Intégrale
Understanding Ground Conditions

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Proposed Barns Conversion
Aston Hall Barns
Aston Hall
Aston Munslow
Shropshire
SY7 9ER

GEOTECHNICAL AND PHASE 11 CONTAMINATION REPORT

REPORT NO. 21035, September 2021

Geotechnical and Phase II Contamination Report
Proposed Barns Conversion
Aston Hall Barns
Aston Hall
Aston Munslow
Shropshire
SY7 9ER

Client: Mr. & Mrs. D Cleevely

Intégrale Report No. 21035, September 2021

		Signature/Date
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CONFIDENTIALITY STATEMENT

This report is addressed to and may be relied upon by the following:

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EXECUTIVE SUMMARY
Geotechnical and Phase II Contamination Report
21035 – Aston Hall Barns, Aston Munslow

Mr. & Mrs. Cleevely are proposing to repair a series of single and two-storey agricultural barns, and to convert one area of the barns to provide ancillary residential and recreational facilities, together with constructing a new pool extension and link building, plus associated works.

Geological mapping reports the site underlain by the Upper Ludlow Shales of Silurian age.

Old maps show the site has a long history of agricultural/residential land use and the current buildings layout since the early 2000s. The existing barns and manor house pre-date the earliest OS mapping.

Intrusive investigation has established a veneer of Topsoil, a variable thickness mantle (typically 0.5-1m) of predominantly granular existing Made Ground and a discontinuous stratum of variably weathered medium dense/firm in-situ soils, with a shallow rockhead of between 0.2m and 1.2m BEGL. The groundwater table appears to be below 2-3m depth.

The substructure for the existing barns typically comprises the wall line taken down to the siltstone bedrock, with no apparent footings. The engineer will need to consider whether underpinning is required in critical areas.

The variably weathered firm or medium dense Upper Ludlow Shales are capable of supporting (new) spread foundations, with design bearing pressures of 150kN/m^2 for 1m wide foundations at 0.5 to 1m depth, increasing to 300kN/m^2 where very weak siltstone bedrock is present. A piled foundation is another option. New ground slabs can be ground bearing onto natural soils (assuming a 'normal' formation), but suspended slabs should be adopted onto the non-engineered Fill. Design CBR values of at least 5% onto the medium dense Weathered Upper Ludlow Shales are feasible, and perhaps a regulating layer only is required onto the very weak bedrock. Effective design frictions (Ø') of 30° and 35° are appropriate for the variably weathered Upper Ludlow Shales and very weak siltstone bedrock respectively.

Contamination assessment concludes that:

- Removal of topsoil locally and replacement with either clean, imported material or new hard surfacings dependent on the landscaping proposals and future site levels.
- Design Sulphate Class of DS-1 and ACEC Class of AC-1 are recommended for buried concrete.
- New water pipes require protection.
- Basic radon protection measures are required.
- Surplus spoil should be removed to a suitably licenced tip.

1.0 INTRODUCTION

Mr. & Mrs. Cleevely are proposing to repair a series of single and two-storey agricultural barns, and to convert one area of the barns to provide ancillary residential and recreational facilities, together with constructing a new, in-cutting pool building and associated link building to the south of the existing barns. The redevelopment also includes new access/parking and reconfiguration of existing gardens, in addition to new managed soft landscaping. Their consulting engineers are Mann Williams Limited (MWL). The project architects are Giles Quarme Architects Limited (GQAL). The project MEP consultants are Aplus Consultants Limited (ACL).

The project is currently at a pre-application stage. It is understood that a planning application will be submitted to Shropshire Council in due course.

For the purposes of this report, the site and study area are used interchangeably to refer to the area of the site investigation and proposed redevelopment. The client's landholding pertains to the wider area under ownership of the client. These are indicated by the blue and red boundaries on Figure 1.

Integrale Limited (*Intégrale*) are commissioned to undertake a ground investigation and complete a Geotechnical and Phase II Contamination Report. The investigation scope was determined by the consulting engineer in liaison with Intégrale. Contaminated land assessment has been requested in anticipation that such planning conditions will be imposed by Shropshire Council.

This interpretative report summarises desk studies, describes the scope of fieldworks, laboratory testing and monitoring, discusses the ground and groundwater conditions encountered, and gives advice on foundations and other geotechnical aspects.

The results of contamination analyses and generic quantitative risk assessment are reported and used to establish a conceptual model of pollutant linkages. Potential implications for the development are discussed and recommendations for remedial design measures are given.

2.0 THE SITE

2.1 Location and Description

As shown in Appendix A, the study site is located off the B4369, approximately 120m southeast of Aston Munslow village centre and c.8km northeast of Craven Arms. It has an approximate central Ordnance Survey Grid Reference of E350921, N286572 and postcode SY7 9ER.

Notes describing the site were prepared during the site visit and are included as Appendix B, together with typical photographs. The main features and pertinent aspects on the site and immediately adjacent land are summarised below, and annotated on Figure 1:

Current Use	Residential.
Site Area & Plan Shape	Study Area: c.1.5 Hectares, irregular in plan. Client's Landholding: c.5.5 Hectares, irregular in plan.
Maximum Dimensions	Study Area: c.130m NE-SW by c.170m NW-SE.
Ground Slopes & Topography	Fall from c.159mAOD in W to c.155.5m in E, across barns area. Continued fall to c.152mAOD southeastwards across existing garden & manor house areas. Google Earth indicates the SE boundary of the study area is c.148mAOD with the extreme SE of the client's landholding at c.135mAOD.
Buildings & Condition	Barns: Mix of one or two storeys of traditional masonry construction with dual aspect pitched slate roofs, locally with internal mezzanine floor. Some elements of timber cladding. Pronounced lean on external wall of the western limb of the barns with structural wall ties/bolts visible in E elevation & internal steelwork supports. Northern limb of the barns features stone columns to support the roof & open southern elevation. Coach House: Two storeys of traditional masonry construction with dual aspect pitched slate roof & single storey structures appended to N. (Does not form part of proposals. Manor House: One to three storeys of traditional masonry construction with mixture of flat & pitched slate roofing. Basement present, unclear if same size as building footprint.
Surfacings & Condition	Macadam access road becomes gravel-surfaced SE of manor house, before passing to SW & up to E elevation of barns. Locally gravel surfacing within barns' courtyard. Stone paving slabs are present locally around the periphery of the manor house. Some slabs are slightly uneven, but generally in reasonable condition.
Vegetation & Trees	Mixture of semi-mature to mature deciduous 'orchard' trees (e.g. cherry & apple) in garden/orchard areas with peripheral evergreen trees for screening (c.15+m tall). Lawn within garden areas & in barns' courtyard, no signs of dieback.
Water Courses	None within the study area, although 'rises' are mapped c.10-15m NE. The subsequent stream follows the NE boundary of the client's landholding, flowing SE.
Site Boundary Features	N/NE – Private access road & soft landscaping (& rough grazing within client's landholding). SE – Rough grazing/farmland within client's landholding. SW – Rough grazing/farmland. W/NW – Private residential properties, private gardens & farmland.
Potential Contamination Issues	Historical & ongoing agricultural usage (fields to E are rented to local farmers for keeping livestock).
Potential Geotechnical Issues	Expense & difficulty of rock excavation to form pool building cut & pool itself. Stability of existing barn buildings which are on shallow, possibly inadequate footings locally & may require underpinning. Structural distress/distortion of barn walls.
Other Features	The existing Manor House is a Grade II* Listed property.

2.2 Published Geology

2.2.1 British Geological Survey (BGS) Mapping

BGS geological maps indicate the following strata beneath and adjacent to the site:

Map/Scale	Sheet 166 (Church Stretton) Solid at 1:50,000, published 1980, & Drift at 1:63,360, published 1967.
BGS Online Viewer	Accessed 30th June 2021.
Artificial Ground	None mapped.
Superficial Deposits	None mapped.
Solid Geology	Siltstone of the Upper Ludlow Shales Group of Silurian Age across entire site and overlain by younger Downton Castle Sandstone Formation in the SE of client's landholding.
Geological Features	Local dip angle of 8-10° down to the SE.

The BGS type description for the above are as follows:

Upper Ludlow Shales: *"Olive-grey calcareous siltstones, silty mudstones and mudstones."*

Downton Castle Sandstone Formation: *"Ludlow Bone Bed Member locally at base; Platyschisma Shale Member (to 2m) above; mainly yellow, fine-grained, micaceous, well-sorted cross-bedded sandstone (Sandstone Member), with siltstone and olive green mudstone."*

2.2.2 BGS Previous Investigation Records

There are no relevant previous investigation records available on the BGS website under the Open Government Licence.

2.3 Outline History

Historical maps obtained from a Groundsure report are included in Appendix D. These indicate the following pertinent information:

Map Date	Site Features/Land Use	Adjacent Features (distance from site)
1884	Existing barns, coach house & outbuildings in NW quadrant. Manor house centrally in N with smaller structure adj. to W. Apparent garden/soft landscaping areas in NE, possibly some marshy ground with issues. Open field network in S & managed grounds in E. Pump on NE boundary.	Wells (40m N & 75m SE). Ponds (40-175m NE, 75m E & 175-200m SE). Disused windmill (130m NE). Old quarry (140m ENE). Mix of orchards, farmland & managed open ground (bordering in all directions). Residential property (within curtilage of Aston Hall?) (50-75m W).
1901-03	New landscaping to SE of manor house. Structure within barns' courtyard.	Pumps (150m NE & ESE).
1949	Structure in courtyard extended to N & W.	New structure (W boundary).
1972	Building between manor house & coach house demolished. Landscaping works in S. Marshy ground now wooded (with issues off-site to N).	Changes to footpaths & field boundaries to S & E. Access track on N/NE boundary. New structure (30m NW). Reduction in size/infilling of various ponds (40m NE, 75m E & 175m SE).
1978-80	No significant changes.	No significant changes.
1994	Partition of garden in S with walls & orchard shown.	No significant changes.
2001-03	Tennis court in S & some garden walls removed.	No significant changes.
2010	No significant changes.	No significant changes.
2021	No significant changes.	No significant changes.

Google Earth satellite imagery dating to 1999 shows the tennis court present in the south of the site. The larger infill barn structure within the barns' courtyard is present until 2008. No other significant changes are noted.

2.4 Geological Information

The following pertinent information on activities within 250m of the site has been extracted from the Groundsure report.

2.4.1 Ground Working and Mining

	Details	Distance
Historical Surface & Underground Working Features	Pond (1883). Ponds (1883-1949). Pond (1901-1949).	43m N. 158-192m SE. 169m E.
Current Ground Workings	--	--
Mining, Extraction & Natural Cavities	Potential for localised small-scale underground mining of vein minerals.	On-site.

2.4.2 Natural Ground Subsidence

Ground Stability Hazard Potential	Hazard Rating
Ground Dissolution	Negligible.
Landslides	Very Low.
Shrink Swell Clays	Negligible.
Compressible Deposits	Negligible.
Collapsible Deposits	Very Low.
Running Sands	Negligible.

2.5 Background Soils Chemistry

The Groundsure report includes BGS estimated background soil chemistry for 5 metals within shallow soils. This indicates that naturally occurring lead is slightly raised in this area. However, interpretation suggests that at these levels, such metals would be unlikely to exceed generic assessment criteria for residential use. Current National Planning Policy guidance does not consider naturally occurring metals as evidence of contamination.

2.6 Environmental Information

The following pertinent information on activities within 250m of the site has been extracted from the Groundsure report.

2.6.1 Historical Industrial Sites

	Details	Distance
Potentially Contaminative Past Land Use	Old windmill (1901-49).	130m NE.
Tanks	Unspecified tank (1972).	117m NE.
Energy Features	--	--
Historical Petrol Stations	--	--
Historical Garages	--	--
Potentially Infilled Land	--	--

2.6.2 Environmental Permits, Incidents and Registers

	Details	Distance
Historic IPC Authorised sites	--	--
Part A(1) and IPPC Authorised Activities	--	--
Red List Discharge Consents	--	--
List 1 Dangerous Substances	--	--
List 2 Dangerous Substances	--	--
Part A(2) B Activities and Enforcements	--	--
Radioactive Substances Authorisations	--	--
Records of Licenced Discharge Consents	--	--

	Details	Distance
Discharges to public sewer	--	--
Planning Hazardous Substance Consents	--	--
COMAH & NIHHS Sites	--	--
Pollution Incidents	--	--
Contaminated Sites - Part 2A EPA 1990	--	--

2.6.3 Landfill and Other Waste Sites

	Details	Distance
Historic and Current Landfill Sites	--	--
Waste Treatment/Transfer/Disposal Sites	9 No. exemptions for treatment, use, storage & disposal of agricultural & non-agricultural waste at South Hill Farm (Ref. EPR/EF0805ZZ/A001).	232m NE.

2.6.4 Current Land Uses

	Details	Distance
Current Industrial Sites	2 No. Pumps (water pumping stations).	On-site & 151m NE.
Petrol and Fuel Sites	--	--

2.7 Hydrogeology and Hydrology

2.7.1 Aquifers

	Details
Aquifer within Superficial Deposits	--
Aquifer within Bedrock Deposits	Secondary B Aquifer.

Aquifer Definitions	Details
Secondary B Aquifers	Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons, and weathering.

2.7.2 Surface and Groundwater Abstraction Licences

	Details	Distance
Surface Water Abstraction Licences	--	--
Groundwater Abstraction Licences	--	--
Potable Water Abstraction Licences	--	--

2.7.3 Source Protection Zones

	Details	Distance
Source Protection Zones	Type 2 (Outer Catchment). Type 3 (inner Catchment).	On-site. On-site.
Source Protection Zones within Confined Aquifer	--	--

2.7.4 Groundwater Vulnerability and Soil Leaching Potential

	Details
Soils Permeability	Flow Type: Well Connected Fractures. High Leaching Potential.
Anticipated Groundwater Table Depth	>3m depth.
Anticipated Groundwater Flow Direction	Towards E or SE.
Environment Agency Soils Classification	Secondary Bedrock Aquifer – High Vulnerability.
Hydraulic Continuity of Groundwater & Water Courses	Unlikely.
Soluble Rock Risk	Negligible.

2.7.5 Detailed River Network and River Quality

	Details
Surface Water Course & Flow Direction	Unnamed inland river, flowing SE, 10-26m N & 51-101m NE to 215m SE.
Ecological River Quality	--
Chemical River Quality	--
Overall Rating	--
Surface Water Features	Unnamed inland river, flow direction unknown, 222m-226m NE. Lake, 239m NE.

2.7.6 Flood Risk

	Details
River & Coastal Flooding – Zones 2 & 3	--
Risk of Flooding from Rivers and Sea	--
Flood Defences	--
Areas benefiting from Defence & Storage	--
Surface Water Flooding Susceptibility	Negligible.
Groundwater Flooding Susceptibility	Negligible.

2.8 Environmentally Sensitive Sites

The Groundsure report highlights the following sites on or within influencing distance of the site, which could have an impact within the planning process for this site.

	Details
Nitrate Vulnerable Zones	Diddlebury – Groundwater (ID: G35), on-site.
Nitrate Sensitive Areas	--
Other	SSSI Impact Risk Zone – on-site.

2.9 Visual and Cultural Designations

The Groundsure report highlights the following designations on or within influencing distance of the site, which could have an impact within the planning process for this site.

	Details	Distance
World Heritage Sites	--	--
Areas of Outstanding Natural Beauty	Shropshire Hills.	On-site.
National Parks	--	--
Listed Buildings	Privy & garden wall 13m N of Aston Hall (Grade II). Aston Hall, wall to SE & gatepiers to SE & NE (Grade II*). 6 No. Grade II Listed buildings in Aston Munslow.	On-site. On-site. Nearest 68m NE.
Architectural and Historic Conservation Areas	Aston Munslow village.	45m NE.
Scheduled Ancient Monuments	Dovecote.	114m NE.

2.10 Groundsure Radon Risk Information

The Groundsure report (Appendix D) indicates that the specific site lies in a Radon Affected Area, requiring Basic Protection Measures.

It may be prudent to confirm specific radon gas protection methods with the Local Authority's Building Control department, who may have more conservative requirements.

2.11 Conceptual Exposure Model

2.11.1 General

This section draws together desk study information, outlines an initial conceptual exposure model, and provides a qualitative assessment of potential contamination via a source-pathway-receptor framework for the proposed redevelopment.

2.11.2 Proposed Redevelopment

At the time of writing, the proposed redevelopment is at the pre-application stage. Details of the currently proposed redevelopment are shown on Drawing No. 9801P(0)001.PA2 (dated July 2021) and associated drawings given in Appendix K and can be summarised as:

Buildings	Conversion of existing barns with installation of mezzanine or first floor level in some areas. Construction of new, in-cutting pool building to S with single storey link to southern limb of barns.
Car Parking	New parking in N to rear of existing manor house, presumably either permeable paving, macadam or gravel hardstanding.
Access Roads	Retention of existing track up to SE boundary of study area with new driveway formed around N elevation of existing manor house.
Landscaping	Traditional private gardens (re-configuration of existing gardens) & managed soft landscaping to S of existing manor house (currently driveway).
Anticipated Foundations and Floor Slabs Shown on Preliminary Drawings	None shown.
Building Level	Barn conversions & link building at existing grade with c.1-3m in cutting required to form pool building.
Other Information	Actual foundations and other groundworks may be amended - see Section 5.

2.11.3 Potential Sources of Contamination

The desk study has been used to identify the likely remnant contaminant sources and distribution. The potential current and historical on- and off-site sources and the contaminants associated with these, derived using CLR8 Potential Contaminants for the Assessment of Land, and through experience of industrial land use, are detailed below.

Potential Contaminants Associated with On-Site Sources			
Description	Metals, semi-metals, non-metals, inorganic chemicals and others	Organic chemicals	Ground Gases & Vapours
Agricultural Land (incl. buried oil tank).	Range of heavy metals, asbestos & other inorganics.	Range of organics.	Hydrocarbon vapours, methane & carbon dioxide.

Potential Relevant Contaminants Associated with Off-Site Sources			
Description	Metals, semi-metals, non-metals, inorganic chemicals and others	Organic chemicals	Ground Gases & Vapours
Ponds or old quarries (where backfilled) (40-140m NE, 75m E & 175-200m SE).	Range of heavy metals & inorganics (dependent on nature of backfill).	Range of organics (dependent on nature of backfill).	Methane & carbon dioxide.
Old windmill (130m NE).	Range of heavy metals & inorganics, asbestos, pH.	Range of organics.	--

2.11.4 Potential Pathways

To understand the potential risks posed by the contaminants to human receptors, the possible contaminant pathways need identified. The CLEA model (DEFRA & EA 2002) indicates potential exposure routes for assessing risks to human health for a residential setting (with home-grown produce uptake) as follows:

- Dermal exposure.
- Inhalation of particulates.
- Inhalation of soil vapour (indoor and outdoor).
- Inhalation of groundwater vapour (indoor and outdoor).
- Direct ingestion of soil.
- Ingestion of home-grown produce and soil attached to vegetables.

The potential pathways with respect to Controlled Waters will include:

- Downward migration through Made Ground and to underlying Secondary B Aquifer.
- Lateral migration through Made Ground to surface water.
- Lateral migration through groundwater to surface water.
- Lateral migration via man-made pathways (e.g. services) to surface water.

2.11.5 Potential Receptors

For a residential end use and the known neighbouring land uses, the potential receptors to contamination (if present on site) are:

- Immediately adjacent residents – critical receptor female child.
- Construction workers – critical receptor female adult.
- Future site users – critical receptor female child.

The likely sensitive Controlled Waters receptors are considered to be:

- Unnamed river, c.10-15m to north, flowing southeast.
- Secondary B Aquifer.

Due to the topography of the site and surroundings, and the low permeability of the bedrock geology, the unnamed river is considered the most likely receptor.

2.11.6 Conceptual Site Model with Respect to Human Health

The conceptual site model has been developed based upon the source-pathway-receptor linkages.

SOURCE		PATHWAY		RECEPTOR
Contaminated soils	→	Dermal exposure	→	On-site female child
Contaminated soils	→	Inhalation of soil dust	→	On-site female child
Contaminated soils	→	Indoor/Outdoor inhalation of soil vapour	→	On-site female child
Contaminated groundwater	→	Inhalation of groundwater vapours	→	On-site female child
Combustible/toxic ground gases	→	Indoor inhalation	→	On-site female child
Contaminated Soils	→	Direct ingestions of soil	→	On-site female child
Contaminated soils	→	Ingestion of homegrown produce and soil attached to vegetables	→	On-site female child

2.11.7 Conceptual Site Model with Respect to Controlled Waters

The conceptual site model has been developed based upon the source-pathway-receptor linkages.

SOURCE		PATHWAY		RECEPTOR
Contaminated soils	→	Leaching from soils or migration of liquid contaminants laterally through the unsaturated zone	→	Unnamed river

SOURCE		PATHWAY		RECEPTOR
Contaminated soils	→	Leaching from soils or migration of liquid contaminants through man-made pathways and service runs	→	Unnamed river
Groundwater contamination	→	Transport in groundwater	→	Unnamed river
Perched water contamination	→	Transport in groundwater	→	Unnamed river

3.0 GROUND INVESTIGATION

In view of the anticipated ground conditions, current site layout and proposed redevelopment, the following scope of investigation was completed.

3.1 Trial Pitting

3.1.1 Mechanical Trial Pitting

5 No. trial pits were mechanically excavated using a tracked mini excavator on 9th July 2021. The trial pit locations, chosen by the consulting engineer with some liaison from Intégrale, are shown on Figure 1 and were referenced as TPA-E. The general procedures adopted during trial pitting, together with the detailed trial pit records are included in Appendix E.

3.1.2 Manual Trial Pitting

33 No. trial pits were manually excavated using hand tools (and a pneumatic breaker) between 6th and 8th July 2021. The trial pit locations, chosen by the consulting engineer, are shown on Figure 1 and were referenced as TP01-31 and TPF-G. The general procedures adopted during trial pitting, together with the detailed trial pit records are included in Appendix E.

TPF and TPG were hand dug from ground level for the purpose of percolation testing following mechanical pits proving bedrock within 0.4m of existing ground level, precluding excavation by hand from 0.3m depth to the proposed target depth of 0.6mBEGL.

3.2 Soakaway Tests

3.2.1 BRE 365 (2007) – Conventional Soakaway Testing

Soakaway tests were carried out in TPA and TPB. The trial pits were filled from a bowser and the drop water level measured over time. The general procedures adopted during soakaway testing together with the soakaway records are included in Appendix F and discussed in Section 5.

3.2.2 Building Regulations Part H (2010) – Percolation Testing

Percolation testing was undertaken in TPF and TPG. The 300x300x300mm hand dug trial pit was filled with water and the drop in water level measured over time. In line with the guidance, a 'pre-fill' was run to saturate the surrounding soils, however due to slow infiltration no official tests were subsequently undertaken. The percolation records are included in Appendix F and discussed in Section 5.

3.3 Rotary Boreholes

3 No. boreholes were sunk using conventional percussion boring equipment, on 6th July 2021. The borehole locations, chosen by the consulting engineer (and later adjusted in liaison with Intégrale due to design changes), are shown on Figure 1 and were referenced as BH01-03. Boreholes were sunk to between 3m and 5m depth.

Borehole BH01 was advanced by open holing (probing) to 3m depth, due to access constraints for the 4x4-towed water bowser precluding coring. Boreholes BH02 and BH03 were dynamically sampled to rockhead then rotary cored to 5m depth.

The general procedures adopted during soils borings, together with the detailed borehole records are included in Appendix G.

3.4 Groundwater and Soils Gas Standpipe Installations and Monitoring

Standpipes were installed in boreholes BH01 and BH03 to between 3m and 5m depth, and details are given on the borehole logs. Monitoring has been undertaken on 3 No. occasions and the results are included in Appendix H, together with the general procedures adopted for installing standpipes.

3.5 Geotechnical Laboratory Testing

3.5.1 Soils Testing

A schedule of soils testing was prepared by Intégrale and the tests were completed in accordance with BS 1377 (1990) by i2 Analytical Limited. The results are provided in Appendix I and the following shows the testing strategy:

Location	Depth (m)	Stratum	Testing	Criteria for test selection
TP13	0.5	ULS	Natural Moisture Content.	Strata characteristics
TP22	1.0	WULS	Natural Moisture Content.	Strata characteristics
TP22	1.5	WULS	Natural Moisture Content & Atterberg Limits.	Strata classification and characteristics
TP03	1.0	Possible MG	Natural Moisture Content & Atterberg Limits.	Strata classification and characteristics
TP14	0.75	WULS	BRE (Reduced) Suite.	Concrete classification.
TP31	1.2	WULS	BRE (Reduced) Suite.	Concrete classification.

Note: MG – Made Ground; (W)ULS – (Weathered) Upper Ludlow Shales.

3.5.2 Rock Testing

A schedule of rock testing was prepared by Intégrale and the tests were completed in accordance with BS 1377 (1990) by i2 Analytical Limited. The results are provided in Appendix I and the following shows the testing strategy:

Location	Depth (m)	Stratum	Testing	Criteria for test selection
BH02	2.4-2.5	ULS	Point Load Test.	Rock strength.
BH02	5.0-5.1	ULS	Unconfined Compressive Strength.	Rock strength.
BH03	3.6-3.75	ULS	Unconfined Compressive Strength.	Rock strength.
BH01	1.5	ULS	BRE (Reduced) Suite.	Concrete classification.

