Aston Le Walls Equestrian Centre

Import of Engineering Fill for Construction of a Noise and Visual Attenuation Bund

Environmental Setting and Site Design Report

Job No 193224

February 2023

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Document Control

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Report for
Clark Contracting Ltd
Brentford Grange Farm
Beaconsfield Road
Amersham
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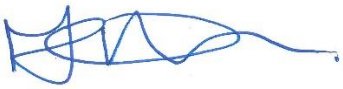

Matthew Lawman MSc BSc (Hons)

Issue Date	Issue
February 2023	Final

Document Reference

193224/ESSD

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1.0 SITE DETAILS AND ENVIRONMENTAL CONTEXT

Site land use and other application details

1.1 The site is located on the north western outskirts of Aston Le Walls. The site is accessed via a private road from Welsh Road. The site is a portion of the existing Aston Le Walls Equestrian Centre site. The current ground level falls gently from 116 m AOD in the north east of the site to 107 m AOD in the west towards Highfurlong Brook. The site location is shown in drawing 193224/D/001. To the east of the site is the Aston Le Walls Equestrian Centre, and to the south is a private road beyond which is agricultural land and a private open space. To the north is the Highfurlong Brook, beyond which land is used for equestrian activities. The west and wider land uses are mainly agricultural.

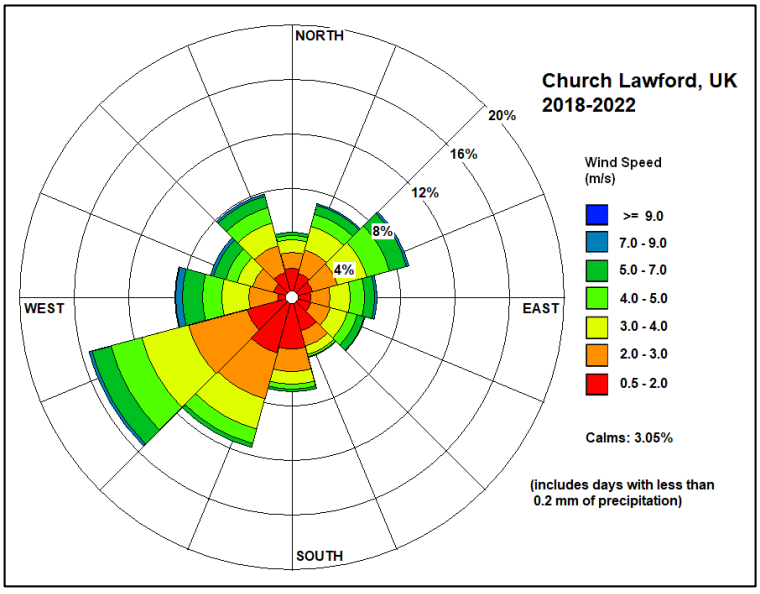
1.2 The proposal is to construct an all-weather eventing course incorporating a visual and acoustic bund. The bund is required to reduce the impacts of HS2 railway on eventing. The new railway runs within 120 m of the site to the west. The proposal requires the raising of the landform to construct and visual and noise screening bund which will be undertaken using imported soils. The detailed landscape strategy is shown in drawing ref. 296WFAW/3. The revised land formation and landscaping was approved under West Northamptonshire planning permission WNS/2021/0766/MAF.

1.3 The site is set in a predominantly rural setting. The nearest residential properties are located on the outskirts of Aston Le Walls Village circa 330 m south east of the site. These are considered the most sensitive receptors, due to their nature.

1.4 Detailed information about the site's environmental setting, the natural and cultural heritage and the surrounding receptors are shown in Drawings 193224/D/002, 003A, and 003B.

Air Quality / Climate

1.5 Meteorological wind data, for five years, have been acquired from the ADM Limited. The wind data has been taken from the Met Office Station in Church Lawford, which is located circa 24 km north of the site. The prevailing wind direction is from the south west quadrant.



1.6 DEFRA Air Quality Management Areas (AQMAs) maps[1] show that the site is not within an AQMA.

[1] Department for Environment Food & Rural Affairs, *UK AIR* https://uk-air.defra.gov.uk, accessed 24/01/2023

Geology and Hydrogeology

1.7 The geology has been determined from reference to BGS Geology Viewer[2]. The site is underlain by Charmouth Mudstone Formation bedrock. The north western part of the site is intersected by superficial deposits of Alluvium - Clay, silt, sand and gravel, associated with the Highfurlong Brook.

1.8 The superficial geology is classified as a Secondary A aquifer. The bedrock geology is a Secondary (undifferentiated) aquifer.

1.9 The site is not located within a Groundwater Source Protection Zone and there are none within 1 km of the site.

1.10 There are two groundwater abstractions within 1 km of the site. The nearest is located circa 571 m south of the site at Appletree Farm. The abstraction is for general farming and domestic from a single point. The permit started in 2008, and no end date is provided. There is a second groundwater abstraction at the same address, granted at the same time for household water supply (drinking, cooking, washing).

1.11 There is one spring located 203 m south east of the site.

Hydrology

1.12 There are two existing ponds on site in the north and west. The nearest off-site surface water is the Highfurlong Brook along the north / north east of the site boundary, which flows from the north east to the south west. There are surface water ponds or lagoons to the north, south and east of the site. The locations are shown on drawing 193224/D/002.

1.13 The Environment Agency flood zone maps have been reviewed to determine the extent of any flood plain around the Highfurlong Brook. The north western edge of the site, parallel to the Highfurlong Brook, is in Flood Zone 3 and 2. The majority of the site is within Flood Zone 1. A very minor extent of the proposed landform is within Flood Zone 2. The proposed landform does not fall within Flood Zone 3. The flood zone extent is shown in drawing 193224/FRA/D/003.

1.14 Surface water flows through the site from the higher lands in the east. Run off flows through via a drainage network, made up of a series of steep sided drainage ditches and subsurface pipes/culverts. The farmland drainage surface and subsurface flow with the topography towards the Highfurlong Brook. The existing drainage is shown in drawing 193224/FRA/D/002. The EA Surface Water flood risk map shows a mixed designation of surface water flooding risk, with areas from very low to high risk. The main proposed landform is situated in an area largely at very low risk of surface water flooding.

1.15 The site has been subject to a flood risk assessment (document reference 193224/FRA dated May 2021) which has been submitted as part of the approved Planning Application. A Hydrogeological Risk Assessment has also been written for this permit.

1.16 The nearest discharge consent is located east of the site within Washroom Farm, operated by M n Taylor for the discharge of sewage (final/treated) into a tributary of the Highfurlong Brook. The permit was issued in 1998.

1.17 The nearest pollution incident to controlled waters is corded circa 447 m south east of the site. The incident involved unknown sewage into an unknown receiving water in 1990. It was graded a Category 3 – minor incident.

Man-made Subsurface Pathways

1.18 There are no recorded coal mine workings underneath the site. It is unlikely for manmade subsurface features other than buried culverts or services exist beneath the site.

Noise

1.19 The ambient noise level at the site will be low during the day. Information from the Extrium website[3] indicate that noise levels will be lower than 55 dB for the 16-hour period between 07:00-23:00.

Environmental Setting

1.20 There are no LNRs, NNRs, SACs, SPAs or Ramsar sites within 2 km of the site.

[2] BGS Geology Viewer, version 0.0.47(BETA) https://geologyviewer.bgs.ac.uk/ accessed 24/01/2023

[3] England Noise Map Viewer, http://www.extrium.co.uk/noiseviewer.html accessed 24/01/2023

1.21 There is one Local Wildlife Site (LWS) within 1 km of the site located along the south-eastern boundary of the site. The LWS comprises a long stretch of disused railway line.

1.22 There are Priority Habitats within 1 km of the site. The nearest is deciduous woodland is located in the south east of the site.

1.23 There are no priority species recorded within the site. There are two within 1 km of the site. The nearest is circa 800 m north of the site where lapwing are recorded as a priority species.

1.24 The environmental setting is shown on drawing ref. 193224/D/003A.

Cultural and Natural Heritage

1.25 The nearest listed buildings is a manor farmhouse approximately 363 m south east of the site boundary. There is a cluster of listed buildings beyond circa 490 m south east of the site in the village of Aston Le Walls.

1.26 The nearest Scheduled Ancient Monument is the Bowl Barrow in Stoke Park Playing Field, circa 2.5 km south west of the site.

1.27 The cultural and natural heritage is shown on drawing ref. 193224/D/003B.

1.28 The nearest school is the St Mary's Catholic Primary School, circa 500 m south east of the site boundary in the village of Aston Le Walls.

1.29 The nearest hospital is located 11.5 km south of the site in Banbury.

1.30 There is a Public Right of Way (PRoW) circa 680 m north west, and 950 m north in Lower Boddington (these are likely to be diverted as part of the proposed HS2 works).

1.31 A detailed plan of all sensitive receptors, within 1 km from the site, is shown in drawing 193224/D/002.

2.0 SOURCE PATHWAY LINKAGES AND CONCEPTUAL MODEL

2.1 Human Health / Loss of Amenity – Noise and Vibration. The works involve the importation of suitable material, which will involve tipper lorries, dozers and excavators. The nearest sensitive receptors are the users of the Aston le Walls Equestrian Centre, users of the private land south of the site and residential properties in Aston Le Walls Village. Subject to the working controls, which are set out in the Operational Plan (193224/OP), the site is expected to have a low residual risk of noise. Only standard construction plant or machinery will be operated (no cooling equipment or fans will be used). There will be no vibratory element machinery. No activities will take place at night.

2.2 Human Health / Natural Heritage/ Loss of Amenity – Dust and Mud. The works involve the importation of suitable material, which will involve tipper lorries, dozers and excavators. The nearest sensitive receptors are the users of the Aston le Walls Equestrian Centre, users of the PRoW, users of the private land south of the site and residential properties at Aston Le Walls Village. Road users on the Welsh Road might also be affected by dust emissions. There is an internal haul route and wheel wash at the site. Without suitable working controls the operation may potentially cause fugitive emissions and mud on road and a loss of amenity and potential nuisance. A Dust Management Plan has been produced for the permit application.

2.3 Cultural Heritage and Natural Heritage – Direct and Indirect Impact. Given the distance and type of operations, there is a very low risk of direct or indirect impact on the Listed Structures or any Scheduled Ancient Monuments. There are no SSSIs, LNRs, SPAs, SACs or Ramsar sites within 1 km of the site. There are no records of European Protected Species within 500 m of the site.

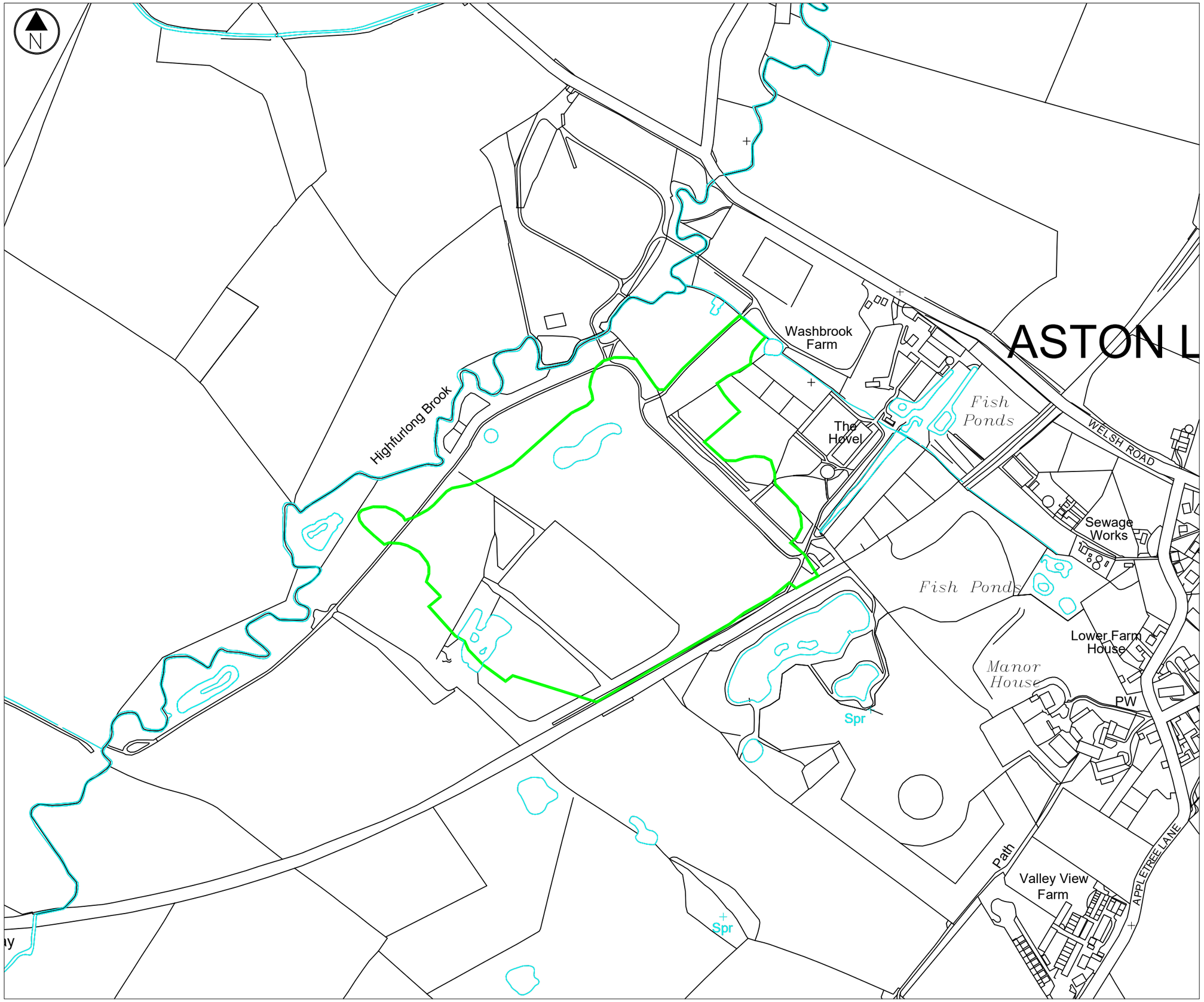
2.4 Controlled Waters – Pollution. The import of potentially contaminated materials or spillages of oils and hydrocarbons creates a risk of potential pollutants entering the surface water. There are no specific pollution control measures required although a Spill Response Plan forms part of the EMS. The implementation of the Importation Protocol (193224/IP) will ensure only acceptable fill material is imported. The Importation Protocol will be supported by a Hydrogeological Risk Assessment. The site is underlain by the Charmouth Mudstone and is not within a groundwater Source Protection Zone (SPZ). All site drainage will be in accordance with the approved drainage plan submitted with the planning application. Due to the proposed permitted waste streams to be imported and importation controls to be applied, it is assessed that the fill material will pose a low risk to the controlled water environment. There is no positive drainage during the infilling and all temporary surface water runoff will be stored and used for dust suppression or maintenance. The importation criteria use the appropriate human health criteria and leachable criteria. Given the proximity of the works to the Highfurlong Brook, surface water monitoring has been assessed within the HRA.

2.5 Ground gas - the final land use is not at risk of the impacts of ground gas. Given the development will be constructed with materials with a low organic content, the risk posed by the generation of ground gases is not considered significant and monitoring is not proposed.

2.6 Stability - the final land use is not at risk of the impacts of stability. Settlement occurs 6 to 12 months from completion of the reprofiling works. Further ongoing settlement and consolidation would be likely to be complete within 3 to 5 years, albeit at a significantly reduced rate. Given the accepted waste types are limited to mineral / aggregate only, the risk of instability is not considered significant. The works will be in accordance with an approved design. The Operator will use well known earthworks compaction techniques to ensure material is suitably compacted during construction.

2.7 The Environmental Risk Assessment (193224/H1ERA) is attached in Appendix A. The Site Condition Report (193224/SCR) detailing the current baseline conditions is submitted with the application.

DRAWINGS



KEY

Permit Boundary

Note
The site is centred at grid reference SP 48722 50969.

Rev.	Details	Drawn / Chkd.	Date

Project
193224
Aston Le Walls

Title
Site Location Plan

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Scale	Date	Drg. No.	Rev.
1:5000@A3	Jan '23	193224/D/001	

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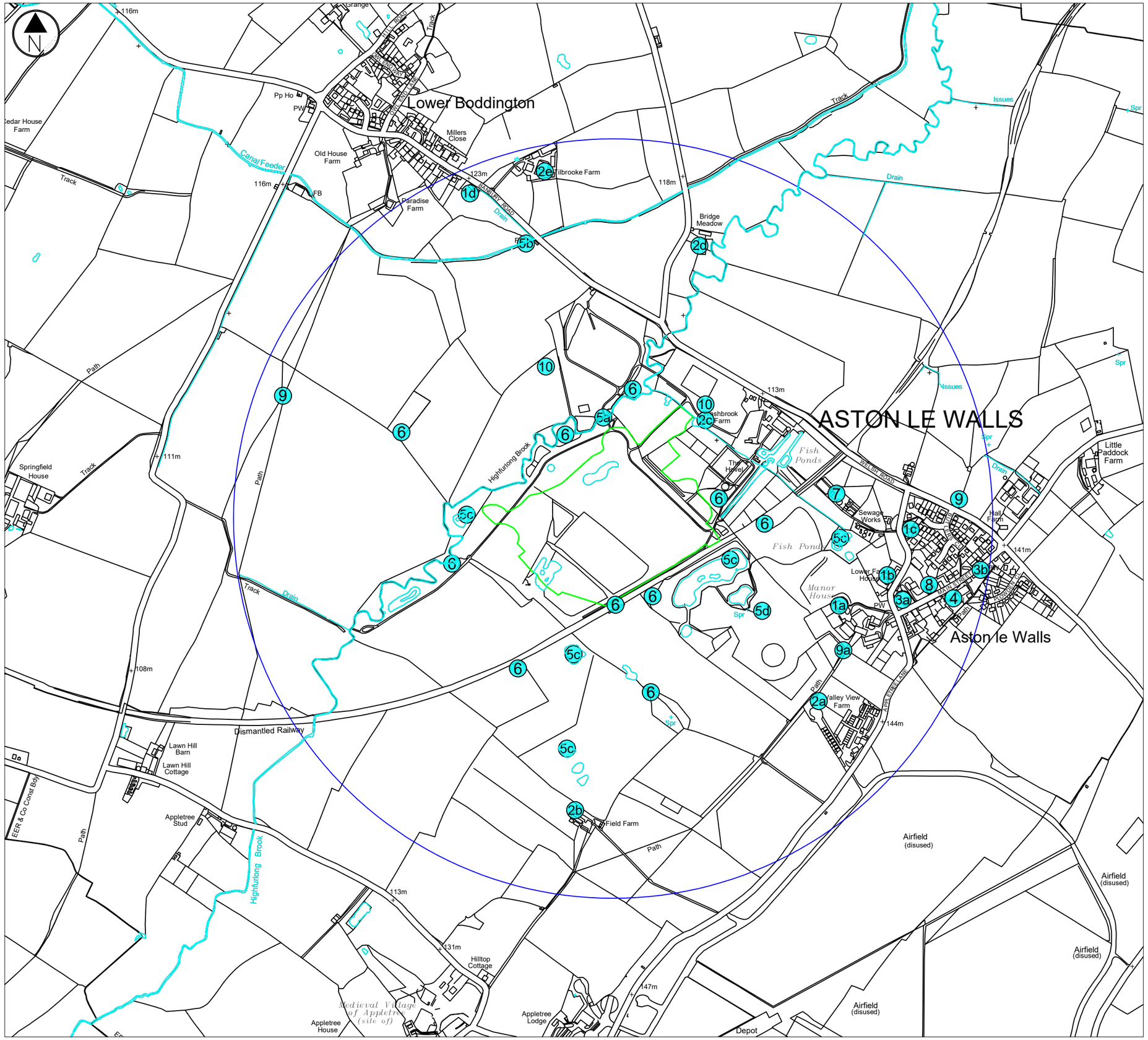
Chkd.: EB



KEY

- Permit Boundary
- 1 km Radius

1. **Residential**
   a) Manor House
   b) Lower Farm House
   c) Dwellings off Blacksmith Lane / Main Street
   d) Lower Boddington
2. **Agricultural**
   a) Valley View Farm
   b) Field Farm
   c) Washbrook Farm
   d) Bridge Meadow Farm
   e) Tilbrooke Farm
3. **Religious**
   a) St Leonard Church
   b) The Catholic Church of the Sacred Heart and Our Lady
4. **St Mary's Catholic Primary School**
5. **Water Features**
   a) Highfurlong Brook
   b) Canal Feeder
   c) Pond / Lagoon
   d) Spring
6. Priority Habitat / Local Wildlife Site
7. Sewage Treatment Works
8. Village Hall
9. Public Right of Way
10. Aston Le Walls Equestrian Centre

Rev.	Details	Drawn / Chkd.	Date

Project
193224
Aston Le Walls

Title
Receptor Plan

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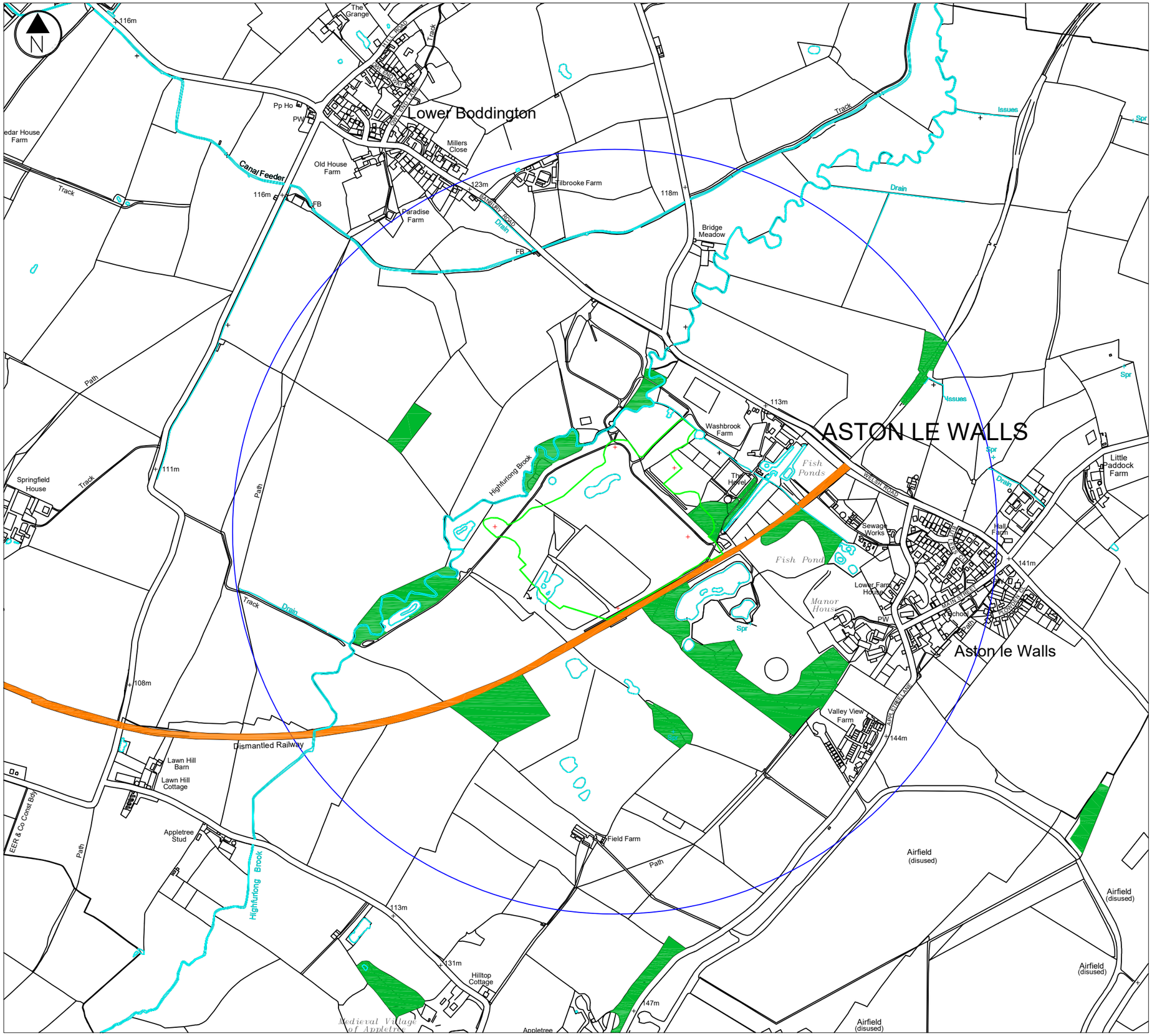

KEY

- Permit Boundary
- 1km radius
- Priority Habitat
- Local Wildlife Site (LWS)
- Surface Water Features

Rev.	Details	Drawn / Chkd.	Date

Project
193224
Aston Le Walls

Title
Environmental Setting

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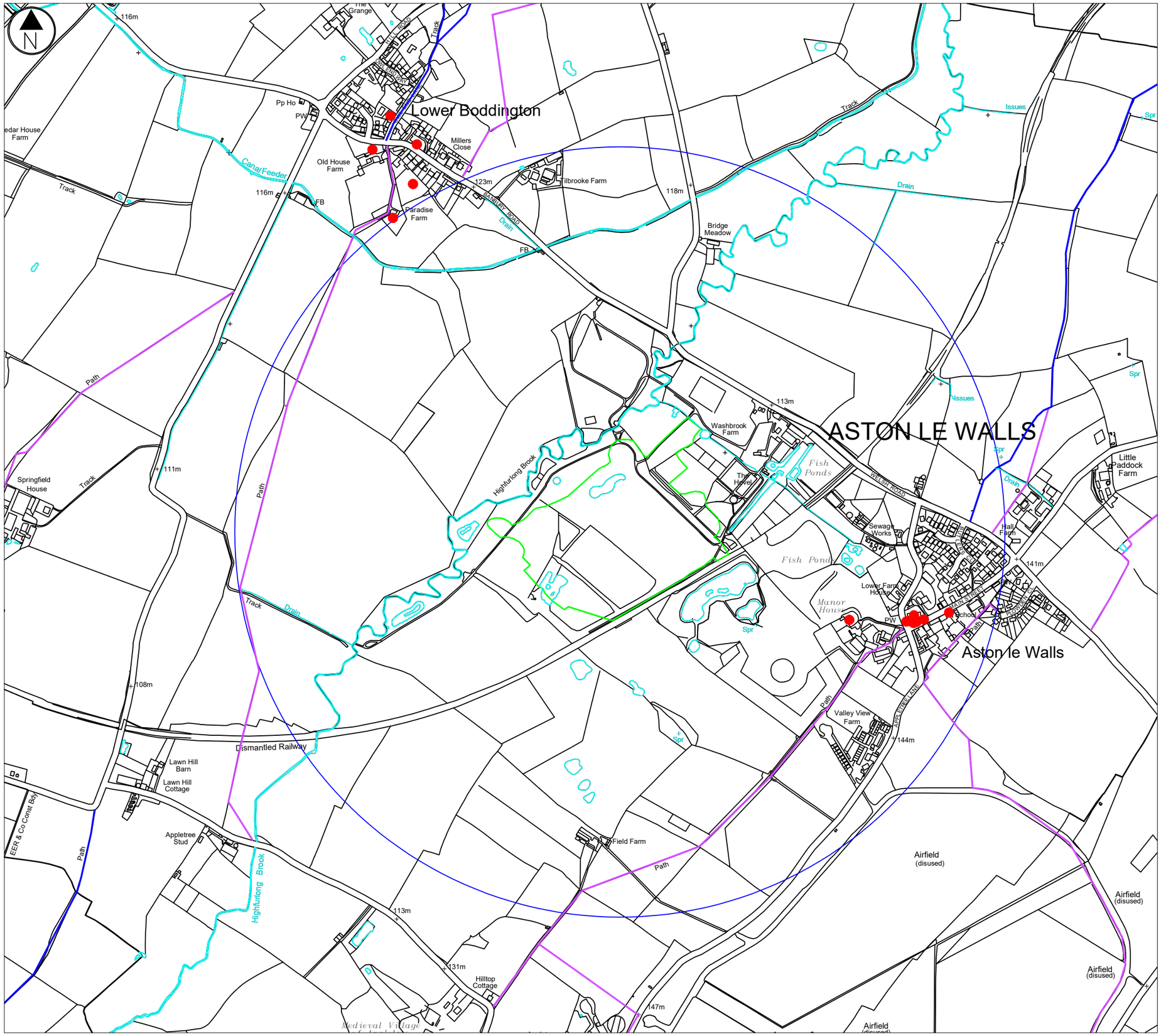

KEY

- Permit Boundary
- 1km radius
- Listed Building
- Footpath
- Bridleway

Rev.	Details	Drawn / Chkd.	Date

Project
193224
Aston Le Walls

Title
Cultural Heritage

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Scale	Date	Drg. No.	Rev.
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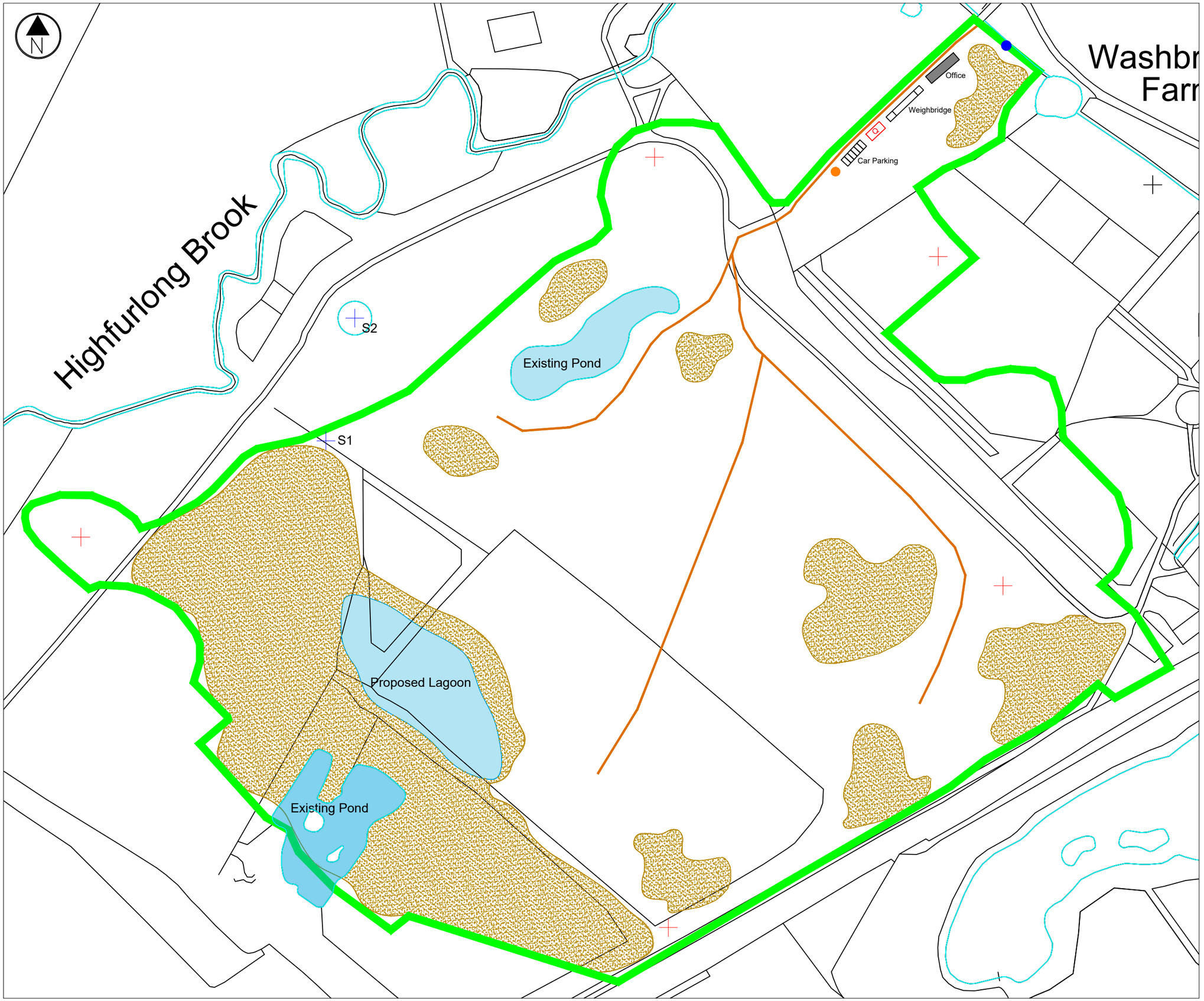

KEY

- Permit Boundary
- Area of Fill
- Quarantine Area
- Site Access Point
- COSHH Storage
- Internal Haul Route (subject to change)
- Visual Monitoring Location
- Surface Water Monitoring Point

Rev.	Details	Drawn / Chkd.	Date

Project

193224
Aston Le Walls

Title

Site Layout Plan

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Scale	Date	Drg. No.	Rev.
1:2000@A3	Jan '23	193224/D/004	

Drawn	Chkd.
EF	EB

N

Pond

Existing Pond

Administrative Cabins

Holding Area

Finish

Start

Warm Up Area

Viewing Mounds

Pond

Washbro

HS2 Balancing Pond

Proposed Lagoon
& Practice Water Jump

WL 110.50

Pond

Fishing
Platform

20 0 20 40 60 80 100

Metres

LEGEND

- HS2 Rail Line (approx)
- Existing Contours (1m)
- Retained Vegetation
- Existing Water Feature
- Extent of HS2 Land Take
- Proposed Contours (1m)
- New Woodland
- Proposed Track
- Propose Swale

Rev	Description	Date
A	Scheme Revisions	17.12.21

Client:
Washbrook Farm Ltd

Project:
Landscaped Cross-Country Course,
Aston Le Walls Equestrian Centre

Title:
Proposed Landform

Drawn By:	Suzi Coyne
Date:	June 2021
Scale:	1:2000 @ A3
Drawing No.:	296WFAW/3

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ALL EXISTING OUTFALLS INTO THE HIGHFURLONG BROOK TO BE MAINTAINED

NO GROUND RAISING BELOW FLOOD ZONE 3+CC LEVEL

PROPOSED SWALE TO RUN AROUND THE BASE PERIMETER TO DRAIN RUNOFF FROM PROPOSED EARTHWORKS.
1:3 SIDE SLOPES TO 0.5M DEEP, 0.5M WIDE CHANNEL BED, TOTAL SWALE WIDTH – 3.5M
MIN GRADIENT 1:300, MAX GRADIENT 1:75.
SWALE TO CONVEY FLOWS NORTHWARDS TO OUTFALL INTO EXISTING ON-SITE DITCH.

Unknown Drainage Arrangement

EXISTING SITE DRAINAGE SYSTEM DOES NOT CONNECT INTO EXISTING POND.
POND TO BE PARTIALLY FILLED IN.
POTENTIAL OUTFALL FROM POND INTO EXISTING DITCH TO BE INVESTIGATED AND RETAINED

EXISTING BURIED LAND DRAINAGE IN THIS AREA DISCHARGES INTO EXISTING POND

PROPOSED OVERFLOW FROM NEW LAGOON INTO EXISTING DITCH AT 110.50mAOD

TWL IN LAGOON – 110.50mAOD. WITH A PERMANENT DEPTH (TBC) OF WATER BELOW THE INLET/OVERFLOW HEADWALL

EXISTING DITCH BED LEVEL APPROXIMATELY 110.50mAOD AT INTERSECTION WITH PROPOSED LAGOON.
EXISTING FLOW ROUTE TO BE DIVERTED THROUGH PROPOSED LAGOON.

EXISTING OPEN DITCHES TO BE RETAINED WHERE FEASIBLE OR CULVERTED WITH A DN300 SOLID TWIN WALL PIPE LAID AT A MINIMUM GRADIENT OF 1/245 (MIN 70 L/S CAPACITY)

EXISTING OPEN DITCHES TO BE CULVERTED WHERE REQUIRED FOR NEW TRACK.
DN300 SOLID TWIN WALL PIPE LAID AT A MINIMUM GRADIENT OF 1/245 (MIN 70 L/S CAPACITY)

EXISTING SURFACE WATER CONVEYANCE ROUTES THROUGH THE SITE VIA THE NETWORK OF OPEN DITCHES AND CULVERTS TO BE MAINTAINED POST-DEVELOPMENT

RUN 1
RUN 2
RUN 3
RUN 4

Pond
Viewing Mounds
Washbrook Farm
Administrative Cabins
Holding Area
Finish
Start
Warm Up Area
Existing Pond
The Hovel
Water
HS2 Balancing Pond
Proposed Lagoon & Practice Water Jump
WL 113.80
Retain Suction Pond
Fishing Platform

1 2 3 4 5 6 7 9 11 12

REV. No.	DATE	DESCRIPTION	DRAWN	CHECKED

Client: AA Environmental

Project: Aston Le Walls Northamptonshire

Title: Surface Water Drainage

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Scale: NTS
Status: FOR INFORMATION
Drawn: CP
Project Engineer: CP
MJA Project No: 6485
Date: May 2021
Drawing Number: 6485-MJA-SW-XX-DR-C-001
Rev: –

Appendix A
H1 Risk Assessment

H1 Environmental Risk Assessment (H1ERA)

Document Ref: 193224/H1ERA

Table 1. Assessment of odour risks

Hazard	Receptors	Harm	Pathway	Hazard Receptor Significance	Likelihood of Hazard Receptor Linkage	Magnitude	Justification	Risk Management	Residual Risk
Odour from imported waste. Fugitive emissions from: • Deposit of materials • Storage of imported material	Workers on site. Users of the Equestrian Centre. Residential properties circa 330 m south east. Private gardens / agricultural fields to the north, south and west. Users of PRoW to the south.	Nuisance and loss of amenity value	Atmospheric (fugitive). Air transport then inhalation.	Mild	Unlikely	Very Low	Imported materials will have a low odour potential (no municipal or waste with high organic content will be imported onto the site).	Controls on types of materials accepted. Recording of any complaints and implementation of controls as set out in the Operational Plan (193224/OP).	Very Low

Table 2. Assessment of noise and vibration risks

Hazard	Receptors	Harm	Pathway	Hazard Receptor Significance	Likelihood of Hazard Receptor Linkage	Magnitude	Justification	Risk Management	Residual Risk
Noise and vibration emissions from haulage (road deliveries) and placement of waste.	Workers on site. Users of the Equestrian Centre. Residential properties circa 330 m south east. Private gardens / agricultural fields to the north, south and west. Users of the PRoW south of the site.	Levels of noise that cause loss of amenity and nuisance to users and residents in the locale. Disturbance to ecological species.	Airborne	Mild	Unlikely	Low	Adherence to agreed site operation hours. This is a relatively short-term construction activity. There will be no on-site processing of materials and activities will only comprise unloading of materials and placement. Only standard construction plant or machinery will be operated (no cooling equipment or fans will be used). No activities will take place at night. Vibration is not an issue at the site, as plant has no	All operatives inducted on the requirement to reduce noise emissions. All plant and vehicles will meet current guidance and will be maintained in line with manufacturer's requirements. Recording of any complaints and implementation of controls.	Low

H1 Environmental Risk Assessment (H1ERA)

Table 3. Assessment of fugitive emissions (other than odour)

Hazard	Receptors	Harm	Pathway	Hazard Receptor Significance	Likelihood of Hazard Receptor Linkage	Magnitude	Justification	Risk Management	Residual Risk
To Air									
Dust from vehicle operations from external haul roads. Dust from operations and handling of soil. Dust from importation and placement of soils.	Workers on site. Users of the Equestrian Centre. Residential properties circa 330 m south east. Private gardens / agricultural fields to the north, south and west. Priority habitats north of the site & the local wildlife site (LWS) to the south east. Users of the PRoW south of the site.	Harm to human health, respiratory irritation and illness.	Air then inhalation.	Moderate	Possible	Medium	Permitted wastes include wastes with small particle sizes and potential to generate dust, especially during re-grading. Haulage, importation, and placement of soils and waste have the potential to generate dusts from off-site movements during prolonged dry periods.	Implementation of controls as set out in the Dust Emissions Management Plan (193224/DEMP).	Low
		Nuisance – deposit on cars, homes, clothing etc.	Air then deposition.	Mild	Possible	Low			
		Potential irritant, loss of habitat and damage to species.	Air then deposition in ditches / terrestrial habitats.	Mild	Possible	Low			

H1 Environmental Risk Assessment (H1ERA)

Hazard	Receptors	Harm	Pathway	Hazard Receptor Significance	Likelihood of Hazard Receptor Linkage	Magnitude	Justification	Risk Management	Residual Risk
To Controlled Waters									
Run-off from site surfaces or spillages.	Drainage surrounding the site (drainage to ground). Surface water features within the site and wider area (drains and ponds) including Highfurlong Brook.	Passive leaching to ground, from contamination or spillages on surface and directly entering the drainage system.	Land and drainage systems	Moderate	Possible	Low	Waste material is being imported to site and without control may contain leachable contaminants. Spillages of oils on to surface could enter the drainage network causing pollution. The bedrock and superficial geology are designated as Secondary A aquifer. The site is not located within a Groundwater Source Protection Zone.	Controls as set out in the OP. Controls on types of materials accepted. Only acceptable fill material imported to the site. No oils or fuel to be stored on the site. Hazardous wastes or wastes in liquid form are not permitted. Drainage design to be in accordance with the Planning Permission.	Low
Run-off and infiltration from site surfaces or spillages (haulage and placement).	Drainage surrounding the site (drainage to ground). Surface water features within the site and wider area (drains and ponds) including Highfurlong Brook.	Pollution to aquifer. Pollution due to sediment entrainment into waters, loss of habitat and damage to species.	Land infiltration through soils.	Moderate	Possible	Medium	Permitted waste types do not include liquids, leachates or sludges and are unlikely to contaminate groundwater. The bedrock and superficial geology is designated as Secondary A aquifer. The site is not located within a Groundwater Source Protection Zone.	Only acceptable fill material will be imported on to the site. Hazardous wastes or wastes in liquid form are not permitted. The imported wastes will adhere to the Importation Protocol.	Low

H1 Environmental Risk Assessment (H1ERA)

Hazard	Receptors	Harm	Pathway	Hazard Receptor Significance	Likelihood of Hazard Receptor Linkage	Magnitude	Justification	Risk Management	Residual Risk
Fugitive emission of waste through entrainment in flood waters.	Local human population (as per odour). Priority habitat. Drainage surrounding the site (drainage to ground). Surface water features within the site and wider area (drains and ponds)	Nuisance, health implications and pollution/ contamination.	Flood waters	Moderate	Unlikely	Low	The majority of the site is within Flood Zone 1. The north western edge of the site, parallel to the Highfurlong Brook, is in Flood Zone 3 and 2. A very minor extent of the proposed landform is within Flood Zone 2. The proposed landform does not fall within Flood Zone 3.	Controls on types of materials accepted. Only acceptable engineering fill material will be imported on to the site. Permitted wastes/materials are at low risk from entrainment.	Very Low
Mud and Litter									
Litter from storage areas and mud from site operation.	Local human population (as per odour). Local flora and fauna. Drainage network.	Nuisance, loss of amenity and reduced safety. Mud on road. Pollution to watercourses.	Air, land, mud on vehicles, runoff to ground.	Moderate	Possible	Medium	Permitted wastes have low litter potential. No municipal wastes accepted. Site will be accessed from a maintained hard-standing haul road.	Controls as set out in the OP. Haulage routes will be inspected and maintained to keep free of mud. Road sweepers and scrapers will be operated on external and internal roads, where necessary. All visible litter on site boundaries will be cleared as soon as practicable. Inspection and corrective action regime will be undertaken in line with site management system.	Low

H1 Environmental Risk Assessment (H1ERA)

Hazard	Receptors	Harm	Pathway	Hazard Receptor Significance	Likelihood of Hazard Receptor Linkage	Magnitude	Justification	Risk Management	Residual Risk
Pest and Vermin									
Storage of waste attracting pests and vermin.	Local human population (as per odour).	Can cause increased populations and infestations of rats, mice, flies and other vermin. Result is harm to health, loss of amenity and nuisance.	Air transport and overland.	Mild	Unlikely	Very Low	Permitted wastes have low organic content. No municipal waste. Very low potential to attract pests and vermin.	Management and control on wastes accepted. Inspection of site by Site Manager on frequent basis. Implementation of controls as required.	Very Low
Ecological									
Damage to ecology (flora and fauna).	No SSSI, LNR, NNR, SAC, SPA or RAMSAR sites within 1 km of the site. Priority habitat and local wildlife site.	Destruction and/or damage to flora / fauna. Disturbance of invasive species leading to human health exposure.	Direct contact, over land and airborne.	Moderate	Possible	High	Some areas directly adjacent to the site's south eastern and near northern boundaries are identified as Priority Habitat and LWS.	All control measures and mitigation will be in accordance with the OP.	Low

H1 Environmental Risk Assessment (H1ERA)

Table 4. Accident risk assessment and management

Hazard	Receptors	Harm	Pathway	Hazard Receptor Significance	Likelihood of Hazard Receptor Linkage	Magnitude	Justification	Risk Management	Residual Risk
Fire (accidental, arson) and smoke.	Local human population (as per odour) and environment. Local flora and fauna.	Damage and loss of amenity, property, nuisance and carcinogenic particulates.	Direct contact, airborne.	Severe	Unlikely	Medium	No fire or burning on-site is permitted. Permitted wastes have low combustion potential.	No wastes will be burned on-site. Site will be secured at all times during development. Access controlled during operational hours. In event of fire, controls specified in site Accident Management Plan (AMP) and Fire Brigade notified, as necessary. Incidents recorded in the Site Diary.	Low
Spillage of fuels, oils or polluting material. Fugitive release of VOC from: • Storage activities	Soil, surface water and groundwater. Local population. Local flora and fauna.	Pollution and/or contamination	Land and drainage systems	Moderate	Unlikely	Low	Only small-scale storage of fuel and oils for plant and machinery. No hazardous or liquid wastes will be accepted on site.	Site procedures include Accident Management Plan (AMP) and spillage controls. Spill kits stored with tanks and plant, and in the site office.	Low

H1 Environmental Risk Assessment (H1ERA)

Hazard	Receptors	Harm	Pathway	Hazard Receptor Significance	Likelihood of Hazard Receptor Linkage	Magnitude	Justification	Risk Management	Residual Risk
Spillage of waste	Human health (as per odour). Surface water drainage.	Loss of amenity, nuisance, pollution and / or contamination.	Land drain and air	Moderate	Unlikely	Low	Uncontrolled release could cause health or pollution issues. No hazardous or liquid wastes will be accepted on site.	All vehicles accessing the site will be sheeted or fully enclosed. Unloading and loading will be controlled at all times. The Accident Prevention Management Plan will incorporate spillage of waste from vehicles in the event of a Road Traffic Accident. Incidents recorded in the Site Diary.	Low
Direct physical contact between humans and wastes, machinery and vehicles.	Human health (site operatives and local population).	Bodily harm.	Direct contact	Severe	Unlikely	Medium	Permitted wastes do not have potential to cause risk to human health (no hazardous materials). No public access during works.	Activities to be managed in accordance with site health and safety management system. Access to wastes to be restricted to trained and competent personnel.	Low

H1 Environmental Risk Assessment (H1ERA)

Hazard	Receptors	Harm	Pathway	Hazard Receptor Significance	Likelihood of Hazard Receptor Linkage	Magnitude	Justification	Risk Management	Residual Risk
Instability of proposed earthworks design causing subsistence / damage	Surrounding area, fauna / flora, end users	Bodily harm. Pollution to surrounding land. Loss of amenity, nuisance, pollution and / or contamination.	Land	Severe	Unlikely	High	Permitted wastes will be cohesive mineral / aggregate material and the risk of instability is considered low. The proposed design has been approved with the local Authority through a planning permission.	Proposed design in accordance with industry guidance principles and the Importation Protocol. Given the accepted waste types are limited to mineral / aggregate only, the risk of instability is not considered significant.	Low

Table 5. Assessment of ground gas risks

Hazard	Receptors	Harm	Pathway	Hazard Receptor Significance	Likelihood of Hazard Receptor Linkage	Magnitude	Justification	Risk Management	Residual Risk
Inhalation of ground gases generated by the suitable soils from proposed earthworks. Inhalation of volatile vapours with elevated concentration of determinants. Explosive risk from bio-gas/ground gases	On site land users (proposed recreational) Temporary construction staff.	Intoxication Explosion	Emissions from ground	Severe	Negligible	Very Low	The bulk of proposed import is of mineral wastes only. The import of organics is limited to use at the surface for the proposed earthworks in the upper profile. As such, no significant methane will be generated by the breakdown in the soils. Some CO_2 may develop within the imported fill due to microbial activity, but it will passively release from the soils and rapidly disperse. Any methane and CO_2 will passively release from the surface of the above ground deposit and not accumulate. The soils will not pose a risk to the recreational users of the site.	Waste acceptance procedures to ensure material is of low organic content. Waste acceptance procedures will be in accordance with the Importation Protocol.	Very Low
	Off-site land users	Intoxication Explosion	Emissions from ground building up within buildings	Severe	Negligible	Low	As above. The deposit is located above ground. Any gas generation is very unlikely. In the event it did migrate from the soils it could laterally or vertically emerge from the ground and dissipate. There is no direct pathway for it to enter nearby properties and enclosures. Hence, there is no viable pathway and risk is negligible.	As above.	Very Low

	On site land users (proposed recreational) Temporary construction staff.	Intoxication Explosion	Emissions from ground causing land instability	Severe	Negligible	Very Low	Settlement occurs 6 to 12 months from completion of the reprofiling works. Further ongoing settlement and consolidation would be likely to be complete within 3 to 5 years, albeit at a significantly reduced rate. Any methane and CO2 will passively release from the surface of the above ground deposit and not accumulate. Woks will be in accordance with an approved design and the operational plan. The operator will use well known earthworks compaction techniques.	As above.	Very Low

Appendix B
Flood Risk Assessment, AAe 2021

FLOOD RISK ASSESSMENT

NEW EVENT COURSE

AND VISUAL AND ACOUSTIC SCREEN

ASTON LE WALLS

Job No. 193224/FRA

May 2021

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Report for
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Washbrook Farm Limited
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Aston Le Walls Equestrian Centre
Washbrook Farm
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Prepared by

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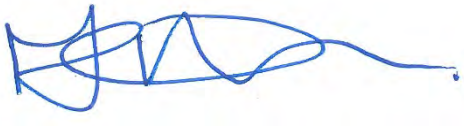
Kristian Wood MSc BSc (Hons)

Issued by

……..
Ed Brown BSc (Hons)

Approved by



……..
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Issue Date	**Issue**
May 2021	**Final**

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Table of Revisions

Issue	Description of status

Contents

DRAWINGS

APPENDICES

1.0 INTRODUCTION

Overview

1.1 AA Environmental Limited (AAe) has been commissioned by Washbrook Farm Limited to produce a Flood Risk Assessment in support of a planning application for a noise and visual screen and new event course on land at Aston Le Walls Equestrian Centre, Washbrook Farm, Welsh Rd, Aston le Walls, NN11 6RT. The site location plan is in drawing 193224/FRA/D/001.

