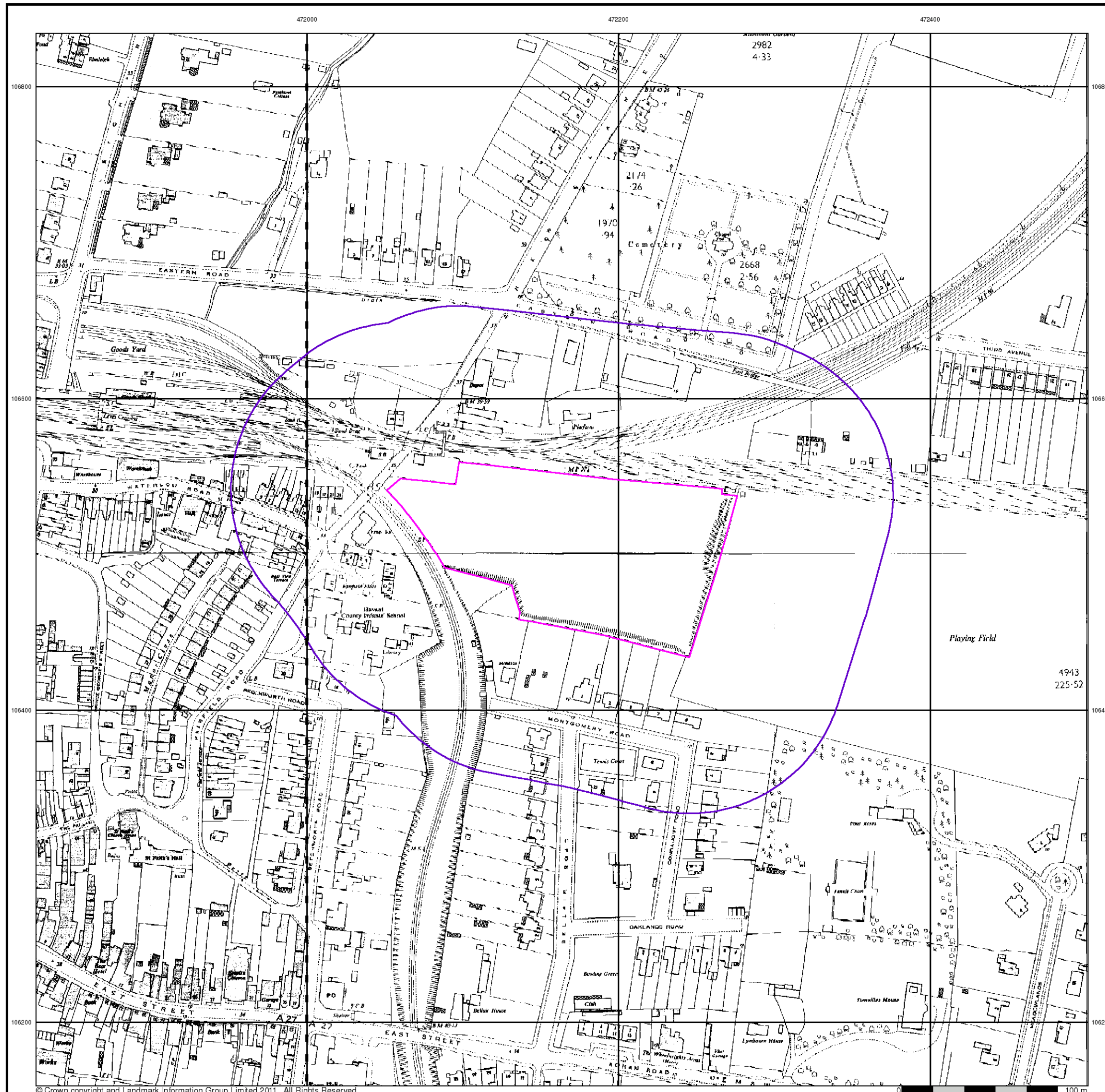


Order Details

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 Search Buffer (m): 100

Site Details

Southleigh Road, HAVANT, Hampshire, PO9 2RR



Additional SIMs

Published 1962 - 1986

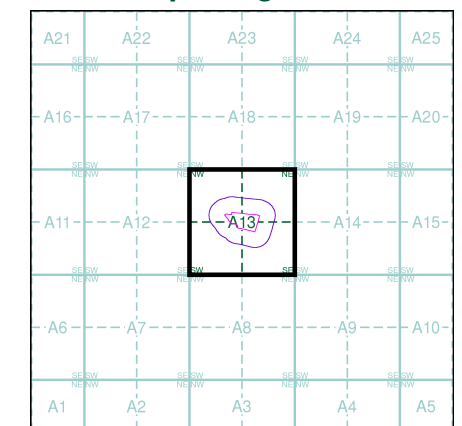
Source map scale - 1:1,250

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)

SU7106NE 1978 1:1,250		SU7206NE 1984 1:1,250
SU7106SE 1981 1:1,250	SU7206SW 1986 1:1,250	SU7206SE 1962 1:1,250

Historical Map - Segment A13

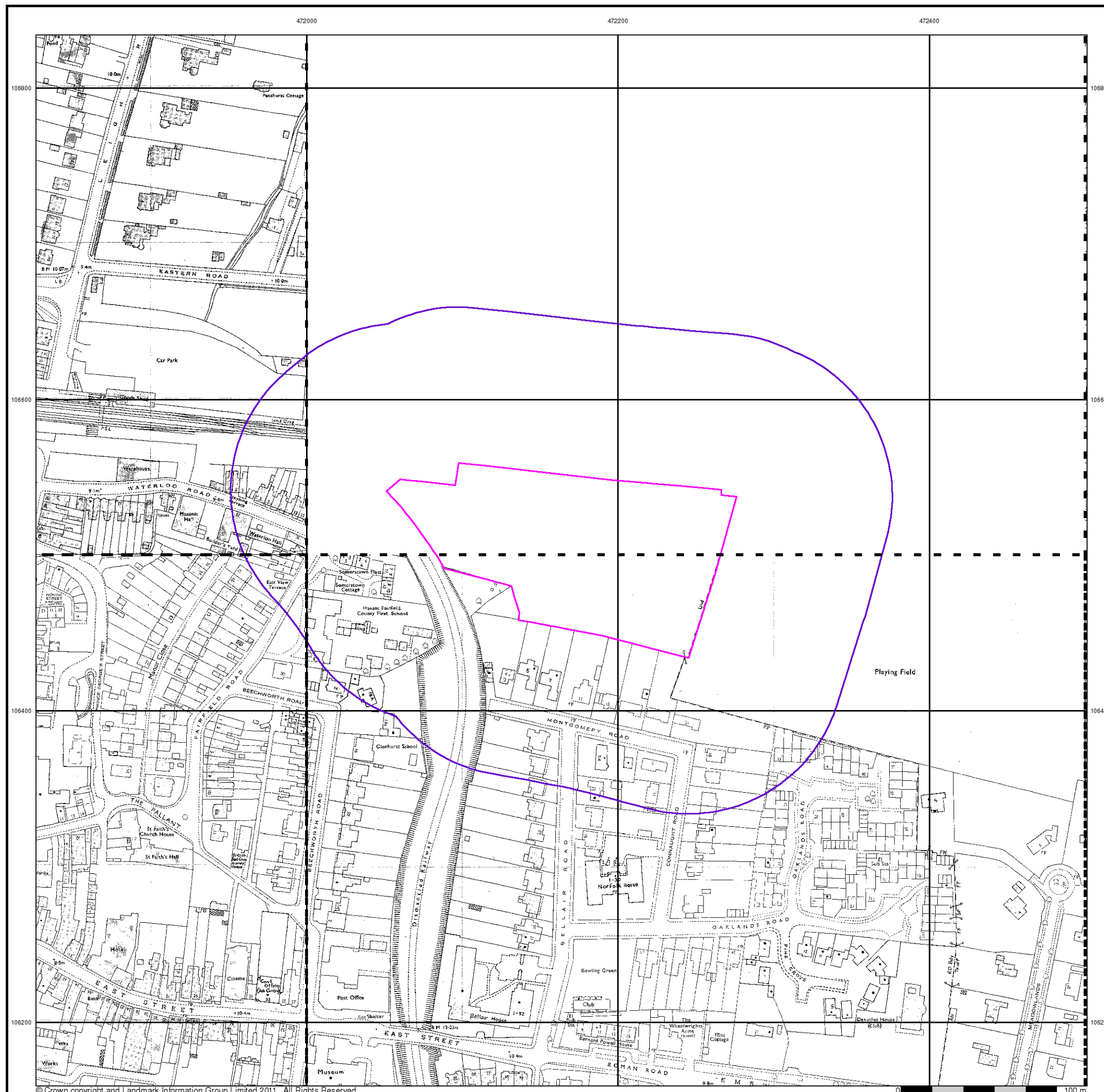


Order Details

Order Number: 33986877_1_1
 Customer Ref: C11051
 National Grid Reference: 472170, 106510
 Slice: A
 Site Area (Ha): 1.74
 Search Buffer (m): 100

Site Details

Southleigh Road, HAVANT, Hampshire, PO9 2RR



Ordnance Survey Plan

Published 1965 - 1973

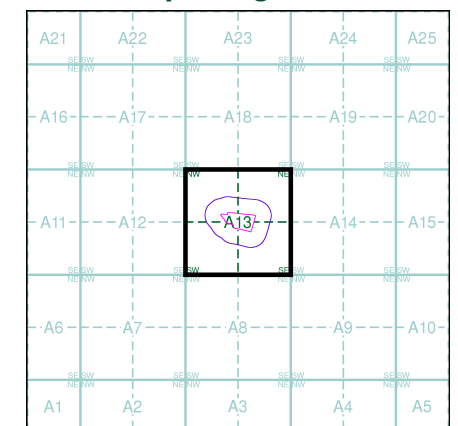
Source map scale - 1:1,250

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)

SU7106NE 1971 1:1,250	SU7206NW 1973 1:1,250	SU7206NE 1971 1:1,250
SU7106SE 1965 1:1,250	SU7206SW 1971 1:1,250	SU7206SE 1971 1:1,250

Historical Map - Segment A13

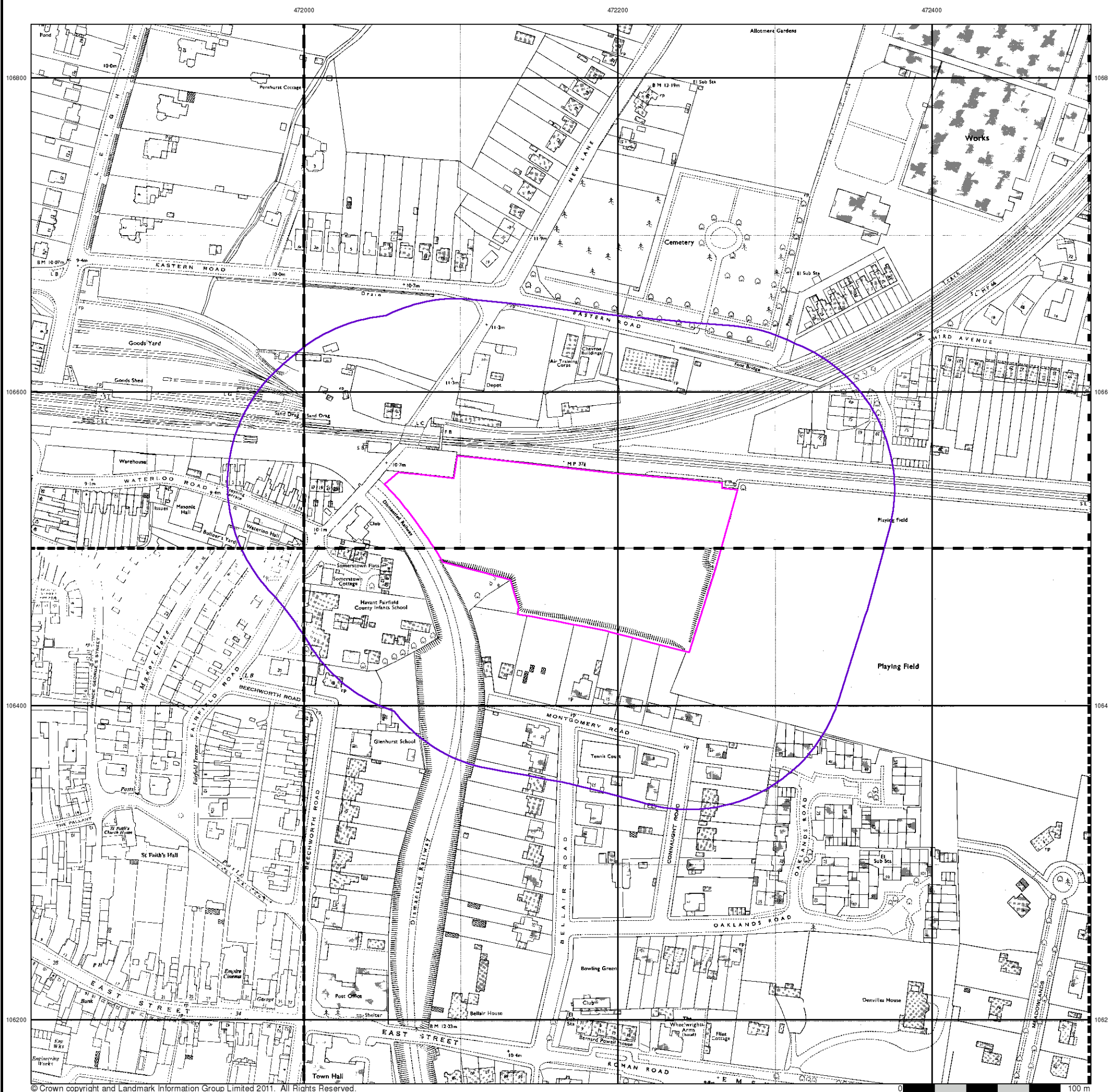


Order Details

Order Number: 33986877_1_1
 Customer Ref: C11051
 National Grid Reference: 472170, 106510
 Slice: A
 Site Area (Ha): 1.74
 Search Buffer (m): 100

Site Details

Southleigh Road, HAVANT, Hampshire, PO9 2RR



Supply of Unpublished Survey Information

Published 1973

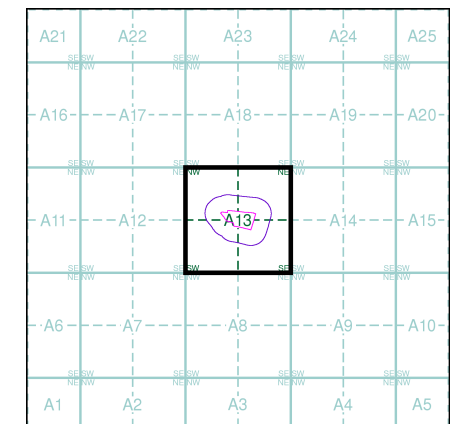
Source map scale - 1:1,250

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)

SU7106NE 1973 1:1,250	SU7206NW 1973 1:1,250	SU7206NE 1973 1:1,250
SU7106SE 1973 1:1,250	SU7206SW 1973 1:1,250	

Historical Map - Segment A13

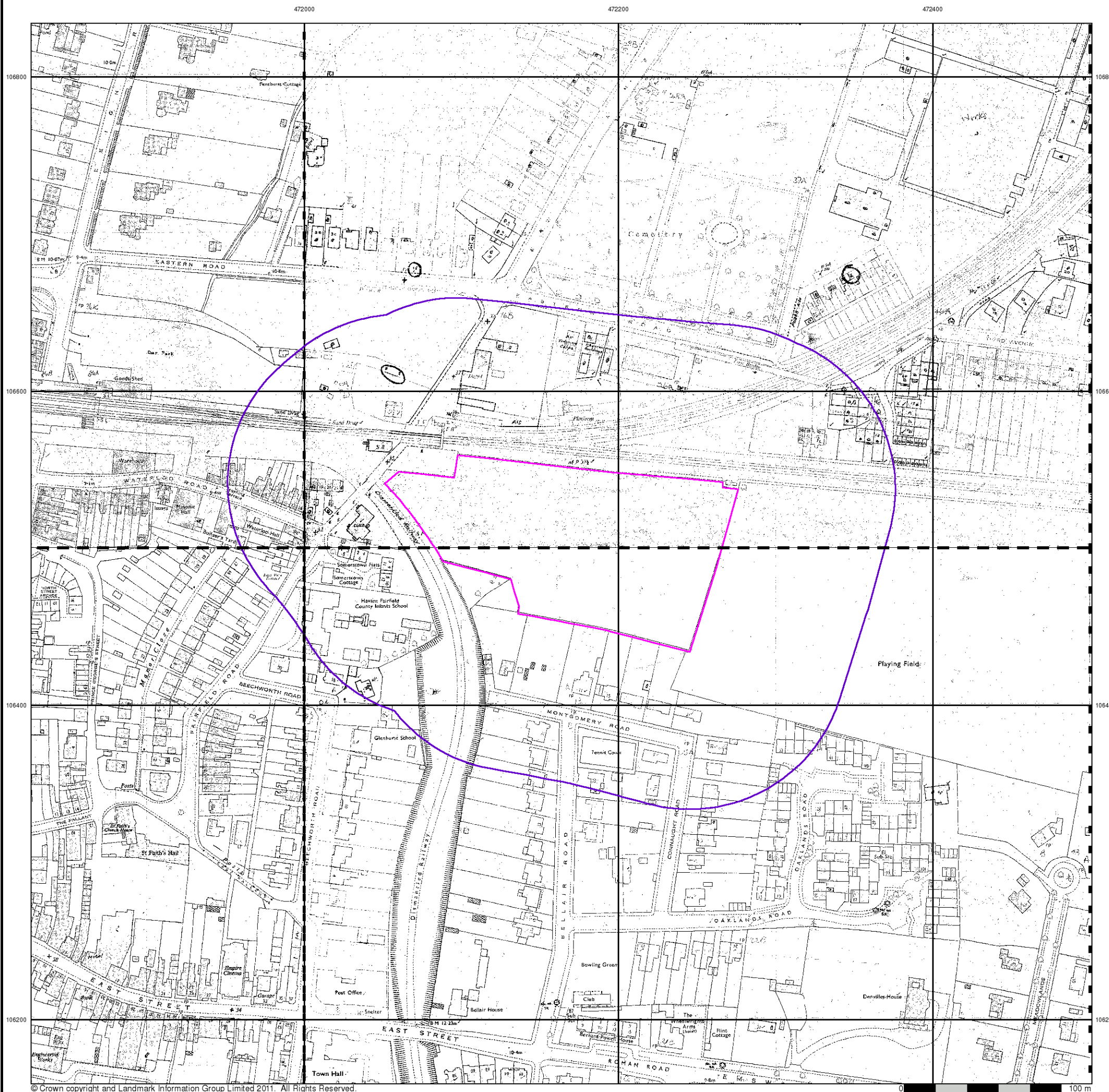


Order Details

Order Number: 33986877_1_1
 Customer Ref: C11051
 National Grid Reference: 472170, 106510
 Slice: A
 Site Area (Ha): 1.74
 Search Buffer (m): 100

Site Details

Southleigh Road, HAVANT, Hampshire, PO9 2RR



Large-Scale National Grid Data

Published 1993

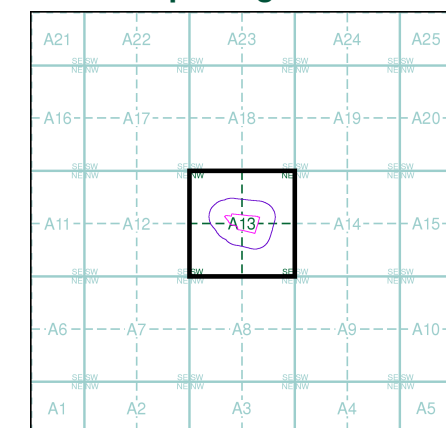
Source map scale - 1:1,250

'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)

SU7106NE 1993 1:1,250	SU7206NW 1993 1:1,250	SU7206NE 1993 1:1,250
SU7106SE 1993 1:1,250	SU7206SW 1993 1:1,250	SU7206SE 1993 1:1,250

Historical Map - Segment A13

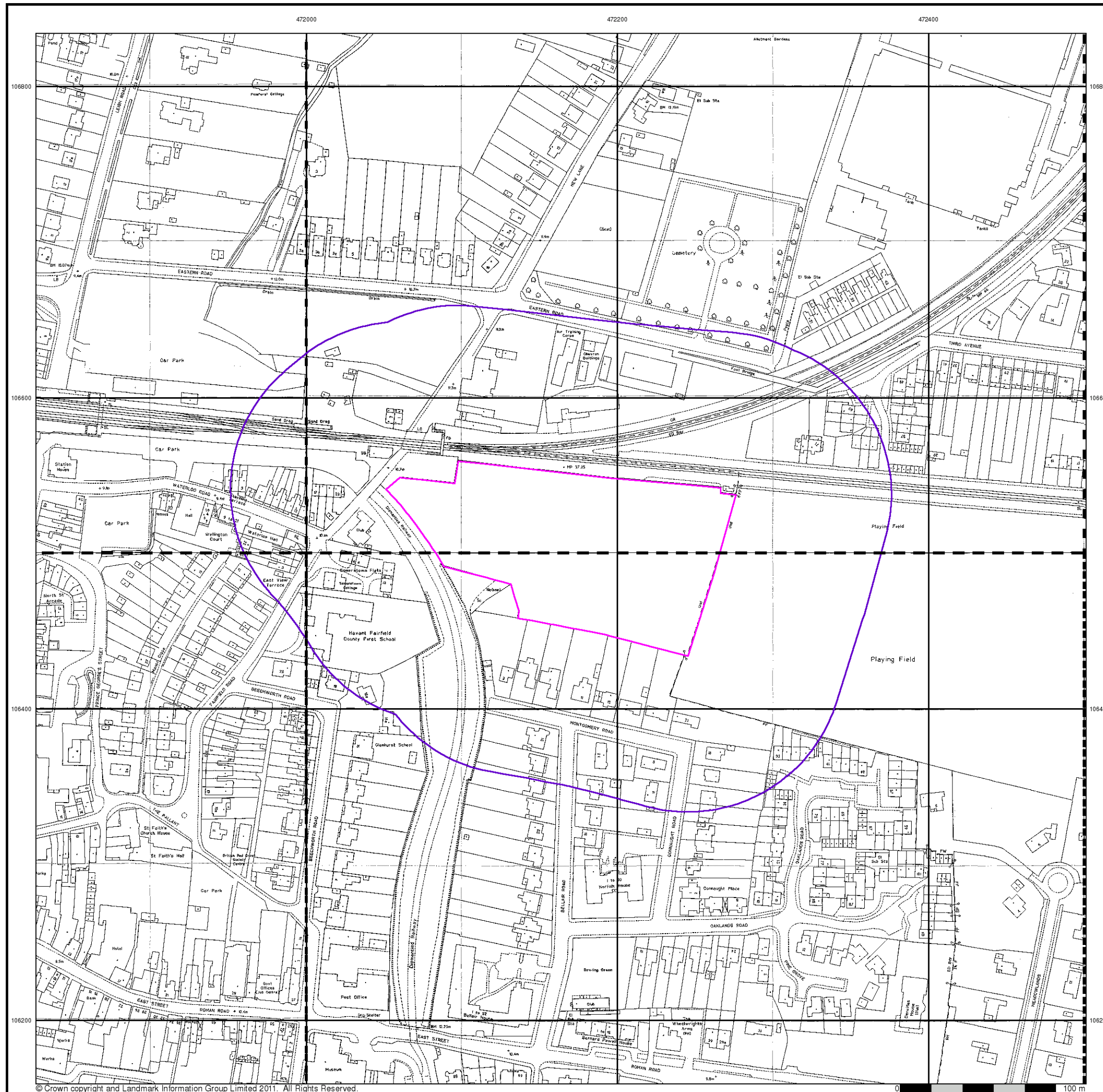


Order Details

Order Number: 33986877_1_1
 Customer Ref: C11051
 National Grid Reference: 472170, 106510
 Slice: A
 Site Area (Ha): 1.74
 Search Buffer (m): 100

Site Details

Southleigh Road, HAVANT, Hampshire, PO9 2RR



Historical Mapping Legends

Ordnance Survey County Series 1:10,560

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

Ordnance Survey Plan 1:10,000

	Chalk Pit, Clay Pit or Quarry		Gravel Pit
	Sand Pit		Disused Pit or Quarry
	Refuse or Slag Heap		Lake, Loch or Pond
	Dunes		Boulders
	Coniferous Trees		Non-Coniferous Trees
	Orchard		Scrub
	Bracken		Heath
	Marsh		Reeds
	Building		Glasshouse
	Sloping Masonry		Pylon
	Cutting		Embankment
	Road Under		Road Over
	Level Crossing		Foot Bridge
	Standard Gauge Multiple Track		Standard Gauge Single Track
	Siding, Tramway or Mineral Line		Narrow Gauge
	Geographical County		Administrative County, County Borough or County of City
	Municipal Borough, Urban or Rural District, Burgh or District Council		Borough, Burgh or County Constituency
	Civil Parish		
	BP, BS Boundary Post or Stone		Police Station
	Church		Post Office
	Club House		Public Convenience
	Fire Engine Station		Public House
	Foot Bridge		Signal Box
	Fountain		Spring
	Guide Post		Telephone Call Box
	Mile Post		Telephone Call Post
	Mile Stone		Well

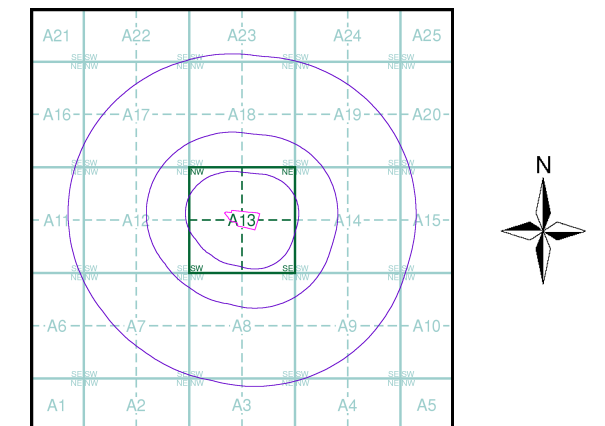
1:10,000 Raster Mapping

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

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
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	1909 - 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
Hampshire & Isle Of Wight	1:10,560	1932	13
Sussex	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	2000	25
10K Raster Mapping	1:10,000	2006	26
10K Raster Mapping	1:10,000	2010	27

Historical Map - Slice A



Order Details

Order Number: 33986877_1_1
Customer Ref: C11051
National Grid Reference: 472170, 106510
Slice: A
Site Area (Ha): 1.74
Search Buffer (m): 1000

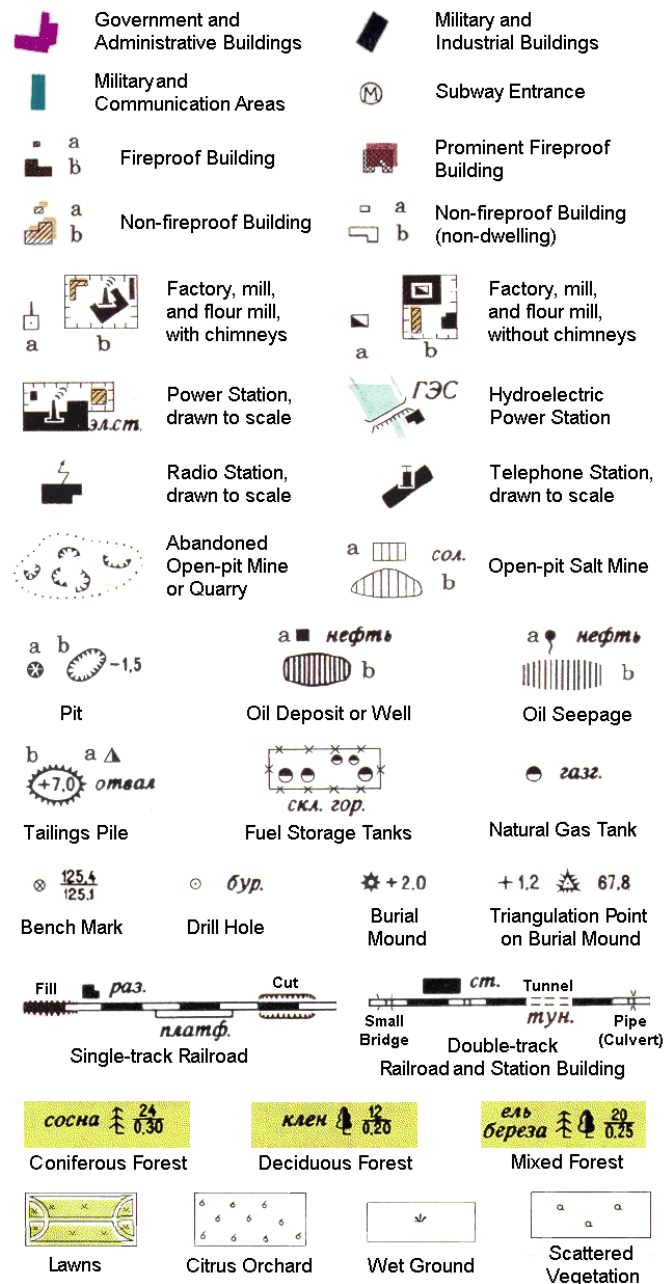
Site Details

Southleigh Road, HAVANT, Hampshire, PO9 2RR

Russian Military Mapping Legends

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

a. Not drawn to scale b. Drawn to scale



243.8 Values for prominent elevations

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

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

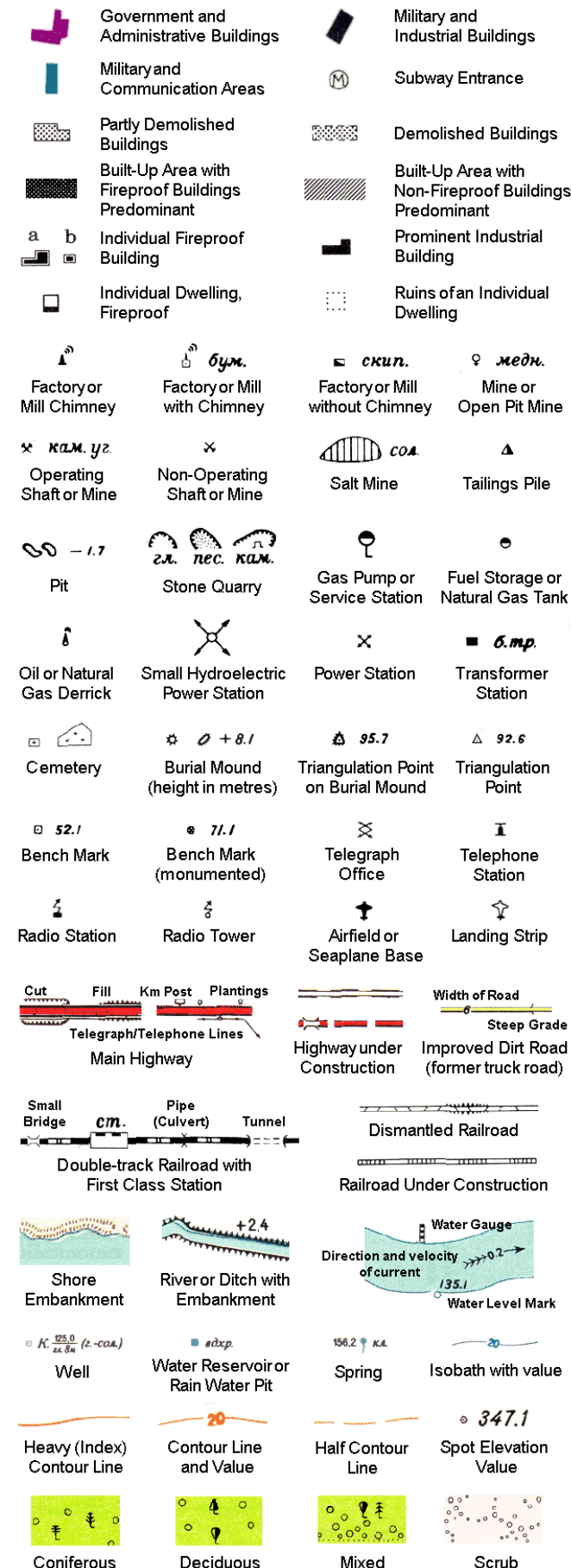
180/12 Fractional terms: length and capacity of bridges; depth of fords and condition of the river bottom; height of forest and the diameter of trees

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

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

1:25,000 mapping

a. Not drawn to scale b. Drawn to scale



Key to Numbers on Mapping

SU70_Havant

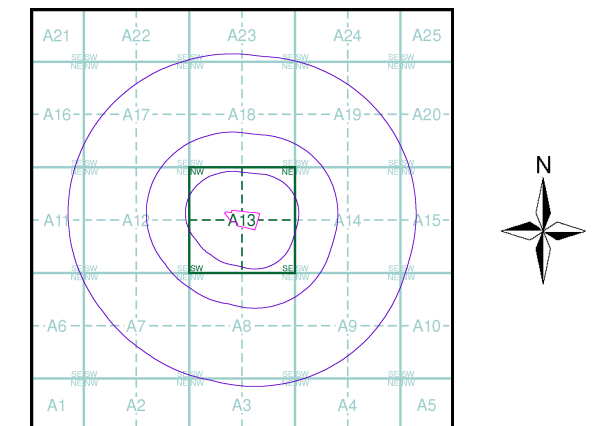
No.	Description
7	Factory (Chemicals)
10	Post Office
15	Railway Station (Freight And Passenger)
16	Sewage Works



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	1909 - 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
Hampshire & Isle Of Wight	1:10,560	1932	13
Sussex	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	2000	25
10K Raster Mapping	1:10,000	2006	26
10K Raster Mapping	1:10,000	2010	27

Russian Map - Slice A



Order Details

Order Number: 33986877_1_1
Customer Ref: C11051
National Grid Reference: 472170, 106510
Slice: A
Site Area (Ha): 1.74
Search Buffer (m): 1000

Site Details

Southleigh Road, HAVANT, Hampshire, PO9 2RR



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

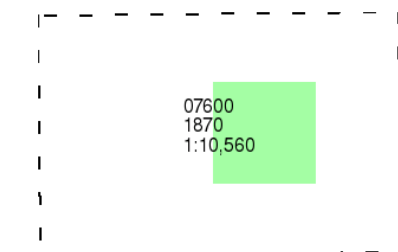
Hampshire & Isle Of Wight

Published 1870

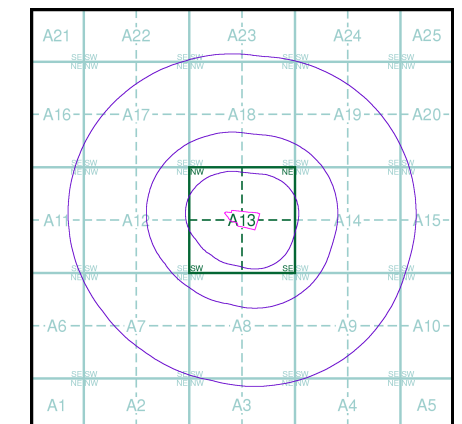
Source map scale - 1:10,560

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

Map Name(s) and Date(s)



Historical Map - Slice A

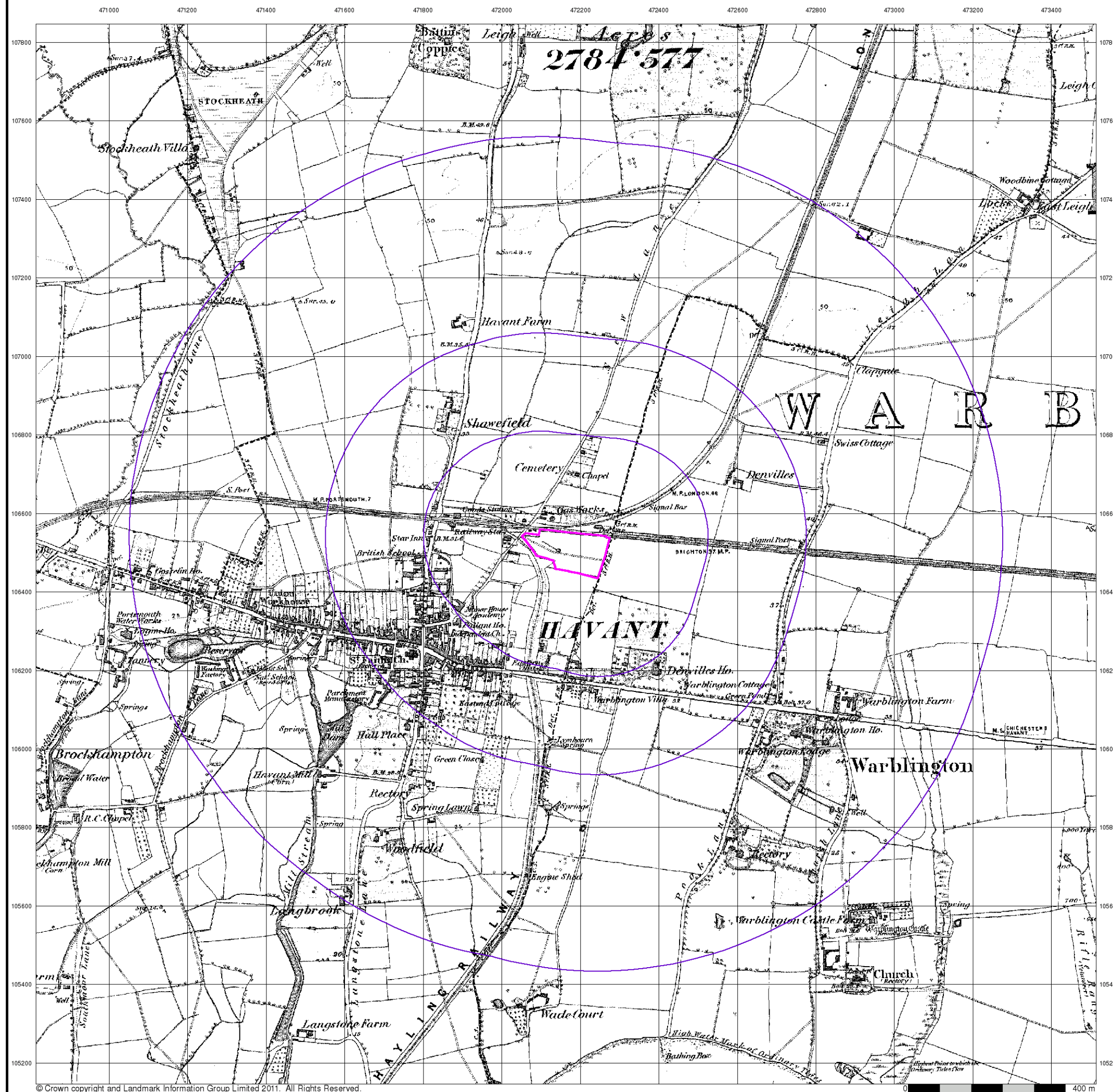


Order Details

Order Number: 33986877_1_1
 Customer Ref: C11051
 National Grid Reference: 472170, 106510
 Slice: A
 Site Area (Ha): 1.74
 Search Buffer (m): 1000

Site Details

Southleigh Road, HAVANT, Hampshire, PO9 2RR



Hampshire & Isle Of Wight

Published 1898

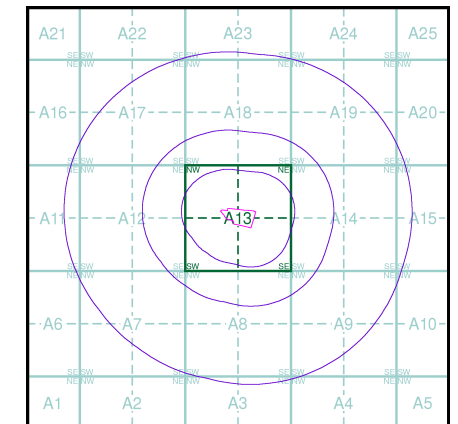
Source map scale - 1:10,560

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

Map Name(s) and Date(s)

076NW 1898 1:10,560	076NE 1898 1:10,560
076SW 1898 1:10,560	076SE 1898 1:10,560

Historical Map - Slice A

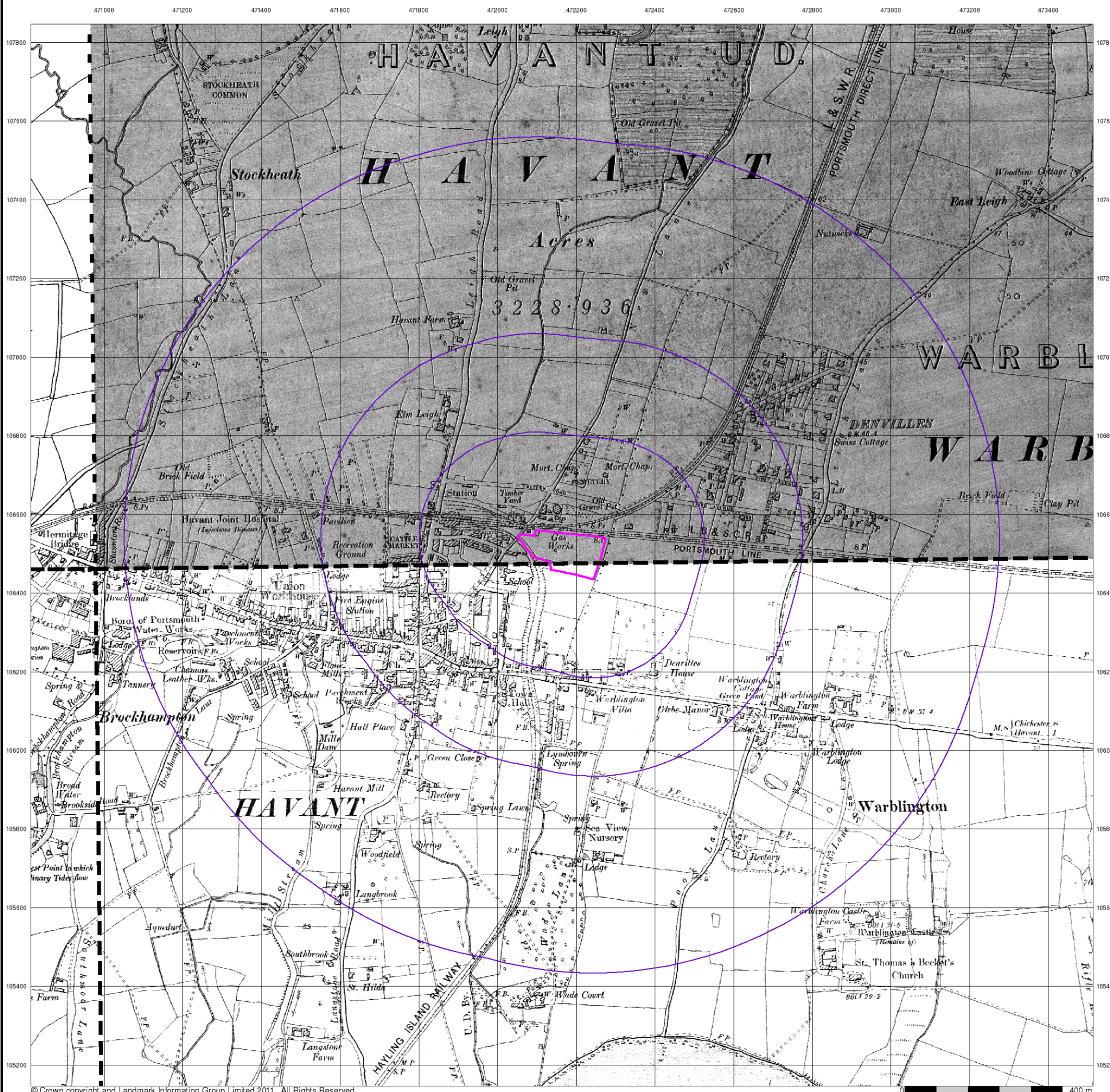


Order Details

Order Number: 33986877_1_1
 Customer Ref: C11051
 National Grid Reference: 472170, 106510
 Slice: A
 Site Area (Ha): 1.74
 Search Buffer (m): 1000

Site Details

Southleigh Road, HAVANT, Hampshire, PO9 2RR



Sussex

Published 1899

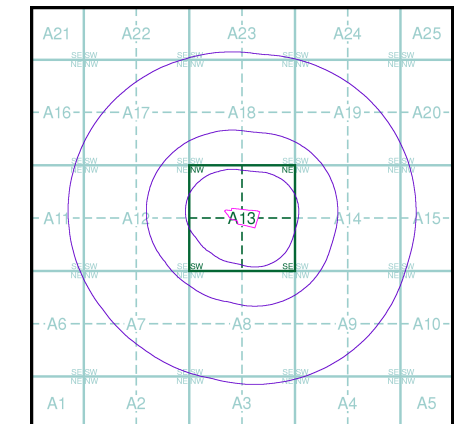
Source map scale - 1:10,560

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)

047SW	1899	1:10,560
060NW	1899	1:10,560

Historical Map - Slice A

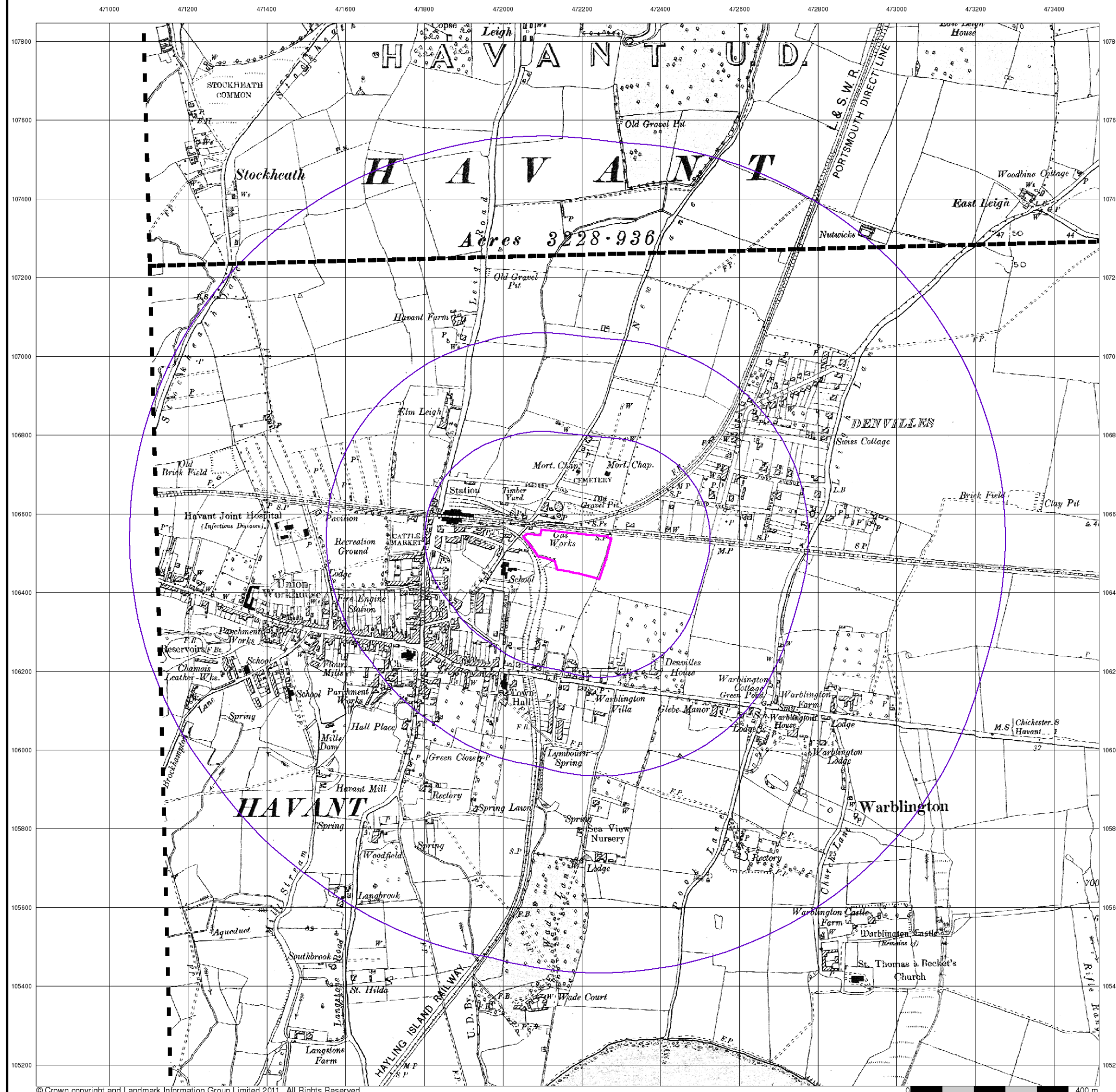


Order Details

Order Number: 33986877_1_1
 Customer Ref: C11051
 National Grid Reference: 472170, 106510
 Slice: A
 Site Area (Ha): 1.74
 Search Buffer (m): 1000

Site Details

Southleigh Road, HAVANT, Hampshire, PO9 2RR



Hampshire & Isle Of Wight

Published 1909 - 1910

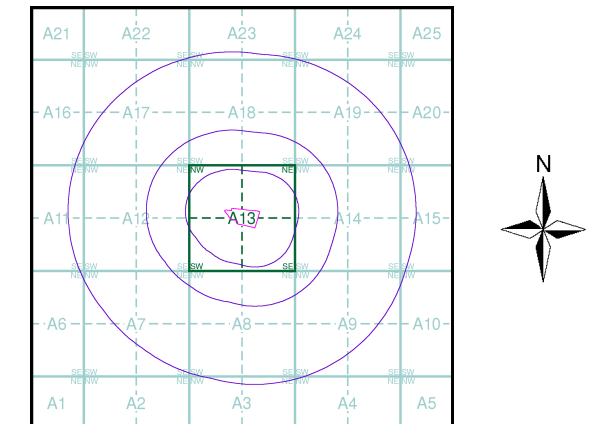
Source map scale - 1:10,560

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)

076NW 1909 1:10,560	076NE 1910 1:10,560
076SW 1910 1:10,560	076SE 1910 1:10,560

Historical Map - Slice A

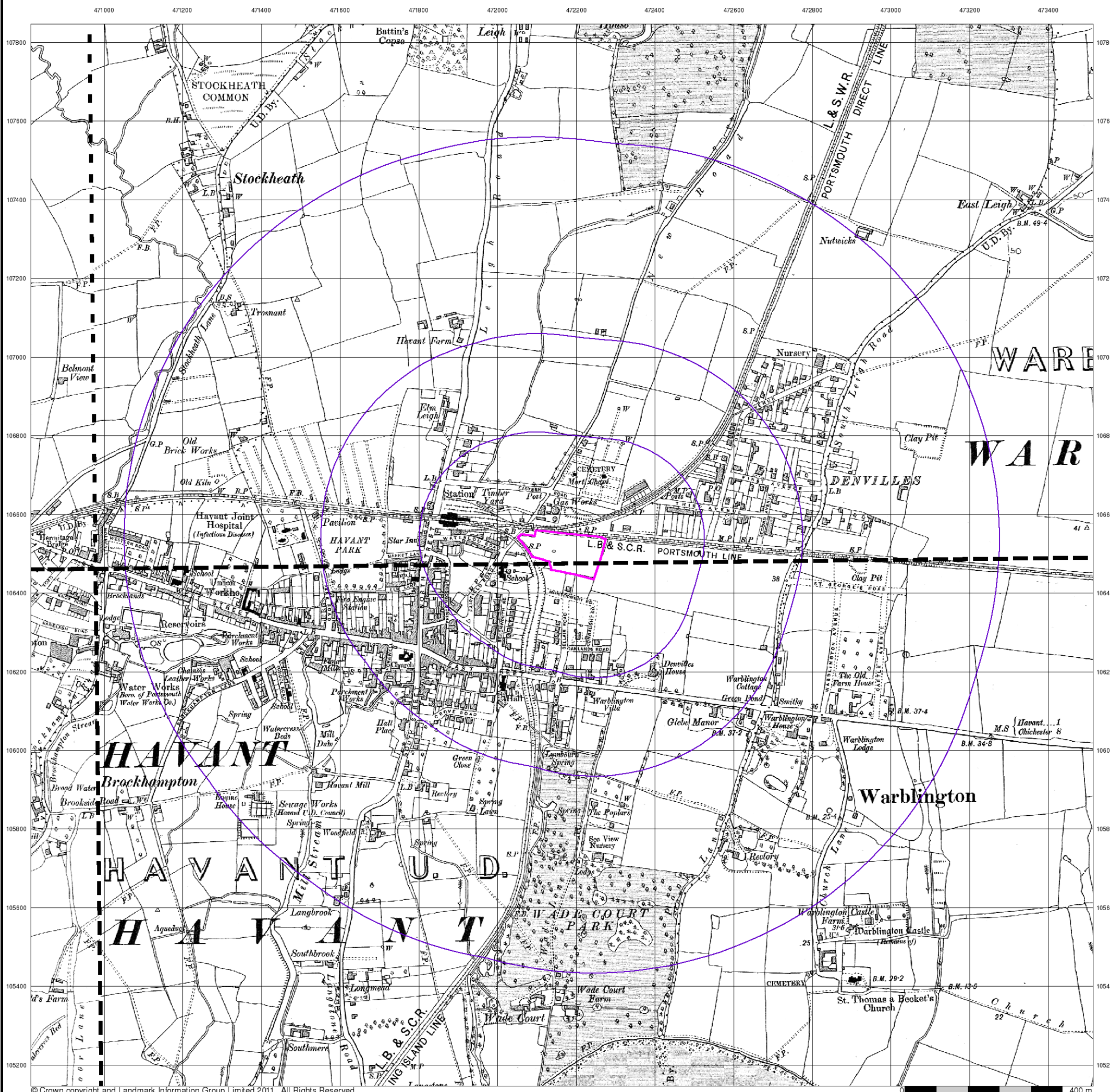


Order Details

Order Number: 33986877_1_1
 Customer Ref: C11051
 National Grid Reference: 472170, 106510
 Slice: A
 Site Area (Ha): 1.74
 Search Buffer (m): 1000

Site Details

Southleigh Road, HAVANT, Hampshire, PO9 2RR



Sussex

Published 1914

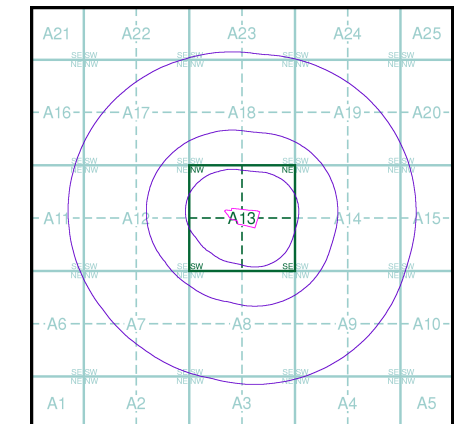
Source map scale - 1:10,560

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

Map Name(s) and Date(s)

047SW	1914	1:10,560
060NW	1914	1:10,560

Historical Map - Slice A

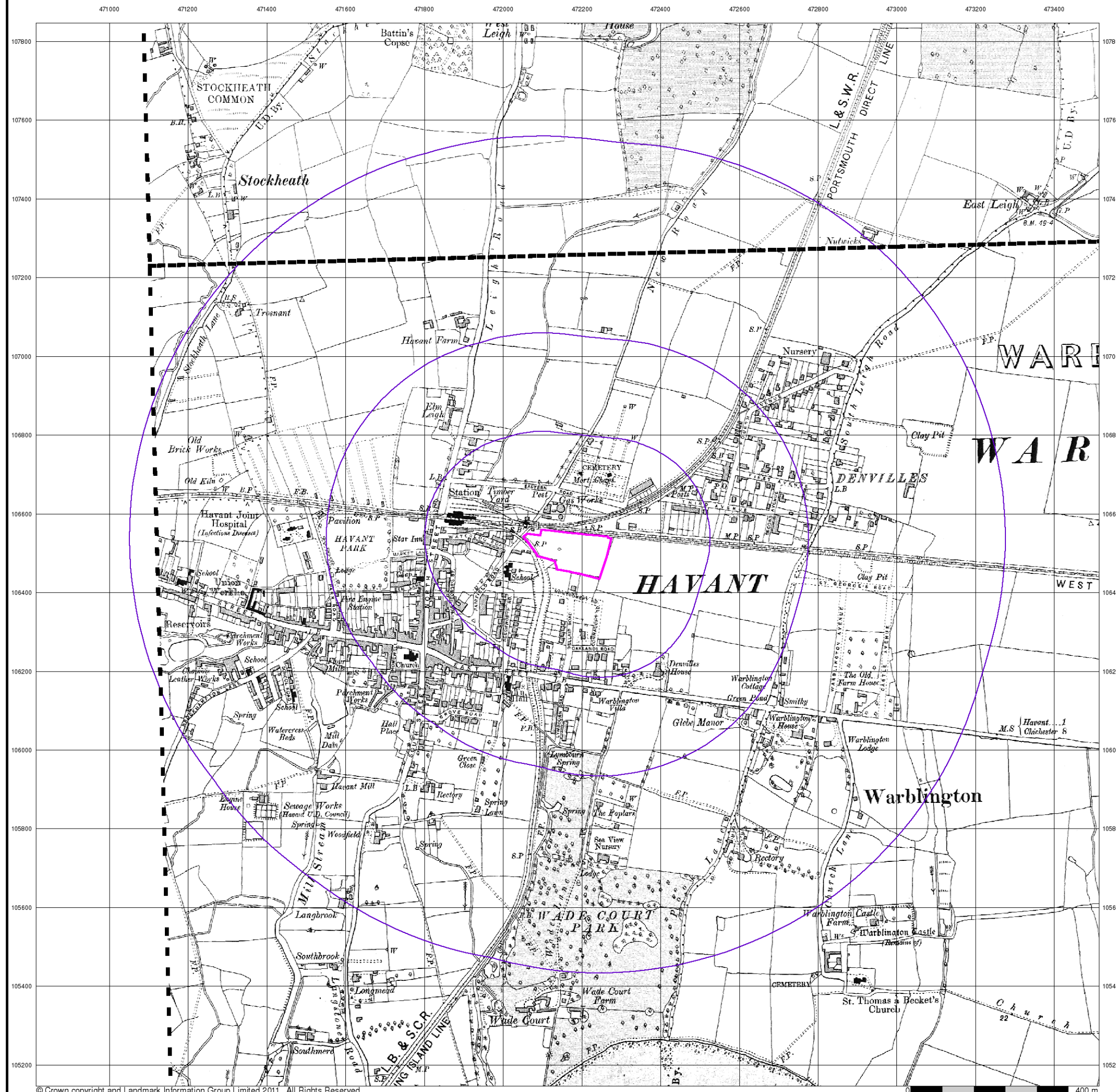


Order Details

Order Number: 33986877_1_1
 Customer Ref: C11051
 National Grid Reference: 472170, 106510
 Slice: A
 Site Area (Ha): 1.74
 Search Buffer (m): 1000

Site Details

Southleigh Road, HAVANT, Hampshire, PO9 2RR



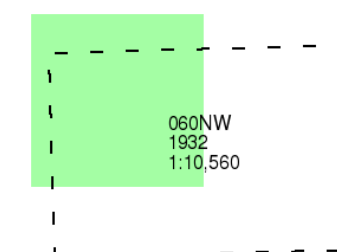
Sussex

Published 1932

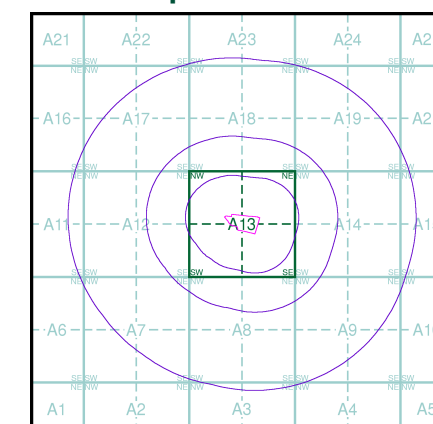
Source map scale - 1:10,560

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

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number: 33986877_1_1
Customer Ref: C11051
National Grid Reference: 472170, 106510
Slice: A
Site Area (Ha): 1.74
Search Buffer (m): 1000