Note: ULS – Upper Ludlow Shales.

3.6 Contamination Analyses

In view of the desk study and fieldwork findings, a schedule of soils analyses was prepared in line with CLR 8. The analyses were completed by i2 Analytical Limited and the results are provided in Appendix J. The following shows the testing strategy:

Location	Depth (m)	Stratum	Testing	Criteria for test selection
TPC	0.4	Possible MG	Generic Contaminant Suite, Total TPH & Asbestos Screen.	Soils analyses – Check contamination in existing field (area of proposed driveway).
TP03	0.05	TS	Generic Contaminant Suite, Total TPH & Asbestos Screen.	Soils analyses – Check contamination in/around existing barns (west limb).
TP11	0.5	MG	Generic Contaminant Suite, Total TPH & Asbestos Screen.	Soils analyses – Check contamination in/around existing barns (north limb).
TP15	0.3	MG	Generic Contaminant Suite, Total TPH & Asbestos Screen.	Soils analyses – check contamination in existing garden (area of proposed driveway).
TP17	0.2	SS	Generic Contaminant Suite, Total TPH & Asbestos Screen.	Soils analyses – Check contamination in existing woodland (area of proposed driveway).

Location	Depth (m)	Stratum	Testing	Criteria for test selection
TP25	0.2	MG	Generic Contaminant Suite, Total TPH & Asbestos Screen.	Soils analyses – Check contamination in/around existing barns (south limb).
TP29	0.1	TS	Generic Contaminant Suite, Total TPH & Asbestos Screen.	Soils analyses – Check contamination in existing walled garden (area of proposed pool building).

Note: MG – Made Ground; TS – Topsoil; SS – Subsoil.

3.7 Referencing

Locations of the exploratory positions were set out using taped offsets from existing features. Ground levels at the exploratory positions have been determined by interpolating between spot levels given on the site survey drawing.

4.0 GROUND & GROUNDWATER CONDITIONS

4.1 Summary of Strata Encountered

The strata encountered across the site are broadly similar as shown on the tentative geological cross-section in Figure 2. They can be summarised as follows:

A) **Area of Proposed Barn Conversions, Pool & Link Buildings (BH01-03)**

Depth (m)	Description
GL to 0.1	TOPSOIL: (Comprising soft or loosely compact dark brown or grey slightly sand slightly gravelly Clay/Silt with little extraneous material variably of brick, charcoal, clinker or glass).
	OR
	GRAVEL CHIPPINGS
0.1 to 0.5/1.2	(POSSIBLE) MADE GROUND: (Comprising moderately compact brown slightly sandy gravelly Silt OR grey-brown sandy very clayey angular to subangular fine to coarse Gravel locally with low to moderate cobble content. Gravel variably of siltstone, brick, charcoal and concrete. Cobbles of siltstone).
0.5/1.2 to 3.0+	Very weak olive green-grey SILTSTONE. (UPPER LUDLOW SHALES)

Internally, a mixture of concrete, brick sets and silty or granular Made Ground was encountered, typically to 0.1m depth in the case of the hardstandings and generally deeper for the Made Ground, perhaps <0.5-1m BEGL.

Bedrock was proven, locally, as shallow as 0.2m BEGL in the south (in the area of the pool and link buildings) and appears to be deeper c.1-1.5m moving northwards across the barns area; although this may just reflect trench backfill adjacent to footings and is not necessarily reflective of the ground conditions across the wider area.

Possible Made Ground (c.0.7-1.2m thick) was encountered in a number of positions (but probably not limited to TP03 and TP30), generally adjacent to footings, where the 'backfill' comprised apparent natural soils/rock mixtures either soft gravelly Clay or Cobbles of siltstone.

B) **Area of Proposed Driveway**

Depth (m)	Description
GL to 0.1	TOPSOIL: (Comprising loosely compact dark grey slightly sandy slightly gravelly Silt with little extraneous material variably of brick, charcoal, clinker or glass).
0.1 to 0.5	SUBSOIL: (Comprising brown-grey slightly sandy slight gravelly Silt with rare extraneous material variably of siltstone, brick or charcoal.)
	OR
0.1 to 0.5+	MADE GROUND: (Comprising soft dark brown slightly sandy slight gravelly Clay/Silt. Gravel variably of siltstone, brick, charcoal and concrete).
0.5 to 0.9+	Firm olive green-grey gravelly SILT. Gravel of siltstone. (WEATHERED UPPER LUDLOW SHALES)
	OR

Very weak olive green-grey SILTSTONE.
(UPPER LUDLOW SHALES)

Locally within the field area, possible clayey or silty Made Ground was encountered from the surface to c.0.5m.

4.2 Summary of Sub-Structure

The trial pits (excluding TP14-17, TP28-29 and TPA-G) examined the existing footings to the barns and, locally, to garden walls, and the following table summarises the findings:

Location	Scope	Sub-Structure	Backfill
TP01	Investigate the foundation of the western limb of the barns – E elevation (externally).	Stone wall to 0.56m depth. No footing. Underlain by siltstone.	Topsoil to 0.14m, over silty MG to 0.27m, then natural soils. *RWDP discharges directly onto ground..*
TP02	Investigate the foundation of the western limb of the barns – E elevation (externally).	Stone wall to 0.8m depth. No footing. Underlain by siltstone with slight toe on bedrock.	Topsoil over concrete gulley, then gravelly MG to 0.5m over natural soils. *RWDP discharges to silted up concrete gulley running N along building elevation.*
TP03	Investigate the foundation of the western limb of the barns – E elevation (externally).	Depth of stone wall line unclear, pit dug to 1.4m depth. No footing assumed.	Topsoil over gravelly MG then possible clayey MG. *RWDP discharges directly onto ground.*
TP04	Expose foundation of the column on S elevation of northern limb of barns.	Stone column to 0.75m. No footing. Underlain by cobbles of siltstone.	Gravel chippings over clayey MG.
TP05	Investigate the foundation of the southern limb of the barns – N elevation (externally).	Stone wall to 0.1m. No footing. Underlain by siltstone.	Topsoil.
TP06	Investigate the foundation of the southern limb of the barns – N elevation (externally).	Stone wall to 0.07m. No footing. Underlain by siltstone.	Topsoil. *RWDP discharges directly onto ground.*
TP07	Investigate the foundation of the southern limb of the barns – S elevation (externally).	Stone wall finishing c.0.5m above GL with concrete below to 0.3m BEGL. No footing. Underlain by siltstone.	Topsoil. *RWDP discharges into adjacent drain.*
TP08	Investigate the foundation of buttressed party wall to neighbouring property (Race House).	Concrete footing sloping out from brick wall. Sat on siltstone bedrock at Ground Level.	N/A. Topsoil adjacent. Roots penetrating through bedrock below footing.
TP09	Investigate the foundation of the southern limb of the barns – S elevation (internally).	Brick wall to 0.1m. No footing. Underlain by siltstone.	Concrete floor slab with DPM at base.
TP10	Investigate the foundation of the southern limb of the barns – N elevation (internally).	Brick wall to 0.16m. No footing. Underlain by siltstone.	Concrete floor slab with DPM at base. Thin layer of MG/sandy Sub-base.
TP11	Investigate the foundation	Stone wall to 1.2m. No	No flooring. Clayey MG.

Location	Scope	Sub-Structure	Backfill
	of the northern limb of the barns – E elevation (internally).	footing. Underlain by siltstone.	
TP12	Investigation the foundation of the garden wall in area of proposed ancillary structures.	Stone footing at 0.23-0.48m depth, protruding 0.08m. Underlain by siltstone.	Gravel chippings over Topsoil/Subsoil.
TP13	Investigation the foundation of the garden wall in area of proposed ancillary structures.	Stone footing at 0.1-0.5m depth, protruding 0.1m. Underlain by siltstone.	Topsoil.
TP18	Investigate the foundation of the western limb of the barns – W elevation (internally).	Mix of brick (to 0.25m) then stone wall to 0.6m. No apparent footing. Underlain by siltstone.	Silty then cobbly MG.
TP19	Investigate the foundation of the western limb of the barns – W elevation (internally).	Mix of concrete (GL to 0.1m BEGL) then cobbles to 0.22m depth (possible floor?). No apparent footing. Underlain by siltstone.	Concrete floor slab over cobbles then thin layer of silty MG.
TP20	Investigate the foundation of the western limb of the barns – E elevation (internally).	Stone wall onto apparent stone footing with 0.05m protrusions at 0.52m & 0.62m depth. Pit dug to 0.9m, base of apparent footing not proven.	Concrete floor slab over cobbly MG (reworked natural with some extraneous material).
TP21	Investigate the foundation of the western limb of the barns – W elevation (internally).	Stone wall onto apparent stone footing from 0.68-0.88m depth with 0.1m protrusion. Underlain by siltstone.	Brick sets over silty MG.
TP22	Investigate the foundation of the western limb of the barns – E elevation (externally).	Stone wall to 1.53m. Base unclear/not proven. Assumed no footing.	Chippings over gravelly MG. *RWDP soaks locally.*
TP23	Investigate the foundation of the southern limb of the barns – S elevation (internally).	Stone wall to 0.06m. No footing. Underlain by siltstone.	Thin layer of sandy MG over bedrock.
TP24	Investigate the foundation of the southern limb of the barns – N elevation (internally).	Stone wall to 0.4m. No footing. Underlain by siltstone.	Cobble flooring over gravelly MG.
TP25	Investigate the foundation of the southern limb of the barns – S elevation (internally).	Stone wall to 0.3m. No footing. Underlain by siltstone.	Silty MG.
TP26	Investigate the foundation of the southern limb of the barns – N elevation (internally).	Stone wall to 0.17m. No footing. Underlain by siltstone.	Cobble flooring over bedrock.
TP27	Investigate the foundation to an internal partition wall within southern limb of	Stone wall to 0.07m. No footing. Underlain by siltstone.	Brick sets over natural soils.

Location	Scope	Sub-Structure	Backfill
	barns.		
TP30	Investigate the foundation of the western limb of the barns – W elevation (internally).	Stone wall to 1.2m. Base unclear/not proven. Assumed no footing.	Probable cobbly MG (possibly reworked natural?).
TP31	Investigate the foundation of the western limb of the barns – W elevation (internally).	Stone wall to 0.95m. No footing. Underlain by apparent siltstone.	Cobbly MG.

Note: MG – Made Ground.

4.3 Strata Properties

4.3.1 Made Ground / Topsoil

Made Ground was proven in several of the exploratory positions and can be categorised as:

Made Ground Type/Location	Clayey/Silty Made Ground TP01, TP15, TP18, TP21	Gravelly/Cobbly Made Ground TP02-03, TP18, TP20, TP22, TP24	Possible/Probable Made Ground TP03
Min./Max. Thickness (m)	0.06/1.2.	0.24/0.95.	0.69+/1.2+.
Main Constituents	Dark brown or brown Clay/Silt with variable brick, charcoal, metal & plastic fragments, concrete, siltstone, polystyrene & straw. Cobbles of siltstone & brick.	Orange, brown or dark grey Gravel or Cobbles of brick, siltstone & limestone. Occasionally with pockets of brown clay.	Olive green-grey gravelly Clay with siltstone (TP03) or Cobbles with much silt (TP30).
Properties	Cohesive. Soft, where clayey. Loosely to moderately compact, where silty.	Granular. Loosely to moderately compact.	Cohesive, soft (TP03). MC: 23%; LL: 33%; PL: 22%; PI: 11%. Low plasticity. Negligible volume change potential. Granular, moderately compact (TP30).
Occurrence	Various.	Locally in W.	Locally in W.
Visual Contamination/ Odours	None noted.	None noted.	None noted.

Topsoil, typically 100-150mm thick, was proven in several of the exploratory positions, usually with some extraneous material. Locally subsoil was proven to c.0.5m depth.

4.3.2 Weathered Upper Ludlow Shales

For the purposes of this report the uppermost horizons of the natural ground have been defined as Weathered where they are soft or firm and green-grey or brown. The properties can be summarised as:

Stratum	Weathered Upper Ludlow Shales – Silt	Weathered Upper Ludlow Shales – Gravel/Cobbles
Min./Max. Thickness (m)	0.28+/0.78+.	0.1+/0.7.
Soil Strength /Properties	Cohesive. Firm, locally soft.	Granular. Medium dense to dense.

	MC: 30-36%; LL: 41%; PL: 25%; PI: 16%. Medium plasticity. Low volume change potential.	Olive green-grey. Cobbles are angular & tabular.
Occurrence	Proven locally in W & NE.	Proven locally in W & NW.
Sulphate/pH	SO_4 0.18g/l pH 6.9-7.6.	--
Visual Contamination/ Odours	None noted.	None noted.

Note: MC – Moisture Content; LL – Liquid Limit; PL – Plastic Limit; PI – Plasticity Index.

4.3.3 Upper Ludlow Shales

For the purposes of this report the relatively unweathered Upper Ludlow Shales have been defined as where rockhead is encountered. The properties can be summarised as:

Stratum	Upper Ludlow Shales
Min./Max. Thickness (m)	2.4/4.65+ (boreholes). Nominal thickness proven in most trial pits.
Soil Strength/ Properties	Very weak Siltstone. Olive green-grey. MC: 12%. Point Load – Is(50): 1.86MPa. UCS: 37.3MPa.
Occurrence	Across the entire site.
Sulphate/pH	SO_4 0.013g/l pH 8.5.
Visual Contamination/ Odours	None noted.

Note: MC – Moisture Content; UCS – Unconfined Compressive Strength.

4.4 Groundwater

A perched groundwater seepage was encountered at c.0.3m in borehole BH01, within the Made Ground. No other seepages were noted in boreholes BH02-03 which were drilled to 5m depth. The trial pits occasionally encountered shallow <0.5m deep seepages, usually related to the positioning of rainwater downpipes along the elevations of the barns. The following groundwater levels were encountered during the subsequent monitoring visits during August and September 2021:

Exploratory Location	19/08/2021	26/08/2021	02/09/2021
	Depth below existing ground level (m)		
BH01	2.23	2.25	2.26
BH02	4.40	4.26	4.43

It is unclear whether the groundwater levels encountered during the subsequent monitoring represent the standing groundwater level, the boreholes have acted as a sump for shallow perched seepages or water introduced during the drilling works has stood on completion of the drilling.

No free-product or sheen was observed on the surface of the groundwater during the investigation or the subsequent monitoring.

4.5 Ground Gas

The monitoring indicates marginally elevated carbon dioxide and locally reduced oxygen with no methane and negligible volatile organic compounds (VOCs) present within the boreholes. A maximum flow rate of 0.2 l/hr was recorded. Summary results are detailed below with full information provided in Appendix H.

Exploratory Location	BH01	BH02

Response Zone (m)	1.00-3.00	1.00-5.00
Contamination	None noted	None noted
Monitoring Visits (No.)	3 of 3	3 of 3
Methane (%)	0.0-0.0	0.0-0.0
Carbon Dioxide (%)	2.3-2.5	2.8-3.3
Oxygen (%)	17.0-17.6	4.6-5.5
VOC (ppm)	1.5-1.5	0.0-0.0
Gas Flow (litres/hr)	0.1-0.2	0.0-0.1
Water Levels (m)	2.23-2.26	4.26-4.43
Atmospheric Pressure Range (mb)	994-1012	994-1012

5.0 GEOTECHNICAL CONSIDERATIONS

5.1 Scheme Details & Structural Loadings

The proposed development will largely be constructed at, or close to, existing grade. A new swimming pool will be constructed in up to 3m of cutting. The new access driveway will also include shallow (less than 1m) cut and fill. According to the consulting engineers the redevelopment will include the following elements:

- Conversion of the existing barns (C-shaped in plan) into new residential/recreational facilities and including a new single storey cloistered/colonnaded extension along the east-facing elevation;
- A new pool barn building, plus link, to the south-facing elevation;
- 3 small ancillary buildings inside the north perimeter wall of the walled garden;
- A new access road/driveway beyond the existing main Hall (to the northeast) running NW to SE for about 130-140m.

It is assumed that the elements of 'new build' will be a mix of steel and timber framing, plus some load bearing masonry construction. Column loads are likely to be in the order of 100-500kN. Foundation line loads could be between 75-150kN/m run. Combined 'dead' and 'live' loading on the ground floor slabs should be less than 10kN/m^2.

In addition to the new access and swimming pool, the redevelopment will also include car parking, conventional gardens and limited communal soft landscaping.

5.2 Site Preparation and Earthworks

Topsoil, typically 100-200mm thick, and any localised areas of particularly poor quality Made Ground, should be removed from beneath proposed building and hardstanding areas. Excavations to about (or less than) 1m depth should be feasible with conventional soils excavating machinery. Pneumatic tools will be required to break out existing foundations, similar buried masonry obstructions and the Silurian siltstone bedrock. Hard rock excavation can be anticipated for the swimming pool excavation

Some of the spoil resulting from excavations in the variable existing Made Ground could be unsuitable for reuse as structural fill. At least 50-75% of spoil resulting from excavations in the natural ground and bedrock should be suitable for reuse.

Whilst most shallow excavations to 1m depth could remain dry, some may encounter slight or moderate infiltration/perched groundwater seepage. Such excavations can be kept dry by intermittent pumping from a convenient sump.

Temporary excavations in the existing Made Ground and shallow weathered in-situ soils will probably stand unsupported in the short term at gradients of about 1 on 2. Excavations below approximately 1m depth (often in bedrock) could locally require sheeting and shoring, particularly if personnel are to enter.

Formations in the most shallow soils should be relatively non-susceptible to deterioration due to site traffic and weather, however some allowance for protection with granular material or of lean mix concrete should be budgeted.

Any heavily root invaded soils should be excavated and made good with well compacted granular material.

The site has a significant history and future groundworkers should be made aware of any old features (as can be seen from the OS maps) that may impact the proposed redevelopment.

5.3 Foundations and Ground Floor Slabs

5.3.1 Typical Ground Conditions and Existing Footing Depths

The investigation has proven a veneer of Topsoil, a variable thickness mantle (typically 0.5-1m) of predominantly granular existing Made Ground and a discontinuous stratum of variably weathered medium dense/firm in-situ soils, with a shallow rockhead of between 0.2m and 1.2m BEGL. The groundwater table is

below this depth and consequently the variably weathered bedrock can provide an adequate bearing stratum for new strip and pad footings.

The existing barns/buildings have conventional (unreinforced) masonry footings to depths of 0.2-1.2m depth, sat on top of the bedrock. The engineer has not yet decided whether any underpinning is required. Intégrale can give further guidance on request.

5.3.2 Design Bearing Pressures for New Strip and Pad Footings

The following design bearing pressures are given for guidance:

Depth (m) BEGL	Stratum (SPT 'N' or Cu kN/m²)	Design Bearing Pressure (kN/m²)		
		1m*	2m*	3m*
0.5 to 1.0	Medium dense/firm WULS (N=20)	150	125	100
0.5 to 1.0	Very weak LS bedrock (N=50)	300	275	250
1.0 to 2.0	Moderately weak to Medium strong ULS bedrock	600	600	600

Notes: * Indicates width of foundation
(W)ULS – (Weathered) Upper Ludlow Shales

All foundations must be in line with the recommendations and guidance given in NHBC Chapter 4.2 'Building near Trees'.

At the intensities of loading given above, both total and differential settlement/angular rotation should not exceed 10mm, the bedrock will remain largely incompressible under moderate foundation loading.

It is possible that there will be some variations in formation compressibility and consequently light gauge mesh reinforcement should be available on site should it be necessary to even out those variations in formation performance.

5.3.3 Piles

Although drilled/bored piling is a foundation option, at the time of writing Intégrale see any direct application at this site. Further guidance can be provided on request.

5.3.4 Ground Floor Slabs

New ground floor slabs can be designed as ground bearing (assuming a 'normal' formation) onto in-situ soils.

In line with NHBC guidelines, suspended ground floor slabs (e.g. 'beam and block' type or similar) should be adopted where the slab will be underlain by 600mm or more of 'non-engineered' Made Ground.

5.3.5 Formation Inspections

All foundation, ground slab and other substructure formations, including the swimming pool excavation formation, should be checked and approved by a suitably qualified and experienced engineer or geotechnical specialist.

5.4 Pavement Design

The equivalent CBR strength of anticipated pavement formations has been determined using a Mexecone Penetrometer and judged on the basis of past experience in similar materials. The following (tentative) design values are given for guidance:

Stratum	Design CBR	Typical Depth (m) BEGL
Medium dense WULS	5%	0.5-1.0

Very Weak ULS	>10% (perhaps regulating layer only)	0.5-1.0

Note: (W)ULS – (Weathered) Upper Ludlow Shales.

It would be prudent to allow a contingency for treating 'soft spots' equivalent to 20% of the proposed access road to a depth of typically 350mm. Please note there are localised areas of existing poorer quality Made ground along the line of the new access, which should be treated as 'soft spots'. All soft spots should be excavated and replaced with suitable well compacted granular material.

Where there could be rapid variations in formation strength, consideration should be given to a sandwiched geogrid construction which will help even out those variations to within acceptable limits. Intégrale can give further guidance on request.

It should be noted that there is an underground oil tank in the north of the site below the area of proposed driveway and parking. The condition of the tank is unknown, including whether any decommissioning has taken place, and represents a potentially anomalous feature which could impact on the formation of the driveway/parking. The associated manhole was lifted with the top of the tank at c.0.5m depth.

5.5 Earth Pressures and Retaining Walls

Foundations for retaining walls can be based on the allowable design bearing pressures given in section 5.3.2. Earth pressures may be calculated assuming the following effective shear strength parameters:

Stratum	Effective Cohesion C^1 (kN/m²)	Effective Angle of Friction $Ø^1$ (degrees)	Bulk Density (Mg/m³)
Medium dense WULS	Zero	30°	1.85
Very Weak ULS bedrock	Zero	35°	2.00

Note: (W)ULS – (Weathered) Upper Ludlow Shales.

5.6 Protection of Buried Concrete

In line with BRE Special Digest 1:2005 'Concrete in Aggressive Ground', 3 No. samples of Weathered and unweathered Upper Ludlow Shales were tested for water soluble sulphate, total acid soluble sulphate, total sulphur and pH. The results are reported in Appendix J.

The desk study and ground investigation indicate the site can be categorised as being:

- Natural ground unlikely to contain pyrites;
- Mobile groundwater conditions, as water will flow into excavations or is percolating slowly through the ground.

The results show a highest water soluble sulphate of 182mg/l. The lowest pH value was 6.9. The results for total acid soluble sulphate (0.019% to 0.069%) and total sulphur (0.009% to 0.028%) indicate pyrite which may oxidise is not present. It is therefore recommended that a Design Sulphate Class of DS-1 and an ACEC Class of AC-1 be adopted for budgeting purposes.

5.7 Drainage Considerations

The engineer requested soakaway trials to BRE365 guidelines in 2 No. investigation locations. A tractor-towed water bowser was therefore used to fill trial pits TPA and TPB with 500mm of water. The drop in water level was recorded over time, and the results are included in Appendix F.

Within approximately 120 minutes at TPA, the water level had only dropped by 5mm and the test was terminated, the Upper Ludlow Shales proving to be practically impervious. At TPB, the rockhead encountered was 'crumbly' and seemingly more permeable, the single extrapolated test undertaken in the time available suggests an infiltration rate in the order of c.2.7×10^{-6}m/s.

The Upper Ludlow Shales are fine-grained mudrocks with 'tight' jointing and limited fracture development, and consequently are not particularly permeable, which correlates with the measured infiltration rate.

It is considered that despite the depth to standing groundwater >2m, the nature of the natural bedrock means conventional soakaways are unlikely to be successful at this site.

Percolation tests, in line with Building Regulations Part H, were also requested by the engineer for a proposed drainage field. The testing was intended to be undertaken at c.600mm depth, however the difficulty of rock excavation in forming the 300x300x300mm pits (and evidence of slow infiltration noted in bedrock from the conventional soakaway testing) resulted in shallow testing being undertaken from Ground Level within the overlying Topsoil. 25L containers were therefore used to fill trial pits TPF and TPG with 300mm of water. The drop in water level was recorded over time, and the results are included in Appendix F.

In both positions, percolation was fairly slow with only the pre-fill run undertaken and no formal tests completed in the time available. VP values based on the two pre-fills suggest a percolation rate of 18-19s/mm, however further testing would be required to conform to the applicable guidelines.

Once the design layout is 'frozen', supplementary trials (at specific locations and appropriate depths) should be completed to confirm the above (and Intégrale can give further assistance with this aspect if required).

6.0 GENERIC QUANTITATIVE CONTAMINATION ASSESSMENT

6.1 Summary of Soils Results with Respect to Human Health

The conceptual model based on the source-pathway-receptor linkages is summarised as:

SOURCE		PATHWAY		RECEPTOR
Contaminated soils	→	Dermal exposure	→	On-site female child
Contaminated soils	→	Inhalation of soil dust	→	On-site female child
Contaminated soils	→	Indoor/Outdoor inhalation of soil vapour	→	On-site female child
Contaminated groundwater	→	Inhalation of groundwater vapours	→	On-site female child
Combustible/toxic ground gases	→	Indoor inhalation	→	On-site female child
Contaminated Soils	→	Direct ingestions of soil	→	On-site female child
Contaminated soils	→	Ingestion of homegrown produce and soil attached to vegetables	→	On-site female child

A generic risk assessment has been undertaken by comparing proven concentrations of contaminants against generic assessment (or screening) criteria (AC).

