SHELL SUTTON ELMS

Shell Sutton Elms, Coventry Road, Broughton, Leicester, LE9 6QD

Phase 1 Environmental Site Assessment

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Shell Sutton Elms

Phase 1 Environmental Site Assessment

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01	29/07/2022	Sameer Kadukar	First Issue.
02	18/08/2022	Sameer Kadukar	Client comments addressed

Executive Summary

Introduction	Arcadis (UK) Limited (Arcadis) was commissioned by Shell UK Oil Products Limited (Shell) to carry out a Phase 1 Environmental Site Assessment at Shell Sutton Elms, Coventry Road, Broughton, Leicester, LE9 6QD (the Site). The Site comprises an active Petrol Filling Station (PFS) and an area of undeveloped land to the southwest of the PFS forecourt. This report has focussed primarily on the footprint of the existing PFS.
Objectives	The Site is anticipated to be included in the 2023 Construction program, to be managed by the Shell Retail PMC (Artelia). The aim of this Phase 1 ESA is to support Shell with their environmental asset management activities and to support the application for Planning consent associated with the proposed construction works. The objectives of this report were to formulate a preliminary Conceptual Site Model (CSM) for the Site and undertake a Preliminary Risk Assessment (PRA) to identify potentially active contaminant linkages based on Continued Petroleum Use (CPU).
Scope of Work	The following scope of work was undertaken: • Desktop review of environmental data from a proprietary database (Envirocheck® Report). • Site walkover survey comprising visual observations of the Site setting and infrastructure. • Review of data provided by the Petroleum Officer (PO) and wetstock monitoring contractor. • Review of relevant data presented in environmental reports previously prepared by other environmental consultants. • Review of private water abstraction information from the Local Authority, within a one kilometer (km) radius of the Site.
Previous Site Investigation & Remediation	Intrusive investigation works conducted by GeoDelft in December 2003 reported no elevated volatile concentrations from field testing compared to the generic screening levels for continued petroleum use of the Site. A Comprehensive Environmental Site Assessment (CESA) conducted by URS in 2011 reported potentially significant risks to groundwater in the Secondary A Aquifer (at the 50m compliance point) and to surface water (at the 20m compliance point) from reported soil concentrations of BTEX compounds and groundwater concentrations of TPH, benzene, xylene and naphthalene. A groundwater monitoring event conducted by URS in January 2014 reported that the concentrations of the majority of Contaminants of Potential Concern (COPC) had decreased, with no potentially significant risks to the River Soar (located 20m east of the Site) or groundwater in the underlying Secondary A Aquifer remaining. The most recent groundwater monitoring event conducted by URS in August 2014 reported concentrations of COPC below URS stage 2 human health Generic Assessment Criteria (GAC) protective of on-site and off-site workers; a potential risk to controlled waters was reported from concentrations of BTEX and TPH. A potential risk to the nearby River Soar was considered to be acceptable. A potential risk to the underlying groundwater was also considered to be acceptable. URS reported decommissioning of monitoring wells MW101 – MW107, SV201 – 202 and BH101 between 10th and 12th September 2014.
Development of the preliminary Conceptual Site Model (CSM)	Following completion of the desk study and Site walkover survey, a preliminary CSM was prepared and is summarised below: **Sources** The current and historical use of the Site as a PFS, a car depot present adjacent to

	the north of the Site and a historical landfill located 142m northeast of the Site were identified as the primary potential sources of contamination. **Receptors** On-Site commercial workers and Site visitors were identified as potential human health receptors associated with the Site. Future on-Site construction workers were also identified as a potential receptor, however the risks to construction workers may be managed by use of appropriate Personal Protective Equipment (PPE), risk assessments and method statements. Potential controlled waters receptors include the Secondary A Aquifer associated with the River Terrace Deposits, the Secondary B Aquifer represented by the Mercia Mudstone beneath the Site and surface water features, the nearest of which is the River Soar located approximately 37m southeast (down-hydraulic gradient) of the Site. **Potentially Active Pathways** The preliminary CSM identified the following potentially complete contaminant linkages, summarised below: **Human Health** *Vapour Inhalation:* • Partitioning of COPC from contaminated soil or groundwater into soil vapour, vertical migration (upwards) towards the ground surface and subsequent inhalation of indoor and outdoor air by on-Site commercial workers, Site visitors e.g. general public. *Direct Contact:* • Direct contact (ingestion, inhalation, dermal) with impacted soil particulates by future on-Site construction workers and associated visitors during construction / redevelopment works. The risks to construction workers may be managed by use of appropriate PPE, risk assessments and method statements **Controlled Waters** *Migration of Groundwater:* • Leaching of COPC from soil into groundwater and subsequent off-Site migration within the underlying Secondary A and Secondary B Aquifers. *Migration to Surface Water:* • Leaching of COPC from soil into groundwater and subsequent migration in groundwater towards local surface water receptors (River Soar located approximately 37m southeast of the Site).
Preliminary Risk Assessment (PRA)	Assessment of the potentially complete contaminant linkages indicated a low to moderate preliminary risk level for each of the potentially active contaminant linkages.

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ABBREVIATIONS

AOD	Above Ordnance Datum
Arcadis	Arcadis (UK) Limited
bgl	Below Ground Level
BGS	British Geological Survey
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CSM	Conceptual Site Model
COPC	Contaminants of Potential Concern
CPU	Continued Petroleum Use
DoE	Department of Environment
EA	Environment Agency
ETBE	Ethyl *Tertiary*-Butyl Ether
HDR	High Density Residential
HGV	Heavy Goods Vehicles
MTBE	Methyl *Tertiary*-Butyl Ether
OS	Ordnance Survey
PAH	Polycyclic Aromatic Hydrocarbons
PFS	Petrol Filling Station
PO	Petroleum Officer
PRA	Preliminary Risk Assessment
TAME	Tertiary-Amyl Methyl Ether
URS	URS Infrastructure & Environment UK Limited
USTs	Underground Storage Tanks
UXO	Unexploded Ordnance

1 INTRODUCTION

1.1 Appointment

Arcadis (UK) Limited (Arcadis) was commissioned by Shell UK Oil Products Limited (Shell) to carry out a Phase 1 Environmental Site Assessment (ESA) at Shell Sutton Elms, Coventry Road, Broughton, Leicester, LE9 6QD (the "Site"). A Site Location Plan is presented as Figure 1.

The Site comprises an active Petrol Filling Station (PFS) and an area of undeveloped land binding the PFS immediately southwest. This report has focussed primarily on the footprint of the existing PFS. A Title Deed Plan, indicating the boundaries of the whole land holding is presented on Figure 2. Arcadis understand that the Site is anticipated to be included in the 2023 Construction program to be managed by the Shell Engineering PMC (Artelia). The scope of the proposed works is not confirmed but assumed to include replacement or extension of the existing sales building.

A planning application 18/1678/FUL was submitted by Shell to Blaby District Council on 02 January 2019 and it has since expired. A copy of the decision notice is presented for reference as Appendix B.

1.2 Limitations

Arcadis' liability, pursuant to the terms of the appointment of Arcadis by Shell, is strictly limited to the work undertaken and the matters contained and specifically referred to in this report. A copy of Arcadis' Study Limitations is presented in Appendix C.

1.3 Aim & Objectives

The aim of this Phase 1 ESA is to support Shell with their environmental asset management activities and to support the application for Planning consent associated with the proposed construction works, The objectives of this report were to:

- Formulate a preliminary Conceptual Site Model (CSM) for the Site.
- Undertake a Preliminary Risk Assessment (PRA) to identify potentially active contaminant linkages based on Continued Petroleum Use (CPU).

1.4 Scope of Work

This report defines the preliminary CSM for the Site, which describes potential sources of contamination, potential pathways for contaminant migration and potential receptors. A PRA was completed to identify potentially unacceptable risks to controlled waters and human health receptors arising from soil and groundwater contamination. This follows the process set out in Environment Agency (EA) Land Contamination Risk Management (LCRM) guidance [1].

The scope of work detailed in this report comprised the following:

- Desktop review of environmental data from a proprietary database (Envirocheck® Report);
- Site walkover survey comprising visual observations of the Site setting and infrastructure;
- Review data provided by the Petroleum Officer (PO) and wetstock monitoring contractor;
- Review relevant data presented in environmental reports previously prepared by other environmental consultants, where available; and,

[1] Environment Agency, "Land Contamination Risk Management (LCRM)," Government Digital Service, 08 October 2020. [Online]. Available: https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm. [Accessed 08 July 2022].

- Prepare a preliminary CSM and identify any potentially active contaminant linkages associated with the Site based on CPU.

The desktop information has been used to develop a conceptual model and identify contaminant linkages at the Site. A contaminant linkage exists only when a source, pathway and receptor are linked together.

- A **source** is a substance that has potential to cause harm or adversely affect controlled waters.
- A **receptor** is something such as human health, an ecological system, animals or crops, buildings or controlled waters that could be adversely affected by a contaminant.
- A **pathway** is a route or means by which a receptor can be exposed to or affected by a contaminant.

1.5 Data Sources

The following information sources were reviewed during the preparation of this Phase 1 ESA:

- Landmark Envirocheck® report[2]
- British Geological Survey (BGS) GeoIndex online viewer[3]
- Zetica Limited (Zetica) Regional Unexploded Bomb Risk maps[4]
- Petroleum Officer Questionnaire
- Wetstock Performance Letter
- Previous environmental reports prepared by other environmental consultants
- Enquiry and review of private water abstractions information within 1 kilometer (km) radius of the Site from local authority.
- A walkover of the PFS area only, which included an informal interview with Site staff, was undertaken by Arcadis on 30 March 2022. Photographs taken during the Site walkover are presented in Appendix B.

[2] Landmark, "Envirocheck® report reference 296131742_1_1 dated 26 May 2022," Landmark Information Group Service.
[3] British Geological Survey, "BGS GeoIndex (Onshore) Map Viewer," [Online]. Available: https://mapapps2.bgs.ac.uk/geoindex/home.html
[4] Zetica UXO, "Zetica UXO Risk Assessment," [Online]. Available: https://zeticauxo.com/downloads-and-resources/risk-maps/. [Accessed 12 July 2022]

1.6 Previous Environmental Works

Date	Consultant	Reference	Surrounding Land Use
04-10-2001	GeoDelft	Petroleum Risk Tier 1 Report [Ref: C928.SG216.8784]	GeoDelft conducted a tier 1 risk assessment on-site, with no contamination reported
17-12-2003	GeoDelft	Geo-Environmental Report ref: C2336.SG216 dated December 2003	GeoDelft conducted a geo-environmental investigation at the Site in December 2003 including the advancement of two investigative locations BH1 and BH1C. No elevated volatile concentrations were identified during on-site field screening.
February 2011	URS	Phase 1 Investigation Report [Ref: 49328043]	URS conducted a phase 1 investigation including a site visit. The Site was reported to have six underground double walled storage tanks installed in 2004, likely to have been installed into the drift deposits. There was no superficial evidence of abandoned underground tanks reported during Site-walkover. The Petroleum Officer (PO) did not report significant accidental releases associated with the Site. Three interceptors were reported to be present on-Site. During the Site visit one monitoring well was observed in the western area of the Site. The Preliminary Risk Assessment identified the following potential complete pollutant linkages: • Permeation from soil and perched water through plastic pipes, to potable water supply. • Leaching of potential hydrocarbon substances in soil to groundwater / perched water beneath the Site. • Remobilisation of potential hydrocarbon substances in groundwater / perched water beneath the Site. • Migration of hydrocarbon impact within the underlying groundwater / perched water to nearby surface water (River Soar). • Migration of hydrocarbon vapour and possibly subsequent inhalation by Site workers and occupants of adjacent Sites.

Date	Consultant	Reference	Surrounding Land Use
01-07-2011	URS	Comprehensive Environmental Site Assessment [Ref: MARP00002 Final]	URS installed eight groundwater monitoring wells to depths of up to 6.3 meters below ground level (m bgl) and three soil vapour wells to depths of up to 1.2m bgl on 20th January 2011. Soil, groundwater, potable water and soil vapour sampling was completed. The analytical results were assessed for potential risks to human health and controlled waters. The average depth to groundwater measured within the wells installed in the superficial deposits was 1.08m. Groundwater flow was observed to be towards the River Soar, located approximately 20m east of the Site. The reported concentrations from the vapour sample collected and analysed from VS201 – VS203 did not exceed the Human Health Generic Assessment Criteria (GAC) protective of on-Site petroleum workers. The highest concentrations of Total Petroleum Hydrocarbon (TPH) and Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) were reported from the soil samples collected from MW103 and MW104, located on the down-hydraulic gradient boundary of the Site. The maximum Poly Aromatic Hydrocarbon (PAH) concentrations in soil were detected in MW107 located close to the shop and down-hydraulic gradient of the car wash interceptor. The concentrations reported did not exceed the Human Health GAC and potential risks to on-Site petroleum employees were not identified. A Detailed Quantitative Risk Assessment (DQRA) identified potentially significant risks simulated to groundwater in the Secondary A Aquifer (River Terrace Drift Deposits) at the 50m compliance point and to surface water (a tributary of the River Soar) at the 20m compliance point. The results of the Controlled Waters DQRA identified potential risks to both the underlying Secondary A Aquifer and nearby surface water (River Soar located approximately 20m east of the Site) from the reported soil concentrations of BTEX compounds and reported groundwater concentrations of TPH, benzene, xylene and naphthalene.
14-06-2012	URS	Environmental Verification Report [49328043/R001]	URS was requested by Shell to support the proposed redevelopment at the Site in order to satisfy the conditions stated in letter from the Environment Agency referenced LT/2011/112875/01-L01, dated 4th May 2011. in order to fulfil the conditions specified in the planning conditions for the proposed construction works at the Site, URS undertook validation sampling from around the removed fuel lines and beneath the existing fuel pump islands. A total of thirteen soil samples were collected, and analysed for TPH, BTEX, Fuel Oxygenates, PAH and metals. The detected concentrations of compounds were compared against Stage 2 or Stage 3 screening criteria protective of Human Health and Controlled Waters. Based on the result of the assessment, the Site was reported to be suitable for a CPU.

Date	Consultant	Reference	Surrounding Land Use
06-01-2014	URS	Comprehensive Groundwater Monitoring Events [Ref: R49328043-005]	URS was commissioned by Shell to undertake a Comprehensive Groundwater Monitoring Event (GME) at the Site. Four (4) groundwater monitoring rounds were undertaken in July 2011, May 2012, November 2012 and October 2013. MW102 to MW108 were sampled in July 2011 and MW101 to MW107 were sampled in May 2012 and November 2012. Surface water samples were obtained from the River Soar in July 2011, May 2012, November 2013 and October 2013 at locations upstream, midstream and downstream of the Site. The depth to groundwater was observed to be between 0.47m and 2.15m bgl. Non Aqueous Phase Liquids (NAPL) was not identified in any of the groundwater monitoring rounds undertaken at the Site with an inferred groundwater flow direction towards the east to southeast. Based on a review of the groundwater results, the concentrations of the majority of Chemicals of Potential Concern (COPC) had decreased with no potentially significant risks to the River Soar (located 20m east of the Site) or to the groundwater in the underlying Secondary A Aquifer remaining.
29/08/2014	URS	Comprehensive Groundwater Monitoring Event [Ref: R49328043-006]	URS completed a groundwater monitoring event comprising sampling of seven (7) monitoring wells, two (2) surface water locations, and an assessment of potential risks to controlled waters and receptors. Groundwater was recorded within all seven (7) monitoring wells at depths ranging from 1.015 m bgl (MW106) to 1.594 m bgl (BH101), with an average depth of 1.344 m bgl. Groundwater elevations ranged from 74.78 Meters Above Ordnance Datum (m AOD) to 75.06 m AOD. Groundwater was inferred to flow in an easterly direction. A hydrocarbon odour was noted during the purging of MW103 (located on the eastern Site boundary). NAPL was not identified in any of the wells. Concentrations of detected COPCs in groundwater and surface water samples exceeded the controlled waters stage 2 screening criteria were compared against stage 3 site specific assessment criteria derived in previous DQRA. Potential risks to the nearby River Soar (20m east of the site) and the underlying groundwater were considered to be acceptable.
30-09-2014	URS	Well Decommissioning Report [R49328043-007]	URS reported decommissioning of monitoring wells MW101 - MW107, SV201 – 202 and BH101 between 10th and 12th September 2014 by removing the existing headworks, backfilling the monitoring wells with bentonite grout and reinstating the ground surface to match surrounding ground surface construction (asphalt, concrete or topsoil).