Site Details

Southleigh Road, HAVANT, Hampshire, PO9 2RR





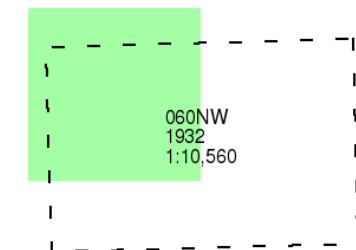
Sussex

Published 1932

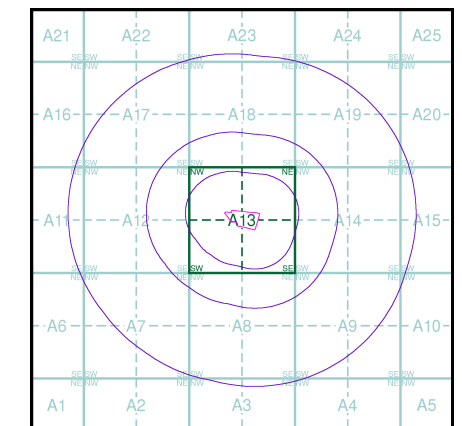
Source map scale - 1:10,560

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

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number: 33986877_1_1
Customer Ref: C11051
National Grid Reference: 472170, 106510
Slice: A
Site Area (Ha): 1.74
Search Buffer (m): 1000

Site Details

Southleigh Road, HAVANT, Hampshire, PO9 2RR

Hampshire & Isle Of Wight

Published 1938 - 1942

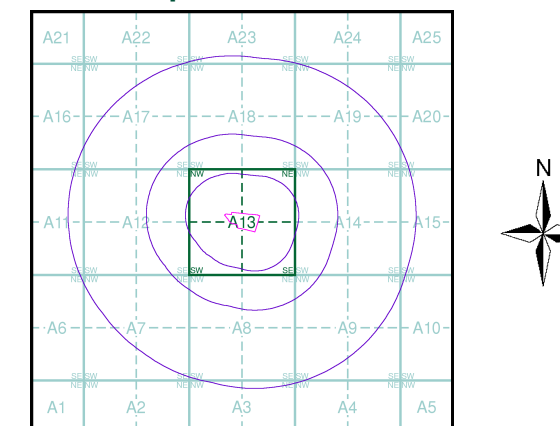
Source map scale - 1:10,560

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)

076NW 1938 1:10,560	076NE 1938 1:10,560
076SW 1938 1:10,560	076SE 1942 1:10,560

Historical Map - Slice A

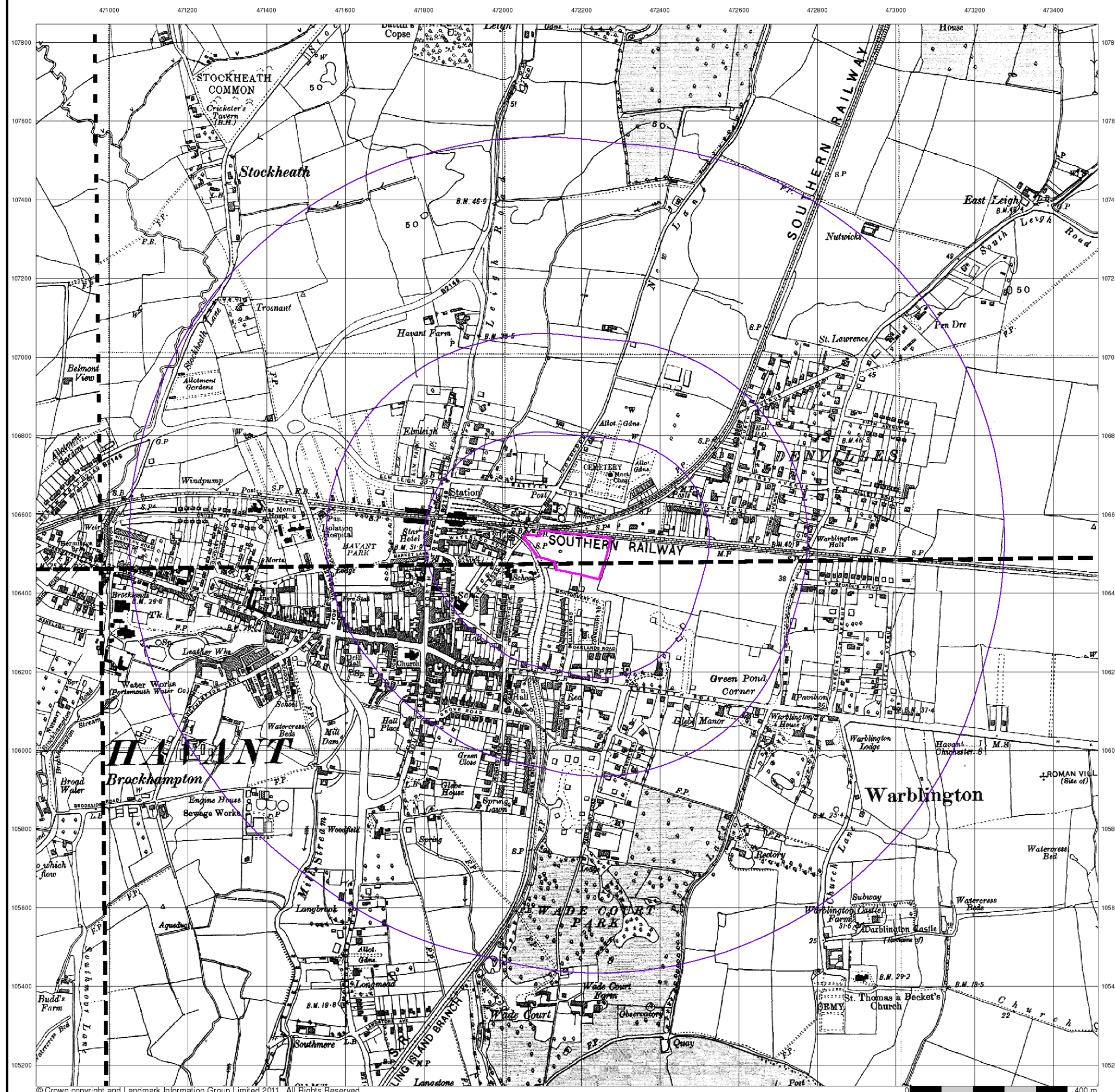


Order Details

Order Number: 33986877_1_1
 Customer Ref: C11051
 National Grid Reference: 472170, 106510
 Slice: A
 Site Area (Ha): 1.74
 Search Buffer (m): 1000

Site Details

Southleigh Road, HAVANT, Hampshire, PO9 2RR



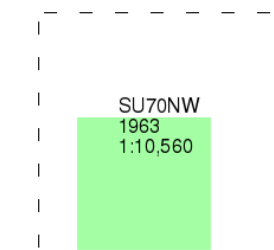
Ordnance Survey Plan

Published 1963

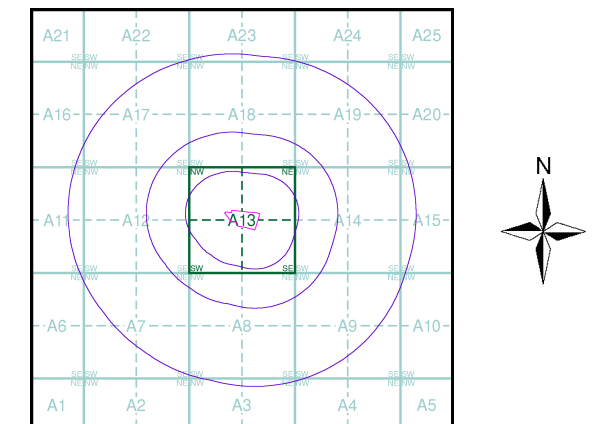
Source map scale - 1:10,000

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)



Historical Map - Slice A

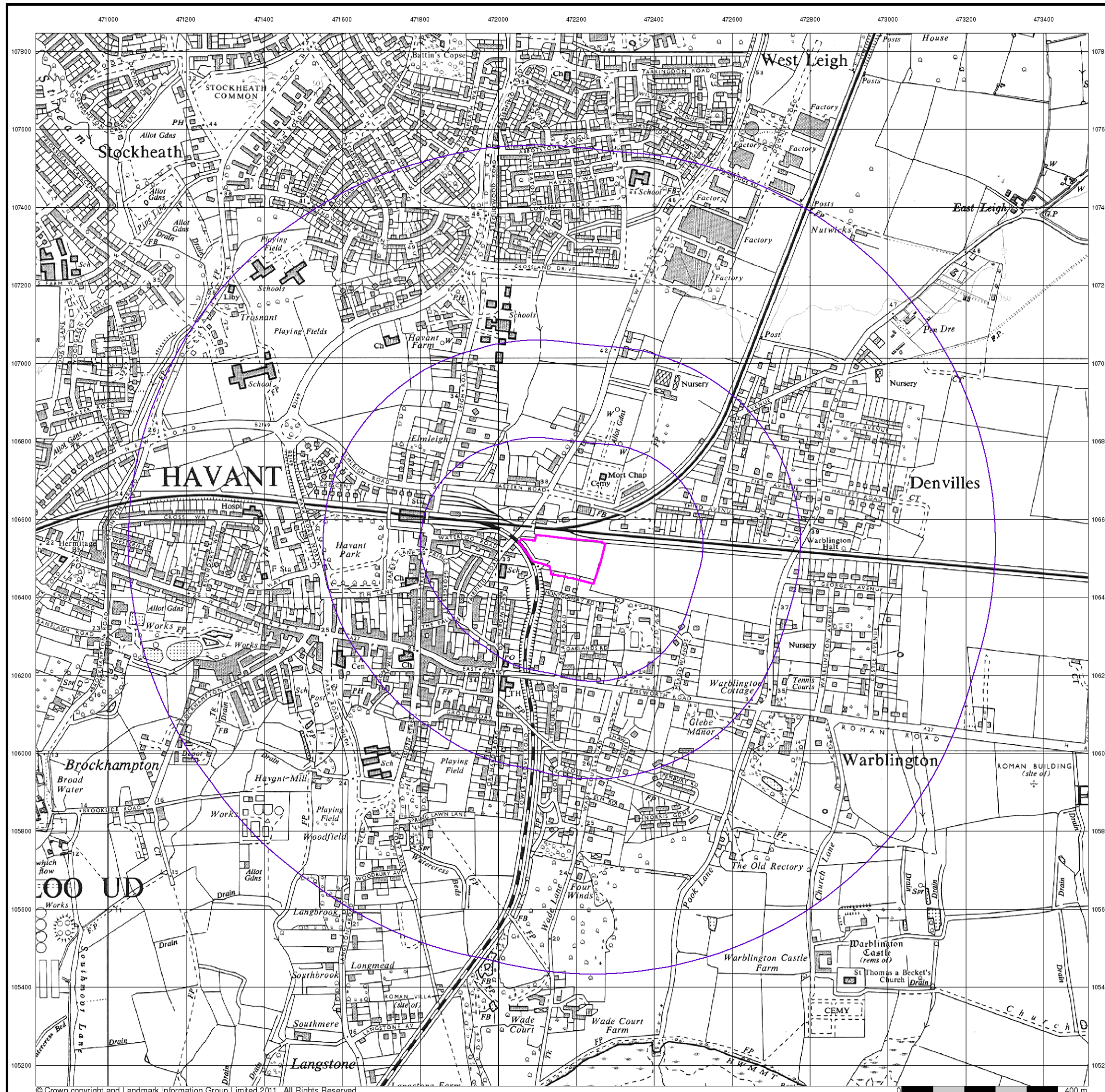


Order Details

Order Number: 33986877_1_1
 Customer Ref: C11051
 National Grid Reference: 472170, 106510
 Slice: A
 Site Area (Ha): 1.74
 Search Buffer (m): 1000

Site Details

Southleigh Road, HAVANT, Hampshire, PO9 2RR



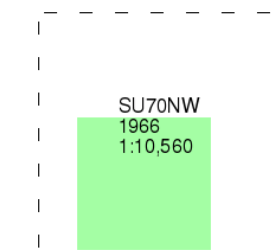
Ordnance Survey Plan

Published 1966

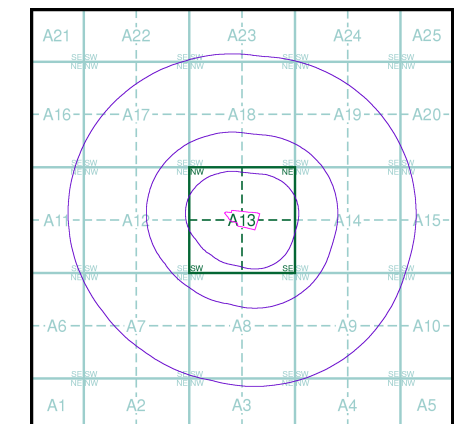
Source map scale - 1:10,000

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

Map Name(s) and Date(s)



Historical Map - Slice A

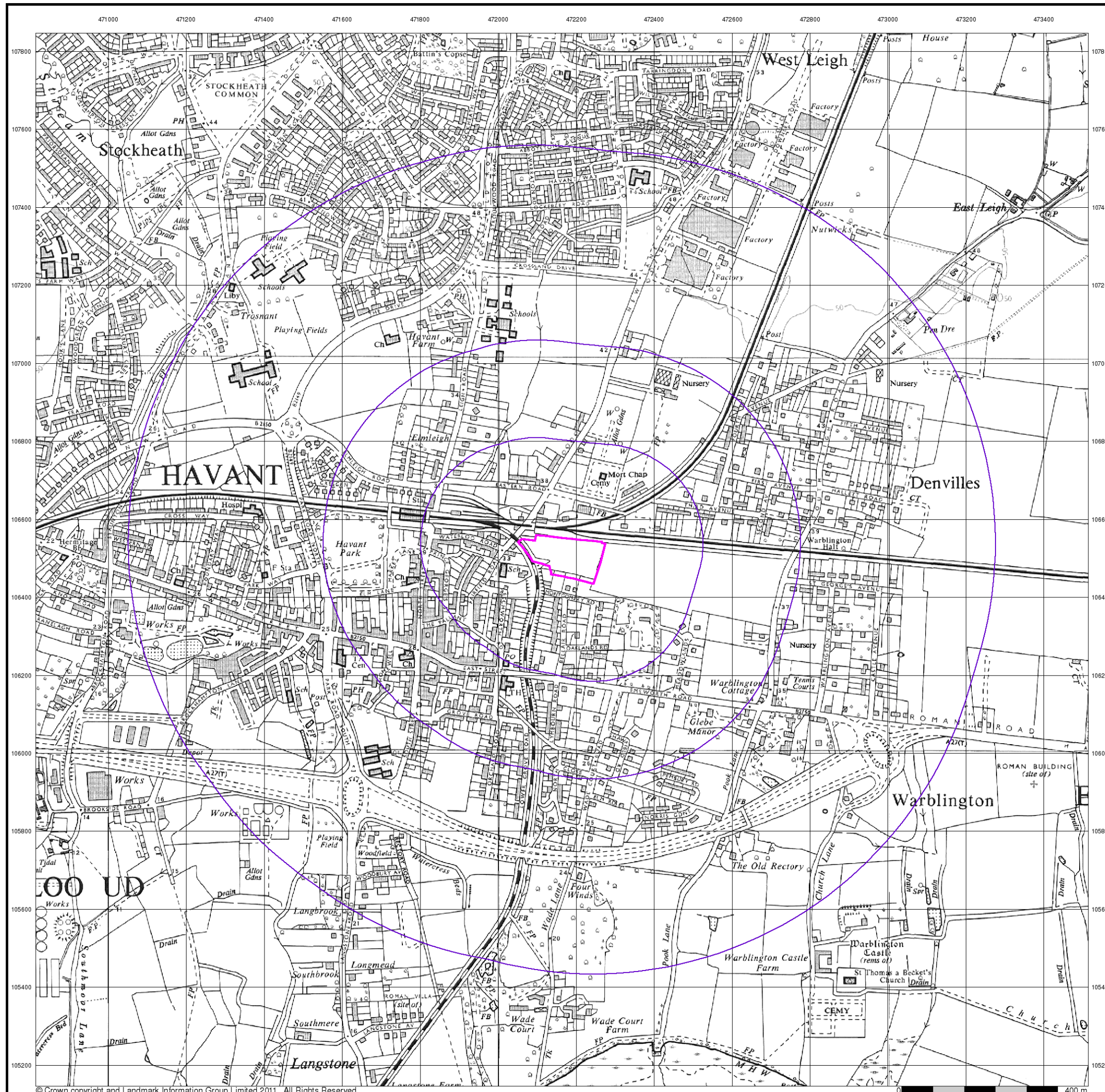


Order Details

Order Number: 33986877_1_1
 Customer Ref: C11051
 National Grid Reference: 472170, 106510
 Slice: A
 Site Area (Ha): 1.74
 Search Buffer (m): 1000

Site Details

Southleigh Road, HAVANT, Hampshire, PO9 2RR



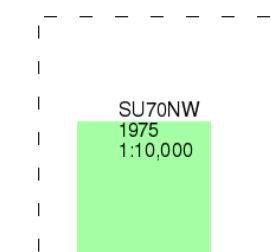
Ordnance Survey Plan

Published 1975

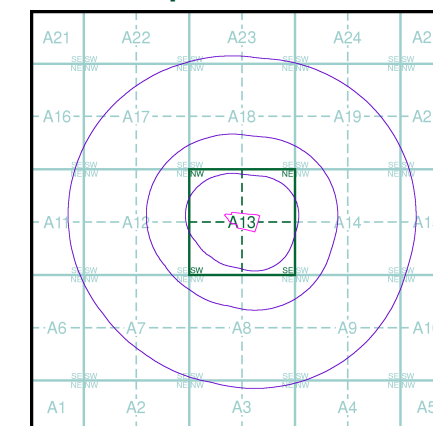
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Map Name(s) and Date(s)



Historical Map - Slice A

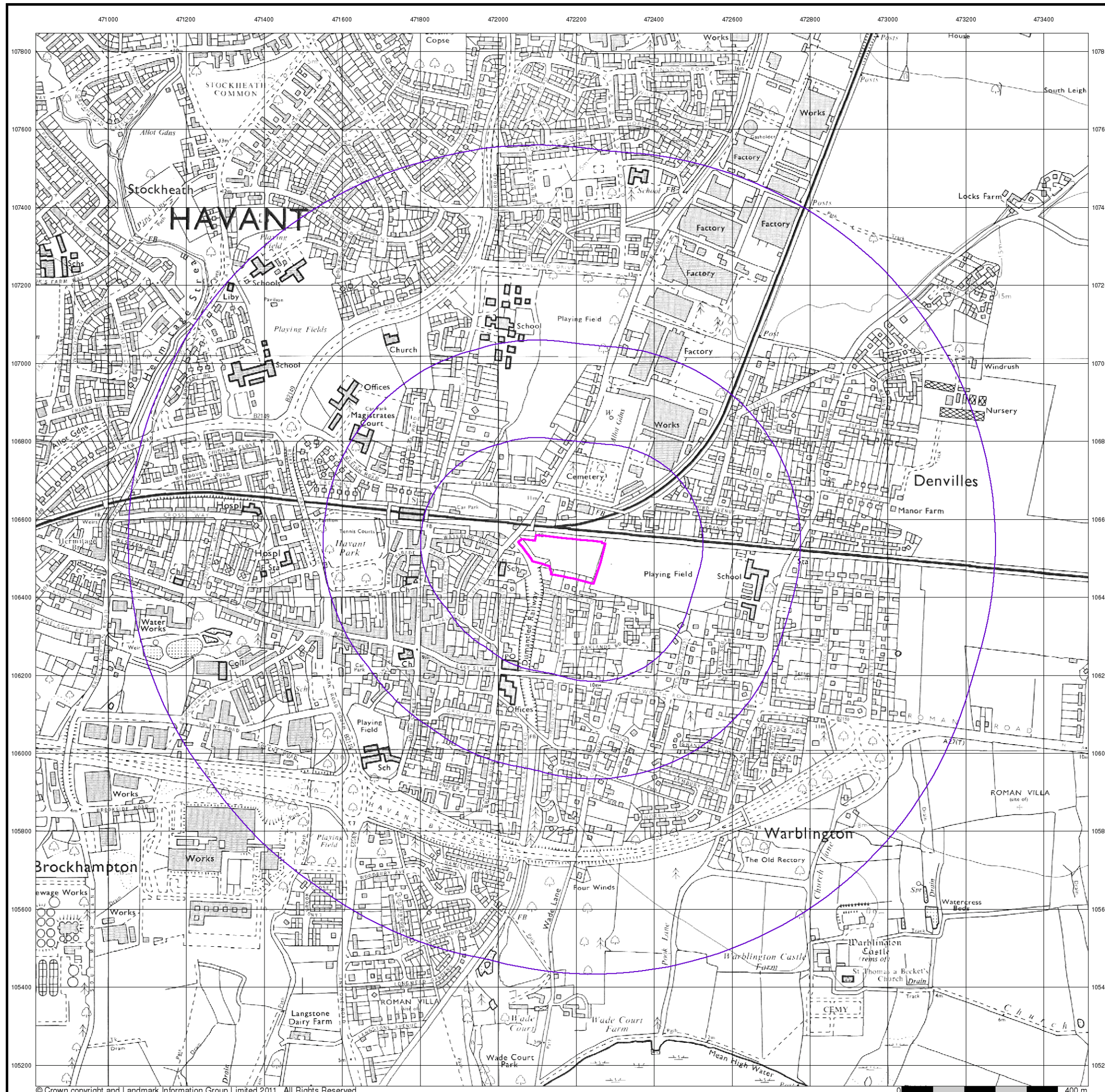


Order Details

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 Customer Ref: C11051
 National Grid Reference: 472170, 106510
 Slice: A
 Site Area (Ha): 1.74
 Search Buffer (m): 1000

Site Details

Southleigh Road, HAVANT, Hampshire, PO9 2RR



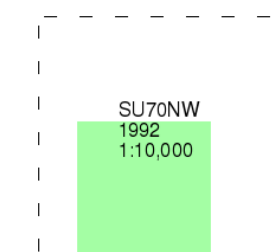
Ordnance Survey Plan

Published 1992

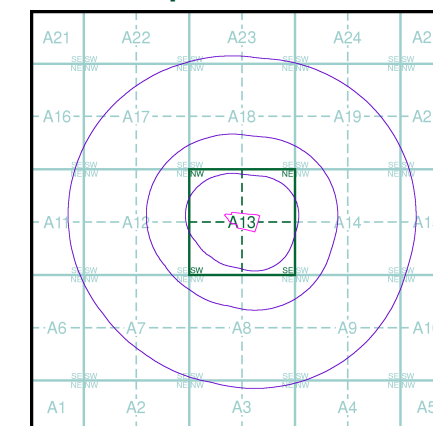
Source map scale - 1:10,000

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

Map Name(s) and Date(s)



Historical Map - Slice A

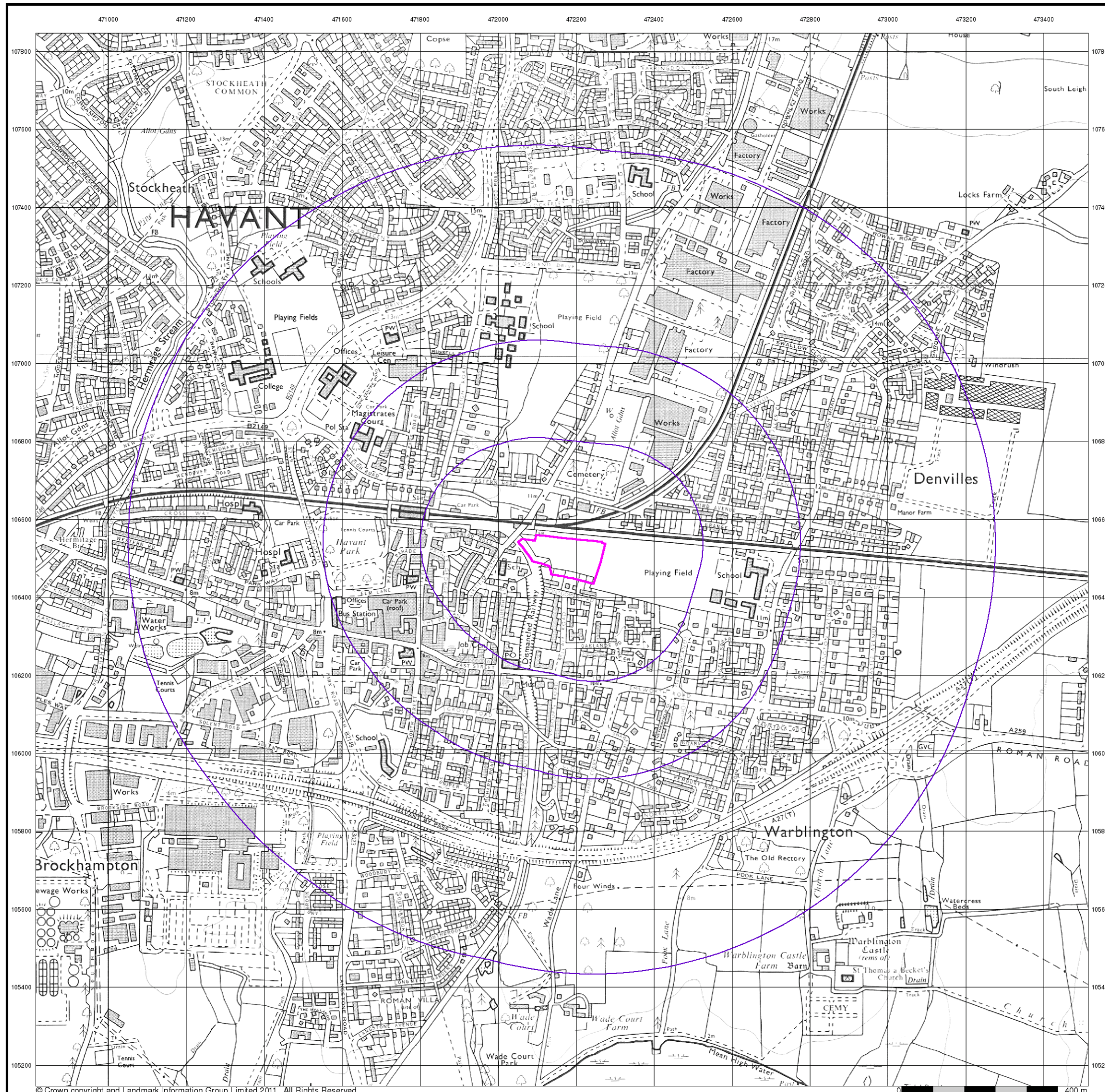


Order Details

Order Number: 33986877_1_1
 Customer Ref: C11051
 National Grid Reference: 472170, 106510
 Slice: A
 Site Area (Ha): 1.74
 Search Buffer (m): 1000

Site Details

Southleigh Road, HAVANT, Hampshire, PO9 2RR



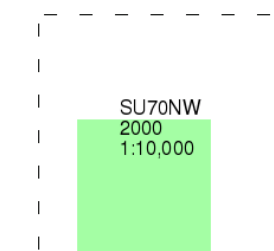
10k Raster Mapping

Published 2000

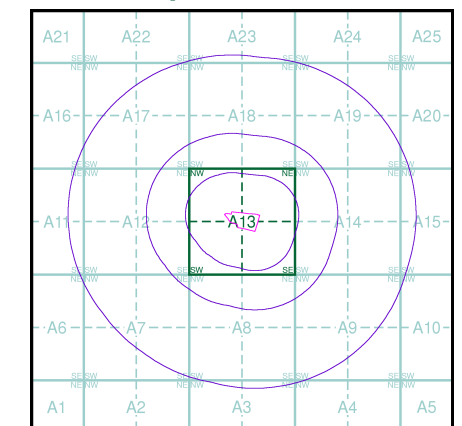
Source map scale - 1:10,000

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

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number: 33986877_1_1
Customer Ref: C11051
National Grid Reference: 472170, 106510
Slice: A
Site Area (Ha): 1.74
Search Buffer (m): 1000

Site Details

Southleigh Road, HAVANT, Hampshire, PO9 2RR



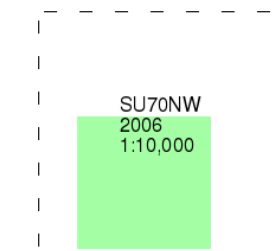
10k Raster Mapping

Published 2006

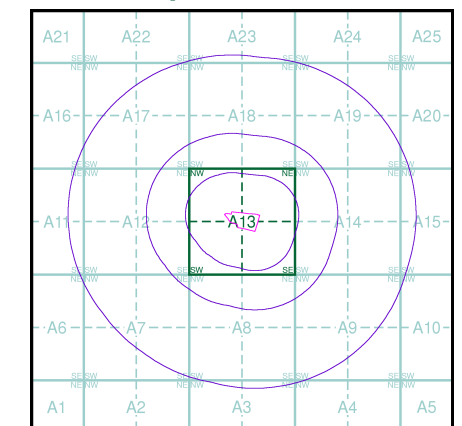
Source map scale - 1:10,000

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Map Name(s) and Date(s)



Historical Map - Slice A



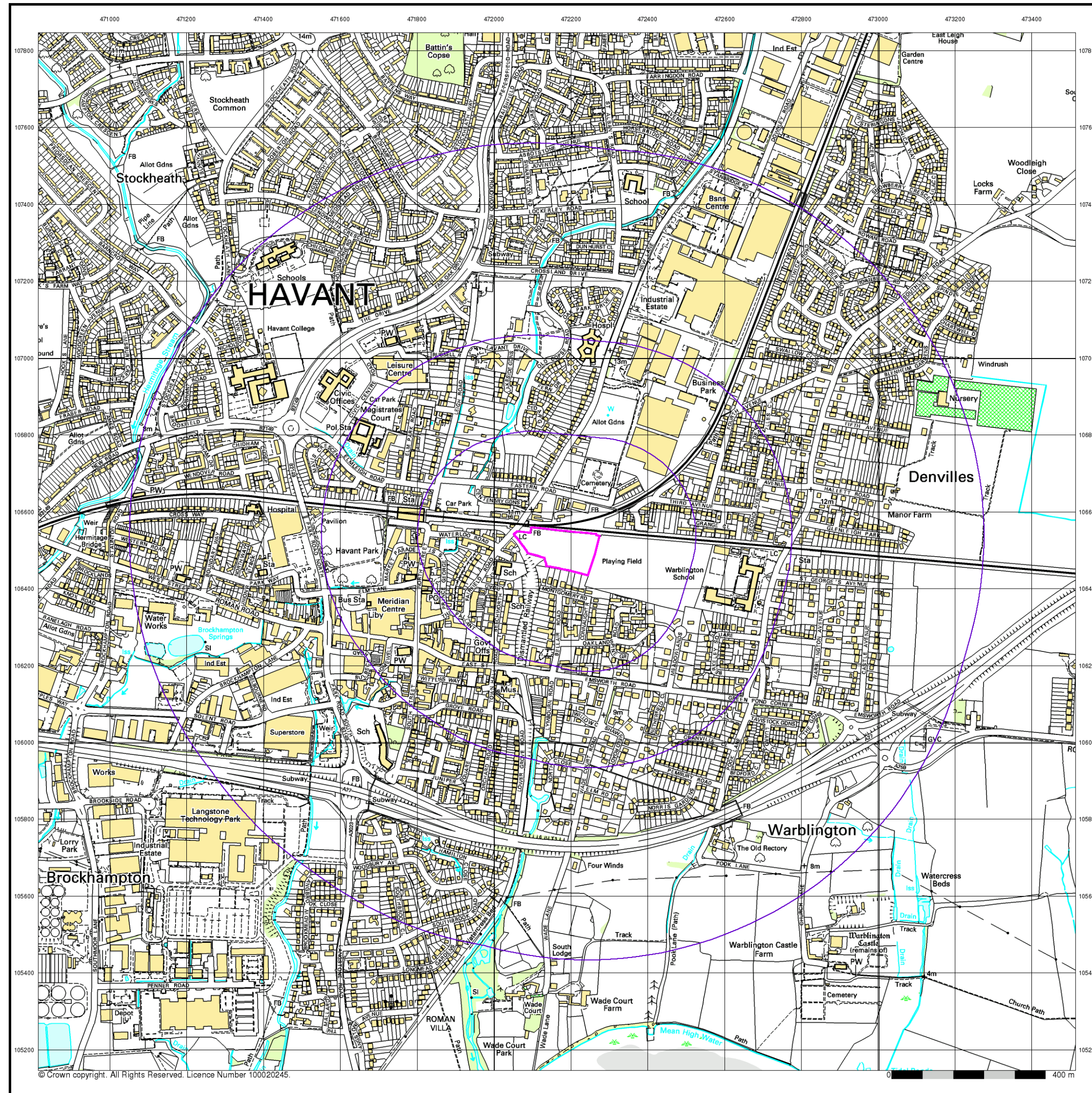
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Customer Ref: C11051
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Slice: A
Site Area (Ha): 1.74
Search Buffer (m): 1000

Site Details

Southleigh Road, HAVANT, Hampshire, PO9 2RR





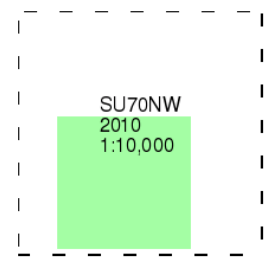
© Crown copyright. All Rights Reserved. Licence Number 100020245.



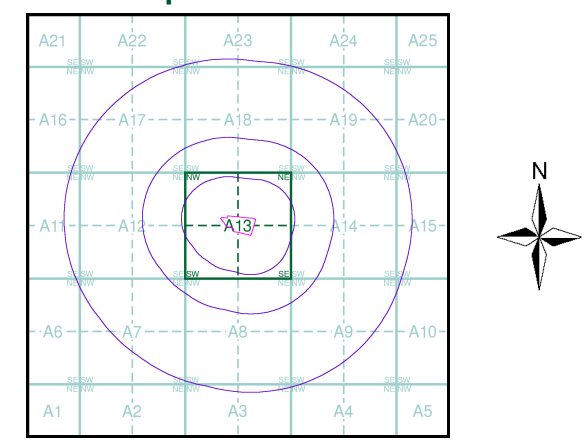
10k Raster Mapping
Published 2010
Source map scale - 1:10,000

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Map Name(s) and Date(s)



Historical Map - Slice A



Order Details
Order Number: 33986877_1_1
Customer Ref: C11051
National Grid Reference: 472170, 106510
Slice: A
Site Area (Ha): 1.74
Search Buffer (m): 1000

Site Details
Southleigh Road, HAVANT, Hampshire, PO9 2RR

Appendix D

DESK STUDY RESEARCH INFORMATION

General

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

Agency and Hydrological

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

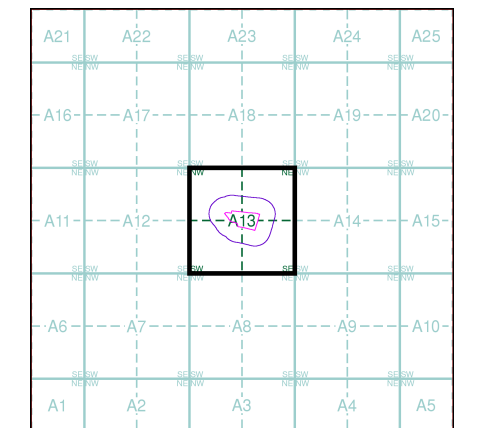
Hazardous Substances

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

Industrial Land Use

- Contemporary Trade Directory Entry
- Fuel Station Entry

Site Sensitivity Map - Segment A13

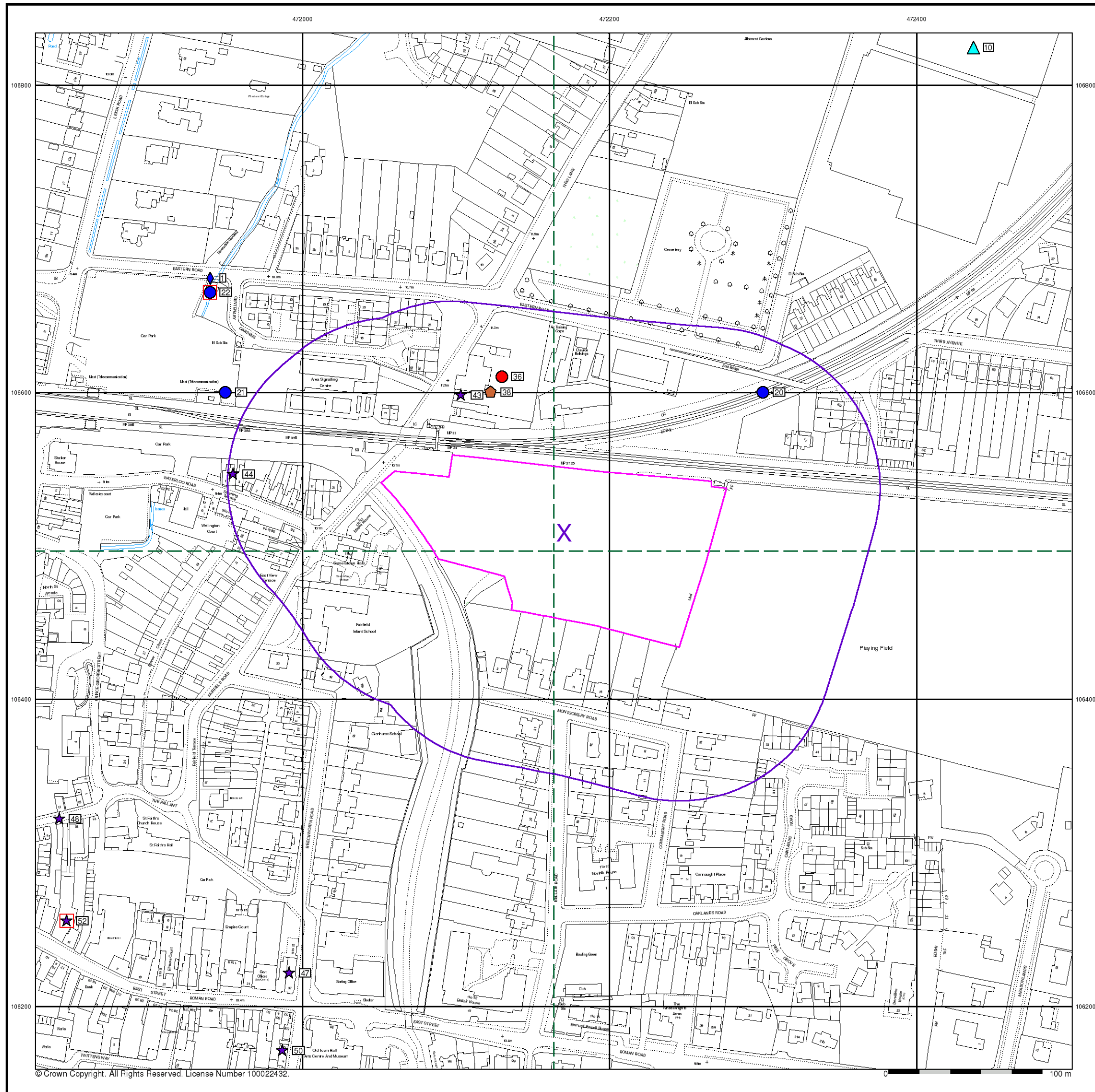


Order Details

Order Number: 33986877_1_1
 Customer Ref: C11051
 National Grid Reference: 472170, 106510
 Slice: A
 Site Area (Ha): 1.74
 Plot Buffer (m): 100

Site Details

Southleigh Road, HAVANT, Hampshire, PO9 2RR



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
- Pollution Incident to Controlled Waters
- Prosecution Relating to Authorised Processes
- Prosecution Relating to Controlled Waters
- Registered Radioactive Substance
- River Network or Water Feature
- River Quality Sampling Point
- Substantiated Pollution Incident Register
- Water Abstraction
- Water Industry Act Referral

Waste

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

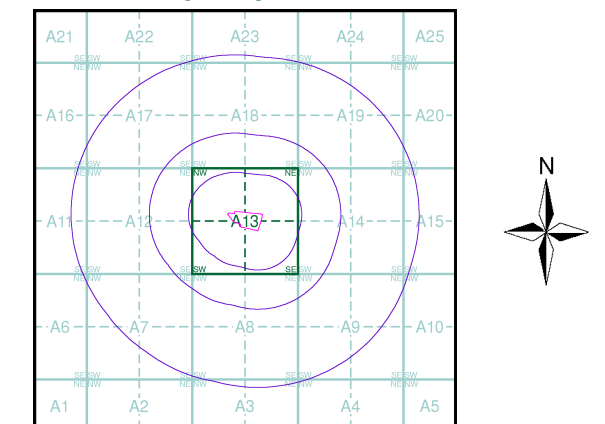
Geological

- BGS Recorded Mineral Site

Industrial Land Use

- Contemporary Trade Directory Entry
- Fuel Station Entry
- COMAH Site
- Explosive Site
- NIHHS Site
- Planning Hazardous Substance Consent
- Planning Hazardous Substance Enforcement

Site Sensitivity Map - Slice A

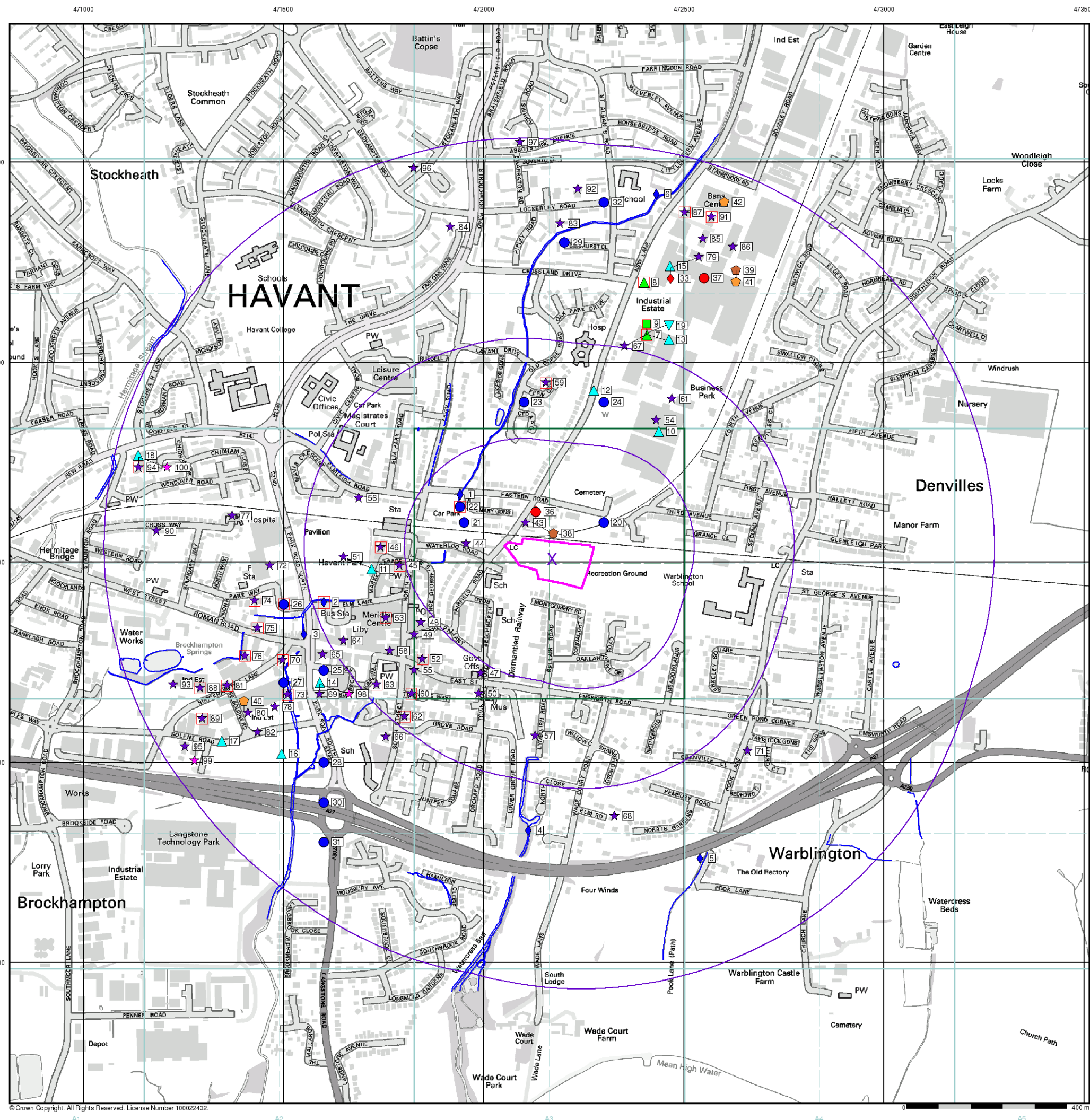


Order Details

Order Number: 33986877_1_1
 Customer Ref: C11051
 National Grid Reference: 472170, 106510
 Slice: A
 Site Area (Ha): 1.74
 Search Buffer (m): 1000

Site Details

Southleigh Road, HAVANT, Hampshire, PO9 2RR



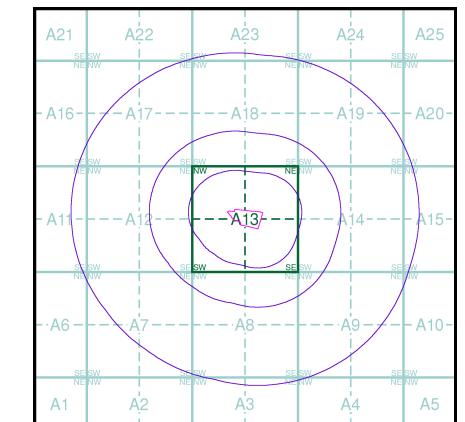
General

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

Agency and Hydrological (Flood)

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

Flood Map - Slice A

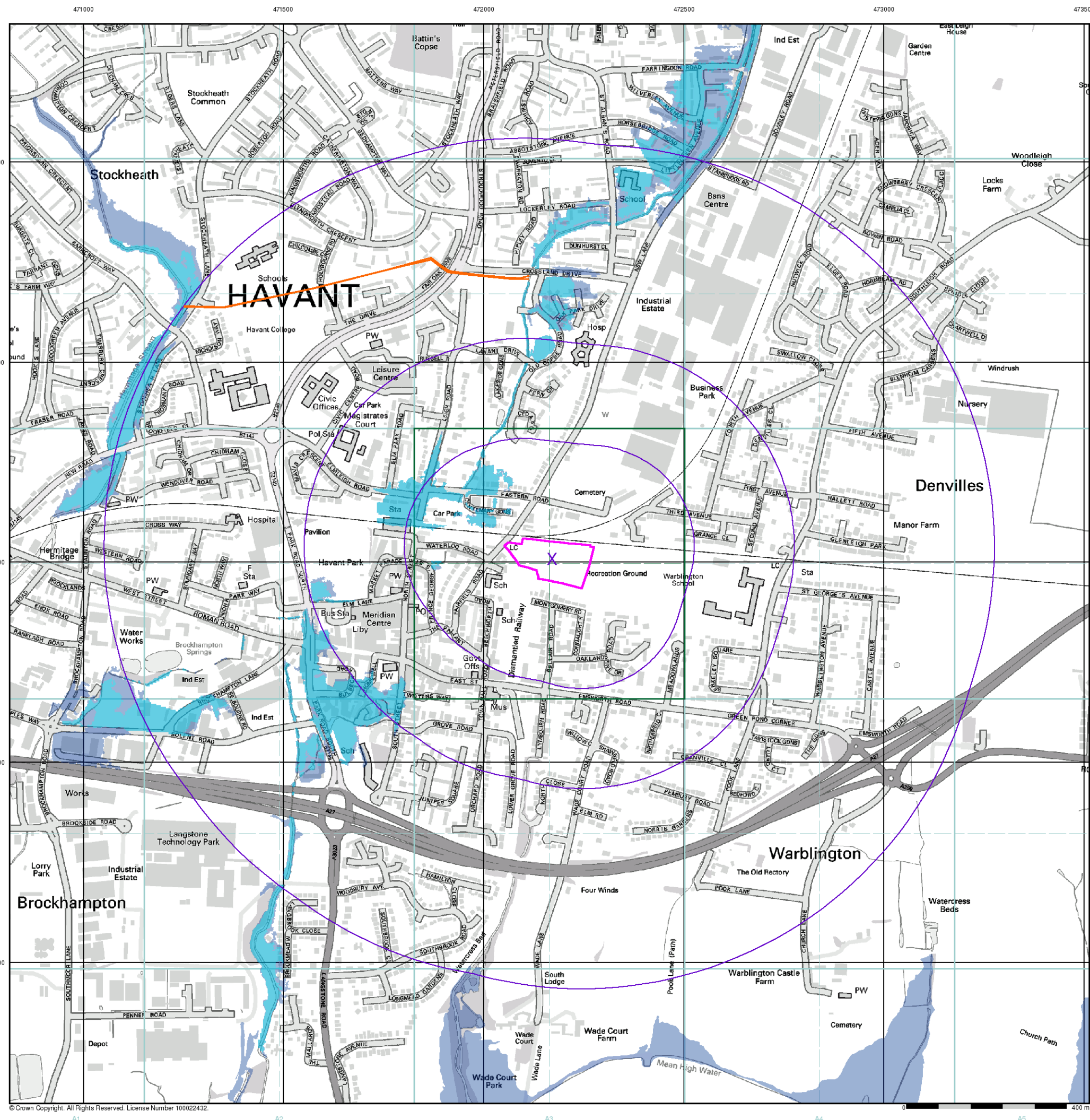


Order Details

Order Number: 33986877_1_1
 Customer Ref: C11051
 National Grid Reference: 472170, 106510
 Slice: A
 Site Area (Ha): 1.74
 Search Buffer (m): 1000

Site Details

Southleigh Road, HAVANT, Hampshire, PO9 2RR



General

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

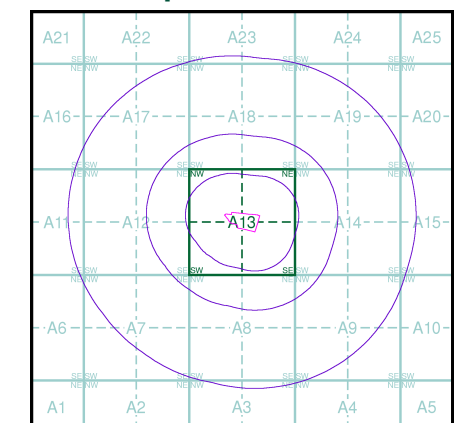
Agency and Hydrological (Boreholes)

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

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

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

Borehole Map - Slice A

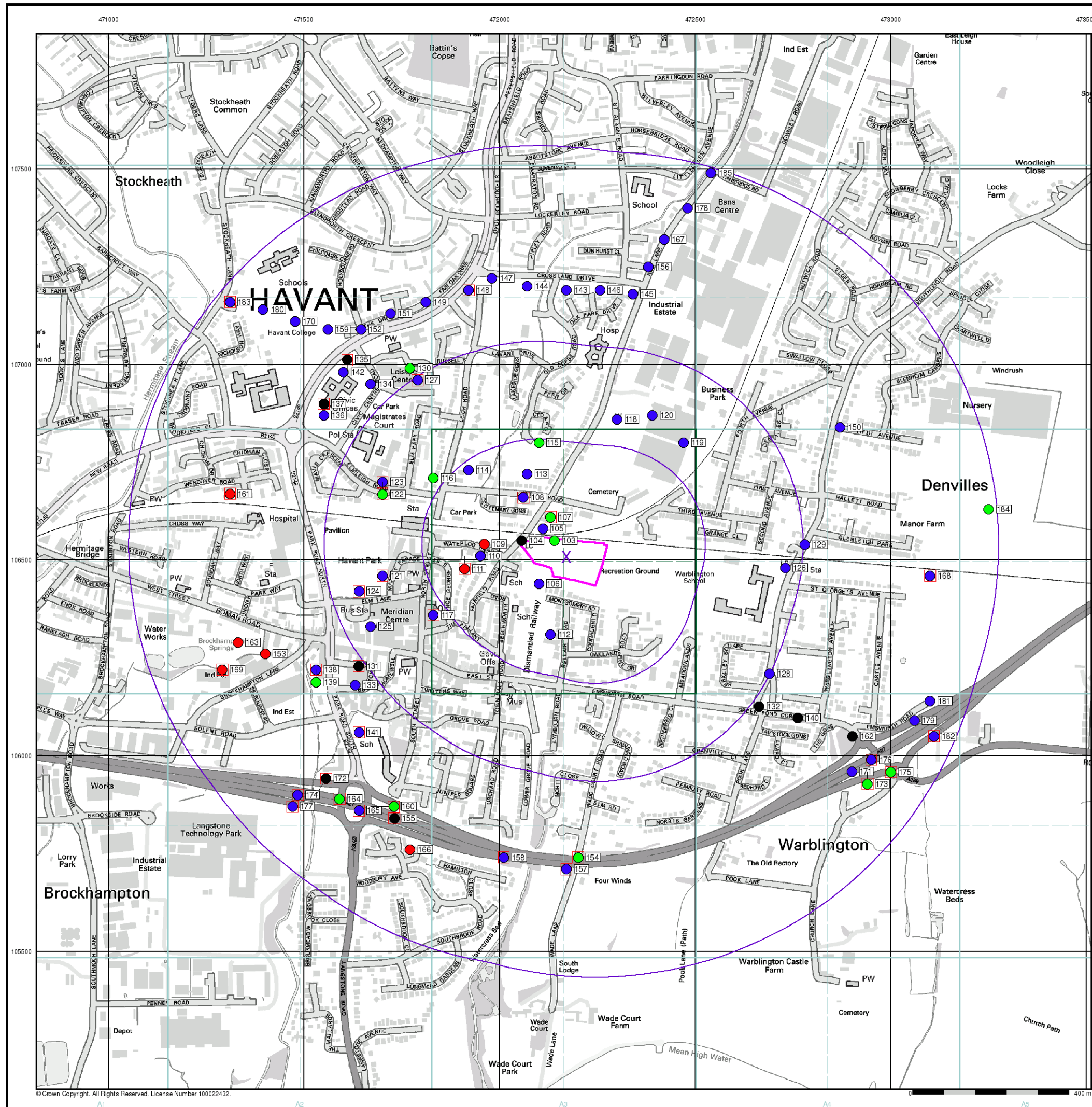


Order Details

Order Number: 33986877_1_1
 Customer Ref: C11051
 National Grid Reference: 472170, 106510
 Slice: A
 Site Area (Ha): 1.74
 Search Buffer (m): 1000

Site Details

Southleigh Road, HAVANT, Hampshire, PO9 2RR



Envirocheck[®] Report:

Datasheet

Order Details:

Order Number:

33986877_1_1

Customer Reference:

C11051

National Grid Reference:

472170, 106510

Slice:

A

Site Area (Ha):

1.74

Search Buffer (m):

1000

Site Details:

Southleigh Road

HAVANT

Hampshire

PO9 2RR

Client Details:

Ms R Roffe

Hydrock Consultants

Over Court Barns

Over Lane

Almondsbury

Bristol

BS32 4DF

Report Section	Page Number
Summary	-
Agency & Hydrological	1
Waste	13
Hazardous Substances	-
Geological	17
Industrial Land Use	19
Sensitive Land Use	28
Data Currency	29
Data Suppliers	34
Useful Contacts	35

Introduction

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

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

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Information supplied from a joint dataset compiled by The British Geological Survey and the Health Protection Agency.

