ATKINS

Member of the SNC-Lavalin Group

Alveston Hill Cycleway

Geo-environmental Desk Study

South Gloucestershire Council

September 2023

5220316/DS/001

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1. Introduction

Atkins Limited (Atkins) has been appointed by South Gloucestershire Council (the Client) to undertake a Geo-environmental Desk Study for the proposed development of both on-road and off-road sections of Alveston Hill Cycleway from the junction of the A38 with the B4061 in Alveston to Midbury Way in Thornbury (herein referred to as "the site").

This report has been prepared to assist in the planning application for the non-highway alignment of the scheme.

This report has been prepared in accordance with BS 10175:2011+A2:2017 [1] and Environment Agency Land Contamination: Risk Management (LCRM) [2] guidance.

1.1. Proposed Development

The purpose of the project is to provide a safer pedestrian and cycle route between Alveston and Thornbury. The project will include existing and new routes, including:

- on road sections along the southern section of Alveston Hill from the junction of the A38 with the B4061 in Alveston; and,
- an off-road section south of Thornbury Leisure Centre passing through agricultural land, before re-joining the public highway at Vilner Lane in Thornbury.

The proposed works for the project include:

- Improvement of existing paths for shared use or segregated paths within the highway;
- Construction of an off-road shared use path and two-way cycle track; and,
- Construction of an on-road two-way cycle track, footway and shared use path within the highway, with associated works.

The proposed new shared use path is currently proposed to comprise of an impervious paving such as asphalt.

This assessment encompasses the proposed development that is not located within the highway boundary, as this is the section of the site which requires planning permission. All works to be undertaken within the existing highway boundary are not considered in this assessment. No buildings or structures are proposed as part of the development.

1.2. Scope of Works

This desk study includes the following scope of works:

- Overview of the available information relating to the site including the site setting, topography, geology, mining and quarrying, hydrogeology and hydrology, environmental sensitivity and site history;
- Identification of geo-environmental risks;
- Completion of a preliminary risk assessment and preliminary Conceptual Site Model (pCSM), considering proposed future site use, based on the contaminant source-pathway-receptor model (as defined in LCRM);
- Provision of information on the geo-environmental constraints for the proposed works; and,
- Recommendations for further work/assessment.

1.3. Information Sources

The recommendations made in this report are based on information contained within the following sources:

- Groundsure GSIP-2023-13374-12932 Data Sheet [3] (Appendix B);
- Groundsure GSIP-2023-13374-12931 Historical Mapping [4] (Appendix C);
- Department of Environment, Food and Rural Affairs (DEFRA) Multi Agency Geographic Information for the Countryside (MAGIC) [5];
- British Geological Survey (BGS) GeoIndex [6];
- Coal Authority Interactive Map Viewer [7]; and
- Zetica online regional bomb risk map [8] (Appendix D).

1.4. Limitations

The findings and opinions conveyed in this report are based on third party information obtained from a variety of sources, as detailed within this report, which Atkins believe are reliable. Reasonable endeavours have been made to source information from reputable organisations, but Atkins cannot and do not guarantee the authenticity or reliability of the information. No attempt has been made to independently verify data collected by others or from other sources.

The accuracy of maps cannot be guaranteed, and it should be recognised that different conditions on-site have the potential to have existed between and subsequent to the various map surveys.

Borehole data from British Geological Survey (BGS) sources are included on the basis that 'The British Geological Survey accept no responsibility for omissions or misinterpretation of the data from their Data Bank has the potential to be old or obtained from non-BGS sources and represent current interpretation'.

This desk study has been based on the current scheme at the time of writing. Should the development proposals change as the design develops then a further desk study review should be undertaken.

This assessment has been carried out under current guidance and legislation, if these are to be updated the assessment contained within this report may also need to be updated.

This report does not advise on measures to deal with asbestos. Advice should be sought from an asbestos specialist, as necessary.

Risks / constraints relating to ecology (including invasive plants), flooding, geotechnical, heritage and landscape etc. are beyond the remit of this report.

This desk study was conducted, and this report prepared for use solely by South Gloucestershire Council. Thereafter, this report shall not be relied upon, or transferred to any other parties without the express written consent of Atkins. If an unauthorised third party comes into possession of this report, they rely on its contents at their own risk.

2. Site Characterisation

2.1. Site Location

The site is located at Alveston Hill, between the village of Alveston in the south and the town of Thornbury in the north. The site is centred on National Grid reference 363472E, 189038N. A site layout plan is included as Figure 1. The off-road section, defined in red in Figure 1, is the focus of this desk study report and comprises the extent of the proposed paved shared footpath and a surrounding 5 m buffer. The on-road section is not subject to planning and is not considered further in this report.

