Geo-Environmental

GROUND INVESTIGATION REPORT

for

HAVANT RETAIL PARK, PORTSDOWN HILL ROAD,

HAVANT PO9 3NA

on behalf of

LINDEN HOMES SOUTHERN LIMITED



Report:	**GROUND INVESTIGATION REPORT**
Site:	**HAVANT RETAIL PARK, PORTSDOWN HILL ROAD, HAVANT PO9 3NA**
Client:	**LINDEN HOMES SOUTHERN LIMITED**
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CONTENTS

EXECUTIVE SUMMARY i
1.0 INTRODUCTION 1
1.1 General 1
1.2 Form of Development 1
1.3 Objectives 1
1.4 Standards 1
1.5 Conditions 2
2.0 DESK STUDY 3
2.1 Site Description 3
2.2 Geology 3
2.3 Hydrogeology 4
2.4 Hydrology 5
2.5 Sensitive Land Uses 6
2.6 Radon 6
2.7 Environmental Data 6
2.8 Geotechnical Data 7
2.9 Landfill and Waste Management Facilities 7
2.10 Historic Mapping 8
2.11 Previous Ground Investigations 9
2.12 Potential Contamination 10
2.13 Ground Gas Summary 10
3.0 PRELIMINARY ASSESSMENT 13
3.1 Geotechnical Factors 13
3.2 Environmental Conceptual Model 13
3.3 Scope of Works 19
3.4 Investigation Strategy 19
4.0 ENCOUNTERED CONDITIONS 21
4.1 Soils 21
4.2 Groundwater 22
4.3 Obstructions 22
4.4 Ground Gases 22
4.5 Chemical Analysis 23
4.6 Geotechnical Testing 23
5.0 ENGINEERING CONSIDERATIONS 24
5.1 Conventional Foundations 24
5.2 Piled Foundations 25
5.3 Floor Slabs 25
5.4 Excavations 25
5.5 Pavements 26
5.6 Sub-Surface Concrete 26
5.7 Soakaways 26
5.8 Quarry Faces 26
6.0 ENVIRONMENTAL CONSIDERATIONS 30
6.1 Outline Risk Assessment 30
6.2 Ground Gases vs. Site Workers 30
6.3 Ground Gases vs. End Users 30
6.4 Ground Gases vs. Soft Landscaping 31

6.5 Ground Gases vs. Adjacent Land Users 31
6.6 Soil Contamination vs. Site Workers 32
6.7 Soil Contamination vs. End Users 32
6.8 Soil Contamination vs. Soft Landscaping 35
6.9 Soil Contamination vs. Built Environment 35
6.10 Soil Contamination vs. Adjacent Land Users 36
6.11 Soil Contamination vs. Groundwater 36
6.12 Groundwater Contamination vs. Site Workers 37
6.13 Groundwater Contamination vs. End Users 37
6.14 Groundwater Contamination vs. Soft Landscaping 37
6.15 Groundwater Contamination vs. Built Environment 37
6.16 Groundwater Contamination vs. Adjacent Land Users 37
6.17 Groundwater Contamination vs. Controlled Waters 37
6.18 Waste Disposal 38
6.19 Discovery Strategy 38

FIGURES

FIGURE 1 Site Location Plan
FIGURE 2 Site Layout Plan
FIGURE 3 Site Photograph Locations
FIGURE 4 Chalk Face Inspection Plan
FIGURE 5 Exploratory Hole Location Plan

APPENDICES

APPENDIX A Site Photographs
APPENDIX B Desk Study Information
APPENDIX C Exploratory Hole Logs
APPENDIX D Geochemical Testing Results
APPENDIX E Ground Gas and Groundwater Monitoring Results
APPENDIX F Imported Soil Specification

EXECUTIVE SUMMARY	
Scope of works	To undertake a combined geotechnical and environmental ground investigation with associated interpretation and assessment.
Form of Development	Construction of new houses, apartments, gardens, roads and associated infrastructure.
Site Description	The site comprised an irregularly shaped parcel of generally flat and level land located within a former chalk quarry, which at the time of the investigation was used as a retail park (DIY store, bowling alley and external car parking). As such the majority of the site was covered either with built footprint or external hardcover. The northern and southern site boundaries were formed by chalk exposures (former quarry faces) which were estimated to extend up to c. 10m above general site ground level.
Ground Conditions	The ground conditions comprised a variable thickness of Made Ground overlying Chalk. The depth of Made Ground varied significantly across the site, with the deepest (5m+) present around the central southern portion of the site.
Groundwater	Groundwater was not encountered during the intrusive investigation, nor proven during subsequent monitoring. Given the site's location and elevation, groundwater is anticipated at depth. Perched water is likely to be present within the Made Ground underlying the site but this is considered to be discontinuous and thus not in continuity with any groundwater body at depth. Perched water was present in Monitoring Well D at depths in the range 5.55-6.31m bgl.
Foundations	Given the presence of deep Made Ground over some portions of the site and possible buried bench steps in the former quarry faces at depth, it is likely that a piled foundation solution will be required for much of the site. It may be possible to utilise conventional foundations where Made Ground does not extend beyond approximately 2.0m.
Excavations	Shallow excavations and those with battered side slopes could remain stable in the short term providing that water ingress does not occur. Deeper excavations and those where water ingress occurs are likely to be accompanied by a rapid onset of instability and could require shoring and dewatering. Construction works should be designed to avoid any requirement for personnel to enter excavations on this site.
Pavements	It is recommended that a CBR of 2% be assumed for pavement design. The formation is considered frost susceptible.
Sub-surface concrete	Sub-surface concrete should be design to Class DS1 (AC1) of BRE Special Digest 1.
Ground Gases	The assessment to date indicates the site's gassing regime to be Characteristic Situation 1/Green, for which no gas protection measures are considered to be required. However, this is based on limited monitoring and thus further monitoring is recommended to provide a more robust assessment.
Radon Gas	No protection measures are required.
Soil contamination	Several contaminants of concern have been identified above appropriate screening criteria for the proposed residential end use and as such it is considered that remedial action is required.
Site workers	A COSHH assessment is recommended for all site workers and safe systems of work adopted.

End users	Sporadic contamination has been identified within near surface soils and in the absence of plot specific testing, it is recommended that a cover system is constructed in all soft landscaped areas to protect end users from soil based contaminants.
Soft landscaping	As part of the cover system, a minimum cover of 150mm of certified clean/suitable Topsoil is recommended in the soft landscaped areas.
Built Environment	Consideration will be required for the selection of appropriate materials for buried services on the site.
Controlled waters	No specific pollutant linkages to controlled water have been identified at this stage.
Waste Disposal	Analytical results and WAC testing indicate that some Hazardous Waste could be generated by the proposed development of this site.
Discovery strategy	A discovery strategy should be employed, so that any evidence of possible unidentified contamination can be dealt with appropriately.
This Executive Summary is intended to provide a brief summary of the main findings and conclusions of the investigation. For detailed information, the reader is referred to the main report ref. GE8756/GIR.	

1.0 INTRODUCTION

1.1 General

Geo-Environmental Services Limited (Geo-Environmental) was instructed by Linden Homes Southern Limited, to undertake an investigation of the geotechnical and geo-environmental factors pertaining to land at Havant Retail Park, Portsdown Hill Road, Havant, Hampshire PO9 3NA (the site). The site's location is presented in Figure 1 and the current site layout is presented in Figure 2.

1.2 Form of Development

It is understood that the site is to be redeveloped for a residential land use to include private gardens and soft landscaping, access and associated infrastructure. However, specific details and layout of the proposed development were unknown at the time of writing.

1.3 Objectives

The data from the geotechnical investigation was to form the basis of an interpretation with respect to foundation design, pavement construction, concrete specification, excavation stability and other pertinent construction issues.

A Preliminary Risk Assessment (PRA) was undertaken as part of the desk study in accordance with CLR11, in order to provide a basis for the scope and rationale of the subsequent Phase II ground investigation. The data from Phase I and Phase II were then to form the basis of a subsequent Tier 1 Generic Quantitative Risk Assessment (GQRA). The objective of the risk assessments was to evaluate the risks posed to the proposed redevelopment, adjacent land uses and the wider environment, in the context of likely planning requirements, immediate liabilities under the Environment Act 1990 and risks posed to Controlled Waters under the Water Resources Act.

1.4 Standards

Where practicable, the ground investigation and subsequent geotechnical and environmental assessments were undertaken in accordance with the following documents and guidance:

- National Planning Policy Framework – March 2012;
- Planning Policy Statement 23 – Planning and Pollution Control;
- Model Procedures for the Management of Contaminated Land, CLR11, DEFRA and Environment Agency 2004;
- Environment Agency Guidance on Requirements for Land Contamination Reports, Version 1 dated July 2005;
- BS10175:2011 - Investigation of Potentially Contaminated Sites - Code of Practice, BSI 2011;
- BS5930: 1999 - Code of Practice for Site Investigations, BSI 1999;

- EN ISO 14688 Geotechnical Investigation and Testing Part 1-2002 and Part 2-2004;
- BS1377: 1990 - Soils for Civil Engineering Purposes, BSI1990;
- NHBC Standards Chapter 4.1 Land Quality - Managing Ground Conditions, September 1999;
- NHBC Standards Chapter 4.2 Building Near Trees;
- BRE Digest 365 – Soakaway Design. Building Research Establishment. 2007
- CIRIA C665 – Assessing risks posed by hazardous ground gases to buildings (2007);
- NHBC 10627-R01(04)- Guidance on evaluation of development proposals on sites where methane and carbon dioxide are present (2007);
- BS8485:2007 Code of practice for the characterisation and remediation from ground gas in affected developments.

1.5 Conditions

The data collected from the investigations have been used to provide an interpretation of the geotechnical and/or environmental conditions pertaining to the site. The recommendations and opinions expressed in this report are based on the data obtained. Geo-Environmental takes no responsibility for conditions that either have not been revealed in the available records, or that occur between or under points of physical investigation. Whilst every effort has been made to interpret the conditions, such information is only indicative and liability cannot be accepted for its accuracy.

It should be noted that in particular the concentrations and levels of mobile liquid and gaseous materials are likely to vary with time. The results obtained may therefore only be representative of the conditions at the time of sampling. This report should not be taken as any guarantee that a site is free of hazardous or potentially contaminative materials.

Information contained in this report is intended for the use of the Client and Geo-Environmental can take no responsibility for the use of this information by any party for uses other than that described in this report. Geo-Environmental makes no warranty or representation whatsoever express or implied with respect to the use of this information by any third party. Geo-Environmental does not indemnify the Client or any third parties against any dispute or claim arising from any finding or other result of this investigation report or any consequential losses.

Assessment criteria or other parameters developed for the evaluation of contamination on this site are based on a number of assumptions regarding exposure and toxicology. Exposure to contaminants and levels of adverse effects may therefore vary. Whilst reasonable care and expertise has been employed in the development of such criteria, no liability is accepted in this respect. Other criteria or guidance on the development of assessment criteria may be published in the future and no liability is accepted in this respect.

2.0 DESK STUDY

Photographs taken during the site walkover survey are presented in Appendix A. A copy of the Landmark Envirocheck report obtained as part of the desk study is presented in Appendix B.

Comments made in the following sections regarding possible ground conditions on the site are based purely on the desk study. Confirmation of ground conditions can only be provided through undertaking site specific intrusive investigation.

2.1 Site Description

The site comprised an irregularly shaped parcel of generally flat and level land within a former chalk quarry. The site extended to approximately 2.1Ha and was located at NGR 469690, 106430. The site was accessed from Portsdown Hill Road.

At the time of the site walk over survey, June 2012, the site was occupied by two portal-framed buildings used as a bowling alley and DIY store. External areas comprised tarmac covered car parking to the north-east of the buildings and a concrete covered service road and yard area to the south and west of the buildings. A marginal strip of scrub/soft landscaping was present along the western boundary of the site and an infestation of Japanese Knotweed was tentatively identified within this portion of the site.

An electricity substation was present in a wooded area on the southern boundary to the rear of the DIY store.

The north-western, south-eastern and southern boundaries were marked by near vertical chalk cliffs varying in height from approximately 2-3m up to 8-10m, remnants of the former use of the site as a chalk quarry. A chain-link fence was present along the toe (offset from the toe by c. 2-5m), presumably to act as a 'catch fence' for any large blocks of chalk which come free from the exposed face. In several areas, a debris slope formed by smaller fragments of chalk was present at the toe of the exposed face. Vegetation was also present on the chalk faces and in some locations, roots were observed to be growing into the exposed chalk face.

The highest portion of exposed chalk face formed the site's northern boundary and it appeared that a bench step was present towards the toe of the exposed face.

The site was bounded to the north by Portsdown Hill Road; to the east by houses fronting on to Portsdown Hill Road; to the south by gardens and houses fronting on to Bedhampton Hill; and to the west by a vegetated slope falling c. 3-5m down to the A3(M).

2.2 Geology

British Geological Survey geological mapping indicated the geology of the site to comprise the Spetisbury Chalk Member of the Upper Chalk, although it is understood that following the historic quarrying operation, some filling may have taken place to form

a level site. As such a variable and possibly significant thickness of Made Ground should also be anticipated.

Made Ground is a collective description for soils and other materials deposited by human action and both the characteristics and properties of such strata are highly variable. As such, great variations in material type, thickness and degree of compaction invariably occur and there can be deleterious or harmful matter, as well as potentially degradable organic material.

Upper Chalk is a soft white friable microporous limestone composed of coccolith biomicrites with a varying proportion of larger shell fragments. Flint characterises the Upper Chalk, occurring as nodular courses, tabular beds and linings to fractures.

At various levels clay sized material occurs as marl seams and partings. Close to the surface the upper few metres are invariably discoloured brown, due to leaching from the overlying strata. The interface with any overlying stratum is invariably extremely irregular as a result of localised weathering and general solution. Weathering by frost action may extend to a depth of several metres.

The site is located on the eastern limb of the Portsdown anticline, a fold in the Chalk which created Portsdown Hill. This results in strata being inclined and orientated away from the horizontal. Given the site's position on the anticline, it is anticipated that strata exposed on the northern boundary could dip at a gentle gradient towards to north or north-east and that strata exposed on the southern boundary could dip at a gentle gradient towards the east or south-east. In addition to bedding planes, Chalk is characterised by a series of joints and discontinuities perpendicular to or inclined from the bedding plane. As such it is anticipated that the structural geology of the site will be variable and potentially complex in some places.

In addition to the local structural geology, a series of more extensive joints and discontinuities are present within the Chalk in this region of Hampshire. These regional features are often aligned with dry valleys and/or with clusters of solution features.

Occasional erosional features, such as pipes, swallow holes and solution cavities, usually in-filled with drift deposits, are found in the chalk, sometimes manifesting themselves at the surface as shallow circular depressions. Solution features may be reactivated by the concentrated ingress of water from leaking drains or soakaways. Reactivation may lead to surface collapse. The risk of solution features on this site is likely to be reduced due to historic quarrying and extraction of chalk from across the site.

2.3 Hydrogeology

The former NRA Groundwater Vulnerability Maps have been superseded with new aquifer designations replacing the older system of classifying aquifers as Major, Minor and Non-Aquifer. This new system is in line with Groundwater Protection Policy (GP3) and the Water Framework Directive (WFD). New designations equate to Principal Aquifers, Secondary Aquifer A, B and Undifferentiated, and finally a third designation of Unproductive Strata.

With reference to the Environment Agency website and the Groundwater Vulnerability Map No 52 entitled Southern Hampshire, the site is indicated to overlie bedrock classified as a Principal Aquifer. These are layers of rock or drift deposits that have high intergranular and/or fracture permeability and usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale.

The soil cover across the site was classified as High (class U) leaching potential. This is likely to relate to the site comprising former mineral workings, i.e. a former chalk quarry, and thus natural soil and overburden cover are likely to have been removed or altered. Water movement within these strata is likely to be highly variable and probably discontinuous if variable soils have been deposited within the former quarry.

According to information provided from the Environment Agency, the site is located within Zone I of the "Bedhampton & Havant Springs" groundwater Source Protection Zone (SPZ). An SPZ is a protection zone placed around a well, or cluster of wells, that supplies groundwater of potable quality. An SPZ is divided into three zones defined as follows:

- Zone I - Travel time (of water) of 50 days or less to the groundwater source.
- Zone II - Either 25% of the source area or a travel time of 400 days whichever is greater.
- Zone III - The total area needed to support the discharge and abstraction from the protected groundwater source.

The closest groundwater abstraction to the subject site was recorded 718m to the east of the site and comprised a potable water supply abstracting groundwater from a single point. This comprised the closest of a cluster of potable supply abstractions between c. 700m and 1200m to the east of the site. It is possible that groundwater beneath the subject site flows towards the abstractions, due to geological conditions and abstraction drawdown.

The desk study did not identify any discharge consents to land, or any substantiated pollution incidents to groundwater within 500m of the site boundary.

2.4 Hydrology

No surface water features were present on site. The closest surface water feature to the site comprised a stream 258m to the north, which flowed from west to east. In addition, Langstone Harbour (a tidal lagoon) was located approximately 900m to the south of the site and at an elevation approximately 20m lower than the site.

A single discharge consent to surface water was recorded within 500m of the site. This related to storm sewer overflow into a saline estuary and was recorded at a point 103m to the south-east of the site. Given that the saline estuary was to the south of the discharge consent location, any discharge would travel away from the subject site.

One pollution incident to surface water was recorded within 500m of the site. This related to a Category 1 Major Incident where crude sewage entered a stream in March 1997. Given the time elapsed, nature of the pollutant and that stream flow was towards

the south, i.e. away from the site, it is considered that the incident would not have impacted the subject site.

The site was not recorded as being situated within an area at risk from flooding from rivers or the sea and no specific flood defences were recorded.

2.5 Sensitive Land Uses

A search was made of environmentally sensitive areas, including areas of green belt, scenic or natural beauty, parks, reserves, nitrate zones, or protected conservation and scientific areas. The site was located within a nitrate vulnerable zone.

2.6 Radon

Data supplied by the Health Protection Agency and British Geological Survey (BGS) indicate the site is located in 'lower probability radon area', as less than 1% of homes are above the action level. The BGS also state that no radon protection measures are necessary in the construction of new dwellings on the subject site.

2.7 Environmental Data

The desk study did not identify any pertinent Contemporary Trade Directory records in relation to current or recent industrial and commercial land uses within the site but did identify four records within 250m of the site boundary, details of which are provided in Table 1 below:

Name	Location	Classification	Location
Pure Chic Interiors	Bedhampton Hill PO9 3JW	Furniture repairers & restorers – Inactive	65m SE
Scratchmaster	10 Glebe Park Avenue PO9 3JR	Car body repairs – Active	101m W*
Diverse Cleaning	76 Lower Road PO9 3LJ	Commercial cleaning services – Inactive	208m S
Microsport Ski Simulators	21 Lodge Road PO9 3LL	Sports equipment manufacturers & distributors – Inactive	210m E

NOTE: * This is on the western side of the A3(M) cutting which separates the subject site from this activity. The remaining locations are likely to be down-gradient of the site with regards to groundwater flow and possible pollutant migration.

Table 1 Contemporary Trade Directory Entries within 250m of the site.

Given the type of activities identified and their locations in relation to the site, it is considered unlikely that they would have resulted in a detrimental impact to the subject site.

2.8 Geotechnical Data

The site lies within an area that is considered by the Coal Authority as being unlikely to be affected by coal mining activity. However, the site is located within a former chalk quarry and thus extractive processes have taken place on the site.

National databases for a number of different geological hazards have been compiled by the BGS, and a summary of the hazard data pertaining to the site itself is presented in Table 2.

Hazard	Designation
Non-coal mining	Rare (on site)
Collapsible ground	Very Low hazard
Compressible ground	No hazard
Ground dissolution	No to Low hazard
Landslide	No hazard
Running sand	No hazard
Swelling clay	No hazard

Table 2 Summary of BGS Geological Hazards

In addition to the hazard designation for ground dissolution, solution pipes have been recorded close to the site, these being as follows:

- Solution pipe within Upper Chalk with no recorded superficial soil cover 17m to the north of the site.
- Cluster of 3No. solution pipes within the Upper Chalk with a cover of Lambeth Group (sand, silt and clay) 42m to the north-east of the site.

Given that the site is situated within a former chalk quarry, it is considered that the potential for solution features to be present is substantially reduced within the site.

2.9 Landfill and Waste Management Facilities

A search of BGS recorded landfill sites, IPC registered waste sites, licensed waste management facilities, local authority recorded landfill sites, other registered landfill sites, waste transfer stations and other waste treatment or disposal sites was undertaken as part of the desk study. Such sites may form an artificial source of ground gases, such as carbon dioxide and methane, where wastes are buried or disposed of to landfill.

The Envirocheck report identified numerous records within 1km of the site, but only one within 500m of the site, which was an historic landfill at Scratchface Lane, 463m to the north of the site and which accepted inert waste. This location comprised a recreation ground at the time of the investigation.

Whilst the records presented within the Envirocheck report did not identify any infilling of the former chalk quarry on the site, consultation with the Contaminated Land Officer at Havant Borough Council revealed that Council records show the site as likely to have been infilled in part. However, more specific information on the dates of any filling and nature of fill materials was not available.

2.10 Historic Mapping

Historic maps dating back to 1868 were obtained as part of the desk study and are presented in Appendix B. A summary of the apparent key features observed on the map extracts both on the site and within the local area is presented within Table 3.

Date	On Site	Off Site
1868	The site was shown to comprise Bedhampton Chalk Pit, with the main quarry excavation areas in the central and western portion of the site. The deepest portion of the pit appeared to be in the central portion of the site. A series of small buildings (possibly houses), the Crown Public House and possible garden areas were shown on the eastern portion of the site. An access track/road was shown extending in to the central portion of the site from the north-eastern boundary with Portsdown Hill Road. Possible buildings were shown in the south-eastern portion of the site.	A road (along the route of the current Portsdown Hill Road) was located on the northern site boundary, with an Ice House shown c. 100m to the north of the site and an 'Old Chalk Pit' c. 100m to the north-east of the site. Prospect Cottage was shown immediately to the south of the site and included a well within its grounds. The remaining land in the vicinity of the site appeared to comprise fields.
1870	No significant changes.	No significant changes.
1897	The quarry was shown to have extended to the northern and southern boundaries and approximately 20m beyond the western site boundary. The central portion of the site which was considered from the 1868 map to be the deepest area of the quarry was marked as rough grassland indicating that quarrying had ceased (at least temporarily) in this area of the site. Limekilns were shown in the north-western quarter of the quarry and a quadrangle of buildings was shown in the south-eastern portion of the site. A series of small buildings, possibly houses, were shown in the north-eastern portion of the site.	The Ice House was no longer shown to the north of the site and the Old Chalk Pit appeared to have been incorporated within the development of Belmont Farm. A second house, Hill Lodge, was shown immediately to the south of the site.
1898	No significant changes.	No significant changes.
1909	The portion of quarry along the northern boundary appeared to have been deepened, or a possible bench step had been formed in the quarry.	The quarry was shown to have extended beyond the western site boundary. An additional house was shown to the south of the site and houses were also shown approximately 200m to the east of the site.
1932	No changes were shown on the site other than the buildings in the south-eastern portion of the site no longer being shown.	Further residential type development was shown primarily to the east, south and west of the site. Belmont Farm was renamed The Dell and some of the buildings appeared to have

Date	On Site	Off Site
		been removed.
1938-42	No significant changes.	No significant changes.
1952	The site was labelled as Bedhampton Chalk Pit (Disused).	Further residential type development was shown in all directions. The Old Chalk Pit to the north-east of the site was shown to have been incorporated into a residential development.
1954	No significant changes other than possible new structures in the former limekilns area indicating a continuance in site use, possibly for storing aggregates or similar bulk materials.	No significant changes.
1957-59	Possible regrading or reprofiling within the chalk pit, as indicated by changes in slope markings particularly in the central portion of the site. A weighbridge was shown in the former limekilns area indicating a possible continuance in use of the site for transport related activities.	No significant changes.
1963	No significant changes.	No significant changes.
1967	The former limekilns area of the site was shown to have been reprofiled with additional storage bays shown and labelled as a Coal Depot. A 'Works' was shown in the southern portion of the site and the absence of any slope markings within the site could indicate that the chalk pit base had either been partly filled or reprofiled.	No significant changes.
1969	No significant changes.	No significant changes.
1982	The Coal Depot was no longer shown on the 1:2500 map. A new structure (unnamed) was located in the south-eastern portion of the site.	The A3(M) was shown within a cutting immediately to the west of the site.
1989	The site was shown to have been developed to the layout observed during the site walk-over survey, i.e. with two large rectangular structures along the western and southern boundaries, an electricity sub-station in the south-eastern corner of the site and car parking areas occupying the remainder of the site.	No significant changes other than further residential development to the north of the site.
1991	No significant changes.	No significant changes.
1993	No significant changes.	No significant changes.
2006	No significant changes.	No significant changes.
2011	No significant changes.	No significant changes.

Table 3 Summary of Historic Map extracts

2.11 Previous Ground Investigations

Whilst it was understood that the site had previously been investigated and assessed by means of at least one desk study and intrusive investigation, no documents were available to Geo-Environmental to review as part of this assessment.

2.12 Potential Contamination

The information obtained from the desk study has shown that the subject site has been used since prior to 1868 as a chalk pit and that the pit continued to operate and expand laterally and probably deepen until some time before 1952. Following cessation of quarrying, historic mapping has indicated that the site was probably partly infilled to form a level site and that activities on site since the 1950s have included a coal depot, works and a retail park.

Whilst the quarrying of chalk is unlikely to have resulted in any contamination, on site activities such as limekilns are likely to have generated waste ash which could have been deposited on the site, there was no specific evidence to support this. Similarly, the use of areas of the site as a coal depot and works, together with operating a vehicles on the site as part of these activities, could have resulted in the introduction of contaminants to the ground and most likely to include hydrocarbons, metals and PAH compounds, although if coal dust were present, this could also represent a risk of combustion within the ground.

It is likely on the basis of the evidence reviewed within the desk study that some materials/soils were imported on to the site to infill deeper sections of the quarry and form a level plateau. The source of any such imported material is now untraceable and it is possible that a range of potential contaminants could have been introduced on to the site, such as metals, inorganic compounds, hydrocarbons, PAH compounds, asbestos and the like. In addition, if organic materials were deposited, then these could release hazardous ground gas.

In addition to generic potential contamination, the current development includes an electricity sub-station, which could be a source for mineral oil and PCB contamination, although both of these contaminants would only be present in small quantities and become readily adsorbed onto soil particles. Pollution from the sub-station would usually be evident as oil staining on the ground and no such staining was observed.

The Desk Study identified the following potential contaminants most likely to be associated with historic and/or current site activities:

- Arsenic, Beryllium, Barium, Boron, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Vanadium, Zinc, cyanide, nitrate, sulphate, asbestos, phenol, oil/fuel hydrocarbons, aromatic hydrocarbons, polyaromatic hydrocarbons, chlorinated aliphatic hydrocarbons and PCB.
- Potential ground gases associated with any Made Ground including, methane, carbon dioxide, oxygen and flow.

2.13 Ground Gas Summary

The desk study identified the likely presence of Made Ground which could represent potential sources of gas. As such it is recommended that monitoring should be undertaken on site to verify the findings of the desk study report and to ensure that ground gas hazards are further assessed in order to clarify the risk of harm to the proposed development and end users.

CIRIA C665 prescribes minimum monitoring periods, as summarised within Table 5, below.

Example of generation potential		Generation potential of source [1,2]				
		Very Low	Low	Moderate	High	Very High
		Inert Made Ground	Alluvium or dock silt	Pre-1960 landfill	Shallow mine workings	Post 1960's domestic landfill
Sensitivity of development	Low (Commercial)	4/1	6/2	6/3	12/6	12/12
	Moderate (Flats)	6/2	6/3	9/6	12/12	24/24
	High (Residential with Gardens)	6/3	9/6	12/6	24/12 [3]	24/24 [3]

Table 5 Summary of likely gas monitoring requirements

Notes:
1 - First number is the minimum number of readings and the second number is minimum period in months, for example 4/1 – Four sets of readings over 1 month.
2 - At Least two sets of readings must be at low and falling atmospheric pressure (but not restricted to periods below <1000mb) known as worst case conditions.
3 - The frequency and period states are considered to represent typical minimum requirements. Depending on specific circumstances fewer or additional readings may be required. The NHBC guidance is also recommending these periods/frequency of monitoring.
4 - Historical data can be used as part of a data set.
5 - Not all sites will require gas monitoring however, this would need to be confirmed with demonstrable evidence.
6 - Placing high sensitivity end use on a high hazard site is not normally acceptable unless the source is removed or treated to reduce its gassing potential. Under such circumstances long-term monitoring may not be appropriate or required.

Methane is an asphyxiating flammable and toxic gas with a density about two-thirds that of air. Methane is toxic at concentrations in excess of 30%v/v and flammable at concentrations of between 5% and 15% by volume in air. Such a methane-air mixture will explode where confined in some way and ignited. The 5% by volume concentration is termed the lower explosive limit (LEL).

Carbon dioxide is a non-flammable toxic and asphyxiating gas which is about 1.5 times heavier than air. In addition, the presence of elevated carbon dioxide may be in conjunction with depleted concentrations of oxygen. Carbon dioxide is inflammable and may affect the flammability of methane by correspondingly reducing the concentration of oxygen within an atmosphere.

With reference to Table 5, the proposed development is considered a 'high' sensitivity. Information obtained from the desk study suggests that the historical land uses of the site and surrounding land are 'very low to moderate risk', with possible sources of ground gases on the subject site. It would be prudent to undertake a limited period of monitoring on the site in line with best practice to confirm the findings of the desk study. Therefore, in order to assess the potential for gas generation and/or release of such gases which could warrant the incorporation of gas protection measures into new development, it was recommended that an initial gas monitoring exercise comprising six rounds over three months was undertaken on site. Should the ground investigation identify adverse ground conditions or the initial gas monitoring exercise identify concentrations of concern for ground gases then gas protection would be required for any proposed development.

Thus, it was recommended that an initial monitoring programme of six monitoring rounds at approximately fortnightly intervals was undertaken to assess the site's gassing regime and to confirm the requirement for and scope of gas protection measures.

3.0 PRELIMINARY ASSESSMENT

Based on the findings of the desk study, the following sections summarise the anticipated geotechnical and environmental factors likely to impact the site in the context of the proposed redevelopment. A justification and rationale for the subsequent ground investigation is given.

3.1 Geotechnical Factors

The information reviewed in the desk study indicated that the site is likely to be underlain by a succession of Made Ground (varying composition and thickness) over Upper Chalk. Given the site's elevation, groundwater is likely to be at depth.

The following provisional assessment is based on the findings of the desk study:

- The possible presence of Made Ground on site, which may affect the foundation design and construction.
- The presence of weak, compressible soils which could impact on the serviceability and long term performance of foundations, pavements and drainage.
- The presence of laterally and vertically variable strata and the impact these could have on construction.
- The presence of obstructions such as drainage, old foundations and the like which could affect construction.
- The potential for soakaways to be used to dispose of storm water run-off.

3.2 Environmental Conceptual Model

A Preliminary Risk Assessment ('PRA') and Conceptual Site Model ('CSM') have been prepared in accordance with CLR11 based on information obtained as part of the desk study. Possible risks associated with potential sources of contamination and sensitive receptors identified have been assessed following a source-pathway-receptor ('SPR') approach in accordance with current UK protocols.

A risk may only exist where a plausible SPR linkage ('pollutant linkage') is present and where the quantity or concentration of a contaminant is sufficient so as to pose harm. Under the statutory definition, "Contamination" may only strictly exist where contaminants pose a risk of harm to a receptor. Risk may be defined as a function of the magnitude and severity of any adverse effects arising from contamination.

For the purpose of the Preliminary Risk Assessment, risk is expressed as a function of the nature of the source, the sensitivity of a receptor, and the magnitude or likelihood of any associated pathway(s) between the source and receptor. The source, pathway(s) and receptor are each rated on a ten-point qualitative scale, with the overall level of risk being expressed as a multiple of those ratings. A summary of the criteria is given in Table 6.

Category	Individual Sources, Pathways and Receptors	Overall Risk Rating (product of SxPxR)
Negligible	0	<1
Very Low	1	1-5
Very Low to Low	1.5	6-9
Low	2	10-14
Low to Moderate	2.5	15-22
Moderate	3	23-35
Moderate to High	3.5	36-55
High	4	56-79
High to Very High	4.5	80-110
Very High	5	111-125

Table 6 Summary of Risk Ranking Scheme

Possible sources of contamination identified or discounted as part of the desk study are summarised in Table 7. Potential contaminants impacting the site have been determined from the desk study together with reference to DoE Industry Profiles, joint EA and NHBC R&D publication 66 and other relevant information sources.

Source	Description	Comments	Rating
Shallow Soils	General background quality of natural soils. Given that most of the site has been quarried, naturally occurring shallow soils are unlikely within the development area, i.e. restricted to the soil profile at the top of quarry faces.	Possible elevated metals, non-metals and organic contaminants.	Very Low (1)
Made Ground	The desk study has identified that Made Ground is likely to be present on the subject site. Generic contaminants could be associated with any Made Ground, if present on site.	Possible elevated metals, non-metals, organic contaminants and asbestos.	High (4)
Coal Depot	The use of the northern portion of the site could have led to the deposition of finer fractions of coal and coke.	Possible elevated concentrations of metals, hydrocarbons and PAH compounds. Combustion risk due to high calorific value of unburned/partially combusted coal and/or coke.	High (4)
Works	The specific use of the Works is unknown but is likely to have been some form or light industrial or possibly maintenance type operation.	Possible elevated metals, non-metals, organic contaminants and asbestos.	High (4)
Electricity sub-station	Sub-stations can be a source of contaminants. However, leakage is typically evident as oil staining on the ground adjacent to a sub-station and no such leakage was observed.	Possible mineral oil and PCB.	Low (2)
Current Retail Park	No specific contaminative activities are undertaken on site and there is extensive built footprint and external	Possible localised hydrocarbon contamination at	Low (2)

Source	Description	Comments	Rating
	hard cover. However, localised leakages such as spills from parked vehicles could occur.	ground level.	
Ground Gases	The desk study has identified former scrub type grass areas in the quarry floor which were subsequently filled. Thus there is the potential for organic material and Made Ground on the subject site and these could result in the presence of ground gases on site.	Possible elevated concentrations of methane, carbon dioxide, depleted oxygen and flow of gas within the ground.	High (4)

Table 7 Possible Sources of Contamination

Furthermore, potential receptors associated with the site and its redevelopment, identified or otherwise discounted, are summarised in Table 8.

Receptor	Description	Comments	Rating
Site Workers	Persons involved in construction and future maintenance of the proposed development.	Ground workers could become exposed during demolition, construction and maintenance.	High (4)
End Users	Users of the proposed redevelopment.	Occupation of the proposed residential properties.	High (4)
Soft Landscaping	Areas of planting including lawns, shrubs, trees, etc.	Lawns and soft landscaping.	Moderate (3)
Built Environment	Buried concrete for foundations etc. and plastics for potable water supply pipes should any unexpected contaminated soils be identified.	Aggressive ground conditions are anticipated.	Moderate (3)
Adjacent Land Users	Sensitive land uses identified within the immediate vicinity.	Residential land use to the north, east and south.	High (4)
Groundwater	Controlled Waters contained within the aquifer(s) beneath the site.	The site overlies a Principal Aquifer and is located within Zone I of a groundwater Source Protection Zone for potable supply.	Very High (5)
Surface Water	Controlled Waters within lakes, rivers and ponds, etc., or coastal waters.	There is no surface water body in proximity to the site. The nearest stream is to the north and uphill from the site and flows from west to east.	Low (1)
Ecological Receptors	Sensitive areas of ecological significance .	None identified on or in close proximity to the site.	Negligible (0)

Table 8 Possible Receptors of Contamination

Where a zero rating is give, there is no plausible pollutant linkage and thus that specific linkage is not considered further in this assessment.

Whilst the above sources and receptors have been identified, Table 9 illustrates the actual exposure pathways by which a contaminant linkage might plausibly exist (overleaf). Migration pathways include:

- Human health exposure through: dermal contact, inhalation of soil dust (including tracked back dust), ingestion of soil, bio-accumulation and ingestion of home grown produce and inhalation of soil derived vapour;
- Dissemination and/or diffusion throughout the soil mass;
- Natural higher permeability zones such as sand lenses, gravel beds, bedding planes, joints and the like;
- Migration along service trenches;
- Vertical migration associated with in-ground structures, e.g. foundations, drainage and soakaways;
- Chemical attack on building materials such as concrete foundations and buried plastics;
- Contamination migration as a plume within the saturated or unsaturated zone;
- Bio-accumulation in vegetation.

		Sources						
		Shallow soils (2)	**Made Ground (4)**	**Coal Depot (4)**	**Works (4)**	**Sub-station (2)**	**Retail Park (2)**	**Ground Gas (4)**
Receptors	**Site Workers (4)**	Ingestion, Dermal Contact, Inhalation (3)	Ingestion, Dermal Contact, Inhalation (3)	Ingestion, Dermal Contact, Inhalation, Combustion (3)	Ingestion, Dermal Contact, Inhalation (3)	Ingestion, Dermal Contact, Inhalation (3)	Ingestion, Dermal Contact, Inhalation (3)	Asphyxiation, Poisoning, Explosion (3)
	End Users (4)	Ingestion, Dermal Contact, Inhalation (4)	Ingestion, Dermal Contact, Inhalation (4)	Ingestion, Dermal Contact, Inhalation, Combustion (3)	Ingestion, Dermal Contact, Inhalation (3)	Ingestion, Dermal Contact, Inhalation (3)	Ingestion, Dermal Contact, Inhalation (3)	Asphyxiation, Poisoning, Explosion (3)
	Soft Landscaping (3)	Plant Uptake (3)	Plant Uptake (3)	Plant Uptake (3)	Plant Uptake (3)	Plant Uptake (3)	Plant Uptake (2)	Asphyxiation, or Poisoning (1)
	Built Environment (3)	Chemical attack (2)	Chemical attack (2)	Chemical attack, combustion (2)	Chemical attack (2)	Chemical attack (2)	Chemical attack (2)	Chemical attack or explosion (2)
	Adjacent Land Users (4)	Ingestion, Dermal Contact, Inhalation (2)	Ingestion, Dermal Contact, Inhalation (2)	Ingestion, Dermal Contact, Inhalation, Combustion (2)	Ingestion, Dermal Contact, Inhalation (2)	Ingestion, Dermal Contact, Inhalation (2)	Ingestion, Dermal Contact, Inhalation (2)	Lateral Migration, Asphyxiation, Poisoning, Explosion (2)
	Groundwater (5)	Downward Migration, Lateral Migration (2)	Downward Migration, Lateral Migration (2)	Downward Migration, Lateral Migration (2)	Downward Migration, Lateral Migration (2)	Downward Migration, Lateral Migration (2)	Downward Migration, Lateral Migration (1)	None (0)
	Surface Water (1)	Downward Migration, Lateral Migration (2)	Downward Migration, Lateral Migration (2)	Downward Migration, Lateral Migration (2)	Downward Migration, Lateral Migration (2)	Downward Migration, Lateral Migration (1)	Downward Migration, Lateral Migration (1)	None (0)

Table 9 Possible Receptors of Contamination

A summary of the preliminary risk ratings is given in Table 10:

		Sources						
		Shallow soils	**Made Ground**	**Coal Depot**	**Works**	**Sub-station**	**Retail Park**	**Ground Gas**
Receptors	**Site Workers**	Low	Moderate to High	Moderate to High	Moderate to High	Moderate	Moderate	Moderate to High
	End Users	Low to Moderate	High	Moderate to High	Moderate to High	Moderate	Moderate	Moderate to High
	Soft Landscaping	Very Low to Low	Moderate to High	Moderate to High	Moderate to High	Low to Moderate	Low	Low
	Built Environment	Very Low to Low	Moderate	Moderate	Moderate	Low	Low	Moderate
	Adjacent Land Users	Very Low to Low	Moderate	Moderate	Moderate	Low to Moderate	Low to Moderate	Moderate
	Groundwater	Low	Moderate to High	Moderate to High	Moderate to High	Low to Moderate	Low	Negligible
	Surface Water	Very Low	Very Low to Low	Very Low to Low	Very Low to Low	Very Low	Very Low	Negligible

Table 10 Potential Pollutant Linkage Risk Rating Summary

3.3 Scope of Works

In summary, the following scope of works for the intrusive investigation was agreed with the Client.

- The construction of window sample boreholes to provide general coverage of the site.
- Logging and sampling of soils from boreholes.
- Screening of soils recovered from boreholes with a Photo-Ionisation Detector (PID) to screen for the presence of volatile organic compounds (VOCs).
- Installation of combined gas and groundwater monitoring wells (with filter pack response zones and sealed with bentonite) within selected window sample boreholes to provide general coverage.
- A ground gas and groundwater monitoring on six occasions at fortnightly intervals.
- In-situ probing across the site to aid pavement design.
- Geotechnical laboratory testing on recovered soil samples to support geotechnical interpretation. (Given the ground conditions encountered, laboratory testing was limited to analysis of soil samples for water soluble sulphate and pH)
- Geochemical laboratory testing on a limited number of soil samples to support a Tier 1 Risk Assessment. The analytical suite included potential contaminants as determined by the desk study assessment. The objective of the analyses was to enable an overview assessment of contamination and it was acknowledged that further investigation and analyses may be required to support detailed design, construction and discharge of planning and/or land quality conditions for any proposed development.

3.4 Investigation Strategy

The positioning of exploratory holes was selected to provide general coverage of the site which remained fully operational throughout the course of the intrusive investigation. Table 11 sets out the general strategy adopted for the environmental assessment, which accounts for the findings of the desk study.

Environmental Area of Concern	Investigation	Positions
General ground conditions	Window sampler boreholes located across the site, coupled with sampling and laboratory analysis.	All
Former Coal Depot area	Window sampler boreholes, coupled with sampling and laboratory analysis.	WS1 to WS4
Former Works area	Window sampler boreholes, coupled with sampling and laboratory analysis.	WS5, WS6, WS8 and WS10
Likely area of deep Made Ground	Window sampler boreholes, coupled with sampling and laboratory analysis.	WS2, WS4 and WS5
Ground gas quality and groundwater levels	Window sampler borehole and monitoring well installation at selected positions.	WS1, WS7 and WS10

Table 11 Summary of Environmental Investigation Strategy

Four gas monitoring wells installed previously by others were also available and monitored as part of the assessment of gassing regime. These were labelled A, B, C and D and are shown on Figure 5.

Soil samples were collected and placed into amber jars and cool boxes on site for transit to the office, where they were stored under chilled conditions (<4°C) prior to final transportation in cool boxes to the laboratory by their in-house courier. Both the geotechnical and contamination testing were undertaken by UKAS accredited laboratories. In addition, geochemical analysis of soil samples was undertaken in accordance with MCERTs protocols. Samples were stored in temperature controlled conditions from sampling until receipt at the laboratory from which time sample preparation and storage was determined by testing requirements and in line with laboratory's protocols.

Table 12 sets out the geotechnical investigation strategy.

Geotechnical Factor	Investigation	Positions
Competent strata	Construction of window sample boreholes across the site with in-situ testing, sampling and laboratory analysis.	All
Shallow ground conditions and potential obstructions	Construction of window sample boreholes across the site with in-situ testing, sampling and laboratory analysis.	All
Pavement construction	Mexecone CBR probing adjacent to boreholes.	All
Groundwater depths	Installation of monitoring wells in window sampler boreholes.	WS1, WS7 and WS10

Table 12 Summary of the Geotechnical Investigation Strategy

Given the sensitivity of the site's setting all of the boreholes were backfilled with bentonite or a monitoring well installed and sealed into either Made Ground or the underlying Chalk.

4.0 ENCOUNTERED CONDITIONS

A factual record of the conditions encountered during the physical investigation of the site is presented in the following sections. The intrusive investigation was undertaken in June 2012 with gas monitoring planned to continue until the end of August 2012.

As stated previously, the site was operational and open to the public throughout the intrusive investigation. In addition, all services remained live throughout the course of the investigation. No site services information was available prior to commencing the investigation and thus all borehole locations were scanned using a cable avoidance tool and signal generator and then commenced with a trial pit excavated by hand to 1.0m bgl to check for buried services. No services were encountered within the exploratory holes.

For further details of the ground conditions, reference should be made to the exploratory hole logs presented in Appendix C, the laboratory testing results in Appendix D and monitoring results in Appendix E.

Unless stated otherwise, all depths are reported as metres below ground level (m bgl).

4.1 Soils

The ground conditions encountered were broadly consistent with those anticipated from the desk study, i.e. with a variable thickness of Made Ground overlying Chalk, as summarised separately in Table 13.

Top (m bgl)	Base (m bgl)	Description
0	0.65 – 5.0+	MADE GROUND: Tarmac over limestone gravel; yellow and grey sandy flint gravel; grey and white chalky sand and gravel; white silty putty chalk with sand pockets and fragments of red brick, flint and possible asbestos cement sheet; grey sandy clay with flint gravel and rare timber and charcoal; brown clay with chalk gravel and fragments of red brick and charcoal.
0.65 – 5.0+	Not proven	CHALK: Structureless CHALK composed of silty putty size chalk – CIRIA Grade Dm; White CHALK with flint – Possible CIRIA Grade C/B

Table 13 Summary of Ground Conditions

No visual or olfactory evidence of contamination, such as by hydrocarbons, was observed in the soils recovered from the window sample boreholes.

Given the potential for solvent, or lighter fraction hydrocarbon compounds to be present within near surface soils, soils recovered from the exploratory holes were screened for volatile organic compounds (VOCs) using a Photoionisation Detector. Soils were screened at 0.25m intervals and at changes in stratum. No VOCs were detected, i.e. 0ppm recorded for all tests.

For more detailed descriptions at specific locations, reference should be made to the exploratory hole logs presented in Appendix C.

4.2 Groundwater

Groundwater was not encountered within any of the exploratory holes during the intrusive investigation or within monitoring wells installed in selected boreholes as part of this investigation. Whilst water was recorded within monitoring well D at depths in the range 5.55m to 6.31m bgl, given the location of this well and ground conditions encountered in its vicinity, it is considered that this was more likely to be perched water within the deep Made Ground rather than groundwater.

It should be noted that groundwater may be present at different depths elsewhere on the site. In addition, perched water could be present within Made Ground and over low permeability soils. Groundwater is unlikely to be encountered within construction excavations, e.g. for drainage and foundations. However, perched water could be present and may require sump pumping or the like to control inflow.

It should also be noted that changes in groundwater levels do occur for a number of reasons including tidal fluctuation, seasonal effects and variations in drainage. Such fluctuations may only be recorded by the measurement of the groundwater level within a standpipe or piezometer installed within appropriate response zones.

If it is necessary to determine the groundwater regime (depth, flow and quality) beneath this site, then additional investigation comprising deep boreholes, clean drilling techniques and aquifer protection measures will be required.

4.3 Obstructions

No obstructions were encountered within the window sample boreholes. However, two exploratory holes were terminated on obstructions at shallow depth.

Given that structures were present historically on the site, that some infilling has taken place and that the site was developed as a retail park at the time of the investigation, the presence of services, deep drainage and buried obstructions at locations elsewhere on the site should be expected, and appropriate contingency measures adopted in the design and construction of the proposed development.

4.4 Ground Gases

Dual purpose gas and water monitoring standpipes were installed within window sampler boreholes WS1, WS7 and WS10, the locations being selected on the basis of the ground conditions encountered and also to provide general coverage of the site. As stated previously, four additional wells (A to D) were discovered on site and these were also monitored. Well A was located close to the northern site boundary and in an area where Made Ground would be anticipated to c. 2m bgl (based on nearest window sample boreholes). Wells B, C and D were located in the portion of the site where historic mapping indicated that the chalk pit may have been deepest and where window sample boreholes proved Made Ground to at least 5m bgl. These positions were monitored for methane, carbon dioxide, oxygen and borehole gas flow through June and August 2012.

Oxygen and carbon dioxide were present in the ranges 18.4-21.6% v/v and 0.0-2.6% v/v whilst methane was not detected. No borehole flow, i.e. 0.0ℓ/hr was recorded at each location. VOCs were not detected, i.e. 0.0ppm, in any of the monitoring wells. Atmospheric pressure was recorded in the range 1000-1024mb and had fallen over the preceding two days from for the monitoring on 6th June and 23rd July 2012.

4.5 Chemical Analysis

In order to assess the general chemical quality of the strata encountered, samples of soils recovered from the exploratory holes were submitted for analysis for a range of commonly occurring brownfield contaminants selected on the basis of the findings of the desk study and supported by DoE Industry Profiles and Environment Agency R&D66.

The testing rationale included sampling and analysis targeted to historic uses of specific areas of the site and also to provide a general coverage of the subject site in relation to the proposed development. Testing was undertaken for a broad range of commonly occurring brownfield contaminants including speciated TPH, PAH and asbestos. Given that on site screening of soils did not detected VOCs, these were not included within the analytical suite.

4.6 Geotechnical Testing

In-situ Mexecone California Bearing Ratio (CBR) tests were undertaken adjacent to window sample boreholes from which CBR values from 2% to >10% were measured. The CBR values were highly variable with depth and between locations. This was considered to be primarily due to the variation in composition of the Made Ground.

Falling head permeability tests were attempted at several locations but hindered in many due to the thickness of Made Ground. Where the Chalk was encountered, the fall in water level was insufficient to determine a permeability value.

Given the presence of variable and locally substantial thickness of Made Ground, geotechnical testing was limited to determining sulphate and pH values in the Made Ground and Chalk.

Nineteen water soluble sulphate and pH determinations were undertaken on samples recovered from the exploratory holes. The results indicate pH values of between pH7.9 and pH10.6 and water soluble sulphate concentrations ranging from <0.010g/ℓ to 0.062g/ℓ.

Laboratory test results are presented in Appendix D.

5.0 ENGINEERING CONSIDERATIONS

Subsequent to intrusive investigation of the site and receipt of the laboratory results, the following interpretative assessments have been made with respect to engineering considerations.

The ground conditions encountered varied from exploratory hole to exploratory hole, but were generally as anticipated from the desk study, i.e. with a variable thickness of Made Ground overlying Chalk.

On the basis of the ground conditions encountered, it is considered that shallow foundations may only be suitable for specific areas of the site and thus a combination of foundations solutions may be most appropriate for the development of this site. A summary of possible foundation solutions is presented in Table 14 below, which draws on the ground conditions encountered.

Exploratory Hole	Foundation Option	Founding depth (m bgl)
WS1	Strip foundation terminating on intact Chalk	2.0-2.5
WS2	Piled foundation	-
WS3	Strip foundation terminating on intact Chalk	2.0-2.5
WS4	Piled foundation	-
WS5	Piled foundation	-
WS6	Strip foundation terminating on intact Chalk	2.0-2.5
WS7	Strip foundation terminating on intact Chalk	1.0
WS8	Strip foundation terminating on intact Chalk	2.0-2.5
WS9	Strip foundation terminating on intact Chalk	2.0-2.5
WS10	Piled foundation	-

Table 14 Possible Foundation Solutions

Where the recommendation in Table 14 is for piled foundations, this is due to the presence of deep Made Ground, i.e. in excess of 3m and for WS2, WS4 and WS5, Made Ground in excess of 5m deep. It is assumed that new structures would generally be two to three storey houses.

It should be noted that the chalk quarry was excavated using bench steps in the quarry faces, as evident in the exposed sections at the time of the investigation. Further bench steps should be anticipated close to buried sections of quarry face. As such, plots close to the existing quarry face could be situated over a bench step and thus in order to minimise the risk of differential settlement or catastrophic foundation failure, it may be necessary to use piled foundations on such plots due to the likely significant variation on depth to Chalk.

5.1 Conventional Foundations

Whilst it is possible that conventional foundations could be used on site, they should pass through any Made Ground, disturbed or reworked ground and terminate within previously undisturbed blocky Chalk. As set out in Table 14, the minimum founding depth for conventional foundations will vary due to the depth of Made Ground varying across the site.

The intact Chalk is considered to be non-shrinkable, as defined in NHBC Standards. However, heave precautions would be recommended for foundations exceeding 1.5m depth, or as indicated by NHBC Standards.

On the basis of ground conditions encountered a net allowable bearing capacity of 200kPa is recommended for the intact blocky Chalk for which settlement should remain within tolerable limits.

Foundations should terminate wholly within soils of similar engineering characteristics in order to minimise the potential for differential settlement.

5.2 Piled Foundations

Further investigation, e.g. the construction of cable percussion boreholes to depths of 15-20m bgl, will be required to support the design of piled foundations or ground improvement. As stated previously, any such investigation will require the use of clean drilling techniques and aquifer protection to ensure that no migration pathways into the Chalk or groundwater are created.

Given the presence of deep Made Ground partially infilling a former chalk quarry, the underlying aquifer status and site's location within Zone 1 of a groundwater abstraction source protection zone, it will be necessary to consult with and gain approval form the Environment Agency with regards to the selection and use of piled foundations on this site. At this stage, it is considered that continuous flight auger (CFA) piles are likely to be acceptable due to the short construction time, the pile bore being full of arisings or concrete at all times during construction and concrete being pumped into the bore under pressure from the base up thereby closing any potential migration pathways between Made Ground, perched water and the aquifer beneath the site.

5.3 Floor Slabs

Given the presence of deep Made Ground, it is recommended that suspended ground floor slabs are used throughout the proposed development.

5.4 Excavations

Shallow excavations on level ground should remain stable in the short term assuming an absence of water ingress, although may require battering to a safe angle if open in the medium to long term. It is anticipated that all excavations would become unstable where perched water or groundwater are encountered without measures to control groundwater and support excavation faces.

Deep excavations, or those taken beneath any water ingress are likely to become unstable and would be likely to require the use of dewatering and support.

Appropriate Health and Safety precautions should be adopted and construction planned in such a way as to avoid site personnel entering excavations.

5.5 Pavements

In-situ CBR tests were undertaken using a Mexecone adjacent to each borehole location, from which CBR values of between 2% and 10% were recorded. The results varied significantly with depth and between locations and thus a lower bound CBR value of 2% is recommended. The formation is likely to be frost susceptible thus requiring a minimum pavement thickness of 450mm.

Any hard or soft spots in the formation level may induce reflective cracking in the pavement and allowance should be made for removing hard spots that may be present. In addition, an allowance should be made for proof rolling coupled with excavation and replacement of soft spots.

5.6 Sub-Surface Concrete

The results of the water soluble sulphate and pH analyses to date indicate that buried concrete should be designed in accordance with Class DS-1 of BRE Special Digest 1, with an ACEC class of AC-1. The advice of this publication should be taken for the design and specification of all sub surface concrete.

5.7 Soakaways

In-situ falling head tests undertaken in the boreholes were inconclusive, i.e. it was not possible to calculate permeabilities to aid soakaway design, and it is considered unlikely that soakaways would perform satisfactorily due to the variability of the ground conditions.

Given the variability in depth and composition of Made Ground, coupled with long term performance issues, potential collapse of surrounding ground and possible mobilisation of contaminants, soakaways should not discharge in to the Made Ground on this site. Whilst deep bored soakaways are not likely to be accepted by the EA, it may be possible to construct deep chambers to discharge into the upper surface (unsaturated zone) of the chalk, subject to testing and consultation with the EA.

It is understood that the current site storm water drainage system comprised deep chambers (possibly in excess of 6m deep) discharging in to the Chalk.

5.8 Quarry Faces

The site is located within a former chalk pit and whilst the deepest portion of the pit appears to have been infilled, the northern and southern site boundaries are marked by inclined to near vertical chalk exposures which ranged in height from c. 1-2m to an estimated 10m in the north-western corner of the site. Some evidence of benching, i.e. a stepped face profile, was observed on the northern boundary exposure. A chain link type fence, presumably a rock face catch fence, was present at ground level close to the toe of the exposed chalk faces around the site.

An inspection of the exposed chalk faces was undertaken from ground level as part of the ground investigation. Records of the chalk face inspection are presented in Figure 4 and on photographs presented in Appendix A.

The chalk face inspections revealed that the main mass exposed in the quarry faces comprised blocky Chalk, probably of CIRIA Grade A or B, with numerous sub-horizontal bedding planes and sub-vertical joints and fractures (discontinuities). The strata exposed in the northern face appeared to dip towards the north or north-east at a shallow angle, i.e. back into the face and the strata on the southern boundary exposure appeared in general to dip towards the east or possibly south-east. However, the southern boundary quarry face was not a linear feature and thus whilst in some sections of the face, the strata appeared to dip back into the face, in other sections, the orientations were less favourable and failures were evident as loss of blocks and slabs of chalk from the face.

In some sections higher up on the northern face, discontinuities had been widened by birds nesting on/in the quarry face. Nonetheless no extensive and open discontinuities were identified.

Many of the exposed slope sections had been colonised to a greater or lesser degree by various plants and trees, such that on lower sections and less steep sections of the faces, shrubs and trees were observed to be growing out of the chalk faces, with roots entwined around blocks of chalk within the exposures. Removal of such vegetation or roots would have a destabilising effect on the exposures.

The quarry face angles were estimated to vary from approximately 60-80°, with the lower portions in many sections standing at a lower angle estimated to be 30-50° although this was in part due to the presence of scree and weathering debris derived from the upper portions of the exposures. Equally, the presence of a bench step in the lower portion of the exposure in the north-western section of the site served to reduce the overall slope angle locally.

The loss of large blocks from the exposed chalk faces was evident in localised areas, including a relatively large area high up in the north-western corner of the site. However, in most areas a layer of tufa, a redeposited fine textured chalk, was observed over the chalk mass, thus indicating that faces have been sufficiently stable for general weathering, washing of fines from the face and redeposition on the face to have occurred over a protracted time.

With reference to papers on chalk cutting stability by Phipps & McGinnity (2001) and Williams (1990) general stability conditions can be predicted for a range of face/slope angles, as set follows, assuming that bedding and other discontinuity orientations are favourable, i.e. large scale block sliding or toppling failure mechanisms are unlikely, and that solution features are not present in the exposure.

- Slopes of 4(v):1(h), i.e. 75°, tend to be stable in the short term for most chalk types and tend to be stable in the long term for massive chalk, albeit with some spalling (due to general weathering).
- Slopes of 2(v):1(h), i.e. 60°, often comprise actively eroding chalk cliffs (due to aggressive weathering/erosional processes).

- Slopes of 1.5(v):1(h), i.e. 53°, tend to be stable cut slopes but with some spalling and loss of vegetation.
- Slopes of 1(v):1(h), i.e. 45°, tend to comprise stable cut slopes for long term maintenance of vegetation.
- Slopes of 1(v):1.5(h), i.e. 33°, tend to be geologically stable slopes on chalk escarpments and a stable cut angle for weathered chalk.

On the basis of the observations made during the chalk face inspections, it is considered likely that the majority of exposures on this site stand steeper than 2(v):1(h) and many significantly steeper. The lack of widespread vegetation, blocky chalk visible in the exposures, scree/debris at the toe and surface tufa are considered to correspond well with the characteristic observations for steep exposures as set out above and thus the exposures, in general, are likely to be relatively stable in the long term, albeit that face weathering, spalling and small clasts and occasional loss of blocks from the face, will continue to occur over time. Some increase in face degradation may be anticipated on sections of the southern face where bedding and discontinuity orientations are unfavourable.

In addition, it is noted that historic mapping indicates the main chalk pit faces were formed some time before 1897 and thus appear to have stood relatively unchanged for approximately 115 years (at the time of writing). This would support the observation that discontinuity controlled mass failure by toppling or block sliding has not occurred. The primary mechanism affecting the overall condition of the exposed chalk faces thus appears to be weathering action such as freeze-thaw action breaking chalk and causing scree size debris to spall from the face and general weathering by rain (including possible acidic rain) although the latter would be reduced to some degree by the surface layer of tufa observed in many sections of the exposed faces.

In general, there are several options which could be considered in terms of protecting the development and end users from possible instability of the chalk faces. These include but are not limited to:

- Burial of the exposed faces – this would entail importing unrealistic volumes of material on to the site and given the site's location any such works may not gain approval from the EA, or require onerous compliance checks. In addition this would raise the site level outside of likely permissible development levels and would destabilise the slope down to the A3(M) on the western site boundary (thus unlikely to gain Highways Agency approval either);
- Partial burial of the faces by forming new soil slopes to cover the chalk. This is achievable, as can be seen at the western end of the former Paulsgrove chalk quarry, but would be both technically difficult to construct (material selection, EA compliance requirement, placement and compaction at high levels) by depositing earthworks fill at the toe and building slopes to the top of the current exposures. This would also result in significant loss of development land;
- Placement of rock mesh/fencing directly over the exposed faces and 'pinning' the mesh to the face using rock bolts. This method may serve to reduce the impact of localised block sliding or toppling where unfavourable discontinuity orientations are present, but would not reduce mass weathering and creation of scree. This would also require some form of long term maintenance agreement and specialist contractors/plant to install the system, possibly with little overall benefit;

- Fix a lightweight mesh over the exposed faces using small anchor bolts and spray a shotcrete (fibre reinforced spray applied concrete) render over the mesh to prevent weathering. This option is likely to require approval from the Highways Agency due to the proximity of the A3(M) cutting, Local Authority Planning Department, due to visual impact, the EA and possibly the local water company due to the sensitivity of the chalk. In addition, it is probable that some allowance for long term maintenance could be required given the likely exposure of the northern quarry face to salt laden air from the Solent.
- Leave the exposed faces as they are (including vegetation and roots on/in the faces) and provide a sterile 'drop zone' and catch fence at the toe of the exposure where scree could collect and if any blocks were to fall from the face, these would be retained by the fence. This is similar to the current solution but would benefit from periodic inspection and possible clearance of debris from behind the catch fence. Typically catch fences are set back 2-10m from the face, depending on face height, angle and catch fence height.

On the basis of the observations made in terms of face heights, angles, primary weathering mechanisms and apparently only localised unfavourable discontinuity orientations, it is considered that the latter option would be suited to the conditions on site and likely failure mechanisms.

6.0 ENVIRONMENTAL CONSIDERATIONS

A Generic Quantitative Risk Assessment (GQRA) incorporating the results of the desk study and ground investigation was undertaken, the findings of which are presented in the following sections.

6.1 Outline Risk Assessment

A number of plausible pollutant linkages were identified as part of the desk study. The investigation did not encounter conditions that warranted a revision of the preliminary Conceptual Site Model.

6.2 Ground Gases vs. Site Workers

Site workers may be affected by accumulations of gases within confined spaces such as manholes, chambers, deep excavations, trenches, or the like. Affects may include inhalation of asphyxiating or poisonous gases, or explosion of combustible gases. For a preliminary assessment, the results of the land gas monitoring have been compared against published occupational exposure limits.

A long-term time weighted 8-hour average (TWA) Workplace Exposure Limit (WEL) was set at 500ppm (0.5%v/v) for carbon dioxide by the Health and Safety Executive (2005). No respective TWA-WEL or short term ST-WEL was given for oxygen, although generally the safe working minimum concentration for oxygen is taken as 19.5%v/v. Furthermore, no TWA-WEL or ST-WEL was given for methane, although methane may be potentially explosive at concentrations in the order of 5% to 15% and may be toxic in concentrations exceeding 30%.

The gas monitoring undertaken to date has detected carbon dioxide in the range 0.0-2.6%v/v, but methane was not detected, i.e. 0% v/v, respectively. Nonetheless, it is recommended that safe working practices are developed for any ground works on the site and that adequate protection is provided for ground workers during any ground works.

Additionally, site managers are responsible for the safety of persons in their employ and therefore any person working within any confined spaces should only do so after the appropriate health and safety assessments, training and development of safe working practices in accordance with the HSE guidance entitled "Work in Confined Spaces" have been undertaken. The concentrations of land gases recorded within the boreholes may not accurately reflect the conditions that may develop within some confined spaces such as manholes and chambers, which may be subject to the generation of gas from other sources and therefore pre-monitoring of any confined space is strongly recommended.