Report Version v47.0

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				5
Integrated Pollution Prevention And Control	pg 3				3
Local Authority Integrated Pollution Prevention And Control					
Local Authority Pollution Prevention and Controls	pg 4			3	6
Local Authority Pollution Prevention and Control Enforcements	pg 5				1
Nearest Surface Water Feature	pg 5		Yes		
Pollution Incidents to Controlled Waters	pg 5		4	2	9
Prosecutions Relating to Authorised Processes					
Prosecutions Relating to Controlled Waters					
Registered Radioactive Substances					
River Quality	pg 8		1	1	1
River Quality Biology Sampling Points					
River Quality Chemistry Sampling Points					
Substantiated Pollution Incident Register					
Water Abstractions	pg 8				(*9)
Water Industry Act Referrals	pg 10				1
Groundwater Vulnerability	pg 10	Yes	n/a	n/a	n/a
Bedrock Aquifer Designations	pg 10	Yes	n/a	n/a	n/a
Superficial Aquifer Designations	pg 10	Yes	n/a	n/a	n/a
Source Protection Zones	pg 11			1	1
Extreme Flooding from Rivers or Sea without Defences	pg 11		Yes	n/a	n/a
Flooding from Rivers or Sea without Defences	pg 11		Yes	n/a	n/a
Areas Benefiting from Flood Defences				n/a	n/a
Flood Water Storage Areas				n/a	n/a
Flood Defences				n/a	n/a
Waste					
BGS Recorded Landfill Sites					
Historical Landfill Sites					
Integrated Pollution Control Registered Waste Sites					
Licensed Waste Management Facilities (Landfill Boundaries)					
Licensed Waste Management Facilities (Locations)	pg 13		1		1
Local Authority Recorded Landfill Sites					
Registered Landfill Sites					
Registered Waste Transfer Sites	pg 14		1		1
Registered Waste Treatment or Disposal Sites	pg 15				3

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Hazardous Substances					
Control of Major Accident Hazards Sites (COMAH)					
Explosive Sites					
Notification of Installations Handling Hazardous Substances (NIHHS)					
Planning Hazardous Substance Consents					
Planning Hazardous Substance Enforcements					
Geological					
BGS Recorded Mineral Sites					
BGS 1:625,000 Solid Geology	pg 17	Yes	n/a	n/a	n/a
Brine Compensation Area			n/a	n/a	n/a
Coal Mining Affected Areas			n/a	n/a	n/a
Mining Instability			n/a	n/a	n/a
Man-Made Mining Cavities					
Natural Cavities					
Non Coal Mining Areas of Great Britain	pg 17		Yes	n/a	n/a
Potential for Collapsible Ground Stability Hazards	pg 17	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 17	Yes		n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 17	Yes		n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 17	Yes	Yes	n/a	n/a
Radon Potential - Radon Affected Areas	pg 17	Yes	n/a	n/a	n/a
Radon Potential - Radon Protection Measures			n/a	n/a	n/a
Industrial Land Use					
Contemporary Trade Directory Entries	pg 19		2	32	70
Fuel Station Entries	pg 27				3

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Sensitive Land Use					
Areas of Adopted Green Belt					
Areas of Unadopted Green Belt					
Areas of Outstanding Natural Beauty	pg 28				1
Environmentally Sensitive Areas					
Forest Parks					
Local Nature Reserves					
Marine Nature Reserves					
National Nature Reserves					
National Parks					
Nitrate Sensitive Areas					
Nitrate Vulnerable Zones	pg 28	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: 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: Freshwater Stream/River Environment: 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	A13NW (NW)	171	1	471940 106670
2	Discharge Consents Operator: Havant Borough Council Property Type: Extraction Of Other Minerals Location: Bus Station At Elm Road, Havant Hampshire Authority: Environment Agency, Southern Region Catchment Area: Not Supplied Reference: N01228 Permit Version: 2 Effective Date: 14th February 1996 Issued Date: 14th February 1996 Revocation Date: Not Supplied Discharge Type: Trade Effluent Discharge-Site Drainage Discharge: Saline Estuary Environment: Receiving Water: Saline Estuary Status: New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995) Positional Accuracy: Located by supplier to within 100m	A12SE (W)	473	1	471600 106400
2	Discharge Consents Operator: Stagecoach (South) Ltd Property Type: Extraction Of Other Minerals Location: Bus Station At Elm Road, Havant Hampshire Authority: Environment Agency, Southern Region Catchment Area: Not Given Reference: N01228 Permit Version: 1 Effective Date: 26th November 1979 Issued Date: 26th November 1979 Revocation Date: 14th February 1996 Discharge Type: Discharge Of Other Matter-Surface Water Discharge: Saline Estuary Environment: Receiving Water: Saline Estuary Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989 Positional Accuracy: Located by supplier to within 100m	A12SE (W)	473	1	471600 106400
3	Discharge Consents Operator: Mr D.S. Hughes F.R.I.C.S. Property Type: Undefined Or Other Location: 62-66 West Street, Havant Hampshire Authority: Environment Agency, Southern Region Catchment Area: Not Given Reference: N01171 Permit Version: 1 Effective Date: 4th June 1982 Issued Date: 4th June 1982 Revocation Date: 31st March 1997 Discharge Type: Discharge Of Other Matter-Surface Water Discharge: Freshwater Stream/River Environment: Receiving Water: Freshwater River Status: Lapsed (under Environment Act 1995, Schedule 23) Positional Accuracy: Located by supplier to within 100m	A12SE (W)	548	1	471550 106320

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
4	Discharge Consents Operator: Southern Water Services Ltd (H) Property Type: Sewerage Network - Sewers - Water Company Location: North Close, Havant Hampshire Authority: Environment Agency, Southern Region Catchment Area: Not Given Reference: A00353 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: Freshwater Stream/River Environment: Receiving Water: Freshwater River Status: Post National Rivers Authority Legislation where issue date > 31/08/1989 Positional Accuracy: Located by supplier to within 10m	A8NW (S)	619	1	472110 105830
5	Discharge Consents Operator: Southern Water Services Ltd (H) Property Type: Sewerage Network - Sewers - Water Company Location: Pook Lane, Havant Hampshire Authority: Environment Agency, Southern Region Catchment Area: Not Given Reference: A00354 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: Freshwater Stream/River Environment: Receiving Water: Freshwater River Status: Post National Rivers Authority Legislation where issue date > 31/08/1989 Positional Accuracy: Located by supplier to within 10m	A9SW (SE)	736	1	472540 105760
6	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: Freshwater Stream/River Environment: Receiving Water: Freshwater River Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989 Positional Accuracy: Located by supplier to within 10m	A18NE (N)	894	1	472430 107420
7	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	A18SE (NE)	541	1	472407 107064
7	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	A18SE (NE)	542	1	472412 107064

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
7	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	A18SE (NE)	546	1	472407 107069
8	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	A18NE (N)	667	1	472400 107195
8	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	A18NE (N)	672	1	472400 107200
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: Effective Application Type: Variation App. Sub Type: Simple Standard Variation 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 Otherwise Prescribed) (Unless Glazing Etc) Primary Activity: Y	A18SE (NE)	546	1	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 Otherwise Prescribed) (Unless Glazing Etc) Primary Activity: Y Activity Code: 0.0 Associated Process Activity Description: Associated Process Primary Activity: N	A18SE (NE)	546	1	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, Southern Region Permit Reference: MP3431KV Original Permit Ref: Bx8076ix Effective Date: Not Supplied Status: Valid 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 Otherwise Prescribed) (Unless Glazing Etc) Primary Activity: Y	A18SE (NE)	546	1	472407 107069
10	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: Not Supplied 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	A13NE (NE)	328	2	472437 106823
11	Local Authority Pollution Prevention and Controls Name: Solent Cleaners Ltd Location: 5 Market Parade, Havant, Po9 1py Authority: Havant Borough Council, Environmental Health Department Permit Reference: HBC/IPPC/05/01765 Dated: Not Supplied Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning Status: Application Not Yet Authorised Positional Accuracy: Located by supplier to within 10m	A12SE (W)	339	2	471719 106479
12	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	A18SE (N)	384	2	472274 106926
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	A18SE (N)	547	2	472403 107071
14	Local Authority Pollution Prevention and Controls Name: Texaco (Star Service Station) Location: 5 Park Road South, HAVANT, Hampshire, PO9 1HA Authority: Havant Borough Council, Environmental Health Department Permit Reference: Epa1/03/98 Dated: 21st August 2000 Process Type: Local Authority Air Pollution Control Description: PG1/14 Petrol filling station Status: Authorisation revokedRevoked Positional Accuracy: Automatically positioned to the address	A12SE (SW)	577	2	471590 106196
15	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	A18NE (N)	722	2	472465 107236

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
16	Local Authority Pollution Prevention and Controls Name: Tesco Stores Ltd Location: Solent Road, Langstone Harbour, HAVANT, Hampshire, PO9 5AH Authority: Havant Borough Council, Environmental Health Department Permit Reference: HBC/IPPC/05/00326 Dated: 28th May 1998 Process Type: Local Authority Pollution Prevention and Control Description: PG1/14 Petrol filling station Status: Permitted Positional Accuracy: Automatically positioned to the address	A7NE (SW)	761	2	471494 106017
17	Local Authority Pollution Prevention and Controls Name: Solent Cleaners Ltd Location: 15 Solent Road, HAVANT, Hampshire, PO9 1AF Authority: Havant Borough Council, Environmental Health Department Permit Reference: HBC/IPPC/05/00724v1 Dated: Not Supplied Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning Status: Permitted Positional Accuracy: Located by supplier to within 10m	A7NW (SW)	861	2	471345 106049
18	Local Authority Pollution Prevention and Controls Name: Kwik-Fit Location: New Road, HAVANT, Hampshire, PO9 1DE Authority: Havant Borough Council, Environmental Health Department Permit Reference: Epa1/02/98 Dated: Not Supplied Process Type: Local Authority Air Pollution Control Description: PG1/14 Petrol filling station Status: Authorisation revokedRevoked Positional Accuracy: Automatically positioned to the address	A11NE (W)	942	2	471136 106763
19	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	A18SE (N)	547	2	472403 107071
	Nearest Surface Water Feature	A13NW (W)	148	-	471904 106526
20	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	A13NE (NE)	67	1	472300 106600
21	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	A13NW (NW)	118	1	471950 106600

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
22	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	A13NW (NW)	167	1	471940 106665
22	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	A13NW (NW)	171	1	471940 106670
23	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	A18SW (N)	341	1	472100 106900
24	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	A18SE (N)	360	1	472300 106900
25	Pollution Incidents to Controlled Waters Property Type: Miscellaneous Premises: Other Location: Cjh Tyres, 3A Brockhampton Lane, HAVANT Authority: Environment Agency, Southern Region Pollutant: Miscellaneous - Vehicle Washings And De Waxing Note: Cleaning Fluid In Stream At Rear Of Premises Incident Date: 10th October 1996 Incident Reference: 796470 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A12SE (SW)	566	1	471600 106200
26	Pollution Incidents to Controlled Waters Property Type: Water Company Sewage: Other Location: Market Parade, HAVANT Authority: Environment Agency, Southern Region Pollutant: Crude Sewage Note: Dirty Stream; Water Company Sewage: Other Incident Date: 12th June 1995 Incident Reference: 1898 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)	570	1	471500 106400

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
26	Pollution Incidents to Controlled Waters Property Type: Private Sewage (Non-PLC): Other Location: Boys Brigade Gardens, Elm Lane, Park Road North Authority: Environment Agency, Southern Region Pollutant: Unknown Sewage Note: Possible Contamination By Sewage Incident Date: 2nd October 1997 Incident Reference: 797533 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A12SE (W)	571	1	471500 106395
27	Pollution Incidents to Controlled Waters Property Type: Miscellaneous Premises: Other Location: Location Description Not Available Authority: Environment Agency, Southern Region Pollutant: Miscellaneous - Urban Runoff Note: Oil On Stream Incident Date: 25th October 1996 Incident Reference: 796498 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A12SE (SW)	649	1	471500 106200
28	Pollution Incidents to Controlled Waters Property Type: Road Location: U/S Of De La Rue Premises Authority: Environment Agency, Southern Region Pollutant: Oils - Other Oil Note: Diesel In Stream Incident Date: 19th October 1992 Incident Reference: 337 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	A7NE (SW)	694	1	471600 106000
29	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	A18NE (N)	748	1	472200 107300
30	Pollution Incidents to Controlled Waters Property Type: Miscellaneous Premises: Other Location: Solent Road, HAVANT Authority: Environment Agency, Southern Region Pollutant: Miscellaneous - Vehicle Washings And De Waxing Note: Diesel Oil In Stream Incident Date: 28th January 1997 Incident Reference: 797046 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Miscellaneous/Other Pollution Type Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A7NE (SW)	768	1	471600 105900
31	Pollution Incidents to Controlled Waters Property Type: Other General Premises Location: Location Description Not Available Authority: Environment Agency, Southern Region Pollutant: Oils - Unknown Note: Oil In Stream; Miscellaneous Premises: Unknown Incident Date: 29th March 1995 Incident Reference: 1766 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)	847	1	471600 105800

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
32	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	A18NE (N)	858	1	472300 107400
	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)	134	1	471992 106674
	River Quality Name: Warblington Strm - No.4 GQA Grade: River Quality A Reach: Tidal Limit - Source Estimated Distance (km): 1 Flow Rate: Flow less than 0.31 cumecs Flow Type: River Year: 2000	A8NW (S)	462	1	472100 105995
	River Quality Name: Warblington Strm - No.3 GQA Grade: River Quality B Reach: Tidal Limit - Source Estimated Distance (km): 1.2 Flow Rate: Flow less than 0.31 cumecs Flow Type: River Year: 2000	A14SE (E)	851	1	473068 106217
	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	A11SE (W)	1046	1	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	A11SE (W)	1046	1	471020 106370

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	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	A11SE (W)	1046	1	471020 106370
	Water Abstractions Operator: Portsmouth Water Ltd Licence Number: 11/42/36.2/1 Permit Version: 101 Location: Bedhampton Ps Spring No 1 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	A11SW (W)	1482	1	470580 106370
	Water Abstractions Operator: Portsmouth Water Ltd Licence Number: 11/42/36.2/1 Permit Version: 102 Location: Bedhampton Ps Spring No 1 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	A11SW (W)	1482	1	470580 106370
	Water Abstractions Operator: Portsmouth Water Co Licence Number: 11/42/36.2/1 Permit Version: 100 Location: Bedhampton Ps Spring No 1 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): 164565 Yearly Rate (m3): 42732400 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 100m	A11SW (W)	1482	1	470580 106370

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Portsmouth Water Ltd Licence Number: 11/42/36.2/1 Permit Version: 101 Location: Havant Ps 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	A11SW (W)	1595	1	470480 106270
	Water Abstractions Operator: Portsmouth Water Ltd Licence Number: 11/42/36.2/1 Permit Version: 102 Location: Havant Ps 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	A11SW (W)	1595	1	470480 106270
	Water Abstractions Operator: Portsmouth Water Co Licence Number: 11/42/36.2/1 Permit Version: 100 Location: Havant Ps 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 100m	A11SW (W)	1595	1	470480 106270
33	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 operator Positional Accuracy: Automatically positioned to the address	A18NE (N)	723	1	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	A13NE (SE)	0	1	472171 106508
	Drift Deposits None				
	Bedrock Aquifer Designations Aquifer Desination: Secondary Aquifer - A	A13NE (SE)	0	3	472171 106508
	Superficial Aquifer Designations Aquifer Designation: Secondary Aquifer - A	A13NE (SE)	0	3	472171 106508

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
34	Source Protection Zones Name: Bedhampton & Havant Springs Source: Environment Agency, Head Office Reference: Su049 Type: Zone I (Inner Protection Zone): Travel time of 50 days or less to the groundwater source.	A13SW (S)	286	1	472079 106177
35	Source Protection Zones Name: Bedhampton & Havant Springs Source: Environment Agency, Head Office Reference: Su049 Type: Groundwater Source	A12SW (W)	929	1	471160 106280
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Boundary Accuracy: As Supplied	A13NW (NW)	52	1	472030 106591
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Boundary Accuracy: As Supplied	A13NW (NW)	69	1	472066 106620
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Boundary Accuracy: As Supplied	A13NW (NW)	93	1	472030 106637
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Boundary Accuracy: As Supplied	A13NW (NW)	116	1	471976 106629
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Boundary Accuracy: As Supplied	A13NW (NW)	122	1	472064 106678
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Boundary Accuracy: As Supplied	A13NW (NW)	127	1	472054 106678
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Boundary Accuracy: As Supplied	A13NW (NW)	130	1	471946 106617
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Boundary Accuracy: As Supplied	A13NW (NW)	151	1	471946 106648
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Boundary Accuracy: As Supplied	A13NW (W)	160	1	471898 106498
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Boundary Accuracy: As Supplied	A13NW (NW)	220	1	472001 106762
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Boundary Accuracy: As Supplied	A13NW (NW)	236	1	471882 106705
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Boundary Accuracy: As Supplied	A13NW (NW)	52	1	472030 106592
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Boundary Accuracy: As Supplied	A13NW (NW)	70	1	472066 106621
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Boundary Accuracy: As Supplied	A13NW (NW)	94	1	472030 106637
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Boundary Accuracy: As Supplied	A13NW (NW)	111	1	471983 106628
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Boundary Accuracy: As Supplied	A13NW (NW)	120	1	471975 106634
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Boundary Accuracy: As Supplied	A13NW (NW)	123	1	472034 106669

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Boundary Accuracy: As Supplied	A13NW (NW)	130	1	472062 106684
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Boundary Accuracy: As Supplied	A13NW (NW)	132	1	471946 106619
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Boundary Accuracy: As Supplied	A13NW (NW)	151	1	471946 106649
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Boundary Accuracy: As Supplied	A13NW (W)	160	1	471898 106498
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Boundary Accuracy: As Supplied	A13NW (NW)	176	1	472048 106728
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Boundary Accuracy: As Supplied	A13NW (NW)	221	1	471999 106761
	Areas Benefiting from Flood Defences None				
	Flood Water Storage Areas None				
	Flood Defences None				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
36	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, Solent and South Downs 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	A13NW (N)	54	1	472130 106610
37	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 - Southern Region, Solent and South Downs 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	A19NW (NE)	726	1	472550 107210
	Local Authority Landfill Coverage Name: Havant Borough Council - Has supplied landfill data		0	2	472171 106508
	Local Authority Landfill Coverage Name: Hampshire County Council - Had landfill data but passed it to the relevant environment agency		0	6	472171 106508

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
38	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: No known restriction on source of waste Restrictions: Licence Status: Operational as far as is knownOperational Dated: 1st February 1990 Preceded By: Not Given Licence: Superseded By: Not Given Licence: Positional Accuracy: Manually positioned to the address or location Boundary Quality: Not Supplied Authorised Waste 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.	A13NW (NW)	43	1	472120 106600
39	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: Waste produced/controlled by licence holder Restrictions: Licence Status: Operational as far as is knownOperational Dated: 11th June 2001 Preceded By: 13/ 22 Licence: Superseded By: Not Given Licence: 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	A19NW (NE)	778	1	472630 107230

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
40	Registered Waste Treatment or Disposal Sites Licence Holder: Larkham Bros Ltd Licence Reference: 13/ 18 Site Location: 12b Clarendon Road, Havant, Hampshire Operator Location: As Site Address Authority: Environment Agency - Southern Region, Hampshire Area Site Category: Scrapyard Max Input Rate: Undefined Waste Source: No known restriction on source of waste Restrictions: Licence Status: Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled Dated: 1st August 1990 Preceded By: Not Given Licence: Superseded By: Not Given Licence: Positional Accuracy: Manually positioned to the address or location Boundary Quality: Not Supplied Authorised Waste: Scrap Metal (As In 1964 Act) Prohibited Waste: Biodegradable Mat'Ls Drums -Unless Empty Or Cont'S Conform Food Waste Liquid/Sludge Wastes -Except As Above Paper/Cardboard/Packaging Waste Phenols/Mat'L Containing Phenol Poisonous, Noxious, Polluting Wastes Potentially Haz. Or Polluting Waste Special Wastes - Except As Above Vegetable Matter Waste Ex Premis.Of Toxic/Water Sol.Chem Environment Agency Assoc. Asbestos must give specific authorisation for this waste to be acceptedWaste requires prior approval Assoc. Battery Acids Assoc. Drainings From Rad'Rs & Transf' Assoc. High Hazard Mat'Ls Assoc. Mineral Engine Oils Assoc. Solid/Liquid Residues	A7NW (SW)	771	1	471400 106130
41	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: Waste produced/controlled by licence holder Restrictions: Licence Status: Record supersededSuperseded Dated: 13th September 1991 Preceded By: Not Given Licence: Superseded By: 13/ 22 Licence: Positional Accuracy: Manually positioned to the address or location Boundary Quality: Not Supplied Authorised Waste: Special Wastes As In Application	A19NW (NE)	778	1	472630 107230

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
42	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: Waste produced/controlled by licence holder Restrictions: Licence Status: Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled Dated: 17th June 1977 Preceded By: Not Given Licence: Superseded By: Not Given Licence: Positional Accuracy: Approximate location provided by supplier Boundary Quality: Not Supplied Authorised Waste: Paper/Cardboard Waste Wood Waste/Timber Environment Agency Waste N.O.S must give specific authorisation for this waste to be acceptedWaste requires prior approval	A19NW (NE)	921	1	472600 107400

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS 1:625,000 Solid Geology Description: London Clay	A13NE (SE)	0	3	472171 106508
	Coal Mining Affected Areas In an area which may not be affected by coal mining				
	Non Coal Mining Areas of Great Britain Risk: Unlikely Source: British Geological Survey, National Geoscience Information Service	A13SW (S)	250	3	472092 106212
	Non Coal Mining Areas of Great Britain Risk: Likely Source: British Geological Survey, National Geoscience Information Service	A13SW (S)	250	3	472076 106216
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NE (N)	0	3	472171 106550
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (SE)	0	3	472171 106508
	Potential for Ground Dissolution Stability Hazards No Hazard				
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (SE)	0	3	472171 106508
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NE (N)	0	3	472171 106550
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (SE)	0	3	472171 106508
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	28	3	472075 106600
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NE (SE)	0	3	472171 106508
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	14	3	472100 106475
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	28	3	472075 106600
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	134	3	472171 106300
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	234	3	471925 106325
	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	A13NE (SE)	0	3	472171 106508
	Radon Potential - Radon Affected Areas Affected Area: The property is in a lower probability radon area, as less than 1% of homes are above the action level Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	0	3	472150 106525
	Radon Potential - Radon Affected Areas Affected Area: The property is in a lower probability radon area, as less than 1% of homes are above the action level Source: British Geological Survey, National Geoscience Information Service	A13NE (E)	0	3	472175 106508
	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	A13NE (SE)	0	3	472171 106508

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	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 (NW)	0	3	472150 106525
	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	A13NE (E)	0	3	472175 106508

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
43	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	A13NW (NW)	39	-	472103 106598
44	Contemporary Trade Directory Entries Name: The Starjammer Group Location: 2, Steyning Terrace, Waterloo Road, Havant, Hampshire, PO9 1BJ Classification: Engineers - General Status: Active Positional Accuracy: Automatically positioned to the address	A13NW (W)	97	-	471955 106547
45	Contemporary Trade Directory Entries Name: Ace Electrics Location: 38, Market Parade, Havant, Hampshire, PO9 1QF Classification: Electrical Goods Sales, Manufacturers & Wholesalers Status: Inactive Positional Accuracy: Automatically positioned to the address	A12SE (W)	267	-	471789 106491
45	Contemporary Trade Directory Entries Name: Maids Location: 37, North Street, Havant, Hampshire, PO9 1PP Classification: Cleaning Services - Domestic Status: Inactive Positional Accuracy: Automatically positioned to the address	A12SE (W)	277	-	471793 106442
45	Contemporary Trade Directory Entries Name: Havent & Emsworth Laundrette Location: 34, Market Parade, Havant, Hampshire, PO9 1QF Classification: Laundries & Launderettes Status: Active Positional Accuracy: Automatically positioned to the address	A12SE (W)	278	-	471779 106491
46	Contemporary Trade Directory Entries Name: Ace Electrics Location: 35-37, Market Parade, Havant, Hampshire, PO9 1PY Classification: Electrical Goods Sales, Manufacturers & Wholesalers Status: Inactive Positional Accuracy: Manually positioned to the address or location	A12NE (W)	273	-	471779 106553
46	Contemporary Trade Directory Entries Name: Blazes Fireplace Centres Location: 23-25, Market Parade, Havant, Hampshire, PO9 1PY Classification: Fireplaces & Mantelpieces Status: Inactive Positional Accuracy: Automatically positioned to the address	A12NE (W)	310	-	471742 106537
47	Contemporary Trade Directory Entries Name: Printworks The Location: 37, East Street, Havant, Hampshire, PO9 1AA Classification: Printers Status: Inactive Positional Accuracy: Automatically positioned to the address	A13SW (SW)	278	-	471992 106222
48	Contemporary Trade Directory Entries Name: Five Star Units Location: The Pallant, Havant, Hampshire, PO9 1BE Classification: Engine Rebuilding & Reconditioning Status: Inactive Positional Accuracy: Manually positioned to the road within the address or location	A13SW (SW)	300	-	471842 106322
49	Contemporary Trade Directory Entries Name: 5 Star Units Location: The Pallant, Havant, Hampshire, PO9 1BE Classification: Gearboxes Status: Inactive Positional Accuracy: Manually positioned to the road within the address or location	A12SE (SW)	315	-	471826 106319
50	Contemporary Trade Directory Entries Name: Pennington Ziggy Location: 2, Town Hall Road, Havant, Hampshire, PO9 1AN Classification: Electrolysis Status: Inactive Positional Accuracy: Automatically positioned to the address	A13SW (SW)	324	-	471987 106171
51	Contemporary Trade Directory Entries Name: F O'Reilly & Son Location: 7, Market Parade, Havant, Hampshire, PO9 1PY Classification: Electrical Engineers Status: Active Positional Accuracy: Automatically positioned to the address	A12SE (W)	336	-	471720 106485

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
52	Contemporary Trade Directory Entries Name: Street'S Location: 11, East Street, Havant, Hampshire, PO9 1AB Classification: Hardware Status: Inactive Positional Accuracy: Automatically positioned to the address	A13SW (SW)	338	-	471847 106256
52	Contemporary Trade Directory Entries Name: Complete Lighting Services Ltd Location: East Street, Havant, Hampshire, PO9 1AA Classification: Lighting Manufacturers Status: Inactive Positional Accuracy: Automatically positioned to the address	A13SW (SW)	346	-	471835 106257
53	Contemporary Trade Directory Entries Name: Robert Dyas Ltd Location: 8-10, Meridian Centre, Havant, Hampshire, PO9 1UW Classification: Hardware Status: Active Positional Accuracy: Automatically positioned to the address	A12SE (W)	348	-	471754 106361
53	Contemporary Trade Directory Entries Name: Wilkinson Hardware Store Location: 23, Meridian Centre, HAVANT, Hampshire, PO9 1UW Classification: Hardware Status: Active Positional Accuracy: Automatically positioned to the address	A12SE (W)	348	-	471754 106361
54	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	A18SE (NE)	350	-	472431 106852
55	Contemporary Trade Directory Entries Name: Animal Fayre Location: 8, East Street, Havant, Hampshire, PO9 1AQ Classification: Pet Foods & Animal Feeds Status: Inactive Positional Accuracy: Automatically positioned to the address	A12SE (SW)	371	-	471826 106230
56	Contemporary Trade Directory Entries Name: Telegraphica Design & Print Location: 29, Elmleigh Road, Havant, Hampshire, PO9 2AA Classification: Printers Status: Inactive Positional Accuracy: Automatically positioned to the address	A12NE (W)	383	-	471688 106661
57	Contemporary Trade Directory Entries Name: Service Master Location: 26, Lymbourn Road, Havant, Hampshire, PO9 2SL Classification: Commercial Cleaning Services Status: Inactive Positional Accuracy: Automatically positioned to the address	A8NW (S)	386	-	472129 106066
58	Contemporary Trade Directory Entries Name: Currys Location: 6, West Street, Havant, Hampshire, PO9 1PF Classification: Electrical Goods Sales, Manufacturers & Wholesalers Status: Inactive Positional Accuracy: Automatically positioned to the address	A12SE (SW)	388	-	471765 106278
59	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	A18SW (N)	393	-	472155 106948
59	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	A18SW (N)	393	-	472155 106948
60	Contemporary Trade Directory Entries Name: Pearce Motors (Havant) Ltd Location: 13-15, South Street, Havant, Hampshire, PO9 1BU Classification: Mot Testing Centres Status: Active Positional Accuracy: Automatically positioned to the address	A12SE (SW)	419	-	471819 106172

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
60	Contemporary Trade Directory Entries Name: Pearce Motors Location: 13-15, South Street, Havant, Hampshire, PO9 1BU Classification: Mot Testing Centres Status: Inactive Positional Accuracy: Automatically positioned to the address	A12SE (SW)	419	-	471819 106172
61	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	A18SE (NE)	419	-	472470 106908
62	Contemporary Trade Directory Entries Name: Price'S Garage Location: 23, South Street, Havant, Hampshire, PO9 1BU Classification: Garage Services Status: Inactive Positional Accuracy: Automatically positioned to the address	A7NE (SW)	456	-	471795 106144
62	Contemporary Trade Directory Entries Name: Havant Garage Location: 25-27, South Street, Havant, Hampshire, PO9 1BU Classification: Mot Testing Centres Status: Inactive Positional Accuracy: Automatically positioned to the address	A7NE (SW)	474	-	471802 106115
62	Contemporary Trade Directory Entries Name: Dave Crews Location: 25-27, South Street, Havant, Hampshire, PO9 1BU Classification: Car Painters & Sprayers Status: Active Positional Accuracy: Automatically positioned to the address	A7NE (SW)	474	-	471802 106115
62	Contemporary Trade Directory Entries Name: Havant Garages Location: 25-27, South Street, Havant, Hampshire, PO9 1BU Classification: Garage Services Status: Inactive Positional Accuracy: Automatically positioned to the address	A7NE (SW)	474	-	471802 106115
62	Contemporary Trade Directory Entries Name: Havant Garages Location: 25-27, South Street, Havant, Hampshire, PO9 1BU Classification: Mot Testing Centres Status: Active Positional Accuracy: Automatically positioned to the address	A7NE (SW)	474	-	471802 106115
63	Contemporary Trade Directory Entries Name: Bath Renovation & Management Services Location: Homewell House, 22, Homewell, Havant, Hampshire, PO9 1EE Classification: Bath Resurfacing Status: Inactive Positional Accuracy: Manually positioned to the address or location	A12SE (SW)	465	-	471732 106194
63	Contemporary Trade Directory Entries Name: All About Gas Heating & Plumbing Services Location: 16, The Parchment, Havant, Hampshire, PO9 1HD Classification: Boilers - Servicing, Replacements & Repairs Status: Active Positional Accuracy: Automatically positioned to the address	A7NE (SW)	497	-	471729 106150
64	Contemporary Trade Directory Entries Name: Solent Cleaners Ltd Location: 34, West Street, Havant, Hampshire, PO9 1PG Classification: Dry Cleaners Status: Inactive Positional Accuracy: Automatically positioned to the address	A12SE (W)	467	-	471650 106304
65	Contemporary Trade Directory Entries Name: Supasnaps Location: 29, West Street, Havant, Hampshire, PO9 1ER Classification: Photographic Processors Status: Inactive Positional Accuracy: Automatically positioned to the address	A12SE (SW)	530	-	471597 106270
66	Contemporary Trade Directory Entries Name: Pesd (Engineering) Ltd Location: 20, South Street, Havant, Hampshire, PO9 1DA Classification: Engineers - General Status: Active Positional Accuracy: Manually positioned to the address or location	A7NE (SW)	543	-	471754 106064

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
67	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	A18SE (NE)	546	-	472407 107069
68	Contemporary Trade Directory Entries Name: Sam Hartley Location: 6, Elm Road, Havant, Hampshire, PO9 2SZ Classification: Car Dealers - Used Status: Active Positional Accuracy: Automatically positioned to the address	A8NE (S)	575	-	472326 105865
69	Contemporary Trade Directory Entries Name: Shell (UK) Ltd Location: 5, Park Road South, Havant, Hampshire, PO9 1HA Classification: Petrol Filling Stations - 24 Hour Status: Inactive Positional Accuracy: Automatically positioned to the address	A12SE (SW)	577	-	471590 106196
70	Contemporary Trade Directory Entries Name: Ers Engineering Services Location: 8-12, Park Road South, Havant, Hampshire, PO9 1HB Classification: Engineers - General Status: Inactive Positional Accuracy: Automatically positioned to the address	A12SE (W)	579	-	471546 106259
70	Contemporary Trade Directory Entries Name: Mercury Graphics Ltd Location: 1a, Brockhampton Lane, Havant, Hampshire, PO9 1LU Classification: Copying & Duplicating Services Status: Active Positional Accuracy: Automatically positioned to the address	A12SE (W)	606	-	471509 106272
70	Contemporary Trade Directory Entries Name: Printline Location: 1a, Brockhampton Lane, Havant, Hampshire, PO9 1LU Classification: Printers Status: Inactive Positional Accuracy: Automatically positioned to the address	A12SE (W)	606	-	471509 106272
70	Contemporary Trade Directory Entries Name: C J H Location: 3, Brockhampton Lane, Havant, PO9 1LU Classification: Brake & Clutch Service Centres Status: Inactive Positional Accuracy: Automatically positioned to the address	A12SE (W)	624	-	471497 106255
71	Contemporary Trade Directory Entries Name: Alchemy International Location: 11, Pook Lane, Havant, Hampshire, PO9 2TH Classification: Cosmetic Manufacturers Status: Active Positional Accuracy: Automatically positioned to the address	A9NW (SE)	580	-	472659 106028
72	Contemporary Trade Directory Entries Name: Park Way Centre Location: Park Way, Havant, Hampshire, PO9 1HH Classification: Hospitals Status: Inactive Positional Accuracy: Automatically positioned to the address	A12SW (W)	588	-	471466 106492
73	Contemporary Trade Directory Entries Name: Trust Marley Recycling & Shredding Location: 24, Park Road South, Havant, Hampshire, PO9 1HB Classification: Reclaiming - Waste Products Status: Active Positional Accuracy: Automatically positioned to the address	A12SE (SW)	613	-	471536 106209
73	Contemporary Trade Directory Entries Name: C J H Tyres Havant Location: 3a, Brockhampton Lane, Havant, Hampshire, PO9 1LU Classification: Tyre Dealers Status: Active Positional Accuracy: Automatically positioned to the address	A12SE (W)	632	-	471497 106238
73	Contemporary Trade Directory Entries Name: The 10th March Group Ltd Location: 3a, Brockhampton Lane, Havant, Hampshire, PO9 1LU Classification: Brake & Clutch Service Centres Status: Active Positional Accuracy: Automatically positioned to the address	A12SE (W)	632	-	471497 106238

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
74	Contemporary Trade Directory Entries Name: Commercial Printers (Portsmouth) Ltd Location: 39, Park Way, Havant, Hampshire, PO9 1HH Classification: Printers Status: Inactive Positional Accuracy: Automatically positioned to the address	A12SW (W)	640	-	471427 106404
74	Contemporary Trade Directory Entries Name: Performance Car Co Location: 39, Park Way, Havant, Hampshire, PO9 1HH Classification: Car Dealers Status: Active Positional Accuracy: Automatically positioned to the address	A12SW (W)	640	-	471427 106404
75	Contemporary Trade Directory Entries Name: Havant Car Connection Location: 98, West Street, Havant, Hampshire, PO9 1LN Classification: Car Dealers - Used Status: Inactive Positional Accuracy: Manually positioned to the address or location	A12SW (W)	650	-	471435 106336
75	Contemporary Trade Directory Entries Name: Alandown Motors Ltd Location: 98, West Street, Havant, Hampshire, PO9 1LN Classification: Mot Testing Centres Status: Active Positional Accuracy: Automatically positioned to the address	A12SW (W)	651	-	471435 106336
75	Contemporary Trade Directory Entries Name: Lawrence Warner Specialist Cars Location: 98, West Street, Havant, Hampshire, PO9 1LN Classification: Car Dealers Status: Active Positional Accuracy: Manually positioned to the address or location	A12SW (W)	651	-	471435 106336
76	Contemporary Trade Directory Entries Name: Henry Jones Joinery Ltd Location: 59-61, West Street, Havant, Hampshire, PO9 1LB Classification: Joinery Manufacturers Status: Active Positional Accuracy: Automatically positioned to the address	A12SW (W)	672	-	471428 106291
76	Contemporary Trade Directory Entries Name: Metalcraft Fabrications Location: 29, The Tanneries, Brockhampton Lane, Havant, Hampshire, PO9 1JB Classification: Metal Products - Fabricated Status: Active Positional Accuracy: Automatically positioned to the address	A12SW (W)	705	-	471403 106266
76	Contemporary Trade Directory Entries Name: E Tech Location: 4, The Tanneries, Brockhampton Lane, Havant, Hampshire, PO9 1JB Classification: Garage Services Status: Active Positional Accuracy: Automatically positioned to the address	A12SW (W)	705	-	471403 106266
76	Contemporary Trade Directory Entries Name: Iso Engineering Electrical Services Ltd Location: 4, The Tanneries, Brockhampton Lane, Havant, Hampshire, PO9 1JB Classification: Control Panel Manufacturers Status: Inactive Positional Accuracy: Automatically positioned to the address	A12SW (W)	705	-	471403 106266
76	Contemporary Trade Directory Entries Name: Iso Engineering Electrical Services Location: 4, The Tanneries, Brockhampton Lane, Havant, Hampshire, PO9 1JB Classification: Control Panel Manufacturers Status: Inactive Positional Accuracy: Automatically positioned to the address	A12SW (W)	705	-	471403 106266
76	Contemporary Trade Directory Entries Name: E-Tech Motorsport Location: 4, The Tanneries, Brockhampton Lane, Havant, Hampshire, PO9 1JB Classification: Car Radiator Servicing & Repairs Status: Active Positional Accuracy: Automatically positioned to the address	A12SW (W)	705	-	471403 106266
76	Contemporary Trade Directory Entries Name: H & R Fabrications & Finishers Ltd Location: 12-12a, The Tanneries, Brockhampton Lane, Havant, Hampshire, PO9 1JB Classification: Sheet Metal Work Status: Inactive Positional Accuracy: Automatically positioned to the address	A12SW (W)	722	-	471403 106224

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
76	Contemporary Trade Directory Entries Name: Able Motor Co Ltd Location: 12-12a, The Tanneries, Brockhampton Lane, Havant, Hampshire, PO9 1JB Classification: Garage Services Status: Active Positional Accuracy: Automatically positioned to the address	A12SW (W)	722	-	471403 106224
76	Contemporary Trade Directory Entries Name: E M P Tooling Service Ltd Location: 9, The Tanneries, Brockhampton Lane, Havant, Hampshire, PO9 1JB Classification: Tool Design, Manufacturers & Makers Status: Active Positional Accuracy: Automatically positioned to the address	A12SW (W)	744	-	471377 106229
76	Contemporary Trade Directory Entries Name: Iain'S Auto Services Location: 20, The Tanneries, Brockhampton Lane, Havant, Hampshire, PO9 1JB Classification: Car Engine Tuning & Diagnostic Services Status: Active Positional Accuracy: Manually positioned to the address or location	A12SW (W)	744	-	471377 106229
76	Contemporary Trade Directory Entries Name: A C E Location: 7, The Tanneries, Brockhampton Lane, Havant, Hampshire, PO9 1JB Classification: Precision Engineers Status: Inactive Positional Accuracy: Automatically positioned to the address	A12SW (W)	744	-	471377 106229
76	Contemporary Trade Directory Entries Name: R S Vehicle Repair & Roys Rovers Location: 20, The Tanneries, Brockhampton Lane, Havant, Hampshire, PO9 1JB Classification: Garage Services Status: Inactive Positional Accuracy: Automatically positioned to the address	A12SW (W)	744	-	471377 106229
76	Contemporary Trade Directory Entries Name: Lynx Garage Location: 19, The Tanneries, Brockhampton Lane, Havant, Hampshire, PO9 1JB Classification: Garage Services Status: Active Positional Accuracy: Automatically positioned to the address	A12SW (W)	744	-	471377 106229
76	Contemporary Trade Directory Entries Name: Dip & Strip Location: 27-28, The Tanneries, Brockhampton Lane, Havant, Hampshire, PO9 1JB Classification: Paint & Varnish Stripping Status: Inactive Positional Accuracy: Manually positioned to the address or location	A12SW (W)	744	-	471377 106229
76	Contemporary Trade Directory Entries Name: Tanneries Trade Location: 27-28, The Tanneries, Brockhampton Lane, Havant, Hampshire, PO9 1JB Classification: Car Dealers - Used Status: Inactive Positional Accuracy: Manually positioned to the address or location	A12SW (W)	744	-	471377 106229
76	Contemporary Trade Directory Entries Name: G & W Motors Location: 2-3, The Tanneries, Brockhampton Lane, Havant, Hampshire, PO9 1JB Classification: Garage Services Status: Inactive Positional Accuracy: Automatically positioned to the address	A12SW (W)	752	-	471358 106251
76	Contemporary Trade Directory Entries Name: Smith Bros Flight Cases Location: 22, The Tanneries, Brockhampton Lane, Havant, Hampshire, PO9 1JB Classification: Case Manufacturers Status: Inactive Positional Accuracy: Automatically positioned to the address	A12SW (W)	752	-	471358 106251
77	Contemporary Trade Directory Entries Name: Havant War Memorial Hospital Location: 59, Cross Way, Havant, Hampshire, PO9 1NG Classification: Hospitals Status: Active Positional Accuracy: Automatically positioned to the address	A12NW (W)	685	-	471371 106616
78	Contemporary Trade Directory Entries Name: Six O Location: Bosmere Building, School Road, Havant, Hampshire, PO9 1NA Classification: Road Haulage Services Status: Active Positional Accuracy: Automatically positioned to the address	A7NW (SW)	706	-	471468 106145

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
79	Contemporary Trade Directory Entries Name: Wyeth Location: 32, New Lane, Havant, Hampshire, PO9 2NG Classification: Pharmaceutical Manufacturers & Distributors Status: Active Positional Accuracy: Automatically positioned to the address	A18NE (N)	723	-	472466 107236
80	Contemporary Trade Directory Entries Name: Burrows Bros Engineering Ltd Location: Selbourne Road, Havant, Hampshire, PO9 1ND Classification: Engineers - General Status: Inactive Positional Accuracy: Automatically positioned to the address	A7NW (SW)	766	-	471411 106123
81	Contemporary Trade Directory Entries Name: A C Redman Metal Spinnings Ltd Location: 13 The Tanneries, Brockhampton La, Havant, Hampshire, PO9 1JB Classification: Metal Spinners Status: Active Positional Accuracy: Manually positioned to the address or location	A12SW (W)	773	-	471359 106198
81	Contemporary Trade Directory Entries Name: P D L Technologies Ltd Location: 13, The Tanneries, Brockhampton Lane, Havant, Hampshire, PO9 1JB Classification: Spraying - Paint & Coatings Status: Inactive Positional Accuracy: Automatically positioned to the address	A12SW (W)	776	-	471357 106196
81	Contemporary Trade Directory Entries Name: Oden Services Ltd Location: Unit 23 Brockhampton La, Havant, Hampshire, PO9 1JB Classification: Computer Recycling & Disposal Status: Active Positional Accuracy: Manually positioned to the address or location	A12SW (W)	790	-	471343 106192
81	Contemporary Trade Directory Entries Name: Plastic Engineering Solutions Location: 23, The Tanneries, Brockhampton Lane, Havant, Hampshire, PO9 1JB Classification: Plastics - Injection Moulding Status: Inactive Positional Accuracy: Automatically positioned to the address	A12SW (W)	791	-	471344 106188
82	Contemporary Trade Directory Entries Name: Visitech Location: Solent Rd, Havant, Hampshire, PO9 1TR Classification: Plastic Products - Manufacturers Status: Inactive Positional Accuracy: Manually positioned to the road within the address or location	A7NW (SW)	774	-	471434 106075
83	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	A18NE (N)	793	-	472191 107347
84	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	A18NW (N)	800	-	471916 107338
85	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	A19NW (NE)	816	-	472548 107308
86	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	A19NW (NE)	826	-	472622 107288
87	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	A19NW (N)	829	-	472509 107334

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
87	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	A19NW (N)	869	-	472516 107374
88	Contemporary Trade Directory Entries Name: Hourglass Location: 14, The Tanneries, Brockhampton Lane, Havant, Hampshire, PO9 1JB Classification: Mirrors & Decorative Glass Status: Active Positional Accuracy: Automatically positioned to the address	A12SW (W)	840	-	471291 106186
88	Contemporary Trade Directory Entries Name: South Hants Glass Location: Unit 10 Solent Rd, Havant, Hampshire, PO9 1JH Classification: Glass Products - Manufacturers Status: Active Positional Accuracy: Manually positioned to the address or location	A12SW (W)	863	-	471262 106194
89	Contemporary Trade Directory Entries Name: Lefay Engineering Ltd Location: Unit 3, 25c, Brockhampton Lane, Havant, Hampshire, PO9 1JT Classification: Precision Engineers Status: Inactive Positional Accuracy: Automatically positioned to the address	A7NW (SW)	870	-	471296 106109
89	Contemporary Trade Directory Entries Name: Mitchell & James Caravans Ltd Location: Unit 3, 25c, Brockhampton Lane, Havant, Hampshire, PO9 1JT Classification: Caravans - Servicing & Repairs Status: Active Positional Accuracy: Automatically positioned to the address	A7NW (SW)	870	-	471296 106109
89	Contemporary Trade Directory Entries Name: Solent Cleaners Location: 15, Solent Road, HAVANT, Hampshire, PO9 1AF Classification: Dry Cleaners Status: Active Positional Accuracy: Automatically positioned to the address	A7NW (SW)	870	-	471296 106109
89	Contemporary Trade Directory Entries Name: Motomex Location: 25a, Brockhampton Lane, Havant, Hampshire, PO9 1JT Classification: Garage Services Status: Active Positional Accuracy: Automatically positioned to the address	A7NW (SW)	870	-	471296 106109
89	Contemporary Trade Directory Entries Name: Motomex Location: Unit 2, 25c, Brockhampton Lane, Havant, Hampshire, PO9 1JT Classification: Garage Services Status: Inactive Positional Accuracy: Automatically positioned to the address	A7NW (SW)	889	-	471273 106113
89	Contemporary Trade Directory Entries Name: Navitron Systems Ltd Location: Unit 2, 25e, Brockhampton Lane, Havant, Hampshire, PO9 1JT Classification: Marine Equipment & Supplies Status: Active Positional Accuracy: Automatically positioned to the address	A7NW (SW)	917	-	471250 106096
89	Contemporary Trade Directory Entries Name: Motomex Location: Unit 2, 25e, Brockhampton Lane, Havant, Hampshire, PO9 1JT Classification: Garage Services Status: Inactive Positional Accuracy: Automatically positioned to the address	A7NW (SW)	917	-	471250 106096
90	Contemporary Trade Directory Entries Name: Kemp Brothers Location: 9, Cross Way, Havant, Hampshire, PO9 1NG Classification: Joinery Manufacturers Status: Inactive Positional Accuracy: Automatically positioned to the address	A12NW (W)	870	-	471182 106578
91	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	A19NW (NE)	875	-	472569 107363

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
91	Contemporary Trade Directory Entries Name: Spur Electron 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	A19NW (NE)	881	-	472537 107380
92	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	A18NE (N)	883	-	472235 107432
93	Contemporary Trade Directory Entries Name: Coopers Blinds Ltd Location: 18, The Tanneries, Brockhampton Lane, Havant, Hampshire, PO9 1JB Classification: Blinds, Awnings & Canopies Status: Inactive Positional Accuracy: Automatically positioned to the address	A12SW (W)	889	-	471233 106194
94	Contemporary Trade Directory Entries Name: Kwik-Fit Location: New Road, HAVANT, Hampshire, PO9 1DE Classification: Tyre Dealers Status: Active Positional Accuracy: Automatically positioned to the address	A11NE (W)	942	-	471137 106764
94	Contemporary Trade Directory Entries Name: Kwik-Fit Location: New Road, Havant, Hampshire, PO9 1DE Classification: Tyre Dealers Status: Inactive Positional Accuracy: Automatically positioned to the address	A11NE (W)	942	-	471137 106764
95	Contemporary Trade Directory Entries Name: Just Tyres Location: Solent Road, Havant, Hampshire, PO9 1JH Classification: Tyre Dealers Status: Inactive Positional Accuracy: Automatically positioned to the address	A7NW (SW)	944	-	471253 106039
96	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	A17NE (N)	965	-	471824 107485
97	Contemporary Trade Directory Entries Name: 1st Aat Location: 15, Abbotstone Avenue, Havant, Hampshire, PO9 2HL Classification: Domestic Appliances - Servicing, Repairs & Parts Status: Active Positional Accuracy: Automatically positioned to the address	A23SW (N)	991	-	472091 107550
98	Fuel Station Entries Name: Park Road South Service Station Location: Park Road South, Bulbeck Road, HAVANT, Hampshire, PO9 1HA Brand: Texaco Premises Type: Petrol Station Status: Closed Positional Accuracy: Automatically positioned to the address	A12SE (SW)	577	-	471590 106196
99	Fuel Station Entries Name: Tesco Havant Langstone Harbour Location: Solent Road, Havant, Hampshire, PO9 1TR Brand: TESCO Premises Type: Hypermarket Status: Open Positional Accuracy: Manually positioned to the address or location	A7NW (SW)	918	-	471280 106044
100	Fuel Station Entries Name: Hendy Lennox Location: New Road, HAVANT, Hampshire, PO9 1DE Brand: Obsolete Premises Type: Not Applicable Status: Obsolete Positional Accuracy: Automatically positioned to the address	A11NE (W)	942	-	471136 106763

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
101	Areas of Outstanding Natural Beauty Name: Chichester Harbour Multiple Areas: N Total Area (m2): 73161989.53 Designation Date: 29th February 1964 Source: Natural England	A8SW (S)	713	4	472102 105725
102	Nitrate Vulnerable Zones Name: Not Supplied Description: NVZ Area Source: Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	A13NE (SE)	0	5	472171 106508

Agency & Hydrological	Version	Update Cycle
Contaminated Land Register Entries and Notices Chichester District Council - Environmental Health Department Havant Borough Council - Environmental Health Department Winchester City Council - Environmental Health Department East Hampshire District Council - Environmental Health Department Portsmouth City Council - Health and Trading Standards	August 2010 December 2009 February 2011 June 2010 March 2010	Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update
Discharge Consents Environment Agency - Southern Region	October 2010	Quarterly
Enforcement and Prohibition Notices Environment Agency - Southern Region	January 2011	Quarterly
Integrated Pollution Controls Environment Agency - Southern Region	October 2008	Not Applicable
Integrated Pollution Prevention And Control Environment Agency - Southern Region	October 2010	Quarterly
Local Authority Integrated Pollution Prevention And Control Winchester City Council - Environmental Health Department Havant Borough Council - Environmental Health Department East Hampshire District Council - Environmental Health Department Chichester District Council - Environmental Health Department Portsmouth City Council - Environmental Health Department	April 2010 February 2011 March 2010 May 2010 October 2010	Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update
Local Authority Pollution Prevention and Controls Winchester City Council - Environmental Health Department Havant Borough Council - Environmental Health Department East Hampshire District Council - Environmental Health Department Chichester District Council - Environmental Health Department Portsmouth City Council - Environmental Health Department	April 2010 February 2011 March 2010 May 2010 October 2010	Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update
Local Authority Pollution Prevention and Control Enforcements East Hampshire District Council - Environmental Health Department Winchester City Council - Environmental Health Department Havant Borough Council - Environmental Health Department Chichester District Council - Environmental Health Department Portsmouth City Council - Environmental Health Department	April 2010 April 2010 February 2011 May 2010 October 2010	Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update
Nearest Surface Water Feature Ordnance Survey	July 2010	Quarterly
Pollution Incidents to Controlled Waters Environment Agency - Southern Region	December 1999	Not Applicable
Prosecutions Relating to Authorised Processes Environment Agency - Southern Region	January 2011	Monthly
Prosecutions Relating to Controlled Waters Environment Agency - Southern Region	December 2011	Monthly
Registered Radioactive Substances Environment Agency - Southern Region	October 2010	Quarterly
River Quality Environment Agency - Head Office	November 2001	Not Applicable
River Quality Biology Sampling Points Environment Agency - Head Office	January 2010	Annually
River Quality Chemistry Sampling Points Environment Agency - Head Office	January 2010	Annually
Substantiated Pollution Incident Register Environment Agency - Southern Region - Hampshire and Isle of Wight Area Office Environment Agency - Southern Region - Solent and South Downs Environment Agency - Southern Region - Sussex Area	October 2010 October 2010 October 2010	Quarterly Quarterly Quarterly

Agency & Hydrological	Version	Update Cycle
Water Abstractions Environment Agency - Southern Region	January 2011	Quarterly
Water Industry Act Referrals Environment Agency - Southern Region	October 2010	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 2010	Annually
Superficial Aquifer Designations British Geological Survey - National Geoscience Information Service	October 2010	Annually
Source Protection Zones Environment Agency - Head Office	January 2011	Quarterly
Extreme Flooding from Rivers or Sea without Defences Environment Agency - Head Office	November 2010	Quarterly
Flooding from Rivers or Sea without Defences Environment Agency - Head Office	November 2010	Quarterly
Areas Benefiting from Flood Defences Environment Agency - Head Office	November 2010	Quarterly
Flood Water Storage Areas Environment Agency - Head Office	November 2010	Quarterly
Flood Defences Environment Agency - Head Office	November 2010	Quarterly

Waste	Version	Update Cycle
BGS Recorded Landfill Sites British Geological Survey - National Geoscience Information Service	June 1996	Not Applicable
Historical Landfill Sites Environment Agency - Southern Region - Hampshire and Isle of Wight Area Office Environment Agency - Southern Region - Solent and South Downs Environment Agency - Southern Region - Sussex Area	October 2010 October 2010 October 2010	Quarterly Quarterly 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 Environment Agency - Southern Region - Solent and South Downs Environment Agency - Southern Region - Sussex Area	January 2011 January 2011 January 2011	Quarterly Quarterly Quarterly
Licensed Waste Management Facilities (Locations) Environment Agency - Southern Region - Hampshire and Isle of Wight Area Office Environment Agency - Southern Region - Solent and South Downs Environment Agency - Southern Region - Sussex Area	October 2010 October 2010 October 2010	Quarterly Quarterly Quarterly
Local Authority Landfill Coverage Chichester District Council - Environmental Health Department East Hampshire District Council Hampshire County Council - Minerals and Waste Planning Havant Borough Council - Environmental Health Department Portsmouth City Council - Environmental Health Department West Sussex County Council - Environment & Development Winchester City Council - Environmental Health Department	May 2000 May 2000 May 2000 May 2000 May 2000 May 2000 May 2000	Not Applicable Not Applicable Not Applicable Not Applicable Not Applicable Not Applicable Not Applicable
Local Authority Recorded Landfill Sites Chichester District Council - Environmental Health Department East Hampshire District Council Hampshire County Council - Minerals and Waste Planning Havant Borough Council - Environmental Health Department Portsmouth City Council - Environmental Health Department West Sussex County Council - Environment & Development Winchester City Council - Environmental Health Department	May 2000 May 2000 May 2000 May 2000 May 2000 May 2000 May 2000	Not Applicable Not Applicable Not Applicable Not Applicable Not Applicable Not Applicable Not Applicable
Registered Landfill Sites Environment Agency - Southern Region - Hampshire Area Environment Agency - Southern Region - Sussex Area	March 2003 March 2003	Not Applicable Not Applicable
Registered Waste Transfer Sites Environment Agency - Southern Region - Hampshire Area Environment Agency - Southern Region - Sussex Area	March 2003 March 2003	Not Applicable Not Applicable
Registered Waste Treatment or Disposal Sites Environment Agency - Southern Region - Hampshire Area Environment Agency - Southern Region - Sussex Area	March 2003 March 2003	Not Applicable Not Applicable

Hazardous Substances	Version	Update Cycle
Control of Major Accident Hazards Sites (COMAH) Health and Safety Executive	May 2010	Bi-Annually
Explosive Sites Health and Safety Executive	July 2010	Bi-Annually
Notification of Installations Handling Hazardous Substances (NIHHS) Health and Safety Executive	November 2000	Not Applicable
Planning Hazardous Substance Enforcements Chichester District Council - Planning Department Havant Borough Council - Commercial Team West Sussex County Council - Environment & Development East Hampshire District Council Winchester City Council - Planning Department Hampshire County Council - Minerals and Waste Planning Portsmouth City Council - Planning Office	February 2011 June 2010 October 2006 October 2010 October 2010 September 2010 September 2010	Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update
Planning Hazardous Substance Consents Chichester District Council - Planning Department Havant Borough Council - Commercial Team West Sussex County Council - Environment & Development East Hampshire District Council Winchester City Council - Planning Department Hampshire County Council - Minerals and Waste Planning Portsmouth City Council - Planning Office	February 2011 June 2010 October 2006 October 2010 October 2010 September 2010 September 2010	Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update
Geological	Version	Update Cycle
BGS Recorded Mineral Sites British Geological Survey - National Geoscience Information Service	October 2010	Bi-Annually
BGS 1:625,000 Solid Geology British Geological Survey - National Geoscience Information Service	August 1996	Not Applicable
Brine Compensation Area Cheshire Brine Subsidence Compensation Board	November 2002	Not Applicable
Coal Mining Affected Areas The Coal Authority - Mining Report Service	January 2006	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	February 2009	Not Applicable
Potential for Collapsible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2010	Annually
Potential for Compressible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2010	Annually
Potential for Ground Dissolution Stability Hazards British Geological Survey - National Geoscience Information Service	January 2010	Annually
Potential for Landslide Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2010	Annually
Potential for Running Sand Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2010	Annually
Potential for Shrinking or Swelling Clay Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2010	Annually
Radon Potential - Radon Affected Areas British Geological Survey - National Geoscience Information Service	May 2007	As notified
Radon Potential - Radon Protection Measures British Geological Survey - National Geoscience Information Service	May 2007	As notified

Industrial Land Use	Version	Update Cycle
Contemporary Trade Directory Entries Thomson Directories	November 2010	Quarterly
Fuel Station Entries Catalist Ltd - Experian	February 2011	Quarterly
Sensitive Land Use	Version	Update Cycle
Areas of Outstanding Natural Beauty Natural England	July 2010	Bi-Annually
Environmentally Sensitive Areas Natural England	October 2010	Annually
Forest Parks Forestry Commission	April 1997	Not Applicable
Local Nature Reserves Natural England	December 2010	Bi-Annually
Marine Nature Reserves Natural England	September 2010	Bi-Annually
National Nature Reserves Natural England	December 2010	Bi-Annually
National Parks Natural England	January 2011	Bi-Annually
Nitrate Sensitive Areas Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	December 2009	Not Applicable
Nitrate Vulnerable Zones Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	November 2010	Annually
Ramsar Sites Natural England	December 2010	Bi-Annually
Sites of Special Scientific Interest Natural England	December 2010	Bi-Annually
Special Areas of Conservation Natural England	December 2010	Bi-Annually
Special Protection Areas Natural England	December 2010	Bi-Annually

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	 British Geological Survey NATURAL ENVIRONMENT RESEARCH COUNCIL
Centre for Ecology and Hydrology	 Centre for Ecology & Hydrology NATURAL ENVIRONMENT RESEARCH COUNCIL
Countryside Council for Wales	 CYNGOR CEFN GWLAD CYMRU COUNTRYSIDE COUNCIL FOR WALES
Scottish Natural Heritage	
Natural England	
Health Protection Agency	
Ove Arup	
Peter Brett Associates	

Contact	Name and Address	Contact Details
1	Environment Agency - National Customer Contact Centre (NCCC) PO Box 544, Templeborough, Rotherham, S60 1BY	Telephone: 08708 506 506 Email: enquiries@environment-agency.gov.uk
2	Havant Borough Council - Environmental Health Department Civic Offices, Civic Centre Road, Havant, Hampshire, PO9 2AX	Telephone: 023 92474174 Fax: 01705 446659 Email: env.services@havant.gov.uk Website: www.havant.gov.uk
3	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
4	Natural England Northminster House, Northminster Road, Peterborough, Cambridgeshire, PE1 1UA	Telephone: 0845 600 3078 Fax: 01733 455103 Email: enquiries@naturalengland.org.uk Website: www.naturalengland.org.uk
5	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
6	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
-	Health Protection Agency - Radon Survey, Centre for Radiation, Chemical and Environmental Hazards Chilton, Didcot, Oxfordshire, OX11 0RQ	Telephone: 01235 822622 Fax: 01235 833891 Email: radon@hpa.org.uk Website: www.hpa.org.uk
-	Landmark Information Group Limited The Smith Centre, Henley On Thames, Oxfordshire, RG9 6AB	Telephone: 0844 844 9952 Fax: 0844 844 9951 Email: customerservices@landmarkinfo.co.uk Website: www.landmarkinfo.co.uk

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

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

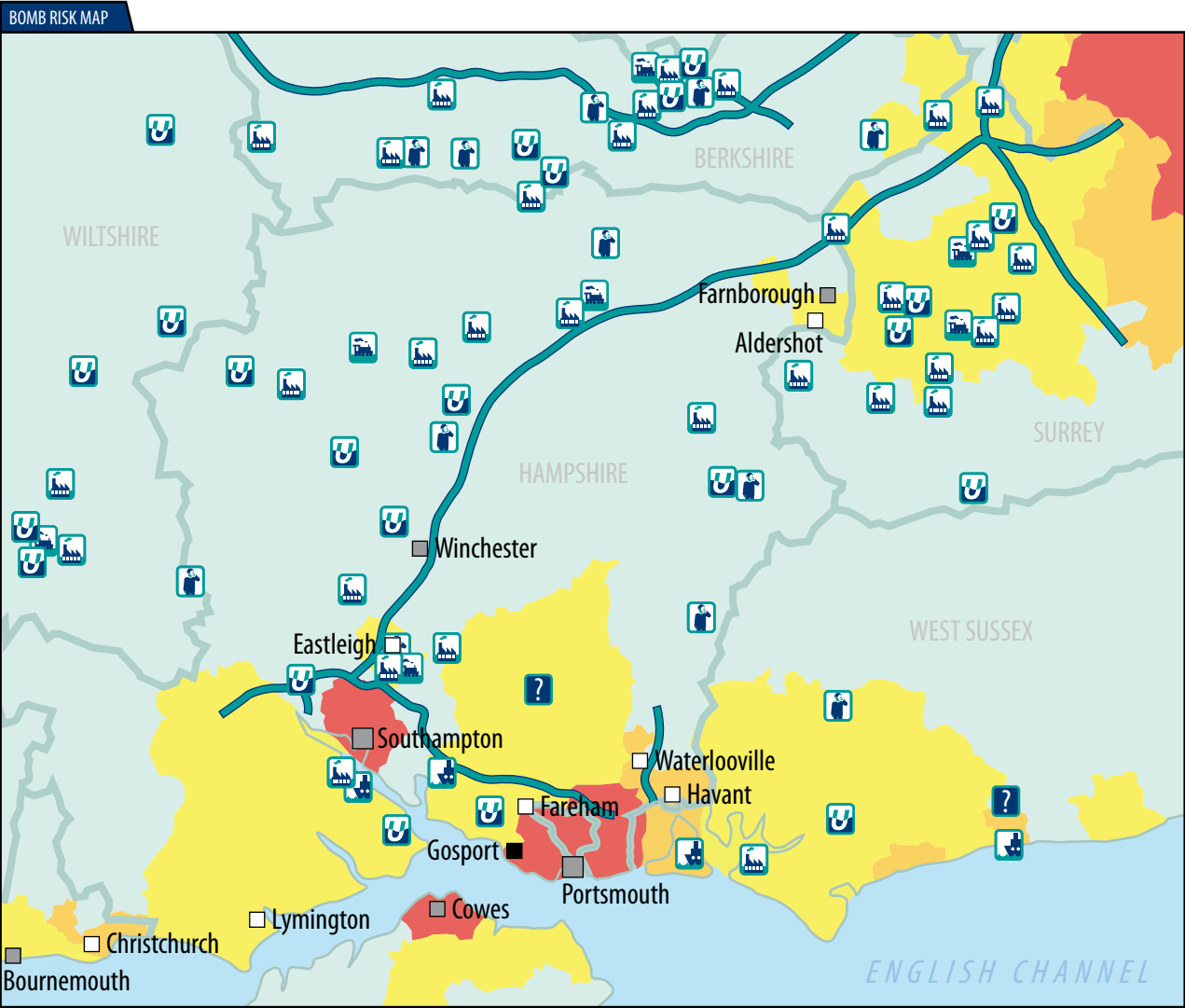
- military
- transport
- utilities
- industry
- docks
- other

BOMB TONNAGE

- >1000
- >500
- >100
- >0
- unverified

BOMB RISK

- high
- moderate
- low



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.



