

A photograph of a stream flowing over rocks, with green grass on the banks. The text "Preliminary Geoenvironmental Investigation" is overlaid in white.

Preliminary Geoenvironmental Investigation

Land at Studley Grange Landfill, Wiltshire

For Heaton Planning

Report no: 5279/2

Date: March 2026



SUMMARY OF GEOENVIRONMENTAL ISSUES

Job No.	5279	Site area/ha	6.2
Client:	Heaton Planning	NGR:	SU 101 817
Site:	Studley Grange Landfill, Wiltshire	Nearest postcode:	SN4 9QT

The site is located off a tarmac access track off the B4005, approximately 5.5km southwest of Swindon, and currently comprises a processing area and section of a larger grassed field currently used for grazing sheep. The majority of the site was formerly a landfill which operated from the 1990s, landfilling has now ceased and the site is being monitored, with gas and leachate extraction.

Lithos were commissioned by Heaton Planning to provide a preliminary geoenvironmental appraisal of the site, which it is understood is to be redeveloped with a solar PV panel array with an associated control building and switch gear. A proposed site layout has been provided.

Lithos' investigation included an inspection of historical and geological maps and information provided by the British Geological Survey, the Landmark Information Group, the Mining Remediation Authority, and QGIS. In addition, a site inspection has been carried out.

A summary of salient geoenvironmental issues is provided in the table below.

Issue	Remarks
Former uses	The site was formerly a landfill/waste management facility, now operated by Biffa. It is possible that the site was a quarry prior to being landfilled, although this is not shown on historical mapping.
Anticipated ground conditions	Deep Made Ground (landfill waste) is anticipated beneath the grassed field. The landfill is known to have been lined and capped, with a capping thickness of ** and comprising **. Shallower Made Ground is anticipated in the processing area and along the access track to the north. Natural soils beneath the Made Ground are anticipated to comprise residual soils, with solid bedrock at relatively shallow depth.
Anticipated contamination	Significant contamination may be present within the landfill mass. Contaminants within the soil and groundwater could include: • Inorganics (metals, semi-metals, non-metals, asbestos associated with the waste mass). • TPH & PAH (associated with waste mass). • VOCs & SVOCs (associated with waste mass). • Hazardous gas and leachate (associated with waste mass). Other potential contaminants could include dioxins and PCBs associated with incinerator ash. The restoration layer (over the landfill cap) had concrete and tarmac cobbles at surface, so further Made Ground materials may be present. Made Ground associated with the processing area and access track is expected to be largely uncontaminated. However, leakage from the oil and leachate tanks is possible.
Mining & quarrying	The site lies beyond the Mining Remediation Authority's defined coalfields. There are no known quarries within 100m.
Hazardous gas	The site is in an area where less than 1% of homes are estimated to be above the radon action level. The site is underlain by a landfill, with further landfills to the east/northeast. Consequently, the site is considered to be susceptible to migrating hazardous ground gas. The proposed development (solar PV array) is considered an open air structure, with buildings only proposed within the solar site compound having some form of ventilation. As such, no gas monitoring is considered necessary.
Flooding & drainage	The majority of the site lies in Flood Zone 1, with the southwest within Flood Zone 2. Soakaways will not provide a suitable drainage solution for surface water run off at the site. Consequently, there is likely to be a need for surface water balancing.
Preparatory works	Topsoil strip (likely capping layer) & Stockpile.
Anticipated foundation solutions	Lithos understands that all PV infrastructure (controls & switchgear) is to be housed inside a container within the site compound, therefore formal foundations should not be necessary. It is understood that the capping layer cannot be pierced, therefore, the solar PV panels will be placed on concrete mounting bases at or close to the ground surface.
Recommendations for ground investigation	As the landfill has a formal engineered capping layer, a non-penetrative ground investigation is likely required. This investigation would comprise plate load tests to determine near surface CBR and Modulus of Subgrade Reaction, with Hand Pitting to allow for the collection of near

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Issue	Remarks
	surface soils to allow for appropriate geotechnical and chemical testing (recommended to assess risk to construction and site workers).

At this stage, anticipated significant abnormalities relating to geoenvironmental issues at the site are:

- Deep Made Ground (landfill waste) is present across much of the site (grassed area), the Made Ground and associated capping layer will need to be considered when designing the foundation solution.
- A vast array of wells and boreholes are present across the grassed area, this will likely need to be maintained throughout the ground investigation, construction and life span of the solar PV array. The location of these systems (include pipework and services) will need to be known and designed around at all stages.

CONTENTS

1	INTRODUCTION.....	1
1.1	THE COMMISSION AND BRIEF	1
1.2	THE PROPOSED DEVELOPMENT	1
1.3	REPORT FORMAT AND LIMITATIONS	2
2	SITE DESCRIPTION	2
2.1	GENERAL.....	2
2.2	SITE FEATURES	2
3	SITE HISTORY	5
4	ENVIRONMENTAL SETTING	6
4.1	GENERAL.....	6
4.2	LANDFILLS	7
4.3	HISTORY OF LANDFILL LEGISLATION & REGULATIONS.....	9
4.4	HAZARDOUS GAS.....	10
5	PRELIMINARY CONCEPTUAL SITE MODEL.....	11
5.1	POTENTIAL CONTAMINANTS.....	11
5.2	ANTICIPATED GROUND CONDITIONS & POTENTIAL ISSUES	11
6	LAND CONTAMINATION – PART IIA & PLANNING	12
7	GROUND INVESTIGATION DESIGN	13
7.1	GROUND INVESTIGATION DESIGN & STRATEGY	13
8	CONCLUSIONS & RECOMMENDATIONS	14
8.1	GENERAL.....	14
8.2	MINING AND QUARRYING.....	14
8.3	FOUNDATIONS.....	14
8.4	HAZARDOUS GAS.....	15
8.5	HIGHWAYS AND EXTERNAL WORKS	15
8.6	DRAINAGE.....	15
8.7	CONTAMINATION	15
8.8	POTENTIAL DEVELOPMENT CONSTRAINTS	15
8.9	FURTHER INVESTIGATION	16

APPENDICES

Appendix A – General notes

01	Environmental setting
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Appendix B – Drawings

Drawing	Revision	Title
5279/1	A	Site Location Plan
5279/2	A	Proposed Layout
5279/2A	-	Proposed Compound Layout
5279/2B	-	Proposed Solar PV Panel Design
5279/3	A	Site Features
5279/4	A	Site Photographs
5279/5	A	Preliminary Conceptual Site Model

Appendix C - Commission

Appendix D – Historical OS plans*

Appendix E – Search responses*

From	Date	Content
Landmark	11 08 2025	Environmental search data

* Some of this data is not included within the paper or PDF copies of this report can be provided on request.

FOREWORD (GEOENVIRONMENTAL APPRAISAL REPORT)

This report has been prepared for the sole internal use and reliance of the Client named on page 1. This report shall not be relied upon or transferred to any other parties without the express written authorisation of Lithos Consulting Limited (Lithos); such authorisation not to be unreasonably withheld. If any unauthorised third party comes into possession of this report, they rely on it at their peril and the authors owe them no duty of care and skill.

This report has been reviewed by a Competent Person, as defined in the National Planning Policy Framework. We ensure that all projects are managed by individuals with necessary experience, relevant qualifications, and current membership of a relevant professional organisation. Records of engineers, project managers and reviewers involved in this project are maintained by us. Lithos QA/QC procedures for all our work forms an integral part of our ISO9001 accreditation and as such is regularly audited.

The report presents observations and factual data obtained during our site investigation and provides an assessment of geoenvironmental issues with respect to information provided by the Client regarding the proposed development. Further advice should be sought from Lithos prior to significant revision of the development proposals.

The report should be read in its entirety, including all associated drawings and appendices. Lithos cannot be held responsible for any misinterpretations arising from the use of extracts that are taken out of context. However, it should be noted that in order to keep the number of pages to a minimum, some information (e.g. full copy of the Landmark/Groundsure Report) is not included in the PDF; by request it can be provided.

The findings and opinions conveyed in this report (including review of any third-party reports) are based on information obtained from a variety of sources as detailed within this report, and which Lithos believes are reliable. Reasonable care and skill has been applied in examining the information obtained. Nevertheless, Lithos cannot and does not guarantee the authenticity or reliability of the information it has relied upon.

Where the report refers to the potential presence of invasive weeds such as Japanese Knotweed, or the presence of asbestos containing materials, it should be noted that the observations are for information only and should be verified by a suitably qualified expert.

Lithos cannot be responsible for the consequences of changing practices, revisions to waste management legislation etc that may affect the viability of proposed remediation options.

The report represents the findings and opinions of experienced geoenvironmental consultants. Lithos does not provide legal advice and the advice of lawyers may also be required.

Lithos standard terms and conditions apply to the report, a copy of the terms and conditions is available on request or can be found with our proposal in Appendix C.

**PRELIMINARY
GEOENVIRONMENTAL INVESTIGATION
OF LAND AT
STUDLEY GRANGE LANDFILL, WILTSHIRE**

1 INTRODUCTION

1.1 The commission and brief

- 1.1.1 Lithos Consulting were commissioned by Heaton Planning to carry out a Preliminary Geoenvironmental Investigation of land at Studley Grange Landfill, Wiltshire.
- 1.1.2 This document is a revision of the Preliminary Geoenvironmental Appraisal (Report 5279/1) issued by Lithos in September 2025; Report 5279/1 is now superseded. This document now covers a parcel of land immediately west of the area included within 5279/1. The new site area is still within Biffa's control.
- 1.1.3 A new walkover covering the new boundary has been undertaken. However, no new search information (landmark) has been obtained as the information obtained for Report 5279/1 still covers the new area of interest within this report.
- 1.1.4 Correspondence regarding Lithos' appointment, including the brief for this investigation, is included in Appendix C. The agreed scope of works included:
- A site walkover and inspection.
 - An assessment of land use history.
 - Determination of the site's environmental setting.
 - Assessment of anticipated ground conditions, including potential contaminants.
 - Assessment of anticipated foundation and engineering issues associated with redevelopment for a solar PV panel farm.
 - Provision of recommendations for an appropriate ground investigation.
- 1.1.5 This Preliminary Investigation comprises an inspection of historical and geological maps and information provided by the British Geological Survey, the Landmark Information Group, the Mining Remediation Authority, QGIS¹, and the Environment Agency. In addition, a site inspection has been carried out by Lithos.

Primary aims of this investigation were to identify salient geoenvironmental issues affecting the site to enable design and costing of an appropriate intrusive investigation, and to support the submission of a planning application.

1.2 The proposed development

- 1.2.1 It is understood that consideration is being given to redevelopment of the site with a c. 5.2ha solar PV panel farm (fenced off with security camera towers) with an associated control building, transformers and switchgear (solar site compound) within the existing processing area to the north of the landfill.
- 1.2.2 It is understood that the solar PV panel foundations will not pierce the capping layer and no buildings are proposed within the solar array.
- 1.2.3 Lithos understands that the proposed control and switchgear will be housed in a container within the site compound, therefore, will not have foundations that will penetrate the ground, even outside of the former landfill area.

¹ An Open Source Geographic Information System used by Lithos to access publicly available Government held digital data.

- 1.2.4 A site layout has been provided by Biffa (Drawing reference HEA064-003, dated 12/03/26) which is reproduced as Drawing No. 5279/2 in Appendix B to this report.
- 1.2.5 Additional drawings showing the indicative compound layout (Drawing reference HEA064-005, dated 12/03/26) and solar panel design (Drawing reference HEA064-004, dated 12/03/26) have been provided by Biffa and reproduced as Drawing No. 5279/2A and 5279/2B respectively.

1.3 Report format and limitations

- 1.3.1 Standard definitions, procedures and guidance are contained within Appendix A, which includes background, generic information on assessment of the site's environmental setting.
- 1.3.2 General notes and limitations relevant to all Lithos preliminary investigations are described in the Foreword and should be read in conjunction with this report. The text of the report draws specific attention to any modification to these procedures and to any other special techniques employed.

2 SITE DESCRIPTION

2.1 General

- 2.1.1 The site's location is shown on Drawing 5279/1 presented in Appendix B to this report. Site details are summarised in the table below.

Detail	Remarks
Location	5.5 km west of southwest of Swindon town centre
NGR	SU 101 817
Area	6.2 ha (15.3 acres)
Known services	Underground utilities and pipework associated with gas and leachate control system across the entire site.

2.2 Site features

- 2.2.1 Lithos completed a walkover survey (with a member of Biffa's site team) of the site on 6th March 2026.
- 2.2.2 Existing salient features, at the time of the walkover are presented on Drawing 5279/3 in Appendix B to this report and summarised in the table below.

Feature	Remarks
Current access	Off B4005 and along a private access road.
Topography	Majority of the site (grassed field) slopes down to the south at c. 1v:13h. The north and northeast of the site (access track and compound area) is relatively level.
Approximate areas	220m ² Buildings and leachate tank (processing area). 750m ² Gravel or hardcore surfacing (processing area). 5,200m ² Tarmac hardstand. 55,700m ² Grassed and overgrown areas.
Nature of boundaries	Access Road (North and northeast) – Trees and hedgerows. Processing Area (North) – Enclosed by palisade fencing. Grassed field (majority of site) – No physical boundary along majority of boundaries, fenced boundary at the 'pinched' section in the centre of this grassed area. Overgrown grassland beyond the fenced area.
Surrounding land uses	North – Woodland and grassed fields, with railway line beyond. Northeast & East – Former landfills, now grassed fields.

Feature	Remarks
	South – Remainder of grassed field with a drain, former canal, woodland and arable land beyond.
	West – Remainder of grassed field with further arable/grazing land beyond.

- 2.2.3 A selection of site photographs are included on Drawing 5279/4.
- 2.2.4 The main area of interest to Heaton Planning and Biffa is a section of a larger grassed field which was formerly a landfill/waste management facility. The following paragraphs will describe the entire Biffa landfill/waste management facility.
- 2.2.5 The private access road to the site is off the B4005 to the east of the site and leads to a processing area which lies immediately north of the grassed field.

Existing compound/processing area

- 2.2.6 The processing area comprises a concrete hardstanding and gravelled fenced off compound that contains the following:
- A site office/welfare cabin (centre north).
 - Transformers (northwest).
 - Bunded leachate tank (northeast, just outside of the compound).
 - Two 5000L oil tanks (southeast).
 - Two generating engines housed within ventilated shipping containers (centre south).
 - Gas flare and monitoring point (southwest).
 - Pipework, utility boxes and small transformers within the compound.
- 2.2.7 Gas enters the compound in the southeast and into the engines which burn the gas and produce electricity, this is then sent to the transformers which direct the electricity off site to a local transformer c. 2.5km. Gas monitoring close to the time of the walkover suggests that the gas entering the compound comprises the following:
- c. 48% Methane.
 - c. 32% Carbon dioxide.
 - c. 0.8% Oxygen.
 - c. 18.4% Balance gas.
 - c. 75ppm Hydrogen Sulphide.
- 2.2.8 Only one of the engines is currently in operation, with the second being a back-up/legacy engine. The engine is understood to have a running c. 97% of the time, only being offline during maintenance.
- 2.2.9 Whilst running the engine produces a constant 300kW of electricity, burning between 230m³ and 240m³ of gas every hour. When the engines are not in operation, the gas is flared (southwest of the site).
- 2.2.10 The tank immediately northeast of the compound holds the leachate which is extracted from the base of the landfill. This leachate is extracted and stored before being transferred off site via tanker.

Grassed area and former landfill

- 2.2.11 The grassed area and former landfill cover an area of c. 15 ha which is domed in the centre, with falling slopes on all sides to each boundary at c. 1v in 13h. The site boundary of interest to Heaton Planning and Biffa is located across the centre and southwest of this grassed field.

- 2.2.12 At the time of the walkover this grassed area was being used to graze sheep. It was noted that the surfacing (restoration layer above the engineered capping layer) of this grassed field contained frequent concrete and tarmac cobbles with occasional plastic and metal.
- 2.2.13 Two sections in the centre west of this grassed field are fenced off and have immature trees planted.
- 2.2.14 Approximately 75 gas wells (exact depths unknown to Lithos but understood to be c. 15m depth and within the landfill mass) are located across this field, these wells extract gas from within the landfill and direct it towards 1 of 8 manifolds which are located around the boundary of the site. The manifolds (metal boxes with pipe junctions and valves) combine the gas from multiple wells into a larger 250mm diameter gas pipeline which runs around the entire site boundary connecting the 8 manifolds and routing the gas into the processing area to the north.
- 2.2.15 At various points along the site boundary both the manifolds and gas pipework are above ground.
- 2.2.16 Approximately 17 leachate wells (to the base of the landfill, depth unknown to Lithos) are located across the field also, these wells extract leachate which has collected at the base of the landfill and direct it towards 1 of 2 redirection wells (c. 1.5m diameter vertical tanks/chambers) before going into the leachate tank northwest of the processing area.
- 2.2.17 It is understood that at the base of each of the leachate wells is a concrete pad which prevented penetration of the lining at the base of the landfill.
- 2.2.18 Approximately 21 gas monitoring wells are located (both within and out of the landfill, depths unknown to Lithos) around the perimeter of the site. These wells are monitored weekly to quantify the gas inside the landfill and check if any gas is migrating out from the landfill.
- 2.2.19 Given the above it is known that a considerable number of utilities and pipework (associated with the gas and leachate operations) is present at relatively shallow depth beneath the entire site. The exact depths and routes of this infrastructure is not known, with only indicative routes provided.
- 2.2.20 Further details of the onsite landfill are provided in Section 4.2 below.

3 SITE HISTORY

- 3.1 In order to investigate the development history and previous land uses at the site and immediate surrounding land, site centred extracts from Ordnance Survey (OS) plans dating back to 1886 have been examined. These plans are presented in Appendix D to this report.
- 3.2 The table below provides a summary of the salient points relating to the history of the site with respect to the proposed end use. It is not the intention of this report to describe in detail all the changes that have occurred on or adjacent to the site. Significant former uses/operations are highlighted in **bold** text for ease of reference.

Date	Site	Surrounding land
1889	Comprises sections of multiple open fields, separated by fences and sporadic trees. Footpath runs across the grassed area southeast to northwest. The branch with the processing area and access track comprises further open fields and woodland.	Studley Grange Farm immediately north of access track branch of the site. Lower Studley Copse immediately north of the grassed field. Wiltshire and Berkshire Canal and Towing Path from c. 20m south. Footpath running north to south from c. 70m east. Pond shown from c. 80m north. Red House from c. 150m northeast. Railway line (Great Western Railway) from c. 150m north. Riverbank Cottages from c. 160m east. Pond shown c. 230m east.
1925	No significant changes.	Canal and Towing Path immediately south now labelled as disused.
1991		Drain shown running north to south from c. 20m east of the grassed field. Landfill labelled from c. 280m east.
2000 (Aerial photo)	Site occupied by stockpiles and tracks – Waste Management Facility / Landfill .	Land immediately east also covered by stockpiles and tracks – Landfill .
2006	Pond shown in the northwest of the grassed field.	Further ponds shown immediately northwest. Further Landfills labelled from c. 50m north.
2025	Site no longer labelled as a landfill, appears to be grassed field.	Landfills around the site no longer labelled, land immediately north now occupied by woodland. Drain shown within this woodland to the north. Garden centre now shown from c. 280m east.