2 ENVIRONMENTAL SETTING

2.1 Description of Site and Surroundings

The summary below has been developed based on information provided in the data sources listed in Section 1.5 and a review of the previous environmental reports provided to Arcadis.

Item	Details
Site status	Active PFS and an area of undeveloped land present to the southwest.
Intended end use	CPU
Ownership Type / Tenure	Freehold. Arcadis understands the Site is an operating Freehold Site.
Grid Reference (Easting and Northing)	450825, 293755
Elevation	74m AOD.
Site size	The forecourt area is approximately 2,500m^2; the total boundary marked in the Title Deed plan, including the undeveloped portion of land to the southwest of the forecourt area is approximately 5,500m^2
Topography	The topography of the surrounding area generally slopes downwards toward the River Soar to the east. The Site walkover conducted by Arcadis on 23 June 2022 reported the Site surface generally slopes from southwest to northeast.
Surfacing	**Forecourt Area** (area under canopy, next to all fuel islands, tank farm and fill points): The area is surfaced with concrete. The area beside the Air/Water is Tarmac. **Access Routes and north of the shop**: The access road to the north of the shop is Tarmac. Small areas of cobble block and grass present on kerb areas around the forecourt.
Site Setting	**North:** The Site is bounded to the north by a road transport depot, Cobley Transport (National and European Road Freight). The depot offices were 30m north of the Site boundary. **South:** The Site is bounded to the south by the B4114 Coventry Road. Beyond this to the southeast was open fields, and approximately 50m southeast of the Site wis the River Soar. **East:** The Site is bounded to the east by the B4114 Coventry Road. Beyond this, approximately 20m east is a tributary of the River Soar, and approximately 50m east from the Site is a hotel and restaurant. **West:** The Site is bounded to the west by open fields associated with Stanton Lodge Farm. Farm buildings are located approximately 250m west of the Site.

2.2 Site History

The historical use of the Site and surrounding area was determined from inspection of 1:2,500 and 1:10,560 scale Ordnance Survey (OS) maps. Historical OS maps are presented with the Envirocheck® Report presented in Appendix D. In brief, the history of the Site, as shown on the maps, is as follows:

Date	Site Use	Surrounding Land Use
1886 – 1955	Site was illustrated as undeveloped land.	Roman Road and Soar Mill present immediately east of the Site boundary. Surrounding area was undeveloped. Mill dam present within 100m southeast of the Site.
1963 - 1977	Small, unmarked building, and associated earthworks present on the Site.	Unknown works present approximately 250m south of the Site. Surrounding area was undeveloped.
1977 - 1991	Filling station developed on Site	Unknown depot and associated ramps were developed adjacent to the northern Site boundary.
1991 - present	Filling station developed on Site	A fishing lake (marked 'Nature reserve' but not formally identified as such within official environmental designations) was developed circa 120m to the southeast of the Site. Unknown depot present adjacent to the Site boundary, with changes in building footprints.

2.3 Geology

Geology	Unit	Thickness (m)	Aquifer Designation
Regional	Source: BGS GeoIndex (BGS) online viewer and DEFRA Magic Maps accessed on 27 July 2022		
Superficial Deposits	River Terrace Deposits of sand and gravel and Wolston Glaciogenic Formation	Unknown	Secondary A Aquifer
Bedrock	Mercia Mudstone Group	Unknown	Secondary B Aquifer
Local	Source: Comprehensive Environmental Site Assessment report by URS [Ref: MARP00002] dated 01 July 2011		
Made Ground	Concrete or tarmac underlain by grey, slightly gravelly, sandy clay and grey to red brown, angular, fine to coarse gravel and cobbles.	0.4 to 1.5	NA
Superficial Deposits – River Terrace Deposits	Soft to very firm, grey to dark brown, slightly sandy, slightly gravelly, silty clay to orange to brown, slightly gravelly, clayey sand.	4.8 to 6.0	Secondary A Aquifer
Bedrock – Mercia Mudstone Formation	BGS Borehole logs for the area indicate that the mudstone is firm to stiff, slightly gravelly, sandy to silty clay bands.	Unknown	Secondary B Aquifer

2.4 Hydrogeology

Hydrogeology	Details
Groundwater depth	Groundwater was recorded at depths ranging from 1.015 m bgl to 1.594 m bgl with an average depth of 1.344 m bgl. Groundwater elevations ranged from 74.78 m AOD to 75.06 m AOD. [Ref: Comprehensive Groundwater Monitoring Event reported by URS R49328043-006 dated 29 August 2014]
Groundwater flow direction	The inferred groundwater flow direction of the groundwater in the Drift Deposits on the Site is towards the east. [Ref: Comprehensive Groundwater Monitoring Event reported by URS R49328043-006 dated 29 August 2014]
Licensed potable groundwater abstractions	According to the Envirocheck report, there are four licensed groundwater abstractions present within 2km of the Site as detailed below. • The nearest groundwater abstraction is located at 473m northwest of the Site operated by Mr. J Sutton, with license number 03/28/50/0044, used for general farming and domestic usage. • A single point groundwater abstraction located at 889m east (downgradient) of the Site operated by Mr. J K Oldham for general farming and domestic usage, registered with licence number 03/28/50/0039. • A single point groundwater abstraction located at 1052m northeast of the Site operated by Mr G E Wild for general farming and domestic usage, registered with licence number 03/28/50/0029. • A single point groundwater abstraction located at 1065m east of the Site operated by Mr A Essex for general farming and domestic usage, registered with licence number 03/28/50/0087
Licensed non-potable groundwater abstractions	None recorded in the Envirocheck report.
Unlicensed groundwater abstractions	None recorded in the Envirocheck report. Under a Freedom of Information request, Blaby District Council on 18 July 2022 confirmed that there are no records of any private groundwater abstractions within 1km of the Site, a copy of the response from information governance team of Blaby District Council is presented as Appendix E.
Groundwater vulnerability	According to the Envirocheck report, groundwater within the superficial aquifer beneath the Site is classified as medium vulnerability with low pollutant speed.
Groundwater Source Protection Zones (SPZ)	The Site is not within 2km of an EA defined source protection zone (SPZ).

2.5 Hydrology

Item	Details (Envirocheck® Report)
Nearest surface water feature	The nearest surface water feature is the River Soar, a tributary of which is located approximately 37m southeast of the Site.
Licensed surface water abstractions	There are three surface water abstractions within 2km radius of the Site; the nearest licensed surface water abstraction is by Foxon Brothers (Concrete Products) Ltd [Licence No: 03/28/50/0001] with permit start date 1 April 2000, located at Broughton Astley - Mill Stream (River Soar), 339m south of the Site.
Flood risk from rivers or sea	Neighbouring land located 28m southeast of the Site is marked as being of high risk of flooding from the River Soar.

2.6 Ground Hazards

Item	Details (Envirocheck® Report)
Ground stability hazards	Hazard levels: • Collapsible deposits: Very low • Running sands: Very low • Compressible deposits: No hazard • Landslides: Very low • Ground dissolution of soluble rocks: No hazard • Shrinking or swelling clay: No hazard
Mining, ground workings and natural cavities	• Coal mining: No records identified within 2km of the Site • Non-coal mining: No records identified within 2km of the Site • Natural Cavities: No records identified within 2km of the Site
Radon	The Site lies within a lower probability radon area (between 1 % of the homes are estimated to be at or above the action levels). Radon protective measures are not required for construction of new dwellings or extensions.

2.7 Invasive Species

No invasive species were recorded to be present on Site during the Site walkover conducted by Arcadis representative on 23 June 2022.

2.8 Ecologically Sensitive Sites

Item	Details (Envirocheck® Report)
Nitrate Vulnerable Zones	The Site is located within surface water nitrite vulnerable zones; however, this is not considered to represent a concern based on the continued use of the Site as a PFS.

The Envirocheck® report indicate that none of the following designations are identified within 2km of the Site: 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, Ramsar Sites, Sites of Special Scientific Interest, Special Areas of Conservation, Special Protection Areas and World Heritage Sites.

3 POTENTIAL CONTAMINATION SOURCES & INFORMATION

3.1 Contemporary Trade Directory Entries

The Envirocheck® Report (Appendix D) identified six contemporary trade directory entries within 500m of the Site, summarised in the table below.

Trade Entry	Classification	Distance and direction from the Site	Active/ Inactive
Shell	PFS	On Site	Active
Sturgess Motor Group	Garage Services	15m east	Inactive
Cobley Transport	Road Haulage Services	65m north	Active
Sturgess Bodycraft	Car Body Repairs	265m southwest	Active
Foxon Bros Ltd	Concrete Products	320m southwest	Inactive
Cordale Cars	Garage Services	476m north	Active
Intrinsic Works Ltd	Home furnishings - Manufacturers	500m northwest	Active

3.2 Landfills

Landfill Gas Sources	Details (Envirocheck® Report)
Historical landfills	A historical landfill site named Off Coventry Road located [Ref: GDO 348] at Broughton, Astley, Coventry Road, Broughton, Astley is located 142m northeast of the Site, active between 1983 to 1985. This site deposited waste included Inert, Industrial and Household Waste
Registered landfills	There are no registered landfills present within 2km of the Site.

Given that the Site is an active PFS, it should be noted that according to Construction Industry Research and Information Association (CIRIA) report C665 (2007), petroleum hydrocarbons have the potential to act as sources of permanent ground gases, such as methane and carbon dioxide.

3.3 Discharge Consents

Item	Details (Envirocheck® Report)
Discharge consents for the Site	Sewage Discharges - Final/Treated Effluent - Not Water Company into Tributary Of The River Soar, issued on 25th July 2007 authority Environment Agency, Midlands Region
Discharge consents within 2km	Nine discharge consents identified within 2km of the Site. The nearest discharge consent is located at Sams Cafe, Coventry Road, Broughton Astley, Leics approximately 69m northeast of the Site. Issued on 13th January 1976. Sewage Discharges - Final/Treated Effluent into River Soar.

3.4 Environmental Permits

Item	Details (Envirocheck® Report)
Environmental permits for the Site	One record identified: Name: Shell Sutton Elms (734) Permit reference: SSE.2/2010/ARF Dated: 15th October 1999 Process Type: Local Authority Pollution Prevention and Control Description: PG1/14 Petrol filling station Status: Permitted
Environmental permits within 2km	One record identified: Name: Foxon Brothers (Concrete Products) Ltd Permit reference: FOX/03/2009/DJG Dated: 4th February 1994 Process Type: Local Authority Air Pollution Control Description: PG3/1Blending, packing, loading and use of bulk cement Status: Authorised

3.5 Pollution Incidents to Controlled Waters

Item	Details (Envirocheck® Report)
Pollution incidents at the Site	None reported
Pollution incidents within 2 km	None reported

3.6 Registered Radioactive Substances

Item	Details (Envirocheck® Report)
Registered radioactive substances on-Site	None recorded
Registered radioactive substances within 2km	None recorded

3.7 Unexploded Ordnance

The Regional Unexploded Bomb Risk map (Zetica) indicates that the Site is located within an area of low UXO risk. The regional UXO map is presented in Appendix F.

4 PFS INFRASTRUCTURE

4.1 PFS Layout

The layout of the PFS, as recorded during the Site walkover conducted on 23 June 2022, and based on the review of the existing Site layout plans is summarised below:

- The sales building is located in the northern part of the PFS.
- The forecourt comprises five pump islands, located in the centre of the PFS. Additionally, a Heavy Goods Vehicle (HGV) pump island is present to the west of the main forecourt.
- Six Underground Storage Tanks (UST) are located south of pump islands.
- AdBlue above ground tank (as per interviews conducted during Site walkover on 23 June 2022, understood to be installed in year 2021) located on the west side of the HGV lane.
- Above ground offset fills and vent stacks are located to the west of the forecourt
- An interceptor is present in the western part of the PFS.
- A car part area is present in the southern part of the PFS.

An Existing Site Layout plan provided by Artelia is presented as Figure 3 in Appendix A.

4.2 Petroleum Officer Records

A questionnaire was sent to Leicestershire County Council Trading Standards Service for completion by the Petroleum Officer (PO). The response dated 12 May 2022 indicates that there are six operational double wall steel USTs present at the Site. The PO's response reported that all previous tanks (USTs) were removed from Site in 2004.

Details of the operational, as provided by the PO, are presented in the following table:

Tank No.	Contents (Fuel Type)	Capacity (Litres)	Approximate Date Installed	Construction Type
Existing Tank Farm				
1	Diesel	19400	2004	Double wall steel
2	Diesel	58200	2004	Double wall steel
3	V-power diesel	19400	2004	Double wall steel
4	Diesel	24250	2004	Double wall steel
5	V-power unleaded	33950	2004	Double wall steel
6	Unleaded	77600	2004	Double wall steel

As per the information obtained from Petroleum risk tier 1 report by GeoDelft [Ref: C928.SG216.8784] dated 04 October 2001, there were seven historical tanks present on the Site all installed in 1990 known to be removed from the Site in 2004 as per PO response.

The PO response didn't report any incidents and / or spillages at the Site. The completed Petroleum Officer Report is provided in Appendix G.

4.3 Fuel Distribution and Management Systems

Item	Details
Number of standard (car) pump islands and dispensers	Five pump islands and ten dispensers.
Number of Heavy Goods Vehicles (HGV) fuel islands and dispensers	One pump island and two dispensers
Fill points and venting	Above ground offset fill and vent stacks
Wetstock management system	Fairbanks Environmental Limited. Real time data collected at 15-minute intervals and is monitored 24/7.

The wetstock management system has confirmed that there are no current or on-going concerns over the performance of the operational tanks at Site. Two minor diesel fuel loss were recorded at tank 4 in June 2016 (a small leak on lipseal to pump 11 and 12 which was repaired) and April 2018 (leak discovered on meter pipe which was repaired), no loss to the ground was reported. The Site performance letter provided by Fairbanks Environmental Limited is included as Appendix H.

4.4 Historical Incidents or Spillages

During the Site walkover undertaken on 23 June 2022, no records of accidental spillage of fuel or other substances were identified, and the Site manager was not aware of any incidents or spills. Fuel staining was observed on forecourt and around pump islands.

4.5 Groundwater Monitoring Wells

It is understood that URS advanced eight groundwater monitoring wells (to depths of up to 6.3m bgl) and three soil vapour wells (to depths of up to 1.2m bgl) on 20th January 2011. All the historical groundwater monitoring wells are known decommissioned by URS in September 2015 in order to prevent the wells becoming preferential pathways to the underlying Secondary A Aquifer (URS Well Decommissioning Report, report ref: R49328043-007, 30 September 2014). Evidence of one monitoring well was noted near pump 11 during Site walkover conducted on 23 June 2022, a photograph of the well condition is presented in the photo log under Appendix I.

4.6 Site Drainage and Waste Management

The Site walkover conducted by an Arcadis representative on 23 June 2022 reported a forecourt separator located in the eastern part of the Site and an interceptor (likely abandoned) located in the west of the Site possibly associated with the former jet wash; strip drains surrounding the north and west of forecourt and partially blocked storm sewers present on the north boundary of the Site. No visible damage to the drainage services was noted.

5 CONCEPTUAL SITE MODEL

Following completion of the desk study and Site reconnaissance, a preliminary CSM has been prepared based on CPU, as summarised below.

5.1 Potential Areas of Concern (Sources)

Potential Areas of Concern (PAOC) associated with the Site which have been identified during the desk study and Site walkover are listed below.

5.1.1 On-Site

Location	PAOC
Current Usage	Operational USTs and fuel distribution pipework – however given that the existing tanks comprise double skin tanks installed in 2014, the existing infrastructure is considered unlikely to represent a potential source.
	Surface spillages and accidental releases to ground from dispensing pumps, offset fill points, forecourt interceptor and drainage
	Imported Made Ground associated with development of the Site
Historical Usage	Historical use of the Site as a garage / PFS
	Historical car wash and associated interceptor

5.1.2 Off Site

Location	PAOC
Current Usage	Car Depot present adjacent north to the Site; An electrical substation was noted to be present within 250 m southeast of the site, possibly cross gradient of the eastern groundwater flow direction [URS CESA, 2014] from the Site to River Soar
Historical Usage	Historical landfill present at 142m northeast of the Site. However, given the distance between the Site and the landfill facility, the shallow depth to water within the vicinity of the Site and the groundwater flow direction recorded beneath the Site during previous groundwater monitoring visits as towards the east (cross gradient to the historical landfill), the source pathway receptor linkage is considered to be incomplete. Therefore, this potential source has been discounted for further assessment.