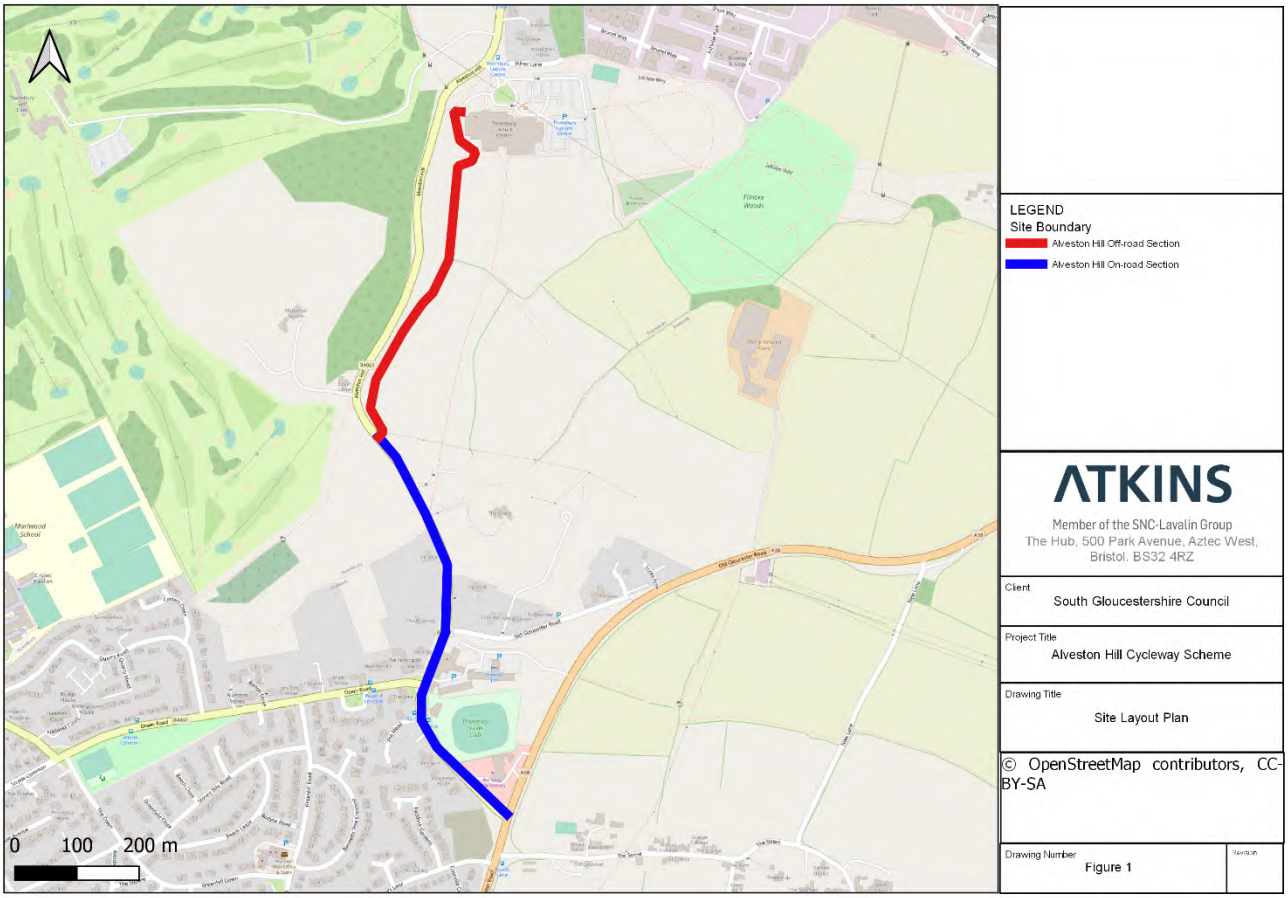


Figure 1 - Site Layout Plan

2.2. Site Description

The following site description has been compiled based on a review of available mapping [4] and aerial photography [3]. A proposed site development plan for the off-road section of the route is provided in the Atkins drawings WECA_SGC-ATK-HGN-5220316-DR-CH-000007 provided as Appendix A.

The site is linear in shape and covers an area of approximately 0.75 hectares (ha). The site moderately slopes to the north from an elevation of approximately 85 m above Ordnance Datum (aOD)in the south of the site to an elevation of approximately 55 m aOD in the north of the site. The site is predominantly occupied by agricultural land, with the exception of the northern-most extent of the site which is occupied by a small car park associated with the Thornbury Leisure Centre.

Ground cover at the site comprises soft standing which is vegetated. Some hardstanding is present in the north of the site associated with the Thornbury Leisure Centre car park. The estimated land coverage proportions of the site are approximately 95% soft standing with vegetation and 5% hardstanding comprising footpaths and car access routes (northern extent of the site), no structures are present on-site.

The site is located in a rural area between the villages of Alveston in the south and Thornbury in the north. The B4061 Thornbury road runs parallel to the site alignment to the west of the site. At its closest, the B4061 is

located approximately 5 m west of the site and at its greatest it is located approximately 25 m west of the site. The northern boundary of the site is the highway boundary for Vilner Lane, and the southern boundary of the site is with the B4061 highway. Agricultural land is present adjacent to the east of the site boundary.

Four surface water features, including ponds and a stream are located to the west of the site adjacent to the B4061. An unnamed surface water feature is present adjacent to the western boundary in the central extent of the site.

3. Site History

3.1. Historical Land Use

The development of the site and surrounding area within 250 m has been determined with reference to historical maps obtained from the Groundsure report [3] [4], which are presented in Appendix B.

A summary of the identified relevant features is presented in Table 3-1.

Table 3-1 - Historical Development

Map	On-site	Off-site (surrounding 250 m)
1880 1:10,560 1881 1:2,500 1886 1:10,560	The site comprises fields, with an unknown structure in the south of the site and a pond located partially within the site boundary in the north. Deciduous hedgerows separate the fields that comprise the site.	Adjacent to the north of the site several ponds are present approximately 5 m west. The land adjacent to the east of the site comprises undeveloped fields. A road labelled as Alveston Hill is present adjacent to the west of the site boundary ranging from distances of less than 10 m up to 75 m. Residential properties are located approximately 40 m to the west of the central extent of the site. A pump and surface water feature are present within 50 m of the west of the site. Thornbury Farm is present approximately 60 m to the north-east of the site. A quarry and limekiln are present approximately 175 m to the south-east of the site. Marlwood Grange is present approximately 180 m west of the site.
1901 1:10,560 1902 - 03 1:2,500	No significant changes to land use on-site.	A West Gloucester Water Works Company reservoir is present approximately 100 m south east of the site. The quarry and limekiln, located 175 m to the south of the site, are no longer present (now labelled as 'old'), residential properties now occupy this area. No significant changes to land use have occurred to the north, east or west of the site within 250 m.
1921 1:2,500 1923 1:10,560	No significant changes to land use on-site.	No significant changes to land use off-site.
1954 1:10,560	No significant changes to land use on-site.	No significant changes to land use off site.
1966 1:2,500	The structure present in the south of the site is no longer shown.	Further residential development has occurred within 250 m of the north of the site, adjacent to Thornbury Farm.
1975 1:10,560	The pond present in the north of the site has been infilled.	Stores and a tyre depot are located approximately 140 m to the east of the north of