4 ENVIRONMENTAL SETTING

4.1 General

- 4.1.1 Notes describing how the site's environmental setting has been assessed are included in Appendix A to this report. Reference has been made to publicly available Government held digital data via QGIS (an Open Source Geographic Information System). Extracts from the Landmark Report are presented in Appendix E.

Issue	Data reviewed	Remarks
Geology	1:50,000 BGS map (Sheet 252) 1:10,000 BGS map (Sheet SU18SW & SU08SE)	Made ground – Deep Made Ground associated with landfilling on site and buildings/infrastructure in the processing area. Drift soils – None mapped across the majority of the site, Alluvium is mapped immediately south. Solid (bedrock) – Ampthill Clay Formation (Mudstone) across the west and Kimmeridge Clay Formation (Mudstone) across the east. Strata Dip – None shown. Faults – None shown. Cavities / Mineral Veins / Fissures – None recorded.
Mining	Mining Remediation Authority	This site is located beyond the Mining Remediation Authority's defined coalfields.
Quarrying	Historical OS plans	Recorded mineral site (Studley Grange Farm Quarry) located in the east of the site – Clay and Shale quarry.
Radon	Public Health England	The site lies in an area where <1% of homes are estimated to be above the action level.
Hydrogeology	Environment Agency electronic open data via QGIS	Source Protection Zone – None within 250m. Aquifer – Unproductive Strata (Solid). Groundwater abstractions – None within 250m, closest from c. 410m of the access track northwest associated with general farming and domestic use from Corallian Limestone. Groundwater vulnerability – Low (unproductive aquifer). Pollution incidents – None within 250m.
Hydrology	Defra Catchment data explorer Envirocheck	Nearest watercourse(s) – Drain c. 20m east and south (surrounds the majority of the northern, eastern and southern boundaries of the landfill area) & Wiltshire and Berkshire Canal from c. 20m south - disused but has been restored by the Canal Trust to encourage wildlife. Water quality – Chemical; Failed, due to Mercury, Perfluorooctane sulphonate (PFOS) and Polybrominated diphenyl ethers (PBDE). Ecological; Moderate. Pollution incidents – None within 250m. Abstractions – None within 250m. Discharge consents – One located on site (near processing area) associated with trade effluent discharge and site drainage for Biffa waste services on site.
Flood risk	Environment Agency electronic open data via QGIS	The majority of the site lies in Flood Zone 1, with the southwest of the grassed field classified as Flood Zone 2. In accordance with Chapter 14 of the National Planning Policy Framework, a site-specific flood risk assessment is required for proposals of 1 hectare or greater in Flood Zone 1, or in an area within Flood Zone 1 which has critical drainage problems (as notified to the local planning authority by the Environment Agency); or any new development in Flood Zones 2 or 3.
Fuel stations	Google & site walkover	None within 250m.
UXO	Zetica website	Entire site classified as low risk.

4.1.2 In addition to the above, the following incidents have been reported on, or within influencing distance of the site:

- Integrated pollution prevention and control for the disposal of >50T/D of non-hazardous waste involving biological treatment from 2008 (still active).
- Category 2 significant impact of land, due to smoke causing atmospheric pollutants and effect in the area of the processing area. There is also an integrated pollution prevention and control for the disposal of >50T/D of non-hazardous waste involving biological treatment from November 2017 (still active).
- Prosecution at Studley Grande Landfill site (on site) under the Environmental Protection Act 1990 Section 34 in September 2000.
- A second prosecution at Studley Grange Landfill (on site) under the Environmental Permitting (E&W) Regulations 2010, Regulation 38 in August 2013.

4.2 Landfills

4.2.1 Known or suspected areas of landfill in the vicinity of the proposed development site are summarised below:

Location	NGR (proximity to site)	Remarks	Source of data
Studley Grange Farm	SU 102 819 (on-site, grassed area and track)	Licenced Waste Management Facility Licence held by Biffa Waste Services Ltd from 29 th April 2005. License effective. Waste landfilling: >10T/D with capacity >25,000T, excluding inert waste.	EA electronic open data via QGIS Envirocheck report
		Licenced Waste Management Facility Operated by Biffa Waste Services Ltd. Licence issued December 1994. In Closure status. Landfill site accepting special waste.	Envirocheck report
	SU 100 818 (immediately north of grassed area and track)	Registered Landfill Sites Licence held by Barge Waste Management Ltd. Licence Ref. EAWML26001. Licence dated 10 th December 1998. Status – Site not yet started. Authorised waste includes bonded asbestos, degradable commercial and industrial waste, inert waste, scrap metal. Prohibited waste includes clinical, industrial powders, liquid wastes, poisonous, noxious, polluting wastes, sludge, waste N.O.S (not otherwise specified).	
	SU 101 819 (immediately east and along access road)	Licenced Waste Management Facility Licence held by Biffa Waste Services Ltd from 24 th December 1994. License number 642333. License in closure. Waste includes A02: Other landfill site taking special waste. Historic Landfill Licence held by MacDougalls Fuels. Ref; EAHLD13664. Licence dates: 15 th January 1990 to 30 th March 1993. First input: 1 st June 1989. Last input: 15 th January 1990. Authorised waste includes inert, industrial, commercial, household and liquid sludge.	EA electronic open data via QGIS

Location	NGR (proximity to site)	Remarks	Source of data
		Registered Landfill Sites Licence held by Barge Waste Management Ltd. Licence Ref NW/94/0065 A. Licence dated 24th August 1994. Authorised waste includes bonded cement asbestos, ceramics, dry non hazardous, commercial and industrial comprising empty clean containers, fabrics, food waste, glass, metal, paper, cardboard, packaging, plasterboard and building boards, polymeric materials, inert building/demolition materials, natural excavation materials, waste from slaughterhouses and wood.	EA electronic open data via QGIS Envirocheck report
	SU 105 822 (immediately north of access road, c. 300m northeast of grassed parcel)	Registered Landfill Sites Licence held by MacDougalls Fuels Ltd T/89/0030 Licence lapsed/cancelled/surrendered. Licence dated 1 st January 1990. Authorised waste includes clean Soil & Subsoil, uncontaminated natural excavated materials.	Envirocheck report
	SU 106 820 (c. 300m northeast of grassed parcel)	Registered Landfill Sites Licence held by Barge Waste Management Ltd. Licence Ref. NW/94/0065 B. Licence dated 17 th October 1996. Licence lapsed/cancelled/surrendered. Medium input rate (equal to or greater than 25,000 and less than 75,000 tonnes a year). No known restrictions on source of waste. Authorised waste included bonded asbestos cement, ceramics, dry non hazardous, containers, fabrics, food, glass, metal, packaging, polymeric, uncontaminated rubble/inert building/ demolition materials, uncontaminated soil/subsoil/natural excavated materials, wood. Prohibited waste included septic tank waste, sewage sludge, slaughterhouse waste and waste N.O.S.	
		Registered Landfill Sites Licence held by R J Lampard & Co Ltd. Licence Ref. NW/94/0065. Licence dated 1 st May 1989. Licence lapsed/cancelled/surrendered. Medium input rate (equal to or greater than 25,000 and less than 75,000 tonnes a year). No known restrictions on source of waste. Authorised waste included ceramics, containers, fabrics, glass, hard waste, metal, inert materials from building works, packaging, plastic, rubble, soil & subsoil, solid dry non-hazardous commercial/industrial and wood.	

- 4.2.2 The above table shows that multiple licences have been held on and adjacent to the site.
- 4.2.3 It appears that the landfill site immediately east was originally operated by MacDougalls Fuel and Barge Waste Management Ltd until the early/mid 1990s, after which Biffa Waste Management took over the landfilling sites in this area (licence first obtained in 1994).
- 4.2.4 The site is now classed as a waste management facility, with historic landfills immediately adjacent to site.

- 4.2.5 The landfilling beneath and adjacent to the site appear to have taken special waste and waste that could degrade and therefore pose a hazardous gas risk. Given the types of waste deposited, risks surrounding installation and maintenance of the proposed solar PV panels should be considered.
- 4.2.6 During the walkover and from subsequent conversations with Biffa staff, the following information has been provided with regard to the landfilling that was undertaken at this site.

Capping and Lining

- 4.2.7 The landfill is known to have both an engineered capping layer and lining comprising of clay and plastic. The exact composition/design was not provided to Lithos.

Waste type, depth and dates

- 4.2.8 The waste deposited on site was known to be domestic, but exact waste deposits was not made clear to Lithos, but it understood that no hazardous materials (asbestos etc.) were not permitted.

4.3 History of landfill legislation & regulations

- 4.3.1 Prior to 1974 legislation on waste disposal had focussed on public health with no concern for wider environmental issues related to leachate and landfill gas. There was no classification of waste and no control over what types of waste were deposited in landfill sites.
- 4.3.2 Sites were usually capped off with a layer of soil to cover the waste without consideration of controlling gas emissions or rainfall infiltration.
- 4.3.3 The Control of Pollution Act 1974 was the first major legislation to control the operation of landfill sites with an emphasis on environmental protection. It led to the creation of Waste Collection Authorities and introduced licensing for waste disposal facilities. The Act also led to the introduction of waste classification and the first controls on what type of waste landfill sites could accept.
- 4.3.4 The Act also required consideration of the wider environmental effects of waste disposal due to leachate generation.
- 4.3.5 At this time, "dilute and disperse" was still an accepted practice, and large volumes of degradable waste were often placed in unlined pits in permeable soils (the worst conditions for landfill gas and leachate generation and migration). Co-disposal of hazardous waste with other types was also an accepted practice and so some domestic refuse sites from this time contain a wide range of hazardous materials.
- 4.3.6 In 1980, the Control of Pollution (Special Waste) Regulations were implemented under the Control of Pollution Act 1974. These defined hazardous waste through toxicity criteria and concentration of chemicals or substances. They retained the need (from the Deposit of Poisonous Waste Act 1972) to pre-notify the waste regulation authorities before moving special waste to pre-determined disposal sites.
- 4.3.7 In 1989, the first edition of Waste Management Paper 27 was published by the Department of the Environment. Updated in 1991 and now superseded by the Environment Agency's guidance on the management of landfill gas (LFTGN 03, 2004), Waste Management Paper 27 provided the first guidance on managing landfill gas emissions from landfill sites.

- 4.3.8 Landfills first required waste management licences under the Waste Management Licensing Regulations which came into effect in May **1994** and were enacted under the Environmental Protection Act 1990. The Regulations introduced a new licensing system for anyone involved in waste management, including those who deposited, treated, or kept controlled waste at landfill sites.
- 4.3.9 Waste management licences became environmental permits on 6th April **2008**, under the Environmental Permitting (England and Wales) Regulations 2007. These regulations merged the previous waste management licensing and pollution prevention and control regimes into a single system. Existing waste management licences automatically became environmental permits on this date.

4.4 Hazardous gas

Methane & carbon dioxide

- 4.4.1 The site is highly likely to be affected by sources of hazardous gas generation as it is:
- Underlain and immediately surrounded by multiple known former and current landfill sites.
 - Anticipated to be underlain by significant areas of deep Made Gound (associated with landfills).
- 4.4.2 Lithos understands that all PV infrastructure (controls & switchgear) is to be housed inside a container within the site compound, therefore formal foundations should not be necessary. As the ground will not be penetrated, gas monitoring will not be required.
- 4.4.3 In addition to the above, the proposed development comprises solar PV panels (an open air structure) and consequently, monitoring is not required.

Radon

- 4.4.4 Requirements with respect to radon measures are set out in Building Regulations Approved Document C. Probability bandings (based on the proportion of properties in a given area that exceed the Action Level; currently 200 Bq.m⁻³) are used to determine whether a property requires no, basic or full measures.
- 4.4.5 At present Approved Document C advocates basic measures for the probability banding 3% to 10% (full measures if >10%). However, the UK Health Security Agency (HSA) would like to see all new build include basic measures.
- 4.4.6 In December 2022, the British Geological Survey (BGS), deployed a revised dataset which increased accuracy and also the number of properties falling within radon affected areas. This revised dataset is now referenced by maps on the HSA website.
- 4.4.7 Information from the HSA website indicates that the site lies in an area where **less than 1%** of homes are estimated to be above the action level.
- 4.4.8 As such, **no** special precautions against radon are required on this site.

5 PRELIMINARY CONCEPTUAL SITE MODEL

5.1 Potential contaminants

- 5.1.1 An assessment of potential contaminants associated with the former uses has been undertaken with reference to CLR8 and the following DETR Industry Profiles: Waste recycling, treatment and disposal sites: *landfills and other waste treatment or waste disposal sites*. As a consequence of this assessment, anticipated potential contaminants, within the landfill mass and/or groundwater include:
- Inorganics (metals, semi-metals, non-metals, asbestos associated with the waste mass) associated with made ground).
 - TPH & PAH (associated with the waste mass).
 - VOCs/SVOCs (associated with the waste mass).
 - Dioxins & PCBs (associated with any furnace ash/fly ash tipped).
 - Landfill gas (methane, carbon dioxide, vapours).
- 5.1.2 Historical plans and environmental data show the site has been landfilled, in addition to surrounding land also being landfilled. Consequently, deep made ground is anticipated across the site.
- 5.1.3 The landfill capping layer is expected to be largely uncontaminated.
- 5.1.4 A preliminary conceptual site model, presented as Drawing 5279/5 in Appendix B, has been prepared after consideration of all the data presented in Sections 2 to 4 inclusive of this report.
- 5.1.5 Potential contaminant linkages are shown on the preliminary conceptual site model.
- 5.1.6 In the context of the proposed redevelopment, the most significant potential contaminant **pathways** include:
- Ingestion
 - Dermal contact
 - Inhalation of contaminated particulates
 - Surface water run-off, including existing drainage infrastructure
 - Downward infiltration of leachable/mobile contaminants to groundwater
- 5.1.7 The most significant potential contaminant **receptors** include:
- The environment - adjacent watercourse (former canal and drains)
 - End users of the site (site workers and visitors)
- 5.1.8 Clearly, the conceptual model will be subject to modification in light of data arising from the proposed intrusive ground investigation.

5.2 Anticipated ground conditions & potential issues

- 5.2.1 Based on the data reviewed in Section 4 (Environmental Setting), anticipated ground conditions are expected to comprise:

Anticipated condition	Remarks
Made ground	The surface soils are expected to be made up of a formal engineered capping layer (concrete and tarmac cobbles were noted at surface), beneath which are deep made ground associated with former landfilling (comprised of multiple waste types).
Natural soils	Possible natural ground (weathered Kimmeridge Clay) around the perimeter of site.
Bedrock	Kimmeridge Clay at surface outside areas of landfilling/directly beneath landfill.

Anticipated condition	Remarks
Groundwater	Perched water and leachate likely within the made ground. Leachate extraction is active across the landfill.

5.2.2 Based on the data above and that in Sections 2 (Site Description) and 3 (History), potential ground-related issues associated with this site are likely to include:

Type of issue	Specific issue	Remarks
Potential on-site contamination sources	- Made ground associated with the waste mass (metals, inorganics, organics, asbestos, dioxins). - Ground gases (CH₄, CO₂, H₂S, vapours) and leachate. - Raw material storage (oil tanks, leachate tanks).	- Unknown contents likely to be variable. Licence accepted special waste (asbestos) and other contaminative waste (liquid sludge, animal waste etc). - Associated with the on-site landfill. - Associated with the gas and leachate processing areas. Spillage/leakage.
Potential off-site contamination sources	Landfill.	Adjacent landfills likely producing hazardous gas and leachate.
Potential geotechnical hazards	- Relict buried obstructions. - Deep made ground (landfill). - Steep slopes. - Soft ground.	- Possible oversize material (cobbles/boulders) within the capping and landfill waste. - Depth to base of landfill unknown, likely >15m deep. - Possible buried highwalls associated with former landfilling operations. Area of landfill is domed and the grassed area of the site slopes south at c. 1v:13h. - Deep made ground (landfill) of variable composition, and possible alluvium in the far south.
Other potential constraints	- Underground utilities (including gas and leachate control system). - Un-named drain and disused canal.	- Will require easement/diversion. - Will require ongoing maintenance.

6 LAND CONTAMINATION – PART IIA & PLANNING

6.1 Local Authorities have responsibilities with respect to land contamination in the context both of Part IIA of the Environmental Protection Act 1990, and Planning.

6.2 The contaminated land regime in Part IIA was introduced specifically to address the historical legacy of land contamination. It applies where there is unacceptable risk, assessed on the basis of the **current** use and the relevant circumstances of the land. It is not directed to assessing risks in relation to a future use of the land that would require a specific grant of planning permission. This is primarily a task for the planning system, which aims to control development and land use in the **future**.

Planning

6.3 The National Planning Policy Framework (NPPF), supported by web-based planning practice guidance, includes the following with respect to contamination and site investigation:

“Where a site is affected by contamination or land stability issues, responsibility for securing safe development rests with the developer and/or landowner”.

6.4 Planning policies and decisions should ensure that:

- The site is suitable for its new use taking account of ground conditions and land instability, including from natural hazards or former activities such as mining, pollution

arising from previous uses, and any proposals for mitigation including land remediation or impacts on the natural environment arising from that remediation

- After remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the environmental protection act 1990
- Adequate site investigation information, prepared by a competent person, is presented'

6.5 Annex 2 of the NPPF states that 'all investigations of land potentially affected by contamination should be carried out in accordance with established procedures (such as BS10175²)'.

This site

6.6 The underlying bedrock is classified as an unproductive aquifer. The nearest surface watercourse is a drainage ditch c. 20m east and the disused Wiltshire and Berkshire Canal from c. 20m south (now managed by the Canal Trust to encourage wildlife). Therefore, the site's environmental setting is considered to be of moderate sensitivity.

6.7 Whilst current use of the site is considered unlikely to have given rise to any significant ground and groundwater contamination, former landfilling operations may well have.

6.8 It is considered that the site should be suitable for the proposed use subject to implementation of appropriate preparatory works.

7 GROUND INVESTIGATION DESIGN

7.1 Ground investigation design & strategy

7.1.1 The preliminary conceptual site model has been used as a basis for design of an appropriate ground investigation, the scope of which is summarised below.