1.2 The development is within the southern portion of the existing equestrian centre, covering an area of approximately 16.4 hectares, comprising of two grass gallops, schooling fields and a cross country course. The site is serviced by an existing drainage network made up of a series of steep sided drainage ditches and subsurface pipes/culverts and there are two existing ponds, one in the north west and the other in the south west. The current ground level falls gently from 116 m AOD in the north east of the site to 107 m AOD in the west towards Highfurlong Brook.

1.3 In compliance with the National Planning Policy Framework (NPPF), this report assesses flood risks associated with all types of flooding, to and from the development, and demonstrates how these risks have been managed through design and mitigation controls.

Methodology and Data Sources

1.4 The guidance for Flood Risk Assessment are set out in section 10 of the NPPF and its accompanying online Planning Practice Guidance (PPG); as well as Standing Advice EA Guidance. The scope and detail of the assessment should be appropriate to the scale and potential impact of the development. The guidance for Flood Risk Assessment is set out in Technical Advice Note 15: Development and Flood Risk and LPGN 29 Management of Surface Water for New Development.

1.5 Further guidance is provided in CIRIA Research Paper 624[1].

1.6 For the purposes of the assessment, data has been obtained from the following sources:

- Environment Agency (EA) flood maps (attached in Appendix A);
- British Geological Survey (BGS) Geological Map Series (1:50,000); and
- Environment Agency Website (www.environment-agency.gov.uk) for details of groundwater source protection zones and indicative fluvial floodplains;
- The Defra Data Services Platform - Risk of Flooding from Reservoirs - (Web Mapping Service); and
- HS2 - London West Midlands Environmental Statement, Volume 5, CFA15 (November 2013).

Local Policy Guidance

1.7 The West Northamptonshire Strategic Flood Risk Assessment (SFRA) (Level 1) (December 2017) and the Northamptonshire Local Flood Risk Management Strategy (NLFRMS) (November 2016) have been reviewed in the preparation of this report.

Limitations

1.8 The findings of this report are based upon information from a range of third party data sources. Professional care and diligence has been undertaken when obtaining and using this data, however AAe cannot be held responsible for the quality and accuracy of the data relied on.

[1] Development and Flood Risk: Guidance for the Construction Industry – CIRIA, London, 2004

2.0 SITE DESCRIPTION AND BASELINE CONDITIONS

Site Layout and Proposed Use

2.1 The site is located on the north western outskirts of Aston Le Walls. The site is located south of and accessed from Welsh Road. The current ground level falls gently from 116 m AOD in the north east of the site to 107 m AOD in the west towards Highfurlong Brook. The brook flows north east to south west, circa 35 m north west running parallel to the site boundary. The site location plan is shown in drawing 193224/FRA/D/001.

2.2 The site is an equestrian centre and used to train rider and horses on all aspects of the evening, including cross country. The flood risk characterisation for this use is Less Vulnerable.

2.3 The proposal is to construct an all-weather eventing course incorporating a visual and acoustic bund. The bund is required to reduce the impacts of HS2 railway on eventing. The new railway runs within 120 m of the site. The proposal requires the raising of the landform which will be undertaken using imported soils.

2.4 The proposals incorporate new ponds to mitigate the loss of the existing surface water features at the site. These ponds are considered to offer limited surface water attenuation. The development proposal is shown in drawing 4. The proposed land formation works do not amend the extant land use and consequently the flood risk characterisation.

Geology and Hydrogeology

2.5 The geology has been determined from reference to BGS Online Viewer. The site is underlain by Charmouth Mudstone Formation bedrock geology. The south western part of the site is intersected by superficial deposits of Alluvium - Clay, silt, sand and gravel, associated with the Highfurlong Brook.

2.6 The superficial geology is classified as a Secondary A aquifer. The bedrock geology is a Secondary (undifferentiated) aquifer.

Hydrology

2.7 The Environment Agency flood zone maps have been reviewed to determine the extent of any flood plain around the Highfurlong Brook. The north western edge of the site, parallel to the Highfurlong Brook, is in Flood Zone 3 and 2. The majority of the site is within Flood Zone 1. A very minor extent of the proposed landform is within Flood Zone 2. The proposed landform does not fall within Flood Zone 3. The main river affecting the site is the Highfurlong Brook, immediately to the north west of the site, which flows north east to south west.

2.8 Surface water flows through the site from the higher lands in the east. Run off flows through via a drainage network, made up of a series of steep sided drainage ditches and subsurface pipes/culverts. The farmland drainage (surface and subsurface flow with the topography towards the Highfurlong brook. The existing drainage is shown in drawing 193224/FRA/D/002. The EA Surface Water flood risk map shows a mixed designation of surface water flooding risk, with areas from very low to high risk. The main proposed landform is situated in an area largely at very low risk of surface water flooding.

3.0 FLOOD RISK ASSESSMENT AND MITIGATION

Assessment of Flood Sources

3.1 All potential sources of flooding must be considered for any proposed development. A summary of the potential sources of flooding and a review of the severity of risk posed by each source at the site is presented in Table 1.

Table 1. Sources of Flooding

<table>
<tr><th>Flood source</th><th>Description</th><th>Significant</th></tr>
<tr><td>Fluvial/lake inundation</td><td>Based on the Environment Agency (EA) Flood Map for Planning shows that the north western edge of the site, is within Flood Zone 3 (1:100 or greater year risk of flooding). The proposed landform is not within Flood Zone 3. A maximum of 10 m of the proposed landform sits with Flood Zone 2 (1:100 to 1:1000 year risk of flooding). The majority of the site is within Flood Zone 1 (>1:1000 year risk of flooding). There is no ground level change within Flood Zone 3. The proposed landform is definitively outside Flood Zone 3.

The EA have advised that they are unable to provide modelled flood level data for the site. Estimated flood levels have been calculated by overlaying the flood zone extents against the topographic levels for the site. Drawing 193224/FRA/D/004 shows estimated flood level nodes across the site demonstrating the Flood Zone 3 and 2 flood levels. The table below presents an overview:

<table>
<tr><th>Flood Level Node</th><th>Flood Zone 3 (1:100 year level) (m AOD)</th><th>Flood Zone 2 (1:100 to 1:1000 year level) (m AOD)</th></tr>
<tr><td>FL1 & 2</td><td>107.98</td><td>108.06</td></tr>
<tr><td>FL3 & 4</td><td>107.96</td><td>107.76</td></tr>
<tr><td>FL5 & 6</td><td>107.61</td><td>107.77</td></tr>
<tr><td>FL7 & 8</td><td>107.58</td><td>107.6</td></tr>
<tr><td>FL9 & 10</td><td>107.58</td><td>107.61</td></tr>
</table>

These are broadly consistent with the downstream HS2 modelled flood levels. It is noted that the flood level does drop off considerably at the lower end of the landform extent, giving a Flood Zone 3 and 2 extent of circa 107.6 m AOD. This is a fall in depth of 400 and 500 mm from the north eastern edge of the landform to the south western edge of the landform.

The approved Highfurlong Brook modelling report (WR-004-008), Volume 5 of the High Speed 2 (HS2) - London West Midlands Environmental Statement has been reviewed as part of the assessment. Previously, an additional climate change allowance of 40 mm (based on the 20% allowance) was incorporated. This is based on a ‘Central’ classification given that it is a less vulnerable development.

<table>
<tr><th>Flood Level Node</th><th>Flood Zone 3 (1:100 year level) (m AOD)</th><th>Flood Zone 3 (plus climate change) (m AOD)</th></tr>
<tr><td>FL1 & 2</td><td>107.98</td><td>108.02</td></tr>
<tr><td>FL3 & 4</td><td>107.96</td><td>108</td></tr>
<tr><td>FL5 & 6</td><td>107.61</td><td>107.65</td></tr>
<tr><td>FL7 & 8</td><td>107.58</td><td>107.62</td></tr>
<tr><td>FL9 & 10</td><td>107.58</td><td>107.62</td></tr>
</table>

The historic flood map provided by the EA shows that the site was unaffected by the 1992, 1993 & 1998 flooding events from the Highfurlong Brook.</td><td>Yes</td></tr>
<tr><td>Foul drainage inundation</td><td>There is no sewerage infrastructure installed on site. There is no increase in risk from foul drainage inundation.</td><td>Unlikely</td></tr>
<tr><td>Surface water drainage ponding and/or inundation (pluvial flooding)</td><td>The site remains green field and run-off rates should remain the same. The drainage at the site includes a new lagoon.

The design ensures that the land to the east of the development can continue to drain through the site un-interrupted and there is no risk of backing up and localised flooding.</td><td>Unlikely</td></tr>
</table>

Flood source	Description	Significant
Surface water run-off and attenuation	The EA map shows the site is largely unaffected by surface water flooding. The proposed landform is situated in an area of low risk of surface water flooding. There is a very small portion of a 1 in 1000 year surface water flood extent along the western edge of the landform.	Unlikely
Groundwater inundation	The NLFRMS designates the area adjacent of the Highfurlong Brook as at very low risk of groundwater flooding. The areas on which the landforms are proposed, are unaffected by groundwater flooding.	Possible
Reservoir Flooding	The Defra Data Services Platform - Risk of Flooding from Reservoirs (Web Mapping Service) shows the site is at risk of flooding from the Boddington Reservoir. The maximum depth of the reservoir flooding would be 111.0 m AOD.	Very Unlikely

Fluvial Flooding

3.2 The majority of the proposed landform is within Flood Zone 1. A very small portion of the site, circa 8 % of the proposed landform area, lies within Flood Zone 2. The development is 'Less Vulnerable' and is acceptable in flood risk terms.

3.3 The interpreted Flood Zone 3 flood event level are shown in Table 1. This has been assessed comparing flood extents against the ground level survey.

3.4 There is no risk of on or off-site displacement of flood waters during a 1:100 year event plus climate change. During a 1:1000 year event, the flood risk is very minor, circa 8 % of the proposed landform area is within Flood Zone 2.

3.5 Furthermore, the HS2 model concluded that the maximum influence of the rail construction on flood levels at the Highfurlong Brook would be 50 m upstream of the viaduct crossing. The distance from the crossing to the proposed landform is greater than 50 m, hence it is considered that there is no need to account for increased flood risk from the HS2 project in regard to the bund construction.

3.6 The historic flood map provided by the EA shows that the site was unaffected by the 1992, 1993 & 1998 flooding events from the Highfurlong Brook.

Surface Water Flooding

3.7 The site is largely unaffected by surface water flooding. The proposed landform is situated in an area of low risk of surface water flooding.

3.8 The surface water drainage is managed well across the site and the existing drainage is presented in drawing 193224/FRA/D/002 and supplemented by photos in Appendix B.

3.9 The reconfiguration of the surface water drainage system is outlined in Appendix C. The landform will be finished with vegetation and permeable track and therefore greenfield runoff rates can be maintained. All surface water will propagate towards the Highfurlong Brook as per existing conditions via a re-configured drainage system. The drainage design seeks to ensure that flow from higher land to the east is not impeded and localised surface water flooding does not occur.

3.10 There will also be attenuation offered by the proposed lagoon. There will be infilling and re-configuration of the existing ponds however following a walkover from the surface water drainage engineer, it was concluded that these were decorative and did not offer significant attenuation.

3.11 The NLFRMS designates the ward as of low sensitivity to climate change impacts on surface water flood risk.

Groundwater Flooding

3.12 The NLFRMS designates the area adjacent of the Highfurlong brook at very low risk of groundwater flooding, likely due to the high permeability of the underlying superficial geology. No recorded incidents of groundwater flooding at the site were identified.

3.13 The risk of groundwater flooding is highest if a development utilises a basement, either for storage and/or car parking. The proposals do not incorporate basements at the site.

Foul Sewer Flooding

3.14 There is no sewerage infrastructure installed on site. There is no increase in the number of people that the sewage system of the existing facilities of the equestrian centre must accommodate for. There is no increase in foul sewer flood risk.

Safe Access & Egress

3.15 The proposed landform is a non-habitable development. The majority of the site is within Flood Zone 1. A very small part of the proposed landform is within Flood Zone 2 however there is easy connectivity to Flood Zone 1. The safe access / egress risk remains the same.

Reservoir Flooding

3.16 According to the EA reservoir flood maps, the site is within an area at risk of flooding, if the containment of Boddington Reservoir were to fail.

3.17 Risk of dam failure on reservoirs is considered extremely low and there is no record of reservoir flooding in Aston Le Walls. Furthermore, there has been no loss of life in the UK from reservoir flooding since 1925. There is the requirement for the probability of a flood event or breach from such a reservoir owned by a water company to be maintained at 1 in 50,000 and any flood risk that exists from reservoir failure is therefore considered to be a residual risk.

Review of Sequential & Exception Test

3.18 The development comprises the re-engineering of site levels to ensure that the business can continue to operate post the construction of HS2. The engineering works are all out with Flood Zone 3, have no impact upon run off rates and following the guidance of the National Planning Policy Framework, a sequential test is not considered necessary.

3.19 The development incorporates design measures to ensure that there is no flood displacement, increased run off, changes to external drainage, or a change in the risk to site users or the wider local community. The land is predominantly in flood zone 1. The development ensures impacts of HS2 on the equestrian centre are fully mitigated and the engineering works are considered to improve the equestrian offering at the site. The site is considered to meet all the requirements of the exception test.

4.0 CONCLUSIONS

4.1 The majority of the site is within Flood Zone 1. The north western part of the site is within Flood Zone 3 however this is not within the proposed developmental footprint. A small portion of the proposed landform (circa 8 % of the area) is within Flood Zone 2; with the majority in Flood Zone 1. The site is located south of and accessed from Welsh Road. The current ground level falls gently from 116 m AOD in the north east of the site to 107 m AOD in the west towards Highfurlong Brook.

4.2 The proposals are to re-engineer the topography of the south west corner of the site. The revised land formation will act as a noise and visual screen for the equestrian centre from the HS2 railway. The proposed development is considered acceptable in flood risk terms.

4.3 To improve the design of the site in terms of flood risk from all sources, the following mitigation measures will be proposed:

- Reconfiguration of the surface water drainage system and incorporation of attenuation lagoon to increase water storage capacity. The revised drainage design maintains the flow of water from the land to the east through the site ensuring there is no localised flooding;
- Extensive planting of noise screening vegetation and permeable track; and
- Alignment of landform to preserve the propagation of flood waters during 1:100 year and 1:100 year plus climate change flood events.

4.4 The majority of the site is within Flood Zone 1 and safe dry access / egress remains the same at the site.

4.5 Provided the following design and mitigation measures are implemented, the proposed development is considered acceptable in flood risk terms in accordance with NPPF, PPG and SFRA guidance.

193224/FRA AA Environmental Limited

May 2021

DRAWINGS

Key:

- Planning Application Boundary
- HS2 Extents
- Proposed HS2 Railway Line

Rev.	Details	Drawn / Chkd.	Date

Project

193224
Aston Le Walls

Title

Site Location Plan

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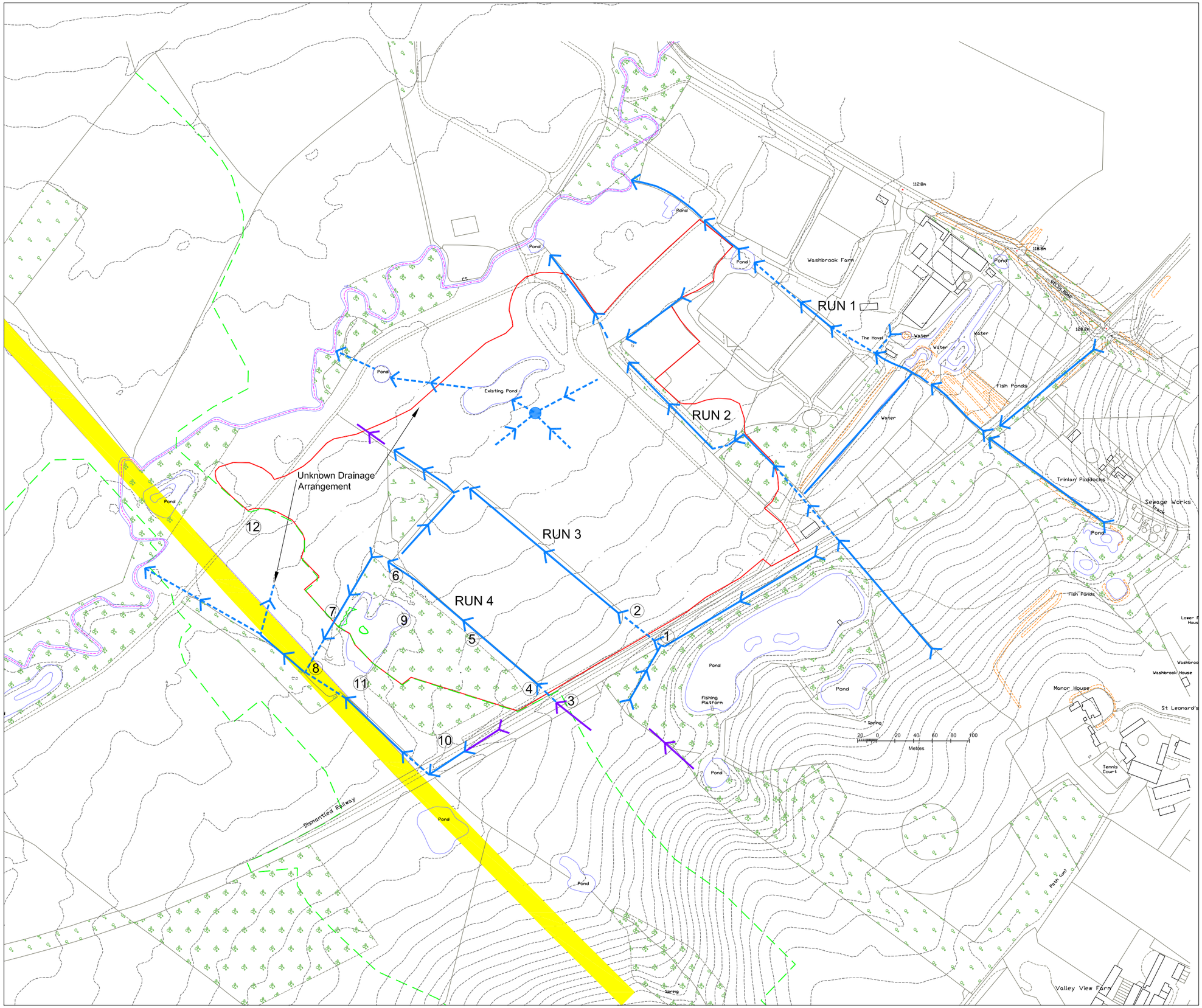
Scale	Date	Drg. No.	Rev.
1:4,000@A3	Apr '21	193224/FRA/D/001	
	Drawn: KW / Chkd.: EB		



Key:

- Planning Application Boundary
- HS2 Extents
- Proposed HS2 Railway Line
- Surface Drainage Ditch
- Subsurface Drainage
- Dry Drainage Ditch
- Flow Direction
- Manhole
- (1) Photoplate Number

Notes:

1. Photoplate numbers correspond to the photos shown in Appendix A of 193224/FRA.
2. Run 1 & 2 are unaffected by the development. Some minor regrading is proposed across the site, however none impinges on the existing drainage network north east of Run 3.

Rev.	Details	Drawn / Chkd.	Date

Project

193224
Aston Le Walls

Title

Existing Drainage Plan

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Scale	Date	Drawn	Chkd.	Drg. No.	Rev.
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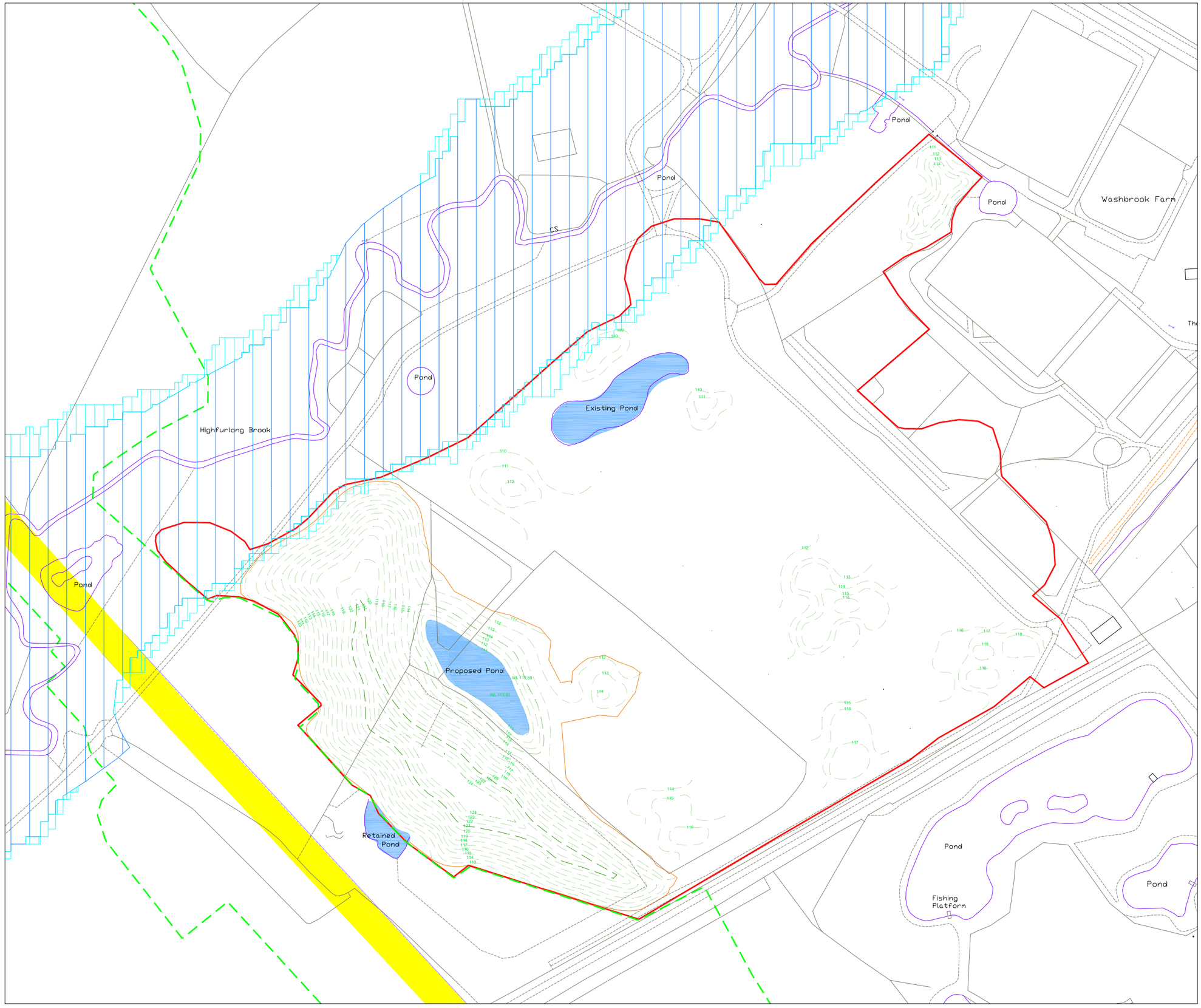

Key:

- Planning Application Boundary
- HS2 Extents
- Proposed HS2 Railway Line
- Proposed Contours
- Proposed Earthworks Outline
- Flood Zone 3 Extent
- Flood Zone 2 Extent

Rev.	Details	Drawn / Chkd.	Date

Project

193224
Aston Le Walls

Title

Flood Zone Extent Plan

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Scale	Date	Drg. No.	Rev.
1:2,500@A3	Apr '21	193224/FRA/D/003	

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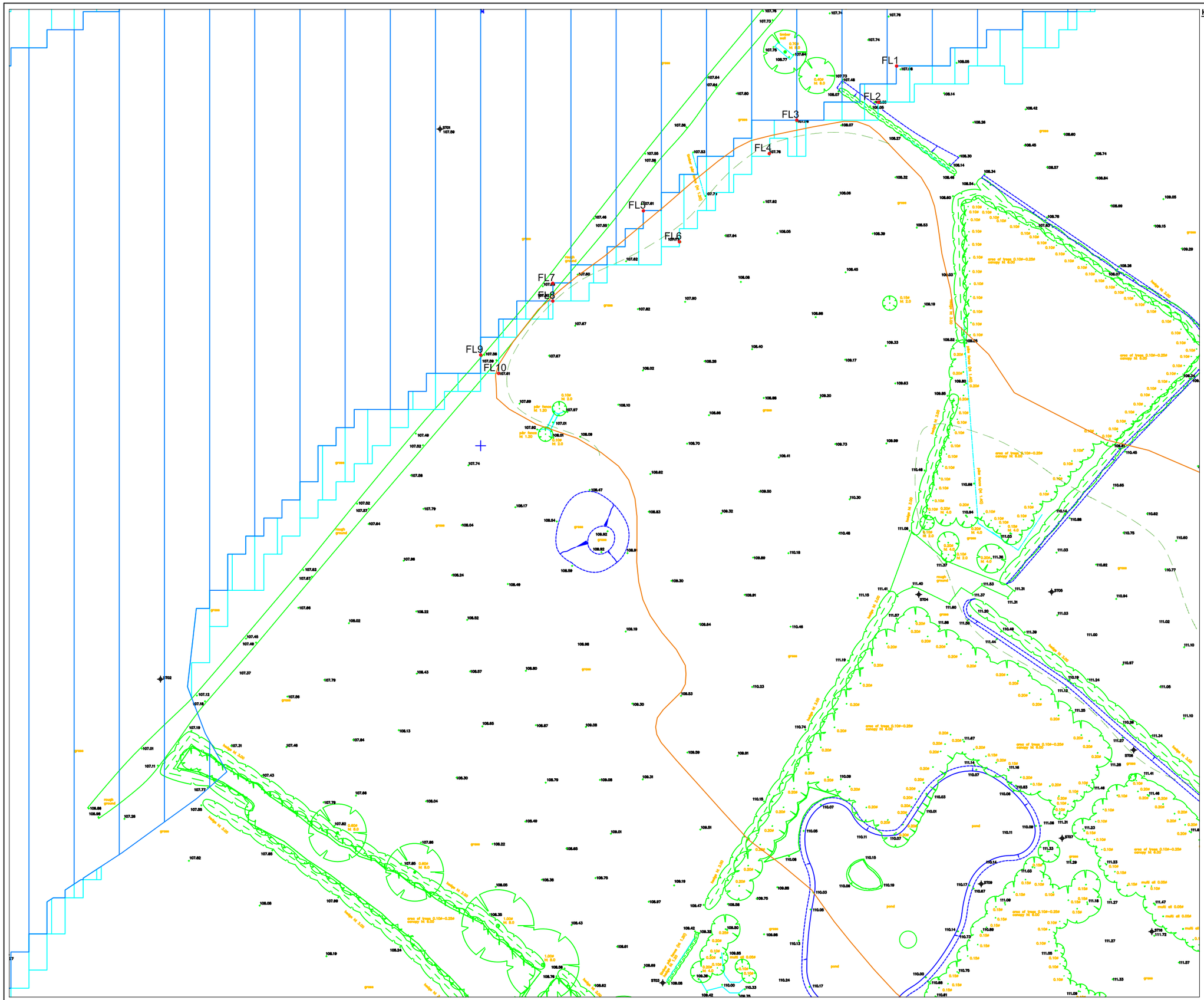
KW	EB



Key:

- 108.84 Ground Level Survey (Midland Survey, May 2019)
- Extent of proposed landform
- Flood Zone 3
- Flood Zone 2
- Flood Level Nodes

Rev.	Details	Drawn / Chkd.	Date

Project

193224
Aston Le Walls

Title

Flood Extent Topographical Survey Plan

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www.aae-ltd.co.uk

Environmental Consultants

Scale	Date	Drg. No.	Rev.
1:1000@A3	May'21	193224/FRA/D/004	
	Drawn: EB / Chkd.: ML		

N

Pond

Existing Pond

Holding Area

Administrative Cabins

Finish

Start

Warm Up Area

Viewing Mounds

Pond

Washbro

HS2 Balancing Pond

Proposed Lagoon
& Practice Water Jump

WL 110.50

Pond

Fishing
Platform

20 0 20 40 60 80 100

Metres

LEGEND

- HS2 Rail Line (approx)
- Existing Contours (1m)
- Retained Vegetation
- Existing Water Feature
- Extent of HS2 Land Take
- Proposed Contours (1m)
- New Woodland
- Proposed Track
- Propose Swale

Rev	Description	Date

Client:
Washbrook Farm Ltd

Project:
Landscaped Cross-Country Course,
Aston Le Walls Equestrian Centre

Title:
Proposed Landform

Drawn By:	Suzi Coyne
Date:	June 2021
Scale:	1:2000 @ A3
Drawing No.:	296WFAW/3

Suzi Coyne Planning

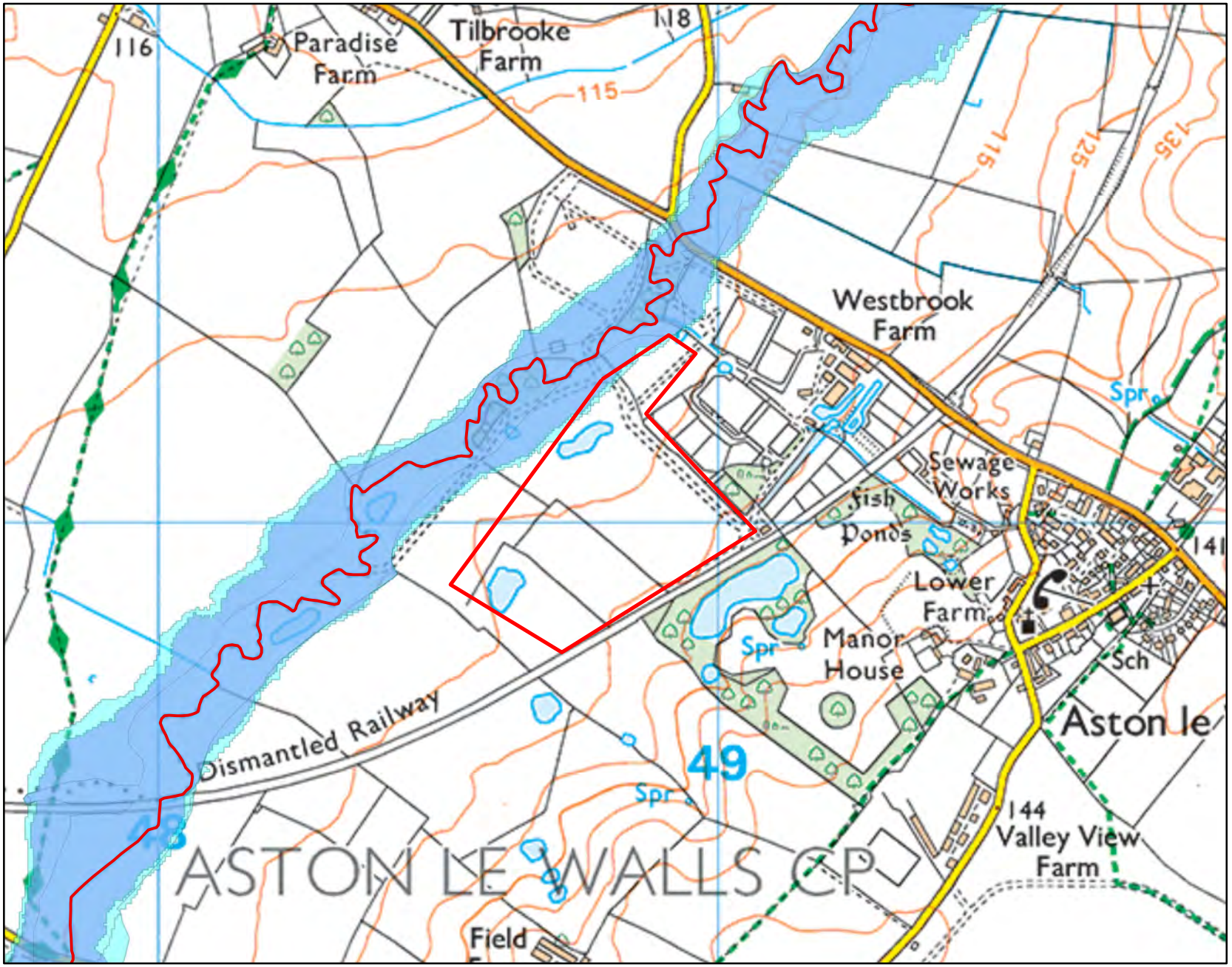
60 Blenheim Drive
Oxford, OX2 8DQ
Tel.: 01865 453747
Mob: 07779 099560

email: suzi.coyne@ntlworld.com

APPENDIX A

Environment Agency Flood Maps

Flood Map for Planning centred on NN11 6RT
Created on 24/3/2021 REF: THM210811



Environment Agency

Kilometres

0 0.25 0.5

Legend

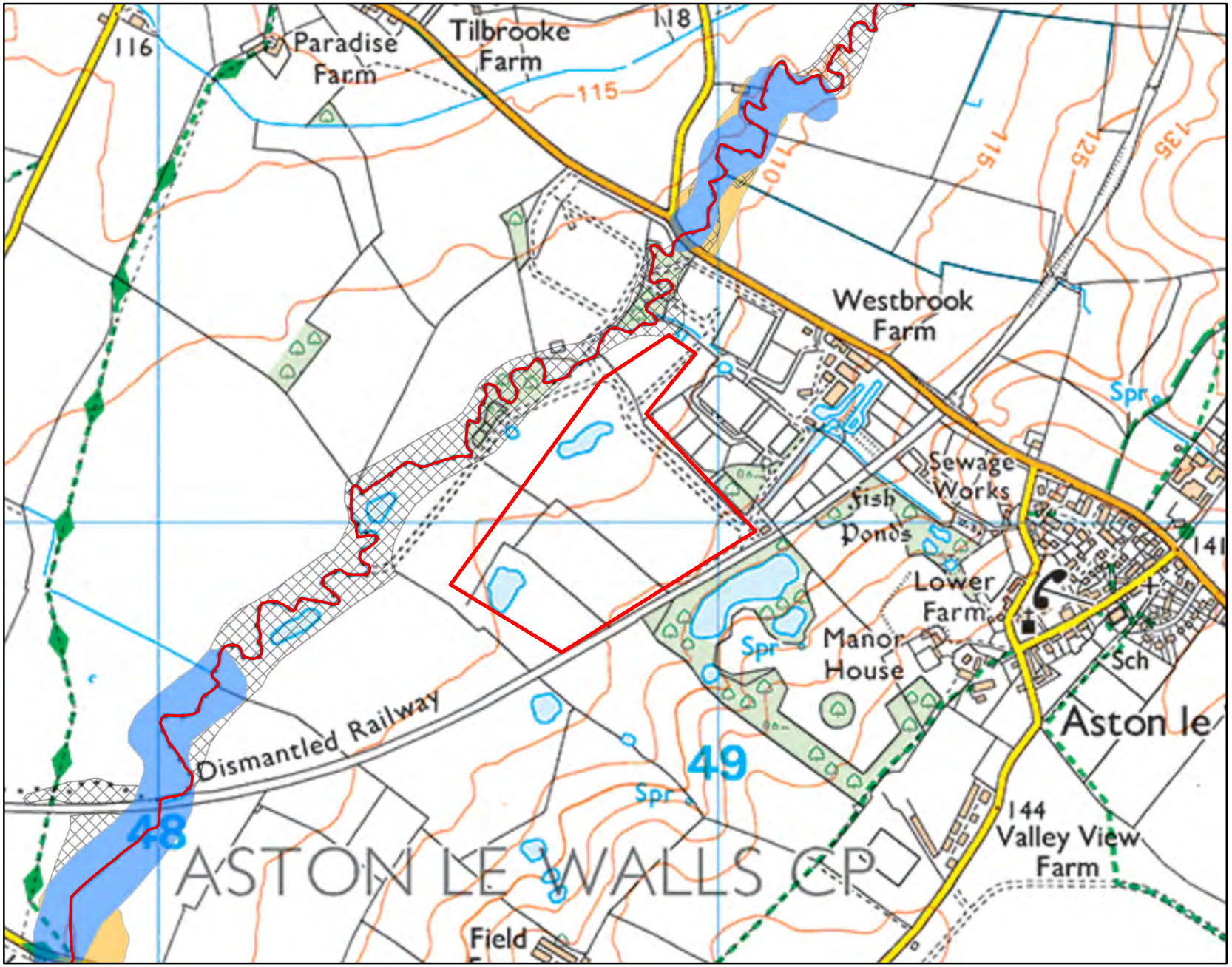
- Main River
- Flood defences
- Areas benefiting from flood defences
- Flooding from rivers or sea (FZ3)
- Extent of extreme flood (FZ2)
- Flood Map - flood storage areas

Flooding from rivers or sea without defences (Flood Zone 3) shows the area that could be affected by flooding:
- from the sea with a 1 in 200 or greater chance of happening each year
- or from a river with a 1 in 100 or greater chance of happening each year.

The Extent of an extreme flood (Flood Zone 2) shows the extent of an extreme flood from rivers or the sea with up to a 1 in 1000 chance of occurring each year.

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

Historic Flood Map centred on NN11 6RT
Created on 24/3/2021 REF: THM210811



Environment Agency

Kilometres

0 0.25 0.5

Legend

Main River

year

1992

1993

1998

Flooding from rivers or sea without defences (Flood Zone 3) shows the area that could be affected by flooding:
- from the sea with a 1 in 200 or greater chance of happening each year
- or from a river with a 1 in 100 or greater chance of happening each year.

The Extent of an extreme flood (Flood Zone 2) shows the extent of an extreme flood from rivers or the sea with up to a 1 in 1000 chance of occurring each year.

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

Risk of flooding from Surface Water centred on NN11 6RT created 24/3/2021 Ref: THM210811

Environment Agency

1: 10,000

0 Metres 250

N W E S

Likelihood of flooding from Surface Water

- High (>=3.3%)
- Medium (3.3% - 1%)
- Low (1% - 01%)
- Very Low
- Flood Extent 1 in 30
- Flood Extent 1 in 100
- Flood Extent 1 in 1000

Likelihood of flooding from Surface Water

High:	Greater than or equal to 3.3% (1 in 30) chance in any given year
Medium:	Less than 3.3% (1 in 30) but greater than or equal to 1% (1 in 100) chance in any given year
Low:	Less than 1% (1 in 100) but greater than or equal to 0.1% (1 in 1,000) chance in any given year
Very Low:	Less than 0.1% (1 in 1,000) chance in any given year

This information is shown on the Risk of Flooding from Surface Water map on GOV.UK.

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506 (Mon-Fri 8-6). E-mail: enquires@environment-agency.gov.uk

APPENDIX B

Site Drainage Photo Plates (March 2021)

Comment

View looking north west, where drainage ditches meet entry point into site.

This is typical of other entry points onto site, where the external ditch flows into a subsurface drainage pipe.

Project
193224
Aston Le Walls

Reference
Photo 1

Date
22/03/2021

Originator
Kristian Wood

AA Environmental Limited
Units 4-8 Cholswell Court
Shippon, Abingdon
OX13 6HX
T: (01235) 536042
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www.aae-ltd.co.uk

Comment

View looking south east at entry point onto site drainage ditch.

Water is channelled through sub surface drainage pipe seen in Photo 1.

Project
193224
Aston Le Walls

Reference
Photo 2

Date
22/03/2021

Originator
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www.aae-ltd.co.uk

Comment

View looking west at entry point into site, with subsurface drainage pipe.

Project
193224
Aston Le Walls

Reference
Photo 3

Date
22/03/2021

Originator
Kristian Wood

AA Environmental Limited
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Comment

View looking east at entry point into drainage ditch on site.

Water is channelled through subsurface drainage pipe seen in photo 3.

Project
193224
Aston Le Walls

Reference
Photo 4

Date
22/03/2021

Originator
Kristian Wood

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Comment

View looking north east at drainage ditch.

Base of drainage ditch is 1 m below surrounding ground level, as determined in site survey. This is a typical ditch depth of the exposed ditches around site.

Project
193224
Aston Le Walls

Reference
Photo 5

Date
22/03/2021

Originator
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Comment

View looking north west where drainage ditch disappears into subsurface pipe.

Project
193224
Aston Le Walls

Reference
Photo 6

Date
22/03/2021

Originator
Kristian Wood

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www.aae-ltd.co.uk

Comment

View looking east where pipe enters the drainage ditch, the latter of which is running south west.

Project
193224
Aston Le Walls

Reference
Photo 7

Date
22/03/2021

Originator
Kristian Wood

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www.aae-ltd.co.uk

Comment

View looking south west where pipe enters off site drainage ditch, the latter of which is running north west.

Note that HS2 railway is to be constructed in this location.

Project
193224
Aston Le Walls

Reference
Photo 8

Date
22/03/2021

Originator
Kristian Wood

Environmental Consultants

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Comment

View looking west at pond, half of which is to be infilled.

No exit points for the water were found, however, pond potentially drains into ditch in photo 7.

Project
193224
Aston Le Walls

Reference
Photo 9

Date
22/03/2021

Originator
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Comment

View looking north west at wet ground.

No other areas of wet or boggy ground were identified in site walkover, other than those in Photos 11 & 12.

Project
193224
Aston Le Walls

Reference
Photo 10

Date
22/03/2021

Originator
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www.aae-ltd.co.uk

Comment

View looking south east at wet ground.

No other areas of wet or boggy ground were identified in site walkover, other than those in Photos 10 & 12. Potentially ponded surface water.

Project
193224
Aston Le Walls

Reference
Photo 11

Date
22/03/2021

Originator
Kristian Wood

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Comment

View looking north at wet ground.

No other areas of wet or boggy ground were identified in site walkover, other than those in Photos 10 & 11.