Map	On-site	Off-site (surrounding 250 m)
1977 1:2,500		the site. Further residential development is present within 250 m of the south of the site.
1985 1:2,500 (north of site only)	The car park for Thornbury Leisure Centre is present in the northern extent of the site.	The Thornbury Leisure Centre is present adjacent to the northern site boundary (less than 5 m from the site). A tank is present approximately 250 m north east of the site associated with one of the stores.
1992-94 1:2,500	No significant changes to land use on-site.	No significant changes to land use off-site.
1999 Aerial Imagery	The site is shown as a ploughed field in the south and a grassed field in the north.	A golf course is present approximately 100 m west of the south of the site.
2001 1:10,000 2003 1:1,250	No significant changes to land use on-site.	No significant changes to land use off-site.
2006 Aerial Imagery	No significant changes to land use on-site.	No significant changes to the land use off-site.
2008 Aerial Imagery	No significant changes to land use on-site.	No significant changes to land use off-site.
2010 1:10,000	No significant changes to land use on-site.	No significant changes to land use off-site.
2017 Aerial Imagery	No significant changes to land use on-site.	Allotments are present approximately 230 m east of the north of the site.
2020 Aerial Imagery	An agricultural building is present in the southern most extent of the site.	No significant changes to land us off-site.
2023 1:10,000	No significant changes to land use on-site.	The water reservoir, located approximately 100 m south east of the site, is no longer shown.

3.2. Summary of Historical Development

The historical mapping provided by Groundsure shows the site has remained undeveloped from the earliest available mapping and has always comprised fields.

In the surrounding area, commercial developments were located within 250 m of the site up to 1901 with residential properties developed between 1966 and 1985. Thornbury Leisure Centre was developed in 1985. No significant changes have been identified post 1985.

Potential contaminative land uses identified from review of the historical mapping have been identified to comprise the following:

<u>On-site</u>

- Leisure centre car park; and
- agricultural land use including use of pesticides, fertilisers and localised fuel/oil leaks from farming activities/machinery.

<u>Off-site</u>

- road, adjacent to the west, comprising Made Ground generated during construction, fuel leaks, surface water runoff and atmospheric fall-out of exhaust particulates;
- pumping station, 100 m south-east, comprising Made Ground generated during construction and localised fuel/oil leaks;
- works depots, stores and garages, 140 m east, comprising Made Ground generated during construction and localised fuel/oil leaks;
- quarry and kiln, 175 m south-east, comprising Made Ground generated during construction and infill of unknown provenance;
- allotments, 230 m south-east, including use of pesticides, fertilisers; and
- a tank of unknown use, 250 m north-east of the site.

4. Environmental Setting

4.1. General

The environmental setting is summarised in the sections below with reference to information provided within the Groundsure report [3] included as Appendix C, and mapping from the British Geological Survey (BGS) GeoIndex website [6].

4.2. Published Geology

4.2.1. Artificial Ground

The BGS mapping does not record the presence of artificial ground on-site or in the surrounding area within 250 m of the site. It is however, considered likely that Made Ground may be present in areas of infilling such as the former pond in the north of the site.

4.2.2. Superficial Deposits

The BGS GeoIndex [6] does not record superficial deposits within the site boundary or within 250 m of the site. Although not mapped by the BGS, Alluvium may be present off-site, associated with the surface water feature located adjacent (less than 5 m) to the western boundary in the central extent of the site.

4.2.3. Bedrock Geology

The BGS GeoIndex [6] records four bedrock geology designations on-site, including the Mercia Mudstone Group (and it's marginal facies), the Tintern Sandstone Formation and the Black Rock Limestone Subgroup. Two further bedrock geology designations are present within 250 m of the site.

A summary of the bedrock geology recorded on-site and within 250 m of the site is provided in Table 4-1. A graphical schematic of the bedrock geology is included in the Groundsure report [3] included as Appendix C.

Table 4-1 - Bedrock Geology Summary

Formation Name	Description	Distance from site	Direction from site
Mercia Mudstone Group – Mudstone	Red, occasionally green mudstones and siltstones.	On-site	Central extent of the site (marginal facies in the north and south)
Tintern Sandstone Formation	Buff-yellow sandstone	On-site	Central extent of the site
Black Rock Limestone	Grey to dark grey skeletal limestones	On -site	Southernmost extent of the site
Mercia Mudstone Group – Conglomerate	Marginal facies present as a dolomitic conglomerate	On-site	South of the site, and the northernmost extent of the site
Avon Group	Grey interbedded limestone and mudstone	47 m	South of the site
Blue Anchor Formation	Pale green-grey mudstone	196 m	South west of the site

4.3. Historical Borehole Records

The BGS GeoIndex [6] records no available historical borehole records located on-site or within 500 m of the site.