6.3 Ground Gases vs. End Users

Recommendations on acceptable gas levels recorded in the ground beneath or adjacent to buildings are given in a variety of publications. For the purpose of this assessment,

the results have been evaluated in terms of CIRIA C665 [2007], BS8485 [2007] and NHBC 10627-R01 (04) [2007].

The gas assessment considers the impact of gas at pressure in the ground, since a low concentration coupled with a high flow could present a greater hazard than a high concentration with little or no flow. On the basis of the gas data collected to date and the gas assessment presented in Appendix E, it is considered that the site's gassing regime is representative of Characteristic Situation 1 (BS8485 and CIRIA) and Green (NHBC) for which no specific gas protection measures are considered to be required.

Notwithstanding this, gas monitoring is currently ongoing and thus the gassing regime is subject to possible change. As such, it may be prudent to assume at this stage that gas protection measures are required. If the further gas monitoring, undertaken in line with best practice, demonstrates the absence of gas hazard, then no protection measures would be required.

Basic gas protection measures would comprise:

- Passively ventilated sub-floor void;
- Well constructed ground floor slab;
- Minimum penetration of services through the slab;
- Gas membrane (suitable for providing protection from methane and carbon dioxide) laid across the floor slab and walls, with all joints and penetrations sealed into the membrane.

The final design measures should be considered in accordance with the protection measures scoring system as set out in BS8485. Guidance on the design and installation of gas protection measures is presented in BRE BR414.

6.4 Ground Gases vs. Soft Landscaping

The monitoring to date has not indicated the presence of carbon dioxide or methane in the ground and whilst a detailed arboricultural or ecological survey was outside of the scope of the works undertaken by Geo-Environmental, no significant evidence of harm to the existing vegetation was noted either on site or in close proximity to the site.

6.5 Ground Gases vs. Adjacent Land Users

The desk study did not identify any specific ground gas hazards on the subject site and thus at this stage, it is considered that no specific action would be required to protect adjacent land users.

Care should be taken to ensure that the development does not create any new migration pathways from which a pollutant linkage to adjacent land users could be created, should any gases be identified.

6.6 Soil Contamination vs. Site Workers

Guideline concentrations for contamination with respect to the health of site workers are cited under HSE guidance document HSG66 entitled Protection of Workers and the General Public during the Development of Contaminated Land.

Despite Made Ground being encountered within investigation locations across the site, laboratory testing undertaken to date on the soils has not indicated the presence of widespread contamination on site, although some localised contamination has been identified, when compared to appropriate standards for the proposed residential end use. Exceedances against long term human health screening criteria for the proposed residential end use have been identified in:

- WS6 at 0.7m – PAH compounds
- WS9 at 0.2m – PAH compounds

In addition, soil leachate testing has identified the following exceedances with regards to protection of water resources:

- WS2 at 3.0m – leachable Benzo(a)pyrene and TPH
- WS5 at 2.5m – leachable Benzo(a)pyrene
- WS10 at 1.0m – leachable TPH

Whilst no asbestos was detected in the soil samples analysed, rare fragments of possible asbestos cement sheeting were encountered within the Made Ground and given that the site comprises a partially infilled chalk pit, the presence of pockets of asbestos containing materials buried within the general mass of Made Ground cannot be ruled out.

It is recommended that a COSHH assessment is prepared in order to provide a robust assessment of safe working practices on the site. Any such assessment should account for the results of the laboratory testing and findings of the intrusive investigation.

This assessment has been prepared in order to provide an indication of possible risks posed to site workers for the purposes of environmental legislation. It remains the responsibility of the main contractor and their appointed sub-contractors to prepare their own further risk assessments in accordance with Health and Safety legislation in order to protect persons in their employ. Special consideration should be given to the provisions of the Construction (Design & Management) Regulations 2007, Health and Safety at Work Act and the Control of Substances Hazardous to Human Health regulations in order to protect the safety of persons in their employ. Additional guidance can be sought from the CIRIA publication entitled "A Guide for Safe Working on Contaminated Sites".

6.7 Soil Contamination vs. End Users

The presence of a possible contaminant does not necessarily imply that a site or area is contaminated or that there is any unacceptable risk to human health. A Preliminary Quantitative Risk Assessment has been undertaken in order to evaluate any

unacceptable risks posed to human health with respect to the proposed redevelopment. It should be noted that this assessment is protective of the chronic long-term effects of contaminants, which is also likely to be protective of any possible immediate acute effects.

For determinants considered a priority in terms of human health, the results of the chemical analysis have been compared against the respective Soil Guideline Values (SGVs), Generic Assessment Criteria (GAC) published (LQM 2009) and GAC published by CL:AIRE (2010) at the time of preparing this report. Where relevant to the specific SGV/GAC, Soil Organic Matter (SOM) content has been considered. SOM was estimated from Total Organic Carbon content as reported for each individual sample.

The exploratory holes were located to provide a general cover of the site and to allow for consideration of the proposed development. Whilst soil sampling was undertaken on a targeted and non-targeted basis, i.e. focusing on specific uses of some areas of the site and providing general coverage, selection of samples for laboratory analysis was targeted based on a combination of the findings of the desk study and observations made during the ground investigation. Therefore, the test data have been compared individually to the proposed residential land use with private gardens.

Whilst the test results do not indicate site-wide contamination, apparently localised exceedances have been identified as summarised in Table 15.

In addition, screening for asbestos fibres or asbestos containing materials within samples analysed did not identify the presence of any asbestos in soil.

Determinand	SGV/GAC (mg/kg)	Reported Concentration (mg/kg)	Location	Stratum
Benz(a)anthracene	3.1	16.2	WS9 at 0.2m	Made Ground
Chrysene	6.0	15.8	WS9 at 0.2m	Made Ground
Benzo(b)fluoranthene	5.6	13.7	WS9 at 0.2m	Made Ground
Benzo(k)fluoranthene	8.5	13.5	WS9 at 0.2m	Made Ground
Benzo(a)pyrene	0.83	2.6 16.1	WS6 at 0.7m WS9 at 0.2m	Made Ground Made Ground
Indeno(123-cd)pyrene	3.2	3.4 11.6	WS6 at 0.7m WS9 at 0.2m	Made Ground Made Ground
Dibenz(ah)anthracene	0.76	1.0 2.8	WS6 at 0.7m WS9 at 0.2m	Made Ground Made Ground

Table 15 Summary of Human Health Exceedances

The presence of apparently sporadic contamination in near surface soils is considered likely to require remedial action to prevent harm to end users. It appears from the testing undertaken to date that 'pockets' or zones of contaminated soil are likely to be present at shallow depth in some areas of the site. On this basis, it is possible that localised remediation could serve to protect end users from soil contamination in gardens and soft landscaping.

Possible remedial options for soft landscaped areas include:

- Delineation of localised contaminated soils, excavation, off-site disposal and replacement with uncontaminated subsoil and/or topsoil;

- Construction of a soil based cover system, which is likely (based on preliminary estimates using BRE Cover System calculations) to be in approximately 0.6m to 1.0m thick and require the placement of uncontaminated subsoil and topsoil. This could result in raising ground levels in gardens;
- Construction of a capillary break layer and cover of uncontaminated soils in garden areas. This is likely to require a reduced total thickness compared with a purely soil based cover system.

It may be possible through extensive additional sampling and analysis of shallow soils to further characterise the contaminative status of shallow soils across the site and identify areas requiring remedial action.

Given that the contamination appears to be sporadic rather than specific to a given discrete area of the site, or specific band of Made Ground, localised removal may not be the most efficient or effective means of protecting end users. Therefore, it is considered that a cover system may provide a more robust means of protecting human health across the site and would negate the requirement for extensive additional investigation. It is therefore recommended that a cover system is placed across all soft landscaping areas (i.e. gardens, amenity areas, verges and communal open space). Whilst further investigation may enable amendment or possible exclusion of a cover system locally, the following is recommended for protection of end users at this stage and assumes that development levels will remain broadly consistent with current site levels :

- Removal of hardstanding for off-site disposal or crushing (concrete) to reveal the top of the Made Ground;
- Lay a basal geotextile separator to prevent cover system mixing with Made Ground;
- Place 0.15m thick layer of crushed concrete to act as a capillary break layer and physical dig barrier;
- Lay a second geotextile separator over the crushed concrete to prevent infiltration by subsoil;
- Place subsoil (certified uncontaminated subsoil only) to a minimum thickness of 0.15m;
- Finish to ground level with certified uncontaminated (chemically and physically) Topsoil with a minimum thickness of 0.15m.

Where a working platform is required, e.g. for piling, this could be retained to form the capillary break layer.

With reference to the proposed development where the exceedances of SGVs and GAC for residential land use identified are situated beneath a proposed building footprint or external hard cover, the development would serve to break potential exposure pathways and thus break potential pollutant linkages. As such, no plausible enduring pollutant linkage would arise and it is considered that no additional remedial action would be required in hard landscape areas.

Given the absence of Topsoil on the site, it is likely that it will be necessary to import Topsoil on to the development. Prior to importation, the chemical, physical and nutritional suitability of all Topsoil and subsoil should be verified. Importation of topsoil or subsoil from unverified or unsuitable sources would require their removal from site and replacement with suitable materials. As a matter of good practice, it is

recommended that the location, approximate extent and thickness of any imported subsoil and/or topsoil are recorded and presented in the Validation/Verification Report to be prepared by the Environmental Consultant. A copy of the recommended specification for imported subsoil and topsoil is provided in Appendix F.

6.8 Soil Contamination vs. Soft Landscaping

ICRCL in publication 70/90 1990 entitled 'Notes on the Restoration and Aftercare of Metalliferous Mining Sites for Pasture and Grazing' provides assessment criteria for a number of potentially phytotoxic contaminants in terms of new planting. No other UK specific soil guideline concentrations were available to provide an assessment of possible phytotoxic effects on plant growth.

Given that a suitable averaging area for soft landscaping may vary considerably between the root zones of grasses to that of a juvenile immature tree, no appropriate averaging area was applicable to this assessment. Therefore, the results of the chemical analysis were evaluated for this SPR linkage singularly.

The results of the chemical analysis for determinands known to pose a potential phytotoxic risk to plant growth are summarised in Table 16, together with the respective adopted Generic Assessment Criteria (GAC) for plant growth.

Determinand	Phytotoxicity GAC Value (mg/kg)	GAC Exceedance
Zinc	1,000	No
Cadmium	50	No
Copper	250	No
Arsenic	1,000	No

Table 16 Summary of Plant Phytotoxicity Assessment

The phytotoxicity assessment indicated that no concentrations exceed the assessment criteria for phytotoxicity. The advice regarding imported topsoil as presented in Section 6.7 would also apply for soft landscaping.

6.9 Soil Contamination vs. Built Environment

Recommendations with respect to pH and sulphate in relation to buried concrete are made in Section 5.6.

With reference to UKWIR guidance, it is considered that precautions would be required to protect water supply pipes from contaminants/harmful substances within the ground. As such, an allowance for barrier pipe and/or ductile iron mains should be made. The water supply company should be consulted in order to confirm their specific requirements in this respect. As a matter of good practice and to maximise the protection to maintenance workers, it is recommended that clean, granular backfill is used in service runs and that marker tapes are used for all buried services.

6.10 Soil Contamination vs. Adjacent Land Users

The surrounding land uses are noted to be broadly consistent with the proposed site use comprising residential areas to the north, east and south and the A3 (M) cutting to the west. Whilst sporadic contamination in near surface soils has been identified within the subject site, the substances identified are not considered mobile and thus the mechanisms for exposure of adjacent land users is limited to the generation of soil derived dust and soil particles becoming airborne if disturbed during dry weather within the construction phase.

It is recommended that dust suppression techniques, e.g. damping down exposed soils, are employed during the demolition and construction phases on site in order to minimise the potential for airborne migration of specific hazards and to manage potential nuisance issues for adjacent land users.

6.11 Soil Contamination vs. Groundwater

The desk study identified that the site comprised a former chalk pit which had been partially infilled. The Chalk comprises a Principal Aquifer and the site is located within the Inner Zone (Zone I) of a groundwater abstraction Source Protection Zone (SPZ). It is therefore possible that mobile or leachable contaminants within the infill/Made Ground materials within the chalk pit could impact on the quality of the groundwater beneath the site and thus impact on an active drinking water supply.

Four samples of Made Ground were selected from depths in the range 1.0-3.0m bgl at locations across the site and were analysed for a leachate suite similar to the general soil samples for human health risk assessment. Given the site's location within Zone I of an active water supply SPZ, the analytical results were compared against Drinking Water Standards (DWS). This comparison is somewhat conservative as the DWS sets out permissible concentrations of various potentially harmful elements and substances at the point of consumption, i.e. consumers' taps, and thus takes no account of likelihood of release of leachate from a soil body, dilution and attenuation within the unsaturated and saturated zone between the source point and abstraction point.

Elevated concentrations, i.e. exceeding the respective DWS thresholds, were identified within the samples analysed from WS2 at 3.0m (leachable TPH and Benzo(a)pyrene); WS5 at 2.5m (leachable Benzo(a)pyrene); and WS10 at 1.0m (leachable TPH). As indicated above, the mere presence of a leachable concentration exceeding the DWS does not mean that remedial action is necessary but that further assessment should be conducted.

With reference to the exploratory hole logs, it can be seen that each of the samples, and the Made Ground mass in general, comprised silty clay size soil and/or silty putty chalk, both of which are considered to have negligible permeability both laterally and vertically. As such, whilst testing has recorded leachable concentrations which could pose harm if present at the point of consumption, there is no plausible, realistic mechanism for such substances to migrate from the Made Ground mass, through any unsaturated zone and groundwater body (ignoring dilution or attenuation) and impacting on the quality of abstracted groundwater. As such, in the absence of a plausible 'pathway' it is

considered that no pollutant linkage exists and thus no remedial action is warranted for the current condition.

It should be noted that if development of the site were to include the construction of piled foundations extending in to the Chalk, the piles could in theory create vertical migration pathways by which groundwater could become impacted. Therefore, if piles are to be used, the method of construction would require approval from the EA.

6.12 Groundwater Contamination vs. Site Workers

The establishment and enforcement of safe working practices and provision of suitable and adequate protection as discussed in Section 6.6 would be prudent.

6.13 Groundwater Contamination vs. End Users

In the absence of groundwater at shallow depth beneath the site, the risk posed to end users is considered to be minimal and unlikely to require remedial action to protect end users.

6.14 Groundwater Contamination vs. Soft Landscaping

No international standards exist with respect to the chemical quality of groundwater with respect to protecting soft landscaping from effects of contamination. In addition, vegetation on and in proximity to the site did not appear to be affected. Given the depth to groundwater identified, it is concluded that negligible risk is posed in this respect and that no specific remedial measures are required.

6.15 Groundwater Contamination vs. Built Environment

Protection measures for the Built Environment as discussed in Section 6.9 are considered appropriate.

6.16 Groundwater Contamination vs. Adjacent Land Users

Surrounding land uses were identified to be broadly consistent with the proposed use of the subject site. Given the depth to groundwater identified, it is concluded that negligible risk is posed in this respect and that no specific remedial measures are required.

6.17 Groundwater Contamination vs. Controlled Waters

Groundwater was not present within the depth range of the investigation and thus the quality and contaminative status of groundwater beneath the site cannot be reported.

Whilst it is possible that further investigation including sampling and analysis of groundwater may be required to clarify the assessment, it is considered unlikely that

remedial action would be warranted due to the absence of any specific on-site source for groundwater contamination.

6.18 Waste Disposal

Although not part of the environmental risk assessment, the following information has been provided with respect to the disposal of arisings generated as part of the proposed redevelopment.

Two soil samples were submitted to the laboratory for Waste Acceptance Criteria (WAC) testing. The results of WAC testing showed the sample from WS2 at 1.5m bgl to fall within the classification for Inert Waste, whilst the sample from WS4 at 1.5m fell into the Non-Reactive Hazardous Waste (in non-hazardous landfill) classification due solely to the sample's organic content. On this basis it is recommended that an allowance is made for the removal of some spoil as Hazardous Waste, principally from drainage and foundation excavations.

However, it may be possible to develop a waste management plan and material handling strategy in line with the Code of Practice for the Definition of Waste (as promoted by CL:AIRE) so as to avoid or minimise the generation of waste for disposal from this site.

Other materials disposed of from site as part of the demolition or remediation process may require disposal separately. All materials containing dangerous substances e.g. tar or bitumen, asbestos, mercury, hydrocarbons and PCBs are likely to be classified as Hazardous Waste and therefore susceptible to the relevant legislative controls.

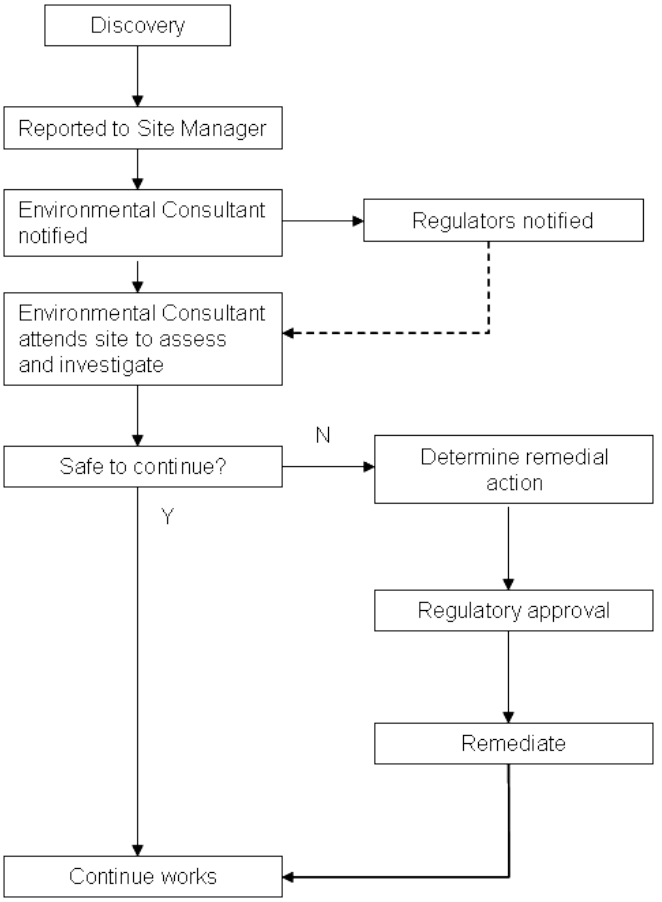
6.19 Discovery Strategy

Whilst an investigation has been undertaken on the site, it remains possible that unexpected soil conditions may be encountered during the process of site demolition, clearance and construction.

Examples may include oily pockets within the soil, pockets of cement boarding or fibrous materials within the soil, black ashy materials, soils exhibiting strong odours, brightly coloured materials and former structures or brickwork.

Should previously undiscovered contamination be encountered during construction by the ground workers, this should be reported to the Site Manager immediately in order that any necessary inspection may be made. Records should be kept and samples submitted for analysis where conditions encountered are not as anticipated. The results of any such testing should be sent to the authorities for consultation.

The process is shown below.



Discovery Strategy Process

A copy of the discovery strategy should be lodged on site and provisions made to ensure that all workers are made aware of their responsibility to observe, report and act on any potentially suspicious or contaminated materials they may encounter.

7.0 RECOMMENDATIONS

It is recommended that the following further works be carried out on the site prior to development works commencing:

- Further investigation in due course to delineate the areas of deep Made Ground and support foundation design;
- Construction of deep boreholes to support design of piled foundation. Any boreholes penetrating through the base of the former chalk pit should be constructed using clean drilling techniques and aquifer protection measures to avoid cross contamination and/or the creation of new migration pathways in to the Principal Aquifer beneath the site;
- Piling Risk Assessment;
- Further sampling, analysis and assessment of near surface soils across the site;
- Groundwater sampling, analysis and risk assessment with respect to controlled waters;
- Continued gas monitoring at monthly intervals for a further six months to provide a complete annual cycle of monitoring data, with at least two rounds undertaken during falling atmospheric pressure;
- Implement a regime to treat and eradicate the infestation of Japanese Knotweed in the south-western corner of the site. This is likely to require numerous treatments and thus could extend into and possibly beyond the construction phase.

It should be noted that where any deep borehole drilling or piling into the aquifer is proposed, this work should only be undertaken once the local water company has been consulted and measures to limit or prevent turbidity within the groundwater body have been agreed. This is critical in terms of protecting groundwater and the local potable water supply.

Furthermore the following will be required as part of site development works:

- Watching brief for a Geotechnical Engineer in relation to any works on or close to quarry faces, where the existing face could be altered or damaged;
- Possible upgrading or replacement of catch fences at the toe of exposed quarry faces;
- Preparation of a Remediation Method Statement;
- Possible EA requirement for a groundwater monitoring plan to verify groundwater quality pre, during and post development, i.e. to demonstrate that the development has not affected the groundwater regime or quality;
- Site inspections (including possible sampling and analysis of soils beneath existing buildings) during demolition and site clearance. If the remedial solution for gardens comprises the construction of a capillary break layer and clean soil cover, then further soil testing may not be necessary;
- Inspection and validation of the cover system in soft landscaped areas;
- Possible requirement for inspection and validation of gas protection measures on all plots;
- Certification of chemical, physical and nutritional suitability of any subsoil and/or Topsoil to be imported on to the development;

- Watching brief or call out attendance of the Environmental Consultant under the Discovery Strategy.

FIGURES



Project:	Havant Retail Park, PO9 3NA			**Title**	Site Location Plan
Client:	Linden Homes Southern Limited			**Geo-Environmental Services Ltd** **28 Crescent Road, Brighton, BN2 3RP** **T: 01273 699 399 F: 01273 699 388** **E: mail@gesl.net W: www.gesl.net**	Geo-Environmental
Ref No:	GE8756	**Revision:**	0		
Drawn:	GR	**Date:**	24/05/2012		
Figure:	1	**Scale:**	Not To Scale		



Project:	Havant Retail Park, PO9 3NA			**Title**	Site Layout Plan
Client:	Linden Homes Southern Limited			**Geo-Environmental Services Ltd** **28 Crescent Road, Brighton, BN2 3RP** **T: 01273 699 399 F: 01273 699 388** **E: mail@gesl.net W: www.gesl.net**	Geo-Environmental
Ref No:	GE8756	**Revision:**	0		
Drawn:	GR	**Date:**	30/05/2012		
Figure:	2	**Scale:**	Not To Scale		



Project:	Havant Retail Park, PO9 3NA			**Title**	Site Photograph Locations
Client:	Linden Homes Southern Limited			**Geo-Environmental Services Ltd** **28 Crescent Road, Brighton, BN2 3RP** **T: 01273 699 399 F: 01273 699 388** **E: mail@gesl.net W: www.gesl.net**	Geo-Environmental
Ref No:	GE8756	**Revision:**	0		
Drawn:	GR	**Date:**	17/08/2012		
Figure:	3	**Scale:**	Not To Scale		



Project:	Havant Retail Park, PO9 3NA			**Title**	Chalk Face Inspection Plan
Client:	Linden Homes Southern Limited			**Geo-Environmental Services Ltd** **28 Crescent Road, Brighton, BN2 3RP** **T: 01273 699 399 F: 01273 699 388** **E: mail@gesl.net W: www.gesl.net**	Geo-Environmental
Ref No:	GE8756	**Revision:**	0		
Drawn:	GR	**Date:**	17/08/2012		
Figure:	4	**Scale:**	Not To Scale		



Project:	Havant Retail Park, PO9 3NA			**Title**	Exploratory Hole Location Plan
Client:	Linden Homes Southern Limited			**Geo-Environmental Services Ltd** **28 Crescent Road, Brighton, BN2 3RP** **T: 01273 699 399 F: 01273 699 388** **E: mail@gesl.net W: www.gesl.net**	Geo-Environmental
Ref No:	GE8756	**Revision:**	0		
Drawn:	GR	**Date:**	30/05/2012		
Figure:	5	**Scale:**	Not To Scale		

APPENDIX A

Site Photographs



Plate 1 View NW across car park



Plate 2 View SE from car park



Plate 3 View SW across site from northern boundary



Plate 4 Crash barrier and highway fence on boundary with Bedhampton Hill Road
(near vertical chalk face dropping to site level beyond the trees)



Plate 5 View southwards along the site's western boundary



Plate 6 Japanese Knotweed infestation in SW corner of the site



Plate 7 New growth from Japanese Knotweed infestation



Plate 8 Near Vertical chalk face with catch fence at toe and vegetation



Plate 9 Concrete buttress on chalk face beneath the Bedhampton Hill Road bridge over the A3(M) cutting (Note some loss of blocky chalk from the face)

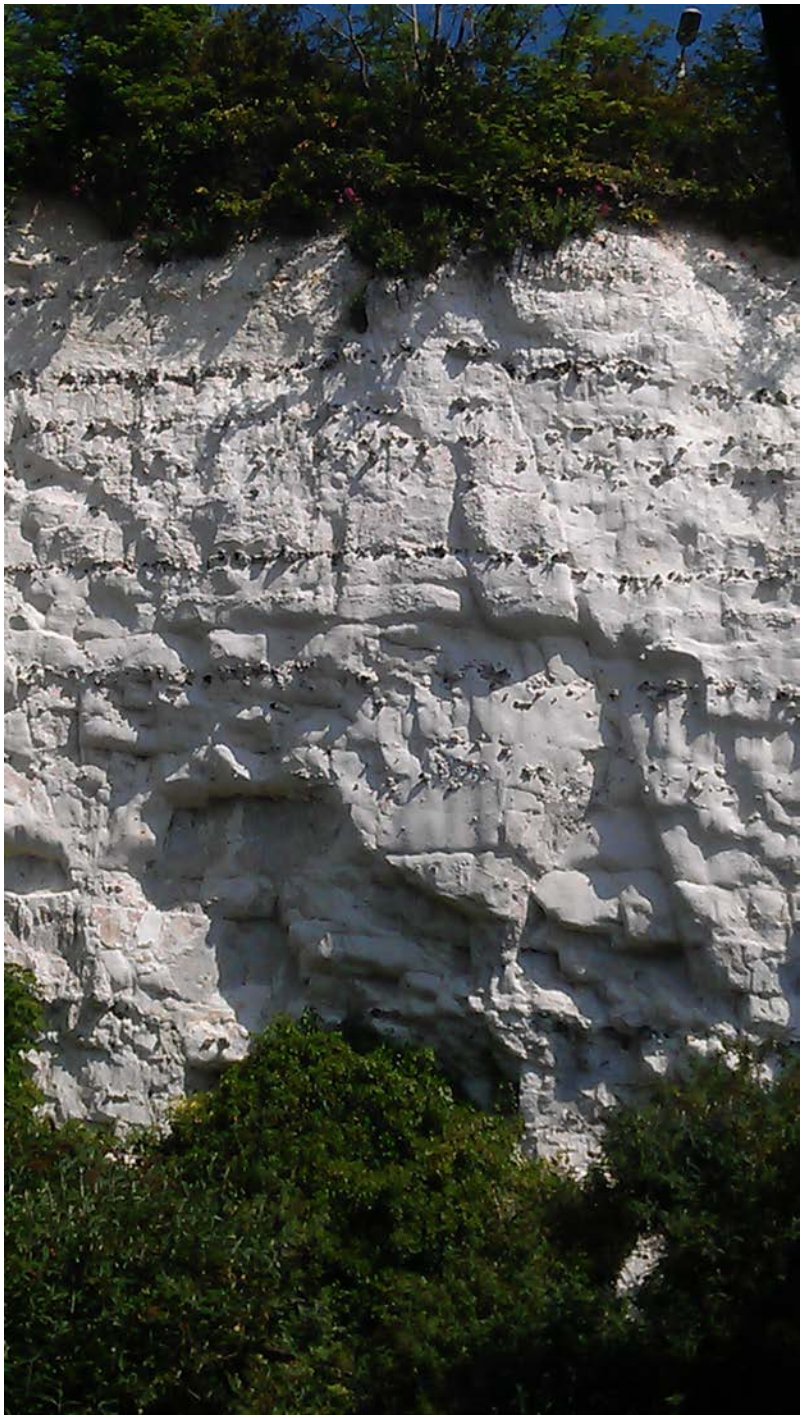


Plate 10 Sub-horizontal flint bands standing proud of the blocky chalk mass due to differential weathering/erosion. Sub-vertical joints and inclined normal fault (strata drop slightly on downslope side of fault). Evidence of loss of blocky chalk from the face but it is unclear whether this is due to quarrying or weathering.



Plate 11 Bedding and discontinuities in chalk face. Some loss of chalk blocks from the face but weathering is seen to have rounded blocky chalk edges suggesting long term process. Tufa coating was evident over the chalk face, visible as stalactite type structures in the central portion of the picture and greyish colouration in shadow.



Plate 12 Protrusion of flints from the chalk face due to preferential erosion of the chalk by weathering (less resistant than flint). Tufa visible in upper section of the picture and rounded/smoothed block edges suggests long term weathering is dominant over structural degradation at this location.



Plate 13 Closer joint spacing visible on chalk exposure in eastern portion of the southern boundary. This is possibly due to face orientation (possible localised climatic variance due to north facing aspect) and closer to original ground level so more weathered bedrock profile. Vegetation is growing up or down over the face but not generally out of the face.



Plate 14 Vegetation around chalk exposure in SE corner of the site



Plate 15 Closer jointing possibly due to natural weathering of chalk closer to original ground level (bedrock weathering profile)



Plate 16 Ivy growth over chalk face in SE corner of the site

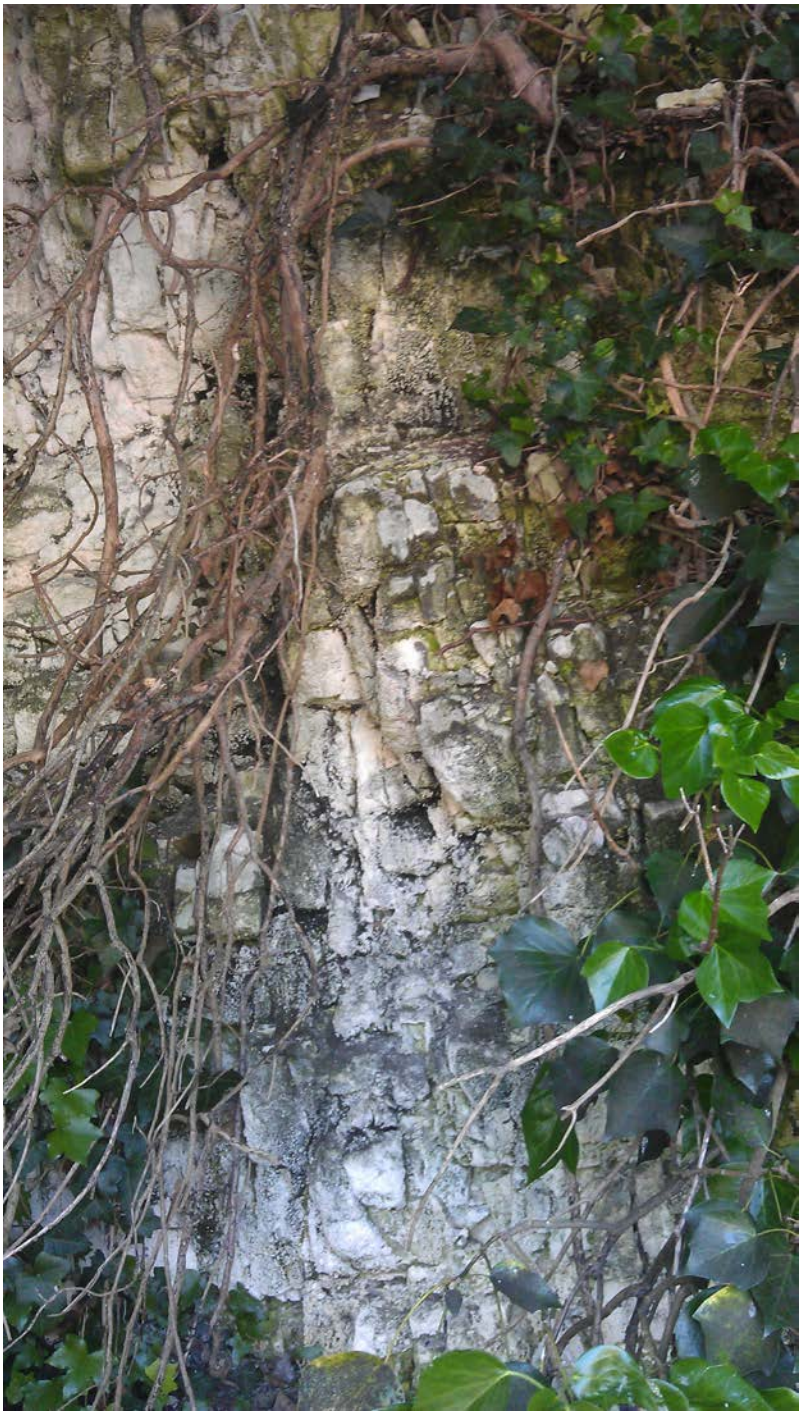


Plate 17 Ivy and root growth over chalk exposure



Plate 18 Vegetation growth over the chalk exposure and at toe (catch fence set back from the kerb)



Plate 19 Chalk exposure protected to some degree from weathering by substantial vegetation coverage/growth over the face in the central southern portion of the site.

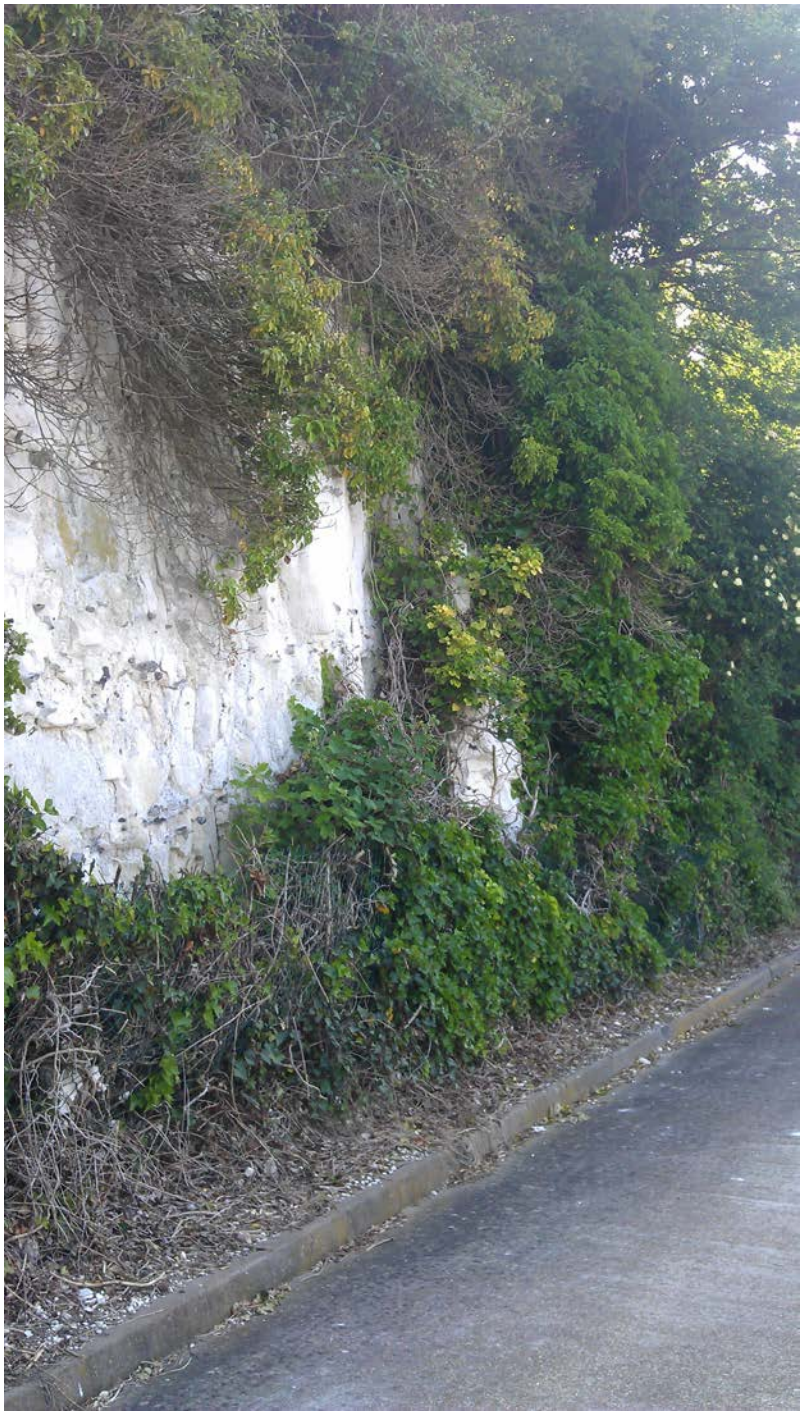


Plate 20 Chalk block size/joint spacing increasing and flints protruding from the chalk face



Plate 21 Ivy growth over the chalk exposure and around the catch fence, which appears damaged



Plate 22 Catch fence in central portion of southern boundary exposure. Note roots visible growing on and in the chalk face. Also scree/spall debris building up behind the catch fence



Plate 23 Slab-like section of Chalk exposed in face

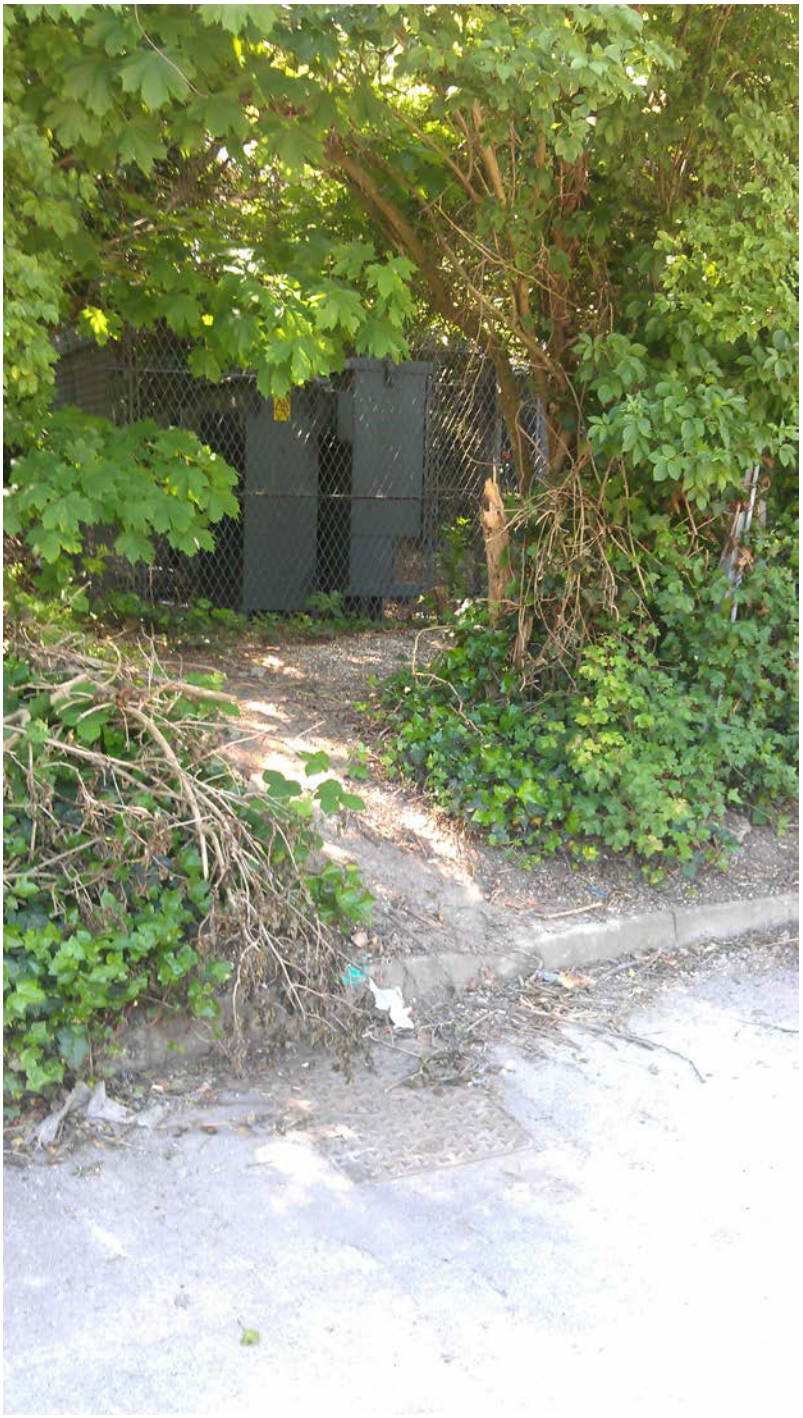


Plate 24 Electricity Sub-station



Plate 25 Access roadway to the rear of the DIY Store and yard storage areas. Vegetation is growing along and through a catch fence

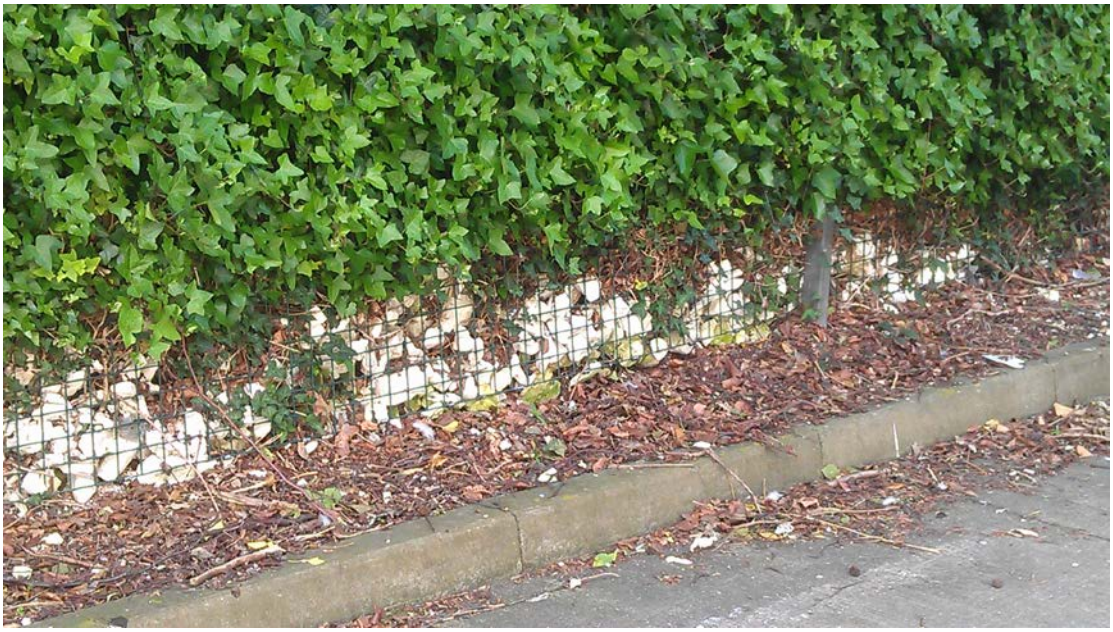


Plate 26 Scree and spall debris retained by the catch fence along the southern boundary exposure. Extensive ivy growth over the fence mesh



Plate 27 Vegetation growing through the catch fence



Plate 28 Upper portion of the southern boundary exposure shows typical bedrock weathering profile with decalcified/solution weathering at junction with overlying soil profile

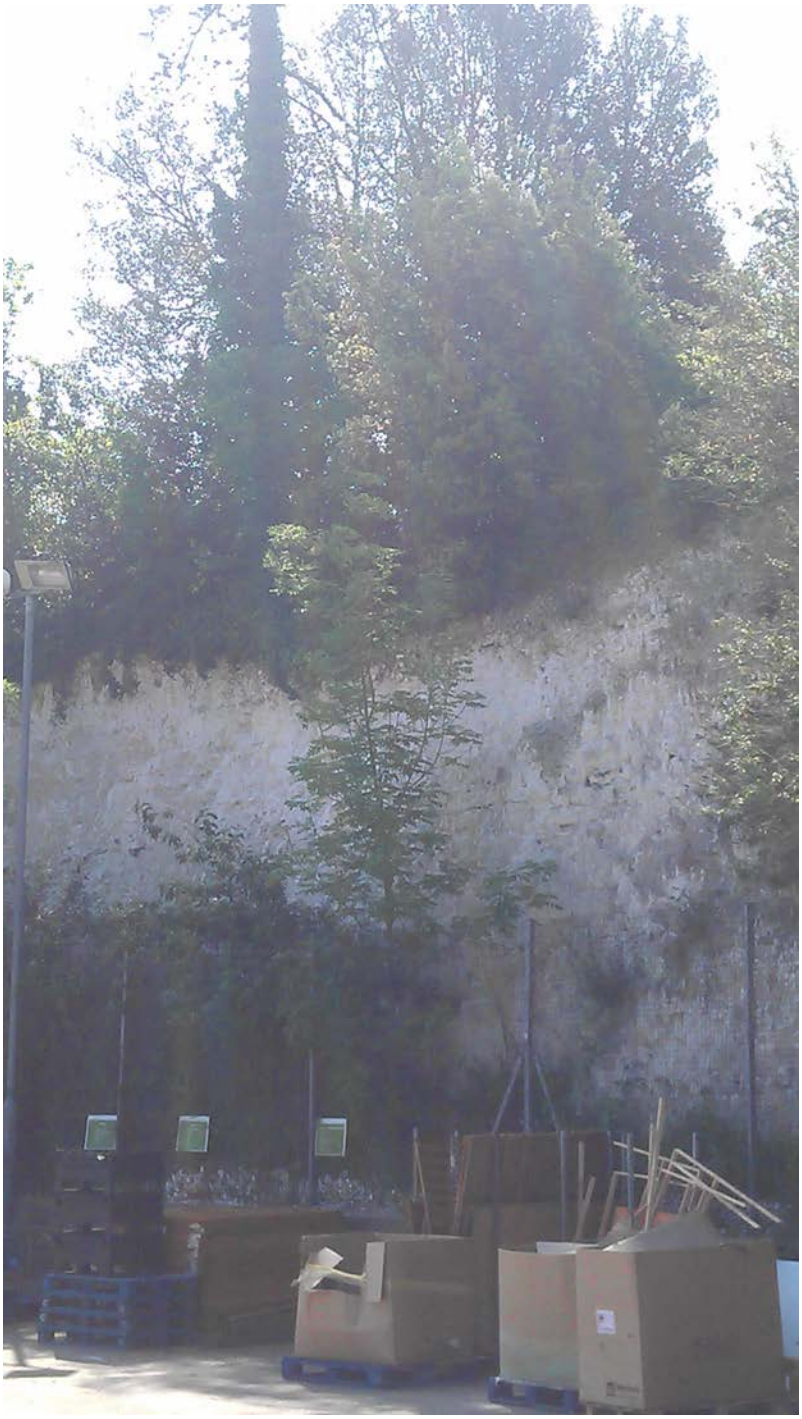


Plate 29 Near vertical chalk exposure in the SW corner of the site. The catch fence here was situated on top of a shallow block work retaining wall



Plate 30 Catch fence on block work wall

APPENDIX B

Desk Study Information

Envirocheck® Report:

Datasheet

Order Details:

Order Number:
39296519_1_1

Customer Reference:
GE8756

National Grid Reference:
469690, 106430

Slice:
A

Site Area (Ha):
2.1

Search Buffer (m):
1000

Site Details:

Havant Retail Park, Portsdown Hill Road
Havant
PO9 3NA

Client Details:

MR J Tingley
Geo Environmental Services Ltd
28 Crescent Road
Brighton
BN2 3RP

Contents

Report Section	Page Number
Summary	-
Agency & Hydrological	1
Waste	10
Hazardous Substances	-
Geological	16
Industrial Land Use	34
Sensitive Land Use	38
Data Currency	39
Data Suppliers	45
Useful Contacts	46

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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Radon Potential dataset Copyright Notice

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Report Version v47.0

Envirocheck®

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Agency & Hydrological					
Contaminated Land Register Entries and Notices					
Discharge Consents	pg 1		1		16
Enforcement and Prohibition Notices					
Integrated Pollution Controls					
Integrated Pollution Prevention And Control	pg 5				2
Local Authority Integrated Pollution Prevention And Control					
Local Authority Pollution Prevention and Controls					
Local Authority Pollution Prevention and Control Enforcements					
Nearest Surface Water Feature	pg 5			Yes	
Pollution Incidents to Controlled Waters	pg 5			1	4
Prosecutions Relating to Authorised Processes					
Prosecutions Relating to Controlled Waters					
Registered Radioactive Substances					
River Quality	pg 6				1
River Quality Biology Sampling Points					
River Quality Chemistry Sampling Points					
Substantiated Pollution Incident Register					
Water Abstractions	pg 6				6 (*3)
Water Industry Act Referrals					
Groundwater Vulnerability	pg 8	Yes	n/a	n/a	n/a
Bedrock Aquifer Designations	pg 9	Yes	n/a	n/a	n/a
Superficial Aquifer Designations			n/a	n/a	n/a
Source Protection Zones	pg 9	1			
Extreme Flooding from Rivers or Sea without Defences				n/a	n/a
Flooding from Rivers or Sea without Defences				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	pg 10				1
Historical Landfill Sites	pg 10			1	1
Integrated Pollution Control Registered Waste Sites	pg 10				3
Licensed Waste Management Facilities (Landfill Boundaries)	pg 11				2
Licensed Waste Management Facilities (Locations)	pg 11				9
Local Authority Recorded Landfill Sites	pg 13				1
Registered Landfill Sites	pg 13				2
Registered Waste Transfer Sites	pg 14				3
Registered Waste Treatment or Disposal Sites	pg 15				1

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Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Hazardous Substances					
Control of Major Accident Hazards Sites (COMAH)					
Explosive Sites					
Notification of Installations Handling Hazardous Substances (NIHHS)					
Planning Hazardous Substance Consents					
Planning Hazardous Substance Enforcements					
Geological					
BGS 1:625,000 Solid Geology	pg 16	Yes	n/a	n/a	n/a
BGS Estimated Soil Chemistry	pg 16	Yes	Yes	Yes	Yes
BGS Recorded Mineral Sites	pg 29	1			2
BGS Urban Soil Chemistry					
BGS Urban Soil Chemistry Averages					
Brine Compensation Area			n/a	n/a	n/a
Coal Mining Affected Areas			n/a	n/a	n/a
Mining Instability			n/a	n/a	n/a
Man-Made Mining Cavities					
Natural Cavities	pg 30		2		
Non Coal Mining Areas of Great Britain	pg 30	Yes	Yes	n/a	n/a
Potential for Collapsible Ground Stability Hazards	pg 31	Yes	Yes	n/a	n/a
Potential for Compressible Ground Stability Hazards	pg 31		Yes	n/a	n/a
Potential for Ground Dissolution Stability Hazards	pg 31	Yes	Yes	n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 32		Yes	n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 32		Yes	n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 33		Yes	n/a	n/a
Radon Potential - Radon Affected Areas			n/a	n/a	n/a
Radon Potential - Radon Protection Measures			n/a	n/a	n/a
Industrial Land Use					
Contemporary Trade Directory Entries	pg 34		4	4	31
Fuel Station Entries	pg 37				1

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Sensitive Land Use					
Areas of Adopted Green Belt					
Areas of Unadopted Green Belt					
Areas of Outstanding Natural Beauty					
Environmentally Sensitive Areas					
Forest Parks					
Local Nature Reserves					
Marine Nature Reserves					
National Nature Reserves					
National Parks					
Nitrate Sensitive Areas					
Nitrate Vulnerable Zones	pg 38	1			
Ramsar Sites	pg 38				1
Sites of Special Scientific Interest	pg 38				1
Special Areas of Conservation	pg 38				1
Special Protection Areas	pg 38				1

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	**Discharge Consents** Operator: Southern Water Services Ltd (H) Property Type: Sewerage Network - Sewers - Water Company Location: Bedhampton Hill, Bedhampton Hampshire Authority: Environment Agency, Southern Region Catchment Area: Not Given Reference: A00315 Permit Version: 1 Effective Date: 1st April 1991 Issued Date: 1st April 1991 Revocation Date: 6th March 1996 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Saline Estuary Receiving Water: Saline Estuary **Status: Post National Rivers Authority Legislation where issue date > 31/08/1989** Positional Accuracy: Located by supplier to within 10m	A13SE (SE)	103	1	469840 106310
2	**Discharge Consents** Operator: Dr F A Stowell Property Type: Undefined Or Other Location: Hulbert Road, Bedhampton Hampshire Authority: Environment Agency, Southern Region Catchment Area: Not Given Reference: H01000 Permit Version: 1 Effective Date: 13th April 1962 Issued Date: 13th April 1962 Revocation Date: 31st March 1997 Discharge Type: Non Water Company (Private) Sewage Discharge Environment: Freshwater Stream/River Receiving Water: Freshwater River **Status: Lapsed (under Environment Act 1995, Schedule 23)** Positional Accuracy: Located by supplier to within 10m	A18SE (NE)	569	1	470000 107040
3	**Discharge Consents** Operator: Mr D & Mrs J Kelly Property Type: Domestic Property (Single) Location: The Old Mill House, Mill Lane, Bedhampton, Havant, Hampshire, Po9 3jh Authority: Environment Agency, Southern Region Catchment Area: Not Given Reference: D01551 Permit Version: 1 Effective Date: 2nd July 1987 Issued Date: 2nd July 1987 Revocation Date: 18th April 1996 Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge Environment: Saline Estuary Receiving Water: Saline Estuary **Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 10m	A9NW (SE)	633	1	470320 106080
4	**Discharge Consents** Operator: Hanson Quarry Products Ltd Property Type: Ready Mixed Concrete Location: Land At Bedhampton Quay, Harts Farm Way, Havant, Hampshire, Po9 1jn Authority: Environment Agency, Southern Region Catchment Area: Not Supplied Reference: P03515 Permit Version: 2 Effective Date: 13th June 1997 Issued Date: 13th June 1997 Revocation Date: Not Supplied Discharge Type: Trade Effluent Discharge Environment: Saline Estuary 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 10m	A9NW (SE)	816	1	470320 105780

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
4	**Discharge Consents** Operator: Pioneer Property Type: Ready Mixed Concrete Location: Land At Bedhampton Quay, Harts Farm Way, Havant, Hampshire, Po9 1jn Authority: Environment Agency, Southern Region Catchment Area: Not Given Reference: P03515 Permit Version: 1 Effective Date: 4th June 1991 Issued Date: 4th June 1991 Revocation Date: 13th June 1997 Discharge Type: Trade Effluent Discharge Environment: Saline Estuary Receiving Water: Saline Estuary **Status: Post National Rivers Authority Legislation where issue date > 31/08/1989** Positional Accuracy: Located by supplier to within 100m	A9NW (SE)	816	1	470320 105780
5	**Discharge Consents** Operator: Southern Water Services Ltd (H) Property Type: Sewerage Network - Sewers - Water Company Location: Park Lane, Bedhampton Hampshire Authority: Environment Agency, Southern Region Catchment Area: Not Supplied Reference: A00316 Permit Version: 1 Effective Date: 1st April 1991 Issued Date: 1st April 1991 Revocation Date: 14th January 1993 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Freshwater River **Status: Post National Rivers Authority Legislation where issue date > 31/08/1989** Positional Accuracy: Located by supplier to within 10m	A14SE (E)	816	1	470600 106350
6	**Discharge Consents** Operator: Havant & Waterloo U.D.C. Property Type: Water Treatment Works Location: Bedhampton Storm Water Overflows, Storm Water Overflows, Bedhampton, Hampshire Authority: Environment Agency, Southern Region Catchment Area: Not Given Reference: H01485 Permit Version: 1 Effective Date: 12th October 1962 Issued Date: 12th October 1962 Revocation Date: 31st March 1997 Discharge Type: Unknown Discharge Environment: Freshwater Stream/River Receiving Water: Freshwater River **Status: Lapsed (under Environment Act 1995, Schedule 23)** Positional Accuracy: Located by supplier to within 100m	A19NW (NE)	830	1	470170 107250
7	**Discharge Consents** Operator: De La Rue Systems Property Type: Undefined Or Other Location: High Technology Campus, Langstone Gate, Solent Road, Havant Hampshire Authority: Environment Agency, Southern Region Catchment Area: Not Given Reference: P00174 Permit Version: 1 Effective Date: 7th August 1985 Issued Date: 7th August 1985 Revocation Date: Not Supplied Discharge Type: Discharge Of Other Matter-Surface Water Discharge Environment: Freshwater Stream/River Receiving Water: Freshwater River **Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 100m	A9NE (SE)	880	1	470530 105950

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
7	**Discharge Consents** Operator: De La Rue Systems Property Type: Undefined Or Other Location: High Technology Campus, Langstone Gate, Solent Road, Havant Hampshire Authority: Environment Agency, Southern Region Catchment Area: Not Given Reference: P00174 Permit Version: 1 Effective Date: 7th August 1985 Issued Date: 7th August 1985 Revocation Date: Not Supplied Discharge Type: Discharge Of Other Matter-Surface Water Discharge Environment: Freshwater Stream/River Receiving Water: Freshwater River **Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 100m	A9NE (SE)	893	1	470550 105960
8	**Discharge Consents** Operator: De La Rue Systems Property Type: Undefined Or Other Location: High Technology Campus, Langstone Gate, Solent Road, Havant Hampshire Authority: Environment Agency, Southern Region Catchment Area: Not Given Reference: P00174 Permit Version: 1 Effective Date: 7th August 1985 Issued Date: 7th August 1985 Revocation Date: Not Supplied Discharge Type: Discharge Of Other Matter-Surface Water Discharge Environment: Freshwater Stream/River Receiving Water: Freshwater River **Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 100m	A9NE (SE)	898	1	470580 106010
8	**Discharge Consents** Operator: De La Rue Systems Property Type: Undefined Or Other Location: High Technology Campus, Langstone Gate, Solent Road, Havant Hampshire Authority: Environment Agency, Southern Region Catchment Area: Not Given Reference: P00174 Permit Version: 1 Effective Date: 7th August 1985 Issued Date: 7th August 1985 Revocation Date: Not Supplied Discharge Type: Discharge Of Other Matter-Surface Water Discharge Environment: Freshwater Stream/River Receiving Water: Freshwater River **Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 100m	A9NE (SE)	906	1	470570 105970
8	**Discharge Consents** Operator: De La Rue Systems Property Type: Undefined Or Other Location: High Technology Campus, Langstone Gate, Solent Road, Havant Hampshire Authority: Environment Agency, Southern Region Catchment Area: Not Given Reference: P00174 Permit Version: 1 Effective Date: 7th August 1985 Issued Date: 7th August 1985 Revocation Date: Not Supplied Discharge Type: Discharge Of Other Matter-Surface Water Discharge Environment: Freshwater Stream/River Receiving Water: Freshwater River **Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 100m	A9NE (SE)	911	1	470580 105980

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
8	**Discharge Consents** Operator: De La Rue Systems Property Type: Undefined Or Other Location: High Technology Campus, Langstone Gate, Solent Road, Havant Hampshire Authority: Environment Agency, Southern Region Catchment Area: Not Given Reference: P00174 Permit Version: 1 Effective Date: 7th August 1985 Issued Date: 7th August 1985 Revocation Date: Not Supplied Discharge Type: Discharge Of Other Matter-Surface Water Discharge Environment: Freshwater Stream/River Receiving Water: Freshwater River **Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 100m	A9NE (SE)	912	1	470590 106000
9	**Discharge Consents** Operator: Lift & Shift Skip Hire Ltd Property Type: Other Mach & Mech Equipment Location: Farlington Redoubt, Portsdown Hill Road, Portsmouth Authority: Environment Agency, Southern Region Catchment Area: Not Supplied Reference: P10535 Permit Version: 1 Effective Date: 9th April 2002 Issued Date: 9th April 2002 Revocation Date: Not Supplied Discharge Type: Trade Effluent Discharge-Site Drainage Discharge Environment: Into Land Receiving Water: Into Land **Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 10m	A11NE (W)	916	1	468660 106440
10	**Discharge Consents** Operator: Hopkins Recycling Ltd Property Type: Unspecified Tip Location: Havant Hw Recycling Centre, Harts Farm Way, Havant, Hampshire Authority: Environment Agency, Southern Region Catchment Area: Not Supplied Reference: P07333 Permit Version: 1 Effective Date: 12th September 2000 Issued Date: 12th September 2000 Revocation Date: Not Supplied Discharge Type: Trade Effluent Discharge-Site Drainage Discharge Environment: Saline Estuary Receiving Water: Saline Estuary **Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 10m	A9NE (SE)	949	1	470500 105780
10	**Discharge Consents** Operator: Hampshire Country Council Property Type: Incinerators Location: OLD HAVANT INCINERATOR SITE, HARTS FARM WAY, HAVANT, HAMPSHIRE Authority: Environment Agency, Southern Region Catchment Area: Not Supplied Reference: P07788 Permit Version: 1 Effective Date: 10th December 1999 Issued Date: 10th December 1999 Revocation Date: Not Supplied Discharge Type: Trade Effluent Discharge-Site Drainage Discharge Environment: Saline Estuary 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 10m	A9NE (SE)	968	1	470500 105750

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
11	**Discharge Consents** Operator: Aep (Hampshire) Ltd (Hmip) Property Type: Incinerators Location: Brockhampton Incinerator, Harts Farm Way, Havant, Hampshire, Po9 1jn Authority: Environment Agency, Southern Region Catchment Area: Not Supplied Reference: Ag8276 Permit Version: 1 Effective Date: 13th May 1993 Issued Date: 13th May 1993 Revocation Date: 6th March 1998 Discharge Type: Discharge Of Other Matter-Surface Water Discharge Environment: Freshwater Stream/River Receiving Water: Freshwater River **Status: Post National Rivers Authority Legislation where issue date > 31/08/1989** Positional Accuracy: Located by supplier to within 10m	A9NE (SE)	991	1	470640 105920
12	**Integrated Pollution Prevention And Control** Name: Portsmouth Water Ltd Location: Bedhampton Landfill, Bedhampton Waterworks, Meyrick Road,,, Havant, Hampshire, PO9 1NN Authority: Environment Agency - South East Region, Solent & South Downs Area Permit Reference: NP3439PN Original Permit Ref: Np3439pn Effective Date: 21st April 2005 **Status: Superseded By Variation** Application Type: Application App. Sub Type: New Positional Accuracy: Located by supplier to within 100m Activity Code: 5.2 A(1) (B) Activity Description: Waste Landfilling; Any Other Landfill To Which The 2002 Landfill Regulations Apply Primary Activity: Y	A14SE (E)	810	1	470600 106390
13	**Integrated Pollution Prevention And Control** Name: Portsmouth Water Ltd Location: Bedhampton Landfill, Bedhampton Waterworks, Meyrick Road,,, Havant, Hampshire, PO9 1NN Authority: Environment Agency, Southern Region Permit Reference: BP3635UL Original Permit Ref: Np3439pn Effective Date: 31st March 2008 **Status: Revoked** Application Type: Variation App. Sub Type: Minor Positional Accuracy: Manually positioned within the geographical locality Activity Code: 5.2 A(1) (B) Activity Description: Waste Landfilling; Any Other Landfill To Which The 2002 Landfill Regulations Apply Primary Activity: Y	A14SE (E)	907	1	470680 106282
	Nearest Surface Water Feature	A13NW (N)	258	-	469579 106718
14	**Pollution Incidents to Controlled Waters** Property Type: Water Company Sewage: Foul Sewer Location: West Street Bridge, Opposite Seward Rover Garage, BEDHAMPTON Authority: Environment Agency, Southern Region Pollutant: Crude Sewage Note: Sewage In Stream Incident Date: 28th March 1997 Incident Reference: 797160 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Plc Sewage Other Incident Severity: Category 1 - Major Incident Positional Accuracy: Located by supplier to within 100m	A8NE (SE)	443	1	470001 106001
15	**Pollution Incidents to Controlled Waters** Property Type: Domestic/Residential Location: BEDHAMPTON Authority: Environment Agency, Southern Region Pollutant: Crude Sewage Note: Stream May Be Polluted Incident Date: 11th September 1997 Incident Reference: 797465 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	A14SE (E)	610	1	470400 106400