Project
193224
Aston Le Walls

Reference
Photo 12

Date
22/03/2021

Originator
Kristian Wood

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APPENDIX C

MJA Consulting Detailed Drainage Design

ALL EXISTING OUTFALLS INTO THE HIGHFURLONG BROOK TO BE MAINTAINED

NO GROUND RAISING BELOW FLOOD ZONE 3+CC LEVEL

PROPOSED SWALE TO RUN AROUND THE BASE PERIMETER TO DRAIN RUNOFF FROM PROPOSED EARTHWORKS.
1:3 SIDE SLOPES TO 0.5M DEEP, 0.5M WIDE CHANNEL BED, TOTAL SWALE WIDTH – 3.5M
MIN GRADIENT 1:300, MAX GRADIENT 1:75.
SWALE TO CONVEY FLOWS NORTHWARDS TO OUTFALL INTO EXISTING ON-SITE DITCH.

Unknown Drainage Arrangement

EXISTING SITE DRAINAGE SYSTEM DOES NOT CONNECT INTO EXISTING POND.
POND TO BE PARTIALLY FILLED IN.
POTENTIAL OUTFALL FROM POND INTO EXISTING DITCH TO BE INVESTIGATED AND RETAINED

HS2 Balancing Pond

Proposed Lagoon & Practice Water Jump

WL 113.80

PROPOSED OVERFLOW FROM NEW LAGOON INTO EXISTING DITCH AT 110.50mAOD

TWL IN LAGOON – 110.50mAOD. WITH A PERMANENT DEPTH (TBC) OF WATER BELOW THE INLET/OVERFLOW HEADWALL

EXISTING DITCH BED LEVEL APPROXIMATELY 110.50mAOD AT INTERSECTION WITH PROPOSED LAGOON.
EXISTING FLOW ROUTE TO BE DIVERTED THROUGH PROPOSED LAGOON.

RUN 3

RUN 4

Existing Pond

EXISTING BURIED LAND DRAINAGE IN THIS AREA DISCHARGES INTO EXISTING POND

Holding Area

Administrative Cabins

Start

Finish

Warm Up Area

Viewing Mounds

RUN 1

RUN 2

EXISTING OPEN DITCHES TO BE RETAINED WHERE FEASIBLE OR CULVERTED WITH A DN300 SOLID TWIN WALL PIPE LAID AT A MINIMUM GRADIENT OF 1/245 (MIN 70 L/S CAPACITY)

EXISTING OPEN DITCHES TO BE CULVERTED WHERE REQUIRED FOR NEW TRACK.
DN300 SOLID TWIN WALL PIPE LAID AT A MINIMUM GRADIENT OF 1/245 (MIN 70 L/S CAPACITY)

EXISTING SURFACE WATER CONVEYANCE ROUTES THROUGH THE SITE VIA THE NETWORK OF OPEN DITCHES AND CULVERTS TO BE MAINTAINED POST-DEVELOPMENT

Fishing Platform

Washbrook Farm

The Hovel

Water

Pond

1 2 3 4 5 6 7 9 11 12

REV. No.	DATE	DESCRIPTION	DRAWN	CHECKED

Client: AA Environmental

Project: Aston Le Walls Northamptonshire

Title: Surface Water Drainage

MJA CONSULTING
CIVIL & STRUCTURAL ENGINEERS
Ipsum Court, 24 The Quadrant, Abingdon Science Park, Abingdon Oxon, OX14 3YS
Tel: 01235 555173
Email: mail@mjaconsulting.co.uk

Scale: NTS | Status: FOR INFORMATION
Drawn: CP | Project Engineer: CP | MJA Project No: 6485 | Date: May 2021
Drawing Number: 6485-MJA-SW-XX-DR-C-001 | Rev: –

Aston Le Walls, Northhants

Surface Water Drainage Technical Note

5th May 2021

The existing greenfield site comprises a network of open drainage ditches and piped culverts to drain surface water from the site and upstream catchment, with all flows conveyed into the Highfurlong Brook at the north western site boundary.
There are several open water features on site, however these do not currently offer any level of attenuation to surface water flows, with flows discharging unrestricted into the watercourse.

As a result of the development proposals, there is to be no increase in impermeable areas. The existing greenfield runoff regime will be maintained post-development including points of outfall, overland routes and the peak rate and volume of surface water runoff.

Any of the existing on-site ditches that require infilling to facilitate the proposals will be culverted with a minimum DN300 twinwall pipe laid no flatter than 1:245, providing a typical approximate flow capacity of 67 l/s.

Mannings equation for DN00 pipe capacity: $\mathbf{V = 1/n * R^{2/3} * S^{1/2}}$

V = Flow Velocity
Q = Flow Rate
R = Hydraulic Radius
S = Pipe Slope
n = Mannings Coefficient

$V= 1/0.012 * (0.07068/0.942)^{2/3} * (0.00408)^{1/2}$
V= 0.95 m/s

Q=V*A
Q = 66.9 l/s

The proposed alterations of ground towards the western site boundary will be accompanied by a dedicated open swale providing a typical approximate flow capacity of 810 l/s throughout its length to drain runoff from the base of the embankments to convey flows into the existing site drainage system.

Mannings equation for open swale channel:

$V= 1/0.03 * (1/3.662)^{2/3} * (0.00333)^{1/2}$
V= 0.81 m/s

Q=V*A
Q = 810 l/s

Statement by

Chris Pendle
MJA Consulting
01253 55513

Appendix C
Envirocheck Report

Envirocheck® Report:

Datasheet

Order Details:

Order Number:
306321037_1_1

Customer Reference:
193224

National Grid Reference:
448750, 251010

Slice:
A

Site Area (Ha):
0.01

Search Buffer (m):
1000

Site Details:

Site at 448700, 251000

Client Details:

Ms E Ford
AA Environmental Ltd
4-8 Cholswell Court
Shippon
Abingdon
OX13 6HX

Envirocheck®
LANDMARK INFORMATION GROUP®

Contents

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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Stantec Copyright Notice

Radon Potential dataset Copyright Notice

Natural Resources Wales Copyright Notice

Report Version v53.0

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Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Agency & Hydrological					
BGS Groundwater Flooding Susceptibility	pg 1		Yes	Yes	n/a
Contaminated Land Register Entries and Notices					
Discharge Consents	pg 1			1	13
Prosecutions Relating to Controlled Waters			n/a	n/a	n/a
Enforcement and Prohibition Notices					
Integrated Pollution Controls					
Integrated Pollution Prevention And Control					
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 4		Yes		
Pollution Incidents to Controlled Waters	pg 4				2
Prosecutions Relating to Authorised Processes					
Registered Radioactive Substances					
River Quality	pg 4		1		1
River Quality Biology Sampling Points					
River Quality Chemistry Sampling Points					
Substantiated Pollution Incident Register					
Water Abstractions	pg 5				2 (*6)
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	pg 7		Yes	n/a	n/a
Flooding from Rivers or Sea without Defences	pg 7		Yes	n/a	n/a
Areas Benefiting from Flood Defences				n/a	n/a
Flood Water Storage Areas				n/a	n/a
Flood Defences				n/a	n/a
OS Water Network Lines	pg 7		1	15	14

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Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Waste					
BGS Recorded Landfill Sites					
Historical Landfill Sites					
Integrated Pollution Control Registered Waste Sites					
Licensed Waste Management Facilities (Landfill Boundaries)					
Licensed Waste Management Facilities (Locations)					
Local Authority Landfill Coverage	pg 11	2	n/a	n/a	n/a
Local Authority Recorded Landfill Sites					
Potentially Infilled Land (Non-Water)					
Potentially Infilled Land (Water)					
Registered Landfill Sites					
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					

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Summary

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 12	Yes	n/a	n/a	n/a
BGS Estimated Soil Chemistry	pg 12	Yes		Yes	Yes
BGS Recorded Mineral Sites					
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 13	Yes		n/a	n/a
Potential for Compressible Ground Stability Hazards	pg 13		Yes	n/a	n/a
Potential for Ground Dissolution Stability Hazards				n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 13	Yes		n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 13		Yes	n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 13	Yes		n/a	n/a
Radon Potential - Radon Affected Areas	pg 13	Yes	n/a	n/a	n/a
Radon Potential - Radon Protection Measures			n/a	n/a	n/a
Industrial Land Use					
Contemporary Trade Directory Entries	pg 14				3
Fuel Station Entries					
Points of Interest - Commercial Services	pg 14				1
Points of Interest - Education and Health					
Points of Interest - Manufacturing and Production	pg 14				1
Points of Interest - Public Infrastructure	pg 14				3
Points of Interest - Recreational and Environmental					
Gas Pipelines					
Underground Electrical Cables					

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Summary

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 15	1			
Ramsar Sites					
Sites of Special Scientific Interest					
Special Areas of Conservation					
Special Protection Areas					
World Heritage Sites					

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A13NW (NW)	131	1	448650 251100
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A14SW (SE)	472	1	449100 250700
1	**Discharge Consents** Operator: Mr. N. Taylor Property Type: DOMESTIC PROPERTY (MULTIPLE) (INCL FARM HOUSES) Location: Washbrook Farm,Welsh Road,Astonle Walls,Daventry,Northamptonshire,Nn11 6r Authority: Environment Agency, Thames Region Catchment Area: Not Given Reference: CATM.3270 Permit Version: 1 Effective Date: 9th June 1998 Issued Date: 9th June 1998 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Trib Of The Highfurlong Brook **Status: New Consent, by Application (Water Resources Act 1991, Section 88)** Positional Accuracy: Located by supplier to within 10m	A14NW (E)	444	2	449160 251180
2	**Discharge Consents** Operator: Thames Water Utilities Ltd Property Type: WWTW/SEWAGE TREATMENT WORKS (WATER COMPANY) Location: Aston Le Walls Wwtw Aston Le Walls Northamptonshire Nn11 6un Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Cntd.0040 Permit Version: 6 Effective Date: 23rd October 2019 Issued Date: 23rd October 2019 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Tributary Of Highfurlong Brook **Status: Varied under EPR 2010** Positional Accuracy: Located by supplier to within 100m	A14SW (E)	652	2	449400 251000
2	**Discharge Consents** Operator: Thames Water Utilities Ltd Property Type: WWTW/SEWAGE TREATMENT WORKS (WATER COMPANY) Location: Aston Le Walls Wwtw Aston Le Walls Northamptonshire Nn11 6un Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Cntd.0040 Permit Version: 6 Effective Date: 23rd October 2019 Issued Date: 23rd October 2019 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Tributary Of Highfurlong Brook **Status: Varied under EPR 2010** Positional Accuracy: Located by supplier to within 100m	A14SW (E)	652	2	449400 251000
2	**Discharge Consents** Operator: Thames Water Utilities Ltd Property Type: WWTW/SEWAGE TREATMENT WORKS (WATER COMPANY) Location: Aston Le Walls Wwtw Aston Le Walls . Northamptonshire Nn11 6un Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Temp.2360 Permit Version: 3 Effective Date: 22nd March 2019 Issued Date: 22nd March 2019 Revocation Date: 22nd October 2019 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Highfurlong Brook **Status: Permit consolidated into another EPR permit** Positional Accuracy: Located by supplier to within 100m	A14SW (E)	652	2	449400 251000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
2	**Discharge Consents** Operator: Thames Water Utilities Limited. Property Type: WWTW/SEWAGE TREATMENT WORKS (WATER COMPANY) Location: Aston Le Walls Wwtw Aston Le Walls Northamptonshire Nn11 6un Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Cntd.0040 Permit Version: 5 Effective Date: 1st April 2010 Issued Date: 1st April 2010 Revocation Date: 22nd October 2019 Discharge Type: Sewage Discharges - Final/Treated Effluent - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Unnamed Trib. Of High Furlong **Status: Varied by Application - (Water Resources Act 1991, Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A14SW (E)	662	2	449410 251000
2	**Discharge Consents** Operator: Thames Water Utilities Limited. Property Type: WWTW/SEWAGE TREATMENT WORKS (WATER COMPANY) Location: Aston Le Walls Wwtw Aston Le Walls Northamptonshire Nn11 6un Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Cntd.0040 Permit Version: 4 Effective Date: 1st January 2010 Issued Date: 25th September 2009 Revocation Date: 31st March 2010 Discharge Type: Sewage Discharges - Final/Treated Effluent - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Unnamed Trib. Of High Furlong **Status: Varied by Application - (Water Resources Act 1991, Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A14SW (E)	662	2	449410 251000
2	**Discharge Consents** Operator: Thames Water Utilities Limited. Property Type: WWTW/SEWAGE TREATMENT WORKS (WATER COMPANY) Location: Aston Le Walls Wwtw Aston Le Walls Northamptonshire Nn11 6un Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Cntd.0040 Permit Version: 3 Effective Date: 8th March 2005 Issued Date: 8th March 2005 Revocation Date: 31st December 2009 Discharge Type: Sewage Discharges - Final/Treated Effluent - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Unnamed Trib. Of High Furlong **Status: Varied by Application - (Water Resources Act 1991, Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A14SW (E)	662	2	449410 251000
2	**Discharge Consents** Operator: Thames Water Utilities Limited. Property Type: WWTW/SEWAGE TREATMENT WORKS (WATER COMPANY) Location: Aston Le Walls Wwtw Aston Le Walls Northamptonshire Nn11 6un Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Cntd.0040 Permit Version: 1 Effective Date: 9th November 1989 Issued Date: 9th November 1989 Revocation Date: 30th September 1990 Discharge Type: Sewage Discharges - Final/Treated Effluent - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Unnamed Trib. Of High Furlong **Status: By direction of Secretary of State (Water Act 1989, Schedule 26 & 25(4)(5))** Positional Accuracy: Located by supplier to within 10m	A14SW (E)	662	2	449410 251000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
2	**Discharge Consents** Operator: Thames Water Utilities Limited. Property Type: WWTW/SEWAGE TREATMENT WORKS (WATER COMPANY) Location: Aston Le Walls Wwtw Aston Le Walls Northamptonshire Nn11 6un Authority: Environment Agency, Thames Region Catchment Area: Not Given Reference: CNTD.0040 Permit Version: 2 Effective Date: 1st October 1990 Issued Date: 9th November 1989 Revocation Date: 7th March 2005 Discharge Type: Sewage Discharges - Final/Treated Effluent - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Unnamed Trib. Of High Furlong **Status: Varied by Application - (Water Resources Act 1991, Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A14SW (E)	662	2	449410 251000
3	**Discharge Consents** Operator: Thames Water Utilities Ltd Property Type: WWTW/SEWAGE TREATMENT WORKS (WATER COMPANY) Location: Aston Le Walls Wwtw Aston Le Walls . Northamptonshire Nn11 6un Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Temp.2360 Permit Version: 2 Effective Date: 3rd September 2010 Issued Date: 3rd September 2010 Revocation Date: 21st March 2019 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Highfurlong Brook **Status: Varied under EPR 2010** Positional Accuracy: Located by supplier to within 100m	A14SW (E)	662	2	449400 250900
3	**Discharge Consents** Operator: Thames Water Utilities Ltd Property Type: WWTW/SEWAGE TREATMENT WORKS (WATER COMPANY) Location: Aston Le Walls Wwtw Aston Le Walls . Northamptonshire Nn11 6un Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Temp.2360 Permit Version: 1 Effective Date: 2nd November 1989 Issued Date: 2nd November 1989 Revocation Date: 2nd September 2010 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Highfurlong Brook **Status: Temporary Consents (Water Act 1989, Section 113)** Positional Accuracy: Located by supplier to within 100m	A14SW (E)	662	2	449400 250900
3	**Discharge Consents** Operator: Thames Water (S+W) Property Type: WWTW/SEWAGE TREATMENT WORKS (WATER COMPANY) Location: Aston Le Walls Wwtw Aston Le Walls Northamptonshire Nn11 6un Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Cssc.1007 Permit Version: 1 Effective Date: 10th October 1985 Issued Date: 10th October 1985 Revocation Date: 8th November 1989 Discharge Type: Sewage Discharges - Final/Treated Effluent - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Highfurlongbrook **Status: Authorisation revoked** Positional Accuracy: Located by supplier to within 100m	A14SW (E)	662	2	449400 250900

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
4	**Discharge Consents** Operator: Thames Water Utilities Ltd Property Type: PUMPING STATION ON SEWERAGE NETWORK (WATER COMPANY) Location: Aston-Le-Walls Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Temp.0370 Permit Version: 1 Effective Date: 2nd November 1989 Issued Date: 2nd November 1989 Revocation Date: 26th November 2002 Discharge Type: Sewage Discharges - Pumping Station - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Highfurlong Brook **Status: Revoked (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 100m	A14SE (E)	952	2	449700 251000
5	**Discharge Consents** Operator: Mr S P Jones Property Type: DOMESTIC PROPERTY (SINGLE) (INCL FARM HOUSE) Location: Paradise Farm, Banbury Road, Lower Boddington, Daventry, Northants Authority: Environment Agency, Thames Region Catchment Area: Not Given Reference: CTWC.0993 Permit Version: 1 Effective Date: 15th July 1986 Issued Date: 15th July 1986 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge Environment: Onto Land Receiving Water: Lower Lias Clay **Status: Transferred from COPA 1974** Positional Accuracy: Located by supplier to within 100m	A17NE (NW)	959	2	448200 251800
	Nearest Surface Water Feature	A13NW (N)	102	-	448728 251113
6	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Aston Le Walls Stw Authority: Environment Agency, Thames Region Pollutant: Unknown Sewage Note: Confirmed As A Pollution Incident Incident Date: 19th February 1990 Incident Reference: W1900090 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A14SW (E)	662	2	449400 250900
7	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Aston-Le-Walls Authority: Environment Agency, Thames Region Pollutant: Unknown Sewage Note: Confirmed As A Pollution Incident Incident Date: 2nd February 1990 Incident Reference: W1900054 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A14SE (E)	752	2	449500 251000
	River Quality Name: Highfurlong Bk GQA Grade: River Quality C Reach: Priors Marston Stw - Cherwell Estimated Distance (km): 13.8 Flow Rate: Flow less than 0.31 cumecs Flow Type: River Year: 2000	A13NW (N)	74	2	448724 251084

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	River Quality Name: Boddington Canal Feeder GQA Grade: River Quality D Reach: Boddington Res. - Oxford Canal Estimated Distance (km): 5.4 Flow Rate: Flow less than 0.31 cumecs Flow Type: River Year: 2000	A18SW (N)	567	2	448648 251571
8	**Water Abstractions** Operator: J P Adams & Son Licence Number: 28/39/14/0177 Permit Version: 100 Location: Appletree Farm, Aston-Le-Walls, (A) Authority: Environment Agency, Thames Region Abstraction: General Farming And Domestic Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st April 2008 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A8SW (S)	816	2	448700 250200
8	**Water Abstractions** Operator: J P Adams & Son Licence Number: 28/39/14/0177 Permit Version: 100 Location: Appletree Farm, Aston-Le-Walls, (A) Authority: Environment Agency, Thames Region Abstraction: Household Water Supply: Drinking; Cooking; Sanitary; Washing; (Small Garden) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st April 2008 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A8SW (S)	816	2	448700 250200
	Water Abstractions Operator: J P Adams & Son Licence Number: 28/39/14/0177 Permit Version: 100 Location: Appletree Farm, Aston-Le-Walls (D) Authority: Environment Agency, Thames Region Abstraction: General Farming And Domestic Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st April 2008 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A3NW (S)	1240	2	448500 249800
	Water Abstractions Operator: J P Adams & Son Licence Number: 28/39/14/0177 Permit Version: 100 Location: Appletree Farm, Aston-Le-Walls (D) Authority: Environment Agency, Thames Region Abstraction: Household Water Supply: Drinking; Cooking; Sanitary; Washing; (Small Garden) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st April 2008 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A3NW (S)	1240	2	448500 249800

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: J P Adams & Son Licence Number: 28/39/14/0177 Permit Version: 100 Location: Appletree Farm, Aston-Le-Walls, (C) Authority: Environment Agency, Thames Region Abstraction: General Farming And Domestic Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st April 2008 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A2SE (S)	1484	2	448300 249600
	Water Abstractions Operator: J P Adams & Son Licence Number: 28/39/14/0177 Permit Version: 100 Location: Appletree Farm, Aston-Le-Walls, (C) Authority: Environment Agency, Thames Region Abstraction: Household Water Supply: Drinking; Cooking; Sanitary; Washing; (Small Garden) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st April 2008 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A2SE (S)	1484	2	448300 249600
	Water Abstractions Operator: J P Adams & Son Licence Number: 28/39/14/0177 Permit Version: 100 Location: Appletree Farm, Aston-Le-Walls (B) Authority: Environment Agency, Thames Region Abstraction: General Farming And Domestic Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): 20 Yearly Rate (m3): 7455 Details: Middle Lias Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st April 2008 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A2SW (SW)	1600	2	448000 249600
	Water Abstractions Operator: J P Adams & Son Licence Number: 28/39/14/0177 Permit Version: 100 Location: Appletree Farm, Aston-Le-Walls (B) Authority: Environment Agency, Thames Region Abstraction: Household Water Supply: Drinking; Cooking; Sanitary; Washing; (Small Garden) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st April 2008 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A2SW (SW)	1600	2	448000 249600

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Groundwater Vulnerability Map Combined Classification: Secondary Bedrock Aquifer - Medium Vulnerability Combined Vulnerability: Medium Combined Aquifer: Productive Bedrock Aquifer, No Superficial Aquifer Pollutant Speed: Low Bedrock Flow: Poorly Connected Fractures Dilution: 300-550 mm/year Baseflow Index: 40-70% Superficial Patchiness: <90% Superficial Thickness: <3m Superficial Recharge: No Data	A13NE (NE)	0	3	448748 251014
	Groundwater Vulnerability - Soluble Rock Risk None				
	Bedrock Aquifer Designations Aquifer Designation: Secondary Aquifer - Undifferentiated	A13NE (NE)	0	3	448748 251014
	Superficial Aquifer Designations No Data Available				
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13NW (NW)	128	2	448685 251125
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models and Fluvial Events Boundary Accuracy: As Supplied	A13NW (NW)	184	2	448610 251135
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13NW (NW)	135	2	448665 251120
	Areas Benefiting from Flood Defences None				
	Flood Water Storage Areas None				
	Flood Defences None				
9	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 1466.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A13NW (NW)	217	4	448561 251121
10	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 17.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A13SE (S)	286	4	448817 250737
11	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 37.3 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A13SE (S)	301	4	448811 250720

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
12	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 151.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A13SE (S)	334	4	448800 250685
13	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 155.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A13NE (NE)	376	4	449023 251270
14	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 23.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A13NE (NE)	376	4	449023 251270
15	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 1328.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18SE (N)	378	4	448892 251363
16	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 81.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A13NE (NE)	378	4	448999 251297
17	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 46.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18SE (N)	378	4	448892 251363
18	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 14.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A13NE (NE)	382	4	448943 251342
19	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 18.0 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A8NE (S)	434	4	448860 250595
20	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 7.4 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A14NW (NE)	436	4	449150 251182

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
21	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 63.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A14NW (E)	440	4	449156 251178
22	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 111.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A8NE (S)	450	4	448872 250582
23	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 4.0 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A14NW (E)	482	4	449212 251147
24	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 237.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A14NW (E)	485	4	449215 251145
25	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 6.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A12SE (SW)	606	4	448191 250778
26	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 146.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A12SE (SW)	612	4	448185 250775
27	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 726.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A12SE (SW)	709	4	448107 250714
28	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 324.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A12SE (SW)	710	4	448098 250730
29	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 525.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18NW (N)	758	4	448492 251727

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
30	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 139.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18NW (N)	765	4	448586 251761
31	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 195.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18NW (N)	765	4	448586 251761
32	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 4.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18NW (N)	788	4	448719 251801
33	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 279.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18NW (N)	793	4	448718 251805
34	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 7.0 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18NE (N)	904	4	448977 251888
35	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 360.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18NE (N)	909	4	448984 251892
36	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 108.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A19SE (NE)	941	4	449600 251413
37	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 382.7 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A19SE (NE)	941	4	449600 251413
38	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 208.6 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A19SE (E)	980	4	449662 251369

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Local Authority Landfill Coverage Name: South Northamptonshire District Council - Has supplied landfill data		0	5	448748 251014
	Local Authority Landfill Coverage Name: Northamptonshire County Council - Has supplied landfill data		0	6	448748 251014

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS 1:625,000 Solid Geology Description: Lias Group	A13NE (NE)	0	1	448748 251014
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 30 - 45 mg/kg	A13NE (NE)	0	1	448748 251014
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 35 - 45 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 120 - 180 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 30 - 45 mg/kg	A13SE (SE)	318	1	448910 250741
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: >120 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: >180mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: >100 mg/kg	A13SE (SE)	441	1	449085 250730
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 45 - 60 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 120 - 180 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 45 - 60 mg/kg	A9NW (SE)	786	1	449380 250547
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 35 - 45 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 120 - 180 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 30 - 45 mg/kg	A18NW (N)	977	1	448735 251990
	BGS Measured Urban Soil Chemistry No data available				
	BGS Urban Soil Chemistry Averages No data available				
	Coal Mining Affected Areas In an area that might not be affected by coal mining				
	Non Coal Mining Areas of Great Britain No Hazard				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	0	1	448748 251014
	Potential for Collapsible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	165	1	448630 251129
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	0	1	448748 251014
	Potential for Compressible Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	165	1	448630 251129
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	0	1	448748 251014
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	0	1	448748 251014
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	0	1	448748 251014
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	165	1	448630 251129
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	0	1	448748 251014
	Radon Potential - Radon Affected Areas Affected Area: The property is in an Intermediate probability radon area (1 to 3% of homes are estimated to be at or above the Action Level). Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	0	1	448748 251014
	Radon Potential - Radon Protection Measures Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	0	1	448748 251014

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
39	**Contemporary Trade Directory Entries** Name: Lamprey Agriculture Ltd Location: 17, Butlers Close, Aston le Walls, Daventry, Northamptonshire, NN11 6UH Classification: Agricultural Merchants **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14SE (E)	920	-	449660 250895
39	**Contemporary Trade Directory Entries** Name: Daqtec Location: Shanalow, Main Street, Aston le Walls, Daventry, Northamptonshire, NN11 6UF Classification: Electronic Engineers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14SE (E)	946	-	449683 250871
40	**Contemporary Trade Directory Entries** Name: Vti Instruments Ltd Location: Main St, Aston le Walls, Daventry, Northamptonshire, NN11 6UF Classification: Testing, Inspection & Calibration Equipment Manufacturers **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A14SE (E)	986	-	449724 250873
41	**Points of Interest - Commercial Services** Name: Daqtec Location: Shanalow, Main Street, Aston Le Walls, Daventry, NN11 6UF Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A14SE (E)	946	7	449683 250871
42	**Points of Interest - Manufacturing and Production** Name: Midland Game Location: Valley View Farm, Appletree Road, Aston-le-Walls, NN11 6TN Category: Farming Class Code: Poultry Farming, Equipment and Supplies Positional Accuracy: Positioned to address or location	A9NE (SE)	895	7	449435 250441
43	**Points of Interest - Public Infrastructure** Name: Sewage Works Location: NN11 Category: Infrastructure and Facilities Class Code: Waste Storage, Processing and Disposal Positional Accuracy: Positioned to address or location	A14NE (E)	686	7	449434 251014
43	**Points of Interest - Public Infrastructure** Name: Sewage Works Location: NN11 Category: Infrastructure and Facilities Class Code: Waste Storage, Processing and Disposal Positional Accuracy: Positioned to an adjacent address or location	A14NE (E)	696	7	449444 251016
43	**Points of Interest - Public Infrastructure** Name: Sewage Works Location: NN11 Category: Infrastructure and Facilities Class Code: Waste Storage, Processing and Disposal Positional Accuracy: Positioned to address or location	A14SE (E)	704	7	449452 250994

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
44	**Nitrate Vulnerable Zones** Name: Cherwell (Ray To Thames) And Woodeaton Brook Nvz Description: Surface Water Source: Environment Agency, Head Office	A13NE (NE)	0	3	448748 251014

Agency & Hydrological	Version	Update Cycle
Contaminated Land Register Entries and Notices		
West Northamptonshire Council	December 2019	Annual Rolling Update
Environment Agency - Head Office	June 2020	Annually
Stratford-on-Avon District Council - Environmental Services	October 2017	Annual Rolling Update
Cherwell District Council - Environmental Health Department	September 2017	Annual Rolling Update
Daventry District Council (now part of West Northamptonshire Council) - Environmental Health Department	September 2017	Annual Rolling Update
South Northamptonshire Council (now part of West Northamptonshire Council) - Environment Division	September 2017	Annual Rolling Update
Discharge Consents		
Environment Agency - Midlands Region	October 2022	Quarterly
Environment Agency - Thames Region	October 2022	Quarterly
Enforcement and Prohibition Notices		
Environment Agency - Anglian Region	March 2013	
Environment Agency - Midlands Region	March 2013	
Environment Agency - Thames Region	March 2013	
Integrated Pollution Controls		
Environment Agency - Anglian Region	January 2009	
Environment Agency - Midlands Region	January 2009	
Environment Agency - Thames Region	January 2009	
Integrated Pollution Prevention And Control		
Environment Agency - Anglian Region	October 2022	Quarterly
Environment Agency - Midlands Region	October 2022	Quarterly
Environment Agency - South East Region - West Thames Area	October 2022	Quarterly
Environment Agency - Thames Region	October 2022	Quarterly
Local Authority Integrated Pollution Prevention And Control		
Stratford-on-Avon District Council - Environmental Health Department	August 2014	Variable
South Northamptonshire Council (now part of West Northamptonshire Council) - Environmental Health Department	December 2014	Variable
West Northamptonshire Council	February 2015	Variable
Daventry District Council (now part of West Northamptonshire Council) - Environmental Health Department	May 2014	Variable
Cherwell District Council - Environmental Health Department	October 2014	Variable
Local Authority Pollution Prevention and Controls		
Stratford-on-Avon District Council - Environmental Health Department	August 2014	Annual Rolling Update
South Northamptonshire Council (now part of West Northamptonshire Council) - Environmental Health Department	December 2014	Annual Rolling Update
West Northamptonshire Council	February 2015	Annual Rolling Update
Daventry District Council (now part of West Northamptonshire Council) - Environmental Health Department	May 2014	Annual Rolling Update
Cherwell District Council - Environmental Health Department	October 2014	Not Applicable
Local Authority Pollution Prevention and Control Enforcements		
Stratford-on-Avon District Council - Environmental Health Department	August 2014	Variable
South Northamptonshire Council (now part of West Northamptonshire Council) - Environmental Health Department	December 2014	Variable
West Northamptonshire Council	February 2015	Variable
Daventry District Council (now part of West Northamptonshire Council) - Environmental Health Department	May 2014	Variable
Cherwell District Council - Environmental Health Department	October 2014	Variable
Nearest Surface Water Feature		
Ordnance Survey	December 2022	
Pollution Incidents to Controlled Waters		
Environment Agency - Midlands Region	December 1999	
Environment Agency - Thames Region	September 1999	

Agency & Hydrological	Version	Update Cycle
Prosecutions Relating to Authorised Processes		
Environment Agency - Anglian Region	July 2015	
Environment Agency - Midlands Region	July 2015	
Environment Agency - Thames Region	July 2015	
Prosecutions Relating to Controlled Waters		
Environment Agency - Anglian Region	March 2013	
Environment Agency - Midlands Region	March 2013	
Environment Agency - Thames Region	March 2013	
Registered Radioactive Substances		
Environment Agency - Anglian Region	June 2016	As notified
Environment Agency - Midlands Region	June 2016	As notified
Environment Agency - Thames Region	June 2016	As notified
River Quality		
Environment Agency - Head Office	November 2001	Not Applicable
River Quality Biology Sampling Points		
Environment Agency - Head Office	April 2012	
River Quality Chemistry Sampling Points		
Environment Agency - Head Office	April 2012	
Substantiated Pollution Incident Register		
Environment Agency - Anglian Region - Northern Area	October 2022	Quarterly
Environment Agency - Midlands Region - Central Area	October 2022	Quarterly
Environment Agency - Midlands Region - Lower Severn Area	October 2022	Quarterly
Environment Agency - South East Region - West Thames Area	October 2022	Quarterly
Environment Agency - Thames Region - West Area	October 2022	Quarterly
Water Abstractions		
Environment Agency - Midlands Region	October 2022	Quarterly
Environment Agency - Thames Region	October 2022	Quarterly
Water Industry Act Referrals		
Environment Agency - Anglian Region	October 2017	
Environment Agency - Midlands Region	October 2017	
Environment Agency - Thames Region	October 2017	
Groundwater Vulnerability Map		
Environment Agency - Head Office	June 2018	As notified
Bedrock Aquifer Designations		
Environment Agency - Head Office	January 2018	Annually
Superficial Aquifer Designations		
Environment Agency - Head Office	January 2018	Annually
Source Protection Zones		
Environment Agency - Head Office	September 2022	Bi-Annually
Extreme Flooding from Rivers or Sea without Defences		
Environment Agency - Head Office	August 2022	Quarterly
Flooding from Rivers or Sea without Defences		
Environment Agency - Head Office	August 2022	Quarterly
Areas Benefiting from Flood Defences		
Environment Agency - Head Office	August 2022	Quarterly
Flood Water Storage Areas		
Environment Agency - Head Office	August 2022	Quarterly
Flood Defences		
Environment Agency - Head Office	August 2022	Quarterly
OS Water Network Lines		
Ordnance Survey	January 2023	Quarterly

Agency & Hydrological	Version	Update Cycle
Surface Water 1 in 30 year Flood Extent Environment Agency - Head Office	May 2018	Annually
Surface Water 1 in 100 year Flood Extent Environment Agency - Head Office	May 2018	Annually
Surface Water 1 in 1000 year Flood Extent Environment Agency - Head Office	May 2018	Annually
Surface Water Suitability Environment Agency - Head Office	February 2016	Annually
BGS Groundwater Flooding Susceptibility British Geological Survey - National Geoscience Information Service	May 2013	As notified

Waste	Version	Update Cycle
BGS Recorded Landfill Sites		
British Geological Survey - National Geoscience Information Service	November 2002	As notified
Historical Landfill Sites		
Environment Agency - Head Office	November 2022	Quarterly
Integrated Pollution Control Registered Waste Sites		
Environment Agency - Anglian Region	January 2009	Not Applicable
Environment Agency - Midlands Region	January 2009	Not Applicable
Environment Agency - Thames Region	January 2009	Not Applicable
Licensed Waste Management Facilities (Landfill Boundaries)		
Environment Agency - Anglian Region - Northern Area	October 2022	Quarterly
Environment Agency - Midlands Region - Central Area	October 2022	Quarterly
Environment Agency - Midlands Region - Lower Severn Area	October 2022	Quarterly
Environment Agency - South East Region - West Thames Area	October 2022	Quarterly
Environment Agency - Thames Region - West Area	October 2022	Quarterly
Licensed Waste Management Facilities (Locations)		
Environment Agency - Anglian Region - Northern Area	July 2022	Quarterly
Environment Agency - Midlands Region - Central Area	July 2022	Quarterly
Environment Agency - Midlands Region - Lower Severn Area	July 2022	Quarterly
Environment Agency - South East Region - West Thames Area	July 2022	Quarterly
Environment Agency - Thames Region - West Area	July 2022	Quarterly
Local Authority Landfill Coverage		
Cherwell District Council - Environmental Health Department	February 2003	Not Applicable
Daventry District Council (now part of West Northamptonshire Council) - Environmental Health Department	February 2003	Not Applicable
Northamptonshire County Council	February 2003	Not Applicable
Oxfordshire County Council	February 2003	Not Applicable
South Northamptonshire Council (now part of West Northamptonshire Council) - Environmental Health Department	February 2003	Not Applicable
Stratford-on-Avon District Council	February 2003	Not Applicable
Warwickshire County Council	February 2003	Not Applicable
West Northamptonshire Council	May 2000	Not Applicable
Local Authority Recorded Landfill Sites		
West Northamptonshire Council	August 2006	
Cherwell District Council - Environmental Health Department	October 2018	
Daventry District Council (now part of West Northamptonshire Council) - Environmental Health Department	October 2018	
Northamptonshire County Council	October 2018	
Oxfordshire County Council	October 2018	
South Northamptonshire Council (now part of West Northamptonshire Council) - Environmental Health Department	October 2018	
Stratford-on-Avon District Council	October 2018	
Warwickshire County Council	October 2018	
Potentially Infilled Land (Non-Water)		
Landmark Information Group Limited	December 1999	
Potentially Infilled Land (Water)		
Landmark Information Group Limited	December 1999	
Registered Landfill Sites		
Environment Agency - Anglian Region - Northern Area	March 2006	Not Applicable
Environment Agency - Midlands Region - Central Area	March 2006	Not Applicable
Environment Agency - Midlands Region - Lower Severn Area	March 2006	Not Applicable
Environment Agency - Thames Region - West Area	March 2006	Not Applicable

Waste	Version	Update Cycle
Registered Waste Transfer Sites		
Environment Agency - Anglian Region - Northern Area	April 2018	
Environment Agency - Midlands Region - Central Area	April 2018	
Environment Agency - Midlands Region - Lower Severn Area	April 2018	
Environment Agency - Thames Region - West Area	April 2018	
Registered Waste Treatment or Disposal Sites		
Environment Agency - Anglian Region - Northern Area	June 2015	
Environment Agency - Midlands Region - Central Area	June 2015	
Environment Agency - Midlands Region - Lower Severn Area	June 2015	
Environment Agency - Thames Region - West Area	June 2015	
Hazardous Substances	**Version**	**Update Cycle**
Control of Major Accident Hazards Sites (COMAH)		
Health and Safety Executive	January 2022	Bi-Annually
Explosive Sites		
Health and Safety Executive	March 2017	Annually
Notification of Installations Handling Hazardous Substances (NIHHS)		
Health and Safety Executive	August 2001	
Planning Hazardous Substance Enforcements		
Cherwell District Council	February 2016	Variable
Oxfordshire County Council	February 2016	Variable
South Northamptonshire Council (now part of West Northamptonshire Council)	February 2016	Variable
Stratford-on-Avon District Council	February 2016	Variable
West Northamptonshire Council	February 2016	Variable
Daventry District Council (now part of West Northamptonshire Council)	January 2016	Variable
Warwickshire County Council	July 2007	Annual Rolling Update
Northamptonshire County Council	May 2013	Annual Rolling Update
Planning Hazardous Substance Consents		
Northamptonshire County Council	December 2014	Annual Rolling Update
Cherwell District Council	February 2016	Variable
Oxfordshire County Council	February 2016	Variable
South Northamptonshire Council (now part of West Northamptonshire Council)	February 2016	Variable
Stratford-on-Avon District Council	February 2016	Variable
West Northamptonshire Council	February 2016	Variable
Daventry District Council (now part of West Northamptonshire Council)	January 2016	Variable
Warwickshire County Council	July 2007	Annual Rolling Update

Geological	Version	Update Cycle
BGS 1:625,000 Solid Geology British Geological Survey - National Geoscience Information Service	January 2009	As notified
BGS Estimated Soil Chemistry British Geological Survey - National Geoscience Information Service	December 2015	As notified
BGS Recorded Mineral Sites British Geological Survey - National Geoscience Information Service	November 2022	Bi-Annually
CBSCB Compensation District Cheshire Brine Subsidence Compensation Board (CBSCB) Cheshire Brine Subsidence Compensation Board (CBSCB)	August 2011 November 2020	As notified
Coal Mining Affected Areas The Coal Authority - Property Searches	March 2014	Annual Rolling Update
Mining Instability Ove Arup & Partners	June 1998	Not Applicable
Non Coal Mining Areas of Great Britain British Geological Survey - National Geoscience Information Service	May 2015	Not Applicable
Potential for Collapsible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	April 2020	As notified
Potential for Compressible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Ground Dissolution Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Landslide Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Running Sand Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Shrinking or Swelling Clay Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Radon Potential - Radon Affected Areas British Geological Survey - National Geoscience Information Service	September 2022	Annually
Radon Potential - Radon Protection Measures British Geological Survey - National Geoscience Information Service	September 2022	Annually

Data Currency

Industrial Land Use	Version	Update Cycle
Contemporary Trade Directory Entries Thomson Directories	October 2022	Quarterly
Fuel Station Entries Catalist Ltd - Experian	January 2023	Quarterly
Gas Pipelines National Grid	October 2021	Bi-Annually
Points of Interest - Commercial Services PointX	December 2022	Quarterly
Points of Interest - Education and Health PointX	December 2022	Quarterly
Points of Interest - Manufacturing and Production PointX	December 2022	Quarterly
Points of Interest - Public Infrastructure PointX	December 2022	Quarterly
Points of Interest - Recreational and Environmental PointX	December 2022	Quarterly
Underground Electrical Cables National Grid	May 2021	Bi-Annually

Sensitive Land Use	Version	Update Cycle
Ancient Woodland		
Natural England	February 2021	Bi-Annually
Areas of Adopted Green Belt		
Cherwell District Council	July 2022	Quarterly
Daventry District Council (now part of West Northamptonshire Council)	July 2022	Quarterly
South Northamptonshire Council (now part of West Northamptonshire Council)	July 2022	Quarterly
Stratford-on-Avon District Council	July 2022	Quarterly
West Northamptonshire Council	July 2022	Quarterly
Areas of Unadopted Green Belt		
Cherwell District Council	July 2022	Quarterly
Daventry District Council (now part of West Northamptonshire Council)	July 2022	Quarterly
South Northamptonshire Council (now part of West Northamptonshire Council)	July 2022	Quarterly
Stratford-on-Avon District Council	July 2022	Quarterly
West Northamptonshire Council	July 2022	Quarterly
Areas of Outstanding Natural Beauty		
Natural England	August 2022	Bi-Annually
Environmentally Sensitive Areas		
Natural England	January 2017	
Forest Parks		
Forestry Commission	April 1997	Not Applicable
Local Nature Reserves		
Natural England	February 2021	Bi-Annually
Marine Nature Reserves		
Natural England	July 2019	Bi-Annually
National Nature Reserves		
Natural England	January 2021	Bi-Annually
National Parks		
Natural England	February 2018	Bi-Annually
Nitrate Sensitive Areas		
Natural England	April 2016	Not Applicable
Nitrate Vulnerable Zones		
Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	April 2016	
Environment Agency - Head Office	June 2017	Bi-Annually
Ramsar Sites		
Natural England	August 2020	Bi-Annually
Sites of Special Scientific Interest		
Natural England	February 2021	Bi-Annually
Special Areas of Conservation		
Natural England	July 2020	Bi-Annually
Special Protection Areas		
Natural England	February 2021	Bi-Annually

Data Suppliers

A selection of organisations who provide data within this report

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

Useful Contacts

Contact	Name and Address	Contact Details
1	**British Geological Survey - Enquiry Service** British Geological Survey, Environmental Science Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG	Telephone: 0115 936 3143 Fax: 0115 936 3276 Email: enquiries@bgs.ac.uk Website: www.bgs.ac.uk
2	**Environment Agency - National Customer Contact Centre (NCCC)** PO Box 544, Templeborough, Rotherham, S60 1BY	Telephone: 03708 506 506 Email: enquiries@environment-agency.gov.uk
3	**Environment Agency - Head Office** Rio House, Waterside Drive, Aztec West, Almondsbury, Bristol, Avon, BS32 4UD	Telephone: 01454 624400 Fax: 01454 624409
4	**Ordnance Survey** Adanac Drive, Southampton, Hampshire, SO16 0AS	Telephone: 03456 05 05 05 Email: customerservices@ordnancesurvey.co.uk Website: www.ordnancesurvey.gov.uk
5	**South Northamptonshire Council (now part of West Northamptonshire Council) - Environmental Health Department** Springfields, Towcester, Northamptonshire, NN12 6AE	Telephone: 0845 2300226 Fax: 01327 359219 Website: www.southnorthants.gov.uk
6	**Northamptonshire County Council** County Hall, Northampton, Northamptonshire, NN1 1DN	Telephone: 0300 126 1000 Website: www.northamptonshire.gov.uk
7	**PointX** 7 Abbey Court, Eagle Way, Sowton, Exeter, Devon, EX2 7HY	Website: www.pointx.co.uk
8	**Natural England** County Hall, Spetchley Road, Worcester, WR5 2NP	Telephone: 0300 060 3900 Email: enquiries@naturalengland.org.uk Website: www.naturalengland.org.uk
-	**Public Health England - Radon Survey, Centre for Radiation, Chemical and Environmental Hazards** Chilton, Didcot, Oxfordshire, OX11 0RQ	Telephone: 01235 822622 Fax: 01235 833891 Email: radon@phe.gov.uk Website: www.ukradon.org
-	**Landmark Information Group Limited** Imperium, Imperial Way, Reading, Berkshire, RG2 0TD	Telephone: 0844 844 9952 Fax: 0844 844 9951 Email: customerservices@landmarkinfo.co.uk Website: www.landmarkinfo.co.uk

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

Geology 1:50,000 Maps Legends

Artificial Ground and Landslip

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	WGR	Worked Ground (Undivided)	Void	Not Supplied - Holocene

Superficial Geology

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	ALV	Alluvium	Clay, Silt, Sand and Gravel	Not Supplied - Holocene

Bedrock and Faults

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	NS	Northampton Sand Formation	Sandstone, Limestone and Ironstone	Not Supplied - Aalenian
	WHM	Whitby Mudstone Formation	Mudstone	Not Supplied - Toarcian
	DYS	Dyrham Formation	Siltstone and Mudstone, Interbedded	Not Supplied - Pliensbachian
	MRB	Marlstone Rock Formation	Ferruginous Limestone and Ironstone	Not Supplied - Pliensbachian
	CHAM	Charmouth Mudstone Formation	Mudstone	Not Supplied - Sinemurian

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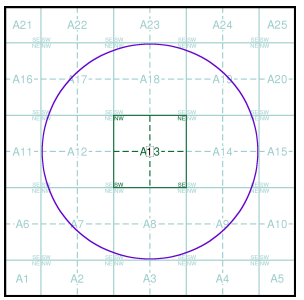
Geology 1:50,000 Maps

This report contains geological map extracts taken from the BGS Digital Geological map of Great Britain at 1:50,000 scale and is designed for users carrying out preliminary site assessments who require geological maps for the area around the site. This mapping may be more up to date than previously published paper maps.
The various geological layers - artificial and landslip deposits, superficial geology and solid (bedrock) geology are displayed in separate maps, but superimposed on the final 'Combined Surface Geology' map. All map legends feature on this page. Not all layers have complete nationwide coverage, so availability of data for relevant map sheets is indicated below.