Exploratory holes	Purpose
Plate load tests c. 20 no.	To determine CBR and Modulus of Subgrade Reaction along access routes and haul roads, and also in the areas of the solar PV panels and control building if a non-penetrative approach is required.
Hand pits c. 20 no.	To recover shallow depth samples for appropriate chemical analysis.

7.1.2 Proposed exploratory hole locations should be selected to provide a representative view of the strata beneath the site. A nominal 50m grid spacing should be appropriate, with additional exploratory locations scheduled as necessary in light of the ground conditions actually encountered.

7.1.3 The investigation should be undertaken in general accordance with:

- BS5930:2015 "Code of practice for site investigation"
- BS10175:2017 "Code of practice for the investigation of potentially contaminated sites"
- "Technical Aspects of Site Investigation" – EA R&D Technical Report P5-065/TR (2000)
- "Development of appropriate soil sampling strategies for land contamination" – EA R&D Technical Report P5-066/TR (2001)

7.1.4 Prior to undertaking the ground investigation, the nature and thickness of the landfill capping system will need to be confirmed.

² BS10175 (2011) - Code of practice for the investigation of potentially contaminated sites

- 7.1.5 **Plate load testing** (PLT) could be implemented (cf. window sample boreholes) to provide CBR/stiffness values to enable design of the proposed solar and control building foundations. In addition, PLTs could be employed beneath haul roads and areas of hardstanding subject to proposed finishes and usage.
- 7.1.6 Routine **geotechnical soils analysis** (moisture content, Atterberg limits, pH, water soluble sulphate) should be scheduled on about 15 samples shallow depth samples of the capping layer recovered from hand pits.
- 7.1.7 Appropriate **chemical analyses** based on the findings of this Report should be allowed for. About 20 shallow depth soils samples collected from the hand pits should be analysed for a suite comprising heavy metals, asbestos ID, speciated PAH and banded TPH (with supplementary speciation as/where appropriate).
- 7.1.8 Lithos understands that all PV infrastructure is to be housed inside a container within the site compound, therefore formal foundations should not be necessary. As the ground will not be penetrated, gas monitoring will not be required.
- 7.1.9 Gas monitoring is not required in the area of the proposed solar PV panels as these are open air structures.
- 7.1.10 On completion of the fieldwork and laboratory testing a comprehensive bound, factual and interpretative report should be issued. This should contain detailed engineering records, laboratory test results, copies of all relevant correspondence and drawings of the site. The report should also include qualitative risk assessment with respect to both controlled waters and human health.

8 CONCLUSIONS & RECOMMENDATIONS

8.1 General

- 8.1.1 The site comprises c. 6.2 hectares of land located at Studley Grange Landfill site, c. 5.5km southwest of Swindon town centre. The site was formerly occupied by a landfill/waste management facility but has now been capped and is occupied by grassland used for grazing sheep.
- 8.1.2 It is understood that Biffa are considering redevelopment of the site with a solar PV panel arrays with an associated control building, switchgear and transformers within the existing processing area to the north.
- 8.1.3 The main issues considered in this report, and in particular in Sections 3 & 4 are based on a review of historical maps and available geological/environmental data. This report provides an assessment of geoenvironmental issues and implications associated with the proposed redevelopment of the site, together with any implications for current use of the site.

8.2 Mining and quarrying

- 8.2.1 This site is located beyond the Mining Remediation Authority's defined coalfields. Consequently, no significant risks have been identified and an intrusive mining investigation is not required.

8.3 Foundations

- 8.3.1 At present, no geotechnical ground investigation data is available and consequently it is only possible to estimate the ground conditions. Before firm foundation recommendations can be given, it will be necessary to undertake an appropriate ground investigation. However, tentative recommendations are provided below.

- 8.3.2 Lithos understands that all PV infrastructure (controls & switchgear) is to be housed inside a container within the site compound, therefore formal foundations should not be necessary.
- 8.3.3 At this stage, using mapped landfill boundaries, all of the solar PV panels will be founded within the former landfill/waste management facility (grassed area). It is understood that the capping layer cannot be pierced, therefore, the solar PV panels will be placed on concrete mounting bases at or close to the ground surface.
- 8.3.4 Calculations for the size of the concrete mounting bases will need to take into account the load of the PV panels, wind loading and underlying CBR/ground stiffness.

8.4 Hazardous gas

- 8.4.1 The site is in an area where less than 1% of homes are estimated to be above the radon action level.
- 8.4.2 The site is considered highly likely to be affected by hazardous gas. However, given the likely presence of an engineered capping layer and proposed redevelopment with solar PV panels (an open air structure) and all control gear to be housed in a container, the capping layer will not be penetrated, therefore, gas monitoring will **not** be required.

8.5 Highways and external works

- 8.5.1 No formal highways are proposed on the site, with the adoption of existing tracks proposed. It is assumed that the existing access road/track will remain in place for the development.
- 8.5.2 It is likely that CBR values will vary across the site, particularly within any Made Ground/landfilled material. Therefore, if a more formal road is proposed, CBR values will need to be determined prior to or during construction.

8.6 Drainage

- 8.6.1 Given anticipated ground conditions (landfill), soakaways will not provide a viable solution for the disposal of surface water. It should be noted that soakaways cannot be allowed to infiltrate into made ground due to the risk of settlement caused by washout of fine soil particles.
- 8.6.2 It is assumed the drainage ditches around the landfill site will be retained.

8.7 Contamination

- 8.7.1 The site's environmental setting is considered to be of moderate sensitivity.
- 8.7.2 Based on observations made during the site walkover, and given site's former use as a waste management facility/landfill, deep made ground of a highly variable nature is anticipated across the majority of the site, and it is considered likely that some (possibly significant) ground contamination will be present in shallow soils beneath the engineered capping system, which is expected to be present.

8.8 Potential development constraints

- 8.8.1 The on-site gas and leachate control system will remain in place and may require maintenance throughout the lifespan of the solar PV panel farm. This will need to be considered when designing the layout, especially where any wells/boreholes are within a proposed solar array.
- 8.8.2 Furthermore, ground investigation and installation of the solar PV panels will need to take account of the pipework associated with the control systems (i.e. manifolds) to avoid damaging the pipe network.

8.9 Further investigation

- 8.9.1 Whilst the site is considered suitable for its current and proposed use, the proposed change in use will require some intrusive investigation.
- 8.9.2 This would include:
- Plate load testing (PLT) to provide CBR/stiffness values. In addition, PLTs could be employed beneath haul roads and areas of hardstanding subject to proposed finishes and usage.
 - Geotechnical soils analysis.
 - Chemical testing on shallow soil.
- 8.9.3 An appropriate ground investigation strategy is presented in Section 7.

Appendix A

General Notes

General

Third party information obtained from the British Geological Survey (BGS), the Coal Authority, the Local Authority etc is presented in the "Search Responses" Appendix of this Geoenvironmental Report.

Geology, mining & quarrying

In order to establish the geological setting of a site, Lithos refer to BGS maps for the area, and the relevant geological memoir. Further information is sourced by reference to current and historical OS plans.

In July 2011, the Coal Authority (CA) formalised their requirements in relation to planning applications and introduced some new terminology. The CA, using its extensive records has prepared plans for all coalfield Local Planning Authorities, which effectively refines the defined coalfield areas into High Risk and Low Risk areas. **High Risk** areas are likely to be affected by a range of legacy issues that pose a risk to surface stability, including: mine entries; shallow coal workings; workable coal seam outcrops; mines gas; and previous surface mining sites. **Low Risk** areas comprise the remainder of the defined coalfield, and are areas where no known defined risks have been recorded; although there may still be unrecorded issues. Where a site lies within either a High or Low Risk area, a mining report is obtained from the CA.

Landfills

Reference is made to publicly available Government held digital data via **QGIS** (an Open Source Geographic Information System), data from Landmark or Groundsure, and sometimes the Environment Agency and the Local Authority with respect to known areas of landfilling within 250m of the proposed development site.

Historical OS plans are also inspected for evidence of backfilled quarries, railway cuttings, colliery spoil tips etc.

Radon

Radon is a colourless, odourless gas, which is radioactive. It is formed in strata that contain uranium and radium (most notably granite), and can move through fissures eventually discharging to atmosphere, or the spaces under and within buildings. Where radon occurs in high concentrations, it can pose a risk to health.

In order to assess potential risks associated with radon gas, Lithos refer to BRE Report BR211¹, and the UK Health Protection Agency (HPA) website. In December 2022, the British Geological Survey (BGS), deployed a revised dataset which increased accuracy and also the number of properties falling within radon affected areas. This revised dataset is now referenced by maps on the HSA website.

Advice on the limitation of exposure of the population to radon in buildings was originally published in 1990 by the National Radiological Protection Board (NRPB), which joined the HPA in 2005; the HPA updated NRPB advice in July 2010².

The HPA recommended that the NRPB radon Action Level for homes be retained, and a new Target Level for radon in homes be introduced. The values of the Action Level and Target Level, expressed as the annual average radon concentration in the home, are 200 Bqm⁻³ and 100 Bqm⁻³ respectively. The Target Level was to provide an objective for remedial action in existing homes and preventive action in new homes.

The term 'radon Affected Area' is defined as those parts of the country with >1% of homes estimated to be above the Action Levels. The level of protection needed is site-specific and can be determined by reference to this mapping on the Public Health England website, which indicates the highest radon potential within each 1km grid square. Each 1km grid square is classified on the basis of the percentage of existing homes within that grid square estimated to have radon concentrations above the Action Level. There are 6 'bands': <1%; 1 to 3%; 3 to 5%; 5 to 10%; 10 to 30%; and >30%.

The NRPB advised that action should be taken to reduce radon concentrations in existing homes if the radon concentration exceeded the Action Level of 200 Bqm⁻³ in room air averaged over a year; ten times the average UK domestic radon concentration. NRPB advice informed changes in the requirements for radon protection in new buildings.

- **Basic** preventive measures are required in new buildings, extensions, conversions and refurbishments if the probability of exceeding the Action Level is **>3%** in England and Wales, and >1% in Scotland and Northern Ireland.
- Provision for further preventive (**Full**) measures is required in new buildings if the probability of exceeding the Action Level is **>10%**.

At present Building Regulations Approved Document C advocates basic measures for the probability banding 3% to 10%, and full measures if >10%. However, HPA would like to see all new build include basic measures.

Action & Target Levels should also be applied to non-domestic buildings with public occupancy exceeding 2,000 hrs/yr and to all schools.

Hydrogeology

Reference is made to publicly available Government held digital data via QGIS, and Landmark or Groundsure with respect to:

- Groundwater quality
- Recorded pollution incidents
- Licensed groundwater abstractions

From April 2010 the EA's Groundwater Protection Policy uses aquifer designations that are consistent with the Water Framework Directive. These designations reflect the importance of aquifers in terms of groundwater as a resource (drinking water supply), but also their role in supporting surface water flows and wetland ecosystems. The aquifer designation data is based on geological mapping provided by the British Geological Survey. The maps are split into two different types of aquifer designation:

- Superficial (Drift) - permeable unconsolidated (loose) deposits. For example, sands and gravels
- Bedrock - solid permeable formations e.g. sandstone, chalk and limestone

The maps display the following aquifer designations:

Principal aquifers: These are layers of rock or superficial deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as major aquifer.

Secondary aquifers: These include a wide range of rock layers or superficial deposits with an equally wide range of water permeability and storage. Secondary aquifers are subdivided into three types:

- **Secondary A** - permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
- **Secondary B** - predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers
- Secondary undifferentiated - In most cases, this is because the rock type in question has previously been designated as both a minor and non-aquifer in different locations due to the variable characteristics.

¹ BRE Report BR211, 2023: "Radon: guidance on protective measures for new buildings (including supplementary advice for extensions, conversions and refurbishment projects)".

² Limitation of Human Exposure to Radon, Documents of the Health Protection Agency - Radiation, Chemical and Environmental Hazards, RCE-15. July 2010.

Unproductive strata: These are rock layers or superficial deposits with low permeability that have negligible significance for water supply or river base flow.

The EA maps only display the principal and secondary aquifers as coloured areas. All uncoloured areas on the map will be unproductive strata. However, for uncoloured areas on the superficial (drift) designation map it is not possible to distinguish between areas of unproductive strata and areas where no superficial deposits are present; to do this, it is necessary to consult the published geological survey maps.

For the purposes of the EA's Groundwater Protection Policy the following default position applies, unless there is site specific information to the contrary:

- If no superficial (drift) aquifers are shown, the bedrock designation is adopted
- In areas where the bedrock designation shows unproductive strata (the uncoloured areas) the superficial designation is adopted
- In all other areas, the more sensitive of the two designations is used (e.g. If secondary superficial overlies principal bedrock, an overall designation of principal is assumed)

The EA have also designated groundwater Source Protection Zones, which are based on proximity to a groundwater source (springs, wells and abstraction boreholes). The size of a Source Protection Zone is a function of the aquifer, volume of groundwater abstracted and the effective rainfall, and may vary from tens to several thousand hectares.

Hydrology

Reference is made to publicly available Government held digital data via QGIS, and Landmark or Groundsure with respect to:

- Surface water quality
- Recorded pollution incidents
- Licensed abstractions (groundwater & surface waters)
- Licensed discharge consents
- Site susceptibility to flooding

The EA have set **water quality** targets for all rivers. These targets are known as River Quality Objectives (RQOs). The water quality classification scheme used to set RQO planning targets is known as the River Ecosystem scheme. The scheme comprises five classes (RE1 to RE5) which reflect the chemical quality requirements of communities of plants and animals occurring in our rivers.

General Quality Assessment (GQA) grades reflect actual water quality. They are based on the most recent analytical testing undertaken by the EA. There are 6 GQA grades (denoted A to F) defined by the concentrations of biochemical oxygen demand, total ammonia and dissolved oxygen.

The susceptibility of a site to **flooding** is assessed by reference to a Flood Map on the Environment Agency's website. These maps show natural floodplains - areas potentially at risk of flooding if a river rises above its banks, or high tides and stormy seas cause flooding in coastal areas. There are two different kinds of area shown on the Flood Map:

1. Dark blue areas (Flood Zone 3) could be flooded by the sea by a flood that has a 0.5% (1 in 200) or greater chance of happening each year, or by a river by a flood that has a 1% (1 in 100) or greater chance of happening each year
2. Light blue areas (Flood Zone 2) show the additional extent of an extreme flood from rivers or the sea. These outlying areas are likely to be affected by a major flood, with up to a 0.1% (1 in 1000) chance of occurring each year

These two colours show the extent of the natural floodplain if there were no flood defences or certain other manmade structures and channel improvements. Where there is no blue shading (Flood Zone 1), there is less than a 0.1% (1 in 1000) chance of flooding occurring each year.

The maps also show all flood defences built in the last five years to protect against river floods with a 1% (1 in 100) chance of happening each year, or floods from the sea with a 0.5% (1 in 200) chance of happening each year, together with some, but not all, older defences and defences which protect against smaller floods.

The Agency's assessment of the likelihood of flooding from rivers and the sea at any location is based on the presence and effect of all flood defences, predicted flood levels, and ground levels.

It should also be noted that as the floodplain shown is the 1 in 100 year, areas outside this may be flooded by more extreme floods (e.g. the 1 in 1000 year flood). Also, parts of the areas shown at risk of flooding will be flooded by lesser floods (e.g. the 1 in 5 year flood). In some places due to the shape of the river valley, the smaller floods will flood a very similar extent to larger floods but to a lesser depth.

If a site falls within a floodplain, it is recommended that a flood survey be undertaken by a specialist who can advise on appropriate mitigating measures; i.e. raising slab levels, provision of storage etc. In accordance with Chapter 10 of the National Planning Policy Framework, a site-specific flood risk assessment is required for: proposals of 1 hectare or greater in Flood Zone 1, or in an area within Flood Zone 1 which has critical drainage problems (as notified to the local planning authority by the Environment Agency); and any new development in Flood Zones 2 and 3.

COMAH & explosive sites

Lithos obtain information from Landmark or Groundsure with respect to Control of Major Accident Hazards (COMAH) or explosive sites within 1km of the proposed development site. Lithos' report refers to any that are present, and recommends that the Client seeks further advice from the HSE.

Areas around COMAH sites (chemical plants etc) are zoned with respect to the implementation of emergency plans. The HSE are a statutory consultee to the local planning authority for all COMAH sites. The COMAH site may have to revise its emergency action plan if development occurs. This might be quite straightforward or could entail significant expenditure. Consequently, the COMAH site may object to a proposed development (although it is the Local Authority who have final say, and they are likely to place more weight on advice from the HSE).

Preliminary conceptual site model

The site's environmental setting (and proposed end use) is used by Lithos to assess the significance of any contamination encountered during the subsequent ground investigation.

Assessment of contaminated land is based on an evaluation of pollutant linkages (source-pathway-receptor). Contaminants within the near surface strata represent a potential source of pollution. The environment (most notably groundwater), site workers and end users are potential receptors.