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.

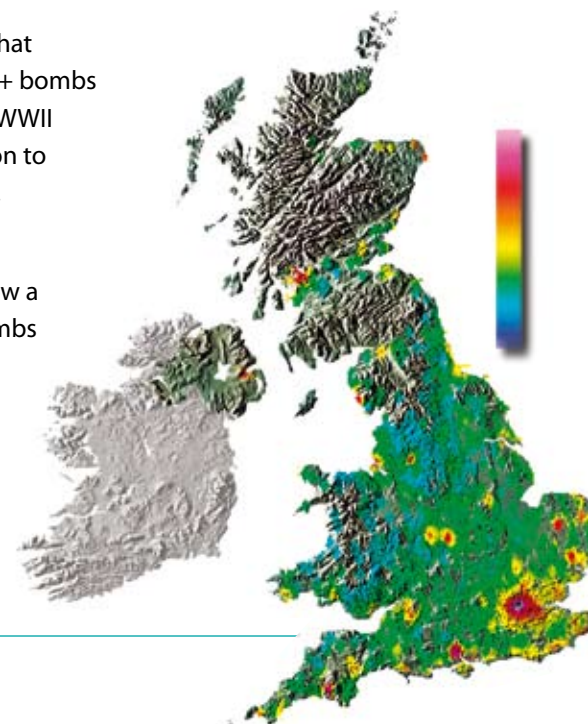
Low risk

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.

Geology 1:50,000 Maps Legends

Artificial Ground and Landslip

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	MGR	Made Ground (Undivided)	Artificial Deposit	Present Day - Present Day
	WGR	Worked Ground (Undivided)	Void	Present Day - Present Day

Superficial Geology

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	ALV	Alluvium	Clay, Silt, Sand and Gravel	Flandrian - Flandrian
	HEAD	Head	Clayey Gravel	Quaternary - Quaternary
	RTDU	River Terrace Deposits (Undifferentiated)	Sand, Silt and Clay	Quaternary - Quaternary
	HEAD	Head	Clay, Silt, Sand and Gravel	Quaternary - Quaternary
	RMD	Raised Marine Deposits	Sand and Gravel	Quaternary - Quaternary
	BTFU	Beach and Tidal Flat Deposits (Undifferentiated)	Clay, Silt, Sand and Gravel	Quaternary - Quaternary

Bedrock and Faults

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	BOSA	Bognor Sand Member	Sand	Eocene - Eocene
	LC	London Clay Formation	Clay, Silt and Sand	Eocene - Eocene
	LC	London Clay Formation	Sand	Eocene - Eocene
	LMBE	Lambeth Group	Clay, Silt and Sand	Paleocene - Paleocene
	LPCK	Lewes Nodular Chalk Formation, Seaford Chalk Formation, Newhaven Chalk Formation, Culver Chalk Formation and Portsdown Chalk Formation (Undifferentiated)	Chalk	Campanian - Turonian



Geology 1:50,000 Maps

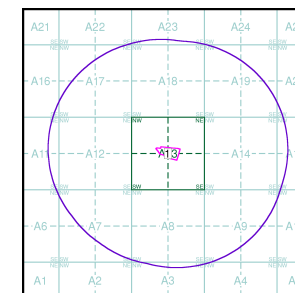
This report contains geological map extracts taken from the BGS Digital Geological map of Great Britain at 1:50,000 scale and is designed for users carrying out preliminary site assessments who require geological maps for the area around the site. This mapping may be more up to date than previously published paper maps.

The various geological layers - artificial and landslip deposits, superficial geology and solid (bedrock) geology are displayed in separate maps, but superimposed on the final 'Combined Surface Geology' map. All map legends feature on this page. Not all layers have complete nationwide coverage, so availability of data for relevant map sheets is indicated below.

Geology 1:50,000 Maps Coverage

Map ID:	1
Map Sheet No:	316
Map Name:	Fareham
Map Date:	1998
Bedrock Geology:	Available
Superficial Geology:	Available
Artificial Geology:	Available
Faults:	Available
Landslip:	Available
Rock Segments:	Not Available

Geology 1:50,000 Maps - Slice A



Order Details:

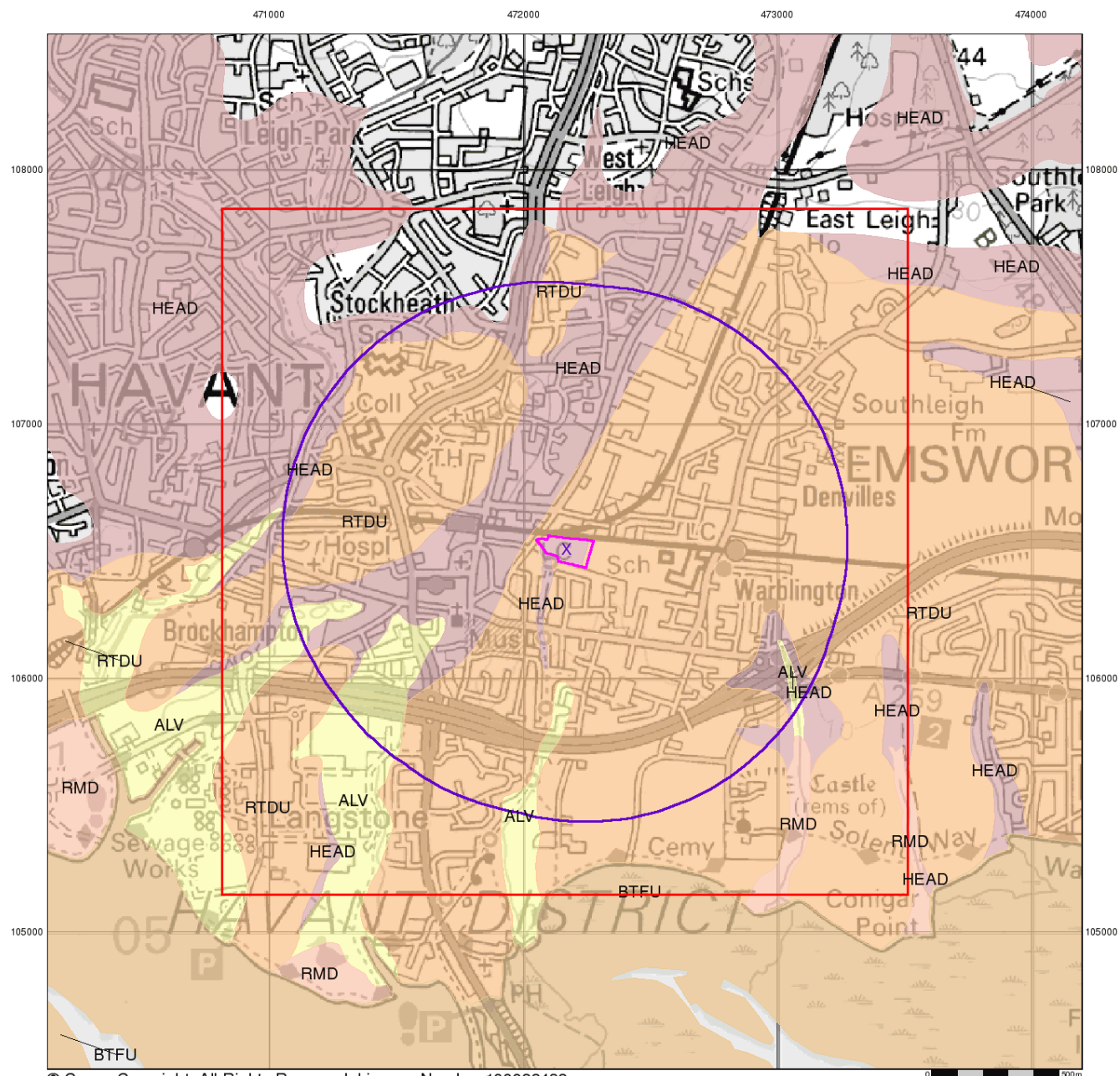
Order Number:	33986877_1_1
Customer Reference:	C11051
National Grid Reference:	472170, 106510
Slice:	A
Site Area (Ha):	1.74
Search Buffer (m):	1000

Site Details:

Southleigh Road, HAVANT, Hampshire, PO9 2RR



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



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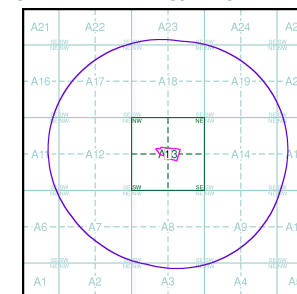
Superficial Geology

Superficial Deposits are the youngest geological deposits formed during the most recent period of geological time, the Quaternary, which extends back about 1.8 million years from the present.

They rest on older deposits or rocks referred to as Bedrock. This dataset contains Superficial deposits that are of natural origin and 'in place'. Other superficial strata may be held in the Mass Movement dataset where they have been moved, or in the Artificial Ground dataset where they are of man-made origin.

Most of these Superficial deposits are unconsolidated sediments such as gravel, sand, silt and clay, and onshore they form relatively thin, often discontinuous patches or larger spreads.

Superficial Geology Map - Slice A



Order Details:

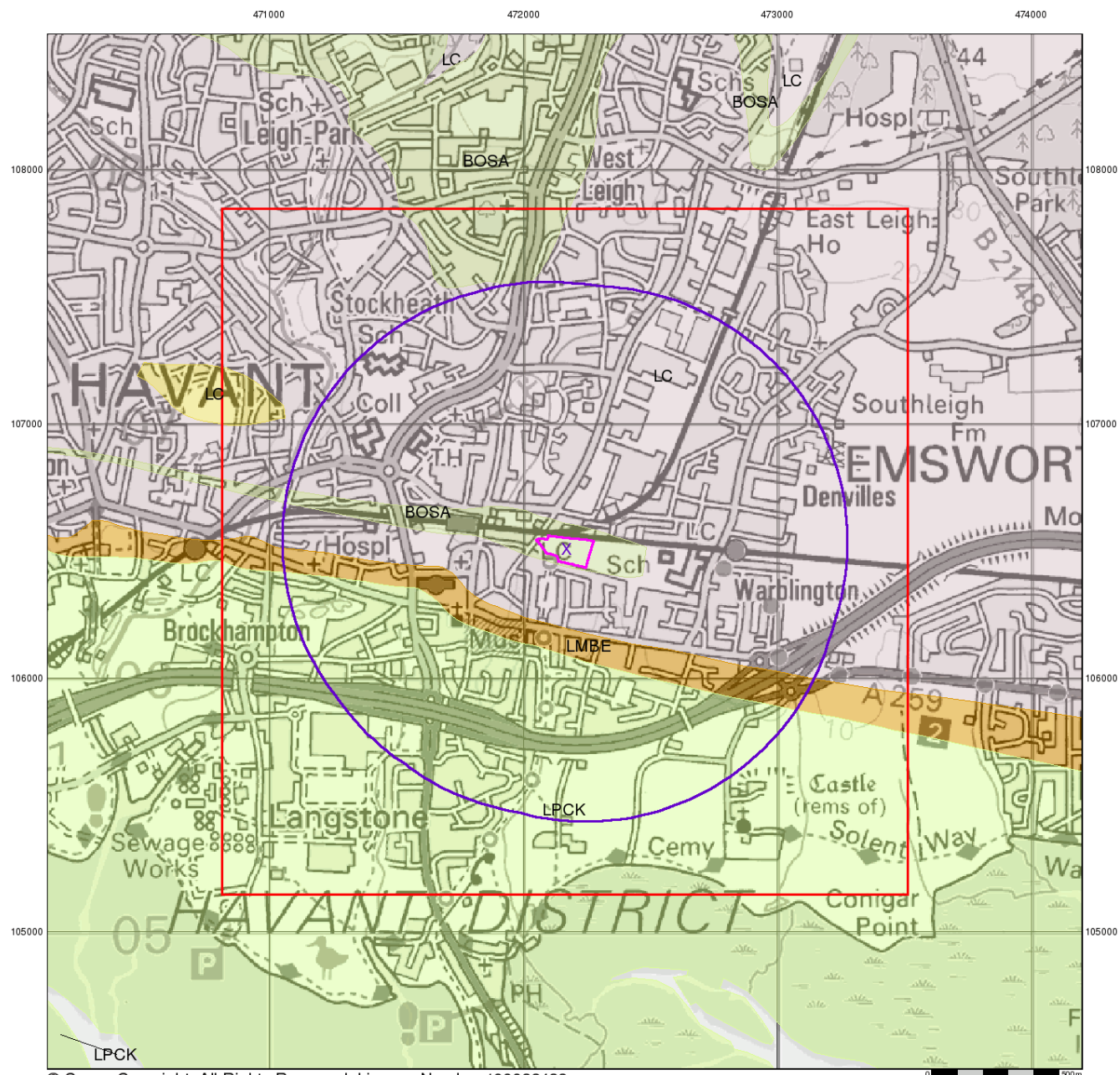
Order Number: 33986877_1_1
 Customer Reference: C11051
 National Grid Reference: 472170, 106510
 Slice: A
 Site Area (Ha): 1.74
 Search Buffer (m): 1000

Site Details:

Southleigh Road, HAVANT, Hampshire, PO9 2RR



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



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Bedrock and Faults

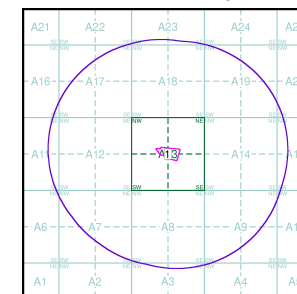
Bedrock geology is a term used for the main mass of rocks forming the Earth and are present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

The bedrock has formed over vast lengths of geological time ranging from ancient and highly altered rocks of the Proterozoic, some 2500 million years ago, or older, up to the relatively young Pliocene, 1.8 million years ago.

The bedrock geology includes many lithologies, often classified into three types based on origin: igneous, metamorphic and sedimentary.

The BGS Faults and Rock Segments dataset includes geological faults (e.g. normal, thrust), and thin beds mapped as lines (e.g. coal seam, gypsum bed). Some of these are linked to other particular 1:50,000 Geology datasets, for example, coal seams are part of the bedrock sequence, most faults and mineral veins primarily affect the bedrock but cut across the strata and post date its deposition.

Bedrock and Faults Map - Slice A



Order Details:

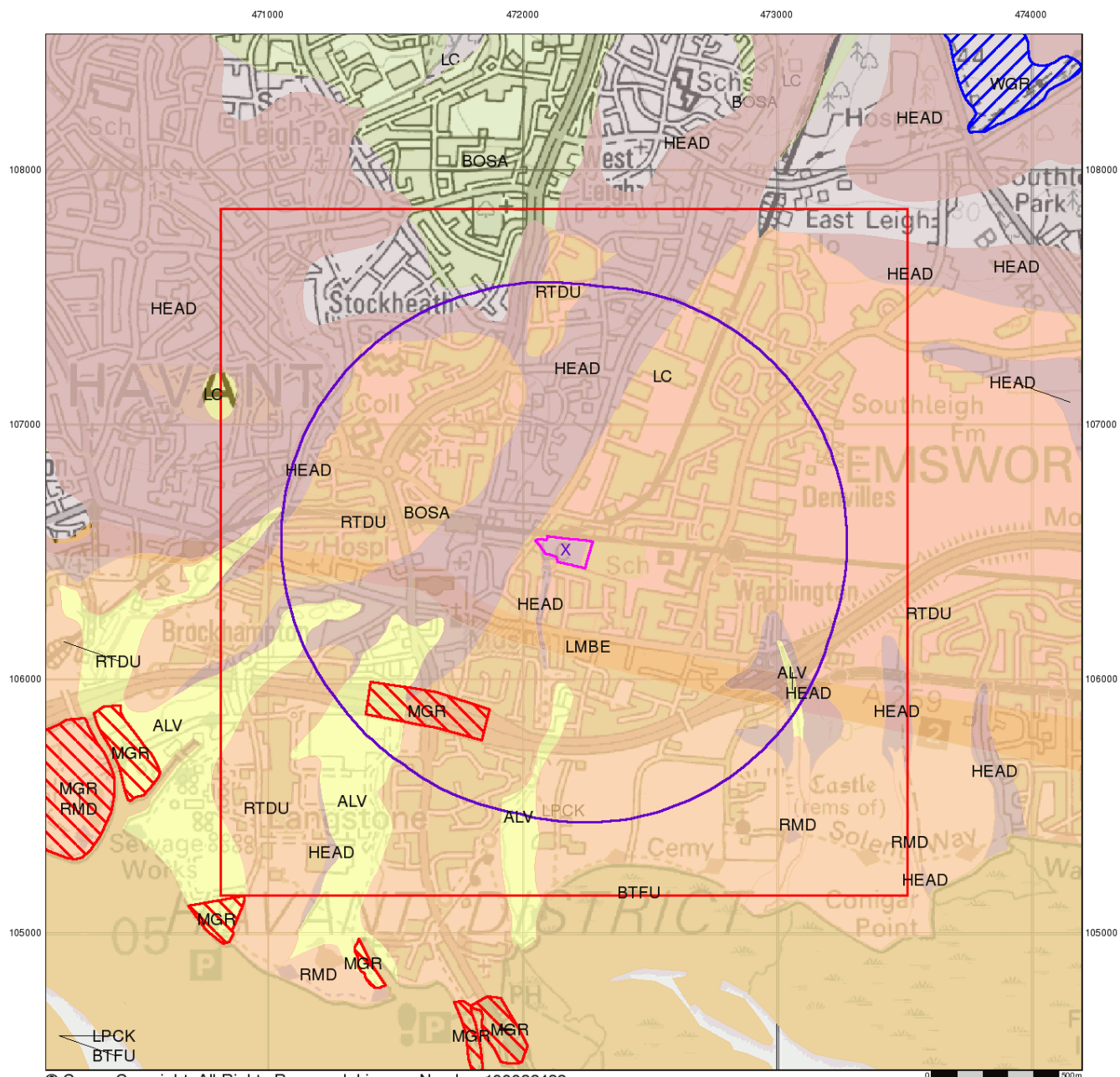
Order Number: 33986877_1_1
 Customer Reference: C11051
 National Grid Reference: 472170, 106510
 Slice: A
 Site Area (Ha): 1.74
 Search Buffer (m): 1000

Site Details:

Southleigh Road, HAVANT, Hampshire, PO9 2RR



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



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Combined Surface Geology

The Combined Surface Geology map combines all the previous maps into one combined geological overview of your site.

Please consult the legends to the previous maps to interpret the Combined "Surface Geology" map.

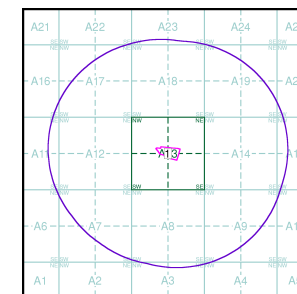
Additional Information

More information on 1:50,000 Geological mapping and explanations of rock classifications can be found on the BGS website. Using the LEX Codes in this report, further descriptions of rock types can be obtained by interrogating the 'BGS Lexicon of Named Rock Units'. This database can be accessed by following the 'Information and Data' link on the BGS website.

Contact

British Geological Survey
Kingsley Dunham Centre
Keyworth
Nottingham
NG12 5GG
Telephone: 0115 936 3143
Fax: 0115 936 3276
email: enquiries@bgs.ac.uk
website: www.bgs.ac.uk

Combined Geology Map - Slice A



Order Details:

Order Number: 33986877_1_1
Customer Reference: C11051
National Grid Reference: 472170, 106510
Slice: A
Site Area (Ha): 1.74
Search Buffer (m): 1000

Site Details:

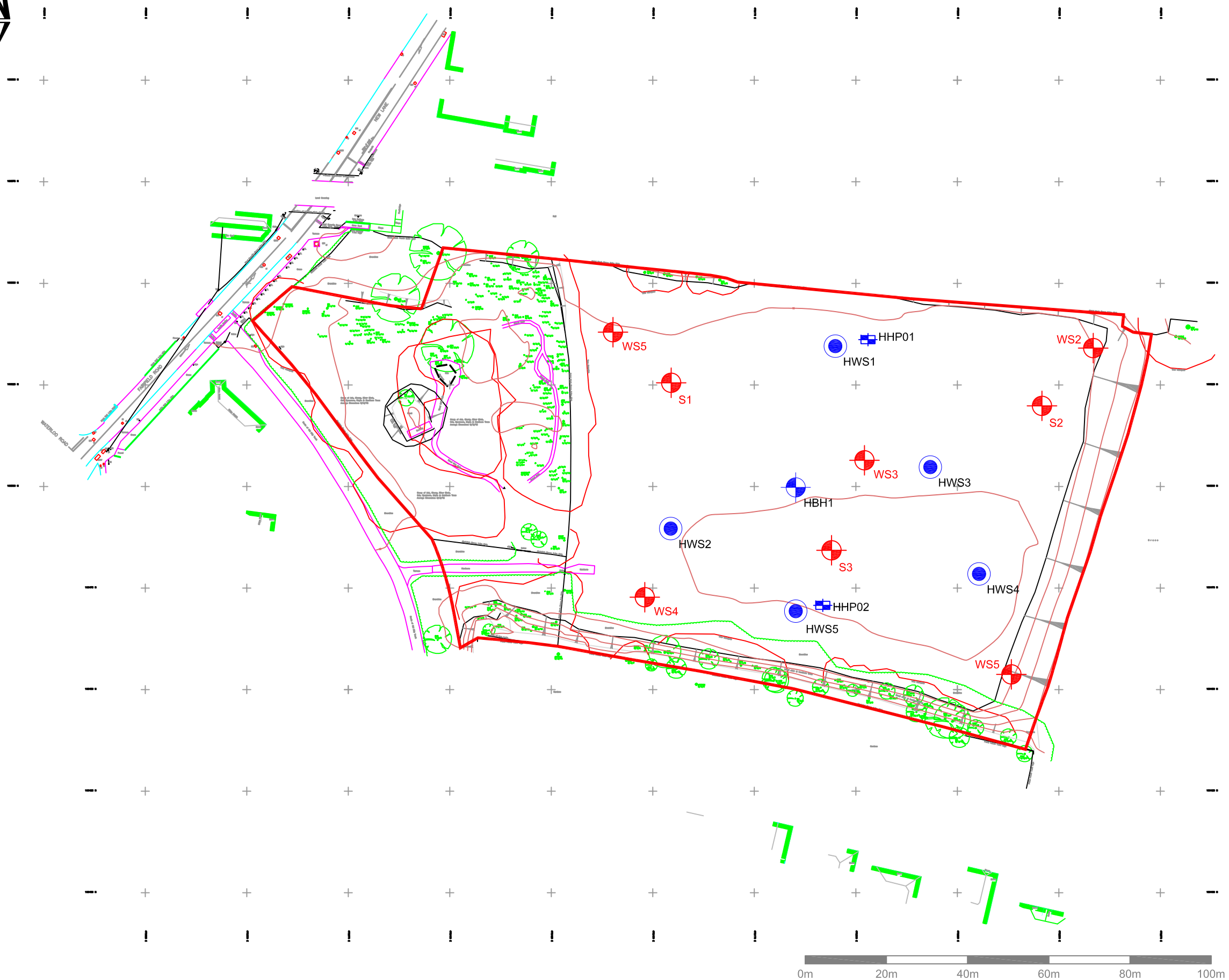
Southleigh Road, HAVANT, Hampshire, PO9 2RR



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

Appendix E

GROUND INVESTIGATION PLAN, EXPLORATORY HOLE LOGS & PHOTOGRAPHS



Notes:

1. This drawing has been produced using a survey supplied by the client.

Legend

- Approximate Site Boundary
- Borehole Location (Hydrock)
- Window Sample Location (Hydrock)
- Window Sample Location (Ashdown)
- Soak away Location (Hydrock)

Rev	Date	Description	Ckd	By
-----	------	-------------	-----	----

Hydrock

Unit 3, Hawthorn Park
Holdenby Road
Spratton
Northampton NN6 8LD
TEL: 01604 842 888
FAX: 01604 842 666
E-Mail: northampton@hydrock.com
or visit www.hydrock.com

Client

BLOOR HOMES

Project

**NEW LANE, HAVANT,
HAMPSHIRE**

Title

**Exploratory Hole
Location Plan**

Drawing Status

INFORMATION

Job No.

C/11051

Drawn	Checked	Scale at A3	Date	Issue Date
CV	AB	1:1000	23/03/11	23/03/11

Drawing No.	Revision
11051/D003	-

ASHDOWN SITE INVESTIGATION **L.I.M.I.T.E.D**

GEOTECHNICAL AND ENVIRONMENTAL ENGINEERS
Swarborough Farm
Swarborough
Lewes, East Sussex
BN7 3PF

Borehole No.: WS1

Site Name: Warblington School, Southleigh Road, Havant, Hampshire

Job No.: LW20180

Start Date: 13/10/2009

Ground Level: 10.10m

End Date: 13/10/2009

Standpipe Installation	Samples and Testing					Strata		
	Sample Type	Depths		Vane Pen Test N Value	DPBH Profile Blows/100mm 5 15 25	Legend	Depth / Reduced Level	Strata Descriptions
		From (m)	To (m)					
							10.10	Ground Level
							0.00	Topsoil.
							9.85	
							0.25	MADE GROUND: Brown and grey slightly clayey fine to coarse gravel of flint with occasional fine to medium gravel of brick
	JD	0.50					9.40	
							0.70	
	DH	0.60		>250			9.20	Stiff to very stiff brown grey slightly gravelly CLAY with red brown staining. Gravel is flint. (Head)
							0.90	
	D	1.00						Stiff brown very gravelly CLAY. Gravel is fine to coarse flint. (Head)
							8.60	
							1.50	Loose green grey and orange brown silty fine SAND. (Bognor Sand Member) with a black stained horizon (50mm thick) at 1.7m depth.
	JD	1.90						
							7.70	
							2.40	Firm very closely spaced inter-laminated brown CLAY and silty fine SAND. (Bognor Sand Member)
	D	2.60						
							7.30	
							2.80	
	DH	3.00		155			7.10	Firm very closely to closely inter-laminated orange brown gravelly CLAY and orange fine SAND. Gravel is fine to coarse flint. (Bognor Sand Member)
							3.00	End of Borehole

Remarks:

Groundwater noted below 1.5m depth.

Borehole collapsed to 1.55m depth on completion (running sand).

Excavation Method: Window Sampler

Borehole Diameter: Various

Made By: TH

ASHDOWN SITE INVESTIGATION

L · I · M · I · T · E · D
 GEOTECHNICAL AND ENVIRONMENTAL
 ENGINEERS
 Swanborough Farm
 Swanborough
 Lewes, East Sussex
 BN1 3PF

Borehole No.: WS2

Site Name: Warblington School, Southleigh Road, Havant, Hampshire

Job No.: LW21080

Start Date: 13/10/2009

Ground Level: 9.95m

End Date: 13/10/2009

Standpipe Installation	Samples and Testing					Strata		
	Sample Type	Depths		Vane/ Pen Test N Value	DPSH Profile Blows/100mm 5, 15, 25	Legend	Depth / Reduced Level	Strata Descriptions
		From (m)	To (m)					
							9.95 0.00	Ground Level
	J	0.30					9.65 0.40	Topsoil (100mm) over, MADE GROUND: Pale brown silty clay with a trace of fine to coarse gravel of brick
	J D	0.70					9.55 0.40	MADE GROUND: Grey slightly clayey fine to coarse gravel of flint.
	D	1.00					9.05 0.90	Loose orange brown clayey very sandy fine to coarse GRAVEL of flint. (River Terrace Deposits)
							8.45 1.50	Medium dense brown silty fine SAND with medium spaced thick laminae of clay. (Bognor Sand Member)
	D	2.00						becoming loose to medium dense below 2.0m depth. becoming grey brown with orange staining with depth.
	D	2.70					7.25 2.70	becoming inter-laminated fine SAND and CLAY towards base.
								End of Borehole

Remarks:

No further progress below 2.7m depth - too dense.

Borehole collapsed to 1.3m depth on completion (running sand).

Groundwater ponding at base of collapsed borehole (1.3m).

Excavation Method: Window Sampler

Borehole Diameter: Various

Made By: TH

ASHDOWN SITE INVESTIGATION

L · I · M · I · T · E · D

GEOTECHNICAL AND ENVIRONMENTAL
ENGINEERS
Swarborough Farm
Swarborough
Lewes, East Sussex
BN7 3PF

Borehole No.: WS3

Site Name: Warblington School, Southleigh Road, Havant, Hampshire

Job No.: LW20180

Start Date: 13/10/2009

Ground Level: 9.60m

End Date: 13/10/2009

Standpipe Installation	Samples and Testing					Strata		
	Sample Type	Depths		Vane Pen Test N Value	CPSM Probe Blows/100mm 5 15 25	Legend	Depth / Reduced Level	Strata Descriptions
		From (m)	To (m)					
							9.60 0.00	Ground Level
	D	0.30					9.20 0.40	Topsoil (100mm) over, MADE GROUND: Grey brown silty clay with a little fine to medium gravel of flint, coal, brick and clinker.
	D	0.60					8.70 0.90	MADE GROUND: Grey sandy medium to coarse gravel of flint and occasional fine brick
	D	1.00					8.50 1.10	Loose to medium dense orange brown sandy very clayey fine to coarse GRAVEL of flint. (Head)
	D	1.50					7.90 1.70	Loose orange brown silty sandy fine to coarse GRAVEL of flint. (River Terrace Deposits)
	D	2.00					7.40 2.20	Loose brown silty fine SAND with medium spaced thick laminae of clay. (Bognor Sand Member)
	D	2.30					7.10 2.50	Firm to stiff very closely spaced inter-laminated dark grey CLAY and gravelly fine SAND. Gravel is rounded fine to medium flint. (Bognor Sand Member)
	D	2.70					6.85 2.75	Dense green brown silty fine SAND. (Bognor Sand Member)
								End of Borehole

Remarks:

No further progress below 2.75m depth - too dense.

Groundwater noted below 1.0m depth.

Borehole collapsed to 1.1m depth on completion (running sand).

Excavation Method: Window Sampler

Borehole Diameter: Various

Made By: TH

ASHDOWN SITE INVESTIGATION

L · I · M · I · T · E · D
GEOTECHNICAL AND ENVIRONMENTAL
ENGINEERS
Swanborough Farm
Swanborough
Lewes, East Sussex
BN1 3PF

Borehole No.: WS4

Site Name: Warblington School, Southleigh Road, Havant, Hampshire

Job No.: LW20180

Start Date: 13/10/2009

Ground Level: 9.50m

End Date: 13/10/2009

Sounding Installation	Samples and Testing					Strata		
	Sample Type	Depths		Vane/ Pen Test N Value	DPSH Profile Blows/100mm 5, 15, 25	Legend	Depth / Reduced Level	Strata Description
		From (m)	To (m)					
							9.50	Ground Level
							0.00	Topsoil over Subsoil.
	J	0.20					9.20	
	J	0.50					0.30	MADE GROUND: Brown and grey slightly clayey fine to coarse gravel of flint and brick.
	D	0.70						
							8.30	
							1.20	Firm orange brown slightly sandy gravelly CLAY. Gravel is fine to coarse flint. (Head)
	D	1.50					1.30	Medium dense orange brown very silty fine SAND. (Bognor Sand Member) becoming loose below 1.6m depth.
							7.70	
							1.80	Loose green grey silty fine SAND with medium spaced thick laminae of clay. (Bognor Sand Member) with occasional shell fragments below 2.0m depth.
	D	2.20						
							7.10	becoming inter-laminated with CLAY below 2.3m depth.
							2.40	Soft brown grey gravelly CLAY. Gravel is fine to medium flint. (Bognor Sand Member)
							2.50	Dense green brown silty fine SAND. (Bognor Sand Member)
	D	3.00						
							6.50	
							3.00	End of Borehole

Remarks:

Groundwater noted between 1.3m and 1.8m depth.

Borehole collapsed to 1.5m depth on completion (running sand).

Excavation Method: Window Sampler

Borehole Diameter: Various

Made By: TH

ASHDOWN SITE INVESTIGATION

L · I · M · I · T · E · D

GEOTECHNICAL AND ENVIRONMENTAL
ENGINEERS
Swanborough Farm
Swanborough
Lewes, East Sussex
BN7 3PF

Borehole No.: WS5

Site Name: Warblington School, Southleigh Road, Havant, Hampshire

Job No.: LW20180

Start Date: 13/10/2009

Ground Level: 9.55m

End Date: 13/10/2009

Sample Installation	Samples and Testing					Strata		
	Sample Type	Depths		Vane Pen Test N Value	DPSH Profile Blows/100mm	Legend	Depth / Reduced Level	Strata Descriptions
		From (m)	To (m)					
							9.55	Ground Level
							0.00	Topsoil.
	J	0.30					9.35 0.20	MADE GROUND: Pale brown silty clay with a trace of gravel of brick.
	J D	0.60					9.15 0.40	MADE GROUND: Grey slightly clayey fine to coarse gravel of flint.
	J	1.00					8.85 0.80	Medium dense orange brown clayey sandy fine to coarse flint GRAVEL. (River Terrace Deposits)
	D	1.50					7.85 1.70	Loose green grey slightly gravelly silty fine SAND with medium spaced thick laminae of clay and occasional shell fragments. Gravel is fine to coarse flint. (Bognor Sand Member)
	D	2.00						becoming dark grey below 2.5m depth.
	D	3.00					8.55 3.00	with no gravel content towards base.
								End of Borehole

Remarks:

Groundwater noted below 1.2m depth.

Borehole collapsed 1.0m depth on completion (running sand).

Groundwater ponding at base of collapsed borehole (1.0m).

Excavation Method: Window Sampler

Borehole Diameter: Various

Made By: TH

ASHDOWN SITE INVESTIGATION

L · I · M · I · T · E · D

GEOTECHNICAL AND ENVIRONMENTAL
ENGINEERS
Swarborough Farm
Swarborough
Leaves, East Sussex
BN7 3PF

Borehole No.: S1

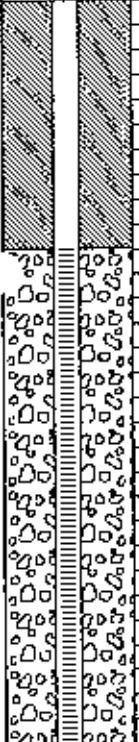
Site Name: Warblington School, Southleigh Road, Havant, Hampshire

Job No.: LW20180

Start Date: 15/10/2009

Ground Level: 9.90m

End Date: 15/10/2009

Standpipe Installation	Samples and Testing				Strata		
	Sample Type	Depths		Vane/ Pen- Test N Value	Legend	Depth / Reduced Level	Strata Descriptions
		From (m)	To (m)				
						9.90 0.00	Ground Level
	J	0.50					Topsoil (150mm) over, MADE GROUND: Grey and brown clayey medium to coarse gravel of flint and occasional fine to medium brick and clinker.
						8.90 1.00	Orange brown very clayey fine to coarse GRAVEL of flint. (Head)
	D	1.50				8.60 1.30	Brown silty fine SAND. (Bognor Sand Member)
	D	2.30				7.40 2.50	Soft to firm very closely spaced inter-laminated brown CLAY and silty fine SAND. (Bognor Sand Member)
	D	2.60				7.20 2.70	Firm brown slightly sandy gravelly CLAY. Gravel is medium to coarse flint. (Bognor Sand Member)
		2.80				6.90 3.00	End of Borehole

Remarks:

Borehole unstable below 2.0m depth.

Standing water level at 1.30m on completion of borehole.

Standpipe installed to 3.0m depth; 3.0m to 1.0m slotted pipe with gravel surround;
1.0m to ground level plain pipe with bentonite seal; completed with gas tap and
security cover concreted flush with ground surface.

Excavation Method: Window Sampler

Borehole Diameter: Various

Made By: TH

ASHDOWN SITE INVESTIGATION

L · I · M · I · T · E · D
 GEOTECHNICAL AND ENVIRONMENTAL ENGINEERS
 Swanborough Farm
 Swanborough
 Lewes, East Sussex
 BN7 3PF

Borehole No.: S2

Site Name: Warblington School, Southleigh Road, Havant, Hampshire

Job No.: LW20180

Start Date: 13/10/2009

Ground Level: 9.75m

End Date: 13/10/2009

Standpipe Installation	Samples and Testing			Strata		
	Sample Type	Depth		Vane Pen Test N Value	Legend	Strata Description
		From (m)	To (m)			
						Ground Level
						9.75 0.00
	J	0.20				Topsoil (100mm) over, MADE GROUND: Brown clay with a little medium to coarse gravel of flint and a trace of fine gravel of brick.
						9.35 0.40
	D	0.60				MADE GROUND: Grey and brown clay with medium to coarse gravel of flint.
						8.85 0.90
	D	1.00				Orange brown very clayey fine to coarse GRAVEL of flint. (Head)
						8.25 1.50
	D	2.00				Green brown slightly clayey silty fine SAND and medium spaced thick laminae of clay. (Bognor Sand Member)
						6.85 2.90
	D	2.70				Green grey very silty very sandy rounded medium to coarse GRAVEL of flint. (Bognor Sand Member)
	D	3.00				End of Borehole
						3.00

Remarks:

Borehole unstable below 1.2m depth.

Standing water level at 1.10m on completion of borehole.

Standpipe installed to 3.0m depth; 3.0m to 1.0m slotted pipe with gravel surround; 1.0m to ground level plain pipe with bentonite seal; completed with gas tap and security cover concreted flush with ground surface.

Excavation Method: Window Sampler

Borehole Diameter: Various

Made By: TH



End Date: 15/10/2009

Made By: TH



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Geological Survey**

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DRILLERS BORING RECORD

Location: Howant Bridge

Date: 8.5.72

Type of boring: Percussion

Diameter: 150 mm

OP: SA 112

B.H. No.: 4

Hours worked

(South side)

From 1030 to 1045 From to

Samples

Soil

Daywork

Reason	hours
Attempting to break through obstruction using clay-cutters, pulling casing, inserting rig & equipment to new position	
Total	2

Chiselling

Depth		hours	Depth		hours
from	to		from	to	
2.5		1			

Ground Water

Time	WATER LEVEL	DEPTH B.H.	DEPTH CASING	Remarks
	1.6	2.0	1.6	After sample No. 4 Encountered.

Penetration Tests

Test No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Depth	2.0																			
Type	S																			
Blows/3"	1																			

N = 6

Description	Depth	Remarks
Topsoil	0.3	
Firm/firm to stiff mottled brown v. gravelly clay.	0.3	
Firm mottled light brown fine v. sandy silty clay	1.2	BE
Soft/firm brown gravelly sandy clay	1.6	G ₃
Loose brown v. fine + fine sand	2.5	S(1C) G ₂ or Member
Borehole terminated owing to clay cutter + casing refusal.		

NEW LANE BRIDGE, HOWANT

(4)

APPENDIX 2

SU70NW/143
72140655



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DRILLERS BORING RECORD

Location: Hewant Bridge

Date: 8-10.5.72

Type of boring: Percussion

Diameter: 150 mm

B.H. No. : 4A

Hours worked

Samples

Soil

(South side)

From	to	From	to
------	----	------	----

Undisturbed			Disturbed	
No.	Depth	Length	No.	Depth
16	13.8		7	3.0
18	16.8		85	3.3
20	19.8		95	4.6
23	22.8		105	6.1
			115	7.6
			125	9.15
			13	10.3
				Water
			145	10.65
			155	12.2
			175	15.3
			195	18.0
			215	21.3
			22	23.3+
				Water
			245	23.3

Notes Standpipe installed to 5.0 m

Description	Depth	Remarks
<u>Topsoil</u>	0-3	Be }
Firm/firm to stiff mottled brown v. gravelly clay, becoming softer with depth.		Water 1-6 m after pulling casing
<u>Loose brown v. fine + fine sand, becoming silty with thin soft clay lenses below 2.5 m</u>	1-6 3-3	
<u>Dense brown fine (with some medium) sand with occasional flints, becoming brownish grey at 4.5</u>		SL(C) B.gnor Hender
<u>Dense dark grey fine sand with occasional thin slightly clayey sand zones.</u>		
<u>Dense dark grey highly fissured clayey + silty fine sand with zones of v. stiff fine v. sandy & v. silty clay</u>	12-2 0.3-7.5	Steadily Sap below 15-2 m

NEW LANE BRIDGE, HAVANT

(11) 50 mm/143

APPENDIX

Daywork

Reason	hours
1. I have a job	10
2. I have a family	10
3. I have a car	10
4. I have a house	10
5. I have a garden	10
6. I have a pet	10
7. I have a hobby	10
8. I have a friend	10
9. I have a partner	10
10. I have a child	10
11. I have a dog	10
12. I have a cat	10
13. I have a fish	10
14. I have a bird	10
15. I have a hamster	10
16. I have a rabbit	10
17. I have a guinea pig	10
18. I have a goldfish	10
19. I have a snake	10
20. I have a lizard	10
21. I have a turtle	10
22. I have a frog	10
23. I have a toad	10
24. I have a salamander	10
25. I have a butterfly	10
26. I have a moth	10
27. I have a bee	10
28. I have a wasp	10
29. I have an ant	10
30. I have a spider	10
31. I have a scorpion	10
32. I have a centipede	10
33. I have a millipede	10
34. I have a slug	10
35. I have a snail	10
36. I have a mole	10
37. I have a badger	10
38. I have a hedgehog	10
39. I have a rabbit	10
40. I have a guinea pig	10
41. I have a hamster	10
42. I have a goldfish	10
43. I have a snake	10
44. I have a lizard	10
45. I have a turtle	10
46. I have a frog	10
47. I have a toad	10
48. I have a salamander	10
49. I have a butterfly	10
50. I have a moth	10
51. I have a bee	10
52. I have a wasp	10
53. I have an ant	10
54. I have a spider	10
55. I have a scorpion	10
56. I have a centipede	10
57. I have a millipede	10
58. I have a slug	10
59. I have a snail	10
60. I have a mole	10
61. I have a badger	10
62. I have a hedgehog	10
63. I have a rabbit	10
64. I have a guinea pig	10
65. I have a hamster	10
66. I have a goldfish	10
67. I have a snake	10
68. I have a lizard	10
69. I have a turtle	10
70. I have a frog	10
71. I have a toad	10
72. I have a salamander	10
73. I have a butterfly	10
74. I have a moth	10
75. I have a bee	10
76. I have a wasp	10
77. I have an ant	10
78. I have a spider	10
79. I have a scorpion	10
80. I have a centipede	10
81. I have a millipede	10
82. I have a slug	10
83. I have a snail	10
84. I have a mole	10
85. I have a badger	10
86. I have a hedgehog	10
87. I have a rabbit	10
88. I have a guinea pig	10
89. I have a hamster	10
90. I have a goldfish	10
91. I have a snake	10
92. I have a lizard	10
93. I have a turtle	10
94. I have a frog	10
95. I have a toad	10
96. I have a salamander	10
97. I have a butterfly	10
98. I have a moth	10
99. I have a bee	10
100. I have a wasp	10
101. I have an ant	10
102. I have a spider	10
103. I have a scorpion	10
104. I have a centipede	10
105. I have a millipede	10
106. I have a slug	10
107. I have a snail	10
108. I have a mole	10
109. I have a badger	10
110. I have a hedgehog	10
111. I have a rabbit	10
112. I have a guinea pig	10
113. I have a hamster	10
114. I have a goldfish	10
115. I have a snake	10
116. I have a lizard	10
117. I have a turtle	10
118. I have a frog	10
119. I have a toad	10
120. I have a salamander	10
121. I have a butterfly	10
122. I have a moth	10
123. I have a bee	10
124. I have a wasp	10
125. I have an ant	10
126. I have a spider	10
127. I have a scorpion	10
128. I have a centipede	10
129. I have a millipede	10
130. I have a slug	10
131. I have a snail	10
132. I have a mole	10
133. I have a badger	10
134. I have a hedgehog	10
135. I have a rabbit	10
136. I have a guinea pig	10
137. I have a hamster	10
138. I have a goldfish	10
139. I have a snake	10
140. I have a lizard	10
141. I have a turtle	10

Chiselling

[illegible]

Ground Water

Time	WATER LEVEL	DEPTH B.H.	DEPTH CASING	Remarks
	4.9	9.6	9.15	After SPT No. 6
4.5.72	3.2	10.3	10.3	Overnight
10.5.72	3.2	23.7	15.2	Overnight

Penetration Tests

Test No.	2	3	4	5	6	7	8	9	10	11	12
Depth	3.3	4.6	6.1	7.6	9.15	10.65	12.2	15.3	18.0	21.3	23.3
Type	3	3	5	3	3	3	3	3	3	3	3
Blows/3"	4	4	25	23	11	14	11	10	8	9	9
	7	12	47	62	20	21	12	10	11	15	10
	10	23			45	29	16	12	13	17	13
	17	38					21	14	14	22	13
							20	16	16		19

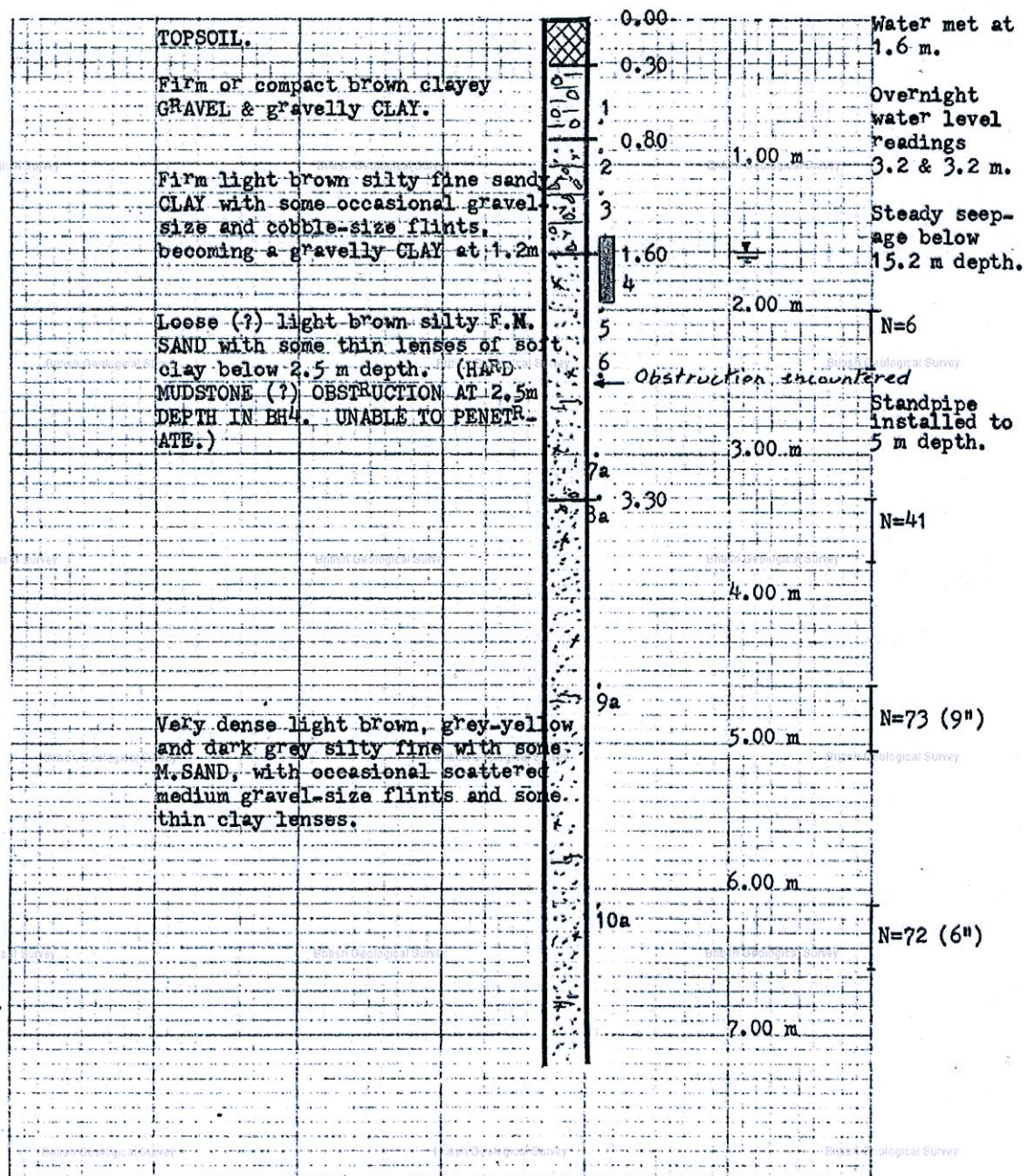
$N=41$ $N=73$ $N=72$ $N=85$ $N=76$ $N=74$ $N=64$ $N=52$ $N=54$ $N=68$ $N=55$

End of BH

433

SITE NEW LANE BRIDGE, HAVANT

FIG.1e

BOREHOLE 4 & 4a DIAMETER 200 & 150 mm DEPTH 23.75 mDATE 8-10.5.72

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SITE NEW LANE BRIDGE, HAVANT

FIG. 1f

BOREHOLE 4 & 4a DIAMETER 200 & 150 mm

(continuation sheet)

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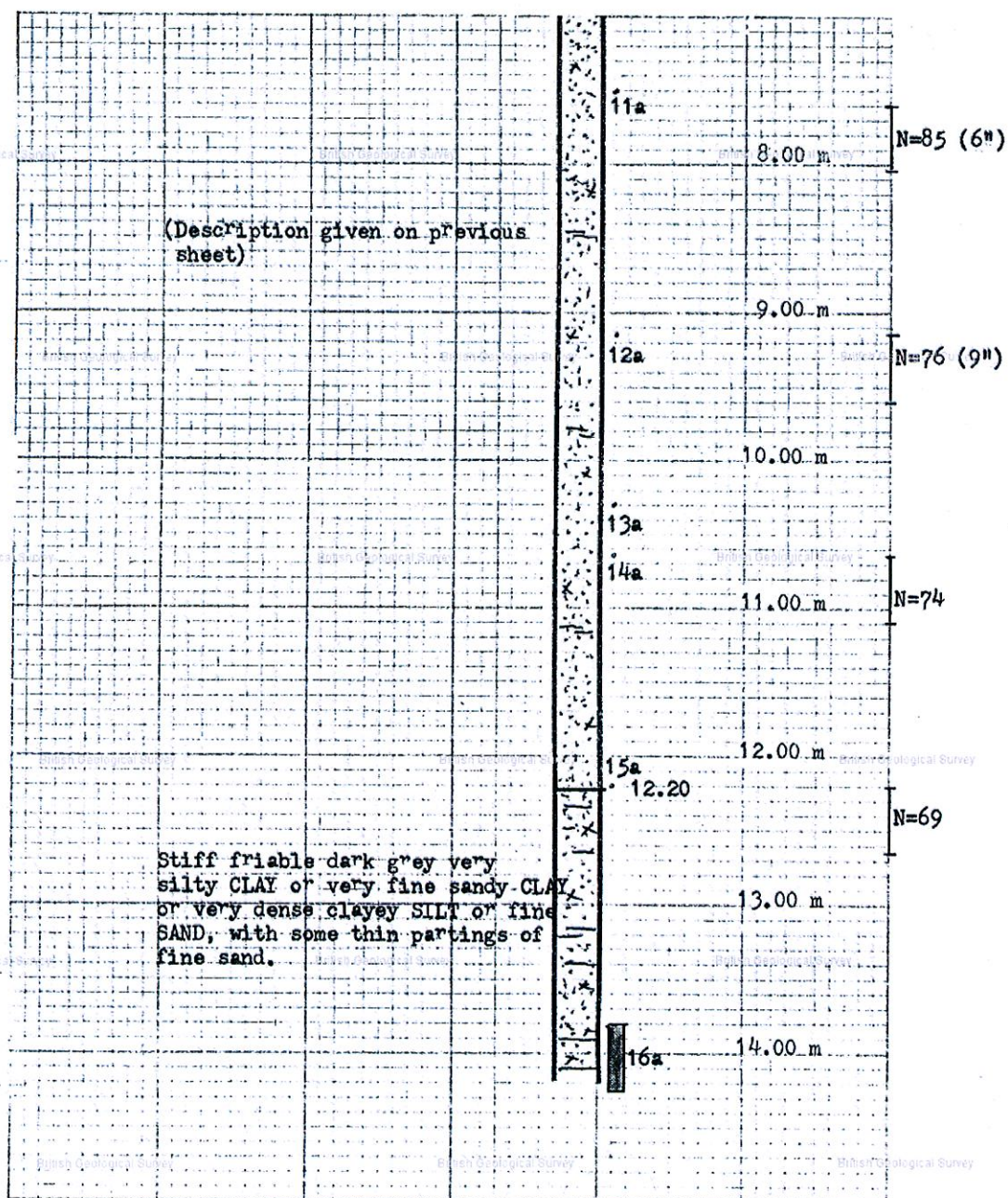
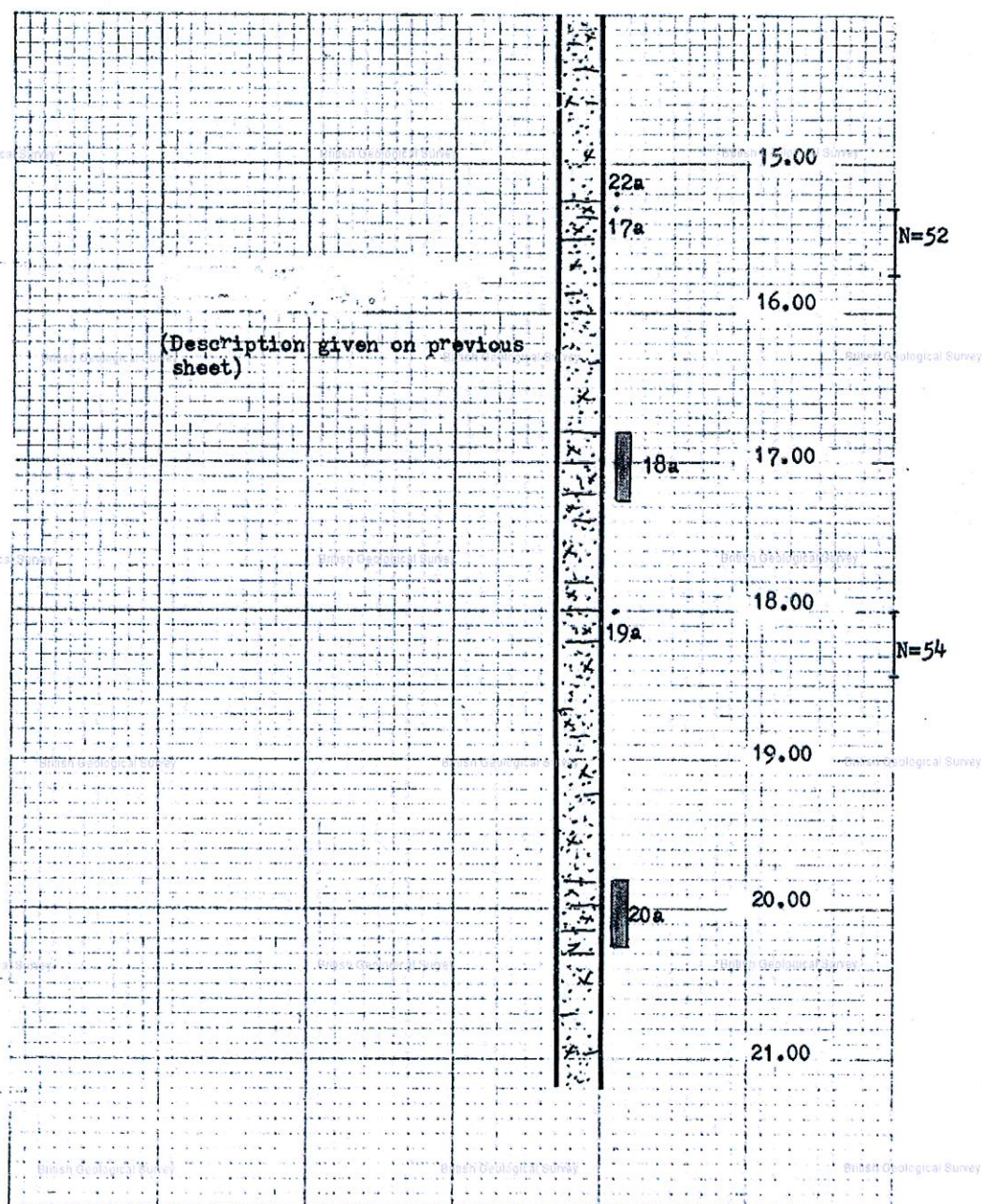


FIG. 1g

(continuation sheet)