The closest historical BGS borehole record is located 570 m to the north of the site adjacent to Tweed Close. Eight exploratory hole records (ST68NW88 to ST68NW95) are located within this area and all recorded solid geology at shallow depths between 0.80 m below ground level (bgl) and 1.40 m bgl.

4.4. Mineral Resources

The Coal Authority website [7] indicates that the site does not lie within a Coal Authority Reporting area, nor a Coal Authority high risk development area.

The Groundsure report [3] records two historical surface and underground mineral workings within 250 m of the site; these are summarised in Table 4-2.

Table 4-2 – Mineral Resource Records within 250 m of the site

Distance from Site	Direction from Site	BritPits Record Details
154 m	South east	Name: Alveston Green Address: Alveston, Thornbury Commodity: Limestone Status: Ceased
233 m	South	Name: Alveston Address: Alveston, Bristol Commodity: Limestone Status: Ceased

4.5. Ground Stability Hazards

The greatest hazard rating for potential ground stability hazards identified in the Groundsure report [3] for the site are summarised in Table 4-3.

Table 4-3 - Ground Stability Hazards

Ground Stability Hazard	Greatest Hazard Rating on-site
Shrink swell clays	Very low
Running sands	Negligible
Compressible deposits	Negligible
Collapsible deposits	Very low
Landslides	Low
Ground dissolution of soluble rocks	Low

4.6. Radon

Information from the BGS National Geoscience Information Service, provided in the Groundsure report [3], indicates the site is located in an area affected by radon. The UK Radon Map [9] indicates that the maximum radon potential at the site is 5 -10 %.

4.7. Hydrogeology

The Groundsure report [3] indicates that there are three bedrock aquifer designations on site, these are summarised in Table 4-4.

Table 4-4 - Bedrock Aquifer Designations On-site

Aquifer Designation	Strata Name (s)	Description
Principal aquifer	Black Rock Limestone	*Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/rive base flow on a strategic scale. Generally principal aquifers were previously major aquifers.*
	Mercia Mudstone Group Conglomerate	

Aquifer Designation	Strata Name (s)	Description
Secondary A aquifer	Tintern Sandstone Formation	*Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers*
Secondary B aquifer	Mercia Mudstone Group	*Predominantly lower permeability layers which may store/yield limited amount of groundwater due to localised features such as fissures, thin permeable horizons and weathering*

4.7.1. Groundwater Vulnerability

The Groundsure report [3] indicates that the groundwater underlying the site in the principal and secondary aquifers (A and B) is of high vulnerability due to the absence of superficial geology and high leaching potential of soils. The site is also within a soluble rock risk zone.

The high vulnerability classification is defined as "*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".*

4.7.2. Source Protection Zones

The Groundsure report [3] and the DEFRA MAGIC website [5] records the site, and surrounding area within 250 m, to not be located within a groundwater Source Protection Zone.

4.7.3. Groundwater Abstractions

The Groundsure report [3] indicates that there are no active or historical groundwater abstraction licenses within 250 m of the site.

4.7.4. Groundwater Discharge Consents

The Groundsure report [3] indicates there to be no records for groundwater discharge consents within 250 m of the site.

4.7.5. Groundwater Quality

The Groundsure report [3] records there to be a Water Framework Directive (WFD) groundwater body on-site. The record is for the Carboniferous Limestone (Alveston) groundwater body which was classified by the WFD as having a good chemical quality in 2019.

4.8. Hydrology

4.8.1. Surface Watercourses

The nearest surface watercourse is an unnamed stream located adjacent to the western boundary of the site.

The maps provided by Groundsure [4] show there to be two ponds located to the west of the northern extent of the site, both are approximately 15 m west of the site boundary.

Two further ponds are present approximately 20 m to the west of the southern extent of the site, located between the site boundary and Alveston Hill road.

An additional pond is located approximately 200 m north of the site and a sixth pond is located approximately 225 m south of the site.

4.8.2. Surface Water Discharge Consents

The Groundsure report [3] records no licensed discharge or recorded pollutant releases to surface water features on-site or within 250 m of the site.

4.8.3. Surface Water Abstractions

The Groundsure report records no surface water abstractions on-site or within 250 m of the site.

4.8.4. Flood Risk

The Groundsure report [3] records that the central extent of the site has a high risk of flooding from rivers; this is defined by the environment agency as a "*greater than or equal to 1 in 30"* probability of flooding to occur annually.

A medium risk of flooding is also present across the remainder of the site with the exception of the southern-most extent of the site. A medium risk of flooding from rivers and seas is defined as *"less than a 1 in 30 probability of flooding annually, but greater than or equal to a 1 in 100*". The data from Groundsure [3] records that the central and northern extent of the site lies within a river flooding Flood Zone 3 classified by the Environment Agency as an area that has a *"1 in 100 or greater annual probability of flooding"*.

The Groundsure report [3] indicates that the highest risk on site from surface water flooding is designated as 1 in 30 year return period with modelled maximum flood depths of between 0.3 m – 1.0 m. The highest risk area is associated with the northernmost extent of the site adjacent to Thornbury Leisure Centre.

5. Environmental Records

5.1. General

The environmental data summarised below has been taken from information obtained from datasets referenced in the Groundsure report [3] and information obtained from Zetica's UXO website [8].

5.2. Historical and Current Landfills and Waste Management Facilities

The Groundsure report records no landfills / waste management facilities on-site or within 250 m of the site.

5.3. Waste Exemptions

The Groundsure report indicates there to be four records of waste exemptions within 250 m of the site, these are summarised in Table 5-1.