The AC adopted are the published LQM/CIEH Suitable For Use Levels (S4UL's), for a generic residential with plant uptake end-use, adopted under licence no. 3580. These provide a precautionary approach, based on the principle of minimal or tolerable risk, but relying on conservative values for soil type (sandy loam) and organic matter contents of 1, 2.5 or 6% as appropriate. Where no S4UL is published, e.g. lead, the alternative AC is the most recently published industry standard value.

If the proven contaminant concentration is less than the respective AC, it is considered there is no significant risk to human health from these substances.

6.1.1 Generic Human Health Assessment

The soil samples where contaminants exceed the relevant assessment criteria are:

Substance	Stratum	Depth BEGL	Location	Result
Assessment Criteria for Residential Use & Plant Uptake				
Benzo(b)fluoranthene (AC = 2.6 mg/kg)	TS	0.05m	TP03	2.9 mg/kg
Benzo(a)pyrene (AC = 2.2 mg/kg)	TS	0.05m	TP03	2.9 mg/kg
Dibenz(a,h)anthracene (AC = 0.24 mg/kg)	TS	0.05m	TP03	0.42 mg/kg

A number of PAHs have exceeded the generic assessment criteria for human health. The slight exceedances are limited to one particular location and do not appear to be indicative of a wider issue.

Consideration should therefore be given to the short-term exposure risk of groundworkers with removal and replacement of Topsoil likely to be sufficient to protect future site users.

6.2 Summary of Soils Results with Respect to Phytotoxicity

The soil samples where phytotoxic contaminants exceeded the former ICRCL 59/83 thresholds are:

Substance	Stratum	Depth BEGL	Location	Result
Phytotoxic Target				
Zinc (AC = 300mg/kg)	TS TS	0.05m 0.1m	TP03 TP29	380 mg/kg 320 mg/kg

Zinc has been reported at concentrations that may potentially be phytotoxic for new planting, however no dieback or other similar indicators of stress were noted on the grass in these areas.

6.3 Summary of Soils Results with Respect to WRAS

The soil samples which exceeded the Water Regulations Advisory Scheme (WRAS) guidance on water supply pipes are:

Substance	Stratum	Depth BEGL	Location	Result
WRAS Target				
pH (AC = pH 5-8)	MG MG ULS	0.5m 0.3m 1.5m	TP11 TP15 BH01	8.1 8.3 8.6
Arsenic (AC = 10mg/kg)	MG MG	0.4m 0.3m	TPC TP15	11 mg/kg 12 mg/kg
Chromium (AC = 25mg/kg)	TS MG MG SS MG TS	0.05m 0.4m 0.5m 0.2m 0.2m 0.1m	TP03 TPC TP11 TP17 TP25 TP29	34 mg/kg 35 mg/kg 30 mg/kg 31 mg/kg 39 mg/kg 31 mg/kg
Total TPH (AC = 50mg/kg)	TS	0.05m	TP03	51 mg/kg

This suggests that new water pipes laid through all existing soils and rock will need to be protective against chemical attack. Requirements should be confirmed with the water supply company.

6.4 Controlled Waters

6.4.1 Conceptual Model

The assessment of risks to controlled waters follows guidance provided by the Environment Agency, including their Remedial Targets Methodology: Hydrogeological Risk Assessment for Land Contamination (2006). The conceptual site model has been developed based on the source-pathway-receptor linkages identified during the desk study and fieldworks. Possible sources, pathways and receptors have been assessed, which identifies the potential pollutant linkages as:

SOURCE		PATHWAY		RECEPTOR
Contaminated soils	→	Leaching from soils or migration of liquid contaminants laterally through the unsaturated zone	→	Unnamed river
Contaminated soils	→	Leaching from soils or migration of liquid contaminants through man-made pathways and service runs	→	Unnamed river
Groundwater contamination	→	Transport in groundwater	→	Unnamed river
Perched water contamination	→	Transport in groundwater	→	Unnamed river

The conceptual site model indicates that the unnamed river (c.10m to the north) is the most sensitive controlled waters receptor.

The true groundwater table has not been proven within 5m of current ground levels, nor given the site history is it likely that there is conceivably a groundwater pollution problem at this site that could impact on hydrologically linked surface water bodies.

The relatively impermeable nature of the bedrock and locally discontinuous, chemically benign Made Ground suggest there is negligible risk to the surface water course through leaching from soils.

Consideration will need to be given to the formation of the new driveway and any subsequent run-off which could affect the receptor. Additionally, the condition of the underground oil tank in the north of the site is unknown, and it is unclear whether this will be removed or decommissioned as part of the proposals.

6.5 Gas Mitigation

The following maximum readings have been recorded across the three monitoring visits:

Methane: 0.0%.
Carbon dioxide: 3.3%.
VOCs: 1.5ppm.
Gas flow rate: 0.2 litres/hour.

Based on the 'worst case' maximum values, the results give a maximum gas screening value of 0.0066 litres of gas per hour, indicating a Gas Regime classification of Characteristic Situation 1. For low-rise residential buildings this suggests a Green protection level is required in line with the NHBC Traffic Light system.

According to CIRIA C665 where a negligible gas regime has been identified, as in this instance, then gas protection measures are not considered necessary.

Strictly to conform to CIRIA C665, further ground gas readings are required; however the readings to date and the absence of a known gas source are likely to be sufficient evidence to support the above conclusions.

6.6 Conceptual Exposure Model & Risk Assessment

The potential hazards and risks from soils, water and gas contamination have been developed as a Conceptual Exposure Model, based on desk studies, proven ground conditions, analytical and monitoring results and the proposed redevelopment. Substances actually proven, or strongly suspected present, have been assessed against potential exposure pathways and available receptors.

The following hazard-pathway-receptor linkages are therefore established for this site:

- Priority PAHs are present at concentrations that potentially pose a risk to human health, in the Topsoil at TP03; this location is limited to the western area within the barns' courtyard.
- Zinc is present at concentrations that are potentially phytotoxic to new planting within the Topsoil at TP03 and TP29.
- WRAS Contaminant Threshold Concentrations are exceeded in the majority of the Topsoil, Subsoil and Made Ground.

6.7 Recommendations

6.7.1 For Protection of Human Health

Based on the generic screening assessment undertaken to date, the following remedial works and measures will be necessary to protect the health of groundworkers, neighbours, future occupiers and visitors:

a) Removal of contaminated Topsoil (locally) and replace with clean imported topsoil, where necessary. Validation criteria for imported material should be agreed with the regulator/Intégrale.
b) Provision of suitable pavings, hardstandings and floor slabs in all other areas to either break the contaminant pathway (should material not be removed from site) or replace existing Topsoil, dependent on proposed levels.
c) Advice and protection to groundworkers during excavations.

6.7.2 For Protection of Surface Water

Based on the generic screening assessment undertaken to date, the following remedial measures will be necessary to protect the adjacent surface water course:

a) Control of surface run-off during construction of the proposed driveway to reduce the risk of silt entering the watercourse.

6.7.3 For Protection of Building Materials & Services

To protect new building materials the following precautions will be necessary:

a) Specification of appropriate concrete protection for the sulphate/pH environment, as detailed in Section 5.
b) Use of protective pipework for all water supplies.

6.7.4 For Protection of New Vegetation

To reduce potential impact from soils contaminants on new planting, the following precautions will be necessary:

a) Consideration to be given to removal of existing Topsoil or Made Ground to allow up to 150mm of clean imported subsoil and topsoil in all new soft landscaped areas/gardens, although unlikely to be necessary locally. Validation criteria for imported soils should be agreed with the regulators/Intégrale.

6.7.5 Reuse and Disposal of Surplus Spoil

Surplus spoil from excavations must be categorised and stockpiled as either suitable for reuse, contaminated for selective reuse and/ or treatment, or contaminated for disposal off-site and/or treatment.

It seems unlikely to be possible to reuse existing Topsoil (from the barns' courtyard) in areas of new soft landscaping or planting. Where spoil is to be reused, it will be necessary to place it beneath suitably designed hard surfacings or a cover system to break the contaminant pathway.

Should soils need removal to a suitably licensed tip, waste characterisation and classification in accordance with the Environment Agency's Technical Guidance will need to be undertaken to comply with the Duty of Care. Consideration should be given to whether it will be a requirement to prepare a Materials Management Plan for all soils excavation, reuse or disposal.

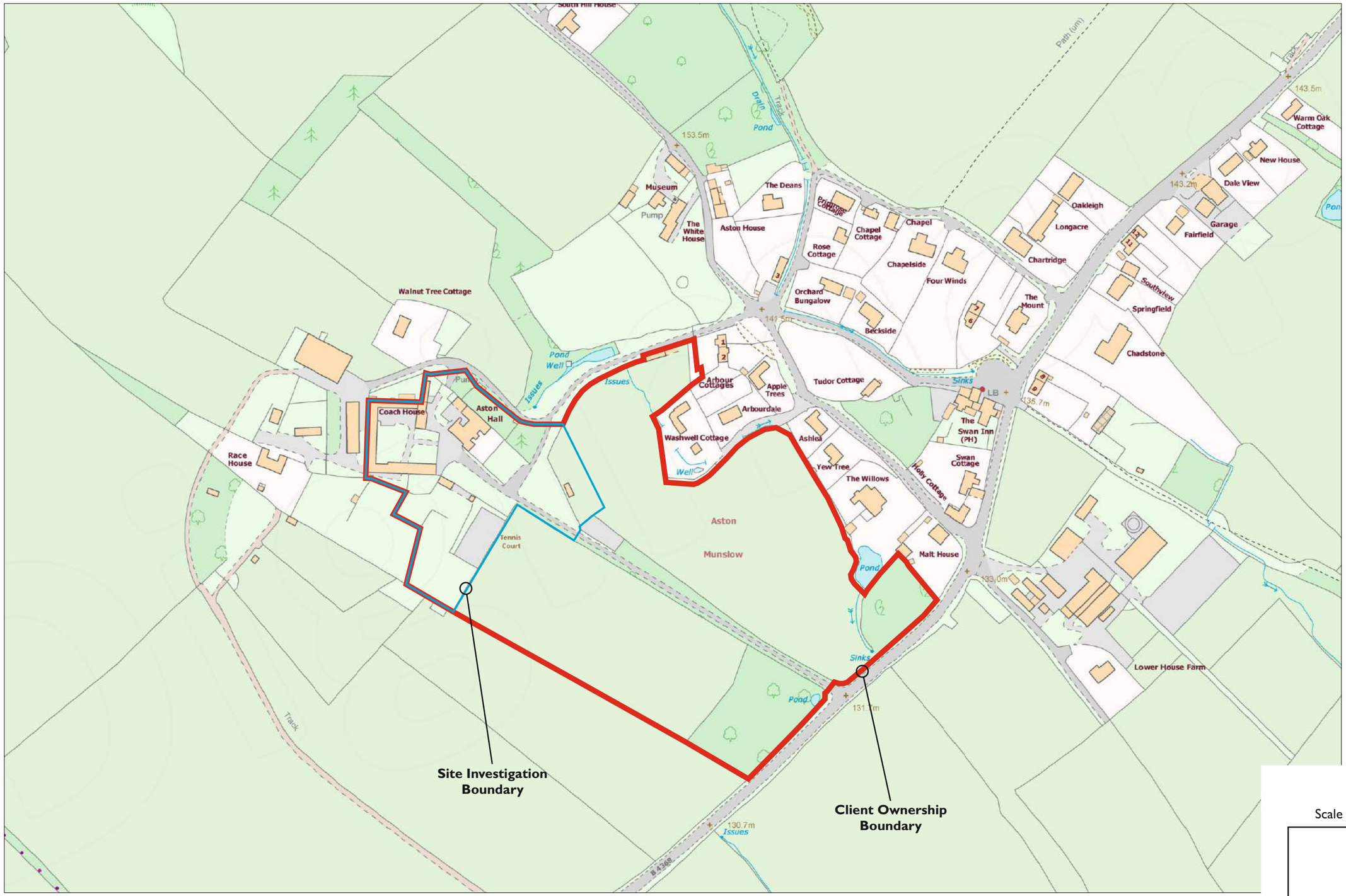
6.7.6 Recommended Further Assessment/Specification

Consideration should be given the existing, redundant underground oil tank in the north of the site and whether this may affect formation of the new driveway and parking proposed in this area (no new buildings proposed in this location). No investigation has been completed in this area and any information regarding its potential decommissioning is unknown.

Any groundworks in this area should be undertaken with care, particularly until the condition of the tank has been assessed. If removal were to take place, it would be prudent to complete further assessment and validation may be necessary and Intégrale would be happy to assist, if required.

A watching brief should be kept at all times while groundworks are occurring. Should any signs of unforeseen contamination be found during groundworks, Intégrale should be contacted immediately to determine the best course of action.

At the time of writing the redevelopment has not been submitted for planning and it is unclear whether there will be a need to discharge planning conditions. If required, a copy of this report should be provided to the Local Authority to confirm their agreement with the findings and recommendations.



Scale = 1:2500 (approx.) @ A3

Figure 1
Site Plan
Aston Hall
Aston Munslow
Shropshire
SY7 9ER

Job No: 21035
August 2021

Intégrale
Understanding Ground Conditions

Adapted from Giles Quarme Architects drawing 'Location Plan' No.9801 L(0) 001, February 2021.

N
W
E
S

PUMP

TP14

TP15

TP16

TP17

Coach House

Main Hall

For Trial Pits in/around existing barns
see Figure 1B

A

A'

BH02

Barn
Conversions

TP08

BH03

BH01

TP12

Proposed
Link
Building

TP29

Proposed
Pool
Building

TP13

Proposed
Ancillary
Buildings

TENNIS

Tennis Court
(to be replaced by
'kitchen garden')

Field

Route of new
driveway
and parking

TPE

TPD

TPC

Field

Area of proposed
drainage field

TPG

TPF

Key:

- Rotary Cored/Probed Borehole
- Mechanical Trial Pit
- Hand excavated Trial Pit
- Percolation Test

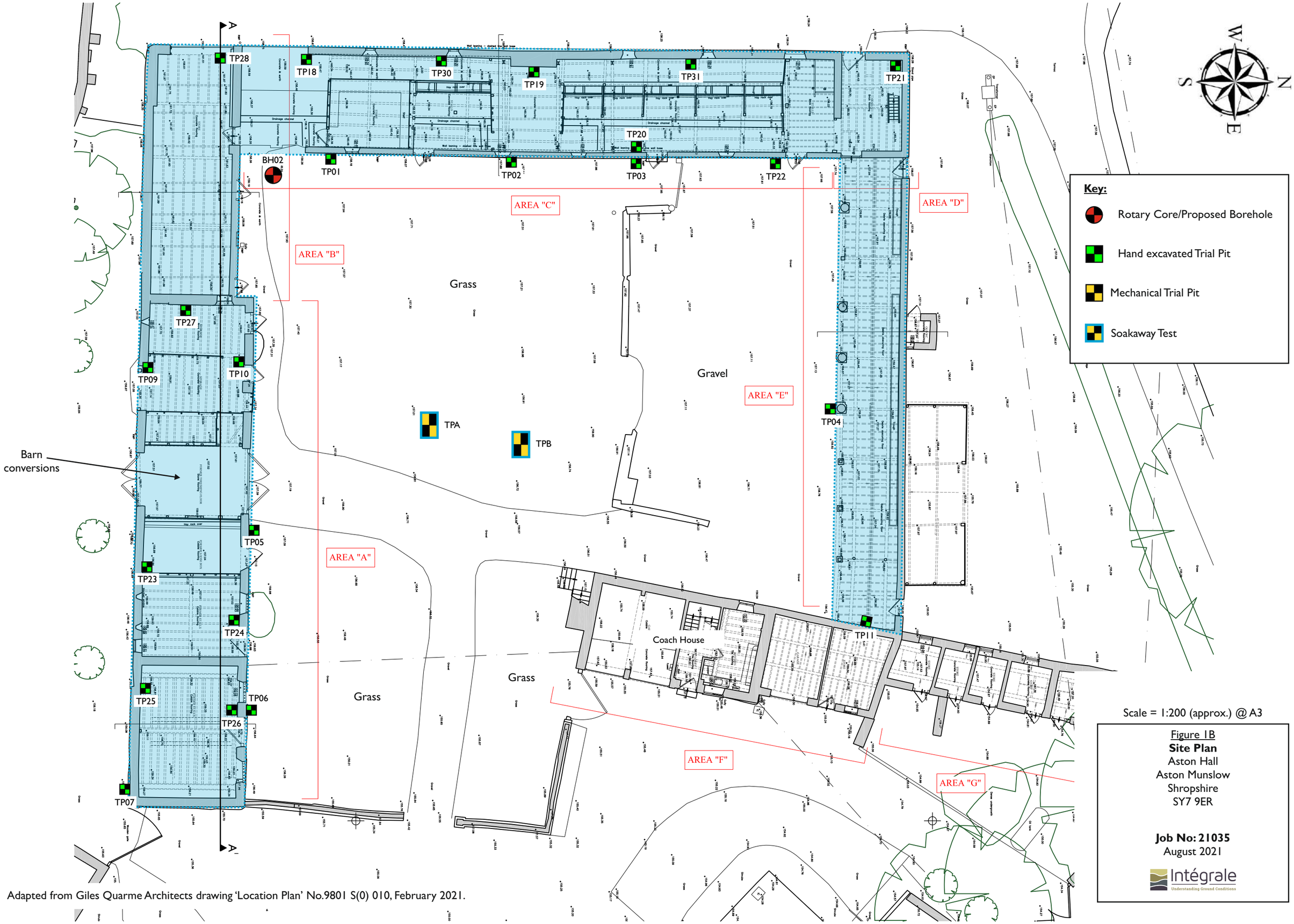
Adapted from Giles Quarme Architects drawing 'Location Plan' No.9801 S(0) 001, February 2021.

Scale = 1:500 (approx.) @ A3

Figure 1A
Site Plan
Aston Hall
Aston Munslow
Shropshire
SY7 9ER

Job No: 21035
August 2021

Intégrale
Understanding Ground Conditions



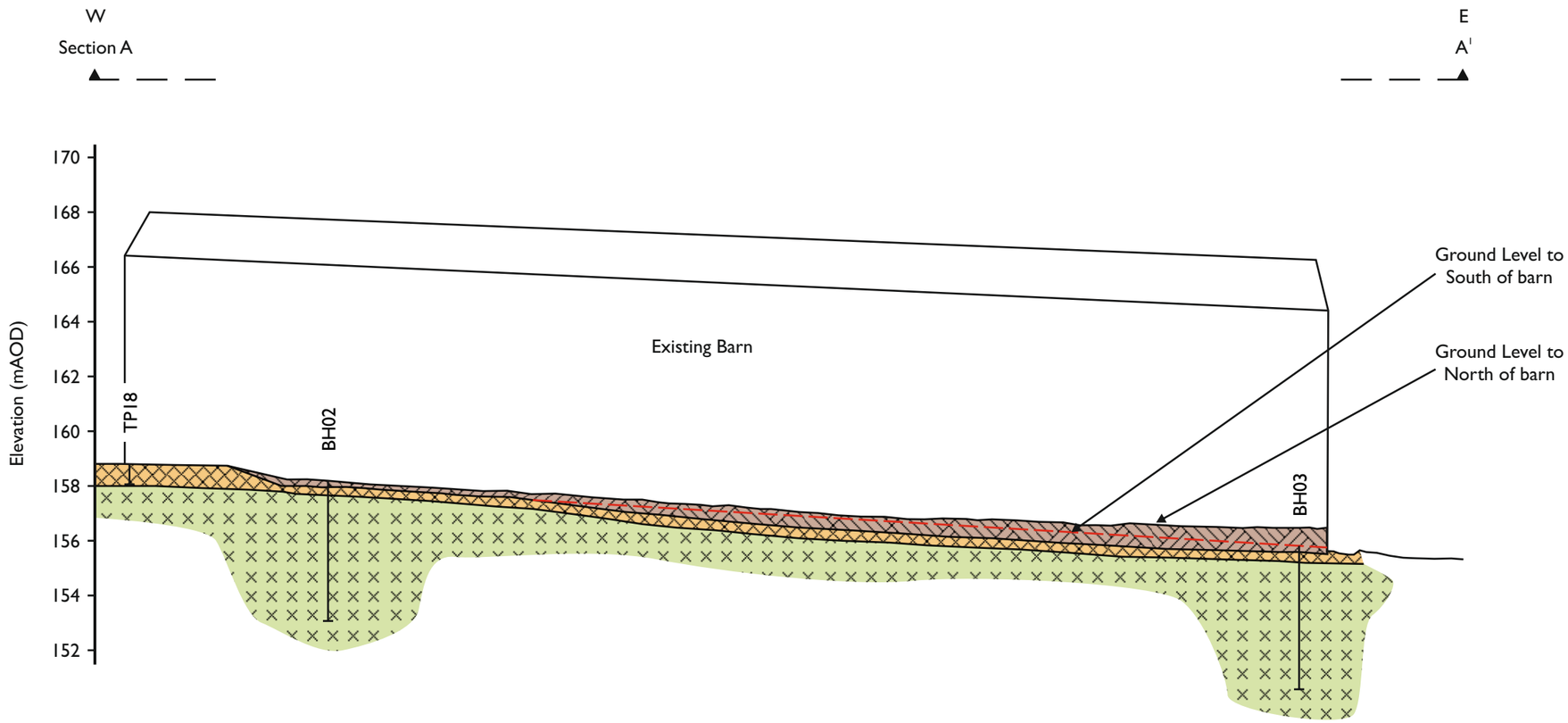
Adapted from Giles Quarme Architects drawing 'Location Plan' No.9801 S(0) 010, February 2021.

Scale = 1:200 (approx.) @ A3

Figure 1B
Site Plan
Aston Hall
Aston Munslow
Shropshire
SY7 9ER

Job No: 21035
August 2021

Intégrale
Understanding Ground Conditions



Key:

- TOPSOIL
- MADE GROUND
- UPPER LUDLOW SHALES

Scale = 1:200 Horizontal and Vertical (approx.) @ A3

Figure 2
Tentative Geological Cross-Section A-A'
Aston Hall
Aston Munslow
Shropshire
SY7 9ER

Job No: 21035
August 2021

Intégrale
Understanding Ground Conditions

Appendix A

Site Location

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Tel: 01275 333036
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Project: **Aston Hall Barns, Aston Hall, Aston Munslow, Shropshire, SY7 9ER** **Job No:** **21035**

Site Location Plan

Appendix B

Site Description & Photographs

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REFERENCES	
Project No.	21035.
Site Address	Aston Hall, Aston Munslow, Shropshire, SY7 9ER.
Grid Reference	E350921, N286572.
Date of Visit	06/07/21.
Names of site owners/ developers/ engineers	Tony (Groundskeeper).
Prepared by	JB.
SITE – GENERAL	
Plan of site	See Figure 1.
Site size (area): % building, % hardstanding, % soft landscaping, % open space, etc.	30% building, 15% hardstanding, 55% soft landscaping.
Current use	Residential.
Site Area	Study Area: c.1.5 Hectares, irregular in plan. Client's Landholding: c.5.5 Hectares, irregular in plan.
Maximum Dimensions	Study Area: c.130m NE-SW by c.170m NW-SE.
Boundaries	N/NE – Private access road & soft landscaping (& rough grazing within client's landholding). SE – Rough grazing/farmland within client's landholding. SW – Rough grazing/farmland. W/NW – Private residential properties, private gardens & farmland.
Any access limitations	No access for drilling rig into walled garden & proximity of beehives in orchard area precludes drilling within footprint of pool building & link building.
Any specific working hours for SI/keys	08:00-17:00.
Any specific Health and Safety hazards	Stability of mezzanine floor in W limb of barns – no access required for investigation.
Water/Power supply on site?	Numerous external taps for water.
SITE – BUILDINGS **The Coach House and Manor House do not form part of the proposals, therefore no access was required into these private dwellings. Other than describing the building appearance, all other features in this section relate to the existing barns.**	
Age of building(s)	16th Century (possibly with some earlier features), plus later additions.
Building appearance: no. of storeys, basement, roofing type, chimneys / stacks? car park, service areas;	Barns: Mix of one or two storeys of traditional masonry construction with dual aspect pitched slate roofs, locally with internal mezzanine floor. Some elements of timber cladding. Northern limb of the barns features stone columns to support the roof & open southern elevation. Coach House: Two storeys of traditional masonry construction with dual aspect pitched slate roof & single storey structures appended to N. (Does not form part of proposals. Manor House: One to three storeys of traditional masonry construction with mixture of flat & pitched slate roofing. Basement present, unclear if same size as building footprint.
State of buildings, i.e. cracks; structural distress etc.	Pronounced lean on external wall of the western limb of the barns with structural wall ties/bolts visible in E elevation &

	internal steelwork supports.
Tanks	None within buildings.
Heating: electric/gas/oil	Unknown.
Chemical storage: drums, other chemical stores	None.
Gas control measures (e.g. vents, cowls, monitoring / alarms)	N/A.
Other evidence of industrial activity	N/A.
Asbestos / deleterious materials – any asbestos surveys? removal programmes?	None noted.
Electrical equipment / Transformers	None noted, although main electricity present in one area of barns used for bicycle storage.
SITE – EXTERNAL	
Hard surfacings: type (asphalt/concrete etc.), staining, weathering, subsidence, repairs. Specific reinstatement required.	Macadam access road becomes gravel-surfaced SE of manor house, before passing to SW & up to E elevation of barns. Locally gravel surfacing within barns' courtyard. Stone paving slabs are present locally around the periphery of the manor house. Some slabs are slightly uneven, but generally in reasonable condition.
Landscaped areas/soft landscaping:	Private walled garden area in S with lawn & plant beds. 'Orchard' immediately to S of southern limb of barns. Lawn areas locally within barns' courtyard.
Invasive species noted	None noted. (Note: Absence indicated here by non-specialist does not preclude presence on site).
Can investigation be in landscaped areas. Specific reinstatement required.	Yes, track matting required to protect grass. Avoid pivoting tracked plant/rigs on the spot so turf is not churned up.
Site topography	Fall from c.159mAOD in W to c.155.5m in E, across barns area. Continued fall to c.152mAOD southeastwards across existing garden & manor house areas. Google Earth indicates the SE boundary of the study area is c.148mAOD with the extreme SE of the client's landholding at c.135mAOD.
Evidence of filling or raising, earthworks, mounds/ hummocks, soil creep, soil fluction, mass movement, steep/ vertical laces, crater-like holes (in chalk/limestone areas). Sloping ground – any indication of instability (cracks in ground, bulges, leaning trees, walls or poles), rotational slip scars.	Party wall to curtilage of Race House, located to the S of the barns, is buttressed. Roots were noted below the (shallow) footing with a deciduous tree within 1m of the wall.
Soil drainage – marshy/marsh vegetation/dry surfaces/cracked/surface rutting etc.	No cracking or rutting noted.
Trees – effects on buildings, condition, species and height, location, maturity, leaning/upright, rotated trees?	Mixture of semi-mature to mature deciduous 'orchard' trees (e.g. cherry & apple) in garden/orchard areas with peripheral evergreen trees for screening (c.15+m tall).
Rock/soil exposures	Yes, siltstone bedrock exposed locally along southern limb of barns complex.
Drainage	Majority of RWDPs on existing barns discharge straight to surface. Shallow concrete drainage channel noted locally along E elevation of western limb, but this is overgrown.
Other evidence of services	Presence of manhole covers locally around site & overhead cables & pole in N.