ASHDOWN SITE INVESTIGATION LTD

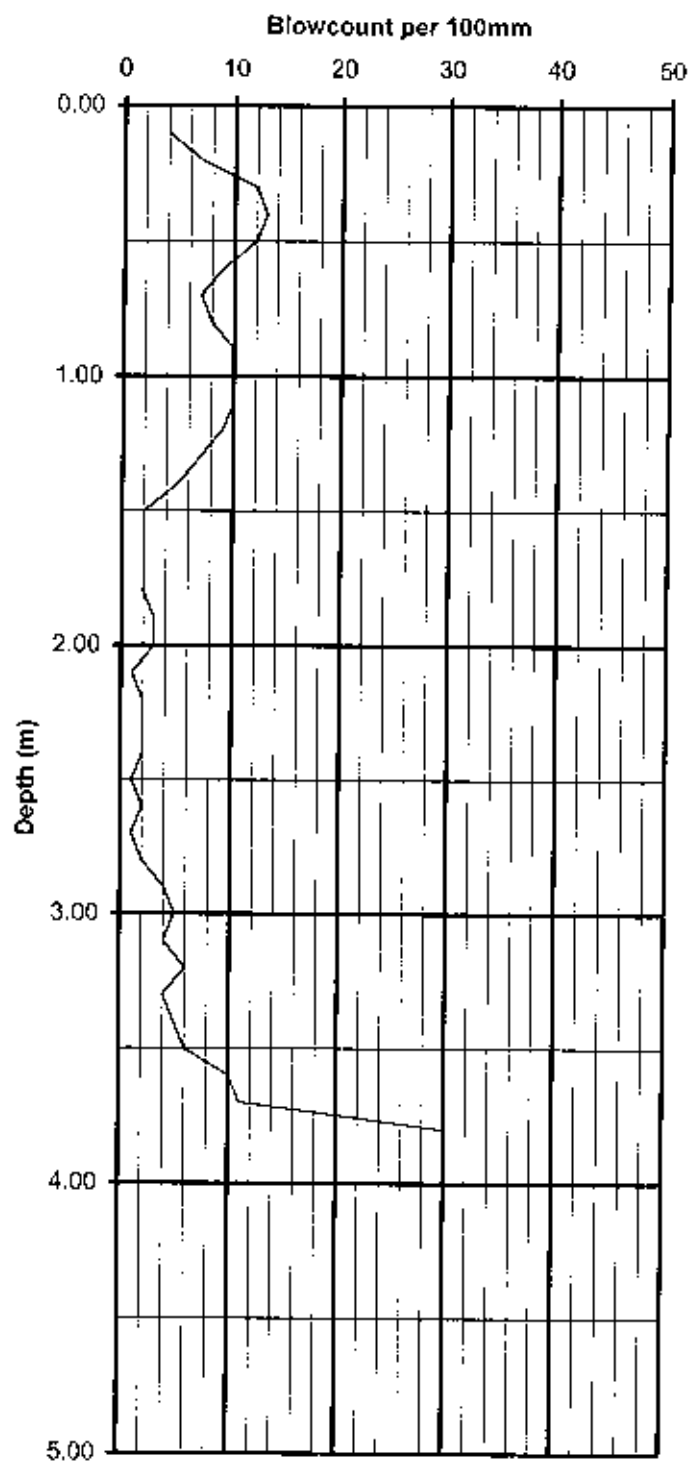
DPSH Continuous Dynamic Probe N_{100} vs Depth Profile

SITE Warblington School, Southleigh Road, Havant, Hampshire

Report Ref. LW20180

DP No. WS1

Depth (m)	Blows	Torque (kgm)
0.00		
0.10	4	
0.20	7	
0.30	12	
0.40	13	
0.50	12	
0.60	9	
0.70	7	
0.80	8	
0.90	10	
1.00	10	
1.10	10	
1.20	9	
1.30	7	
1.40	5	
1.50	2	
1.60	2	
1.70	2	
1.80	2	
1.90	3	
2.00	3	
2.10	1	
2.20	2	
2.30	2	
2.40	2	
2.50	1	
2.60	2	
2.70	1	
2.80	2	
2.90	4	
3.00	5	
3.10	4	
3.20	6	
3.30	4	
3.40	5	
3.50	6	
3.60	10	
3.70	11	
3.80	30	
3.90		
4.00		
4.10		
4.20		
4.30		
4.40		
4.50		
4.60		
4.70		
4.80		
4.90		
5.00		



Comments

*No further progress - Hammer bouncing

ASHDOWN SITE INVESTIGATION LTD

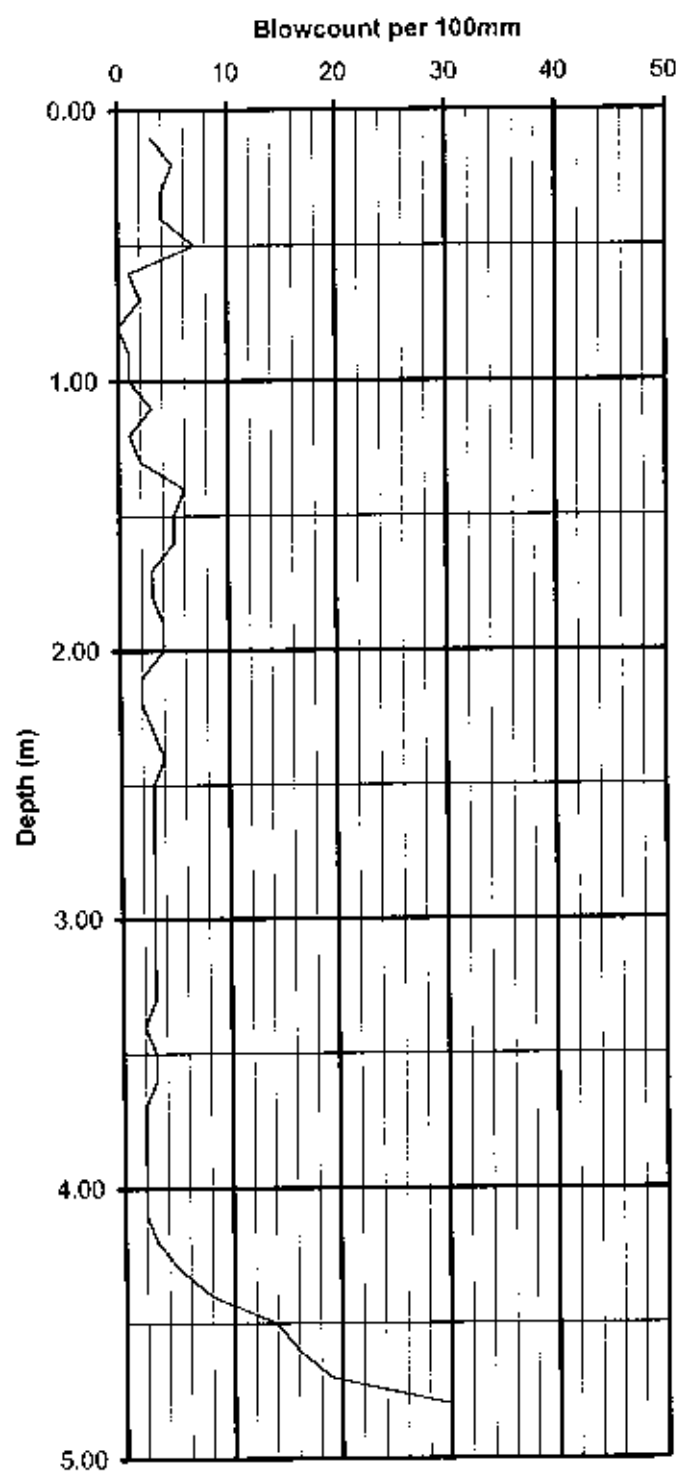
DPSH Continuous Dynamic Probe N₁₀₀ vs Depth Profile

SITE Warblington School, Southleigh Road, Havant, Hampshire

Report Ref. LW20180

DP No. WS2

Depth (m)	Blows	Torque (kgm)
0.00		
0.10	3	
0.20	5	
0.30	4	
0.40	4	
0.50	7	
0.60	1	
0.70	2	
0.80	0	
0.90	1	
1.00	1	
1.10	3	
1.20	1	
1.30	2	
1.40	6	
1.50	5	
1.60	5	
1.70	3	
1.80	3	
1.90	4	
2.00	4	
2.10	2	
2.20	2	
2.30	3	
2.40	4	
2.50	3	
2.60	3	
2.70	3	
2.80	3	
2.90	3	
3.00	3	
3.10	3	
3.20	3	
3.30	3	
3.40	2	
3.50	3	
3.60	3	
3.70	2	
3.80	2	
3.90	2	
4.00	2	
4.10	2	
4.20	3	
4.30	5	
4.40	8	
4.50	14	
4.60	16	
4.70	19	
4.80	30	
4.90		
5.00		



Comments

*No further progress - Hammer bouncing

ASHDOWN SITE INVESTIGATION LTD

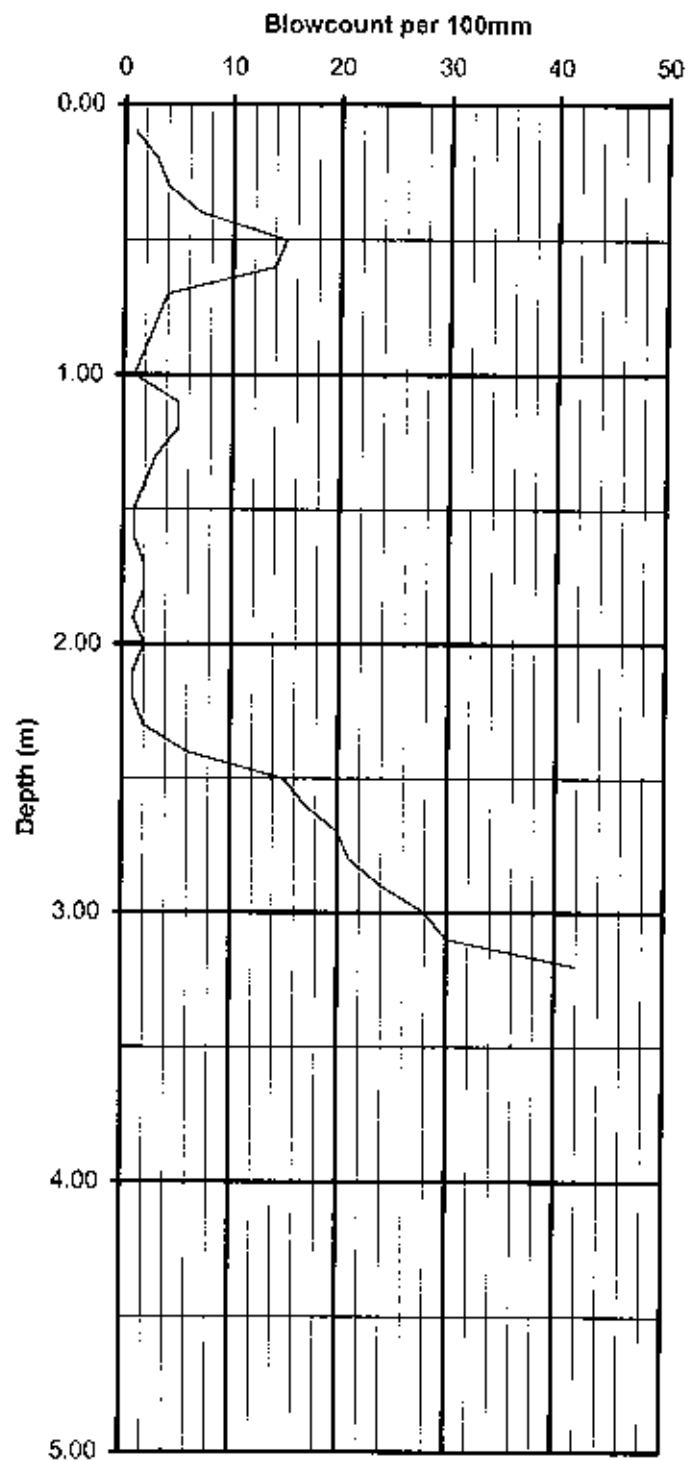
DPSH Continuous Dynamic Probe N₁₀₀ vs Depth Profile

SITE Warblington School, Southleigh Road, Havant, Hampshire

Report Ref. LW20180

DP No. WS3

Depth (m)	Blows	Torque (kgm)
0.00		
0.10	1	
0.20	3	
0.30	4	
0.40	7	
0.50	15	
0.60	14	
0.70	4	
0.80	3	
0.90	2	
1.00	1	
1.10	5	
1.20	5	
1.30	3	
1.40	2	
1.50	1	
1.60	1	
1.70	2	
1.80	2	
1.90	1	
2.00	2	
2.10	1	
2.20	1	
2.30	2	
2.40	6	
2.50	15	
2.60	17	
2.70	20	
2.80	21	
2.90	24	
3.00	28	
3.10	30	
3.20	42	
3.30		
3.40		
3.50		
3.60		
3.70		
3.80		
3.90		
4.00		
4.10		
4.20		
4.30		
4.40		
4.50		
4.60		
4.70		
4.80		
4.90		
5.00		



Comments

ASHDOWN SITE INVESTIGATION LTD

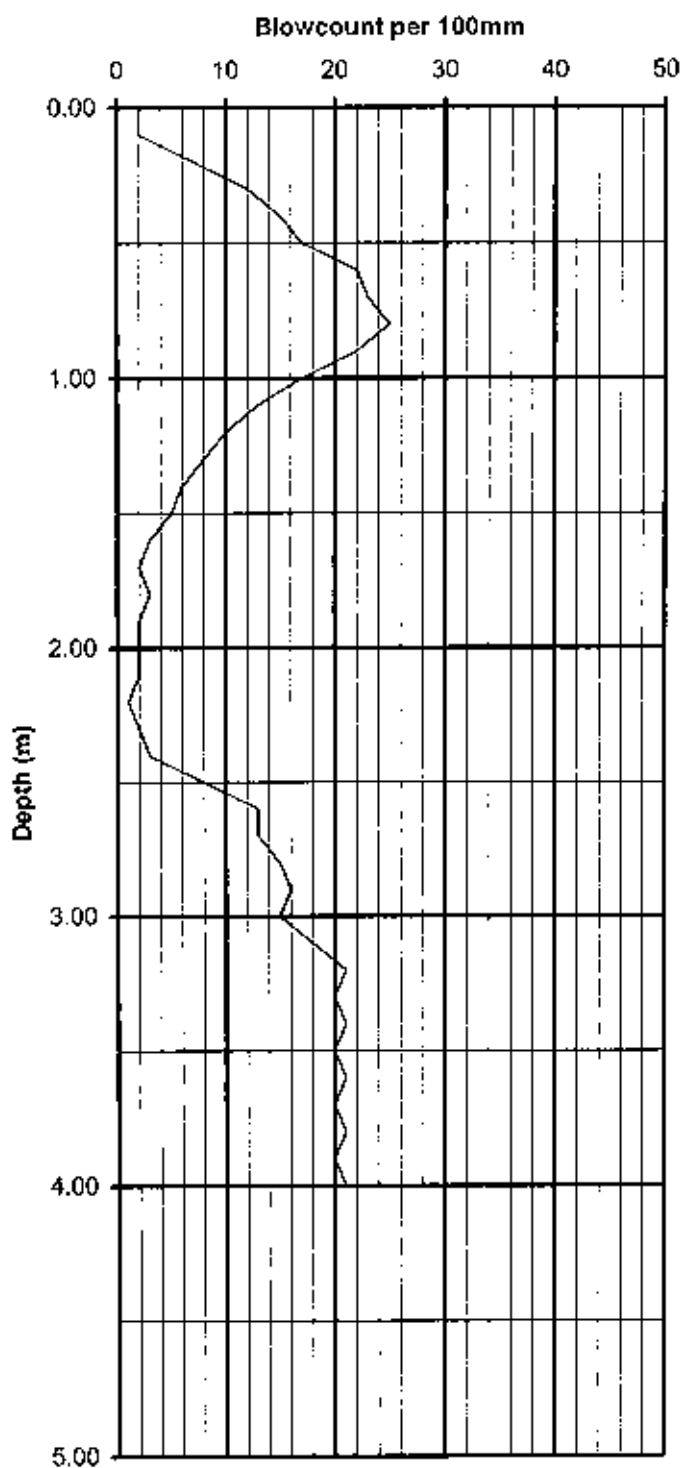
DPSH Continuous Dynamic Probe N_{100} vs Depth Profile

SITE Warblington School, Southleigh Road, Havant, Hampshire

Report Ref. LW20180

DP No. WS4

Depth (m)	Blows	Torque (kgm)
0.00		
0.10	2	
0.20	7	
0.30	12	
0.40	15	
0.50	17	
0.60	22	
0.70	23	
0.80	25	
0.90	22	
1.00	17	
1.10	13	
1.20	10	
1.30	8	
1.40	6	
1.50	5	
1.60	3	
1.70	2	
1.80	3	
1.90	2	
2.00	2	
2.10	2	
2.20	1	
2.30	2	
2.40	3	
2.50	8	
2.60	13	
2.70	13	
2.80	15	
2.90	16	
3.00	15	
3.10	18	
3.20	21	
3.30	20	
3.40	21	
3.50	20	
3.60	21	
3.70	20	
3.80	21	
3.90	20	
4.00	21	
4.10		
4.20		
4.30		
4.40		
4.50		
4.60		
4.70		
4.80		
4.90		
5.00		



Comments

ASHDOWN SITE INVESTIGATION LTD

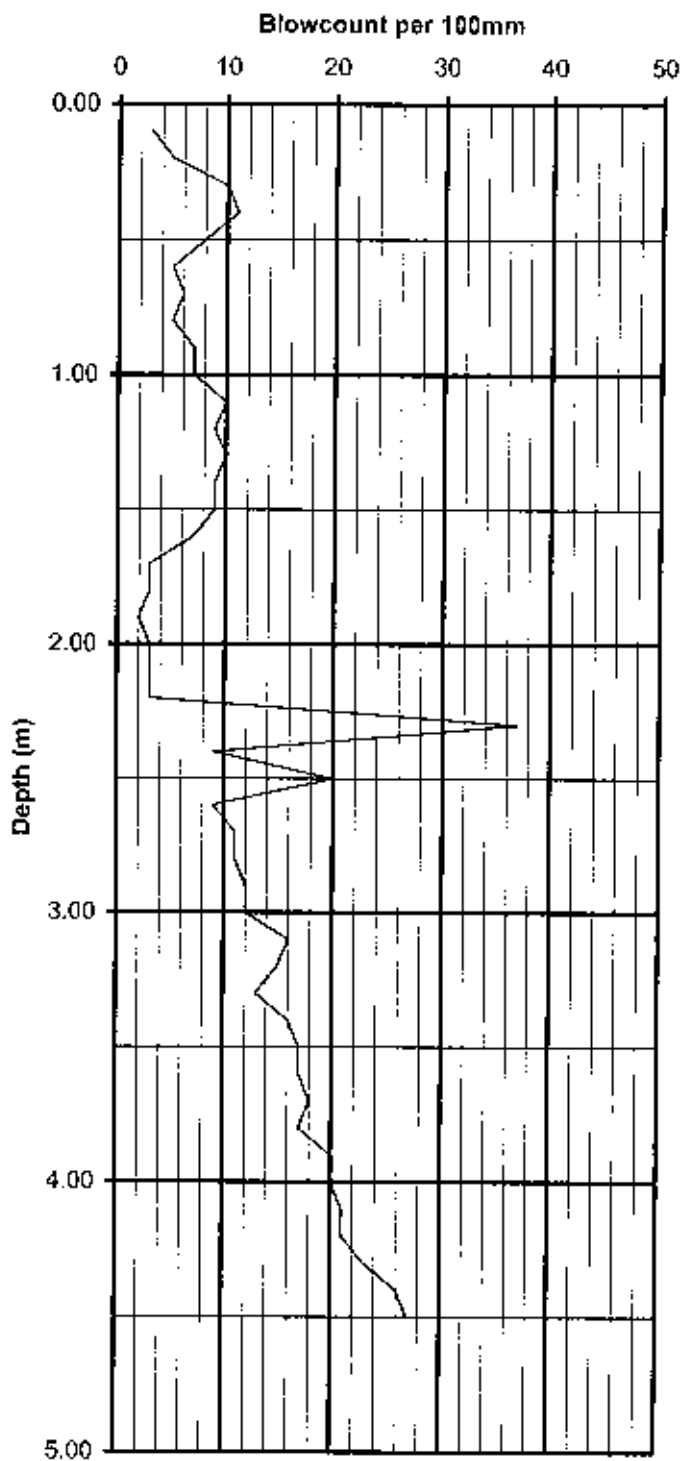
DPSH Continuous Dynamic Probe N_{100} vs Depth Profile

SITE Warblington School, Southleigh Road, Havant, Hampshire

Report Ref. LW20180

DP No. WS5

Depth (m)	Blows	Torque (kgm)
0.00		
0.10	3	
0.20	5	
0.30	10	
0.40	11	
0.50	8	
0.60	5	
0.70	6	
0.80	5	
0.90	7	
1.00	7	
1.10	10	
1.20	9	
1.30	10	
1.40	9	
1.50	9	
1.60	7	
1.70	3	
1.80	3	
1.90	2	
2.00	3	
2.10	3	
2.20	3	
2.30	37	
2.40	9	
2.50	20	
2.60	9	
2.70	11	
2.80	11	
2.90	12	
3.00	12	
3.10	16	
3.20	15	
3.30	13	
3.40	16	
3.50	17	
3.60	17	
3.70	18	
3.80	17	
3.90	20	
4.00	20	
4.10	21	
4.20	21	
4.30	23	
4.40	26	
4.50	27	
4.60		
4.70		
4.80		
4.90		
5.00		



Comments

ASHDOWN SITE INVESTIGATION LTD

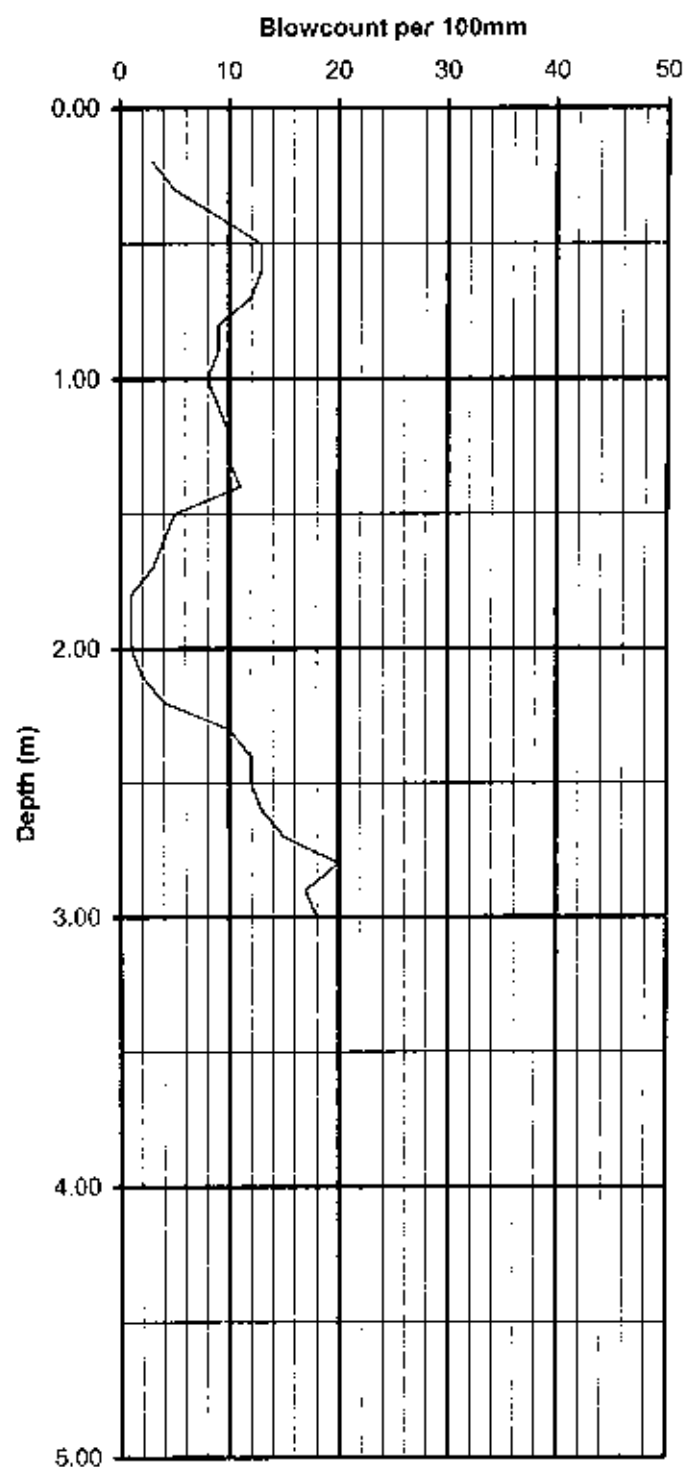
DPSH Continuous Dynamic Probe N_{100} vs Depth Profile

SITE Warblington School, Southleigh Road, Havant, Hampshire

Report Ref. LW20180

DP No. S3

Depth (m)	Blows	Torque (kgm)
0.00		
0.10		
0.20	3	
0.30	5	
0.40	9	
0.50	13	
0.60	13	
0.70	12	
0.80	9	
0.90	9	
1.00	8	
1.10	9	
1.20	10	
1.30	10	
1.40	11	
1.50	5	
1.60	4	
1.70	3	
1.80	1	
1.90	1	
2.00	1	
2.10	2	
2.20	4	
2.30	10	
2.40	12	
2.50	12	
2.60	13	
2.70	15	
2.80	20	
2.90	17	
3.00	18	
3.10		
3.20		
3.30		
3.40		
3.50		
3.60		
3.70		
3.80		
3.90		
4.00		
4.10		
4.20		
4.30		
4.40		
4.50		
4.60		
4.70		
4.80		
4.90		
5.00		



Comments

Trial Pit Soakaway Data Sheet

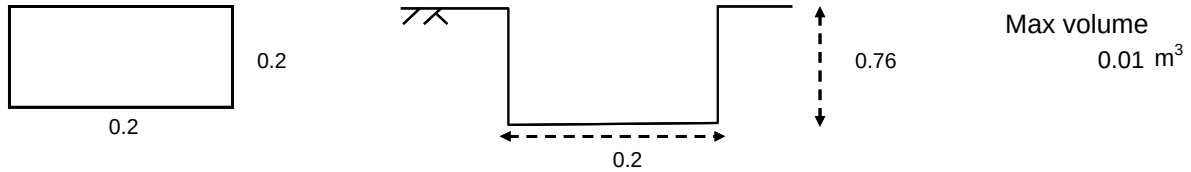


Site: Southleigh Rd, Havant
Client: Bloor Homes
Job No: C11051

Soakaway HHP01 (Test 1)

31-Mar-11

Pit Dimensions (m)

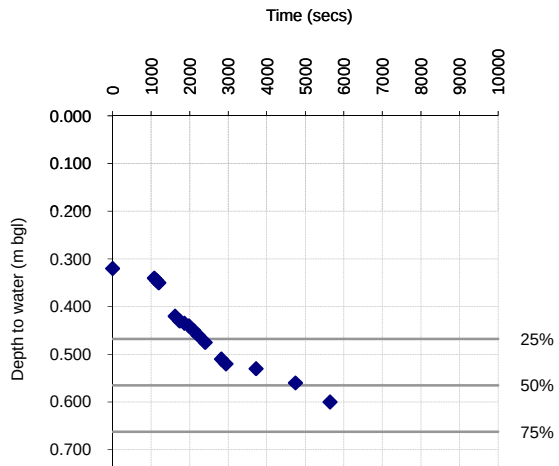


Test A

Time to soakaway

Time (secs)	Depth to water (m bgl)
0	0.320
1080	0.340
1140	0.345
1200	0.350
1620	0.420
1740	0.430
1860	0.435
1980	0.440
2100	0.45
2220	0.46
2400	0.475
2820	0.51
2940	0.52
3720	0.53
4740	0.56
5640	0.6

Length	0.2
Width	0.2
Depth	0.76
Fill Depth	0.37
Time for Graph	10000
25% water depth	0.4675
50% water depth	0.565
75% water depth	0.6625
75% time (seconds)	8000
25% time (seconds)	2500



$$\begin{aligned}
 V_{p\ 75-25} &= \text{length} \times \text{width} \times (75\% \text{ water depth} - 25\% \text{ water depth}) = 0.0078 \\
 a_{p\ 50} &= (\text{length} \times 50\% \text{ water column} \times 2) + (\text{width} \times 50\% \text{ column} \times 2) + (\text{length} \times \text{width}) = 0.196 \\
 t_{p\ 75-25} &= \text{seconds for water top drop to 75\%} - \text{seconds for water top drop to 25\%} = 5500
 \end{aligned}$$

$$\text{SOIL INFILTRATION RATE} = \frac{V_{p\ 75-25}}{a_{p\ 50} \times t_{p\ 75-25}} = \frac{0.0078}{1078.0000} = 7.24\text{E-}06$$

Trial Pit Soakaway Data Sheet

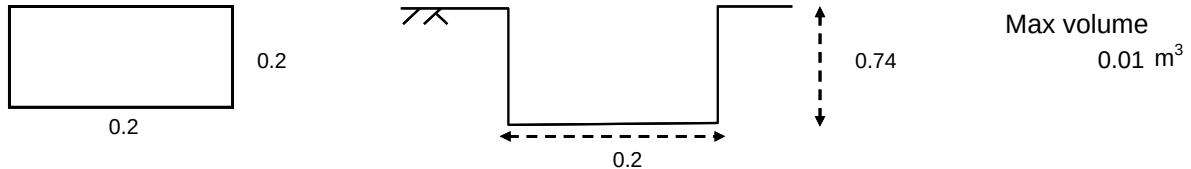


Site: Southleigh Rd, Havant
 Client: Bloor Homes
 Job No: C11051

Soakaway HHP02 (Test 1)

31-Mar-11

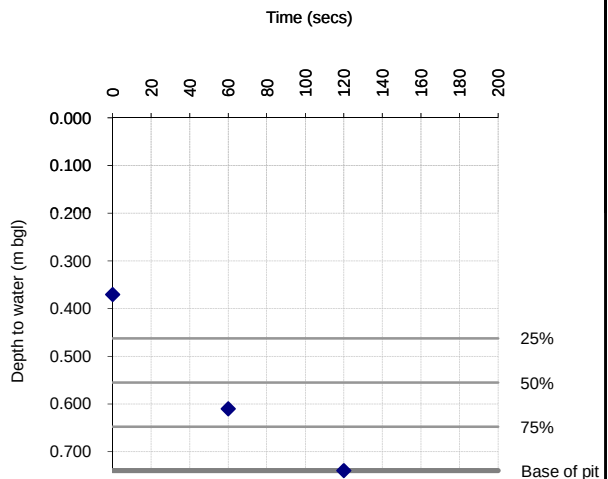
Pit Dimensions (m)



Test A

Time to soakaway

Time (secs)	Depth to water (m bgl)
0	0.370
60	0.610
120	0.740



Length	0.2
Width	0.2
Depth	0.74
Fill Depth	0.37
Time for Graph	200
25% water depth	0.4625
50% water depth	0.555
75% water depth	0.6475
75% time (seconds)	80
25% time (seconds)	20

$$\begin{aligned}
 V_{p\ 75-25} &= \text{length} \times \text{width} \times (75\% \text{ water depth} - 25\% \text{ water depth}) = 0.0074 \\
 a_{p\ 50} &= (\text{length} \times 50\% \text{ water column} \times 2) + (\text{width} \times 50\% \text{ column} \times 2) + (\text{length} \times \text{width}) = 0.188 \\
 t_{p\ 75-25} &= \text{seconds for water top drop to 75\%} - \text{seconds for water top drop to 25\%} = 60
 \end{aligned}$$

$$\text{SOIL INFILTRATION RATE} = \frac{V_{p\ 75-25}}{a_{p\ 50} \times t_{p\ 75-25}} = \frac{0.0074}{11.2800} = 6.56E-04$$

Trial Pit Soakaway Data Sheet

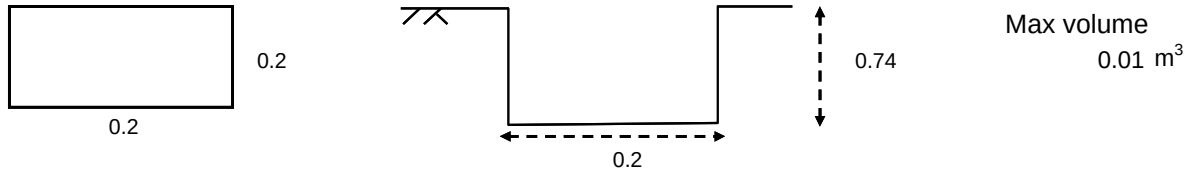


Site: Southleigh Rd, Havant
 Client: Bloor Homes
 Job No: C11051

Soakaway HHP02 (Test 2)

31-Mar-11

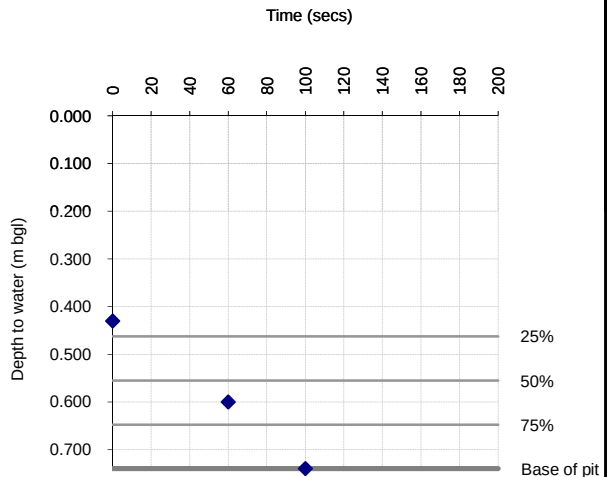
Pit Dimensions (m)



Test A

Time to soakaway

Time (secs)	Depth to water (m bgl)
0	0.430
60	0.600
100	0.740



Length	0.2
Width	0.2
Depth	0.74
Fill Depth	0.37
Time for Graph	200
25% water depth	0.4625
50% water depth	0.555
75% water depth	0.6475
75% time (seconds)	100
25% time (seconds)	20

$$\begin{aligned}
 V_{p\ 75-25} &= \text{length} \times \text{width} \times (75\% \text{ water depth} - 25\% \text{ water depth}) = 0.0074 \\
 a_{p\ 50} &= (\text{length} \times 50\% \text{ water column} \times 2) + (\text{width} \times 50\% \text{ column} \times 2) + (\text{length} \times \text{width}) = 0.188 \\
 t_{p\ 75-25} &= \text{seconds for water top drop to 75\%} - \text{seconds for water top drop to 25\%} = 80
 \end{aligned}$$

$$\text{SOIL INFILTRATION RATE} = \frac{V_{p\ 75-25}}{a_{p\ 50} \times t_{p\ 75-25}} = \frac{0.0074}{15.0400} = 4.92\text{E-}04$$

Trial Pit Soakaway Data Sheet

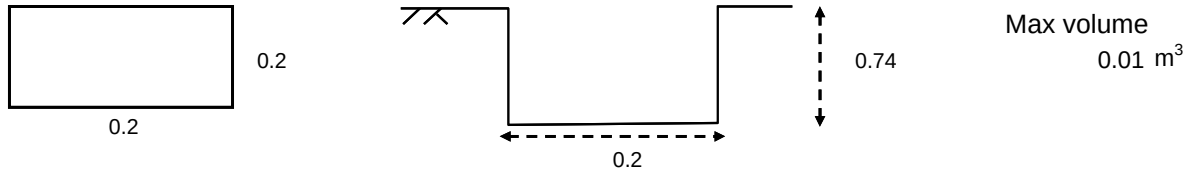


Site: Southleigh Rd, Havant
 Client: Bloor Homes
 Job No: C11051

Soakaway HHP02 (Test 3)

31-Mar-11

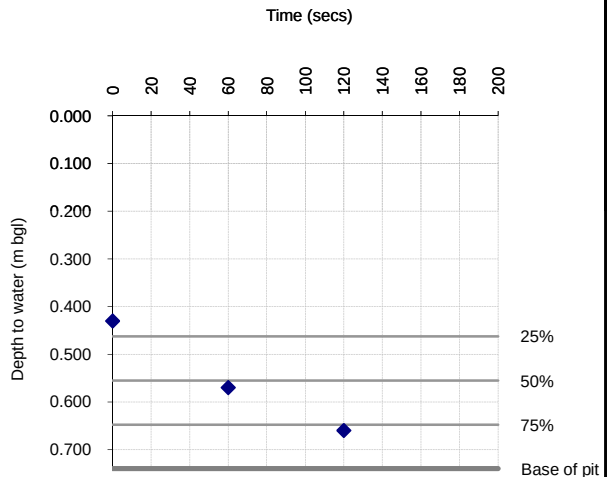
Pit Dimensions (m)



Test A

Time to soakaway

Time (secs)	Depth to water (m bgl)
0	0.430
60	0.570
120	0.660
720	0.740

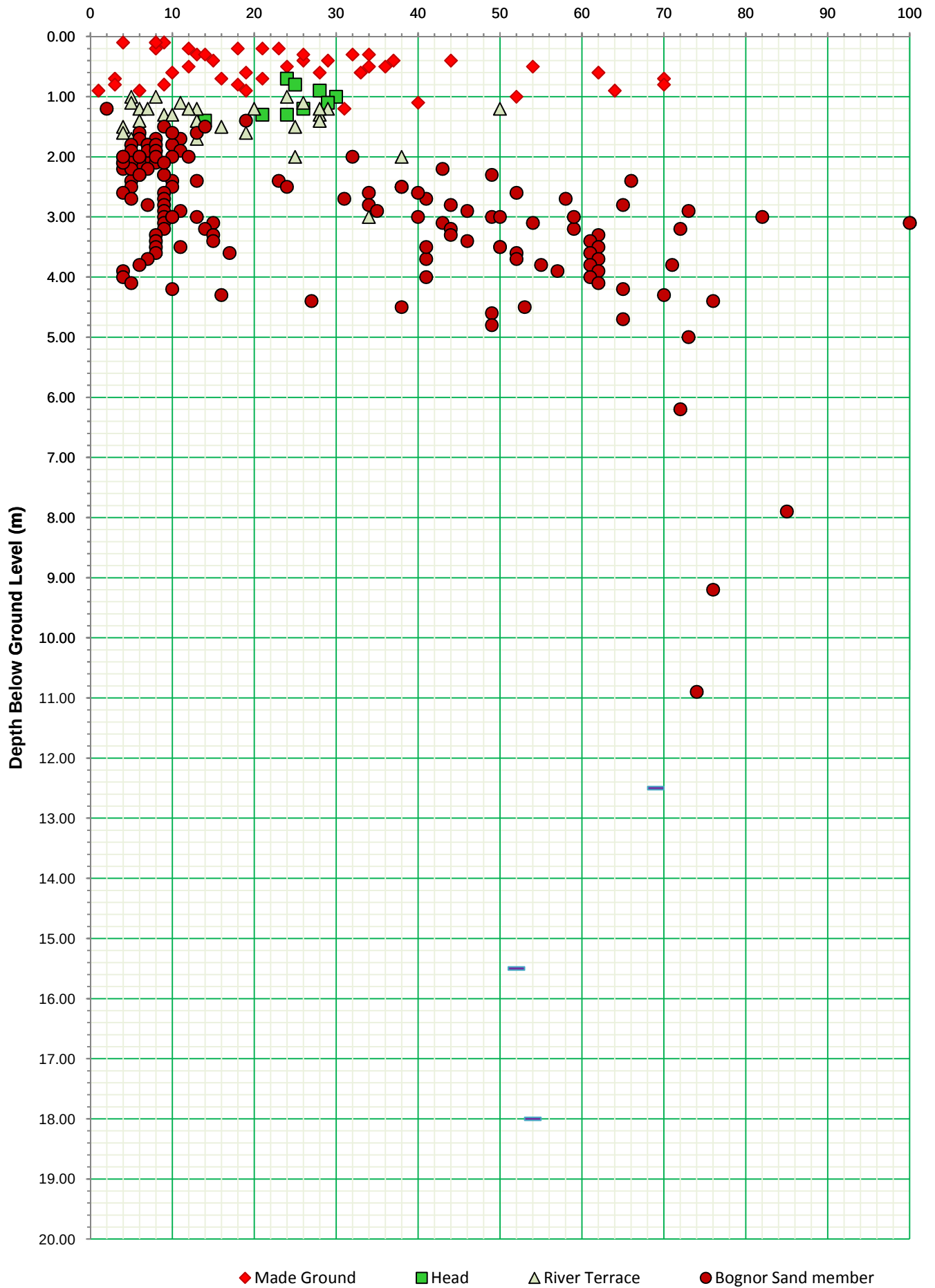


Length	0.2
Width	0.2
Depth	0.74
Fill Depth	0.37
Time for Graph	200
25% water depth	0.4625
50% water depth	0.555
75% water depth	0.6475
75% time (seconds)	115
25% time (seconds)	20

$$\begin{aligned}
 V_{p\ 75-25} &= \text{length} \times \text{width} \times (75\% \text{ water depth} - 25\% \text{ water depth}) = 0.0074 \\
 a_{p\ 50} &= (\text{length} \times 50\% \text{ water column} \times 2) + (\text{width} \times 50\% \text{ column} \times 2) + (\text{length} \times \text{width}) = 0.188 \\
 t_{p\ 75-25} &= \text{seconds for water top drop to 75\%} - \text{seconds for water top drop to 25\%} = 95
 \end{aligned}$$

$$\text{SOIL INFILTRATION RATE} = \frac{V_{p\ 75-25}}{a_{p\ 50} \times t_{p\ 75-25}} = \frac{0.0074}{17.8600} = 4.14\text{E-}04$$

SPT 'N' Value (for 300mm penetration)



ASHDOWN SITE INVESTIGATION LIMITED

Site: Warblington School, Southleigh Road, Havant, Hampshire

Report No.: LW20180

Sheet No.: 1 of 1

SUMMARY OF IN SITU FARNELL CONE PENETROMETER (CBR) TEST RESULTS

BH/ TP No.	Depth m	Moisture Content %	Classification	CBR Values			Cone Depth
				Test 1	Test 2	Test 3	
				%	%	%	
WS1	0.50			>10	>10	>10	Base of pit.
WS2	0.50			>10	>10	>10	Base of pit.
WS3	0.50			>10	>10	>10	Base of pit.
WS4	0.50			>10	>10	>10	Base of pit.
WS5	0.50			>10	>10	>10	Base of pit.

ASHDOWN SITE INVESTIGATION LIMITED

Site: Warblington School, Southleigh Road, Havant, Hampshire	Report No.: LW20180 Sheet No.: 1 of 1
--	--

SUMMARY OF BOREHOLE FALLING HEAD SOAKAGE TESTS

Borehole S1		Borehole S2		Borehole S3	
Time (mins)	Depth to water (m)	Time (mins)	Depth to water (m)	Time (mins)	Depth to water (m)
0	0.30	0	0.20	0	0.20
1	0.90	1	1.04	1	1.00
2	1.10	2	1.05	2	1.00
4	1.15	4	1.10		
8	1.25				
16	1.27				
32	1.30				
Borehole Depth (m)	3.00	Borehole Depth (m)	3.00	Borehole Depth (m)	2.80
Casing Depth (m)	1.00	Casing Depth (m)	1.00	Casing Depth (m)	1.00
Borehole Diameter (mm)	85.00	Borehole Diameter (mm)	85.00	Borehole Diameter (mm)	85.00
Casing Diameter (mm)	105.00	Casing Diameter (mm)	105.00	Casing Diameter (mm)	105.00
Standing Water Depth (m)	1.30	Standing Water Depth (m)	1.10	Standing Water Depth (m)	1.00

Notes: Standing water depths recorded prior to carrying out soakage tests.

Appendix F

GEOTECHNICAL TEST RESULTS & SPT DEPTH PLOTS



LABORATORY REPORT



4043

Contract Number: PSL11/0522

Client's Reference:

Report Date: 14 March 2011

Client Name: Hydrock Consultants Ltd
 4th Floor, Churchill House
 Regent Road
 Hanley
 Stoke on Trent
 ST1 3JJ

For the attention of: Claire Moreira

Contract Title: Southleigh Road, Havant

Date Received: 09-March-11

Date Commenced: 09-March-11

Date Completed: 14-March-11

Notes: Observations 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)

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

[illegible]

Professional Soils Laboratory

Compiled by	Date	Checked by	Date	Approved by	Date
	14/03/11		14/03/11		14/03/11
SOUTHLEIGH ROAD, HAVANT.				Contract No: PSL11/0522	
				Client Ref: C11051	

SUMMARY OF SOIL CLASSIFICATION TESTS

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

[illegible]

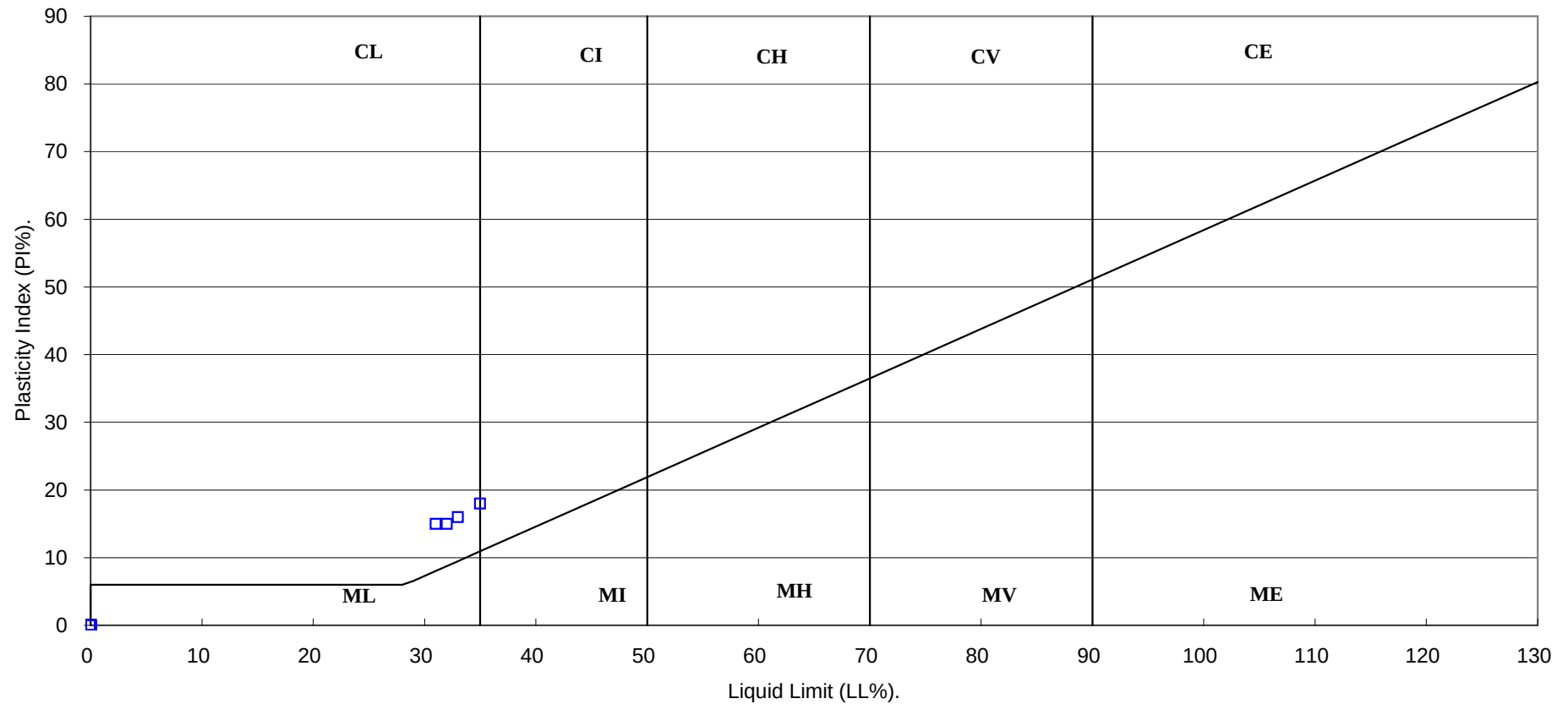
SYMBOLS : NP : Non Plastic

* : Liquid Limit and Plastic Limit Wet Sieved.

 Professional Soils Laboratory	Compiled by	Date	Checked by	Date	Approved by	Date
		14/03/11		14/03/11		14/03/11
	SOUTHLEIGH ROAD, HAVANT.				Contract No: PSL11/0522	
					Client Ref: C11051	

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.

(B.S.5930 : 1999)



PSL

Professional Soils Laboratory

Compiled by	Date	Checked by	Date	Approved by	Date
<i>[Signature]</i>	14/03/11	<i>[Signature]</i>	14/03/11	<i>[Signature]</i>	14/03/11
SOUTHLEIGH ROAD, HAVANT.				Contract No:	PSL11/0522
				Client Ref:	C11051

Particle Size Distribution Test

BS1377 : Part 2 : 1990

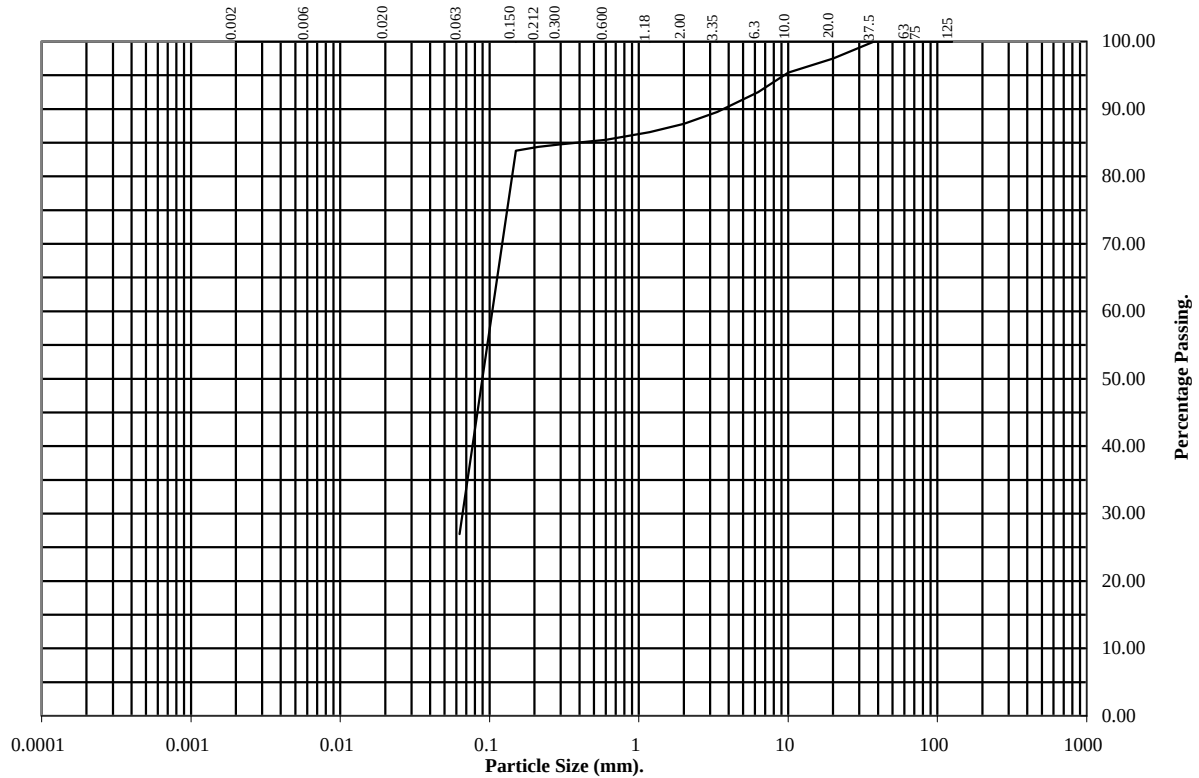
Wet Sieve, Clause 9.2

Hole Number: BH1

Depth (m): 0.80-1.20

Sample Number: 8

Sample Type: B



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
37.5	100
20	98
10	95
6.3	92
3.35	90
2	88
1.18	87
0.6	85
0.3	85
0.212	84
0.15	84
0.063	27

Soil Fraction	Total Percentage
Cobbles	0
Gravel	12
Sand	61
Silt / Clay	27

Remarks:

See summary of soil descriptions.

Checked By	Date	Approved By	Date
<i>H. S.</i>	14/03/11	<i>H. S.</i>	14/03/11

PSL
Professional Soils Laboratory

SOUTHLEIGH ROAD, HAVANT.