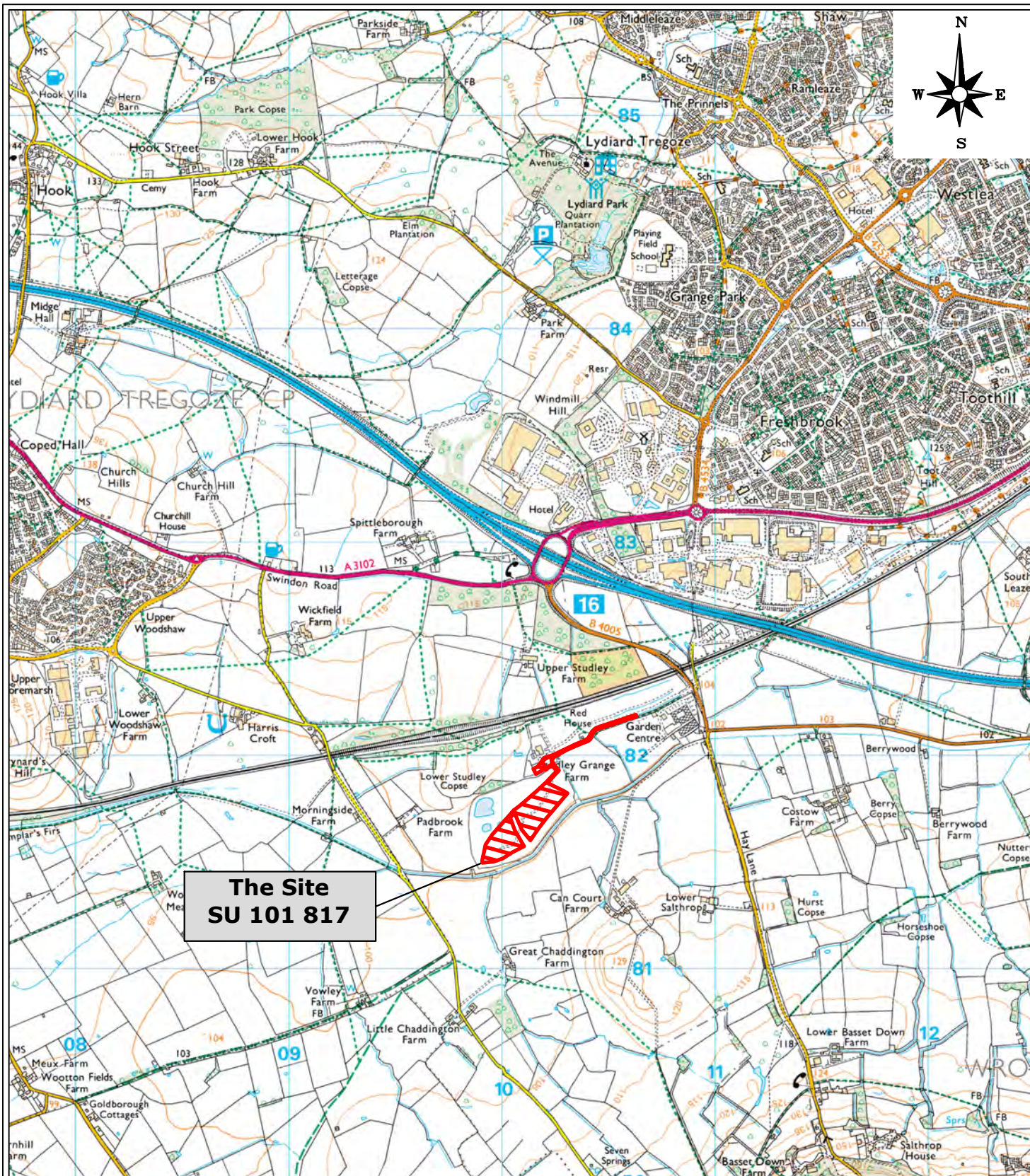
Potential pollutant linkages are shown on a preliminary conceptual site model (pCSM). A CSM is essentially a cross-section through a site that reflects both the surface topography and underlying geology, and shows surface features of interest. The most significant sources of contamination are then superimposed onto this cross-section together with potential receptors (human health & controlled waters), and plausible pathways between the two. In addition to environmental issues, the CSM should also highlight geotechnical issues.

A pCSM is prepared after consideration of all available "desk study" data, and before design of the ground investigation. Data reviewed should include historical plans (with superimposition on a current-day plan), previous SI reports, geological maps etc. The pCSM, in conjunction with knowledge of site constraints (buildings, services, slopes etc) is used to design the ground investigation.

The revised CSM takes account of data obtained during the ground investigation, including the distribution of made ground, the nature and distribution of contamination etc.

Appendix B

Drawings



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CLIENT

HEATON
PLANNING

JOB TITLE

STUDLEY
GRANGE
LANDFILL,
WILTSHIRE

DRAWING TITLE

SITE LOCATION
PLAN

DRAWN

DP

DATE

18 08 2025

CHECKED

AG

DATE

18 08 2025

STATUS

FOR COMMENT ☐

DRAFT ☐

FOR APPROVAL ☐

FINAL ☒

SCALE

1:25,000

SHEET

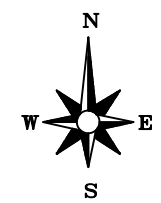
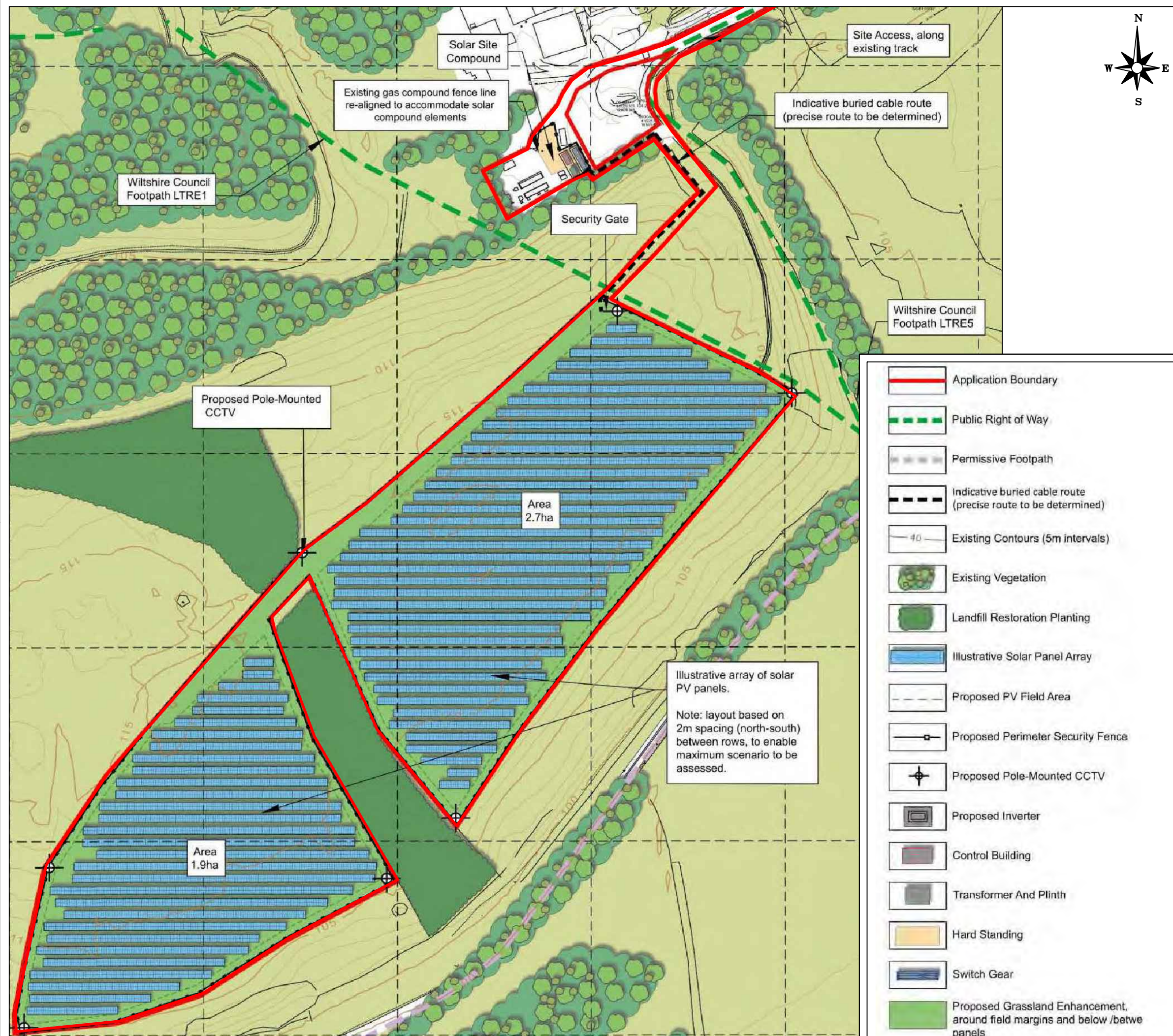
A4

DRAWING NO.

5279/1

REVISION

A



NOTES

— APPROXIMATE SITE BOUNDARY

REPRODUCED FROM BIFFA DRAWING
REFERENCE HEA064-003, DATED 12/03/26

REV.	DESCRIPTION	DATE
A	UPDATED SITE AREA	24/03/2026



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CLIENT

HEATON
PLANNING

JOB TITLE

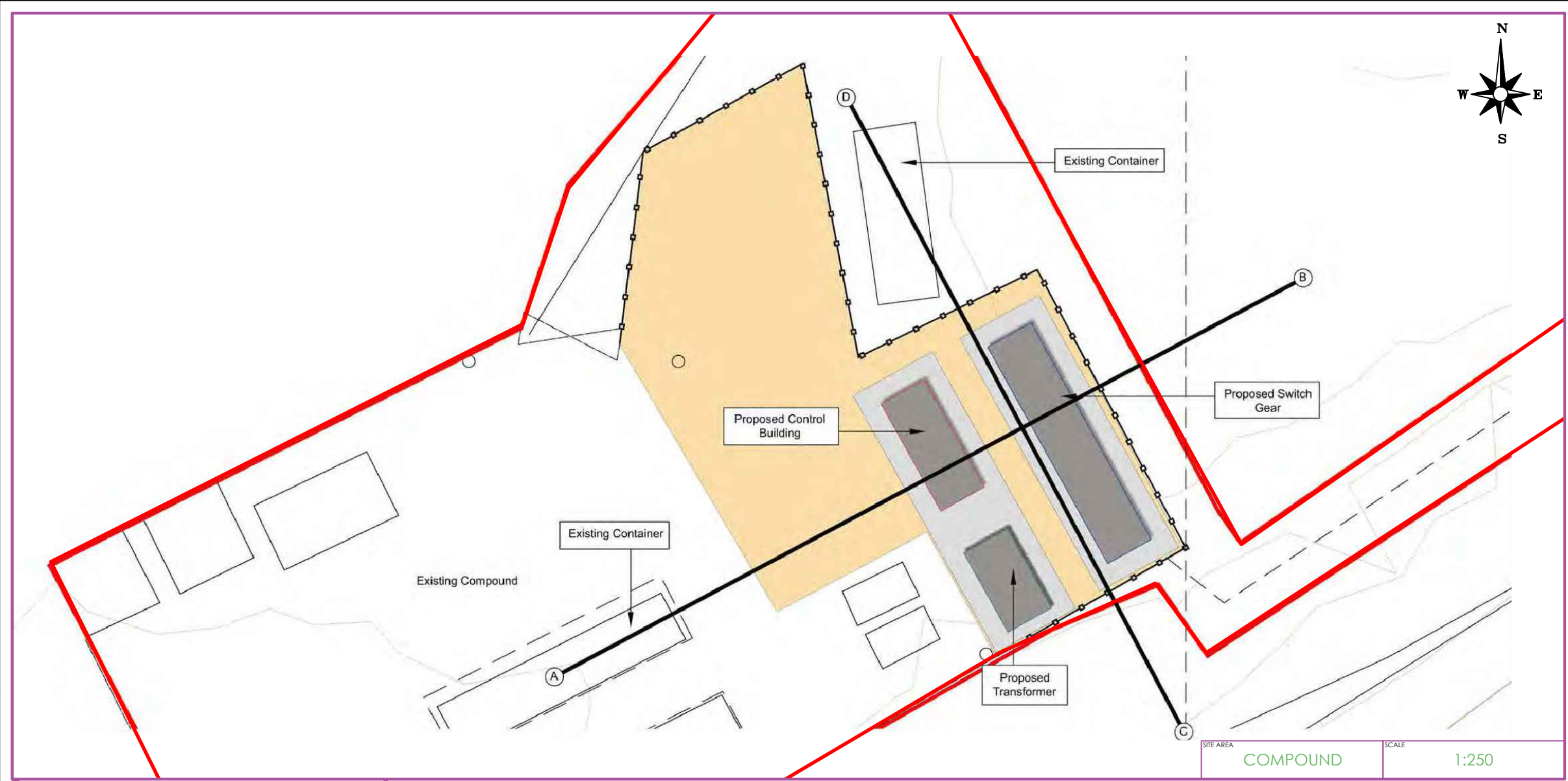
STUDLEY
GRANGE
LANDFILL,
WILTSHIRE

DRAWING TITLE

PROPOSED SITE LAYOUT

DRAWN	DP	DATE	18 08 2025	STATUS	FOR COMMENT ☐
CHECKED	AG	DATE	18 08 2025		FOR APPROVAL ☐
					DRAFT ☐
					FINAL ☒

SCALE	1:2,000	SHEET	A3	DRAWING NO.	5279/2	REVISION	A
-------	---------	-------	----	-------------	--------	----------	---



NOTES

— APPROXIMATE SITE BOUNDARY

REPRODUCED FROM BIFFA DRAWING
REFERENCE HEA064-005, DATED 12/03/26

REV.	DESCRIPTION	DATE



info@lithos.co.uk
www.lithos.co.uk
Tel 01937 545330

CLIENT

HEATON
PLANNING

JOB TITLE

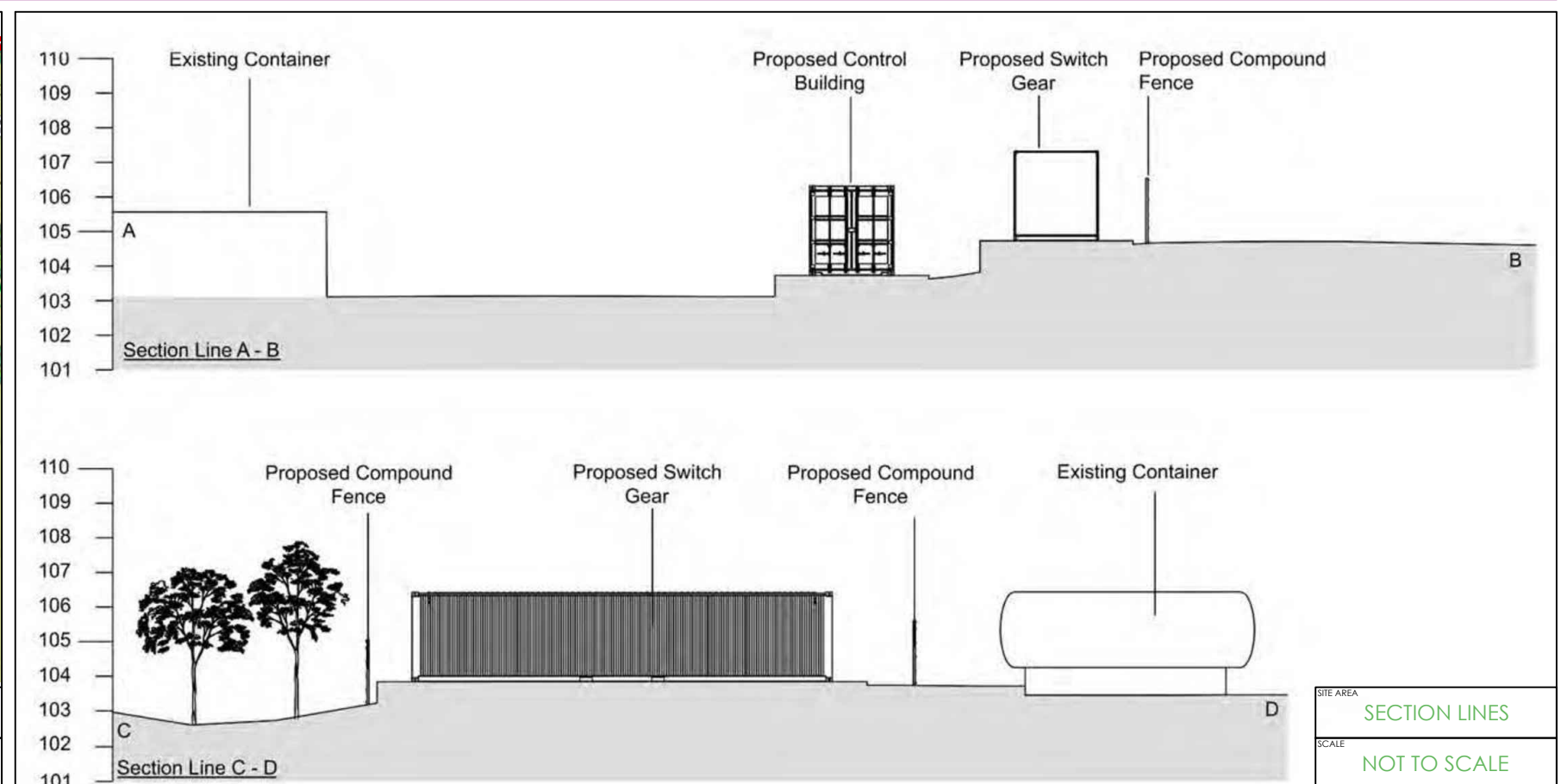
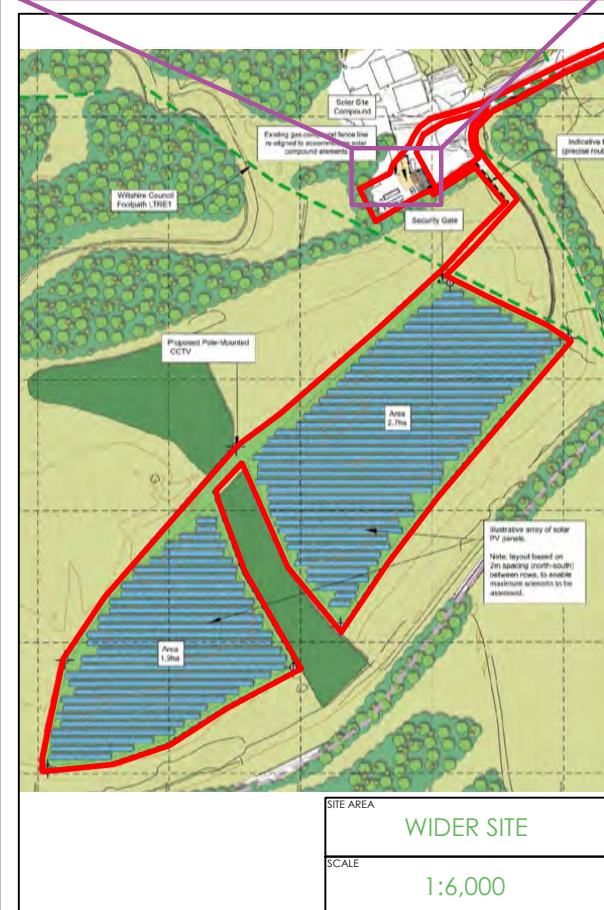
STUDLEY
GRANGE
LANDFILL,
WILTSHIRE