Geology 1:50,000 Maps Coverage

Map ID:	**1**
Map Sheet No:	**201**
Map Name:	**Banbury**
Map Date:	**1982**
Bedrock Geology:	**Available**
Superficial Geology:	**Available**
Artificial Geology:	**Available**
Faults:	**Not Supplied**
Landslip:	**Available**
Rock Segments:	**Not Supplied**

Geology 1:50,000 Maps - Slice A



Order Details:

Order Number:	306321037_1_1
Customer Reference:	193224
National Grid Reference:	448750, 251010
Slice:	A
Site Area (Ha):	0.01
Search Buffer (m):	1000

Site Details:

Site at 448700, 251000

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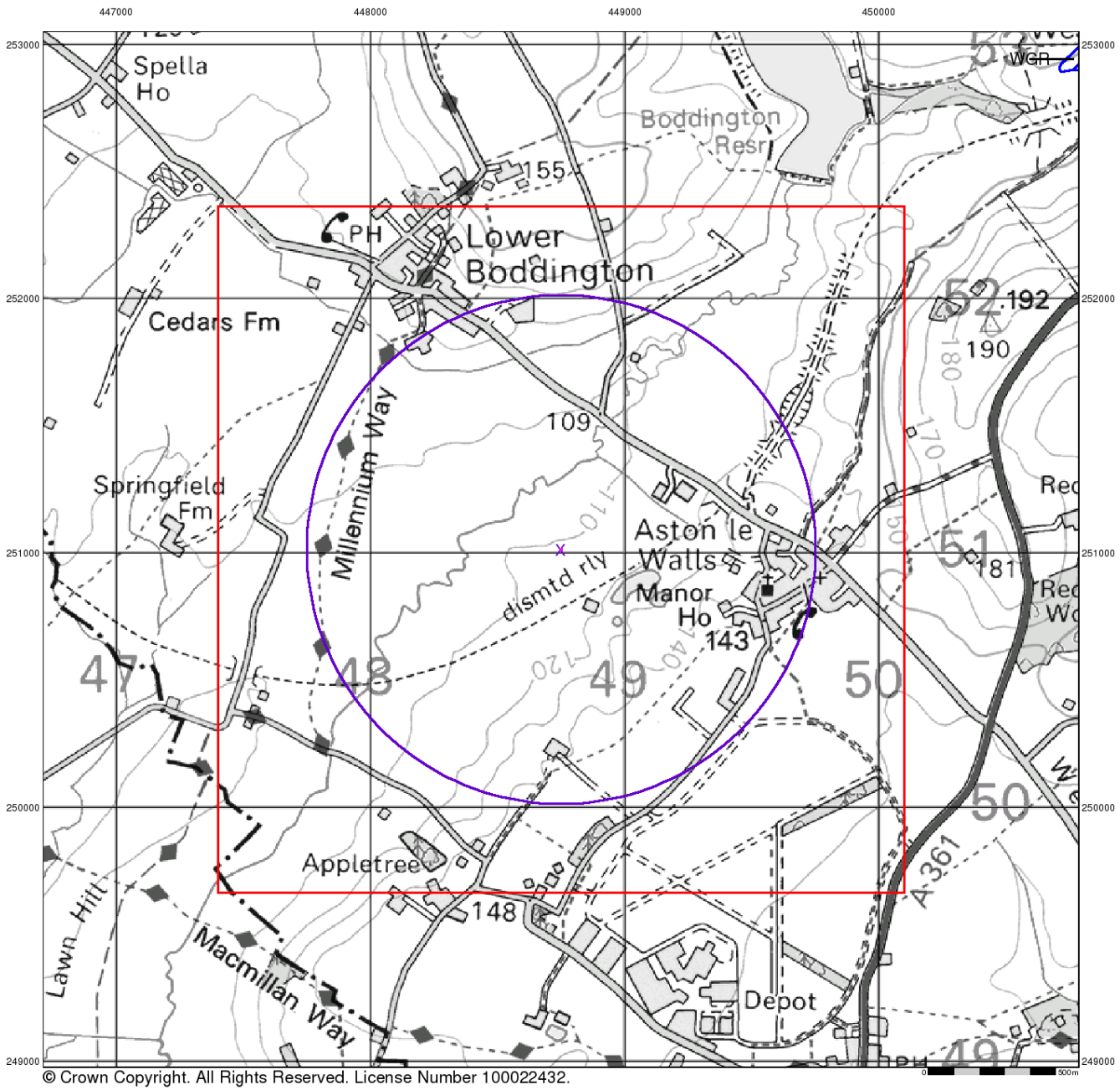

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Artificial Ground and Landslip

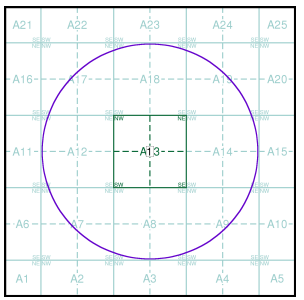
Artificial ground is a term used by BGS for those areas where the ground surface has been significantly modified by human activity. Information about previously developed ground is especially important, as it is often associated with potentially contaminated material, unpredictable engineering conditions and unstable ground.

Artificial ground includes:

- Made ground - man-made deposits such as embankments and spoil heaps on the natural ground surface.
- Worked ground - areas where the ground has been cut away such as quarries and road cuttings.
- Infilled ground - areas where the ground has been cut away then wholly or partially backfilled.
- Landscaped ground - areas where the surface has been reshaped.
- Disturbed ground - areas of ill-defined shallow or near surface mineral workings where it is impracticable to map made and worked ground separately.

Mass movement (landslip) deposits on BGS geological maps are primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground. The dataset also includes foundered strata, where the ground has collapsed due to subsidence.

Artificial Ground and Landslip Map - Slice A



Order Details:

Order Number:	306321037_1_1
Customer Reference:	193224
National Grid Reference:	448750, 251010
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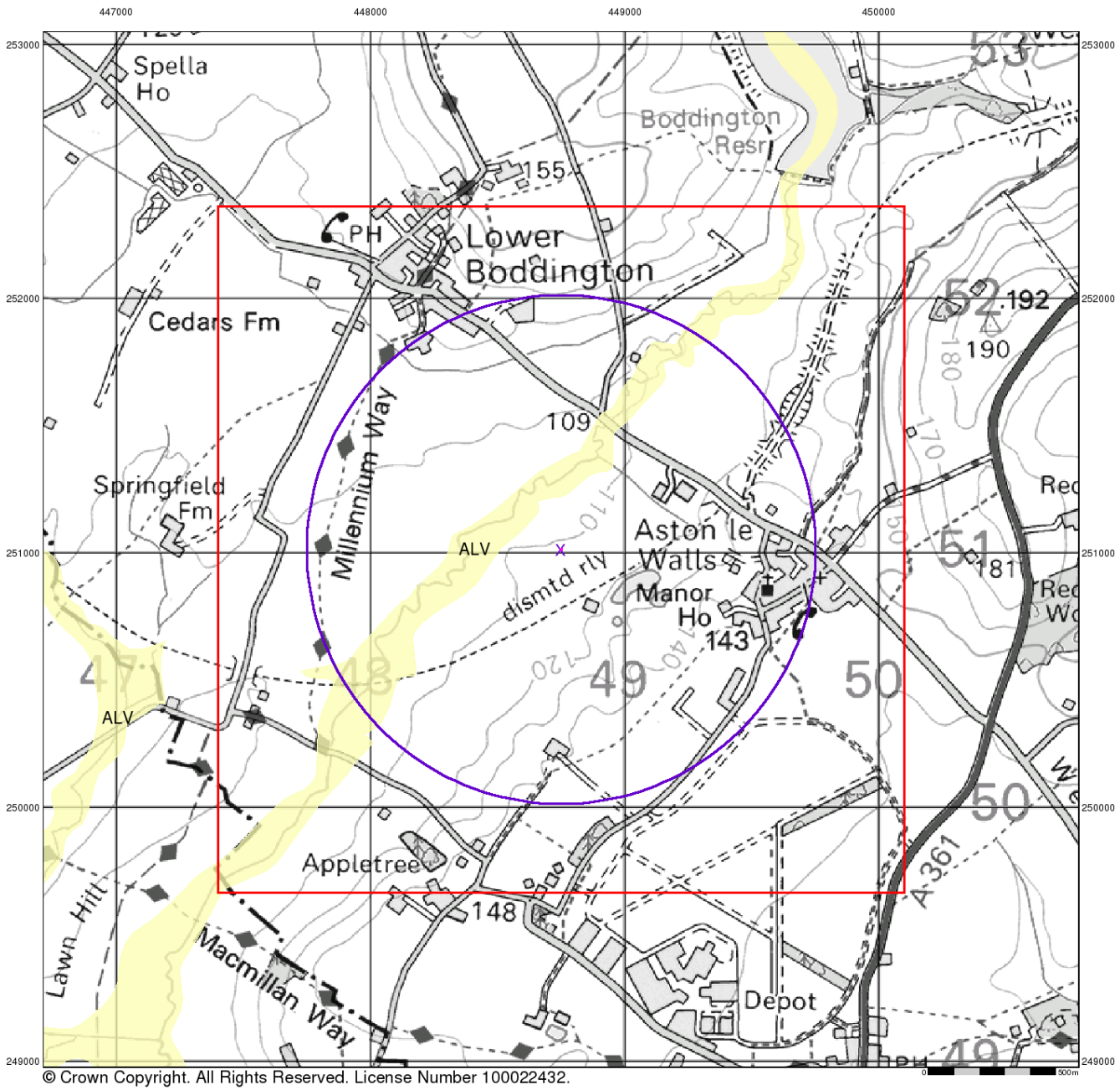

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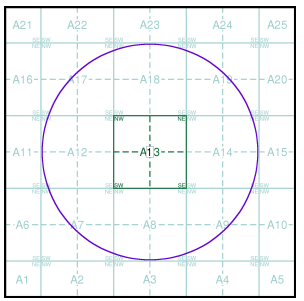
Superficial Geology

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

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

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

Superficial Geology Map - Slice A



Order Details:

Order Number:	306321037_1_1
Customer Reference:	193224
National Grid Reference:	448750, 251010
Slice:	A
Site Area (Ha):	0.01
Search Buffer (m):	1000

Site Details:

Site at 448700, 251000

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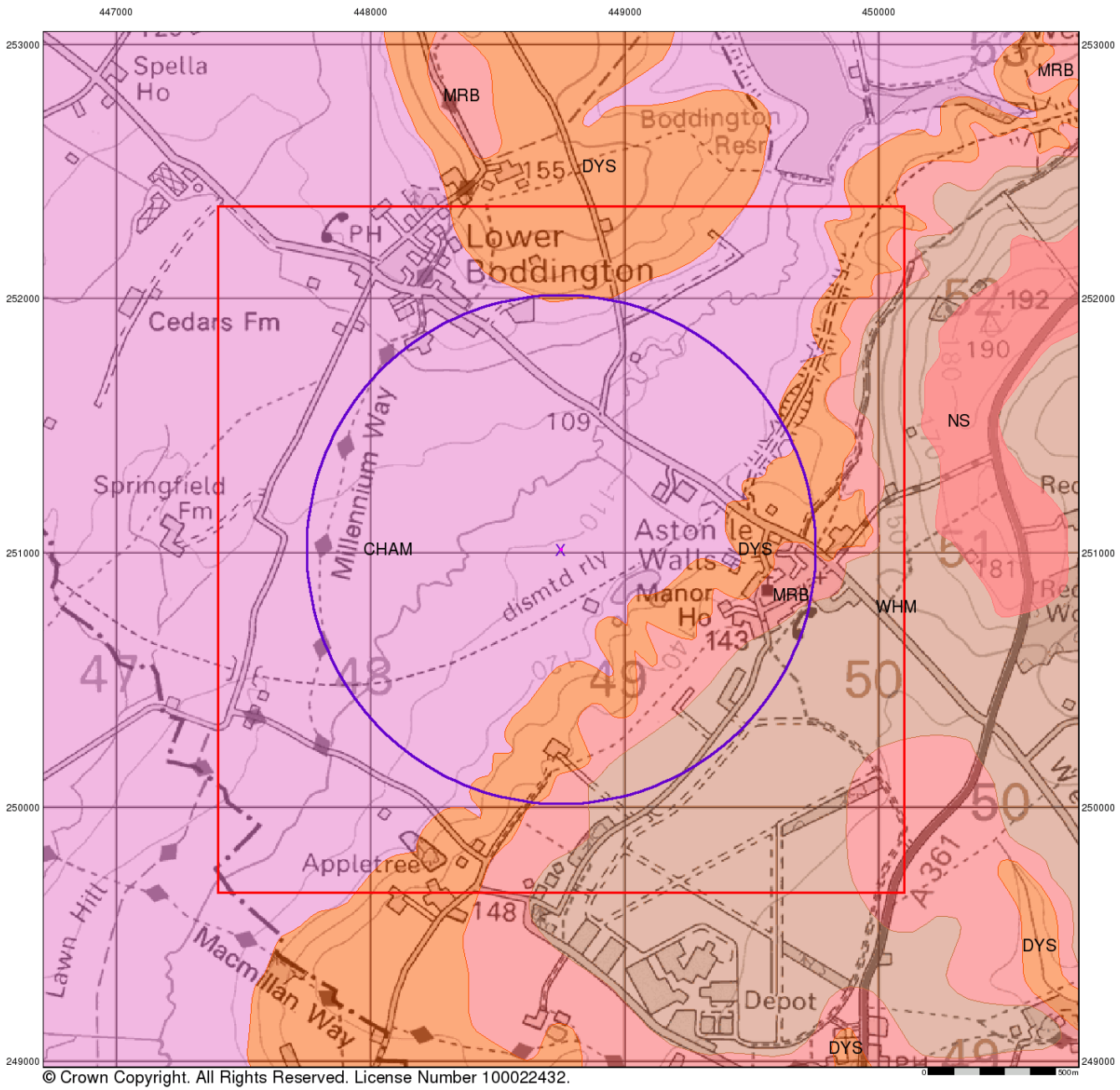

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Bedrock and Faults

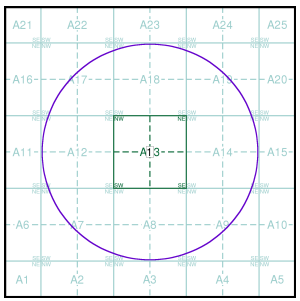
Bedrock geology is a term used for the main mass of rocks forming the Earth and are present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

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

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

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

Bedrock and Faults Map - Slice A



Order Details:

Order Number:	306321037_1_1
Customer Reference:	193224
National Grid Reference:	448750, 251010
Slice:	A
Site Area (Ha):	0.01
Search Buffer (m):	1000

Site Details:

Site at 448700, 251000

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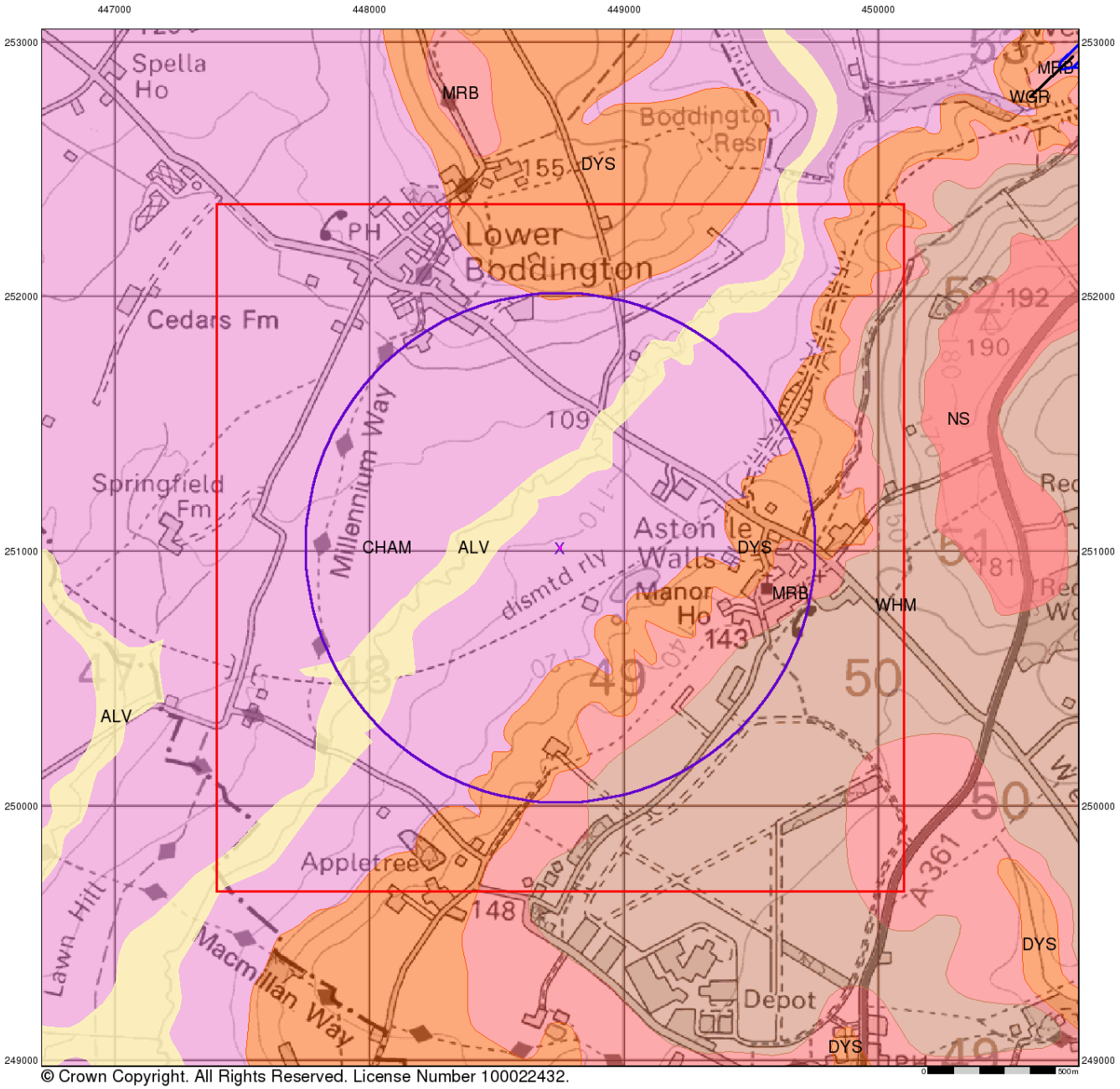
Web: www.envirocheck.co.uk



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Combined Surface Geology

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

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

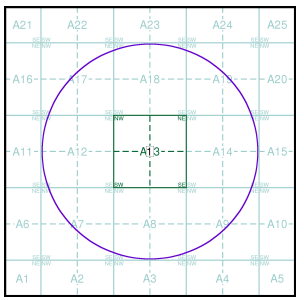
Additional Information

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

Contact

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

Combined Geology Map - Slice A



Order Details:

Order Number:	306321037_1_1
Customer Reference:	193224
National Grid Reference:	448750, 251010
Slice:	A
Site Area (Ha):	0.01
Search Buffer (m):	1000

Site Details:

Site at 448700, 251000

Historical Mapping Legends

Ordnance Survey County Series 1:10,560

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

Ordnance Survey Plan 1:10,000

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

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

1:10,000 Raster Mapping

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

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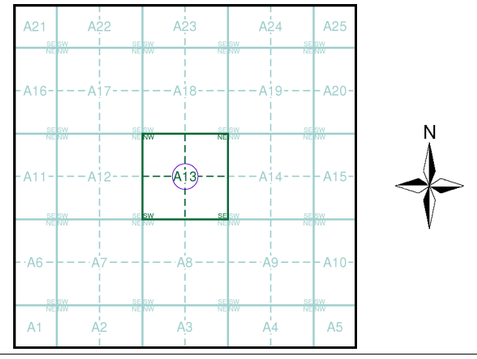
Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Northamptonshire	1:10,560	1884	2
Oxfordshire	1:10,560	1885	3
Oxfordshire	1:10,560	1900	4
Northamptonshire	1:10,560	1900	5
Oxfordshire	1:10,560	1900	6
Northamptonshire	1:10,560	1923	7
Historical Aerial Photography	1:10,560	1947 - 1949	8
Ordnance Survey Plan	1:10,000	1955	9
Ordnance Survey Plan	1:10,000	1982 - 1984	10
10K Raster Mapping	1:10,000	1999	11
10K Raster Mapping	1:10,000	2006	12
VectorMap Local	1:10,000	2022	13

Historical Map - Slice A



Order Details

Order Number:	306321037_1_1
Customer Ref:	193224
National Grid Reference:	448750, 251010
Slice:	A
Site Area (Ha):	0.01
Search Buffer (m):	1000

Site Details

Site at 448700, 251000

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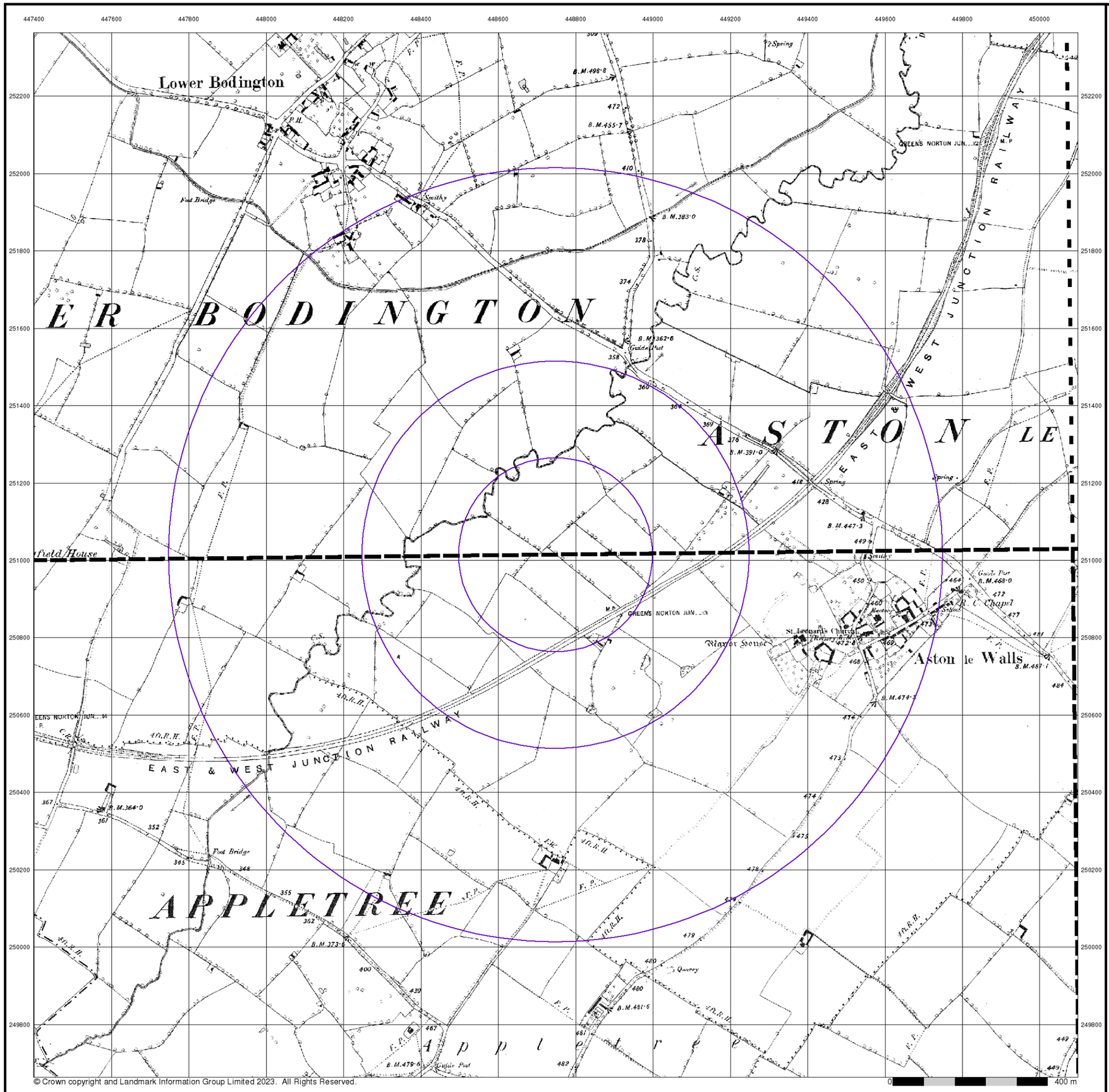
Web: www.envirocheck.co.uk



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Northamptonshire

Published 1884

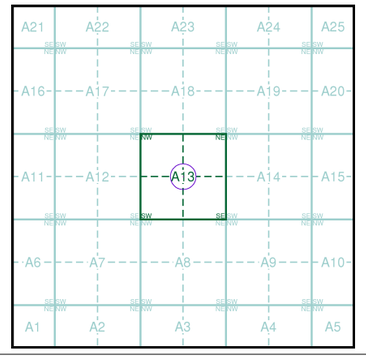
Source map scale - 1:10,560

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)

049SW 1884 1:10,560	049SE 1884 1:10,560
054NW 1884 1:10,560	054NE 1884 1:10,560

Historical Map - Slice A



N

Order Details

Order Number:	306321037_1_1
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Slice:	A
Site Area (Ha):	0.01
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Site Details

Site at 448700, 251000

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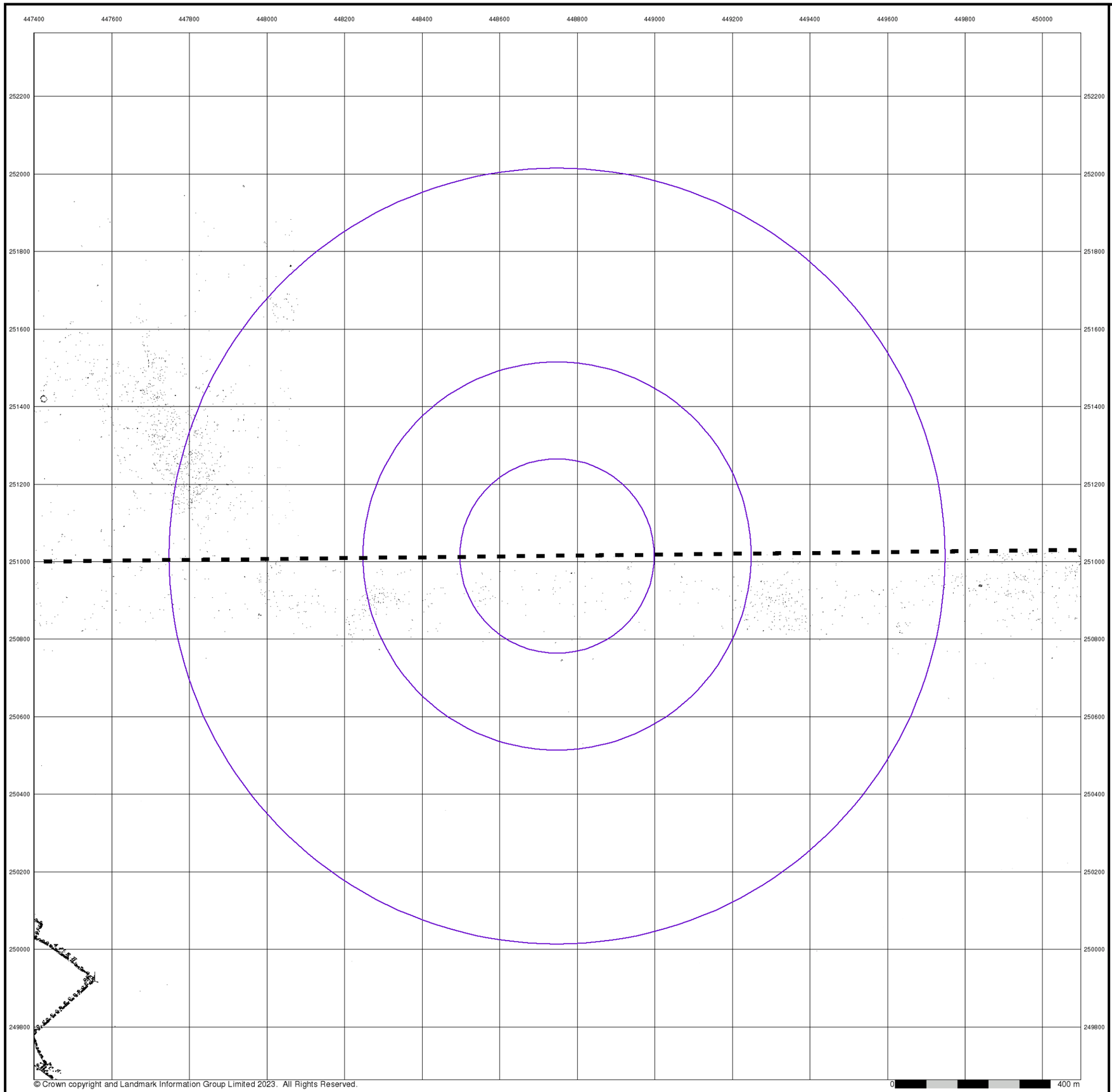

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Oxfordshire

Published 1885

Source map scale - 1:10,560

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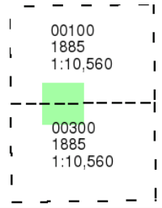
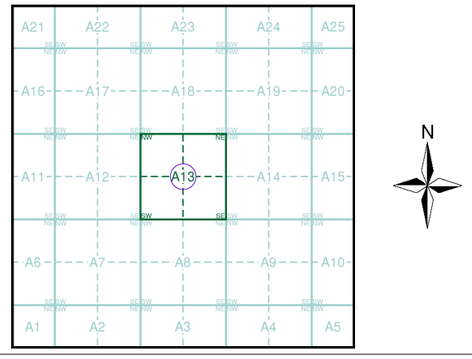


Historical Map - Slice A



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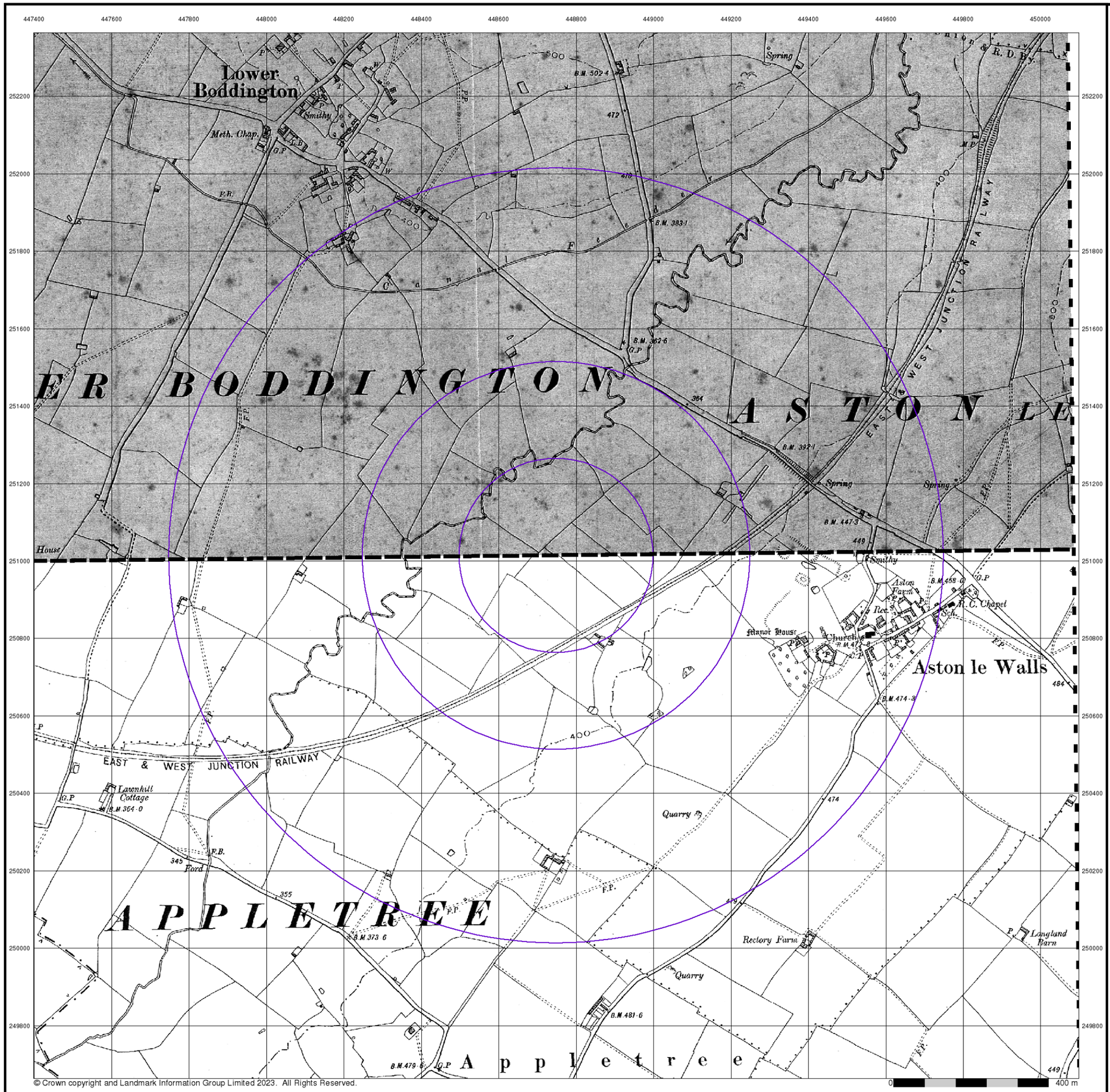

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LANDMARK INFORMATION GROUP®

Oxfordshire

Published 1900

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.

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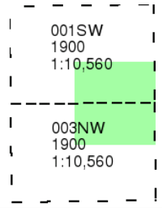
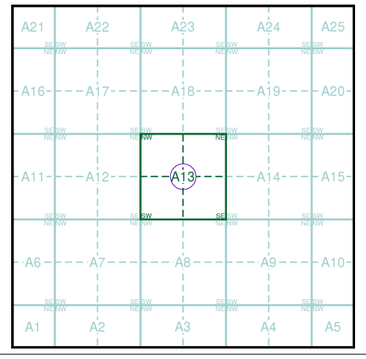


Historical Map - Slice A



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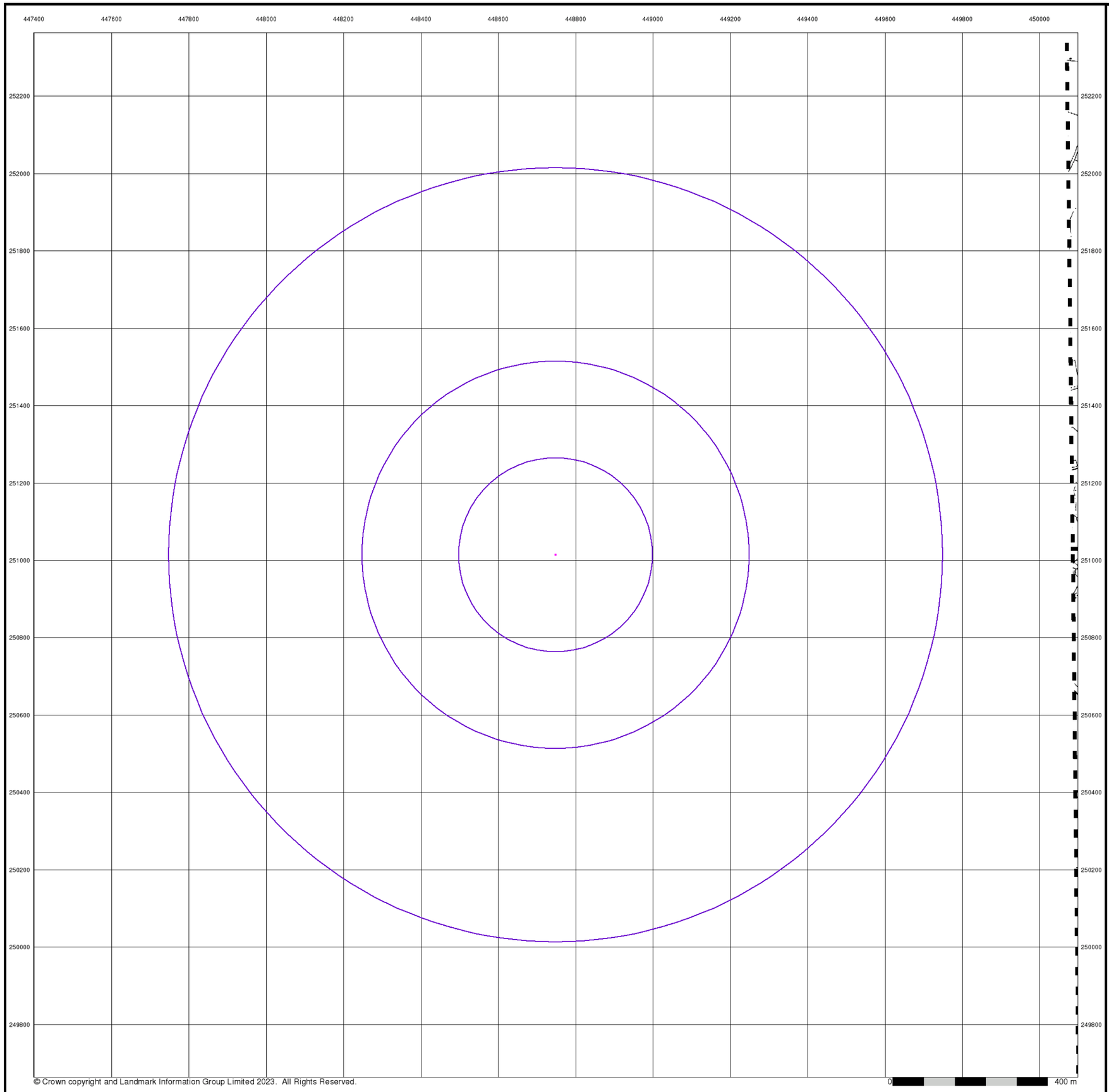

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LANDMARK INFORMATION GROUP®

Northamptonshire

Published 1900

Source map scale - 1:10,560

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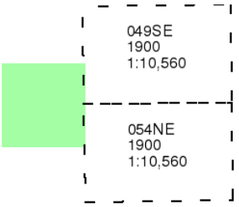
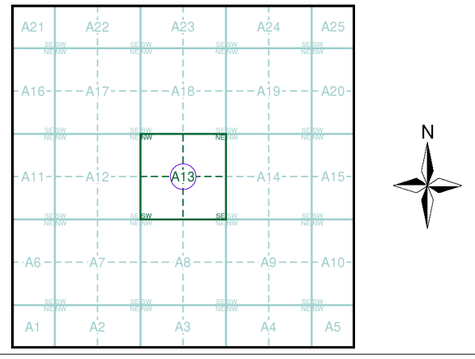


Historical Map - Slice A



Order Details

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Customer Ref:	193224
National Grid Reference:	448750, 251010
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Site Details

Site at 448700, 251000

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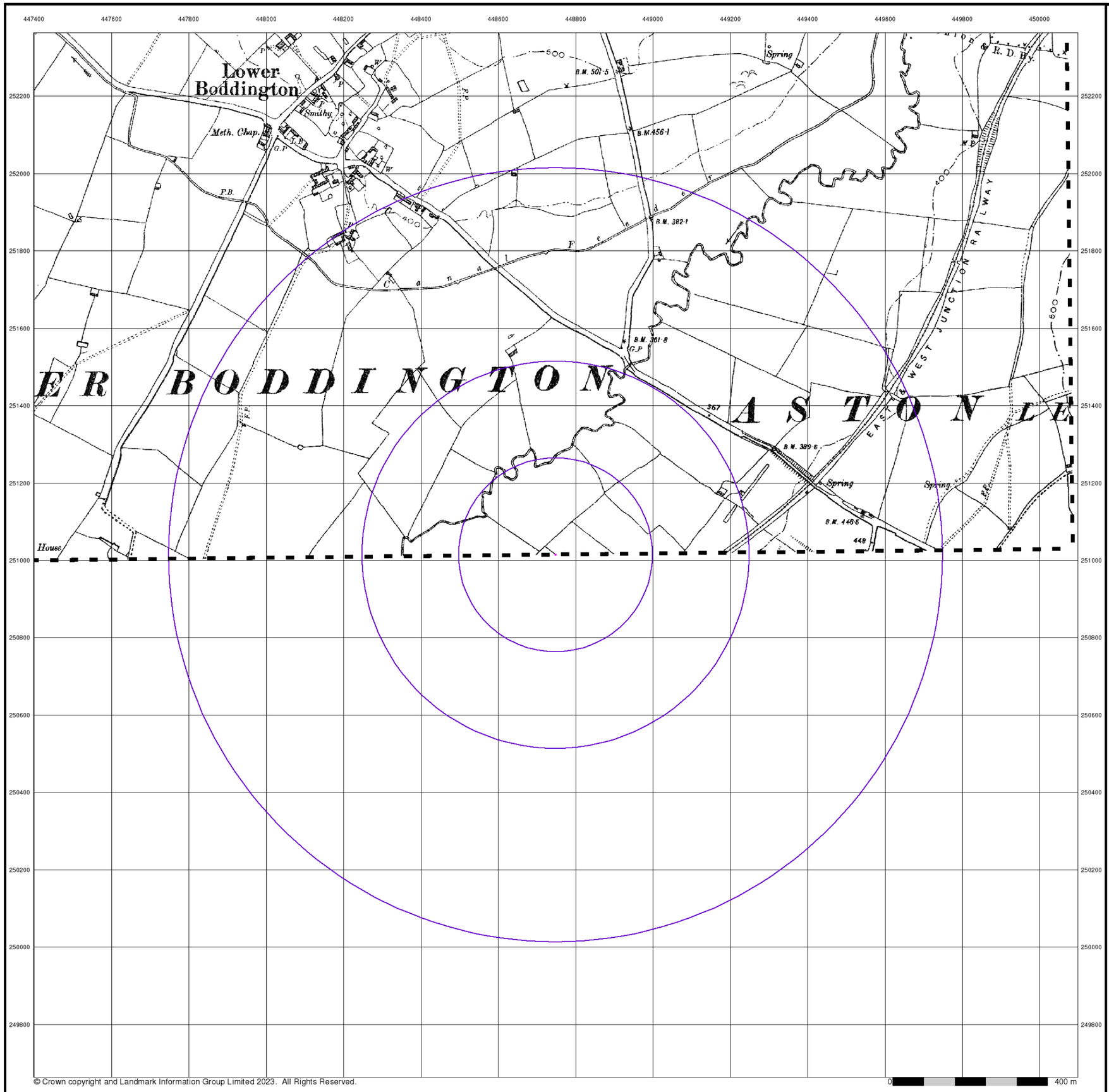

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LANDMARK INFORMATION GROUP®

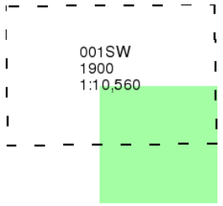
Oxfordshire

Published 1900

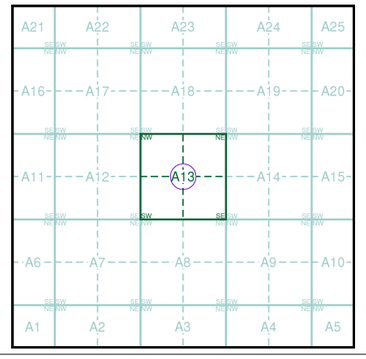
Source map scale - 1:10,560

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:	306321037_1_1
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Site Area (Ha):	0.01
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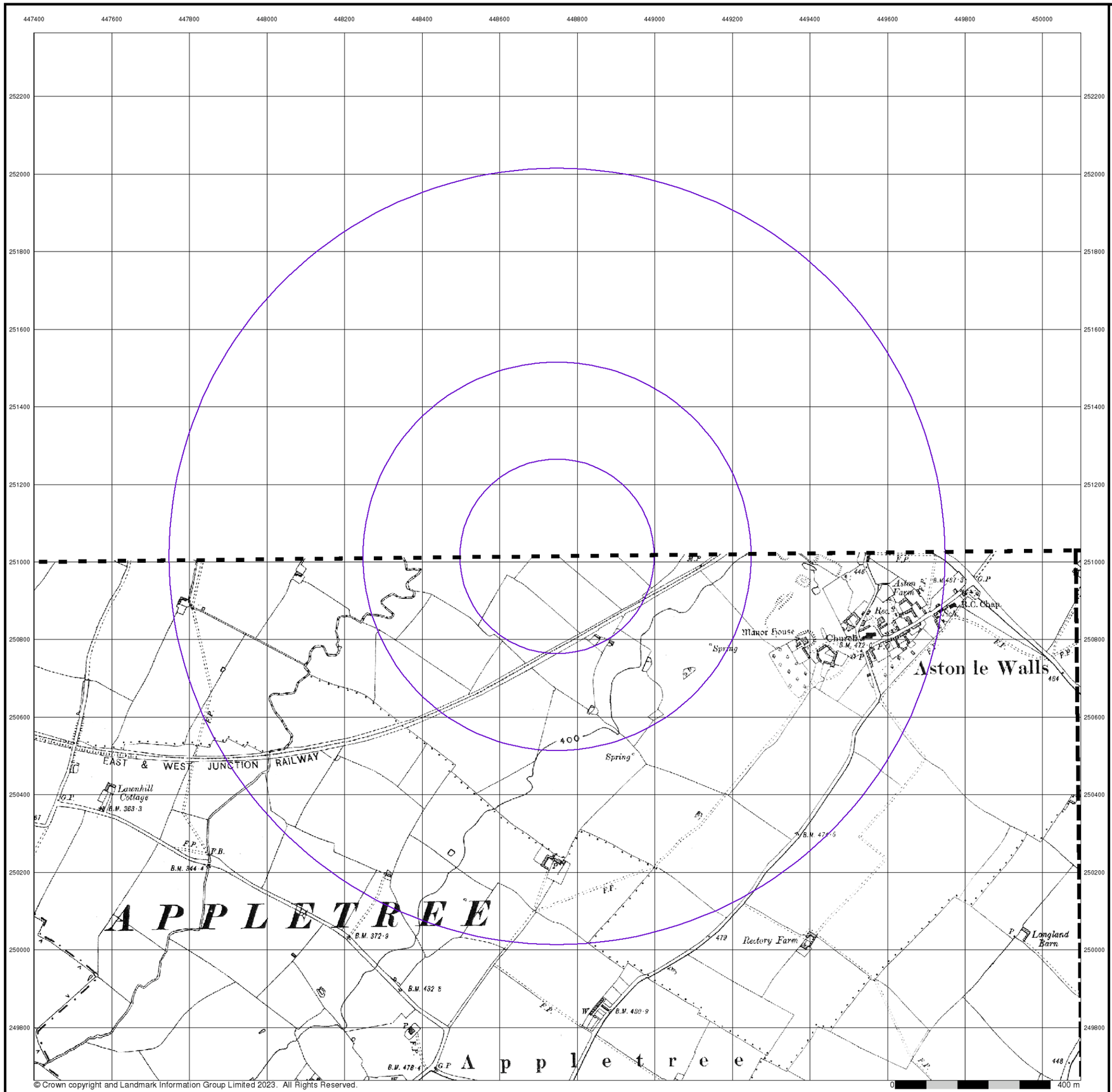