The remaining potential off-Site sources identified in Section 2 are not considered further due to the distance from the Site.

5.2 Contaminants of Potential Concern

COPC for the Site have been selected based on the current and historical on- and (where a plausible pathway has been identified) o-Site PAOC and with reference to the relevant Department of Environment (DoE) Industry Profiles5.

PAOC	COPC
On-Site	
Fuel storage and distribution network	• Petroleum hydrocarbons • Benzene, toluene, ethylbenzene, xylenes (BTEX) • Fuel additives (Methyl *tertiary*-butyl ether (MTBE), ethyl *tertiary*-butyl ether (ETBE), *tertiary*-amyl methyl ether (TAME), di-isopropyl ether (DIPE), *tertiary*-butyl alcohol (TBA) and ethanol) • Polycyclic Aromatic Hydrocarbons (PAH)
Interceptor	
Surface spillages	
Historical use of the Site as PFS	• Petroleum hydrocarbons • BTEX • PAH • Fuel additives (MTBE, ETBE, TAME, DIPE, TBA and ethanol) • Ground gases (including methane and carbon dioxide)
Imported Made Ground	• Heavy metals • PAH • Asbestos • Ground gases (including methane and carbon dioxide)
Off-Site	
Car Depot	• Petroleum hydrocarbons • Volatile Organic Compounds PCBs are not considered as COPC due to their low mobility in the environment

5.3 Potential Receptors

Based on CPU, the following potential receptors for the Site have been identified.

Type of Receptor	Potential Receptors
Human Health	On-Site and off-Site commercial workers
	Site visitors e.g. general public
	Future on-Site[6] and offsite construction/ maintenance workers

[5] Department of Environment, "DoE Industry Profiles" [Online]. Available: https://www.claire.co.uk/useful-government-legislation-and-guidance-by-country/198-doe-industry-profiles

[6] Risks to on site construction workers may be managed by use of appropriate Personal Protective Equipment (PPE), risk assessments and method statements.

Type of Receptor	Potential Receptors
Controlled Waters	Secondary A Aquifer associated with the River Terrace Deposits beneath the Site.
	Surface water features (River Soar, a tributary of which is located approximately 37m east of the Site).

5.4 Potentially Active Pathways

Based on the information presented in this report, the primary potential sources are considered to be associated with the current and historical use of the Site as a PFS, with the following pathways considered potentially active:

Human Health

Vapour Inhalation:

- Partitioning of COPC from contaminated soil or groundwater into soil vapour, vertical migration (upwards) towards the ground surface and subsequent inhalation of indoor and outdoor air by on-Site commercial workers, Site visitors e.g. general public.

Direct Contact:

- Direct contact (ingestion, inhalation, dermal) with impacted soil particulates by future on-Site construction workers and associated visitors during construction / redevelopment works[7].

Controlled Waters

Migration of Groundwater:

- Leaching of COPC from soil into groundwater and subsequent off-Site migration within the underlying Secondary A Aquifer.

Migration to Surface Water:

- Leaching of COPC from soil into groundwater and subsequent migration in groundwater towards surface water receptors (River Soar 37m east of the Site).

[7] Risks to construction workers may be managed by use of appropriate PPE, risk assessments and method statements.

6 Preliminary Risk Assessment

Based on the Conceptual Site Model, the table below describes and evaluates the plausible Source-Pathway-Receptor contamination linkages and the preliminary risk to sensitive receptors.

Source	Pathway	Receptor	Severity	Likelihood	Risk	Justification
Human Health						
Potentially impacted soil/ groundwater	**Vapour Inhalation:** Partitioning of COPC from soil and groundwater into soil vapour, lateral and vertical vapour migration and subsequent inhalation.	On-Site commercial workers and visitors	Medium	Low	Low	The human health assessment previously undertaken indicated that concentrations of COPC in soil were below the URS GAC protective of on-Site workers (assuming vapour only pathways).
		Future on-Site construction workers	Medium	Low	Low	During redevelopment works, contact with COPC is possible if contaminated soils are encountered. The risks to construction workers can be reduced through appropriate use of PPE and good working practices.
		Future off-site construction workers	Medium	Low	Low	During construction works, contact with COPC is possible if contaminated soils are encountered. The risks to construction workers can be reduced through appropriate use of PPE and good working practices.
	Direct Contact: Ingestion, inhalation, dermal contact with impacted soil particulates.	On-Site commercial workers and visitors	Low	Low	Moderate / Low	The human health assessment undertaken previously indicated that concentrations of COPC in soil were below the URS GAC protective of on-Site workers (assuming vapour only pathways).
		Future on-Site construction workers	Medium	Low	Moderate / Low	During redevelopment works, contact with COPC is possible if contaminated soils are encountered. The risks to construction workers can be reduced through appropriate use of PPE and good working practices.
		Future on-Site construction workers	Low	Low	Low	

Source	Pathway	Receptor	Severity	Likelihood	Risk	Justification
Controlled Waters						
Potentially impacted soil/ groundwater	Leaching of COPC from soil into groundwater and subsequent migration of impacted groundwater.	Secondary A Aquifer (River Terrace Deposits)	Medium	Medium	Moderate / Low	During the most recent groundwater monitoring event, conducted by URS in August 2014, the concentrations of detected COPCs in ground water samples, which exceeded the controlled waters stage 2 screening criteria were compared against stage 3 site specific assessment criteria which was derived by a previous DQRA. Based on this, a potential risk to the groundwater within underlying river terrace deposits (secondary A aquifer) was acceptable.
		Surface water features (River Soar located 37m east)	Medium	Low	Moderate	During the most recent groundwater monitoring event, conducted by URS in August 2014, the concentrations of detected COPCs in surface water samples, which exceeded the Controlled Waters Stage 2 screening criteria were compared against Stage 3 Site Specific Assessment Criteria which was derived by a previous DQRA. Based on this, a potential risk to the nearby River Soar was considered to be acceptable.

7 CONCLUSIONS

The Site comprises an active PFS and an area of undeveloped land located directly to the southwest, situated within a primarily commercial area. The B4114 (Coventry Road) is located adjacent to the eastern Site boundary.

Regional geological mapping indicates that the Site directly overlies River Terrace Deposits of sand and gravel (designated as a Secondary A Aquifer) underlain by the Mercia Mudstone Formation (designated as Secondary B Aquifer).

Intrusive Site investigation works were conducted by URS in July 2011. Potentially significant risks to groundwater in the Secondary A Aquifer (River Terrace Drift Deposits) were identified at the 50m compliance point modelled, and to surface water (a tributary of the River Soar) at a 20m compliance point.

During groundwater monitoring undertaken by URS in August 2014, groundwater was encountered resting at depths of between 1.015 m bgl to 1.594 m bgl, with groundwater elevations ranging from 74.78 m AOD to 75.06 m AOD within the River Terrace Deposits. Groundwater monitoring visits undertaken at the Site have consistently inferred a south-easterly to easterly groundwater flow direction. The results of the most recent groundwater monitoring event conducted by URS in August 2014 indicated, potential risks to the nearby River Soar (20m east of the site) and the groundwater beneath were considered to be acceptable..

It is understood that the historical groundwater monitoring wells previously installed at the Site were decommissioned in September 2014 in order to prevent the wells becoming preferential pathways to the underlying Secondary A Aquifer (URS Well Decommissioning Report, report ref: R49328043-007, 02 October 2014).

Four licensed potable groundwater abstractions have been identified within 2km radius of the Site. The nearest licensed potable abstraction is located approximately 473m northwest of the Site and used for agricultural and domestic purposes. The response from Blaby Council regarding private water abstractions in the area reported no registered abstractions present within 1km of the Site. The nearest surface water feature is River Soar located approximately 37m east (downgradient) of the Site.

The current and historical use of the Site as a PFS, the car depot present adjacent to the north of the Site and a historical landfill located 142m northeast of the Site were identified as the primary potential sources of contamination.

Based on the findings of the desk study and Site reconnaissance, the preliminary CSM identified the following potentially complete contaminant linkages:

Human Health
Vapour Inhalation:

- Partitioning of COPC from contaminated soil or groundwater into soil vapour, vertical migration (upwards) towards the ground surface and subsequent inhalation of indoor and outdoor air by on-Site commercial workers, Site visitors e.g. general public.

Direct Contact:

- Direct contact (ingestion, inhalation, dermal) with impacted soil particulates by future on-Site construction workers and associated visitors during construction / redevelopment works. Risks to construction workers may be managed by use of appropriate PPE, risk assessments and method statements.

Controlled Waters
Migration of Groundwater:

- Leaching of COPC from soil into groundwater and subsequent off-Site migration within the underlying Secondary A Aquifer.

Migration to Surface Water:

- Leaching of COPC from soil into groundwater and subsequent migration in groundwater towards surface water receptors (Tributary of the River Soar located approximately 37m east of the Site).

Preliminary Risk Assessment

Assessment of the potentially complete contaminant linkages indicated a low to moderate preliminary risk level for each of the potentially active contaminant linkages.

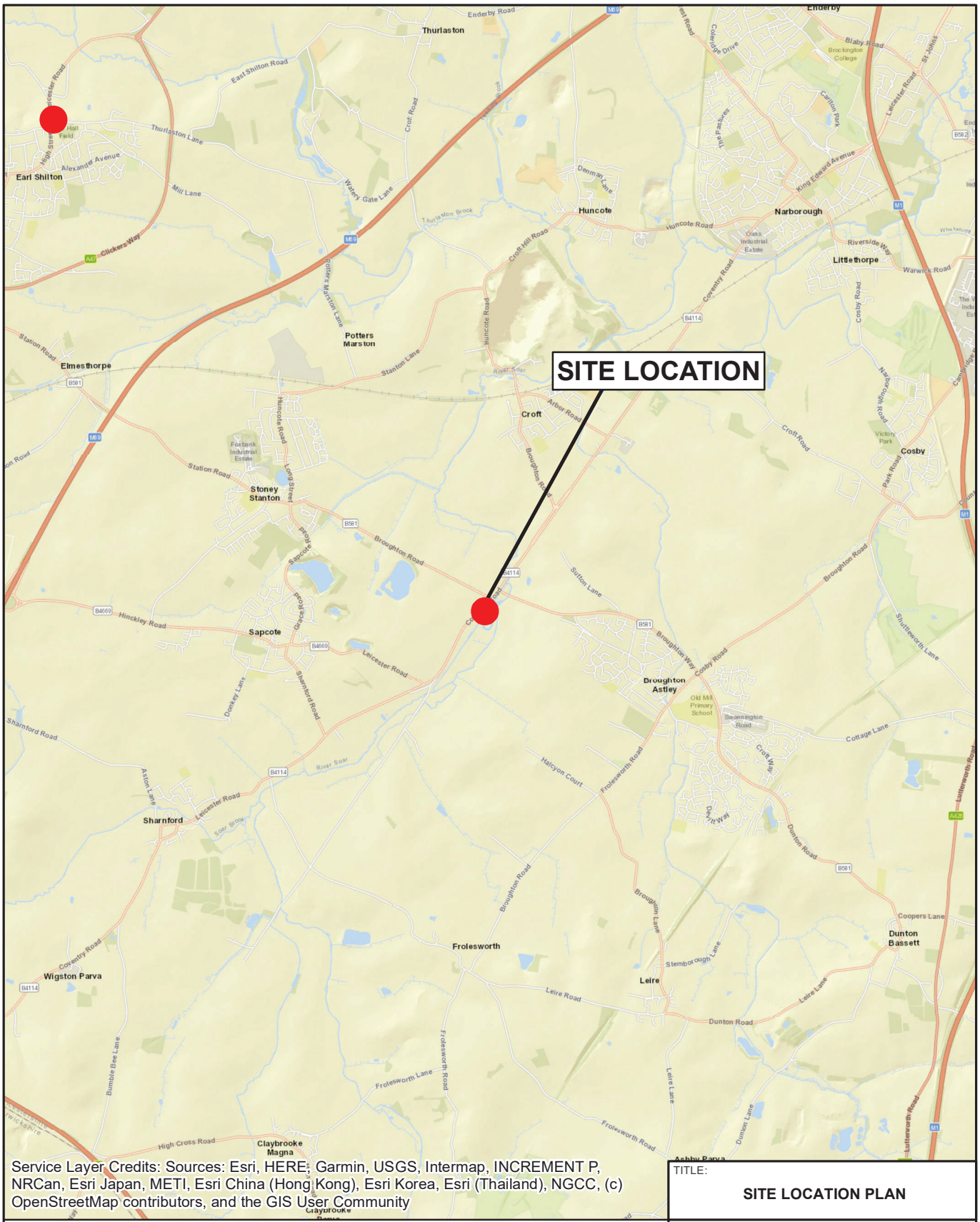
APPENDIX A

Report Figures

Figure 1 – Site Location Plan

Figure 2 – Title Deed Plan

Figure 3 – Existing Site Layout Plan



Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

LEGEND

- SITE LOCATION

NOTES

SYMBOLS FOR BOREHOLES, TRIAL PITS AND OTHER SPECIFIC FEATURES ARE REPRESENTATIONS OF LOCATION ONLY AND UNLESS OTHERWISE SPECIFIED, DO NOT REPRESENT THE TRUE SIZE OF THE FEATURE.

0 0.2 0.4 0.8 1.2 1.6 2 Kilometres

N

TITLE: **SITE LOCATION PLAN**

SITE : **SHELL SUTTON ELMS**

CLIENT : **SHELL UK OIL PRODUCTS LIMITED**

PROJECT : **10044284** | **FIGURE 1**

DATE : 06/07/22 | DRAWN BY : AP

DRG No. : 10044284-AUK-SHSE-XX-DR-ZZ-0412-P1.GIS

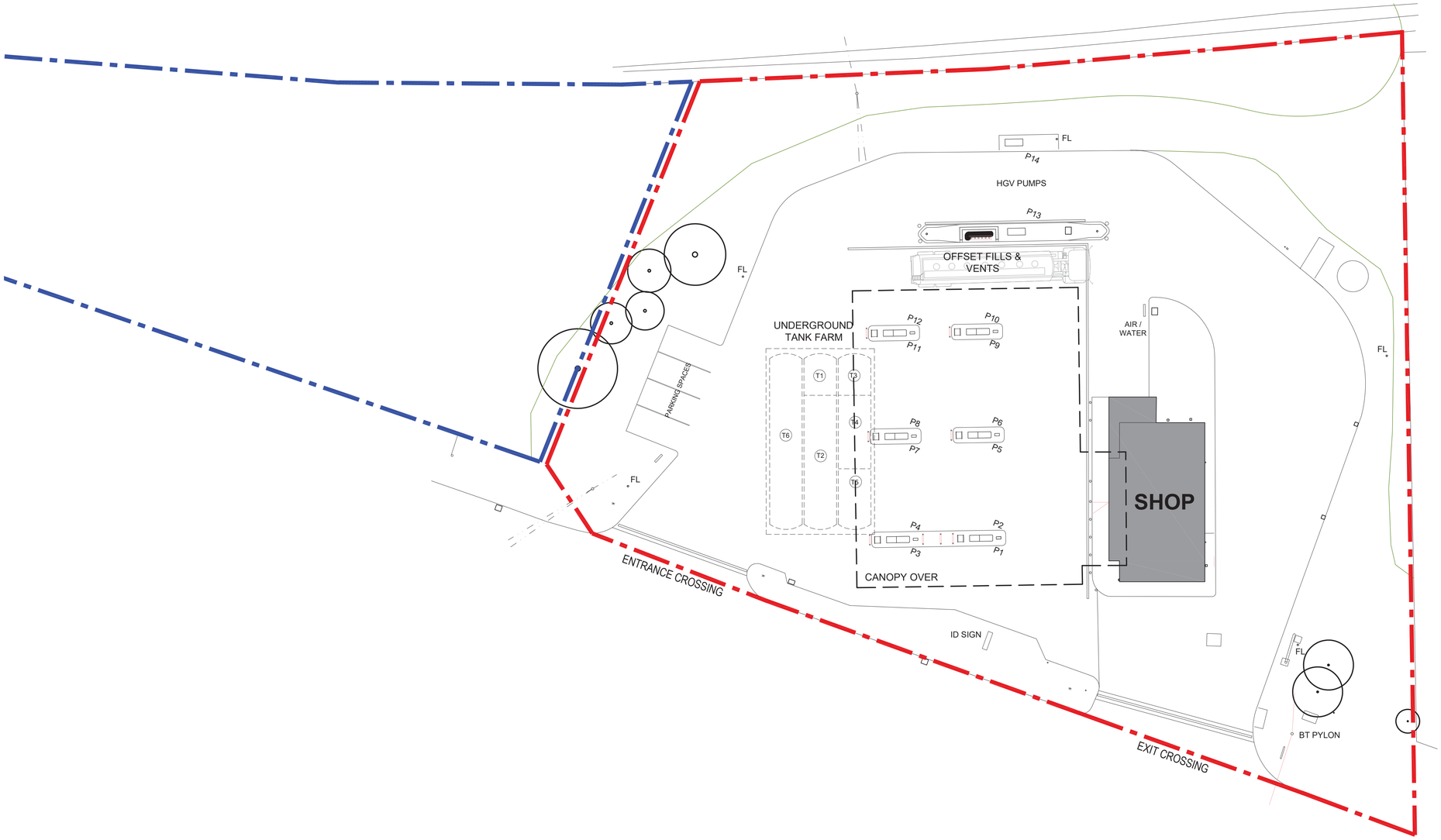
SCALE : **1 : 50,000** | PRINT : **A4**

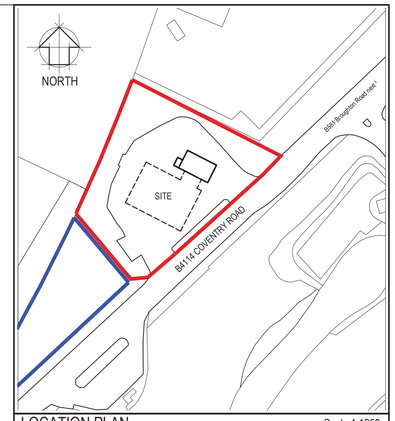
ARCADIS

SHELL SUTTON ELMS
COVENTRY ROAD, BROUGHTON, ASTLEY, LEICESTER
LEICESTERSHIRE, LE9 6QD

ARTELIA INTERNATIONAL

NORTH





LOCATION PLAN Scale 1:1250

GENERAL NOTES

THIS DRAWING HAS BEEN PREPARED FOR PLANNING PURPOSES ONLY.