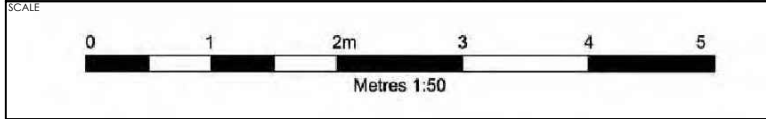
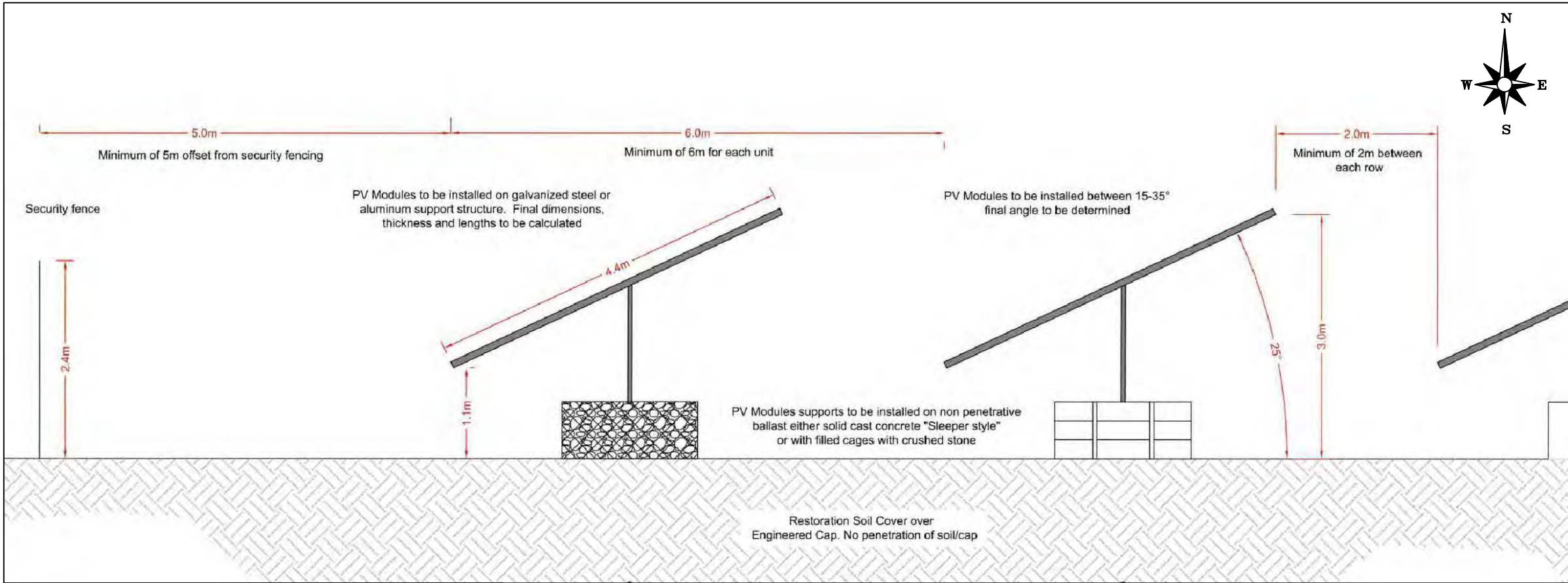
DRAWING TITLE

PROPOSED COMPOUND LAYOUT

DRAWN	DP	DATE	24 03 2026	STATUS	FOR COMMENT ☐
CHECKED	AG	DATE	24 03 2026	FOR APPROVAL	☐
				DRAFT	☐
				FINAL	☒

SCALE	VARIES	SHEET	A3	DRAWING NO.	5279/2A	REVISION	
-------	--------	-------	----	-------------	---------	----------	--



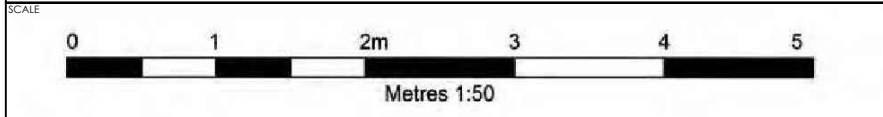
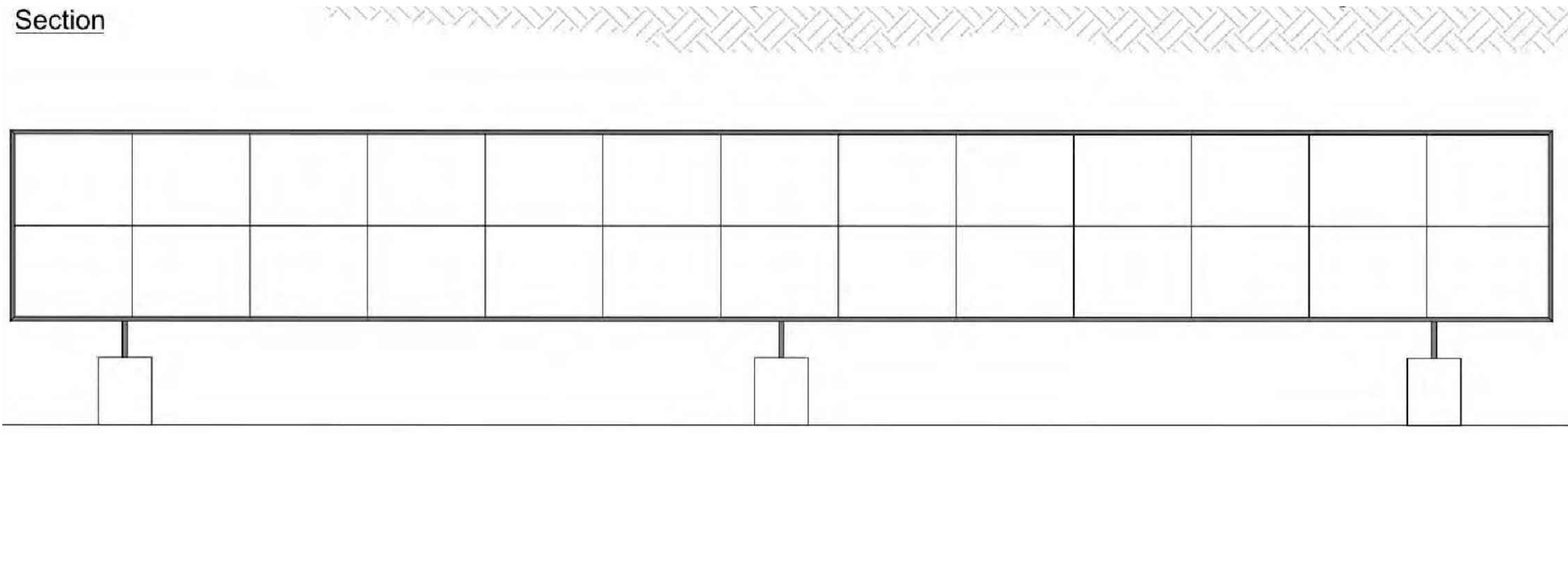


NOTES		
— APPROXIMATE SITE BOUNDARY		
REPRODUCED FROM BIFFA DRAWING REFERENCE HEA064-003, DATED 12/03/26		
REV.	DESCRIPTION	DATE

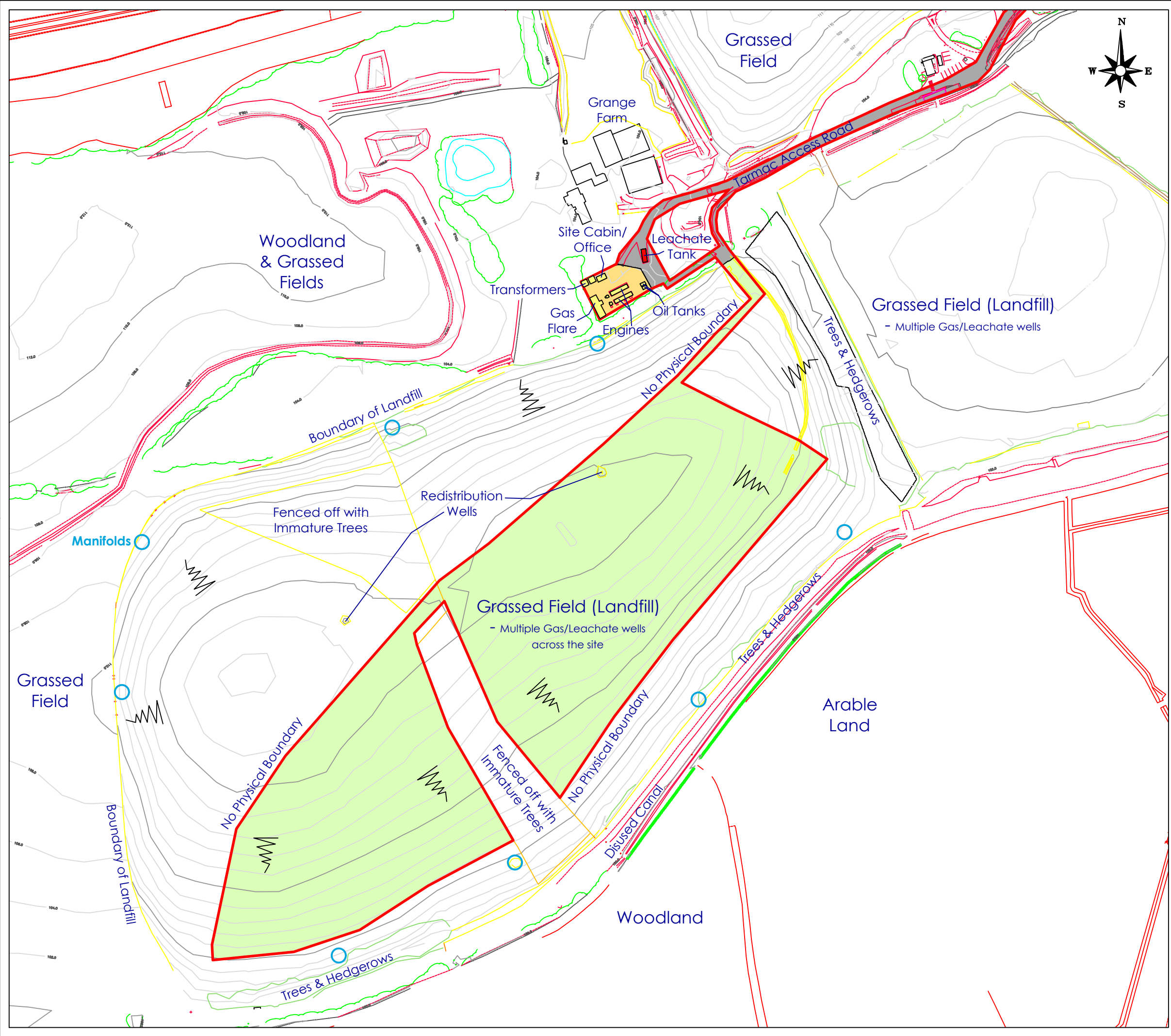


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Tel 01937 545330

Section



CLIENT		
HEATON PLANNING		
JOB TITLE		
STUDLEY GRANGE LANDFILL, WILTSHIRE		
DRAWING TITLE		
INDICATIVE SOLAR PANEL DETAIL		
DRAWN	DATE	STATUS
DP	24 03 2026	FOR COMMENT ☐
CHECKED	DATE	FOR APPROVAL ☐
AG	24 03 2026	DRAFT ☐
		FINAL ☒
SCALE	SHEET	DRAWING NO.
VARIES	A3	5279/ 2B
		REVISION
		A



NOTES

- GRASS & OVERGROWN AREAS
- BUILDING
- GRAVEL OR HARDCORE SURFACING
- TARMAC HARDSTAND
- LEACHATE STORAGE TANK
- APPROXIMATE MANIFOLD LOCATION
- APPROXIMATE SITE BOUNDARY

REV.	DESCRIPTION	DATE
A	UPDATED SITE AREA	09/03/2026



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HEATON PLANNING

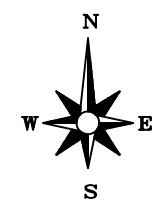
JOB TITLE

STUDLEY GRANGE LANDFILL, WILTSHIRE

DRAWING TITLE

SITE FEATURES

DRAWN		DATE		STATUS			
DP		18 08 2025		FOR COMMENT ☐			
CHECKED		DATE		FOR APPROVAL ☐			
AG		18 08 2025		DRAFT ☐			
				FINAL ☒			
SCALE		SHEET		DRAWING NO.		REVISION	
1:2,500		A3		5279/3		A	



NOTES		
	GRASS & OVERGROWN AREAS	
	BUILDING	
	GRAVEL OR HARDCORE SURFACING	
	TARMAC HARDSTAND	
	LEACHATE STORAGE TANK	
	APPROXIMATE MANIFOLD LOCATION	
	APPROXIMATE SITE BOUNDARY	
	LOCATION & ORIENTATION OF PHOTOGRAPH	
A	UPDATED SITE AREA & PHOTOS	09/03/2026
REV.	DESCRIPTION	DATE



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www.lithos.co.uk
Tel 01937 545330

CLIENT		
HEATON PLANNING		
JOB TITLE		
STUDLEY GRANGE LANDFILL, WILTSHIRE		
DRAWING TITLE		
SITE PHOTOGRAPHS		
DRAWN	DATE	STATUS
DP	27 08 2025	FOR COMMENT ☐
CHECKED	DATE	FOR APPROVAL ☐
AG	27 08 2025	DRAFT ☐
		FINAL ☒
SCALE	SHEET	DRAWING NO.
NOT TO SCALE	A3	5279/4
		REVISION
		A

Appendix C

Commission

From: [Dan Platford](#)
To: [Dan Platford](#)
Date: 11 March 2026 11:09:10
Attachments: [image002.jpg](#)
[image003.png](#)
[image004.png](#)

From: Adam Gombocz
Sent: 29 January 2026 12:29
To: 'Gemma Newall' <[REDACTED]>
Cc: Will Newton <[REDACTED]>; Clive Saul <[REDACTED]>
Subject: RE: Studley Grange site amendments - further fee proposal and indication of timeframe request

Morning Gemma,

I have taken a look at the costs for this.

We will need undertake a fresh walkover (bear in mind the site is c. 220miles from our office), update all our drawings and the report, however, given the new location is the adjacent field, we do not need to order fresh environmental searches (Landmark etc).

The costs associated with the above is £****+VAT, which will be done in accordance with our standard T+Cs, which are attached.

The timeframe to prepare the new report and undertake the fresh walkover is c. 3 weeks from instruction.

Kind regards,

Adam Gombocz
Director
Lithos Consulting Ltd

www.lithos.co.uk

Parkhill
Walton Road
Wetherby, LS22 5DZ



M [REDACTED]
DD [REDACTED]



From: Gemma Newall <[REDACTED]>
Sent: 26 January 2026 16:26
To: Adam Gombocz <[REDACTED]>
Cc: Will Newton <[REDACTED]>; Clive Saul <[REDACTED]>
Subject: Studley Grange site amendments - further fee proposal and indication of timeframe request
Importance: High

Hi Adam / Will,

I haven't received the updated Studley Grange report back but as a side note / request, the client has also asked if we could consider moving the site to the field to the west as the Biffa team have looked into the potential use of closed landfill sites for BNG habitat banks and have Studley (where the solar farm is proposed).

Please outline any further costs (site visits / data information purchase etc) and timeframes required to update your report to relocate the solar array to the main landfill area to the west of the Studley Phase 1 land (see attached draft red line site area image).

We appreciate that this is quite late in the day, but would you be able to let me have this information by CoB Wednesday in order for me to put together further fees to the client by the end of the week?

Any issues / further queries, please do not hesitate to get in touch.

Kind regards

Gemma Newall

M: [REDACTED]

E: [REDACTED]

Please note that my working days are Mon-Thurs

Heatons
The Arc, 6 Mallard Way
Pride Park

Purchase Order



Purchase Order No **PO-000470**
Job No. BIF-028B-EN
Date 24 February 2026

Heatons
The Arc
6 Mallard Way
Pride Park
Derby DE24 8GX
Phone: 01332949656

Lithos Consulting

Delivery Address

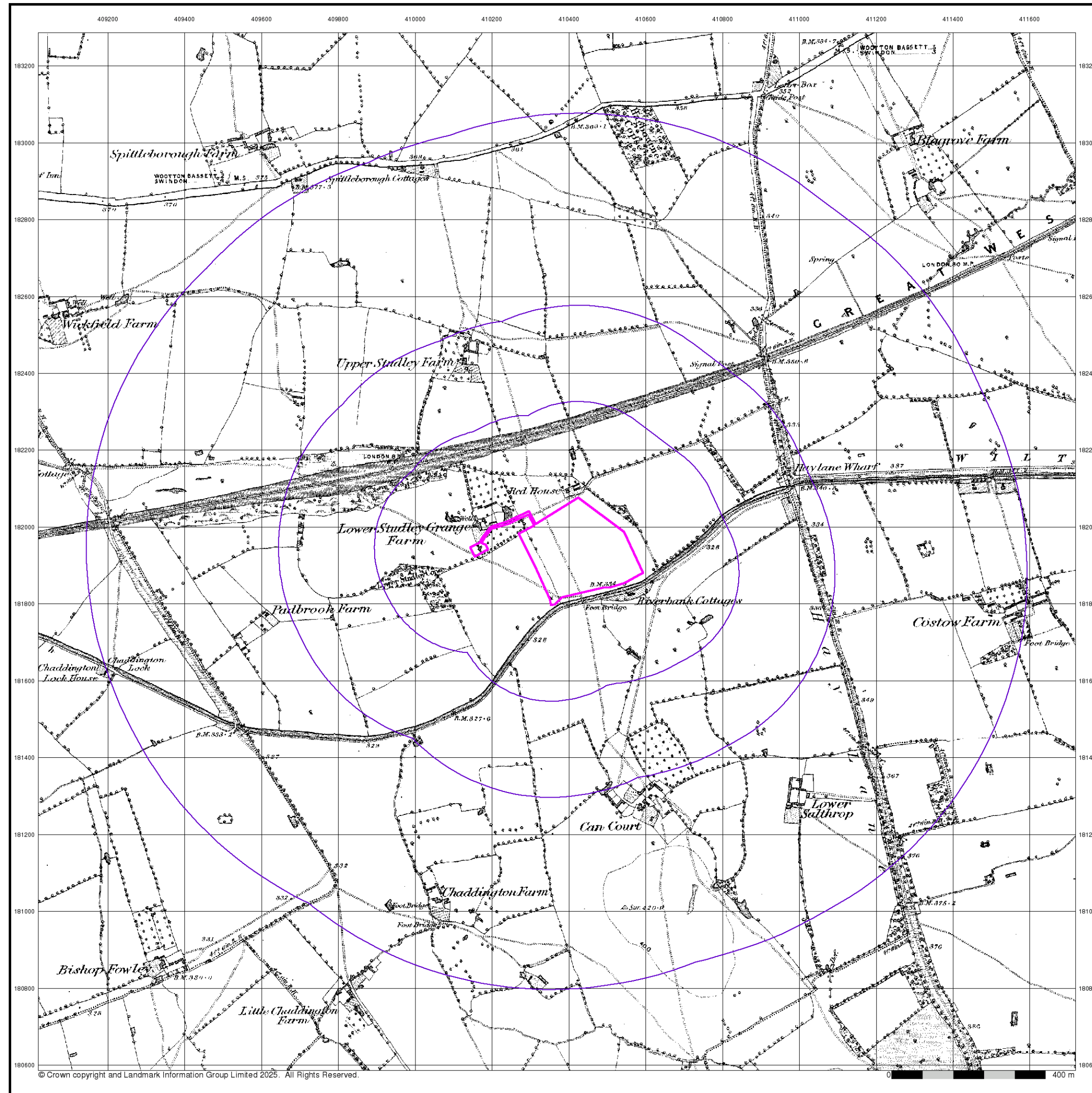
Studley Grange Solar - change of application site to the adjacent former landfill to the west

Description	Code	Quantity	Unit Price	Amount
Phase 1 Geotechnical Update		1.00	----,--	----,--
			Subtotal	----,--
			VAT (20%)	---,--
				-,--
			Total	----,--

Please quote our PO number on your invoices and email them to finance@heatonplanning.co.uk, and cc the relevant Project Manager.