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LANDMARK INFORMATION GROUP®

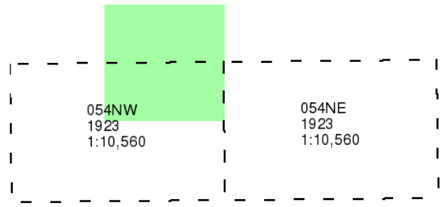
Northamptonshire

Published 1923

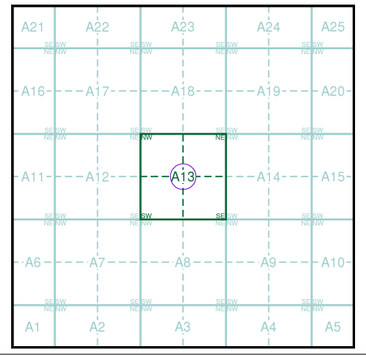
Source map scale - 1:10,560

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

Map Name(s) and Date(s)



Historical Map - Slice A



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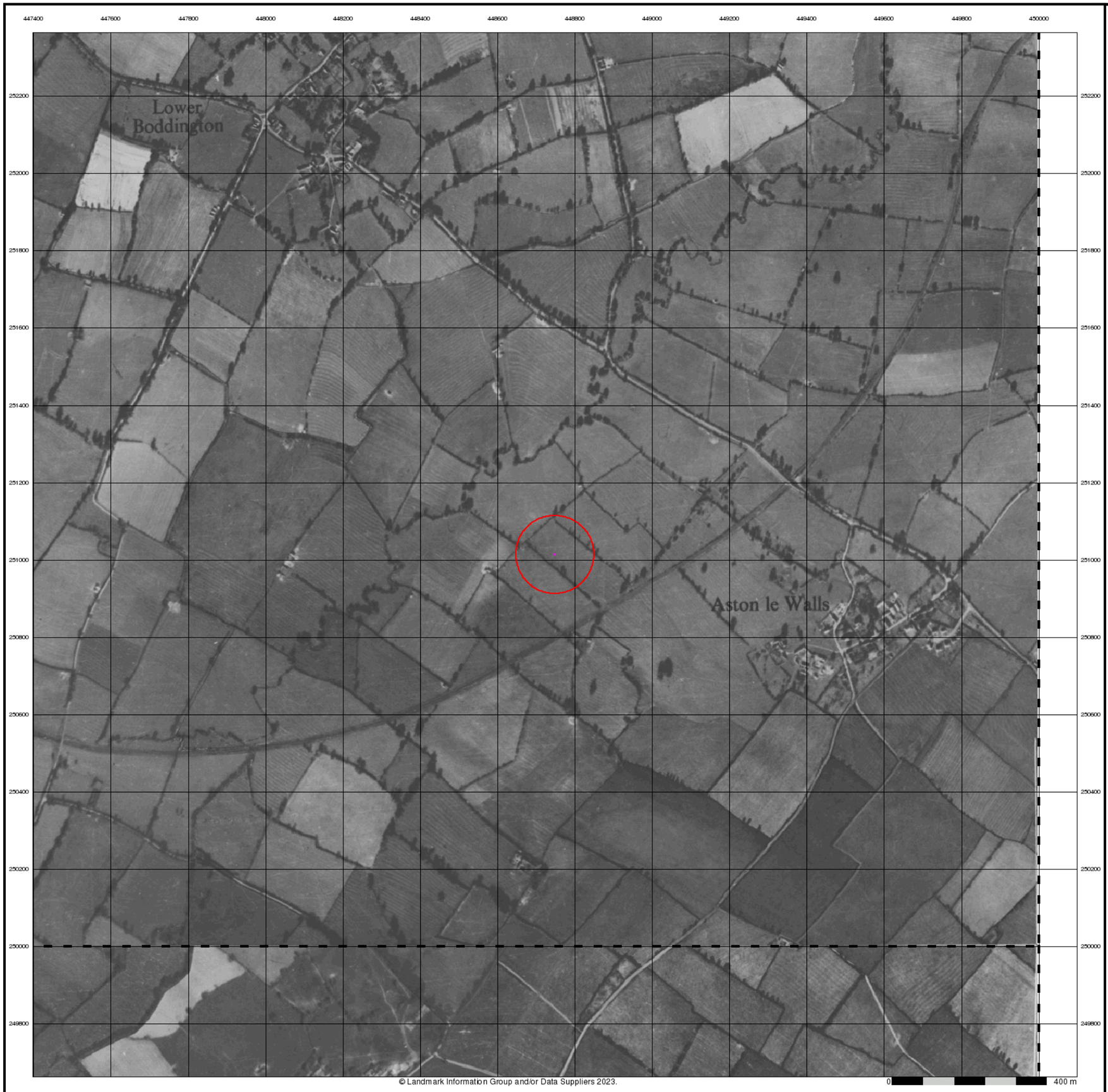

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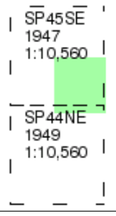
Historical Aerial Photography

Published 1947 - 1949

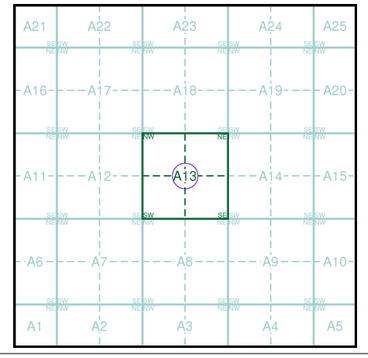
Source map scale - 1:10,560

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

Map Name(s) and Date(s)



Historical Aerial Photography - Slice A



Order Details

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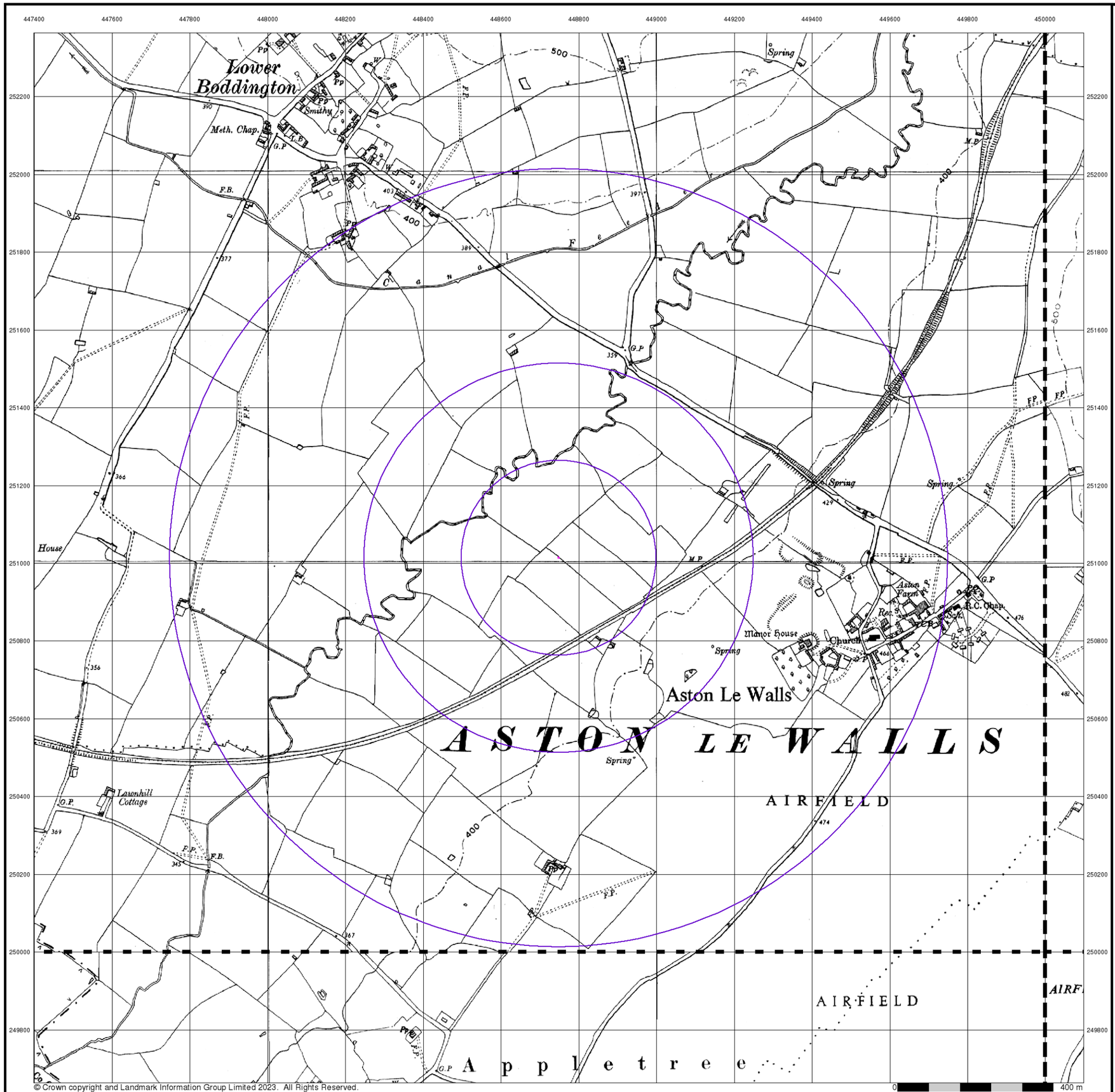

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Ordnance Survey Plan

Published 1955

Source map scale - 1:10,000

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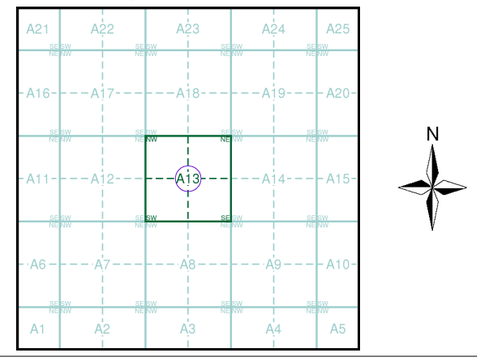
Map Name(s) and Date(s)

SP45SE 1955 1:10,560	SP55SW 1955 1:10,560
SP44NE 1955 1:10,560	SP54NW 1955 1:10,560

Historical Map - Slice A



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Site at 448700, 251000

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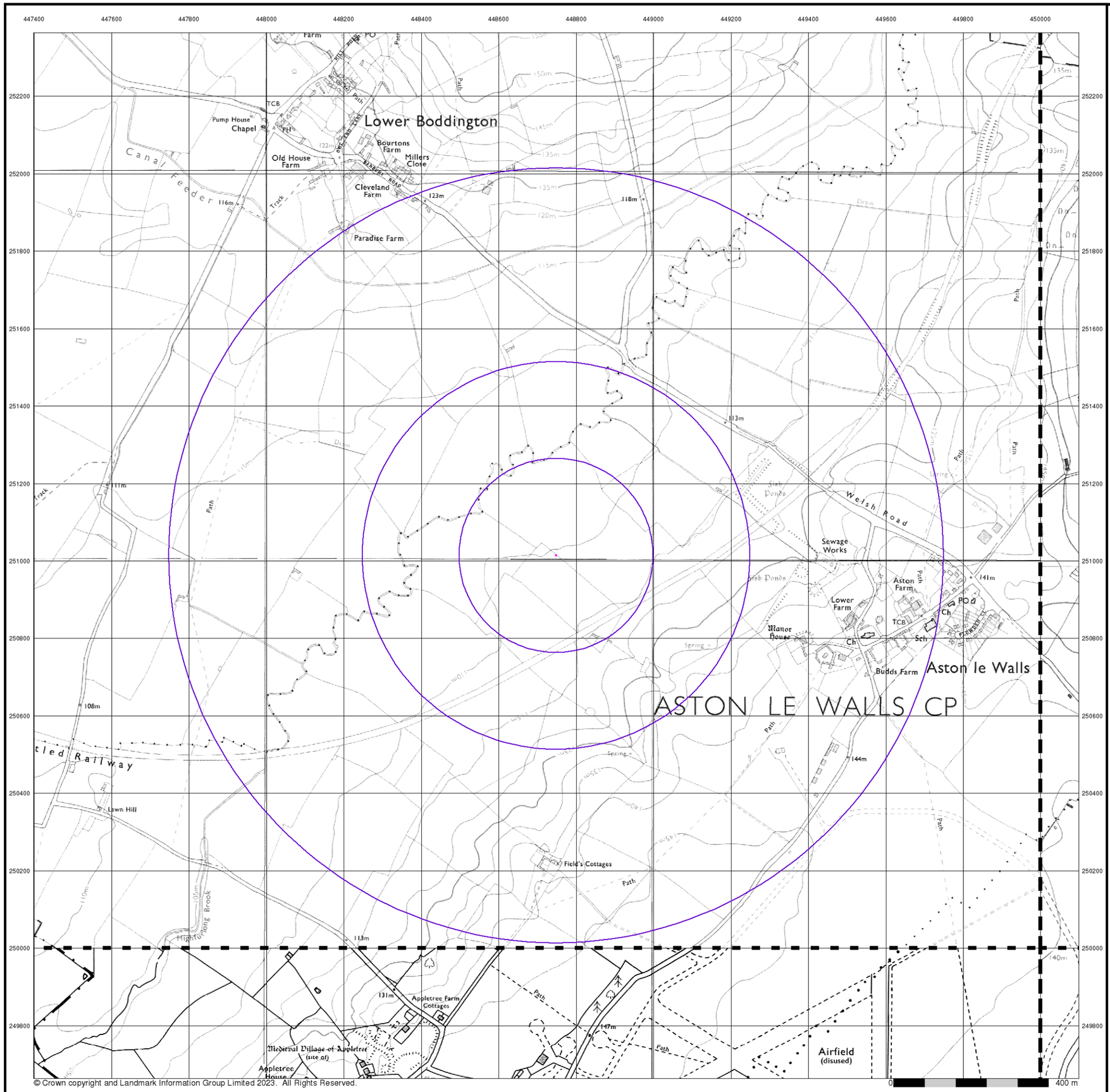

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LANDMARK INFORMATION GROUP®

Ordnance Survey Plan

Published 1982 - 1984

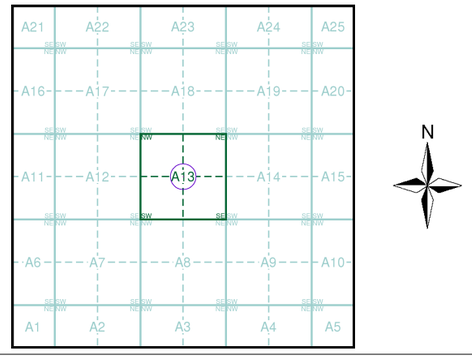
Source map scale - 1:10,000

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)

SP45SE 1983 1:10,000	SP55SW 1984 1:10,000
SP44NE 1982 1:10,000	SP54NW 1982 1:10,000

Historical Map - Slice A



Order Details

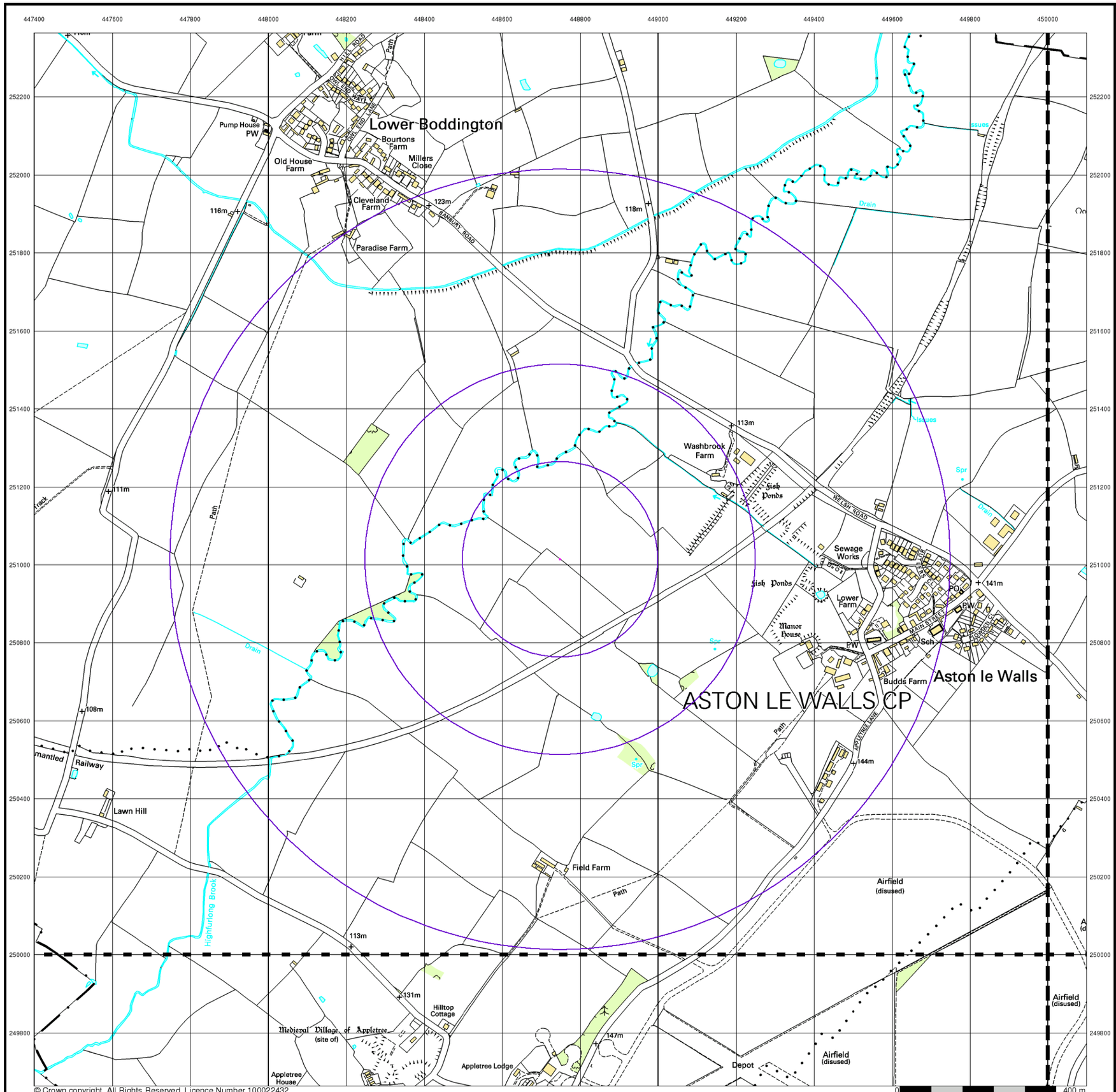
Order Number:	306321037_1_1
Customer Ref:	193224
National Grid Reference:	448750, 251010
Slice:	A
Site Area (Ha):	0.01
Search Buffer (m):	1000

Site Details

Site at 448700, 251000

Landmark INFORMATION GROUP

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



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10k Raster Mapping

Published 1999

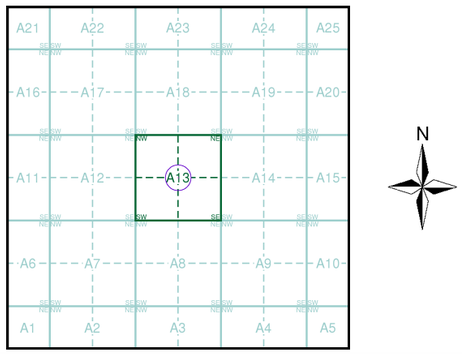
Source map scale - 1:10,000

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

Map Name(s) and Date(s)

SP45SE 1999 1:10,000	SP55SW 1999 1:10,000
SP44NE 1999 1:10,000	SP54NW 1999 1:10,000

Historical Map - Slice A



Order Details

Order Number:	306321037_1_1
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Site at 448700, 251000

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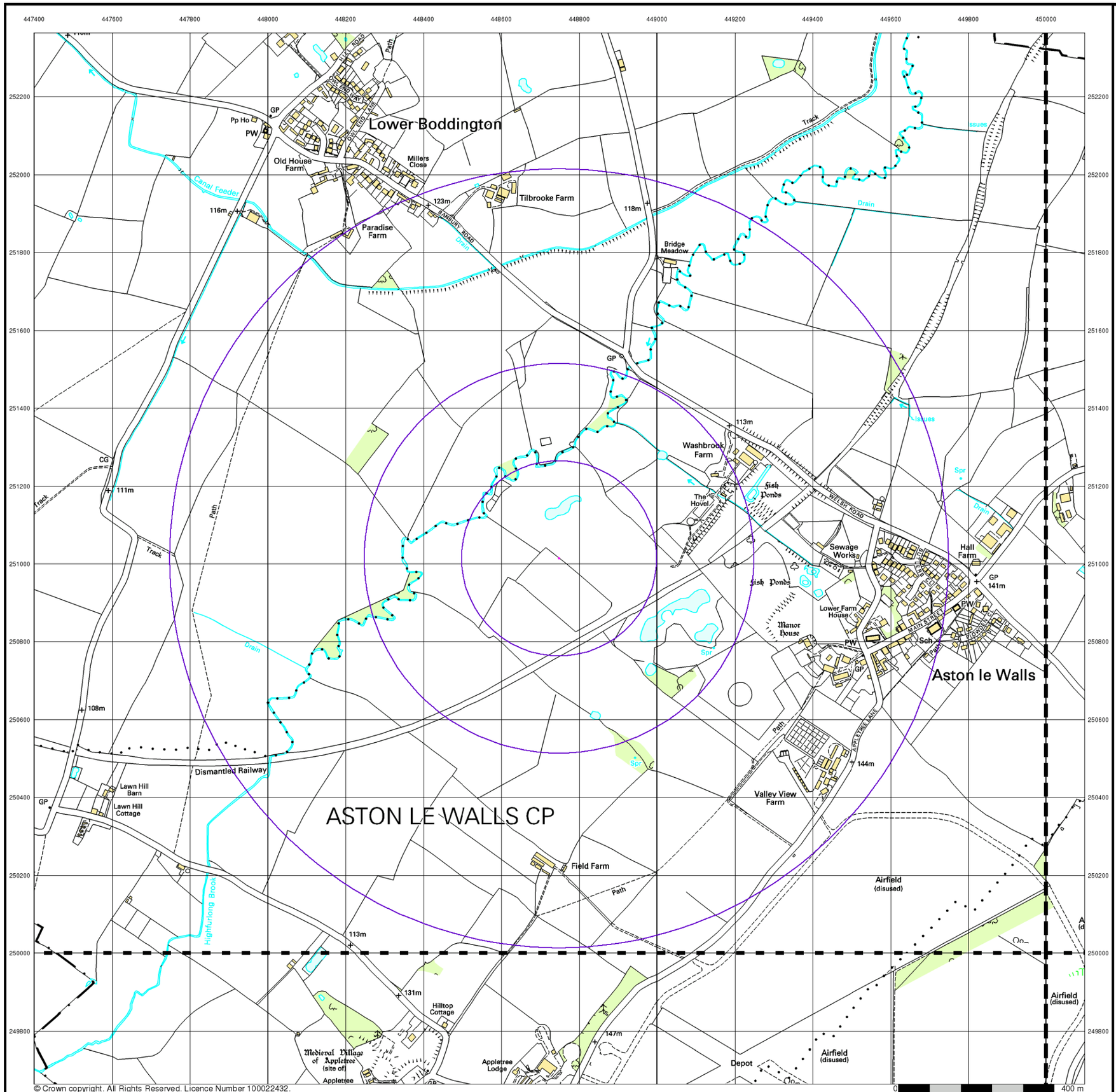

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10k Raster Mapping

Published 2006

Source map scale - 1:10,000

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

Map Name(s) and Date(s)

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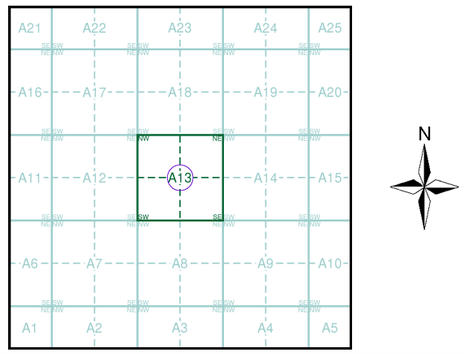
SP44NE 2006 1:10,000	SP54NW 2006 1:10,000

Historical Map - Slice A



Order Details

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Site Details

Site at 448700, 251000

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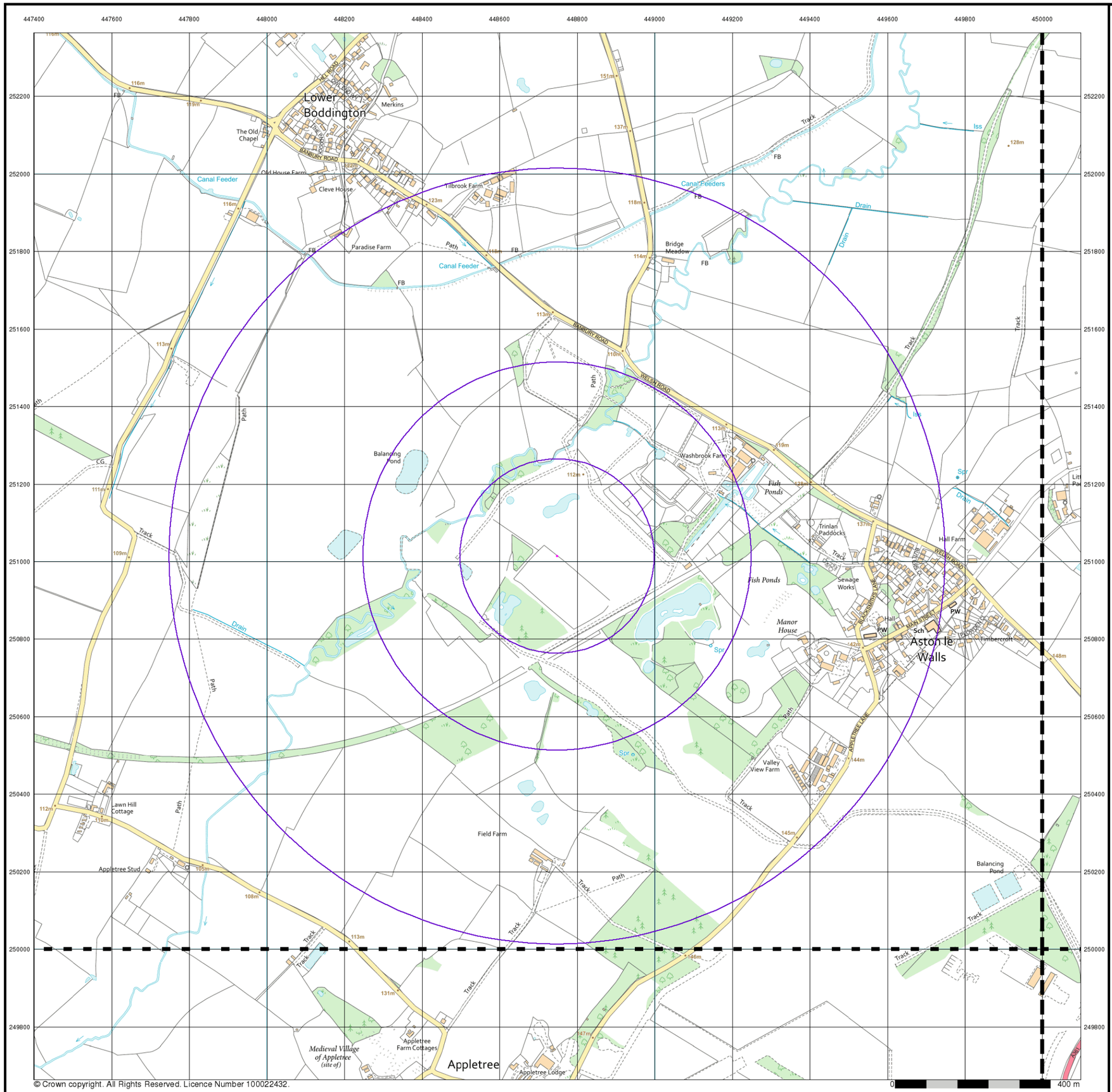

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VectorMap Local

Published 2022

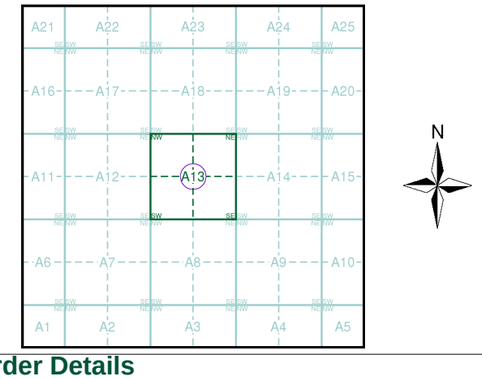
Source map scale - 1:10,000

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

Map Name(s) and Date(s)

SP45SE 2022 Variable	SP55SW 2022 Variable
SP44NE 2022 Variable	SP54NW 2022 Variable

Historical Map - Slice A



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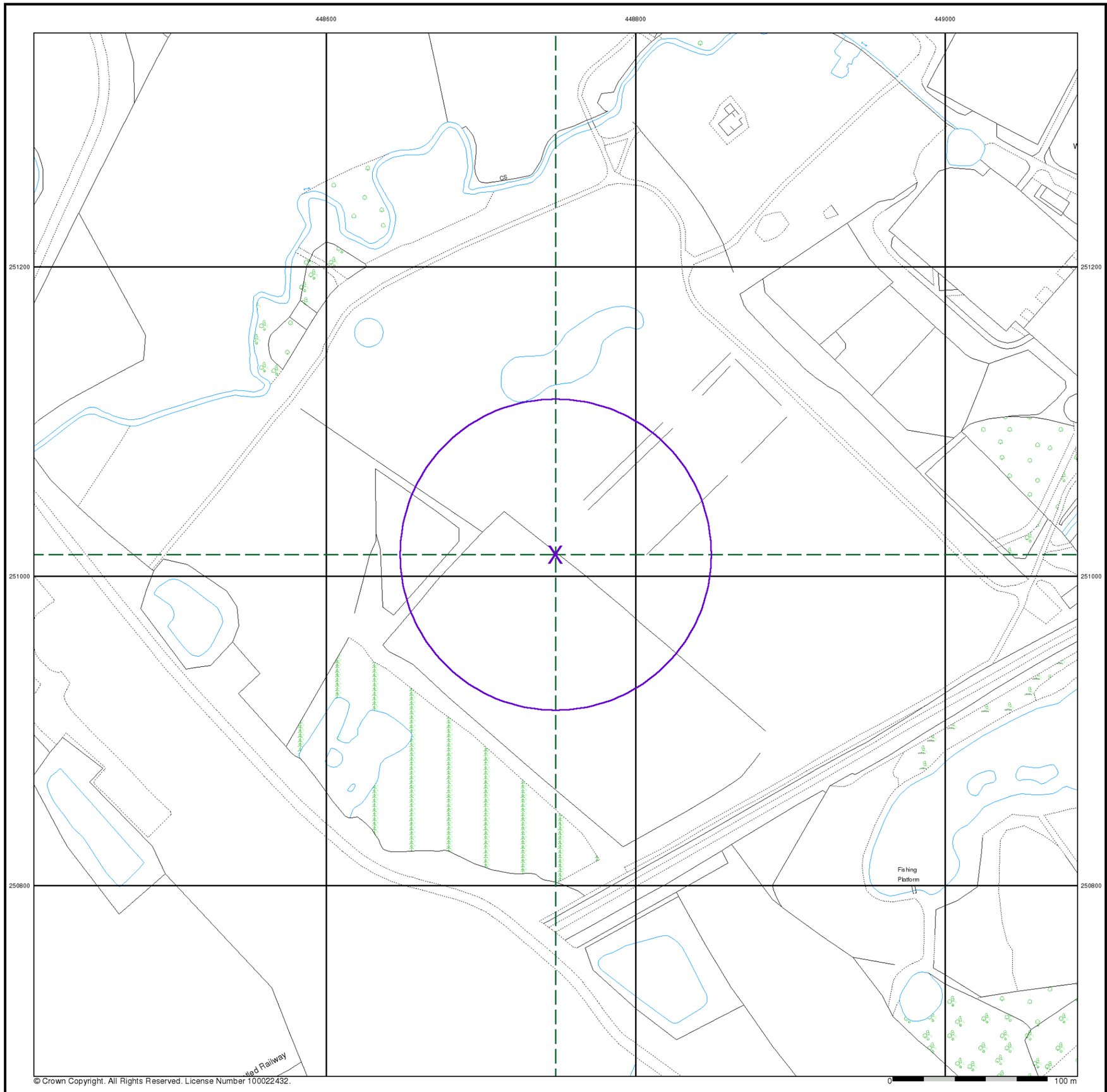

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LANDMARK INFORMATION GROUP®

General

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

Agency and Hydrological

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

Hazardous Substances

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

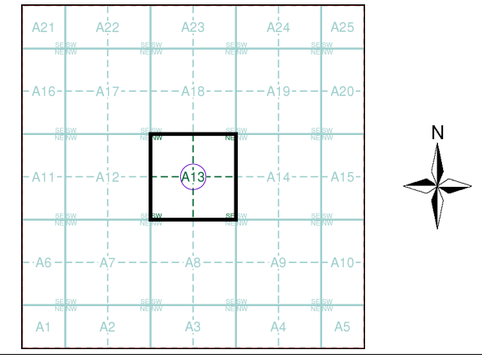
Geological

- BGS Recorded Mineral Site

Waste

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

Site Sensitivity Map - Segment A13



Order Details

Order Number:	306321037_1_1
Customer Ref:	193224
National Grid Reference:	448750, 251010
Slice:	A
Site Area (Ha):	0.01
Plot Buffer (m):	100

Site Details

Site at 448700, 251000

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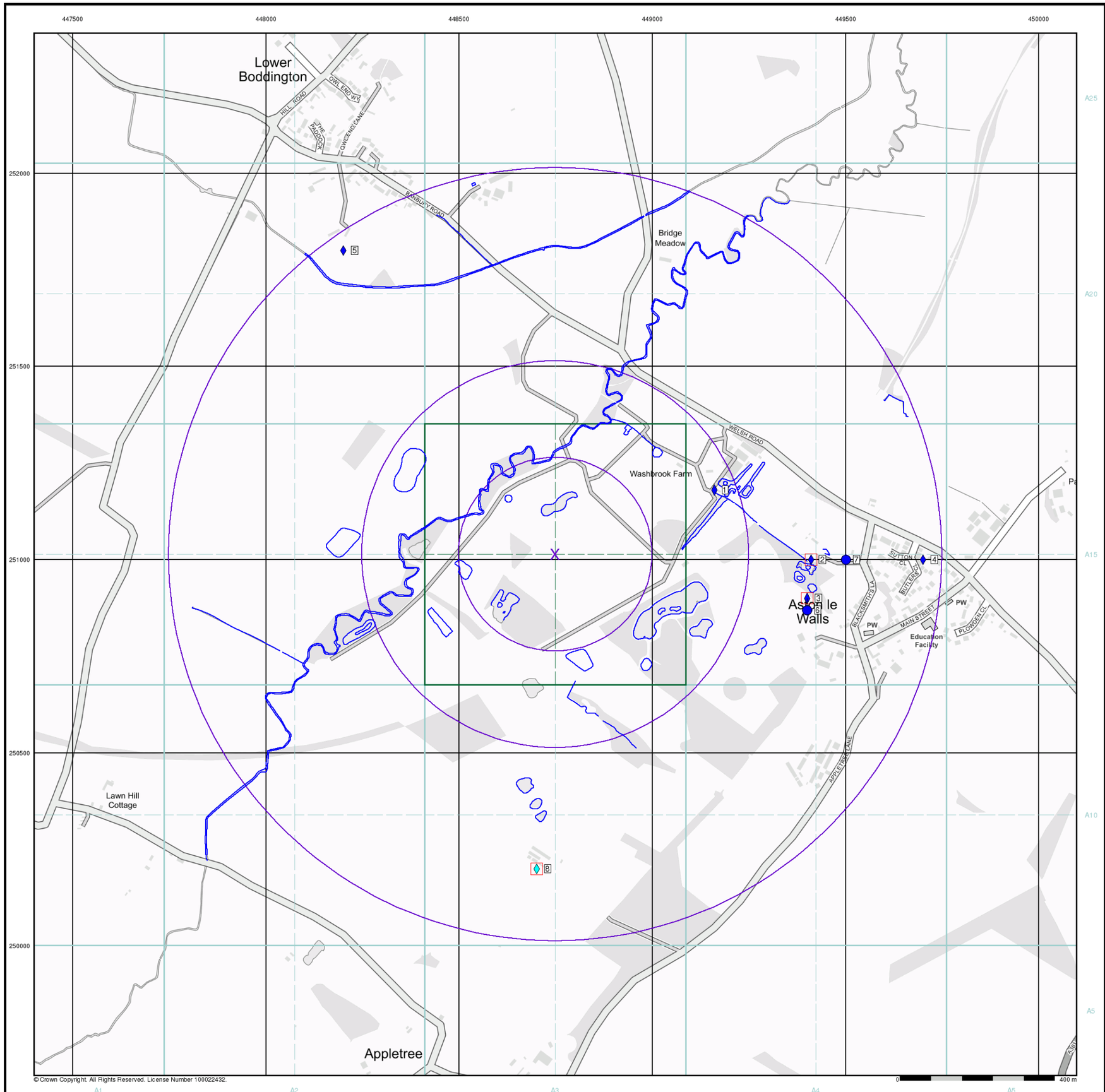

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LANDMARK INFORMATION GROUP®

General

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

Agency and Hydrological

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

Hazardous Substances

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

Geological

- BGS Recorded Mineral Site

Waste

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- BGS Recorded Landfill Site
- EA Historic Landfill (Buffered Point)
- EA Historic Landfill (Polygon)
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- Licensed Waste Management Facility (Location)
- Local Authority Recorded Landfill Site (Location)
- Local Authority Recorded Landfill Site
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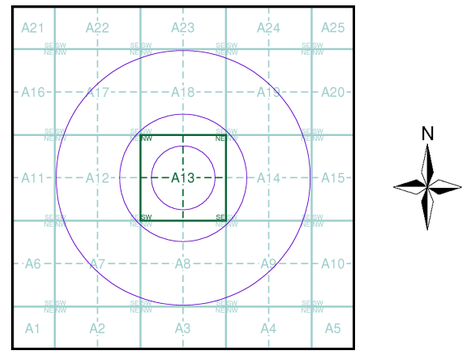
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Water)
- Potentially Infilled Land (Water)
- Potentially Infilled Land (Water)
- Registered Landfill Site
- Registered Landfill Site (Location)
- Registered Landfill Site (Point Buffered to 100m)
- Registered Landfill Site (Point Buffered to 250m)
- Registered Waste Transfer Site (Location)
- Registered Waste Transfer Site
- Registered Waste Treatment or Disposal Site (Location)
- Registered Waste Treatment or Disposal Site

Site Sensitivity Map - Slice A



Order Details

Order Number:	306321037_1_1
Customer Ref:	193224
National Grid Reference:	448750, 251010
Slice:	A
Site Area (Ha):	0.01
Search Buffer (m):	1000

Site Details

Site at 448700, 251000

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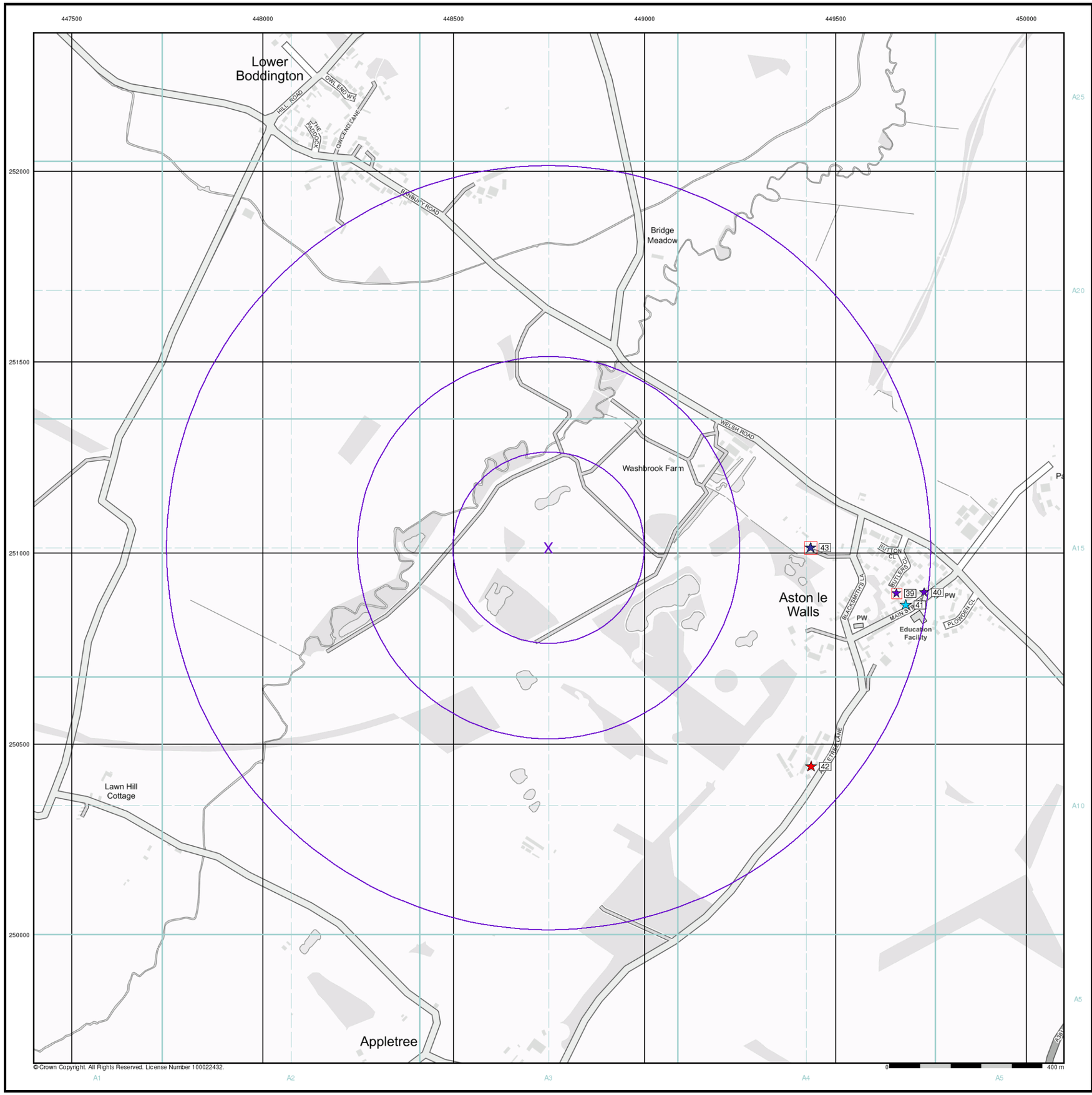

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Industrial Land Use Map

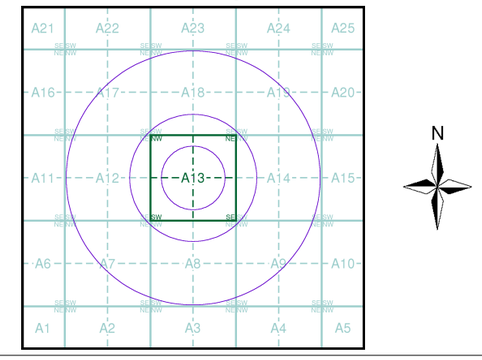
General

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

Industrial Land Use

- Contemporary Trade Directory Entry
- Fuel Station Entry
- Gas Pipeline
- Points of Interest - Commercial Services
- Points of Interest - Education and Health
- Points of Interest - Manufacturing and Production
- Points of Interest - Public Infrastructure
- Points of Interest - Recreational and Environmental
- Underground Electrical Cables

Industrial Land Use Map - Slice A



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Site at 448700, 251000

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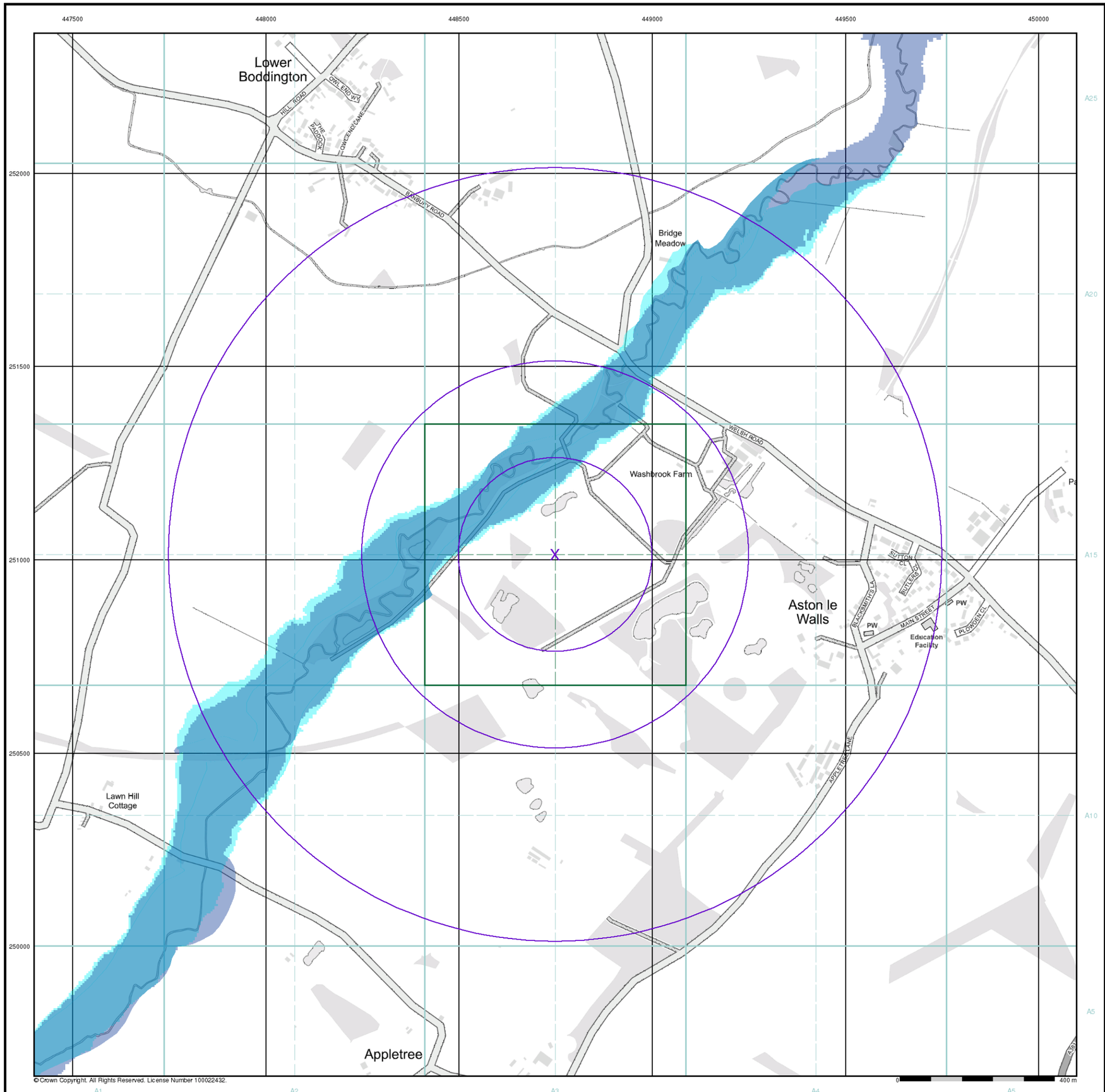