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Vehicle maintenance: washdown areas, workshops, refuelling points.	N/A.
Waste: skips / compounds, any hazardous waste? Burning grounds or incinerators.	None noted.
Sub-stations: age, condition, transformers, operator, servicing?	None present.
Ecological features of note – Burrows, bats, nest sites, designated preservation areas.	Small nests noted locally in ceiling timbers of barns.
Any seepages on or adjacent to site.	None noted.
Watercourses, water levels, direction and rate of flow.	None within site.
Other features of note within site.	Redundant, buried oil tank to N of manor house with apparent breather pipe. Manhole lifted, but no access to measure depth. Newer elevated tank immediately adjacent to NW. Propane gas tank on concrete slab also adjacent. Disused water pump on NE boundary.
SURROUNDING LAND USES	
General site context – industrial, commercial, urban, agricultural etc.	Agricultural.
Land use – North/Northeast	Agricultural with private access road.
Land use – Southeast	Agricultural within client's landholding.
Land use – Southwest	Agricultural within client's landholding & also private land.
Land use – West/Northwest	Residential – curtilage of Race House (& private garden).
Nearby (<500m) sources of pollution – landfills, filling stations, industrial activity.	Old windmill (130m NE). Old quarry (140m NE).
Nearby river / surface water features.	Issues noted c.10m N with stream that follows NE boundary of client's landholding, flowing SE.
Local ground profiles and signs of instability.	Falling to SE & E.
Evidence of structural distress on nearby buildings.	No obvious signs noted.
Evidence of mining history (colliery spoil heap, miner's cottage).	N/A.
Nearby rock/soil outcrops.	Exposure of siltstone bedrock in cutting alongside private access road c.100m N of site.
Vegetation – distinctive change in vegetation (e.g. hydrophyllic veg).	Marshy ground noted c.30m NE where stream cuts through part of client's landholding.
Adjacent geotechnical features of note – cuttings, quarries, embankments, slopes (particularly if failed), major excavations, deep basements, sources of vibrations (railway or heavy machinery).	Aforementioned under 'nearby rock outcrops'.
Other features of note adjacent to site.	N/A.

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Job No:	21035	**Site Photographs**	Date
Job Name:	Aston Hall Barns, Aston Munslow		06/07/2021
Client:	Mr. & Mrs. D. Cleevely		

Plate 1 N elevation of southern limb of barns.

Plate 2 Central barn's courtyard, looking SW.

Plate 3 Barn's courtyard, looking N.

Plate 4 Gravel chippings in N of courtyard, looking SE.

Plate 5 Structural wall ties/bolts on E elevation of western limb, evidence of former agricultural structure (wall line & markings on E elevation).

Plate 6 S elevation of the northern limb of barns.

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Job No:	21035	**Site Photographs**	Date
Job Name:	Aston Hall Barns, Aston Munslow		06/07/2021
Client:	Mr. & Mrs. D. Cleevely		

Plate 7 Lean on eastern elevation.

Plate 8 Internal structural supports.

Plate 9 As per Plate 9.

Plate 10 Old stable areas within western limb.

Plate 11 Existing roof structure in western limb.

Plate 12 Mezzanine floor within western limb.

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Client:	Mr. & Mrs. D. Cleevely		

Plate 13 W elevation of western limb, looking S.

Plate 14 S elevation of southern limb, looking W.

Plate 15 Infilled opening (& concrete underpinning?) of E end of southern limb of barns.

Plate 16 Localised cracking within concrete.

Plate 17 Orchard area with beehives. Area of proposed link building.

Plate 18 Boundary wall to curtilage of 'Race House', with infilled opening between buttresses.

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Job Name:	Aston Hall Barns, Aston Munslow		06/07/2021
Client:	Mr. & Mrs. D. Cleevely		

Plate 19 Proximiyt of trees to buttressed wall. Bedrock is visible at the bae of the stonework.

Plate 20 Localised repointing of stonework.

Plate 21 Walled garden, looking N, across proposed pool building location.

Plate 22 Existing tennis court, looking W.

Plate 23 Tennis court, looking N. Cut for the development plateau is visible in background centre.

Plate 24 Stone retaining wall downslope of tennis courts & garden.

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Job No:	21035	**Site Photographs**	Date
Job Name:	Aston Hall Barns, Aston Munslow		06/07/2021
Client:	Mr. & Mrs. D. Cleevely		

Plate 25 Existing parking area & drive. Coach House visible background centre.

Plate 26 E elevation of Manor House.

Plate 27 N elevation of Manor House, area of proposed new driveway.

Plate 28 Basement access below Manor House.

Plate 29 As per Plate 27.

Plate 30 Proposed parking area in NE of site (immediately adjacent to NW of Manor House).

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Job Name:	Aston Hall Barns, Aston Munslow		06/07/2021
Client:	Mr. & Mrs. D. Cleevely		

Plate 31 Manhole to redundant oil tank. Apparent breather pipe in background, to right of centre.

Plate 32 Oil tank manhole.

Plate 33 Newer, elevated oil tank, to NW of Manor House.

Plate 34 Propane gas tank, to NW of Manor House.

Plate 35 Proposed route of new driveway through wooded area to NE of Manor House.

Plate 36 Private driveway to neighbouring properties with buttressed wall retaining garden area (new driveway) to N of Manor House.

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Plate 37 Proposed driveway to run through field downslope of wooded area, and to E of Manor House.

Plate 38 Buildings within client's landholding to N of study site. Boggy ground in foreground is course of unnamed river.

Plate 39 Culverted watercourse below private driveway.

Plate 40 Dried pond bed beyond client's landholding from which watercourse runs.

Plate 41 Exposed bedrock in c.2-3m high cutting to N of study site, opposite client's landholding.

Plate 42 As per Plate 35.

Intégrale

Appendix C

Desk Study Information

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Groundsure
LOCATION INTELLIGENCE

Enviro+Geo Insight

Aston Hall Barns, Aston Hall, Aston Munslow, Shropshire, SY7 9ER

Order Details

Date: 19/08/2021

Your ref: 13238

Our Ref: CMAPS-CM-985025-13238-190821EDRGEO

Client: CENTREMAPS

Site Details

Location: 350902 286575

Area: 1.28 ha

Authority: Shropshire Council - Unitary

Contact us with any questions at:
info@groundsure.com
08444 159 000

Summary of findings

Page	Section	Past land use	On site	0-50m	50-250m	250-500m	500-2000m
14	1.1	Historical industrial land uses	0	0	1	4	-
15	1.2	Historical tanks	0	0	1	0	-
15	1.3	Historical energy features	0	0	0	0	-
16	1.4	Historical petrol stations	0	0	0	0	-
16	1.5	Historical garages	0	0	0	1	-
16	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped	On site	0-50m	50-250m	250-500m	500-2000m
17	2.1	Historical industrial land uses	0	0	2	6	-
18	2.2	Historical tanks	0	0	1	0	-
18	2.3	Historical energy features	0	0	0	0	-
18	2.4	Historical petrol stations	0	0	0	0	-
19	2.5	Historical garages	0	0	0	2	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
20	3.1	Active or recent landfill	0	0	0	0	-
20	3.2	Historical landfill (BGS records)	0	0	0	0	-
21	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
21	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
21	3.5	Historical waste sites	0	0	0	0	-
21	3.6	Licensed waste sites	0	0	0	0	-
21	3.7	Waste exemptions	0	0	9	24	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
26	4.1	Recent industrial land uses	1	0	1	-	-
27	4.2	Current or recent petrol stations	0	0	0	1	-
27	4.3	Electricity cables	0	0	0	0	-
27	4.4	Gas pipelines	0	0	0	0	-
27	4.5	Sites determined as Contaminated Land	0	0	0	0	-

27	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
28	4.7	Regulated explosive sites	0	0	0	0	-
28	4.8	Hazardous substance storage/usage	0	0	0	0	-
28	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
28	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
28	**4.11**	**Licensed pollutant release (Part A(2)/B)**	0	0	0	1	-
29	4.12	Radioactive Substance Authorisations	0	0	0	0	-
29	4.13	Licensed Discharges to controlled waters	0	0	0	0	-
29	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
29	4.15	Pollutant release to public sewer	0	0	0	0	-
30	4.16	List 1 Dangerous Substances	0	0	0	0	-
30	4.17	List 2 Dangerous Substances	0	0	0	0	-
30	4.18	Pollution Incidents (EA/NRW)	0	0	0	0	-
30	4.19	Pollution inventory substances	0	0	0	0	-
30	4.20	Pollution inventory waste transfers	0	0	0	0	-
31	4.21	Pollution inventory radioactive waste	0	0	0	0	-

Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
32	**5.1**	**Superficial aquifer**	Identified (within 500m)				
33	**5.2**	**Bedrock aquifer**	Identified (within 500m)				
35	**5.3**	**Groundwater vulnerability**	Identified (within 50m)				
36	**5.4**	**Groundwater vulnerability- soluble rock risk**	Identified (within 0m)				
36	5.5	Groundwater vulnerability- local information	None (within 0m)				
37	5.6	Groundwater abstractions	0	0	0	0	0
38	**5.7**	**Surface water abstractions**	0	0	0	0	1
38	5.8	Potable abstractions	0	0	0	0	0
38	**5.9**	**Source Protection Zones**	2	0	0	0	-
39	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-

Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
40	**6.1**	**Water Network (OS MasterMap)**	0	2	15	-	-

42	**6.2**	**Surface water features**	0	1	10	-	-
42	**6.3**	**WFD Surface water body catchments**	1	-	-	-	-
43	**6.4**	**WFD Surface water bodies**	0	0	0	-	-
43	**6.5**	**WFD Groundwater bodies**	2	-	-	-	-

Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
44	7.1	Risk of Flooding from Rivers and Sea (RoFRaS)	None (within 50m)				
44	7.2	Historical Flood Events	0	0	0	-	-
44	7.3	Flood Defences	0	0	0	-	-
44	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
45	7.5	Flood Storage Areas	0	0	0	-	-
46	7.6	Flood Zone 2	None (within 50m)				
46	7.7	Flood Zone 3	None (within 50m)				

Page	Section	Surface water flooding	
47	**8.1**	**Surface water flooding**	1 in 30 year, 0.3m - 1.0m (within 50m)

Page	Section	Groundwater flooding	
49	**9.1**	**Groundwater flooding**	Negligible (within 50m)

Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
50	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
51	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
51	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
51	10.4	Special Protection Areas (SPA)	0	0	0	0	0
51	10.5	National Nature Reserves (NNR)	0	0	0	0	0
52	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
52	**10.7**	**Designated Ancient Woodland**	0	0	0	0	5
52	10.8	Biosphere Reserves	0	0	0	0	0
53	10.9	Forest Parks	0	0	0	0	0
53	10.10	Marine Conservation Zones	0	0	0	0	0
53	10.11	Green Belt	0	0	0	0	0
53	10.12	Proposed Ramsar sites	0	0	0	0	0

53	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
54	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
54	10.15	Nitrate Sensitive Areas	0	0	0	0	0
54	**10.16**	**Nitrate Vulnerable Zones**	1	0	0	0	1
55	**10.17**	**SSSI Impact Risk Zones**	2	-	-	-	-
56	10.18	SSSI Units	0	0	0	0	0
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
57	11.1	World Heritage Sites	0	0	0	-	-
58	**11.2**	**Area of Outstanding Natural Beauty**	1	0	0	-	-
58	11.3	National Parks	0	0	0	-	-
58	**11.4**	**Listed Buildings**	2	0	6	-	-
59	**11.5**	**Conservation Areas**	0	1	0	-	-
59	**11.6**	**Scheduled Ancient Monuments**	0	0	1	-	-
60	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
61	**12.1**	**Agricultural Land Classification**	Grade 3 (within 250m)				
62	12.2	Open Access Land	0	0	0	-	-
62	12.3	Tree Felling Licences	0	0	0	-	-
62	**12.4**	**Environmental Stewardship Schemes**	2	0	4	-	-
63	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
64	**13.1**	**Priority Habitat Inventory**	0	0	5	-	-
65	13.2	Habitat Networks	0	0	0	-	-
65	13.3	Open Mosaic Habitat	0	0	0	-	-
65	13.4	Limestone Pavement Orders	0	0	0	-	-
Page	Section	Geology 1:10,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
66	**14.1**	**10k Availability**	Identified (within 500m)				
67	14.2	Artificial and made ground (10k)	0	0	0	0	-
68	14.3	Superficial geology (10k)	0	0	0	0	-

68	14.4	Landslip (10k)	0	0	0	0	-
69	14.5	Bedrock geology (10k)	0	0	0	0	-
69	14.6	Bedrock faults and other linear features (10k)	0	0	0	0	-
Page	Section	Geology 1:50,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
70	**15.1**	**50k Availability**	Identified (within 500m)				
71	15.2	Artificial and made ground (50k)	0	0	0	0	-
71	15.3	Artificial ground permeability (50k)	0	0	-	-	-
72	**15.4**	**Superficial geology (50k)**	0	0	1	0	-
73	15.5	Superficial permeability (50k)	None (within 50m)				
73	15.6	Landslip (50k)	0	0	0	0	-
73	15.7	Landslip permeability (50k)	None (within 50m)				
74	**15.8**	**Bedrock geology (50k)**	1	0	2	3	-
75	**15.9**	**Bedrock permeability (50k)**	Identified (within 50m)				
75	15.10	Bedrock faults and other linear features (50k)	0	0	0	0	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
76	16.1	BGS Boreholes	0	0	0	-	-
Page	Section	Natural ground subsidence					
77	**17.1**	**Shrink swell clays**	Negligible (within 50m)				
78	**17.2**	**Running sands**	Negligible (within 50m)				
79	**17.3**	**Compressible deposits**	Negligible (within 50m)				
80	**17.4**	**Collapsible deposits**	Very low (within 50m)				
81	**17.5**	**Landslides**	Very low (within 50m)				
82	**17.6**	**Ground dissolution of soluble rocks**	Negligible (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
83	18.1	Natural cavities	0	0	0	0	-
84	**18.2**	**BritPits**	0	0	0	2	-
84	**18.3**	**Surface ground workings**	0	1	8	-	-
85	18.4	Underground workings	0	0	0	0	0
85	18.5	Historical Mineral Planning Areas	0	0	0	0	-

85	**18.6**	**Non-coal mining**	1	0	0	0	1
86	18.7	Mining cavities	0	0	0	0	0
86	**18.8**	**JPB mining areas**	Identified (within 0m)				
86	18.9	Coal mining	None (within 0m)				
87	18.10	Brine areas	None (within 0m)				
87	18.11	Gypsum areas	None (within 0m)				
87	18.12	Tin mining	None (within 0m)				
87	18.13	Clay mining	None (within 0m)				

Page	Section	Radon	
88	**19.1**	**Radon**	Between 5% and 10% (within 0m)

Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
89	**20.1**	**BGS Estimated Background Soil Chemistry**	2	1	-	-	-
89	20.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
89	20.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-

Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
90	21.1	Underground railways (London)	0	0	0	-	-
90	21.2	Underground railways (Non-London)	0	0	0	-	-
90	21.3	Railway tunnels	0	0	0	-	-
90	21.4	Historical railway and tunnel features	0	0	0	-	-
90	21.5	Royal Mail tunnels	0	0	0	-	-
91	21.6	Historical railways	0	0	0	-	-
91	21.7	Railways	0	0	0	-	-
91	21.8	Crossrail 1	0	0	0	0	-
91	21.9	Crossrail 2	0	0	0	0	-
91	21.10	HS2	0	0	0	0	-

Recent aerial photograph

Capture Date: 21/04/2020

Site Area: 1.28ha

Recent site history - 2016 aerial photograph

Capture Date: 19/07/2016

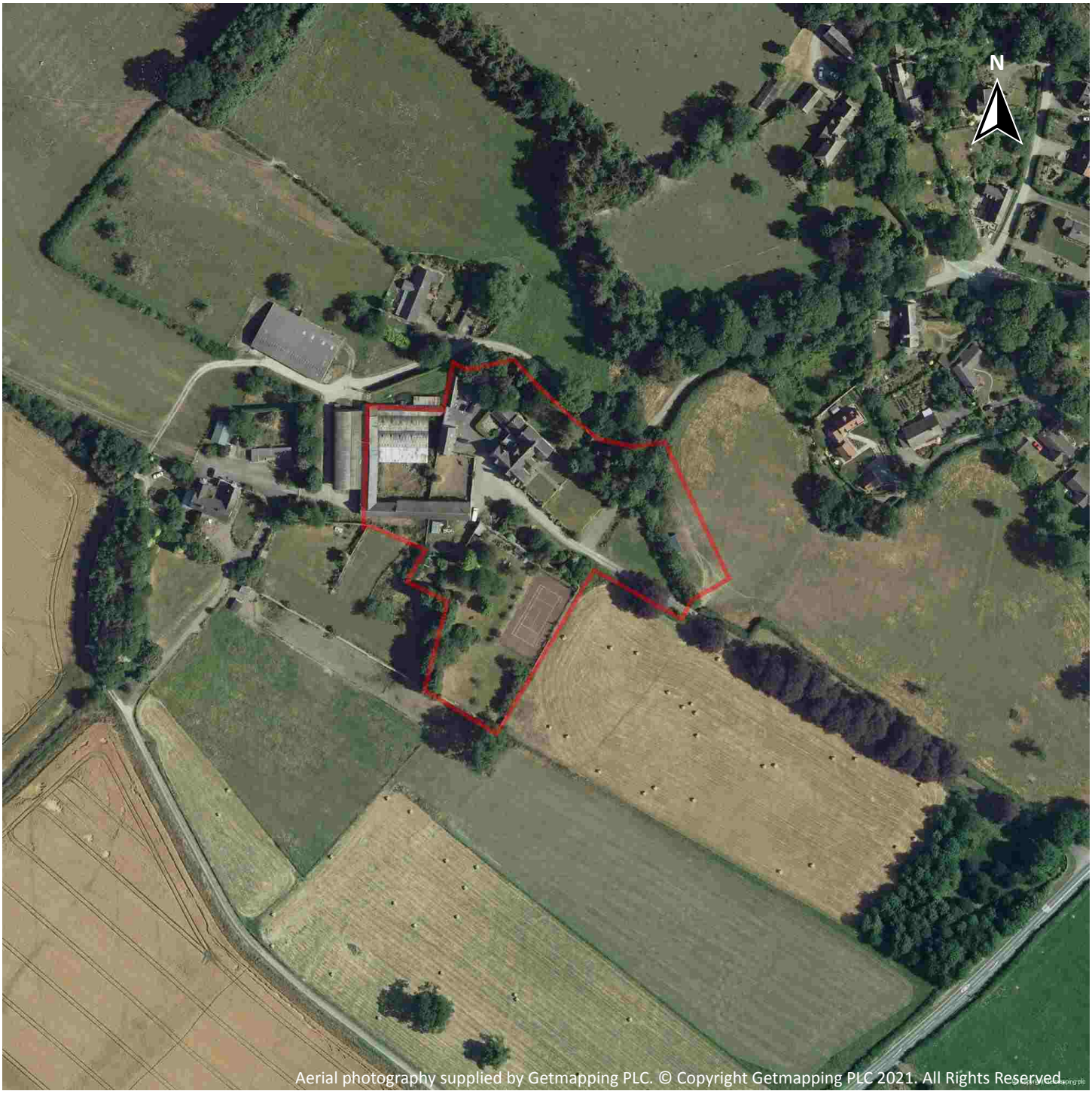
Site Area: 1.28ha

Recent site history - 2012 aerial photograph

Capture Date: 27/03/2012

Site Area: 1.28ha

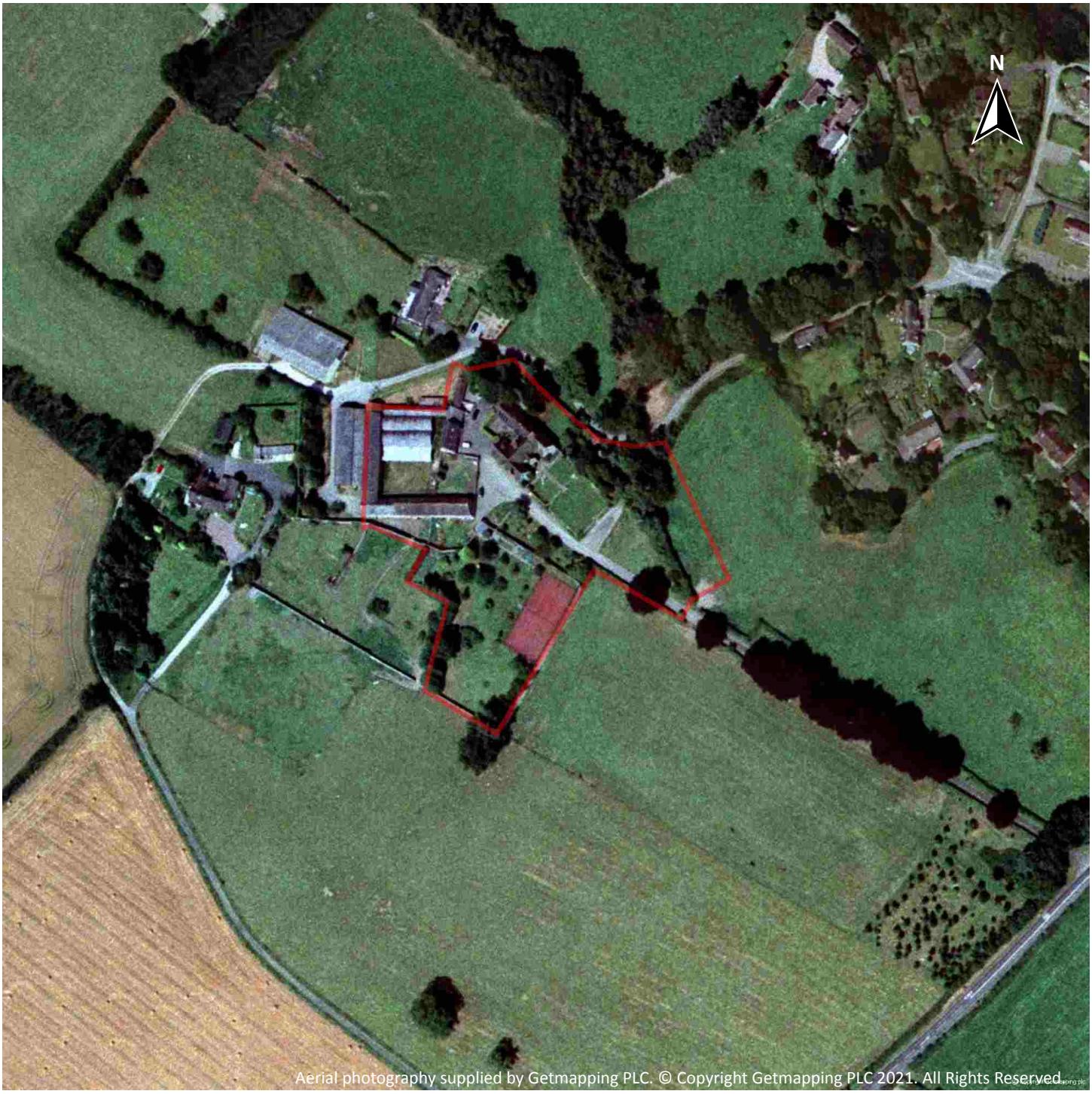
Recent site history - 2006 aerial photograph