Table 5-1 - Waste Exemptions within 250 m of the site

Site Name	Distance from site	Direction from site	Type	Description
Thornbury Road, Thornbury, Bristol, BS35 3JB	29 m	North east	Treating waste exemption – not on a farm	Aerobic composting and associated prior treatment
Open pasture land, Running alongside Bristol Road, Thornbury, BS35 3JA	136 m	North	Disposing of waste exemption – on a farm	Burning waste in the open
Car Park at Thornbury Leisure Centre, Thornbury Road, Thornbury, BS35 3JB	178 m	East	Treating waste exemption – non-agricultural waste only	Aerobic composting and associated prior treatment
Open pasture land, Running alongside Bristol Road, Thornbury, BS35 3JA	202 m	North	Disposing of waste exemption – on a farm	Burning waste in the open

5.4. Pollution Incidents

There are no pollution incidents reported by Groundsure on-site or within 250 m of the site.

5.5. Pollution Prevention and Controls

The Groundsure report records no Local Authority Pollution Prevention and Controls (LAPPC) applications on-site or within 250 m of the site.

5.6. Planning Hazardous Substance Consents

The Groundsure report records no Control of Major Accident Hazards (COMAH) Sites / planning hazardous substance consents on-site or within 250 m of the site.

5.7. Radioactive Substances

The Groundsure report records no radioactive substance authorisation features within 250 m of the site.

5.8. Recent Industrial Land Uses

The Groundsure report indicates there to be a gas governor station located in the north of the site. Further industrial land uses within 250 m of the site include electrical features, metal manufacturers/fabricators and farming infrastructure (slurry tank to the south).

5.9. Historical Petrol Stations

There are no records of historical petrol stations or historical garages within 250 m of the site.

5.10. Active and Current Petrol Stations

There are no records of active petrol stations on-site or within 250 m of the site.

5.11. Contaminated Land Designations

The Groundsure report records no contaminated land designations on-site or within 250 m of the site.

5.12. Sensitive Land Use

The data from Groundsure records there are no sensitive land uses such as Sites of Special Scientific Interest (SSSI), Special Areas of Conservation, Special Protection Areas or Ramsar sites on-site or within 250 m of the site.

The Bath and Bristol greenbelt designation is present on-site.

5.13. Agricultural Land Classification

The Groundsure report records two Agricultural Land Classifications (ALC) on-site and one within 250 m of the site. The classification of the quality of agricultural land considers the climate, physical geography and soil properties. A summary of the ALC on-site and within 250 m is included in Table 5-2.

Table 5-2 - Agricultural Land Classifications on-site

Distance from site	Direction from site	Classification	Description
On-site	Northern extent of site	Grade 2	Very good quality agricultural land. Land with minor limitations.
On-site	Southern extent of site	Grade 3	Good to moderate quality agricultural land. Land with moderate limitations.
86 m	North east of site	Urban	NA

5.14. Invasive Species

This has not been covered in this report as a separate Ecological Impact Assessment is to be undertaken for the site.

5.15. Unexploded Ordnance (UXO)

The Zetica Unexploded Ordnance Risk Map [8] included as Appendix D, records a low risk of encountering air dropped WWII UXO at the site. Considering the low risk, further assessment is not recommended for UXO risks at the site.

6. Preliminary Risk Assessment

6.1. Introduction

This report has been prepared to assist in the identification of potential constraints that contamination might pose to the development of the site and to provide a preliminary risk assessment (PRA) to inform the design of the proposed development. The assessment methodology used is similar to that derived for the determination of statutory Contaminated Land, as defined in Part 2A of the Environmental Protection Act 1990 [10] which is assessed through the identification and assessment of contaminant linkages (Source-Pathway-Receptor relationships). Implicit in the Defra statutory guidance is the application of risk assessment to consider whether potential contaminant linkages may be significant. In accordance with guidance provided in the Environment Agency Land Contamination Risk Management (LCRM) [11], human health, buildings and wider environmental receptors and pathways have been identified based on the proposed end-uses.

Primary guidance for assessing and managing land contamination is presented in LCRM [11]. This provides a technical framework for identifying and remediating contamination through the application of a risk management process. The question of whether risk is unacceptable in any particular case involves not only scientific and technical assessments, but also appropriate criteria by which to judge the risk and conclude exactly what risk would be unacceptable.

A preliminary conceptual site model (pCSM) has been developed based on the available information, to enable the assessment of the potential land contamination. A pCSM describes the relationship between potential sources of contamination (resulting from both on- and off-site historical and current activities) and receptors to the potential contamination. Three elements are identified and assessed:

- potential sources of contamination and associated contaminants;
- potential receptors to that contamination – humans, controlled waters (surface water/groundwater), ecological systems and property/services; and
- potential pathways between the sources and receptors.

Where all three elements are present, or are likely to be present, they are described as potential contaminant linkages (PCLs). The PCLs can then be subjected to the risk assessment and risk management process.

It should be noted that under current health and safety legislation, construction and maintenance workers are required to carry out appropriate risk assessments and adopt appropriate mitigation measures to protect themselves, other human receptors and the environment from contamination which may be present. Such risks must be adequately mitigated by the measures required under current legislation, specifically the Construction Design Management (CDM) Regulations [12] which requires that potential risks to human health and the environment from construction activities are appropriately identified and all necessary steps taken to eliminate / manage that risk. On this basis, it been assumed that personal protective equipment (PPE) and health and safety best practices will be adopted during the construction works and acute risks to construction workers have therefore not been considered as part of this assessment.

Through a review of available historical and published information (e.g. geological, hydrogeological and hydrological information), potential sources of contamination and associated contaminants were identified and/or discounted. Those sources/contaminants that are not discounted are then considered in relation to potential receptors that may be harmed by the source, and potential pathways that may link the sources to the receptors, i.e. source-pathway-receptor relationship.