Appendix D

Historical OS Plans



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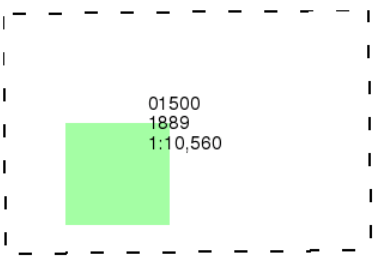
Wiltshire

Published 1889

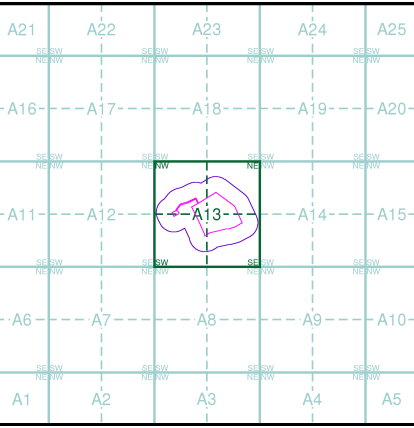
Source map scale - 1:10,560

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

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number: 383193650_1_1
Customer Ref: 5279
National Grid Reference: 410370, 181930
Slice: A
Site Area (Ha): 5.46
Search Buffer (m): 1000

Site Details

Site at 410410, 181950



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



Historical Aerial Photography

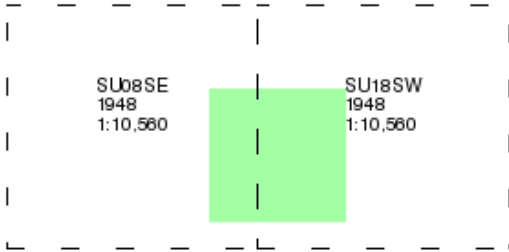
Published 1948

Source map scale - 1:10,560

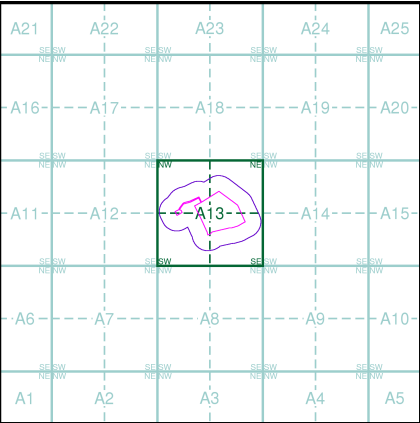
The Historical Aerial Photos were produced by the Ordnance Survey at a scale of 1:1,250 and 1:10,560 from Air Force photography. They were produced between 1944 and 1951 as an interim measure, pending preparation of conventional mapping, due to post war resource shortages. New security measures in the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

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Map Name(s) and Date(s)



Historical Aerial Photography - Slice A



Order Details

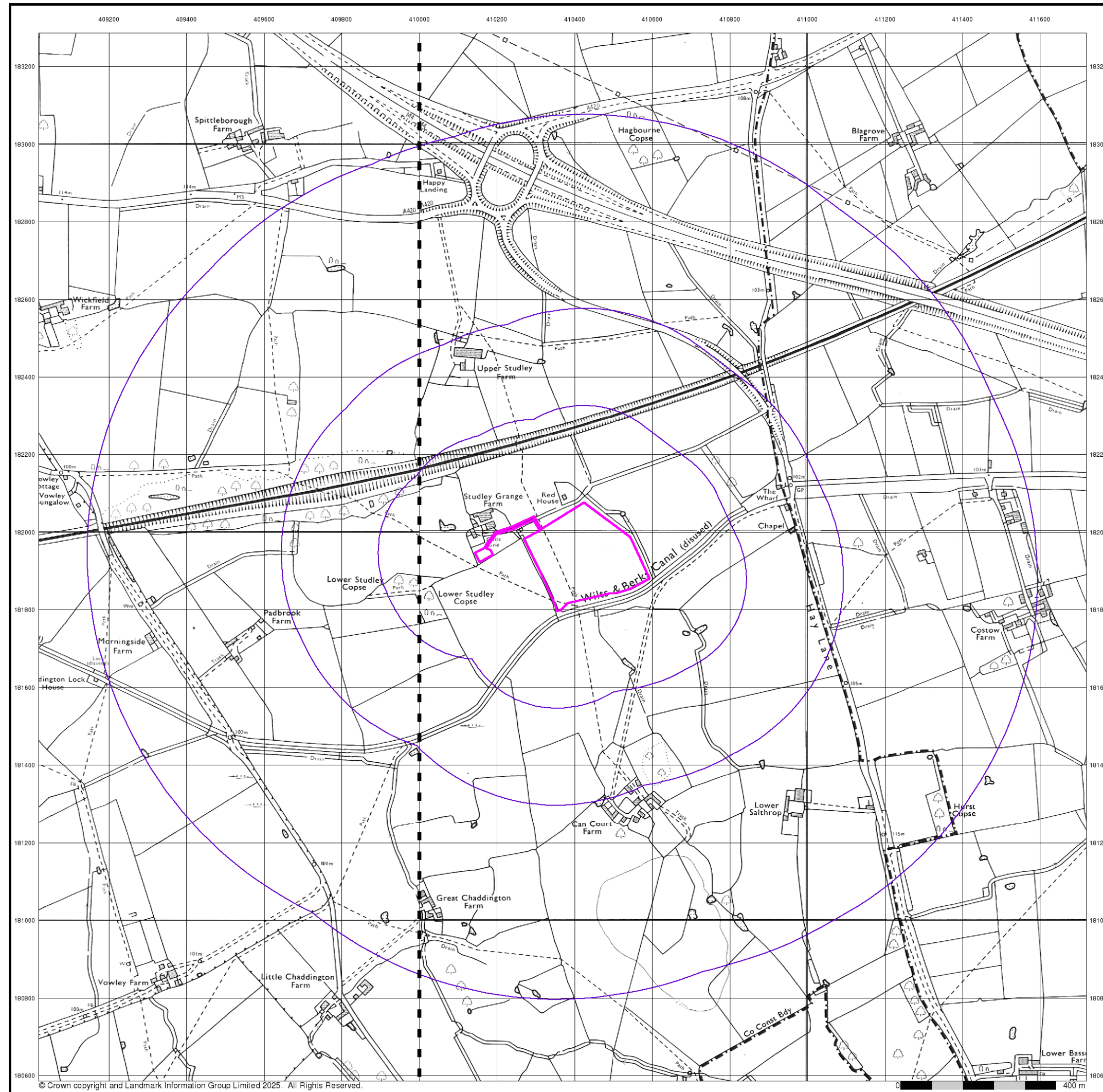
Order Number: 383193650_1_1
Customer Ref: 5279
National Grid Reference: 410370, 181930
Slice: A
Site Area (Ha): 5.46
Search Buffer (m): 1000

Site Details

Site at 410410, 181950



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



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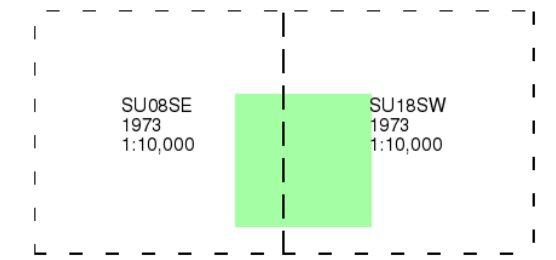
Ordnance Survey Plan

Published 1973

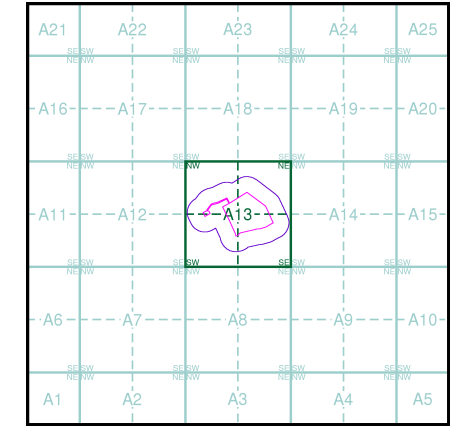
Source map scale - 1:10,000

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: 383193650_1_1
Customer Ref: 5279
National Grid Reference: 410370, 181930
Slice: A
Site Area (Ha): 5.46
Search Buffer (m): 1000

Site Details
Site at 410410, 181950



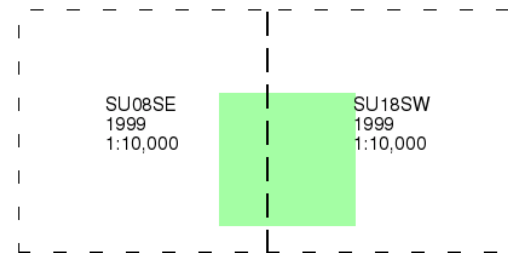
10k Raster Mapping

Published 1999

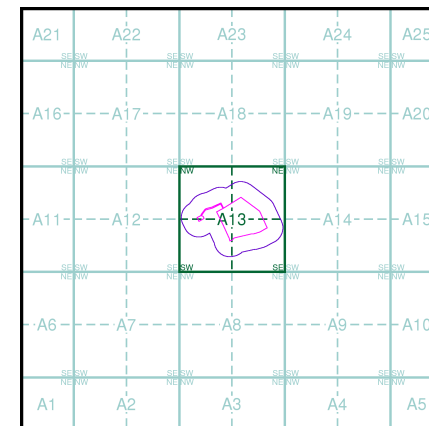
Source map scale - 1:10,000

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

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number: 383193650_1_1
Customer Ref: 5279
National Grid Reference: 410370, 181930
Slice: A
Site Area (Ha): 5.46
Search Buffer (m): 1000

Site Details

Site at 410410, 181950



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



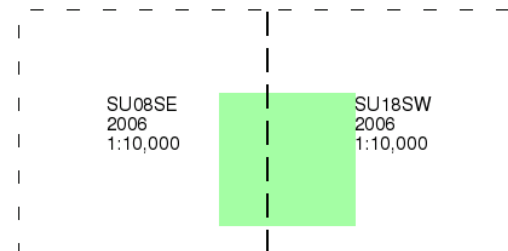
10k Raster Mapping

Published 2006

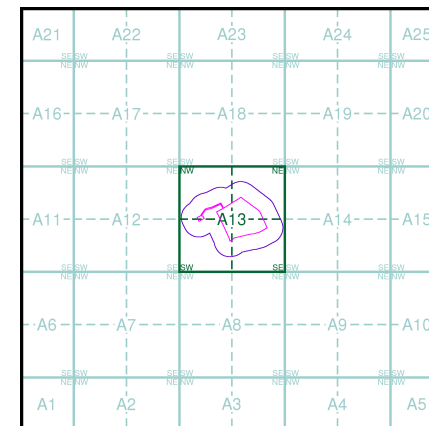
Source map scale - 1:10,000

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

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

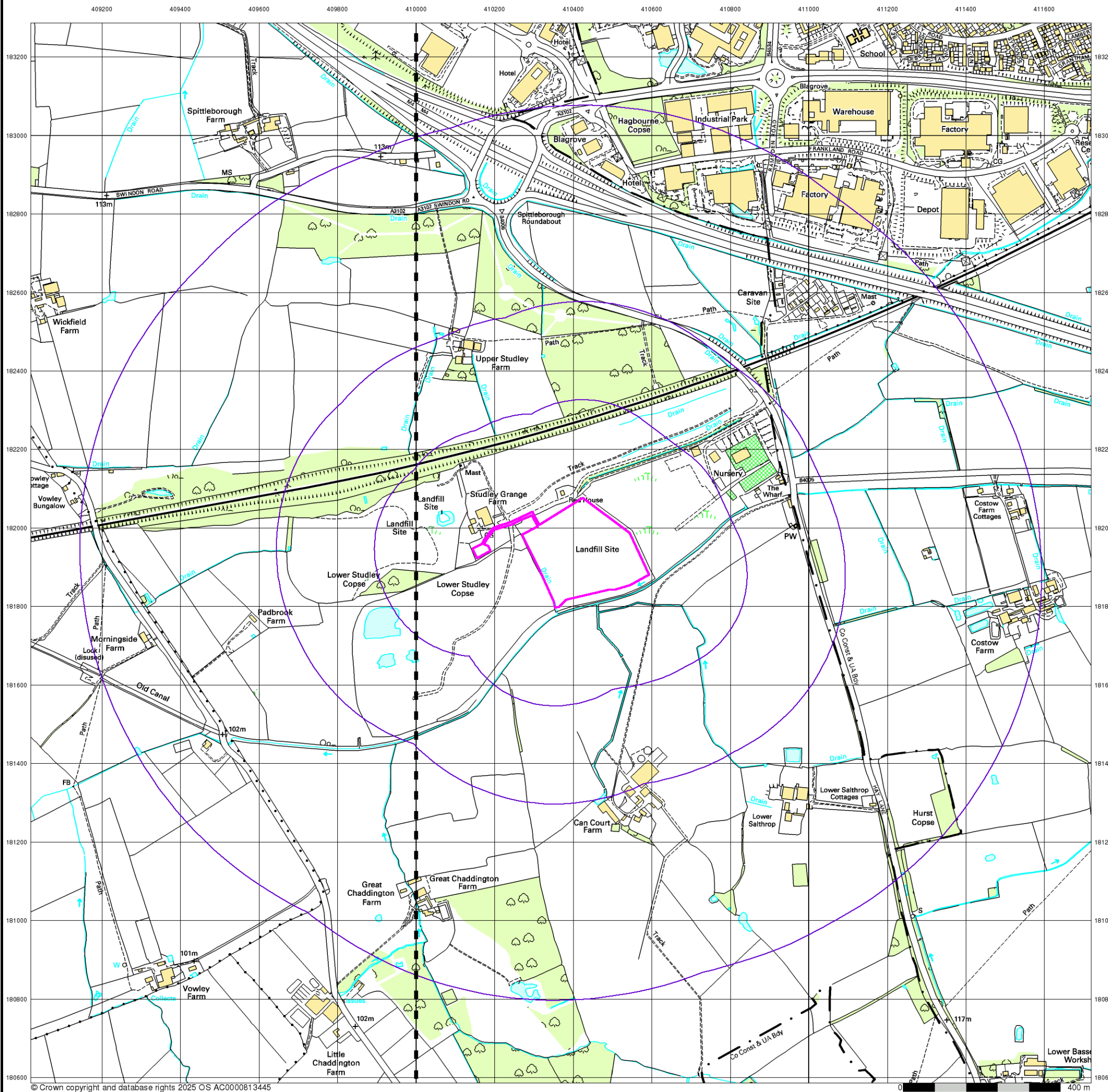
Order Number: 383193650_1_1
Customer Ref: 5279
National Grid Reference: 410370, 181930
Slice: A
Site Area (Ha): 5.46
Search Buffer (m): 1000

Site Details

Site at 410410, 181950



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



Appendix E

Search Responses & other Correspondence

Envirocheck[®] Report:

Datasheet

Order Details:

Order Number:

383193650_1_1

Customer Reference:

5279

National Grid Reference:

410370, 181930

Slice:

A

Site Area (Ha):

5.46

Search Buffer (m):

1000

Site Details:

Site at 410410, 181950

Client Details:

Mr M Perrin
Lithos Consulting Ltd
Parkhill
Walton Road
Wetherby
LS22 5DZ

Report Section	Page Number
Summary	-
Agency & Hydrological	1
Waste	29
Hazardous Substances	-
Geological	35
Industrial Land Use	38
Sensitive Land Use	44
Data Currency	45
Data Suppliers	51
Useful Contacts	52

Introduction

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

Information supplied from a joint dataset compiled by The British Geological Survey and Public Health England. The probability result is only valid for properties above ground. All basement and cellar areas are considered to be at additional risk from high radon levels. If an underground room such as a cellar or basement makes up part of the living or working accommodation, the property should be tested regardless of Radon Affected Area status.