Capture Date: 17/07/2006

Site Area: 1.28ha

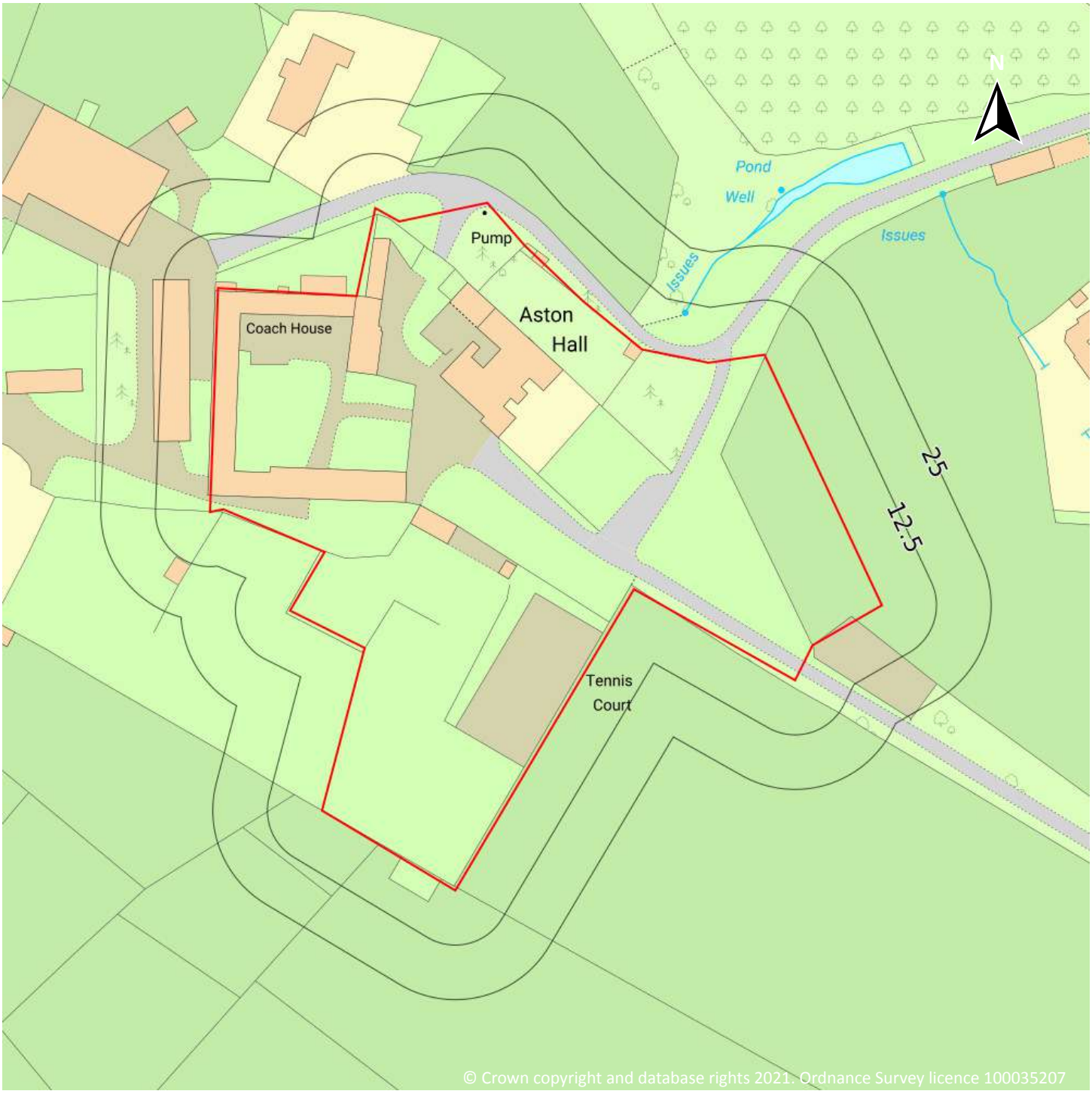
Recent site history - 1999 aerial photograph



Capture Date: 29/07/1999

Site Area: 1.28ha

OS MasterMap site plan



Site Area: 1.28ha

1 Past land use

Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical garages

1.1 Historical industrial land uses

Records within 500m	5

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 1:10,560 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
A	130m NE	Old Windmill	1901 - 1949	1040777

ID	Location	Land use	Dates present	Group ID
B	287m NE	Unspecified Old Quarry	1901 - 1949	1065292
B	324m NE	Unspecified Old Quarry	1883	1023553
C	394m NW	Unspecified Old Quarry	1901 - 1949	1135238
C	403m NW	Unspecified Old Quarry	1883	1139037

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	**1**

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
A	117m NE	Unspecified Tank	1972	152173

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	**0**

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m	0

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m	1

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
1	396m NE	Garage	1972 - 1997	30129

This data is sourced from Ordnance Survey / Groundsure.

1.6 Historical military land

Records within 500m	0

Areas of military land digitised from multiple sources including the National Archives, local records, MOD records and verified other sources, intelligently grouped into contiguous features.

This data is sourced from Ordnance Survey / Groundsure / other sources.

2 Past land use - un-grouped

Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical garages

2.1 Historical industrial land uses

Records within 500m	8

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 10,560 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 17**

ID	Location	Land Use	Date	Group ID
A	130m NE	Old Windmill	1949	1040777
A	130m NE	Old Windmill	1901	1040777
B	287m NE	Unspecified Old Quarry	1949	1065292

ID	Location	Land Use	Date	Group ID
B	287m NE	Unspecified Old Quarry	1901	1065292
B	324m NE	Unspecified Old Quarry	1883	1023553
C	394m NW	Unspecified Old Quarry	1949	1135238
C	394m NW	Unspecified Old Quarry	1901	1135238
C	403m NW	Unspecified Old Quarry	1883	1139037

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	**1**

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 17**

ID	Location	Land Use	Date	Group ID
A	117m NE	Unspecified Tank	1972	152173

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	**0**

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m	**0**

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

2.5 Historical garages

Records within 500m	**2**

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 17**

ID	Location	Land Use	Date	Group ID
D	396m NE	Garage	1972	30129
D	397m NE	Garage	1997	30129

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill

Site Outline

Search buffers in metres (m)

Waste exemptions

3.1 Active or recent landfill

Records within 500m	0

Active or recently closed landfill sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.2 Historical landfill (BGS records)

Records within 500m	0

Landfill sites identified on a survey carried out on behalf of the DoE in 1973. These sites may have been closed or operational at this time.

This data is sourced from the British Geological Survey.

3.3 Historical landfill (LA/mapping records)

Records within 500m	0

Landfill sites identified from Local Authority records and high detail historical mapping.

This data is sourced from the Ordnance Survey/Groundsure and Local Authority records.

3.4 Historical landfill (EA/NRW records)

Records within 500m	0

Known historical (closed) landfill sites (e.g. sites where there is no PPC permit or waste management licence currently in force). This includes sites that existed before the waste licensing regime and sites that have been licensed in the past but where a licence has been revoked, ceased to exist or surrendered and a certificate of completion has been issued.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.5 Historical waste sites

Records within 500m	0

Waste site records derived from Local Authority planning records and high detail historical mapping.

This data is sourced from Ordnance Survey/Groundsure and Local Authority records.

3.6 Licensed waste sites

Records within 500m	0

Active or recently closed waste sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.7 Waste exemptions

Records within 500m	33

Activities involving the storage, treatment, use or disposal of waste that are exempt from needing a permit. Exemptions have specific limits and conditions that must be adhered to.

Features are displayed on the Waste and landfill map on **page 20**

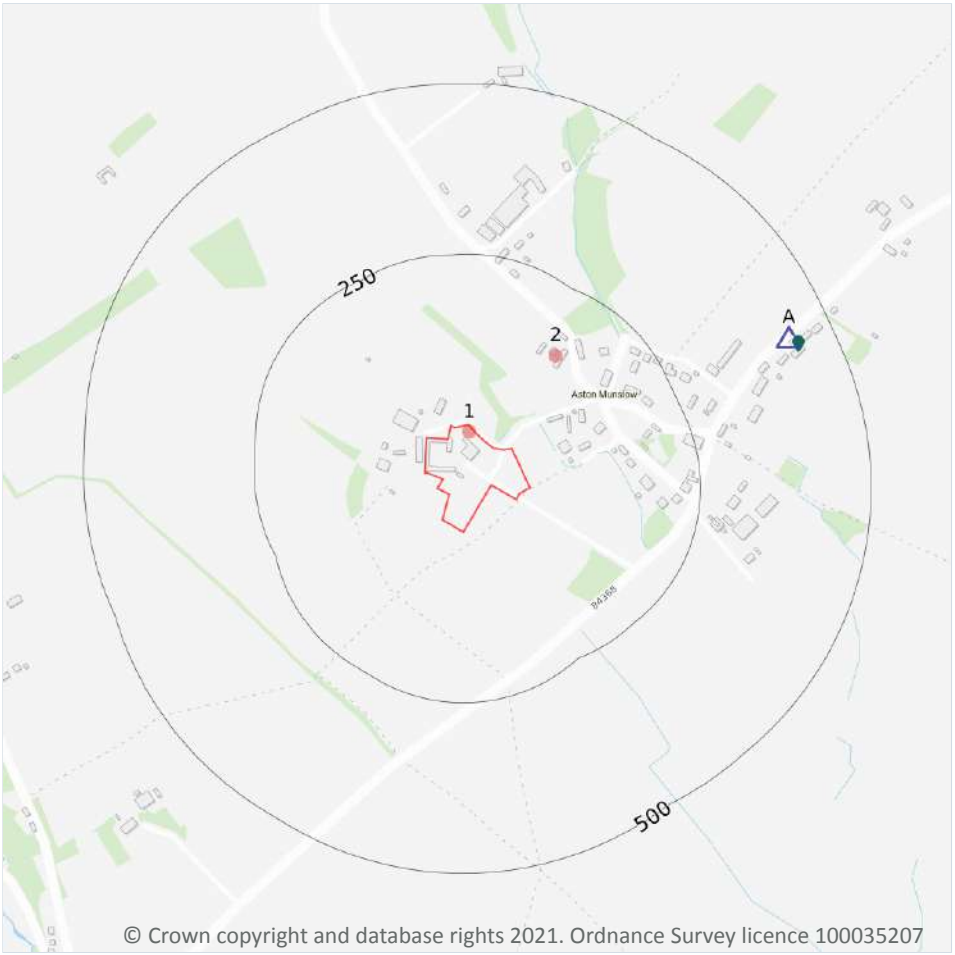
ID	Location	Site	Reference	Category	Sub-Category	Description
A	232m NE	South Hill Farm CRAVEN ARMS Shropshire SY7 9ER	EPR/EF0805ZZ /A001	Disposing of waste exemption	Both agricultural and non-agricultural waste	Deposit of waste from dredging of inland waters
A	232m NE	South Hill Farm CRAVEN ARMS Shropshire SY7 9ER	EPR/EF0805ZZ /A001	Disposing of waste exemption	Both agricultural and non-agricultural waste	Burning waste in the open
A	232m NE	South Hill Farm CRAVEN ARMS Shropshire SY7 9ER	EPR/EF0805ZZ /A001	Storing waste exemption	Both agricultural and non-agricultural waste	Storage of waste in secure containers
A	232m NE	South Hill Farm CRAVEN ARMS Shropshire SY7 9ER	EPR/EF0805ZZ /A001	Storing waste exemption	Both agricultural and non-agricultural waste	Storage of waste in a secure place
A	232m NE	South Hill Farm CRAVEN ARMS Shropshire SY7 9ER	EPR/EF0805ZZ /A001	Treating waste exemption	Both agricultural and non-agricultural waste	Crushing and emptying waste vehicle oil filters
A	232m NE	South Hill Farm CRAVEN ARMS Shropshire SY7 9ER	EPR/EF0805ZZ /A001	Treating waste exemption	Both agricultural and non-agricultural waste	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
A	232m NE	South Hill Farm CRAVEN ARMS Shropshire SY7 9ER	EPR/EF0805ZZ /A001	Using waste exemption	Both agricultural and non-agricultural waste	Use of waste in construction
A	232m NE	South Hill Farm CRAVEN ARMS Shropshire SY7 9ER	EPR/EF0805ZZ /A001	Using waste exemption	Both agricultural and non-agricultural waste	Spreading waste on agricultural land to confer benefit
A	232m NE	South Hill Farm CRAVEN ARMS Shropshire SY7 9ER	EPR/EF0805ZZ /A001	Using waste exemption	Both agricultural and non-agricultural waste	Use of waste for a specified purpose

ID	Location	Site	Reference	Category	Sub-Category	Description
B	308m N	SOUTH HILL FARM, ASTON MUNSLOW, CRAVEN ARMS, SY7 9ER	WEX150590	Disposing of waste exemption	On a Farm	Burning waste in the open
B	308m N	SOUTH HILL FARM, ASTON MUNSLOW, CRAVEN ARMS, SY7 9ER	WEX150590	Storing waste exemption	On a Farm	Storage of waste in secure containers
B	308m N	SOUTH HILL FARM, ASTON MUNSLOW, CRAVEN ARMS, SY7 9ER	WEX150590	Using waste exemption	On a Farm	Spreading waste on agricultural land to confer benefit
B	308m N	SOUTH HILL FARM, ASTON MUNSLOW, CRAVEN ARMS, SY7 9ER	WEX150590	Disposing of waste exemption	On a Farm	Deposit of waste from dredging of inland waters
B	308m N	SOUTH HILL FARM, ASTON MUNSLOW, CRAVEN ARMS, SY7 9ER	WEX150590	Using waste exemption	On a Farm	Use of waste in construction
B	308m N	SOUTH HILL FARM, ASTON MUNSLOW, CRAVEN ARMS, SY7 9ER	WEX150590	Treating waste exemption	On a Farm	Crushing and emptying waste vehicle oil filters
B	308m N	SOUTH HILL FARM, ASTON MUNSLOW, CRAVEN ARMS, SY7 9ER	WEX150590	Treating waste exemption	On a Farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
B	308m N	SOUTH HILL FARM, ASTON MUNSLOW, CRAVEN ARMS, SY7 9ER	WEX150590	Storing waste exemption	On a Farm	Storage of waste in a secure place
B	308m N	SOUTH HILL FARM, ASTON MUNSLOW, CRAVEN ARMS, SY7 9ER	WEX135250	Disposing of waste exemption	On a farm	Deposit of waste from dredging of inland waters
B	308m N	SOUTH HILL FARM, ASTON MUNSLOW, CRAVEN ARMS, SY7 9ER	WEX135250	Using waste exemption	On a farm	Use of waste for a specified purpose
B	308m N	SOUTH HILL FARM, ASTON MUNSLOW, CRAVEN ARMS, SY7 9ER	WEX135250	Treating waste exemption	On a farm	Crushing and emptying waste vehicle oil filters
B	308m N	SOUTH HILL FARM, ASTON MUNSLOW, CRAVEN ARMS, SY7 9ER	WEX135250	Storing waste exemption	On a farm	Storage of waste in a secure place
B	308m N	SOUTH HILL FARM, ASTON MUNSLOW, CRAVEN ARMS, SY7 9ER	WEX135250	Disposing of waste exemption	On a farm	Burning waste in the open

ID	Location	Site	Reference	Category	Sub-Category	Description
B	308m N	SOUTH HILL FARM, ASTON MUNSLOW, CRAVEN ARMS, SY7 9ER	WEX135250	Storing waste exemption	On a farm	Storage of waste in secure containers
B	308m N	SOUTH HILL FARM, ASTON MUNSLOW, CRAVEN ARMS, SY7 9ER	WEX135250	Treating waste exemption	On a farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
B	308m N	SOUTH HILL FARM, ASTON MUNSLOW, CRAVEN ARMS, SY7 9ER	WEX135250	Using waste exemption	On a farm	Use of waste in construction
B	308m N	SOUTH HILL FARM, ASTON MUNSLOW, CRAVEN ARMS, SY7 9ER	WEX135250	Using waste exemption	On a farm	Spreading waste on agricultural land to confer benefit
B	308m N	South Hill Farm CRAVEN ARMS Shropshire SY7 9ER	EPR/BE5041NU/A001	Disposing of waste exemption	Agricultural Waste Only	Deposit of agricultural waste consisting of plant tissue under a Plant Health notice
B	308m N	South Hill Farm CRAVEN ARMS Shropshire SY7 9ER	EPR/BE5041NU/A001	Using waste exemption	Agricultural Waste Only	Use of waste in construction
B	308m N	South Hill Farm CRAVEN ARMS Shropshire SY7 9ER	EPR/BE5041NU/A001	Disposing of waste exemption	Both agricultural and non-agricultural waste	Burning waste in the open
B	308m N	South Hill Farm CRAVEN ARMS Shropshire SY7 9ER	EPR/BE5041NU/A001	Treating waste exemption	Both agricultural and non-agricultural waste	Cleaning, washing, spraying or coating relevant waste
B	308m N	South Hill Farm CRAVEN ARMS Shropshire SY7 9ER	EPR/BE5041NU/A001	Treating waste exemption	Both agricultural and non-agricultural waste	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
B	308m N	South Hill Farm CRAVEN ARMS Shropshire SY7 9ER	EPR/BE5041NU/A001	Using waste exemption	Both agricultural and non-agricultural waste	Spreading waste on agricultural land to confer benefit
B	308m N	South Hill Farm CRAVEN ARMS Shropshire SY7 9ER	EPR/BE5041NU/A001	Using waste exemption	Both agricultural and non-agricultural waste	Use of waste for a specified purpose

This data is sourced from the Environment Agency and Natural Resources Wales.

4 Current industrial land use



Site Outline

Search buffers in metres (m)

Recent industrial land uses

Current or recent petrol stations

Licensed pollutant release (Part A(2)/B)

4.1 Recent industrial land uses

Records within 250m	2

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 26**

ID	Location	Company	Address	Activity	Category
1	**On site**	**Pump**	**Shropshire, SY7**	**Water Pumping Stations**	**Industrial Features**
2	151m NE	Pump	Shropshire, SY7	Water Pumping Stations	Industrial Features

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m	1

Open, closed, under development and obsolete petrol stations.

Features are displayed on the Current industrial land use map on **page 26**

ID	Location	Company	Address	LPG	Status
A	437m NE	UNBRANDED	B4368, Aston Munslow, Craven Arms, Shropshire, SY7 9ER	No	Open

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m	0

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m	0

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m	0

Contaminated Land Register of sites designated under Part 2a of the Environmental Protection Act 1990.

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m	0

Control of Major Accident Hazards (COMAH) sites. This data includes upper and lower tier sites, and includes a historical archive of COMAH sites and Notification of Installations Handling Hazardous Substances (NIHHS) records.

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m	0

Sites registered and licensed by the Health and Safety Executive under the Manufacture and Storage of Explosives Regulations 2005 (MSER). The last update to this data was in April 2011.

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m	0

Consents granted for a site to hold certain quantities of hazardous substances at or above defined limits in accordance with the Planning (Hazardous Substances) Regulations 2015.

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m	0

Integrated Pollution Control (IPC) records of substance releases to air, land and water. This data represents a historical archive as the IPC regime has been superseded.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.10 Licensed industrial activities (Part A(1))

Records within 500m	0

Records of Part A(1) installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.11 Licensed pollutant release (Part A(2)/B)

Records within 500m	1

Records of Part A(2) and Part B installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

Features are displayed on the Current industrial land use map on **page 26**

ID	Location	Address	Details	
A	444m NE	Aston Munslow Garage, Aston Munslow, SY7 9ER	Process: Petrol Vapour Recovery Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m	0

Records of the storage, use, accumulation and disposal of radioactive substances regulated under the Radioactive Substances Act 1993.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.13 Licensed Discharges to controlled waters

Records within 500m	0

Discharges of treated or untreated effluent to controlled waters under the Water Resources Act 1991.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.14 Pollutant release to surface waters (Red List)

Records within 500m	0

Discharges of specified substances under the Environmental Protection (Prescribed Processes and Substances) Regulations 1991.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.15 Pollutant release to public sewer

Records within 500m	0

Discharges of Special Category Effluents to the public sewer.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.16 List 1 Dangerous Substances

Records within 500m	0

Discharges of substances identified on List I of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.17 List 2 Dangerous Substances

Records within 500m	0

Discharges of substances identified on List II of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.18 Pollution Incidents (EA/NRW)

Records within 500m	0

Records of substantiated pollution incidents. Since 2006 this data has only included category 1 (major) and 2 (significant) pollution incidents.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.19 Pollution inventory substances

Records within 500m	0

The pollution inventory (substances) includes reporting on annual emissions of certain regulated substances to air, controlled waters and land. A reporting threshold for each substance is also included. Where emissions fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.20 Pollution inventory waste transfers

Records within 500m	0

The pollution inventory (waste transfers) includes reporting on annual transfers and recovery/disposal of controlled wastes from a site. A reporting threshold for each waste type is also included. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

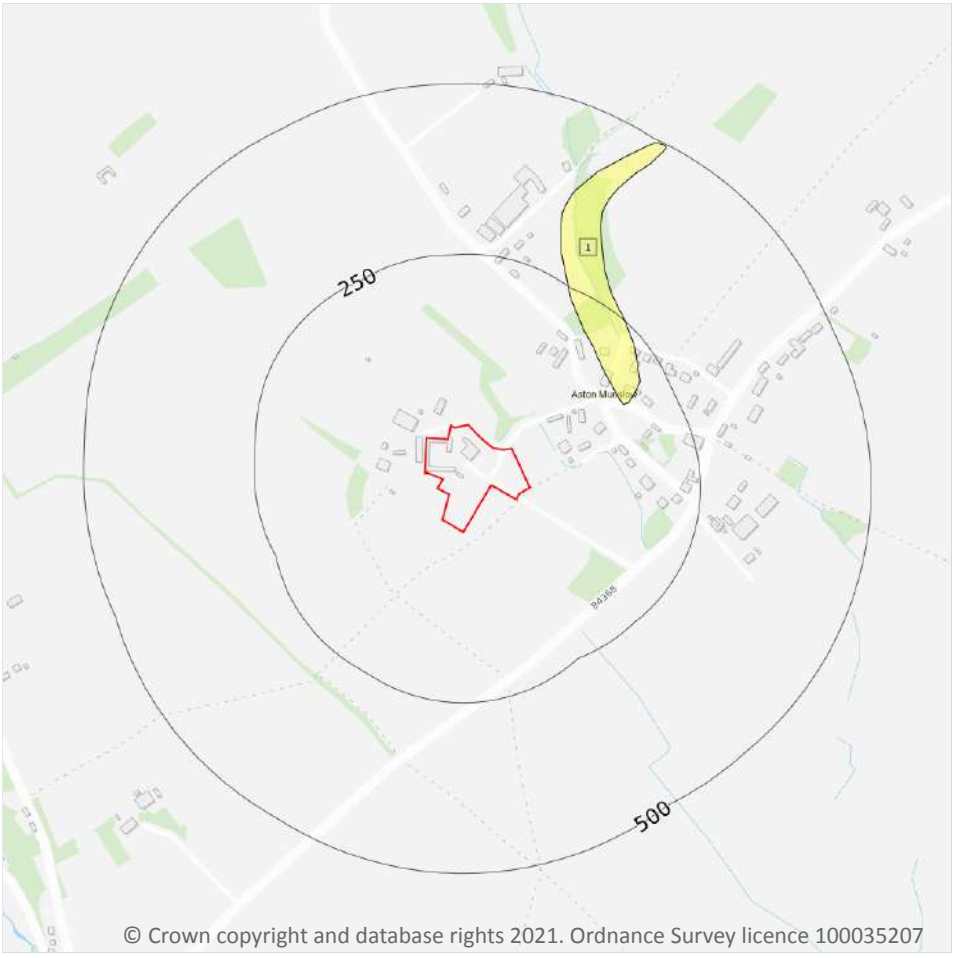
4.21 Pollution inventory radioactive waste

Records within 500m	0

The pollution inventory (radioactive wastes) includes reporting on annual releases of radioactive substances from a site, including the means of release. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

5 Hydrogeology - Superficial aquifer



Site Outline

Search buffers in metres (m)

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

5.1 Superficial aquifer

Records within 500m	1

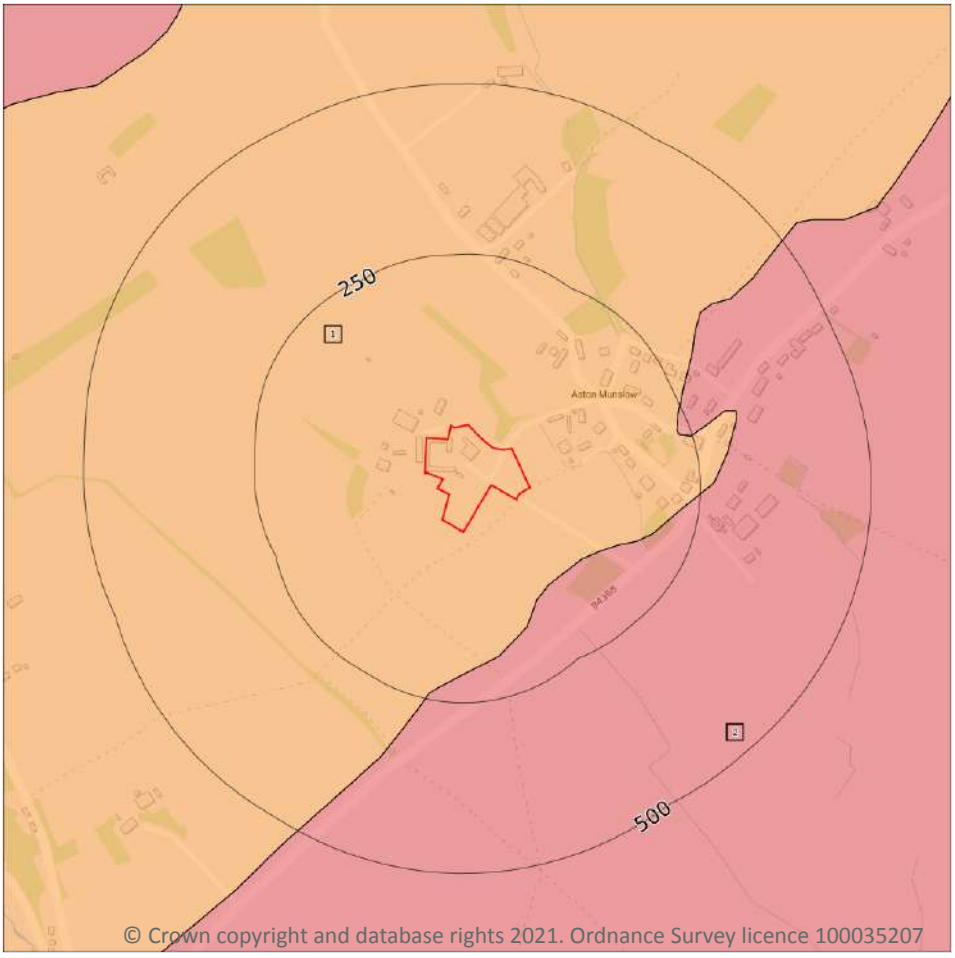
Aquifer status of groundwater held within superficial geology.