A number of historical and current land uses have been identified on-site and within 250 m of the site which may have given rise to contamination and these sources are summarised in the following section.

The risk assessment has been undertaken in consideration of potential existing and/or future uses of the site as a shared pedestrian and cycle way, which is considered a public open space (parkland) end use.

6.2. Potential Sources

Based on the review of available information presented in this report, potentially contaminative sources have been identified and are summarised in Table 6-1.

Table 6-1 - Potential Sources of Contamination

Potential Source		Potential Contaminants
On-site	Made Ground of unknown provenance associated with the infilling of the pond feature in the north	A range of inorganic and organic contaminants including hydrocarbons, metals, asbestos and the potential for ground gas generation.
	Farming activities associated with the agricultural use of the site	A range of inorganic and organic contaminants including herbicides, pesticides and fertilisers.
	Made Ground associated with Thornbury Leisure Centre car park in the north of the site	A range of inorganic and organic contaminants including hydrocarbons, metals and asbestos.
Off-site	Made Ground associated with the construction and maintenance of the B4601 Alveston Hill road adjacent to the western boundary	A range of inorganic and organic contaminants including hydrocarbons, metals, asbestos, fuel oils.
	Made Ground associated with the construction, maintenance and decommission of the West Gloucester Water Works reservoir approximately 100 m south east	A range of inorganic and organic contaminants including metals, asbestos and the potential for ground gas generation.
	Made Ground associated with the construction and operation of the works depots, stores and garages located 140 m to the east of the site	A range of inorganic and organic contaminants including hydrocarbons, metals, and asbestos.
	Made Ground associated with the former quarries and lime kilns located approximately 175 m south of the site	A range of inorganic and organic contaminants including hydrocarbons, metals, and asbestos.
	Agricultural activities associated with the allotments located 230 m north east.	A range of inorganic and organic contaminants including herbicides, pesticides and fertilisers.

6.3. Potential Receptors and Pathways

The following potential receptors which are relevant to the current and future site uses and potential contaminant exposure and migration pathways have been identified as outlined in Table 6-2.

Table 6-2 - Potential Receptors and Pathways

Receptor Group	Receptor	Potential Contaminant Migration Pathways
Human Health (On-site)	Future site users	Direct contact / ingestion / inhalation of contaminants in soil and soil-derived dusts; Direct contact / ingestion of contaminants in groundwater within excavations; and Inhalation of ground gas / vapours.
	Future public open space users and site workers for maintenance of the proposed development	
Human Health (Off-site)	Off-site workers and residents, 40 m west and surrounding commercial properties within 250 m	Direct contact / ingestion / inhalation of contaminants in soil and soil-derived dusts that may

Receptor Group	Receptor	Potential Contaminant Migration Pathways
		have migrated off-site; Direct contact / ingestion of contaminants in groundwater within excavations that may have migrated off-site; and Inhalation of ground gas / vapours that may have migrated off-site.
Controlled Waters: Surface water	Off-site: surface water ponds and unnamed stream located approximately 15 to 20 m west of the site	Leaching or dissolution of contaminants in soils and subsequent migration of contaminants; Lateral migration of dissolved phase contaminants via preferential pathways such as drains and high permeability strata; Lateral migration of dissolved phase contaminants in groundwater to surface water; and Migration of contaminants entrained in surface water runoff
Controlled Waters: Groundwater	Principal aquifer (Black Rock Limestone and Mercia Mudstone Group Conglomerate) Secondary A aquifer (Tintern Sandstone Formation) Secondary B aquifer (Mercia Mudstone Group)	Leaching or dissolution of contaminants in soils and subsequent migration of contaminants in groundwater; Vertical migration of dissolved phase contaminants to the underlying groundwater; and Lateral migration of dissolved phase contaminants via preferential pathways such as drains and high permeability strata
Property	On-site existing and future below ground infrastructure	Direct contact of contaminated soils / water with infrastructure, services and structures and subsequent chemical attack; and, Migration of ground gas along strata and preferential pathways such as service routes or differentially permeable strata leading to accumulation and explosion.
	Off-site residential and commercial properties within 250 m of the site.	Migration of ground gas along strata and preferential pathways such as service routes or differentially permeable strata leading to accumulation and explosion.

6.4. Preliminary Conceptual Site Model

Table 6-3 provides the qualitative risk matrix, based on CIRIA552 guidance, Contaminated land risk assessment. A guide to good practice [13], in which the likelihood or probability of each contaminant linkage being realised is ranked against the severity of the consequences. The result is the relative risk classification, the results of which can inform the due diligence process and allow prioritisation of any further assessments or the implementation of risk management measures.

Definitions of the risk classifications presented in the guidance are given in Table 6-4 below.

Table 6-3 - Qualitative Risk Matrix

Risk Matrix		Severity of Consequence			
		Severe	Medium	Mild	Minor
Probability of Contaminant linkage	High Likelihood	Very High Risk	High Risk	Moderate Risk	Moderate/Low Risk
	Likely	High Risk	Moderate Risk	Moderate/Low Risk	Low Risk
	Low Likelihood	Moderate Risk	Moderate/Low Risk	Low Risk	Very Low Risk
	Unlikely	Moderate/Low Risk	Low Risk	Very Low Risk	Very Low Risk

Table 6-4 - Risk Classifications

Risk Classification	Definition
Very High Risk	There is a high probability that severe harm could arise to a designated receptor from an identified source, or there is evidence that severe harm to a designated receptor is currently happening.
High Risk	Harm is likely to arise to a designated receptor from an identified source.
Moderate Risk	It is possible that harm could arise to a designated receptor from an identified source. However, it is relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild.
Low Risk	It is possible that harm could arise to a designated receptor from an identified source, but it is likely that this harm, if realised, would at worst normally be mild.
Very Low Risk	There is a low possibility that harm could arise to a receptor. In the event of such harm being realised it is not likely to be severe.