DO NOT SCALE OFF THIS DRAWING.

0 5 10 15 20

SCALE - 1:200 METRES @ A1

A1
ORIGINAL
PLOT SIZE

PLANNING

JENNINGS DESIGN LIMITED

York House, Valley Court Canal Road,
Bradford West Yorkshire BD1 4SP

TEL. No 01274 395422
FAX. No 01274 395427
E-mail office@jen305.com

REV	DATE		BY
A	02/01/19	Site location plan added.	DS

PROJECT : SHELL SUTTON ELMS
COVENTRY ROAD
LEICESTER, LE9 6QD

TITLE : EXISTING SITE LAYOUT

SHELL UK LIMITED
SHELL CENTRE
LONDON
SE1 7NA
UNITED KINGDOM

DRAWN BY :	SF	SCALE :	1:200 @ A1
DATE :	15/10/2018	PLOT DATE :	15/10/2018
CAD FILE :	E:\ARCHIVE\DRAWINGS\SUTTONELMS-10019140-PLNG-2018		

DWG No :	10019140	PLNG-1	2018	A

APPENDIX B

Planning Application Decision Notice

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Blaby District Council

the heart of Leicestershire

Council Offices, Desford Road, Narborough, Leicester, LE19 2EP

NOTICE OF DECISION ON PLANNING APPLICATION
TOWN AND COUNTRY PLANNING ACT 1990

PLANNING PERMISSION

Name and Address of Applicant
Shell UK Limited
Shell Centre
London
SE1 7NA

Name and Address of Agent
Jennings Design Limited
Neil Jennings
York House
Valley Court
Canal Road
Bradford
BD1 4SP

Part -1 Particulars of Application

Date of Application 2 January 2019 Application No. **18/1678/FUL**

Particulars and Location of Development

Demolition of sales building to existing petrol filling station and erection of replacement sales building and associated works including new parking areas and alteration to the existing vehicle exit crossing.

Shell Filling Station Coventry Road Stoney Stanton Leicestershire

Part -2 Particulars of Decision

In pursuance of its powers under the Town and Country Planning Act 1990, the Blaby District Council **GRANTS** planning permission for the carrying out of the development referred to in PART -1 hereto in accordance with the application and plans submitted, subject to the following conditions;

Conditions attached to the planning permission and reasons for those conditions are :-

CONDITIONS

1 The development hereby permitted shall be begun before the expiration of three years from the date of this permission.

2 The Development hereby approved shall be built in strict accordance with the following approved plans;

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Proper Officer of the Council

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- Proposed Site Layout - Jennings Design Limited - 10019140-PLNG-3-2018
- Proposed Site Elevations - Jennings Design Limited - 10019140-PLNG-4-2018
- New Building Elevations - Jennings Design Limited - 10019140-PLNG-5-2018

3 The development hereby permitted shall be constructed using the materials specified on the 'Planning Application' forms, which are attached to and form part of this planning permission, unless alternative materials are agreed in writing by the District Planning Authority.

4 Within one month of the commencement of works on site, a plan showing a detailed soft and hard landscaping scheme shall be submitted to and agreed in writing by the District Planning Authority. This scheme shall include details of:

(a) any existing trees, shrubs, hedges, water bodies to be retained and measures of protection in the course of the development;

(b) new tree and shrub planting. Including plant type, size, quantities and locations;

(c) other surface treatments;

(d) fencing and boundary treatments;

(e) any changes in levels or contours;

(f) the position of service and/or drainage runs (which may affect tree roots).

5 The approved landscaping scheme shall be carried out within one year of completion of the development and any trees, hedges, shrubs or plants which within a period of 5 years from the completion of the planting die, are removed or become seriously damaged or diseased shall be replaced in the next planting season with others of similar size and species, unless the District Planning Authority gives written consent to any variation.

6 No development shall commence on-site until full details of the means of foul and surface water drainage for the site have been submitted to and agreed in writing by the District Planning Authority. Once approved the works shall be carried out before any of the development is occupied.

7 The development hereby permitted shall not be occupied until such time as the layout, access, parking and turning facilities have been implemented in accordance with the approved site layout plan (drawing no.10019140-PLNG-3). Thereafter, the onsite parking provision shall be so maintained in perpetuity.

8 Prior to the first use of the new sales building, a scheme of signage improvements to indicate ingress and egress (to include both upstanding signs and painted markings)

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Blaby District Council
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shall be submitted to and agreed in writing by the District Planning Authority, and the signage shall be installed in accordance with the agreed details.

9 Notwithstanding the provisions of the Town and Country Planning (General Permitted Development) Order 2015 (or any subsequent re-enactment with or without modification), no alterations or extensions shall be made to the retail store without the prior permission of the District Planning Authority granted on an application submitted in that regard.

10 The proposed new retail unit shall only be used in association with and ancillary to the use of the site as a petrol filling station, and shall not be subdivided or converted to any other use without a further grant of planning permission.

11 No plant or machinery, including refrigeration, air conditioning or extraction equipment shall be installed until details have first been submitted to and agreed in writing by the District Planning Authority. The plant or machinery shall only be installed in accordance with the agreed details.

12 No development approved by this planning permission shall be commenced until:

(a) A Phase 1 desk top study has been carried out which shall include the identification of previous site uses, potential contaminants that might reasonably be expected given those uses and other relevant information such as potential for migrating landfill gas. Using this information the report should contain a diagrammatical representation (Conceptual Model) of the site for all potential contaminant sources, pathways and receptors shall be produced. Additionally, recommendations for any further investigation and/or mitigation measures should be included within the scheme.

(b) A site investigation (if necessary) has been designed using the information obtained from the desk study (if recommended by the Phase 1 desk top study). This should be submitted to, and approved in writing by the District Planning Authority prior to that investigation being carried out on the site. The investigation must enable a risk assessment to be undertaken relating to migrating landfill gas, ground and surface waters, both on and off the site which may be affected, and refinement of the Conceptual Model, and the development of a Method Statement detailing the remediation requirements.

(c) The site investigation has been undertaken in accordance with the details approved by the District Planning Authority.

(d) A Method Statement detailing any necessary remediation requirements, including measures to minimise the impact on ground and surface waters, has been submitted to and agreed by the District Planning Authority.

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13 Prior to the commencement of main site works, any approved remediation works agreed as part of condition 12 shall be completed in accordance with the approved method statement to the satisfaction of the District Planning Authority. Appropriate validation of the remedial scheme shall be submitted to the District Planning Authority for written approval.

14 In the event that contamination is found at any time when carrying out the approved development that was not previously identified, it must be reported in writing immediately to the Local Planning Authority. An investigation and risk assessment must be undertaken in accordance with the requirements of condition 12 and where remediation is necessary, a remediation scheme must be prepared in accordance with the requirements of condition 13, which is subject to the approval in writing of the Local Planning Authority.

Following completion of measures identified in the approved remediation scheme, a verification report must be prepared which is subject to the approval in writing of the Local Planning Authority in accordance with condition 13.

REASONS

1 To prevent the unnecessary accumulation of unimplemented permissions, to encourage early implementation and to enable the District Planning Authority to review the consent if a further application is made.

2 For the avoidance of doubt.

3 To ensure that the external materials are not detrimental to the building or character and appearance of the area

4 To ensure that the District Planning Authority can exercise proper control over the visual appearance of the area and in the interests of visual amenity.

5 In the interests of visual amenity.

6 To ensure that the development is provided with a satisfactory means of drainage as well as to reduce the risk of creating or exacerbating a flooding problem and to minimise the risk of pollution.

7 To ensure that adequate off-street parking provision is made to reduce the possibility of the proposed development leading to on-street parking problems locally; to enable vehicles to enter and leave the site in a forward direction; to ensure that vehicles entering and leaving the site may pass each other clear of the highway in a slow and controlled manner; in the interests of highway safety and in accordance with Paragraph 109 of the National Planning Policy Framework.

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8 To mitigate the impact of the development, in the general interests of highway safety and in accordance with Paragraph 109 of the National Planning Policy Framework.

9 In the interests of visual amenity and to protect the character and appearance of the countryside.

10 To avoid inappropriate uses in the countryside and to prevent an increase in traffic visiting the store.

11 In the interests of visual amenity and for the avoidance of doubt.

12 To ensure the site is suitable for its intended use and to protect the quality of the water.

13 To ensure the site is suitable for its intended use and to protect the quality of the water.

14 To ensure that risks from land contamination to the future users of the land and neighbouring land are minimised, together with those to controlled waters, property and ecological systems, and to ensure that the development can be carried out safely without unacceptable risks to workers, neighbours and other off-site receptors.

NOTES TO APPLICANT

1. This grant of planning permission does not authorise any development outside the application site including any foundation, footings, fascias, eaves, soffits, verges or guttering.

2. The development hereby permitted must be carried out in complete accordance with the approved plans. If changes are made to the approved scheme, whether INTERNALLY or EXTERNALLY, the development will not be in accordance with this grant of planning permission, it therefore would not benefit from planning permission and may result in enforcement action.

3. Planning Permission does not give you approval to work on the public highway. Therefore, prior to carrying out any works on the public highway you must ensure all necessary licences/permits/agreements are in place. For further information, please telephone 0116 3050001. It is an offence under Section 148 and Section 151 of the Highways Act 1980 to deposit mud on the public highway and therefore you should take every effort to prevent this occurring.

4. It is recommended that the developer undertakes any contamination related works in line with the guidance provided within 'CLR11 Model Procedures' and 'Guiding Principles for Land Contamination' which are available on the Environment Agency's website at the following address:

Date: 26 February 2019
18/1678/FUL

C Hanley

Proper Officer of the Council

Blaby District Council
the heart of Leicestershire

http://www.gov.uk/government/collections/land-contamination-technical-guidance

Where deep foundations are proposed it is recommended that the developer follows the guidance set out in the Environment Agency's document 'Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination', available at the following address:
http://webarchive.nationalarchives.gov.uk/20140328084622/http://cdn.environment-agency.gov.uk/scho0501bitt-e-e.pdf

5. The following conditions require further information to be submitted to and approved by the District Planning Authority, as part of a 'Discharge of Condition request': 4, 6, 8, 11, 12 and 13.

   There is a fee is payable in respect of each request to discharge conditions, not for individual conditions. I would suggest that if there are a number of conditions which need to be discharged, they are grouped into one request. You should keep the decision of the Council in respect of discharged conditions as a fee is now also paid for each request confirming that conditions have been discharged.

6. This planning permission does not grant consent for any advertisements. Advertisements may require separate consent under the Town and Country Planning (Control of Advertisements) Regulations 2007.

SUMMARY OF REASONS FOR RECOMMENDATION

1 The District Planning Authority has reached its decision taking into account the advice contained within paragraph 38 of the National Planning Policy Framework and, where possible, has worked proactively with the applicants to seek solutions to problems arising in relation to dealing with the planning application.

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18/1678/FUL

C Hanley
Proper Officer of the Council

Blaby District Council
the heart of Leicestershire

Shell UK Limited

Date: 26 February 2019
My Ref: Development Monitoring
Contact: Jonathan Hodge
Tel No: 0116 272 7528
Email: planning.enforcement@blaby.gov.uk

Dear Sir/Madam

Development Monitoring

The enclosed planning permission has been granted and is subject to all the planning conditions attached to and forming part of the planning permission. Failure to comply with these conditions will be a breach of planning control which may result in your development being unauthorised and subject to enforcement and/or legal action.

Therefore you should ensure that you notify the Planning Enforcement Section at least 4 weeks prior to commencement of the development to ensure that all pre-commencement conditions have been discharged and complied with. Please contact me using the details at the top of this communication.

It should also be noted that the site will be monitored to ensure:-

(a) compliance with all conditions attached to the planning permission and;
(b) the development is carried out in accordance with the approved plans.

I look forward to your co-operation with this matter however, if you require any further information or assistance please do not hesitate to contact me.

Yours faithfully

Jonathan Hodge

Jonathan Hodge
Planning Enforcement Compliance Officer

APPENDIX C

Arcadis Study Limitations

This appendix should be read before reliance is placed on any of the information, opinions, advice, recommendations or conclusions contained in this report.

1. This report has been prepared by Arcadis (UK) Limited ('Arcadis'), with all reasonable skill, care and diligence within the terms of the Appointment and with the resources and manpower agreed with Shell UK Oil Products Ltd (the 'Client'). Arcadis does not accept responsibility for any matters outside the agreed scope.
2. This report has been prepared for the sole benefit of the Client unless agreed otherwise in writing. The contents of this report may not be used or relied upon by any person other than this party without the express written consent and authorisation of Arcadis.
3. Unless stated otherwise, no consultations with authorities or funders or other interested third parties have been carried out. Arcadis is unable to give categorical assurance that the findings will be accepted by these third parties as such bodies may have unpublished, more stringent objectives. Further work may be required by these parties.
4. All work carried out in preparing this report has used, and is based on, Arcadis' professional knowledge and understanding of current relevant legislation. Changes in legislation or regulatory guidance may cause the opinion or advice contained in this report to become inappropriate or incorrect. In giving opinions and advice, pending changes in legislation, of which Arcadis is aware, have been considered. Following delivery of the report, Arcadis has no obligation to advise the Client or any other party of such changes or their repercussions.
5. This report is only valid when used in its entirety. Any information or advice included in the report should not be relied upon until considered in the context of the whole report.
6. Whilst this report and the opinions made are correct to the best of Arcadis' belief, Arcadis cannot guarantee the accuracy or completeness of any information provided by third parties. provided by third parties. Arcadis has taken reasonable steps to ensure that the information sources used for this assessment provided accurate information and has therefore assumed this to be the case.
7. This report has been prepared based on the information reasonably available during the project programme. All information relevant to the scope may not have been received.
8. This report refers, within the limitations stated, to the condition of the Site at the time of the inspection. No warranty is given as to the possibility of changes in the condition of the Site since the time of the investigation.
9. The content of this report represents the professional opinion of experienced environmental consultants. Arcadis does not provide specialist legal or other professional advice. The advice of other professionals may be required.
10. Where intrusive investigation techniques have been employed, they have been designed to provide a reasonable level of assurance on the conditions. Given the discrete nature of sampling, no investigation technique is capable of identifying all conditions present in all areas. In some cases the investigation is further limited by Site operations, underground obstructions and above ground structures. Unless otherwise stated, areas beyond the boundary of the Site have not been investigated.
11. If below ground intrusive investigations have been conducted as part of the scope, safe location of exploratory holes has been carried out with reference to the Arcadis ground disturbances procedure. No guarantee can be given that all services have been identified. Additional services, structures or other below ground obstructions, not indicated on the drawing, may be present on Site.
12. Unless otherwise stated the report provides no comment on the nature of building materials, operational integrity of the facility or on any regulatory compliance issues.
13. Unless otherwise stated, an inspection of the Site has not been undertaken and there may be conditions present at the Site which have not been identified within the scope of this assessment.
14. Unless otherwise stated, samples from the Site (soil, groundwater, building fabric or other samples) have not been obtained.
15. Arcadis has relied upon the accuracy of documents, oral information and other material and information provided by the Client and others, and Arcadis assumes no liability for the accuracy of such data, although in the event of apparent conflicts in information, Arcadis would highlight this and seek to resolve.
16. Unless otherwise stated, the scope of works has not included an environmental compliance review, health and safety compliance review, hazardous building materials assessment, interviews or contacting Local Authority, requests for information to the petroleum officer, sampling or analyses of soil, ground water, surface water, air or hazardous building materials or a chain of title review.
17. Unless otherwise stated, this assessment has considered the ongoing use of the Site and has not been prepared for the purposes of redevelopment which may act as a trigger for Site investigation and remediation works not needed for ongoing use.