Contract No.:
PSL11/0522

ASHDOWN SITE INVESTIGATION LTD

Site: Warblington School, Southleigh Road, Havant

Report No.: LW20180

Sheet No.: 1 of 1

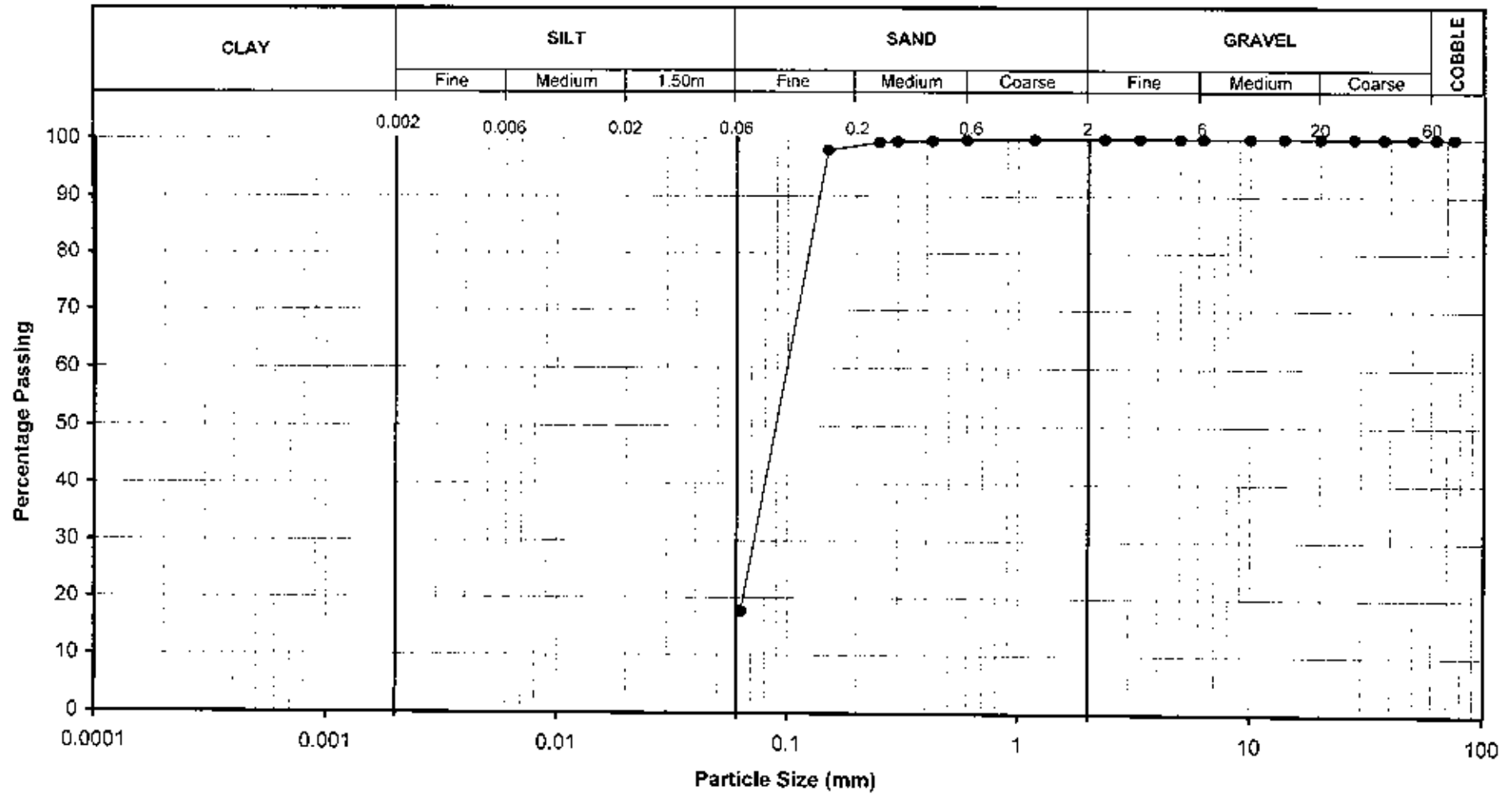
SOIL CLASSIFICATION SUMMARY

BH/TP No.	Depth m	Moist. Cont. %	Atterberg Limits			% Passing 425 μ m sieve	Class'n	Visual Description of Sample
			LL %	PL %	PI %			
WS 1	0.80	12	36	19	17	97	CL	Brown grey slightly gravelly CLAY with occasional fine roots. Gravel is flint.
	1.90	24						
	2.60	31	33	18	15	100	CL	
	3.00	32						
WS 2	1.00	16						Light brown silty CLAY.
	2.70	30						
WS 3	1.00	19	54	18	36	22	CH	Light yellow brown silty clayey GRAVEL. Gravel is flint.
	1.50	13						
	2.00	28						
	2.70	18						
WS 4	1.50	24						
	3.00	22						
WS 5	1.50	12						
	3.00	25						
S1	1.50	24						
	2.60	32	40	16	24	100	CI	
S2	2.00	32						
	3.00	11						
S3	1.10	14						
	2.00	30						

Remarks:

ASHDOWN SITE INVESTIGATION LTD

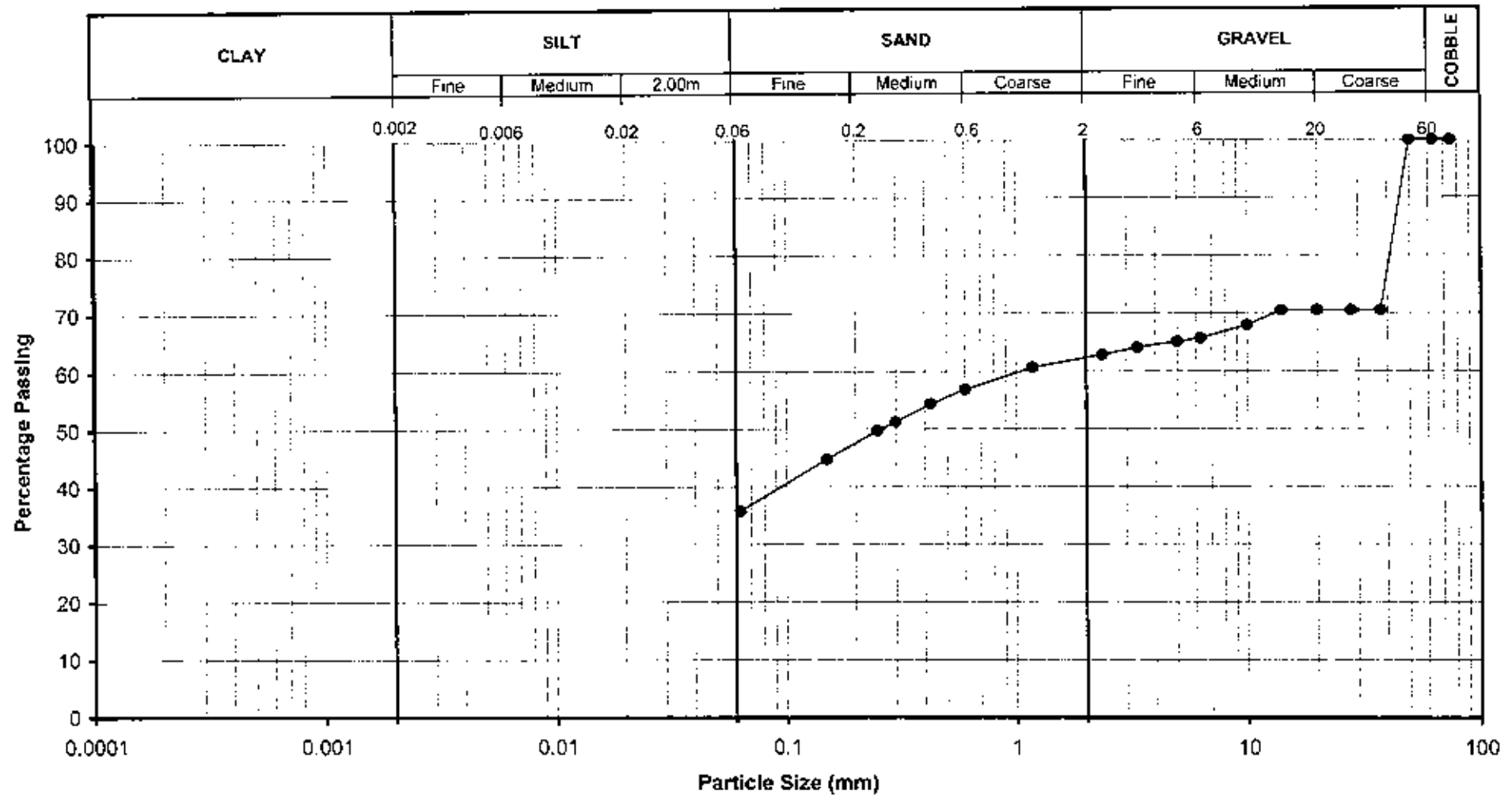
RESULTS OF PARTICLE SIZE ANALYSIS



Job Name	Warblington School, Southleigh Road, Havant	BH/ TP No.	WS1	Sample Description	Silty SAND.
Job No.	LW20180	Sample Depth	1.90m		

ASHDOWN SITE INVESTIGATION LTD

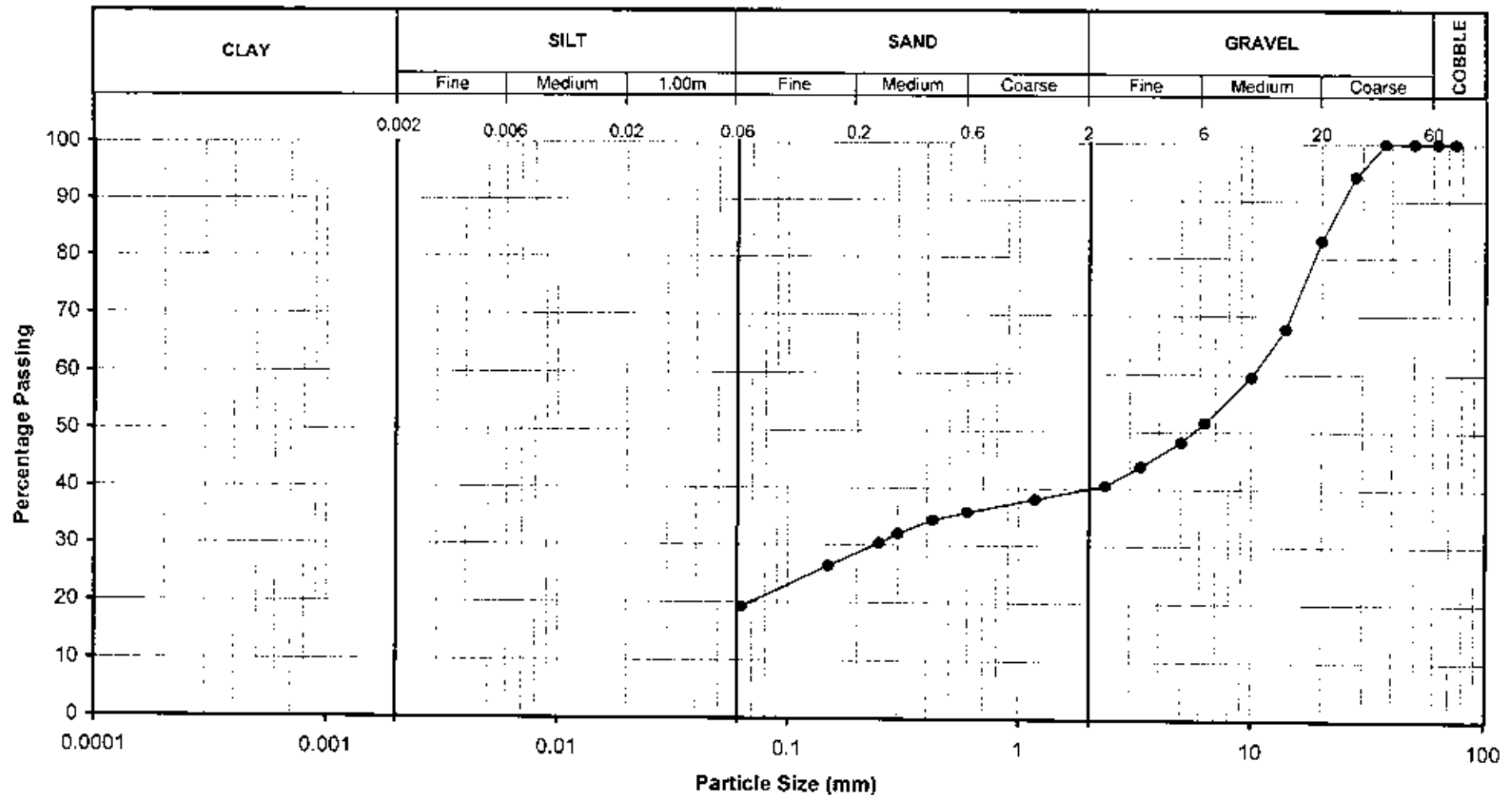
RESULTS OF PARTICLE SIZE ANALYSIS



Job Name	Warblington School, Southleigh Road, Havant	BH/ TP No.	WS 1	Sample Description	Slightly gravelly slightly sandy CLAY.
Job No.	LW20180	Sample Depth	3.00m		

ASHDOWN SITE INVESTIGATION LTD

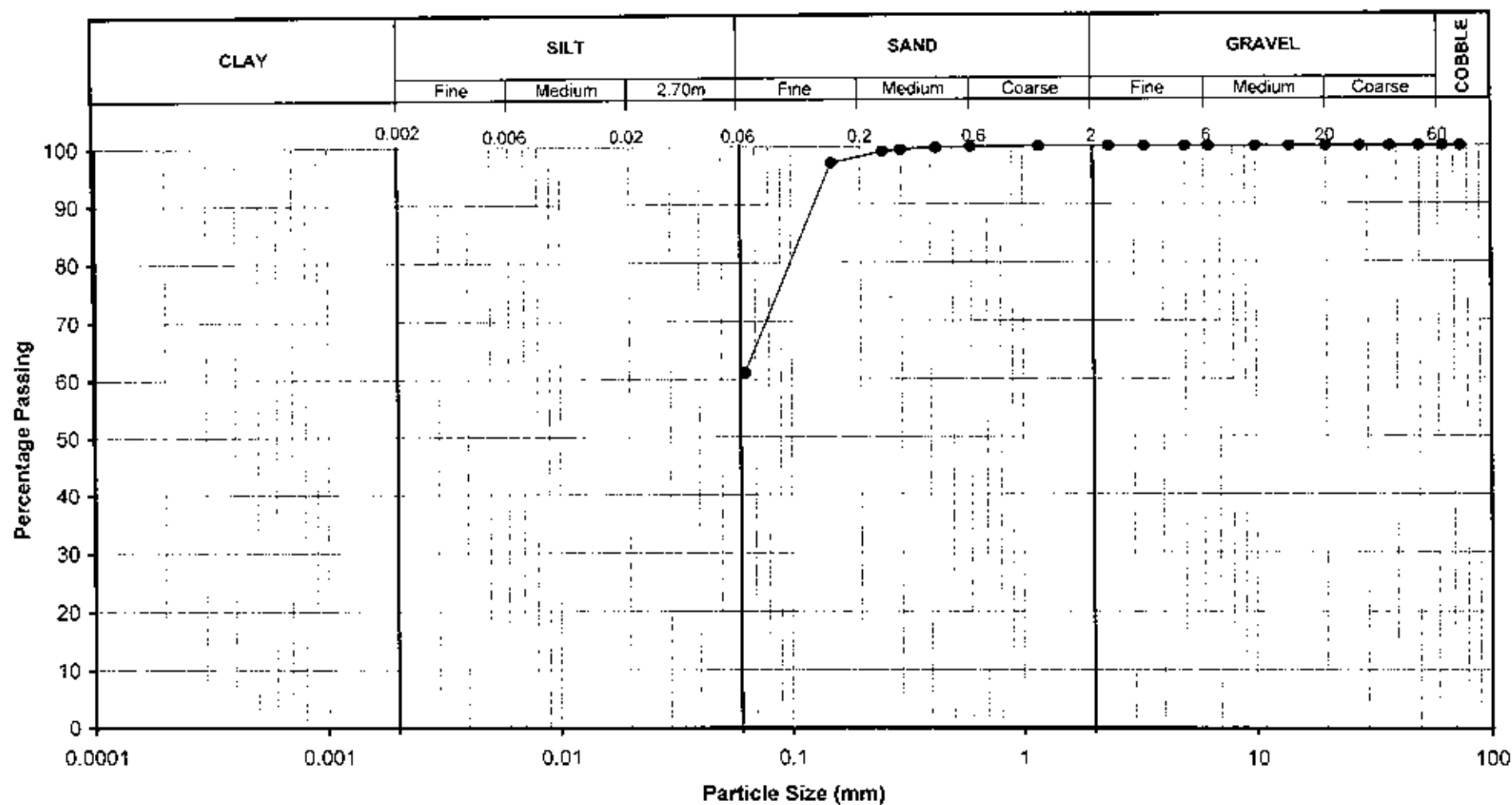
RESULTS OF PARTICLE SIZE ANALYSIS



Job Name	Warblington School, Southleigh Road, Havant	BH/ TP No.	WS 2	Sample Description	Silty very sandy GRAVEL
Job No.	LW20180	Sample Depth	1.00m		

ASHDOWN SITE INVESTIGATION LTD

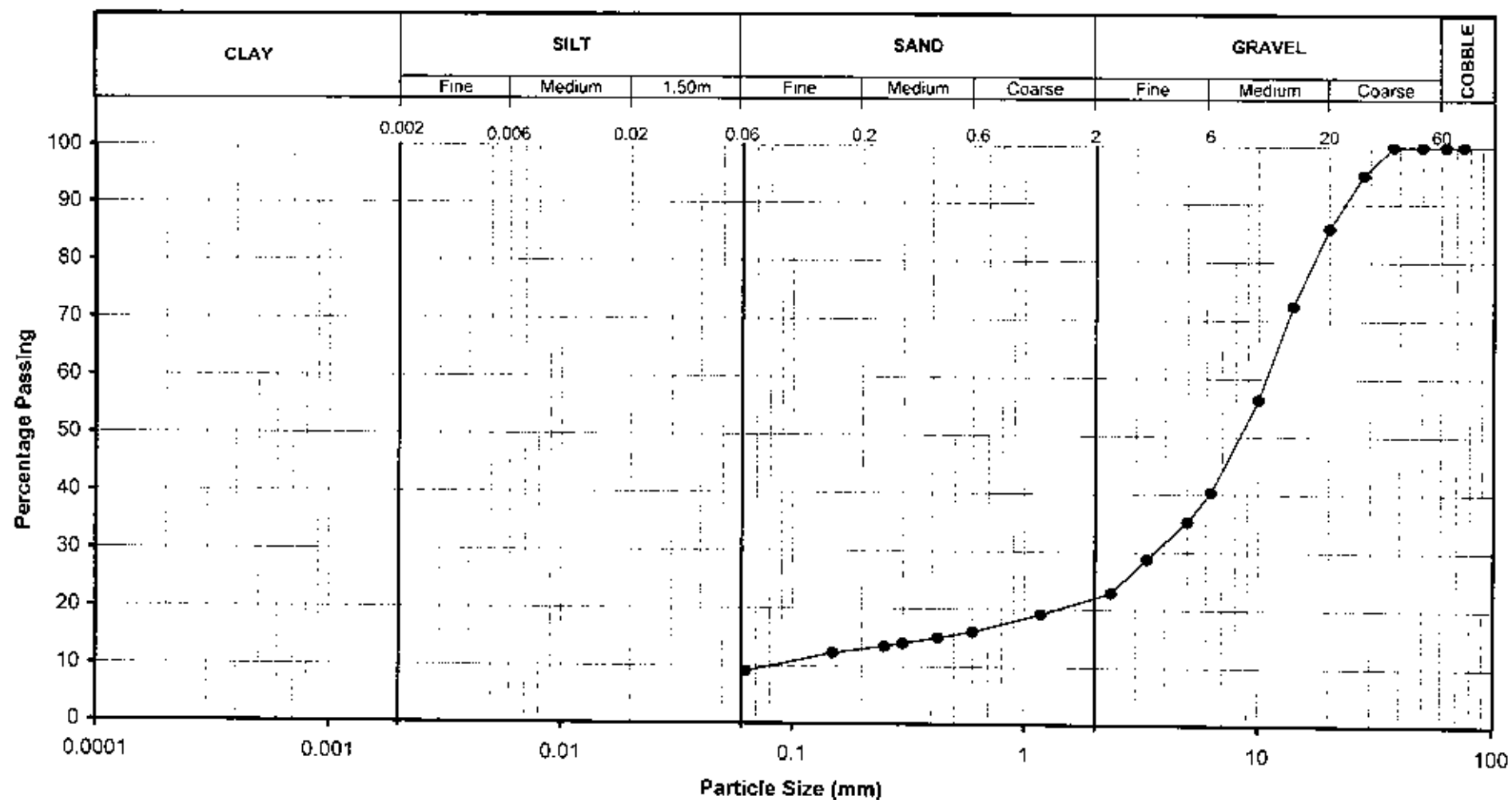
RESULTS OF PARTICLE SIZE ANALYSIS



Job Name	Warblington School, Southleigh Road, Havant	BH/ TP No.	WS2	Sample Description	Slightly sandy FINE SOIL.
Job No.	LW20180	Sample Depth	2.70m		

ASHDOWN SITE INVESTIGATION LTD

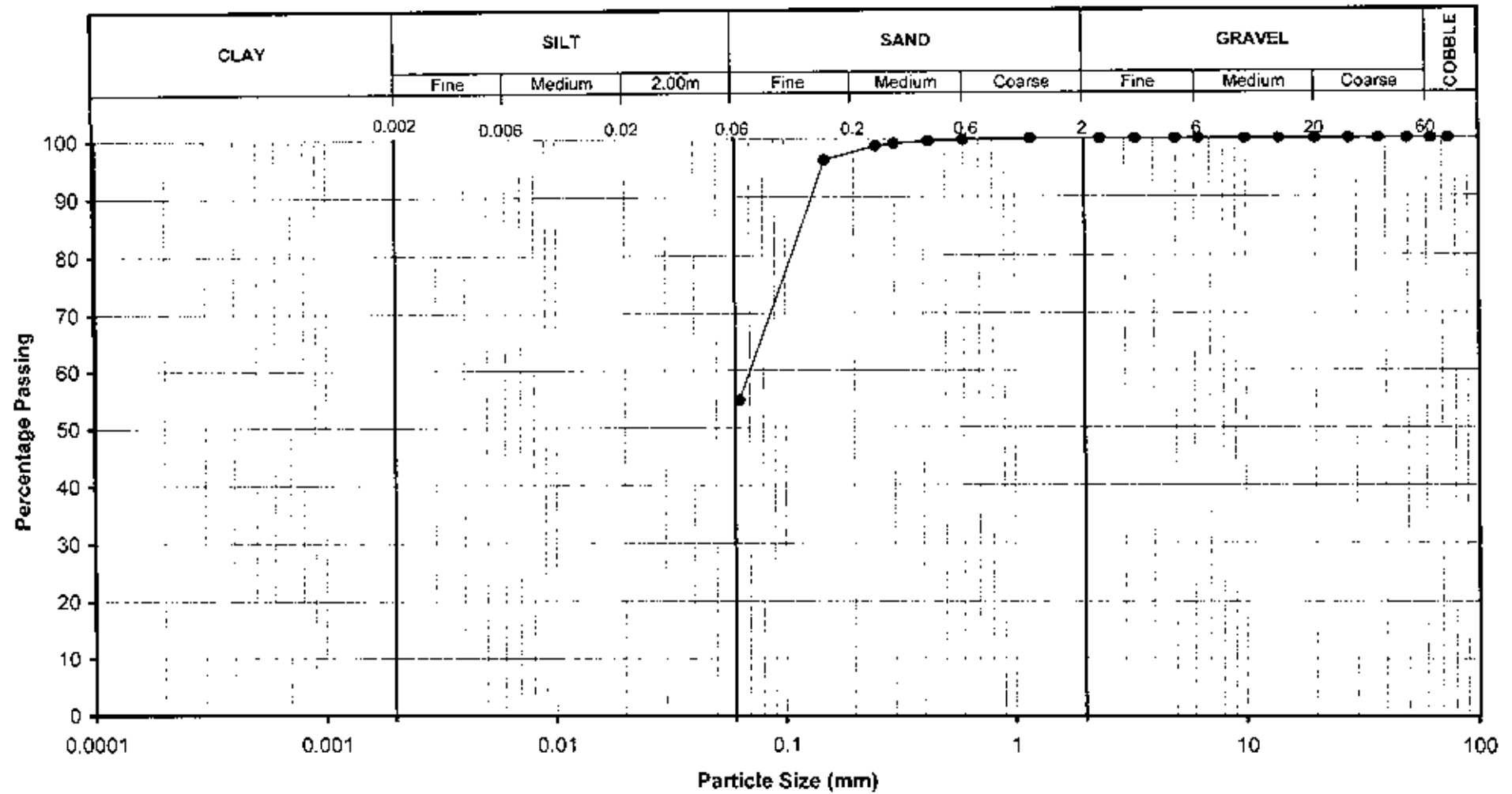
RESULTS OF PARTICLE SIZE ANALYSIS



Job Name	Warblington School, Southleigh Road, Havant	BH/ TP No.	WS 3	Sample Description	Silty sandy GRAVEL.
Job No.	LW20180	Sample Depth	1.50m		

ASHDOWN SITE INVESTIGATION LTD

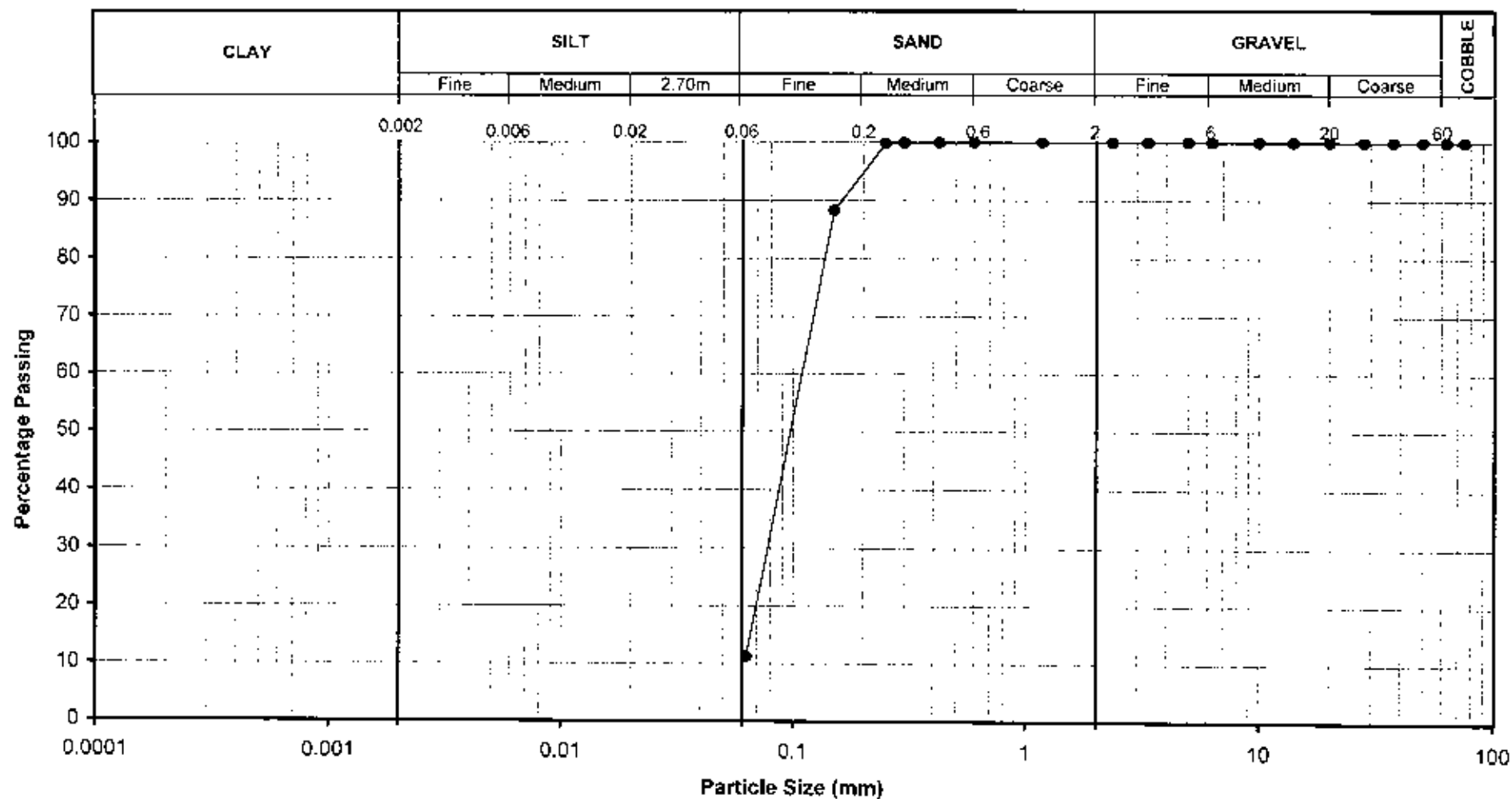
RESULTS OF PARTICLE SIZE ANALYSIS



Job Name	Warblington School, Southleigh Road, Havant	BH/ TP No.	WS 3	Sample Description	Sandy FINE SOIL.
Job No.	LW20180	Sample Depth	2.00m		

ASHDOWN SITE INVESTIGATION LTD

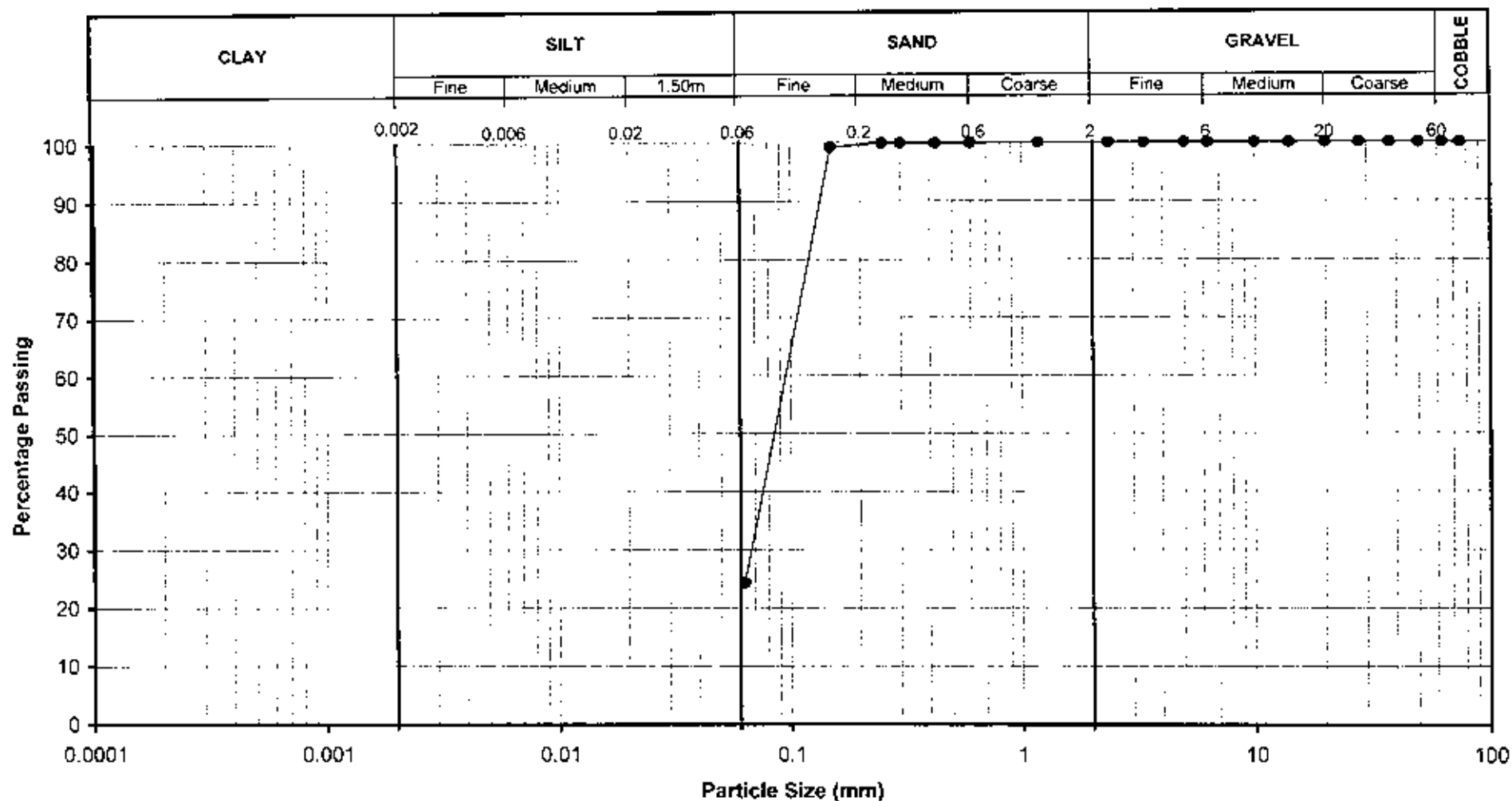
RESULTS OF PARTICLE SIZE ANALYSIS



Job Name	Warblington School, Southleigh Road, Havant	BH/ TP No.	WS 3	Sample Description	Silty SAND.
Job No.	LW20180	Sample Depth	2.70m		

ASHDOWN SITE INVESTIGATION LTD

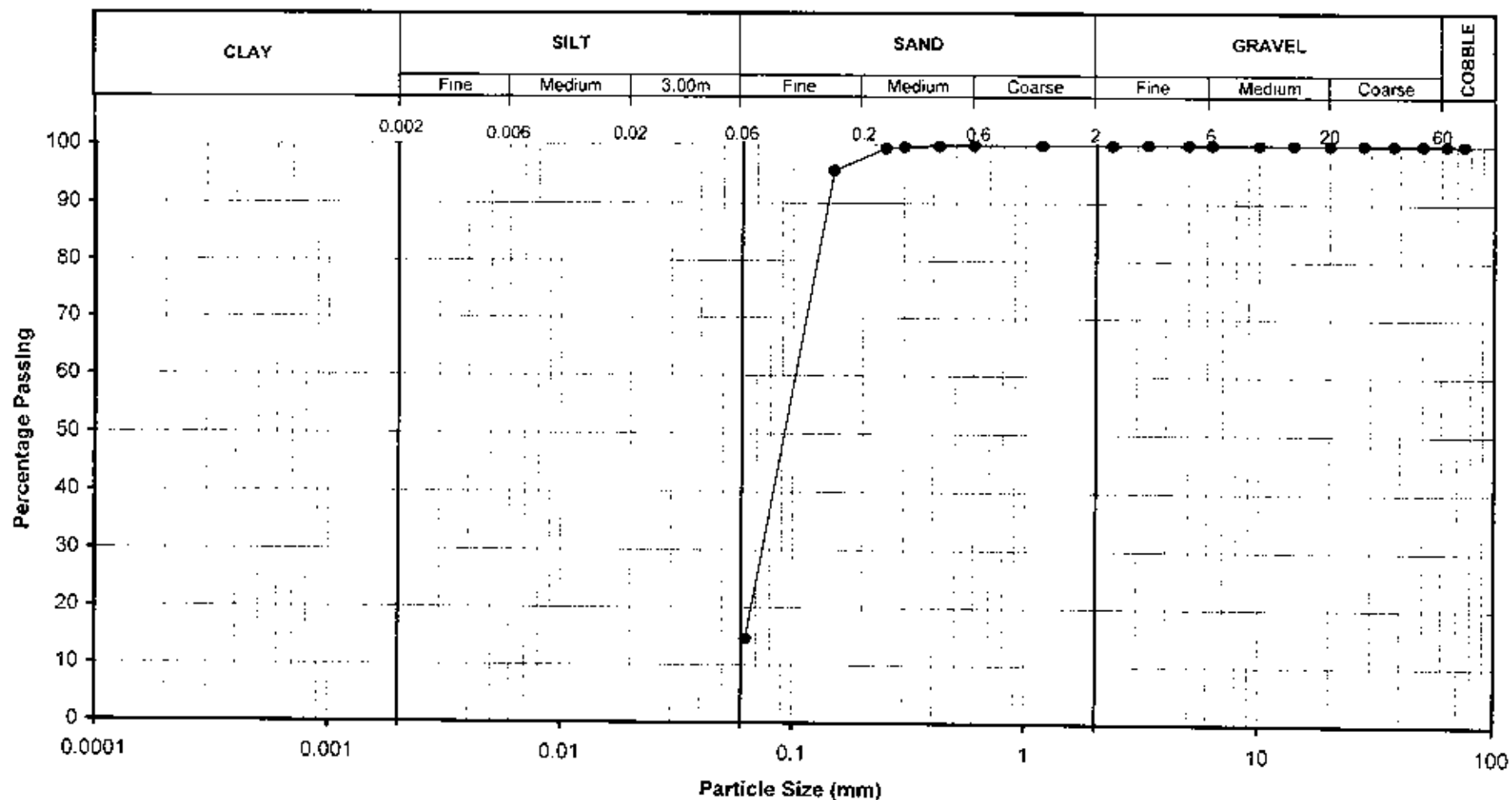
RESULTS OF PARTICLE SIZE ANALYSIS



Job Name	Warblington School, Southleigh Road, Havant	BH/ TP No.	WS4	Sample Description	Very silty SAND.
Job No.	LW20180	Sample Depth	1.50m		

ASHDOWN SITE INVESTIGATION LTD

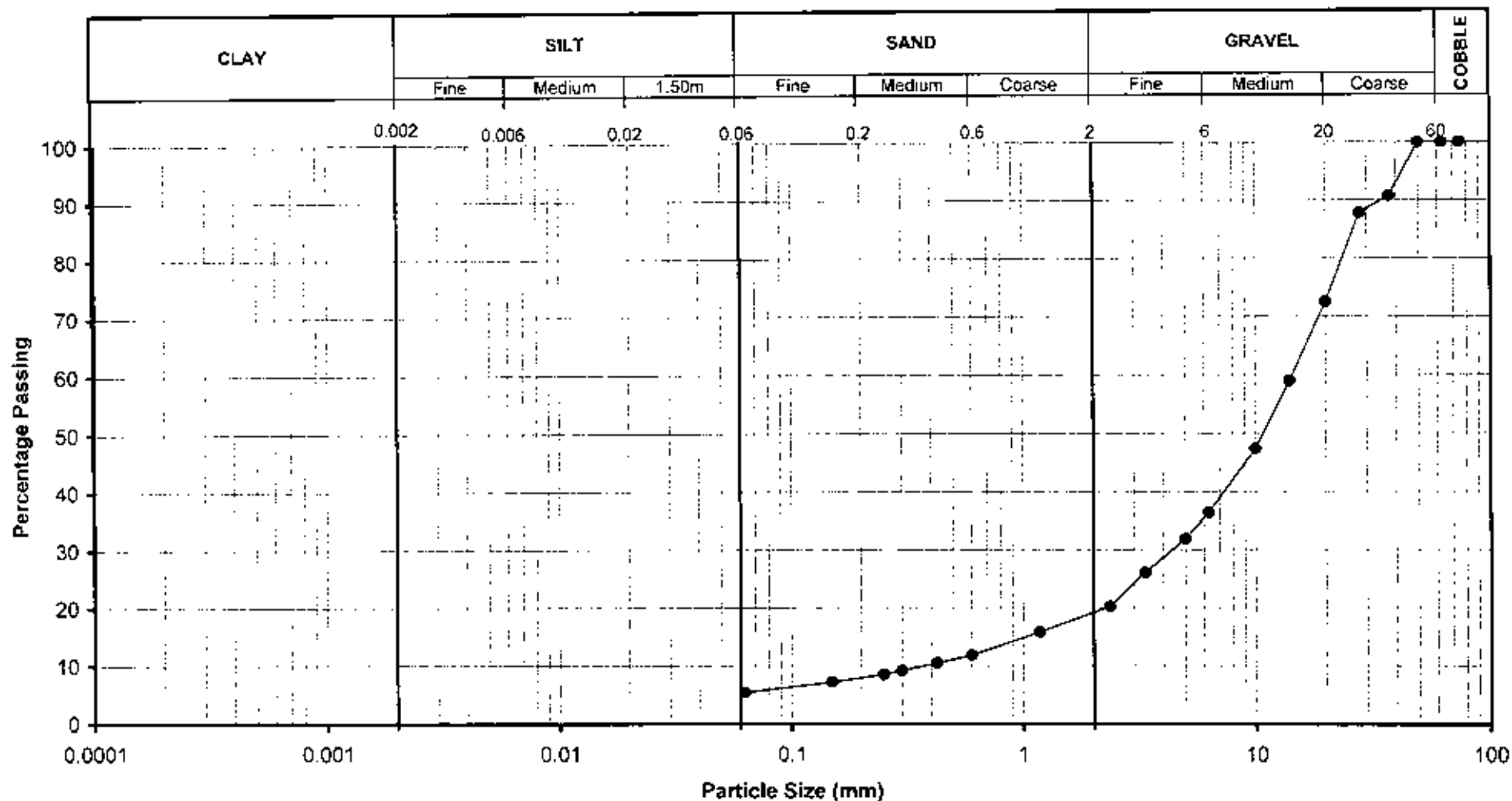
RESULTS OF PARTICLE SIZE ANALYSIS



Job Name	Warblington School, Southleigh Road, Havant	BH/ TP No.	WS 4	Sample Description	Silty SAND.
Job No.	LW20180	Sample Depth	3.00m		

ASHDOWN SITE INVESTIGATION LTD

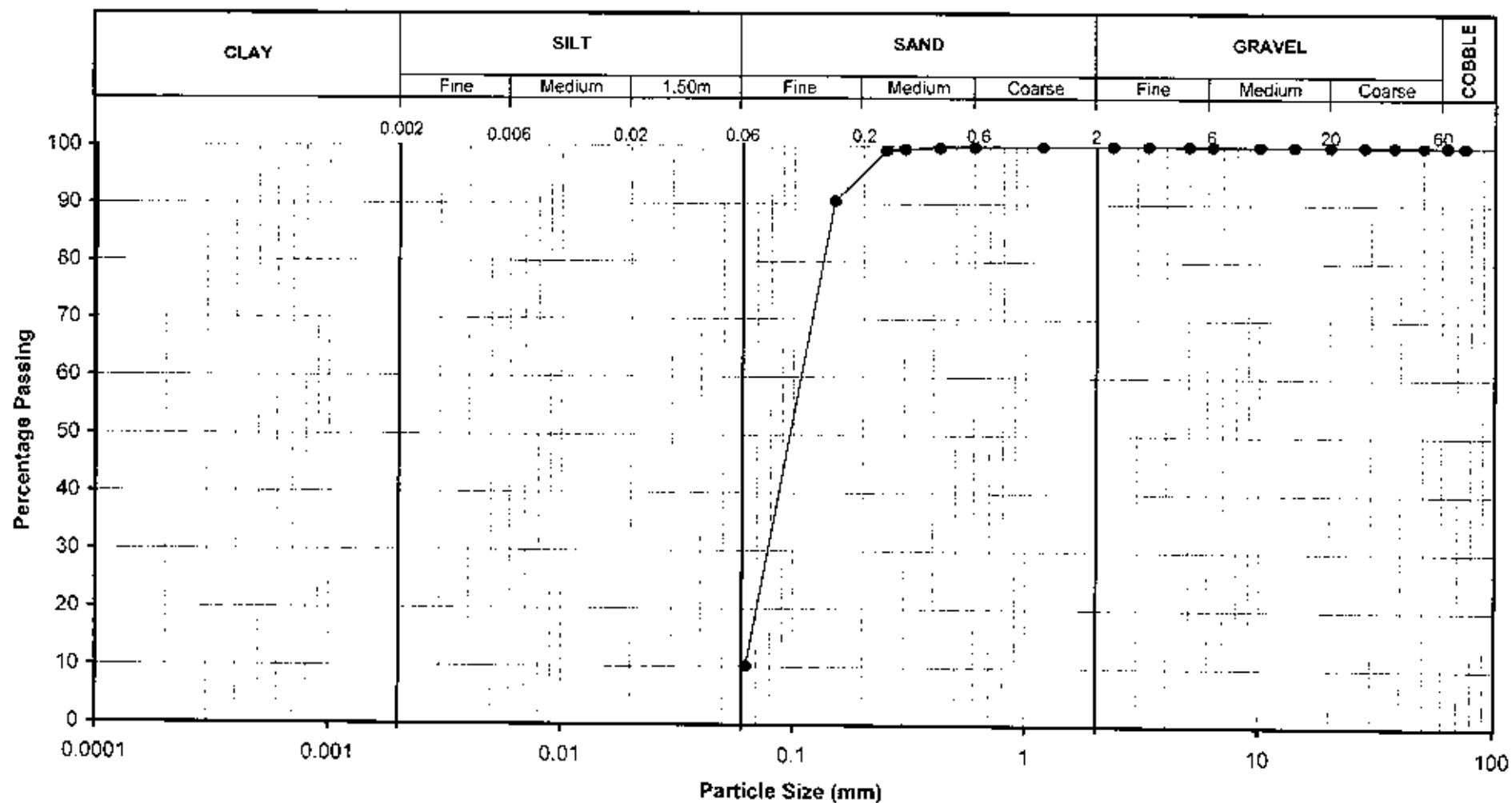
RESULTS OF PARTICLE SIZE ANALYSIS



Job Name	Warblington School, Southleigh Road, Havant	BH/ TP No.	WS 5	Sample Description	Silty sandy GRAVEL.
Job No.	LW20180	Sample Depth	1.50m		

ASHDOWN SITE INVESTIGATION LTD

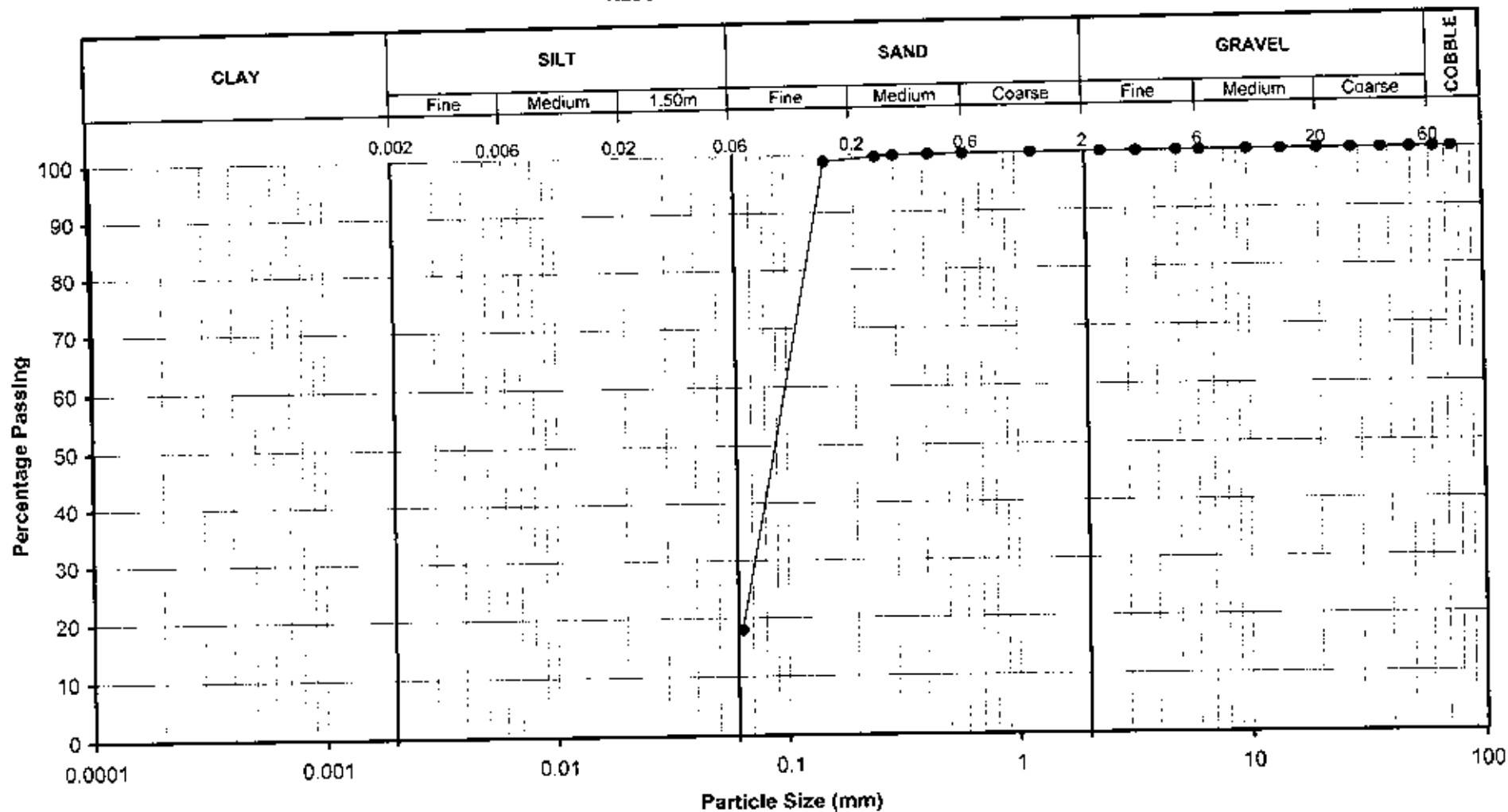
RESULTS OF PARTICLE SIZE ANALYSIS



Job Name	Warlington School, Southleigh Road, Havant	BH/ TP No.	WS 5	Sample Description	Silty SAND.
Job No.	LW20180	Sample Depth	3.00m		

ASHDOWN SITE INVESTIGATION LTD

RESULTS OF PARTICLE SIZE ANALYSIS



Job Name	Warblington School, Southleigh Road, Havant	BH/ TP No.	S1	Sample Description	Silty SAND.
Job No.	LW20180	Sample Depth	1.50m		

Appendix G

SITE MONITORING DATA

Appendix H

RISK ASSESSMENT RATIONALE

Hydrock Report Appendix on Risk Rationale, version 02 updated 28/03/11 applies to this report.

This appendix may not be included in the printed report to reduce the document size.

It is presented in the PDF version of the report on the CD enclosed with the printed report.

Alternatively, it can be supplied on request by quoting the version number and date.

Appendix I

CONTAMINATION TEST RESULTS & STATISTICAL ANALYSIS

Assessment of Chemicals of Potential Concern to Human Health

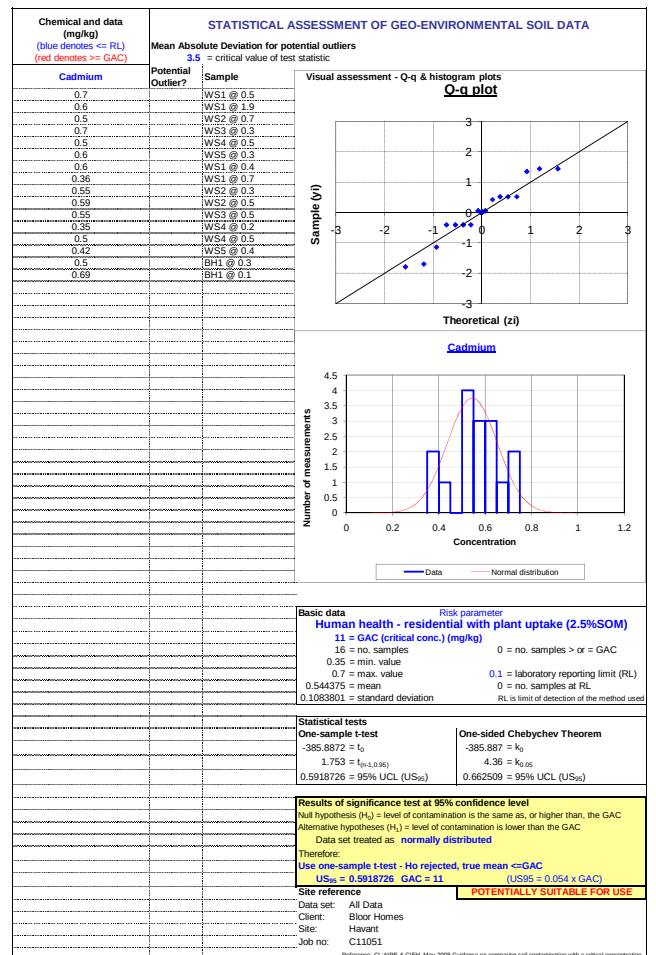
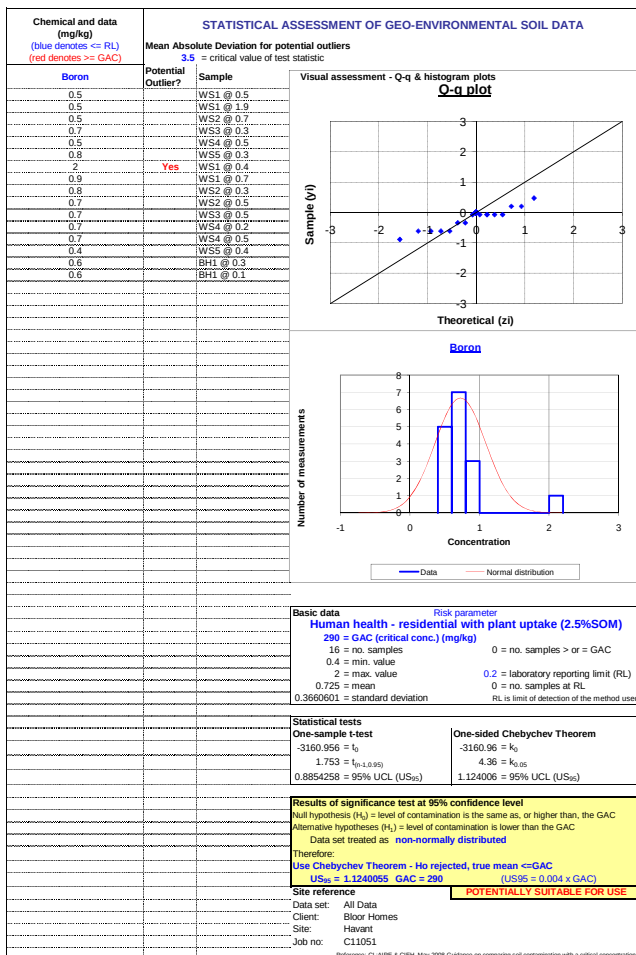
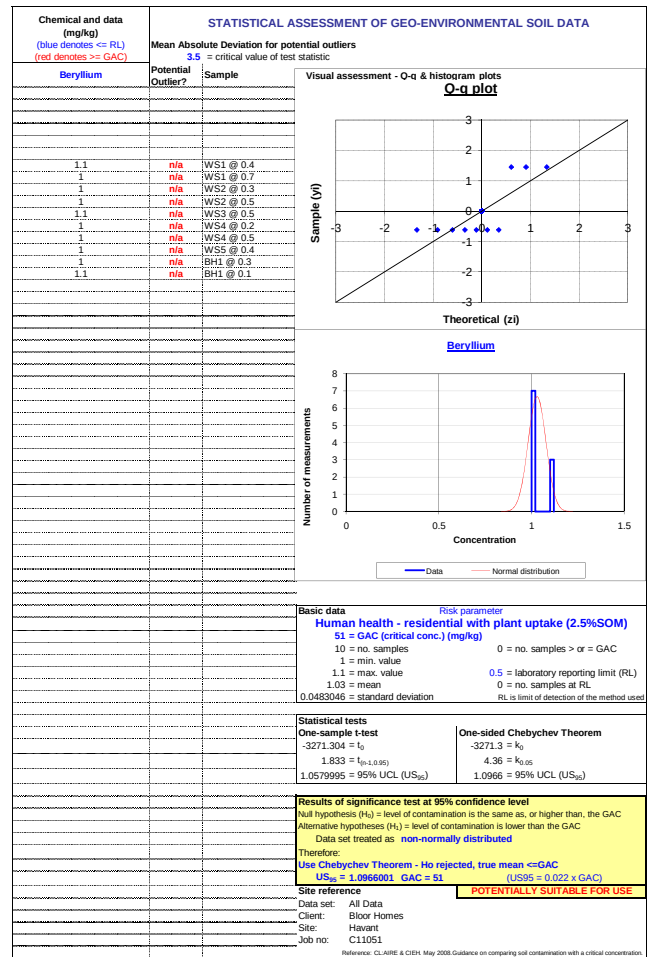
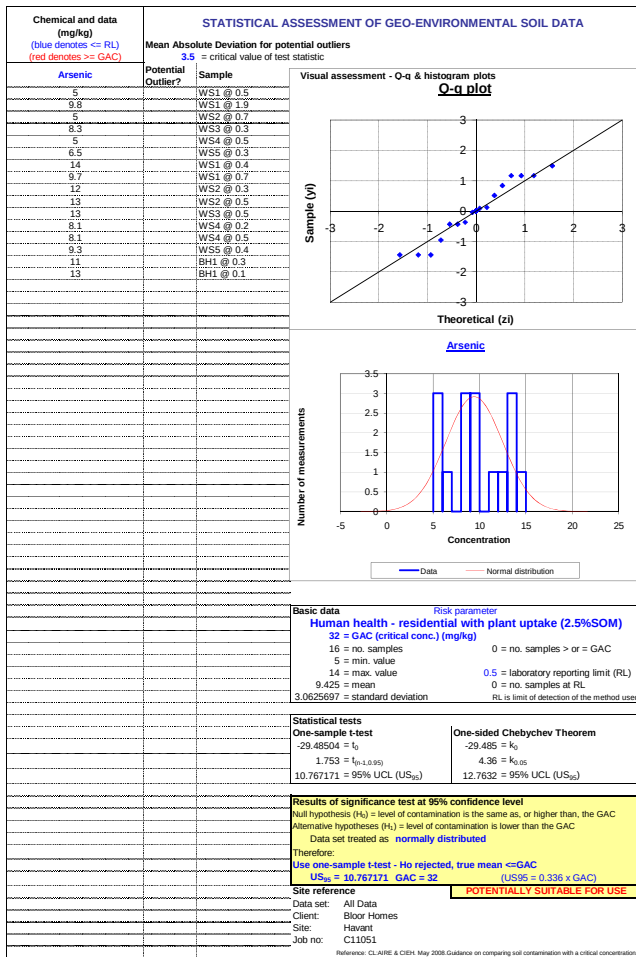


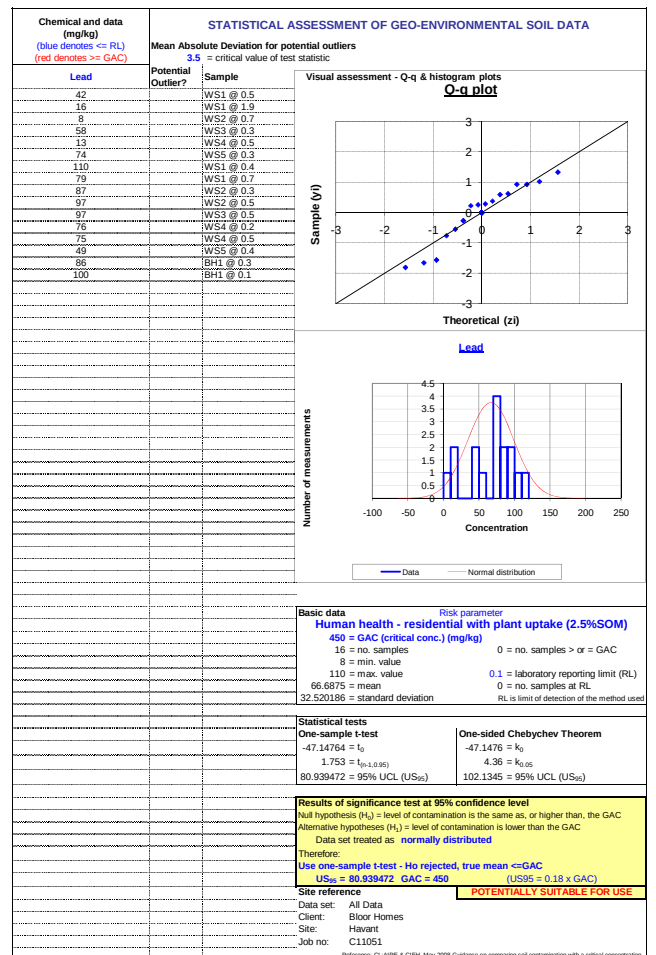
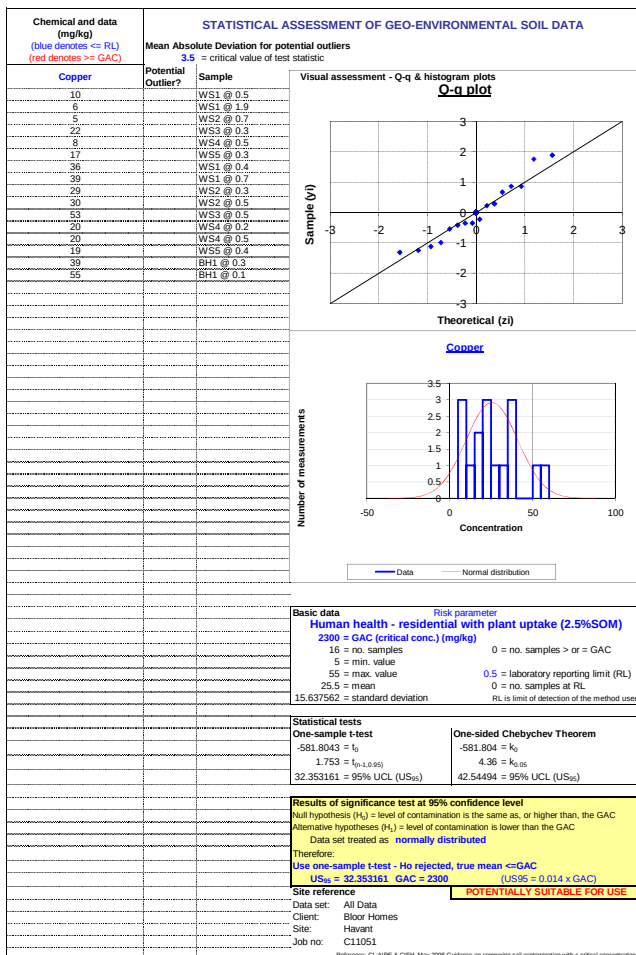
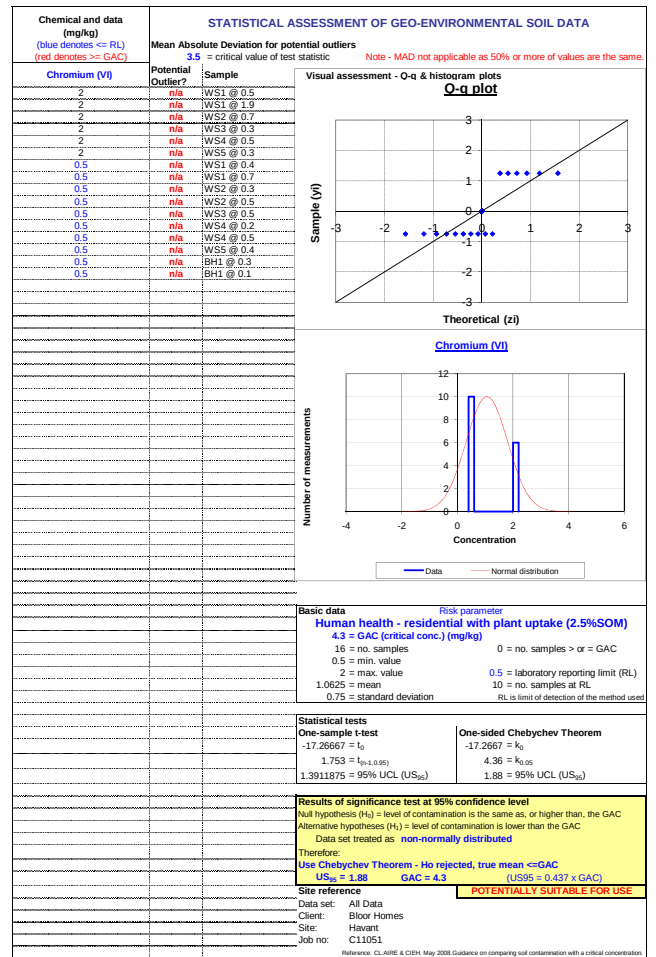
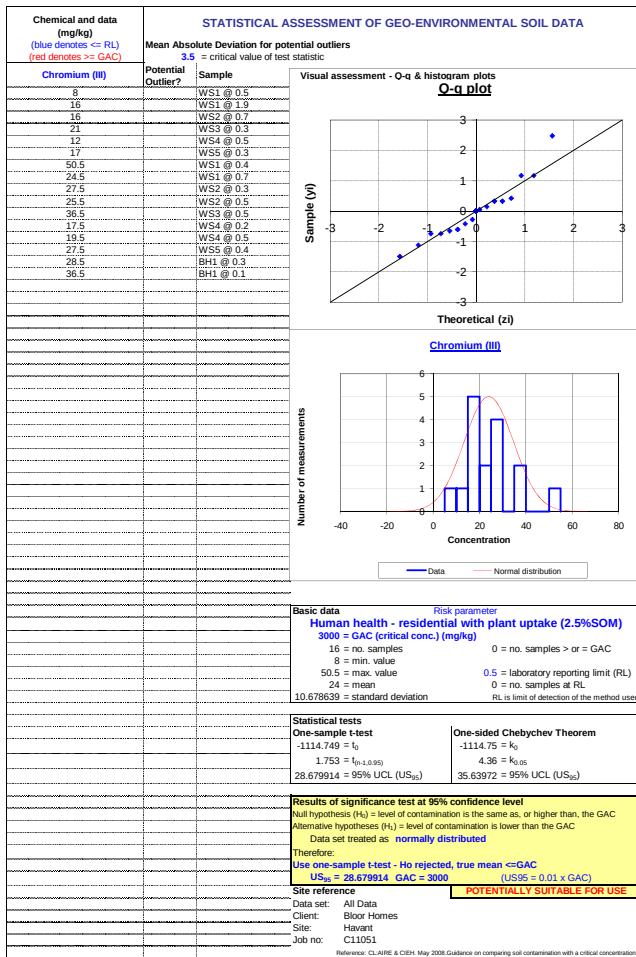
All values in mg/kg unless otherwise stated								Soil Type																		
Chemical of Potential Concern	Lab. RL	No. Samples	Min. Value	Max. Value	No. Samples > or = GAC	GAC	US ₉₅	Location & Depth	WS1	WS1	WS2	WS3	WS4	WS5	WS1	WS1	WS2	WS2	WS3	WS4	WS4	WS5	BH1	BH1		
									0.5	1.9	0.7	0.3	0.5	0.3	0.4	0.7	0.3	0.5	0.5	0.2	0.5	0.4	0.5	0.4	0.3	0.1
								Result of Significance Test																		
Arsenic	0.5	16	5	14	0	32	10.76717	POTENTIALLY SUITABLE FOR USE	5	9.8	5	8.3	5	6.5	14	9.7	12	13	13	8.1	8.1	9.3	11	13		
Beryllium	0.5	10	1	1.1	0	51	1.0966	POTENTIALLY SUITABLE FOR USE							1.1	1	1	1	1.1	1	1	1	1.1			
Boron	0.2	16	0.4	2		290	1.124006	POTENTIALLY SUITABLE FOR USE	0.5	0.5	0.5	0.7	0.5	0.8	2	0.9	0.8	0.7	0.7	0.7	0.7	0.4	0.6	0.6		
Cadmium	0.1	16	0.35	0.7	0	11	0.591873	POTENTIALLY SUITABLE FOR USE	0.7	0.6	0.5	0.7	0.5	0.6	0.6	0.36	0.55	0.59	0.55	0.35	0.5	0.42	0.5	0.69		
Chromium (III)	0.5	16	8	50.5	0	3000	28.67991	POTENTIALLY SUITABLE FOR USE	8	16	16	21	12	17	50.5	24.5	27.5	25.5	36.5	17.5	19.5	27.5	28.5	36.5		
Chromium (VI)	0.5	16	0.5	2	0	4.3	1.88	POTENTIALLY SUITABLE FOR USE	2	2	2	2	2	2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		
Copper	0.5	16	5	55	0	2300	32.35316	POTENTIALLY SUITABLE FOR USE	10	6	5	22	8	17	36	39	29	30	53	20	20	19	39	55		
Lead	0.1	16	8	110	0	450	80.93947	POTENTIALLY SUITABLE FOR USE	42	16	8	58	13	74	110	79	87	97	97	76	75	49	86	100		
Mercury, inorganic	0.5	16	0.1	0.5001	0	170	0.489539	POTENTIALLY SUITABLE FOR USE	0.5001	0.5	0.5	0.5	0.5	0.5	0.41	0.16	0.18	0.21	0.18	0.15	0.12	0.1	0.16	0.2		
Nickel	0.4	16	9	38	0	130	22.53541	POTENTIALLY SUITABLE FOR USE	10	9	13	19	12	15	23	18	26	23	27	14	17	20	24	38		
Selenium	20	16	0.2	0.7	0	350	0.434347	POTENTIALLY SUITABLE FOR USE	0.5	0.5	0.5	0.7	0.5	0.5	0.2	0.2	0.3	0.59	0.22	0.2	0.2	0.2	0.2	0.2		
Vanadium	0.5	16	24	59	0	74	42.23892	POTENTIALLY SUITABLE FOR USE	48	34	24	59	27	49	58	32	34	35	41	25	26	28	35	42		
Zinc	2	10	47	110	0	3700	84.46381	POTENTIALLY SUITABLE FOR USE							110	57	73	76	83	47	50	58	70	100		
Cyanide (free)	1	16	0.5	1	0	750	0.96	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		
Phenol (total)	1	16	0.3	1	0	290	0.944	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	1	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3		
Acenaphthene	0.01	16	0.01	0.5001	0	480	0.477672	POTENTIALLY SUITABLE FOR USE	0.5	0.5	0.5	0.5	0.5	0.5	0.33	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.01		
Acenaphthylene	0.01	16	0.01	0.5001	0	400	0.493878	POTENTIALLY SUITABLE FOR USE	0.5	0.5	0.5	0.5	0.5	0.5	0.47	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01		
Anthracene	0.01	16	0.01	0.95	0	4900	0.391499	POTENTIALLY SUITABLE FOR USE	0.5	0.5	0.5	0.5	0.5	0.5	0.95	0.01	0.01	0.01	0.01	0.01	0.01	0.06	0.1	0.01		
Benz(a)anthracene	0.01	16	0.01	2	0	4.7	0.627713	POTENTIALLY SUITABLE FOR USE	0.5	0.5	0.5	0.5	0.5	0.5	2	0.01	0.41	0.59	0.01	0.01	0.01	0.5	0.1	0.01		
Benzo(a)pyrene	0.01	16	0.01	1.9	2	0.94	0.674488	POTENTIALLY SUITABLE FOR USE	0.5	0.5	0.5	0.5	0.5	0.5	1.9	0.01	0.68	1.1	0.01	0.01	0.01	0.54	0.01	0.01		
Benzo(b)fluoranthene	0.01	16	0.01	2.8	0	6.5	0.822228	POTENTIALLY SUITABLE FOR USE	0.5	0.5	0.5	0.5	0.5	0.5	2.8	0.01	0.72	1	0.01	0.01	0.01	0.75	0.02	0.01		
Benzo(ghi)perylene	0.01	16	0.01	1.9	0	46	0.680875	POTENTIALLY SUITABLE FOR USE	0.5	0.5	0.5	0.5	0.5	0.5	1.9	0.01	0.39	1.4	0.01	0.01	0.01	0.44	0.01	0.01		
Benzo(k)fluoranthene	0.01	16	0.01	1.6	0	9.6	0.806097	POTENTIALLY SUITABLE FOR USE	0.5	0.5	0.5	0.5	0.5	0.5	1.6	0.01	0.39	0.42	0.01	0.01	0.01	0.45	0.02	0.01		
Chrysene	0.01	16	0.01	2.5	0	8	0.752431	POTENTIALLY SUITABLE FOR USE	0.5	0.5	0.5	0.5	0.5	0.5	2.5	0.01	0.59	0.8	0.01	0.01	0.01	0.67	0.22	0.01		
Dibenz(a,h)anthracene	0.01	16	0.01	0.5001	0	0.86	0.47984	POTENTIALLY SUITABLE FOR USE	0.5	0.5	0.5	0.5	0.5	0.5	0.21	0.01	0.29	0.03	0.01	0.01	0.01	0.05	0.02	0.01		
Fluoranthene	0.01	16	0.1	4.4	0	460	1.250874	POTENTIALLY SUITABLE FOR USE	0.9	0.5	0.5	0.5	0.5	0.5	4.4	0.32	1.1	1.4	0.39	0.28	0.26	1	0.1	0.18		
Fluorene	0.01	16	0.01	0.5001	0	380	0.479141	POTENTIALLY SUITABLE FOR USE	0.5	0.5	0.5	0.5	0.5	0.5	0.32	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.14	0.01		
Indeno(1,2,3-cd)pyrene	0.01	16	0.01	1.2	0	3.9	0.523433	POTENTIALLY SUITABLE FOR USE	0.5	0.5	0.5	0.5	0.5	0.5	1.2	0.01	0.35	0.57	0.01	0.01	0.01	0.74	0.12	0.01		
Naphthalene	0.01	16	0.01	0.5001	0	3.7	0.490015	POTENTIALLY SUITABLE FOR USE	0.5	0.5	0.5	0.5	0.5	0.5	0.44	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.01	0.01		
Phenanthrene	0.01	16	0.1	3.4	0	200	1.380553	POTENTIALLY SUITABLE FOR USE	0.5	0.5	0.5	0.5	0.5	0.5	3.4	0.15	0.4	0.44	0.16	0.13	0.11	0.31	0.22	0.1		
Pyrene	0.01	16	0.01	3.9	0	1000	1.679082	POTENTIALLY SUITABLE FOR USE	0.5	0.5	0.5	0.5	0.5	0.5	3.9	0.24	0.85	1.1	0.4	0.24	0.27	0.96	0.01	0.19		
	Mean																									
FOC (dimensionless)	0.015								0.012761	0.015081	0.011021	0.012181	0.00232	0.012181	0.027	0.01	0.018	0.019	0.021	0.021	0.017	0.016	0.015	0.0095		
SOM (calculated)	2.58%								2.20%	2.60%	1.90%	2.10%	0.40%	2.10%	4.65%	1.72%	3.10%	3.28%	3.62%	3.62%	2.93%	2.76%	2.59%	1.64%		
pH (su)	7.5								8.2	8.1	8	7.5	8	7.1	7.8	7.9	7.8	7.8	7.1	6.2	6.1	7.5	7.5	7.6		
Risk parameter: Human health - residential with plant uptake (2.5%SOM)								Legend: Values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate. Values in red are equal to, or greater than, the generic assessment criterion (GAC). MG denotes Made Ground NAT denotes natural ground																		
Data set: All Data																										
Client: Bloor Homes																										
Site: Havant																										
Job no: C11051																										