Features are displayed on the Hydrogeology map on **page 32**

ID	Location	Designation	Description
1	173m NE	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

Bedrock aquifer



Site Outline

Search buffers in metres (m)

- Principal
- Secondary A
- Secondary B
- Secondary Undifferentiated
- Unproductive

5.2 Bedrock aquifer

Records within 500m	2

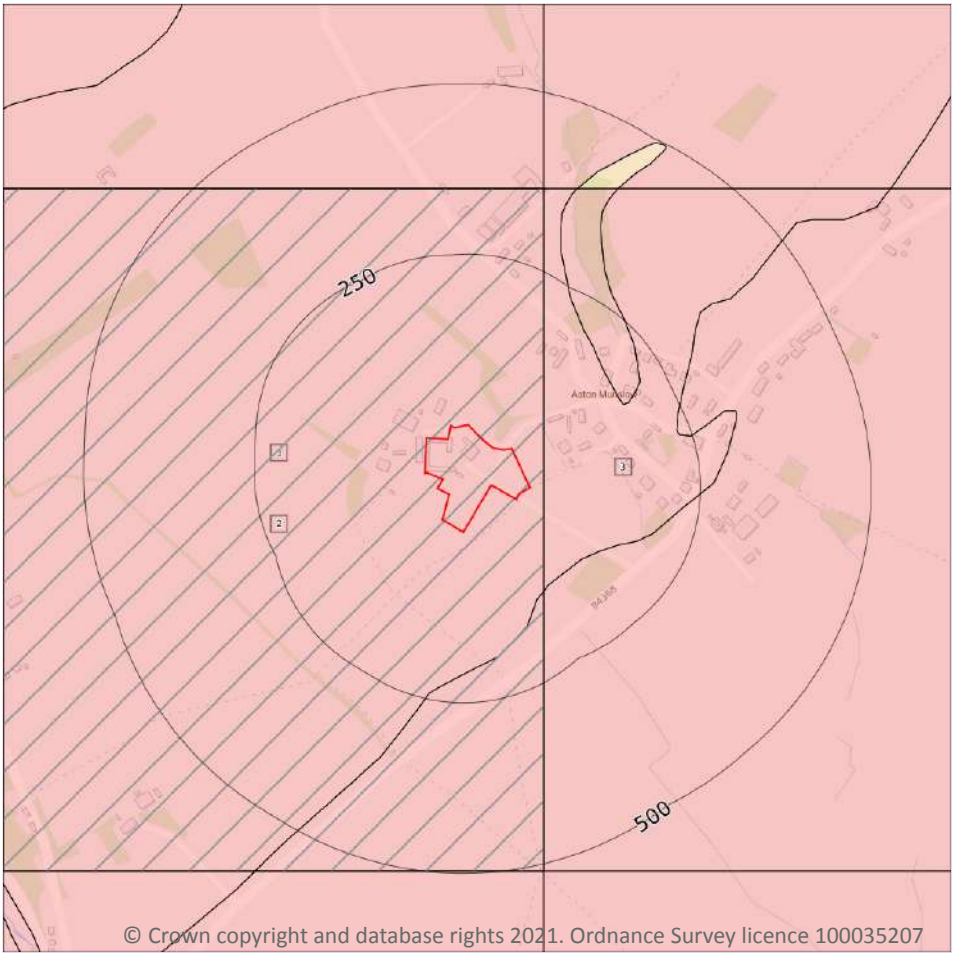
Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 33**

ID	Location	Designation	Description
1	**On site**	**Secondary B**	**Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeablehorizons and weathering. These are generally the water-bearing parts of the former non-aquifers**
2	128m SE	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

Groundwater vulnerability



Site Outline

Search buffers in metres (m)

Superficial vulnerability
- Principal superficial aquifer, high vulnerability
- Secondary superficial aquifer, high vulnerability
- Principal superficial aquifer, medium vulnerability
- Secondary superficial aquifer, medium vulnerability
- Principal superficial aquifer, low vulnerability
- Secondary superficial aquifer, low vulnerability

Bedrock vulnerability
- Principal bedrock aquifer, high vulnerability
- Secondary bedrock aquifer, high vulnerability
- Principal bedrock aquifer, medium vulnerability
- Secondary bedrock aquifer, medium vulnerability
- Principal bedrock aquifer, low vulnerability
- Secondary bedrock aquifer, low vulnerability

Other information
- Unproductive aquifer
- Soluble rock risk
- Local information

5.3 Groundwater vulnerability

Records within 50m	2

An assessment of the vulnerability of groundwater to a pollutant discharged at ground level based on the hydrological, geological, hydrogeological and soil properties within a one kilometre square grid. Groundwater vulnerability is described as High, Medium or Low as follows:

- High - Areas able to easily transmit pollution to groundwater. They are likely to be characterised by high leaching soils and the absence of low permeability superficial deposits.
- Medium - Intermediate between high and low vulnerability.
- Low - Areas that provide the greatest protection from pollution. They are likely to be characterised by low leaching soils and/or the presence of superficial deposits characterised by a low permeability.

Features are displayed on the Groundwater vulnerability map on **page 35**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	**On site**	**Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer**	**Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year**	**Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data**	**Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures**
3	20m E	Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: Intermediate Infiltration value: 40-70% Dilution value: 300-550mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

5.4 Groundwater vulnerability- soluble rock risk

Records on site	**1**

This dataset identifies areas where solution features that enable rapid movement of a pollutant may be present within a 1km grid square.

ID	Maximum soluble risk category	Percentage of grid square covered by maximum risk
2	**Significant soluble rocks are likely to be present. Problems unlikely except with considerable surface or subsurface water flow.**	**0.0%**

This data is sourced from the British Geological Survey and the Environment Agency.

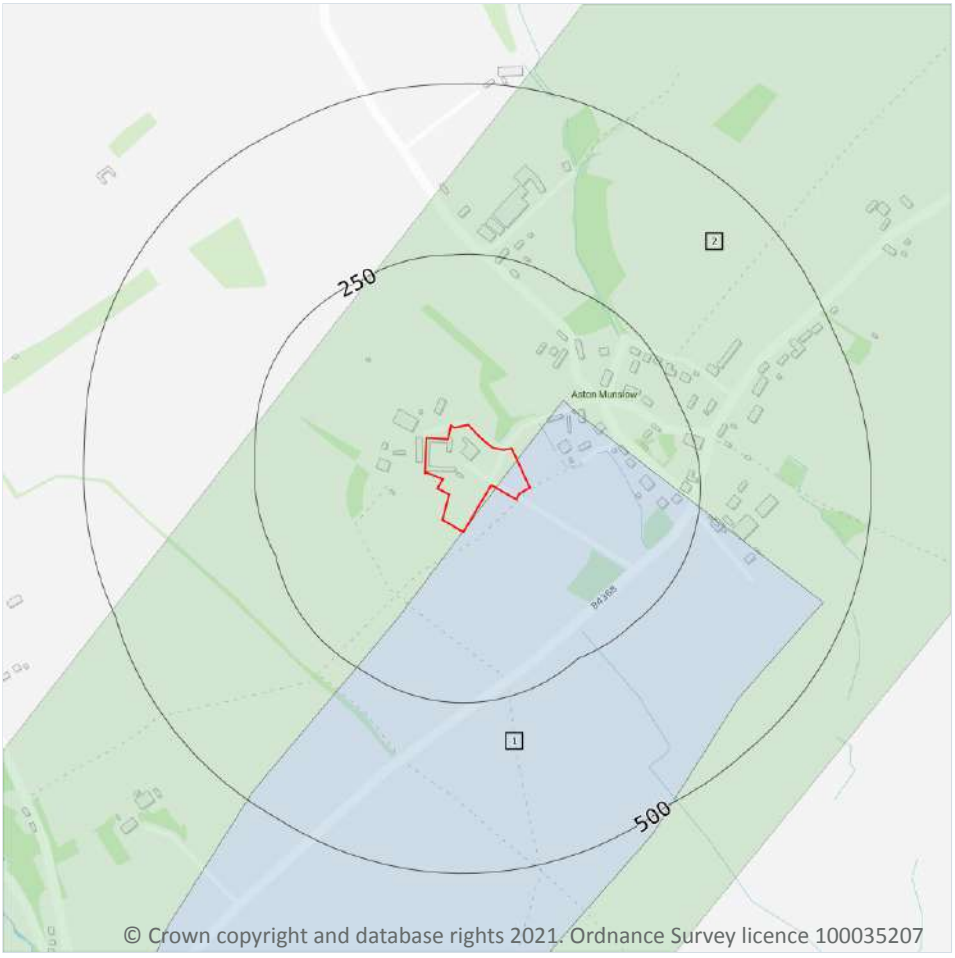
5.5 Groundwater vulnerability- local information

Records on site	**0**

This dataset identifies areas where additional local information affecting vulnerability is held by the Environment Agency. Further information can be obtained by contacting the Environment Agency local Area groundwater team through the Environment Agency National Customer Call Centre on 03798 506 506 or by email on enquiries@environment-agency.gov.uk.

This data is sourced from the British Geological Survey and the Environment Agency.

Abstractions and Source Protection Zones



Site Outline

Search buffers in metres (m)

Source Protection Zone 1
Inner catchment

Source Protection Zone 2
Outer catchment

Source Protection Zone 3
Total catchment

Source Protection Zone 4
Zone of Special Interest

Source Protection Zone 1c
Inner catchment - confined aquifer

Source Protection Zone 2c
Outer catchment - confined aquifer

Source Protection Zone 3c
Total catchment - confined aquifer

Drinking water abstraction licences

Drinking water abstraction licences
Polygon features

Drinking water abstraction licences
Linear features

Groundwater abstraction licence (point)

Groundwater abstraction licence (area)

Groundwater abstraction licence (linear)

Surface Water Abstractions (point)

Surface Water Abstractions (area)

Surface Water Abstractions (linear)

5.6 Groundwater abstractions

Records within 2000m	0

Licensed groundwater abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, between two points (line data) or a larger area.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.7 Surface water abstractions

Records within 2000m	1

Licensed surface water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 37**

ID	Location	Details	
-	1201m S	Status: Active Licence No: 18/54/09/0543 Details: Lake & Pond Throughflow Direct Source: Surface Water Midlands Region Point: DELBURY HALL,CRAVEN ARMS - DIDDLEBURY BROOK Data Type: Point Name: WRIGLEY Easting: 350770 Northing: 285300	Annual Volume (m^3): 49,640 Max Daily Volume (m^3): 136 Original Application No: - Original Start Date: 03/04/1991 Expiry Date: - Issue No: 100 Version Start Date: 03/04/1991 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.8 Potable abstractions

Records within 2000m	0

Licensed potable water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.9 Source Protection Zones

Records within 500m	2

Source Protection Zones define the sensitivity of an area around a potable abstraction site to contamination.

Features are displayed on the Abstractions and Source Protection Zones map on **page 37**

ID	Location	Type	Description
1	**On site**	**2**	**Outer catchment**
2	**On site**	**3**	**Total catchment**

This data is sourced from the Environment Agency and Natural Resources Wales.

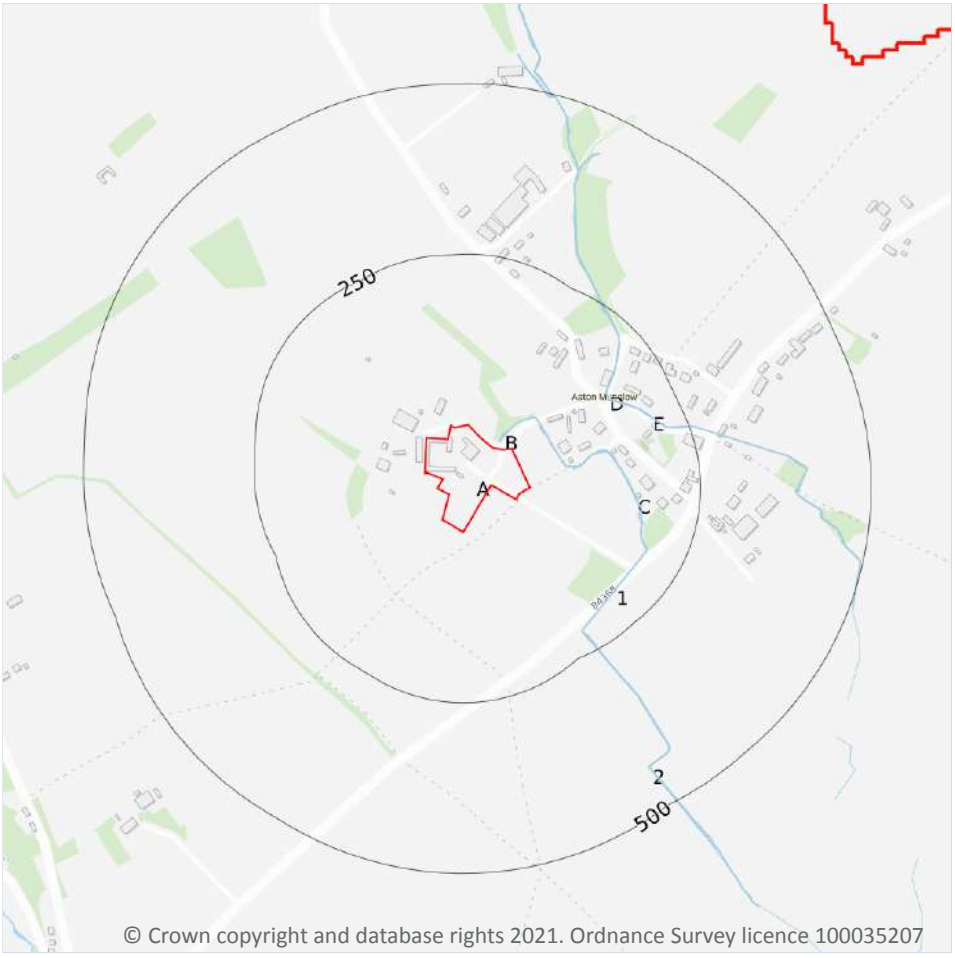
5.10 Source Protection Zones (confined aquifer)

Records within 500m	0

Source Protection Zones in the confined aquifer define the sensitivity around a deep groundwater abstraction to contamination. A confined aquifer would normally be protected from contamination by overlying geology and is only considered a sensitive resource if deep excavation/drilling is taking place.

This data is sourced from the Environment Agency and Natural Resources Wales.

6 Hydrology



Site Outline

Search buffers in metres (m)

Water Network (OS MasterMap)

Surface water features (wider than 5m)

Surface water features (narrower than 5m)

WFD River, canal and surface water transfer water bodies

WFD Lake water bodies

WFD Transitional and coastal water bodies

WFD Surface water body catchments boundaries

WFD Groundwater body boundaries

6.1 Water Network (OS MasterMap)

Records within 250m	**17**

Detailed water network of Great Britain showing the flow and precise central course of every river, stream, lake and canal.

Features are displayed on the Hydrology map on **page 40**

ID	Location	Type of water feature	Ground level	Permanence	Name
B	10m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
B	26m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	51m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	55m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	69m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	76m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	101m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	124m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
D	160m NE	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
E	160m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
D	160m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
1	191m SE	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
2	215m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
D	222m NE	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
D	226m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
D	239m NE	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
D	243m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m	**11**

Covering rivers, streams and lakes (some overlap with OS MasterMap Water Network data in previous section) but additionally covers smaller features such as ponds. Rivers and streams narrower than 5m are represented as a single line. Lakes, ponds and rivers or streams wider than 5m are represented as polygons.

Features are displayed on the Hydrology map on **page 40**

This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site	**1**

The Water Framework Directive is an EU-led framework for the protection of inland surface waters, estuaries, coastal waters and groundwater through river basin-level management planning. In terms of surface water, these basins are broken down into smaller units known as management, operational and water body catchments.

Features are displayed on the Hydrology map on **page 40**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
A	**On site**	**River WB catchment**	**Corve - conf unnamed trib to conf Seifton Bk**	**GB109054044050**	**Teme Upper**	**Teme**

This data is sourced from the Environment Agency and Natural Resources Wales.

6.4 WFD Surface water bodies

Records identified	1

Surface water bodies under the Directive may be rivers, lakes, estuary or coastal. To achieve the purpose of the Directive, environmental objectives have been set and are reported on for each water body. The progress towards delivery of the objectives is then reported on by the relevant competent authorities at the end of each six-year cycle. The river water body directly associated with the catchment listed in the previous section is detailed below, along with any lake, canal, coastal or artificial water body within 250m of the site. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each water body listed.

Features are displayed on the Hydrology map on **page 40**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
-	1435m SE	River	Corve - conf unnamed trib to conf Seifton Bk	GB109054044050	Moderate	Good	Moderate	2016

This data is sourced from the Environment Agency and Natural Resources Wales.

6.5 WFD Groundwater bodies

Records on site	2

Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each groundwater body listed.

Features are displayed on the Hydrology map on **page 40**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
A	**On site**	**Teme - Secondary Combined**	**GB40902G991000**	**Poor**	**Poor**	**Good**	**2015**
A	**On site**	**Teme - Secondary Combined**	**GB40902G991000**	**Poor**	**Poor**	**Good**	**2016**

This data is sourced from the Environment Agency and Natural Resources Wales.

7 River and coastal flooding

7.1 Risk of Flooding from Rivers and Sea (RoFRaS)

Records within 50m	0

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 100 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 100 chance) or High (greater than or equal to 1 in 30 chance).

This data is sourced from the Environment Agency and Natural Resources Wales.

7.2 Historical Flood Events

Records within 250m	0

Records of historic flooding from rivers, the sea, groundwater and surface water. Records began in 1946 when predecessor bodies started collecting detailed information about flooding incidents, although limited details may be included on flooding incidents prior to this date. Takes into account the presence of defences, structures, and other infrastructure where they existed at the time of flooding, and includes flood extents that may have been affected by overtopping, breaches or blockages.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.3 Flood Defences

Records within 250m	0

Records of flood defences owned, managed or inspected by the Environment Agency and Natural Resources Wales. Flood defences can be structures, buildings or parts of buildings. Typically these are earth banks, stone and concrete walls, or sheet-piling that is used to prevent or control the extent of flooding.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.4 Areas Benefiting from Flood Defences

Records within 250m	0

Areas that would benefit from the presence of flood defences in a 1 in 100 (1%) chance of flooding each year from rivers or 1 in 200 (0.5%) chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.5 Flood Storage Areas

Records within 250m	0

Areas that act as a balancing reservoir, storage basin or balancing pond to attenuate an incoming flood peak to a flow level that can be accepted by the downstream channel or to delay the timing of a flood peak so that its volume is discharged over a longer period.

This data is sourced from the Environment Agency and Natural Resources Wales.

River and coastal flooding - Flood Zones

7.6 Flood Zone 2

Records within 50m	0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land between Flood Zone 3 (see next section) and the extent of the flooding from rivers or the sea with a 1 in 1000 (0.1%) chance of flooding each year.

This data is sourced from the Environment Agency and Natural Resources Wales.

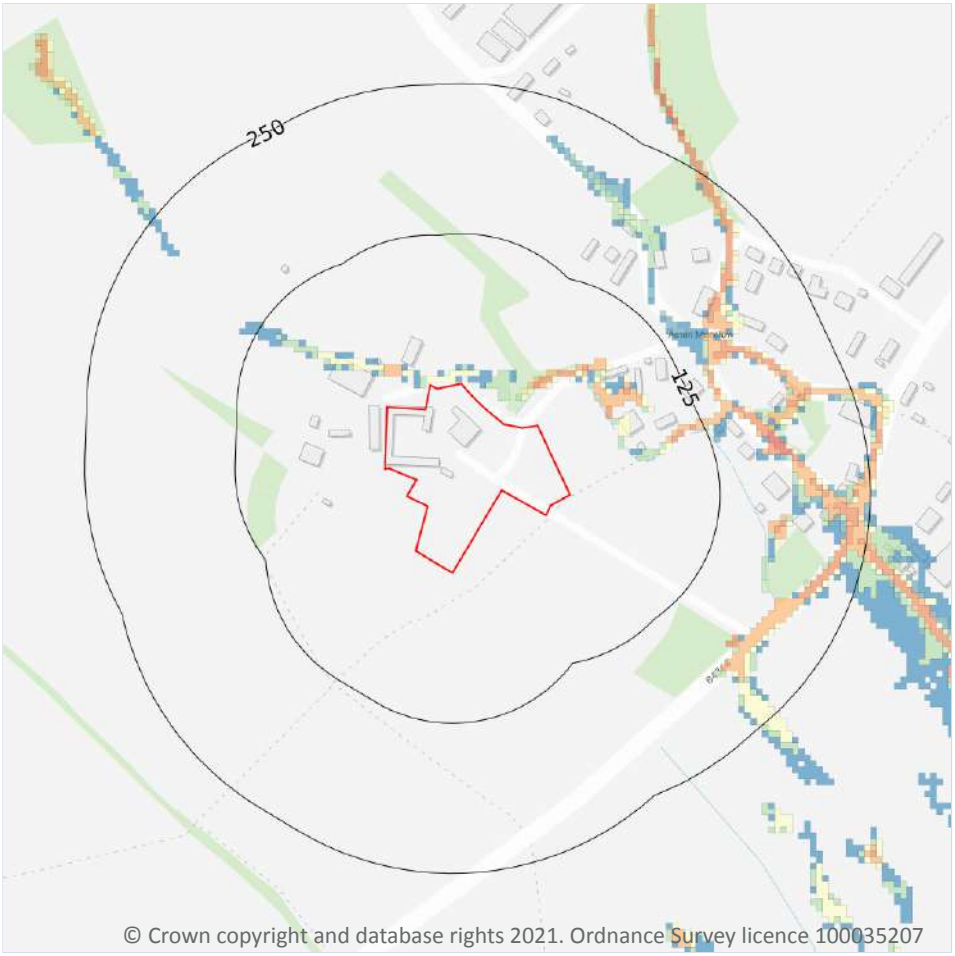
7.7 Flood Zone 3

Records within 50m	0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.

8 Surface water flooding



Site Outline
Search buffers in metres (m)

1 in 1000 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 250 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 100 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 30 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

8.1 Surface water flooding

Highest risk on site	**Negligible**
Highest risk within 50m	**1 in 30 year, 0.3m - 1.0m**

Ambiental Risk Analytics surface water (pluvial) FloodMap identifies areas likely to flood as a result of extreme rainfall events, i.e. land naturally vulnerable to surface water ponding or flooding. This data set was produced by simulating 1 in 30 year, 1 in 100 year, 1 in 250 year and 1 in 1,000 year rainfall events. Modern urban drainage systems are typically built to cope with rainfall events between 1 in 20 and 1 in 30 years, though some older ones may flood in a 1 in 5 year rainfall event.