The individual sources, pathways and receptors identified in previous sections are judged against this risk matrix and professional judgement has been used to estimate the combination of probability of a contaminant linkage being realised and the consequence of the harm that might result in line with CIRIA C552.

A summary of the potential contaminant linkages and associated risks is presented in Table 6-5.

Table 6-5 - Preliminary Conceptual Site Model and Risk Assessment

Source	Receptor		Contaminant Exposure/ Migration Pathway	Potential Consequence	Probability	Risk Classification	Comments
On-site: Source 1 - Made Ground of unknown provenance associated with the infilling of the pond feature in the north Source 2 - Farming activities associated with the agricultural use of the site Source 3 - Made Ground associated with the Thornbury Leisure Centre car park in the north of the site *A range of inorganic and organic contaminants including heavy metals, hydrocarbons, herbicides,*	Human Health (On-site)	Future Site Users	Direct contact / ingestion / inhalation of contaminants in soil and soil-derived dusts; Direct contact / ingestion of contaminants in groundwater within excavations; and, Inhalation of ground gas / vapours.	Medium	Low	Moderate / Low risk, reduced to low through mitigation	The site currently comprises agricultural farmland and open access land in the north. The land surface is largely soft-standing with some vegetation. This land surface is to be covered with hard-standing in the form of a shared use path for the proposed development. This reduces the risk of direct contact and/or ingestion of soils and soil-derived dusts due to encapsulation beneath hardstanding. Soils present adjacent to the shared use path would be bound by vegetation and therefore the likelihood of direct contact and generation of soil derived dust is reduced. It is anticipated that during the works soils may be exposed in the construction of the cycleway and footpath, this may temporarily increase the risk to human health from soil derived dusts and direct contact with soils. It is assumed that human health risks to on-site workers would be managed through robust risk assessments to identify appropriate PPE and working methods.
		Future public open space users and site workers for maintenance of the proposed development		Medium	Low	Moderate / Low risk, reduced to low through mitigation	

pesticides, fertilisers and potential ground gas generation.	Human Health (Off-site)	Off-site workers and residents, 40 m west and surrounding commercial properties within 250 m	Direct contact / ingestion / inhalation of contaminants in soil and soil-derived dusts that may have migrated off-site; Direct contact / ingestion of contaminants in groundwater within excavations that may have migrated off-site; and, Inhalation of ground gas / vapours that may have migrated off-site.	Medium	Unlikely	Low risk	The site will comprise hardstanding for the footpath with vegetated soils either side. The ground cover in the surrounding area largely comprises unsurfaced vegetated ground. It is unlikely that off-site migration of soil-derived dusts would occur due to encapsulation below the hardstanding or binding of the soils by vegetation. Considering the distance to the nearest receptor, and predominantly unsurfaced ground in the surrounding area, it is likely that venting of ground gases, if present, would vent to the atmosphere in preference of migrating laterally to the identified off-site receptors.
	Controlled Waters: Surface water	Off-site: surface water ponds and unnamed stream located approximately 20 m west of the site	Leaching or dissolution of contaminants in soils and subsequent migration of contaminants; Lateral migration of dissolved phase contaminants via preferential pathways such as drains and high permeability strata; and, Migration of contaminants entrained in surface water runoff	Medium	Low likelihood	Moderate / Low risk	The nearest surface water receptors comprise ponds in the north of the site and an unnamed stream, 20 m west of the site. Contaminants associated with the historical use of the site may migrate from the site to surface waters through surface water flow, preferential pathways such as drains, and through groundwater. Infiltration and leaching of contaminants in soil in the unsaturated zone to groundwater is likely to be occurring in vegetated areas of the site. Construction activities may result in short term increases in leaching

						of contaminants due to disturbance of the soil.
Controlled Waters: Groundwater	Principal aquifer (Black Rock Limestone and Mercia Mudstone Group Conglomerate) Secondary A aquifer (Tintern Sandstone Formation) Secondary B aquifer (Mercia Mudstone Group)	Leaching or dissolution of contaminants in soils and subsequent migration of contaminants in groundwater; Vertical migration of dissolved phase contaminants to the underlying groundwater; and, Lateral migration of dissolved phase contaminants via preferential pathways such as drains and high permeability strata	Medium	Low likelihood	Moderate / low risk	The site is underlain by a principal aquifer in the northern and southern site extents with a secondary A and secondary B aquifer underlying the majority of the central section of the site. Contaminants associated with the historical use of the site may migrate from the site to surface waters through surface water flow, preferential pathways such as drains, and through groundwater. Infiltration and leaching of contaminants in soil in the unsaturated zone to groundwater in the underlying principal and secondary aquifers is likely to be occurring in vegetated areas of the site. Construction activities may result in short term increases in leaching of contaminants due to disturbance of the soil. Subsequent vertical migration to groundwater is likely to occur considering the permeable characteristic of the underlying strata. A principal aquifer is typically related to a highly permeable strata of high of importance for potable water supply.
Property	On-site existing and	Direct contact of contaminated soils/water with	Mild	Unlikely	Very low	It is assumed that any concrete infrastructure required for