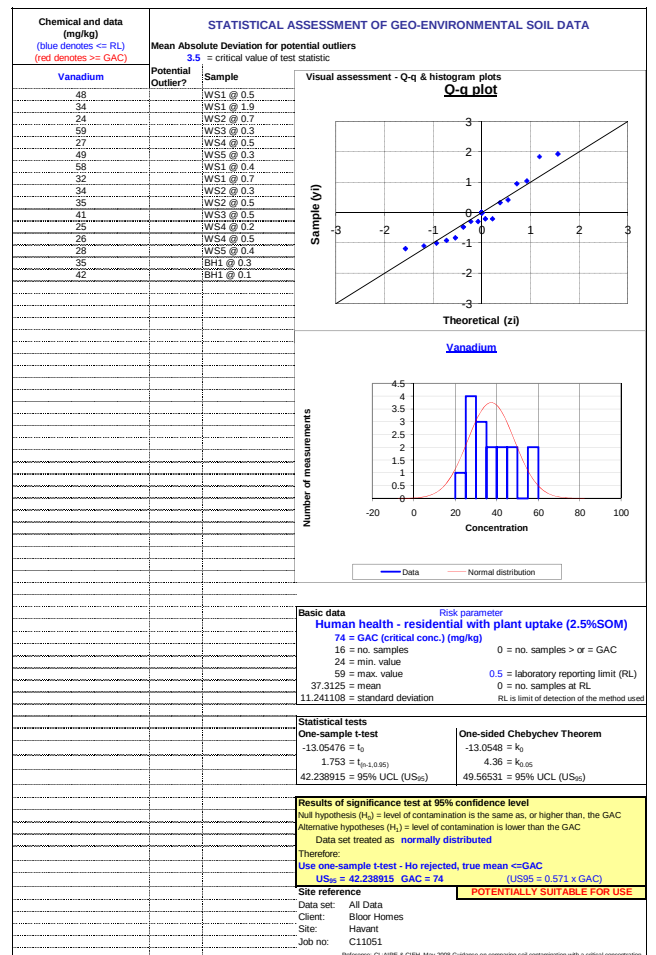
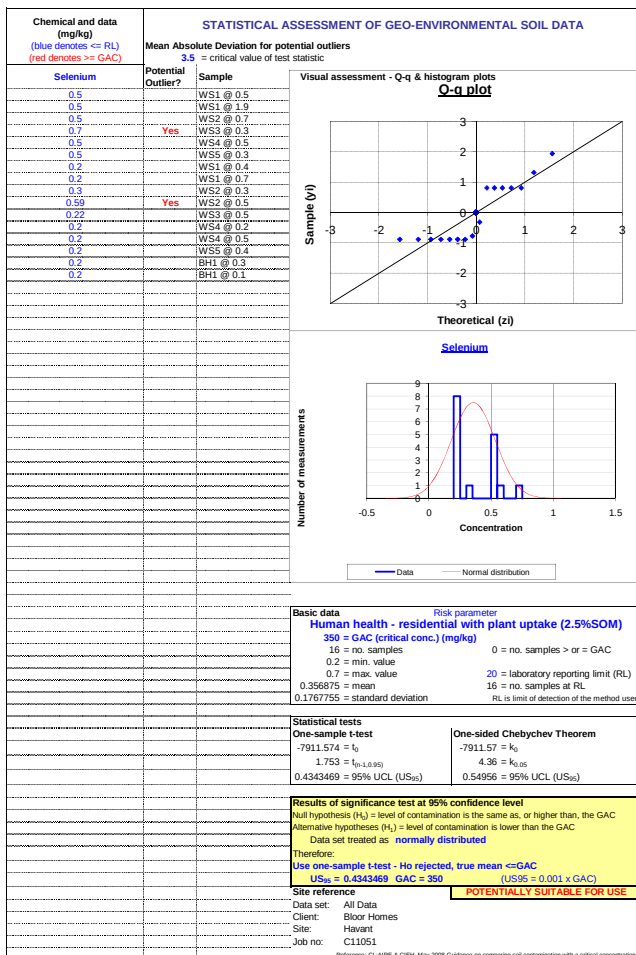
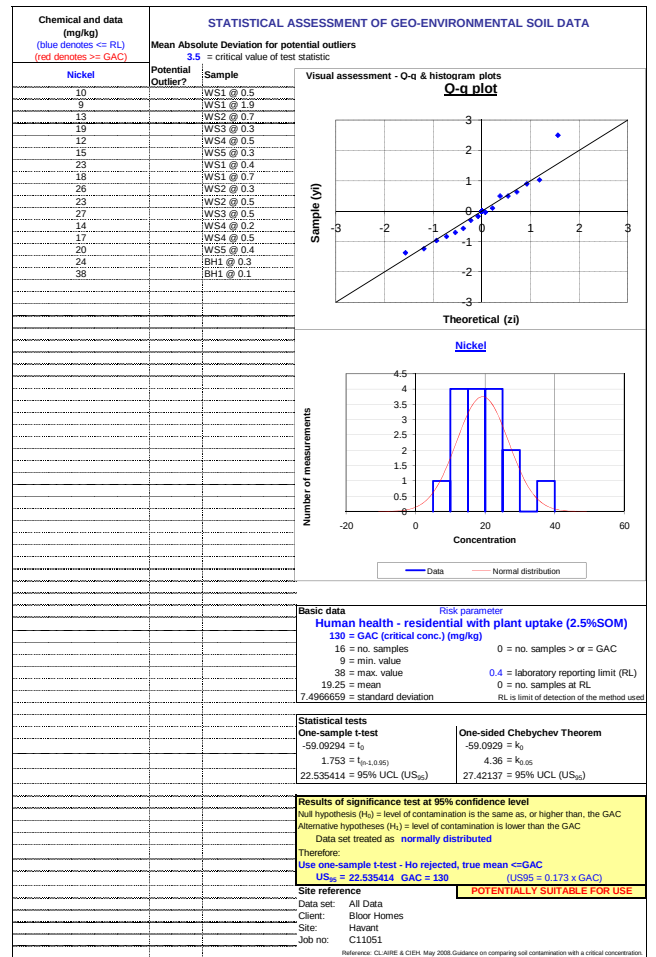
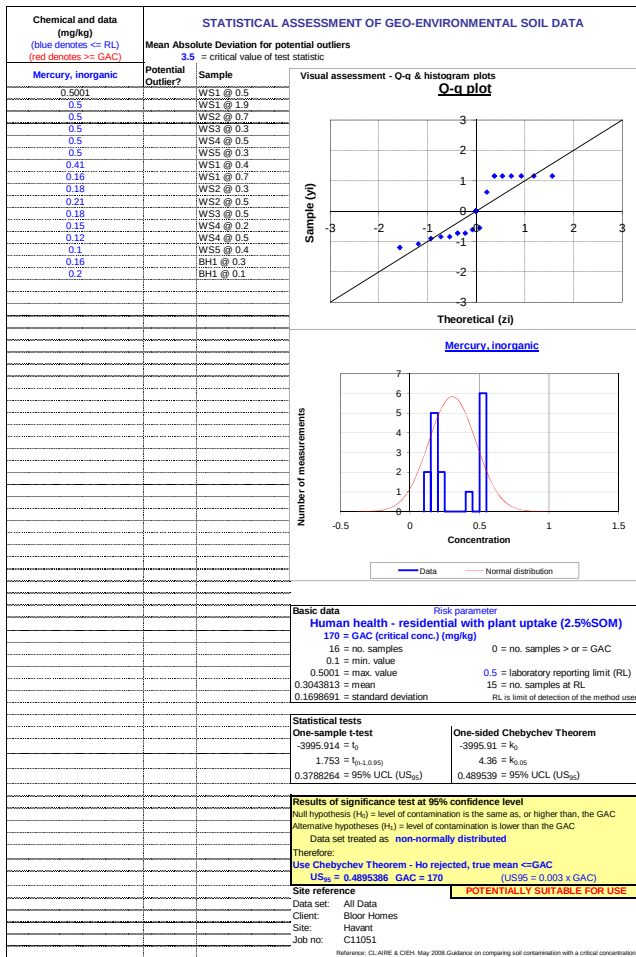
Assessment of Chemicals of Potential Concern to Plant Life

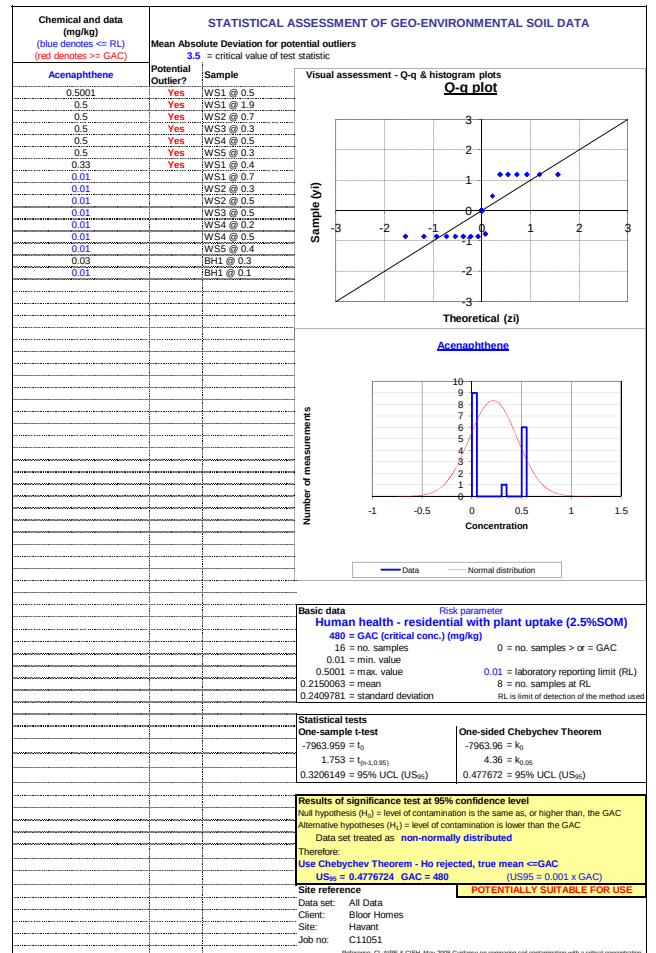
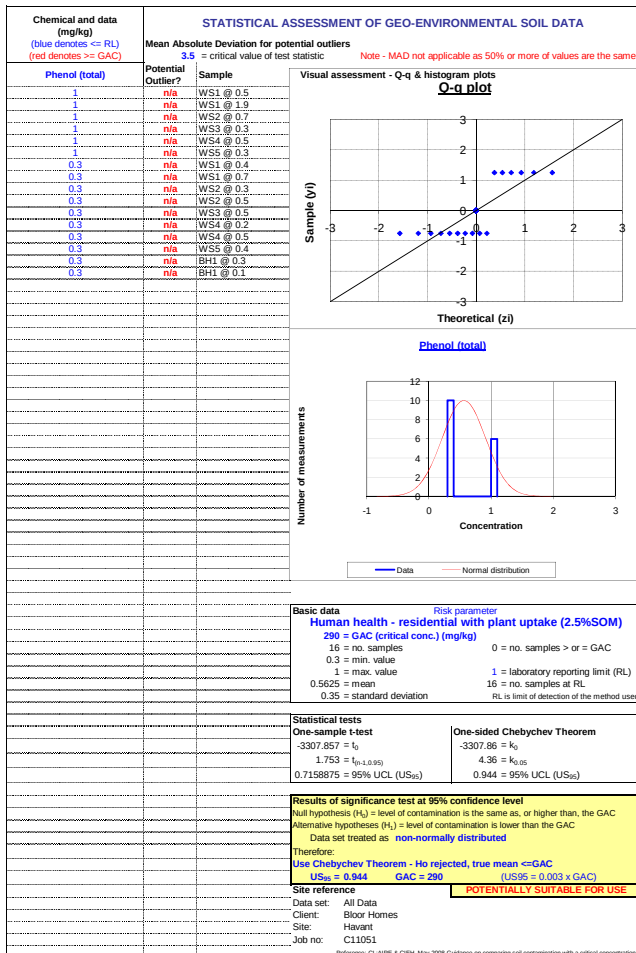
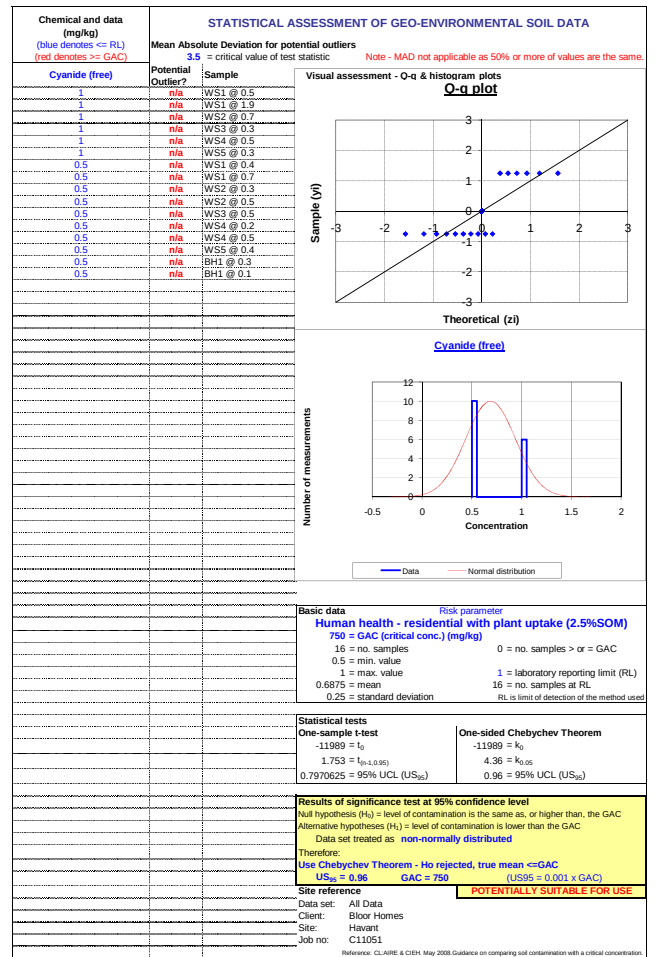
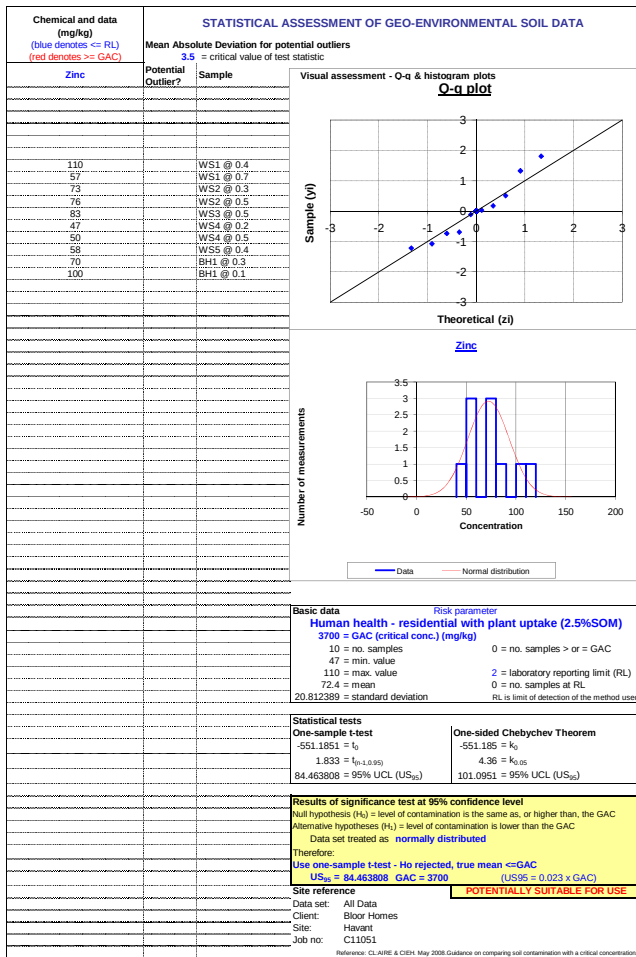


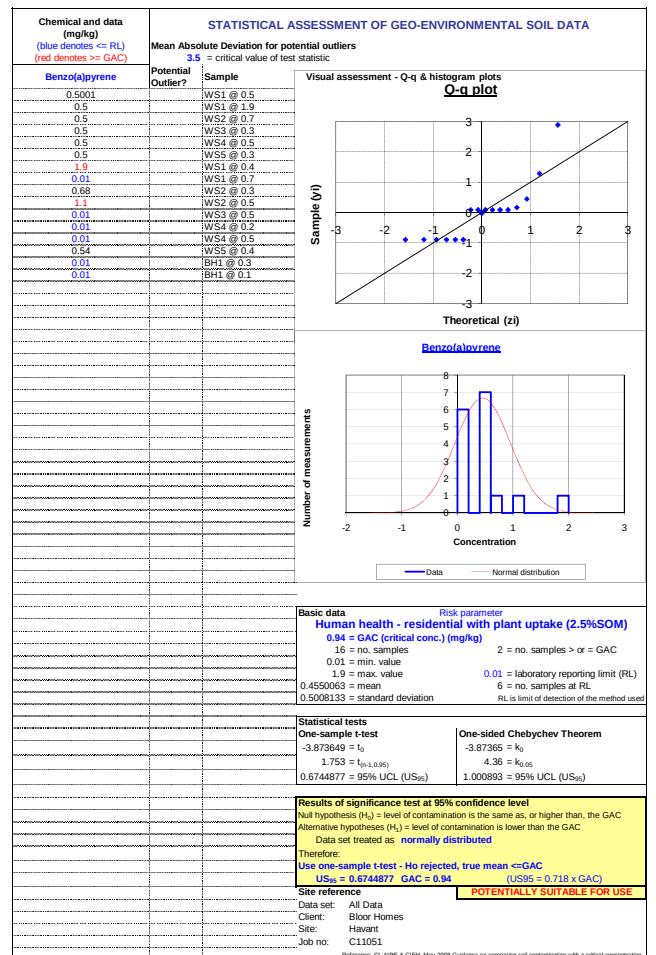
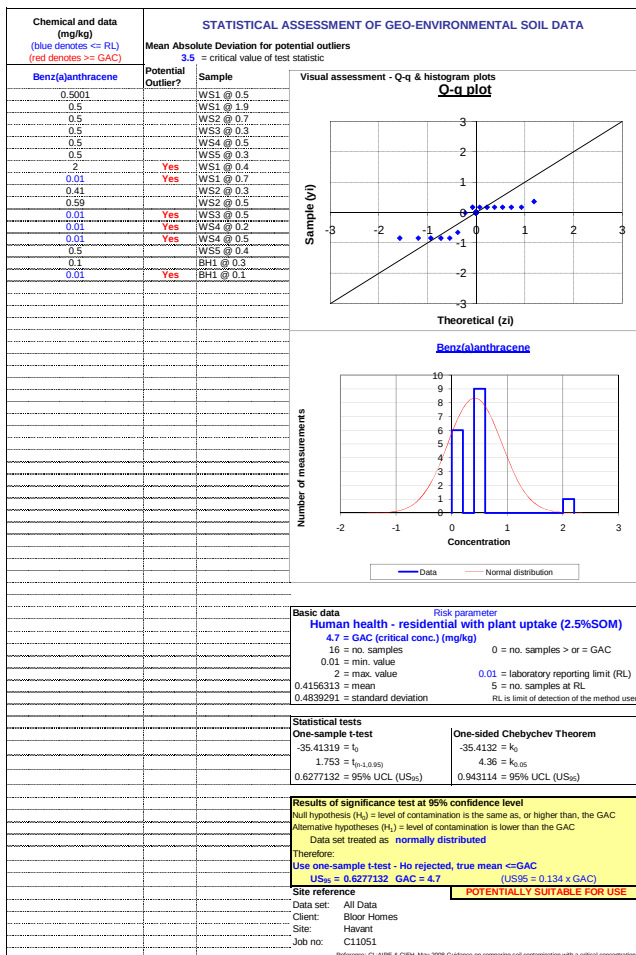
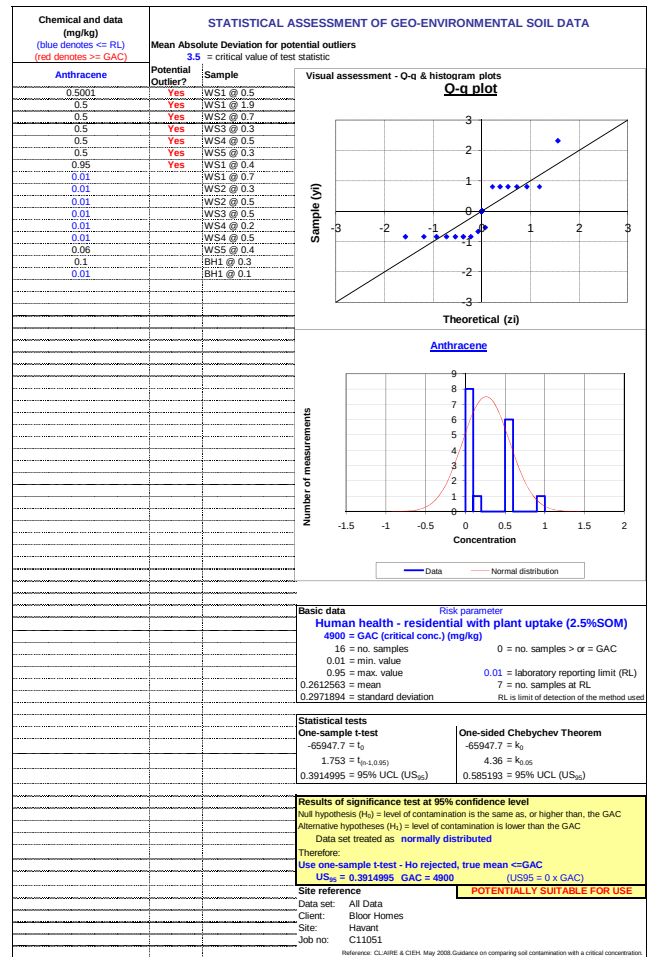
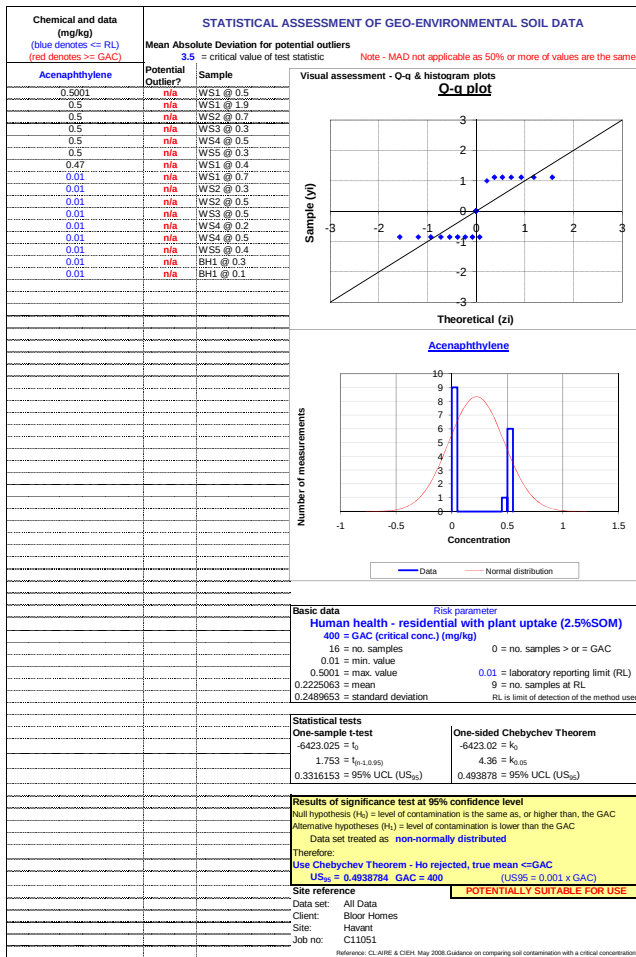
All values in mg/kg unless otherwise stated								Soil Type																									
								Location & Depth		WS1	WS1	WS2	WS3	WS4	WS5	WS1	WS1	WS2	WS2	WS3	WS4	WS4	WS5	BH1	BH1								
Chemical of Potential Concern	Lab. RL	No. Samples	Min. Value	Max. Value	No. Samples > or = GAC	GAC	US ₉₅	Result of Significance Test	0.5	1.9	0.7	0.3	0.5	0.3	0.4	0.7	0.3	0.5	0.5	0.2	0.5	0.4	0.3	0.1									
									Arsenic	0.5	16	5	14	0	250	10.76717	POTENTIALLY SUITABLE FOR USE	5	9.8	5	8.3	5	6.5	14	9.7	12	13	13	8.1	8.1	9.3	11	13
									Boron	0.2	16	0.4	2	0	3	0.885426	POTENTIALLY SUITABLE FOR USE	0.5	0.5	0.5	0.7	0.5	0.8	2	0.9	0.8	0.7	0.7	0.7	0.4	0.6	0.6	
									Chromium (III)	0.5	16	8	50.5	0	400	28.67991	POTENTIALLY SUITABLE FOR USE	8	16	16	21	12	17	50.5	24.5	27.5	25.5	36.5	17.5	19.5	27.5	28.5	36.5
									Chromium (VI)	0.5	16	0.5	2	0	25	1.88	POTENTIALLY SUITABLE FOR USE	2	2	2	2	2	2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
									Copper	0.5	16	5	55	0	135	32.35316	POTENTIALLY SUITABLE FOR USE	10	6	5	22	8	17	36	39	29	30	53	20	20	19	39	55
Nickel	0.4	16	9	38	0	75	22.53541	POTENTIALLY SUITABLE FOR USE	10	9	13	19	12	15	23	18	26	23	27	14	17	20	24	38									
Zinc	2	10	47	110	0	300	84.46381	POTENTIALLY SUITABLE FOR USE							110	57	73	76	83	47	50	58	70	100									
	Mean																																
pH (su)	7.5								8.2	8.1	8	7.5	8	7.1	7.8	7.9	7.8	7.8	7.1	6.2	6.1	7.5	7.5	7.6									
Risk parameter: Plant life pH 7 Data set: All Data Client: Bloor Homes Site: Havant Job no: C11051								Legend: Values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate. Values in red are equal to, or greater than, the generic assessment criterion (GAC). MG denotes Made Ground NAT denotes natural ground																									

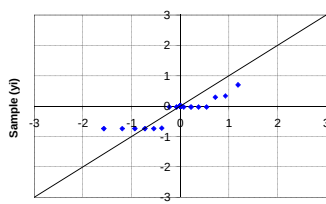
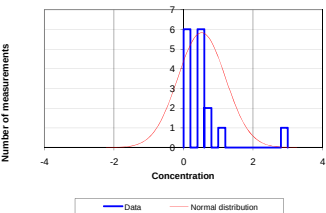


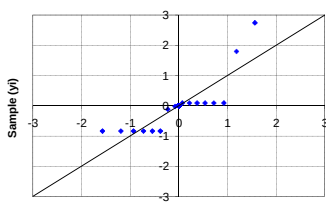
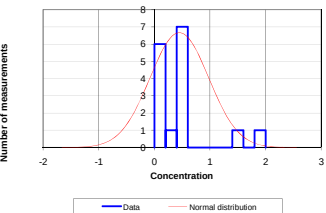


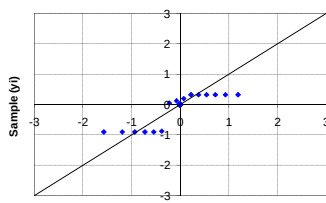
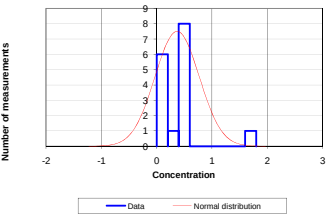


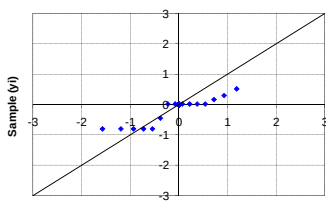
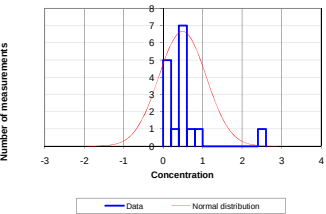


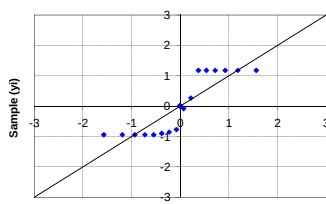
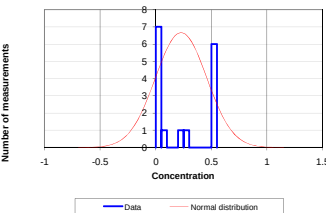


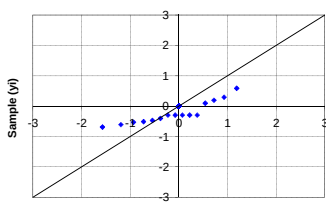
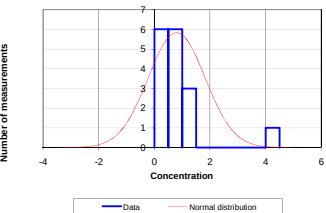
Chemical and data (mg/kg)		STATISTICAL ASSESSMENT OF GEO-ENVIRONMENTAL SOIL DATA	
(blue denotes <= RL) (red denotes >= GAC)		Mean Absolute Deviation for potential outliers 3.5 = critical value of test statistic	
Benzo(b)fluoranthene	Potential Outlier?	Sample	Visual assessment - Q-Q & histogram plots Q-q plot
0.5001		WS1 @ 0.5	
0.5		WS1 @ 1.9	
0.5		WS2 @ 0.7	
0.5		WS3 @ 0.3	
0.5		WS4 @ 0.5	
0.5		WS5 @ 0.3	
2.8		WS1 @ 0.4	
0.01	Yes	WS1 @ 0.7	
0.72		WS2 @ 0.5	
1		WS3 @ 0.5	
0.01		WS4 @ 0.2	
0.01		WS4 @ 0.5	
0.75		WS5 @ 0.4	
0.02		BH1 @ 0.3	
0.01		BH1 @ 0.1	
			Theoretical (z)
			Benzo(b)fluoranthene
			
			Number of measurements
			Concentration
			— Data — Normal distribution
			Basic data
			Risk parameter
			Human health - residential with plant uptake (2.5% SOM)
			6.5 = GAC (critical conc.) (mg/kg)
			16 = no. samples
			0.01 = min. value
			2.8 = max. value
			0.5212663 = mean
			0.6867591 = standard deviation
			5 = no. samples at RL
			RL is limit of detection of the method used
			Statistical tests
			One-sample t-test
			-34.82295 = t ₀
			1.753 = t _{0.05}
			0.8222284 = 95% UCL (US ₉₅)
			One-sided Chebychev Theorem
			-34.8229 = k ₀
			4.36 = k _{0.05}
			1.269824 = 95% UCL (US ₉₅)
			Results of significance test at 95% confidence level
			Null hypothesis (H ₀) = level of contamination is the same as, or higher than, the GAC
			Alternative hypotheses (H _a) = level of contamination is lower than the GAC
			Data set treated as normally distributed
			Therefore:
			Use one-sample t-test - Ho rejected, true mean <= GAC
			US ₉₅ = 0.8222284 GAC = 6.5
			Site reference
			POTENTIALLY SUITABLE FOR USE
			Data set: All Data
			Client: Bloor Homes
			Site: Havant
			Job no: C11051
			Reference: CL AIRE & CEN May 2008 Guidance on comparing soil contamination with a critical concentration

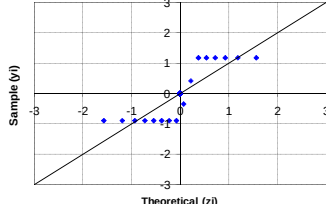
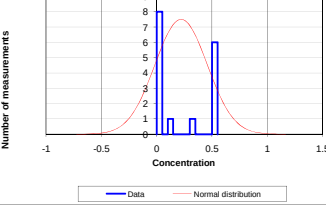
Chemical and data (mg/kg)		STATISTICAL ASSESSMENT OF GEO-ENVIRONMENTAL SOIL DATA	
(blue denotes <= RL) (red denotes >= GAC)		Mean Absolute Deviation for potential outliers 3.5 = critical value of test statistic	
Benzo(ghi)perylene	Potential Outlier?	Sample	Visual assessment - Q-Q & histogram plots Q-q plot
0.5001		WS1 @ 0.5	
0.5		WS1 @ 1.9	
0.5		WS2 @ 0.7	
0.5		WS3 @ 0.3	
0.5		WS4 @ 0.5	
0.5		WS5 @ 0.3	
1.9		WS1 @ 0.4	
0.01	Yes	WS1 @ 0.7	
0.39		WS2 @ 0.5	
1.4		WS3 @ 0.5	
0.01		WS4 @ 0.2	
0.01		WS4 @ 0.5	
0.44		WS5 @ 0.4	
0.01		BH1 @ 0.3	
0.01		BH1 @ 0.1	
			Theoretical (z)
			Benzo(ghi)perylene
			
			Number of measurements
			Concentration
			— Data — Normal distribution
			Basic data
			Risk parameter
			Human health - residential with plant uptake (2.5% SOM)
			46 = GAC (critical conc.) (mg/kg)
			16 = no. samples
			0.01 = min. value
			1.9 = max. value
			0.4493913 = mean
			0.5282737 = standard deviation
			6 = no. samples at RL
			RL is limit of detection of the method used
			Statistical tests
			One-sample t-test
			-344.9343 = t ₀
			1.753 = t _{0.05}
			0.6808753 = 95% UCL (US ₉₅)
			One-sided Chebychev Theorem
			-344.934 = k ₀
			4.36 = k _{0.05}
			1.025145 = 95% UCL (US ₉₅)
			Results of significance test at 95% confidence level
			Null hypothesis (H ₀) = level of contamination is the same as, or higher than, the GAC
			Alternative hypotheses (H _a) = level of contamination is lower than the GAC
			Data set treated as normally distributed
			Therefore:
			Use one-sample t-test - Ho rejected, true mean <= GAC
			US ₉₅ = 0.6808753 GAC = 46
			Site reference
			POTENTIALLY SUITABLE FOR USE
			Data set: All Data
			Client: Bloor Homes
			Site: Havant
			Job no: C11051
			Reference: CL AIRE & CEN May 2008 Guidance on comparing soil contamination with a critical concentration

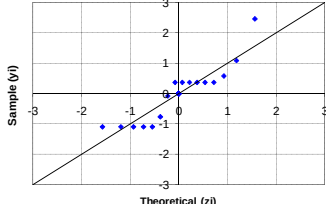
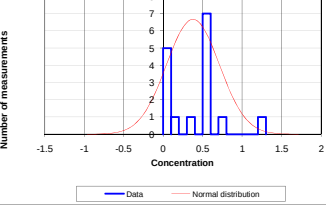
Chemical and data (mg/kg)		STATISTICAL ASSESSMENT OF GEO-ENVIRONMENTAL SOIL DATA	
(blue denotes <= RL) (red denotes >= GAC)		Mean Absolute Deviation for potential outliers 3.5 = critical value of test statistic	
Benzo(k)fluoranthene	Potential Outlier?	Sample	Visual assessment - Q-Q & histogram plots Q-q plot
0.5001		WS1 @ 0.5	
0.5		WS1 @ 1.9	
0.5		WS2 @ 0.7	
0.5		WS3 @ 0.3	
0.5		WS4 @ 0.5	
0.5		WS5 @ 0.3	
1.6		WS1 @ 0.4	
0.01	Yes	WS1 @ 0.7	
0.39	Yes	WS2 @ 0.5	
0.42	Yes	WS3 @ 0.5	
0.01	Yes	WS4 @ 0.2	
0.01	Yes	WS4 @ 0.5	
0.45	Yes	WS5 @ 0.4	
0.02	Yes	BH1 @ 0.3	
0.01	Yes	BH1 @ 0.1	
			Theoretical (z)
			Benzo(k)fluoranthene
			
			Number of measurements
			Concentration
			— Data — Normal distribution
			Basic data
			Risk parameter
			Human health - residential with plant uptake (2.5% SOM)
			9.6 = GAC (critical conc.) (mg/kg)
			16 = no. samples
			0.01 = min. value
			1.6 = max. value
			0.3706313 = mean
			0.3995097 = standard deviation
			5 = no. samples at RL
			RL is limit of detection of the method used
			Statistical tests
			One-sample t-test
			-92.40696 = t ₀
			1.753 = t _{0.05}
			0.5457164 = 95% UCL (US ₉₅)
			One-sided Chebychev Theorem
			-92.407 = k ₀
			4.36 = k _{0.05}
			0.806097 = 95% UCL (US ₉₅)
			Results of significance test at 95% confidence level
			Null hypothesis (H ₀) = level of contamination is the same as, or higher than, the GAC
			Alternative hypotheses (H _a) = level of contamination is lower than the GAC
			Data set treated as non-normally distributed
			Therefore:
			Use Chebychev Theorem - Ho rejected, true mean <= GAC
			US ₉₅ = 0.8060968 GAC = 9.6
			Site reference
			POTENTIALLY SUITABLE FOR USE
			Data set: All Data
			Client: Bloor Homes
			Site: Havant
			Job no: C11051
			Reference: CL AIRE & CEN May 2008 Guidance on comparing soil contamination with a critical concentration

Chemical and data (mg/kg)		STATISTICAL ASSESSMENT OF GEO-ENVIRONMENTAL SOIL DATA	
(blue denotes <= RL) (red denotes >= GAC)		Mean Absolute Deviation for potential outliers 3.5 = critical value of test statistic	
Chrysene	Potential Outlier?	Sample	Visual assessment - Q-Q & histogram plots Q-q plot
0.5001		WS1 @ 0.5	
0.5		WS1 @ 1.9	
0.5		WS2 @ 0.7	
0.5		WS3 @ 0.3	
0.5		WS4 @ 0.5	
0.5		WS5 @ 0.3	
2.5		WS1 @ 0.4	
0.01	Yes	WS1 @ 0.7	
0.59		WS2 @ 0.5	
0.6		WS3 @ 0.5	
0.01		WS4 @ 0.2	
0.01		WS4 @ 0.5	
0.67		WS5 @ 0.4	
0.22		BH1 @ 0.3	
0.01		BH1 @ 0.1	
			Theoretical (z)
			Chrysene
			
			Number of measurements
			Concentration
			— Data — Normal distribution
			Basic data
			Risk parameter
			Human health - residential with plant uptake (2.5% SOM)
			8 = GAC (critical conc.) (mg/kg)
			16 = no. samples
			0.01 = min. value
			2.5 = max. value
			0.4893913 = mean
			0.6022775 = standard deviation
			5 = no. samples at RL
			RL is limit of detection of the method used
			Statistical tests
			One-sample t-test
			-50.05181 = t ₀
			1.753 = t _{0.05}
			0.752431 = 95% UCL (US ₉₅)
			One-sided Chebychev Theorem
			-50.0518 = k ₀
			4.36 = k _{0.05}
			1.143629 = 95% UCL (US ₉₅)
			Results of significance test at 95% confidence level
			Null hypothesis (H ₀) = level of contamination is the same as, or higher than, the GAC
			Alternative hypotheses (H _a) = level of contamination is lower than the GAC
			Data set treated as normally distributed
			Therefore:
			Use one-sample t-test - Ho rejected, true mean <= GAC
			US ₉₅ = 0.752431 GAC = 8
			Site reference
			POTENTIALLY SUITABLE FOR USE
			Data set: All Data
			Client: Bloor Homes
			Site: Havant
			Job no: C11051
			Reference: CL AIRE & CEN May 2008 Guidance on comparing soil contamination with a critical concentration

Chemical and data (mg/kg)		STATISTICAL ASSESSMENT OF GEO-ENVIRONMENTAL SOIL DATA	
(blue denotes <= RL) (red denotes >= GAC)		Mean Absolute Deviation for potential outliers 3.5 = critical value of test statistic	
Dibenz(a,h)anthracene	Potential Outlier?	Sample	Visual assessment - Q-Q & histogram plots Q-q plot
0.5001		WS1 @ 0.5	
0.5		WS1 @ 1.9	
0.5		WS2 @ 0.7	
0.5		WS3 @ 0.3	
0.5		WS4 @ 0.5	
0.5		WS5 @ 0.3	
0.21		WS1 @ 0.4	
0.01		WS1 @ 0.7	
0.29		WS2 @ 0.3	
0.03		WS2 @ 0.5	
0.01		WS3 @ 0.5	
0.01		WS4 @ 0.2	
0.01		WS4 @ 0.5	
0.05		WS5 @ 0.4	
0.02		BH1 @ 0.3	
0.01		BH1 @ 0.1	
			Theoretical (z)
			Dibenz(a,h)anthracene
			
			Number of measurements
			Concentration
			— Data — Normal distribution
			Basic data
			Risk parameter
			Human health - residential with plant uptake (2.5% SOM)
			0.86 = GAC (critical conc.) (mg/kg)
			16 = no. samples
			0.01 = min. value
			0.5001 = max. value
			0.2293213 = mean
			0.2309254 = standard deviation
			0 = no. samples > or = GAC
			0.01 = laboratory reporting limit (RL)
			5 = no. samples at RL
			RL is limit of detection of the method used
			Statistical tests
			One-sample t-test
			-10.94498 = t ₀
			1.753 = t _{0.05}
			0.3293343 = 95% UCL (US ₉₅)
			One-sided Chebychev Theorem
			-10.945 = k ₀
			4.36 = k _{0.05}
			0.47984 = 95% UCL (US ₉₅)
			Results of significance test at 95% confidence level
			Null hypothesis (H ₀) = level of contamination is the same as, or higher than, the GAC
			Alternative hypotheses (H _a) = level of contamination is lower than the GAC
			Data set treated as non-normally distributed
			Therefore:
			Use Chebychev Theorem - Ho rejected, true mean <= GAC
			US ₉₅ = 0.47984 GAC = 0.86
			Site reference
			POTENTIALLY SUITABLE FOR USE
			Data set: All Data
			Client: Bloor Homes
			Site: Havant
			Job no: C11051
			Reference: CLAIR & CEN May 2008 Guidance on comparing soil contamination with a critical concentration

Chemical and data (mg/kg)		STATISTICAL ASSESSMENT OF GEO-ENVIRONMENTAL SOIL DATA	
(blue denotes <= RL) (red denotes >= GAC)		Mean Absolute Deviation for potential outliers 3.5 = critical value of test statistic	
Fluoranthene	Potential Outlier?	Sample	Visual assessment - Q-Q & histogram plots Q-q plot
0.9		WS1 @ 0.5	
0.5		WS1 @ 1.9	
0.5		WS2 @ 0.7	
0.5		WS3 @ 0.3	
0.5		WS4 @ 0.5	
0.5		WS5 @ 0.3	
4.4	Yes	WS1 @ 0.4	
0.32		WS1 @ 0.7	
1.1		WS2 @ 0.3	
1.4		WS2 @ 0.5	
0.39		WS3 @ 0.5	
0.28		WS4 @ 0.2	
0.26		WS4 @ 0.5	
1		WS5 @ 0.4	
0.1		BH1 @ 0.3	
0.18		BH1 @ 0.1	
			Theoretical (z)
			Fluoranthene
			
			Number of measurements
			Concentration
			— Data — Normal distribution
			Basic data
			Risk parameter
			Human health - residential with plant uptake (2.5% SOM)
			460 = GAC (critical conc.) (mg/kg)
			16 = no. samples
			0.1 = min. value
			4.4 = max. value
			0.801875 = mean
			1.0245273 = standard deviation
			0 = no. samples > or = GAC
			0.01 = laboratory reporting limit (RL)
			5 = no. samples at RL
			RL is limit of detection of the method used
			Statistical tests
			One-sample t-test
			-1792.819 = t ₀
			1.753 = t _{0.05}
			1.2508741 = 95% UCL (US ₉₅)
			One-sided Chebychev Theorem
			-1792.82 = k ₀
			4.36 = k _{0.05}
			1.91861 = 95% UCL (US ₉₅)
			Results of significance test at 95% confidence level
			Null hypothesis (H ₀) = level of contamination is the same as, or higher than, the GAC
			Alternative hypotheses (H _a) = level of contamination is lower than the GAC
			Data set treated as normally distributed
			Therefore:
			Use one-sample t-test - Ho rejected, true mean <= GAC
			US ₉₅ = 1.2508741 GAC = 460
			Site reference
			POTENTIALLY SUITABLE FOR USE
			Data set: All Data
			Client: Bloor Homes
			Site: Havant
			Job no: C11051
			Reference: CLAIR & CEN May 2008 Guidance on comparing soil contamination with a critical concentration

Chemical and data (mg/kg)		STATISTICAL ASSESSMENT OF GEO-ENVIRONMENTAL SOIL DATA	
(blue denotes <= RL) (red denotes >= GAC)		Mean Absolute Deviation for potential outliers 3.5 = critical value of test statistic	
Fluorene	Potential Outlier?	Sample	Visual assessment - Q-Q & histogram plots Q-q plot
0.5001	Yes	WS1 @ 0.5	
0.5	Yes	WS1 @ 1.9	
0.5	Yes	WS2 @ 0.7	
0.5	Yes	WS3 @ 0.3	
0.5	Yes	WS4 @ 0.5	
0.5	Yes	WS5 @ 0.3	
0.32	Yes	WS1 @ 0.4	
0.01		WS1 @ 0.7	
0.01		WS2 @ 0.3	
0.01		WS3 @ 0.5	
0.01		WS3 @ 0.5	
0.01		WS4 @ 0.2	
0.01		WS4 @ 0.5	
0.01		WS5 @ 0.4	
0.14		BH1 @ 0.3	
0.01		BH1 @ 0.1	
			Theoretical (z)
			Fluorene
			
			Number of measurements
			Concentration
			— Data — Normal distribution
			Basic data
			Risk parameter
			Human health - residential with plant uptake (2.5% SOM)
			380 = GAC (critical conc.) (mg/kg)
			16 = no. samples
			0.01 = min. value
			0.5001 = max. value
			0.221563 = mean
			0.2365912 = standard deviation
			0 = no. samples > or = GAC
			0.01 = laboratory reporting limit (RL)
			8 = no. samples at RL
			RL is limit of detection of the method used
			Statistical tests
			One-sample t-test
			-6420.844 = t ₀
			1.753 = t _{0.05}
			0.3240423 = 95% UCL (US ₉₅)
			One-sided Chebychev Theorem
			-6420.84 = k ₀
			4.36 = k _{0.05}
			0.479141 = 95% UCL (US ₉₅)
			Results of significance test at 95% confidence level
			Null hypothesis (H ₀) = level of contamination is the same as, or higher than, the GAC
			Alternative hypotheses (H _a) = level of contamination is lower than the GAC
			Data set treated as non-normally distributed
			Therefore:
			Use Chebychev Theorem - Ho rejected, true mean <= GAC
			US ₉₅ = 0.4791406 GAC = 380
			Site reference
			POTENTIALLY SUITABLE FOR USE
			Data set: All Data
			Client: Bloor Homes
			Site: Havant
			Job no: C11051
			Reference: CLAIR & CEN May 2008 Guidance on comparing soil contamination with a critical concentration

Chemical and data (mg/kg)		STATISTICAL ASSESSMENT OF GEO-ENVIRONMENTAL SOIL DATA	
(blue denotes <= RL) (red denotes >= GAC)		Mean Absolute Deviation for potential outliers 3.5 = critical value of test statistic	
Indeno(1,2,3-cd)pyrene	Potential Outlier?	Sample	Visual assessment - Q-Q & histogram plots Q-q plot
0.5001		WS1 @ 0.5	
0.5		WS1 @ 1.9	
0.5		WS2 @ 0.7	
0.5		WS3 @ 0.3	
0.5		WS4 @ 0.5	
0.5		WS5 @ 0.3	
1.2		WS1 @ 0.4	
0.01		WS1 @ 0.7	
0.35		WS2 @ 0.3	
0.57		WS2 @ 0.5	
0.01		WS3 @ 0.5	
0.01		WS4 @ 0.2	
0.01		WS4 @ 0.5	
0.74		WS5 @ 0.4	
0.12		BH1 @ 0.3	
0.01		BH1 @ 0.1	
			Theoretical (z)
			Indeno(1,2,3-cd)pyrene
			
			Number of measurements
			Concentration
			— Data — Normal distribution
			Basic data
			Risk parameter
			Human health - residential with plant uptake (2.5% SOM)
			3.9 = GAC (critical conc.) (mg/kg)
			16 = no. samples
			0.01 = min. value
			1.2 = max. value
			0.3768813 = mean
			0.3344018 = standard deviation
			0 = no. samples > or = GAC
			0.01 = laboratory reporting limit (RL)
			5 = no. samples at RL
			RL is limit of detection of the method used
			Statistical tests
			One-sample t-test
			-42.14234 = t ₀
			1.753 = t _{0.05}
			0.5234328 = 95% UCL (US ₉₅)
			One-sided Chebychev Theorem
			-42.1423 = k ₀
			4.36 = k _{0.05}
			0.741379 = 95% UCL (US ₉₅)
			Results of significance test at 95% confidence level
			Null hypothesis (H ₀) = level of contamination is the same as, or higher than, the GAC
			Alternative hypotheses (H _a) = level of contamination is lower than the GAC
			Data set treated as normally distributed
			Therefore:
			Use one-sample t-test - Ho rejected, true mean <= GAC
			US ₉₅ = 0.5234328 GAC = 3.9
			US ₉₅ = 0.001 x GAC
			Site reference
			POTENTIALLY SUITABLE FOR USE
			Data set: All Data
			Client: Bloor Homes
			Site: Havant
			Job no: C11051
			Reference: CLAIR & CEN May 2008 Guidance on comparing soil contamination with a critical concentration

Chemical and data (mg/kg)
(blue denotes <= RL)
(red denotes > GAC)

Naphthalene	Potential Outlier?	Sample
0.5001	Yes	WS1 @ 0.5
0.5	Yes	WS1 @ 1.9
0.5	Yes	WS2 @ 0.7
0.5	Yes	WS3 @ 0.3
0.5	Yes	WS4 @ 0.5
0.5	Yes	WS5 @ 0.3
0.44	Yes	WS1 @ 0.4
0.01		WS1 @ 0.7
0.01		WS2 @ 0.3
0.01		WS2 @ 0.5
0.01		WS3 @ 0.5
0.01		WS4 @ 0.2
0.01		WS4 @ 0.5
0.01		WS5 @ 0.4
0.03		BH1 @ 0.3
0.01		BH1 @ 0.1

STATISTICAL ASSESSMENT OF GEO-ENVIRONMENTAL SOIL DATA

Mean Absolute Deviation for potential outliers
3.5 = critical value of test statistic

Visual assessment - Q-q & histogram plots

Q-q plot

Histogram

Basic data

Human health - residential with plant uptake (2.5% SOM)
3.7 = GAC (critical conc.) (mg/kg)

16 = no. samples 0 = no. samples > or = GAC
0.01 = min. value 0.01 = laboratory reporting limit (RL)
0.5001 = max. value 0.228813 = mean 8 = no. samples at RL
0.228813 = mean 0.459045 = standard deviation RL = limit of detection of the method used

Statistical tests

One-sample t-test	One-sided Chebychev Theorem
-66.55604 = t_{α}	-56.556 = k_{α}
-1.753 = $t_{\alpha/2, 99}$	4.36 = $k_{0.05}$
0.3296883 = 95% UCL (US_{95})	0.490015 = 95% UCL (US_{95})

Results of significance test at 95% confidence level

Null hypothesis (H_0) = level of contamination is the same as, or higher than, the GAC
Alternative hypotheses (H_A) = level of contamination is lower than the GAC

Data set treated as **non-normally distributed**

Therefore:
Use Chebychev Theorem - No rejected, true mean <= GAC
 $US_{95} \approx 0.490015$ GAC = 3.7 ($US_{95} = 0.132 \times GAC$)

Site reference **POTENTIALLY SUITABLE FOR USE**

Data set: All Data
Client: Bloor Homes
Site: Havant
Job no: CL11051

Chemical and data (mg/kg)	STATISTICAL ASSESSMENT OF GEO-ENVIRONMENTAL SOIL DATA	
(blue denotes <= RL) (red denotes >= GAC)	Mean Absolute Deviation for potential outliers	
	3.5 = critical value of test statistic	
Phenanthrene	Potential Outlier?	Sample
0.5001		WS1 @ 0.5
0.5		WS2 @ 1.9
0.5		WS2 @ 0.7
0.5		WS3 @ 0.3
0.5		WS4 @ 0.5
0.5		WS5 @ 0.3
3.4	Yes	WS1 @ 0.4
0.15		WS1 @ 0.7
0.4		WS2 @ 0.3
0.44		WS2 @ 0.5
0.16		WS3 @ 0.5
0.13		WS4 @ 0.2
0.11		WS4 @ 0.5
0.31		WS5 @ 0.4
0.22		BH1 @ 0.3
0.1		BH1 @ 0.1