Features are displayed on the Surface water flooding map on **page 47**

The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Negligible
1 in 250 year	Negligible
1 in 100 year	Negligible
1 in 30 year	Negligible

This data is sourced from Ambiental Risk Analytics.

9 Groundwater flooding

Site Outline

Search buffers in metres (m)

High

Moderate - High

Moderate

Low

Negligible

9.1 Groundwater flooding

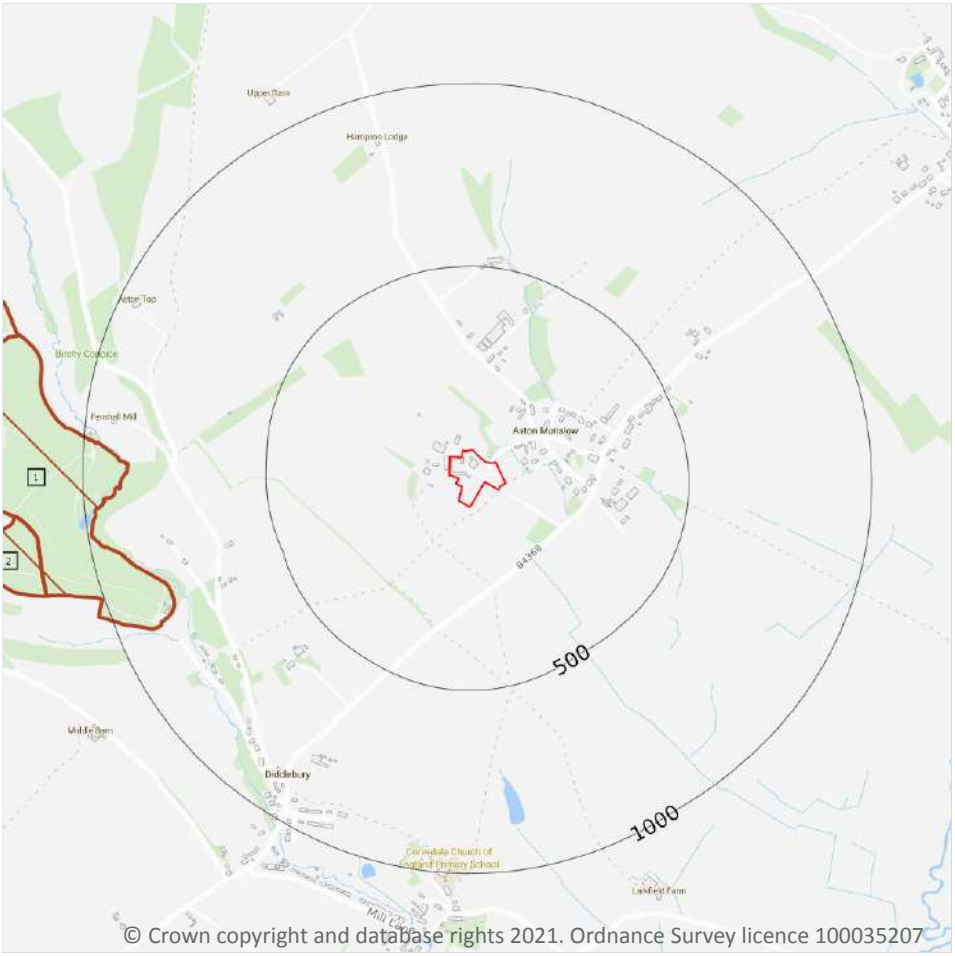
Highest risk on site	**Negligible**
Highest risk within 50m	**Negligible**

Groundwater flooding is caused by unusually high groundwater levels. It occurs when the water table rises above the ground surface or within underground structures such as basements or cellars. Groundwater flooding tends to exhibit a longer duration than surface water flooding, possibly lasting for weeks or months, and as a result it can cause significant damage to property. This risk assessment is based on a 1 in 100 year return period and a 5m Digital Terrain Model (DTM).

Features are displayed on the Groundwater flooding map on **page 49**

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations



10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	0

Sites providing statutory protection for the best examples of UK flora, fauna, or geological or physiographical features. Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs were re-notified under the Wildlife and Countryside Act 1981. Improved provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000 (in England and Wales) and (in Scotland) by the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment (Scotland) Act 2010.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	0

Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. They cover all aspects of wetland conservation and wise use, recognizing wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the well-being of human communities. These sites cover a broad definition of wetland; marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, and even some marine areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.3 Special Areas of Conservation (SAC)

Records within 2000m	0

Areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.4 Special Protection Areas (SPA)

Records within 2000m	0

Sites classified by the UK Government under the EC Birds Directive, SPAs are areas of the most important habitat for rare (listed on Annex I to the Directive) and migratory birds within the European Union.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.5 National Nature Reserves (NNR)

Records within 2000m	0

Sites containing examples of some of the most important natural and semi-natural terrestrial and coastal ecosystems in Great Britain. They are managed to conserve their habitats, provide special opportunities for scientific study or to provide public recreation compatible with natural heritage interests.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.6 Local Nature Reserves (LNR)

Records within 2000m	0

Sites managed for nature conservation, and to provide opportunities for research and education, or simply enjoying and having contact with nature. They are declared by local authorities under the National Parks and Access to the Countryside Act 1949 after consultation with the relevant statutory nature conservation agency.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.7 Designated Ancient Woodland

Records within 2000m	5

Ancient woodlands are classified as areas which have been wooded continuously since at least 1600 AD. This includes semi-natural woodland and plantations on ancient woodland sites. 'Wooded continuously' does not mean there is or has previously been continuous tree cover across the whole site, and not all trees within the woodland have to be old.

Features are displayed on the Environmental designations map on **page 50**

ID	Location	Name	Woodland Type
1	823m W	Hazeldine Coppices	Ancient Replanted Woodland
2	1137m W	Hazeldine Coppices	Ancient & Semi-Natural Woodland
3	1223m W	Hazeldine Coppices	Ancient & Semi-Natural Woodland
-	1246m W	Hazeldine Coppices	Ancient & Semi-Natural Woodland
-	1696m W	Hazeldine Coppices	Ancient Replanted Woodland

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.8 Biosphere Reserves

Records within 2000m	0

Biosphere Reserves are internationally recognised by UNESCO as sites of excellence to balance conservation and socioeconomic development between nature and people. They are recognised under the Man and the Biosphere (MAB) Programme with the aim of promoting sustainable development founded on the work of the local community.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.9 Forest Parks

Records within 2000m	0

These are areas managed by the Forestry Commission designated on the basis of recreational, conservation or scenic interest.

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m	0

A type of marine nature reserve in UK waters established under the Marine and Coastal Access Act (2009). They are designated with the aim to protect nationally important, rare or threatened habitats and species.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.11 Green Belt

Records within 2000m	0

Areas designated to prevent urban sprawl by keeping land permanently open.

This data is sourced from the Ministry of Housing, Communities and Local Government.

10.12 Proposed Ramsar sites

Records within 2000m	0

Ramsar sites are areas listed as a Wetland of International Importance under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (the Ramsar Convention) 1971. The sites here supplied have a status of 'Proposed' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m	0

Special Areas of Conservation are areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive. Those sites supplied here are those with a status of 'Possible' having been identified for potential adoption under the framework.

This data is sourced from Natural England and Natural Resources Wales.

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m	0

Special Protection Areas (SPAs) are areas designated (or 'classified') under the European Union Wild Birds Directive for the protection of nationally and internationally important populations of wild birds. Those sites supplied here are those with a status of 'Potential' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m	0

Areas where nitrate concentrations in drinking water sources exceeded or was at risk of exceeding the limit of 50 mg/l set by the 1980 EC Drinking Water Directive. Voluntary agricultural measures as a means of reducing the levels of nitrate were introduced by DEFRA as MAFF, with payments being made to farmers who complied. The scheme was started as a pilot in 1990 in ten areas, later implemented within 32 areas. The scheme was closed to further new entrants in 1998, although existing agreements continued for their full term. All Nitrate Sensitive Areas fell within the areas designated as Nitrate Vulnerable Zones (NVZs) in 1996 under the EC Nitrate Directive (91/676/EEC).

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

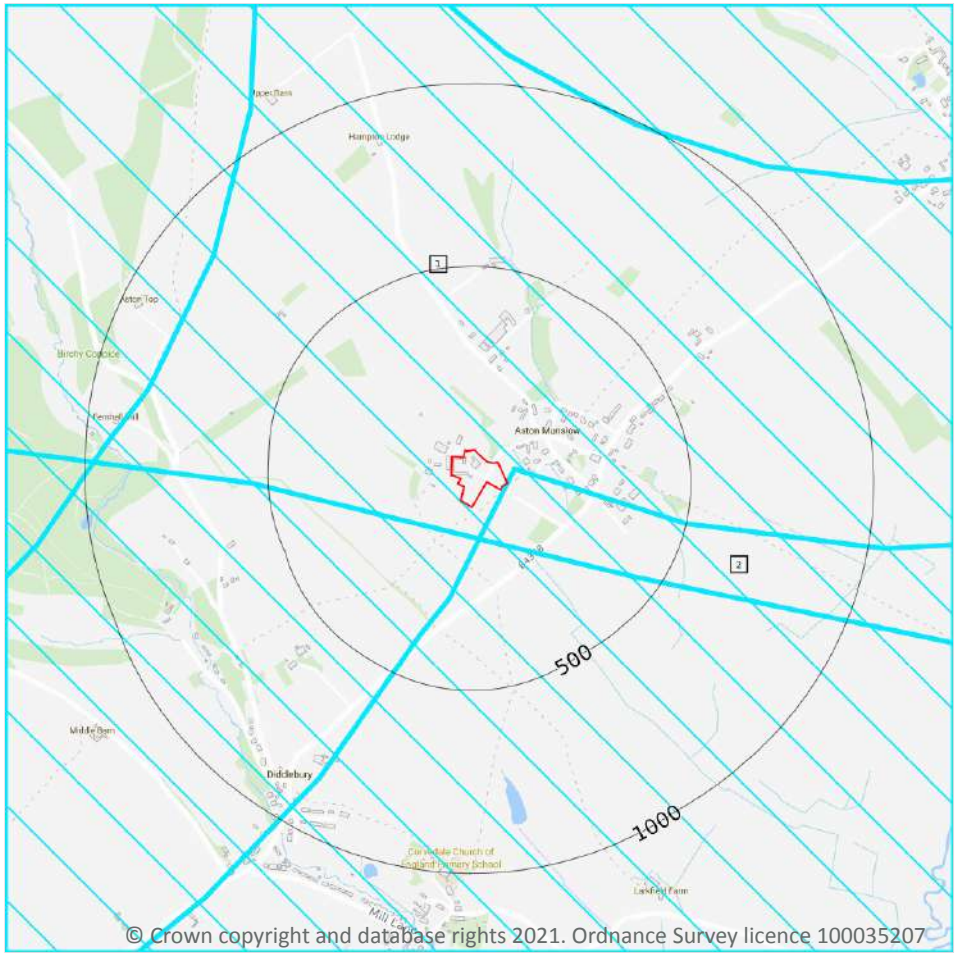
Records within 2000m	2

Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture.

Location	Name	Type	NVZ ID	Status
On site	**Diddlebury**	**Groundwater**	**G35**	**Existing**
594m SW	Diddlebury	Groundwater	G35	Existing

This data is sourced from Natural England and Natural Resources Wales.

SSSI Impact Zones and Units



Site Outline

Search buffers in metres (m)

SSSI Impact Risk Zones

SSSI Units

Not recorded

Favourable

Unfavourable - Recovering

Unfavourable - No change

Unfavourable - Declining

Partially destroyed

Destroyed

10.17 SSSI Impact Risk Zones

Records on site	2

Developed to allow rapid initial assessment of the potential risks to SSSIs posed by development proposals. They define zones around each SSSI which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts.

Features are displayed on the SSSI Impact Zones and Units map on **page 55**

ID	Location	Type of developments requiring consultation
1	**On site**	**Infrastructure - Airports, helipads and other aviation proposals.** **Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction.** **Air pollution - Livestock & poultry units with floorspace > 500m², slurry lagoons > 750m² & manure stores > 3500t.**

ID	Location	Type of developments requiring consultation
2	**On site**	**Infrastructure - Airports, helipads and other aviation proposals.** **Air pollution - Livestock & poultry units with floorspace > 500m², slurry lagoons > 750m² & manure stores > 3500t.**

This data is sourced from Natural England.

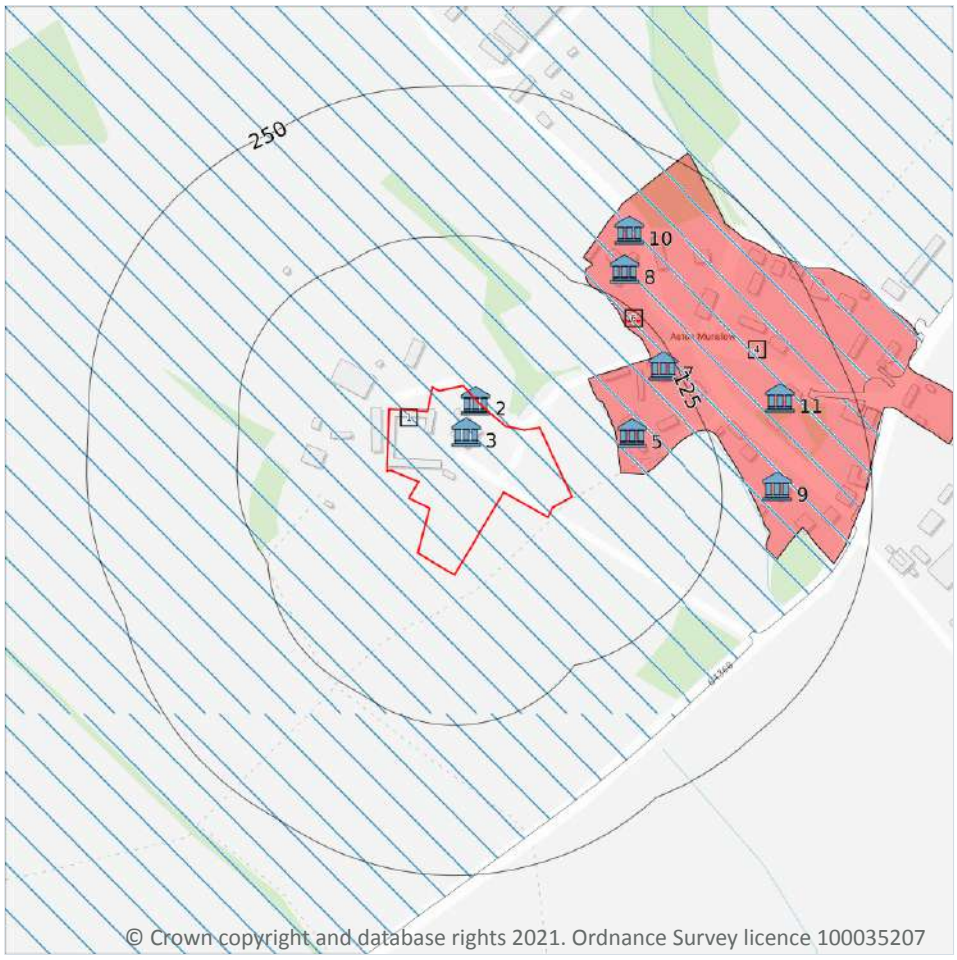
10.18 SSSI Units

Records within 2000m	**0**

Divisions of SSSIs used to record management and condition details. Units are the smallest areas for which Natural England gives a condition assessment, however, the size of units varies greatly depending on the types of management and the conservation interest.

This data is sourced from Natural England and Natural Resources Wales.

11 Visual and cultural designations



Site Outline

Search buffers in metres (m)

Listed buildings

Conservation areas

Conservation areas - no data

National Parks

Areas of Outstanding Natural Beauty

Registered parks and gardens

Scheduled Monuments

World Heritage Sites

11.1 World Heritage Sites

Records within 250m	0

Sites designated for their globally important cultural or natural interest requiring appropriate management and protection measures. World Heritage Sites are designated to meet the UK's commitments under the World Heritage Convention.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.2 Area of Outstanding Natural Beauty

Records within 250m	1

Areas of Outstanding Natural Beauty (AONB) are conservation areas, chosen because they represent 18% of the finest countryside. Each AONB has been designated for special attention because of the quality of their flora, fauna, historical and cultural associations, and/or scenic views. The National Parks and Access to the Countryside Act of 1949 created AONBs and the Countryside and Rights of Way Act, 2000 added further regulation and protection. There are likely to be restrictions to some developments within these areas.

Features are displayed on the Visual and cultural designations map on **page 57**

ID	Location	NAME	Data Source
1	**On site**	**Shropshire Hills**	**Natural England**

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.3 National Parks

Records within 250m	0

In England and Wales, the purpose of National Parks is to conserve and enhance landscapes within the countryside whilst promoting public enjoyment of them and having regard for the social and economic well-being of those living within them. In Scotland National Parks have the additional purpose of promoting the sustainable use of the natural resources of the area and the sustainable social and economic development of its communities. The National Parks and Access to the Countryside Act 1949 established the National Park designation in England and Wales, and The National Parks (Scotland) Act 2000 in Scotland.

This data is sourced from Natural England, Natural Resources Wales and the Scottish Government.

11.4 Listed Buildings

Records within 250m	8

Buildings listed for their special architectural or historical interest. Building control in the form of 'listed building consent' is required in order to make any changes to that building which might affect its special interest. Listed buildings are graded to indicate their relative importance, however building controls apply to all buildings equally, irrespective of their grade, and apply to the interior and exterior of the building in its entirety, together with any curtilage structures.

Features are displayed on the Visual and cultural designations map on **page 57**

ID	Location	Name	Grade	Reference Number	Listed date
2	**On site**	**Privy And Garden Wall 13 Metres North Of Aston Hall, Munslow, Shropshire, SY7**	**II**	**1383345**	**29/02/2000**

ID	Location	Name	Grade	Reference Number	Listed date
3	**On site**	**Aston Hall And Wall And Gatepiers To South East And Gatepiers To North East, Munslow, Shropshire, SY7**	**II***	**1383344**	**12/11/1954**
5	68m NE	Washwell Cottage, Munslow, Shropshire, SY7	II	1350320	20/03/2003
7	115m NE	Arbour Cottages, Munslow, Shropshire, SY7	II	1383342	15/03/1974
8	150m NE	The White House, Munslow, Shropshire, SY7	II*	1383349	28/10/1969
9	171m E	Lower Farm Farmhouse, Munslow, Shropshire, SY7	II	1383346	15/03/1974
10	181m NE	Stable Block To North Of The White House, Munslow, Shropshire, SY7	II	1383350	15/03/1974
11	192m NE	Tudor Cottage, Munslow, Shropshire, SY7	II	1383351	15/03/1974

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.5 Conservation Areas

Records within 250m	**1**

Local planning authorities are obliged to designate as conservation areas any parts of their own area that are of special architectural or historic interest, the character and appearance of which it is desirable to preserve or enhance. Designation of a conservation area gives broader protection than the listing of individual buildings. All the features within the area, listed or otherwise, are recognised as part of its character. Conservation area designation is the means of recognising the importance of all factors and of ensuring that planning decisions address the quality of the landscape in its broadest sense.

Features are displayed on the Visual and cultural designations map on **page 57**

ID	Location	Name	District	Date of designation
4	45m NE	Aston Munslow	Shropshire	01/12/1993

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.6 Scheduled Ancient Monuments

Records within 250m	**1**

A scheduled monument is an historic building or site that is included in the Schedule of Monuments kept by the Secretary of State for Digital, Culture, Media and Sport. The regime is set out in the Ancient Monuments and Archaeological Areas Act 1979. The Schedule of Monuments has c.20,000 entries and includes sites such as Roman remains, burial mounds, castles, bridges, earthworks, the remains of deserted villages and industrial sites. Monuments are not graded, but all are, by definition, considered to be of national importance.

Features are displayed on the Visual and cultural designations map on **page 57**

ID	Location	Ancient monument name	Reference number
6	114m NE	Dovecote 250m south east of South Hill Farm, Aston Munslow	1020657

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

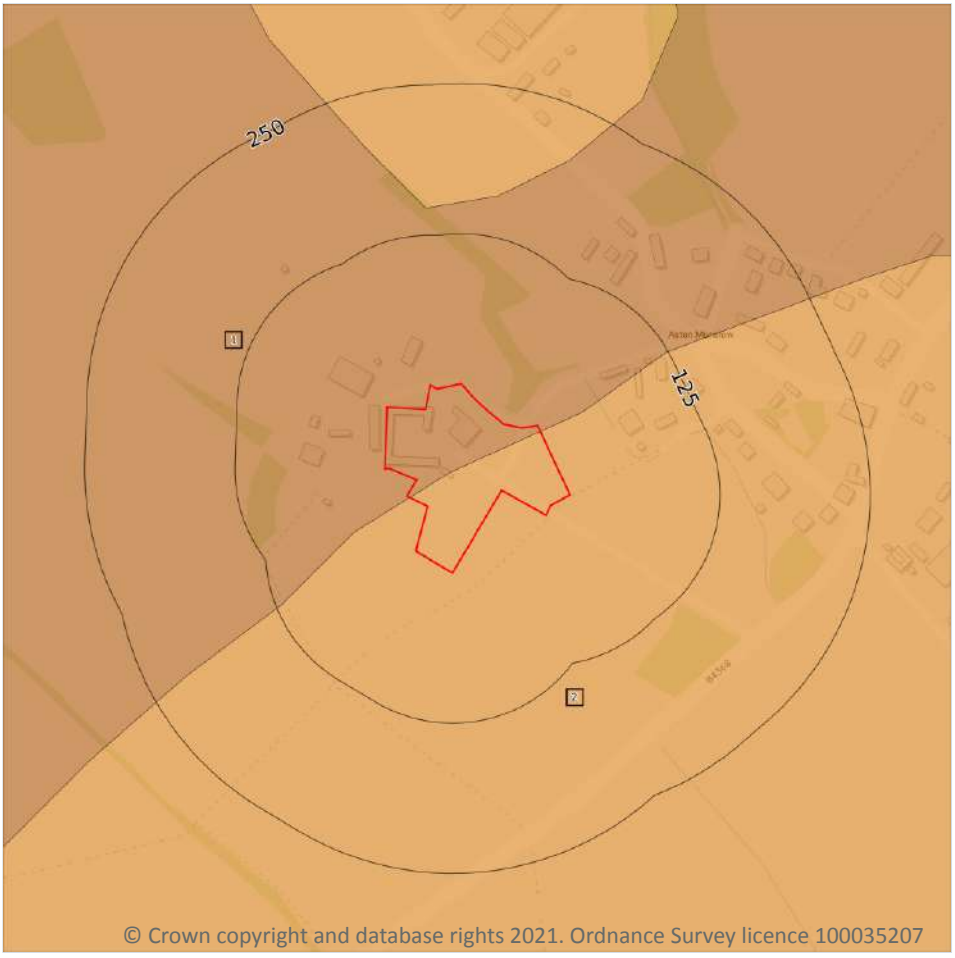
11.7 Registered Parks and Gardens

Records within 250m	**0**

Parks and gardens assessed to be of particular interest and of special historic interest. The emphasis being on 'designed' landscapes, rather than on planting or botanical importance. Registration is a 'material consideration' in the planning process, meaning that planning authorities must consider the impact of any proposed development on the special character of the landscape.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

12 Agricultural designations



Site Outline

Search buffers in metres (m)

- Grade 1 - excellent quality
- Grade 2 - very good quality
- Grade 3 - good to moderate quality
- Grade 3a - good quality
- Grade 3b - moderate quality
- Grade 4 - poor quality
- Grade 5 - very poor quality
- Non-agricultural land
- Urban land
- Exclusion land
- Tree felling licences
- Open Access land

12.1 Agricultural Land Classification

Records within 250m	2

Classification of the quality of agricultural land taking into consideration multiple factors including climate, physical geography and soil properties. It should be noted that the categories for the grading of agricultural land are not consistent across England, Wales and Scotland.

Features are displayed on the Agricultural designations map on **page 61**

ID	Location	Classification	Description
1	**On site**	**Grade 2**	**Very good quality agricultural land. Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1.**
2	**On site**	**Grade 3**	**Good to moderate quality agricultural land. Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2.**

This data is sourced from Natural England.

12.2 Open Access Land

Records within 250m	**0**

The Countryside and Rights of Way Act 2000 (CROW Act) gives a public right of access to land without having to use paths. Access land includes mountains, moors, heaths and downs that are privately owned. It also includes common land registered with the local council and some land around the England Coast Path. Generally permitted activities on access land are walking, running, watching wildlife and climbing.

This data is sourced from Natural England and Natural Resources Wales.

12.3 Tree Felling Licences

Records within 250m	**0**

Felling Licence Application (FLA) areas approved by Forestry Commission England. Anyone wishing to fell trees must ensure that a licence or permission under a grant scheme has been issued by the Forestry Commission before any felling is carried out or that one of the exceptions apply.