APPENDIX D

Landmark Envirocheck® Report

Geology 1:10,000 Maps Legends

Artificial Ground and Landslip

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

Superficial Geology

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	ALV	Alluvium	Sand with Clay And Gravel	Flandrian - Pleistocene
	ALV	Alluvium	Clay, Silt, Sand and Gravel	Flandrian - Pleistocene
	THT	THRUSSINGTON MEMBER	Diamicton	Anglian - Flandrian
	ODT	Oadby Member	Diamicton	Anglian - Flandrian
	RTD2	River Terrace Deposits, 2	Sand and Gravel	Quaternary - Ryazanian
	WOC	Wolston Clay	Clay and Silt	Quaternary - Ryazanian
	GFDU	Glaciofluvial Deposits	Sand and Gravel	Quaternary - Ryazanian
	TILL	Till	Diamicton	Quaternary - Ryazanian
	RTD1	River Terrace Deposits, 1	Sand and Gravel	Quaternary - Ryazanian

Bedrock and Faults

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	EDW	Edwalton Member	Mudstone	Carnian - Carnian
	MMG	Mercia Mudstone Group	Mudstone	Rhaetian - Early Triassic
	UPO	Unnamed Pluton, Ordovician	Quartz-Diorite	Ordovician - Ordovician

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Geology 1:10,000 Maps

This report contains geological map extracts taken from the BGS Digital Geological map of Great Britain at 1:10,000 scale and is designed for users carrying out preliminary site assessments who require geological maps for the area around a site. This mapping may be more up to date than previously published paper maps.

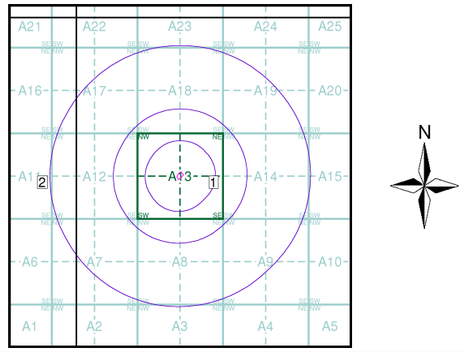
The various geological layers - artificial and landslip deposits, superficial geology and solid (bedrock) geology are displayed in separate maps, but superimposed on the final 'Combined Surface Geology' map. All map legends feature on this page.

Please Note: Not all of the layers have complete nationwide coverage, so availability of data for relevant map sheets is indicated below.

Geology 1:10,000 Maps Coverage

Map ID:		**Map ID:**	
Map Name:	SP59NW	**Map Name:**	SP49NE
Map Date:	2006	**Map Date:**	1983
Bedrock Geology:	Available	**Bedrock Geology:**	Available
Superficial Geology:	Available	**Superficial Geology:**	Available
Artificial Geology:	Available	**Artificial Geology:**	Available
Faults:	Available	**Faults:**	Available
Landslip:	Not Available	**Landslip:**	Not Available
Rock Segments:	Not Available	**Rock Segments:**	Not Available
Map ID:	1	**Map ID:**	2
Map Name:	SP59SW	**Map Name:**	SP49SE
Map Date:	1992	**Map Date:**	1992
Bedrock Geology:	Available	**Bedrock Geology:**	Available
Superficial Geology:	Available	**Superficial Geology:**	Available
Artificial Geology:	Available	**Artificial Geology:**	Available
Faults:	Not Supplied	**Faults:**	Not Supplied
Landslip:	Not Available	**Landslip:**	Not Available
Rock Segments:	Not Supplied	**Rock Segments:**	Not Supplied

Geology 1:10,000 Maps - Slice A



Order Details

Order Number:	296131742_1_1
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Slice:	A
Site Area (Ha):	0.17
Search Buffer (m):	1000

Site Details

Site at 450820, 293750

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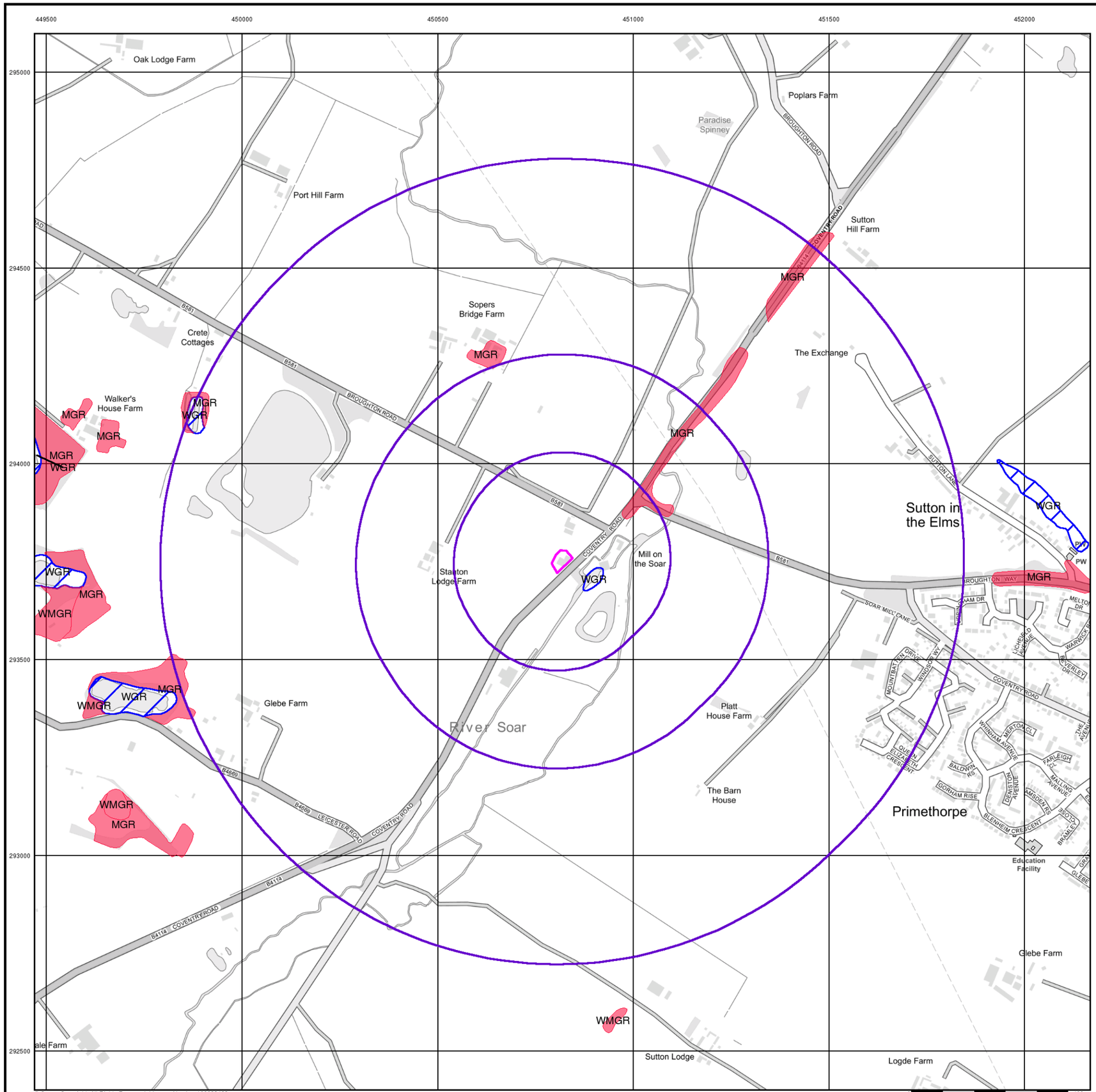
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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Artificial Ground and Landslip

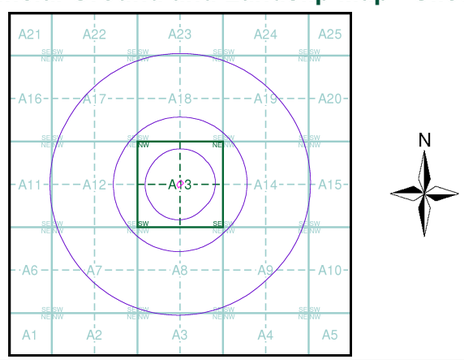
Artificial ground is a term used by BGS for those areas where the ground surface has been significantly modified by human activity. Information about previously developed ground is especially important, as it is often associated with potentially contaminated material, unpredictable engineering conditions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



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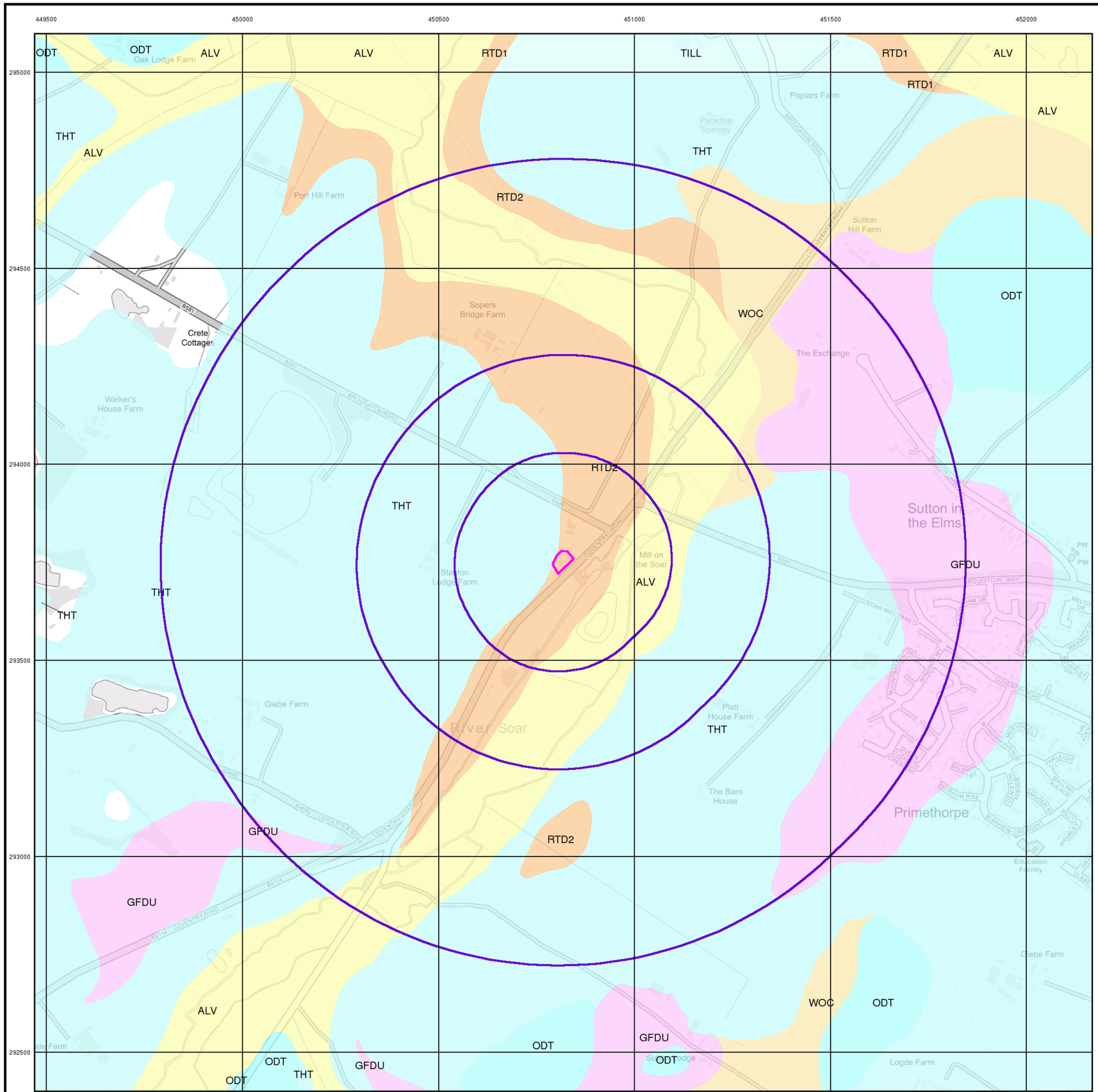

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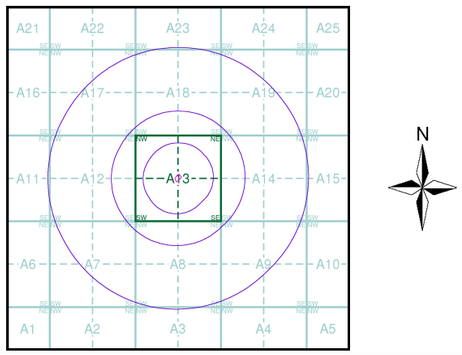
Superficial Geology

BGS 1:10,000 Superficial Deposits are the youngest geological deposits formed during the most recent period of geological time, 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



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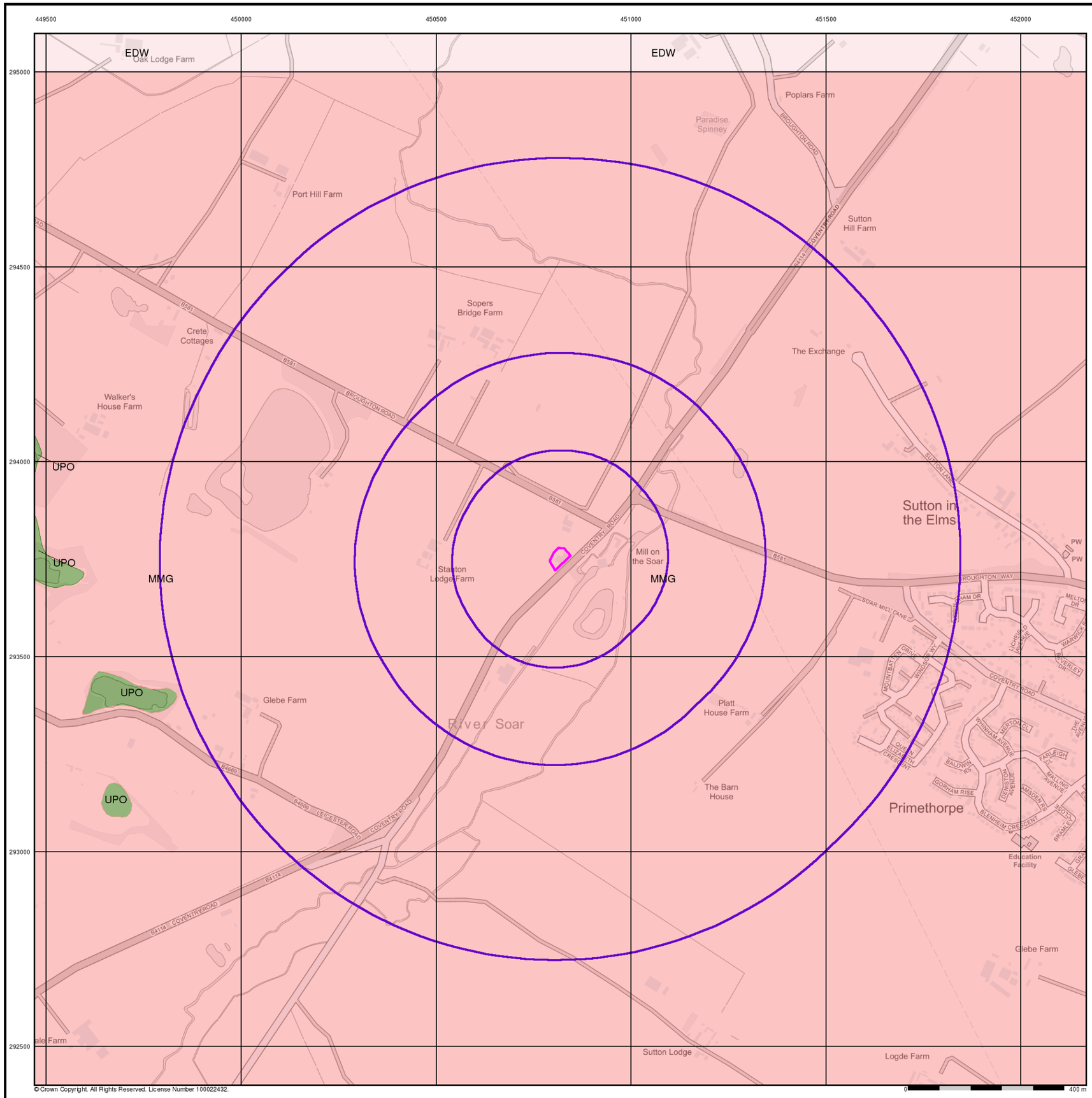

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Bedrock and Faults

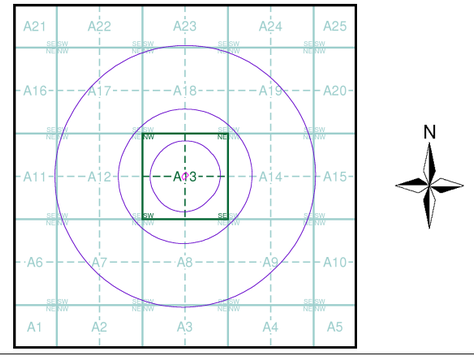
Bedrock geology is a term used for the main mass of rocks forming the Earth and are present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

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 and thin beds mapped as lines such as coal seams and mineral veins. These are not restricted by age and could relate to features of any of the 1:10,000 geology datasets.