Envirocheck®

LANDMARK INFORMATION GROUP®

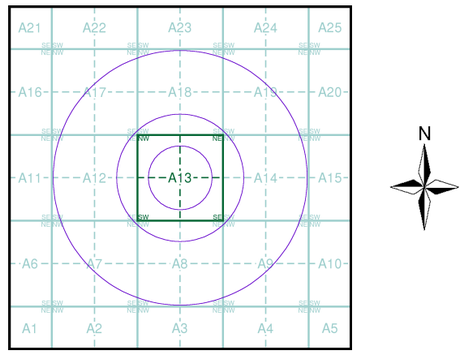
General

- 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:	306321037_1_1
Customer Ref:	193224
National Grid Reference:	448750, 251010
Slice:	A
Site Area (Ha):	0.01
Search Buffer (m):	1000

Site Details

Site at 448700, 251000

Landmark INFORMATION GROUP

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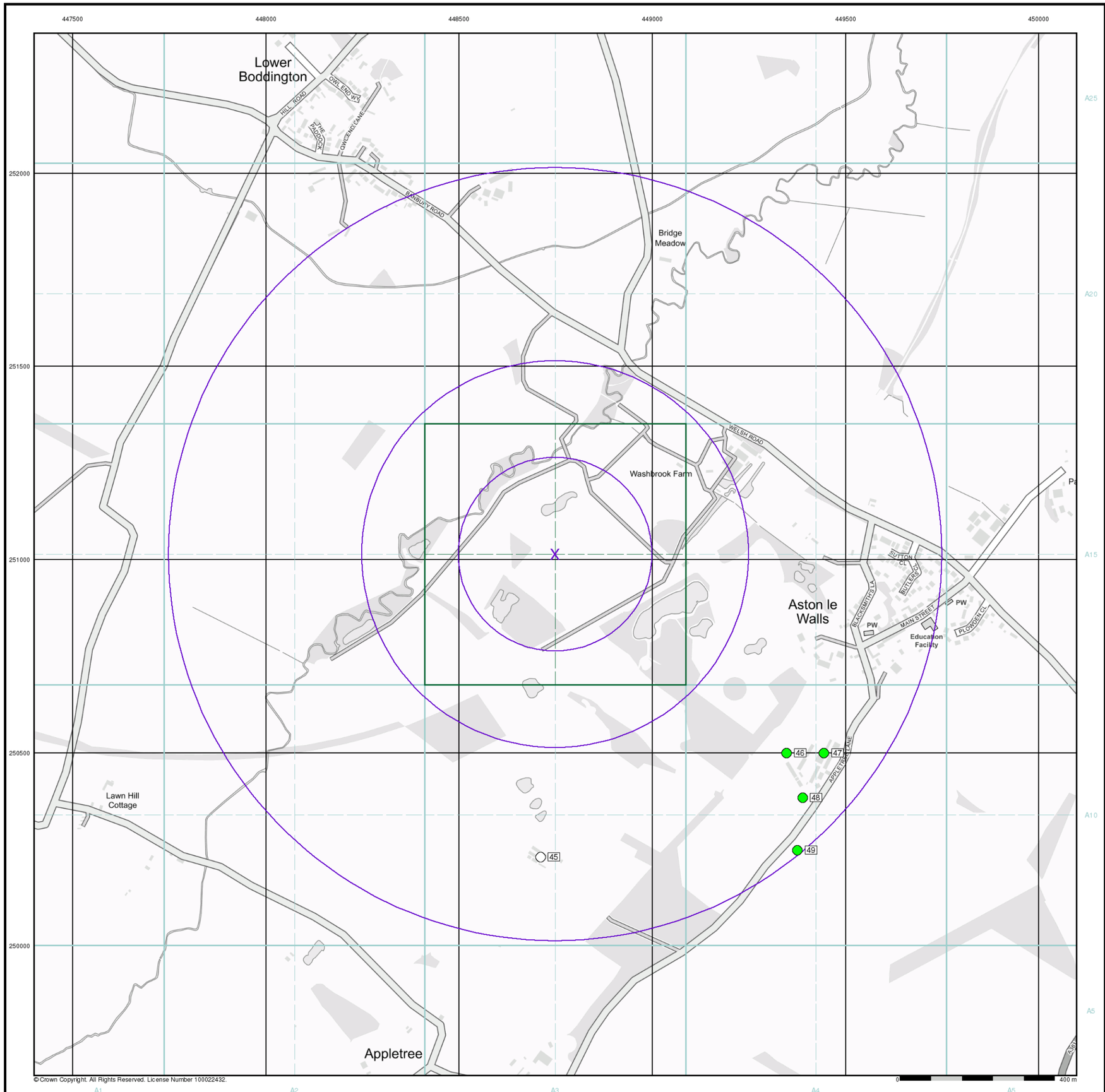


Envirocheck®

LANDMARK INFORMATION GROUP®

General

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

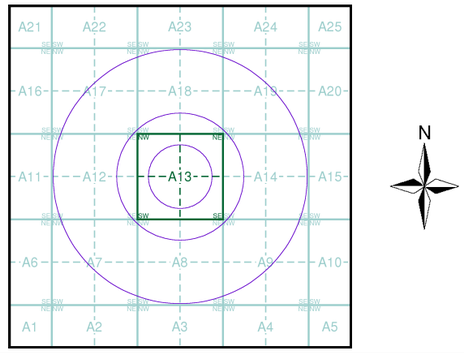
Agency and Hydrological (Boreholes)

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

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

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

Borehole Map - Slice A



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Site Details

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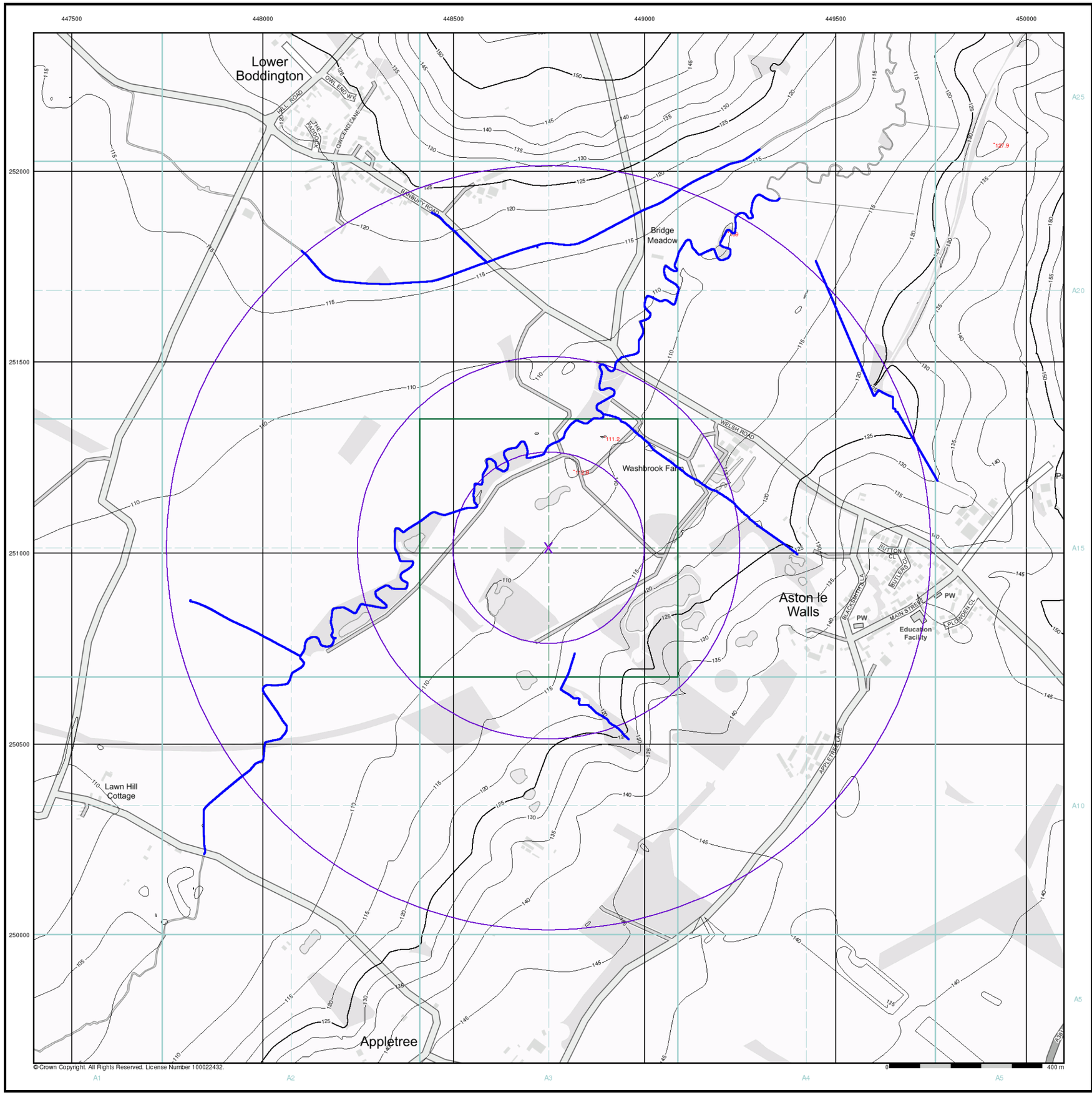

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LANDMARK INFORMATION GROUP®

General

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

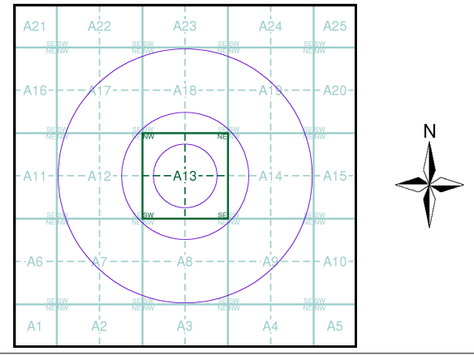
OS Water Network Data

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

Contours (height in meters)

- Standard Contour
- Master Contour
- Spot Height 167.3
- MLW Mean Low Water
- MHW Mean High Water

OS Water Network Map - Slice A



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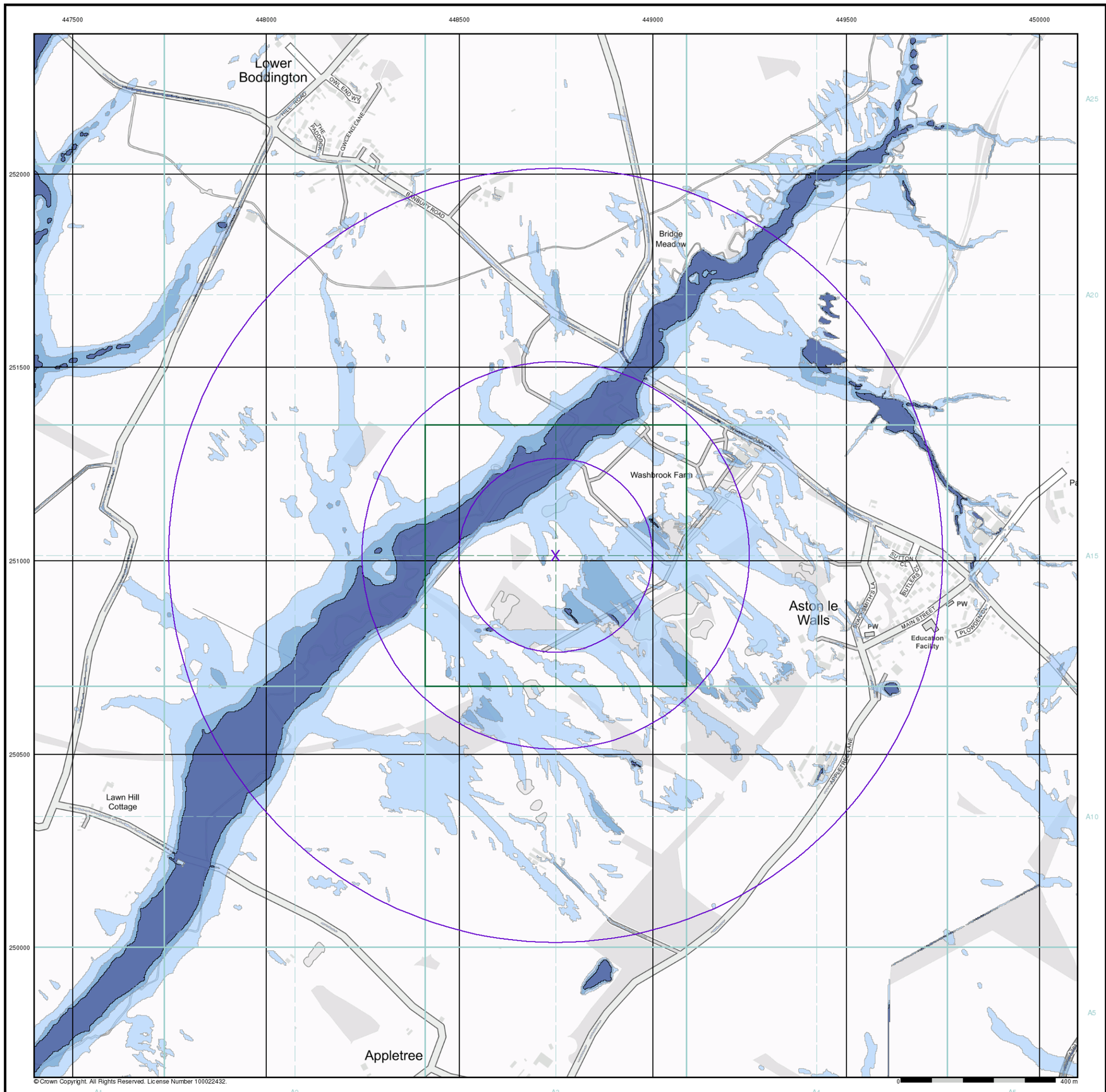


Envirocheck®

LANDMARK INFORMATION GROUP®

General

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

Risk of Flooding from Surface Water

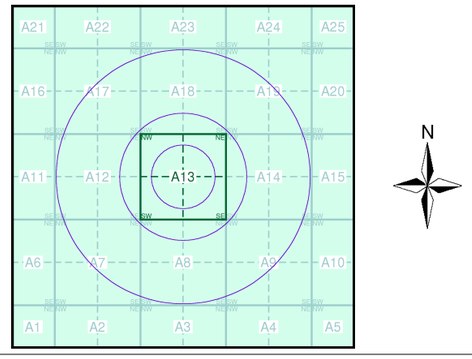
- High - 30 Year Return
- Medium - 100 Year Return
- Low - 1000 Year Return

Suitability

See the suitability map below

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

EA/NRW Suitability Map - Slice A



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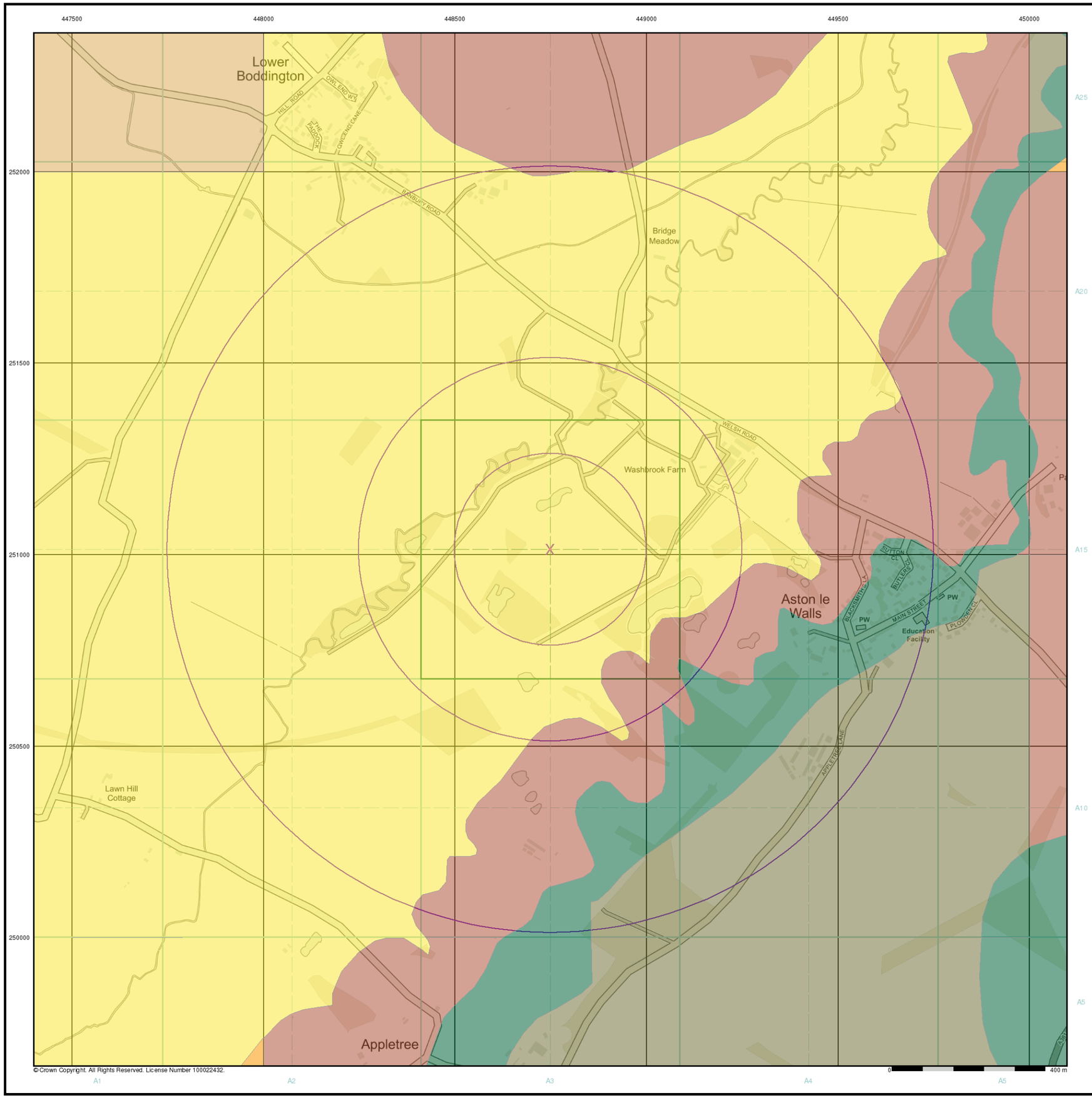

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LANDMARK INFORMATION GROUP®

General

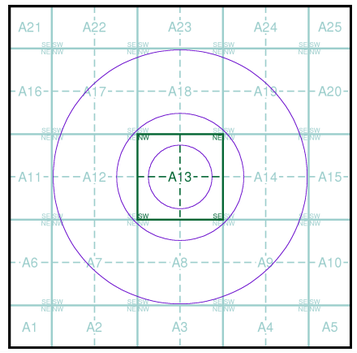
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Arsenic

Arsenic Concentrations mg/kg

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

Estimated Soil Chemistry Arsenic - Slice A



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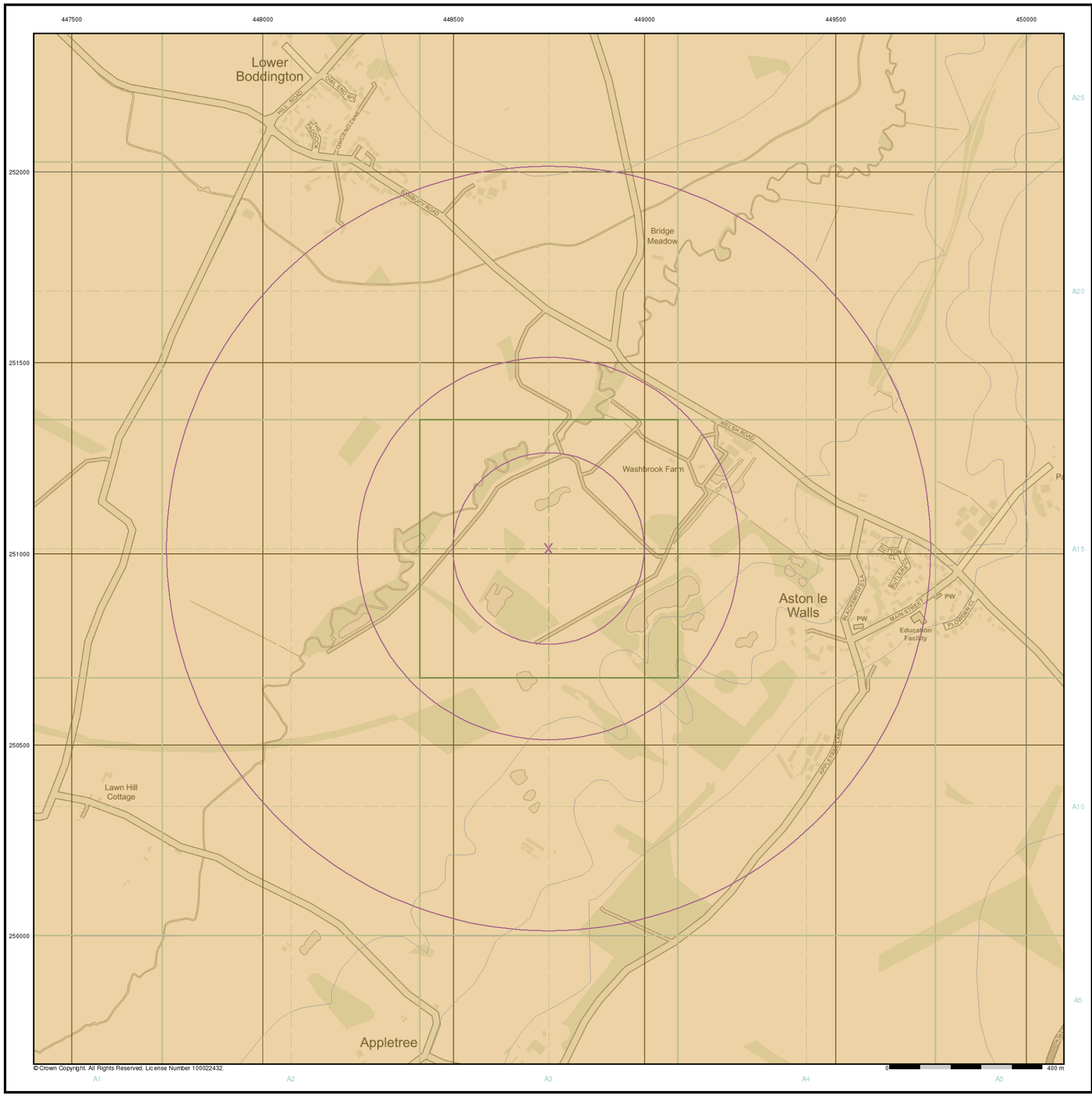


Envirocheck®

LANDMARK INFORMATION GROUP®

General

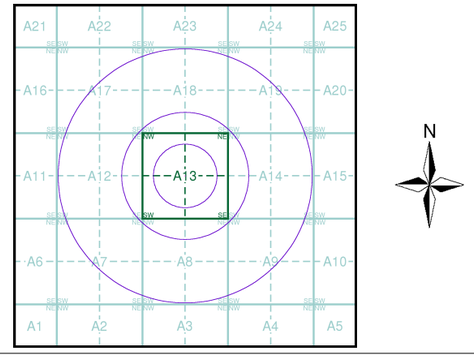
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Cadmium

Cadmium Concentrations mg/kg

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

Estimated Soil Chemistry Cadmium - Slice A



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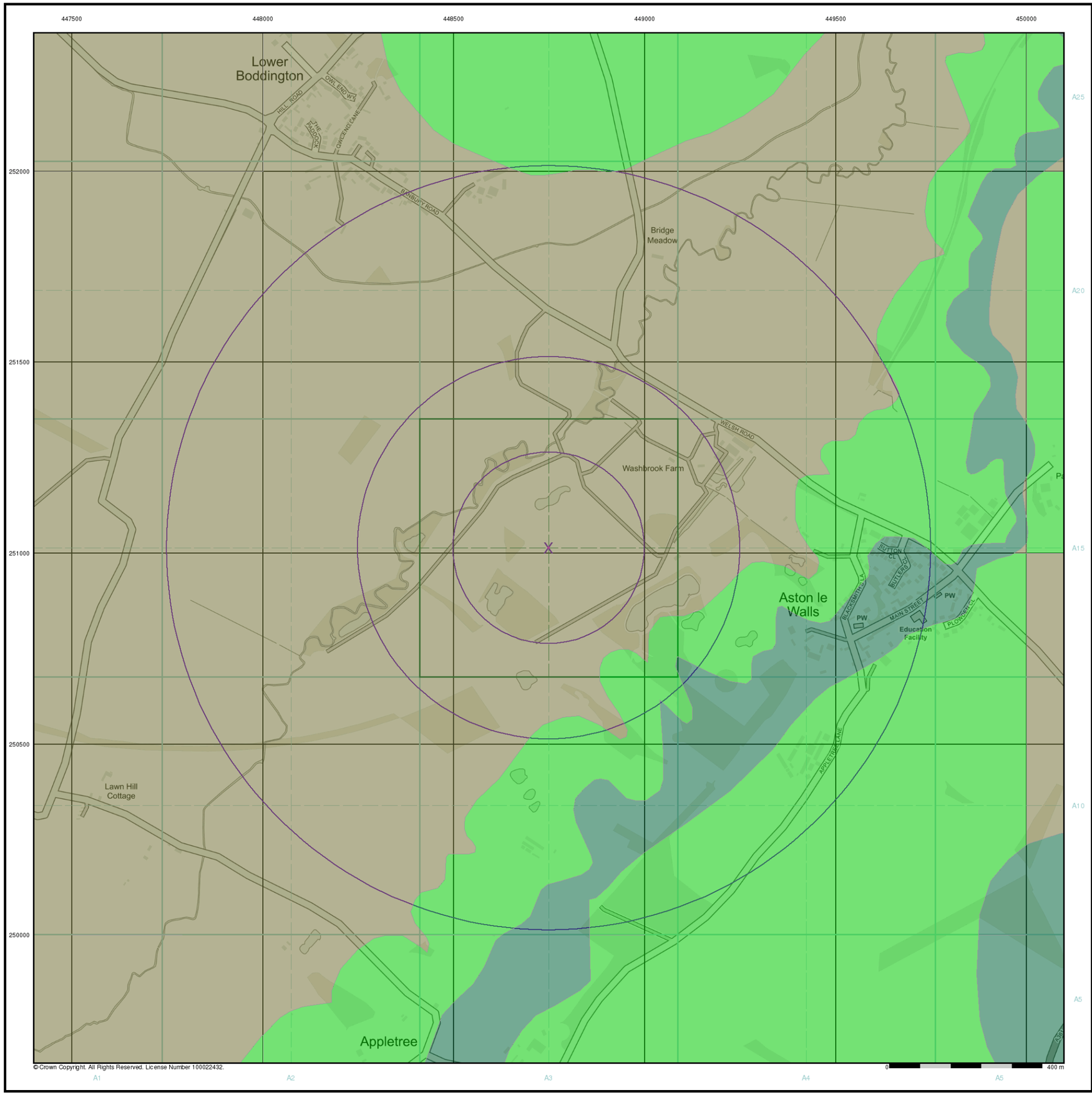


Envirocheck®

LANDMARK INFORMATION GROUP®

General

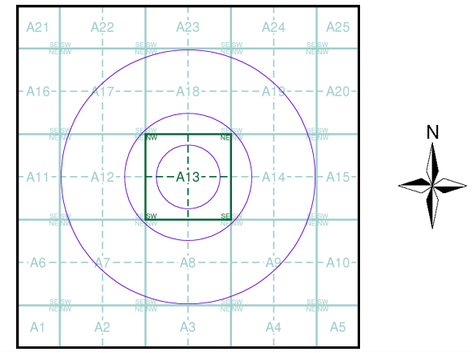
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Chromium

Chromium Concentrations mg/kg

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

Estimated Soil Chemistry Chromium - Slice A



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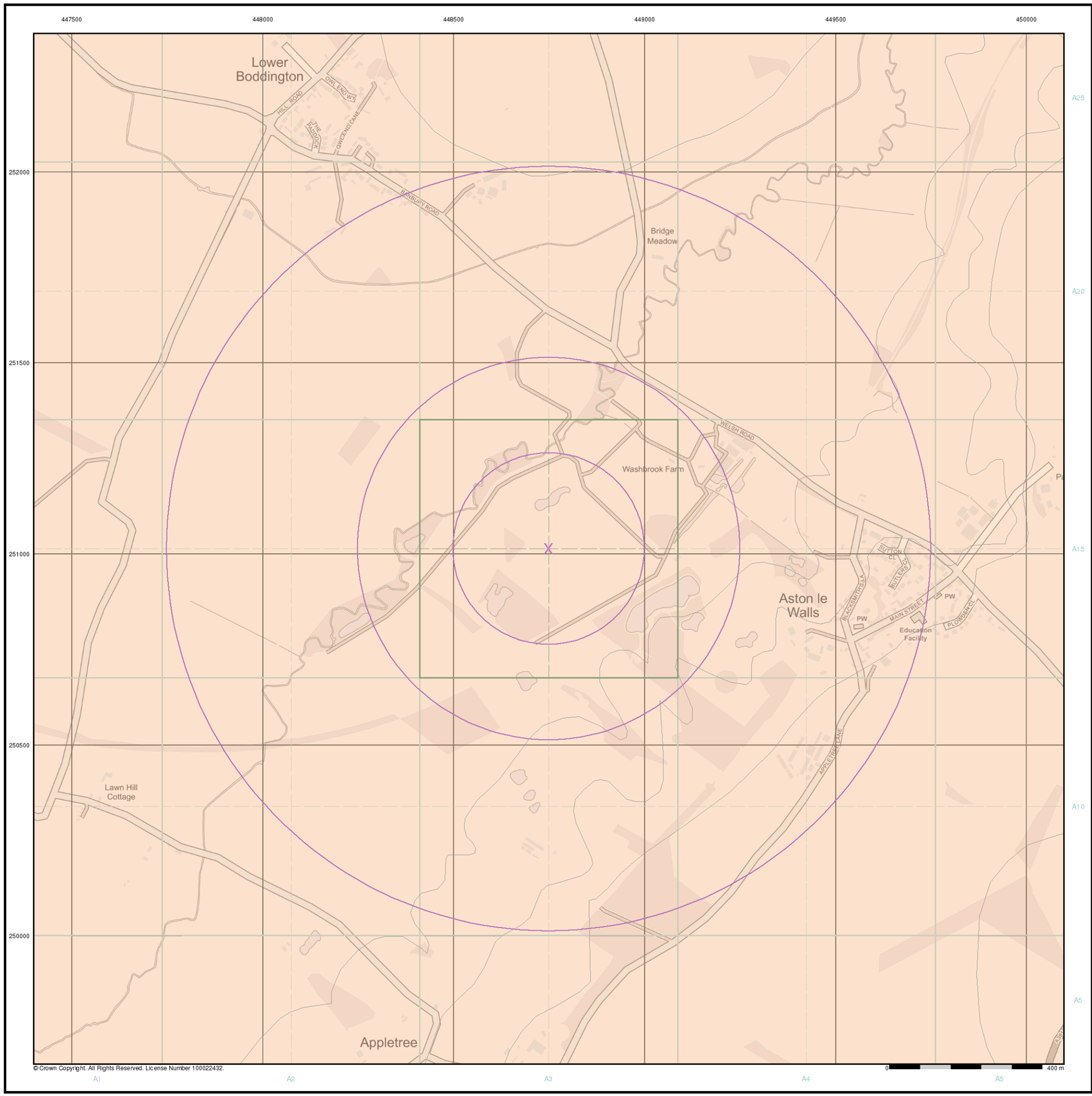
Web: www.envirocheck.co.uk



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General

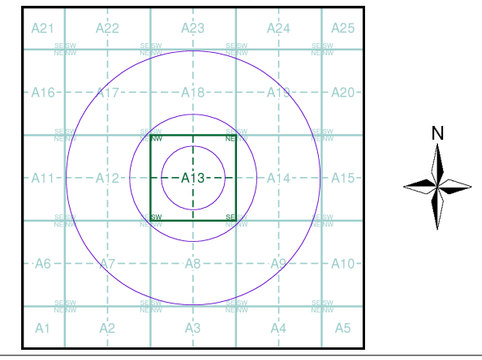
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Lead

Lead Concentrations mg/kg

- <100 mg/kg
- 100 - 200
- 200 - 300
- 300 - 600
- 600 - 1200
- >1200

Estimated Soil Chemistry Lead - Slice A



Order Details

Order Details:	306321037_1_1
Customer Ref:	193224
National Grid Reference:	448750, 251010
Slice:	A
Site Area (Ha):	0.01
Search Buffer (m):	1000

Site Details

Site at 448700, 251000

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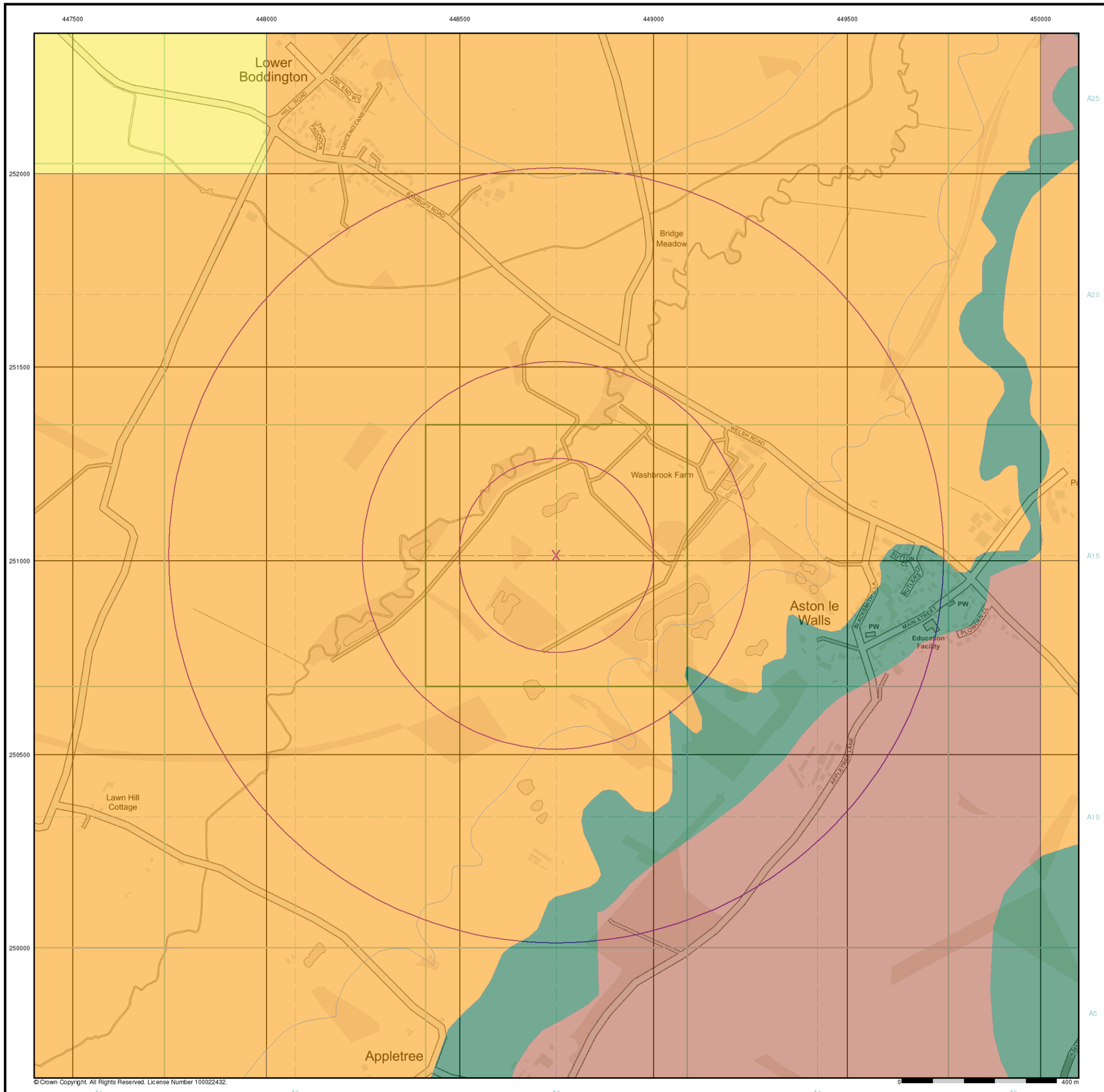

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LANDMARK INFORMATION GROUP®

General

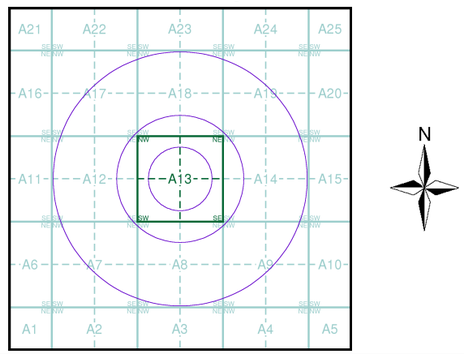
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Nickel

Nickel Concentrations mg/kg

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

Estimated Soil Chemistry Nickel - Slice A



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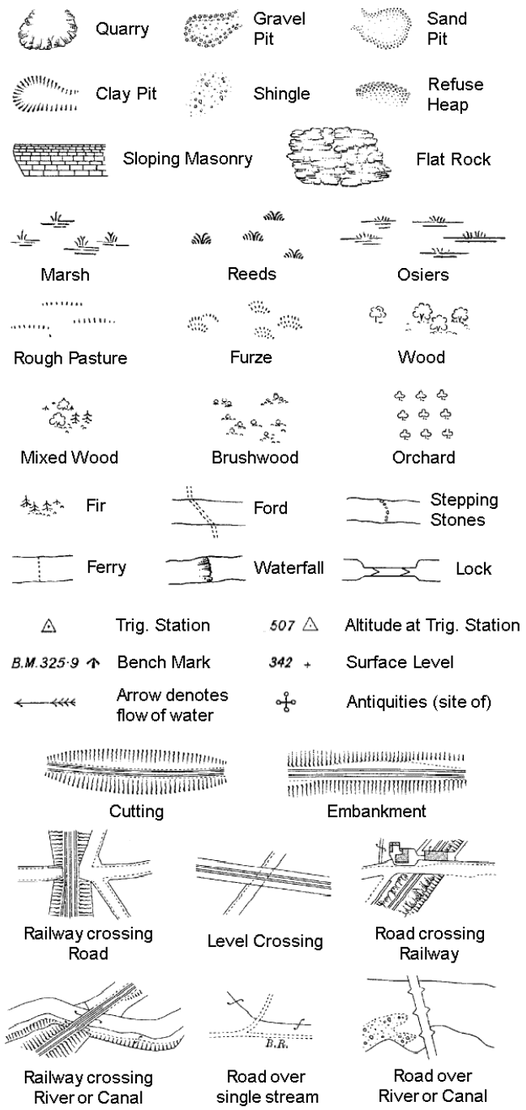
Historical Mapping Legends

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



County Boundary (Geographical)

County & Civil Parish Boundary

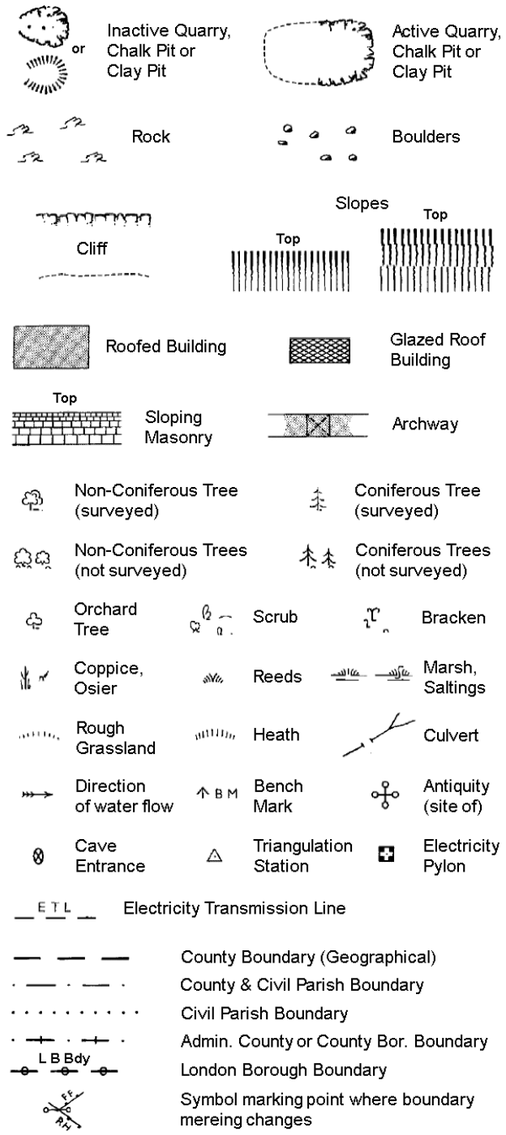
Administrative County & Civil Parish Boundary

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

Co. Burgh Bdy. County Burgh Boundary (Scotland)

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

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



County Boundary (Geographical)

County & Civil Parish Boundary

Civil Parish Boundary

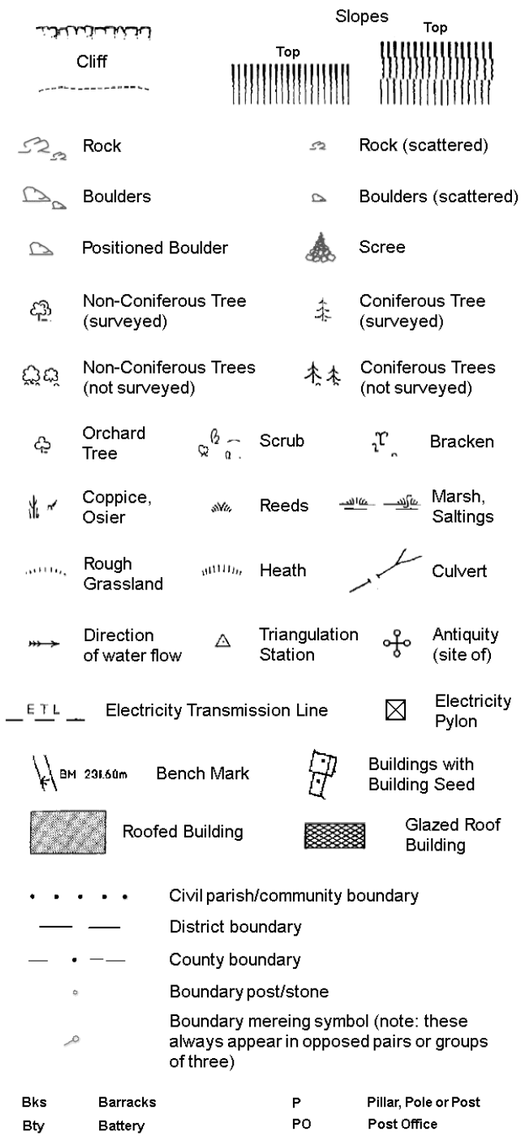
Admin. County or County Bor. Boundary

L B Bdy London Borough Boundary

Symbol marking point where boundary mereing changes

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

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



Civil parish/community boundary

District boundary

County boundary

Boundary post/stone

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

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

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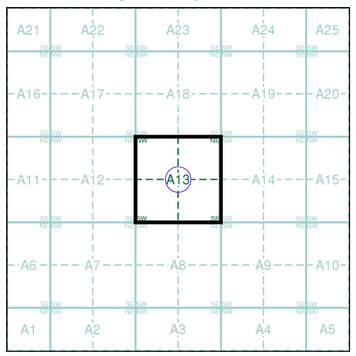
Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Oxfordshire	1:2,500	1882	2
Northamptonshire	1:2,500	1885	3
Northamptonshire	1:2,500	1900	4
Northamptonshire	1:2,500	1922	5
Oxfordshire	1:2,500	1922	6
Ordnance Survey Plan	1:2,500	1974	7
Additional SIMs	1:2,500	1990	8
Large-Scale National Grid Data	1:2,500	1993	9
Historical Aerial Photography	1:2,500	1999	10

Historical Map - Segment A13



Order Details

Order Number:	306321037_1_1
Customer Ref:	193224
National Grid Reference:	448750, 251010
Slice:	A
Site Area (Ha):	0.01
Search Buffer (m):	100