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
16	**Pollution Incidents to Controlled Waters** Property Type: Industrial: Other Location: Location Description Not Available Authority: Environment Agency, Southern Region Pollutant: Oils - Other Oil Note: Oil On Stream; Demolition Incident Date: 12th May 1994 Incident Reference: 1255 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Oils/Related Products Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A9NE (SE)	732	1	470400 106020
17	**Pollution Incidents to Controlled Waters** Property Type: Other Transport Location: A27 Between A3 And Havant Authority: Environment Agency, Southern Region Pollutant: Organic Wastes: Milk Note: Leaking Milk Tanker; Road (Road Traffic Accident) Incident Date: 25th May 1995 Incident Reference: 1866 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	A8SW (S)	742	1	469600 105600
18	**Pollution Incidents to Controlled Waters** Property Type: Road (Road Traffic Accident) Location: Portsbridge (Marker Post 44.9), HAVANT Authority: Environment Agency, Southern Region Pollutant: Oils - Petrol Note: 10 Litres Of Petrol To Drain Incident Date: 23rd August 1996 Incident Reference: 796389 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Road Traffic Accident Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A7SE (SW)	811	1	469300 105600
	River Quality Name: Hermitage Strm GQA Grade: River Quality C Reach: Tidal Limit - Source Estimated Distance (km): 14.8 Flow Rate: Flow less than 0.62 cumecs Flow Type: River Year: 2000	A9NW (SE)	717	1	470301 105904
19	**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	A14SE (E)	718	1	470480 106270

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
19	**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	A14SE (E)	718	1	470480 106270
19	**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	A14SE (E)	718	1	470480 106270
20	**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	A14SE (E)	793	1	470580 106370
20	**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	A14SE (E)	793	1	470580 106370

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
20	**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	A14SE (E)	793	1	470580 106370
	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	A15SW (E)	1230	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	A15SW (E)	1230	1	471020 106370
	Water Abstractions Operator: Portsmouth Water Co Licence Number: 11/42/36.2/1 Permit Version: 100 Location: Bedhampton Ps Spring No 2 Authority: Environment Agency, Southern Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: See Licence Map Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 26th September 1977 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A15SW (E)	1230	1	471020 106370
	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 52 Southern Hampshire Scale: 1:100,000	A13NE (W)	0	1	469692 106430
	Drift Deposits None				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Bedrock Aquifer Designations Aquifer Desination: Principal Aquifer	A13NE (W)	0	2	469692 106430
	Superficial Aquifer Designations No Data Available				
21	**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.	A13NE (NE)	0	1	469701 106452
	Extreme Flooding from Rivers or Sea without Defences None				
	Flooding from Rivers or Sea without Defences None				
	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
22	**BGS Recorded Landfill Sites** Site Name: Storhouse Lake Tip Location: HAVANT, Hants Authority: British Geological Survey, National Geoscience Information Service Ground Water: Information not available Surface Water: Information not available Geology: N/A Positional Accuracy: Unknown Boundary Accuracy: Not Applicable	A9SW (SE)	840	2	470100 105600
23	**Historical Landfill Sites** Licence Holder: Gleeson Civil Engineering Limited Location: Bedhampton, Hampshire Name: Scratchface Lane Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD20966 First Input Date: Not Supplied Last Input Date: Not Supplied Specified Waste Type: Deposited Waste included Inert Waste EA Waste Ref: Not Supplied Regis Ref: Not Supplied WRC Ref: Not Supplied BGS Ref: Not Supplied Other Ref: FHA16, 13/4	A18SE (N)	463	1	469718 106976
24	**Historical Landfill Sites** Licence Holder: Hampshire County Council Location: Harts Farm Way, Havant Name: Harts Farm Way Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD20831 First Input Date: Not Supplied Last Input Date: Not Supplied Specified Waste Type: Deposited Waste included Household Waste EA Waste Ref: Not Supplied Regis Ref: Not Supplied WRC Ref: Not Supplied BGS Ref: Not Supplied Other Ref: FHA15, 1760/1/13/6	A9SW (SE)	672	1	470023 105749
25	**Integrated Pollution Control Registered Waste Sites** Name: Onyx Hampshire Ltd Location: Brockhampton Incinerator, Harts Farm Way, HAVANT, Hampshire, PO9 1JN Authority: Environment Agency, Southern Region Permit Reference: AR5260 Dated: 31st May 1995 Process Type: IPC minor (non-substantial) variation to previous variation Description: 5.1 A (C) Incineration within the Waste Disposal Industry **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Manually positioned to the address or location	A9NE (SE)	949	1	470521 105808
25	**Integrated Pollution Control Registered Waste Sites** Name: Onyx Hampshire Ltd Location: Brockhampton Incinerator, Harts Farm Way, HAVANT, Hampshire, PO9 1JN Authority: Environment Agency, Southern Region Permit Reference: AY3199 Dated: 9th April 1997 Process Type: IPC minor (non-substantial) variation to previous variation Description: 5.1 A (C) Incineration within the Waste Disposal Industry **Status: Authorisation revokedRevoked** Positional Accuracy: Manually positioned to the address or location	A9NE (SE)	950	1	470526 105813
25	**Integrated Pollution Control Registered Waste Sites** Name: Onyx Hampshire Ltd Location: Brockhampton Incinerator, Harts Farm Way, HAVANT, Hampshire, PO9 1JN Authority: Environment Agency, Southern Region Permit Reference: AG8276 Dated: 13th May 1993 Process Type: IPC application for process that was regulated by HMIP for air releases under previous legislation Description: 5.1 A (C) Incineration within the Waste Disposal Industry **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Manually positioned to the address or location	A9NE (SE)	953	1	470526 105808

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
26	**Licensed Waste Management Facilities (Landfill Boundaries)** Name: Bedhampton Waterworks Licence Number: 19988 Location: Bedhampton Waterworks, Meyrick Road, Havant, Hampshire, PO9 1NN Licence Holder: Portsmouth Water Company Ltd Authority: Environment Agency - Southern Region, Hampshire and Isle of Wight Area Office Site Category: Landfills Taking Non-biodegradeable Wastes (Not Construction) Max Input Rate: Not Supplied **Licence Status: Inactive** Issued 18th February 1992 Positional Accuracy: Positioned by the supplier Boundary Accuracy: As Supplied	A14SE (E)	697	1	470477 106338
27	**Licensed Waste Management Facilities (Landfill Boundaries)** Name: Bedhampton Waterworks Landfill Licence Number: 19988 Location: Bedhampton Waterworks, Meyrick Road, Havant, Hampshire, PO9 1NN Licence Holder: Portsmouth Water Ltd Authority: Environment Agency - South East Region, Solent & South Downs Area Site Category: Landfills Taking Non-biodegradeable Wastes (Not Construction) Max Input Rate: Not Supplied **Licence Status: IPPC** Issued 18th February 1992 Positional Accuracy: Positioned by the supplier Boundary Accuracy: As Supplied	A14SE (E)	700	1	470479 106333
28	**Licensed Waste Management Facilities (Locations)** Licence Number: 210123 Location: Bedhampton Waterworks, Meyrick Road, H, Bedhampton, Hampshire, PO9 1NN Operator Name: Portsmouth Water Ltd Operator Location: Not Supplied Authority: Environment Agency - South East Region, Solent & South Downs Area Site Category: Inert LF **Licence Status: Issued** Issued: 21st April 2005 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: NP3439 Positional Accuracy: Located by supplier to within 10m	A14SE (E)	810	1	470600 106390
28	**Licensed Waste Management Facilities (Locations)** Licence Number: 19988 Location: Bedhampton Waterworks, Meyrick Road, Havant, Hampshire, PO9 1NN Operator Name: Portsmouth Water Ltd Operator Location: Not Supplied Authority: Environment Agency - South East Region, Solent & South Downs Area Site Category: Landfills Taking Non-biodegradeable Wastes (Not Construction) **Licence Status: IPPC** Issued: 18th February 1992 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: NP3439PN Positional Accuracy: Located by supplier to within 10m	A14SE (E)	810	1	470600 106390
29	**Licensed Waste Management Facilities (Locations)** Licence Number: 10226 Location: Farlington Redoubt, Portsdown Hill Road, Portsmouth, Hampshire, PO6 1BW Operator Name: Lift & Shift Skip Hire Ltd Operator Location: Not Supplied Authority: Environment Agency - South East Region, Solent & South Downs Area Site Category: Physical Treatment Facilities **Licence Status: Modified** Issued: 8th April 2002 Last Modified: 30th October 2009 Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A12NW (W)	876	1	468700 106440

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
30	**Licensed Waste Management Facilities (Locations)** Licence Number: 10229 Location: Harts Farm Way Depot, Harts Farm Way, Havant, Hampshire, PO9 1JN Operator Name: Hampshire County Council Operator Location: Not Supplied Authority: Environment Agency - South East Region, Solent & South Downs Area Site Category: Metal Recycling Sites (Mixed) **Licence Status: Transferred** Issued: 19th December 2002 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 100m	A9NE (SE)	879	1	470500 105900
30	**Licensed Waste Management Facilities (Locations)** Licence Number: 19989 Location: Havant Incinerator, Harts Farm Way, Havant, Hampshire Operator Name: Associated Environmental Projects (hampshire) Ltd Operator Location: Not Supplied Authority: Environment Agency - South East Region, Solent & South Downs Area Site Category: Household, Commercial And Industrial Transfer Stations **Licence Status: Surrendered** Issued: 21st June 1993 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: 26th November 2001 IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A9NE (SE)	905	1	470541 105918
30	**Licensed Waste Management Facilities (Locations)** Licence Number: 103260 Location: Havant H W R C, Harts Farm Way, Havant, Hampshire, PO9 1JN Operator Name: Hopkins Recycling Limited Operator Location: Not Supplied Authority: Environment Agency - South East Region, Solent & South Downs Area Site Category: Non-hazardous & hazardous HWA Site **Licence Status: Issued** Issued: 2nd March 2012 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	A9NE (SE)	907	1	470500 105850
31	**Licensed Waste Management Facilities (Locations)** Licence Number: 10279 Location: Bedhampton Waste Works, Meyrick Road, Havant, Hampshire, PO9 1NN Operator Name: Portsmouth Water Limited Operator Location: Not Supplied Authority: Environment Agency - South East Region, Solent & South Downs Area Site Category: Transfer Stations Taking Non-biodegradable Wastes **Licence Status: Issued** Issued: 29th June 2007 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	A14SE (E)	890	1	470680 106380
32	**Licensed Waste Management Facilities (Locations)** Licence Number: 19983 Location: Land/ Premises At, Harts Farm Way, Havant, Hampshire, PO9 1JN Operator Name: Hopkins Recycling Ltd Operator Location: Not Supplied Authority: Environment Agency - South East Region, Solent & South Downs Area Site Category: Household, Commercial And Industrial Transfer Stations **Licence Status: Modified** Issued: 29th June 1993 Last Modified: 19th August 2004 Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A9NE (SE)	985	1	470530 105760

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
32	**Licensed Waste Management Facilities (Locations)** Licence Number: 10275 Location: Havant H W R C, Harts Farm Way, Havant, Hampshire, PO9 1JN Operator Name: Hopkins Recycling Limited Operator Location: Not Supplied Authority: Environment Agency - South East Region, Solent & South Downs Area Site Category: Household Waste Amenity Sites **Licence Status: Issued** Issued: 18th September 2006 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	A9SE (SE)	990	1	470518 105738
	Local Authority Landfill Coverage Name: Havant Borough Council - Has supplied landfill data		0	3	469692 106430
	Local Authority Landfill Coverage Name: Hampshire County Council - Had landfill data but passed it to the relevant environment agency		0	8	469692 106430
	Local Authority Landfill Coverage Name: Portsmouth City Unitary Council - Has not been able to supply Landfill data		692	9	468902 106263
33	**Local Authority Recorded Landfill Sites** Location: Broadmarsh Site Reference: 4 Authority: Havant Borough Council, Environmental Health Department **Last Reported Status: Unknown** Types of Waste: Not Supplied Date of Closure: Not Supplied Positional Accuracy: Positioned by the supplier Boundary Quality: Good	A9NW (SE)	667	3	470046 105766
34	**Registered Landfill Sites** Licence Holder: Portsmouth Water Plc Licence Reference: 13/ 25A Site Location: Bedhampton Waterworks, Meyrick Road, HAVANT, Hampshire, PO9 1NN Licence Easting: 470600 Licence Northing: 106360 Operator Location: PO Box 8, West Street, HAVANT, Hampshire, PO9 1LG Authority: Environment Agency - Southern Region, Hampshire Area Site Category: Landfill Max Input Rate: Medium (Equal to or greater than 25,000 and less than 75,000 tonnes per year) Waste Source Restrictions: No known restriction on source of waste Status: Operational as far as is knownOperational Dated: 14th November 1991 Preceded By Licence: Not Given Superseded By Licence: Not Given Positional Accuracy: Manually positioned to the address or location Boundary Accuracy: Not Applicable Authorised Waste Inert Waste From Pipework Excavation Prohibited Waste Biodegradable Waste Brick And Concrete Rubble Clinical - As In Wmp 25 Construction And Demolition Wastes Food/Vegetable Matter Hazardous Wastes Land Clear.Waste Contam. > Background Liquid/Slurry/Sludge Wastes Paper/Cardboard/Packaging Phenols/Mat'Ls Cont. Phenol Plaster Poisonous, Noxious, Polluting Wastes Rubble Ex Prems Storing Tox/Sol.Chems Special Wastes Timber Waste N.O.S.	A14SE (E)	814	1	470600 106360

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
35	**Registered Landfill Sites** Licence Holder: Hampshire C.C. Licence Reference: 13/ 4 RES Site Location: Harts Farm Way, Havant, Hampshire Licence Easting: 470100 Licence Northing: 105600 Operator Location: The Castle, Winchester, Hampshire Authority: Environment Agency - Southern Region, Hampshire Area Site Category: Landfill Max Input Rate: Undefined Waste Source Restrictions: No known restriction on source of waste Status: Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled Dated: 20th July 1977 Preceded By Licence: Not Given Superseded By Licence: Not Given Positional Accuracy: Manually positioned to the address or location Boundary Accuracy: Not Applicable Authorised Waste: Civic Amenity/Refuse Amenity Waste; Concrete Waste; Construction And Demolition Wastes; Excavated Natural Materials $; Hardcore And Rubble; Household, Crude Waste; Incinerator Residues; Silt And Dredgings Prohibited Waste: Liquid Wastes	A9SW (SE)	840	1	470100 105600
36	**Registered Waste Transfer Sites** Licence Holder: Assoc.Environmental Proj.(Hants) Ltd Licence Reference: HV 030 Site Location: Recycling Storage Bays, Havant Incinerator, Havant, Hampshire Operator Location: 37-41 Old Queen Street, LONDON, Greater London, SW1H 9JA Authority: Environment Agency - Southern Region, Hampshire Area Site Category: Transfer Max Input Rate: Small (Equal to or greater than 10,000 and less than 25,000 tonnes per year) Waste Source Restrictions: No known restriction on source of waste Licence Status: Site dormant Dated: 21st June 1993 Preceded By Licence: Not Given Superseded By Licence: HV 006A Positional Accuracy: Located by supplier to within 100m Boundary Quality: Not Supplied Authorised Waste: Ferrous/Non-Ferrous Cans; Glass; Paper/Cardboard Waste; Plastics Prohibited Waste: Clinical - As In Wmp 25; Liable To Cause Environmental Hazards; Liquid/Slurry/Sludge Wastes; Poisonous, Noxious And Polluting N.O.S; Rubble Ex Prem Stor.Tox/Water Sol.Chem; Special Wastes; Waste N.O.S.	A9NE (SE)	903	1	470540 105920

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
37	**Registered Waste Transfer Sites** Licence Holder: Mc Nicholas Construction Co Ltd Licence Reference: HV 031A Site Location: Farlington Redoubt, Portsdown Hill Road, Havant, Hampshire Operator Location: Unit 8 Lismarrane Industrial Park, ELSTREE, Hertfordshire, WD6 3EA Authority: Environment Agency - Southern Region, Hampshire Area Site Category: Transfer Max Input Rate: Medium (Equal to or greater than 25,000 and less than 75,000 tonnes per year) Waste Source Restrictions: No known restriction on source of waste Licence Status: Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled Dated: 1st December 1991 Preceded By Licence: Not Given Superseded By Licence: Not Given Positional Accuracy: Manually positioned to the address or location Boundary Quality: Not Supplied Authorised Waste: Arisings From Cable Trench Excav'Ns Max.Waste Permitted By Licence-Stated Sand,Chalk,Gravel Prohibited Waste: All Tar-Based Surfacing Wastes Biodegradable Waste Clinical - As In Wmp 25 Food/Vegetable Matter Hazardous Wastes Liquid/Slurry/Sludge Wastes Paper/Cardboard/Packaging Phenols/Mat'Ls Cont. Phenol Poisonous, Noxious, Polluting Wastes Rubble Ex Prems Storing Tox/Sol Chems Special Wastes Waste N.O.S.	A11NE (W)	936	1	468640 106460
38	**Registered Waste Transfer Sites** Licence Holder: Hampshire Recycling Ltd Licence Reference: HV 006A Site Location: Harts Farm Way C.A.Site, HAVANT, Hampshire, PO9 1JN Operator Location: Unit 10 Bridge Farm, Curbridge, Botley, SOUTHAMPTON, Hampshire, SO30 2HB Authority: Environment Agency - Southern Region, Hampshire Area Site Category: Civic Amenity Max Input Rate: Small (Equal to or greater than 10,000 and less than 25,000 tonnes per year) Waste Source Restrictions: No known restriction on source of waste Licence Status: Operational as far as is knownOperational Dated: 24th November 1978 Preceded By Licence: Not Given Superseded By Licence: Not Given Positional Accuracy: Located by supplier to within 100m Boundary Quality: Not Supplied Authorised Waste: Com. Waste Solely For Reuse/Recycling Maximum Waste Permitted By Licence Waste Deposited By Householders Prohibited Waste: Liq.Waste N.O.S. (Exc. Oils For Recyc) Special Wastes N.O.S. (Exc.H'Holders) Waste N.O.S.	A9NE (SE)	985	1	470530 105760
39	**Registered Waste Treatment or Disposal Sites** Licence Holder: B.M. Recycling Ltd Licence Reference: 13/ 4 Site Location: Brockhampton Incinerator, Harts Farm Way, Havant, Hampshire Operator Location: 7 Eagle Avenue, Cowplain, PORTSMOUTH, Hampshire, PO8 9UB Authority: Environment Agency - Southern Region, Hampshire Area Site Category: Incineration Max Input Rate: Undefined Waste Source Restrictions: No known restriction on source of waste Licence Status: Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled Dated: 18th May 1977 Preceded By Licence: Not Given Superseded By Licence: Not Given Positional Accuracy: Manually positioned to the address or location Boundary Quality: Not Supplied Authorised Waste: Controlled Wastes Licenced Wastes Not To Hand	A9NE (SE)	915	1	470480 105810

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS 1:625,000 Solid Geology Description: Oldhaven, Blackheath, Woolwich, and Reading and Thanet beds	A13NE (W)	0	2	469692 106430
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SE (S)	0	4	469696 106412
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13NE (W)	0	4	469692 106430
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A13SE (S)	40	4	469698 106306
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A13SE (S)	83	4	469700 106262
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SW (S)	83	4	469637 106258
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13NE (N)	84	4	469751 106609

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A13SE (SE)	95	4	469793 106280
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13NE (N)	106	4	469719 106616
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A13NW (N)	107	4	469638 106579
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A13NE (E)	172	4	469963 106445
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13NE (N)	185	4	469729 106706
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13NE (E)	204	4	470000 106471

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A13NE (E)	205	4	470000 106445
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A13NE (E)	208	4	470000 106430
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A13SE (S)	210	4	469704 106130
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A13SE (E)	215	4	470000 106419
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SE (SE)	233	4	469916 106200
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13NE (N)	234	4	469708 106747

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13NE (NE)	245	4	470000 106645
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13NE (NE)	266	4	470000 106680
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SE (SE)	272	4	470000 106248
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A8NW (S)	341	4	469671 106000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14NW (E)	342	4	470134 106559
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A8NE (S)	343	4	469692 106000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SE (N)	380	4	469687 106886
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SW (E)	386	4	470164 106370
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SE (N)	398	4	469692 106905
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12SE (SW)	399	4	469252 106182
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SE (NE)	439	4	470000 106897
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A8NE (SE)	443	4	470000 106000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SE (NE)	458	4	470000 106919
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14NW (NE)	461	4	470189 106750
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SE (N)	490	4	469859 107000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SE (N)	491	4	469692 107000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SE (NE)	494	4	470000 106959
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SW (N)	495	4	469672 107000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SW (N)	507	4	469654 106998
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A19SW (NE)	512	4	470142 106886
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SW (N)	529	4	469588 107000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SE (NE)	532	4	470000 107000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12NW (W)	575	4	469000 106430
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12SW (W)	576	4	469000 106405

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12SW (W)	591	4	469000 106285
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A12NW (W)	600	4	469000 106591
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12SW (W)	608	4	469000 106223
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12NW (W)	617	4	469000 106652
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A9NW (SE)	623	4	470258 106000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14NE (E)	627	4	470423 106474

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A12SW (SW)	654	4	469000 106109
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12NW (NW)	655	4	469000 106750
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A17SE (NW)	666	4	469092 106902
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A9NW (SE)	676	4	470090 105781
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18NE (NE)	682	4	470000 107159
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A8SE (SE)	686	4	470000 105723

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A7NW (SW)	704	4	469005 106000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A7NW (SW)	708	4	469000 106000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A7NW (SW)	708	4	469000 106000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A17SW (NW)	739	4	468915 106767
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A9NW (SE)	741	4	470279 105845
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12NW (W)	742	4	468906 106754

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18NW (N)	743	4	469399 107171
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A17SW (NW)	751	4	469000 106925
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A17SW (NW)	769	4	469000 106952
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A17SW (NW)	772	4	469000 106957
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SE (E)	775	4	470502 106155
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A9NE (SE)	790	4	470455 106000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A17NE (NW)	790	4	469277 107180
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A17SW (NW)	791	4	468977 106959
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A17SW (NW)	801	4	469000 107000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A17SW (NW)	828	4	468897 106915
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A17SW (NW)	858	4	468883 106947
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A7SW (SW)	868	4	469000 105738

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A17SW (NW)	869	4	468910 107000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A8SW (S)	872	4	469663 105470
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15NW (E)	935	4	470730 106454
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A17NW (NW)	943	4	469000 107193
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18NW (N)	956	4	469555 107434
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A19NE (NE)	964	4	470479 107189

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15SW (E)	975	4	470759 106331
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A9NE (SE)	976	4	470628 105931
40	**BGS Recorded Mineral Sites** Site Name: Bedhampton Chalk Pit Location: , Bedhampton, Havant, Hampshire Source: British Geological Survey, National Geoscience Information Service Reference: 13718 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Cretaceous Geology: Portsdown Chalk Formation Commodity: Chalk Positional Accuracy: Located by supplier to within 10m	A13SW (W)	0	2	469620 106420
41	**BGS Recorded Mineral Sites** Site Name: Camp Down Location: , Portsdown Hill Road, Purbrook, Portsmouth, Hampshire Source: British Geological Survey, National Geoscience Information Service Reference: 55252 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Cretaceous Geology: Portsdown Chalk Formation Commodity: Chalk Positional Accuracy: Located by supplier to within 10m	A12SW (W)	575	2	469005 106351
42	**BGS Recorded Mineral Sites** Site Name: Farlington Redoubt Location: , Portsdown Hill Road, Purbrook, Portsmouth, Hampshire, Po6 1bw Source: British Geological Survey, National Geoscience Information Service Reference: 55253 Type: Opencast **Status: Active** Operator: L & S Waste Management Ltd Operator Location: L & S Waste Management Ltd, Pegham Industrial Park, Laveys Lane, Fareham, Hampshire, Po15 6sd Periodic Type: Not Available Geology: Recycled Aggregates Commodity: Secondary Positional Accuracy: Located by supplier to within 10m	A11NE (W)	931	2	468645 106445
	BGS Measured Urban Soil Chemistry No data available				
	BGS Urban Soil Chemistry Averages No data available				
	Coal Mining Affected Areas In an area that might not be affected by coal mining				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Natural Cavities Easting: 469700 Northing: 106500 Distance: 17 Quadrant Reference: A13 Quadrant Reference: NE Bearing Ref: N Cavity Type: Solution Pipe Solid Geology Detail: Upper Chalk Formation Superficial Geology Detail: No Details	A13NE (N)	17	5	469700 106500
	Natural Cavities Easting: 469800 Northing: 106550 Distance: 42 Quadrant Reference: A13 Quadrant Reference: NE Bearing Ref: NE Cavity Type: Solution Pipe x 3 Solid Geology Detail: Lambeth Group, Upper Chalk Formation Superficial Geology Detail: Head	A13NE (NE)	42	5	469800 106550
	Non Coal Mining Areas of Great Britain Risk: Rare Source: British Geological Survey, National Geoscience Information Service	A13NE (W)	0	2	469692 106430
	Non Coal Mining Areas of Great Britain Risk: Highly Unlikely Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	43	2	469698 106303
	Non Coal Mining Areas of Great Britain Risk: Unlikely Source: British Geological Survey, National Geoscience Information Service	A13NE (N)	82	2	469752 106606
	Non Coal Mining Areas of Great Britain Risk: Highly Unlikely Source: British Geological Survey, National Geoscience Information Service	A13NE (N)	83	2	469692 106572
	Non Coal Mining Areas of Great Britain Risk: Highly Unlikely Source: British Geological Survey, National Geoscience Information Service	A13NE (E)	89	2	469876 106430
	Non Coal Mining Areas of Great Britain Risk: Likely Source: British Geological Survey, National Geoscience Information Service	A13NE (N)	103	2	469751 106606
	Non Coal Mining Areas of Great Britain Risk: Highly Unlikely Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	104	2	469627 106572
	Non Coal Mining Areas of Great Britain Risk: Highly Unlikely Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	104	2	469851 106597
	Non Coal Mining Areas of Great Britain Risk: Unlikely Source: British Geological Survey, National Geoscience Information Service	A13NW (N)	104	2	469639 106576
	Non Coal Mining Areas of Great Britain Risk: Likely Source: British Geological Survey, National Geoscience Information Service	A13NE (N)	122	2	469719 106614
	Non Coal Mining Areas of Great Britain Risk: Unlikely Source: British Geological Survey, National Geoscience Information Service	A13SE (SE)	151	2	469901 106322
	Non Coal Mining Areas of Great Britain Risk: Likely Source: British Geological Survey, National Geoscience Information Service	A13NE (E)	187	2	469983 106481
	Non Coal Mining Areas of Great Britain Risk: Likely Source: British Geological Survey, National Geoscience Information Service	A13NE (E)	205	2	470001 106468
	Non Coal Mining Areas of Great Britain Risk: Unlikely Source: British Geological Survey, National Geoscience Information Service	A13NE (E)	205	2	470001 106430
	Non Coal Mining Areas of Great Britain Risk: Highly Unlikely Source: British Geological Survey, National Geoscience Information Service	A13SE (SE)	236	2	469917 106197

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Non Coal Mining Areas of Great Britain Risk: Rare Source: British Geological Survey, National Geoscience Information Service	A13SE (SE)	245	2	469840 106134
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (W)	0	2	469692 106430
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (E)	205	2	470001 106430
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SE (SE)	236	2	469917 106197
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (W)	0	2	469692 106430
	Potential for Compressible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	52	2	469610 106294
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (E)	205	2	470001 106430
	Potential for Ground Dissolution Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	0	2	469697 106410
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (W)	0	2	469692 106430
	Potential for Ground Dissolution Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NE (N)	0	2	469707 106522
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	30	2	469657 106506
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (W)	39	2	469553 106379
	Potential for Ground Dissolution Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	43	2	469698 106303
	Potential for Ground Dissolution Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (N)	47	2	469694 106530
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (S)	73	2	469630 106268
	Potential for Ground Dissolution Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (S)	76	2	469636 106265
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	79	2	469523 106502
	Potential for Ground Dissolution Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	96	2	469568 106547
	Potential for Ground Dissolution Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13NE (E)	96	2	469878 106437
	Potential for Ground Dissolution Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13NW (N)	104	2	469639 106576
	Potential for Ground Dissolution Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	125	2	469559 106236

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Potential for Ground Dissolution Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	136	2	469522 106251
	Potential for Ground Dissolution Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	138	2	469571 106216
	Potential for Ground Dissolution Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	140	2	469524 106244
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (W)	146	2	469436 106378
	Potential for Ground Dissolution Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (W)	147	2	469435 106375
	Potential for Ground Dissolution Stability Hazards Hazard Potential: High Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	160	2	469920 106385
	Potential for Ground Dissolution Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13NE (E)	174	2	469964 106442
	Potential for Ground Dissolution Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NE (E)	205	2	470001 106468
	Potential for Ground Dissolution Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13NE (E)	206	2	470001 106442
	Potential for Ground Dissolution Stability Hazards Hazard Potential: High Source: British Geological Survey, National Geoscience Information Service	A13NE (E)	210	2	470001 106430
	Potential for Ground Dissolution Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SE (SE)	236	2	469876 106166
	Potential for Landslide Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (W)	0	2	469692 106430
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	43	2	469698 106303
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SW (S)	76	2	469636 106265
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	105	2	469610 106567
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	125	2	469559 106236
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	128	2	469492 106541
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	140	2	469524 106244
	Potential for Landslide Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	142	2	469472 106541
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (E)	205	2	470001 106430
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (W)	0	2	469692 106430

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	43	2	469698 106303
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (E)	205	2	470001 106430
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (N)	232	2	469709 106744
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SE (SE)	236	2	469917 106197
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (W)	0	2	469692 106430
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	43	2	469698 106303
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13NE (N)	82	2	469719 106614
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NW (N)	104	2	469639 106576
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NE (N)	182	2	469729 106704
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13NE (E)	205	2	470001 106468
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (E)	206	2	470001 106430
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SE (SE)	236	2	469917 106197
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	244	2	470001 106642
	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 (W)	0	2	469692 106430
	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 (W)	0	2	469692 106430

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
43	**Contemporary Trade Directory Entries** Name: Pure Chic Interiors Location: Bedhampton Hill, Havant, Hampshire, PO9 3JW Classification: Furniture - Repairing & Restoring **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A13SE (SE)	65	-	469824 106373
44	**Contemporary Trade Directory Entries** Name: Scratchmaster Location: 10, Glebe Park Avenue, Havant, Hampshire, PO9 3JR Classification: Car Body Repairs **Status: Active** Positional Accuracy: Automatically positioned to the address	A13SW (W)	101	-	469475 106404
45	**Contemporary Trade Directory Entries** Name: Diverse Cleaning Location: 76, Lower Road, Havant, Hampshire, PO9 3LJ Classification: Commercial Cleaning Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13SE (S)	208	-	469799 106157
46	**Contemporary Trade Directory Entries** Name: Microsport Ski Simulators Ltd Location: 21, Lodge Road, Havant, Hampshire, PO9 3LL Classification: Sports Equipment Manufacturers & Distributors **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13SE (E)	210	-	469973 106375
47	**Contemporary Trade Directory Entries** Name: Budgens Vehical Movements Location: 42, Penhurst Road, Havant, Hampshire, PO9 3NX Classification: Breakdown and Recovery **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SE (N)	347	-	469741 106851
48	**Contemporary Trade Directory Entries** Name: J W Blunden Location: 14, Park Side, Havant, Hampshire, PO9 3PL Classification: Coal & Smokeless Fuel Merchants & Distributors **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SE (NE)	368	-	469996 106818
48	**Contemporary Trade Directory Entries** Name: Spx Location: 13, Park Side, Havant, Hampshire, PO9 3PJ Classification: Air Compressors **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A19SW (NE)	405	-	470028 106841
49	**Contemporary Trade Directory Entries** Name: M J Rose Location: 65, Hillmead Gardens, Havant, Hampshire, PO9 3NN Classification: Power Flushing **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SW (N)	490	-	469564 106955
50	**Contemporary Trade Directory Entries** Name: B L Wilson Location: 26, Scratchface Lane, Havant, Hampshire, PO9 3NG Classification: Boatbuilders & Repairers **Status: Active** Positional Accuracy: Automatically positioned to the address	A19SW (NE)	520	-	470027 106974
51	**Contemporary Trade Directory Entries** Name: Ian Golds Location: 4, Scratchface Lane, Havant, Hampshire, PO9 3NG Classification: Fishing & Angling Equipment - Manufacturers & Distributors **Status: Active** Positional Accuracy: Automatically positioned to the address	A19SW (NE)	587	-	470167 106965
52	**Contemporary Trade Directory Entries** Name: J Price & Son Location: 108, Bedhampton Road, Havant, Hampshire, PO9 3EZ Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14NW (NE)	593	-	470346 106731
53	**Contemporary Trade Directory Entries** Name: D H G Teasedale Gas Deliveries Location: 96, Bedhampton Road, Havant, Hampshire, PO9 3EZ Classification: Gas Suppliers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14NE (E)	663	-	470435 106686

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
54	**Contemporary Trade Directory Entries** Name: Wessex Sliding Doors Location: 10, Lester Avenue, Havant, Hampshire, PO9 3HE Classification: Door Manufacturers - Domestic **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A19SE (NE)	705	-	470451 106770
55	**Contemporary Trade Directory Entries** Name: Hb Cleaning Ltd Location: 30, Fortunes Way, Havant, Hampshire, PO9 3LZ Classification: Carpet, Curtain & Upholstery Cleaners **Status: Active** Positional Accuracy: Automatically positioned to the address	A7NW (SW)	748	-	468934 106035
56	**Contemporary Trade Directory Entries** Name: National Tyres And Autocare Location: 27a, Bedhampton Road, Havant, Hampshire, PO9 3ES Classification: Tyre Dealers **Status: Active** Positional Accuracy: Automatically positioned to the address	A14NE (E)	751	-	470542 106602
56	**Contemporary Trade Directory Entries** Name: Cambridge Garage Portsmouth Ltd Location: 23, Bedhampton Road, Havant, Hampshire, PO9 3ES Classification: Car Dealers **Status: Active** Positional Accuracy: Automatically positioned to the address	A14NE (E)	777	-	470568 106592
56	**Contemporary Trade Directory Entries** Name: Cambridge Garage (Portsmouth) Ltd Location: 23, Bedhampton Road, Havant, Hampshire, PO9 3ES Classification: Car Dealers **Status: Active** Positional Accuracy: Automatically positioned to the address	A14NE (E)	777	-	470568 106592
57	**Contemporary Trade Directory Entries** Name: R J B Performance Location: 28, Lester Avenue, Havant, Hampshire, PO9 3HE Classification: Garage Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A19SE (NE)	758	-	470467 106861
58	**Contemporary Trade Directory Entries** Name: Ats Euromaster Ltd Location: 60-62, Bedhampton Road, Havant, Hampshire, PO9 3EY Classification: Tyre Dealers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14NE (E)	767	-	470552 106641
59	**Contemporary Trade Directory Entries** Name: Hmd Domestics Location: 28, Littlepark Avenue, Havant, Hampshire, PO9 3QY Classification: Domestic Appliances - Servicing, Repairs & Parts **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NE (N)	791	-	469839 107299
60	**Contemporary Trade Directory Entries** Name: Headline Printers Location: The Villa, Littlepark House, Oakwood Avenue, Havant, Hampshire, PO9 3RB Classification: Printers **Status: Active** Positional Accuracy: Manually positioned to the address or location	A18NW (N)	844	-	469506 107305
60	**Contemporary Trade Directory Entries** Name: John Inkster Littlepark Ltd Location: Littlepark House, Oakwood Avenue, Havant, Hampshire, PO9 3RB Classification: Builders' Merchants **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NW (N)	844	-	469507 107305
61	**Contemporary Trade Directory Entries** Name: Portsmouth A C Ltd Location: 39, Broadmarsh Business & Innovation Centre, Harts Farm Way, Havant, Hampshire, PO9 1HS Classification: Air Conditioning & Refrigeration Contractors **Status: Active** Positional Accuracy: Automatically positioned to the address	A9NE (SE)	860	-	470399 105798

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
62	**Contemporary Trade Directory Entries** Name: British Maids Location: 42, Broadmarsh Business & Innovation Centre, Harts Farm Way, Havant, Hampshire, PO9 1HS Classification: Cleaning Services - Domestic **Status: Active** Positional Accuracy: Automatically positioned to the address	A9NE (SE)	868	-	470417 105807
62	**Contemporary Trade Directory Entries** Name: C4 Location: 42-43, Broadmarsh Business & Innovation Centre, Harts Farm Way, Havant, Hampshire, PO9 1HS Classification: Commercial Cleaning Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9NE (SE)	868	-	470417 105807
62	**Contemporary Trade Directory Entries** Name: Select Freight Ltd Location: 42, Broadmarsh Business & Innovation Centre, Harts Farm Way, Havant, Hampshire, PO9 1HS Classification: Freight Forwarders **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9NE (SE)	868	-	470417 105807
62	**Contemporary Trade Directory Entries** Name: Fairview Lifting Gear Services Location: 47, Broadmarsh Business & Innovation Centre, Harts Farm Way, Havant, Hampshire, PO9 1HS Classification: Lifting Equipment **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A9NE (SE)	898	-	470449 105799
62	**Contemporary Trade Directory Entries** Name: Raft Systems Ltd Location: 49, Broadmarsh Business & Innovation Centre, Harts Farm Way, Havant, Hampshire, PO9 1HS Classification: Telecommunications Equipment & Systems **Status: Active** Positional Accuracy: Automatically positioned to the address	A9NE (SE)	909	-	470456 105790
62	**Contemporary Trade Directory Entries** Name: Lewis Mobility Location: 51, Broadmarsh Business & Innovation Centre, Harts Farm Way, Havant, Hampshire, PO9 1HS Classification: Disability Equipment - Manufacturers & Suppliers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9NE (SE)	921	-	470462 105778
62	**Contemporary Trade Directory Entries** Name: Supply Team Location: 52, Broadmarsh Business & Innovation Centre, Harts Farm Way, Havant, Hampshire, PO9 1HS Classification: Pharmaceutical Manufacturers & Distributors **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9NE (SE)	927	-	470466 105773
63	**Contemporary Trade Directory Entries** Name: Tudor Blinds Location: 50, Park Lane, Bedhampton, Havant, Hampshire, PO9 3HL Classification: Blinds, Awnings & Canopies **Status: Active** Positional Accuracy: Automatically positioned to the address	A19NE (NE)	883	-	470435 107119
64	**Contemporary Trade Directory Entries** Name: Goodmans Loudspeakers Ltd Location: 1-3, Ridgway, Havant, Hampshire, PO9 1JS Classification: Sound Equipment Systems Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14SE (E)	893	-	470613 106111
64	**Contemporary Trade Directory Entries** Name: Mordaunt-Short Location: 1-3, Ridgway, Havant, Hampshire, PO9 1JS Classification: Sound Equipment Systems Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14SE (E)	893	-	470613 106111
64	**Contemporary Trade Directory Entries** Name: T G I Plc Location: 1-3, Ridgway, Havant, Hampshire, PO9 1JS Classification: Sound Equipment Systems Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14SE (E)	893	-	470613 106111

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
65	**Contemporary Trade Directory Entries** Name: Tt Coil Ltd Location: 18, Broadmarsh Business & Innovation Centre, Harts Farm Way, Havant, Hampshire, PO9 1HS Classification: Heat Exchangers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9SE (SE)	896	-	470402 105748
65	**Contemporary Trade Directory Entries** Name: 2 Teck Ltd Location: 19, Broadmarsh Business & Innovation Centre, Harts Farm Way, Havant, Hampshire, PO9 1HS Classification: Air Conditioning & Refrigeration Contractors **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A9SE (SE)	896	-	470402 105748
66	**Contemporary Trade Directory Entries** Name: L & S Waste Management Ltd Location: Farlington Redoubt, Portsdown Hill Road, Portsmouth, PO6 1BW Classification: Waste Disposal Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A11SE (W)	915	-	468661 106394
67	**Contemporary Trade Directory Entries** Name: E S M Recovery Location: 373, Havant Road, Farlington, Portsmouth, PO6 1AA Classification: Car Breakers & Dismantlers **Status: Active** Positional Accuracy: Automatically positioned to the address	A7NW (SW)	963	-	468787 105860
68	**Contemporary Trade Directory Entries** Name: Hanson Concrete Location: Harts Farm Way, Havant, Hampshire, PO9 1JN Classification: Concrete & Mortar Ready Mixed **Status: Active** Positional Accuracy: Manually positioned to the road within the address or location	A9SE (SE)	965	-	470421 105670
69	**Fuel Station Entries** Name: Cambridge Garage Location: 23 Bedhampton Road, HAVANT, Hampshire, PO9 3ES Brand: Obsolete Premises Type: Not Applicable **Status: Obsolete** Positional Accuracy: Automatically positioned to the address	A14NE (E)	776	-	470568 106592

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
70	**Nitrate Vulnerable Zones** Name: Not Supplied Description: NVZ Area Source: Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	A13NE (W)	0	7	469692 106430
71	**Ramsar Sites** Name: Chichester And Langstone Harbours Multiple Areas: Y Total Area (m2): 58109478.02 Source: Natural England Reference: UK11013 Designation Date: Not Supplied	A8SW (S)	886	6	469664 105453
72	**Sites of Special Scientific Interest** Name: Langstone Harbour Multiple Areas: Y Total Area (m2): 20856825.63 Source: Natural England Reference: 1001182 Designation Details: EC Special Protection Area Designation Date: 22nd February 1985 Date Type: Notified Designation Details: Local Nature Reserve Designation Date: 22nd February 1985 Date Type: Notified Designation Details: Local Wildlife Trust Reserve Designation Date: 22nd February 1985 Date Type: Notified Designation Details: Nature Conservation Review Designation Date: 22nd February 1985 Date Type: Notified Designation Details: Ramsar Site Designation Date: 22nd February 1985 Date Type: Notified Designation Details: Special Area Of Conservation Designation Date: 22nd February 1985 Date Type: Notified	A8SW (S)	886	6	469664 105453
73	**Special Areas of Conservation** Name: Solent Maritime Multiple Areas: Y Total Area (m2): 112433815.66 Source: Natural England Reference: UK0030059 **Status: Designated**	A8SW (S)	886	6	469664 105453
74	**Special Protection Areas** Name: Chichester And Langstone Harbours Multiple Areas: Y Total Area (m2): 58109478.02 Source: Natural England Reference: UK9011011 Designation Date: Not Supplied	A8SW (S)	886	6	469664 105453

Agency & Hydrological	Version	Update Cycle
Contaminated Land Register Entries and Notices		
Portsmouth City Council - Health and Trading Standards	February 2012	Annual Rolling Update
Winchester City Council - Environmental Health Department	January 2012	Annual Rolling Update
Chichester District Council - Environmental Health Department	July 2011	Annual Rolling Update
Havant Borough Council - Environmental Health Department	March 2012	Annual Rolling Update
East Hampshire District Council - Environmental Health Department	May 2012	Annual Rolling Update
Discharge Consents		
Environment Agency - Southern Region	January 2012	Quarterly
Enforcement and Prohibition Notices		
Environment Agency - Southern Region	April 2012	Quarterly
Integrated Pollution Controls		
Environment Agency - Southern Region	October 2008	Not Applicable
Integrated Pollution Prevention And Control		
Environment Agency - Southern Region	January 2012	Quarterly
Environment Agency - South East Region - Solent & South Downs Area	October 2011	Quarterly
Local Authority Integrated Pollution Prevention And Control		
East Hampshire District Council - Environmental Health Department	April 2012	Annual Rolling Update
Chichester District Council - Environmental Health Department	August 2011	Annual Rolling Update
Havant Borough Council - Environmental Health Department	February 2011	Annual Rolling Update
Winchester City Council - Environmental Health Department	March 2012	Annual Rolling Update
Portsmouth City Council - Environmental Health Department	September 2011	Annual Rolling Update
Local Authority Pollution Prevention and Controls		
Chichester District Council - Environmental Health Department	August 2011	Annual Rolling Update
East Hampshire District Council - Environmental Health Department	February 2011	Annual Rolling Update
Havant Borough Council - Environmental Health Department	February 2011	Annual Rolling Update
Winchester City Council - Environmental Health Department	March 2012	Annual Rolling Update
Portsmouth City Council - Environmental Health Department	September 2011	Annual Rolling Update
Local Authority Pollution Prevention and Control Enforcements		
East Hampshire District Council - Environmental Health Department	April 2012	Annual Rolling Update
Chichester District Council - Environmental Health Department	August 2011	Annual Rolling Update
Havant Borough Council - Environmental Health Department	February 2011	Annual Rolling Update
Winchester City Council - Environmental Health Department	March 2012	Annual Rolling Update
Portsmouth City Council - Environmental Health Department	September 2011	Annual Rolling Update
Nearest Surface Water Feature		
Ordnance Survey	December 2011	Quarterly
Pollution Incidents to Controlled Waters		
Environment Agency - Southern Region	December 1999	Not Applicable
Prosecutions Relating to Authorised Processes		
Environment Agency - Southern Region	April 2012	Monthly
Prosecutions Relating to Controlled Waters		
Environment Agency - Southern Region	April 2012	Monthly
Registered Radioactive Substances		
Environment Agency - Southern Region	January 2012	Quarterly
River Quality		
Environment Agency - Head Office	November 2001	Not Applicable
River Quality Biology Sampling Points		
Environment Agency - Head Office	January 2011	Annually
River Quality Chemistry Sampling Points		
Environment Agency - Head Office	January 2011	Annually
Substantiated Pollution Incident Register		
Environment Agency - Southern Region - Hampshire and Isle of Wight Area Office	January 2012	Quarterly
Environment Agency - Southern Region - Solent and South Downs	January 2012	Quarterly
Environment Agency - Southern Region - Sussex Area	January 2012	Quarterly

Agency & Hydrological	Version	Update Cycle
Water Abstractions Environment Agency - Southern Region	January 2012	Quarterly
Water Industry Act Referrals Environment Agency - Southern Region	January 2012	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	September 2011	Annually
Superficial Aquifer Designations British Geological Survey - National Geoscience Information Service	September 2011	Annually
Source Protection Zones Environment Agency - Head Office	December 2011	Quarterly
Extreme Flooding from Rivers or Sea without Defences Environment Agency - Head Office	May 2012	Quarterly
Flooding from Rivers or Sea without Defences Environment Agency - Head Office	May 2012	Quarterly
Areas Benefiting from Flood Defences Environment Agency - Head Office	May 2012	Quarterly
Flood Water Storage Areas Environment Agency - Head Office	May 2012	Quarterly
Flood Defences Environment Agency - Head Office	May 2012	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	January 2012	Quarterly
Environment Agency - Southern Region - Solent and South Downs	January 2012	Quarterly
Environment Agency - Southern Region - Sussex Area	January 2012	Quarterly
Integrated Pollution Control Registered Waste Sites		
Environment Agency - Southern Region	October 2008	Not Applicable
Licensed Waste Management Facilities (Landfill Boundaries)		
Environment Agency - South East Region - Solent & South Downs Area	January 2012	Quarterly
Environment Agency - Southern Region - Hampshire and Isle of Wight Area Office	January 2012	Quarterly
Environment Agency - Southern Region - Solent and South Downs	January 2012	Quarterly
Environment Agency - Southern Region - Sussex Area	January 2012	Quarterly
Licensed Waste Management Facilities (Locations)		
Environment Agency - South East Region - Solent & South Downs Area	April 2012	Quarterly
Environment Agency - Southern Region - Hampshire and Isle of Wight Area Office	April 2012	Quarterly
Environment Agency - Southern Region - Solent and South Downs	April 2012	Quarterly
Environment Agency - Southern Region - Sussex Area	April 2012	Quarterly
Local Authority Landfill Coverage		
Chichester District Council - Environmental Health Department	May 2000	Not Applicable
East Hampshire District Council	May 2000	Not Applicable
Hampshire County Council - Minerals and Waste Planning	May 2000	Not Applicable
Havant Borough Council - Environmental Health Department	May 2000	Not Applicable
Portsmouth City Council - Environmental Health Department	May 2000	Not Applicable
West Sussex County Council - Environment & Development	May 2000	Not Applicable
Winchester City Council - Environmental Health Department	May 2000	Not Applicable
Local Authority Recorded Landfill Sites		
Chichester District Council - Environmental Health Department	May 2000	Not Applicable
East Hampshire District Council	May 2000	Not Applicable
Hampshire County Council - Minerals and Waste Planning	May 2000	Not Applicable
Havant Borough Council - Environmental Health Department	May 2000	Not Applicable
Portsmouth City Council - Environmental Health Department	May 2000	Not Applicable
West Sussex County Council - Environment & Development	May 2000	Not Applicable
Winchester City Council - Environmental Health Department	May 2000	Not Applicable
Registered Landfill Sites		
Environment Agency - Southern Region - Hampshire Area	March 2003	Not Applicable
Environment Agency - Southern Region - Sussex Area	March 2003	Not Applicable
Registered Waste Transfer Sites		
Environment Agency - Southern Region - Hampshire Area	March 2003	Not Applicable
Environment Agency - Southern Region - Sussex Area	March 2003	Not Applicable
Registered Waste Treatment or Disposal Sites		
Environment Agency - Southern Region - Hampshire Area	March 2003	Not Applicable
Environment Agency - Southern Region - Sussex Area	March 2003	Not Applicable

Hazardous Substances	Version	Update Cycle
Control of Major Accident Hazards Sites (COMAH)		
Health and Safety Executive	December 2011	Bi-Annually
Explosive Sites		
Health and Safety Executive	December 2011	Bi-Annually
Notification of Installations Handling Hazardous Substances (NIHHS)		
Health and Safety Executive	November 2000	Not Applicable
Planning Hazardous Substance Enforcements		
Portsmouth City Council - Planning Office	August 2011	Annual Rolling Update
Chichester District Council - Planning Department	January 2012	Annual Rolling Update
Havant Borough Council - Commercial Team	May 2012	Annual Rolling Update
West Sussex County Council - Environment & Development	October 2006	Annual Rolling Update
East Hampshire District Council	September 2011	Annual Rolling Update
Hampshire County Council - Minerals and Waste Planning	September 2011	Annual Rolling Update
Winchester City Council - Planning Department	September 2011	Annual Rolling Update
Planning Hazardous Substance Consents		
Portsmouth City Council - Planning Office	August 2011	Annual Rolling Update
Chichester District Council - Planning Department	January 2012	Annual Rolling Update
Havant Borough Council - Commercial Team	May 2012	Annual Rolling Update
West Sussex County Council - Environment & Development	October 2006	Annual Rolling Update
East Hampshire District Council	September 2011	Annual Rolling Update
Hampshire County Council - Minerals and Waste Planning	September 2011	Annual Rolling Update
Winchester City Council - Planning Department	September 2011	Annual Rolling Update

Geological	Version	Update Cycle
BGS 1:625,000 Solid Geology British Geological Survey - National Geoscience Information Service	August 1996	Not Applicable
BGS Estimated Soil Chemistry British Geological Survey - National Geoscience Information Service	January 2010	Variable
BGS Recorded Mineral Sites British Geological Survey - National Geoscience Information Service	April 2012	Bi-Annually
Brine Compensation Area Cheshire Brine Subsidence Compensation Board	November 2002	Not Applicable
Coal Mining Affected Areas The Coal Authority - Mining Report Service	August 2011	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 2011	Not Applicable
Potential for Collapsible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	February 2011	Annually
Potential for Compressible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	February 2011	Annually
Potential for Ground Dissolution Stability Hazards British Geological Survey - National Geoscience Information Service	February 2011	Annually
Potential for Landslide Ground Stability Hazards British Geological Survey - National Geoscience Information Service	February 2011	Annually
Potential for Running Sand Ground Stability Hazards British Geological Survey - National Geoscience Information Service	February 2011	Annually
Potential for Shrinking or Swelling Clay Ground Stability Hazards British Geological Survey - National Geoscience Information Service	February 2011	Annually
Radon Potential - Radon Affected Areas British Geological Survey - National Geoscience Information Service	July 2011	As notified
Radon Potential - Radon Protection Measures British Geological Survey - National Geoscience Information Service	July 2011	As notified
Industrial Land Use	**Version**	**Update Cycle**
Contemporary Trade Directory Entries Thomson Directories	February 2012	Quarterly
Fuel Station Entries Catalist Ltd - Experian	November 2011	Quarterly

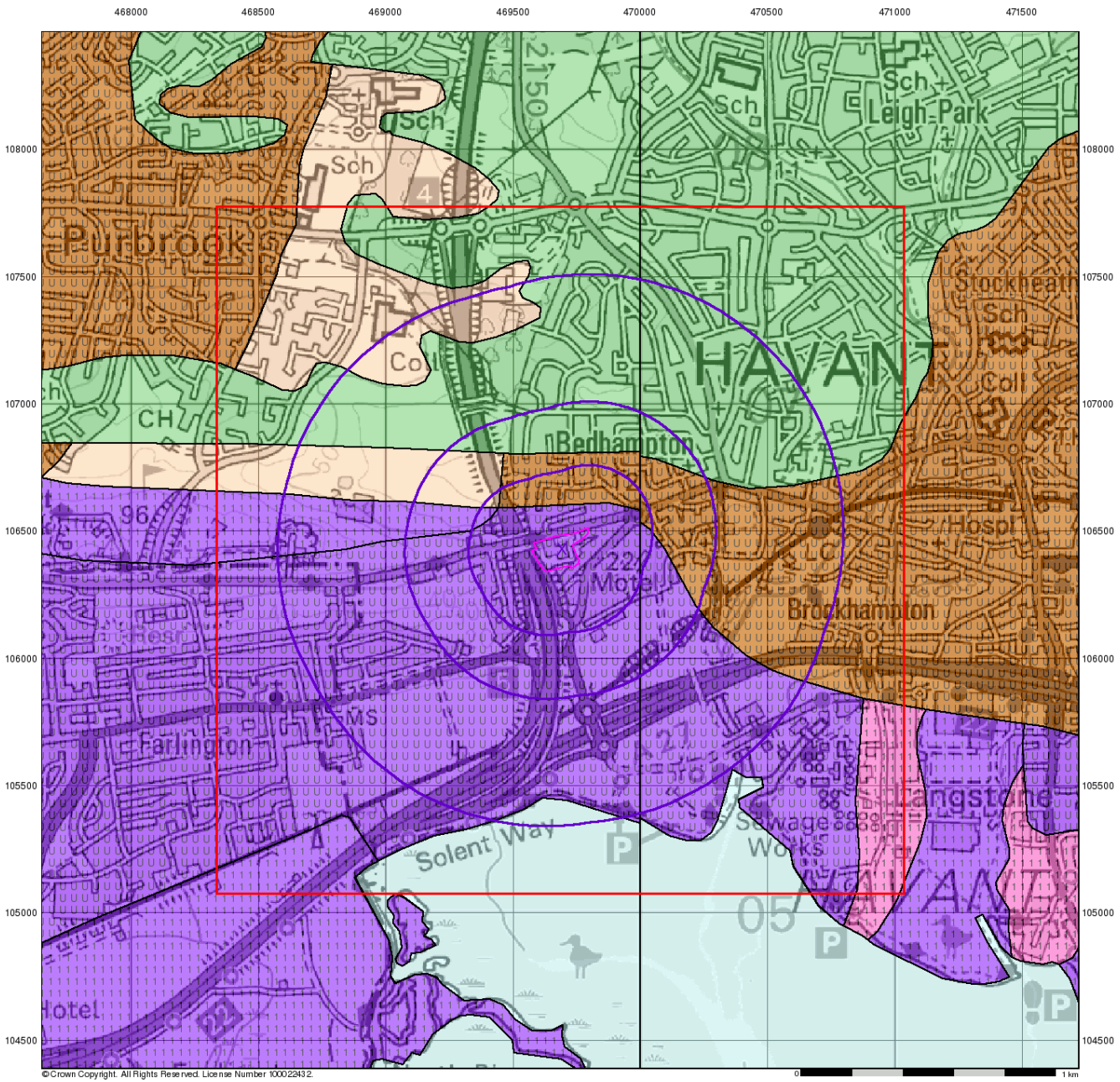
Sensitive Land Use	Version	Update Cycle
Areas of Outstanding Natural Beauty Natural England	February 2012	Bi-Annually
Environmentally Sensitive Areas Natural England	February 2012	Annually
Forest Parks Forestry Commission	April 1997	Not Applicable
Local Nature Reserves Natural England	February 2012	Bi-Annually
Marine Nature Reserves Natural England	February 2012	Bi-Annually
National Nature Reserves Natural England	February 2012	Bi-Annually
National Parks Natural England	February 2012	Bi-Annually
Nitrate Sensitive Areas Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	February 2012	Not Applicable
Nitrate Vulnerable Zones Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	February 2012	Annually
Ramsar Sites Natural England	February 2012	Bi-Annually
Sites of Special Scientific Interest Natural England	February 2012	Bi-Annually
Special Areas of Conservation Natural England	February 2012	Bi-Annually
Special Protection Areas Natural England	February 2012	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	
Centre for Ecology and Hydrology	
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	**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
3	**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
4	**Landmark Information Group Limited** 5 - 7 Abbey Court, Eagle Way, Sowton, Exeter, Devon, EX2 7HY	Telephone: 01392 441761 Fax: 01392 441709 Email: cssupport@landmarkinfo.co.uk Website: www.landmarkinfo.co.uk
5	**Peter Brett Associates** Caversham Bridge House, Waterman Place, Reading, Berkshire, RG1 8DN	Telephone: 0118 950 0761 Fax: 0118 959 7498 Email: reading@pba.co.uk Website: www.pba.co.uk
6	**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
7	**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
8	**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
9	**Portsmouth City Council - Environmental Health Department** Civic Offices, Guildhall Square, Portsmouth, Hampshire, PO1 2AZ	Telephone: 023 92822251 Fax: 01705 834519 Website: www.portsmouth.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.