Bedrock and Faults Map - Slice A



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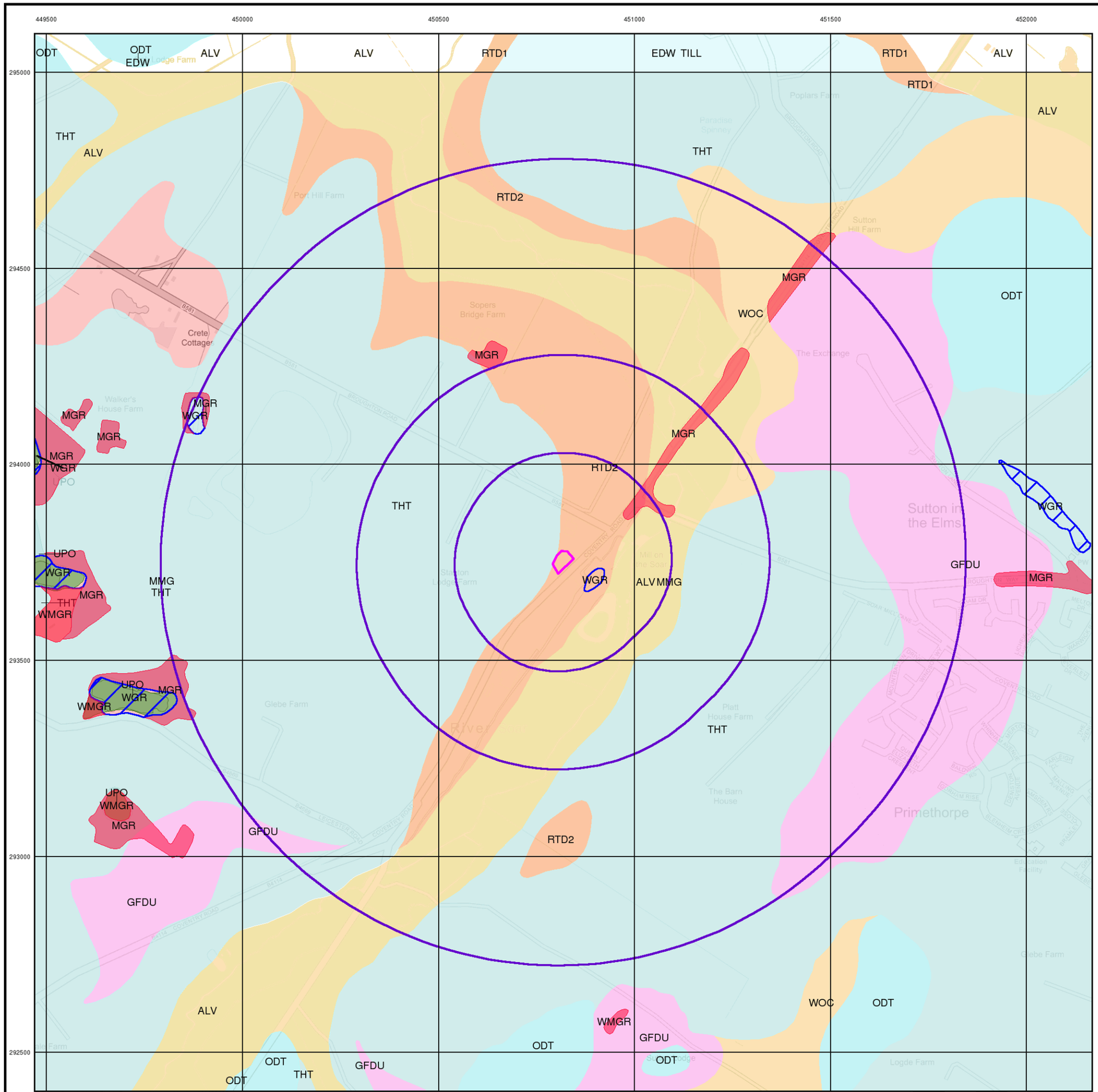

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Combined Surface Geology

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.

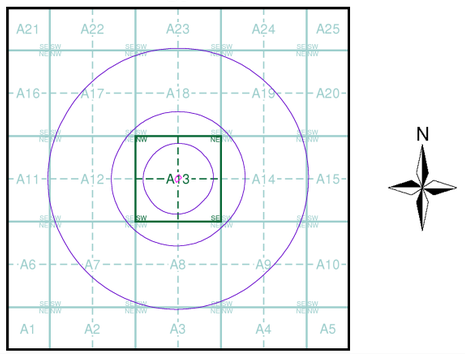
Additional Information

More information on 1:10,000 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



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Site Details

Site at 450820, 293750

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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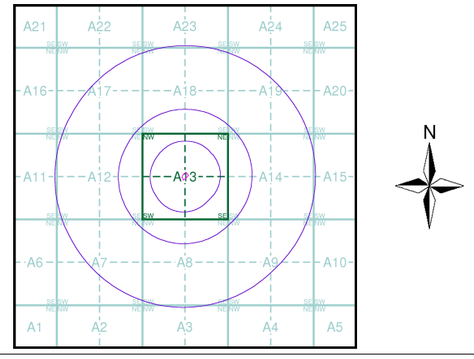
Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Leicestershire	1:10,560	1886	2
Leicestershire	1:10,560	1904	3
Ordnance Survey Plan	1:10,000	1955	4
Ordnance Survey Plan	1:10,000	1967 - 1968	5
Ordnance Survey Plan	1:10,000	1973 - 1979	6
Ordnance Survey Plan	1:10,000	1980 - 1982	7
Ordnance Survey Plan	1:10,000	1993	8
10K Raster Mapping	1:10,000	2000	9
10K Raster Mapping	1:10,000	2006	10
VectorMap Local	1:10,000	2021	11

Historical Map - Slice A



Order Details

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Customer Ref: 14063685
National Grid Reference: 450820, 293750
Slice: A
Site Area (Ha): 0.17
Search Buffer (m): 1000

Site Details

Site at 450820, 293750

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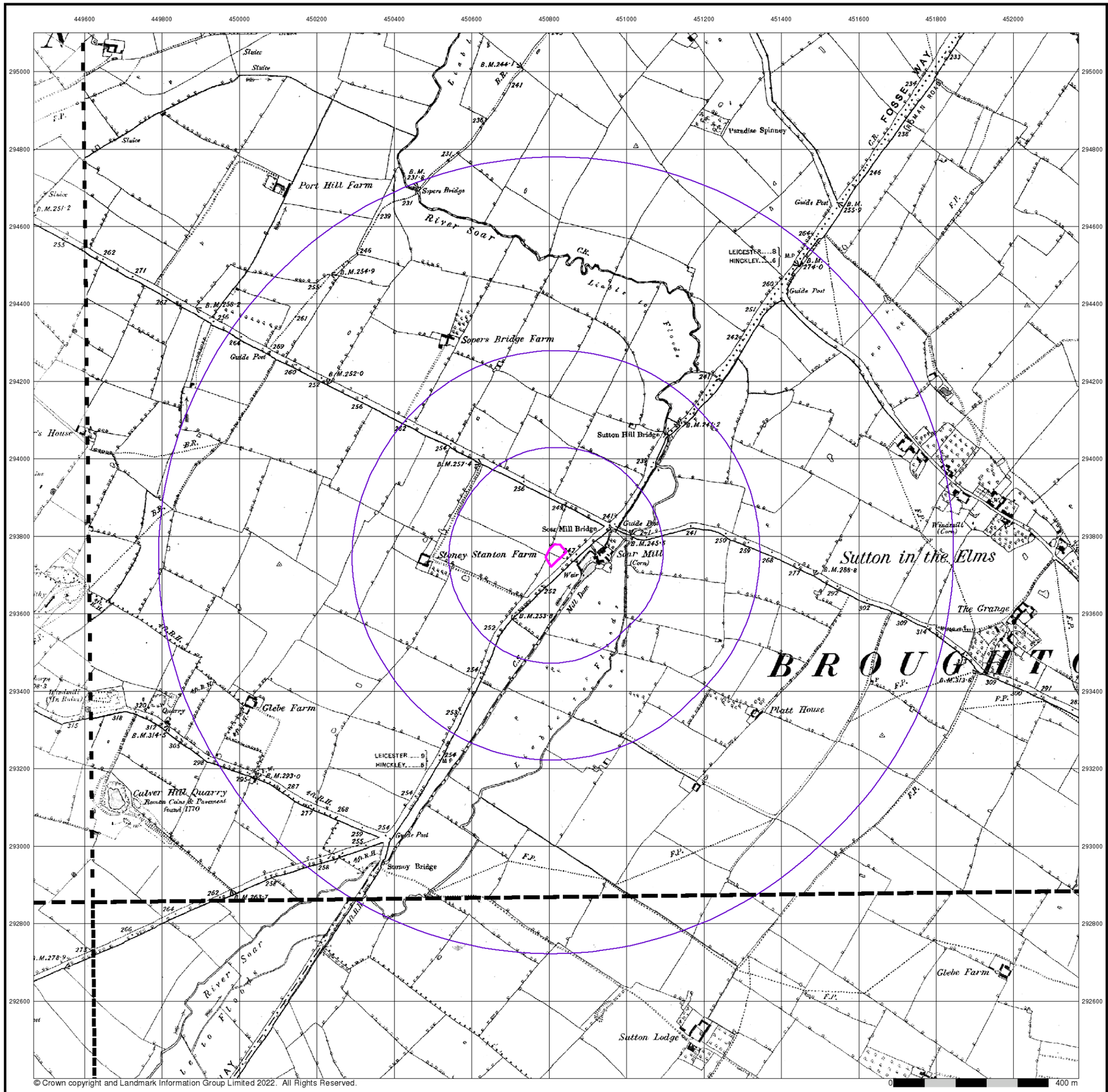
Web: www.envirocheck.co.uk



ARCADIS Design & Consultancy for natural and built assets

Leicestershire

Published 1886

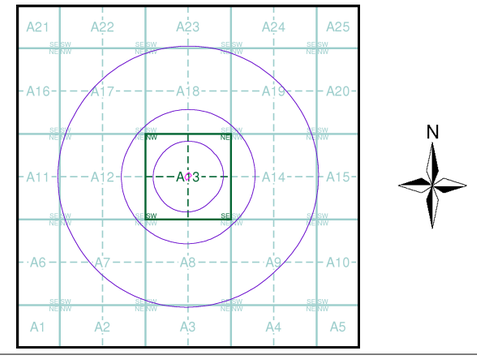
Source map scale - 1:10,560

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)

043NW 1886 1:10,560	043NE 1886 1:10,560
043SW 1886 1:10,560	043SE 1886 1:10,560

Historical Map - Slice A



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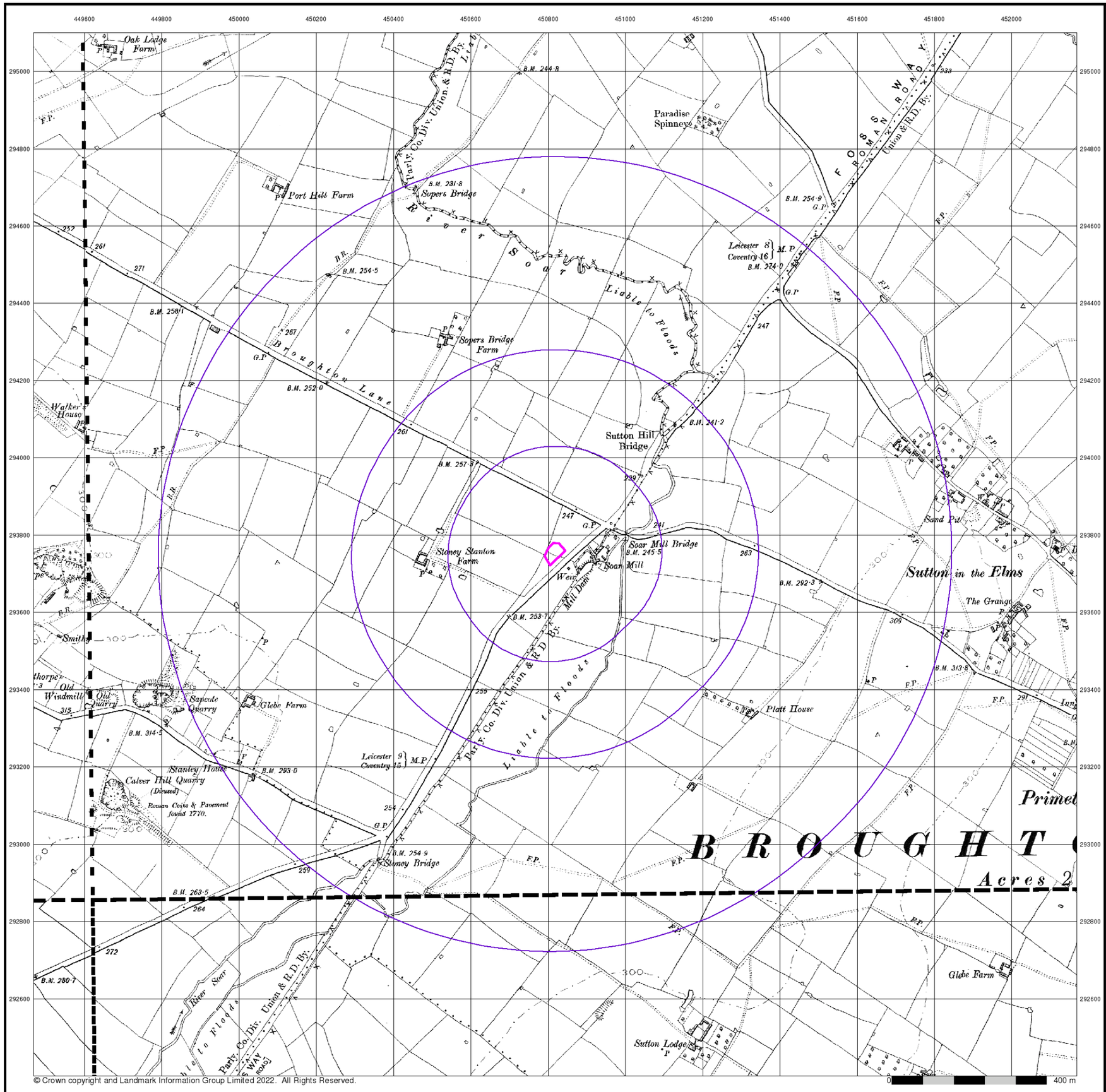