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Report Version v53.0

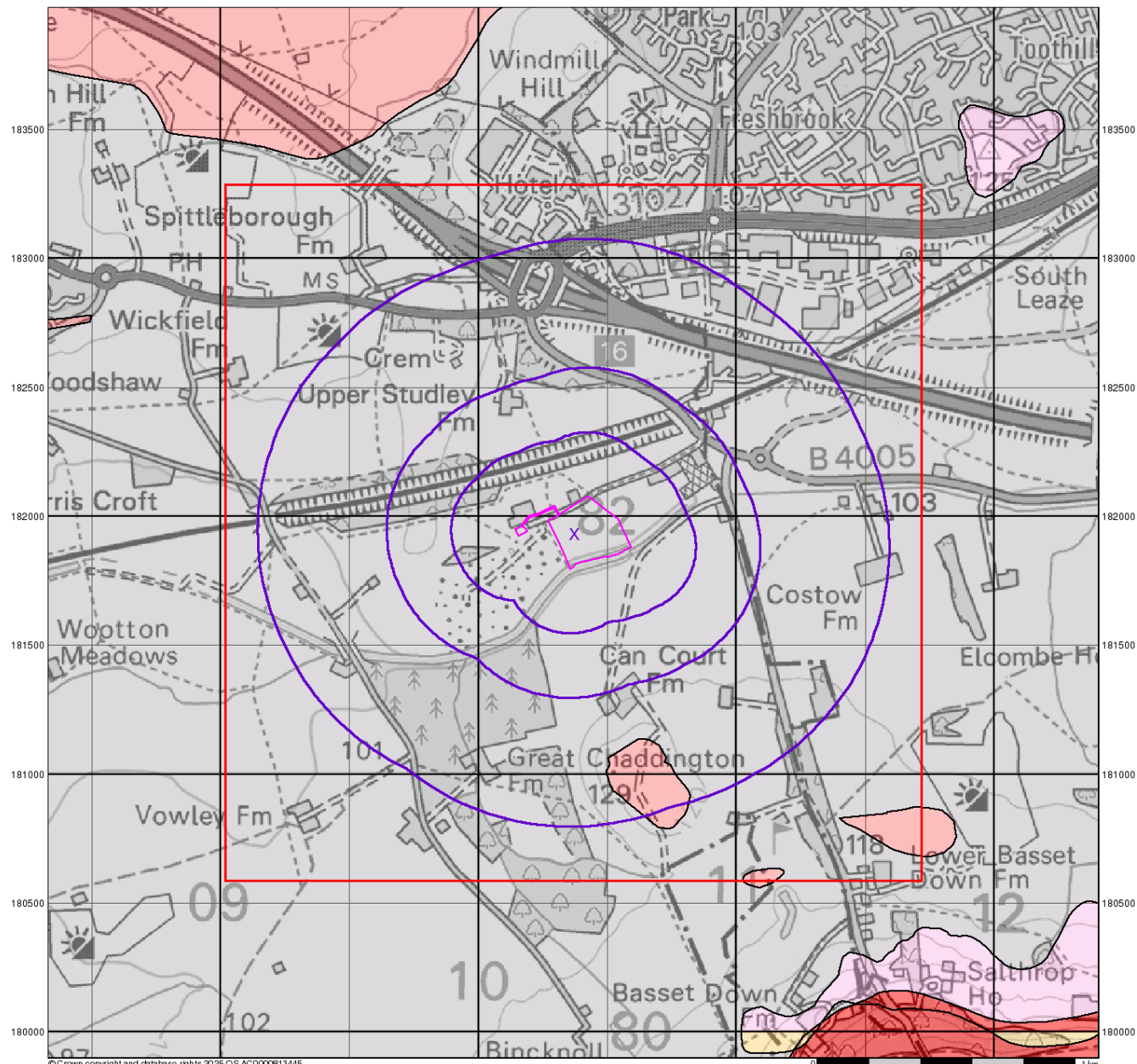
Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Agency & Hydrological					
BGS Groundwater Flooding Susceptibility					n/a
Contaminated Land Register Entries and Notices					
Discharge Consents	pg 1		1	2	3
Prosecutions	pg 2		2		
Enforcement and Prohibition Notices					
Integrated Pollution Controls	pg 2				1
Integrated Pollution Prevention And Control	pg 3		9		
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
Historical Prosecutions					
Registered Radioactive Substances					
Substantiated Pollution Incident Register	pg 6		2		
Water Abstractions	pg 6			1	1 (*2)
Water Industry Act Referrals					
Groundwater Vulnerability Map	pg 7	Yes	n/a	n/a	n/a
Groundwater Vulnerability - Soluble Rock Risk			n/a	n/a	n/a
Groundwater Vulnerability - Local Information			n/a	n/a	n/a
Bedrock Aquifer Designations	pg 7	Yes	n/a	n/a	n/a
Superficial Aquifer Designations			n/a	n/a	n/a
Source Protection Zones					
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
OS Water Network Lines	pg 8	2	26	35	121
Water Framework Directive - Catchment	pg 28	Yes			Yes
Water Framework Directive - Groundwater					
Water Framework Directive - Surface Waters					

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Waste					
BGS Recorded Landfill Sites					
Historical Landfill Sites	pg 29	1			
Integrated Pollution Control Registered Waste Sites					
Licensed Waste Management Facilities (Landfill Boundaries)	pg 29	2			
Licensed Waste Management Facilities (Locations)	pg 29		2	1	
Local Authority Landfill Coverage	pg 30	2	n/a	n/a	n/a
Local Authority Recorded Landfill Sites	pg 30	1	2	1	
Potentially Infilled Land (Non-Water)					
Potentially Infilled Land (Water)	pg 30		2	2	10
Registered Landfill Sites	pg 32	1	4		
Registered Waste Transfer Sites					
Registered Waste Treatment or Disposal Sites					
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					

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Geological					
BGS 1:625,000 Solid Geology	pg 35	Yes	n/a	n/a	n/a
BGS Estimated Soil Chemistry	pg 35	Yes			
BGS Recorded Mineral Sites	pg 35			1	1
BGS Urban Soil Chemistry					
BGS Urban Soil Chemistry Averages					
CBSCB Compensation District			n/a	n/a	n/a
Coal Mining Affected Areas			n/a	n/a	n/a
Mining Instability			n/a	n/a	n/a
Man-Made Mining Cavities					
Natural Cavities					
Non Coal Mining Areas of Great Britain				n/a	n/a
Potential for Collapsible Ground Stability Hazards	pg 35	Yes	Yes	n/a	n/a
Potential for Compressible Ground Stability Hazards	pg 36	Yes		n/a	n/a
Potential for Ground Dissolution Stability Hazards				n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 36	Yes	Yes	n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 36	Yes		n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 36	Yes	Yes	n/a	n/a
Radon Potential - Radon Affected Areas			n/a	n/a	n/a
Radon Potential - Radon Protection Measures			n/a	n/a	n/a
Industrial Land Use					
Contemporary Trade Directory Entries	pg 38		2	2	24
Fuel Station Entries					
Points of Interest - Commercial Services	pg 40				10
Points of Interest - Education and Health					
Points of Interest - Manufacturing and Production	pg 41			3	6
Points of Interest - Public Infrastructure	pg 42	1	6		8
Points of Interest - Recreational and Environmental					
Underground Electrical Cables					

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Sensitive Land Use					
Ancient Woodland					
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 44	1		1	
Ramsar Sites					
Sites of Special Scientific Interest					
Special Areas of Conservation					
Special Protection Areas					
World Heritage Sites					

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Groundwater Vulnerability

General

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

Agency and Hydrological

Bedrock Aquifers

- High Vulnerability, Principal Aquifer
- High Vulnerability, Secondary Aquifer
- Medium Vulnerability, Principal Aquifer
- Medium Vulnerability, Secondary Aquifer
- Low Vulnerability, Principal Aquifer
- Low Vulnerability, Secondary Aquifer

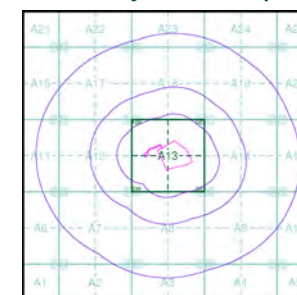
Superficial Aquifers

- High Vulnerability, Principal Aquifer
- High Vulnerability, Secondary Aquifer
- Medium Vulnerability, Principal Aquifer
- Medium Vulnerability, Secondary Aquifer
- Low Vulnerability, Principal Aquifer
- Low Vulnerability, Secondary Aquifer

Unproductive Aquifer

Soluble Rock

Site Sensitivity Context Map - Slice A



Order Details

Order Number: 383193650_1_1
 Customer Ref: 5279
 National Grid Reference: 410370, 181930
 Slice: A
 Site Area (Ha): 5.46
 Search Buffer (m): 1000

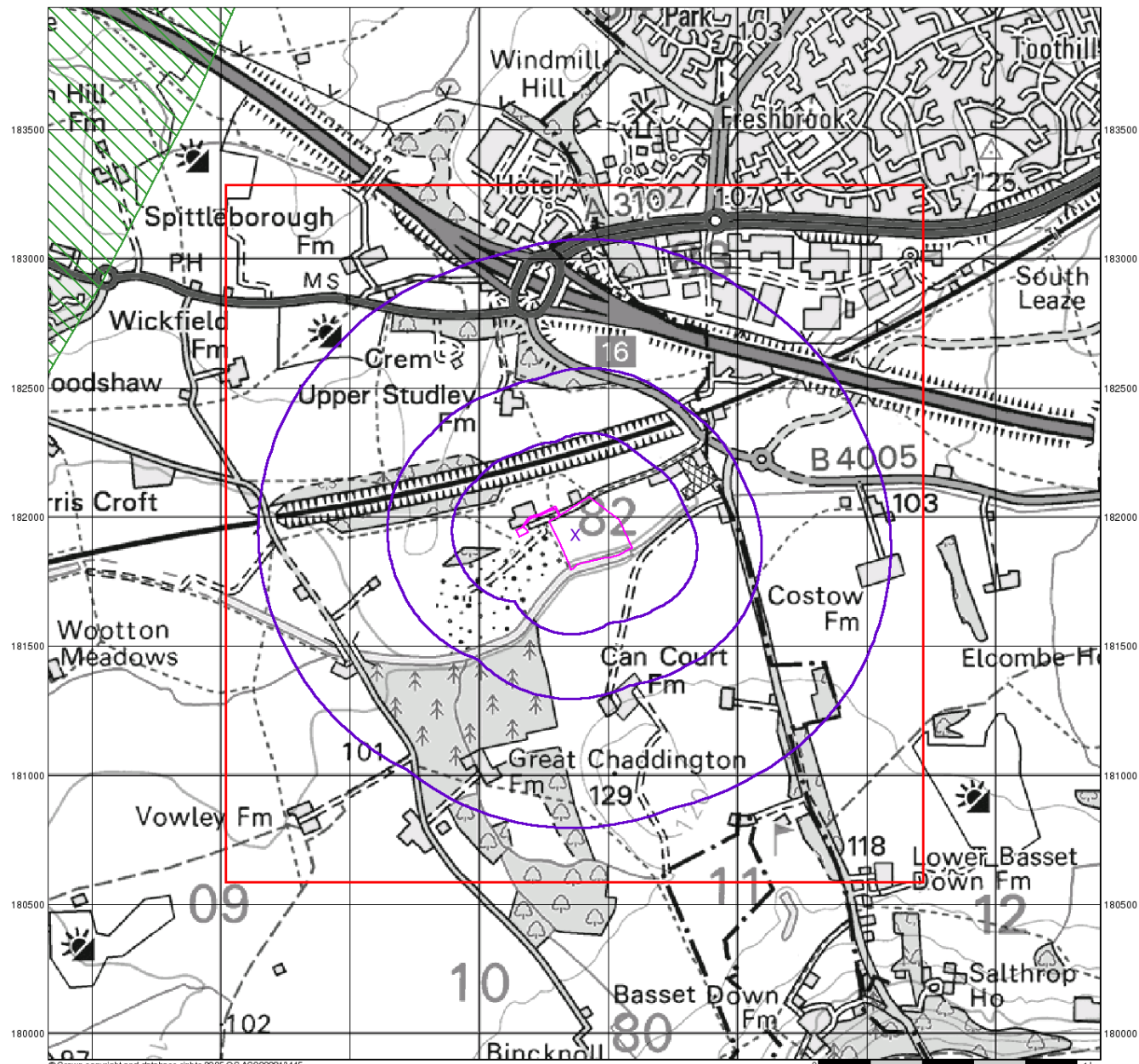
Site Details

Site at 410410, 181950

Landmark
 INFORMATION GROUP

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

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Source Protection Zones

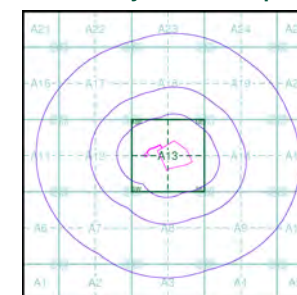
General

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

Agency and Hydrological

- Inner zone (Zone 1)
- ▨ Inner zone - subsurface activity only (Zone 1c)
- Outer zone (Zone 2)
- ▨ Outer zone - subsurface activity only (Zone 2c)
- Total catchment (Zone 3)
- ▨ Total catchment - subsurface activity only (Zone 3c)
- Special interest (Zone 4)

Site Sensitivity Context Map - Slice A



Order Details

Order Number: 383193650_1_1
 Customer Ref: 5279
 National Grid Reference: 410370, 181930
 Slice: A
 Site Area (Ha): 5.46
 Search Buffer (m): 1000

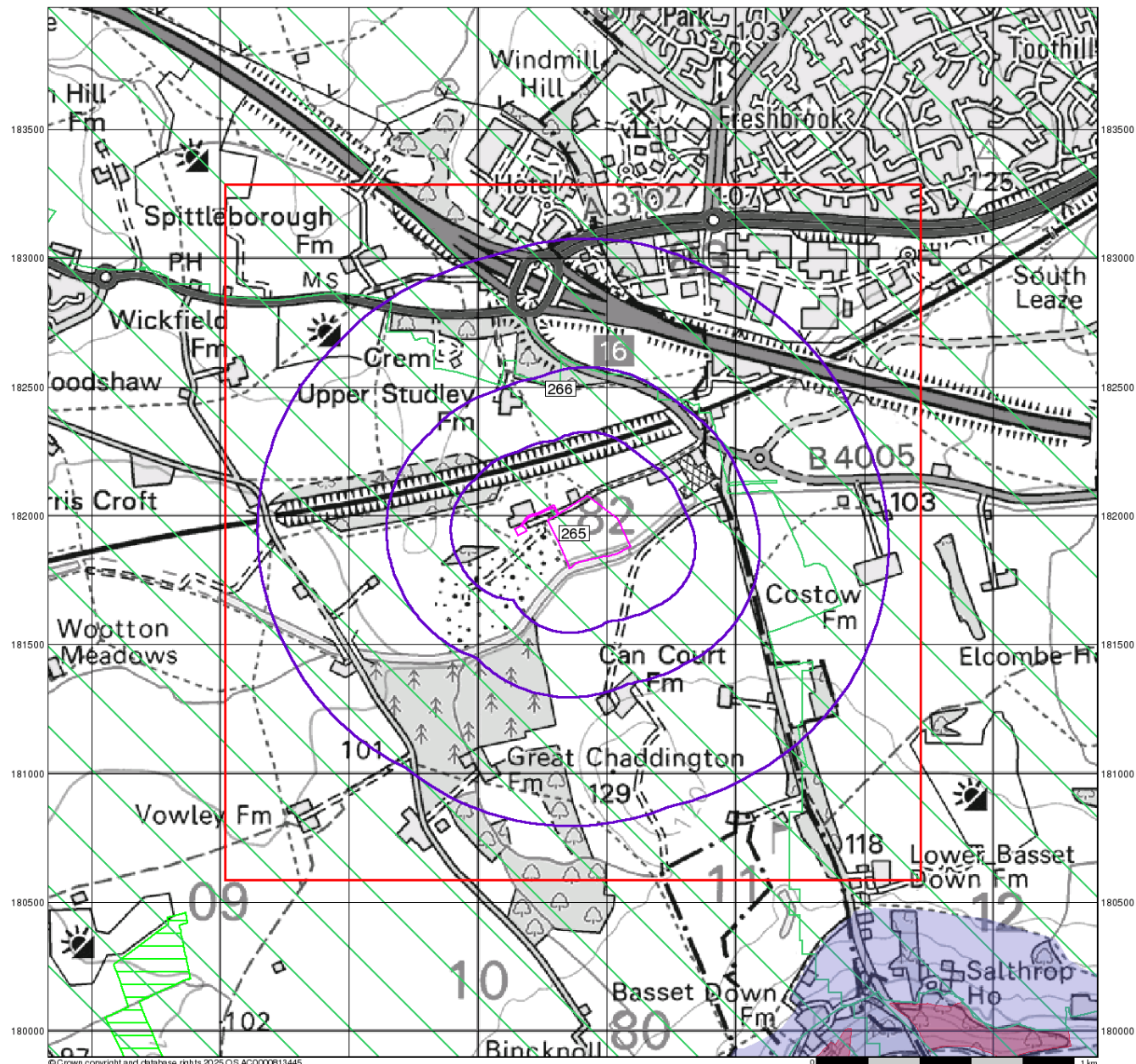
Site Details

Site at 410410, 181950



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Sensitive Land Uses

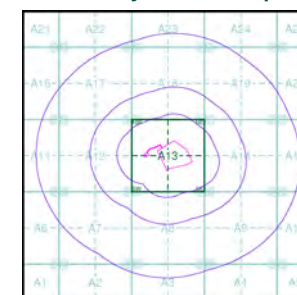
General

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

Sensitive Land Uses

- Ancient Woodland
- 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
- World Heritage Sites

Site Sensitivity Context Map - Slice A



Order Details

Order Number: 383193650_1_1
 Customer Ref: 5279
 National Grid Reference: 410370, 181930
 Slice: A
 Site Area (Ha): 5.46
 Search Buffer (m): 1000

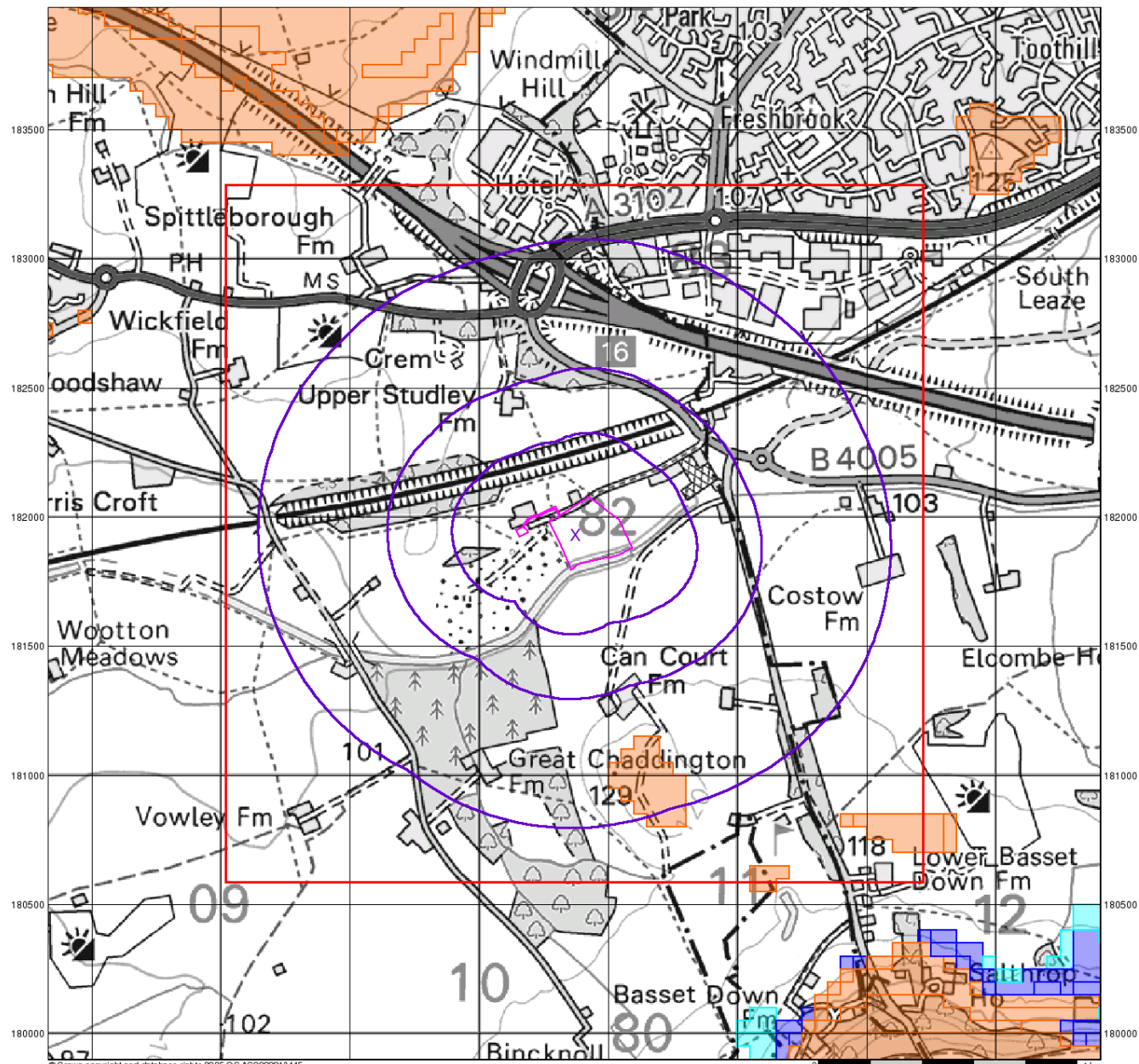
Site Details

Site at 410410, 181950



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BGS Flood GFS Data

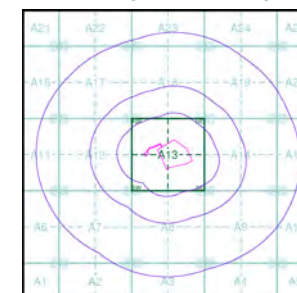
General

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

Agency and Hydrological (Flood)