Groundwater Vulnerability

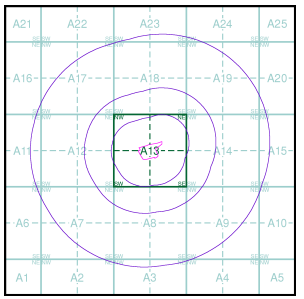
General

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

Agency and Hydrological

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

Site Sensitivity Context Map - Slice A



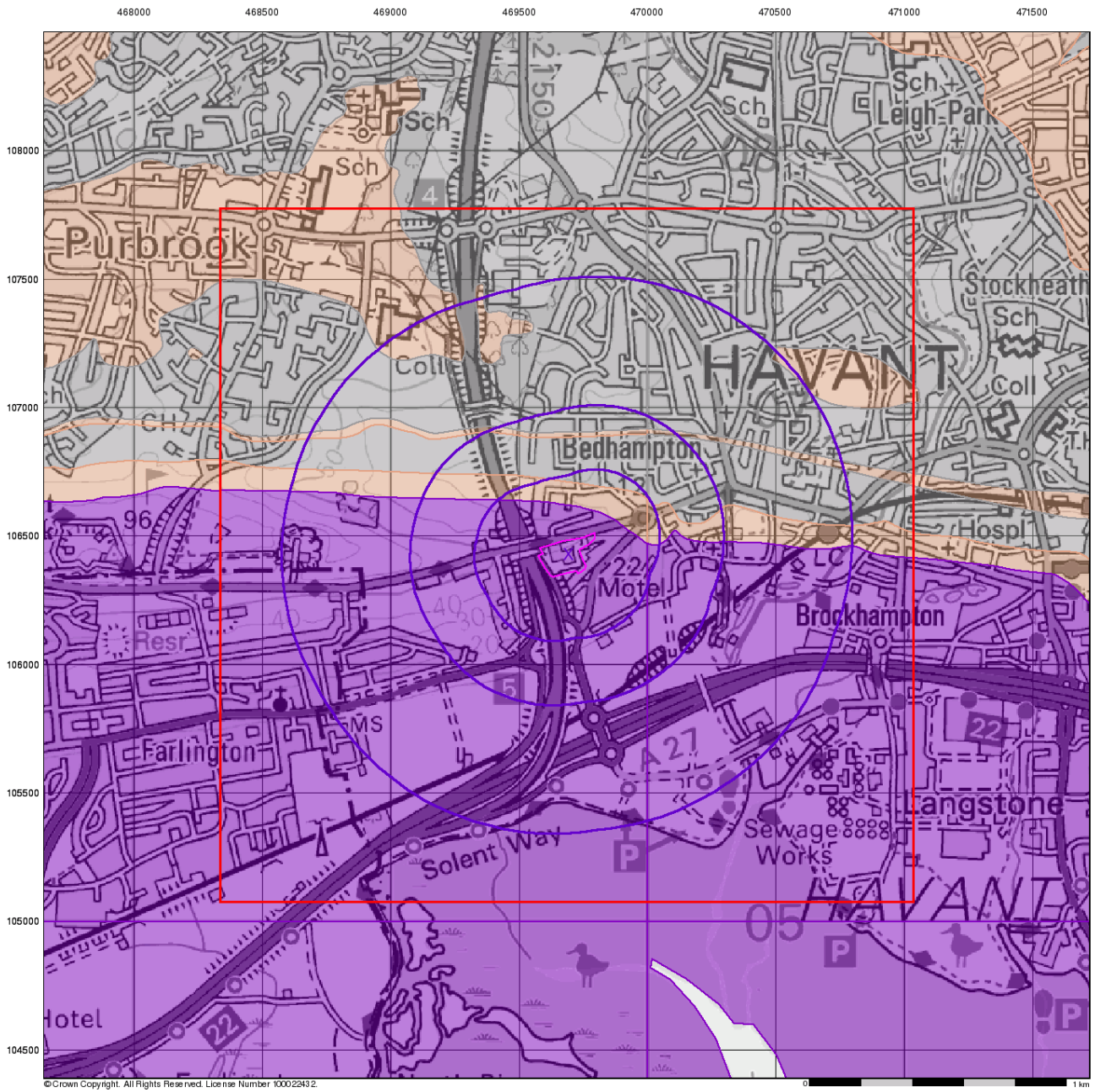
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Customer Ref:	GE8756
National Grid Reference:	469690, 106430
Slice:	A
Site Area (Ha):	2.1
Search Buffer (m):	1000

Site Details

Havant Retail Park, Portsdown Hill Road, Havant, PO9 3NA

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Bedrock Aquifer Designation

General

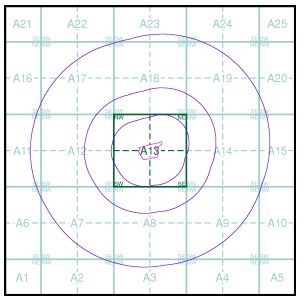
Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Agency and Hydrological

Geological Classes

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

Site Sensitivity Context Map - Slice A



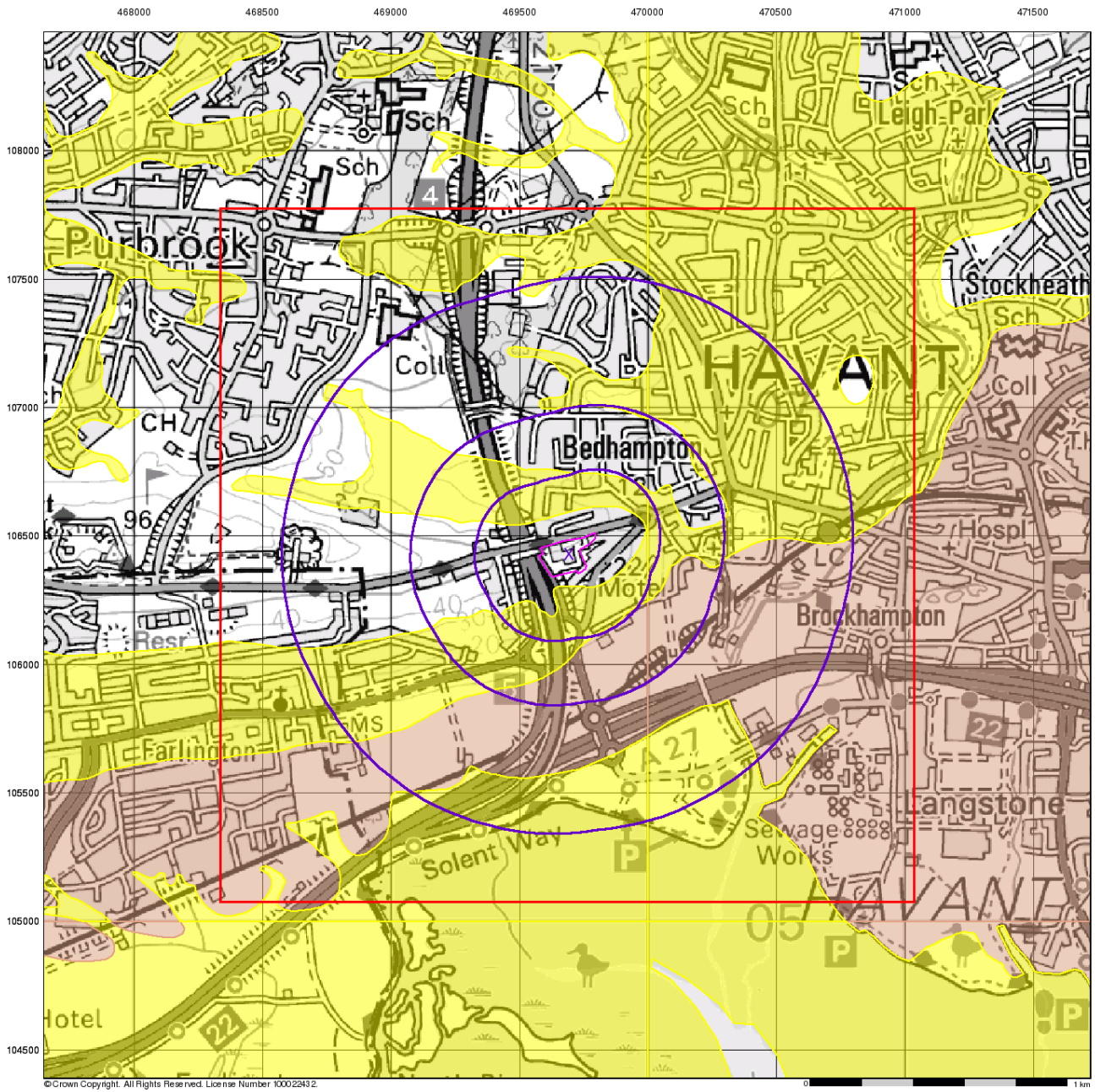
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Site Area (Ha):	2.1
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Superficial Aquifer Designation

General

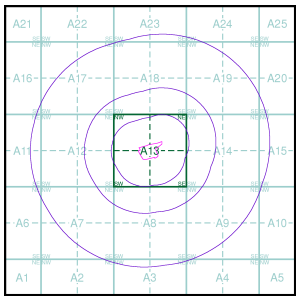
Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Agency and Hydrological

Geological Classes

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

Site Sensitivity Context Map - Slice A



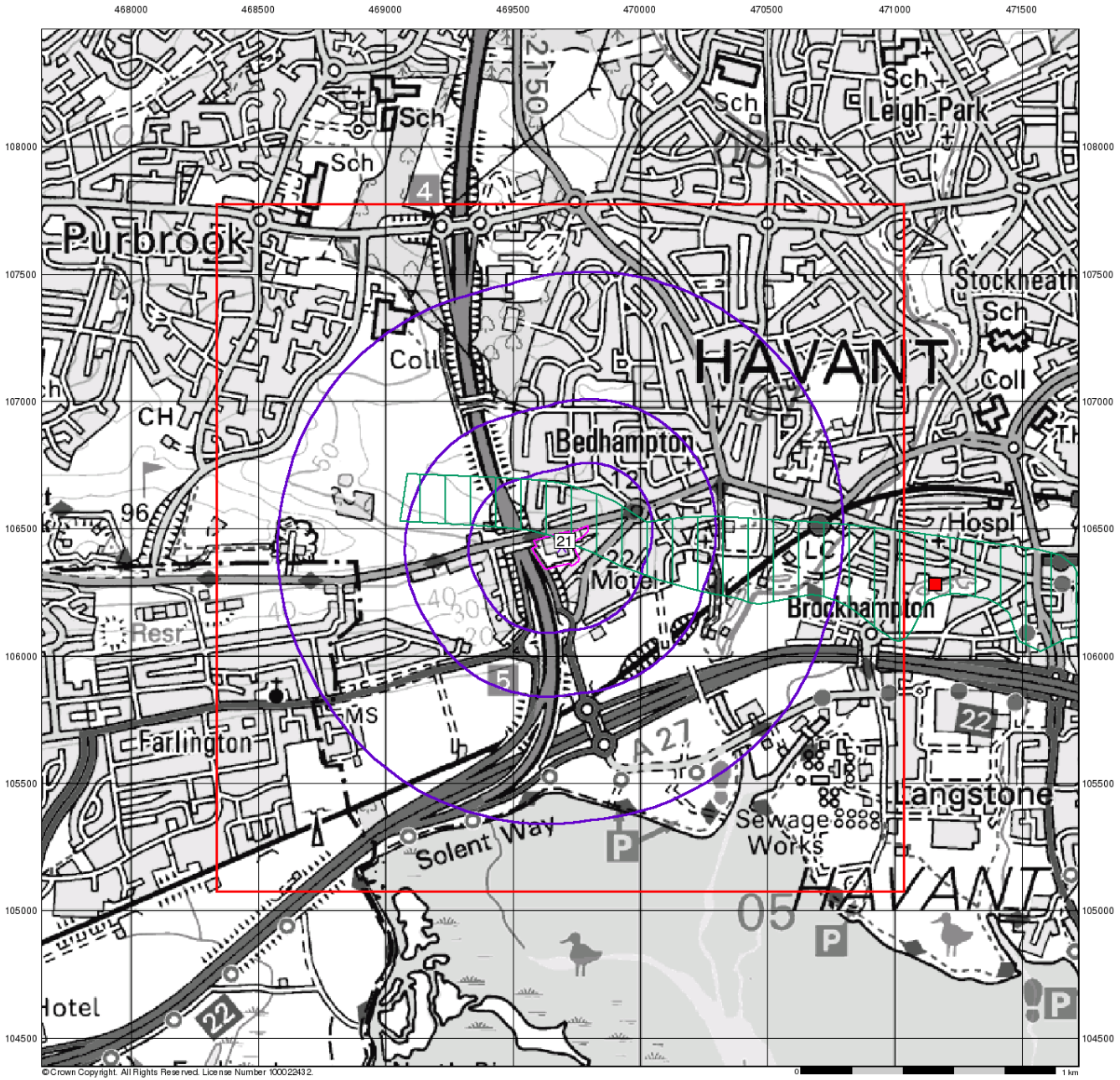
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Site Area (Ha):	2.1
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Source Protection Zones

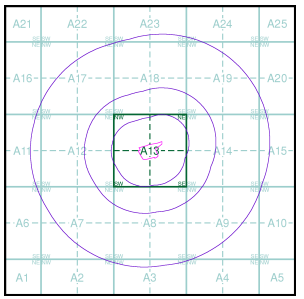
General

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

Agency and Hydrological

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

Site Sensitivity Context Map - Slice A



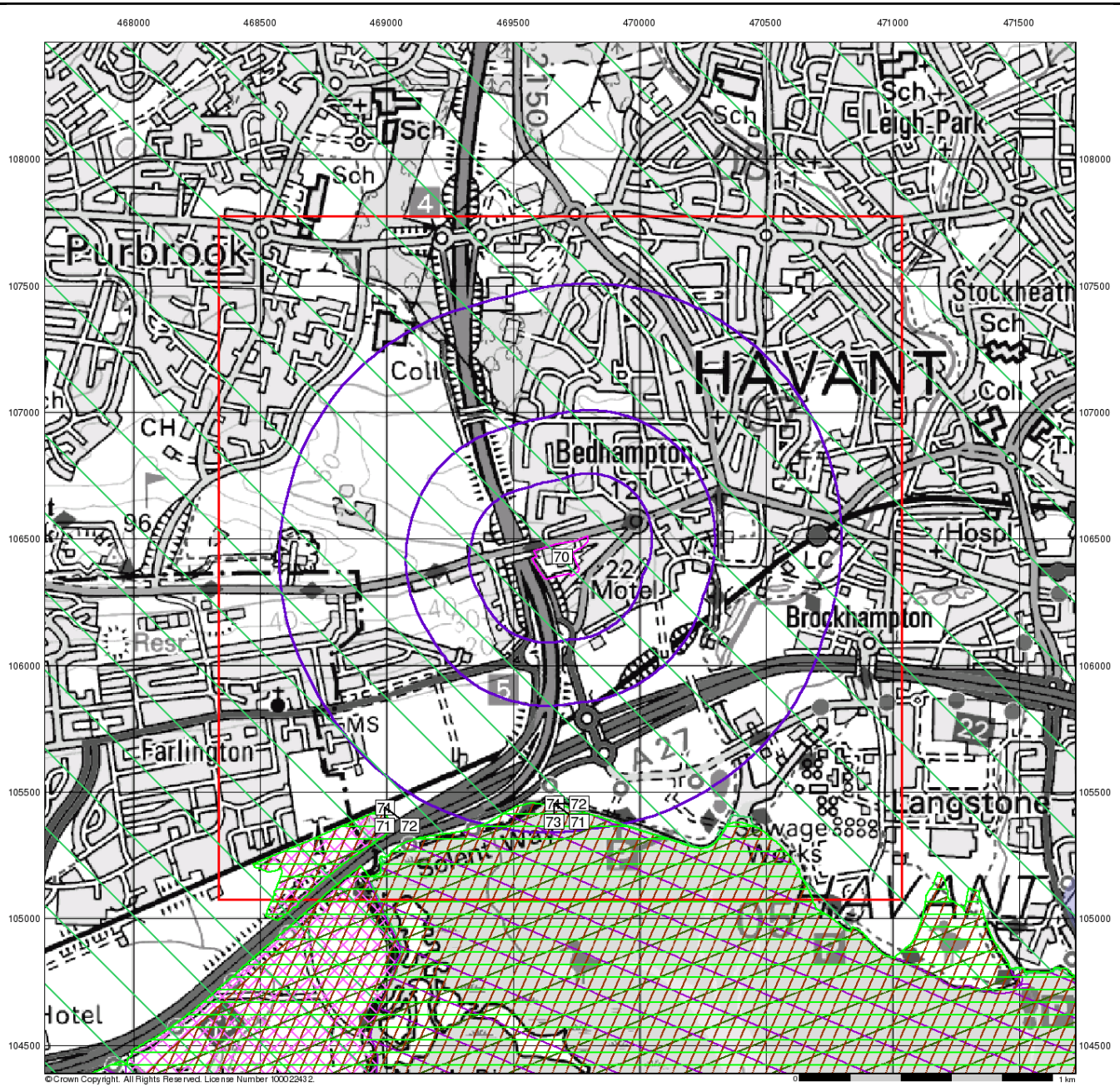
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Customer Ref:	GE8756
National Grid Reference:	469690, 106430
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Site Area (Ha):	2.1
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Site Details

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Sensitive Land Uses

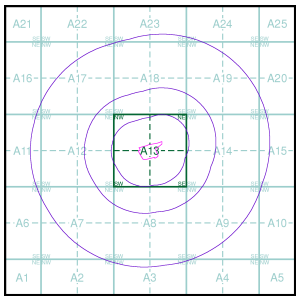
General

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

Sensitive Land Uses

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

Site Sensitivity Context Map - Slice A



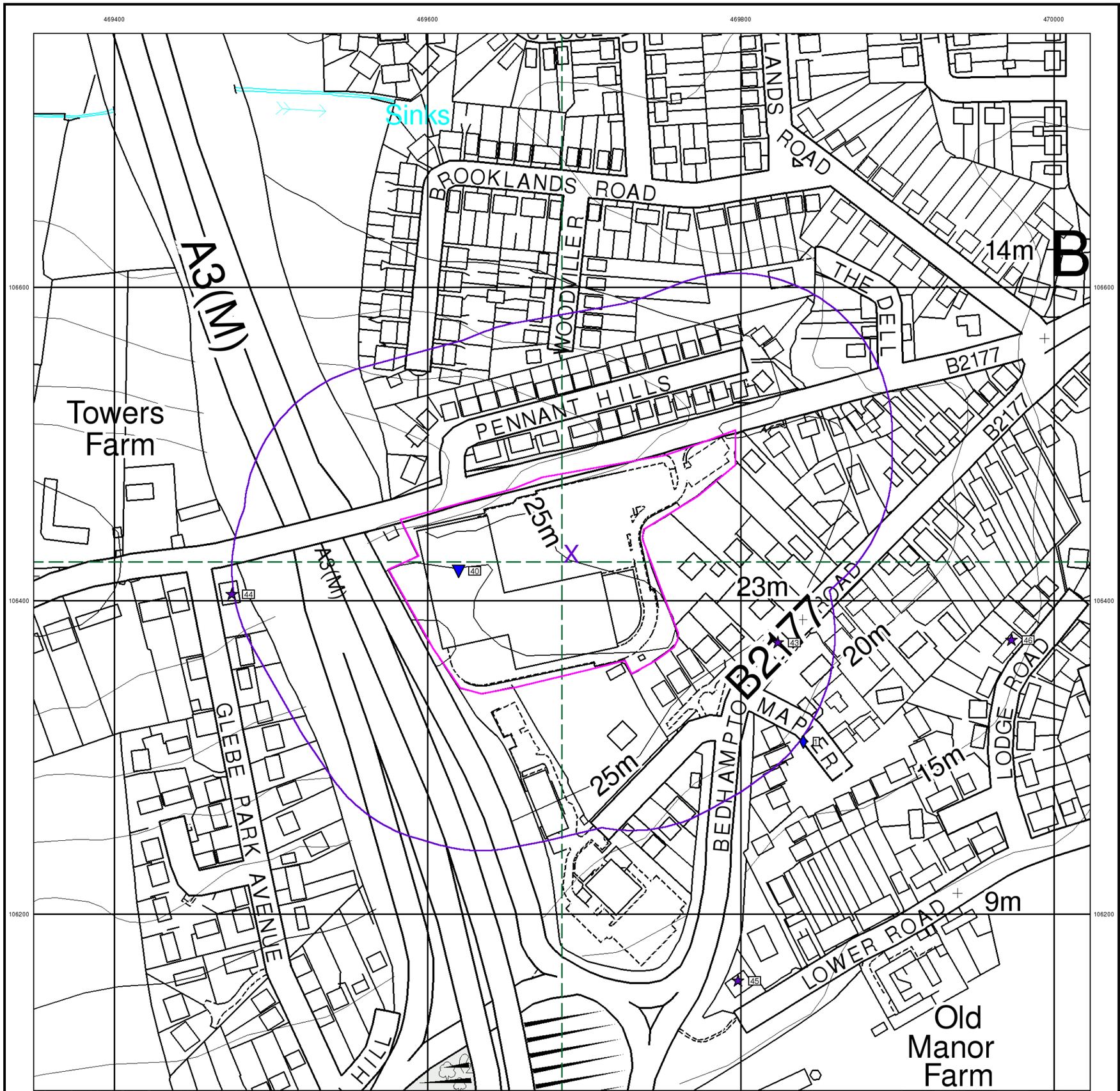
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General

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

Agency and Hydrological

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

Geological

- BGS Recorded Mineral Site

Industrial Land Use

- Contemporary Trade Directory Entry
- Fuel Station Entry

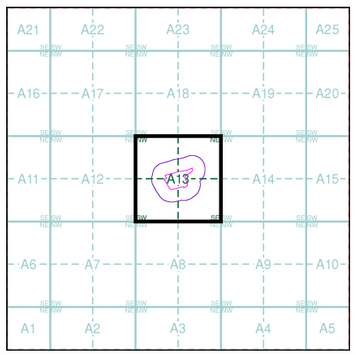
Waste

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

Hazardous Substances

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

Site Sensitivity Map - Segment A13



Order Details

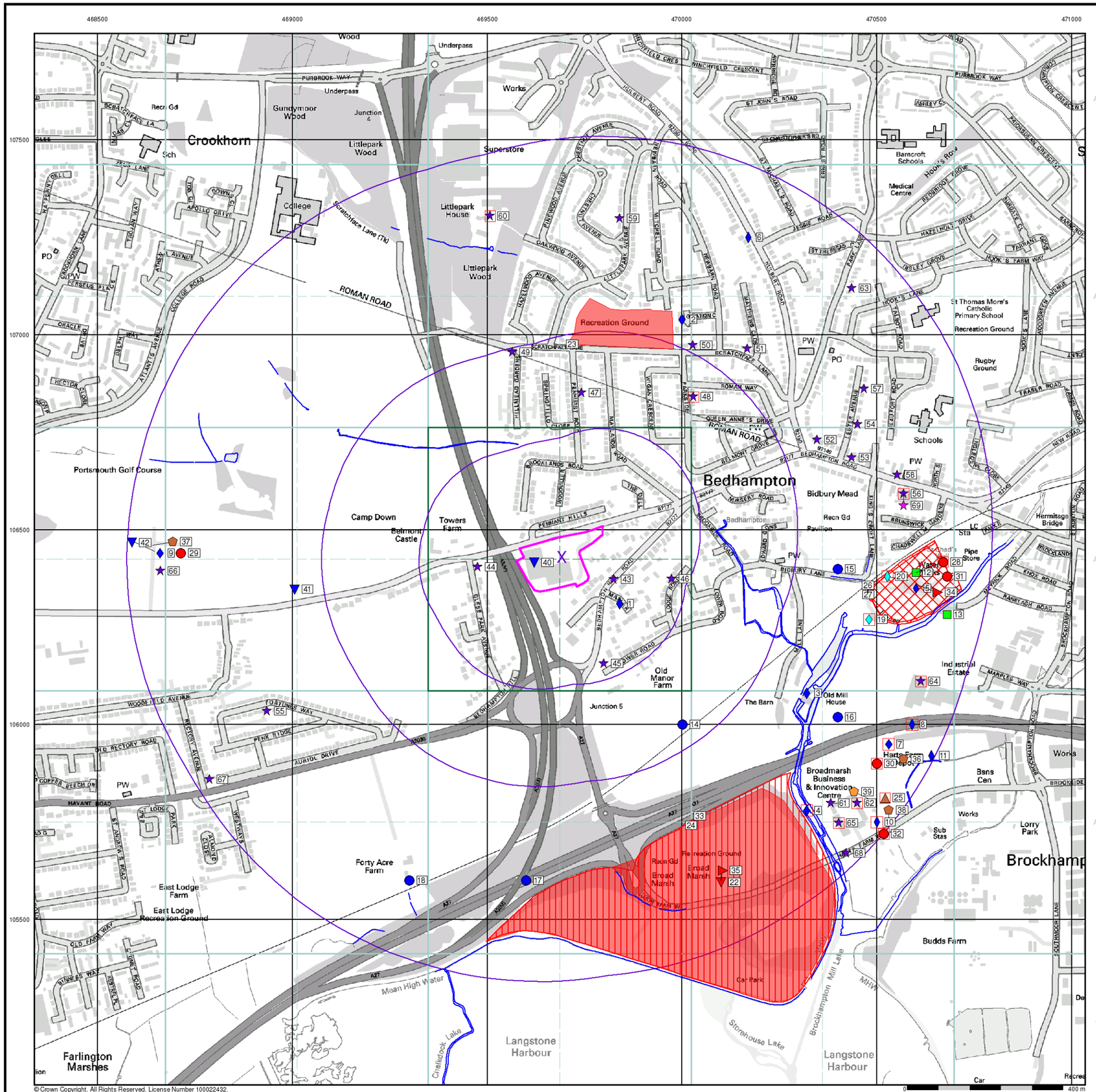
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Customer Ref:	GE8756
National Grid Reference:	469690, 106430
Slice:	A
Site Area (Ha):	2.1

Site Details

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General

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

Agency and Hydrological

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

Geological

- BGS Recorded Mineral Site

Industrial Land Use

- Contemporary Trade Directory Entry
- Fuel Station Entry

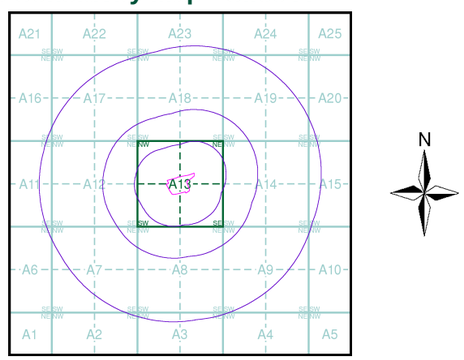
Waste

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

Hazardous Substances

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

Site Sensitivity Map - Slice A



Order Details

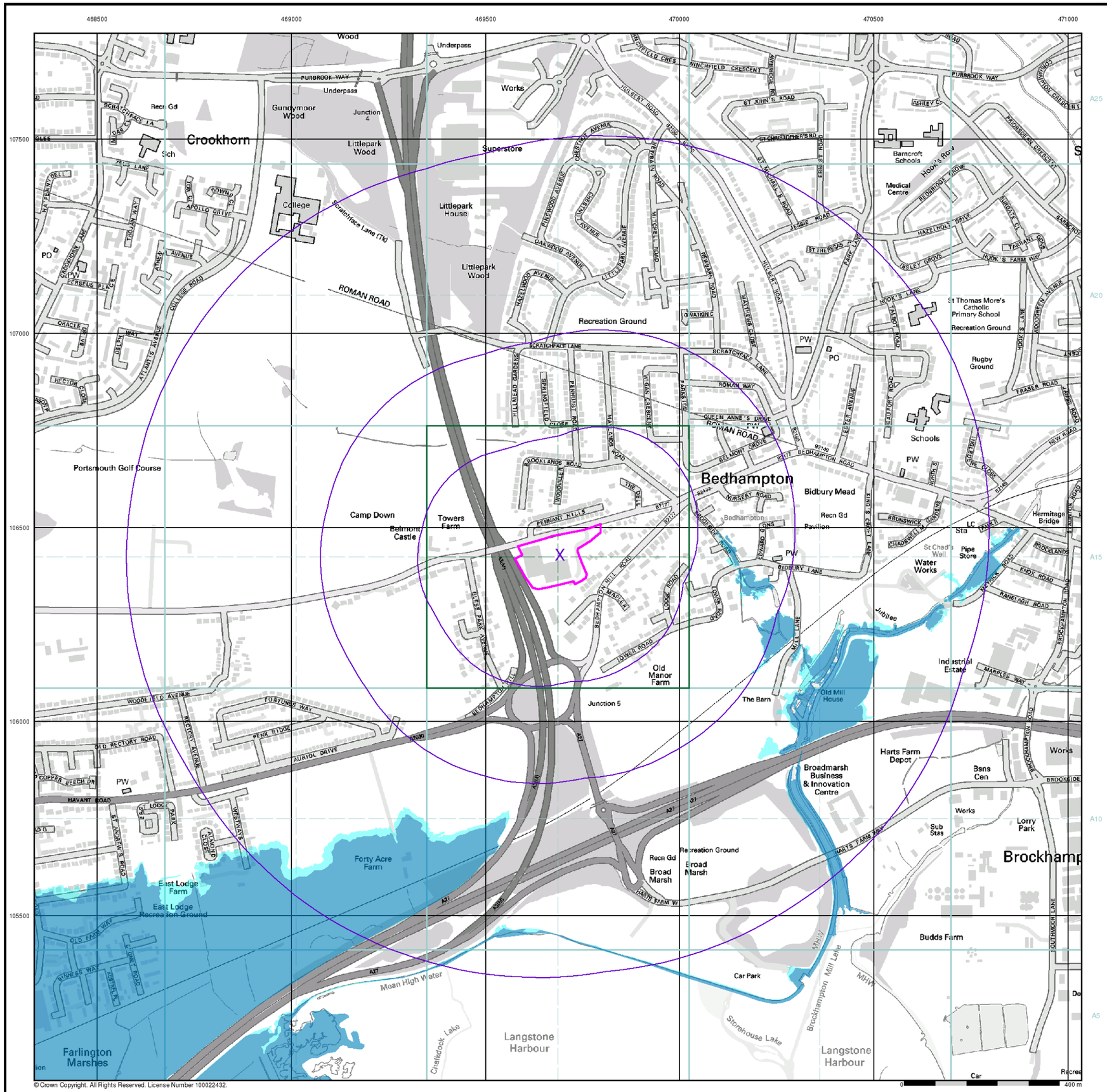
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Customer Ref:	GE8756
National Grid Reference:	469690, 106430
Slice:	A
Site Area (Ha):	2.1
Search Buffer (m):	1000

Site Details

Havant Retail Park, Portsdown Hill Road, Havant, PO9 3NA

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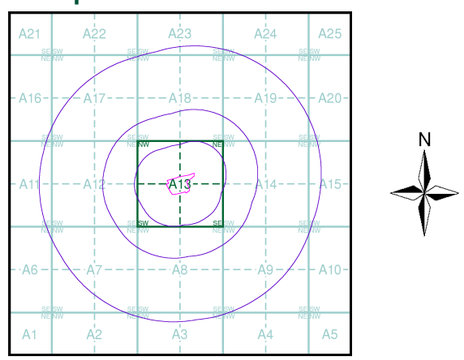
General

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

Agency and Hydrological (Flood)

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

Flood Map - Slice A



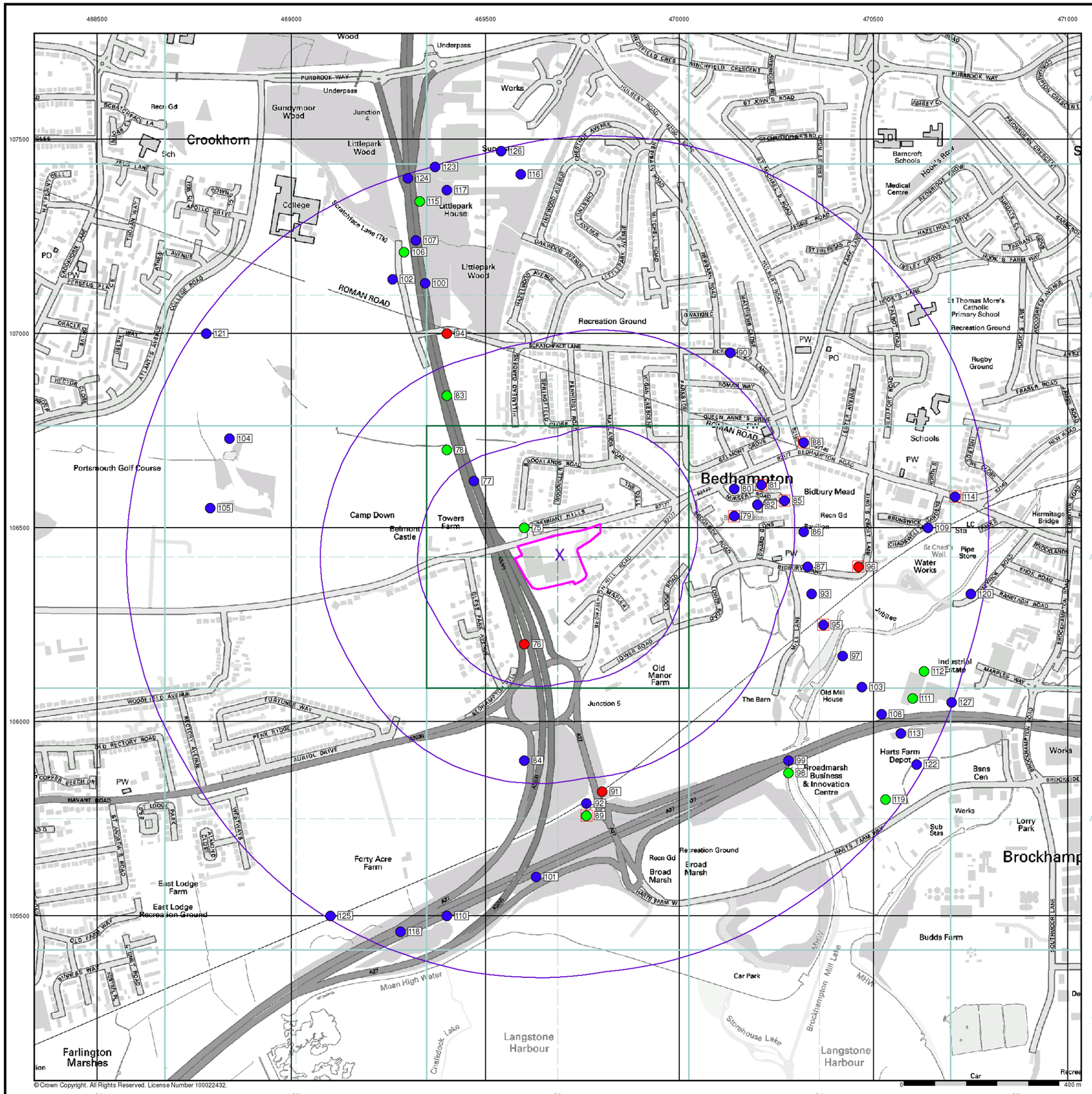
Order Details

Order Number:	39296519_1_1
Customer Ref:	GE8756
National Grid Reference:	469690, 106430
Slice:	A
Site Area (Ha):	2.1
Search Buffer (m):	1000

Site Details

Havant Retail Park, Portsdown Hill Road, Havant, PO9 3NA

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Fax: 0844 844 9951
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General

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

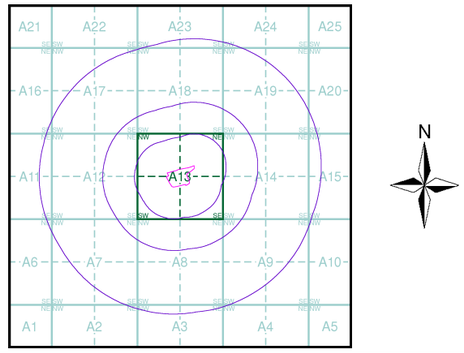
Agency and Hydrological (Boreholes)

- 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

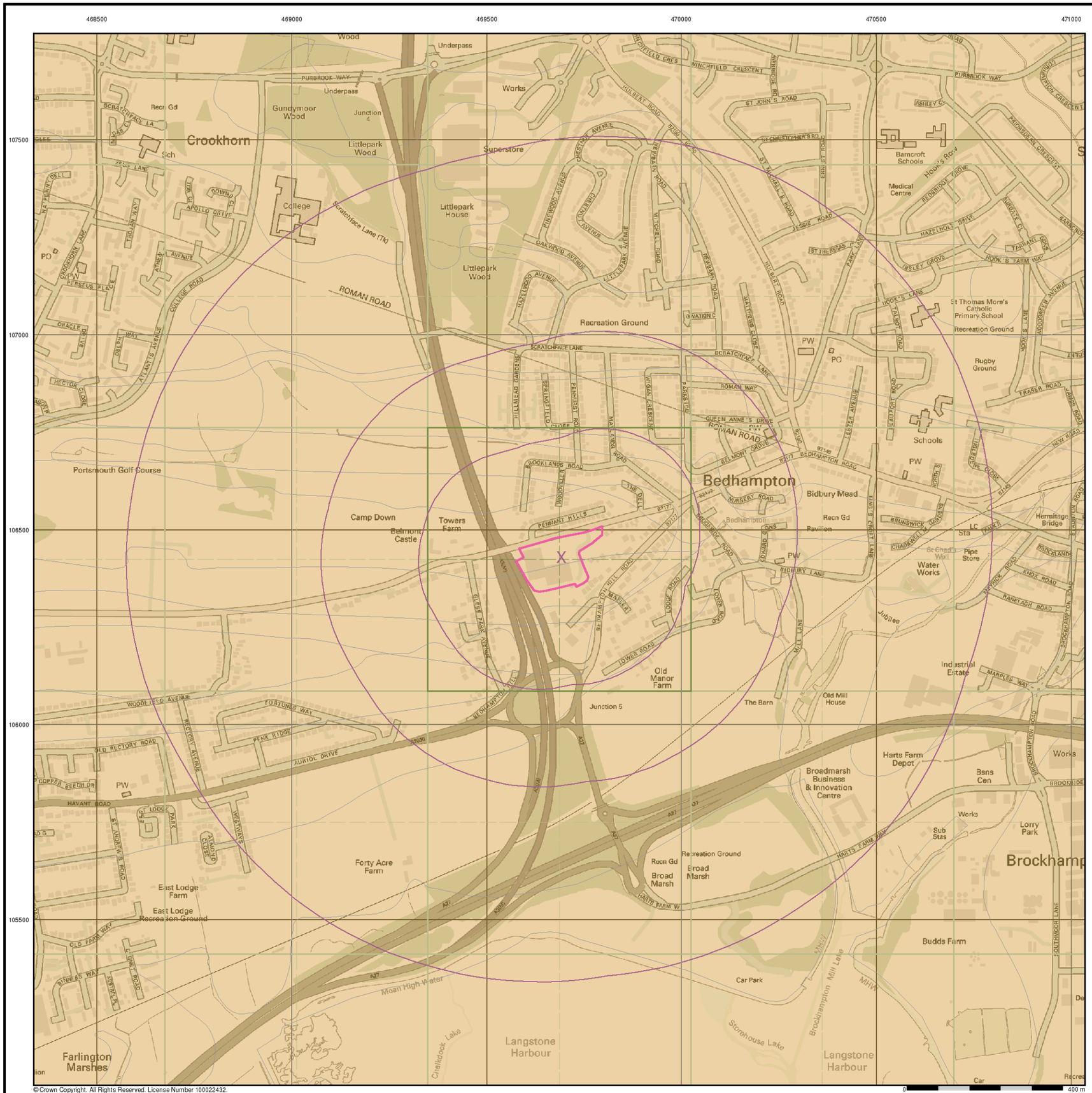
Order Number:	39296519_1_1
Customer Ref:	GE8756
National Grid Reference:	469690, 106430
Slice:	A
Site Area (Ha):	2.1
Search Buffer (m):	1000

Site Details

Havant Retail Park, Portsdown Hill Road, Havant, PO9 3NA

Landmark Information Group

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



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General

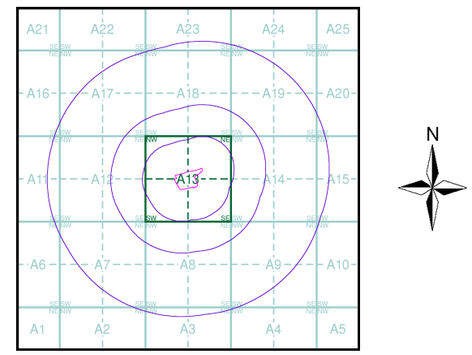
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Arsenic

Arsenic Concentrations mg/kg

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

Estimated Soil Chemistry Arsenic - Slice A



Order Details

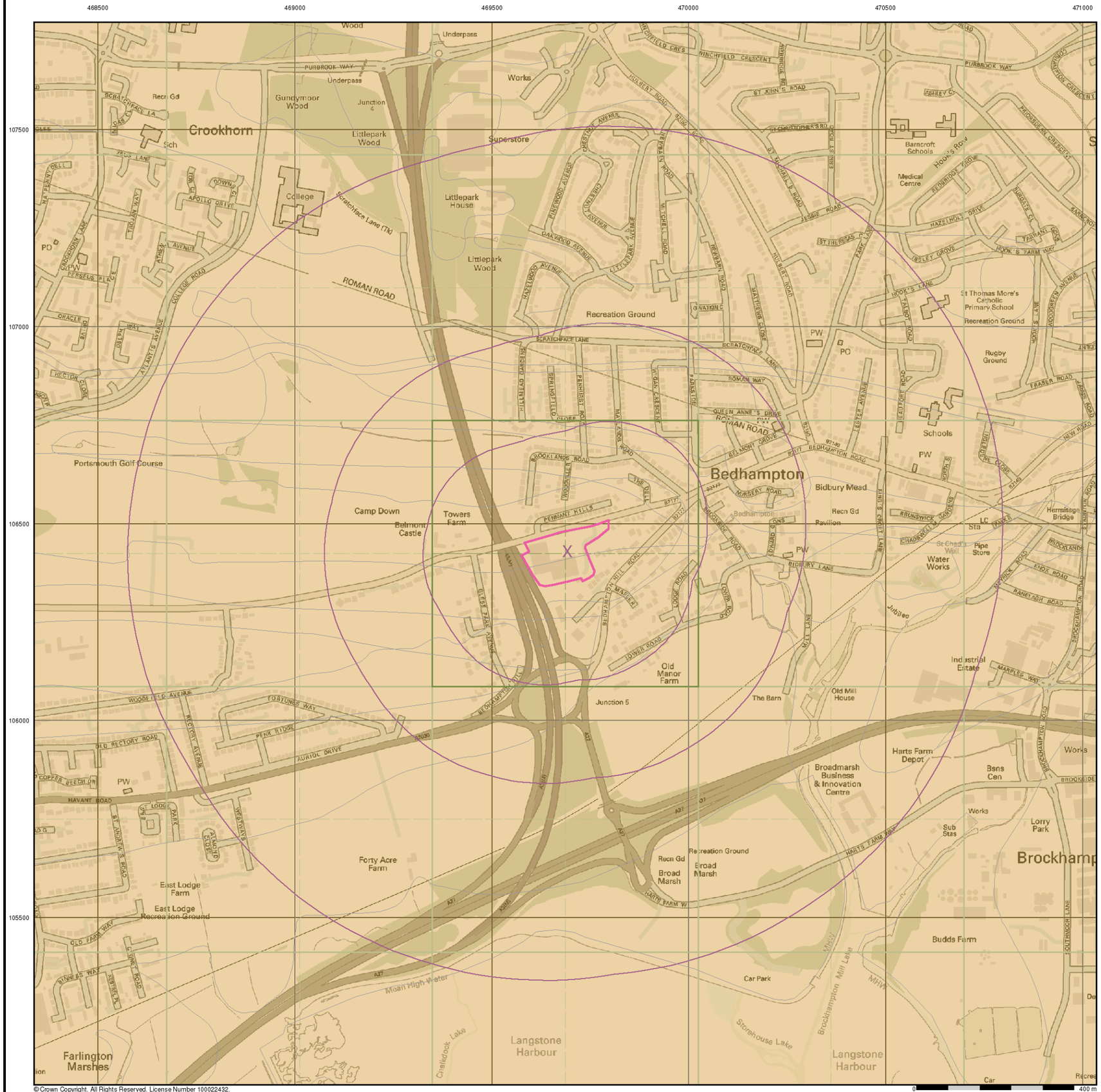
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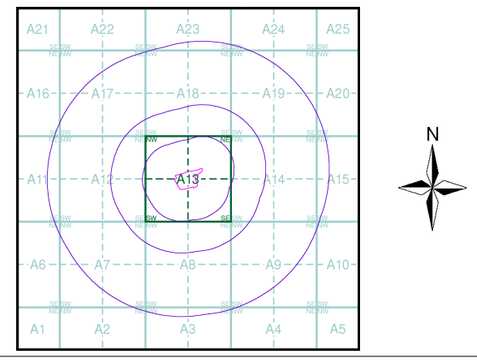
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Cadmium

Cadmium Concentrations mg/kg

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

Estimated Soil Chemistry Cadmium - Slice A



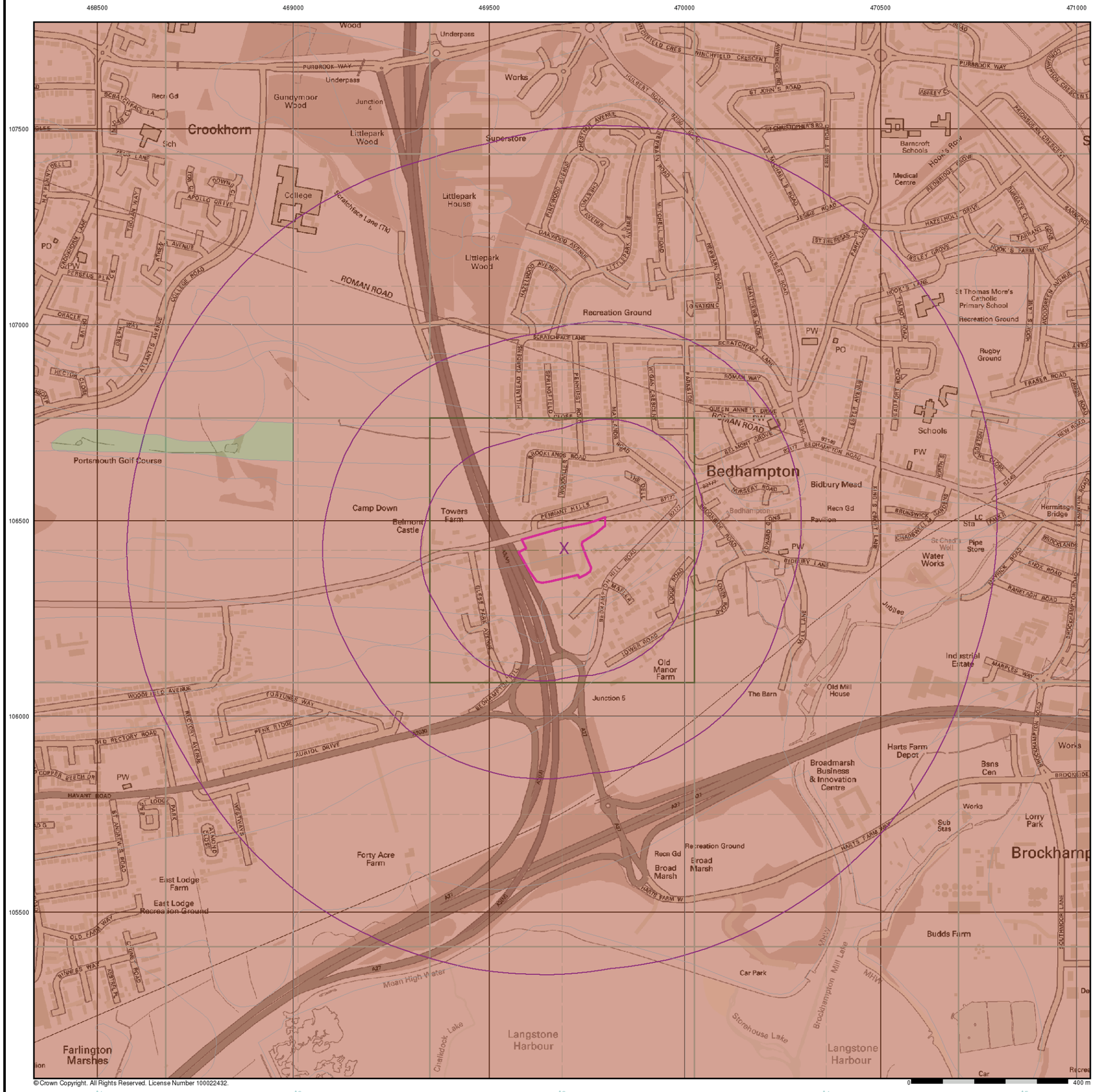
Order Details

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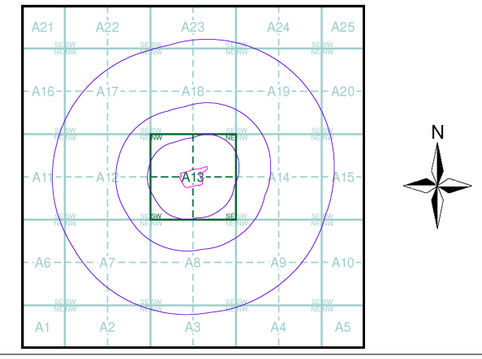
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Chromium

Chromium Concentrations mg/kg

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

Estimated Soil Chemistry Chromium - Slice A



Order Details

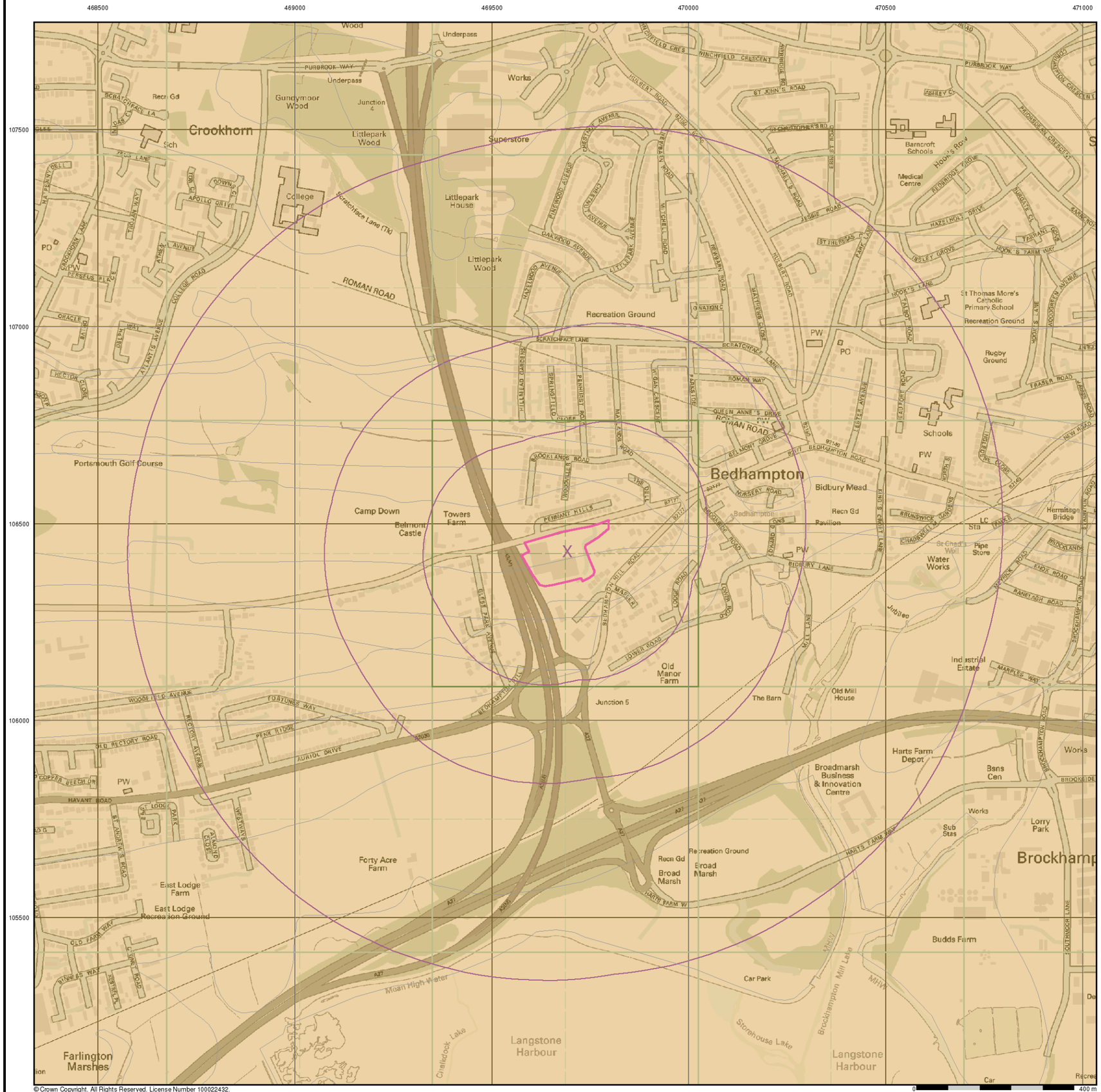
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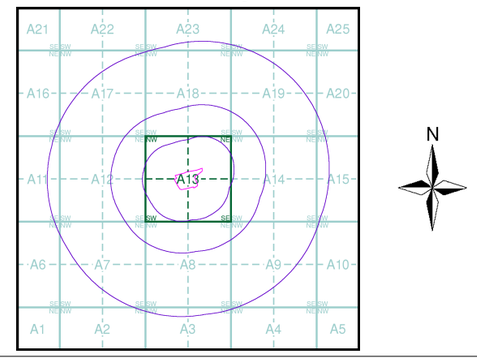
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Lead

Lead Concentrations mg/kg

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

Estimated Soil Chemistry Lead - Slice A



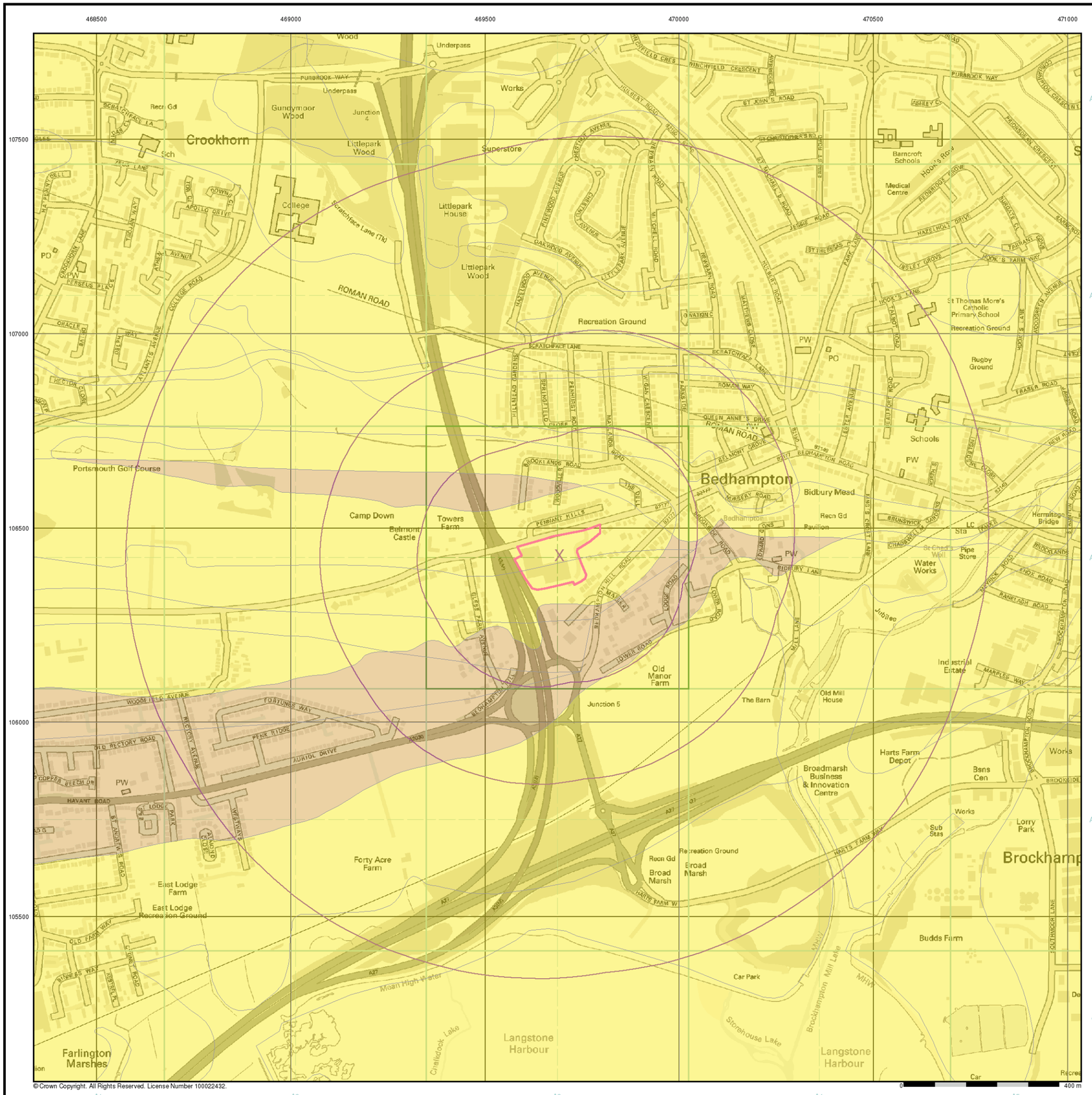
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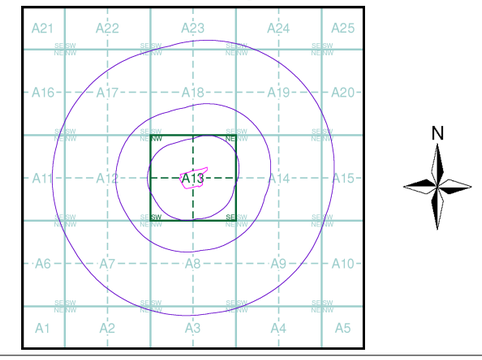
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Nickel

Nickel Concentrations mg/kg

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

Estimated Soil Chemistry Nickel - Slice A



Order Details

Order Details:	39296519_1_1
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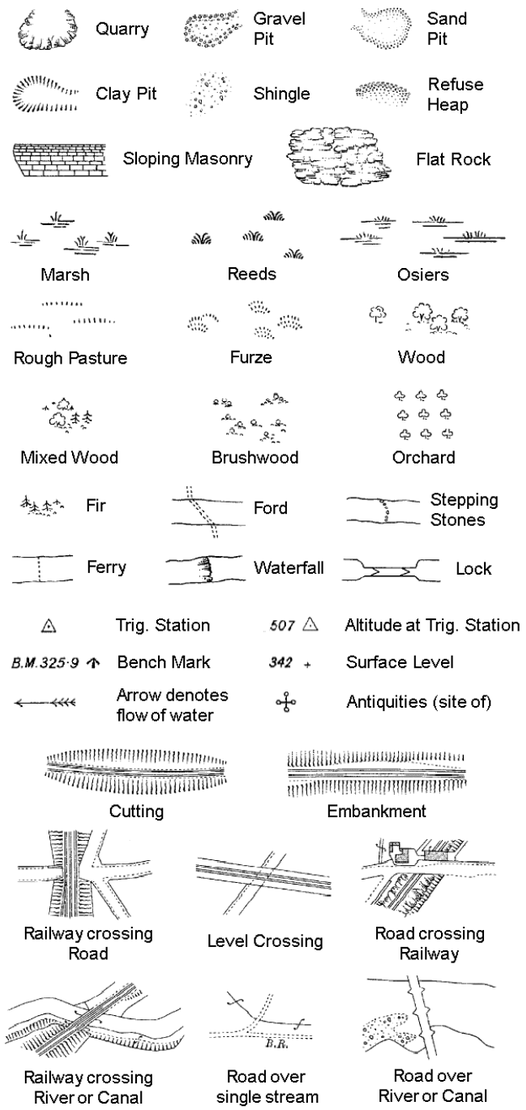
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Historical Mapping Legends

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



County Boundary (Geographical)

County & Civil Parish Boundary

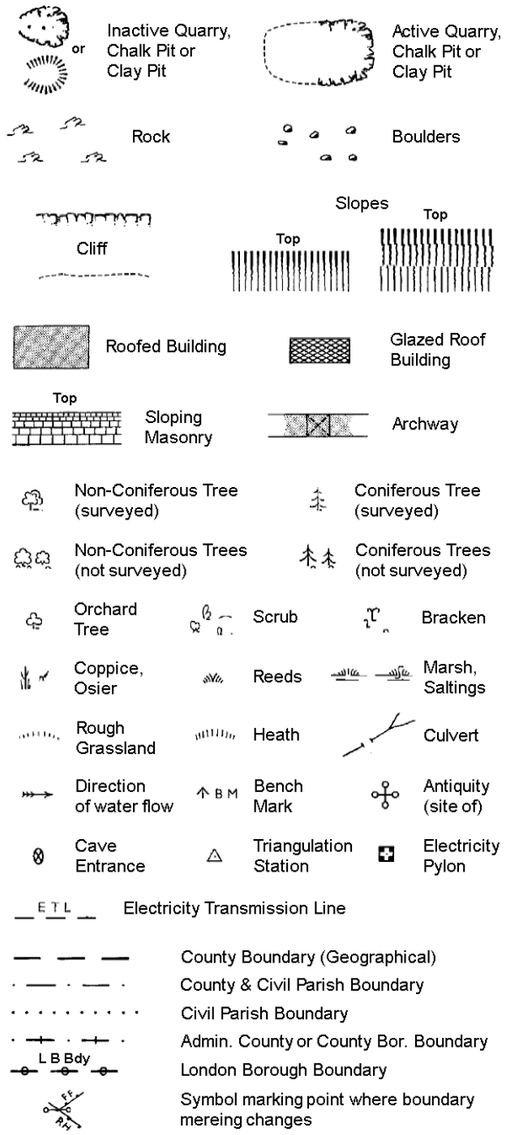
Administrative County & Civil Parish Boundary

Co. Boro. Bdy. County Borough Boundary (England)

Co. Burgh Bdy. County Burgh Boundary (Scotland)

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

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



County Boundary (Geographical)

County & Civil Parish Boundary

Civil Parish Boundary

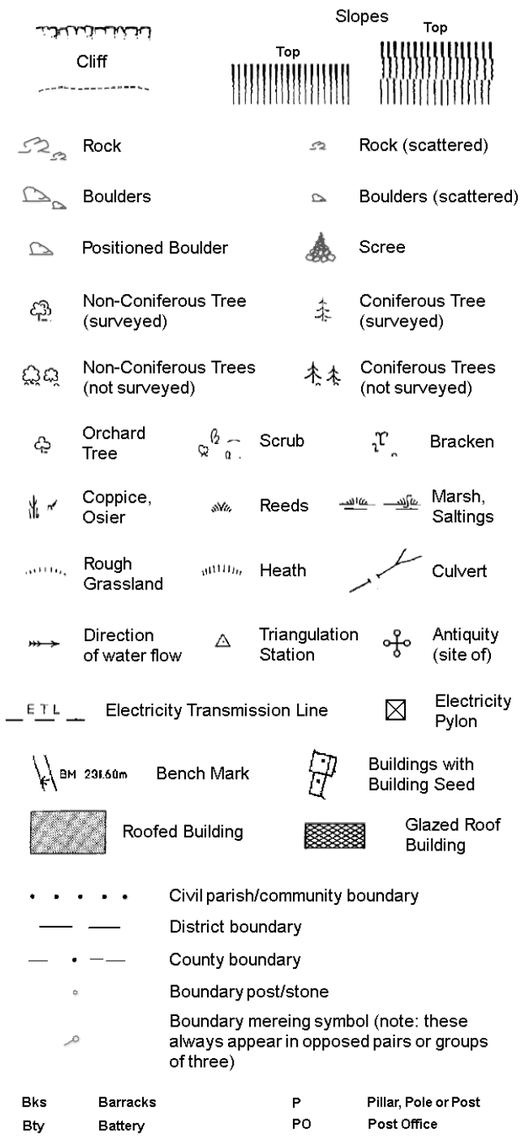
Admin. County or County Bor. Boundary

L B Bdy London Borough Boundary

Symbol marking point where boundary mereing changes

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

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



Civil parish/community boundary

District boundary

County boundary

Boundary post/stone

Boundary mereing symbol (note: these always appear in opposed pairs or groups of three)

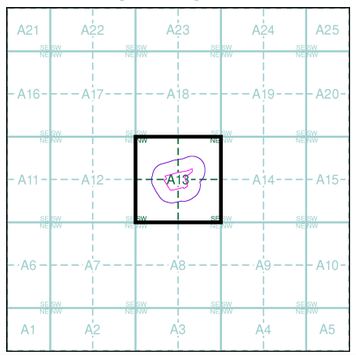
Bks	Barracks	P	Pillar, Pole or Post
Bty	Battery	PO	Post Office
Cemy	Cemetery	PC	Public Convenience
Chy	Chimney	Pp	Pump
Cis	Cistern	Ppg Sta	Pumping Station
Dismtd Rly	Dismantled Railway	PW	Place of Worship
El Gen Sta	Electricity Generating Station	Sewage Ppg Sta	Sewage Pumping Station
El P	Electricity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

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Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Hampshire & Isle Of Wight	1:2,500	1868	2
Hampshire & Isle Of Wight	1:2,500	1897	3
Hampshire & Isle Of Wight	1:2,500	1909	4
Hampshire & Isle Of Wight	1:2,500	1932	5
Ordnance Survey Plan	1:2,500	1952	6
Ordnance Survey Plan	1:2,500	1954	7
Ordnance Survey Plan	1:1,250	1957 - 1973	8
Ordnance Survey Plan	1:2,500	1961 - 1969	9
Ordnance Survey Plan	1:1,250	1963 - 1973	10
Ordnance Survey Plan	1:2,500	1969	11
Ordnance Survey Plan	1:1,250	1973 - 1982	12
Supply of Unpublished Survey Information	1:1,250	1973	13
Additional SIMs	1:1,250	1980 - 1989	14
Additional SIMs	1:2,500	1981	15
Large-Scale National Grid Data	1:1,250	1993	16
Large-Scale National Grid Data	1:1,250	1995	17

Historical Map - Segment A13



Order Details

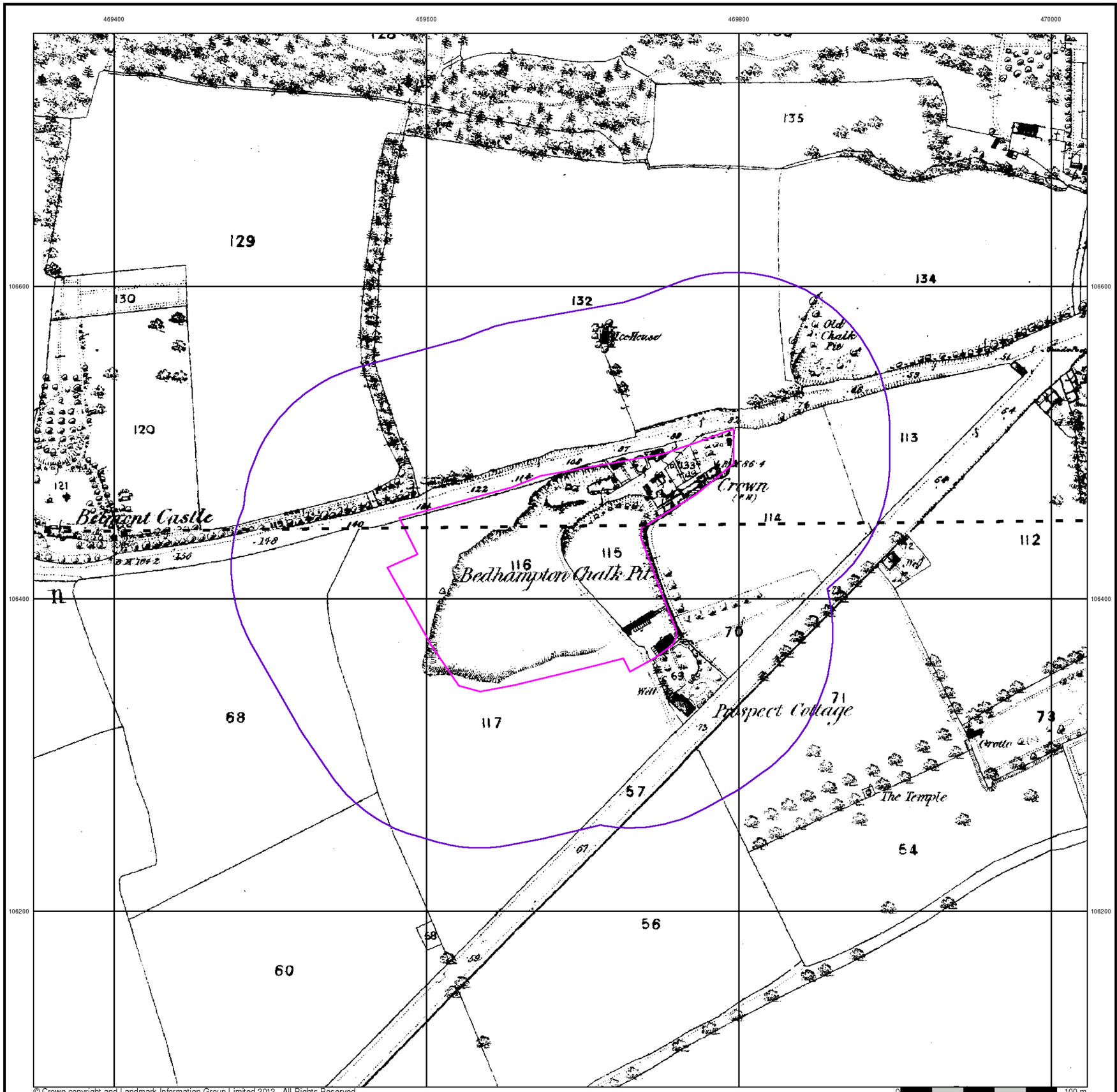
Order Number:	39296519_1_1
Customer Ref:	GE8756
National Grid Reference:	469690, 106430
Slice:	A
Site Area (Ha):	2.1
Search Buffer (m):	100