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Leicestershire

Published 1904

Source map scale - 1:10,560

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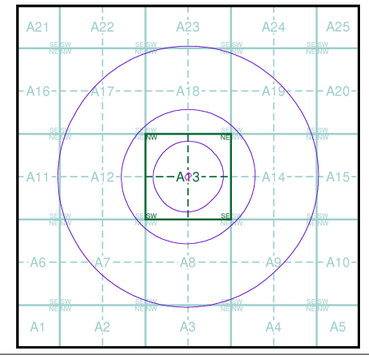
Map Name(s) and Date(s)

043NW 1904 1:10,560	043NE 1904 1:10,560
043SW 1904 1:10,560	043SE 1904 1:10,560

Historical Map - Slice A



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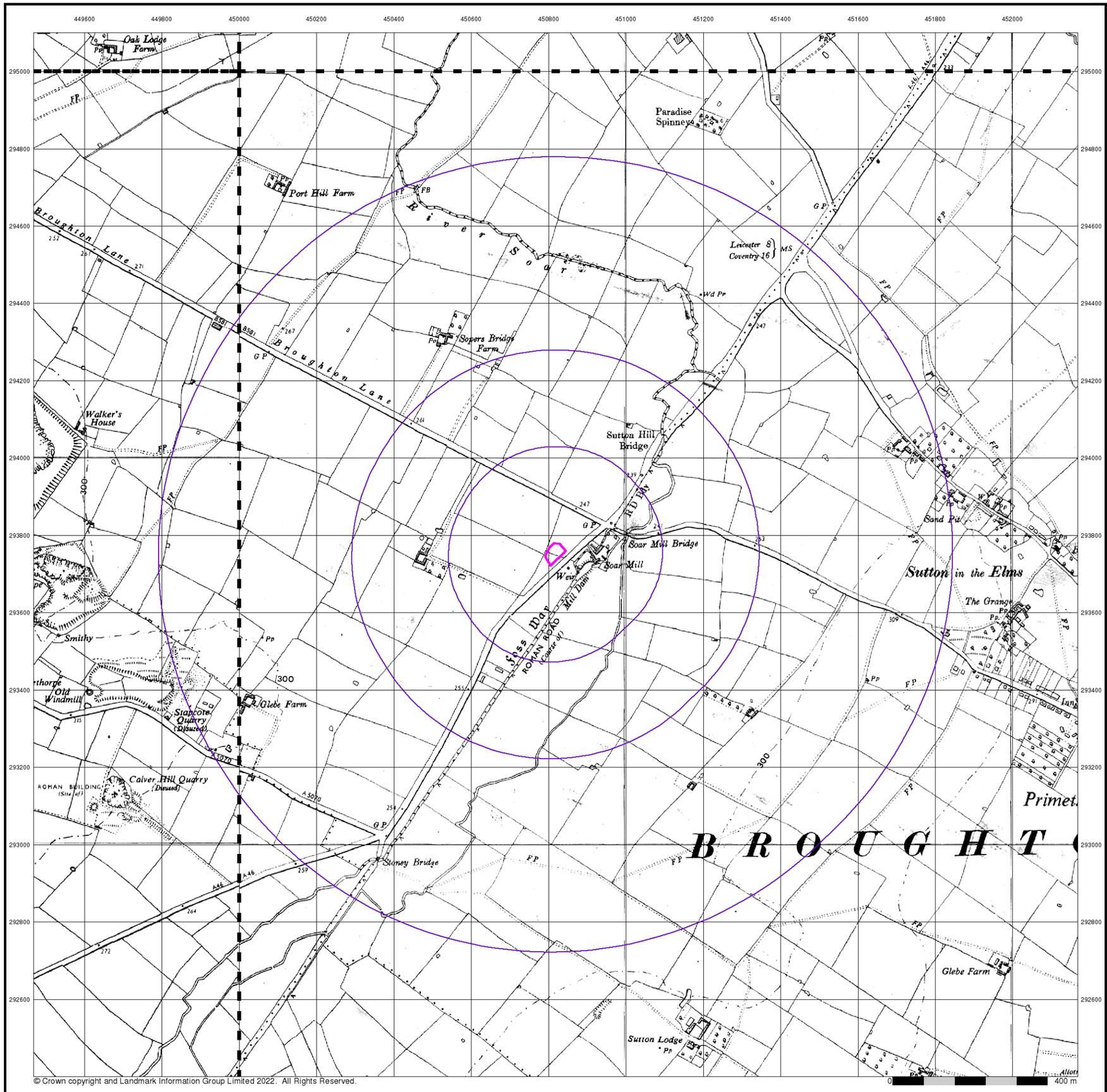

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Ordnance Survey Plan

Published 1955

Source map scale - 1:10,000

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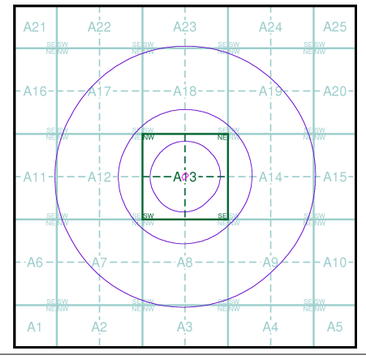
Map Name(s) and Date(s)

SP49NE 1955 1:10,560	SP59NW 1955 1:10,560
SP49SE 1955 1:10,560	SP59SW 1955 1:10,560

Historical Map - Slice A



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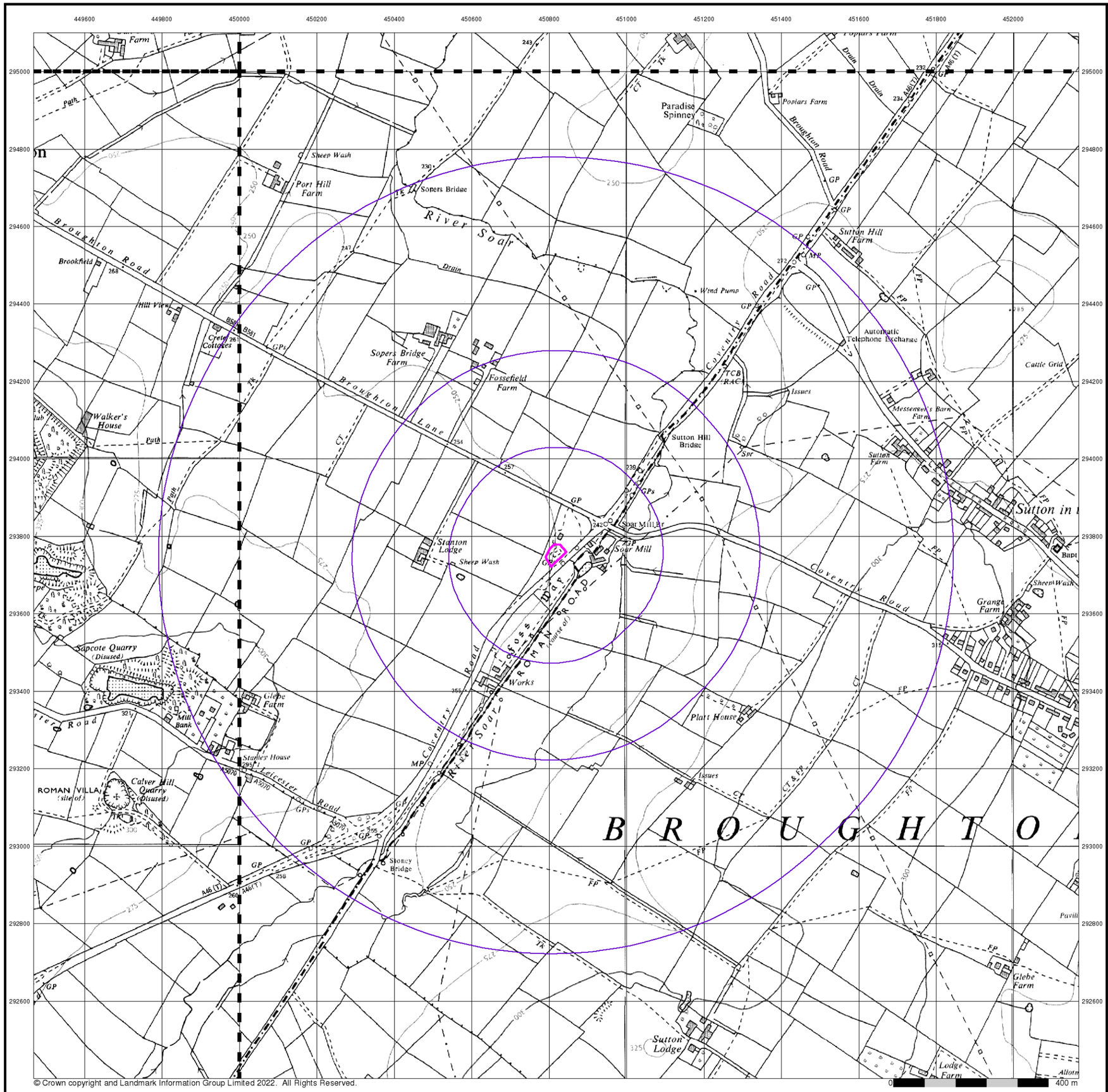

ARCADIS Design & Consultancy for natural and built assets

Ordnance Survey Plan

Published 1967 - 1968

Source map scale - 1:10,000

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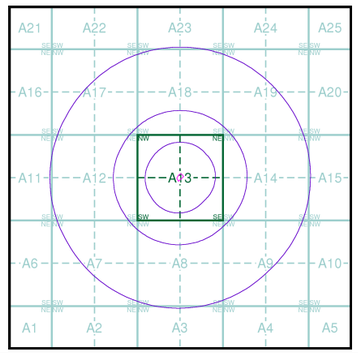
Map Name(s) and Date(s)

SP49NE 1968 1:10,560	SP59NW 1967 1:10,560
SP49SE 1968 1:10,560	SP59SW 1967 1:10,560

Historical Map - Slice A



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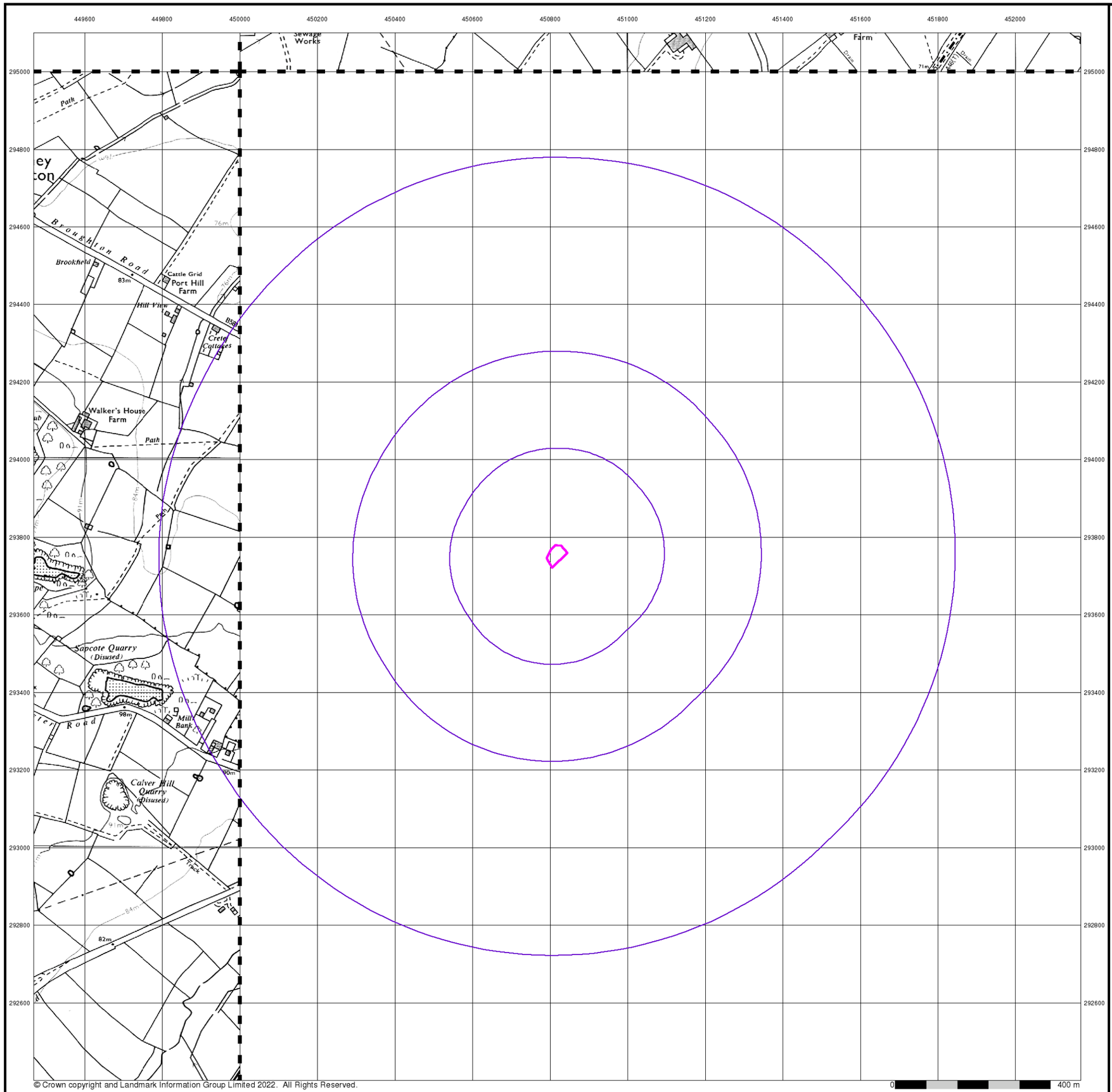
Customer Ref:	14063685
National Grid Reference:	450820, 293750
Slice:	A
Site Area (Ha):	0.17
Search Buffer (m):	1000

Site Details

Site at 450820, 293750

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



ARCADIS Design & Consultancy for natural and built assets

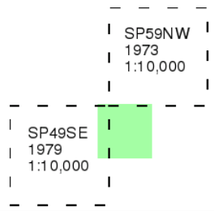
Ordnance Survey Plan

Published 1973 - 1979

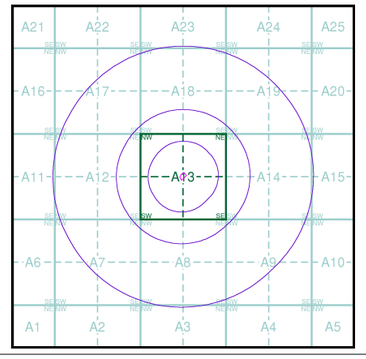
Source map scale - 1:10,000

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

Map Name(s) and Date(s)