- Limited Potential for Groundwater Flooding to Occur
- Potential for Groundwater Flooding of Property Situated Below Ground Level
- Potential for Groundwater Flooding to Occur at Surface

Site Sensitivity Context Map - Slice A



Order Details

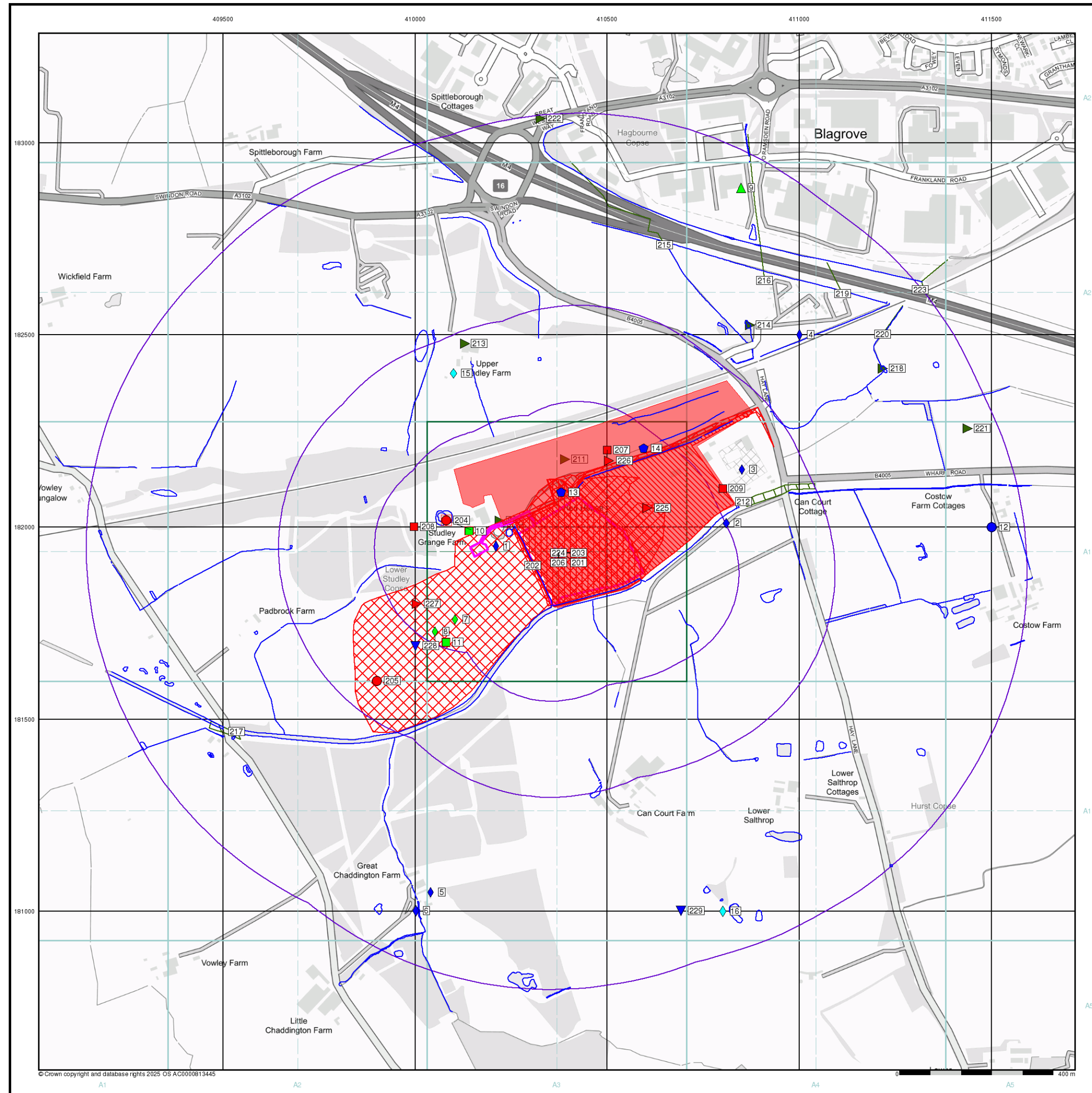
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 National Grid Reference: 410370, 181930
 Slice: A
 Site Area (Ha): 5.46
 Search Buffer (m): 1000

Site Details

Site at 410410, 181950

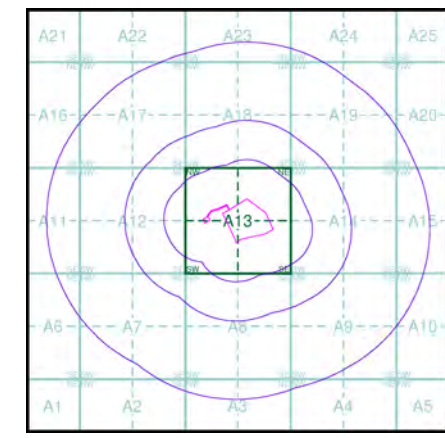


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- General**
- Specified Site
 - Specified Buffer(s)
 - Bearing Reference Point
 - Map ID
- Agency and Hydrological**
- Contaminated Land Register Entry or Notice (Location)
 - Contaminated Land Register Entry or Notice
 - Discharge Consent
 - Enforcement or Prohibition Notice
 - Integrated Pollution Control
 - Integrated Pollution Prevention Control
 - Local Authority Integrated Pollution Prevention and Control
 - Local Authority Pollution Prevention and Control
 - Local Authority Pollution Prevention and Control Enforcement
 - Pollution Incident to Controlled Waters
 - Historical Prosecutions
 - Prosecutions
 - Registered Radioactive Substance
 - River Network or Water Feature
 - Substantiated Pollution Incident Register
 - Water Abstraction
 - Water Industry Act Referral
- Waste**
- BGS Recorded Landfill Site (Location)
 - BGS Recorded Landfill Site
 - EA Historic Landfill (Buffered Point)
 - EA Historic Landfill (Polygon)
 - Integrated Pollution Control Registered Waste Site
 - Licensed Waste Management Facility (Landfill Boundary)
 - Licensed Waste Management Facility (Location)
 - Local Authority Recorded Landfill Site (Location)
 - Local Authority Recorded Landfill Site
 - Potentially Infilled Land (Non-water)
 - Potentially Infilled Land (Non-water)
 - Potentially Infilled Land (Non-water)
 - Potentially Infilled Land (Water)
 - Potentially Infilled Land (Water)
 - Potentially Infilled Land (Water)
 - Potentially Infilled Land (Water)
 - Registered Landfill Site
 - Registered Landfill Site (Point Buffered to 100m)
 - Registered Landfill Site (Point Buffered to 250m)
 - Registered Waste Transfer Site (Location)
 - Registered Waste Transfer Site
 - Registered Waste Treatment or Disposal Site (Location)
 - Registered Waste Treatment or Disposal Site
- Hazardous Substances**
- COMAH Site
 - Explosive Site
 - NIHHS Site
 - Planning Hazardous Substance Consent
 - Planning Hazardous Substance Enforcement
- Geological**
- BGS Recorded Mineral Site

Site Sensitivity Map - Slice A

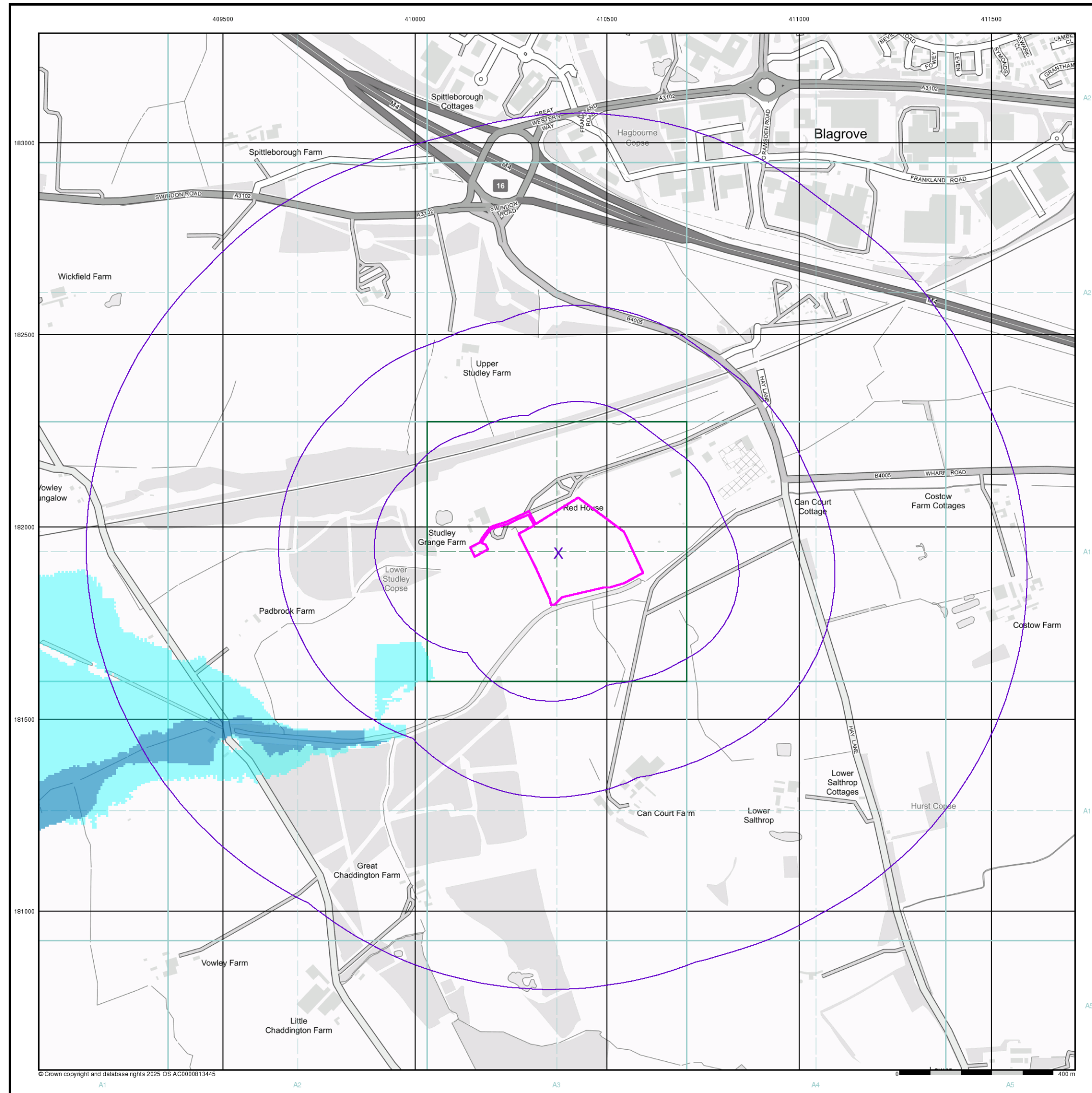


Order Details

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National Grid Reference: 410370, 181930
Slice: A
Site Area (Ha): 5.46
Search Buffer (m): 1000

Site Details

Site at 410410, 181950



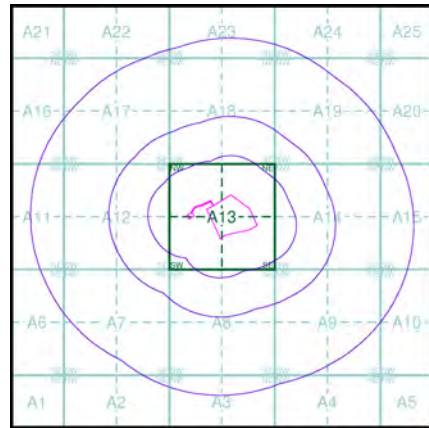
General

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

Agency and Hydrological (Flood)

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

Flood Map - Slice A



Order Details

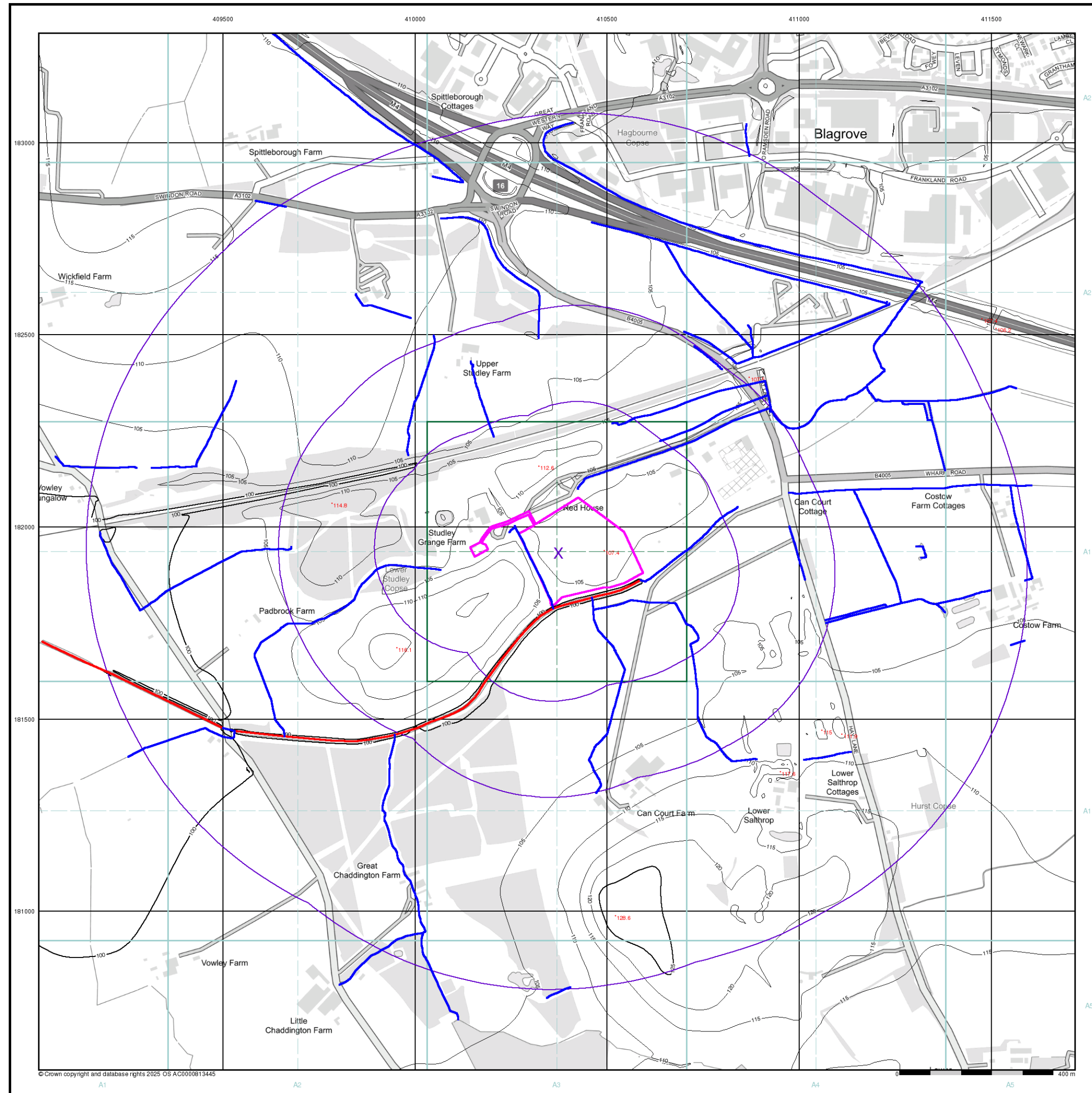
Order Number: 383193650_1_1
Customer Ref: 5279
National Grid Reference: 410370, 181930
Slice: A
Site Area (Ha): 5.46
Search Buffer (m): 1000

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General

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

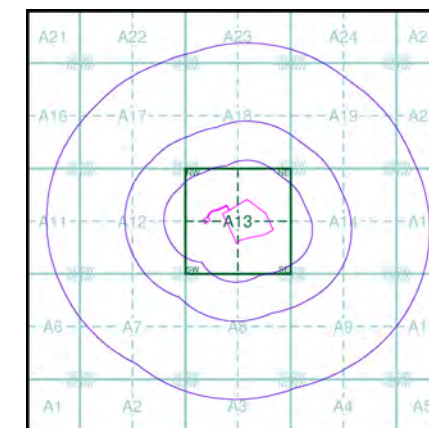
OS Water Network Data

- | | |
|--------------|-------------------------|
| Canal | Drain |
| Reservoir | Other |
| Foreshore | Lake |
| Marsh | Transfer |
| Tidal River | Lock Or Flight Of Locks |
| Inland River | Sea |

Contours (height in meters)

- Standard Contour: 105, 100, 95
- Master Contour: 105, 100, 95
- Spot Height: 167.3
- MLW: Mean Low Water
- MHW: Mean High Water

OS Water Network Map - Slice A



Order Details

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Site Details

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General

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

Risk of Flooding from Surface Water

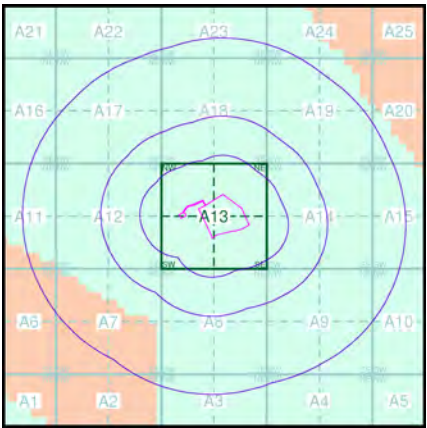
- High - 30 Year Return
- Medium - 100 Year Return
- Low - 1000 Year Return

Suitability

See the suitability map below

- National to county
- County to town
- Town to street
- Street to parcels of land
- Property

E/NRW Suitability Map - Slice A



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