Visual assessment - Q-q & histogram plots

Q-q plot

Phenanthrene

Basic data

Human health - residential with plant uptake (2.5% SOM)

16 = no. samples 0 = no. samples > or = GAC

0.1 = min. value 0.01 = laboratory reporting limit (RL)

3.4 = max. value 0 = no. samples at RL

0.5262563 = mean RL is limit of detection of the method used

0.7837589 = standard deviation

Statistical tests

One-sample t-test

-1018.036 = t_{α}

1.753 = $t_{0.05}$

0.8697386 = 95% UCL (US_{95})

One-sided Chebychev Theorem

-1018.04 = k_{α}

4.36 = $k_{0.05}$

1.380553 = 95% UCL (US_{95})

Results of significance test at 95% confidence level

Null hypothesis (H_0) = level of contamination is the same as, or higher than, the GAC

Alternative hypotheses (H_1) = level of contamination is lower than the GAC

Data set treated as **non-normally distributed**

Therefore:

Use Chebychev Theorem - No rejected, true mean <= GAC

Site reference **US₉₅ = 1.3805534 GAC = 200** (US₉₅ = 0.007 x GAC)

POTENTIALLY SUITABLE FOR USE

Data set: All Data

Client: Bloor Homes

Site: Havant

Job no: C11051

Referencing CLAIR & C161: May 2008 Guidance on comprehensive soil contamination with a critical concentration

Chemical and data (mg/kg) (blue denotes <= RL) (red denotes >= GAC)		STATISTICAL ASSESSMENT OF GEO-ENVIRONMENTAL SOIL DATA	
Pyrene		Potential Outlier?	Sample
0.5001			WS1 @ 0.5
0.5			WS1 @ 1.9
0.5			WS2 @ 0.7
0.5			WS3 @ 0.3
0.5			WS4 @ 0.5
0.5			WS5 @ 0.3
3.9		Yes	WS1 @ 0.4
0.24			WS1 @ 0.7
0.85			WS2 @ 0.3
1.1			WS2 @ 0.5
0.7			WS3 @ 0.5
0.24			WS4 @ 0.2
0.27			WS4 @ 0.5
0.96			WS5 @ 0.4
0.01			BH1 @ 0.3
0.19			BH1 @ 0.1

Visual assessment - Q-Q & histogram plots

Q-Q plot

Theoretical (z)

Pyrene

Number of measurements

Concentration

Legend: Data (blue bars), Normal distribution (red curve)

Basic data

Risk parameter

Human health - residential with plant uptake (2.5% SOM)

1000 = GAC (critical conc.) (mg/kg)

16 = no. samples 0 = no. samples > or = GAC

0.01 = min. value 3.9 = max. value 0.01 = laboratory reporting limit (RL)

0.6975063 = mean 1 = no. samples at RL

0.900528 = standard deviation RL is limit of detection of the method used

Statistical tests

One-sample t-test	One-sided Chebyshev Theorem
-4438.74 = t_0	-4438.74 = k_0
1.753 = $t_{0.999}$	4.36 = $k_{0.99}$
1.0921627 = 95% UCL (US_{95})	1.679082 = 95% UCL (US_{95})

Results of significance test at 95% confidence level

Null hypothesis (H_0) = level of contamination is the same as, or higher than, the GAC

Alternative hypotheses (H_1) = level of contamination is lower than the GAC

Data set treated as: non-normally distributed

Therefore:

Use Chebyshev Theorem - Ho rejected, true mean <= GAC

$US_{95} = 1.6790818$ GAC = 1000 ($US_{95} < 0.002 < \text{GAC}$)

Site reference

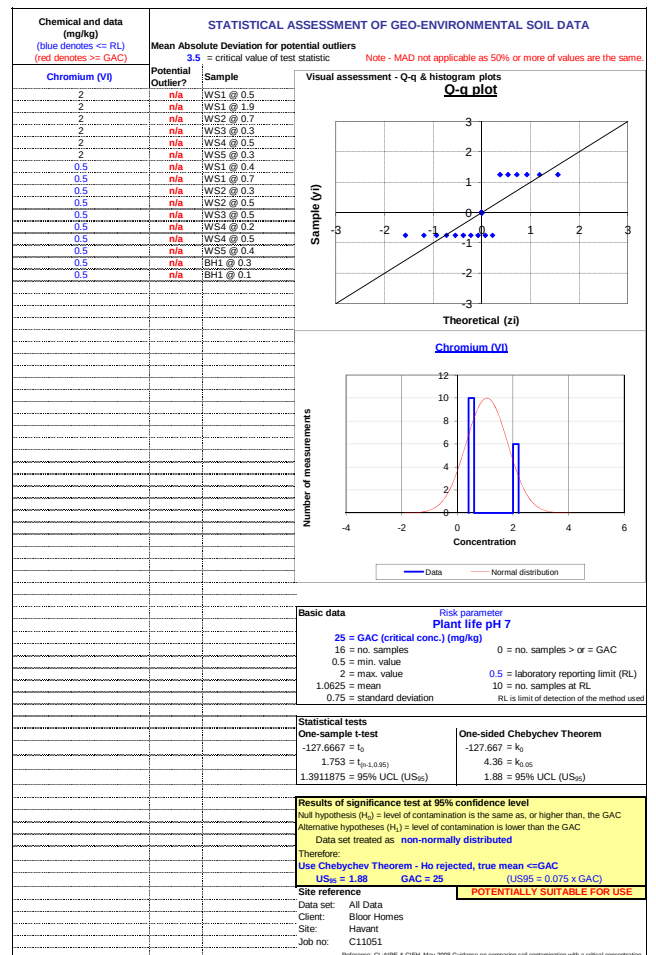
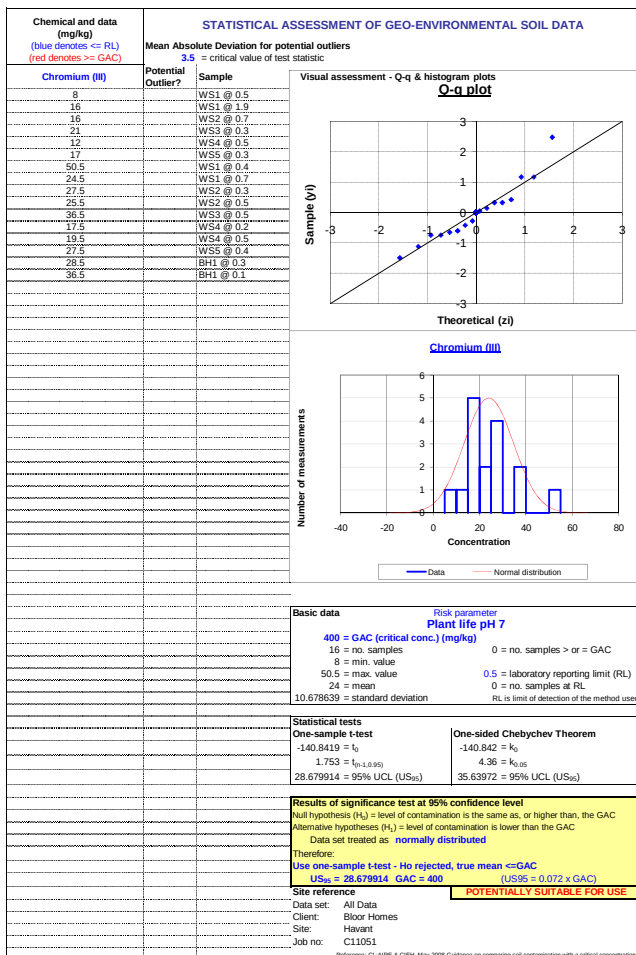
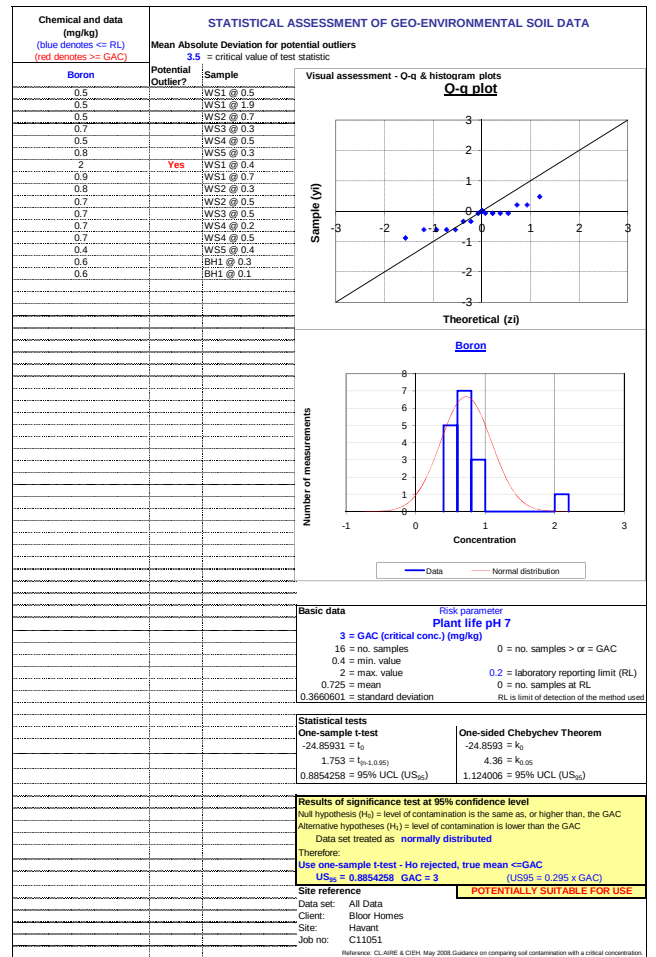
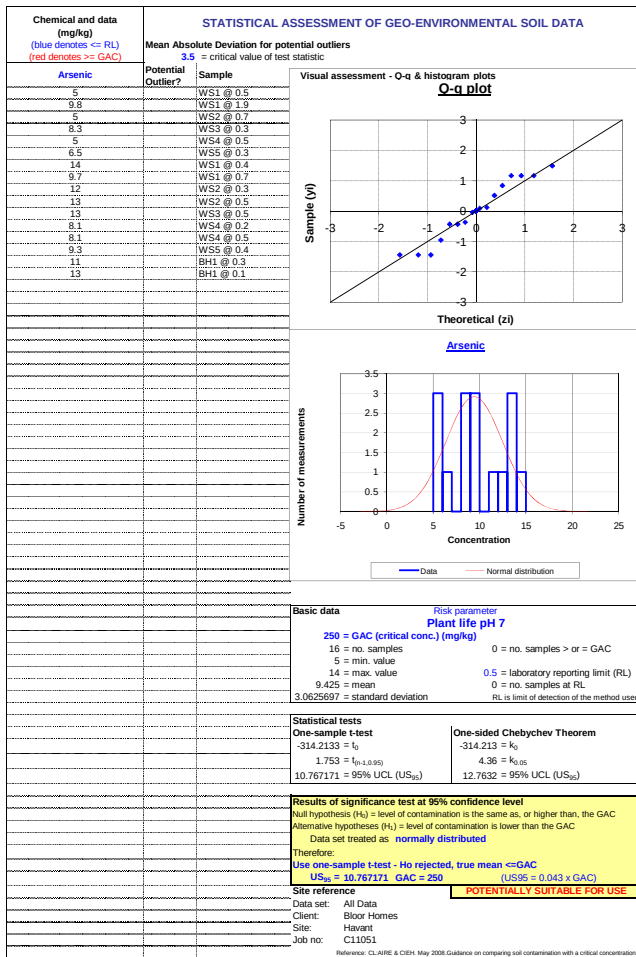
Date set: All Data

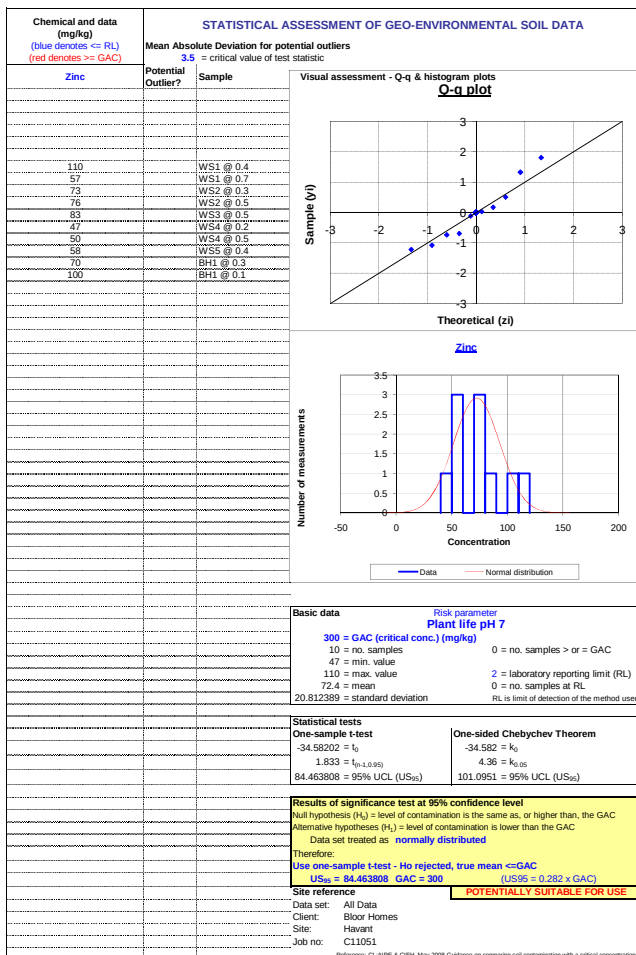
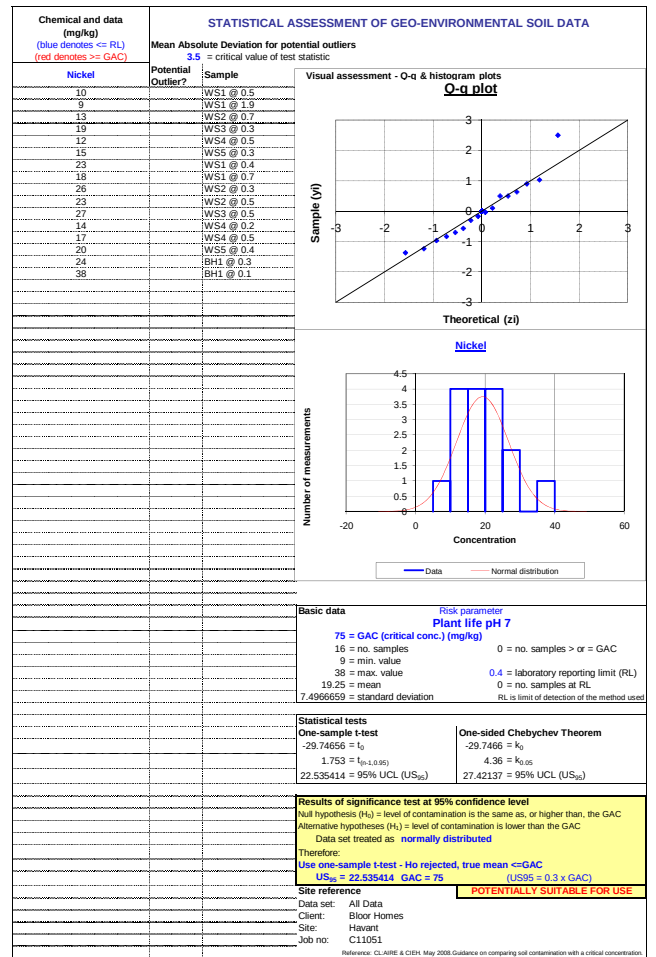
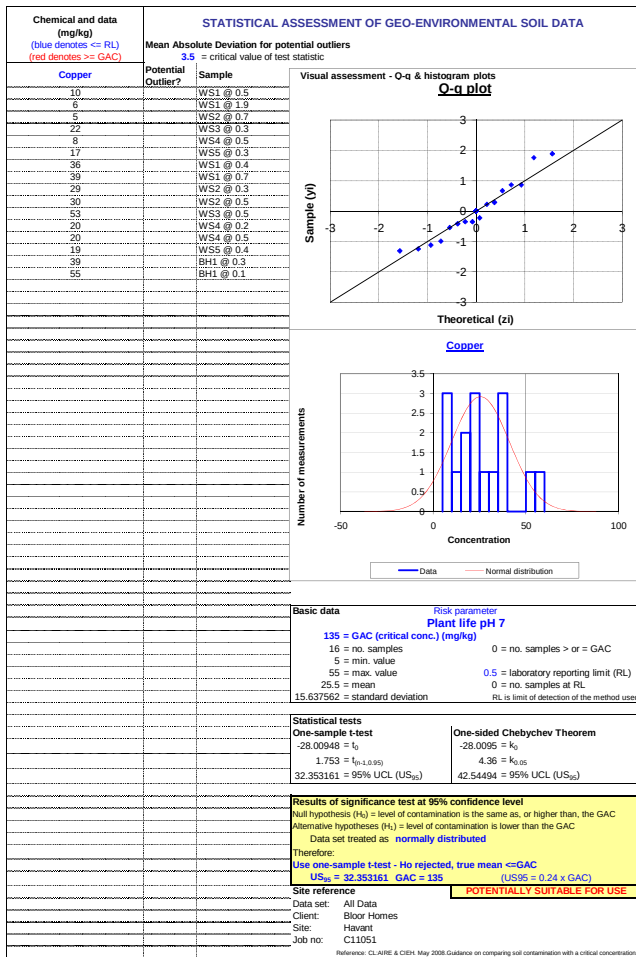
Client: Bloor Homes

Site: Havant

Job no: C11051

POTENTIALLY SUITABLE FOR USE





Hydrock Consultants
3 Hawthorn Park
Holdenby Road
Spratton, Northampton
NN6 8LD

FAO C Moreira/A Bell
15 March 2011

Dear C Moreira/A Bell

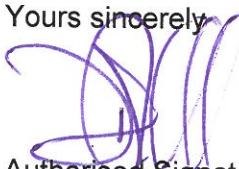
Test Report Number 122831
Your Project Reference C11051/CNM - Southleigh Rd, Havant

Please find enclosed the results of analysis for the samples received 9 March 2011.

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

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

Yours sincerely,


Authorised Signatory

☒ Darrell Hall	Director
☐ Phil Hellier	Director
☐ Keith Jones	Technical Manager
☐ John Crawford	Quality Manager
☐ Malcolm Avis	Director



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Notes to accompany report:

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

Test Report 122831 Cover Sheet

LABORATORY TEST REPORT

Results of analysis of 10 samples
received 9 March 2011

Report Date
15 March 2011

FAO C Moreira/A Bell

C11051/CNM - Southleigh Rd, Havant

Login Batch No

Chemtest LIMS ID

Sample ID

Sample No

Sampling Date

Depth

Matrix

SOP↓	Determinand↓	CAS No↓	Units↓	*
2010	pH			M
2186	Asbestos Containing Material			U
2300	Cyanide (free)	57125	mg kg ⁻¹	M
2625	Fraction of Organic Carbon			M
2120	Boron (hot water soluble)	7440428	mg kg ⁻¹	M
2490	Chromium (hexavalent)	18540299	mg kg ⁻¹	N
2450	Arsenic	7440382	mg kg ⁻¹	M
	Beryllium	7440417	mg kg ⁻¹	U
	Cadmium	7440439	mg kg ⁻¹	M
	Chromium	7440473	mg kg ⁻¹	M
	Copper	7440508	mg kg ⁻¹	M
	Mercury	7439976	mg kg ⁻¹	M
	Nickel	7440020	mg kg ⁻¹	M
	Lead	7439921	mg kg ⁻¹	M
	Selenium	7782492	mg kg ⁻¹	M
	Vanadium	7440622	mg kg ⁻¹	M
	Zinc	7440666	mg kg ⁻¹	M
2700	Naphthalene	91203	mg kg ⁻¹	N
	Acenaphthylene	208968	mg kg ⁻¹	N
	Acenaphthene	83329	mg kg ⁻¹	N
	Fluorene	86737	mg kg ⁻¹	N
	Phenanthrene	85018	mg kg ⁻¹	N
	Anthracene	120127	mg kg ⁻¹	N
	Fluoranthene	206440	mg kg ⁻¹	N
	Pyrene	129000	mg kg ⁻¹	N
	Benzo[a]anthracene	56553	mg kg ⁻¹	N
	Chrysene	218019	mg kg ⁻¹	N

122831

AF82980	AF82981	AF82982	AF82983	AF82984	AF82985
WS1	WS1	WS2	WS2	WS3	WS4
08/03/2011	08/03/2011	08/03/2011	08/03/2011	08/03/2011	08/03/2011
0.4m	0.7m	0.3m	0.5m	0.5m	0.2m
SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
7.8	7.9	7.8	7.8	7.1	6.2
not found	not found	not found	not found	not found	not found
<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
0.027	0.010	0.018	0.019	0.021	0.021
2.0	0.9	0.8	0.7	0.7	0.7
<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
14	9.7	12	13	13	8.1
1.1	<1.00	<1.00	<1.00	1.1	<1.00
0.60	0.36	0.55	0.59	0.55	0.35
51	25	28	26	37	18
36	39	29	30	53	20
0.41	0.16	0.18	0.21	0.18	0.15
23	18	26	23	27	14
110	79	87	97	97	76
<0.20	<0.20	0.30	0.59	0.22	<0.20
58	32	34	35	41	25
110	57	73	76	83	47
0.44	<0.01	<0.01	<0.01	<0.01	<0.01
0.47	<0.01	<0.01	<0.01	<0.01	<0.01
0.33	<0.01	<0.01	<0.01	<0.01	<0.01
0.32	<0.01	<0.01	<0.01	<0.01	<0.01
3.4	0.15	0.4	0.44	0.16	0.13
0.95	<0.01	<0.01	<0.01	<0.01	<0.01
4.4	0.32	1.1	1.4	0.39	0.28
3.9	0.24	0.85	1.1	0.4	0.24
2	<0.01	0.41	0.59	<0.01	<0.01
2.5	<0.01	0.59	0.8	<0.01	<0.01

All tests undertaken between 09/03/2011 and 15/03/2011

* Accreditation status

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

Column page 1

Report page 1 of 2

LIMS sample ID range AF82980 to AF82989

LABORATORY TEST REPORT

Results of analysis of 10 samples
received 9 March 2011

Report Date
15 March 2011

FAO C Moreira/A Bell

C11051/CNM - Southleigh Rd, Havant

Login Batch No

Chemtest LIMS ID

Sample ID

Sample No

Sampling Date

Depth

Matrix

SOP↓ Determinand↓

CAS No↓

Units↓

122831

AF82986

AF82987

AF82988

AF82989

WS4

WS5

BH1

BH1

08/03/2011

08/03/2011

08/03/2011

08/03/2011

0.5m

0.4m

0.3m

0.1m - 0.6m

SOIL

SOIL

SOIL

SOIL

2010	pH			M	6.1	7.5	7.5	7.6
2186	Asbestos Containing Material			U	not found	not found	not found	not found
2300	Cyanide (free)	57125	mg kg ⁻¹	M	<0.50	<0.50	<0.50	<0.50
2625	Fraction of Organic Carbon			M	0.017	0.016	0.015	0.0095
2120	Boron (hot water soluble)	7440428	mg kg ⁻¹	M	0.7	0.4	0.6	0.6
2490	Chromium (hexavalent)	18540299	mg kg ⁻¹	N	<0.5	<0.5	<0.5	<0.5
2450	Arsenic	7440382	mg kg ⁻¹	M	8.1	9.3	11	13
	Beryllium	7440417	mg kg ⁻¹	U	<1.00	<1.00	<1.00	1.1
	Cadmium	7440439	mg kg ⁻¹	M	0.50	0.42	0.50	0.69
	Chromium	7440473	mg kg ⁻¹	M	20	28	29	37
	Copper	7440508	mg kg ⁻¹	M	20	19	39	55
	Mercury	7439976	mg kg ⁻¹	M	0.12	0.10	0.16	0.20
	Nickel	7440020	mg kg ⁻¹	M	17	20	24	38
	Lead	7439921	mg kg ⁻¹	M	75	49	86	100
	Selenium	7782492	mg kg ⁻¹	M	<0.20	<0.20	<0.20	<0.20
	Vanadium	7440622	mg kg ⁻¹	M	26	28	35	42
	Zinc	7440666	mg kg ⁻¹	M	50	58	70	100
2700	Naphthalene	91203	mg kg ⁻¹	N	<0.01	<0.01	0.03	<0.01
	Acenaphthylene	208968	mg kg ⁻¹	N	<0.01	<0.01	<0.01	<0.01
	Acenaphthene	83329	mg kg ⁻¹	N	<0.01	<0.01	0.03	<0.01
	Fluorene	86737	mg kg ⁻¹	N	<0.01	<0.01	0.14	<0.01
	Phenanthrene	85018	mg kg ⁻¹	N	0.11	0.31	0.22	0.1
	Anthracene	120127	mg kg ⁻¹	N	<0.01	0.06	0.1	<0.01
	Fluoranthene	206440	mg kg ⁻¹	N	0.26	1	0.1	0.18
	Pyrene	129000	mg kg ⁻¹	N	0.27	0.96	<0.01	0.19
	Benzo[a]anthracene	56553	mg kg ⁻¹	N	<0.01	0.5	0.1	<0.01
	Chrysene	218019	mg kg ⁻¹	N	<0.01	0.67	0.22	<0.01

Hydrock Consultants
3 Hawthorn Park
Holdenby Road
Spratton, Northampton
NN6 8LD

FAO C Moreira/A Bell

LABORATORY TEST REPORT

Results of analysis of 10 samples
received 9 March 2011

C11051/CNM - Southleigh Rd, Havant



Report Date
15 March 2011

					122831					
					AF82980	AF82981	AF82982	AF82983	AF82984	AF82985
					WS1	WS1	WS2	WS2	WS3	WS4
					08/03/2011	08/03/2011	08/03/2011	08/03/2011	08/03/2011	08/03/2011
					0.4m	0.7m	0.3m	0.5m	0.5m	0.2m
					SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
2700	Benzo[b]fluoranthene	205992	mg kg ⁻¹	N	2.8	<0.01	0.72	1	<0.01	<0.01
	Benzo[k]fluoranthene	207089	mg kg ⁻¹	N	1.6	<0.01	0.39	0.42	<0.01	<0.01
	Benzo[a]pyrene	50328	mg kg ⁻¹	N	1.9	<0.01	0.68	1.1	<0.01	<0.01
	Dibenzo[a,h]anthracene	53703	mg kg ⁻¹	N	0.21	<0.01	0.29	0.03	<0.01	<0.01
	Indeno[1,2,3-cd]pyrene	193395	mg kg ⁻¹	N	1.2	<0.01	0.35	0.57	<0.01	<0.01
	Benzo[g,h,i]perylene	191242	mg kg ⁻¹	N	1.9	<0.01	0.39	1.4	<0.01	<0.01
	Total (of 16) PAHs		mg kg ⁻¹	N	28.3	0.71	6.17	8.85	0.95	0.65
2920	Phenols (total)		mg kg ⁻¹	N	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3

All tests undertaken between 09/03/2011 and 15/03/2011

* Accreditation status

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

Column page 1

Report page 2 of 2

LIMS sample ID range AF82980 to AF82989

LABORATORY TEST REPORT

Results of analysis of 10 samples
received 9 March 2011

Report Date
15 March 2011

FAO C Moreira/A Bell

C11051/CNM - Southleigh Rd, Havant

					122831			
					AF82986	AF82987	AF82988	AF82989
					WS4	WS5	BH1	BH1
					08/03/2011	08/03/2011	08/03/2011	08/03/2011
					0.5m	0.4m	0.3m	0.1m - 0.6m
					SOIL	SOIL	SOIL	SOIL
2700	Benzo[b]fluoranthene	205992	mg kg ⁻¹	N	<0.01	0.75	0.02	<0.01
	Benzo[k]fluoranthene	207089	mg kg ⁻¹	N	<0.01	0.45	0.02	<0.01
	Benzo[a]pyrene	50328	mg kg ⁻¹	N	<0.01	0.54	0.01	<0.01
	Dibenzo[a,h]anthracene	53703	mg kg ⁻¹	N	<0.01	0.05	0.02	<0.01
	Indeno[1,2,3-cd]pyrene	193395	mg kg ⁻¹	N	<0.01	0.74	0.12	<0.01
	Benzo[g,h,i]perylene	191242	mg kg ⁻¹	N	<0.01	0.44	0.01	<0.01
	Total (of 16) PAHs		mg kg ⁻¹	N	0.64	6.47	1.14	0.47
2920	Phenols (total)		mg kg ⁻¹	N	<0.3	<0.3	<0.3	<0.3

THE ENVIRONMENTAL LABORATORY LTD

F.A.O. David Harris
Ashdown Site Investigation Limited
The Old Dairy, Swanborough Farm
Swanborough, Lewes,
East Sussex, BN7 9PF

Reporting Date: 10/11/09

ANALYTICAL REPORT No. AR23505

Samples Received By:-	Laboratory Courier
Samples Received:-	23/10/09
Your Job No:	LW20180
Site Location:	Warblington School, Havant
No Samples Received:-	14

Report Checked By:-



Steve Knight
Director

Authorised By:-



Cliff P.V. Knight BSc, EurChem, CChem FRSC
Managing Director

Any comments, opinions, or interpretations expressed herein are outside the scope of UKAS accreditation (Accreditation Number 2683)



THE ENVIRONMENTAL LABORATORY LTD

The Harley Reed Building, Unit C, Drury Lane, Piperswood Industrial Estate, St Leonard's on Sea, East Sussex, TN38 9BA

Tel: 01424 718618 Fax: 01424 729911

ANALYTICAL REPORT No. AR23505

Location: Warblington School, Havant



Your Job No: LW20180

Reporting Date: 10/11/09

F.A.O. David Harris
Ashdown Site Investigation Limited
The Old Dairy, Swanborough Farm
Swanborough, Lewes,
East Sussex, BN7 9PF

Soils	Characteristic	Silt loam	Sandy loam	Sandy clay loam	Silt loam	Silt loam	Silt loam
	TP/BH	WS1	WS1	WS2	WS3	WS4	WS5
	Depth (m)	0.50	1.90	0.70	0.30	0.50	0.30
	Our ref	36906	36907	36908	36909	36910	36911
Arsenic**	(mg/kg)	<5	9.8	<5	8.3	<5	6.5
Cadmium**	(mg/kg)	0.7	0.5	<0.5	0.7	0.5	0.6
Chromium**	(mg/kg)	10	18	18	23	14	19
Lead**	(mg/kg)	42	16	8	58	13	74
Mercury**	(mg/kg)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel**	(mg/kg)	10	9	13	19	12	15
Copper**	(mg/kg)	10	6	5	22	8	17
Zinc**	(mg/kg)	48	34	24	59	27	49
Selenium	(mg/kg)	<0.5	<0.5	<0.5	0.7	<0.5	<0.5
Hexavalent Chromium	(mg/kg)	<2	<2	<2	<2	<2	<2
Water Soluble Boron	(mg/kg)	<0.5	<0.5	<0.5	0.7	<0.5	0.8
pH Value**	(Units)	8.2	8.1	8.0	7.5	8.0	7.1
Total Sulphate	(%)	<0.05	0.12	<0.05	0.17	<0.05	0.17
Total Cyanide**	(mg/kg)	<1	1.4	<1	<1	<1	<1
Free Cyanide	(mg/kg)	<1	<1	<1	<1	<1	<1
Sulphide	(mg/kg)	<2	<2	<2	<2	<2	<2
Total Sulphur	(%)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Thiocyanate	(mg/kg)	<2	<2	<2	<2	<2	<2
Total Monohydric Phenols**	(mg/kg)	<1	<1	<1	<1	<1	<1
Ammonium	(mg/l)	1.7	3.1	1.3	2.1	<0.1	1.8
Total t.PH**	(mg/kg)	10.4	6.4	<5	<5	<5	<5
Soil Organic Matter*	(%)	2.2	2.6	1.9	2.1	0.4	2.1

All results expressed on dry weight basis

** - MCDERTS accredited test

* - UKAS accredited test

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Tel: 01424 718618

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ANALYTICAL REPORT No. AR23505

Location: Warblington School, Havant



Your Job No: LW20180

Reporting Date: 10/11/09

F.A.O. David Harris
Ashdown Site Investigation Limited
The Old Dairy, Swanborough Farm
Swanborough, Lewes,
East Sussex, BN7 9PF

Soils

	Characteristic	Silt Loam	Silt loam	Sandy clay	Loamy sand	Sandy clay	Sandy clay	Loamy sand	Sandy clay
	TP/BH	WS5	WS1	WS2	WS3	WS3	WS4	WS5	WS5
	Depth (m)	0.60	1.00	2.00	0.60	2.30	2.20	0.60	2.00
	Our ref	36912	36913	36914	36915	36916	36917	36918	36919
	pH Value**	(Units)	8.0	7.7	8.2	8.0	8.0	8.2	8.1
	Total Sulphate	(% as SO ₄)	<0.05	<0.05	<0.05	<0.05	0.08	<0.05	<0.05
	Total Sulphur	(% as S)	<0.05	<0.05	<0.05	<0.05	0.17	<0.05	<0.05
	Water Soluble Sulphate**	(mg/l as SO ₄)	<10	<10	<10	<10	51	17	<10
	Water Soluble Chloride	(mg/l)	12	<5	<5	<5	<5	<5	<5
	Water Soluble Nitrate	(mg/l)	4	1	<1	1	<1	<1	2
	Water Soluble Magnesium	(mg/l)	0.12	0.10	0.12	0.08	0.44	0.24	0.11
	Ammonium	(mg/l as NH ₄)	0.1	<0.1	<0.1	0.1	0.3	<0.1	<0.1

All results expressed on dry weight basis.

** - MCERTS accredited test

* - UKAS accredited test



THE ENVIRONMENTAL LABORATORY LTD

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Tel: 01424 718618 Fax: 01424 729911

ANALYTICAL REPORT No. AR23505

Location: Warblington School, Havant

ELAB

Your Job No: LW20180

Reporting Date: 10/11/09

F.A.O. David Harris

Ashdown Site Investigation Limited

The Old Dairy, Swanborough Farm

Swanborough, Lewes,

East Sussex, BN7 9PF

Soils	Characteristic	Silt Loam	Sandy loam	Sandy clay loam	Silt Loam	Silt Loam	Silt Loam
	TP/BH	WS1	WS1	WS2	WS3	WS4	WS5
	Depth (m)	0.50	1.90	0.70	0.30	0.50	0.30
	Our ref	36906	36907	36908	36909	36910	36911
Naphthalene**	(mg/kg)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene**	(mg/kg)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene**	(mg/kg)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene**	(mg/kg)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene**	(mg/kg)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene**	(mg/kg)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene**	(mg/kg)	0.9	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene**	(mg/kg)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)anthracene**	(mg/kg)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene**	(mg/kg)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene**	(mg/kg)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene**	(mg/kg)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene**	(mg/kg)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-cd)pyrene**	(mg/kg)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene**	(mg/kg)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(ghi)perylene**	(mg/kg)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total PAH**	(mg/kg)	0.9	<0.5	<0.5	<0.5	<0.5	<0.5

All results expressed on dry weight basis

** - MCCERTS accredited test



THE ENVIRONMENTAL LABORATORY LTD

The Parley Road Building, Unit G, Drury Lane, Portsmouth Industrial Estate, Bottomlands on Sea, East Sussex, TN36 9QA

Tel: 01424 718818 Fax: 01424 729911

ANALYTICAL REPORT No. AR23505

Location: Warblington School, Havant

ELAB

F.A.O. David Harris
Ashdown Site Investigation Limited
The Old Dairy, Swanborough Farm
Swanborough, Lewes,
East Sussex, BN7 9PF

Your Job No: LW20180

Reporting Date: 10/11/09

Asbestos Identification

Sample ref: WS1
Depth (m): 0.50
Our ref: 36906
#Description of Sample Matrix: Silt Loam
Result: No asbestos identified

Sample ref: WS1
Depth (m): 1.90
Our ref: 36907
#Description of Sample Matrix: Sandy loam
Result: No asbestos identified

Sample ref: WS2
Depth (m): 0.70
Our ref: 36908
#Description of Sample Matrix: Sandy clay loam
Result: No asbestos identified

Sample ref: WS3
Depth (m): 0.30
Our ref: 36909
#Description of Sample Matrix: Silt Loam
Result: No asbestos identified

Sample ref: WS4
Depth (m): 0.50
Our ref: 36910
#Description of Sample Matrix: Silt Loam
Result: No asbestos identified

Sample ref: WS5
Depth (m): 0.30
Our ref: 36911
#Description of Sample Matrix: Silt Loam
Result: No asbestos identified

UKAS Accredited

Analysis results only apply to the sample submitted by the client

Any comments, queries or interpretations should be made in this report to the UKAS Accredited Laboratory (Reference No 20287) or to the Environmental Laboratory Ltd by letter to the client



The Harley Reed Building
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THE ENVIRONMENTAL LABORATORY LTD

Waste Acceptance Criteria ANALYTICAL RESULTS									
Report No:	ANALYTICAL REPORT No. A023505					Page 6 of 10			
						CLIENT:	Ashdown Site Investigation Limited		
Project Name	Location: Worthington School, Havant								
Lab Reference	36907					Landfill Waste Acceptance Criteria			
Sampling Date	N/A					Limits			
Sample ID	WS1					Inert Waste Landfill	Stable Non-reactive SUE HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill	
Depth	1.90								
Solid Waste Analysis									
TOC (%)	<0.1					3%	5%	6%	
Loss on ignition (%)**	0.8					-	-	10%	
BTEX (mg/kg)**	<0.01					6	-	-	
Sum of PCBs (mg/kg)**	<0.01					1	-	-	
Mineral Oil (mg/kg)**	6					500	-	-	
Total PAH (mg/kg)**	<0.5					130	-	-	
pH (units)**	8.5					-	-	-	
Acid Neutralisation Capacity (mol/kg)	<0.1						To be authorised	To be authorised	
Trace Analysis	2.1	5.1			Cumulative 13.1	Limit values for compliance leaching test using RS EN 12457-3 at L/S 10 (g/kg/m ² /kg)			
	mg/l	mg/l			mg/kg				
Arsenic*	<0.005	<0.005			<0.1	0.5	2	25	
Barium*	0.022	0.003			<0.1	20	100	300	
Cadmium*	<0.001	<0.001			<0.01	0.04	1	5	
Chromium*	<0.005	<0.005			<0.1	0.5	10	10	
Copper*	0.013	0.012			<0.1	2	50	100	
Mercury*	<0.0021	<0.0001			<0.001	0.01	0.2	2	
Molybdenum*	0.007	<0.005			<0.1	0.5	10	30	
Nickel*	0.006	<0.005			<0.1	0.4	10	40	
Lead*	<0.005	<0.005			<0.1	0.5	10	50	
Antimony	<0.005	<0.005			<0.01	0.06	0.7	5	
Selenium	<0.005	<0.005			<0.01	0.1	0.5	7	
Zinc*	0.020	0.023			0.1	4	50	200	
Chloride*	35	3			60	500	15000	25000	
Fluoride*	<1	<2			<1	30	150	500	
Sulphate*	43	7			52	1000	20000	50000	
IDS	260	60			558	4000	60000	100000	
Phenol Index	<0.5	<0.5			<0.5	1	-	-	
DOC	5.6	4.2			23	500	800	1000	
Leach Test Information									
pH*	8.2	6.0							
EC*	379	116							
Sample Mass (g)	0.215								
Dry Matter (%)	61								
Moisture (%)	24								
Stage 1									
Volume Eluate L2 (litres)	0.308								
Filtered Eluate VE1 (litres)	0.232								
Results are expressed on a dry weight basis, after correction for moisture content where applicable. Stated limits are for guidance only and ELAB cannot be held responsible for any discrepancies with current legislation.									

** ELAB accredited

** MCERTS accredited test



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THE ENVIRONMENTAL LABORATORY LTD

Waste Acceptance Criteria ANALYTICAL RESULTS									
Report No:		ANALYTICAL REPORT No. AN23505				Page 7 of 10			
Client:		Kendall Smith Investigation Limited							
Project Name:		Location: Worthington School, Havant							
Lab Reference:		38917				Landfill Waste Acceptance Criteria			
Sampling Date:		n/a				Limits			
Sample ID:		W55				Inert Waste Landfill	Stable Non- reactive HAZARDOUS Waste in non- hazardous Landfill	Hazardous Waste Landfill	
Depth:		0.60							
Solid Waste Analysis									
COC (%)	0.3					3%	5%	6%	
Loss on ignition (%)**	2.4					-	-	10%	
BTEX (mg/kg)**	<0.01					6	-	-	
Sum of PCBs (mg/kg)**	<0.01					5	-	-	
Mineral Oil (mg/kg)**	<5					500	-	-	
Total PAH (mg/kg)**	<0.5					100	-	-	
Oil (mg/kg)**	6.0					-	-	-	
Acid Neutralisation Capacity (mg/kg)	<0.1					-	To be evaluated	To be evaluated	
Trace Analysis		2.1	8.1		Cumulative 10:1	Limit values for compliance landfill (mg/kg) using US EPA 12457 Bar/Lys 10 (mg/kg kg)			
	mg/kg	mg/kg			mg/kg				
Arsenic*	<0.005	<0.005			<0.1	0.5	2	20	
Boron*	0.006	0.016			0.1	20	100	300	
Cadmium*	<0.001	<0.001			<0.01	0.04	1	5	
Chromium*	<0.005	<0.005			<0.1	0.5	10	70	
Copper*	<0.005	0.008			<0.1	2	50	100	
Mercury*	<0.0001	<0.0001			<0.001	0.01	0.2	2	
Molybdenum*	<0.005	<0.005			<0.1	0.5	10	30	
Nickel*	<0.005	<0.005			<0.1	0.4	10	40	
Lead*	<0.005	<0.005			<0.1	0.5	10	50	
Iron*	<0.005	<0.005			<0.01	0.05	0.7	5	
Selenium*	<0.005	<0.005			<0.01	0.1	0.5	7	
Zinc*	0.018	0.016			0.1	4	50	200	
Chloride*	2	4			29	500	15000	25000	
Fluoride*	<1	<1			<1	10	150	500	
Sulphate*	4	8			52	1000	20000	50000	
TDS	50	180			1133	4000	60000	100000	
Free radicals	<0.5	<0.5			<0.5	1	-	-	
DOO	4.5	7.4			50	50.0	600	1000	
Leach Test Information									
pH**	8.1	8.0							
EC*	142	112							
Sample Mass (kg)	0.153								
Dry Matter (%)	93								
Moisture (%)	6								
Stage 1									
Volume Eluate L2 (L)	0.337								
Filtered Eluate Vb1 (L)	0.258								
Results are expressed on a dry weight basis, after correction for moisture content where applicable									
Statistical limits are for guidance only and ELAB cannot be held responsible for any discrepancies with current legislation									

** UKAS accredited

** M-CERTS accredited test

THE ENVIRONMENTAL LABORATORY LTD

SAMPLE RECEIPT AND TEST DATES

Our Analytical Report Number: AR23505
Your Job No: LW20180
Sample Receipt Date: 23/10/09
Reporting Date: 10/11/09

Registered: 23/10/09
Prepared: 24/10/09
Analysis complete: 05/11/09

TEST METHOD SUMMARY

PARAMETER	Analysis Undertaken on	Date Tested	Method Number	Technique
Arsenic**	Air dried sample	29/10/09	118	ICPMS
Barium**	Air dried sample	29/10/09	118	ICPMS
Chromium**	Air dried sample	29/10/09	118	ICPMS
Lead**	Air dried sample	29/10/09	118	ICPMS
Mercury**	Air dried sample	29/10/09	118	ICPMS
Nickel**	Air dried sample	29/10/09	118	ICPMS
Copper**	Air dried sample	29/10/09	118	ICPMS
Zinc**	Air dried sample	29/10/09	118	ICPMS
Selenium	Air dried sample	29/10/09	118	ICPMS
Hexavalent Chromium	As submitted sample	27/10/09	110	Colorimetry
Water Soluble Boron	Air dried sample	28/10/09	202	Colorimetry AA3
Total Cyanide**	As submitted sample	03/11/09	204	Automated Flow Digital Colorimetry
Free Cyanide	As submitted sample	03/11/09	107	Colorimetry
Sulphide	As submitted sample	29/10/09	109	Colorimetry
Thiocyanate	As submitted sample	27/10/09	146	Colorimetry
Asbestos*	As submitted sample	04/11/09	179	see note
Total Monohydrate Phosphates**	As submitted sample	29/10/09	121	HPLC
Total EPH**	As submitted sample	27/10/09	117	Gas chromatography
Total Sulphate	Air dried sample	30/10/09	208	BRE SD1
Total Sulphur	Air dried sample	29/10/09	118	BRE SD1
Water Soluble Sulphate**	Air dried sample	30/10/09	118	BRE SD1
Water Soluble Nitrate	Air dried sample	30/10/09	118	BRE SD1
Water Soluble Chloride	Air dried sample	30/10/09	118	BRE SD1
Water Soluble Magnesium**	Air dried sample	30/10/09	118	BRE SD1
Ammonium	As submitted sample	04/11/09	151	Colorimetry

Asbestos analysis qualitative only

Note: Documented in-house procedure based on HSG 248 2005

* - UKAS Accredited test

** - MCERTS Accredited test

Determinands not marked with * or ** are non accredited

MCERTS accreditation covers samples which are predominantly sand, clay, loam or combinations of these three soil types

Any comments, opinions, or interpretations expressed herein are outside the scope of UKAS accreditation (Accreditation Number 2683)

THE ENVIRONMENTAL LABORATORY LTD

SAMPLE RECEIPT AND TEST DATES

Our Analytical Report Number: AR23505
Your Ref No: LW2D180
Sample Receipt Date: 23/10/09
Reporting Date: 10/11/09

Registered: 23/10/09
Prepared: 24/10/09
Analysis complete: 05/11/09

TEST METHOD SUMMARY

PARAMETER	Undertaken on	Date Tested	Method Number	Technique
pH Value**	Air dried sample	25/10/09	113	Electrometric
Total Organic Carbon	Air dried sample	29/10/09	210	Automated IR Absorption
Loss on Ignition**	Air dried sample	26/10/09	129	Gravimetric
Neutralization Capacity to pH 7	Air dried sample	26/10/09	-	EA
Benzene**	As submitted sample	26/10/09	181	GCMS
Toluene**	As submitted sample	26/10/09	181	GCMS
Ethyl Benzene**	As submitted sample	26/10/09	181	GCMS
Xylenes**	As submitted sample	26/10/09	181	GCMS
Mineral Oil**	As submitted sample	27/10/09	117	GC/ED
PCB 28**	Air dried sample	02/11/09	120	GCMS
PCB 52**	Air dried sample	02/11/09	120	GCMS
PCB 101**	Air dried sample	02/11/09	120	GCMS
PCB 118**	Air dried sample	02/11/09	120	GCMS
PCB 138**	Air dried sample	02/11/09	120	GCMS
PCB 153**	Air dried sample	02/11/09	120	GCMS
PCB 180**	Air dried sample	02/11/09	120	GCMS
Specified PAH**	As submitted sample	28/10/09	133	GC/ED

The analysts' guide for sampling, analysis and clearance procedures

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THE ENVIRONMENTAL LABORATORY LTD**LEACHATE SAMPLE RECEIPT AND TEST DATES**

Our Analytical Report Number AR23505
Your Ref No: LW20180
Sample Receipt Date: 23/10/09
Reporting Date: 10/11/09

Registered: 23/10/09
Prepared: 24/10/09
Analysis complete: 05/11/09

LEACHATE TEST METHOD SUMMARY

PARAMETER	Method Number	Technique
Arsenic*	101	ICPMS
Cadmium*	101	ICPMS
Chromium*	101	ICPMS
Lead*	101	ICPMS
Nickel*	101	ICPMS
Copper**	101	ICPMS
Zinc*	101	ICPMS
Mercury*	101	ICPMS
Selenium	101	ICPMS
Antimony	101	ICPMS
Barium*	101	ICPMS
Molybdenum*	101	ICPMS
pH Value*	113	Electrometric
Electrical Conductivity*	136	Probe
Dissolved Organic Carbon	102	TOC analyser
Chloride*	131	Ion Chromatography
Fluoride*	131	Ion Chromatography
Sulphate*	131	Ion Chromatography
Total Dissolved Solids	144	Gravimetric
Phenol Index	121	HPLC

* = UKAS Accredited test

Determinands not marked with * are not accredited

Any comments, corrections, or interpretations expressed herein are outside the scope of UKAS accreditation (Accreditation Number 2683)

Appendix J

WASTE MANAGEMENT

WASTE MANAGEMENT

Establishing if Substances are Wastes

Any material excavated on site may be classified as waste and it is the responsibility of the holder of a material to form their own view on whether or not it is waste. This includes determining when waste that has been treated in some way can cease to be classed as waste for a particular purpose.

One of the ways this can be achieved is set out in the Development Industry Code of Practice (CoP) (CL:AIRE, September 2008).

The handling, re-use or disposal of waste is regulated by the Environment Agency. The Agency will take into account the use of the CoP in deciding whether to regulate materials as waste. If materials are dealt with in accordance with the CoP, the Agency considers that those materials are unlikely to be waste at the point when they are to be used for the purpose of land development. This may be because the materials were never discarded in the first place, or because they have been submitted to a recovery operation and have been completely recovered so that they have ceased to be waste.

Good practice has three basic elements:

1. Ensuring that an adequate Materials Management Plan (MMP) is in place, covering the use of materials on a specific site.
2. Ensuring that the MMP is based on an appropriate risk assessment, that underpins the Remediation Strategy or Design Statement, concluding that the objectives of preventing harm to human health and pollution of the environment will be met if materials are used in the proposed manner.
3. Ensuring that materials are actually treated and used as set out in the MMP and risk assessment.

To confirm that Steps 1 and 2 have been taken, a Qualified Person must review the relevant documents and provide a Declaration before excavation work commences on a particular site. When the Declaration is provided to the Agency, demonstrating that the materials are to be dealt with in accordance with the MMP and risk assessment, the Agency will take the view that the materials on the site where they are to be used will not be waste.

However, if it turns out that materials were not used in accordance with the MMP and risk assessment, or if it is discovered that materials are not suitable for use, are used or planned to be used in excessive quantities, or are likely to cause harm to human health or pollution of the environment, the Agency may conclude that those materials have been discarded and are waste. In order to show how materials have been treated and used, a Verification Report must be prepared at the conclusion of works and, if requested, provided to the Agency. Completion of a Verification Report will not prevent consideration of the above matters by the Agency.

The CoP applies to both uncontaminated and contaminated material from anthropogenic and natural sources excavated:

- for use on the site from which it has been excavated, either without treatment or after on-site treatment, in the development of that land; or
- for use in the development of land other than the site from which the material has been excavated, following treatment at an authorised treatment facility, e.g. Hub site within a defined Cluster project and used in the development of land. (An authorisation means an environmental permit or an exempt waste operation under the Environmental Permitting (England and Wales) Regulations 2007.)

The need to distinguish between “contaminated” and “uncontaminated” soils is no longer considered necessary. The Agency accepts that these are self-defining terms on a site specific basis having regard to the risk assessment (e.g. some soil may not be considered contaminated for a given land use, but would be for a more sensitive land use, on the same site).

The fact that the material has to be treated indicates that it is a waste, i.e. it is not suitable for use until it is treated.

“Development” also includes redevelopment, remediation and regrading of a site. The CoP therefore applies not only to development carried out under the development control regime, but also to remediation activities which may occur outside of that regime, e.g. remediation as a direct result of a spillage or leak on an industrial site or at the surrender stage of a permit. Land development or remediation does not include landfilling of waste or other waste disposal operations.

There is no single factor that can be used to determine if something is a waste or when it ceases to be waste. However, in the context of excavated materials used on sites undergoing development, the following factors are considered to be of particular relevance.

- *Factor 1: suitability for use, without any further treatment* - Suitability for use means that a material must be suitable for its intended purpose in all respects. In particular, both its chemical and geotechnical properties have to be demonstrated to be suitable, and the relevant specification for its use must be met. Suitability of use also includes consideration of the effect that the material may have on the environment.

Certain excavated materials may be suitable for their intended use in the proposed development without any treatment at all. If they are used in that way those materials are unlikely to be waste. For example some materials may be assessed as being suitable for direct use, e.g. engineered backfill beneath cover layers, capping layers, buildings and hard standing or for site regrading. Use for the purposes of reclamation, restoration, landscaping or improvement of land may fall within this category. Landfilling or disposal does not. Where reclamation, restoration, landscaping or improvement of land is carried out on the same site as excavation, the materials used for those purposes are unlikely to have been discarded and so do not become waste.

Other materials may not have the required characteristics for use without first being treated. If treatment is needed in order to make the material ready for use the materials

will be waste, but may cease to be waste once treated so as to be suitable for use. This treatment may be biological, chemical, physical or any combination of these and will need to be carried out under an appropriate authorisation.

Some materials, although they do not require treatment to make them suitable for use, may nonetheless be regraded or compacted before or during their use as part of the development of a site. This regrading or compacting does not prevent the material being regarded as a non-waste.

- *Factor 2: certainty of use* - The holder of the material must be able to demonstrate that the material will actually be used and that the use is not just a probability, but a certainty. For example, if materials are stockpiled with little prospect of being used, they will be waste.

In the process of site development surplus material may be generated that cannot be used either directly or after treatment. For example, the material may not conform to the required specification following treatment and in such a case the material would remain a waste.

There may be unexpected arisings on a development site that were not picked up within the site investigation works. Any out of specification materials will be waste and will need to be disposed of or recovered in the proper manner and in accordance with waste legislation.

- *Factor 3: quantity of material* - Materials should be used in the quantities necessary for that use, and no more. The use of an excessive amount of material will indicate that it is being disposed of and is waste.

The need to ensure that the aims of the Waste Framework Directive are not undermined is the underlying principle in all situations in considering whether a material is discarded. Therefore, if the use of a material will pollute the environment or cause harm to human health, it is likely to be waste. The production of a MMP will help to ensure that the above matters are considered and a correct determination made in relation to the nature of the materials reached.

In order to demonstrate that the factors described above have been satisfied, an MMP has to be produced which includes a tracking system and contingency arrangements. A Verification Plan also needs to form a part of the Remediation Strategy or Design Statement. Upon completion of these documents, a Qualified Person needs to sign a Declaration. Once the development has been completed in accordance with the MMP, a Verification Report must be completed that demonstrates that the materials have been located in the correct place within the development or dealt with appropriately. Further details can be found in the CoP.

Key Legal Requirements

If the material is considered to be waste then the legislation will apply up to the point that it ceases to be waste.

Site Waste Management Plan: Compulsory under the Site Waste Management Plans Regulations 2008 for all construction and demolition projects with a value exceeding

£300,000. The client must appoint a principal contractor. It is anticipated that the MMP will form part of the SWMP for a development site.

Duty of Care: It is necessary to ensure all waste is handled, recovered and disposed of responsibly, and that the waste is only handled by individuals, companies or groups that are authorised to deal with it. For example, waste can only be collected by registered carriers or transporters. Regular checks must be made on the destination of all wastes leaving site to ensure they are only being taken to an appropriately authorised waste management facility. Records (Waste Transfer Notes) must be kept of all wastes received or transferred.

Characteristics of waste received from a third party must be checked to ensure that companies are licensed or have an exemption under which they can receive it and that it complies with the classification set out in the Waste Transfer Notes.

Waste Carrier or Transporter: Registration is required to transport waste.

Waste Framework Directive Permits: It is normally an offence to undertake waste disposal or recovery operations, which are regulated by the Agency, without being in possession of a WFD permit which can be a WML or PPC permit. However there are a number of exemptions from waste management licensing, mainly for small-scale storage and waste recovery operations, but these are subject to certain limitations. These limitations are general rules under which the waste activity can take place and cover such details as the types and quantities of waste permitted, the methods of disposal or recovery and pollution control measures.

The specific limitations for exempt waste activities are detailed in some 46 exemptions paragraphs prescribed in Schedule 3 to the Waste Management Licensing Regulations 1994 (as amended). Establishments or undertakings should normally register exempt activities with the Environment Agency. Typical Schedule 3 exemptions used by the construction sector include:

- Schedule 3 Paragraph 9A– Land reclamation;
- Schedule 3 Paragraph 13 – Manufacture of construction and soil materials;
- Schedule 3 Paragraph 19A – Storage and use of waste for construction; and
- Schedule 3 Paragraph 24 – Crushing, grinding, or size reduction of bricks, tiles or concrete.

Waste Classification

With respect to the possible waste streams from a site, it is recommended that a phased approach is implemented. In the first instance, the groundwork's contractor or specialist remediation contractor appointed by the developer should approach the landfill site with the available chemical data and seek a waste characterisation. Should the waste be classified as hazardous, it would be necessary to undertake the Waste Acceptance Criteria (WAC) testing to determine whether the receiving landfill could accept the hazardous waste. This would require additional soil sampling and chemical testing.

The two stages are explained below.

Waste Characterisation

All wastes going to landfill must be classified as 'inert', 'non-hazardous' or 'hazardous'. There is a sub-category of hazardous waste known as 'stable non-reactive hazardous waste'. Individual landfill sites have permits to take these classes of waste. Hazardous and non-hazardous wastes cannot be disposed of at the same site, apart from stable non-reactive hazardous waste which can go to specially constructed cells in certain non-hazardous landfill sites.

Contaminated soil is a 'mirror entry' in the Consolidated European Waste Catalogue, and is not necessarily a hazardous waste. It is only classified as hazardous if it contains dangerous substances above certain threshold concentrations. The Environment Agency Briefing Note on Hazardous Waste and Contaminated Soil (V.1 July 2004) suggests that waste holders should use the information collected as part of the contaminated land risk assessment to inform decisions as to the concentrations that might reasonably be expected to be present in the contaminated soil, given the past and current uses of the site.

The waste must be assessed against all the appropriate hazards in accordance with the Environment Agency Technical Guidance WM2. This makes certain worst case assumptions about the chemical composition if specific compounds are not analysed for.

Waste Acceptance Criteria

Waste classified as hazardous must be subject to WAC testing to determine if it can go to a hazardous landfill site. The WAC are a list of limit values for certain parameters obtained from standard leaching tests and total content tests. If the limit values are exceeded, the waste is not suitable for disposal at that class of landfill site and alternative disposal methods have to be found. Maximum permissible limit values are determined by the EU (part of what is known as 'full waste acceptance criteria') but individual landfills may have more stringent values to take into account the environmental setting, liner system or additional nature of specific waste streams.

There are WAC limit values for inert, stable non-reactive hazardous and hazardous wastes, but not for non-hazardous wastes. Note that if hazardous waste contains inorganic substances that are not listed in the WAC limit values, but present a risk of pollution or harm, then an upflow percolation test must be carried out, followed by risk assessment of the results with respect to the intended landfill site.

Hazardous and non-hazardous wastes require pre-treatment prior to disposal at landfill, unless pre-treatment does not further the objectives of the EU Landfill Directive. This is defined as physical, thermal, chemical or biological processing, including sorting, that changes the characteristics of the waste, and does so in order to reduce its mass, reduce its hazardous nature, facilitate its handling or enhance its recovery.

WAC testing should be carried out following pre-treatment.