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m	**6**

Environmental Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. The schemes identified may be historical schemes that have now expired, or may still be active.

Location	Reference	Scheme	Start Date	End date
On site	**AG00328664**	**Entry Level plus Higher Level Stewardship**	**01/11/2010**	**31/10/2020**

Location	Reference	Scheme	Start Date	End date
On site	**AG00815550**	**Entry Level plus Higher Level Stewardship**	**01/11/2010**	**31/10/2020**
80m W	AG00328664	Entry Level plus Higher Level Stewardship	01/11/2010	31/10/2020
80m W	AG00815550	Entry Level plus Higher Level Stewardship	01/11/2010	31/10/2020
198m SE	AG00815550	Entry Level plus Higher Level Stewardship	01/11/2010	31/10/2020
198m SE	AG00328664	Entry Level plus Higher Level Stewardship	01/11/2010	31/10/2020

This data is sourced from Natural England.

12.5 Countryside Stewardship Schemes

Records within 250m	**0**

Countryside Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. Main objectives are to improve the farmed environment for wildlife and to reduce diffuse water pollution.

This data is sourced from Natural England.

13 Habitat designations

Site Outline

Search buffers in metres (m)

Priority Habitat Inventory
Open Mosaic Habitat
Limestone Pavement Orders

Habitat Networks
Primary Habitat
Restorable Habitat
Associated Habitats
Habitat Restoration-Creation
Network Enhancement Zone 1
Network Enhancement Zone 2

13.1 Priority Habitat Inventory

Records within 250m	5

Habitats of principal importance as named under Natural Environment and Rural Communities Act (2006) Section 41.

Features are displayed on the Habitat designations map on **page 64**

ID	Location	Main Habitat	Other habitats
1	180m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
2	183m NE	Deciduous woodland	Main habitat: TORCH (INV > 50%); DWOOD (INV > 50%)
3	221m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
A	232m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

ID	Location	Main Habitat	Other habitats
A	236m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m	0

Habitat networks for 18 priority habitat networks (based primarily, but not exclusively, on the priority habitat inventory) and areas suitable for the expansion of networks through restoration and habitat creation.

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m	0

Sites verified as Open Mosaic Habitat. Mosaic habitats are brownfield sites that are identified under the UK Biodiversity Action Plan as a priority habitat due to the habitat variation within a single site, supporting an array of invertebrates.

This data is sourced from Natural England.

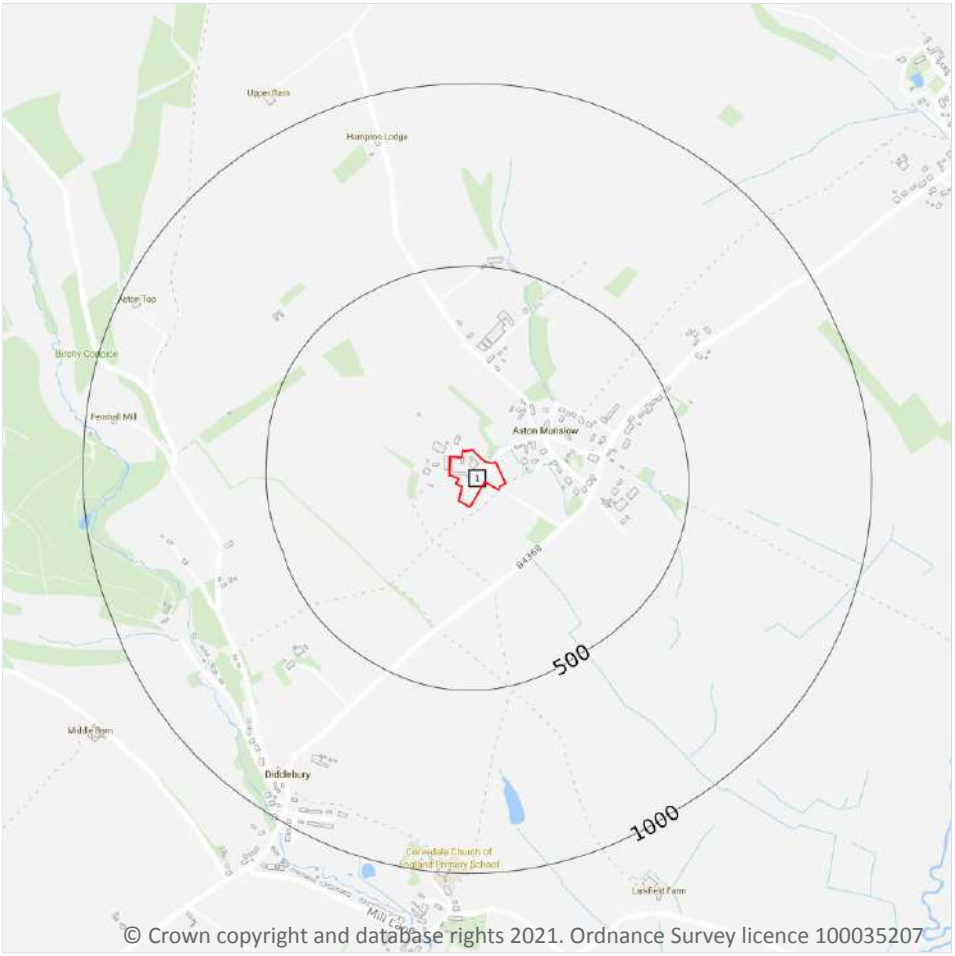
13.4 Limestone Pavement Orders

Records within 250m	0

Limestone pavements are outcrops of limestone where the surface has been worn away by natural means over millennia. These rocks have the appearance of paving blocks, hence their name. Not only do they have geological interest, they also provide valuable habitats for wildlife. These habitats are threatened due to their removal for use in gardens and water features. Many limestone pavements have been designated as SSSIs which affords them some protection. In addition, Section 34 of the Wildlife and Countryside Act 1981 gave them additional protection via the creation of Limestone Pavement Orders, which made it a criminal offence to remove any part of the outcrop. The associated Limestone Pavement Priority Habitat is part of the UK Biodiversity Action Plan priority habitat in England.

This data is sourced from Natural England.

14 Geology 1:10,000 scale - Availability



14.1 10k Availability

Records within 500m	1

An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 66**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**No coverage**	**No coverage**	**No coverage**	**No coverage**	**NoCov**

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Artificial and made ground

14.2 Artificial and made ground (10k)

Records within 500m	0

Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Superficial

14.3 Superficial geology (10k)

Records within 500m	0

Superficial geological deposits at 1:10,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

This data is sourced from the British Geological Survey.

14.4 Landslip (10k)

Records within 500m	0

Mass movement deposits on BGS geological maps at 1:10,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Bedrock

14.5 Bedrock geology (10k)

Records within 500m	0

Bedrock geology at 1:10,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

This data is sourced from the British Geological Survey.

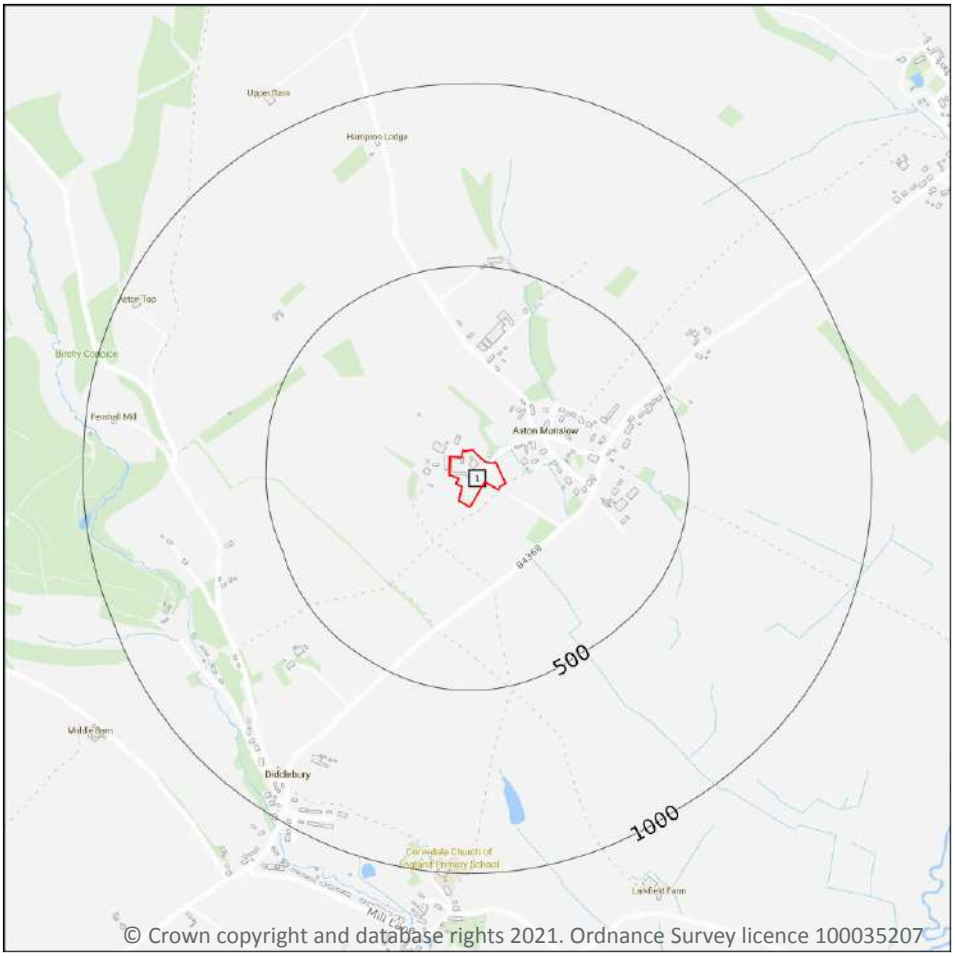
14.6 Bedrock faults and other linear features (10k)

Records within 500m	0

Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

This data is sourced from the British Geological Survey.

15 Geology 1:50,000 scale - Availability



Site Outline

Search buffers in metres (m)

Geological map tile

15.1 50k Availability

Records within 500m	1

An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 70**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**No coverage**	**Full**	**Full**	**Full**	**EW166_church_stretton_v4**

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Artificial and made ground

15.2 Artificial and made ground (50k)

Records within 500m	0

Details of made, worked, infilled, disturbed and landscaped ground at 1:50,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

This data is sourced from the British Geological Survey.

15.3 Artificial ground permeability (50k)

Records within 50m	0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any artificial deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Superficial

Site Outline

Search buffers in metres (m)

Landslip (50k)

Superficial geology (50k)
Please see table for more details.

15.4 Superficial geology (50k)

Records within 500m	1

Superficial geological deposits at 1:50,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 72**

ID	Location	LEX Code	Description	Rock description
1	173m NE	HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m	0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any superficial deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m	0

Mass movement deposits on BGS geological maps at 1:50,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

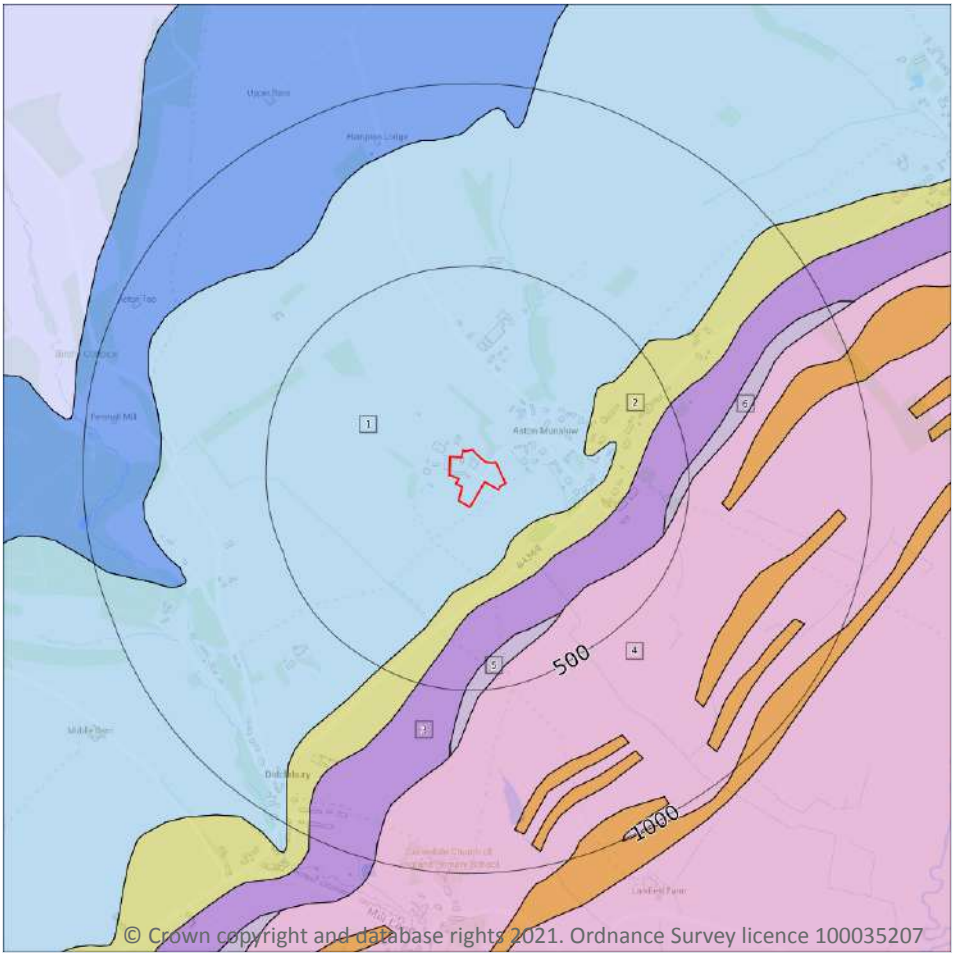
15.7 Landslip permeability (50k)

Records within 50m	0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any landslip deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (50k)

Bedrock geology (50k)
Please see table for more details.

15.8 Bedrock geology (50k)

Records within 500m	6

Bedrock geology at 1:50,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 74**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**ULUS-SLST**	**UPPER LUDLOW SHALES GROUP - SILTSTONE**	**LUDFORDIAN**
2	128m SE	DCS-SDST	DOWNTON CASTLE SANDSTONE FORMATION - SANDSTONE	-
3	237m SE	TSH-MDST	TEMESIDE MUDSTONE FORMATION - MUDSTONE	-

ID	Location	LEX Code	Description	Rock age
4	356m SE	RG-SIMD	RAGLAN MUDSTONE FORMATION - SILTSTONE AND MUDSTONE, INTERBEDDED	-
5	368m S	TSH-SDST	TEMESIDE MUDSTONE FORMATION - SANDSTONE	-
6	444m E	TSH-SDST	TEMESIDE MUDSTONE FORMATION - SANDSTONE	-

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m	**1**

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of bedrock (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Fracture**	**Moderate**	**Low**

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m	**0**

Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

This data is sourced from the British Geological Survey.

16 Boreholes

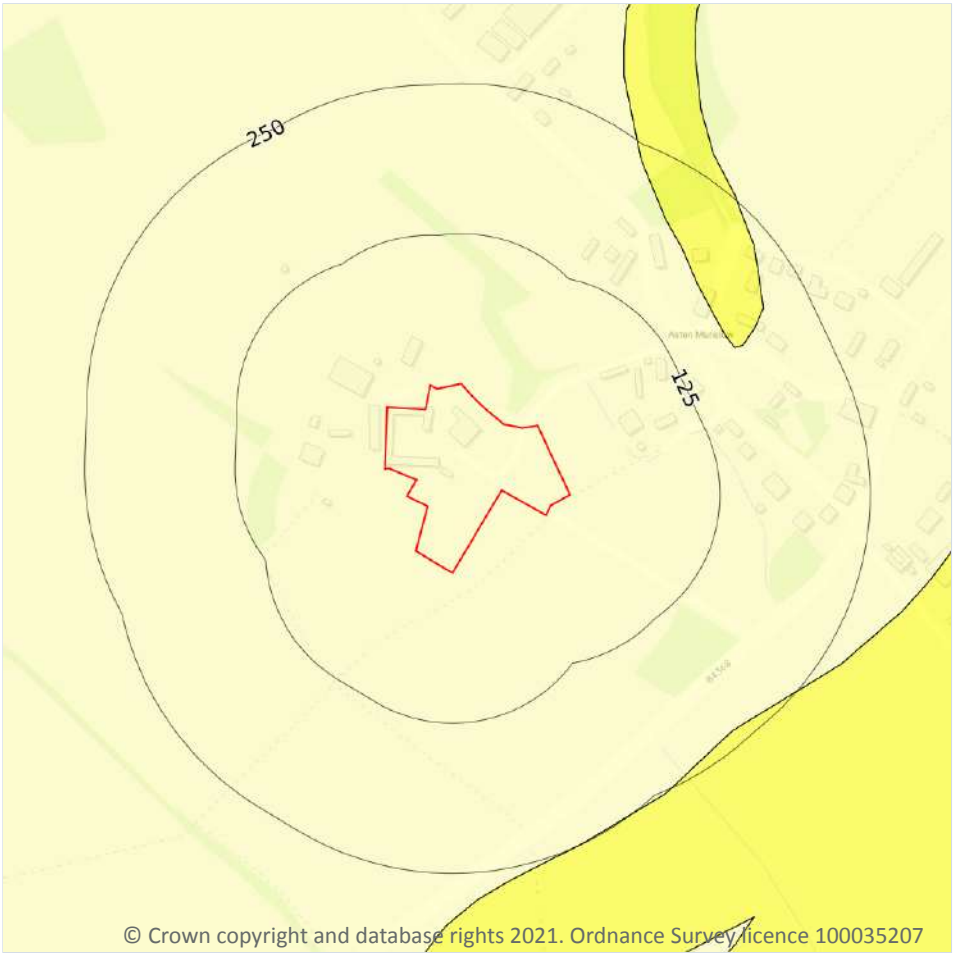
16.1 BGS Boreholes

Records within 250m	0

The Single Onshore Boreholes Index (SOBI); an index of over one million records of boreholes, shafts and wells from all forms of drilling and site investigation work held by the British Geological Survey. Covering onshore and nearshore boreholes dating back to at least 1790 and ranging from one to several thousand metres deep.

This data is sourced from the British Geological Survey.

17 Natural ground subsidence - Shrink swell clays



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.1 Shrink swell clays

Records within 50m	1

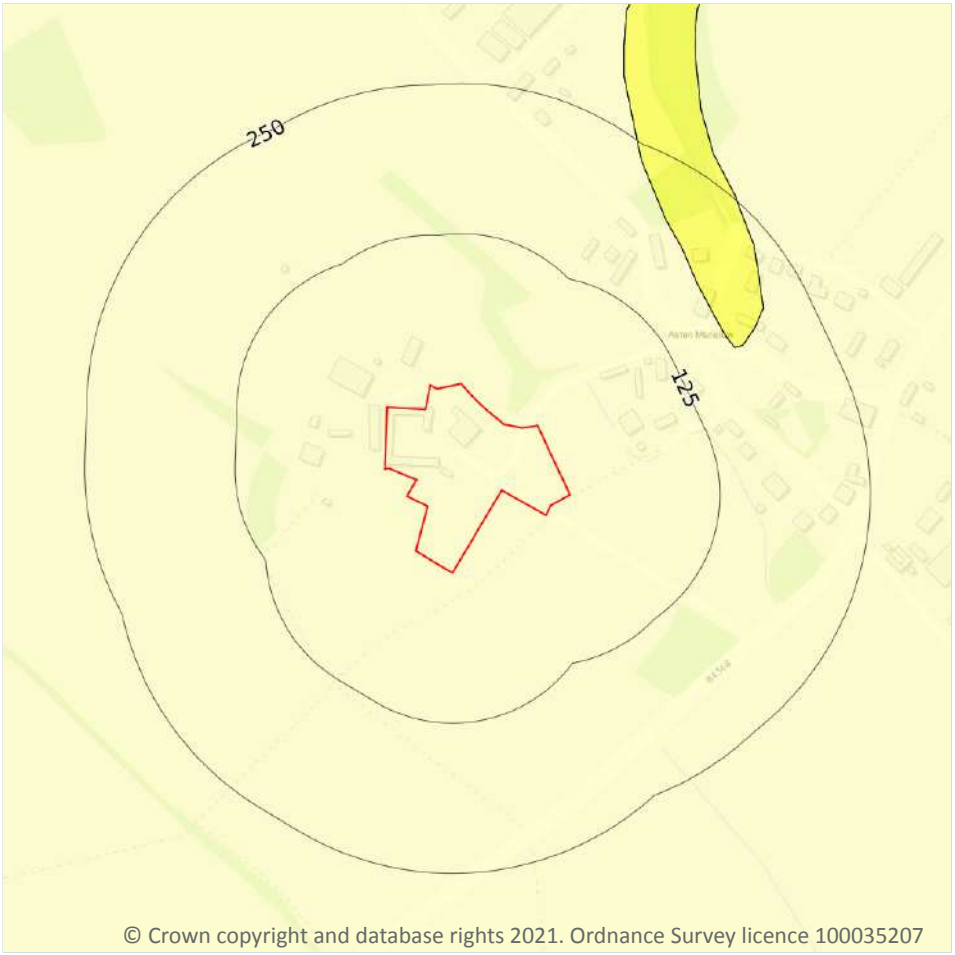
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and local drainage).

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 77**

Location	Hazard rating	Details
On site	**Negligible**	**Ground conditions predominantly non-plastic.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Running sands



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.2 Running sands

Records within 50m	1

The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

Features are displayed on the Natural ground subsidence - Running sands map on **page 78**

Location	Hazard rating	Details
On site	**Negligible**	**Running sand conditions are not thought to occur whatever the position of the water table. No identified constraints on lands use due to running conditions.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Compressible deposits

Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.3 Compressible deposits

Records within 50m	1

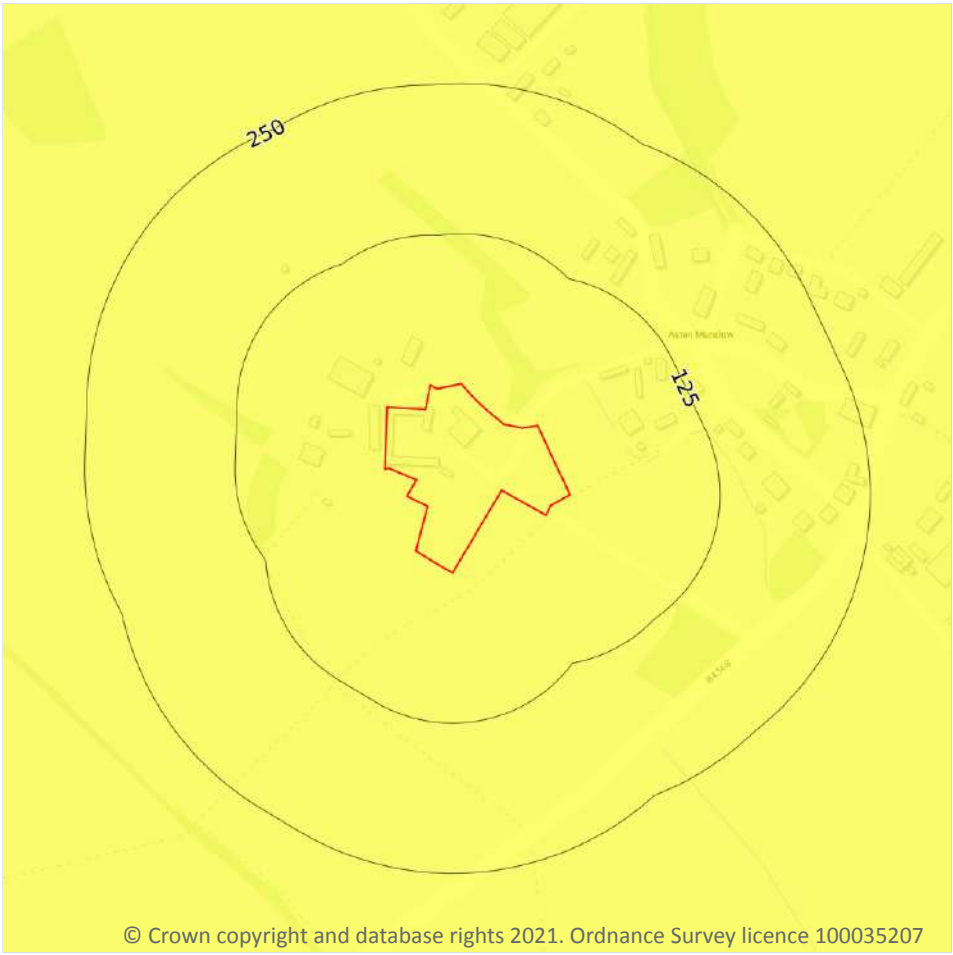
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 79**

Location	Hazard rating	Details
On site	**Negligible**	**Compressible strata are not thought to occur.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Collapsible deposits



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.4 Collapsible deposits

Records within 50m	1

The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 80**

Location	Hazard rating	Details
On site	**Very low**	**Deposits with potential to collapse when loaded and saturated are unlikely to be present.**

This data is sourced from the British Geological Survey.