Site Details

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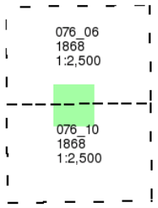
Hampshire & Isle Of Wight

Published 1868

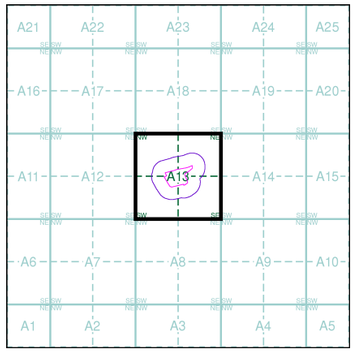
Source map scale - 1:2,500

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

Map Name(s) and Date(s)



Historical Map - Segment A13

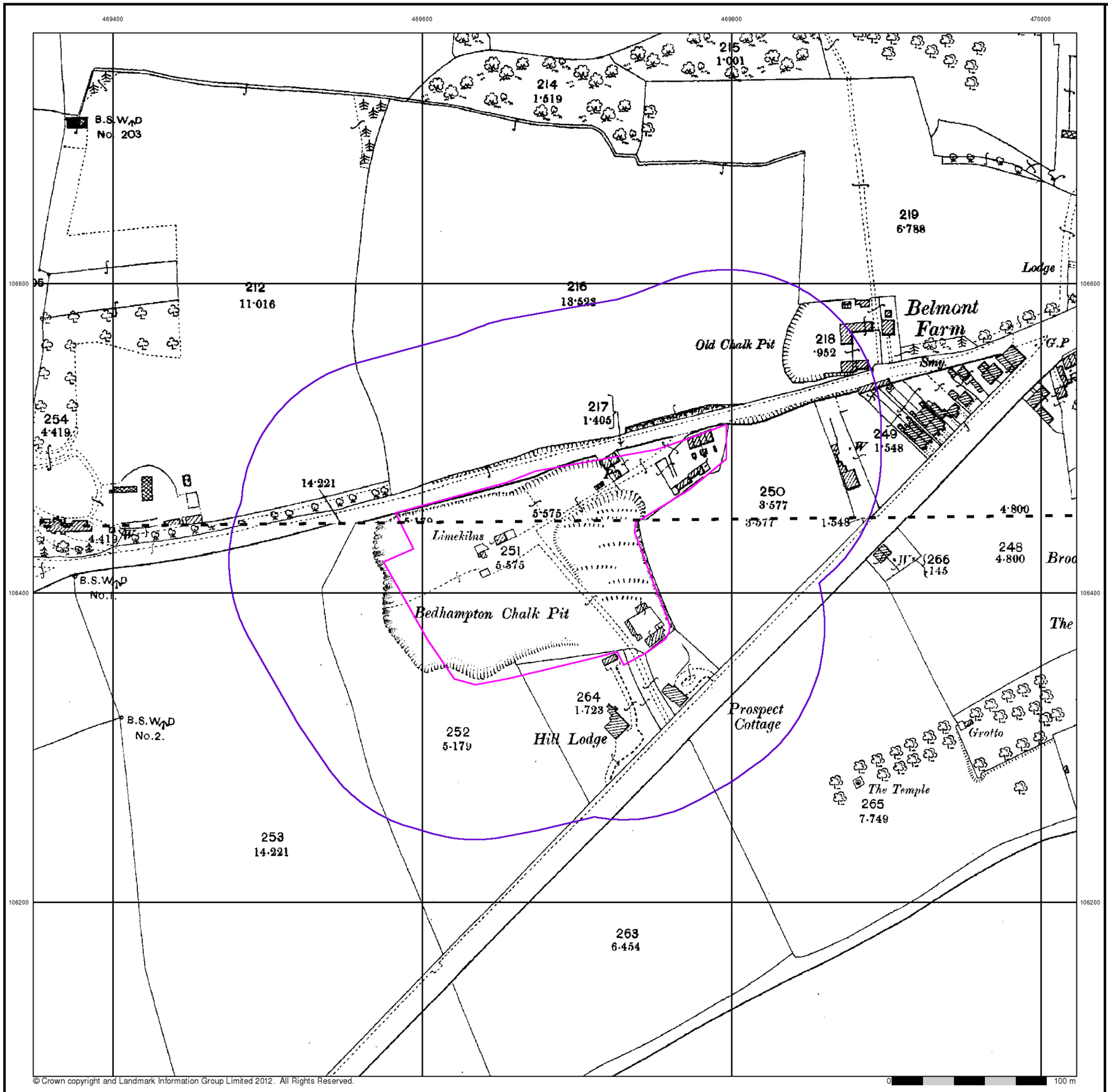


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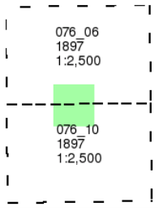
Hampshire & Isle Of Wight

Published 1897

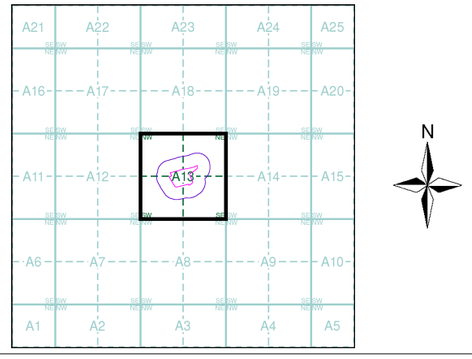
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Map Name(s) and Date(s)



Historical Map - Segment A13



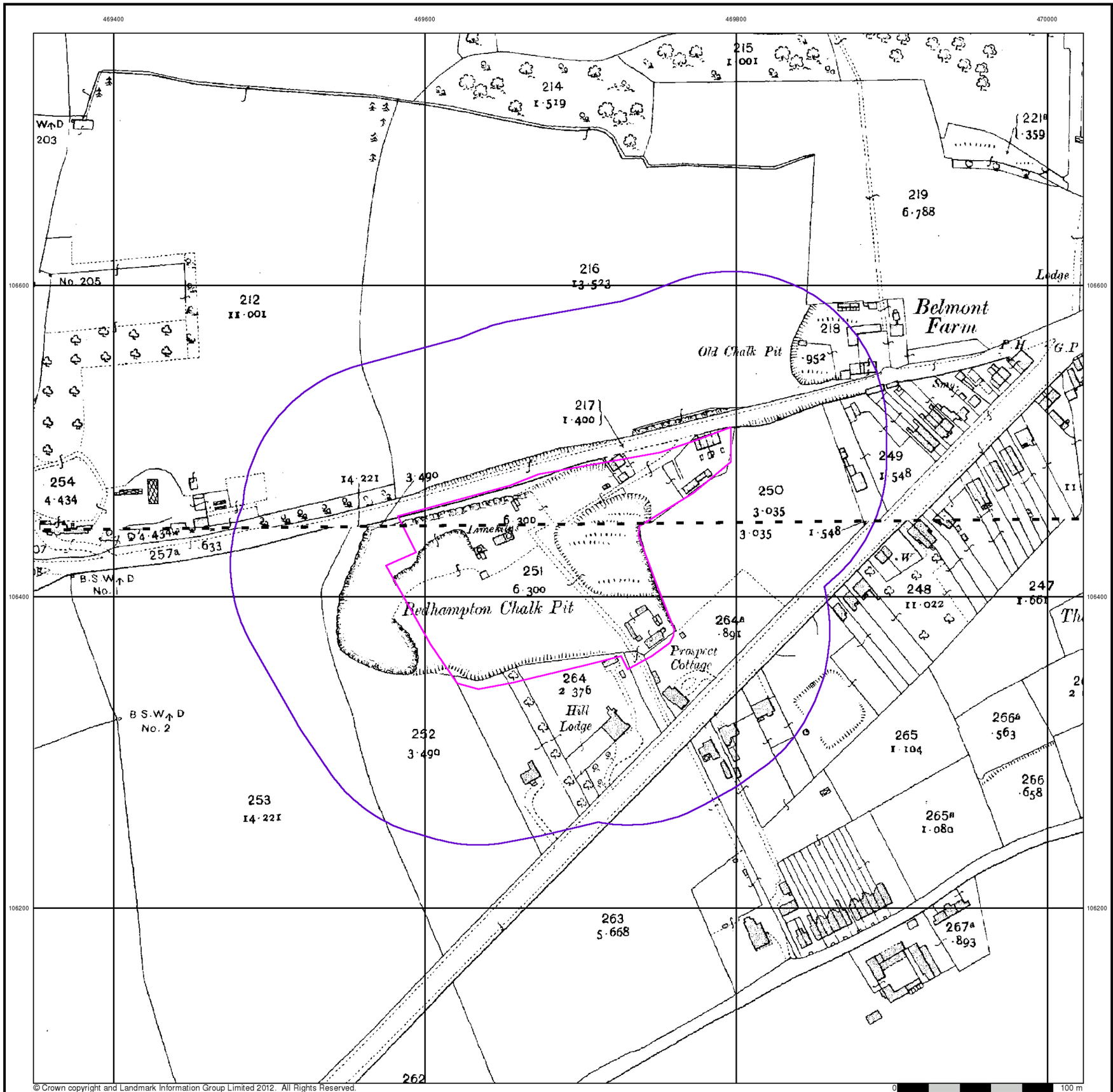
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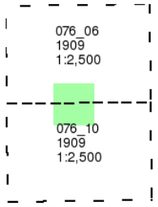
Hampshire & Isle Of Wight

Published 1909

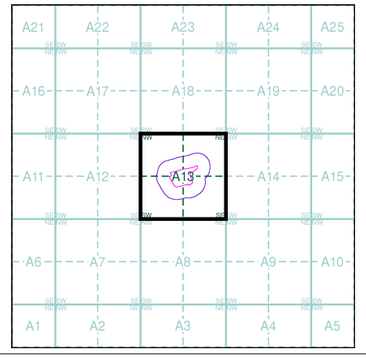
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A13



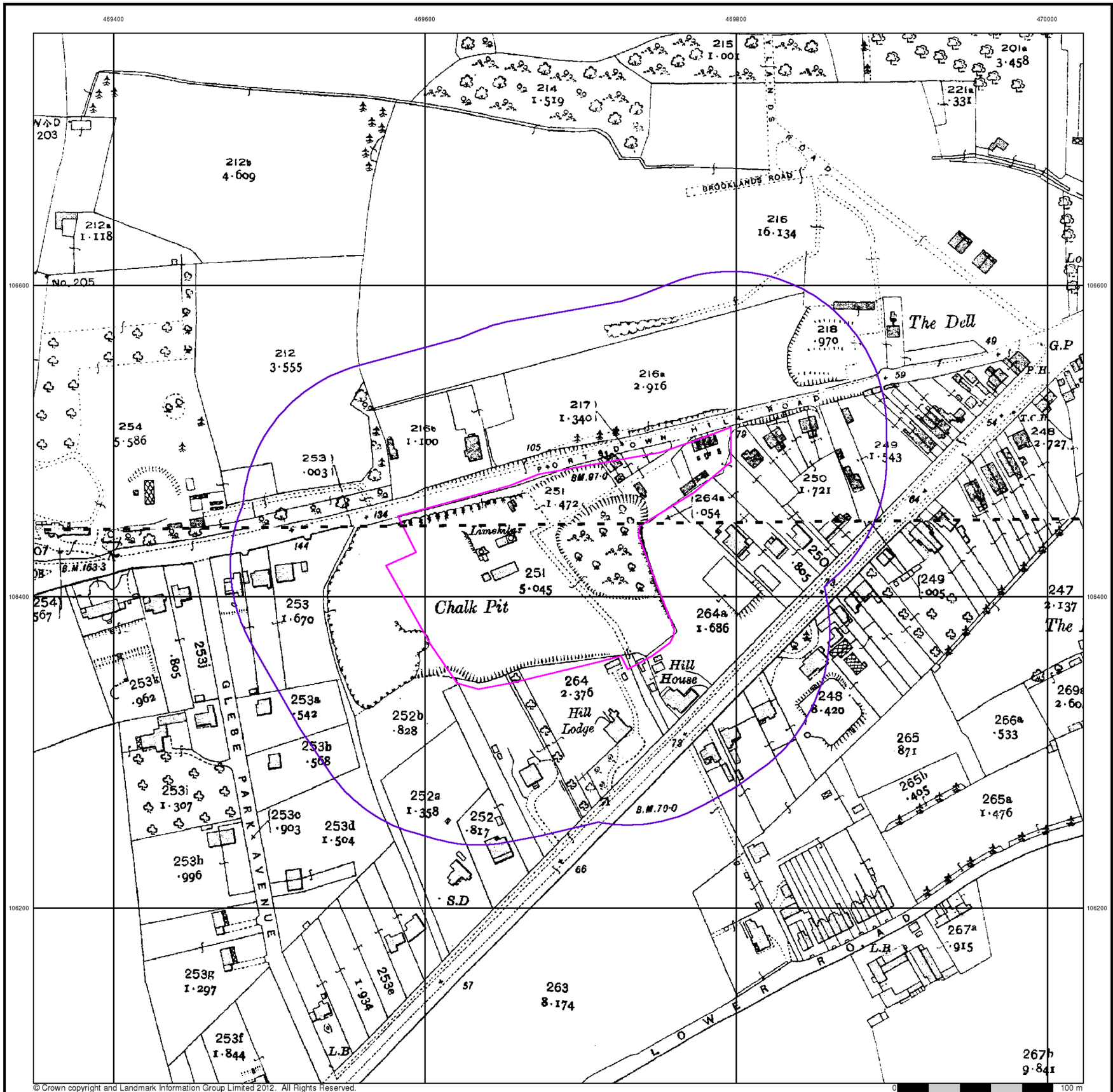
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Hampshire & Isle Of Wight

Published 1932

Source map scale - 1:2,500

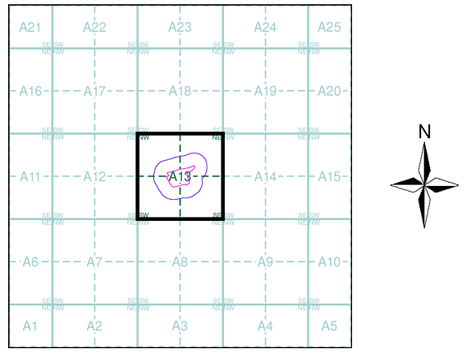
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Map Name(s) and Date(s)

076_06
1932
1:2,500

076_10
1932
1:2,500

Historical Map - Segment A13



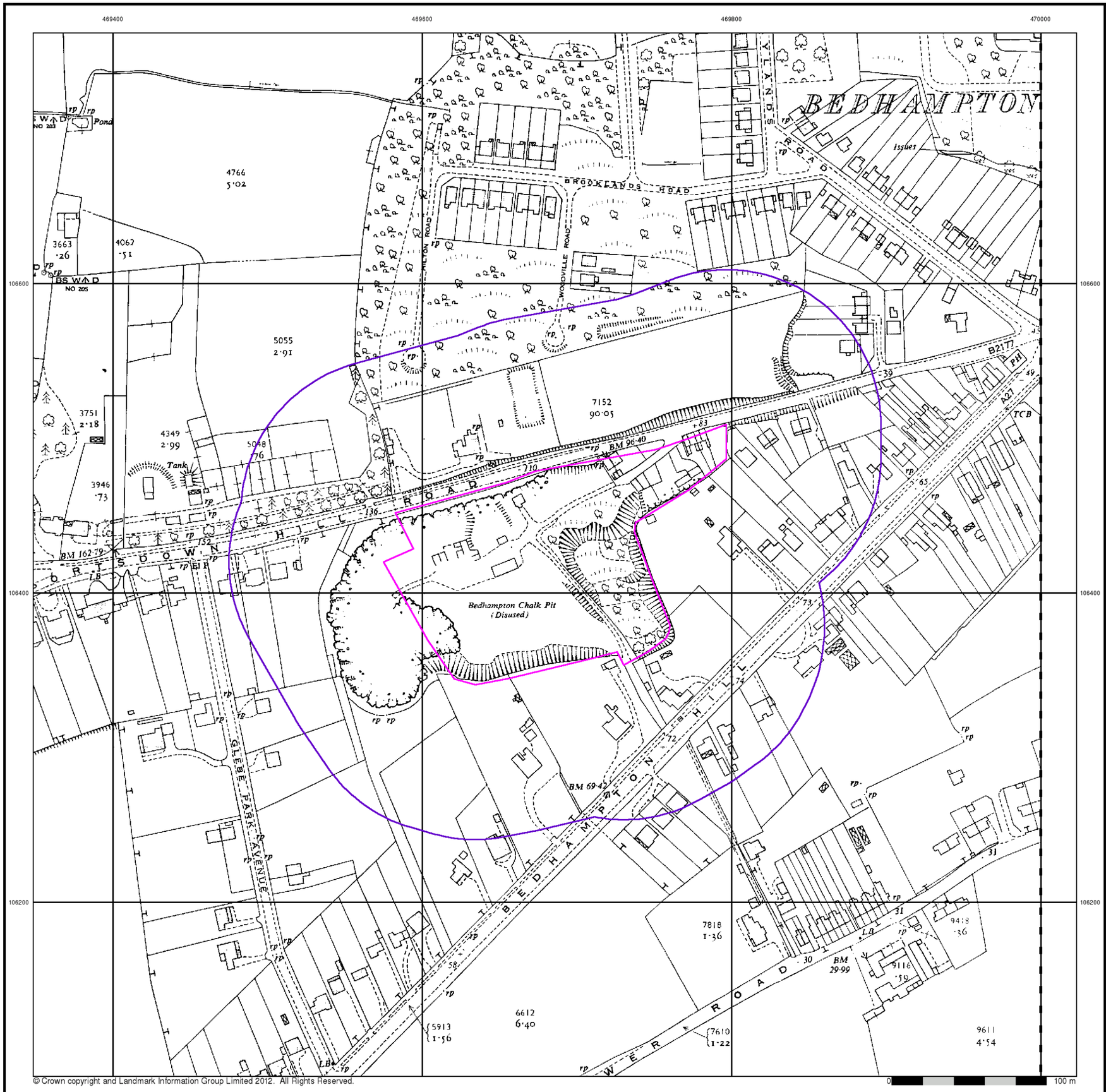
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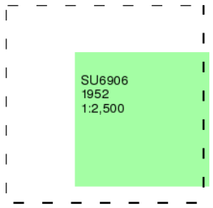
Ordnance Survey Plan

Published 1952

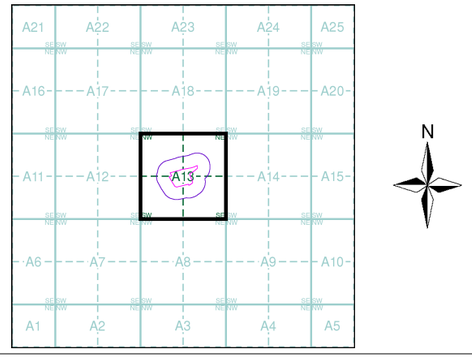
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Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

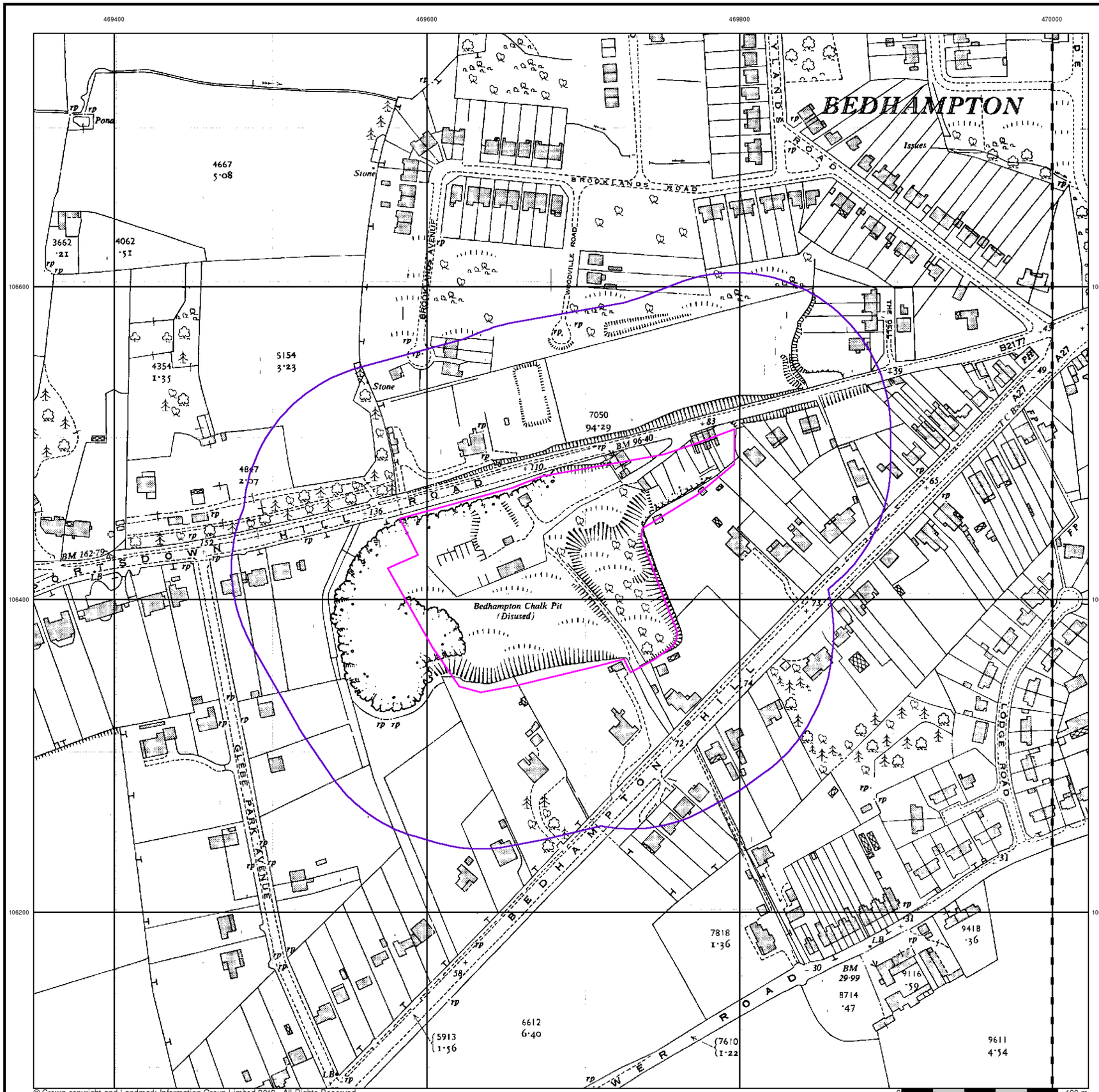
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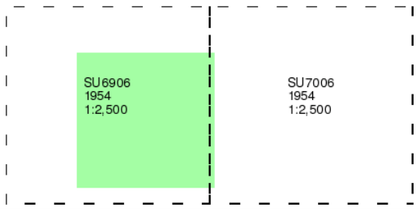
Ordnance Survey Plan

Published 1954

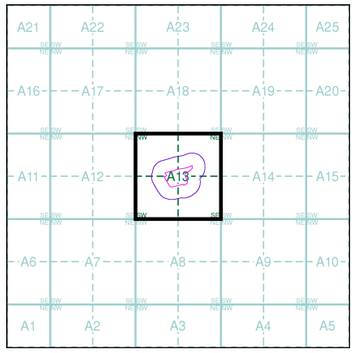
Source map scale - 1:2,500

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

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number:	39296519_1_1
Customer Ref:	GE8756
National Grid Reference:	469690, 106430
Slice:	A
Site Area (Ha):	2.1
Search Buffer (m):	100

Site Details

Havant Retail Park, Portsdown Hill Road, Havant, PO9 3NA

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469400 469600 469800 470000



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Ordnance Survey Plan

Published 1957 - 1973

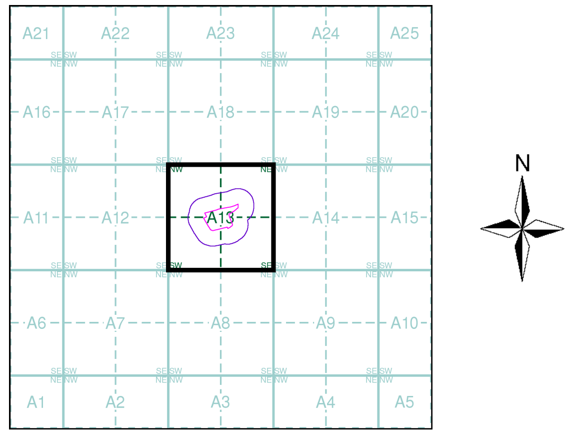
Source map scale - 1:1,250

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)

SU6906NW 1973 1:1,250	SU6906NE 1957 1:1,250	SU7006NW 1959 1:1,250
SU6906SW 1973 1:1,250	SU6906SE 1959 1:1,250	SU7006SW 1959 1:1,250

Historical Map - Segment A13



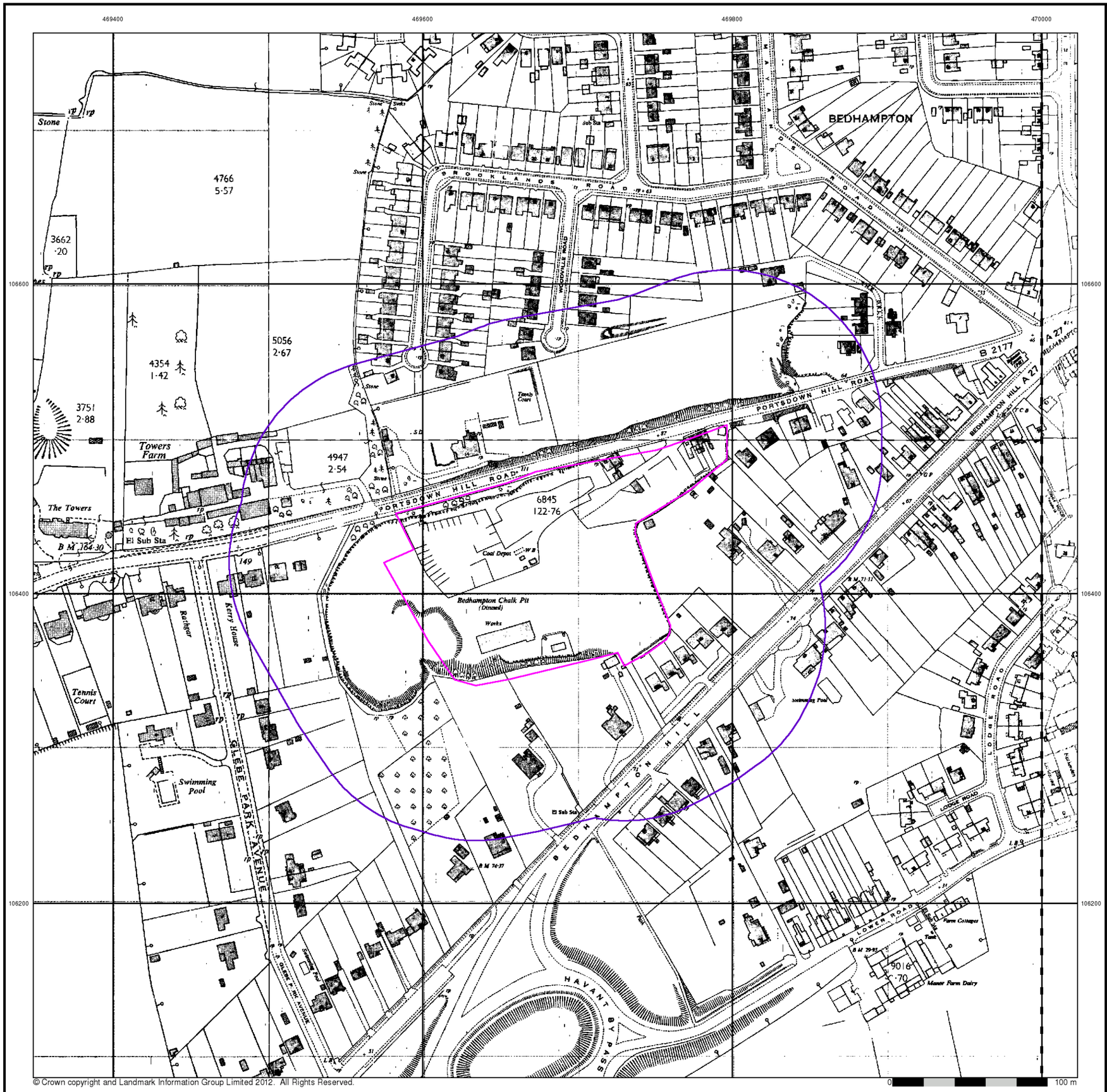
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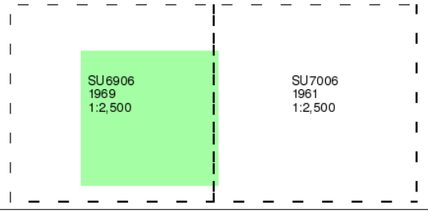
Ordnance Survey Plan

Published 1961 - 1969

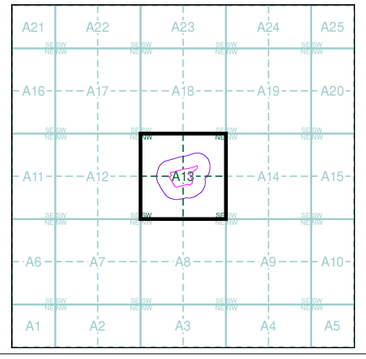
Source map scale - 1:2,500

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

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

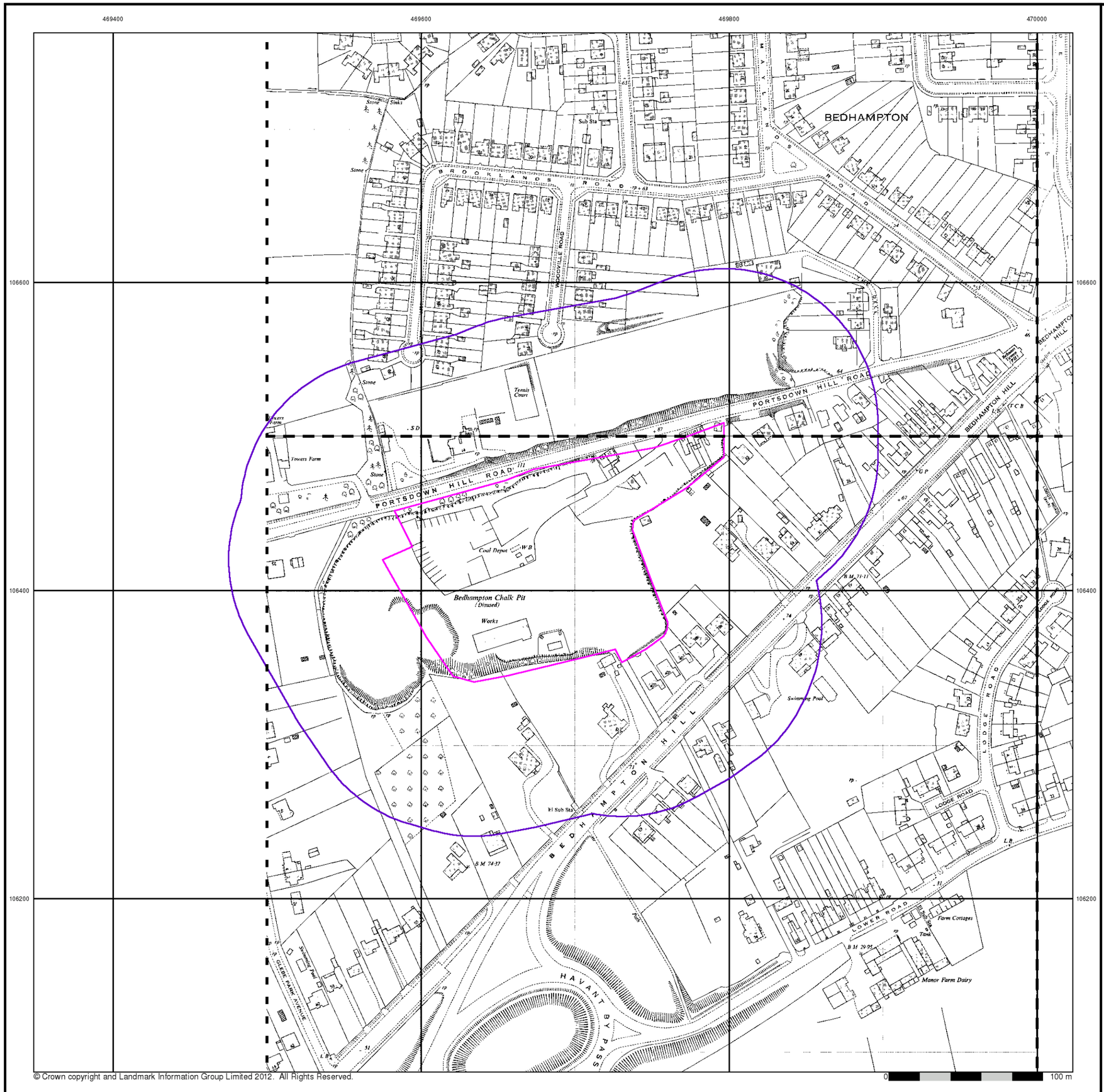
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Customer Ref:	GE8756
National Grid Reference:	469690, 106430
Slice:	A
Site Area (Ha):	2.1
Search Buffer (m):	100

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Ordnance Survey Plan

Published 1963 - 1973

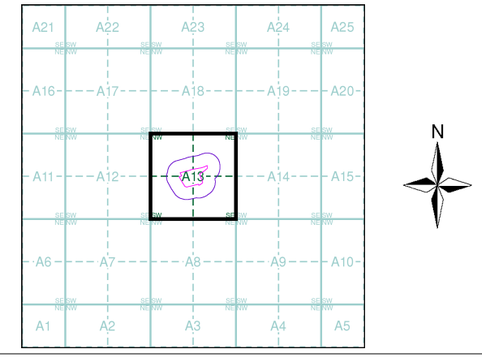
Source map scale - 1:1,250

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)

SU6906NE 1967 1:1,250	SU7006NW 1963 1:1,250
SU6906SE 1967 1:1,250	SU7006SW 1973 1:1,250

Historical Map - Segment A13



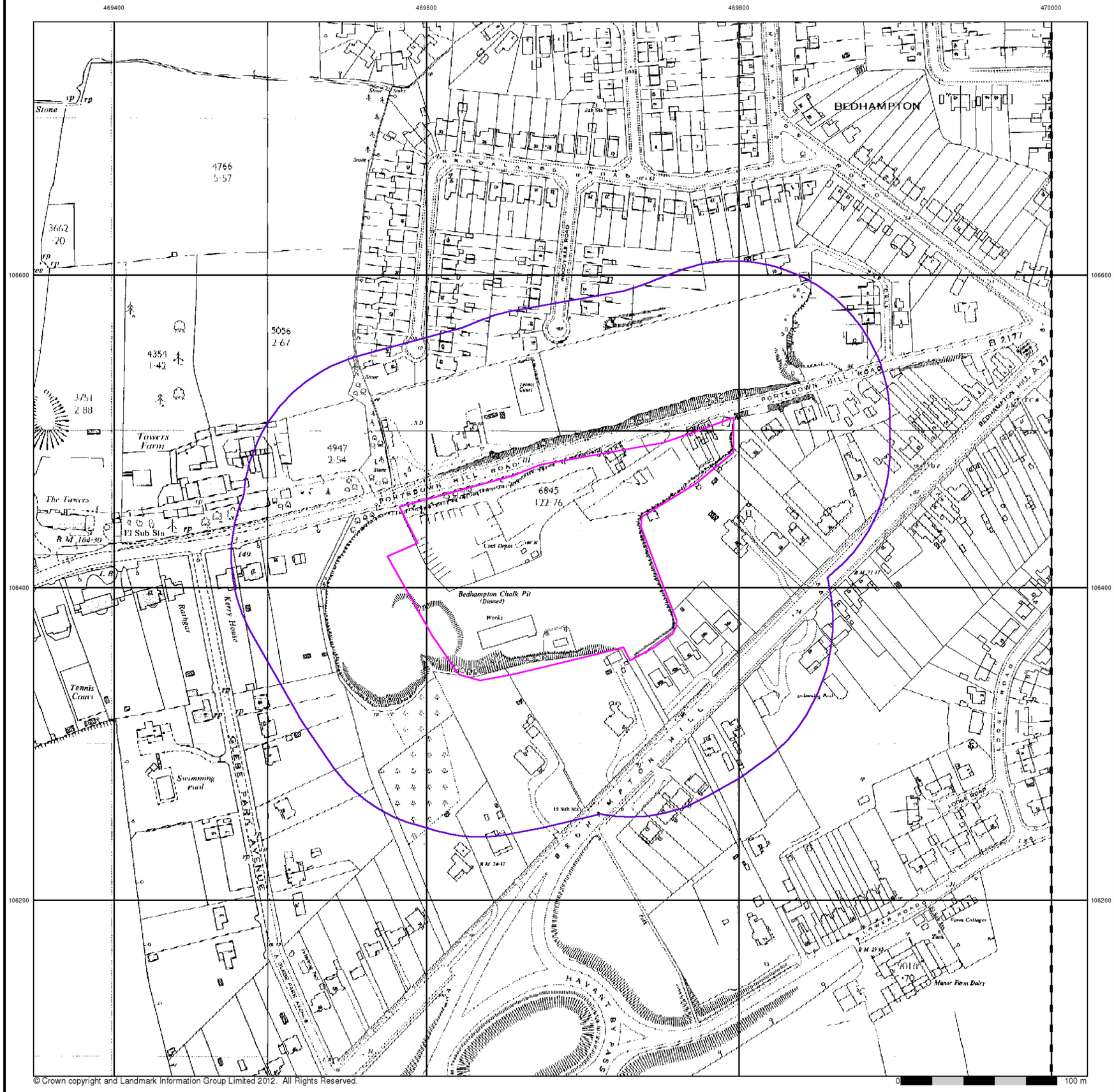
Order Details

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Customer Ref:	GE8756
National Grid Reference:	469690, 106430
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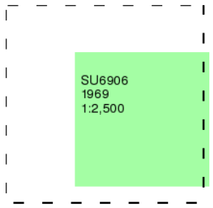
Ordnance Survey Plan

Published 1969

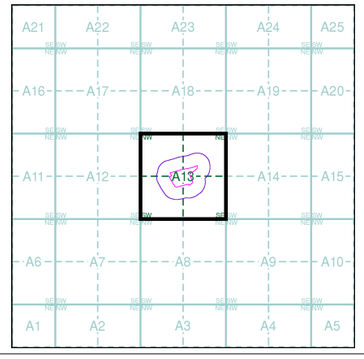
Source map scale - 1:2,500

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

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number:	39296519_1_1
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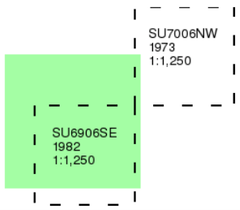
Ordnance Survey Plan

Published 1973 - 1982

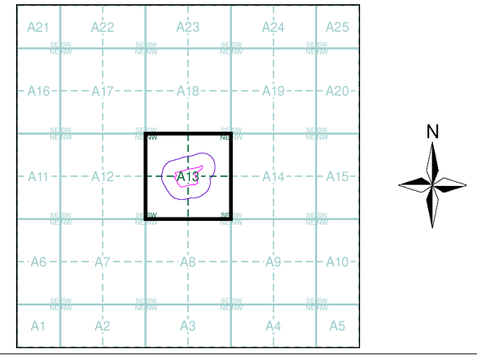
Source map scale - 1:1,250

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

Map Name(s) and Date(s)



Historical Map - Segment A13



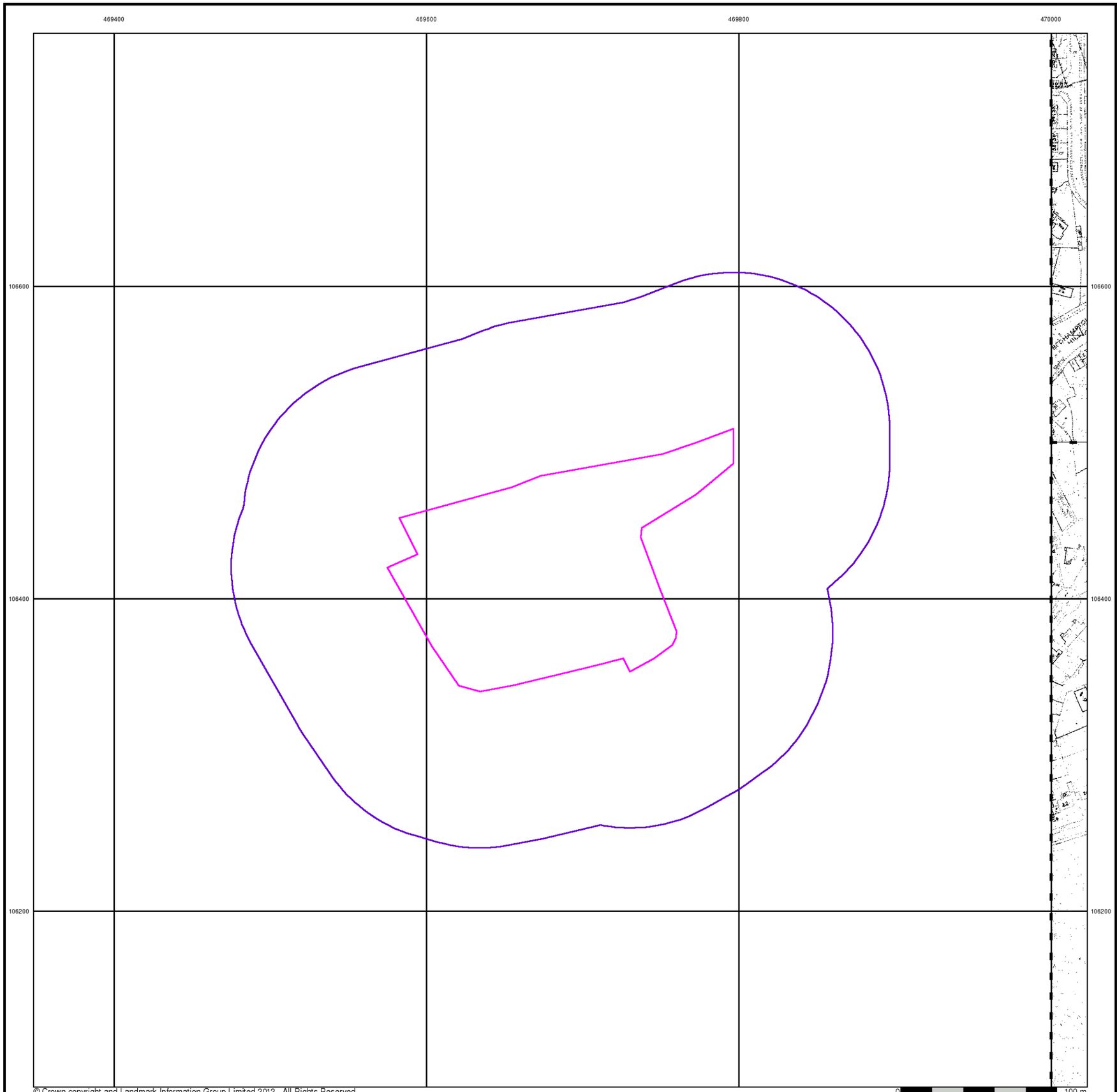
Order Details

Order Number:	39296519_1_1
Customer Ref:	GE8756
National Grid Reference:	469690, 106430
Slice:	A
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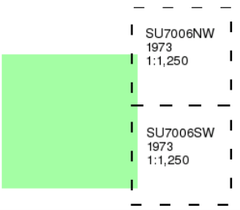
Supply of Unpublished Survey Information

Published 1973

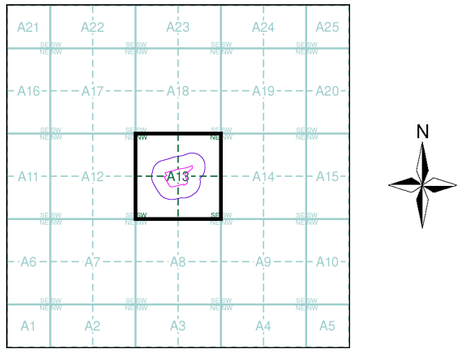
Source map scale - 1:1,250

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

Map Name(s) and Date(s)



Historical Map - Segment A13



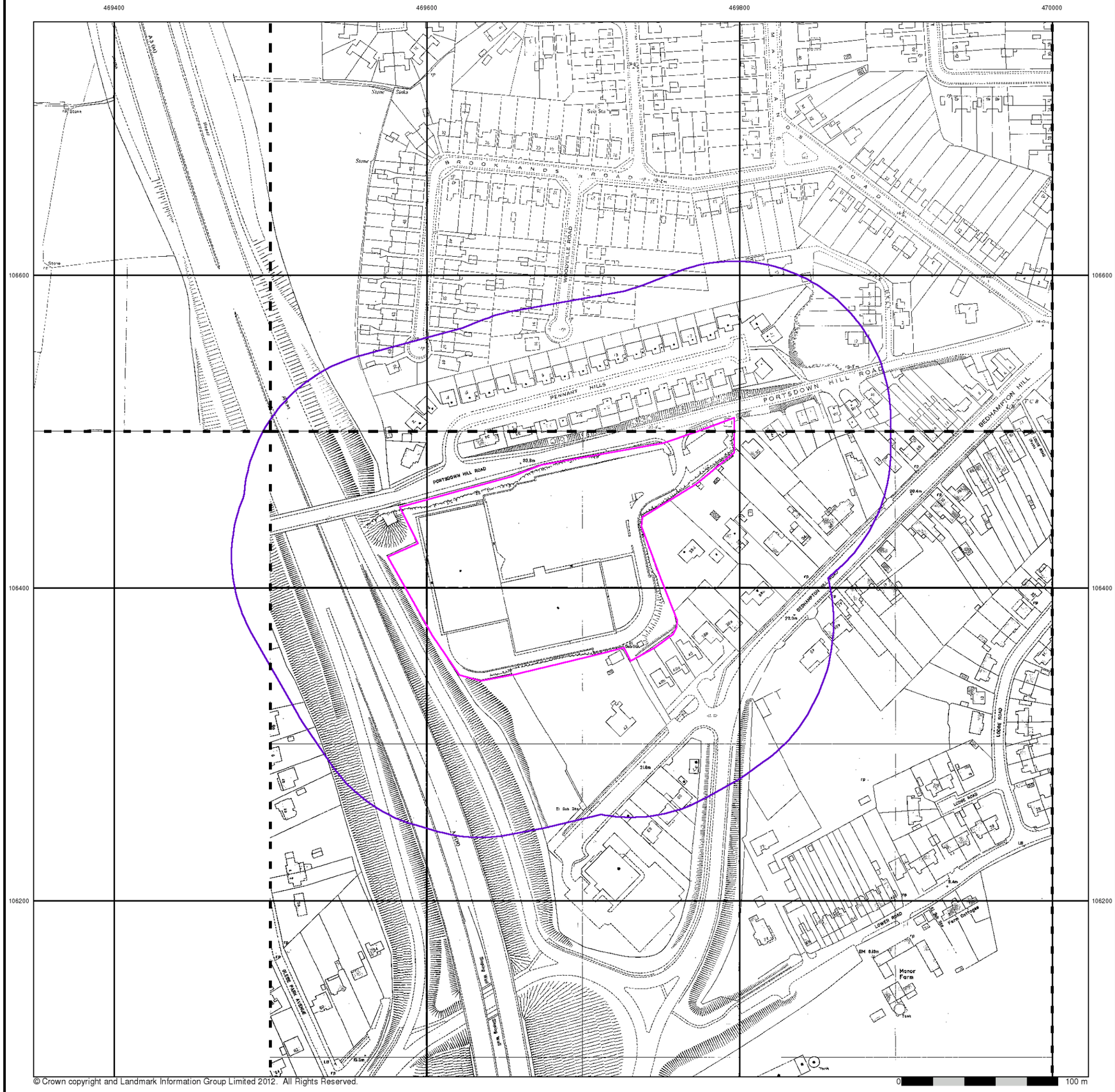
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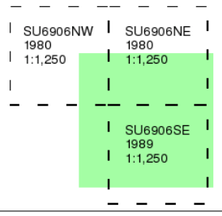
Additional SIMs

Published 1980 - 1989

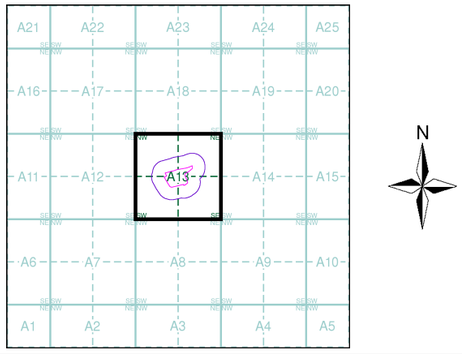
Source map scale - 1:1,250

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

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

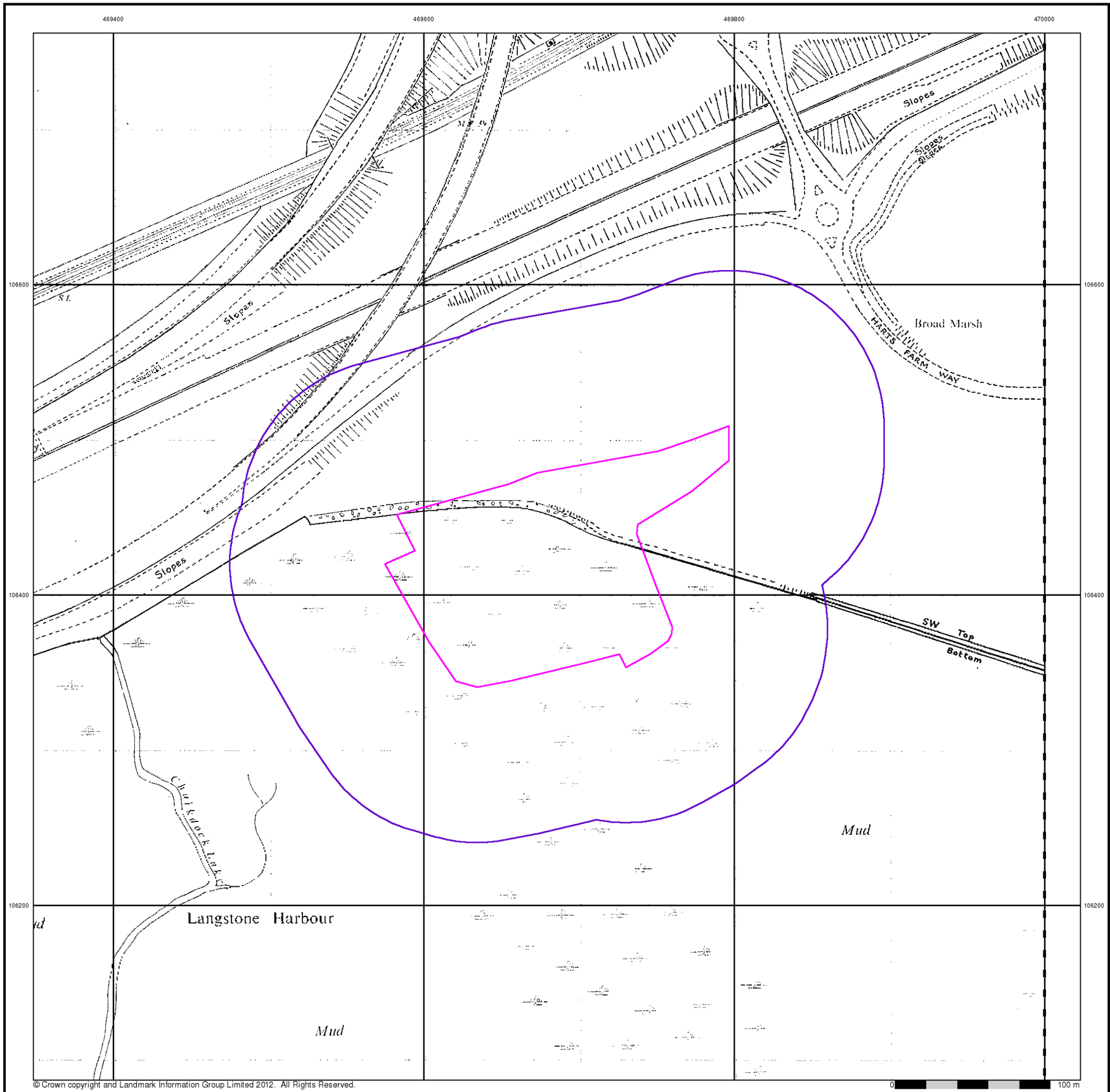
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Customer Ref:	GE8756
National Grid Reference:	469690, 106430
Slice:	A
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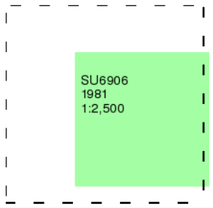
Additional SIMs

Published 1981

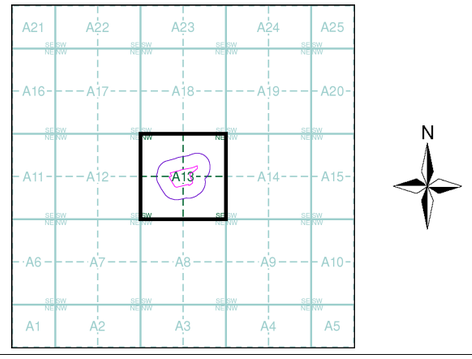
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A13



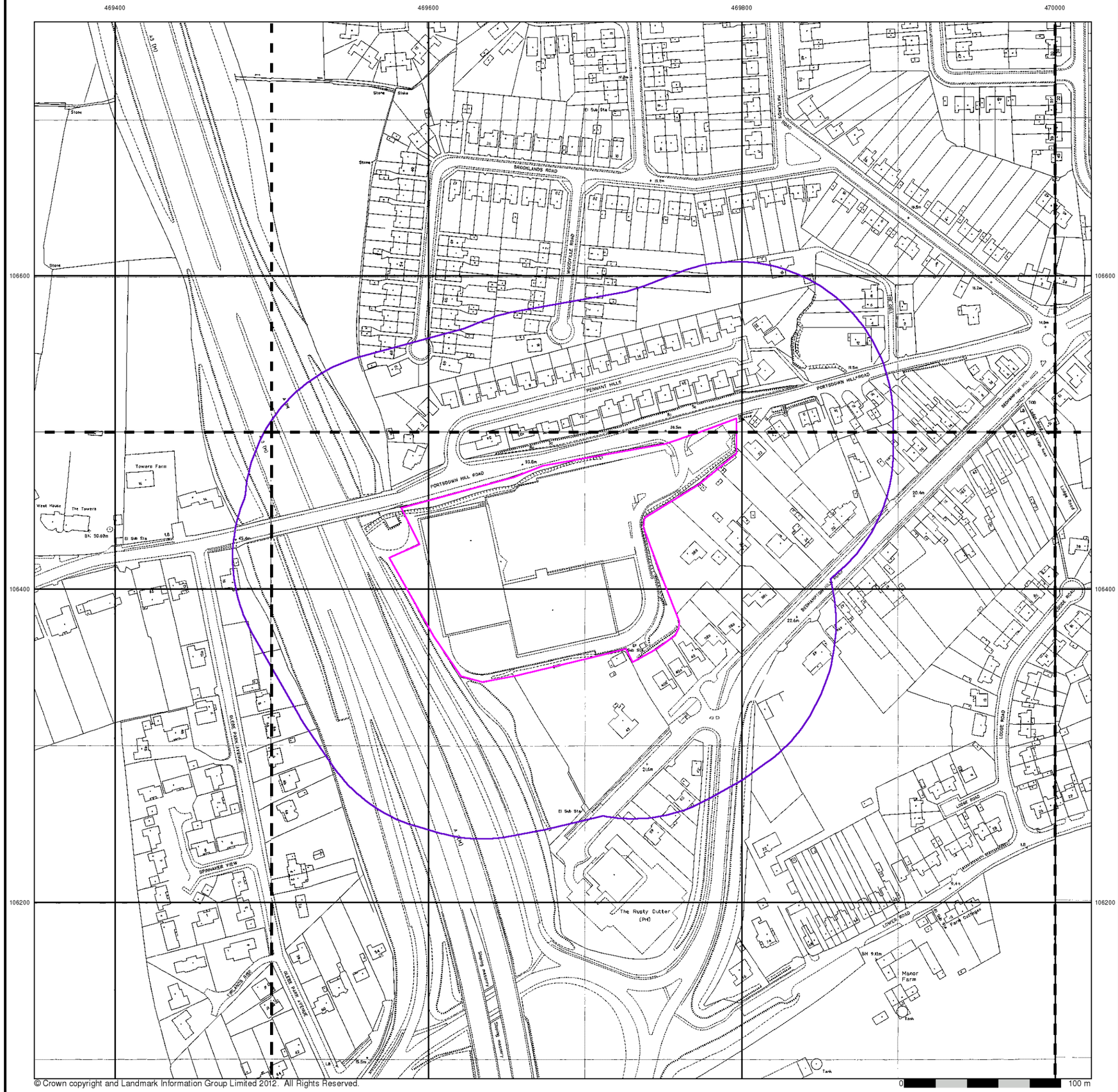
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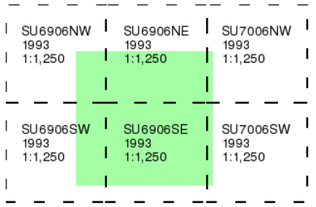
Large-Scale National Grid Data

Published 1993

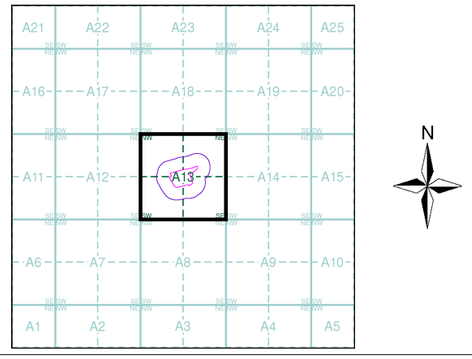
Source map scale - 1:1,250

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

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

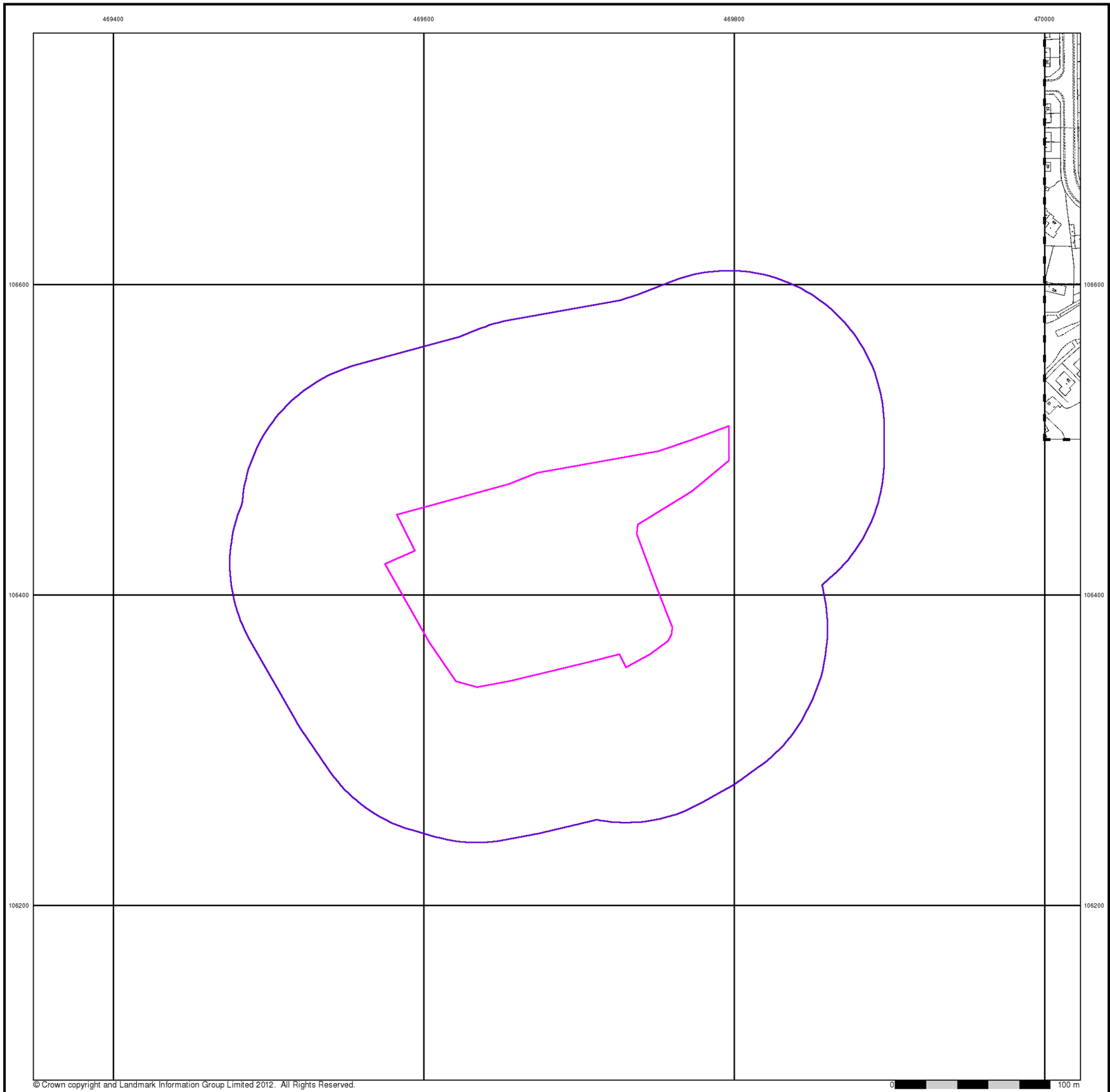
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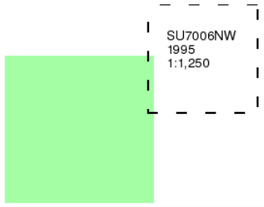
Large-Scale National Grid Data

Published 1995

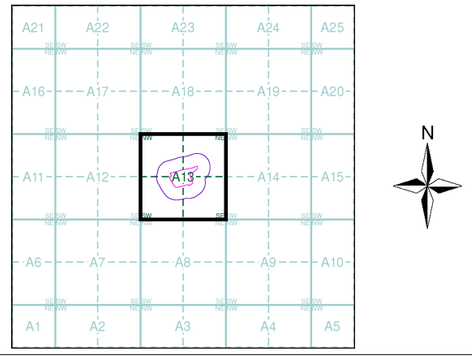
Source map scale - 1:1,250

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Historical Mapping Legends

Ordnance Survey County Series 1:10,560

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

Ordnance Survey Plan 1:10,000

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

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

1:10,000 Raster Mapping

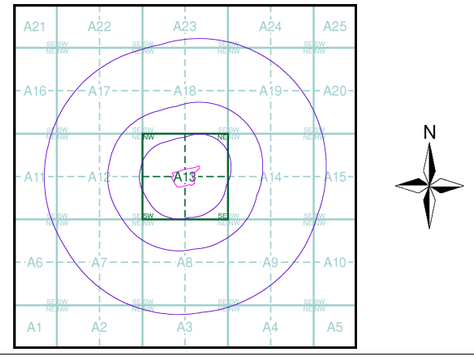
Gravel Pit
Refuse tip or slag heap
Rock
Rock (scattered)
Boulders
Boulders (scattered)
Shingle
Mud
Mud
Sand
Sand
Sand Pit
Slopes
Top of cliff
General detail
Underground detail
Overhead detail
Narrow gauge railway
Multi-track railway
Single track railway
County boundary (England only)
Civil, parish or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