Historical Map - Slice A



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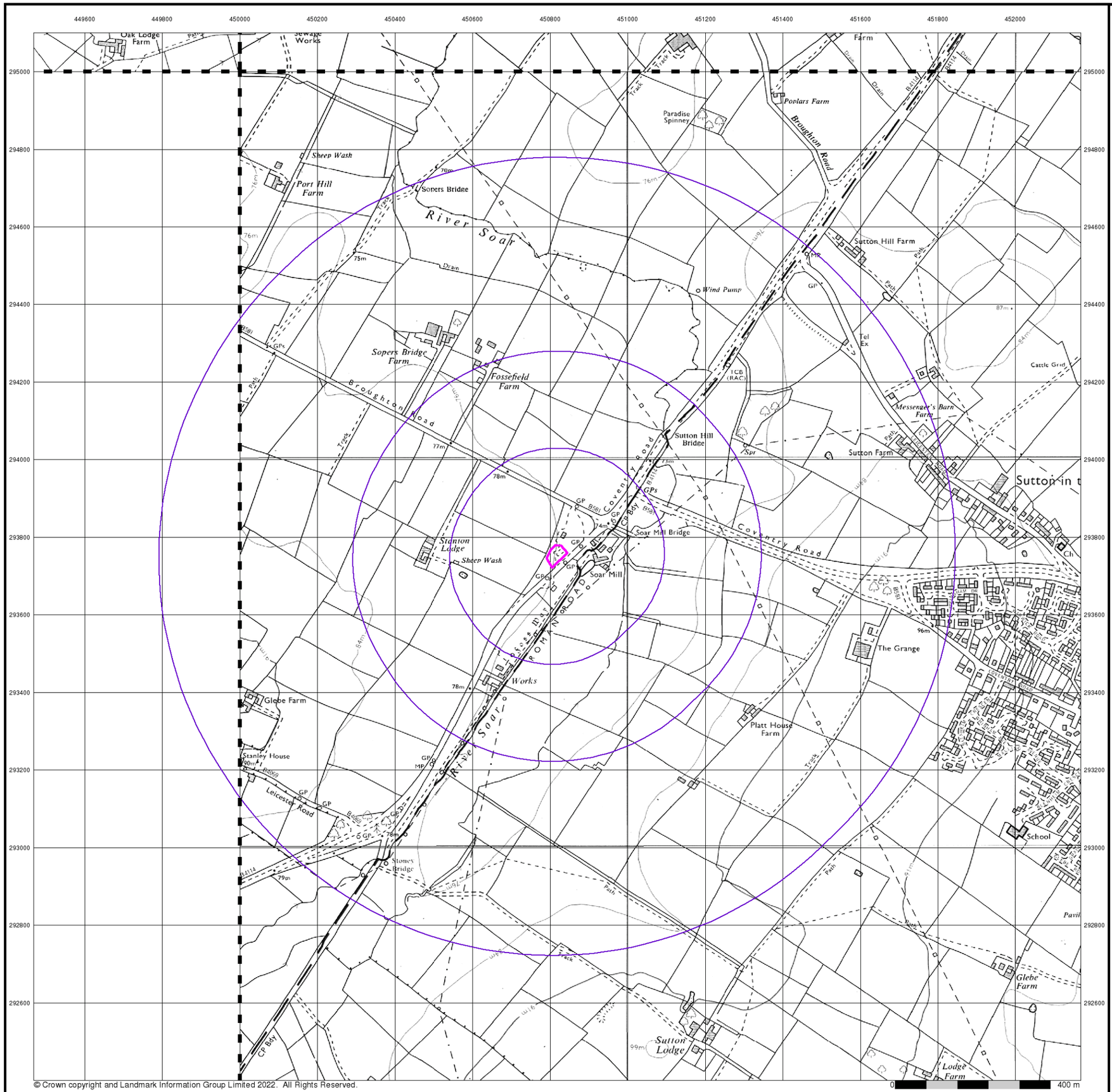


ARCADIS Design & Consultancy for natural and built assets

Ordnance Survey Plan

Published 1980 - 1982

Source map scale - 1:10,000

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

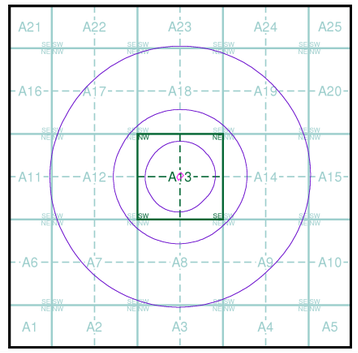
Map Name(s) and Date(s)

SP49NE 1980 1:10,000

SP59NW 1982 1:10,000

SP59SW 1980 1:10,000

Historical Map - Slice A



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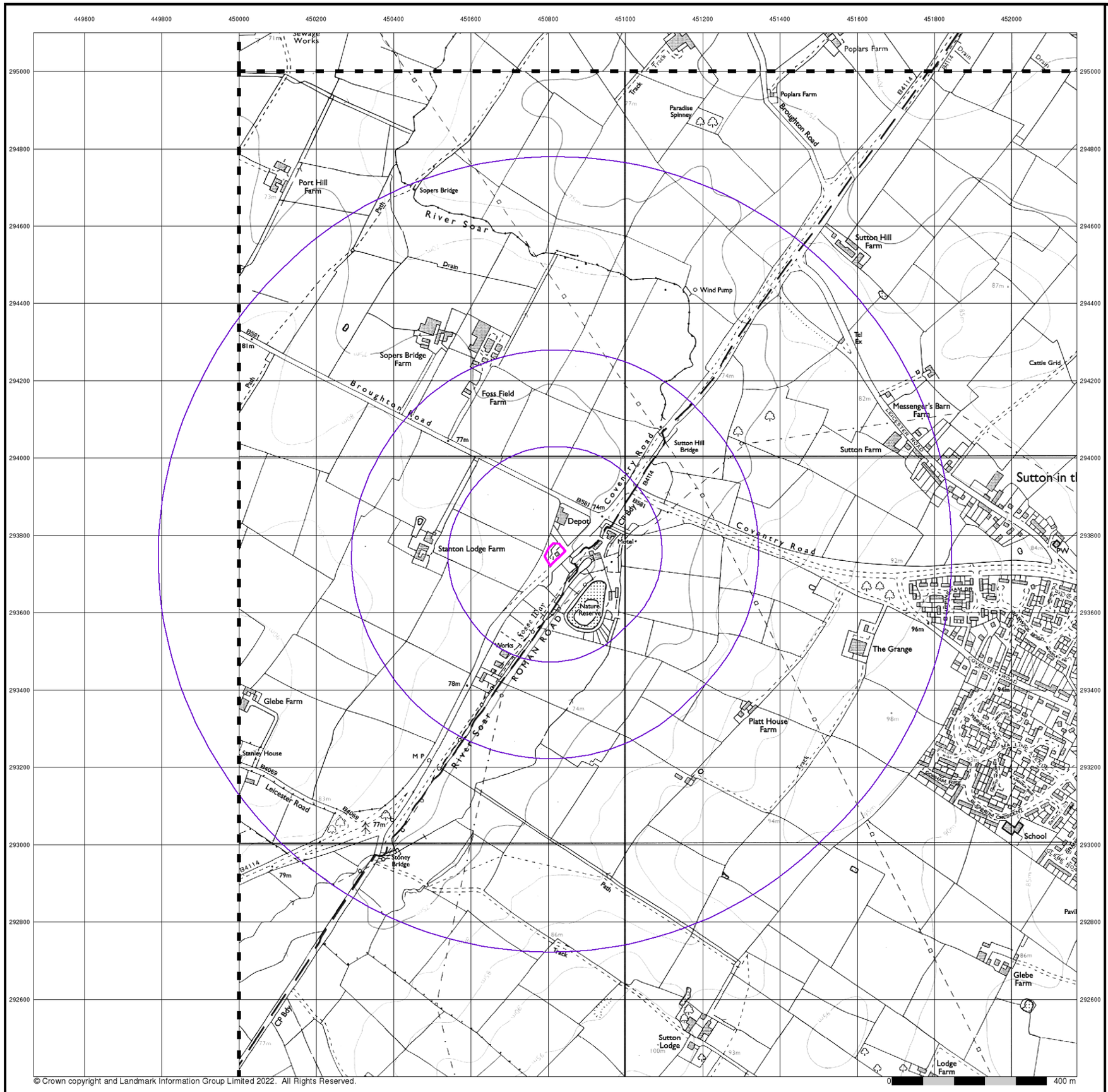

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Ordnance Survey Plan

Published 1993

Source map scale - 1:10,000

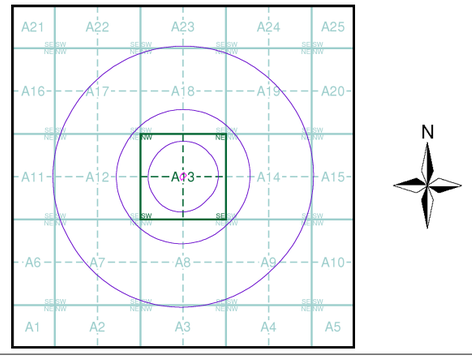
The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some 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)

SP59NW
1993
1:10,000

SP59SW
1993
1:10,000

Historical Map - Slice A



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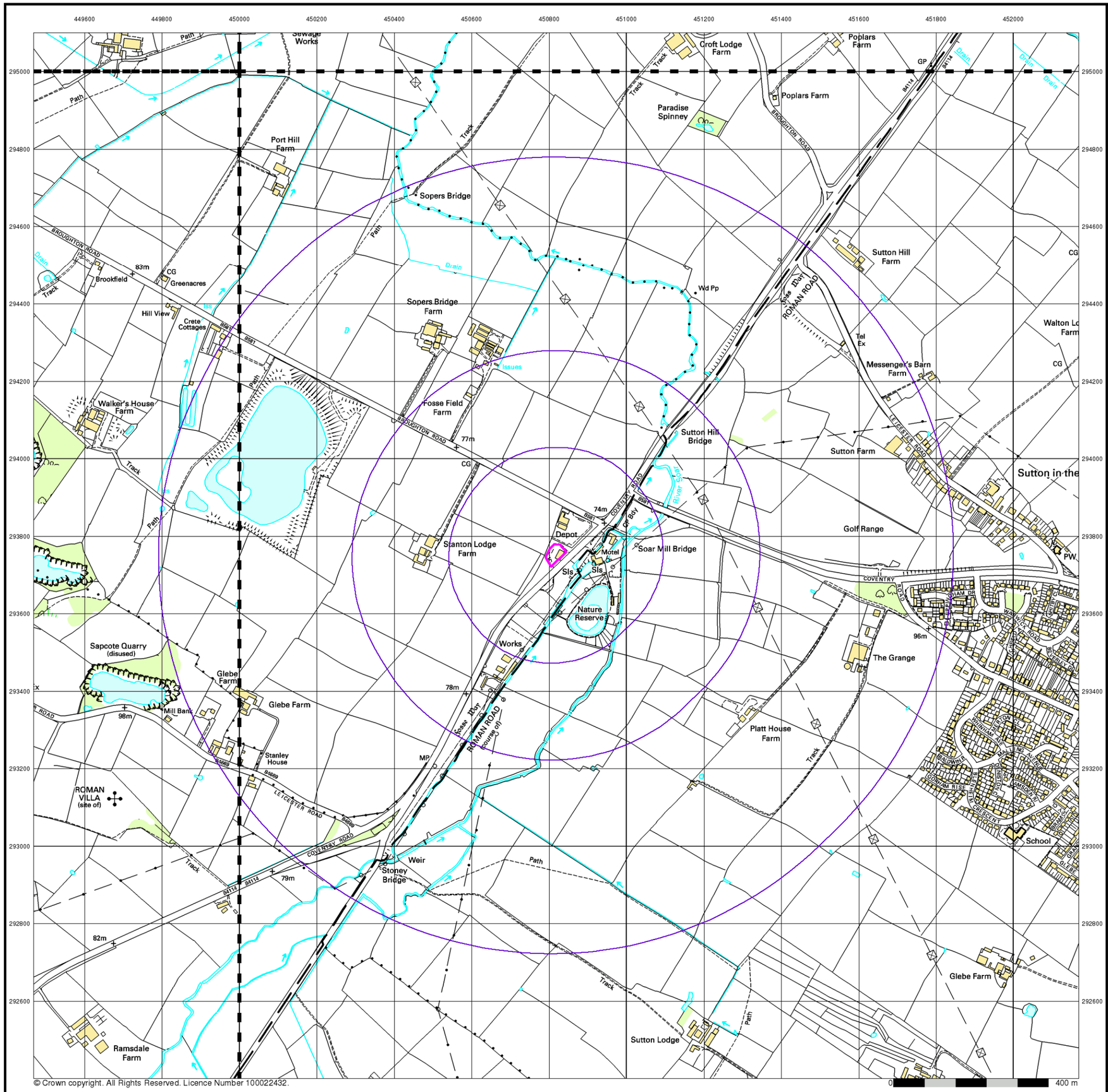


ARCADIS Design & Consultancy for natural and built assets

10k Raster Mapping

Published 2000

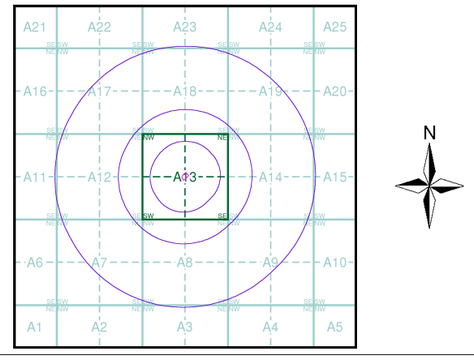
Source map scale - 1:10,000

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

Map Name(s) and Date(s)

SP49NE 2000 1:10,000	SP59NW 2000 1:10,000
SP49SE 2000 1:10,000	SP59SW 2000 1:10,000

Historical Map - Slice A



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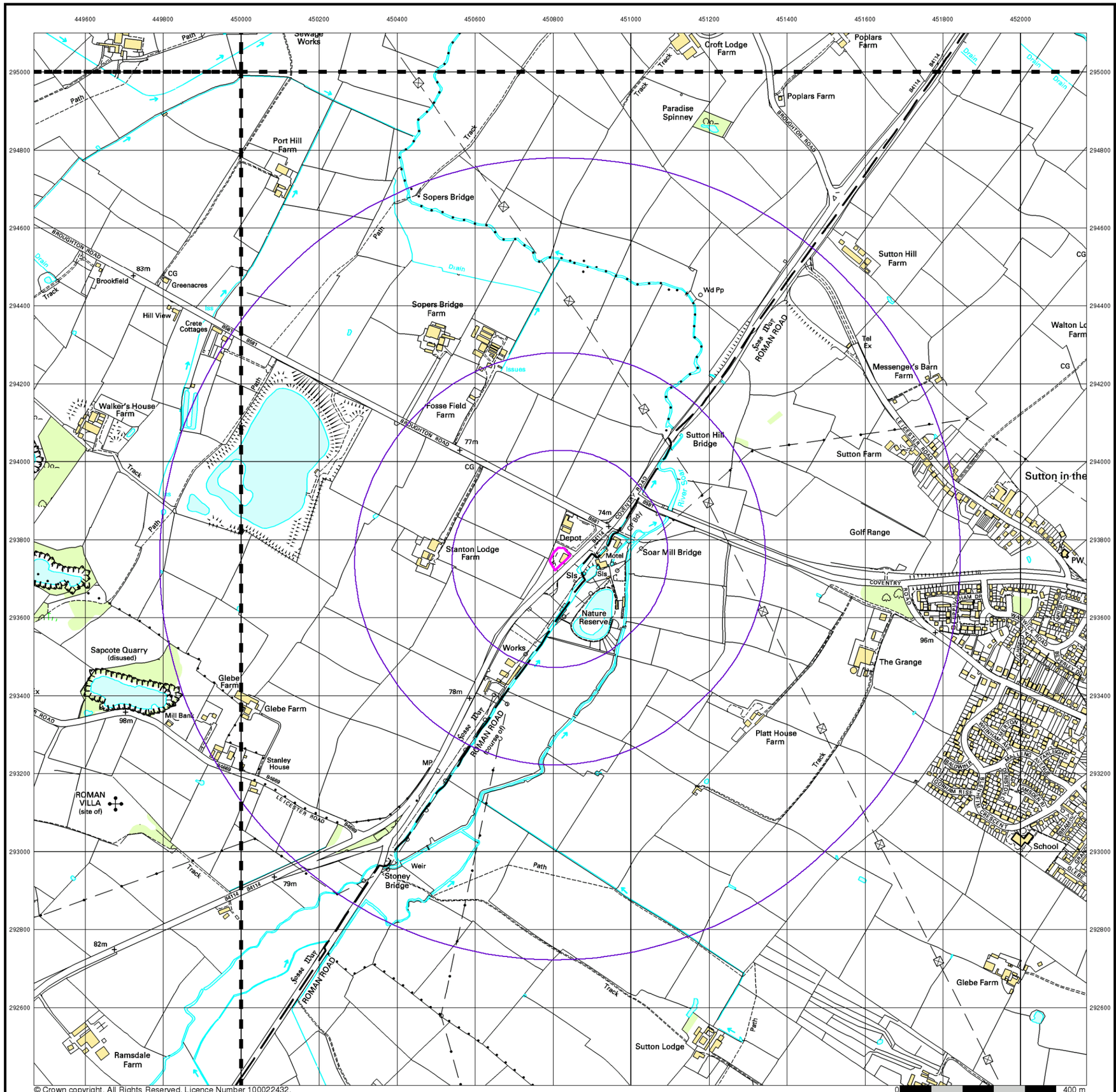


ARCADIS Design & Consultancy for natural and built assets

10k Raster Mapping

Published 2006

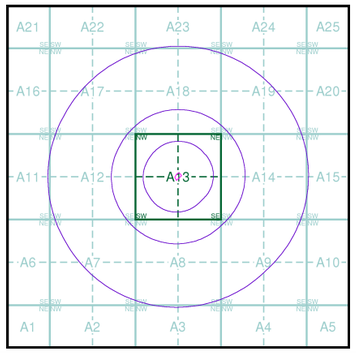
Source map scale - 1:10,000

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)

SP49NE 2006 1:10,000	SP59NW 2006 1:10,000
SP49SE 2006 1:10,000	SP59SW 2006 1:10,000

Historical Map - Slice A



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