Site Details

Site at 448700, 251000

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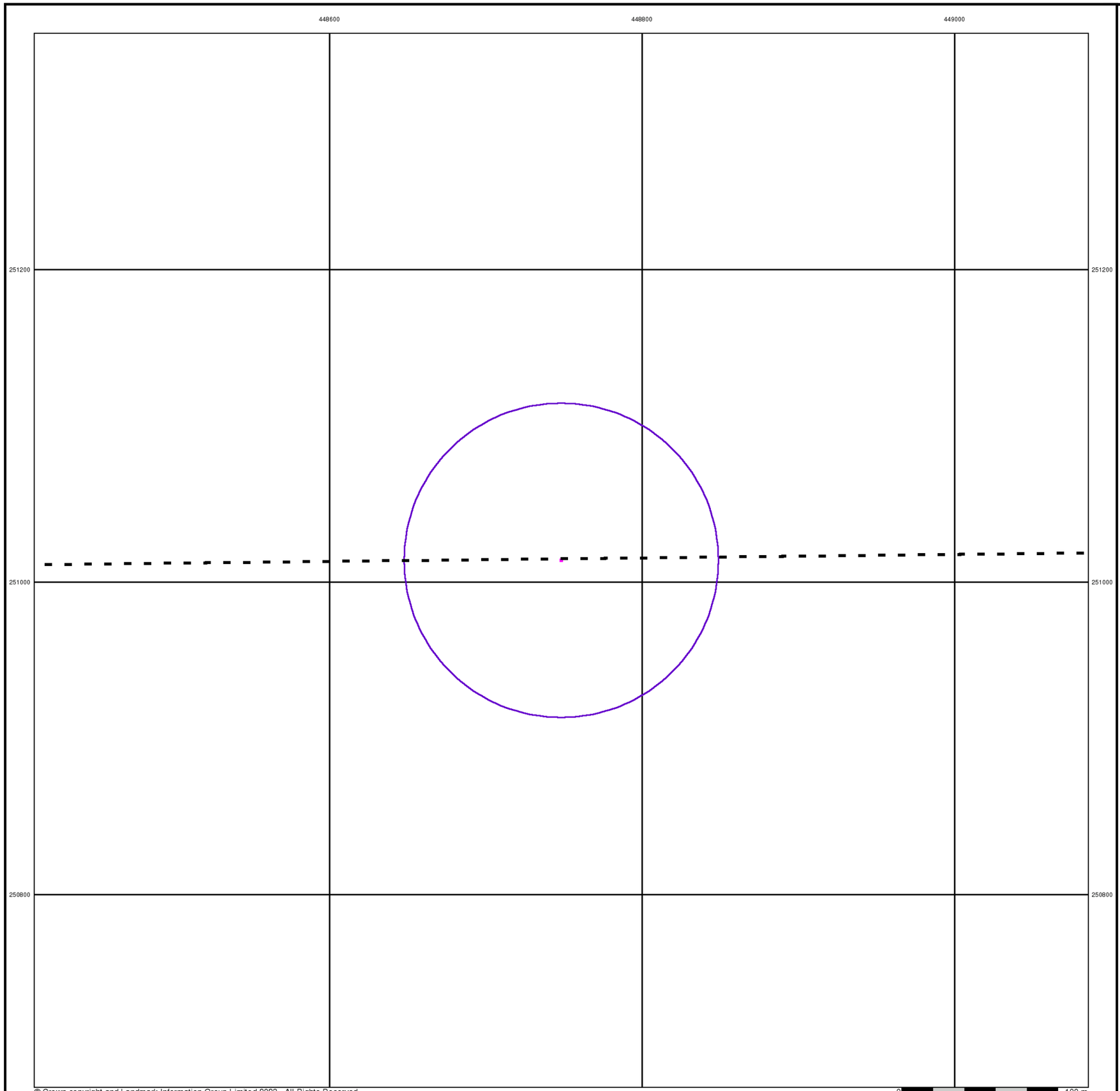

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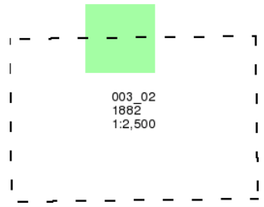
Oxfordshire

Published 1882

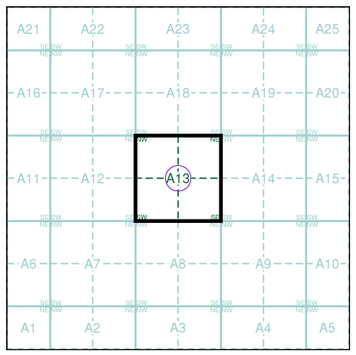
Source map scale - 1:2,500

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

Map Name(s) and Date(s)



Historical Map - Segment A13



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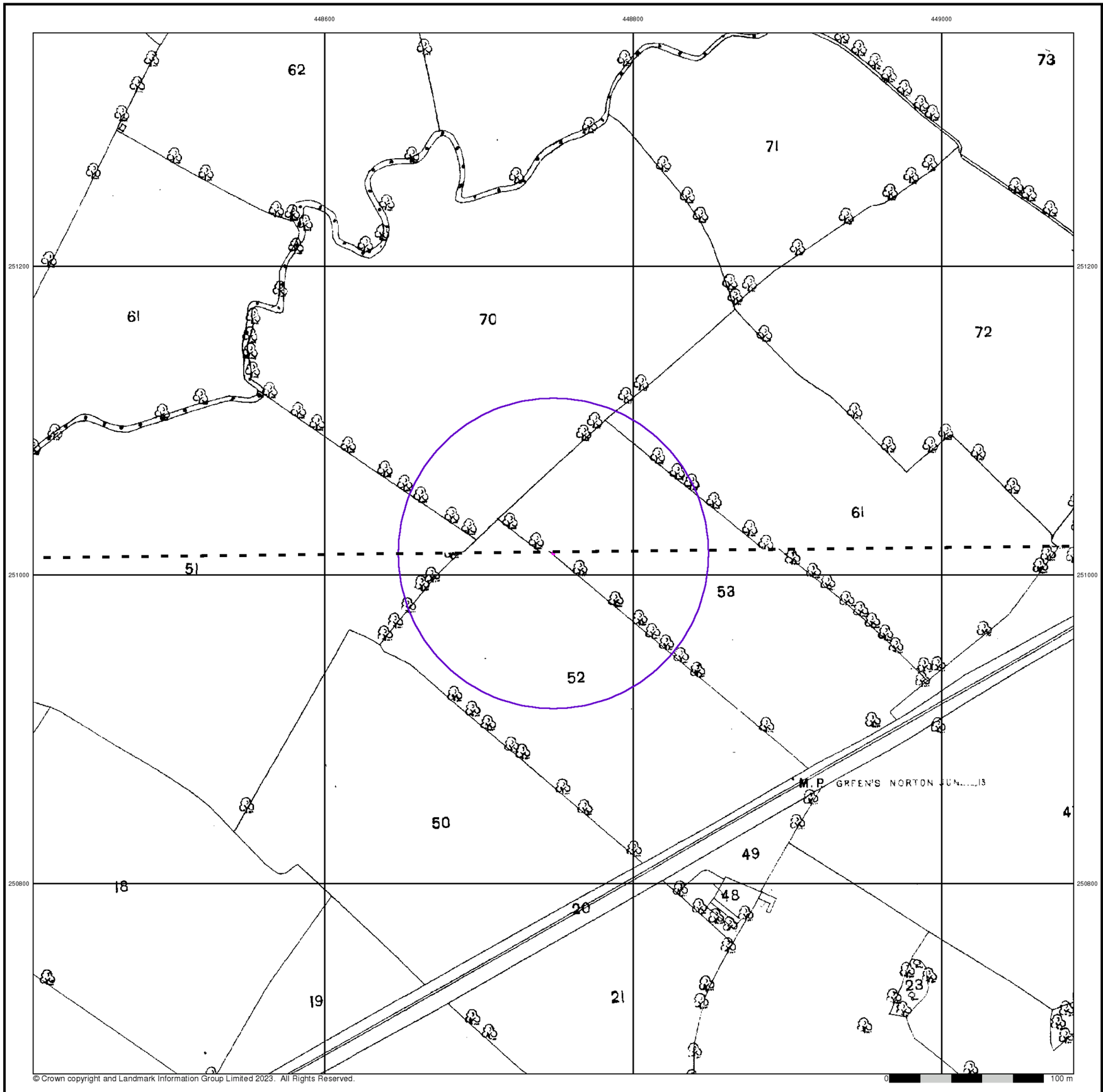

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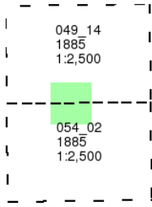
Northamptonshire

Published 1885

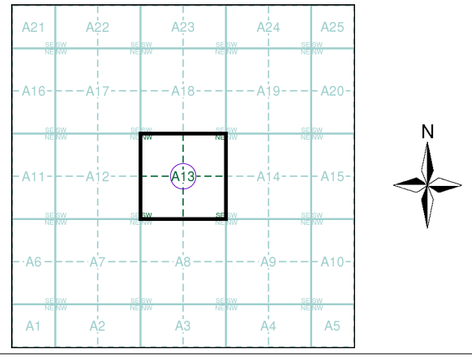
Source map scale - 1:2,500

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

Map Name(s) and Date(s)



Historical Map - Segment A13



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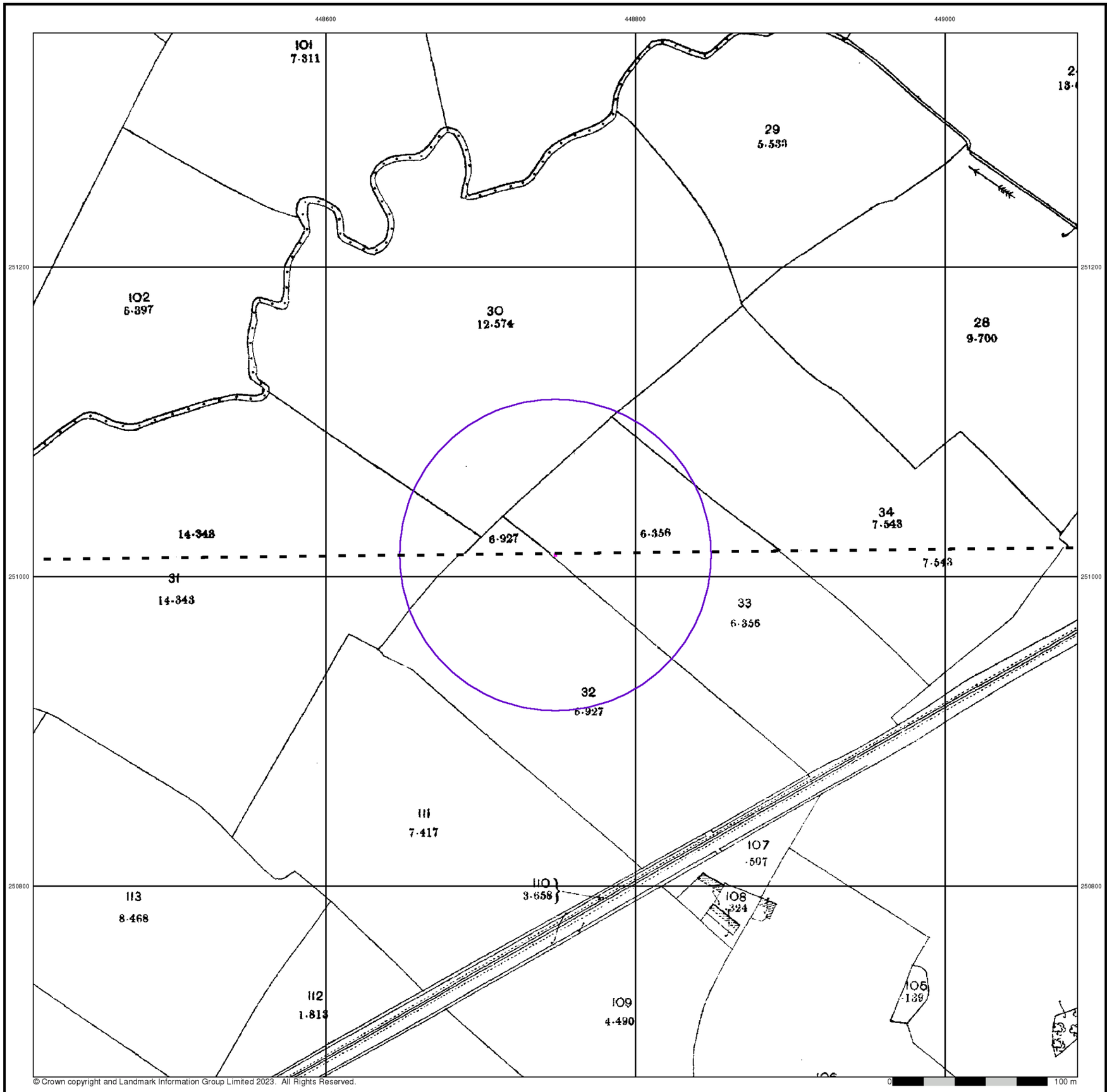

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Northamptonshire

Published 1900

Source map scale - 1:2,500

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

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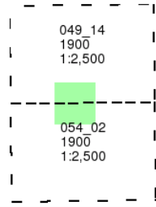
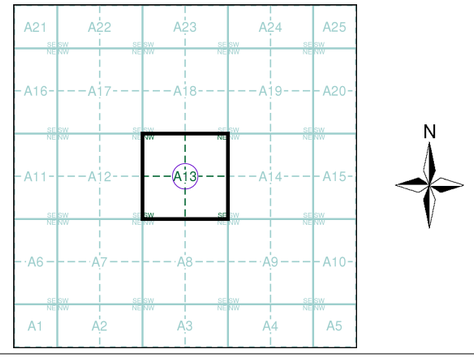


Historical Map - Segment A13



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Search Buffer (m):	100

Site Details

Site at 448700, 251000

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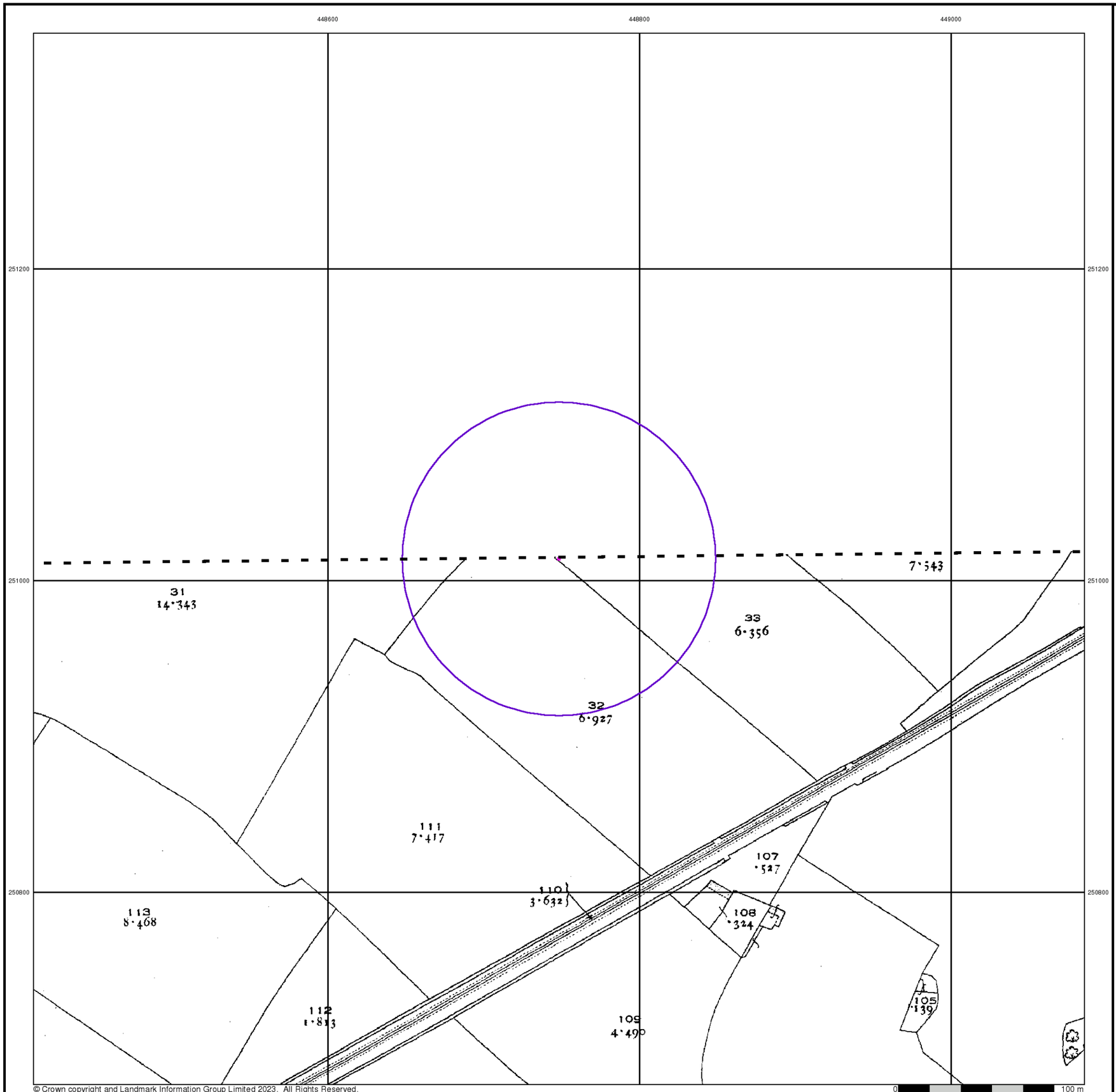

0 100 m

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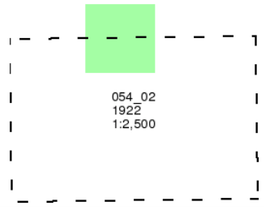
Northamptonshire

Published 1922

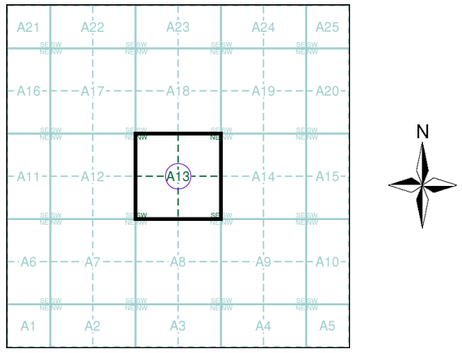
Source map scale - 1:2,500

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

Map Name(s) and Date(s)



Historical Map - Segment A13



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Site Details

Site at 448700, 251000

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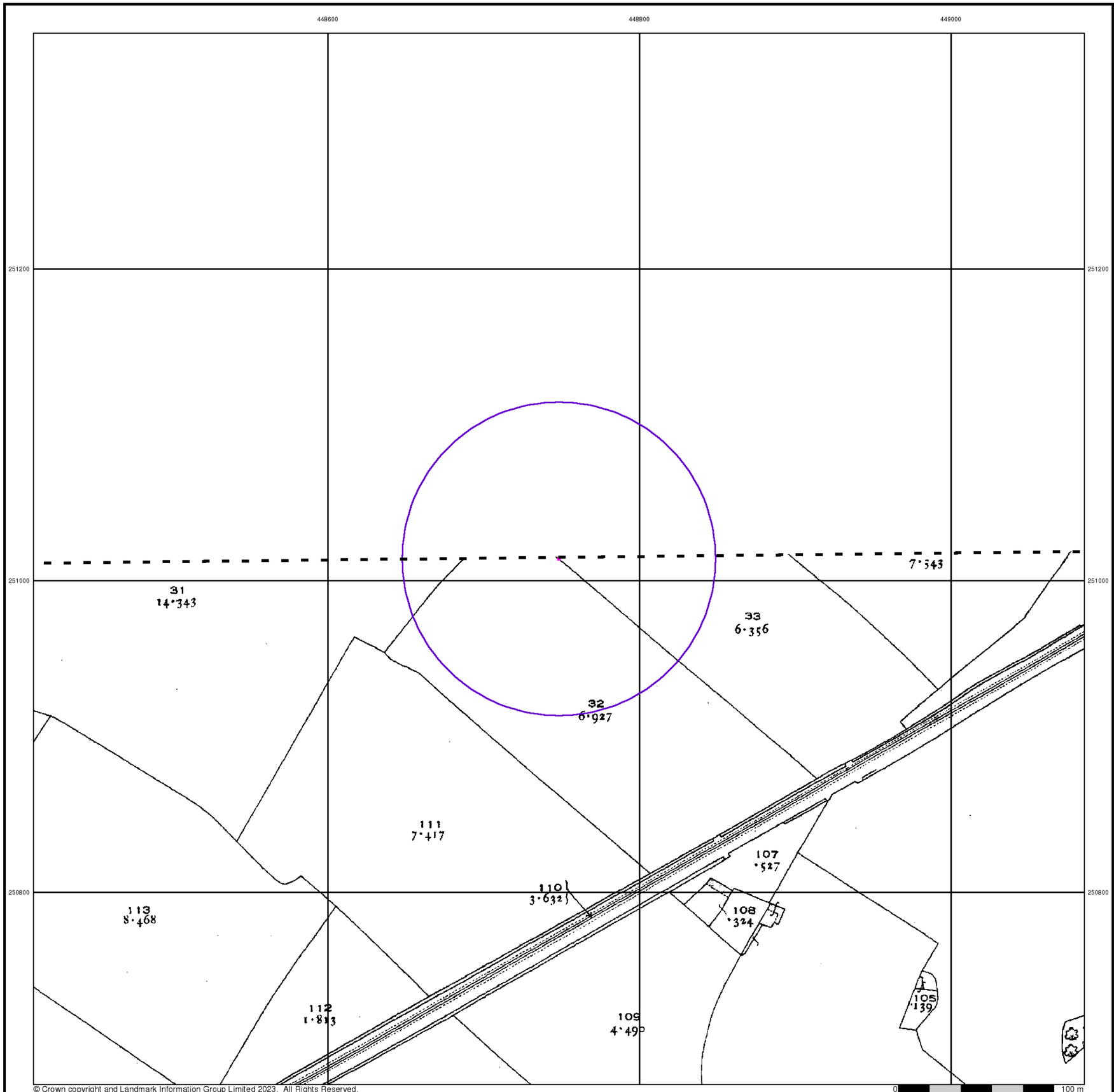

0 100 m

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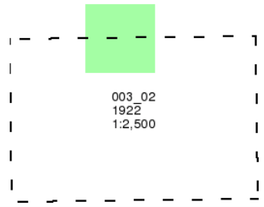
Oxfordshire

Published 1922

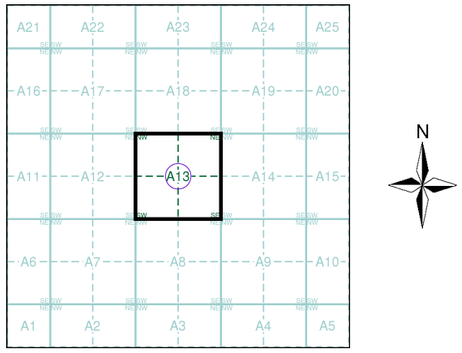
Source map scale - 1:2,500

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

Map Name(s) and Date(s)



Historical Map - Segment A13



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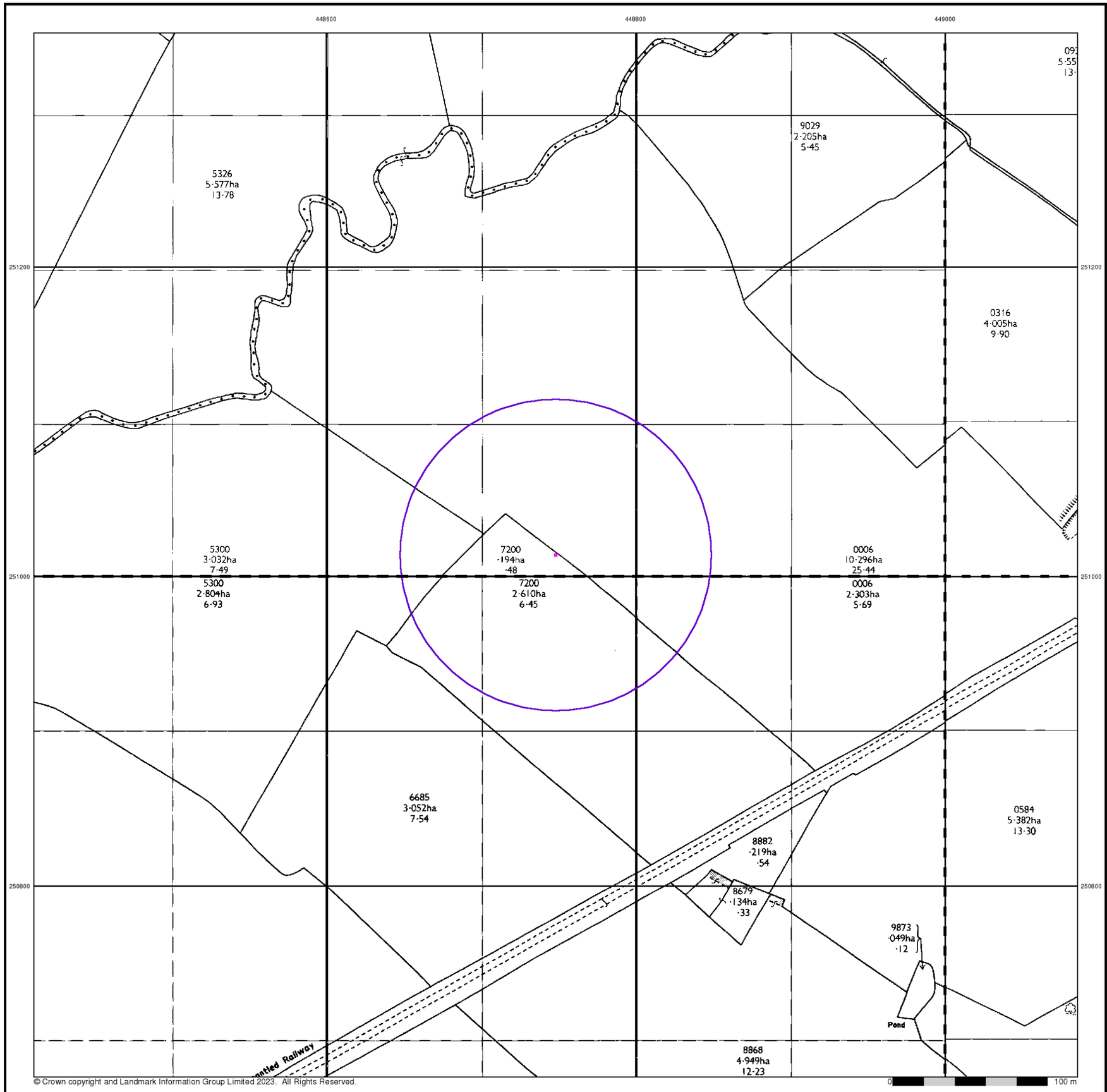

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Ordnance Survey Plan

Published 1974

Source map scale - 1:2,500

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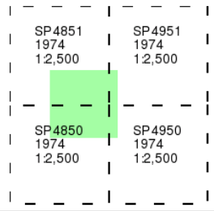
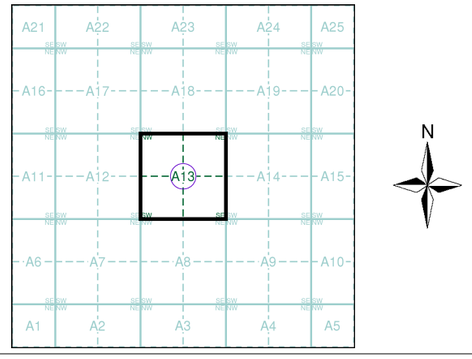
Map Name(s) and Date(s)



Historical Map - Segment A13



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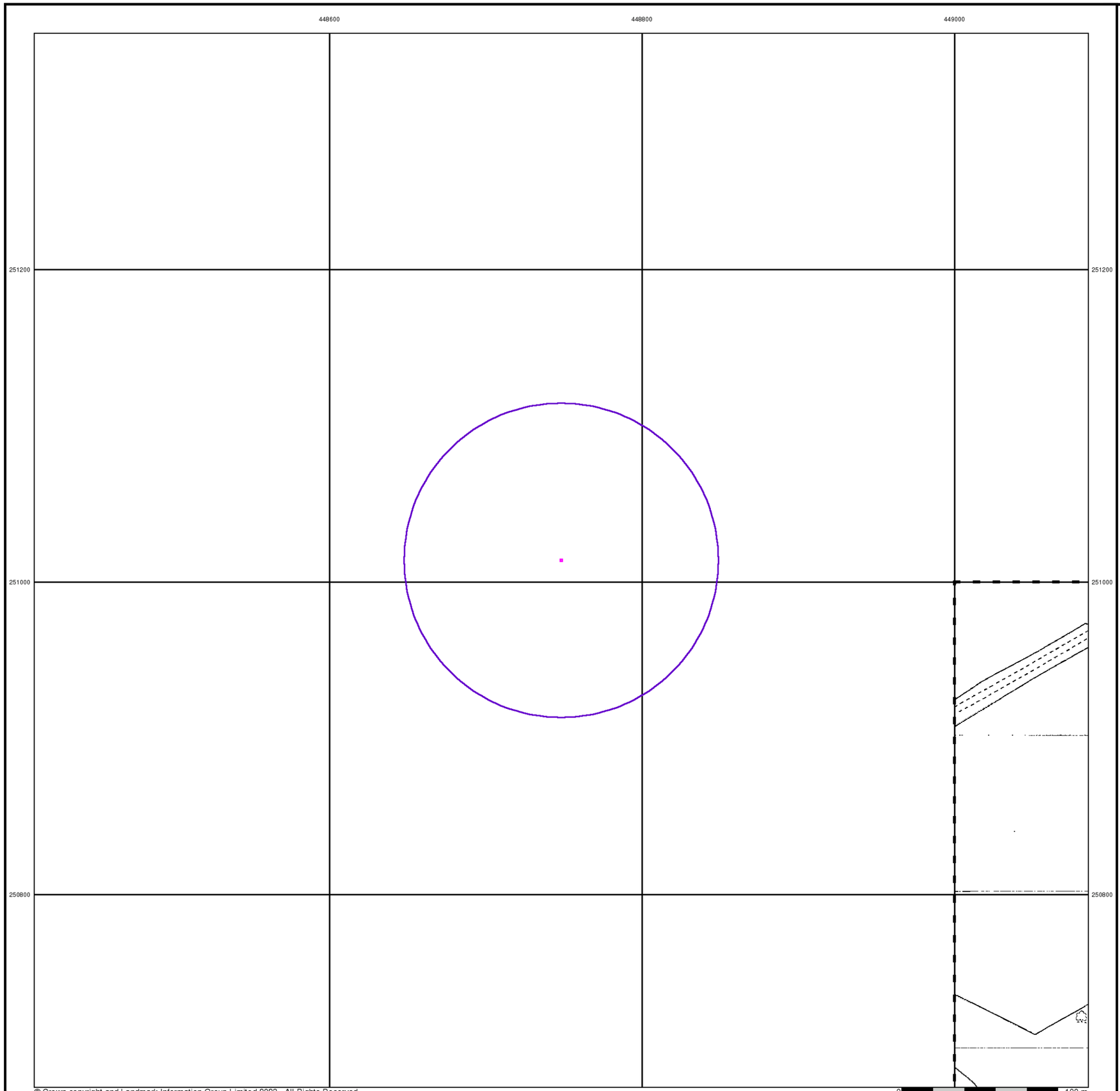

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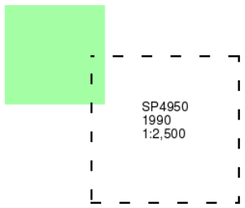
Additional SIMs

Published 1990

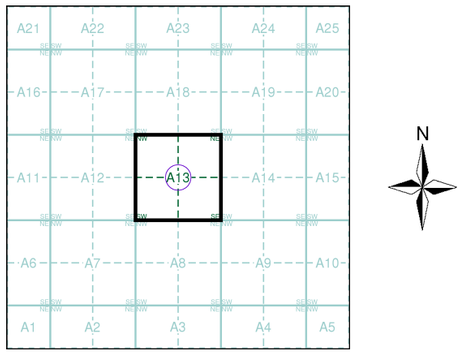
Source map scale - 1:2,500

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

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

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Slice:	A
Site Area (Ha):	0.01
Search Buffer (m):	100

Site Details

Site at 448700, 251000

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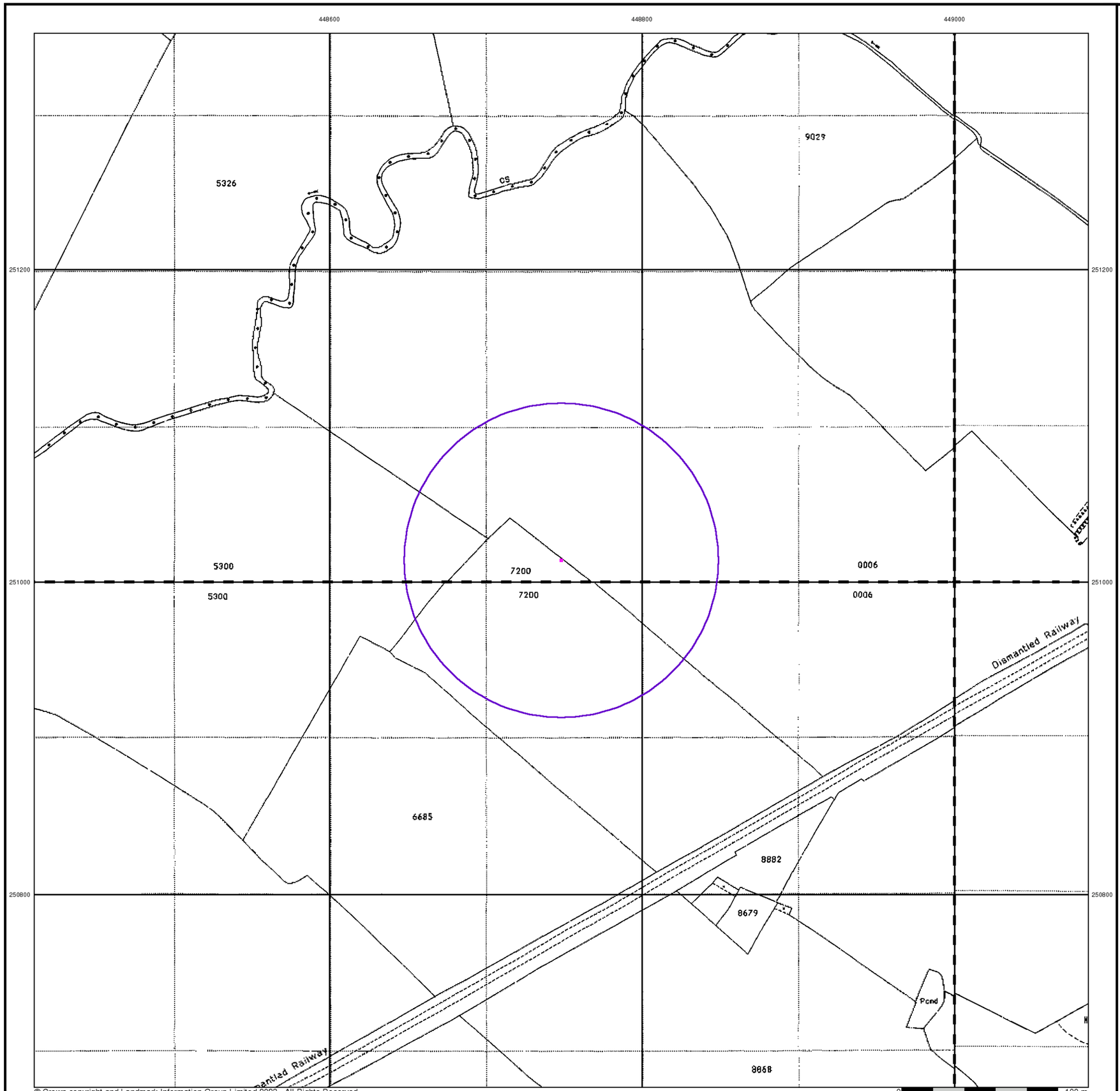

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LANDMARK INFORMATION GROUP®

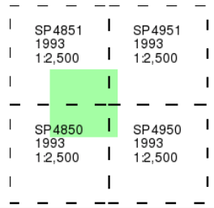
Large-Scale National Grid Data

Published 1993

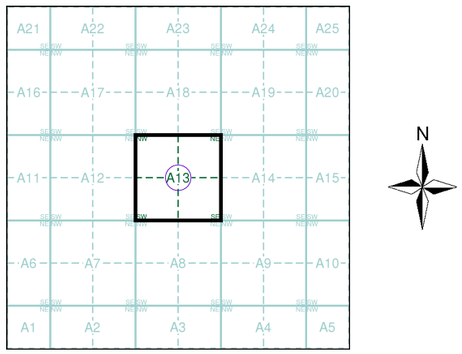
Source map scale - 1:2,500

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

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

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Slice:	A
Site Area (Ha):	0.01
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Site Details

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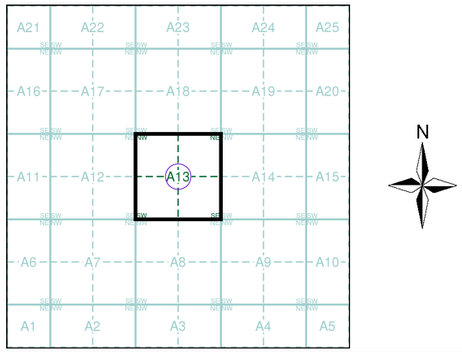
Historical Aerial Photography

Published 1999

This aerial photography was produced by Getmapping, these vertical aerial photographs provide a seamless, full colour survey of the whole of Great Britain

Historical Aerial Photography - Segment A13



Order Details

Order Number:	306321037_1_1
Customer Ref:	193224
National Grid Reference:	448750, 251010
Slice:	A
Site Area (Ha):	0.01
Search Buffer (m):	100

Site Details

Site at 448700, 251000

Landmark® INFORMATION GROUP

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Appendix D
Preliminary Ecological Assessment (Windrush Ecology)

Land at Aston le Walls Equestrian Centre, Aston le Walls, Northamptonshire NN11 6RT

Preliminary Ecological Appraisal

March 2021

on behalf of **Aston le Walls Equestrian Centre**

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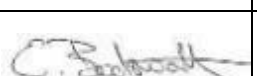
Nothing in this report constitutes legal opinion.

Client	Aston le Walls Equestrian Centre
Job name	Land at Aston le Walls Equestrian Centre, Aston le Walls, Northamptonshire NN11 6RT
Survey date	10th March 2021
Report date	26th March 2021
Report title	Preliminary Ecological Appraisal
Reference	W4166_rep_Aston Le Walls Equestrian Centre_26-03-21

	Signed	**Name**	**Position**	**Date**
Prepared by		Oliver Bevan *MEnvSci*	Ecologist	25/03/2021
Reviewed by		Edward Bodsworth *MA (Cantab) PhD MCIEEM*	Director	26/03/2021

Report Contents

1 Executive Summary

Site Details	The land at Aston le Walls Equestrian Centre, referred to as the 'site' for the purpose of this report, is located to the south-western side of the Aston le Walls Equestrian Centre, at Washbrook Farm, approximately 500m north-west of the village of Aston le Walls in Northamptonshire NN11 6RT. The approximate Ordnance Survey grid reference for the site is SP 487 5105.
Proposals	There is a proposal to create a new cross country equestrian course within the site, including an all-weather surface to the course. In addition, the proposals include a noise and visual screen to the adjacent HS2 site including a bund and new tree and shrub planting.
Methodology	An extended Phase 1 Habitat Survey was undertaken on 10th March 2021 by Edward Bodsworth *MA (Cantab) PhD MCIEEM*. A great crested newt habitat assessment was also undertaken on the same day, to include five ponds.
Evaluation	• The majority of the site comprises an area of amenity grassland, within the equestrian centre, as well as hedgerows, plantation woodland and ponds/waterbodies. • Amenity grassland is considered to be of negligible/low ecological value. • Plantation woodland and two of the ponds, are considered to be of ecological value within the context of the site. • Hedgerows are considered to be of high ecological value and are considered to meet the criteria for a habitat of 'principal importance'. • Pond 4 has the potential to support breeding amphibians, including common toads and great crested newts; other ponds are considered to be unsuitable.
Impact Assessment	• The proposed development will result in the loss of amenity grassland, plantation woodland a pond (Pond 4). • This is likely to result in ecological impacts at the site level, which can be compensated for through the proposed new tree and shrub planting and creation of a lagoon/pond. • With the retention and protection of hedgerows (and associated mature trees), there are no foreseeable impacts on habitats of 'principal importance' or of high ecological value.

	• The proposed visual and noise screen may result in the loss of aquatic and terrestrial habitats that have the potential to support great crested newts and common toads. • There are no foreseeable impacts on other protected/notable species.
Recommendations	Retained hedgerows and mature trees should be protected in accordance with British Standard 5837:2012, through the establishment of appropriate root protection zones. It is recommended that, if possible, existing data (from HS2) are obtained with regard to great crested newts and Pond 4. If a great crested newt licence is required, this could be a District Level Licence, which would avoid the need for further surveys for great crested newts. Recommendations are made for precautionary working methods with regard to reptiles and nesting birds. Enhancement measures are made with regard to the erection of bat boxes, and sensitive lighting for bats.

2 Introduction

2.1 Site Description & Context

The land at Aston le Walls Equestrian Centre, referred to as the 'site' for the purpose of this report, is located to the south-western side of the Aston le Walls Equestrian Centre, at Washbrook Farm, approximately 500m north-west of the village of Aston le Walls in Northamptonshire NN11 6RT. The approximate Ordnance Survey grid reference for the site is SP 487 5105.

The site comprises areas of amenity grassland, for equestrian use, as well as hedgerows, plantation woodland, and a number of ponds/waterbodies. The site is in use as an existing cross country course, with ride, jumps and water features. The site forms part of the wider equestrian facility, with amenity grassland forming an existing area for the exercise and riding of horses. A stream, the Highfurlong Brook, runs close to the north-western boundary of the site.

The site is located within the open countryside, with the surrounding landscape characterised by agriculture, including arable land and improved grassland (pasture) with boundary hedgerows. The majority of the land to the north-east and north is used for equestrian activities and comprises amenity grassland, improved grassland and bare ground (riding arenas). The route of HS2 runs past the south-western boundary of the site and works along the route of the high-speed railway were being undertaken at the time of the survey.

2.2 Proposals

There is a proposal to create a new cross country equestrian course within the site, including an all-weather surface to the course. In addition, the proposals include a noise and visual screen to the adjacent HS2 site including a bund and new tree and shrub planting.

2.3 Aims of Study

The aims of this study are to describe and evaluate the habitats present within the site and to assess the potential for the site to support protected and notable species. The report discusses the likely impacts of the proposed development on the ecology of the site, on valued habitats and on protected/notable species. The study also makes recommendations for appropriate mitigation measures and habitat enhancement with regard to habitats and species. The need for further ecological survey work is discussed in light of the impact assessment.

3 Methodology

3.1 Desk Study

The Northamptonshire Environmental Records Centre (NERC) was contacted in March 2021 to collate records that it holds for protected/notable species and non-statutory sites of nature conservation importance within a 1km radius around the site.

The Multi-Agency Geographic Information for the Countryside (www.magic.gov.uk) website was searched for information regarding internationally protected sites (e.g. Special Areas of Conservation) within 5km of the survey area and statutory sites of nature conservation importance (e.g. Sites of Special Scientific Interest) within a 1km radius of the site. Other Internet resources interrogated as part of the desk study include:

- Bing Maps - www.bing.com/maps
- Google Earth - www.earth.google.co.uk
- Google maps - www.google.co.uk/maps

Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 and the Northamptonshire Biodiversity Action Plan (BAP) were also consulted to gather information pertaining to priority habitats and species for conservation action at the national and local level.

Aerial photography interpretation is used to place the site into an ecological context and to provide information on the nature of the habitats beyond the site boundary. The information gathered is used to provide a baseline to the habitat assessment.

3.2 Field Surveys

3.2.1 *Extended Phase 1 Habitat Survey*

An extended Phase 1 Habitat Survey was undertaken on 10th March 2021 by Edward Bodsworth *MA (Cantab) PhD MCIEEM*. A walkover of the site was conducted, and a description of the habitats present was prepared using standard Phase 1 Habitat Survey methodology (JNCC 2010).

Target notes were also prepared on features of particular ecological interest and an assessment was made of the site's potential to support protected and notable species (such as species listed under Section 41 of the NERC Act 2006).

3.2.2 *Assessment for Great Crested Newts*

A Habitat Suitability Index (HSI) assessment of five ponds (see Figure 1 for location of ponds) at the equestrian centre was conducted on 10th March 2021, by Dr Bodsworth. The assessment was undertaken according to the criteria and method developed by Oldham *et al.* 2000.

The work by Oldham, and others, hypothesises that the likely presence of breeding great crested newts can be predicted by a number of habitat features such as pond size, location, shading, the presence of fish, wildfowl and aquatic plants.

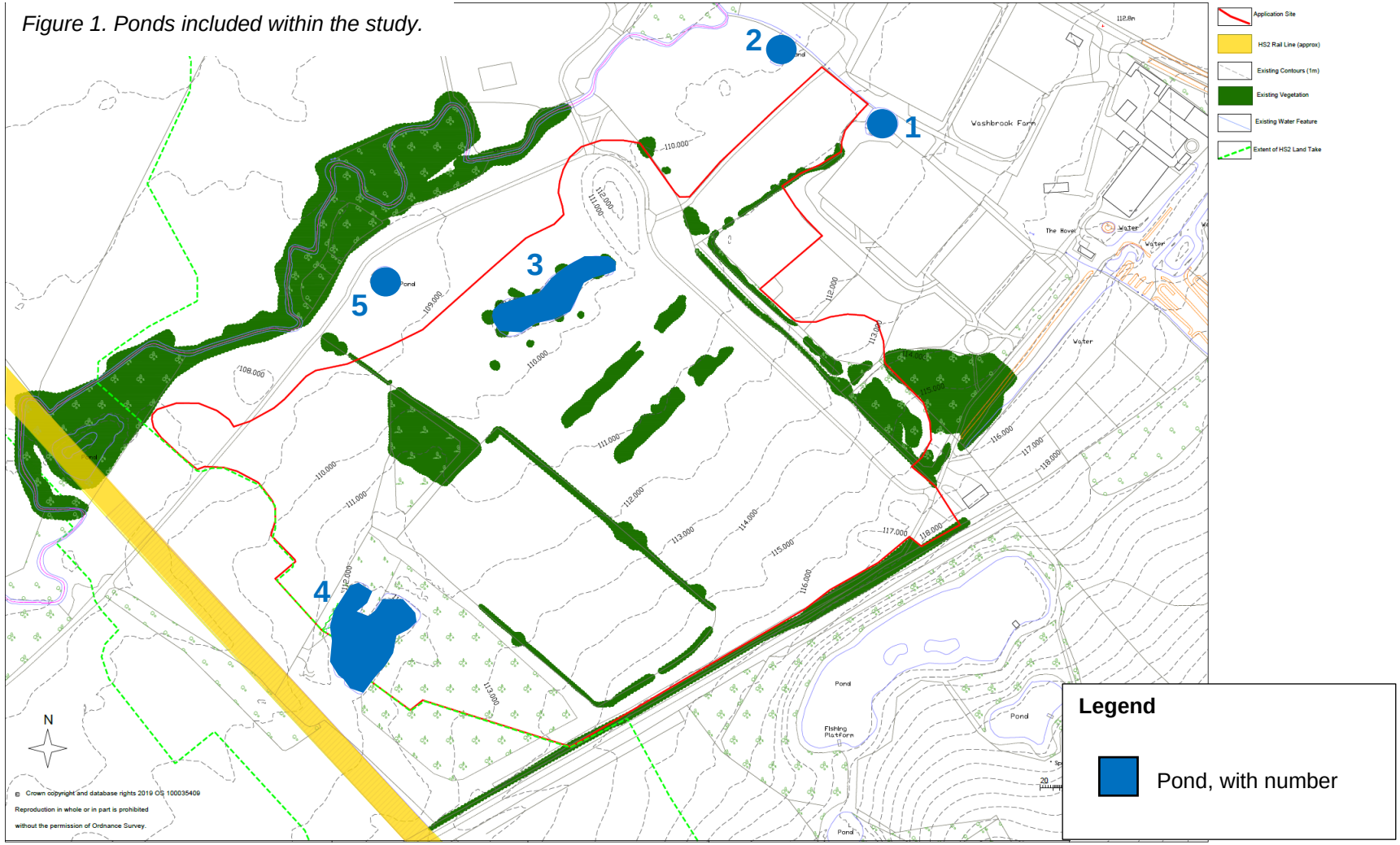
These data are used to calculate an HSI value; represented as a number from 0 to 1. The higher the number, the more likely the pond is to be occupied by breeding great crested newts (see Table 2).