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Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Hampshire & Isle Of Wight	1:10,560	1870	3
Hampshire & Isle Of Wight	1:10,560	1898	4
Hampshire & Isle Of Wight	1:10,560	1909 - 1910	5
Hampshire & Isle Of Wight	1:10,560	1932	6
Hampshire & Isle Of Wight	1:10,560	1932	7
Hampshire & Isle Of Wight	1:10,560	1933	8
Hampshire & Isle Of Wight	1:10,560	1933	9
Hampshire & Isle Of Wight	1:10,560	1938 - 1942	10
Historical Aerial Photography	1:10,560	1949	11
Ordnance Survey Plan	1:10,000	1963	12
Ordnance Survey Plan	1:10,000	1966	13
Ordnance Survey Plan	1:10,000	1975	14
Ordnance Survey Plan	1:10,000	1982	15
Havant	1:25,000	1983	16
Portsmouth	1:10,000	1988	17
Ordnance Survey Plan	1:10,000	1991 - 1992	18
10K Raster Mapping	1:10,000	2006	19
10K Raster Mapping	1:10,000	2011	20

Historical Map - Slice A



Order Details

Order Number: 39296519_1_1
Customer Ref: GE8756
National Grid Reference: 469690, 106430
Slice: A
Site Area (Ha): 2.1
Search Buffer (m): 1000

Site Details

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Russian Military Mapping Legends

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

a. Not drawn to scale b. Drawn to scale

- Government and Administrative Buildings
- Military and Industrial Buildings
- Military and Communication Areas
- Subway Entrance
- Fireproof Building
- Prominent Fireproof Building
- Non-fireproof Building
- Non-fireproof Building (non-dwelling)
- Factory, mill, and flour mill, with chimneys
- Factory, mill, and flour mill, without chimneys
- Power Station, drawn to scale
- Hydroelectric Power Station
- Radio Station, drawn to scale
- Telephone Station, drawn to scale
- Abandoned Open-pit Mine or Quarry
- Open-pit Salt Mine
- Pit
- Oil Deposit or Well
- Oil Seepage
- Tailings Pile
- Fuel Storage Tanks
- Natural Gas Tank
- Bench Mark
- Drill Hole
- Burial Mound
- Triangulation Point on Burial Mound
- Single-track Railroad
- Double-track Railroad and Station Building
- Coniferous Forest
- Deciduous Forest
- Mixed Forest
- Lawns
- Citrus Orchard
- Wet Ground
- Scattered Vegetation

243,8 — Values for prominent elevations

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

0,2 — Velocity of the current, width of river bed, depth of river

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

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

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

1:25,000 mapping

a. Not drawn to scale b. Drawn to scale

- Government and Administrative Buildings
- Military and Industrial Buildings
- Military and Communication Areas
- Subway Entrance
- Partly Demolished Buildings
- Demolished Buildings
- Built-Up Area with Fireproof Buildings Predominant
- Built-Up Area with Non-Fireproof Buildings Predominant
- Individual Fireproof Building
- Prominent Industrial Building
- Individual Dwelling, Fireproof
- Ruins of an Individual Dwelling
- Factory or Mill Chimney
- Factory or Mill with Chimney
- Factory or Mill without Chimney
- Mine or Open Pit Mine
- Operating Shaft or Mine
- Non-Operating Shaft or Mine
- Salt Mine
- Tailings Pile
- Pit
- Stone Quarry
- Gas Pump or Service Station
- Fuel Storage or Natural Gas Tank
- Oil or Natural Gas Derrick
- Small Hydroelectric Power Station
- Power Station
- Transformer Station
- Cemetery
- Burial Mound (height in metres)
- Triangulation Point on Burial Mound
- Triangulation Point
- Bench Mark
- Bench Mark (monumented)
- Telegraph Office
- Telephone Station
- Radio Station
- Radio Tower
- Airfield or Seaplane Base
- Landing Strip
- Main Highway
- Highway under Construction
- Improved Dirt Road (former truck road)
- Double-track Railroad with First Class Station
- Dismantled Railroad
- Railroad Under Construction
- Shore Embankment
- River or Ditch with Embankment
- Well
- Water Reservoir or Rain Water Pit
- Spring
- Isobath with value
- Heavy (Index) Contour Line
- Contour Line and Value
- Half Contour Line
- Spot Elevation Value
- Coniferous
- Deciduous
- Mixed
- Scrub

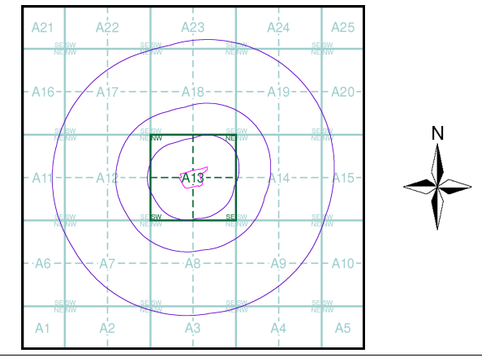
Key to Numbers on Mapping

Envirocheck®

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Hampshire & Isle Of Wight	1:10,560	1898	4
Hampshire & Isle Of Wight	1:10,560	1909 - 1910	5
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10K Raster Mapping	1:10,000	2006	19
10K Raster Mapping	1:10,000	2011	20

Russian Map - Slice A



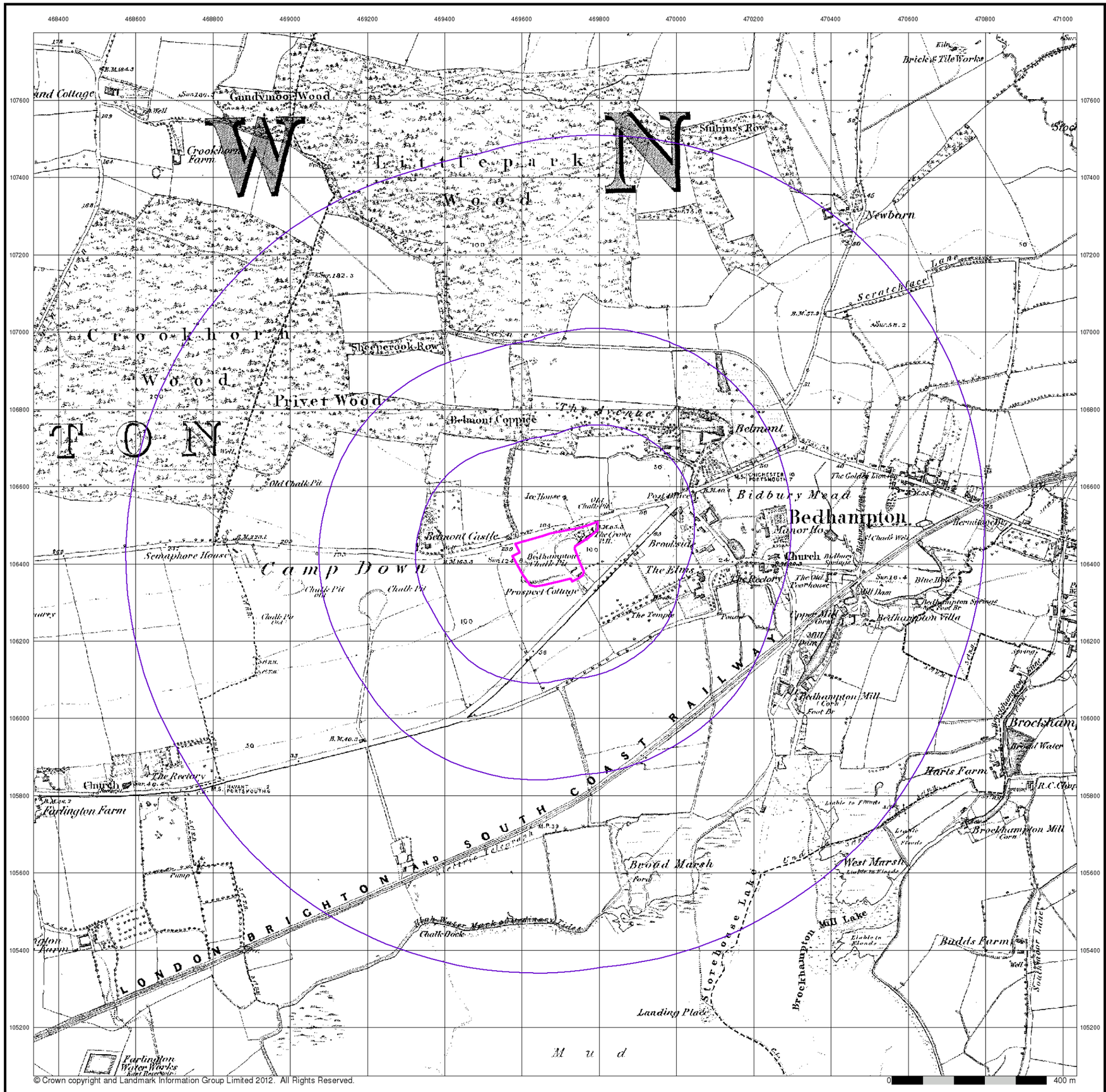
Order Details

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Search Buffer (m): 1000

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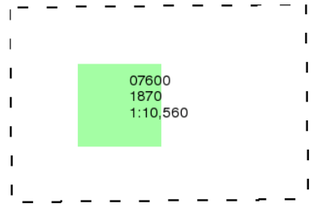
Hampshire & Isle Of Wight

Published 1870

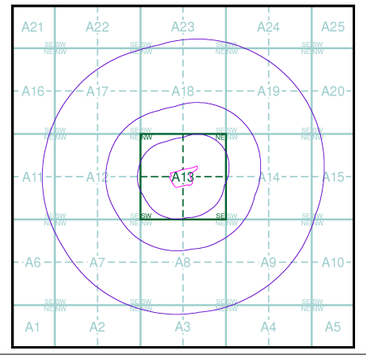
Source map scale - 1:10,560

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Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

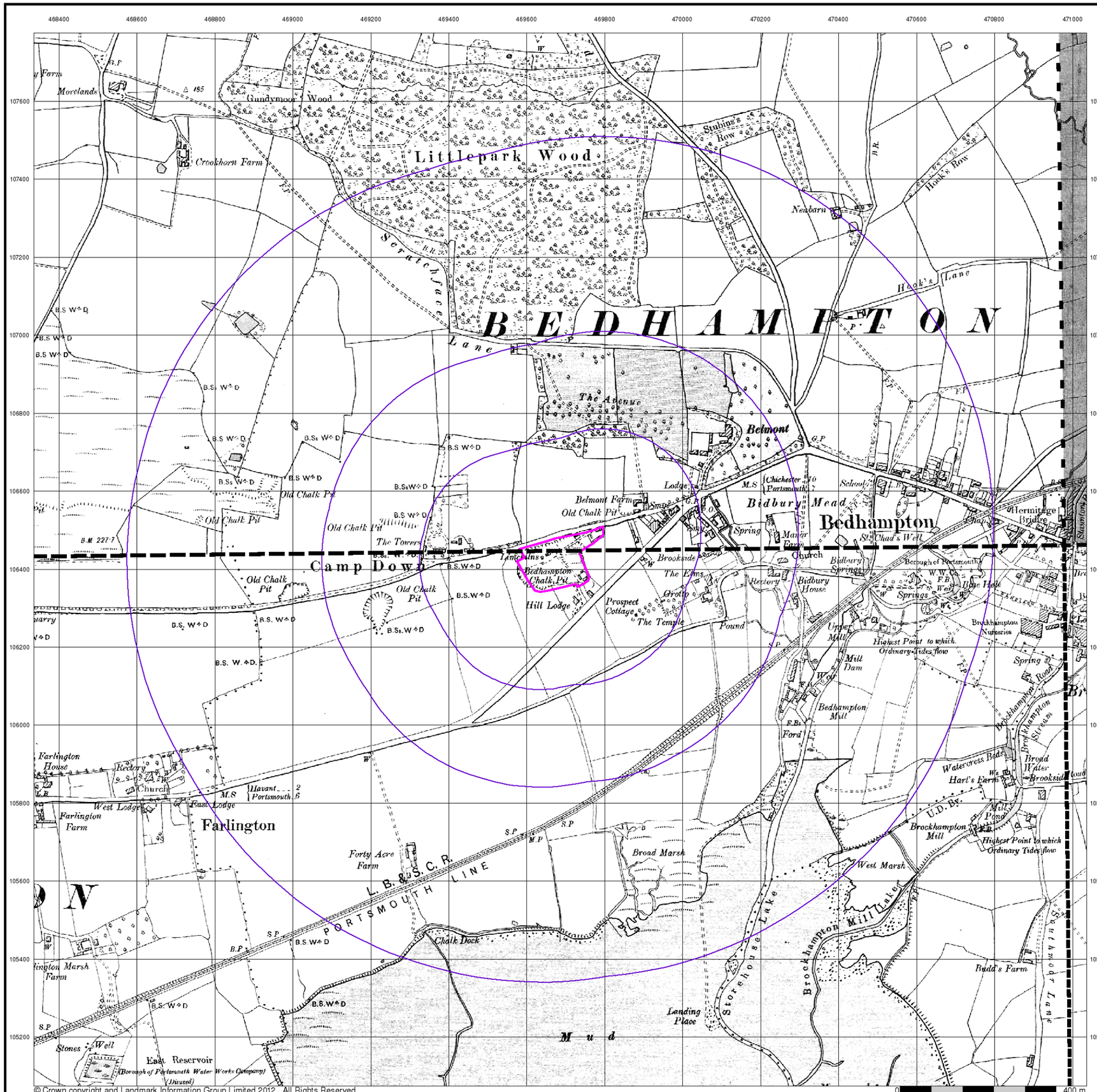
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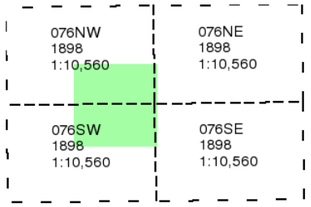
Hampshire & Isle Of Wight

Published 1898

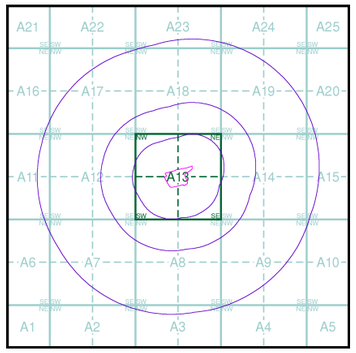
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Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

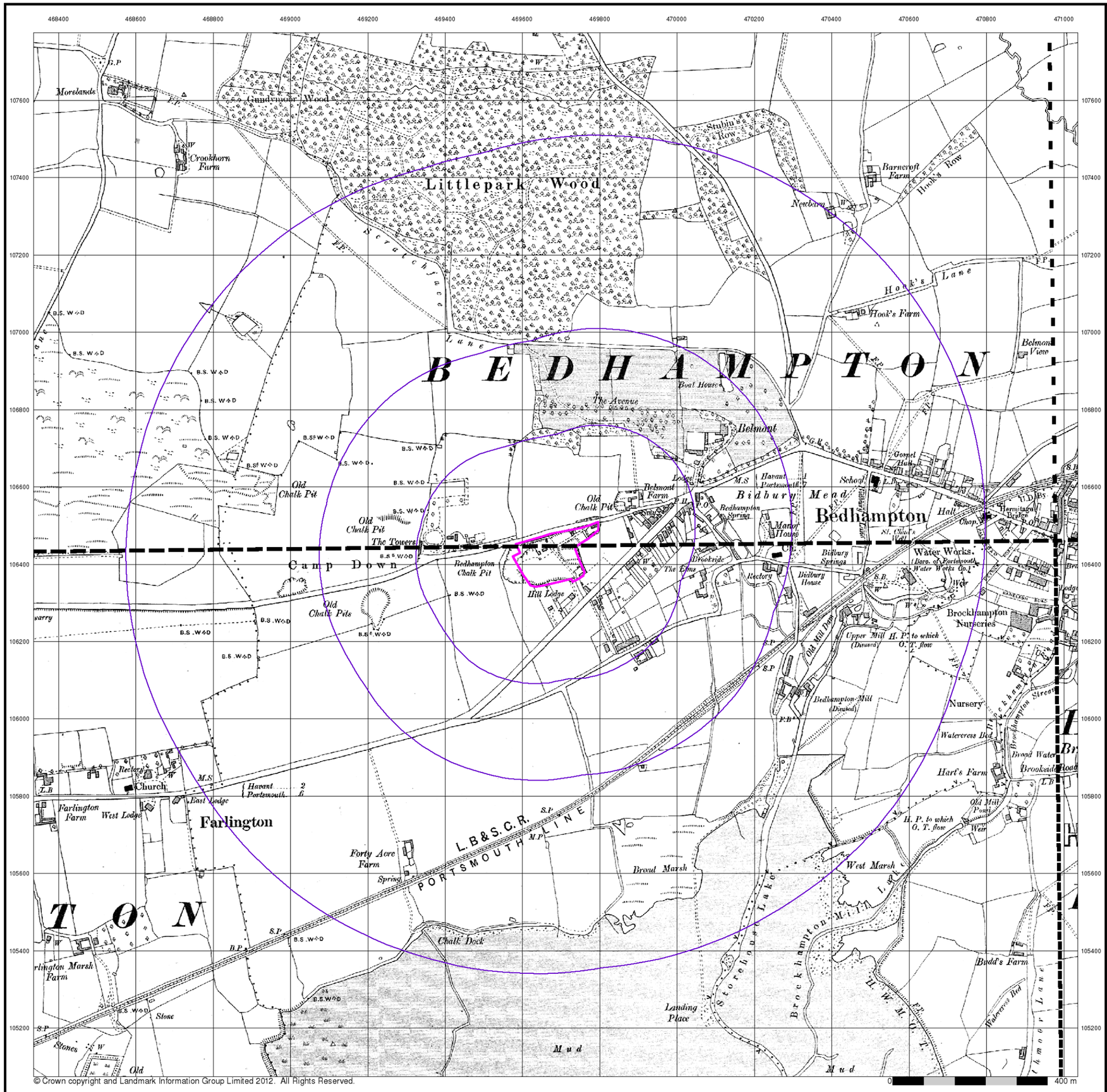
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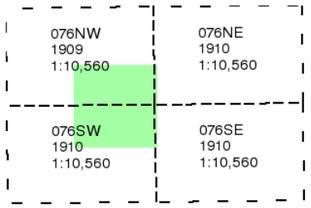
Hampshire & Isle Of Wight

Published 1909 - 1910

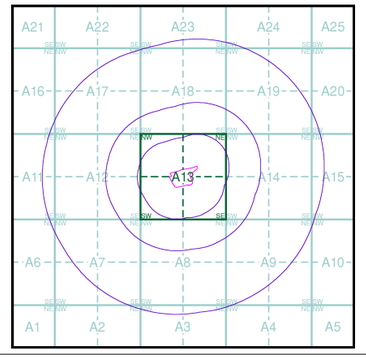
Source map scale - 1:10,560

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Map Name(s) and Date(s)



Historical Map - Slice A



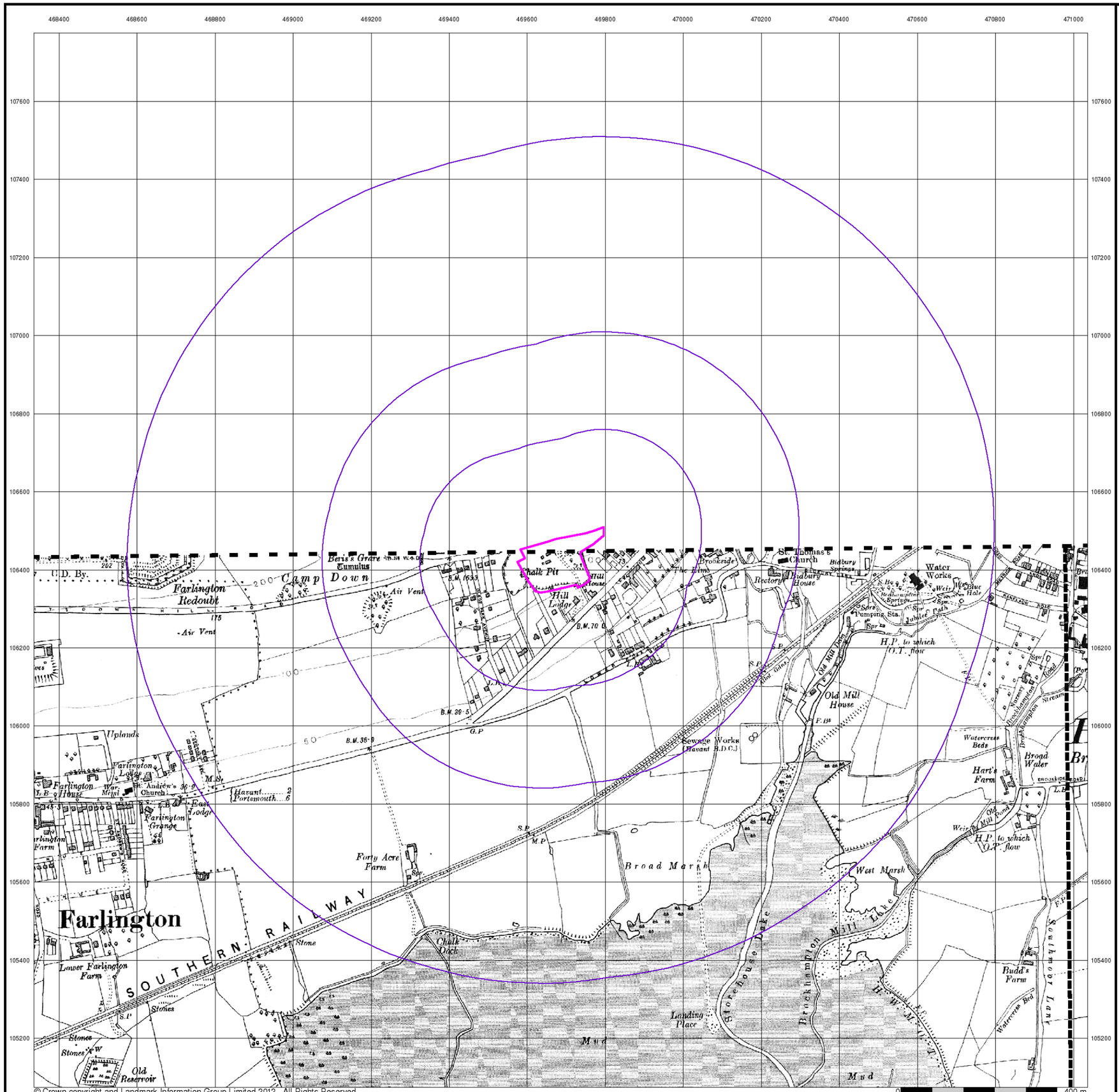
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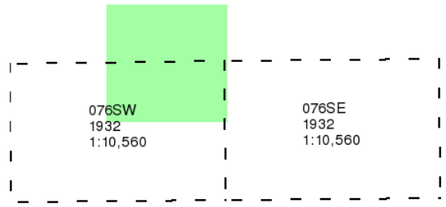
Hampshire & Isle Of Wight

Published 1932

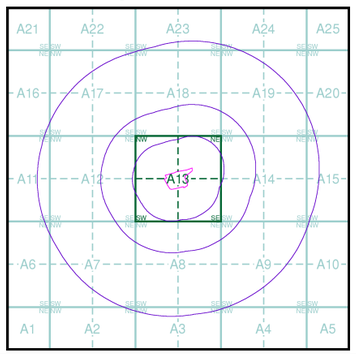
Source map scale - 1:10,560

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Map Name(s) and Date(s)



Historical Map - Slice A



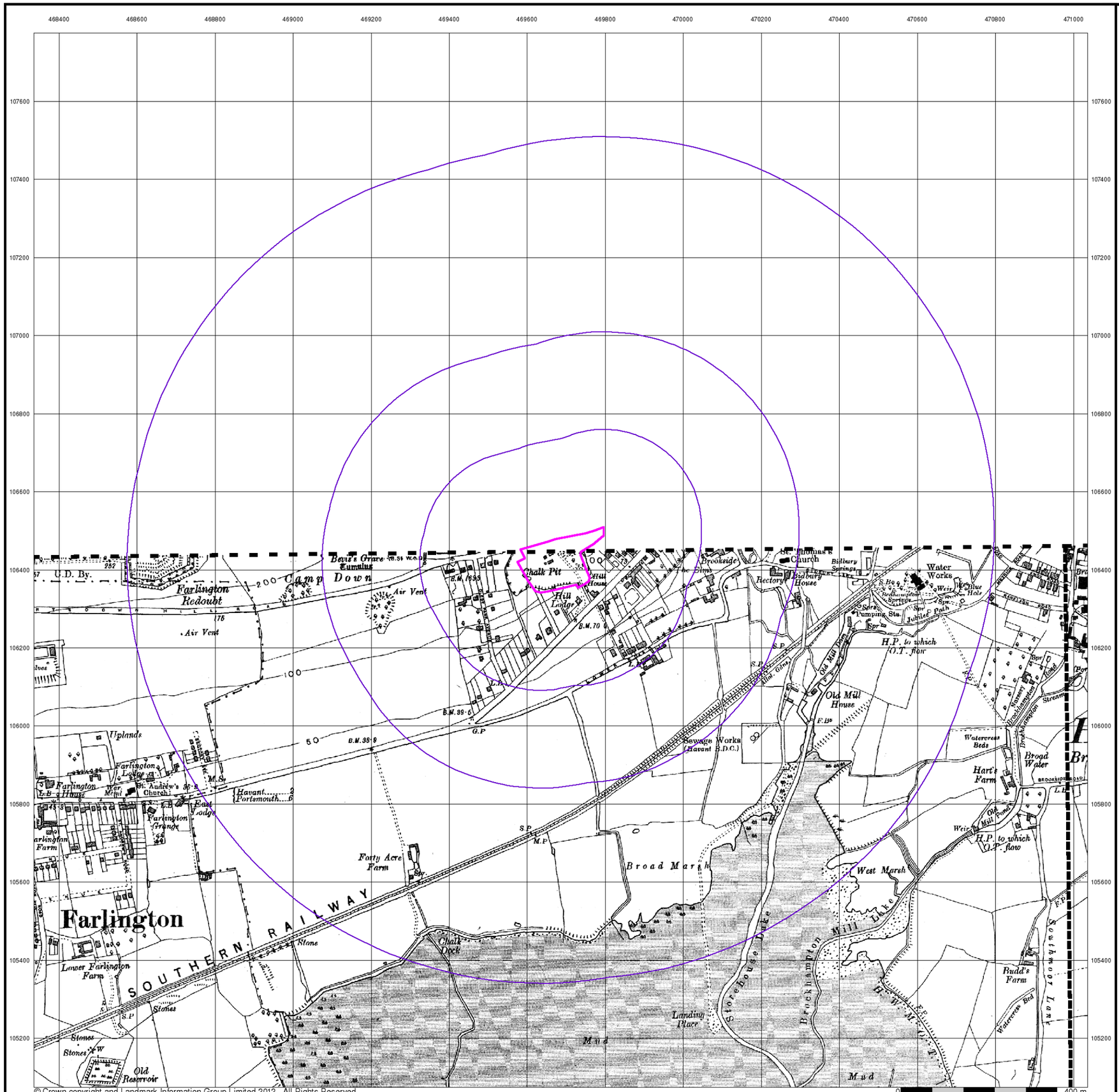
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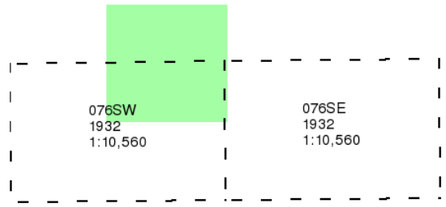
Hampshire & Isle Of Wight

Published 1932

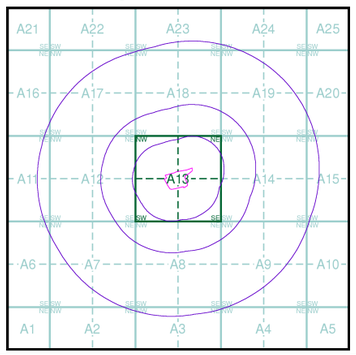
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Map Name(s) and Date(s)



Historical Map - Slice A



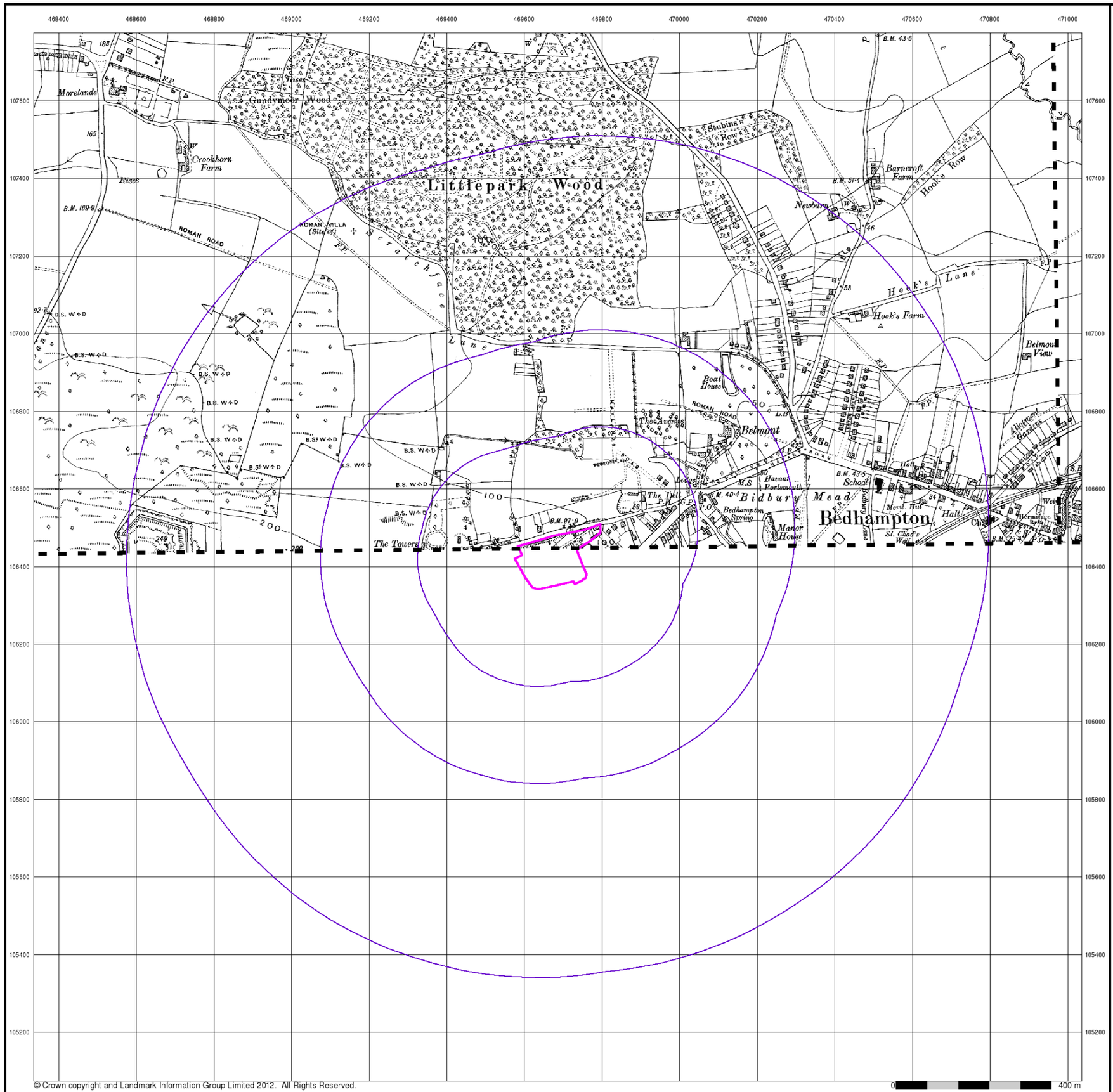
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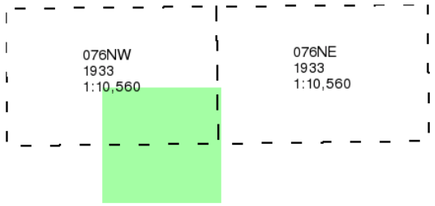
Hampshire & Isle Of Wight

Published 1933

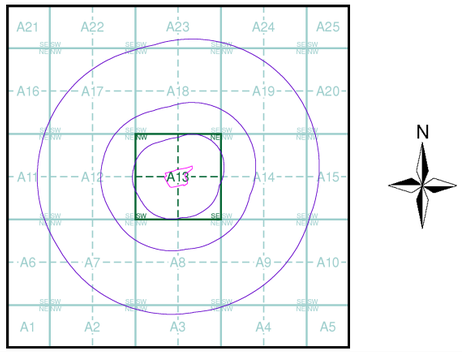
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Map Name(s) and Date(s)



Historical Map - Slice A



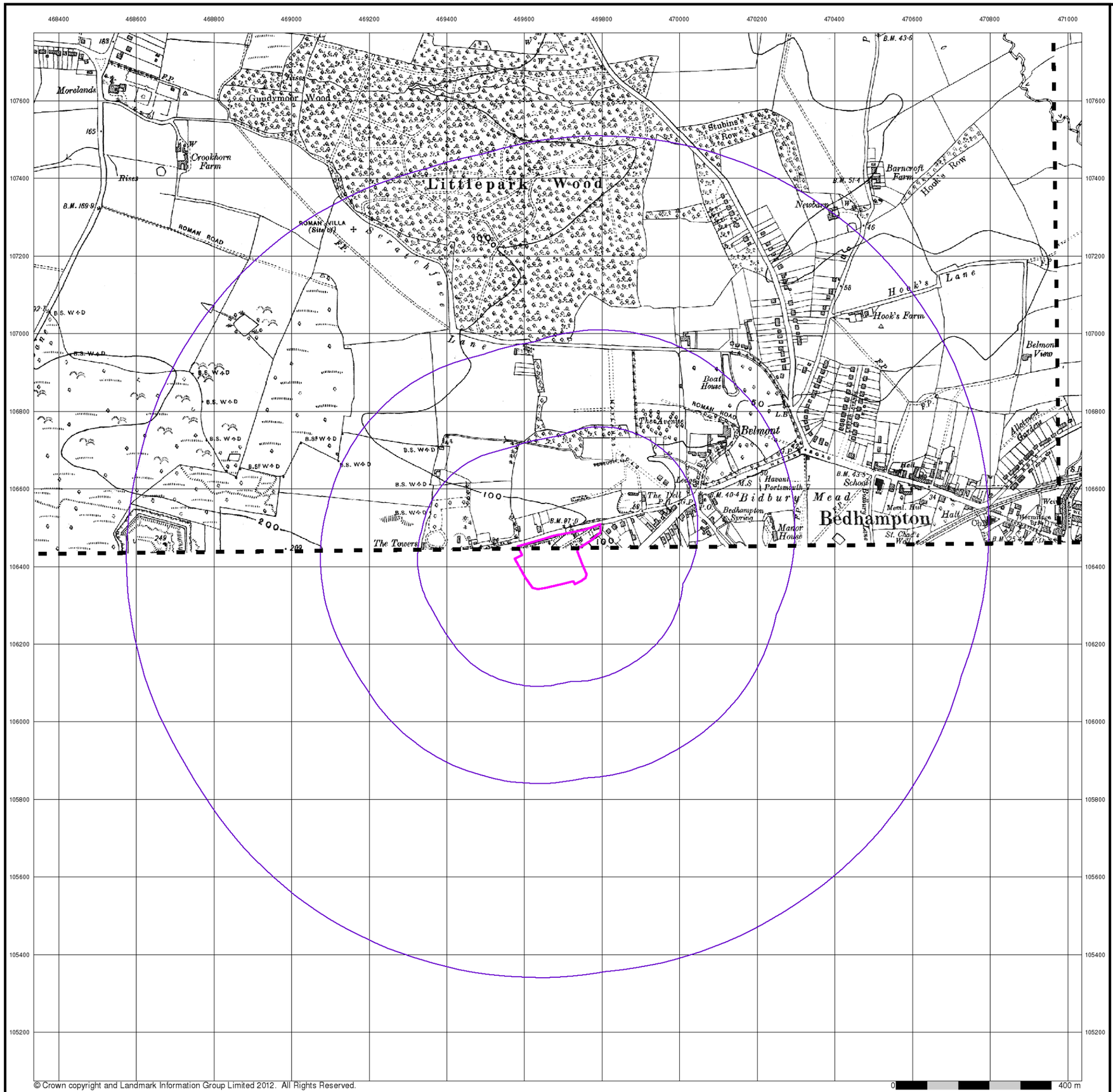
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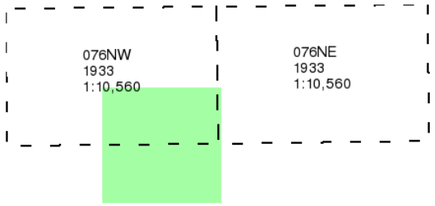
Hampshire & Isle Of Wight

Published 1933

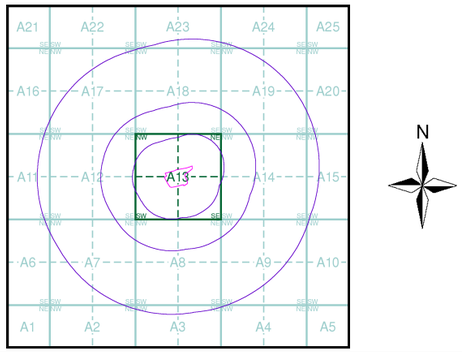
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Historical Map - Slice A



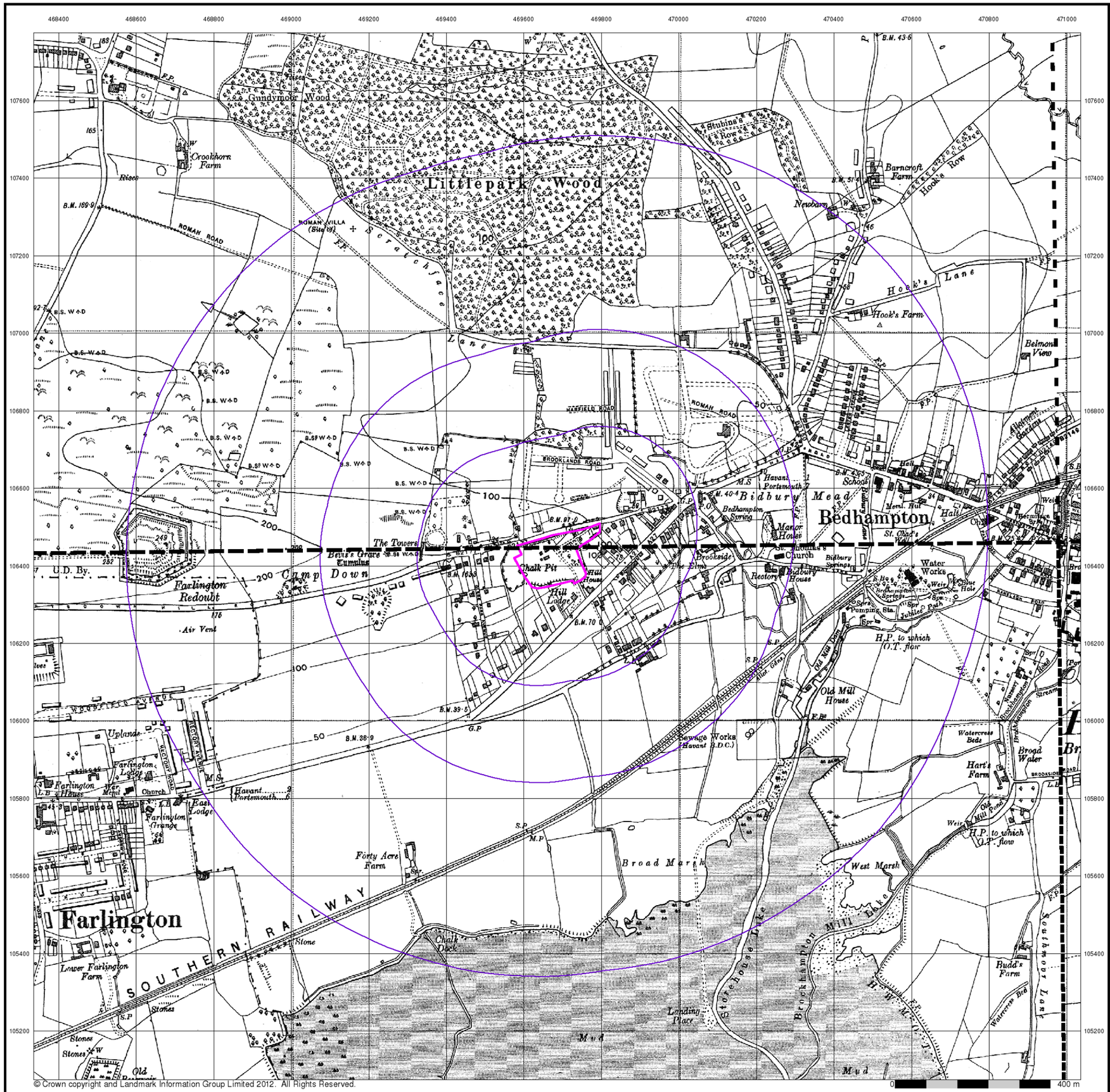
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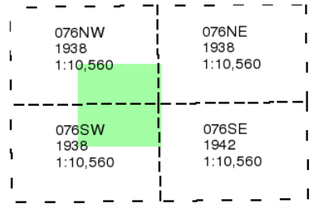
Hampshire & Isle Of Wight

Published 1938 - 1942

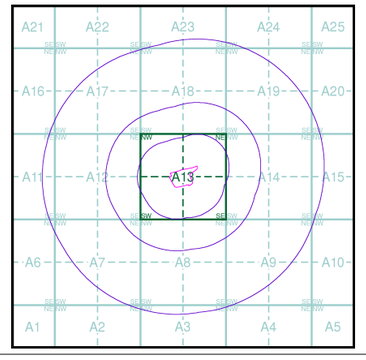
Source map scale - 1:10,560

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)



Historical Map - Slice A



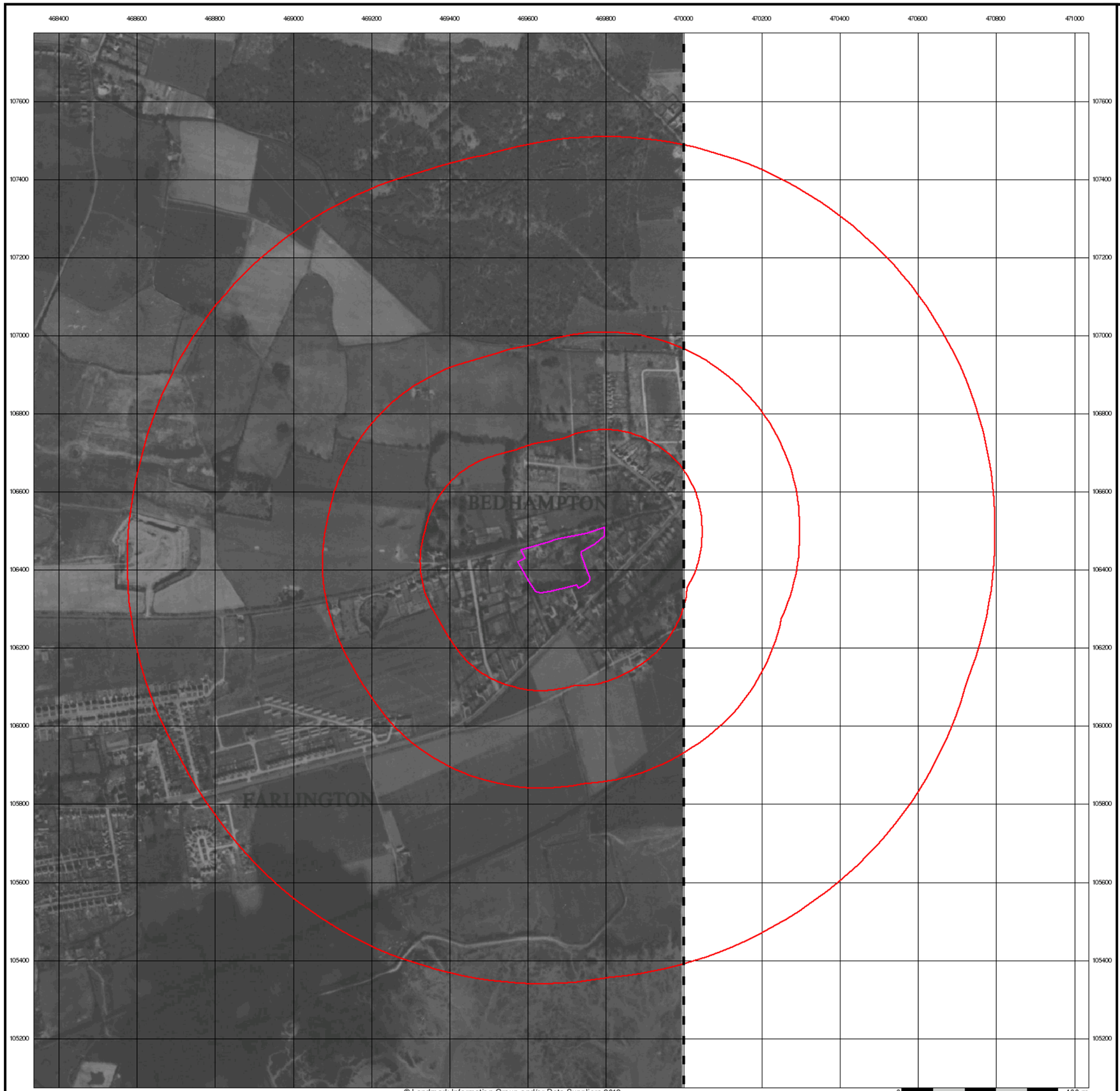
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Customer Ref:	GE8756
National Grid Reference:	469690, 106430
Slice:	A
Site Area (Ha):	2.1
Search Buffer (m):	1000

Site Details

Havant Retail Park, Portsdown Hill Road, Havant, PO9 3NA

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Historical Aerial Photography

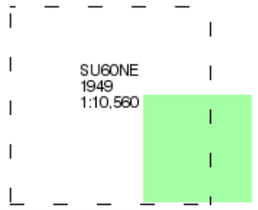
Published 1949

Source map scale - 1:10,560

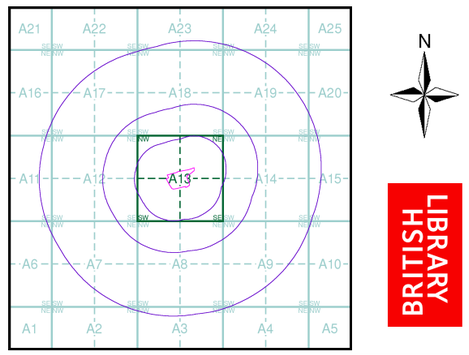
The Historical Aerial Photos were produced by the Ordnance Survey at a scale of 1:1,250 and 1:10,560 from Air Force photography. They were produced between 1944 and 1951 as an interim measure, pending preparation of conventional mapping, due to post war resource shortages. New security measures in the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

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Map Name(s) and Date(s)



Historical Aerial Photography - Slice A



Order Details

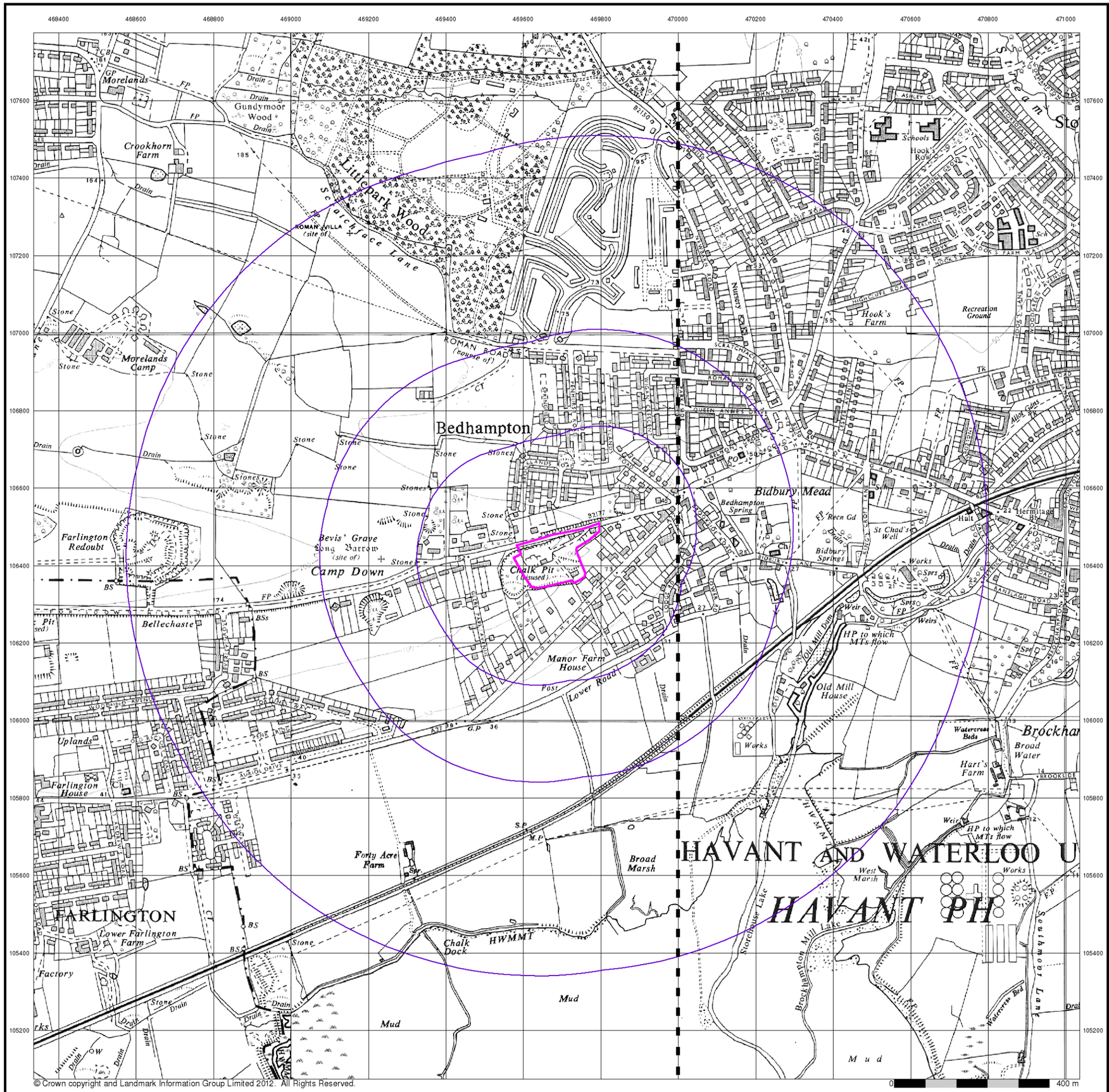
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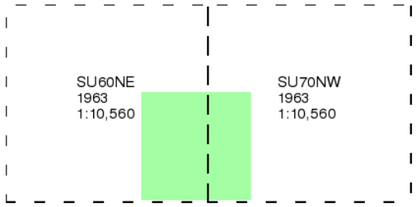
Ordnance Survey Plan

Published 1963

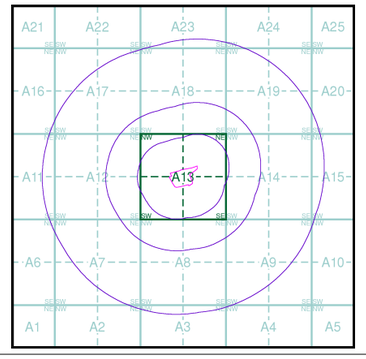
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Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

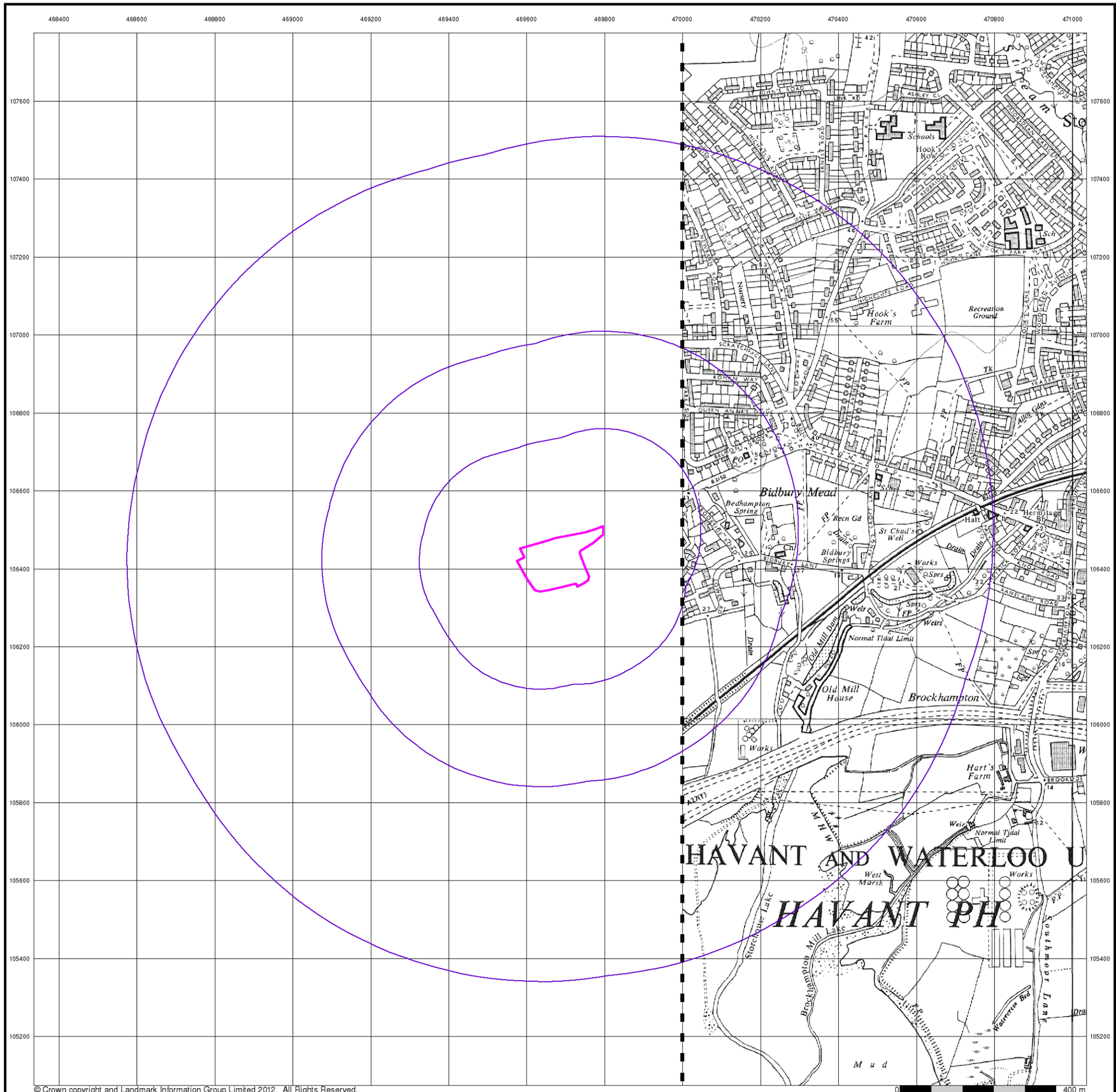
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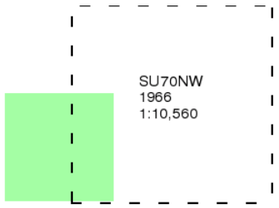
Ordnance Survey Plan

Published 1966

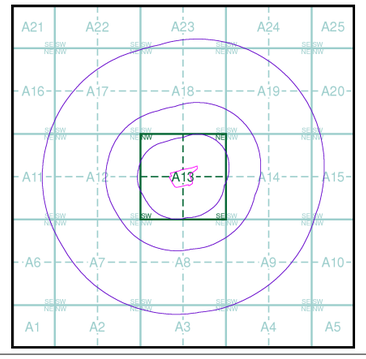
Source map scale - 1:10,000

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Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number:	39296519_1_1
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National Grid Reference:	469690, 106430
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Site Details

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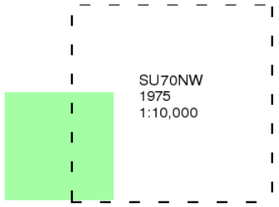
Ordnance Survey Plan

Published 1975

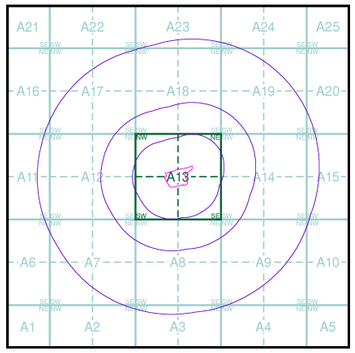
Source map scale - 1:10,000

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Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

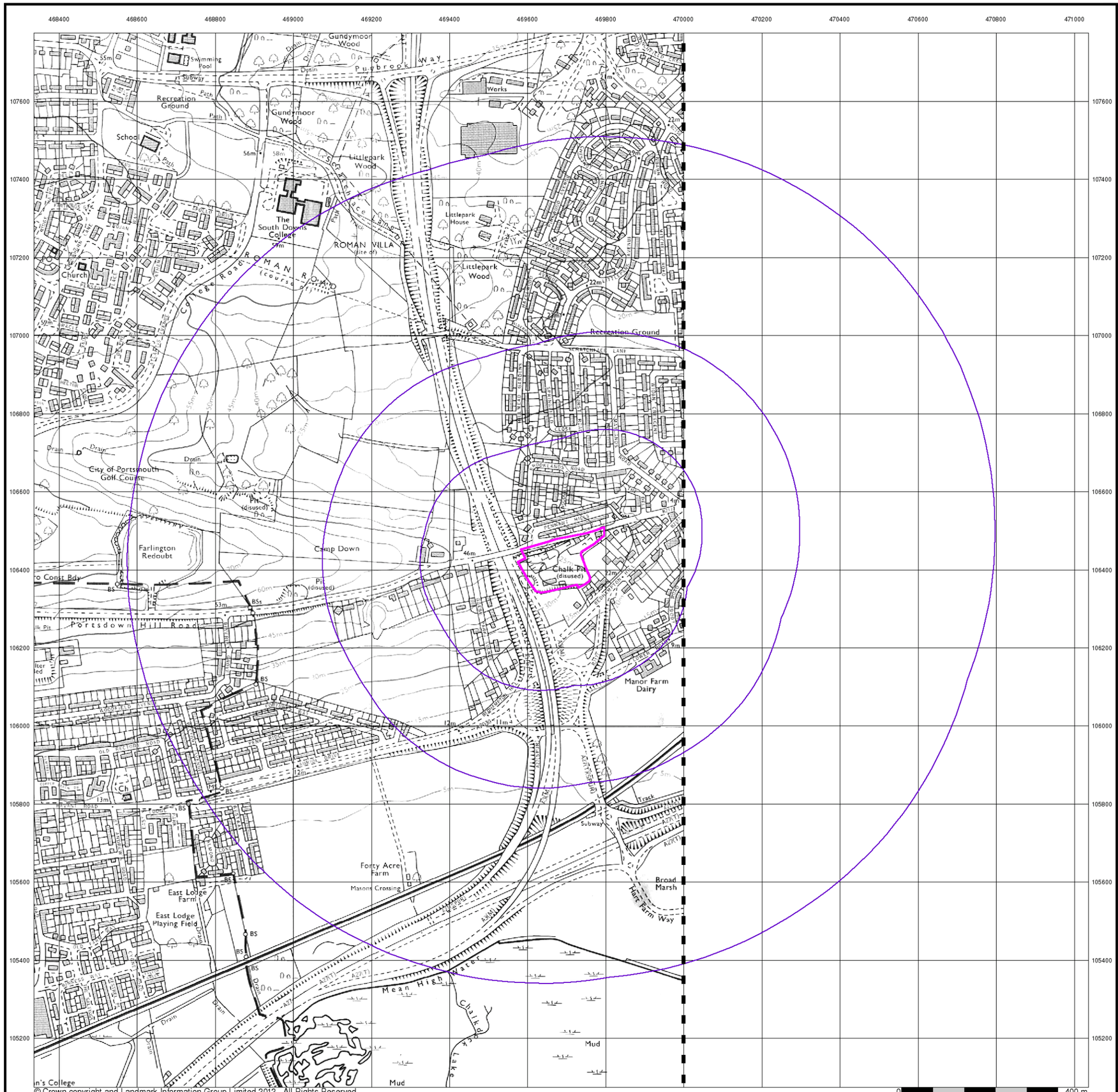
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Customer Ref:	GE8756
National Grid Reference:	469690, 106430
Slice:	A
Site Area (Ha):	2.1
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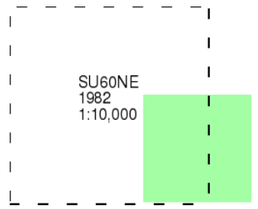
Ordnance Survey Plan

Published 1982

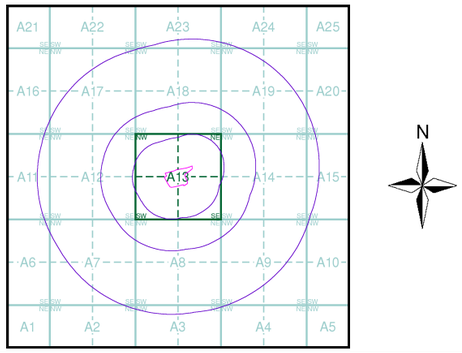
Source map scale - 1:10,000

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:	39296519_1_1
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Slice:	A
Site Area (Ha):	2.1
Search Buffer (m):	1000

Site Details

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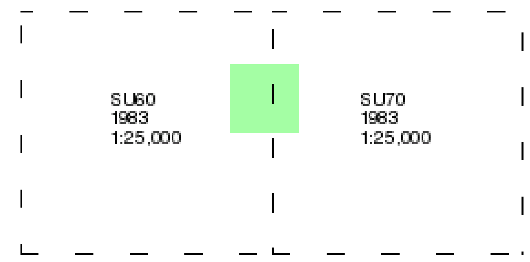
Havant

Published 1983

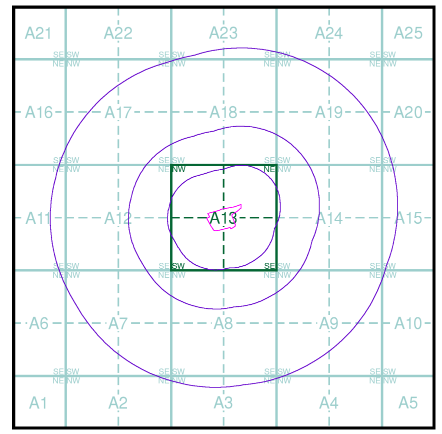
Source map scale - 1:25,000

These maps were produced by the Russian military during the Cold War between 1950 and 1997, and cover 103 towns and cities throughout the U.K. The maps are produced at 1:25,000, 1:10,000 and 1:5,000 scale, and show detailed land use, with colour-coded areas for development, green areas, and non-developed areas. Buildings are coloured black and important building uses (such as hospitals, post offices, factories etc.) are numbered, with a numbered key describing their use.
They were produced by the Russians for the benefit of navigation, as well as strategic military sites and transport hubs, for use if they were to have invaded the U.K. The detailed information provided indicates that the areas were surveyed using land-based personnel, on the ground, in the cities that are mapped.