The studies by Oldham, later expanded by Brady (2010), indicate that great crested newts tend to avoid ponds with low HSI scores. Ponds with low HSI scores (poor to below average) typically only support great crested newts when they are located close to another occupied pond. Low scoring ponds are therefore only likely to support great crested newts in areas of high pond density. Ponds with relatively high HSI scores (good to excellent) frequently support great crested newts and survey work undertaken in England indicates that great crested newts are present in more than 90% of 'excellent' ponds.

Table 2. HSI categories of pond suitability for great crested newts.

HSI	**Pond Suitability**
<0.5	Poor
0.5 - 0.59	Below average
0.6 - 0.69	Average
0.7 - 0.79	Good
> 0.8	Excellent

Figure 1. Ponds included within the study.



4 Results

4.1 Ecological Context

4.1.1 *Sites of Nature Conservation Importance*

4.1.1.1 Statutory Sites

There are no sites of nature conservation importance, such as Sites of Special Scientific Interest, within a 1km radius.

There are no sites of international nature conservation importance, such as Special Areas of Conservation, within a 5km radius.

4.1.1.2 Non-statutory Sites

There are no non-statutory sites of nature conservation importance within the site.

There is one Local Wildlife Site (LWS), one Pocket Park and one potential Wildlife Site within the 1km search radius around the site; the Records Centre holds no data on Pocket Parks or potential Wildlife Sites. Aston le Walls LWS is located adjacent to the south-eastern boundary of the site.

Aston le Walls Railway Line LWS

Local Wildlife Sites are areas of land which are rich in wildlife and are the equivalent to Sites of Importance for Nature Conservation. Criteria for selection take in threats and declines in certain species, national priorities and local distinctiveness. The LWS system is managed, in partnership, by The Wildlife Trust, local authorities, statutory nature conservation agencies, local naturalists and landowners. Local Wildlife Sites were previously known as County Wildlife Site (CWS) in the past.

The LWS comprises a long stretch of disused railway line with a variety of different habitats ranging from species rich grassland to dense scrub. Overall, it provides a useful wildlife corridor, particularly for butterflies and birds, as well as being complimented by surrounding woodland and ponds in the central section. The surrounding land use is predominantly arable and pasture fields. However, around the centre of the site there has been a large amount of woodland planting and pond creation, which are becoming valuable wildlife habitats in their own right.

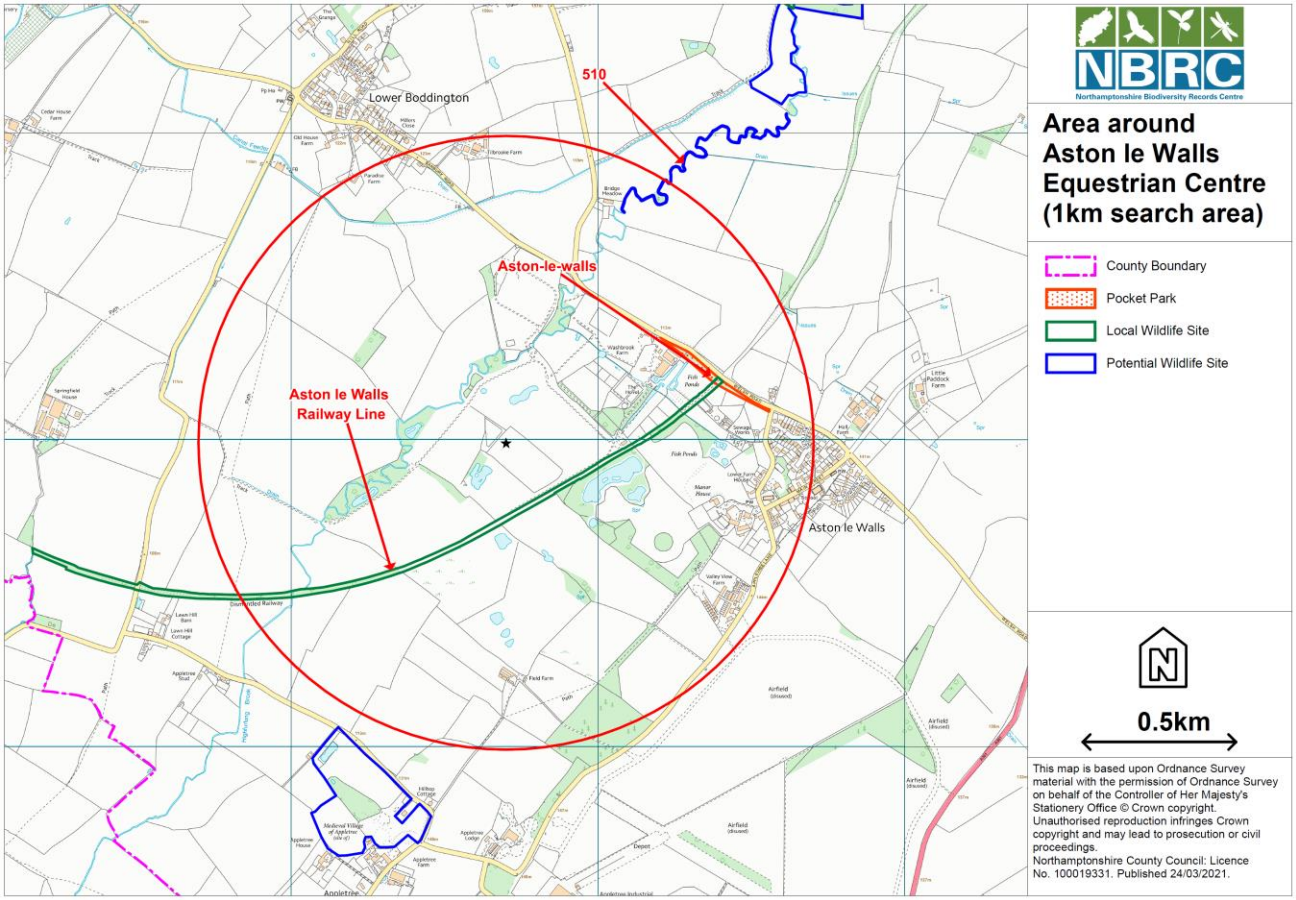


Figure 2. Plan showing the location of Aston le Walls Railway line LWS.

4.1.2 *Species Records*

The following sections summarise pertinent information on species gathered from the Records Centre, given the nature of the habitats that are present within the site.

4.1.2.1 Amphibians

There are three records held for the great crested newt *Triturus cristatus*, from a location/s in Lower Boddington, dating from 1985 and 1989. The edge of the village of Lower Boddington is located approximately 800m from the site. In addition to these records, there is also a record of common toad *Bufo bufo* from the Aston le Walls Railway Line, dating from 2011.

Aston le Walls, and surrounding areas, are show as being within a red or amber zone on the Naturespace Impact Risk Map for the great crested newt District Licence Scheme.

- Red – highly suitable habitat – the most important areas for great crested newt
- Amber – suitable habitat – great crested newt likely to be present

The scheme gives developers the opportunity to access an alternative licensing option. Developers can choose to use the district licensing option to speed up their development delivery, ensure legal certainty when it comes to great crested newts and futureproof mitigation costs. The scheme provides a robust, landscape-scale compensation strategy that provides demonstrable net gain and long-term protection for great crested newt conservation that is delivered through our not-for-profit conservation partner the Newt Conservation Partnership. The scheme offers a year-round solution for assessing sites, avoiding survey season restrictions and unforeseen delays. Developers do not need to provide newt survey information under the scheme.

4.1.2.2 Reptiles

There are two record of grass snake *Natrix helvetica*, dating from 1951 to 1958, and 1990. The amenity grassland habitat of the site is not suitable for this species.

4.1.2.3 Plants

The Records Centre holds records for several uncommon plant species, including species of grassland habitats such as tormentil *Potentilla erecta* and sainfoin *Onobrychis viciifolia*. Records are also held for woodland species such as lily of the valley *Convallaria majalis* and bluebell *Hyacinthoides non-scripta*. The most recent records are from 2014.

None of these species, or any other uncommon plant species, were noted within the site.

4.1.2.4 Birds

Bird species of hedgerow and woodland habitats that have been recorded from the locality include yellowhammer *Emberiza citrinella*, song thrush *Turdus philomelos* and bullfinch *Pyrrhula pyrrhula*.

There is also one record of red kite *Milvus milvus* from the Aston le Walls Railway Line, dating from 2011.

4.1.2.5 Invertebrates

The Records Centre holds a number of invertebrate records, including several true flies. In addition, there are records of wall butterfly *Lassiomata megera* and cinnabar moth *Tyria jacobeae*.

The cinnabar moth and wall butterfly are both species of grassland habitats, although the amenity grassland of the site is not suitable for either species.

4.1.2.6 Water Vole

There are two records for the water vole *Arvicola amphibius*, from the search area. The records date from 1985 and 1989, and may not be representative of the species current status.

4.2 Habitats

4.2.1 *Amenity Grassland*

The vast majority of the site comprises amenity grassland, that forms the existing cross country equestrian course. The grassland is uniform in its species composition and structure, and is largely homogeneous throughout. Grasses dominate, with herbaceous species limited to white clover *Trifolium repens*, creeping buttercup *Ranunculus repens*, dandelion *Taraxacum officinale* and common mouse-ear *Cerastium fontanum*.

The amenity grassland is not considered to meet the criteria for a grassland habitat of ‘principal importance’, as listed within Section 41 of the NERC Act 2006. The grassland is considered to be of negligible/low ecological value.

4.2.2 *Ponds/Waterbodies*

Five ponds/waterbodies were included within this assessment, and these are numbered Pond 1 to Pond 5 within this report. Pond 1, Pond 2 and Pond 5 are water features within the cross country course, and have been created as horse jumps. These are not natural waterbodies, are shallow and do not support any submerged or emergent aquatic vegetation. They are not considered to be suitable for breeding amphibians, and are not considered further within this report.

Pond 3 is a relatively large pond, which appears to be stocked with fish. A dead carp was noted by the banks of the pond, and the water was very murky at the time of the survey, which indicates that it

may be stocked with carp. Coppiced willows *Salix* sp. fringe the pond at intervals, but the pond is largely unshaded. No submerged or emergent aquatic vegetation was noted.

Pond 4 is a semi-natural pond located along the south-western boundary of the site, with part of the pond located outside the site boundary. The pond was relatively shallow at the time of the survey, and rushes were noted within the shallow parts of the pond, indicating that the pond may dry out on occasion. Some submerged vegetation was noted and the pond is largely unshaded, being surrounded by young plantation woodland.

Pond 3 and Pond 4 are considered to be of ecological value within the context of the site, but are not considered to be pond habitats of 'principal importance'.

4.2.3 *Hedgerows*

Hedgerows form some of the site boundaries, as well as dividing areas of amenity grassland, and some hedgerows form horse jumps. The majority of the hedgerows are regularly trimmed, some to form horse jumps, and are mostly the same species composition, including dominant hawthorn *Crataegus monogyna* and blackthorn *Prunus spinosa*, with occasional dogwood *Cornus sanguinea*, hazel *Corylus avellana*, and elm *Ulmus* species. Mature and semi-mature trees are present within, or associated with, the hedgerows, the majority of which are oak *Quercus robur* and ash *Fraxinus excelsior*.

Although trimmed for their visual/amenity value, the hedgerows are native and appear to have once been field boundaries. Given this it is considered that the hedgerows will qualify as a habitat of 'principal importance' as listed within Section 41 of the NERC Act 2006. Hedgerows are therefore considered to be of high ecological value.

4.2.4 *Plantation Woodland*

Plantation woodland is present within the south-western area of the site (around Pond 4) and to the eastern corner of the site. The plantation is generally young (perhaps 15-20 years old) and has mixed stands of hawthorn, blackthorn, willow, larch *Larix europaeus*, silver birch *Betula pendula*, ash, spruce *Picea* sp., oak and Scot's pine *Pinus sylvestris*.

There are mown paths of amenity grassland through the plantation woodland, but the grassland under the trees is unmanaged and forms a tussocky sward.

Plantation woodland is not considered to meet the criteria for any woodland habitat of 'principal importance' as listed within Section 41 of the NERC Act 2006, and is considered to be of ecological value within the context of the site.

4.2.5 *Bare Ground*

There is a horse arena (bare ground) within the site, as well as pathways/trackways of gravel. Areas of bare ground are considered to be of negligible ecological value.

4.2.6 *Stream (Running Water)*

Outside of the site, but close to its north-western boundary, is a stream, known as the Highfurlong Brook. The stream is a semi-natural watercourse with earth banks and a meandering course. For much of its length, the stream runs through an area of plantation woodland, although mature oak and ash, are also present along the watercourse.

The watercourse is likely to meet the criteria for 'Rivers', a habitat of 'principal importance' as listed within the NERC Act 2006. As such, the habitat is considered to be of high ecological value, both within the context of the site and within the wider local area.

4.3 Species

4.3.1 *Amphibians*

Pond 1, Pond 2 and Pond 5 are not considered to be suitable habitats for amphibians. These water features have been created as part of the existing equestrian cross country course.

The Habitat Suitability Index for Pond 3 has been calculated as 0.42, indicating that it is 'poor' for breeding great crested newts. The pond scores low due to the presumed presence of carp, poor water quality and an absence of macrophytes.

The Habitat Suitability Index for Pond 4 has been calculated as 0.71, indicating that the pond may be 'good' for breeding great crested newts. Fish appear to be absent from the pond, water quality appears to be moderate and some submerged vegetation was noted. The presence of breeding great crested newts within Pond 4 cannot be ruled out at present.

Pond 4 is largely surrounded by plantation woodland, with unmanaged and tussocky grassland beneath the planted trees. The plantation woodland may offer shelter to amphibians during the terrestrial phase of their lifecycle. Amenity grassland is considered to be unsuitable as a terrestrial habitat due to the fact that it is species-poor, has poor structure, managed and used for the riding of horses, which obviously disturb the ground.

Table 3. HSI assessment of Pond 3 and Pond 4.

Characteristic	**Score**	
	Pond 3	**Pond 4**
SI_1 Location	1.00	1.00
SI_2 Pond Area	0.80	0.80
SI_3 Pond Drying	0.90	0.50
SI_4 Water Quality	0.33	0.67
SI_5 Shade	1.00	1.00
SI_6 Fowl	0.67	0.67
SI_7 Fish	0.01	0.67
SI_8 Ponds	1.00	1.00
SI_9 Terrestrial Habitat	0.33	0.67
SI_{10} Macrophytes	0.30	0.40
Habitat Suitability Index	**0.42**	**0.71**
Suitability	**Poor**	**Good**

The proposed line of the HS2 railway runs along the south-western boundary of the site. In this area, at the time of the survey, amphibian exclusion fencing was noted. This may indicate the presence of great crested newts in the area, and that there may be a trapping and translocation exercise as part of the HS2 project.

However, there is no data held by the Northamptonshire Biodiversity Records Centre in regard to great crested newts and HS2, and no other data could be found online in relation to HS2 survey data.

4.3.2 *Reptiles*

The majority of the site is unsuitable for reptiles, as the amenity grassland does not offer a suitable habitat to reptile species.

Whilst the grassland within the plantation woodland is unmanaged, and has higher species richness and a more complex structure than the amenity grassland, it is considered likely that reptiles are absent from areas of plantation woodland.

This is due to the fact that there are very few, and relatively old, records of grass snakes and no records of other reptiles, as well as the ecological context of the plantation woodland and the site as a whole. It seems unlikely that reptiles would have colonised the plantation woodland from adjacent areas of amenity grassland (which do not offer suitable habitat). The wider landscape is largely agricultural, comprising arable farmland and improved grassland, habitats which are also considered to be largely unsuitable for reptiles.

It is therefore considered likely that reptiles, such as grass snakes, are absent from the areas of plantation woodland, and from the site as a whole.

4.3.3 *Plants*

No rare or uncommon plants were noted during the survey and the amenity grassland is not a suitable habitat for uncommon grassland plants such as sainfoin and tormentil.

The plantation woodland is not suitable for lily of the valley or bluebells.

4.3.4 *Birds*

The plantation woodland, hedgerows and trees offer potential nesting opportunities to breeding birds. The species assemblage may include certain commoner species that are of 'principal importance', as listed within Section 41 of the NERC Act 2006, such as song thrush and yellowhammer.

The amenity grassland is not a suitable habitat for ground-nesting species such as skylark *Alauda arvensis*. This is due to the homogeneous structure of the grassland, and the fact that it is disturbed by horses and through amenity use.

4.3.5 *Invertebrates*

The amenity grassland is not suitable habitat for uncommon grassland butterfly species such as wall, and no host plants (common ragwort) for cinnabar moth are present within the grassland.

The amenity grassland is a poor habitat for invertebrates, and is likely to support only common and widespread species that are typical of amenity grassland. The site is unlikely to support uncommon true fly species.

4.3.6 *Water Vole*

There are no running water habitats within the site, and the ponds are not considered to be suitable habitats for water voles. No evidence of water voles was noted during the survey.

The nearby stream has sections which may be suitable for water voles, but this watercourse is located outside of the site boundary and will remain unaffected by the proposals.

4.3.7 *Bats*

There are some mature trees, associate with hedgerows, that have features that bats could use for shelter. The majority of these trees are mature ash and oak. Features include rot holes, hollows and cracks. There are no buildings within the site that bats could use for shelter.

Hedgerows and plantation woodland may provide some foraging habitat, and movement/dispersal routes through the site and around the site. In addition, Pond 3 and Pond 4 may offer some foraging habitats to bats, particularly species that forage over water.

However, the majority of the site is considered to be poor for foraging bats, as the amenity grassland is relatively open, species-poor and has poor structure. The grassland is unlikely to support a diversity and abundance of insect prey and is unlikely to form a key foraging resource for the local bat populations.

4.3.8 *Badgers*

No badger setts, or evidence of badger activity, were noted within the site.

4.3.9 *Hedgehogs*

Hedgerows, and plantation woodland, may offer shelter and habitat for hedgehogs, and amenity grassland may provide some foraging opportunities.

4.3.10 *Other Species*

The site is not considered to offer suitable habitat to other species.

5 Discussion

5.1 Legislative & Policy Guidance

5.1.1 *The Natural Environment and Rural Communities Act 2006*

Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 places a duty on the Secretary of State to publish, review and revise lists of living organisms and types of habitat in England that are of principal importance for the purpose of conserving English biodiversity.

It also requires the Secretary of State to take, and promote the taking of, steps to further the conservation of the listed organisms and habitats. This is important in the context of planning decisions as the National Planning Policy Framework affords planning policy protection to the habitats of species listed by virtue of Section 41.

Habitats present within the site that are listed within Section 41 of the NERC Act 2006 include:

- Hedgerows

Species listed within Section 41 of the NERC Act 2006 that are considered relevant to the site include:

- Great crested newt and common toad (Pond 4 may provide breeding habitat and plantation woodland appears to be suitable terrestrial habitat).
- Certain common and widespread bird species such as yellowhammer and song thrush (plantation woodland, hedgerows and trees provide potential nesting habitat).
- Hedgehog (plantation woodland and hedgerows offer potential habitat).

5.1.2 *The National Planning Policy Framework*

The revised National Planning Policy Framework was updated in February 2019 and sets out the government's planning policies for England and how these are expected to be applied. This revised Framework replaces the previous National Planning Policy Framework published in March 2012 and revised in July 2018.

The NPPF states that planning policies and decisions should contribute to and enhance the natural and local environment by:

- Protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);
- Recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;
- Maintaining the character of the undeveloped coast, while improving public access to it where appropriate;

- Minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;
- Preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and
- Remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.

Plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework; take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries.

Great weight should be given to conserving and enhancing landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty, which have the highest status of protection in relation to these issues. The conservation and enhancement of wildlife and cultural heritage are also important considerations in these areas, and should be given great weight in National Parks and the Broads. The scale and extent of development within these designated areas should be limited. Planning permission should be refused for major development other than in exceptional circumstances, and where it can be demonstrated that the development is in the public interest. Consideration of such applications should include an assessment of:

- The need for the development, including in terms of any national considerations, and the impact of permitting it, or refusing it, upon the local economy;
- The cost of, and scope for, developing outside the designated area, or meeting the need for it in some other way; and
- Any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which that could be moderated.

Within areas defined as Heritage Coast (and that do not already fall within one of the designated areas mentioned in paragraph 172), planning policies and decisions should be consistent with the special character of the area and the importance of its conservation. Major development within a Heritage Coast is unlikely to be appropriate, unless it is compatible with its special character.

To protect and enhance biodiversity and geodiversity, plans should:

- Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation; and
- Promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.

When determining planning applications, local planning authorities should apply the following principles:

- If significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;

- Development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;
- Development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and
- Development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.

The following should be given the same protection as habitats sites:

- ❖ Potential Special Protection Areas and possible Special Areas of Conservation;
- ❖ Listed or proposed Ramsar sites; and
- ❖ Sites identified, or required, as compensatory measures for adverse effects on European sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.

The presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site.

5.2 Potential Impacts

5.2.1 *Sites of Nature Conservation Importance*

There are no foreseeable direct or indirect impacts on sites of nature conservation importance as a result of the proposals. Whilst Aston le Walls Railway Line LWS is located adjacent to the site boundary, there are no foreseeable direct or indirect impacts on the LWS as a result of the proposals.

5.2.2 *Habitats*

The proposals for an all-weather cross country course are likely to affect areas of amenity grassland, with other habitats, including hedgerows, mature trees and ponds remaining unaffected. The existing amenity grassland is species-poor, has poor structure and appears intensively managed to create a short, green sward that is suitable for horse riding. It is considered unlikely that loss of amenity grassland will result in any significant ecological impacts.

With the retention and protection of hedgerows, there are no foreseeable impacts on habitats of ‘principal importance’ to nature conservation.

The proposed noise and visual screen to HS2 will result in the loss of plantation woodland, amenity grassland and loss of Pond 4. Whilst there are no foreseeable impacts on habitats of ‘principal importance’, the plantation woodland and pond are of ecological value within the context of the site, and some compensation for habitat loss is likely to be required.

However, the proposed new bund will be planted with trees and shrubs, replacing the existing plantation woodland, and there is also a proposed lagoon, which will compensate for the loss of the existing pond (Pond 4). With these compensatory measures in place, and other measures to enhance retained habitats, it is considered that biodiversity net gain can be achieved within the site through appropriate tree and shrub species mixes, as well as the creation of species-rich grassland.

5.2.3 *Species*

5.2.3.1 Amphibians

The proposals will directly affect Pond 4, as well as plantation woodland habitats that surround that pond. If great crested newts are present within the pond, the proposals will result in a loss of aquatic and terrestrial habitats, and these impacts would be significant under the legal protection that is afforded to great crested newts and their habitats. The proposals may also affect breeding habitats and terrestrial habitats for common toads.

Given that the HS2 project is adjacent to the site, and will also affect Pond 4, it seems likely that there are existing data on great crested newts within Pond 4 and (potentially) within other ponds within the local area. These data may be useful in determining the presence/absence of great crested newts from this, and other, ponds.

As previously discussed, the amenity grassland is considered to be unsuitable terrestrial habitat for great crested newts, due to its structure and disturbance by activity and horses. It is considered that habitat loss or habitat damage within areas of amenity grassland will result in no significant impacts on great crested newts or their habitats. Therefore, there are considered to be no impacts of the proposed new cross country course on great crested newts or their habitats. Pond 3 is not considered to be suitable for great crested newts as it is believed to be stocked with carp.

5.2.3.2 Reptiles

There are no foreseeable impacts on reptiles or their habitats. However, a precautionary approach is recommended with regard to reptiles and areas of plantation woodland.

5.2.3.3 Plants

There are no foreseeable impacts on rare or uncommon plant species.

5.2.3.4 Birds

Removal of the plantation woodland, or other trees or woody vegetation, during the period when birds and breeding and nesting, may result in the damage or destruction of active bird's nests, and/or the killing or injury of young and eggs.

There are no foreseeable impacts on ground-nesting bird species. This is due to the fact that the amenity grassland is not a suitable habitat for species that nest on the ground, such as skylarks.

5.2.3.5 Invertebrates

There are no foreseeable impacts on rare or uncommon invertebrates, including butterflies and moths.

5.2.3.6 Water Voles

There are no foreseeable impacts on water voles. Pond 4 does not provide suitable habitat for the species and the proposals will have no foreseeable impact on the nearby stream.

5.2.3.7 Bats

There are no foreseeable impacts on trees that offer potential bat roosting opportunities, as all mature trees will be retained. There are no structures or buildings within the site that could offer shelter to roosting bats.

Loss of plantation woodland, and a pond, are unlikely to result in a significant impact on foraging bats, or result in a significant loss of foraging habitats. The loss of plantation woodland will be compensated for through the planting of trees and shrubs on the proposed new bund, as well as the creation of a new lagoon/pond. In the mid to long term, these measures will compensate for the temporary loss of any foraging habitat.

External lighting could have an impact on bats by affecting their activity and behaviour. In that certain species of bat have been shown to be attracted to mercury vapour lamps which emit light over a very broad-spectrum including UV light to which insects are particularly sensitive.

Furthermore, insects can be attracted in large numbers to mercury lamps and so can bats of the genera *Nyctalus* and *Pipistrellus*, including noctules *N. noctula* and common pipistrelles *P. pipistrellus* (Rydell and Racey 1993). Lighting has shown to have an opposite effect on certain other species, such as the lesser horseshoe bat *Rhinolophus hipposideros*, which have been shown to avoid areas of artificial light (Stone *et al.* 2009).

5.2.3.8 Badgers

There are no foreseeable impacts on badgers.

5.2.3.9 Hedgehogs

Removal of plantation woodland may result in some loss of habitat for hedgehogs, and a precautionary method is recommended for habitat clearance. In the mid to long term, the planting of trees and shrubs within the proposed noise and visual screen will compensate for habitat loss.

6 Recommendations

6.1 Further Surveys

No further surveys are currently recommended.

This is on the recommendation that the District Level Licencing Scheme is adopted with regard to great crested newts. This scheme avoids the need for full great crested newt surveys to be undertaken.

6.2 Habitats

Retained trees and hedgerows should be protected in accordance with British Standard 5837:2012, through the establishment of an appropriate root protection zone.

6.2.1 *New Tree & Shrub Planting*

It is recommended that the proposed new tree and shrub planting comprises native species, that are typical of the woodlands of the area, and that conifers and non-native conifers in particular, are avoided. Suitable tree and shrub species include:

- Oak *Quercus robur*
- Ash *Fraxinus excelsior*
- Field maple *Acer campestre*
- Silver birch *Betula pendula*
- Hornbeam *Carpinus betulus*
- Hazel *Corylus avellana*
- Hawthorn *Crataegus monogyna*
- Blackthorn *Prunus spinosa*
- Dogwood *Cornus sanguinea*
- Elder *Sambucus nigra*
- Rose *Rosa canina*

6.2.2 *Grassland Creation*

In addition to new tree and shrub planting to compensate for the loss of existing plantation woodland, it is recommended that the new planting is sown with an appropriate grassland seed mix, to provide

an ecological enhancement to the new woodland, and to create species-rich grassland habitats whilst the new plantation matures.

6.2.3 *Wetland Creation*

In addition to the proposed new planting of trees and shrubs on the proposed visual and noise screen, a new lagoon/pond is also proposed. This will compensate for the loss of Pond 4, and offers an opportunity for habitat enhancement, by creating a pond that is suitable for breeding great crested newts, but that is also suitable for a variety of aquatic plants and invertebrates.

6.2.4 *Other Measures*

With the proposed removal of the existing plantation, there is an opportunity to retain logs and brash and to create log piles, dead wood habitat features, brash piles and 'dead hedges' within the proposed new tree and shrub planting. These features will provide potential habitat for fungi, invertebrates and hedgehogs.

6.3 Species

6.3.1 *Great Crested Newts*

A great crested newt mitigation licence may be required for the proposed removal of Pond 4, and for the removal of the existing plantation woodland so that a visual and noise screen can be created.

Given the number of ponds within the locality, if a licence is required, it is likely that the District Level Licencing Scheme would be the most appropriate route for obtaining a mitigation licence in this instance; this would avoid the need for any detailed surveys for great crested newts.

District Level Licensing for great crested newts is where the power to authorise actions that might harm newts is held by the same body that grants planning permission. District Licensing uses funds raised from development impacts permitted through the planning system to create high quality, sustainable habitat for great created newts and provides long term management and monitoring.

Extensive survey and modelling allow an assessment of the current great crested newt regional conservation status, and the setting of targets for increasing future conservation status. It also provides an 'Impact Risk zone' map that sets four zones of habitat quality (Red, Amber, Green & White) across the region. The spatial zoning determines the different processes that run for any given development and precludes the need for developers to commission their own site-specific newt surveys.

The District Licensing scheme takes account of the wider spatial context and conservation needs of the species, responds to the level of development impact and funds a long-term management and monitoring strategy. The scheme is set up and administered by NatureSpace Partnership (NSP) and is delivered and monitored by experts in amphibian and freshwater habitat conservation through a not-for-profit organisation.

6.3.2 *Reptiles*

Reptiles are considered to be absent from the site. However, a precautionary approach is recommended within areas of plantation woodland.

The site owner/site manager will ensure that anyone undertaking construction works within areas of plantation woodland (including sub-contractors) is made aware of the protected status of all reptile species, from killing and injury and the procedure to follow in the unlikely event that common reptiles are discovered during works.

Should any common reptiles be discovered during construction, and are in danger of killing or injury, works will cease immediately and advice sought from a suitably experienced ecologist.

Within areas of plantation woodland, the following methods of working will be adopted:

- Woody vegetation (trees and shrubs) will be removed outside of the breeding bird period.

- Grassland clearance works will be undertaken when common reptiles are likely to be fully active and during the period April to September, inclusive.

- Clearance of logs, brash, stones, rocks or piles of similar debris will be undertaken carefully and by hand.

- Clearance of tall ruderal and grassland vegetation (if required) will be undertaken using a strimmer or brush cutter with all cuttings raked and removed the same day. Cutting will only be undertaken in a phased way which may either include:
    - Cutting grassland vegetation to a height of no less than 30mm, clearing no more than one third of the site in anyone day or;
    - Cutting grassland vegetation over three consecutive days to a height of no less than150mm at the first cut, 75mm at the second cut and 30mm at the third cut;

- Following removal of tall grassland vegetation using the methods above, remaining grassland vegetation will be maintained at a height of approximately 30mm through regular mowing or strimming to discourage common reptiles moving into the site.

- Ground clearance of any remaining low grassland vegetation (if required) and any ground works will only be undertaken following the works above.

6.3.3 *Birds*

Clearance of plantation woodland, other woody vegetation, should take place outside of the bird breeding period, avoiding March to August inclusive.

6.3.4 *Bats*

6.3.4.1 Retention of Existing Potential Roosts

All mature trees should be retained. If mature trees, including hedgerow trees, are to be removed, the trees will need to be surveyed for their potential to offer shelter to roosting bats. This may include ground-level assessment in the first instance, followed by tree climbing and/or dusk and dawn emergence and re-entry watches as necessary.

6.3.4.2 Bat Roosting Opportunities

As an enhancement measure, it is recommended that bat boxes are erected on mature trees, both within the site and within the wider landholding. Woodcrete boxes that have been designed to mimic hollows within trees, such as the Schwegler 2F bat box, are recommended. The boxes should be mounted approximately 3.5m to 4m above ground level, on a tree with a clear trunk.

6.3.4.3 External Lighting

It is recommended that external lighting should be avoided within the site, unless it is necessary for reasons of security and safety. In particular, light spillage around new bat roosting features and along hedgerows should be avoided, so that dark corridors are maintained through and around the peripheries of the site in order to facilitate the movement of bats, as well as other nocturnal wildlife.

Where external lighting is required, it should be kept at low level and a low intensity, with hoods and baffles used to direct the light to where it is required (Bat Conservation Trust 2018, Emery 2008). To minimise the impact on bats, the use of low pressured sodium lamps is recommended in preference

to mercury or metal halide lamps which have a UV element that can affect the distribution of insects and attract bats to the area, affecting their natural behaviour (Bat Conservation Trust 2018).

The key principals for choosing a suitable type of lamp are:

- Avoid blue-white short wavelength lights: these have a significant negative impact on the insect prey of bats. Use alternatives such as warm-white (long wavelength) lights as this will reduce the impact on insects and therefore bats.
- Avoid lights with high UV content: (e.g. metal halide or mercury light sources) or reduce/completely remove the UV content of the light. Use UV filters or glass housings on lamps which filter out a lot of the UV content.

Selecting an appropriate lamp unit that is designed to be environmentally friendly will minimise light spill, but further controls can be imposed by installing directional accessories such as baffles, hoods and louvres on lamps to direct light away from ecologically sensitive areas.

LED (Light Emitting Diode) units are an effective way to direct the light into small target areas and are recommended for lighting the proposed parking and turning area. Composite LEDs can be switched off to reduce/direct the light beam to specific areas.

6.3.5 *Hedgehogs*

If a hedgehog is discovered during works, it should be either allowed to move to a safe area under its own power or be moved by hand to a relatively nearby, safe location, such as an adjacent garden. Hedgehogs should be moved no further than 200m from where they are found as they may have dependant young that rely on their return for survival.

When handling hedgehogs, gloves should be worn to protect the handler from their spines, infection and parasites.

In the unlikely event that an occupied hedgehog nest is disturbed, or a baby hedgehog is encountered (eyes shut) all works will stop in the vicinity and advice be sought from an appropriate wildlife hospital (such as Tiggywinkles) or animal charity (such as the RSPCA). If the nest has been exposed or destroyed then the entire nest should be covered over, for example with a bucket. Baby hedgehogs should not be handled with bare hands as this can result in abandonment by their mother.

7 References

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JNCC, 2010. *Handbook for Phase 1 Habitat Survey - a technique for environmental audit*. JNCC First published 1990; reprinted in 1993; reprinted in 2003 with limited revisions & additions; reprinted in 2004; reprinted in 2007 with minor additions; reprinted in 2010.

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8 Appendix 1. Photographs

Photograph 1. Detail of amenity grassland, the dominant habitat within the site.

Photograph 2. Amenity grassland and trimmed hedgerow; typical of the hedgerows of the site.

Photograph 3. Pond 1.

Photograph 4. Pond 2.

Photograph 5. Pond 3.

Photograph 6. Pond 3.

Photograph 7. Pond 4.

Photograph 8. Pond 5.

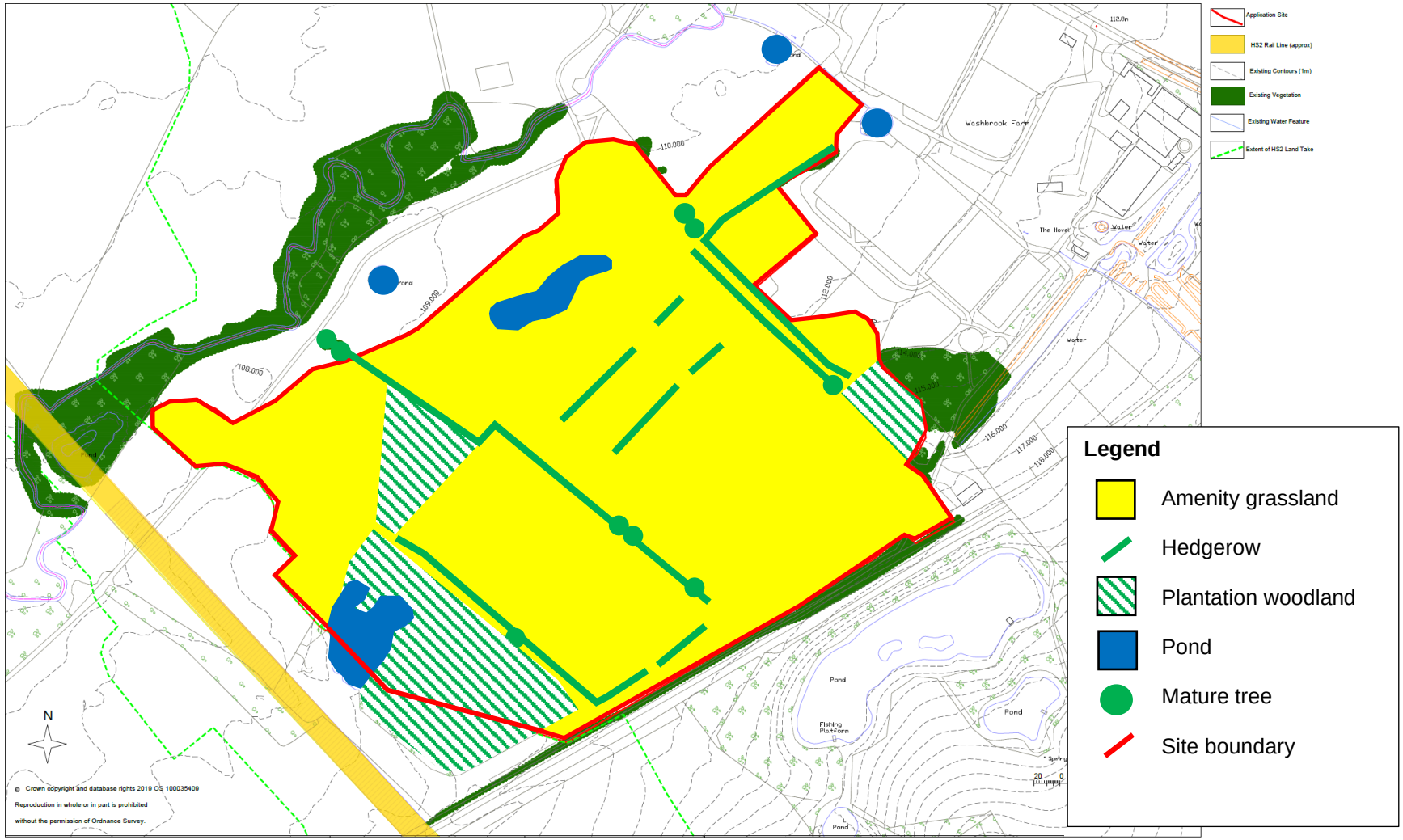
Photograph 9. Plantation woodland.

Photograph 10. Tussocky grassland beneath the plantation woodland.

Photograph 11. Laid hedgerow and conifers.

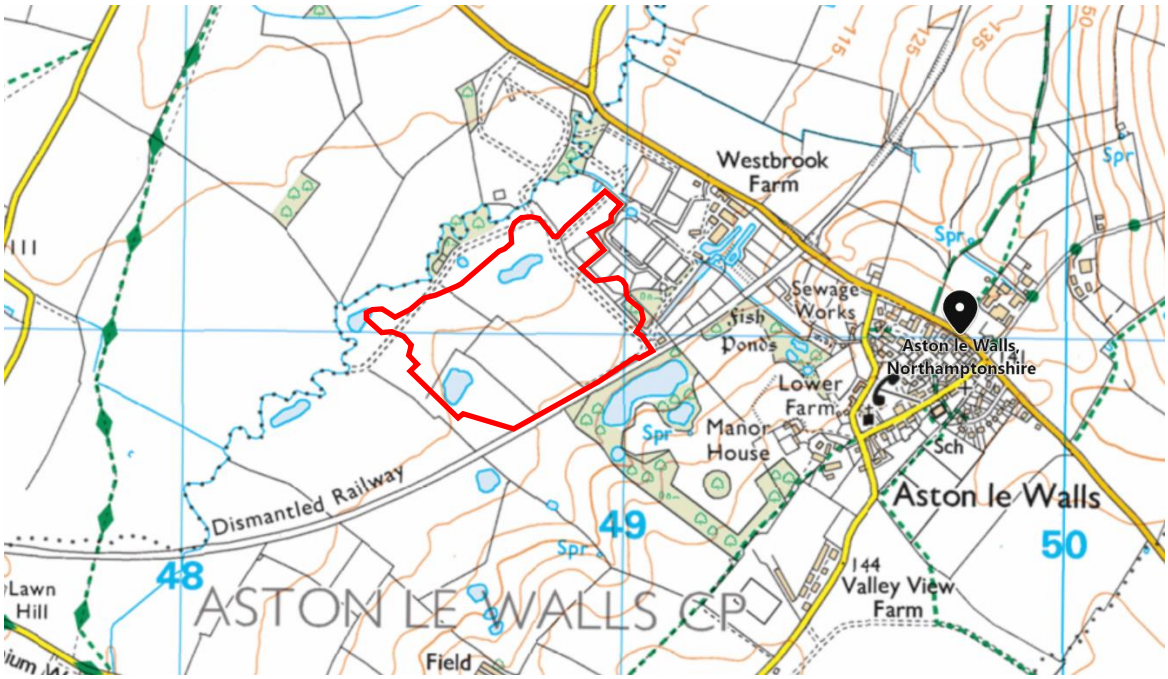
Photograph 12. General view over the site, and amenity grassland.

9 Appendix 2. Phase 1 Habitat Plan



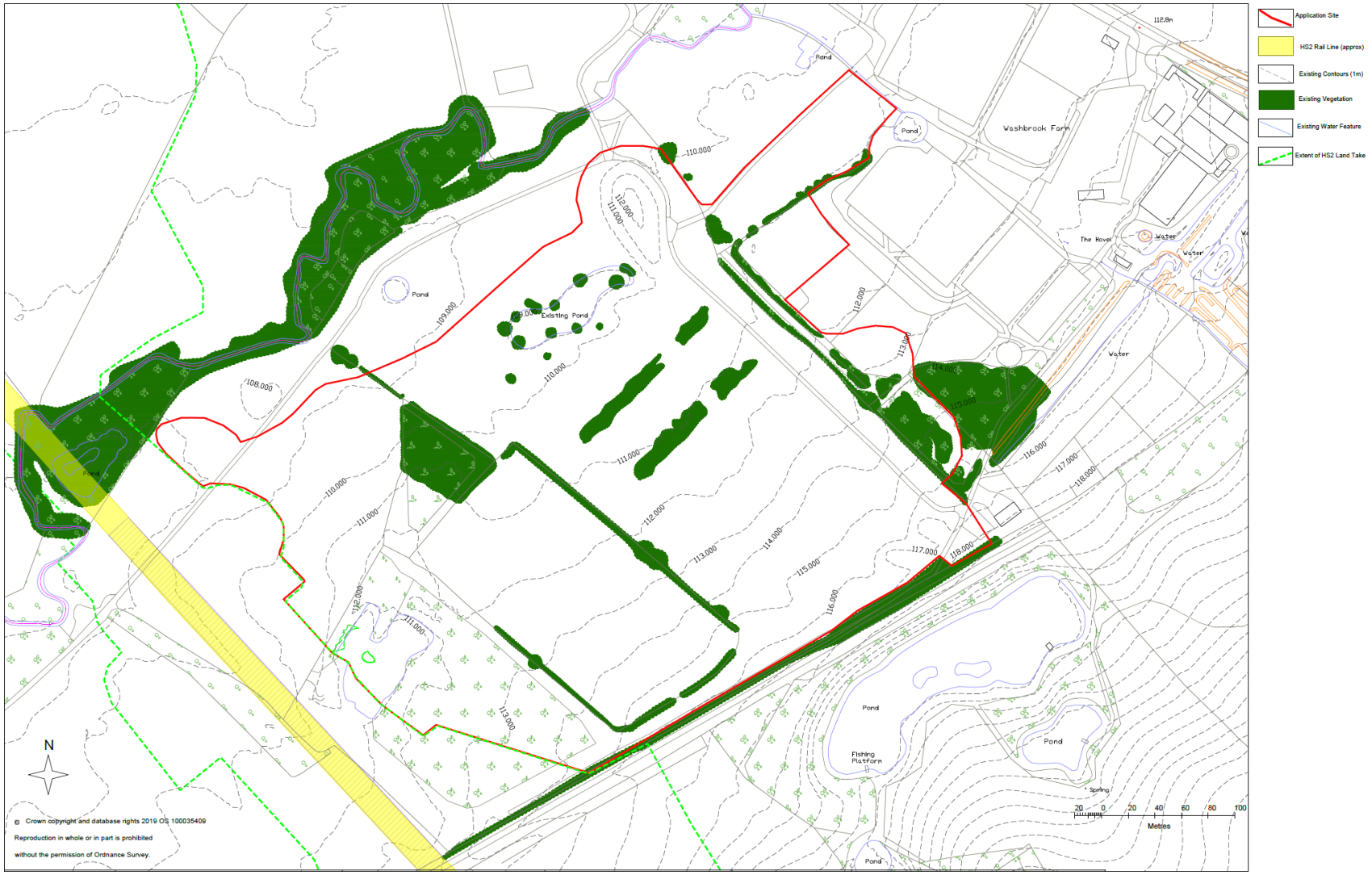
10 Appendix 3. Site Location Plans

Aerial photograph showing the location of the site, outlined in red.



Ordnance Survey map showing the approximate location of the site (indicated by the red outline) within the local area.

11 Appendix 4. Existing Site Plan



12 Appendix 5. Data Search Results

Please refer to separate report prepared by the Northamptonshire Biodiversity Records Centre.