Map Name(s) and Date(s)



Russian Map - Slice A



Order Details

Order Number: 39296519_1_1
Customer Ref: GE8756
National Grid Reference: 469690, 106430
Slice: A
Site Area (Ha): 2.1
Search Buffer (m): 1000

Site Details

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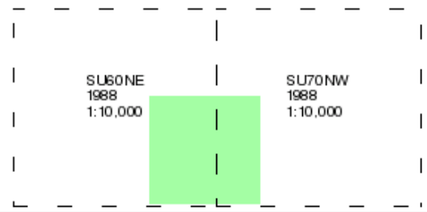
Portsmouth

Published 1988

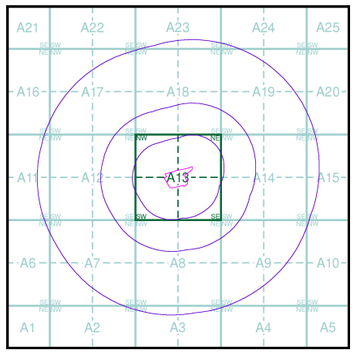
Source map scale - 1:10,000

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Map Name(s) and Date(s)



Russian Map - Slice A



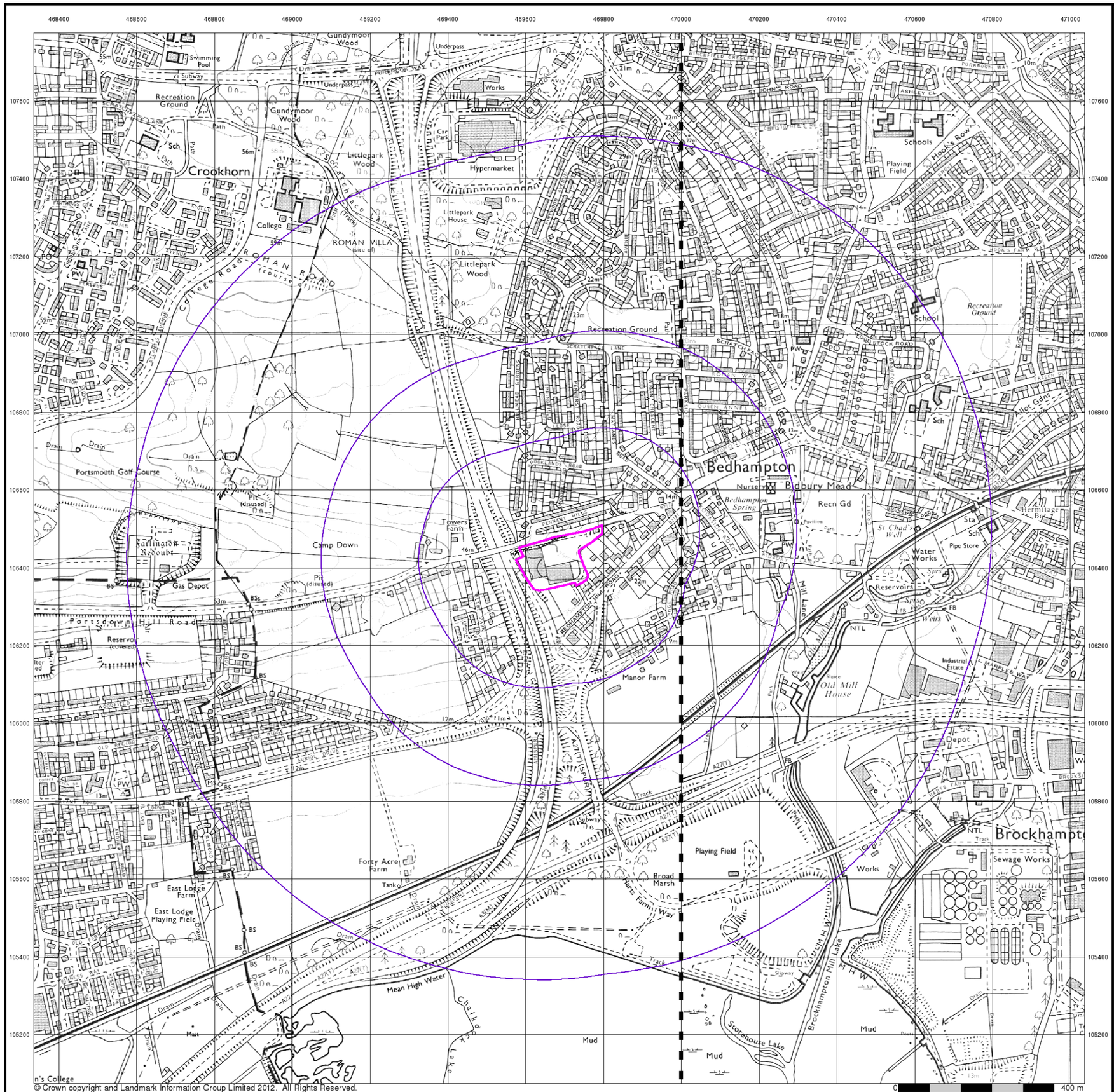
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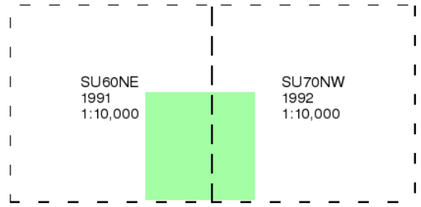
Ordnance Survey Plan

Published 1991 - 1992

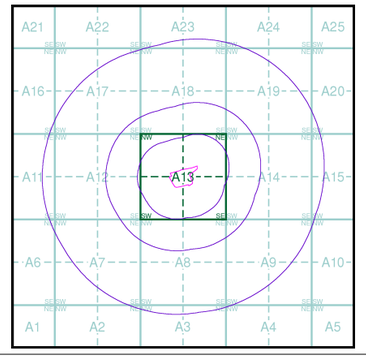
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Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number:	39296519_1_1
Customer Ref:	GE8756
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Site Area (Ha):	2.1
Search Buffer (m):	1000

Site Details

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10k Raster Mapping

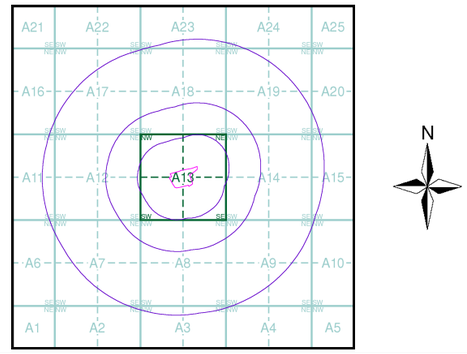
Published 2006

Source map scale - 1:10,000

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

Map Name(s) and Date(s)

Historical Map - Slice A



Order Details

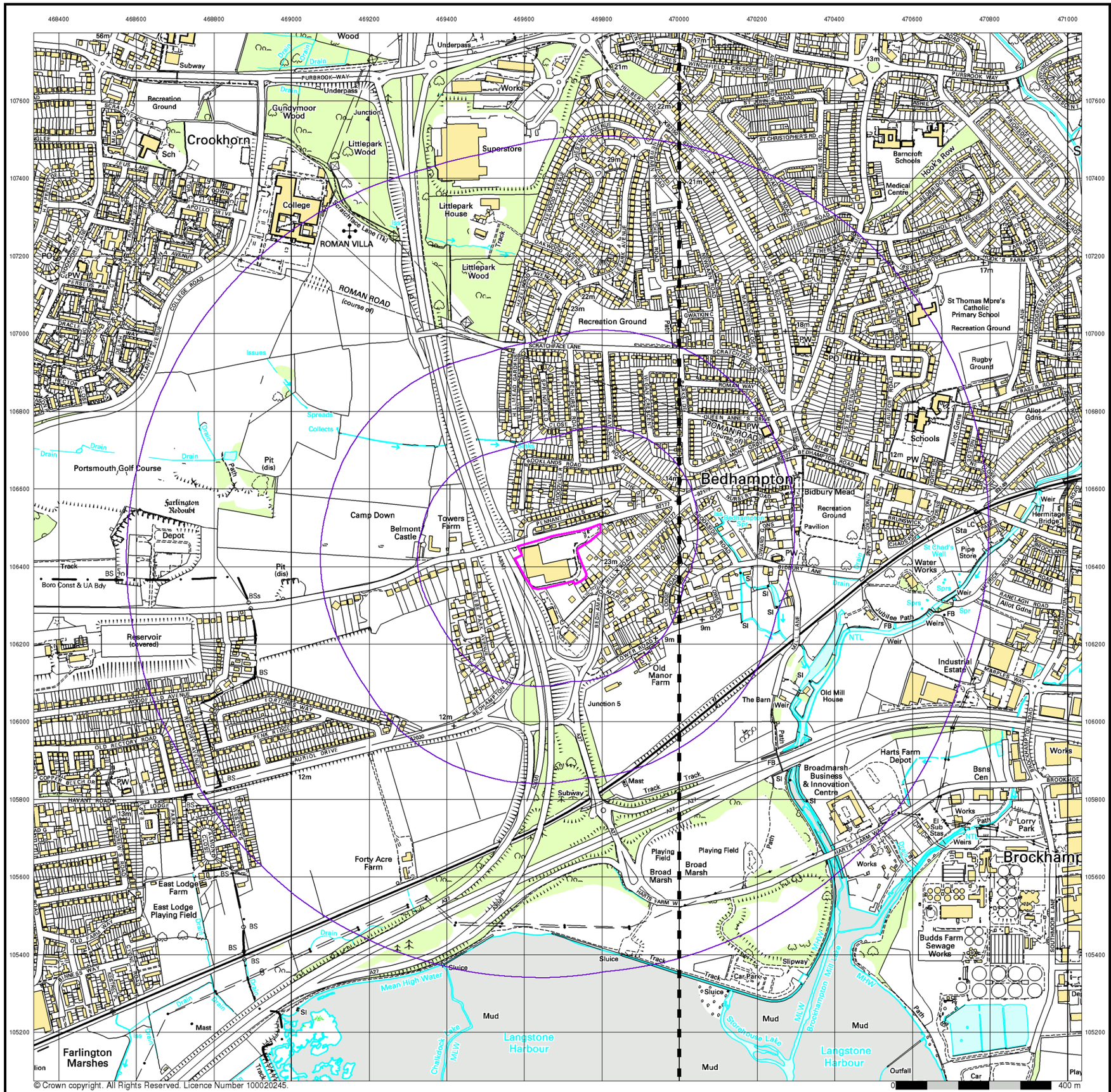
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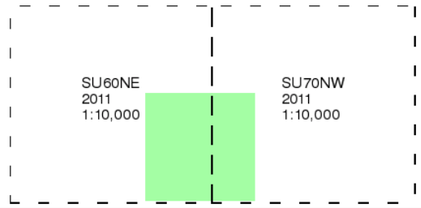
10k Raster Mapping

Published 2011

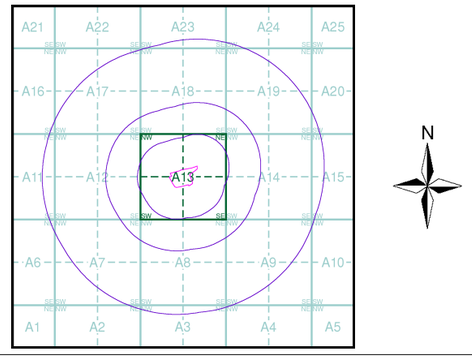
Source map scale - 1:10,000

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

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

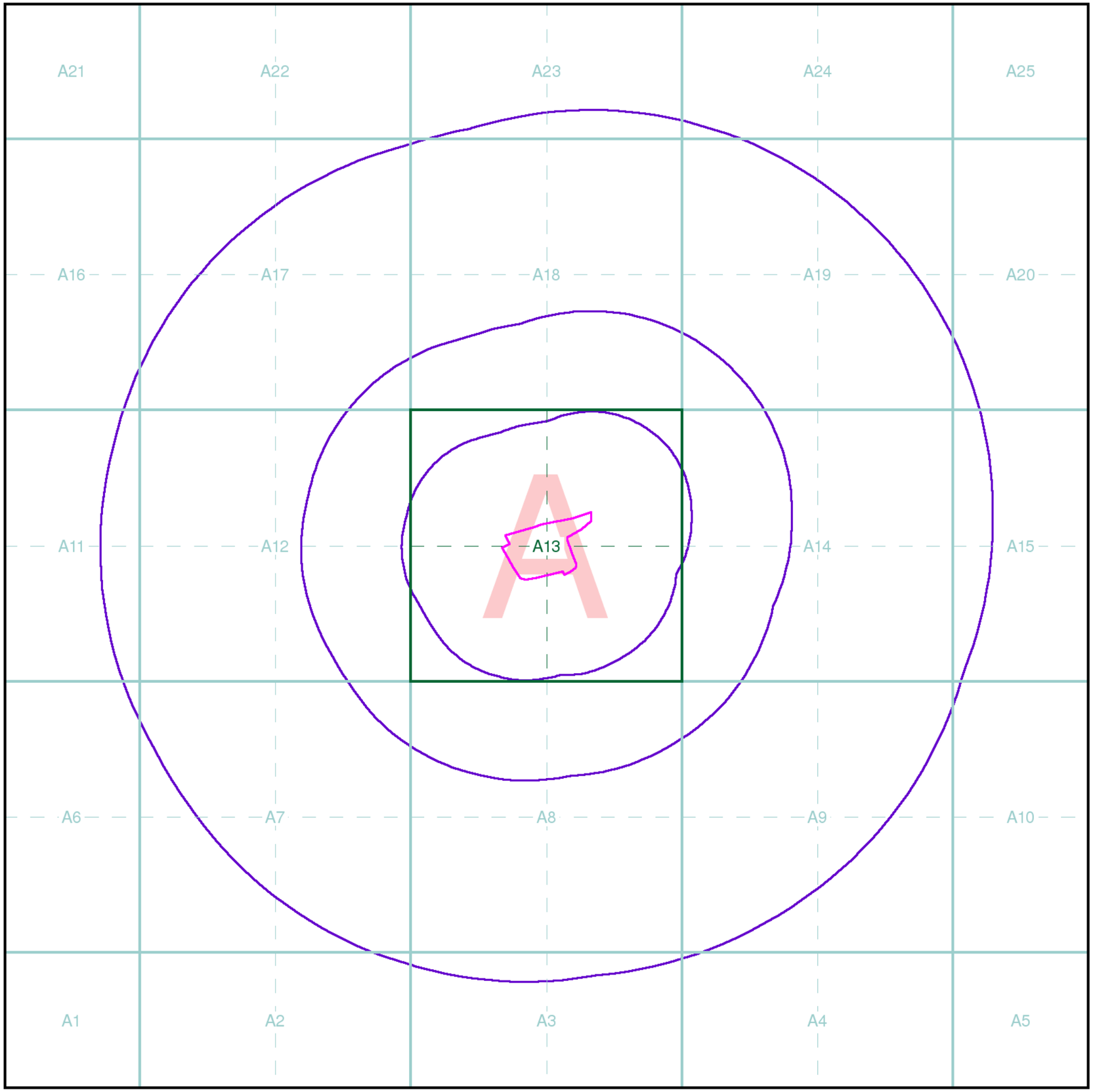
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Index Map

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

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

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

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

A selection of organisations who provide data within this report:

Licensed Partner

Envirocheck reports are compiled from 136 different sources of data.

Client Details
MR J Tingley, Geo Environmental Services Ltd, 28 Crescent Road, Brighton, BN2 3RP

Order Details
Order Number:	39296519_1_1
Customer Ref:	GE8756
National Grid Reference:	469680, 106420
Site Area (Ha):	2.1
Search Buffer (m):	1000

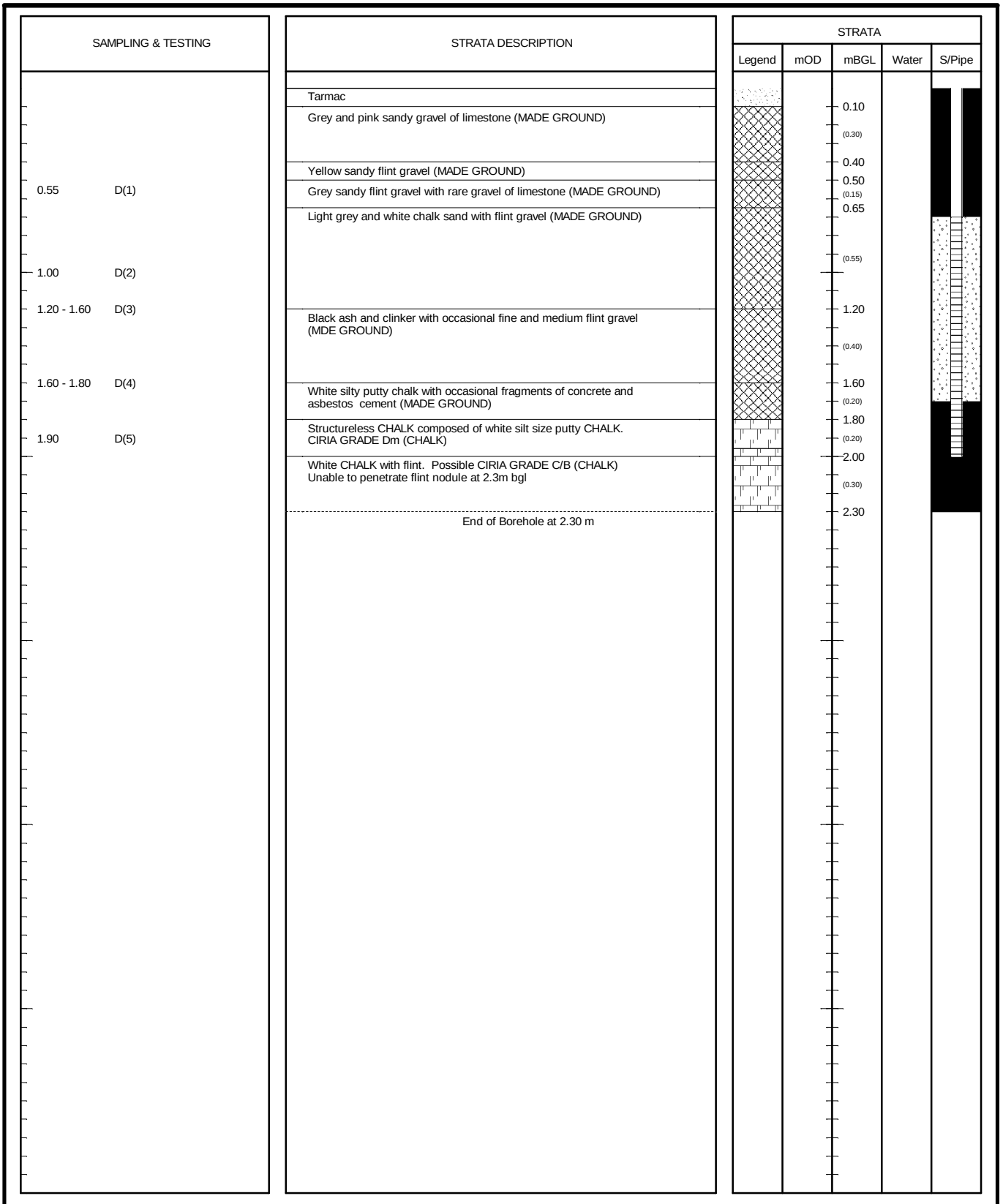
Site Details
Havant Retail Park, Portsdown Hill Road, Havant, PO9 3NA

Full Terms and Conditions can be found on the following link:
http://www.landmarkinfo.co.uk/Terms/Show/430

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

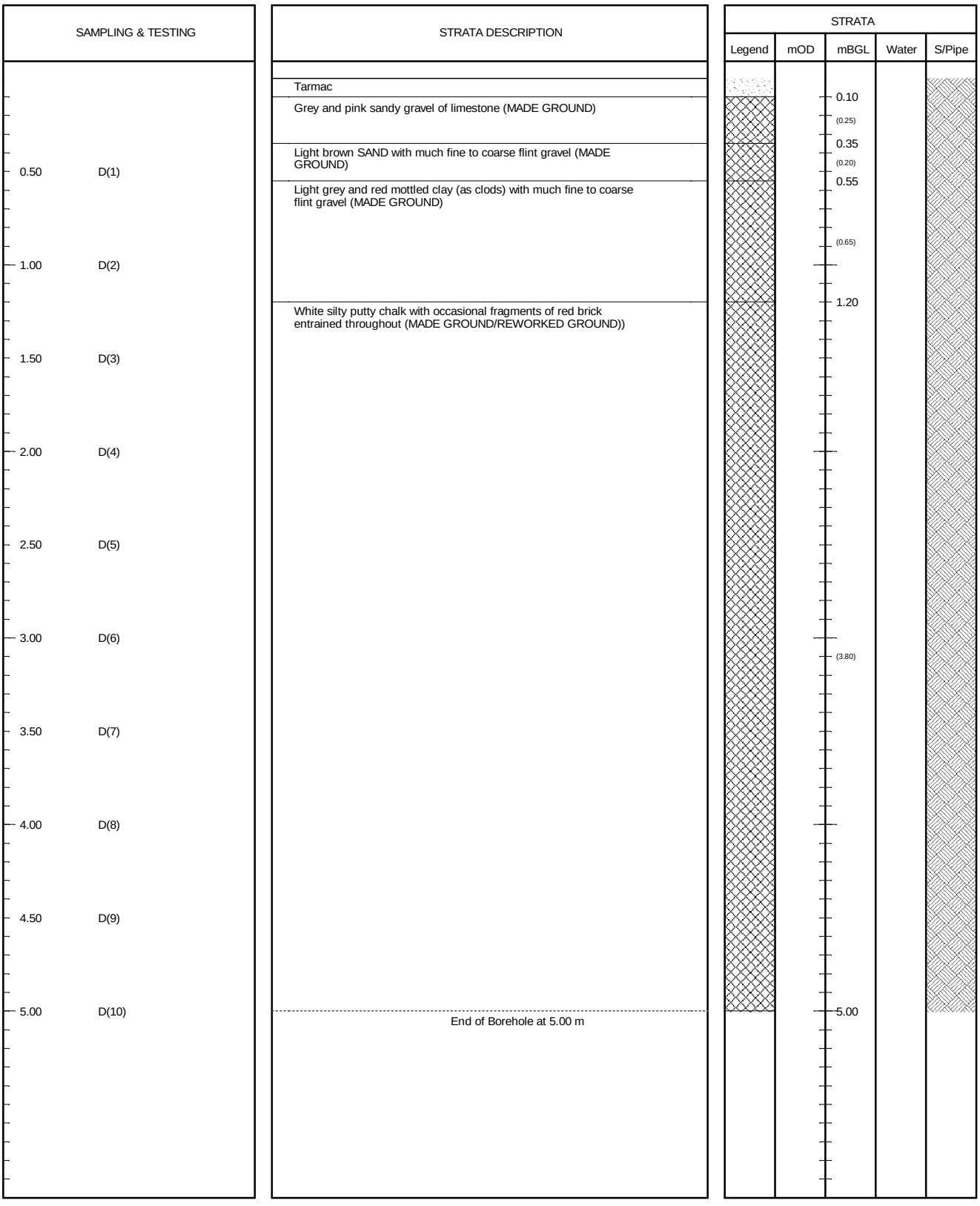
APPENDIX C

Exploratory Hole Logs



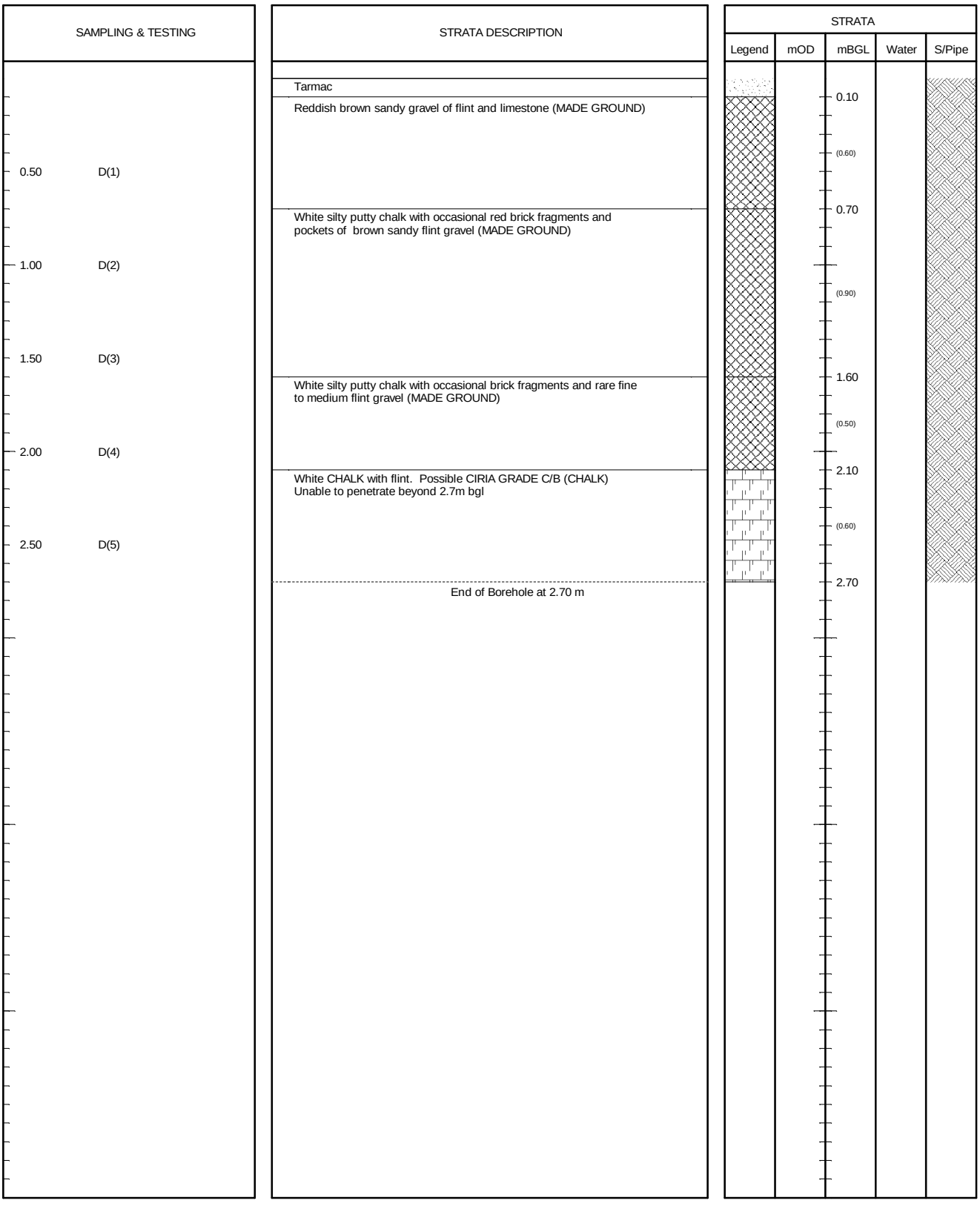
SAMPLES: D=disturbed B=bulk U=undisturbed TESTS: MAC=macintosh IVAN=vane HPEN=penetrometer SPT=split-spoon CPT=cone WATER: ▽ =strike ▼ =rest OTHERS: (2.00)=strata

Stability:	Type: Hydraulic Window Sampler Geoprobe	Ref: GE8756	Position: WS1
Groundwater: No Groundwater Encountered	Method:	Start: 29/05/2012	Scale: 1:30
		Finish: 29/05/2012	Size:
Plant:	Project: Havant Retail Park, Havant	Filled: 29/05/2012	Depth: 2.30mBGL
		Eng: GR	Level: -
Remarks: Service inspection pit excavated to 1m bgl. No water inflow.	Client: Linden Homes Southern	Drawn: NH	Figure: FIG
		Ckd: GR	Sheet: Sheet 1 of 1



SAMPLES: D=disturbed B=bulk U=undisturbed TESTS: MAC=macintosh IVAN=vane HPEN=penetrometer SPT=split-spoon CPT=cone WATER: ▽ =strike ▼ =rest OTHERS: (2.00)=strata

Stability:	Type: Hydraulic Window Sampler Geoprobe	Ref: GE8756	Position: WS2
Groundwater: No Groundwater Encountered	Method:	Start: 29/05/2012	Scale: 1:30
		Finish: 29/05/2012	Size:
Plant:	Project: Havant Retail Park, Havant	Filled: 29/05/2012	Depth: 5.00mBGL
		Eng: GR	Level: -
Remarks: Service inspection pit excavated to 1m bgl. No water inflow.	Client: Linden Homes Southern	Drawn: NH	Figure: FIG
		Ckd: GR	Sheet: Sheet 1 of 1



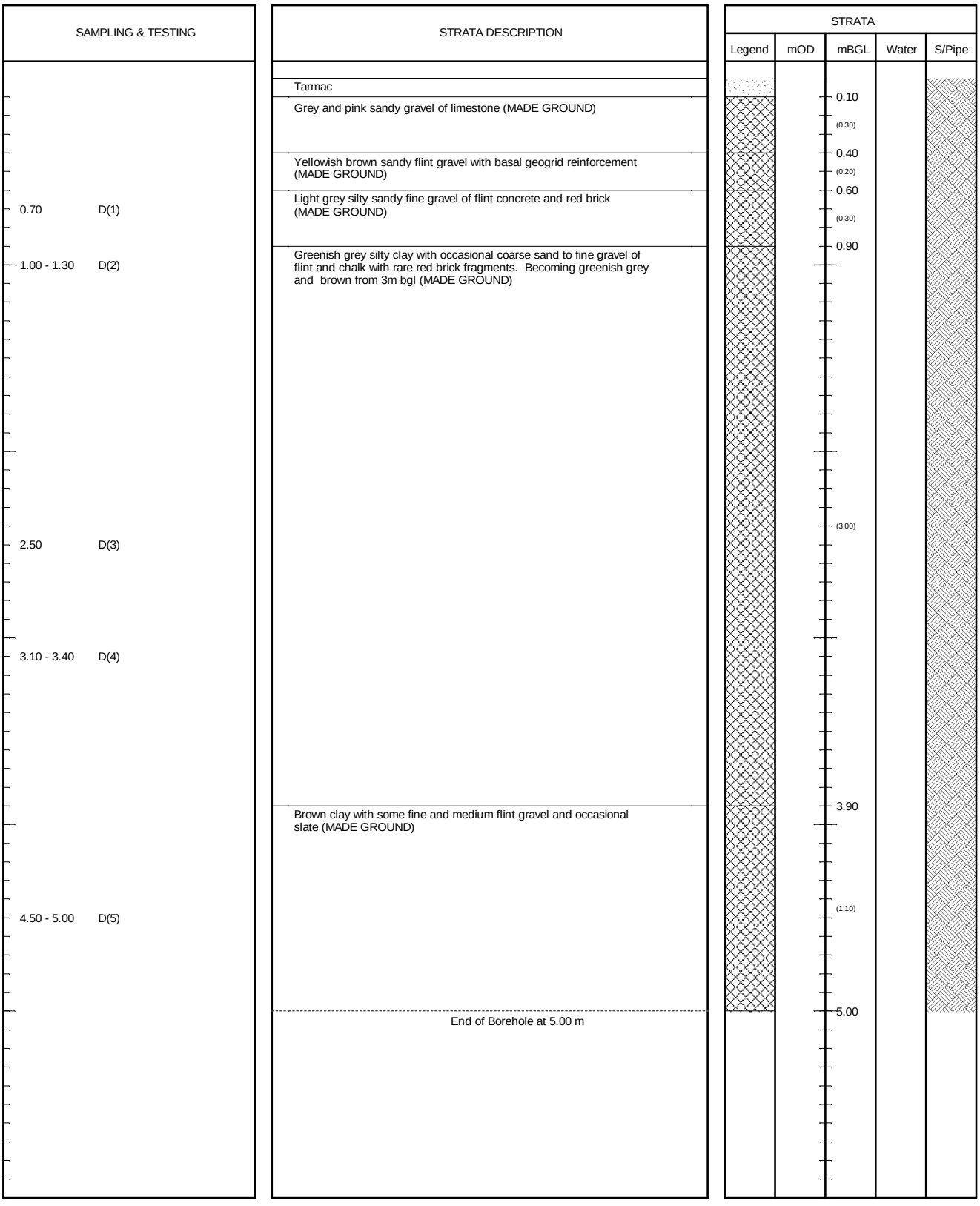
SAMPLES: D=disturbed B=bulk U=undisturbed TESTS: MAC=macintosh IVAN=vane HPEN=penetrometer SPT=split-spoon CPT=cone WATER: ▽ =strike ▼ =rest OTHERS: (2.00)=strata

Stability:	Type: Hydraulic Window Sampler Geoprobe	Ref: GE8756	Position: WS3
Groundwater: No Groundwater Encountered	Method:	Start: 29/05/2012	Scale: 1:30
		Finish: 29/05/2012	Size:
Plant:	Project: Havant Retail Park, Havant	Filled: 29/05/2012	Depth: 2.70mBGL
		Eng: GR	Level: -
Remarks: Service inspection pit excavated to 1m bgl. No water inflow.	Client: Linden Homes Southern	Drawn: NH	Figure: FIG
		Ckd: GR	Sheet: Sheet 1 of 1

SAMPLING & TESTING		STRATA DESCRIPTION	STRATA				
			Legend	mOD	mBGL	Water	S/Pipe
		Tarmac			0.10		
		Greyish brown sandy fine and medium flint gravel with occasional fragments of red brick (MADE GROUND)			(0.60)		
0.50	D(1)				0.70		
		Grey and greenish grey slightly sandy clay with rare fine flint gravel rare timber and pockets of charcoal (MADE GROUND)					
1.00	D(2)				(1.10)		
1.50	D(3)						
		Black ash and glass (MADE GROUND)			1.80		
					(0.20)		
		Brown clay with occasional fine and medium chalk gravel rare charcoal fragments and red brick fragments (MADE GROUND)			2.00		
2.30 - 2.60	D(4)						
					(2.00)		
3.50 - 3.80	D(5)						
		Light greenish brown sandy flint gravel (MADE GROUND)			4.00		
					(0.30)		
		Brown clay with occasional medium flint gravel (MADE GROUND)			4.30		
					(0.20)		
		Off white silty putty chalk with pockets of grey-brown sandy clay (MADE GROUND)			4.50		
					(0.50)		
		End of Borehole at 5.00 m			5.00		

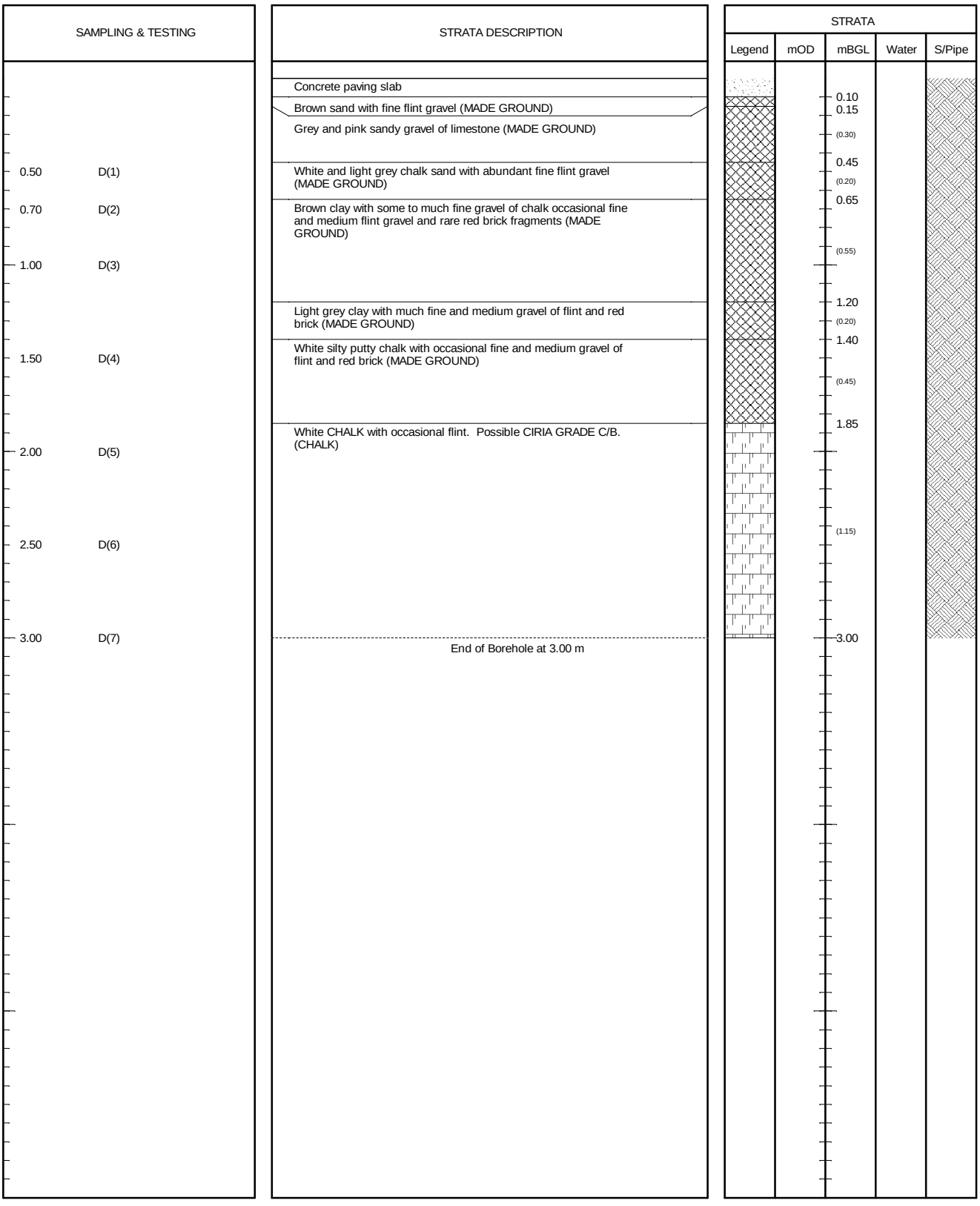
SAMPLES: D=disturbed B=bulk U=undisturbed TESTS: MAC=macintosh IVAN=vane HPEN=penetrometer SPT=split-spoon CPT=cone WATER: ▽ =strike ▼ =rest OTHERS: (2.00)=strata

Stability:	Type: Hydraulic Window Sampler Geoprobe	Ref: GE8756	Position: WS4
Groundwater: No Groundwater Encountered	Method:	Start: 29/05/2012	Scale: 1:30
		Finish: 29/05/2012	Size:
Plant:	Project: Havant Retail Park, Havant	Filled: 29/05/2012	Depth: 5.00mBGL
		Eng: GR	Level: -
Remarks: Service inspection pit excavated to 1m bgl. No water inflow.	Client: Linden Homes Southern	Drawn: GR	Figure: FIG
		Ckd: GR	Sheet: Sheet 1 of 1



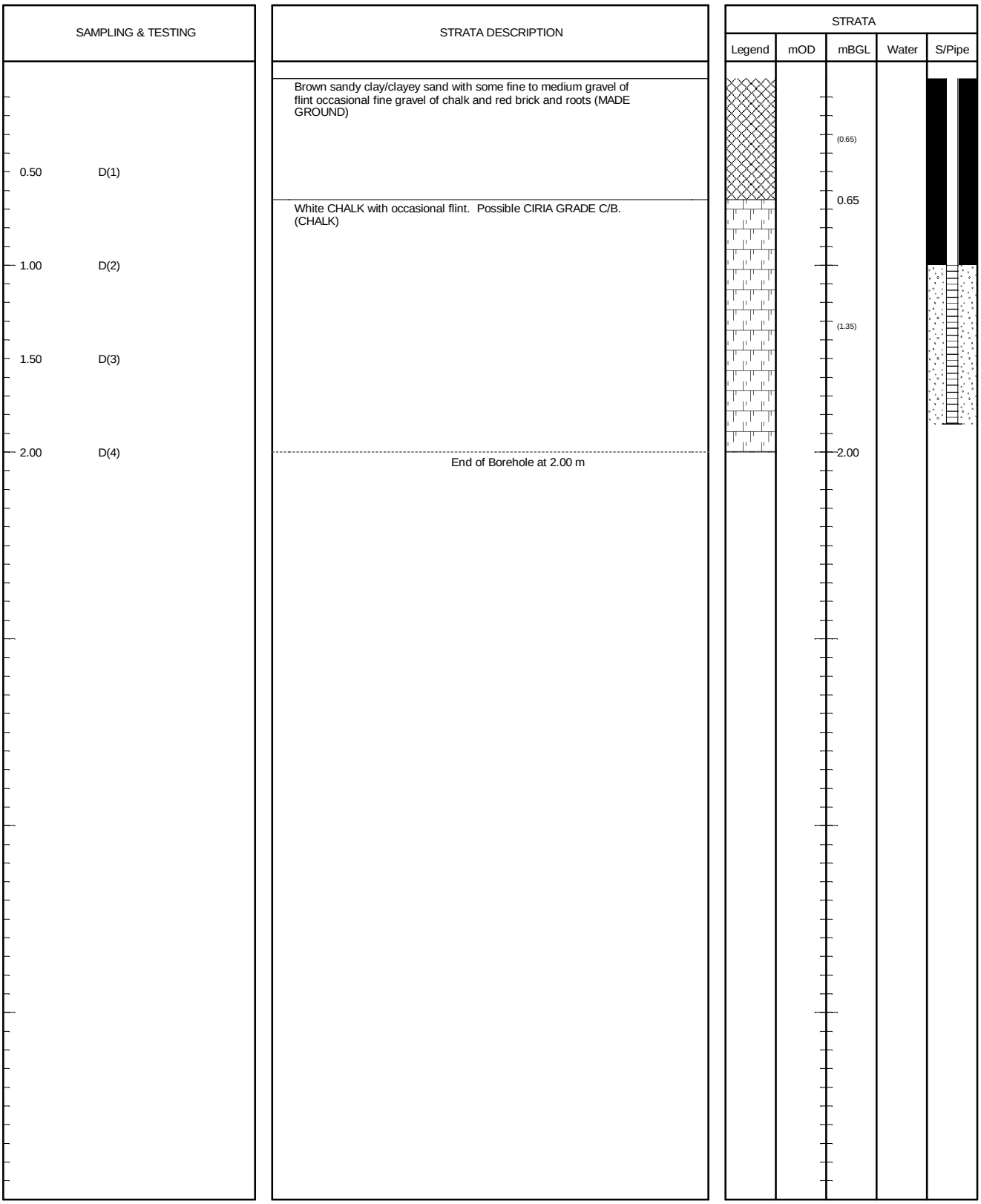
SAMPLES: D=disturbed B=bulk U=undisturbed TESTS: MAC=macintosh IVAN=vane HPEN=penetrometer SPT=split-spoon CPT=cone WATER: ▽ =strike ▼ =rest OTHERS: (2.00)=strata

Stability:	Type: Hydraulic Window Sampler Geoprobe	Ref: GE8756	Position: WS5
Groundwater: No Groundwater Encountered	Method:	Start: 29/05/2012	Scale: 1:30
		Finish: 29/05/2012	Size:
Plant:	Project: Havant Retail Park, Havant	Filled: 29/05/2012	Depth: 5.00mBGL
		Eng: GR	Level: -
Remarks: Service inspection pit excavated to 1m bgl. No water inflow.	Client: Linden Homes Southern	Drawn: GR	Figure: FIG
		Ckd: GR	Sheet: Sheet 1 of 1



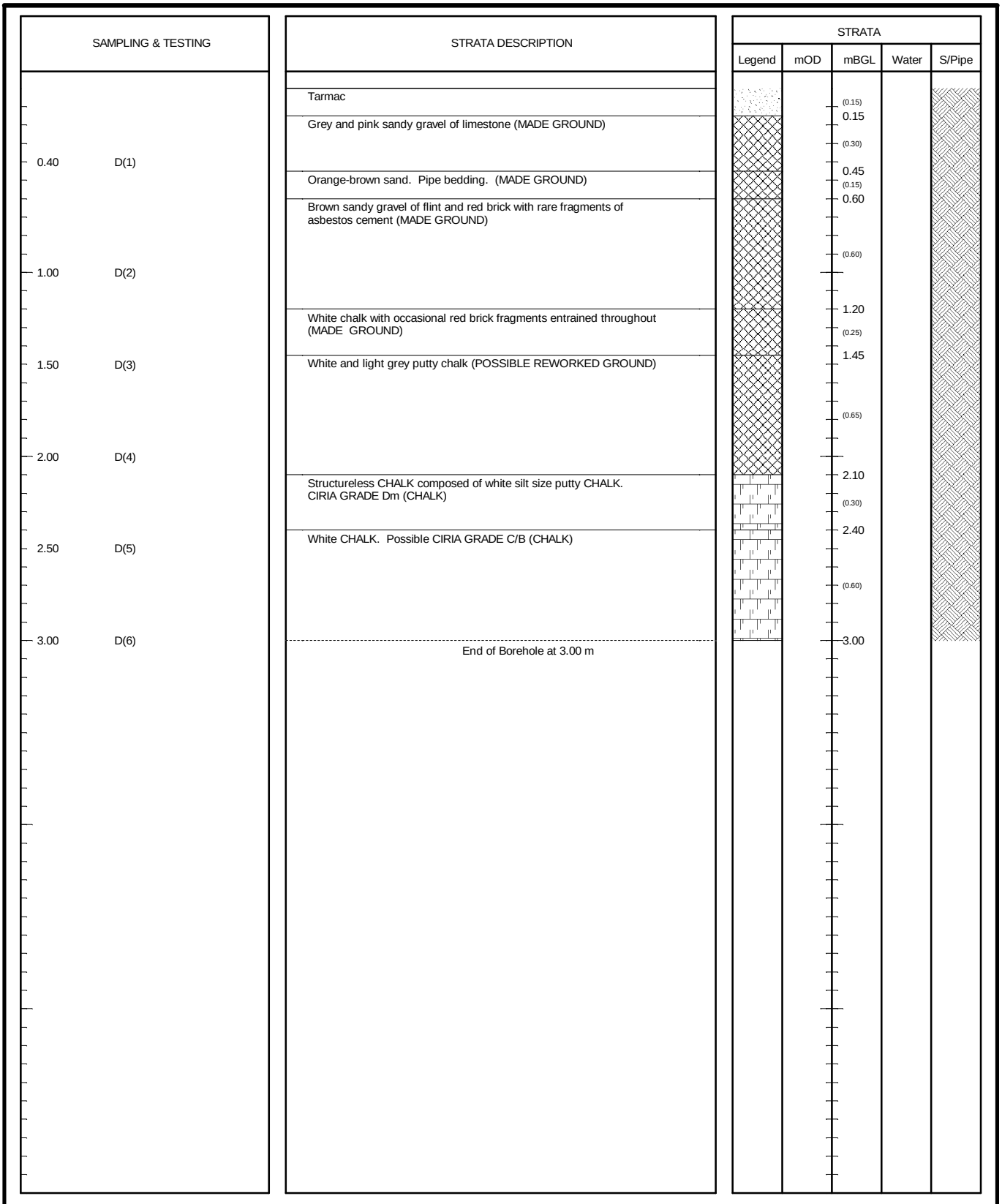
SAMPLES: D=disturbed B=bulk U=undisturbed TESTS: MAC=macintosh IVAN=vane HPEN=penetrometer SPT=split-spoon CPT=cone WATER: ▽ =strike ▼ =rest OTHERS: (2.00)=strata

Stability:	Type: Hydraulic Window Sampler Geoprobe	Ref: GE8756	Position: WS6
Groundwater: No Groundwater Encountered	Method:	Start: 30/05/2012	Scale: 1:30
		Finish: 30/05/2012	Size:
Plant:	Project: Havant Retail Park, Havant	Filled: 30/05/2012	Depth: 3.00mBGL
		Eng: GR	Level: -
Remarks: Service inspection pit excavated to 1m bgl. No water inflow.	Client: Linden Homes Southern	Drawn: NH	Figure: FIG
		Ckd: GR	Sheet: Sheet 1 of 1



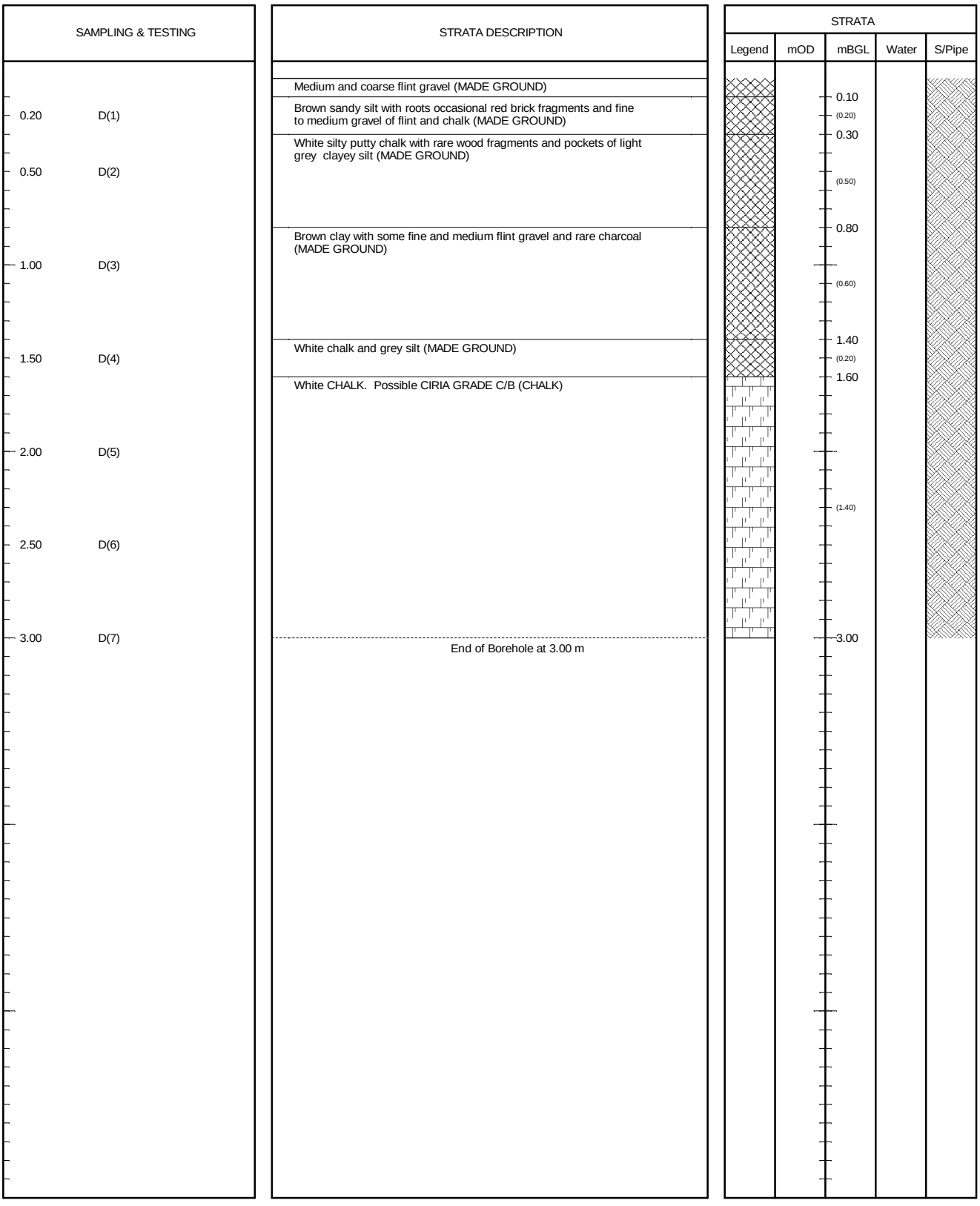
SAMPLES: D=disturbed B=bulk U=undisturbed TESTS: MAC=macintosh IVAN=vane HPEN=penetrometer SPT=split-spoon CPT=cone WATER: ▽ =strike ▼ =rest OTHERS: (2.00)=strata

Stability:	Type: Hydraulic Window Sampler Geoprobe	Ref: GE8756	Position: WS7
Groundwater: No Groundwater Encountered	Method:	Start: 30/05/2012	Scale: 1:30
		Finish: 30/05/2012	Size:
Plant:	Project: Havant Retail Park, Havant	Filled: 30/05/2012	Depth: 2.00mBGL
		Eng: GR	Level: -
Remarks: Service inspection pit excavated to 1m bgl. No water inflow.	Client: Linden Homes Southern	Drawn: NH	Figure: FIG
		Ckd: GR	Sheet: Sheet 1 of 1



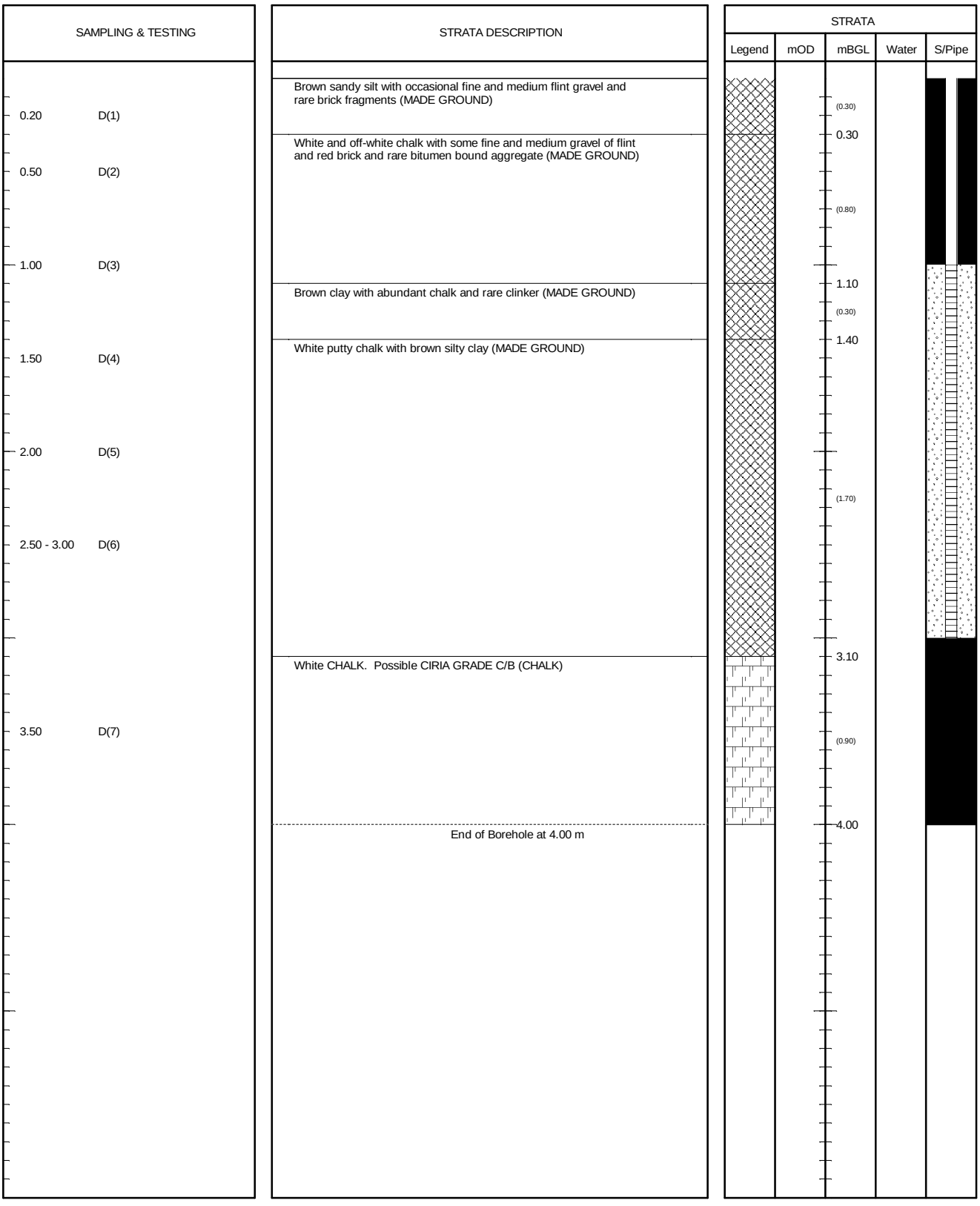
SAMPLES: D=disturbed B=bulk U=undisturbed TESTS: MAC=macintosh IVAN=vane HPEN=penetrometer SPT=split-spoon CPT=cone WATER: ▽ =strike ▼ =rest OTHERS: (2.00)=strata

Stability:	Type: Hydraulic Window Sampler Geoprobe	Ref: GE8756	Position: WS8
Groundwater: No Groundwater Encountered	Method:	Start: 30/05/2012	Scale: 1:30
		Finish: 30/05/2012	Size:
Plant:	Project: Havant Retail Park, Havant	Filled: 30/05/2012	Depth: 3.00mBGL
		Eng: GR	Level: -
Remarks: Service inspection pit excavated to 1m bgl. No water inflow. Gas pipe and duct encountered in inspection pit.	Client: Linden Homes Southern	Drawn: NH	Figure: FIG
		Ckd: GR	Sheet: Sheet 1 of 1



SAMPLES: D=disturbed B=bulk U=undisturbed TESTS: MAC=macintosh IVAN=vane HPEN=penetrometer SPT=split-spoon CPT=cone WATER: ▽ =strike ▼ =rest OTHERS: (2.00)=strata

Stability:	Type: Hydraulic Window Sampler Geoprobe	Ref: GE8756	Position: WS9
Groundwater: No Groundwater Encountered	Method:	Start: 30/05/2012	Scale: 1:30
		Finish: 30/05/2012	Size:
Plant:	Project: Havant Retail Park, Havant	Filled: 30/05/2012	Depth: 3.00mBGL
		Eng: GR	Level: -
Remarks: Service inspection pit excavated to 1m bgl. No water inflow.	Client: Linden Homes Southern	Drawn: GR	Figure: FIG
		Ckd: GR	Sheet: Sheet 1 of 1



SAMPLES: D=disturbed B=bulk U=undisturbed TESTS: MAC=macintosh IVAN=vane HPEN=penetrometer SPT=split-spoon CPT=cone WATER: ▽ =strike ▼ =rest OTHERS: (2.00)=strata

Stability:	Type: Hydraulic Window Sampler Geoprobe	Ref: GE8756	Position: WS10
Groundwater: No Groundwater Encountered	Method:	Start: 30/05/2012	Scale: 1:30
		Finish: 30/05/2012	Size:
Plant:	Project: Havant Retail Park, Havant	Filled: 30/05/2012	Depth: 4.00mBGL
		Eng: GR	Level: -
Remarks: Service inspection pit excavated to 1m bgl. No water inflow.	Client: Linden Homes Southern	Drawn: GR	Figure: FIG
		Ckd: GR	Sheet: Sheet 1 of 1

APPENDIX D

Geochemical Testing Results

Unit A2
Windmill Road
Ponswood Industrial Estate
St Leonards on Sea
East Sussex
TN38 9BY
Telephone (01424) 718618
Facsimile (01424) 729911

2683 2683

THE ENVIRONMENTAL LABORATORY LTD

F.A.O. Gavin Roberts
Geo-Environmental Services Limited
28 Crescent Road
Brighton, East Sussex
BN2 3RP

Reporting Date: 19/06/12

ANALYTICAL REPORT No. AR38970

Samples Received By:-	Laboratory Courier
Samples Received:-	01/06/12
Your Job No:	GE8756
Site Location:	Havant Retail Park
No Samples Received:-	25
Date of Sampling	30/05/12

Report Checked By:-

Steve Knight
Director

Authorised By:-

Mike Varley BSc, CChem, CSci, FRSC
Chief Chemist

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

THE ENVIRONMENTAL LABORATORY LTD

Unit A2, Windmill Road, Ponswood Industrial Estate, St Leonard's on Sea, East Sussex, TN38 9BY

Tel: 01424 718618 Fax: 01424 729911

ANALYTICAL REPORT No. AR38970

Location: Havant Retail Park

Your Job No: GE8756

Reporting Date: 19/06/12

2683 2683

F.A.O. Gavin Roberts
Geo-Environmental Services Limited
28 Crescent Road
Brighton, East Sussex
BN2 3RP

Soils		Characteristic	Silt Loam	Silt Loam	Chalk	Silty clay loam	Chalk	Silt Loam	Silt Loam	Silt Loam	Chalk	Silt Loam
		Date Sampled	30/05/12	30/05/12	30/05/12	30/05/12	30/05/12	30/05/12	30/05/12	30/05/12	30/05/12	30/05/12
		TP/BH	WS1	WS1	WS1	WS2	WS3	WS4	WS5	WS6	WS6	WS7
		Depth (m)	0.55	1.20-1.60	1.90	1.00	2.50	1.00	1.00-1.30	0.70	2.50	0.50
		Our ref	39050	39051	39052	39053	39056	39057	39060	39062	39063	39064
Stone Content	(%)		31	45	<1	24	<1	<1	42	37	6	39
Arsenic**	(mg/kg)		7.9	10.4	n/t	7.4	n/t	9.6	<5	9.0	n/t	<5
Cadmium**	(mg/kg)		4.9	2.3	n/t	0.8	n/t	0.6	0.5	4.6	n/t	0.6
Chromium**	(mg/kg)		27	16	n/t	33	n/t	32	18	23	n/t	10
Lead**	(mg/kg)		29	44	n/t	30	n/t	38	34	336	n/t	56
Mercury**	(mg/kg)		<0.5	<0.5	n/t	<0.5	n/t	<0.5	<0.5	<0.5	n/t	<0.5
Nickel**	(mg/kg)		10	19	n/t	16	n/t	15	10	20	n/t	7
Copper**	(mg/kg)		48	139	n/t	20	n/t	16	28	580	n/t	27
Zinc**	(mg/kg)		134	835	n/t	76	n/t	76	156	830	n/t	73
Selenium**	(mg/kg)		<0.5	0.6	n/t	0.8	n/t	0.8	<0.5	<0.5	n/t	0.6
Hexavalent Chromium	(mg/kg)		<2	<2	n/t	<2	n/t	<2	<2	<2	n/t	<2
Water Soluble Boron	(mg/kg)		0.7	0.8	n/t	1.1	n/t	1.0	1.1	0.6	n/t	0.6
Barium*	(mg/kg)		141	103	n/t	251	n/t	85	42	206	n/t	93
Beryllium*	(mg/kg)		<1	<1	n/t	<1	n/t	<1	<1	<1	n/t	<1
Vanadium**	(mg/kg)		13	15	n/t	46	n/t	48	16	18	n/t	16
pH Value**	(Units)		9.0	10.6	9.2	8.8	9.1	8.4	8.6	8.5	8.8	8.3
Total Sulphate	(% as SO_4)		<0.05	<0.05	n/t	<0.05	n/t	<0.05	<0.05	<0.05	n/t	<0.05
Water Soluble Sulphate**	(mg/l as SO_4)		14	62	24	30	20	16	54	49	10	<10
Water Soluble Chloride	(mg/l)		17	18	n/t	17	n/t	7	9	8	n/t	9
Total Cyanide**	(mg/kg)		<1	<1	n/t	<1	n/t	<1	<1	3.6	n/t	<1
Sulphide	(mg/kg)		<2	<2	n/t	<2	n/t	<2	3.1	<2	n/t	<2
Elemental Sulphur**	(mg/kg)		<10	<10	n/t	<10	n/t	<10	<10	<10	n/t	<10
Total Monohydric Phenols**	(mg/kg)		<1	<1	n/t	<1	n/t	<1	<1	<1	n/t	<1
Total Organic Carbon	(%)		0.5	17.8	n/t	0.3	n/t	1.2	0.8	4.5	n/t	1.4

All results expressed on dry weight basis

** - MCERTS accredited test

* = UKAS accredited test

GM

THE ENVIRONMENTAL LABORATORY LTD

Unit A2, Windmill Road, Ponswood Industrial Estate, St Leonard's on Sea, East Sussex, TN38 9BY

Tel: 01424 718618 Fax: 01424 729911

ANALYTICAL REPORT No. AR38970

Location: Havant Retail Park

Your Job No: GE8756

Reporting Date: 19/06/12

2683 2683

F.A.O. Gavin Roberts
Geo-Environmental Services Limited
28 Crescent Road
Brighton, East Sussex
BN2 3RP

Soils		Characteristic	Chalk	Silt Loam	Chalk	Silt Loam	Silt Loam	Silt Loam	Silt Loam	Silt Loam	Silt Loam
		Date Sampled	30/05/12	30/05/12	30/05/12	30/05/12	30/05/12	30/05/12	30/05/12	30/05/12	30/05/12
		TP/BH	WS7	WS8	WS8	WS9	WS9	WS9	WS10	WS10	WS10
		Depth (m)	1.50	1.00	2.50	0.20	1.00	2.00	0.20	0.50	3.50
		Our ref	39065	39066	39067	39068	39069	39070	39071	39072	39074
Stone Content	(%)		<1	24	<1	32	49	<1	9	23	<1
Arsenic**	(mg/kg)		n/t	7.0	n/t	<5	6.8	n/t	7.3	5.9	n/t
Cadmium**	(mg/kg)		n/t	0.8	n/t	0.7	<0.5	n/t	0.8	1.2	n/t
Chromium**	(mg/kg)		n/t	29	n/t	4	14	n/t	18	13	n/t
Lead**	(mg/kg)		n/t	119	n/t	14	41	n/t	109	72	n/t
Mercury**	(mg/kg)		n/t	<0.5	n/t	<0.5	<0.5	n/t	<0.5	<0.5	n/t
Nickel**	(mg/kg)		n/t	8	n/t	3	11	n/t	13	12	n/t
Copper**	(mg/kg)		n/t	26	n/t	10	16	n/t	26	90	n/t
Zinc**	(mg/kg)		n/t	95	n/t	42	36	n/t	74	148	n/t
Selenium**	(mg/kg)		n/t	<0.5	n/t	<0.5	<0.5	n/t	0.6	0.5	n/t
Hexavalent Chromium	(mg/kg)		n/t	<2	n/t	<2	<2	n/t	<2	<2	n/t
Water Soluble Boron	(mg/kg)		n/t	<0.5	n/t	<0.5	1.4	n/t	0.9	0.7	n/t
Barium*	(mg/kg)		n/t	119	n/t	34	76	n/t	63	288	n/t
Beryllium*	(mg/kg)		n/t	<1	n/t	<1	<1	n/t	<1	<1	n/t
Vanadium**	(mg/kg)		n/t	17	n/t	5	30	n/t	28	19	n/t
pH Value**	(Units)		8.9	8.8	9.0	8.6	9.1	8.9	7.9	8.9	8.5
Total Sulphate	(% as SO_4)		n/t	<0.05	n/t	<0.05	<0.05	n/t	<0.05	<0.05	n/t
Water Soluble Sulphate**	(mg/l as SO_4)		11	22	<10	<10	48	10	<10	22	31
Water Soluble Chloride	(mg/l)		n/t	8	n/t	8	8	n/t	7	20	n/t
Total Cyanide**	(mg/kg)		n/t	<1	n/t	<1	<1	n/t	<1	<1	n/t
Sulphide	(mg/kg)		n/t	<2	n/t	<2	<2	n/t	<2	<2	n/t
Elemental Sulphur**	(mg/kg)		n/t	<10	n/t	<10	11	n/t	<10	<10	n/t
Total Monohydric Phenols**	(mg/kg)		n/t	<1	n/t	<1	<1	n/t	<1	<1	n/t
Total Organic Carbon	(%)		n/t	0.6	n/t	0.8	1.1	n/t	5.0	1.0	n/t

All results expressed on dry weight basis

** - MCERTS accredited test

* = UKAS accredited test

GM

THE ENVIRONMENTAL LABORATORY LTD

Unit A2, Windmill Road, Ponswood Industrial Estate, St Leonard's on Sea, East Sussex, TN38 9BY
Tel: 01424 718618 Fax: 01424 729911

ANALYTICAL REPORT No. AR38970

Location: Havant Retail Park

Your Job No: GE8756

Reporting Date: 19/06/12

F.A.O. Gavin Roberts
Geo-Environmental Services Limited
28 Crescent Road
Brighton, East Sussex
BN2 3RP

Soils	Characteristic	Silt Loam	Silt Loam	Silty clay loam	Silt Loam	Silt Loam	Silt Loam	Silt Loam	Silt Loam	Silt Loam	Silt Loam
	Date Sampled	30/05/12	30/05/12	30/05/12	30/05/12	30/05/12	30/05/12	30/05/12	30/05/12	30/05/12	30/05/12
	TP/BH	WS1	WS1	WS2	WS4	WS5	WS6	WS7	WS8	WS9	WS9
	Depth (m)	0.55	1.20-1.60	1.00	1.00	1.00-1.30	0.70	0.50	1.00	0.20	1.00
	Our ref	39050	39051	39053	39057	39060	39062	39064	39066	39068	39069
Naphthalene**	(mg/kg)	<0.1	1.4	<0.1	<0.1	<0.1	0.7	<0.1	<0.1	<0.1	0.4
Acenaphthylene**	(mg/kg)	<0.1	0.1	<0.1	<0.1	0.3	0.2	<0.1	<0.1	0.1	0.9
Acenaphthene**	(mg/kg)	<0.1	0.3	<0.1	<0.1	<0.1	0.3	0.2	<0.1	<0.1	0.8
Fluorene**	(mg/kg)	<0.1	0.1	<0.1	<0.1	<0.1	0.2	0.3	<0.1	<0.1	0.7
Phenanthrene**	(mg/kg)	<0.1	0.9	<0.1	<0.1	0.6	1.3	0.1	0.1	0.2	9.4
Anthracene**	(mg/kg)	<0.1	0.1	<0.1	<0.1	0.2	0.5	<0.1	<0.1	0.3	3.8
Fluoranthene**	(mg/kg)	0.1	0.7	<0.1	<0.1	1.0	2.1	0.6	0.7	2.7	25.6
Pyrene**	(mg/kg)	<0.1	0.4	<0.1	<0.1	1.1	1.7	0.2	0.6	2.1	22.8
Benz(a)anthracene**	(mg/kg)	<0.1	0.3	<0.1	<0.1	0.6	1.3	0.1	0.3	1.5	16.2
Chrysene**	(mg/kg)	<0.1	0.7	<0.1	<0.1	0.8	2.3	0.2	0.6	1.6	15.8
Benzo(b)fluoranthene**	(mg/kg)	0.1	0.3	<0.1	<0.1	0.5	3.0	0.3	0.5	1.2	13.7
Benzo(k)fluoranthene**	(mg/kg)	0.1	0.2	<0.1	<0.1	0.8	2.1	0.6	0.8	1.8	13.5
Benzo(a)pyrene**	(mg/kg)	<0.1	0.4	<0.1	<0.1	0.5	2.6	0.3	0.5	1.4	16.1
Indeno(123-cd)pyrene**	(mg/kg)	<0.1	0.3	<0.1	<0.1	0.3	3.4	0.1	0.6	1.0	11.6
Dibenz(ah)anthracene**	(mg/kg)	<0.1	0.1	<0.1	<0.1	<0.1	1.0	<0.1	<0.1	0.1	2.8
Benzo(ghi)perylene**	(mg/kg)	<0.1	0.6	<0.1	<0.1	0.5	5.0	<0.1	0.2	1.0	10.1
Total PAH**	(mg/kg)	0.3	7.1	<0.1	<0.1	7.2	27.8	3.2	4.8	15.3	164.1

All results expressed on dry weight basis

** - MCERTS accredited test

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THE ENVIRONMENTAL LABORATORY LTD

Unit A2, Windmill Road, Ponswood Industrial Estate, St Leonard's on Sea, East Sussex, TN38 9BY
Tel: 01424 718618 Fax: 01424 729911

ANALYTICAL REPORT No. AR38970

Location: Havant Retail Park

Your Job No: GE8756

Reporting Date: 19/06/12

F.A.O. Gavin Roberts
Geo-Environmental Services Limited
28 Crescent Road
Brighton, East Sussex
BN2 3RP

Soils	Characteristic	Silt Loam	Silt Loam
	Date Sampled	30/05/12	30/05/12
	TP/BH	WS10	WS10
	Depth (m)	0.20	0.50
	Our ref	39071	39072
Naphthalene**	(mg/kg)	<0.1	<0.1
Acenaphthylene**	(mg/kg)	<0.1	<0.1
Acenaphthene**	(mg/kg)	<0.1	<0.1
Fluorene**	(mg/kg)	<0.1	<0.1
Phenanthrene**	(mg/kg)	0.2	<0.1
Anthracene**	(mg/kg)	0.1	<0.1
Fluoranthene**	(mg/kg)	0.7	0.1
Pyrene**	(mg/kg)	0.5	0.9
Benz(a)anthracene**	(mg/kg)	0.6	0.1
Chrysene**	(mg/kg)	0.5	0.1
Benzo(b)fluoranthene**	(mg/kg)	0.3	0.1
Benzo(k)fluoranthene**	(mg/kg)	0.3	0.1
Benzo(a)pyrene**	(mg/kg)	0.5	<0.1
Indeno(123-cd)pyrene**	(mg/kg)	0.1	<0.1
Dibenz(ah)anthracene**	(mg/kg)	<0.1	<0.1
Benzo(ghi)perylene**	(mg/kg)	0.1	<0.1
Total PAH**	(mg/kg)	3.8	1.5

All results expressed on dry weight basis

** - MCERTS accredited test

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ANALYTICAL REPORT No. AR38970

Location: Havant Retail Park

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Reporting Date: 19/06/12

F.A.O. Gavin Roberts
Geo-Environmental Services Limited
28 Crescent Road
Brighton, East Sussex
BN2 3RP

TPH CWG - Soil												
		Characteristic	Silt Loam	Silt Loam	Silty clay loam	Silt Loam	Silt Loam	Silt Loam	Silt Loam	Silt Loam	Silt Loam	Silt Loam
		Date Sampled	30/05/12	30/05/12	30/05/12	30/05/12	30/05/12	30/05/12	30/05/12	30/05/12	30/05/12	30/05/12
		TP/BH	WS1	WS1	WS2	WS4	WS5	WS6	WS7	WS8	WS9	WS9
		Depth (m)	0.55	1.20-1.60	1.00	1.00	1.00-1.30	0.70	0.50	1.00	0.20	1.00
		Our ref	39050	39051	39053	39057	39060	39062	39064	39066	39068	39069
Aromatic												
$>EC_5-EC_7$	(mg/kg)		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
$>EC_7-EC_8$	(mg/kg)		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
$>EC_8-EC_{10}$	(mg/kg)		<0.1	<0.1	<0.1	0.1	<0.1	1.3	<0.1	<0.1	<0.1	<0.1
$>EC_{10}-EC_{12}$	(mg/kg)		<0.1	0.2	<0.1	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	0.3
$>EC_{12}-EC_{16}$	(mg/kg)		0.1	0.4	<0.1	<0.1	0.3	<0.1	0.3	<0.1	0.1	4.0
$>EC_{16}-EC_{21}$	(mg/kg)		0.2	1.3	<0.1	<0.1	3.3	4.7	0.3	<0.1	0.1	31.4
$>EC_{21}-EC_{35}$	(mg/kg)		4.2	20.0	1.5	0.4	9.4	93.6	2.2	1.5	1.6	135.8
Aliphatic												
$>EC_5-EC_7$	(mg/kg)		<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
$>EC_7-EC_8$	(mg/kg)		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
$>EC_8-EC_{10}$	(mg/kg)		<0.1	<0.1	<0.1	<0.1	<0.1	2.2	<0.1	<0.1	<0.1	<0.1
$>EC_{10}-EC_{12}$	(mg/kg)		<0.1	0.1	<0.1	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	<0.1
$>EC_{12}-EC_{16}$	(mg/kg)		<0.1	0.8	<0.1	<0.1	1.2	0.9	0.9	<0.1	0.3	1.3
$>EC_{16}-EC_{21}$	(mg/kg)		0.2	3.7	<0.1	<0.1	8.1	10.7	<0.1	<0.1	<0.1	5.2
$>EC_{21}-EC_{35}$	(mg/kg)		3.4	31.1	<0.1	0.4	12.0	82.6	<0.1	<0.1	<0.1	11.8
TPH (C_5 - C_{35})	(mg/kg)		8.1	57.6	1.5	0.9	34.2	196.5	3.8	1.5	2.1	189.8

All results expressed on dry weight basis

GM

THE ENVIRONMENTAL LABORATORY LTD

Unit A2, Windmill Road, Ponswood Industrial Estate, St Leonard's on Sea, East Sussex, TN38 9BY

Tel: 01424 718618 Fax: 01424 729911

ANALYTICAL REPORT No. AR38970

Location: Havant Retail Park

Your Job No: GE8756

Reporting Date: 19/06/12

F.A.O. Gavin Roberts
Geo-Environmental Services Limited
28 Crescent Road
Brighton, East Sussex
BN2 3RP

TPH CWG - Soil

		Characteristic	Silt Loam	Silt Loam
		Date Sampled	30/05/12	30/05/12
		TP/BH	WS10	WS10
		Depth (m)	0.20	0.50
		Our ref	39071	39072
Aromatic				
$>EC_5-EC_7$	(mg/kg)		<0.01	<0.01
$>EC_7-EC_8$	(mg/kg)		<0.01	<0.01
$>EC_8-EC_{10}$	(mg/kg)		<0.1	<0.1
$>EC_{10}-EC_{12}$	(mg/kg)		<0.1	<0.1
$>EC_{12}-EC_{16}$	(mg/kg)		0.4	0.3
$>EC_{16}-EC_{21}$	(mg/kg)		0.4	1.0
$>EC_{21}-EC_{35}$	(mg/kg)		5.1	12.4
Aliphatic				
$>EC_5-EC_7$	(mg/kg)		<0.01	<0.01
$>EC_7-EC_8$	(mg/kg)		<0.01	<0.01
$>EC_8-EC_{10}$	(mg/kg)		<0.1	<0.1
$>EC_{10}-EC_{12}$	(mg/kg)		<0.1	<0.1
$>EC_{12}-EC_{16}$	(mg/kg)		0.5	0.5
$>EC_{16}-EC_{21}$	(mg/kg)		0.2	0.4
$>EC_{21}-EC_{35}$	(mg/kg)		<0.1	2.0
TPH (C_5 - C_{35})	(mg/kg)		6.7	16.7

All results expressed on dry weight basis

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Tel: 01424 718618 Fax: 01424 729911

ANALYTICAL REPORT No. AR38970

Location: Havant Retail Park

F.A.O. Gavin Roberts
Geo-Environmental Services Limited
28 Crescent Road
Brighton, East Sussex
BN2 3RP

Your Job No: GE8756

Reporting Date: 19/06/12

Asbestos Identification

Sample ref:	**WS1**
Depth (m)	**0.55**
Our ref:	**39050**
#Description of Sample Matrix:	Silt Loam
Result	No asbestos identified

Sample ref:	**WS1**
Depth (m)	**1.20-1.60**
Our ref:	**39051**
#Description of Sample Matrix:	Silt Loam
Result	No asbestos identified

Sample ref:	**WS2**
Depth (m)	**1.00**
Our ref:	**39053**
#Description of Sample Matrix:	Silty clay loam
Result	No asbestos identified

Sample ref:	**WS4**
Depth (m)	**1.00**
Our ref:	**39057**
#Description of Sample Matrix:	Silt Loam
Result	No asbestos identified

*= UKAS accredited

Analytical result only applies to the sample as submitted by the client

Any comments, opinions or interpretations (marked #) in this report are outside UKAS accreditation (Accreditation No2683). They are subjective comments only which must be verified by the client

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ANALYTICAL REPORT No. AR38970

Location: Havant Retail Park

F.A.O. Gavin Roberts
Geo-Environmental Services Limited
28 Crescent Road
Brighton, East Sussex
BN2 3RP

Your Job No: GE8756

Reporting Date: 19/06/12

Asbestos Identification

Sample ref:	**WS5**
Depth (m)	**1.00-1.30**
Our ref:	**39060**
#Description of Sample Matrix:	Silt Loam
Result	No asbestos identified

Sample ref:	**WS6**
Depth (m)	**0.70**
Our ref:	**39062**
#Description of Sample Matrix:	Silt Loam
Result	No asbestos identified

Sample ref:	**WS7**
Depth (m)	**0.50**
Our ref:	**39064**
#Description of Sample Matrix:	Silt Loam
Result	No asbestos identified

Sample ref:	**WS8**
Depth (m)	**1.00**
Our ref:	**39066**
#Description of Sample Matrix:	Silt Loam
Result	No asbestos identified

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ANALYTICAL REPORT No. AR38970

Location: Havant Retail Park

F.A.O. Gavin Roberts
Geo-Environmental Services Limited
28 Crescent Road
Brighton, East Sussex
BN2 3RP

Your Job No: GE8756

Reporting Date: 19/06/12

Asbestos Identification

Sample ref:	**WS9**
Depth (m)	**0.20**
Our ref:	**39068**
#Description of Sample Matrix:	Silt Loam
Result	No asbestos identified

Sample ref:	**WS9**
Depth (m)	**1.00**
Our ref:	**39069**
#Description of Sample Matrix:	Silt Loam
Result	No asbestos identified

Sample ref:	**WS10**
Depth (m)	**0.20**
Our ref:	**39071**
#Description of Sample Matrix:	Silt Loam
Result	No asbestos identified

Sample ref:	**WS10**
Depth (m)	**0.50**
Our ref:	**39072**
#Description of Sample Matrix:	Silt Loam
Result	No asbestos identified

*= UKAS accredited

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THE ENVIRONMENTAL LABORATORY LTD

Waste Acceptance Criteria **ANALYTICAL** ***RESULTS***

Report No:	ANALYTICAL REPORT No. AR38970				Page 11 of 19		
					CLIENT:	Geo-Environmental Services Limited	
Project Name:	Location: Havant Retail Park						
Lab Reference	39054				Landfill Waste Acceptance Critena Limits		
Sampling Date	30/05/12				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WS2						
Depth	1.50						
Solid Waste Analysis							
TOC (%)	0.2				3%	5%	6%
Loss on Ignition (%)**	0.7				–	–	10%
BTEX (mg/kg)**	<0.01				6	–	–
Sum of PCBs (mg/kg)**	<0.01				1	–	–
Mineral Oil (mg/kg)**	<5				500	–	–
Total PAH (mg/kg)**	<0.5				100	–	–
pH (Units)**	8.4				–	–	–
Acid Neutralisation Capacity (mol/kg)	<0.1				–	To be evaluated	To be evaluated
Eluate Analysis	2:1	8:1		Cumulative 10:1	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)		
	mg/l	mg/l		mg/kg			
Arsenic*	<0.005	<0.005		<0.1	0.5	2	25
Barium*	0.013	0.012		<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	<0.005		<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	0.008		<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*	0.007	0.012		<0.1	4	50	200
Chloride*	11	6		39	800	15000	25000
Fluoride*	<1	<1		<1	10	150	500
Sulphate*	15	4		39	1000	20000	50000
TDS	160	220		1089	4000	60000	100000
Phenol Index	<0.5	<0.5		<0.5	1	-	-
DOC	12.1	10.4		58	500	800	1000
Leach Test Information							
pH *	7.4	8.1					
EC*	215	109					
Sample Mass (kg)	0.206						
Dry Matter (%)	85						
Moisture (%)	20						
Stage 1							
Volume Eluate L2 (litres)	0.315						
Filtered Eluate VE1 (litres)	0.250						

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 discrepencies with current legislation

*= UKAS accredited

** - MCERTS accredited test

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THE ENVIRONMENTAL LABORATORY LTD

Waste Acceptance Criteria **ANALYTICAL** ***RESULTS***

Report No:	ANALYTICAL REPORT No. AR38970				Page 12 of 19		
					CLIENT:	Geo-Environmental Services Limited	
Project Name:	Location: Havant Retail Park						
Lab Reference	39058				Landfill Waste Acceptance Critena Limits		
Sampling Date	30/05/12				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WS4						
Depth	1.50						
Solid Waste Analysis							
TOC (%)	3.6				3%	5%	6%
Loss on Ignition (%)**	7.6				–	–	10%
BTEX (mg/kg)**	<0.01				6	–	–
Sum of PCBs (mg/kg)**	<0.01				1	–	–
Mineral Oil (mg/kg)**	<5				500	–	–
Total PAH (mg/kg)**	<0.5				100	–	–
pH (Units)**	7.6				–	–	–
Acid Neutralisation Capacity (mol/kg)	<0.1				–	To be evaluated	To be evaluated
Eluate Analysis	2:1	8:1		Cumulative 10:1	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)		
	mg/l	mg/l		mg/kg			
Arsenic*	<0.005	<0.005		<0.1	0.5	2	25
Barium*	0.023	0.009		<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	<0.005		<0.1	2	50	100
Mercury*	<0.0001	<0.0001		<0.001	0.01	0.2	2
Molybdenum*	0.006	<0.005		<0.1	0.5	10	30
Nickel*	<0.005	<0.005		<0.1	0.4	10	40
Lead*	<0.005	0.006		<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*	0.013	0.011		<0.1	4	50	200
Chloride*	11	5		26	800	15000	25000
Fluoride*	<1	<1		<1	10	150	500
Sulphate*	146	15		201	1000	20000	50000
TDS	330	190		894	4000	60000	100000
Phenol Index	<0.5	<0.5		<0.5	1	-	-
DOC	26.0	10.3		57	500	800	1000
Leach Test Information							
pH *	7.6	8.0					
EC*	484	145					
Sample Mass (kg)	0.231						
Dry Matter (%)	76						
Moisture (%)	36						
Stage 1							
Volume Eluate L2 (litres)	0.288						
Filtered Eluate VE1 (litres)	0.190						

Results are expressed on a dry weight basis, after correction for moisture content where applicable
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*= UKAS accredited

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Tel: 01424 718618 Fax: 01424 729911

2683

ANALYTICAL REPORT No. AR38970

Location: Havant Retail Park

Your Job No: GE8756

Reporting Date: 19/06/2012

F.A.O. Gavin Roberts
Geo-Environmental Services Limited
28 Crescent Road
Brighton, East Sussex
BN2 3RP

Waters

		Date Sampled	30/05/12	30/05/12	30/05/12	30/05/12
		TP/BH	WS2	WS4	WS5	WS10
		Depth	3.00	2.30-2.60	2.50	1.00
		Our ref	39055	39059	39061	39073
Arsenic*	(µg/l)		<5	<5	<5	<5
Cadmium*	(µg/l)		<1	<1	<1	<1
Chromium*	(µg/l)		<5	<5	<5	<5
Lead*	(µg/l)		<1	<1	<1	2
Nickel*	(µg/l)		<1	<1	2	<1
Copper*	(µg/l)		<5	<5	<5	<5
Zinc*	(µg/l)		<5	6	5	8
Mercury*	(µg/l)		<0.1	<0.1	<0.1	<0.1
Selenium*	(µg/l)		<5	<5	<5	<5
Boron	(µg/l)		33	34	63	38
Barium*	(µg/l)		<5	7	11	17
Beryllium*	(µg/l)		<5	<5	<5	<5
Vanadium	(µg/l)		<5	<5	5	<5
pH Value*	(Units)		7.3	7.4	7.6	7.5
Sulphate*	(mg/l)		6	<5	13	10
Chloride*	(mg/l)		<5	<5	<5	8
Total Cyanide	(µg/l)		<5	<5	<5	<5
Sulphide	(mg/l)		0.1	0.1	0.1	<0.1
Total Phenols	(µg/l)		<0.5	<0.5	<0.5	<0.5
Hexavalent Chromium	(µg/l)		<20	<20	<20	<20
TOC (In filtered samples)*	(mg/l)		4.3	6.9	10.2	6.6
Elemental Sulphur	(mg/l)		<0.1	<0.1	<0.1	<0.1

* = UKAS Accredited test

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Location: Havant Retail Park

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Reporting Date: 19/06/12

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Brighton, East Sussex
BN2 3RP

Waters

		Date Sampled	30/05/12	30/05/12	30/05/12	30/05/12
		TP/BH	WS2	WS4	WS5	WS10
		Depth	3.00	2.30-2.60	2.50	1.00
		Our ref	39055	39059	39061	39073
Naphthalene	(µg/l)		0.28	0.13	0.25	0.14
Acenaphthylene	(µg/l)		<0.01	<0.01	0.01	<0.01
Acenaphthene	(µg/l)		0.04	<0.01	0.36	<0.01
Fluorene	(µg/l)		<0.01	<0.01	0.33	<0.01
Phenanthrene	(µg/l)		0.40	<0.01	1.35	<0.01
Anthracene	(µg/l)		0.17	0.03	0.40	<0.01
Fluoranthene	(µg/l)		0.37	0.09	0.81	0.03
Pyrene	(µg/l)		0.27	0.06	0.56	0.01
Benz(a)anthracene	(µg/l)		0.05	0.01	0.11	<0.01
Chrysene	(µg/l)		0.05	0.01	0.12	<0.01
Benzo(b)fluoranthene	(µg/l)		0.01	0.01	0.02	<0.01
Benzo(k)fluoranthene	(µg/l)		0.02	0.01	0.03	<0.01
Benzo(a)pyrene	(µg/l)		0.02	0.01	0.02	<0.01
Indeno(123-cd)pyrene	(µg/l)		0.01	<0.01	<0.01	<0.01
Dibenz(ah)anthracene	(µg/l)		<0.01	<0.01	<0.01	<0.01
Benzo(ghi)perylene	(µg/l)		0.01	<0.01	<0.01	<0.01
Total PAH	(µg/l)		1.70	0.36	4.37	0.18

GM

THE ENVIRONMENTAL LABORATORY LTD

Unit A2, Windmill Road, Ponswood Industrial Estate, St Leonards On Sea, East Sussex, TN38 9BY

Tel: 01424 718618 Fax: 01424 729911

ANALYTICAL REPORT No. AR38970

Location: Havant Retail Park

Your Job No: GE8756

Reporting Date: 19/06/12

F.A.O. Gavin Roberts
Geo-Environmental Services Limited
28 Crescent Road
Brighton, East Sussex
BN2 3RP

Waters

		Date Sampled	30/05/12	30/05/12	30/05/12	30/05/12
		TP/BH	WS2	WS4	WS5	WS10
		Depth	3.00	2.30-2.60	2.50	1.00
		Our ref	39055	39059	39061	39073
Aromatic						
$>C_5-C_7$	(µg/l)		<10	<10	<10	<10
$>C_7-C_8$	(µg/l)		<10	<10	<10	<10
$>C_8-C_{10}$	(µg/l)		<10	<10	<10	<10
$>C_{10}-C_{12}$	(µg/l)		<10	<10	<10	<10
$>C_{12}-C_{16}$	(µg/l)		<10	<10	<10	<10
$>C_{16}-C_{21}$	(µg/l)		16	<10	<10	<10
$>C_{21}-C_{35}$	(µg/l)		<10	<10	<10	<10
Aliphatic						
$>C_5-C_6$	(µg/l)		<10	<10	<10	<10
$>C_6-C_8$	(µg/l)		<10	<10	<10	<10
$>C_8-C_{10}$	(µg/l)		<10	<10	<10	<10
$>C_{10}-C_{12}$	(µg/l)		<10	<10	<10	19
$>C_{12}-C_{16}$	(µg/l)		<10	<10	<10	50
$>C_{16}-C_{21}$	(µg/l)		<10	<10	<10	49
$>C_{21}-C_{35}$	(µg/l)		<10	<10	<10	74
TPH (C_5 - C_{35})	(µg/l)		16	<10	<10	193

GM

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2683 2683

THE ENVIRONMENTAL LABORATORY LTD

SAMPLE RECEIPT AND TEST DATES

Our Analytical Report Number	AR38970
Your Job No:	GE8756
Sample Receipt Date:	01/06/12
Reporting Date:	19/06/12
Registered:	01/06/12
Prepared:	02/06/12
Analysis complete:	19/06/12

TEST METHOD SUMMARY

PARAMETER	Analysis Undertaken on	Date Tested	Method Number	Technique
Arsenic**	Air dried sample	09/06/12	118	ICPMS
Cadmium**	Air dried sample	09/06/12	118	ICPMS
Chromium**	Air dried sample	09/06/12	118	ICPMS
Lead**	Air dried sample	09/06/12	118	ICPMS
Mercury**	Air dried sample	09/06/12	118	ICPMS
Nickel**	Air dried sample	09/06/12	118	ICPMS
Copper**	Air dried sample	09/06/12	118	ICPMS
Zinc**	Air dried sample	09/06/12	118	ICPMS
Selenium**	Air dried sample	09/06/12	118	ICPMS
Hexavalent Chromium	As submitted sample	08/06/12	110	Colorimetry
Water Soluble Boron	Air dried sample	12/06/12	202	Colorimetry AA3
Barium*	Air dried sample	09/06/12	118	ICPMS
Beryllium*	Air dried sample	09/06/12	118	ICPMS
Vanadium**	Air dried sample	09/06/12	118	ICPMS
pH Value**	Air dried sample	08/06/12	113	Probe
Total Sulphate	Air dried sample	12/06/12	208	Colorimetry
Water Soluble Sulphate**	Air dried sample	13/06/12	172	Ion Chromatography
Water Soluble Chloride	Air dried sample	13/06/12	172	Ion Chromatography
Total Cyanide**	As submitted sample	12/06/12	204	Colorimetry
Sulphide	As submitted sample	13/06/12	109	Colorimetry
Elemental Sulphur**	Air dried sample	12/06/12	122	HPLC
Total Monohydric Phenols**	As submitted sample	12/06/12	121	HPLC
Total Organic Carbon	Air dried sample	14/06/12	210	Automated IR Adsorption
Speciated PAH**	As submitted sample	12/06/12	133	Gas Chromatography
Carbon Banding (TPH)	As submitted sample	12/06/12	117	Gas chromatography
Asbestos*	As submitted sample	13/06/12	179	see note

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

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THE ENVIRONMENTAL LABORATORY LTD

WATER SAMPLE RECEIPT AND TEST DATES

Our Analytical Report Number	AR38970
Your Ref No:	GE8756
Sample Receipt Date:	01/06/12
Reporting Date:	19/06/12
Registered:	01/06/12
Prepared:	02/06/12
Analysis complete:	19/06/12

WATER 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
Boron	203	Colorimetry
Barium*	101	ICPMS
Beryllium*	101	ICPMS
Vanadium	101	ICPMS
pH Value*	113	Electrometric
Sulphate*	131	Ion Chromatography
Chloride*	131	Ion Chromatography
Total Cyanide	130	Colorimetry
Sulphide	134	Colorimetry
Total Phenols	121	HPLC
Hexavalent Chromium	110	Colorimetry
TOC (In filtered samples)*	102	TOC Analyser
Elemental Sulphur	122	HPLC
Speciated PAH	135	GCMS
Carbon Banding (TPH)	117	Gas chromatography

* = UKAS Accredited test

Determinands not marked with * are non accredited

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

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THE ENVIRONMENTAL LABORATORY LTD

SAMPLE RECEIPT AND TEST DATES

Our Analytical Report Number	AR38970
Your Ref No:	GE8756
Sample Receipt Date:	01/06/12
Reporting Date:	19/06/12
Registered:	01/06/12
Prepared:	02/06/12
Analysis complete:	19/06/12

TEST METHOD SUMMARY

PARAMETER	Undertaken on	Date Tested	Method Number	Technique
pH Value**	Air dried sample	07/06/12	113	Electrometric
Total Organic Carbon	Air dried sample	14/06/12	210	Automated IR Absorption
Loss on Ignition**	Air dried sample	07/06/12	129	Gravimetric
Neutralization Capacity to pH 7	Air dried sample	07/06/12	-	EA
Benzene**	As submitted sample	08/06/12	181	GCMS
Toluene**	As submitted sample	08/06/12	181	GCMS
Ethyl Benzene**	As submitted sample	08/06/12	181	GCMS
Xylenes**	As submitted sample	08/06/12	181	GCMS
Mineral Oil**	As submitted sample	11/06/12	117	GCFID
PCB 28**	Air dried sample	11/06/12	120	GCMS
PCB 52**	Air dried sample	11/06/12	120	GCMS
PCB 101**	Air dried sample	11/06/12	120	GCMS
PCB 118**	Air dried sample	11/06/12	120	GCMS
PCB 138**	Air dried sample	11/06/12	120	GCMS
PCB 153**	Air dried sample	11/06/12	120	GCMS
PCB 180**	Air dried sample	11/06/12	120	GCMS
Speciated PAH**	As submitted sample	12/06/12	133	GCFID

The analysts' guide for sampling, analysis and clearance procedures
* = UKAS Accredited test
** - MCERTS Accredited test
Determinands not marked with a * or ** are not accredited
MCERTS accreditation covers samples which are predominantly sand, clay, loam or combinations of these three soil types

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THE ENVIRONMENTAL LABORATORY LTD

LEACHATE SAMPLE RECEIPT AND TEST DATES

Our Analytical Report Number	AR38970
Your Ref No:	GE8756
Sample Receipt Date:	01/06/12
Reporting Date:	19/06/12
Registered:	01/06/12
Prepared:	02/06/12
Analysis complete:	19/06/12

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

APPENDIX E

Ground Gas and Groundwater Monitoring Results

Project: Havant Retail Park
Ref: GE8756
Client: Linden

Geo-Environmental

Location	Date	Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	Flow (l/hr)	VOC (ppm)	Pressure (mb)	GWL (m bgl)	GSV/Qhgs		Characteristic Situation		CS1 Limiting Value Check			NHBC			
												BS8485 & C665					CH_4		CO_2	
										CH_4	CO_2	CH_4	CO_2	Flow	CH_4	CO_2	GSV	Conc.	GSV	Conc.
WS1	08/06/12	10	0.0	0.5	21.6	0.0	-	1000	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	08/06/12	20	0.0	0.6	20.3	0.0	-	1000	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	08/06/12	30	0.0	0.6	20.3	0.0	-	1000	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	08/06/12	60	0.0	0.6	20.3	0.0	-	1000	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	08/06/12	120	0.0	0.6	20.3	0.0	-	1000	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	08/06/12	10	0.0	0.7	21.3	0.0	-	1000	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	08/06/12	20	0.0	1.2	19.8	0.0	-	1000	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	08/06/12	30	0.0	1.2	19.5	0.0	-	1000	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	08/06/12	60	0.0	1.2	19.5	0.0	-	1000	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	08/06/12	120	0.0	1.4	19.5	0.0	-	1000	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	08/06/12	10	0.0	0.0	21.1	0.0	-	1000	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	08/06/12	20	0.0	1.1	20.5	0.0	-	1000	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	08/06/12	30	0.0	1.2	20.4	0.0	-	1000	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	08/06/12	60	0.0	1.6	20.2	0.0	-	1000	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	08/06/12	120	0.0	1.6	20.2	0.0	-	1000	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
A	08/06/12	10	0.0	0.0	20.8	0.0	-	1000	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
A	08/06/12	20	0.0	0.0	20.8	0.0	-	1000	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
A	08/06/12	30	0.0	0.3	20.8	0.0	-	1000	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
A	08/06/12	60	0.0	0.4	20.6	0.0	-	1000	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
A	08/06/12	120	0.0	0.5	20.6	0.0	-	1000	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
B	08/06/12	10	0.0	0.0	21.0	0.0	-	1000	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
B	08/06/12	20	0.0	0.0	21.0	0.0	-	1000	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
B	08/06/12	30	0.0	0.0	21.1	0.0	-	1000	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
B	08/06/12	60	0.0	0.0	21.1	0.0	-	1000	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
B	08/06/12	120	0.0	0.0	21.1	0.0	-	1000	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
C	08/06/12	10	0.0	0.0	21.1	0.0	-	1000	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
C	08/06/12	20	0.0	0.0	21.1	0.0	-	1000	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
C	08/06/12	30	0.0	0.0	21.1	0.0	-	1000	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
C	08/06/12	60	0.0	0.0	21.1	0.0	-	1000	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
C	08/06/12	120	0.0	0.0	21.2	0.0	-	1000	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
D	08/06/12	10	0.0	0.0	21.0	0.0	-	1000	6.15	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
D	08/06/12	20	0.0	0.2	20.9	0.0	-	1000	6.15	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
D	08/06/12	30	0.0	0.1	21.0	0.0	-	1000	6.15	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
D	08/06/12	60	0.0	0.1	20.9	0.0	-	1000	6.15	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
D	08/06/12	120	0.0	0.0	21.0	0.0	-	1000	6.15	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	22/06/12	10	0.0	0.0	20.9	0.0	-	1011	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	22/06/12	20	0.0	0.0	20.9	0.0	-	1011	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	22/06/12	30	0.0	0.0	20.9	0.0	-	1011	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	22/06/12	60	0.0	0.0	20.8	0.0	-	1011	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	22/06/12	120	0.0	0.0	20.8	0.0	-	1011	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	22/06/12	10	0.0	0.0	20.9	0.0	-	1011	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	22/06/12	20	0.0	0.0	20.9	0.0	-	1011	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	22/06/12	30	0.0	0.1	20.8	0.0	-	1011	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	22/06/12	60	0.0	0.1	20.8	0.0	-	1011	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	22/06/12	120	0.0	0.2	20.8	0.0	-	1011	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	22/06/12	10	0.0	0.0	20.8	0.0	-	1011	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	22/06/12	20	0.0	1.7	19.1	0.0	-	1011	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN

Project: Havant Retail Park
Ref: GE8756
Client: Linden

Geo-Environmental

Location	Date	Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	Flow (l/hr)	VOC (ppm)	Pressure (mb)	GWL (m bgl)	GSV/Qhgs		Characteristic Situation		CS1 Limiting Value Check			NHBC			
												BS8485 & C665					CH_4		CO_2	
										CH_4	CO_2	CH_4	CO_2	Flow	CH_4	CO_2	GSV	Conc.	GSV	Conc.
WS10	22/06/12	30	0.0	1.8	18.9	0.0	-	1011	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	22/06/12	60	0.0	2.2	18.7	0.0	-	1011	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	22/06/12	120	0.0	2.2	18.7	0.0	-	1011	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
A	22/06/12	10	0.0	0.0	20.6	0.0	-	1011	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
A	22/06/12	20	0.0	0.0	20.6	0.0	-	1011	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
A	22/06/12	30	0.0	0.0	20.6	0.0	-	1011	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
A	22/06/12	60	0.0	0.1	20.6	0.0	-	1011	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
A	22/06/12	120	0.0	0.1	20.6	0.0	-	1011	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
B	22/06/12	10	0.0	0.0	20.8	0.0	-	1011	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
B	22/06/12	20	0.0	0.0	20.8	0.0	-	1011	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
B	22/06/12	30	0.0	0.0	20.8	0.0	-	1011	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
B	22/06/12	60	0.0	0.0	20.8	0.0	-	1011	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
B	22/06/12	120	0.0	0.1	20.7	0.0	-	1011	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
C	22/06/12	10	0.0	0.0	20.8	0.0	-	1011	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
C	22/06/12	20	0.0	0.0	20.8	0.0	-	1011	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
C	22/06/12	30	0.0	0.0	20.8	0.0	-	1011	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
C	22/06/12	60	0.0	0.0	20.8	0.0	-	1011	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
C	22/06/12	120	0.0	0.0	20.8	0.0	-	1011	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
D	22/06/12	10	0.0	0.0	20.6	0.0	-	1011	5.55	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
D	22/06/12	20	0.0	0.0	20.6	0.0	-	1011	5.55	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
D	22/06/12	30	0.0	0.0	20.6	0.0	-	1011	5.55	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
D	22/06/12	60	0.0	0.0	20.7	0.0	-	1011	5.55	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
D	22/06/12	120	0.0	0.1	20.5	0.0	-	1011	5.55	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	03/07/12	10	0.0	0.0	20.8	0.0	-	1014	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	03/07/12	20	0.0	0.7	20.0	0.0	-	1014	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	03/07/12	30	0.0	0.7	20.0	0.0	-	1014	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	03/07/12	60	0.0	0.8	20.0	0.0	-	1014	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	03/07/12	120	0.0	0.8	20.0	0.0	-	1014	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	03/07/12	10	0.0	0.0	20.8	0.0	-	1014	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	03/07/12	20	0.0	0.5	20.3	0.0	-	1014	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	03/07/12	30	0.0	0.5	20.3	0.0	-	1014	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	03/07/12	60	0.0	0.5	20.2	0.0	-	1014	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	03/07/12	120	0.0	0.6	20.1	0.0	-	1014	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	03/07/12	10	0.0	1.1	20.6	0.0	-	1014	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	03/07/12	20	0.0	1.7	20.0	0.0	-	1014	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	03/07/12	30	0.0	1.8	19.9	0.0	-	1014	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	03/07/12	60	0.0	1.8	20.0	0.0	-	1014	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	03/07/12	120	0.0	1.6	20.2	0.0	-	1014	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
A	03/07/12	10	0.0	0.2	20.7	0.0	-	1014	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
A	03/07/12	20	0.0	0.2	20.6	0.0	-	1014	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
A	03/07/12	30	0.0	0.4	20.4	0.0	-	1014	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
A	03/07/12	60	0.0	0.4	20.4	0.0	-	1014	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
A	03/07/12	120	0.0	0.5	20.3	0.0	-	1014	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
B	03/07/12	10	0.0	0.0	21.0	0.0	-	1014	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
B	03/07/12	20	0.0	0.2	20.9	0.0	-	1014	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
B	03/07/12	30	0.0	1.1	20.3	0.0	-	1014	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
B	03/07/12	60	0.0	1.4	19.8	0.0	-	1014	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN

Project: Havant Retail Park
Ref: GE8756
Client: Linden

Geo-Environmental

Location	Date	Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	Flow (l/hr)	VOC (ppm)	Pressure (mb)	GWL (m bgl)	GSV/Qhgs		Characteristic Situation		CS1 Limiting Value Check			NHBC			
												BS8485 & C665					CH_4		CO_2	
										CH_4	CO_2	CH_4	CO_2	Flow	CH_4	CO_2	GSV	Conc.	GSV	Conc.
B	03/07/12	120	0.0	1.7	19.6	0.0	-	1014	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
C	03/07/12	10	0.0	0.0	21.2	0.0	-	1014	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
C	03/07/12	20	0.0	0.0	21.2	0.0	-	1014	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
C	03/07/12	30	0.0	0.0	21.2	0.0	-	1014	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
C	03/07/12	60	0.0	0.0	21.2	0.0	-	1014	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
C	03/07/12	120	0.0	0.0	21.2	0.0	-	1014	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
D	03/07/12	10	0.0	0.0	21.3	0.0	-	1014	5.73	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
D	03/07/12	20	0.0	0.0	21.3	0.0	-	1014	5.73	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
D	03/07/12	30	0.0	0.0	21.3	0.0	-	1014	5.73	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
D	03/07/12	60	0.0	0.0	21.3	0.0	-	1014	5.73	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
D	03/07/12	120	0.0	0.0	21.3	0.0	-	1014	5.73	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	23/07/12	10	0.0	0.7	19.0	0.0	-	1021	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	23/07/12	20	0.0	0.7	18.7	0.0	-	1021	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	23/07/12	30	0.0	0.8	18.7	0.0	-	1021	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	23/07/12	60	0.0	0.8	18.7	0.0	-	1021	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	23/07/12	120	0.0	0.8	18.8	0.0	-	1021	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	23/07/12	10	0.0	0.6	20.2	0.0	-	1021	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	23/07/12	20	0.0	1.1	19.5	0.0	-	1021	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	23/07/12	30	0.0	1.1	19.4	0.0	-	1021	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	23/07/12	60	0.0	1.2	19.2	0.0	-	1021	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	23/07/12	120	0.0	1.2	19.2	0.0	-	1021	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	23/07/12	10	0.0	1.1	19.5	0.0	-	1021	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	23/07/12	120	0.0	1.2	19.2	0.0	-	1021	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	23/07/12	10	0.0	1.1	19.5	0.0	-	1021	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	23/07/12	20	0.0	1.8	19.2	0.0	-	1021	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	23/07/12	30	0.0	1.9	19.1	0.0	-	1021	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	23/07/12	60	0.0	2.4	18.8	0.0	-	1021	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	23/07/12	120	0.0	2.6	18.6	0.0	-	1021	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
A	23/07/12	10	0.0	0.9	20.0	0.0	-	1021	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
A	23/07/12	20	0.0	1.0	19.1	0.0	-	1021	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
A	23/07/12	30	0.0	1.2	18.8	0.0	-	1021	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
A	23/07/12	60	0.0	1.2	18.7	0.0	-	1021	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
A	23/07/12	120	0.0	1.4	18.6	0.0	-	1021	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
B	23/07/12	10	0.0	1.4	18.8	0.0	-	1021	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
B	23/07/12	20	0.0	1.5	18.5	0.0	-	1021	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
B	23/07/12	30	0.0	1.8	18.4	0.0	-	1021	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
B	23/07/12	60	0.0	1.6	18.5	0.0	-	1021	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
B	23/07/12	120	0.0	1.7	18.5	0.0	-	1021	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
C	23/07/12	10	0.0	0.0	20.9	0.0	-	1021	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
C	23/07/12	20	0.0	0.0	21.0	0.0	-	1021	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
C	23/07/12	30	0.0	0.0	21.0	0.0	-	1021	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
C	23/07/12	60	0.0	0.0	21.0	0.0	-	1021	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
C	23/07/12	120	0.0	0.0	21.0	0.0	-	1021	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
D	23/07/12	10	0.0	0.6	19.8	0.0	-	1021	6.28	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
D	23/07/12	20	0.0	1.1	19.0	0.0	-	1021	6.28	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
D	23/07/12	30	0.0	1.1	18.9	0.0	-	1021	6.28	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
D	23/07/12	60	0.0	1.2	18.8	0.0	-	1021	6.28	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
D	23/07/12	120	0.0	1.3	18.6	0.0	-	1021	6.28	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	03/08/12	10	0.0	0.1	20.8	0.0	-	1012	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN

Project: Havant Retail Park
Ref: GE8756
Client: Linden

Geo-Environmental

Location	Date	Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	Flow (l/hr)	VOC (ppm)	Pressure (mb)	GWL (m bgl)	GSV/Qhgs		Characteristic Situation		CS1 Limiting Value Check			NHBC			
												BS8485 & C665					CH_4		CO_2	
										CH_4	CO_2	CH_4	CO_2	Flow	CH_4	CO_2	GSV	Conc.	GSV	Conc.
WS1	03/08/12	20	0.0	1.1	19.8	0.0	-	1012	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	03/08/12	30	0.0	0.8	19.8	0.0	-	1012	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	03/08/12	60	0.0	0.9	19.8	0.0	-	1012	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	03/08/12	120	0.0	0.9	19.8	0.0	-	1012	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	03/08/12	10	0.0	0.4	20.6	0.0	-	1012	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	03/08/12	20	0.0	0.4	20.4	0.0	-	1012	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	03/08/12	30	0.0	0.5	20.3	0.0	-	1012	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	03/08/12	60	0.0	0.5	20.3	0.0	-	1012	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	03/08/12	120	0.0	0.5	20.3	0.0	-	1012	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	03/08/12	10	0.0	1.6	20.0	0.0	-	1012	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	03/08/12	20	0.0	1.7	19.8	0.0	-	1012	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	03/08/12	30	0.0	2.3	19.4	0.0	-	1012	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	03/08/12	60	0.0	1.8	19.9	0.0	-	1012	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	03/08/12	120	0.0	1.7	20.0	0.0	-	1012	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
A	03/08/12	10	0.0	0.0	20.9	0.0	-	1012	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
A	03/08/12	20	0.0	0.0	20.8	0.0	-	1012	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
A	03/08/12	30	0.0	0.0	20.8	0.0	-	1012	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
A	03/08/12	60	0.0	0.1	20.8	0.0	-	1012	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
A	03/08/12	120	0.0	0.2	20.7	0.0	-	1012	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
B	03/08/12	10	0.0	0.0	20.8	0.0	-	1012	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
B	03/08/12	20	0.0	0.0	20.8	0.0	-	1012	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
B	03/08/12	30	0.0	0.0	20.8	0.0	-	1012	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
B	03/08/12	60	0.0	0.0	20.8	0.0	-	1012	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
B	03/08/12	120	0.0	0.4	20.7	0.0	-	1012	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
C	03/08/12	10	0.0	0.1	20.7	0.0	-	1012	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
C	03/08/12	20	0.0	0.3	20.2	0.0	-	1012	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
C	03/08/12	30	0.0	0.2	20.2	0.0	-	1012	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
C	03/08/12	60	0.0	0.2	20.4	0.0	-	1012	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
C	03/08/12	120	0.0	0.2	20.4	0.0	-	1012	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
D	03/08/12	10	0.0	0.0	20.8	0.0	-	1012	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
D	03/08/12	20	0.0	0.0	20.7	0.0	-	1012	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
D	03/08/12	30	0.0	0.0	20.7	0.0	-	1012	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
D	03/08/12	60	0.0	0.0	20.7	0.0	-	1012	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
D	03/08/12	120	0.0	0.2	20.6	0.0	-	1012	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	17/08/12	10	0.0	0.5	20.8	0.0	-	1013	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	17/08/12	20	0.0	0.8	20.1	0.0	-	1013	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	17/08/12	30	0.0	0.8	20.1	0.0	-	1013	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	17/08/12	60	0.0	0.9	20.0	0.0	-	1013	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	17/08/12	120	0.0	0.9	20.0	0.0	-	1013	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	17/08/12	10	0.0	0.4	20.8	0.0	-	1013	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	17/08/12	20	0.0	0.5	20.4	0.0	-	1013	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	17/08/12	30	0.0	0.5	20.3	0.0	-	1013	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	17/08/12	60	0.0	0.6	20.3	0.0	-	1013	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	17/08/12	120	0.0	0.6	20.2	0.0	-	1013	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	17/08/12	10	0.0	0.5	20.8	0.0	-	1013	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	17/08/12	20	0.0	1.0	20.2	0.0	-	1013	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	17/08/12	30	0.0	1.0	20.3	0.0	-	1013	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN

Project: Havant Retail Park
Ref: GE8756
Client: Linden

Geo-Environmental

Location	Date	Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	Flow (l/hr)	VOC (ppm)	Pressure (mb)	GWL (m bgl)	GSV/Qhgs		Characteristic Situation		CS1 Limiting Value Check			NHBC			
												BS8485 & C665					CH_4		CO_2	
										CH_4	CO_2	CH_4	CO_2	Flow	CH_4	CO_2	GSV	Conc.	GSV	Conc.
WS10	17/08/12	60	0.0	0.9	20.4	0.0	-	1013	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	17/08/12	120	0.0	0.7	20.5	0.0	-	1013	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
A	17/08/12	10	0.0	0.2	20.8	0.0	-	1013	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
A	17/08/12	20	0.0	0.4	20.5	0.0	-	1013	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
A	17/08/12	30	0.0	0.5	20.4	0.0	-	1013	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
A	17/08/12	60	0.0	0.6	20.3	0.0	-	1013	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
A	17/08/12	120	0.0	0.8	20.2	0.0	-	1013	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
B	17/08/12	10	0.0	0.1	20.7	0.0	-	1013	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
B	17/08/12	20	0.0	0.2	20.6	0.0	-	1013	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
B	17/08/12	30	0.0	0.6	19.8	0.0	-	1013	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
B	17/08/12	60	0.0	2.1	17.1	0.0	-	1013	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
B	17/08/12	120	0.0	2.0	17.1	0.0	-	1013	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
C	17/08/12	10	0.0	0.1	20.9	0.0	-	1013	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
C	17/08/12	20	0.0	0.1	20.8	0.0	-	1013	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
C	17/08/12	30	0.0	0.1	20.8	0.0	-	1013	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
C	17/08/12	60	0.0	0.1	20.9	0.0	-	1013	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
C	17/08/12	120	0.0	0.0	20.9	0.0	-	1013	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
D	17/08/12	10	0.0	0.3	20.1	0.0	-	1013	6.31	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
D	17/08/12	20	0.0	0.3	20.1	0.0	-	1013	6.31	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
D	17/08/12	30	0.0	0.3	20.1	0.0	-	1013	6.31	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
D	17/08/12	60	0.0	0.4	19.9	0.0	-	1013	6.31	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
D	17/08/12	120	0.0	0.7	19.2	0.0	-	1013	6.31	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
Max values			0.0	2.6	21.6	0.0	0.0	1021.0		0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
Min Vaules			0.0	0.0	17.1	0.0	0.0	1000.0		0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
BH Flow LoD check			0.0	2.6	21.6	0.1	0.0	1021.0		0.000	0.003	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN

APPENDIX F

Imported Soil Specification

Geo-Environmental

IMPORTED SOIL SPECIFICATION

Document Reference	**Imported Soil Specification**
Site	**GE8756 – Havant Retail Park**
Issue Date	**August 2012**
Issue Version	**1.0**
Prepared By	**Gavin Roberts (Geo-Environmental)**

CONTENTS

1.0 Introduction....1
2.0 Chemical Composition....2
3.0 Nutritional Composition....7
4.0 Physical Composition....8
5.0 Source Requirements....9
6.0 Testing Rates....10

1.0 Introduction

This documents sets out the requirements for cover systems and imported materials for any project undergoing redevelopment or other works where capping work is required.

Within the specification reference has been made to topsoil and subsoil. Topsoil relates to the top layer of natural soil that can support healthy vegetation growth. Subsoil relates to the layer of soil immediately below the topsoil to the depth of the underlying broken rock or geological parent material.

The specification considers the chemical, nutritional and physical properties of soils that are to be imported onto site, in order to ensure materials used are suitable for their intended use and do not introduce any new hazard or pollutant linkage on to the site.

2.0 Chemical Composition

The chemical criteria listed below are based on published CLEA Soil Guideline Values (SGVs), generic assessment criteria calculated using UK policy compliant software or by reference to current guidance and best practice. From time to time these values may change in line with regulatory or UK policy changes. Such changes will require revision and re-issue of this document.

At the time of preparation, where SGVs have not been published, generic assessment criteria (GAC) published in 2009 by the Chartered Institute of Environmental Health and Land Quality Management have been used. Where SGVs or GAC are published for a range of Soil Organic Matter (SOM) values, these ranges and their respective SOM values have been presented and would be considered when assessing compliance with this Specification.

2.1 Method of Analysis

Samples should be analysed using UKAS or MCERTS accredited laboratories. For TPH analysis sample preparation must not include air drying.

2.1.1 Poly Aromatic Hydrocarbon (PAH)

The PAH analysis must include the EPA priority 16.

2.1.2 Total Petroleum Hydrocarbons (TPH)

The analysis for TPH should be undertaken on the ‘as received’ sample and not be subject to any pre-treatment and include aliphatic and aromatic carbon banding split.

2.2 Topsoil (0-300mm depth)

Table 1 provides a list of the maximum acceptable concentrations for imported topsoil.

Parameter	Maximum concentration (mg/kg)
Inorganic	
Arsenic (total)	<32
Boron (water soluble)	<291
Cadmium (total)	10 (SOM=6%)
Chromium (total)	<130
Copper (total)	<2330
Cyanide (total)	<250
Lead (total)	<450
Mercury (total inorganic)	<8
Nickel (total)	<130 (SOM=6%)
pH	5.5 – 7.8
Selenium (total)	<350 (SOM=6%)
Sulphate (total)	<2000
Zinc (total)	<3750
Organic	
Soil Organic Matter (SOM)	
Phenols (total)	<420 (SOM=6%)
Poly Aromatic Hydrocarbon (speciated)	See Table 1a
Total Petroleum Hydrocarbon (speciated)	See Table 1b

Table 1: Chemical Specification for Topsoil

	Maximum Concentration (mg/kg)		
	1% SOM	**2.5% SOM**	**5% SOM**
Acenaphthene	210	480	1000
Acenaphthylene	170	400	850
Anthracene	2300	4900	9200
Benz(a)anthracene	3.1	4.7	5.9
Benzo(a)pyrene	0.83	0.94	1.0
Benzo(b)fluoranthene	5.6	6.5	7.0
Benzo(ghi)perylene	44	46	47
Benzo(k)fluoranthene	8.5	9.6	10
Chrysene	6.0	8.0	9.3
Dibenz(ah)anthracene	0.76	0.86	0.9
Fluoranthene	260	460	670
Fluorene	160	380	780
Indeno(1,2,3CD)pyrene	3.2	3.9	4.2
Naphthalene	1.5	3.7	8.7
Phenanthrene	92	200	380
Pyrene	560	1000	1600

Table 1a: Topsoil Specification for Speciated PAH

	Maximum Concentration (mg/kg)		
	1% SOM	**2.5% SOM**	**5% SOM**
Aliphatic			
EC 5-6	30	55	110
EC >6-8	73	160	370
EC >8-10	19	46	110
EC >10-12	93	230	540
EC >12-16	740	1700	3000
EC >16-35	45000	64000	76000
EC >35-44	45000	64000	76000
Aromatic			
EC 5-7 (benzene)	65	130	280
EC >7-8 (toluene)	120	270	611
EC >8-10	27	65	151
EC >10-12	69	160	346
EC >12-16	140	310	593
EC >16-21	250	480	770
EC >21-35	890	1100	1230
EC >35-44	890	1100	1230
Aliphatic and Aromatic			
EC >44-70	1200	1300	1300

Table 1b: Topsoil Specification for Speciated TPH

2.3 Subsoil (300-1000mm depth)

Table 2 provides a list of the maximum acceptable concentrations for imported subsoil.

Parameter	Maximum concentration (mg/kg)
Inorganic	
Arsenic (total)	<32
Boron (water soluble)	<291
Cadmium (total)	10 (SOM=6%)
Chromium (total)	<130
Copper (total)	<2330
Cyanide (total)	<250
Lead (total)	<450
Mercury (total inorganic)	<8
Nickel (total)	<130 (SOM=6%)
pH	5.5 – 7.8
Selenium (total)	<350 (SOM=6%)
Sulphate (total)	<2000
Zinc (total)	<3750
Organic	
Soil Organic Matter (SOM)	
Phenols (total)	<420 (SOM=6%)
Poly Aromatic Hydrocarbon (speciated)	See Table 1a
Total Petroleum Hydrocarbon (speciated)	See Table 1b

Table 2: Chemical Specification for Subsoil

	Maximum Concentration (mg/kg)		
	1% SOM	**2.5% SOM**	**5% SOM**
Acenaphthene	210	480	1000
Acenaphthylene	170	400	850
Anthracene	2300	4900	9200
Benz(a)anthracene	3.1	4.7	5.9
Benzo(a)pyrene	0.83	0.94	1.0
Benzo(b)fluoranthene	5.6	6.5	7.0
Benzo(ghi)perylene	44	46	47
Benzo(k)fluoranthene	8.5	9.6	10
Chrysene	6.0	8.0	9.3
Dibenz(ah)anthracene	0.76	0.86	0.9
Fluoranthene	260	460	670
Fluorene	160	380	780
Indeno(1,2,3CD)pyrene	3.2	3.9	4.2
Naphthalene	1.5	3.7	8.7
Phenanthrene	92	200	380
Pyrene	560	1000	1600

Table 2a: Subsoil Specification for Speciated PAH

	Maximum Concentration (mg/kg)		
	1% SOM	**2.5% SOM**	**5% SOM**
Aliphatic			
EC 5-6	30	55	110
EC >6-8	73	160	370
EC >8-10	19	46	110
EC >10-12	93	230	540
EC >12-16	740	1700	3000
EC >16-35	45000	64000	76000
EC >35-44	45000	64000	76000
Aromatic			
EC 5-7 (benzene)	65	130	280
EC >7-8 (toluene)	120	270	611
EC >8-10	27	65	151
EC >10-12	69	160	346
EC >12-16	140	310	593
EC >16-21	250	480	770
EC >21-35	890	1100	1230
EC >35-44	890	1100	1230
Aliphatic and Aromatic			
EC >44-70	1200	1300	1300

Table 2b: Subsoil Specification for Speciated TPH

3.0 Nutritional Composition

The nutritional criteria listed below are based on BS 3882:2007 Specification for Topsoil. In the absence of published criteria, current guidance and best practice has been applied to derive appropriate criteria.

3.1 Topsoil & Subsoil

Table 3 details the minimum acceptable concentrations for imported topsoil and subsoil.

Topsoil/Subsoil	Parameter	Min Concentration
Topsoil	Phosphorous	16 mg/l
	Potassium	120 mg/l
	Magnesium	51 mg/l
	Nitrogen	0.15 %
Subsoil	Phosphorous	16 mg/l
	Potassium	120 mg/l
	Magnesium	51 mg/l
	Nitrogen	0.15 %

Table 3: Nutritional Specification for Topsoil and Subsoil

4.0 Physical Composition

The physical criteria listed below are based on BS 3882:1994 Specification for Topsoil. In the absence of published criteria, current guidance and best practice has been applied to derive appropriate criteria.

4.1 Topsoil

Table 4 details requirements for imported topsoil and subsoil.

Topsoil/Subsoil	Parameter	Specification requirements
Topsoil	Textural Classification	Sandy clay loam, sandy loam, loamy sand, sandy silt loam (as defined in BS 3882, Figure 1)
	Loss on Ignition	5-50%
	Maximum Stone content:	>2mm = 30% >20mm= 10% >50mm= 0%
Subsoil	Textural Classification	N/A
	Loss on Ignition	2-50%
	Maximum Stone content:	>2mm = 65% >20mm= 60% >50mm= 40%

NB: Topsoil and Subsoil must be free from glass, brick fragments etc.

Table 4: Physical Specification for Topsoil & Subsoil

5.0 Source Requirements

5.1 Topsoil and Subsoil

The following will be provided with all soils imported to site:

- Location of site which is clean and has no history of potentially contaminative uses.
- A site plan detailing the location and address of the source site.

5.2 Manufactured soils

Where natural soils are unavailable manufactured soils may be utilised the following should be provided:

- Details of the soil manufacturing process, including criteria for received soils, quality control procedure and validation protocol.
- Soils should be tested at a minimum ratio of one sample per 50m^3.

6.0 Testing Rates and Compliance

6.1 Topsoil

Where natural sourcing is proposed, the provenance of the material shall be determined by confirmation of the source site's history to confirm no previous potentially contaminative use, coupled with analysis of soils at a minimum rate of 3No. samples per source site (up to 250m^3) and 1 sample per 250m^3 thereafter.

Where Topsoil is derived from a manufactured source, testing would be undertaken at a rate of 1 sample per 50m^3.

With regards to physical and nutritional composition and minimum testing regime of 1 sample per 250m^3 is recommended for either source.

6.2 Subsoil

Where the source of the material is known and a due diligence review has established no previous contaminative use associated with the proposed subsoil, validation sampling should be undertaken at a minimum rate of 3 sample per source (up to 250m^3) and 1 sample per 250m^3 thereafter.

Where the source of the material is not known the validation sampling should be undertaken at a minimum of 1 sample per 50m^3.

6.3 Manufactured soils

Soils should be tested at a minimum ratio of one sample per 50m^3.

6.4 Sample failure

In the event that a sample fails to meet the specified criteria for any parameter the Environmental Consultant should be contacted for advice on the suitability of the materials.

Further testing may be required to provide reassurance that the exceedances are not representative of the soil.

6.5 Timing

Sampling and analysis undertaken by a manufactured topsoil supplier shall be no earlier than two weeks from the date of import, any results which are older than two weeks will be deemed not to be representative of the soils to be imported and rejected.

Imported Soil Suppliers and Groundworks Contractors are required to take reasonably practicable measures to ensure that compliance with this Specification does not hinder formal completion of individual plots or developments.

6.6 General Compliance

All analytical suites shall correspond with the chemical and nutritional compliance criteria (as set out in Tables 1 to 3). The soil supplier shall ensure that the analytical limits of detection are equal or lower than the compliance values presented within this Specification. Where either testing suites or limits of detection do not comply with this Specification, the entire set of results shall be rejected.