		future below ground infrastructure	infrastructure, services and structures and subsequent chemical attack; and, Migration of ground gas along strata and preferential pathways such as service routes or differentially permeable strata leading to accumulation and explosion.				drainage structures will be designed for the appropriate concrete classifications protective of ground chemistry. Considering the open nature of the site and absence of proposed enclosed buildings or structures, ground gas, if present, would vent to atmosphere.
		Off-site residential, 40 m west and commercial properties within 250 m of the site.	Migration of ground gas along strata and preferential pathways such as service routes or differentially permeable strata leading to accumulation and explosion.	Mild	Unlikely	Very low risk	Due to the unsurfaced condition of the site, ground gases, if present, would likely vent to the atmosphere in preference of migrating laterally to the identified off-site receptors.
Off-site: Source 4 - Made Ground associated with the construction and maintenance of the B4601 Alveston Hill road adjacent to the western boundary Source 5 - Made Ground associated with	Human Health (On-site)	Future site users	Direct contact / ingestion / inhalation of contaminants in soil and soil-derived dusts generated from off-site sources; Direct contact / ingestion of contaminants in groundwater from off-site source that have migrated on-site within excavations; and,	Medium	Unlikely	Low risk	The area surrounding the site is predominantly vegetated unsurfaced ground. It is therefore unlikely that soil derived dusts would be generated under normal conditions which would migrate to the site. Contaminants, if present, may migrate to the site in groundwater. However, groundwater will not be present at surface and therefore it is unlikely that current or future site visitors/ workers or maintenance workers would come
		Future public open space users and site workers for maintenance of the		Medium	Unlikely	Low risk	

the construction, maintenance and decommission of the West Gloucester Water Works reservoir approximately 100 m south east. Source 6 - Made Ground associated with the construction and operation of the works depots, stores and garages located 140 m to the east of the site Source 7 - Made Ground associated with the former quarries and lime kilns located approximately 175 m south of the site Source 8 - Agricultural activities associated with the allotments located 230 m north east *A range of inorganic and*		proposed development	Inhalation of ground gas / vapours from migration of off-site sources.				into contact with groundwater in excavations. Ground gases, if present, associated with potential off-site sources, would likely dissipate to atmosphere considering the unsurfaced ground across the surrounding rural area.
	Property (On-site)	On-site future below ground infrastructure	Migration of gases into confined spaces/buildings and accumulation (explosion). Inhalation of ground gas (asphyxiation).	Mild	Unlikely	Very Low risk	Ground gases, if present, associated with potential off-site sources, would likely dissipate to atmosphere considering the unsurfaced ground across the surrounding rural area.

organic contaminants including heavy metals, hydrocarbons, herbicides, pesticides, fertilisers and potential ground gas generation.							

7. Conclusions and Recommendations

7.1. Conclusions

The site has been shown to be occupied by agricultural land from the earliest available mapping, dated 1880. The surrounding area has comprised farmland, residential properties, and industrial uses from the earliest available mapping and has been developed further for leisure facilities, industrial uses and residential uses up to the present day.

Several potential sources of contamination have been identified both on and off-site. On-site sources include an infilled pond feature in the north of the site, and sources associated with the leisure centre car park in the north and the site's use as agricultural land. Off-site sources include Made Ground associated with general development and the presence of industrial land uses such as the stores and depots to the north.

Based on the findings of the desk study and the pCSM, the risks to human health are considered to be moderate / low, the risks to controlled waters to be moderate / low and the risks to property to be very low.

7.2. Recommendations

In order to reduce the uncertainty and better evaluate the risks identified, chemical testing data and further information on the ground conditions underlying the site is required to refine the pCSM. It is therefore recommended that a ground investigation is undertaken at the site to target areas of potential contamination such as the infilled pond in the north, and to provide a broad coverage across the site to confirm the contamination status of the site. The assessment will also allow the suitability of material for re-use as part of the proposed development to be verified.

The proposed ground investigation should include environmental sampling of soil and groundwater, and chemical soil and groundwater analysis. Ground gas monitoring is considered not to be required considering the absence of proposed future structures in which gases could accumulate.

On completion of the ground investigation, an interpretative report should be produced. This would include a summary of the ground conditions encountered at the site. A Tier 2 generic human health quantitative risk assessment (GQRA) would be undertaken comparing soil against generic assessment criteria (GAC) to assess potential risks to the identified receptors from contaminant concentrations at the site. The initial CSM would be updated with the findings of the GQRA to identify potentially unacceptable risks to human health.

If material is proposed to be removed or re-used on or off-site as part of the works, it will require appropriate classification and / or sorting to demonstrate suitability with the proposed end use. The actual material to be excavated should be analysed and assessed to identify appropriate disposal / reuse options. Amongst other parameters, the composition of the soil including the potential presence of organic material and asbestos, will determine the final waste classification and with respect asbestos the status of any works with respect to the Control of Asbestos Regulations (CAR) 2012 [14].

Any proposal to re-use material on-site would need to be supported by a clear and genuine need and may require consideration as part of a Materials Management Plan or U1 exemption. It is the Contractor's responsibility to appropriately classify material excavated and ensure adequate testing is completed.

8. References

[1] British Standards Institution, “BS 10175:2011+A2:2017,” 2017.

[2] Environment Agency, “Land Contamination: Risk Management,” Environment Agency, 02 2021. [Online]. Available: https://www.gov.uk/guidance/land-contamination-how-to-manage-the-risks. [Accessed 03 2023].

[3] Groundsure, “Alveston Hill Groundsure Geo+Enviro Insights Report - GSIP-2023-13374-12932,” 2023.

[4] Groundsure, “Alveston Hill Historical Mapping - GSIP-2023-13374-12931,” 2023.

[5] DEFRA, “MAGIC,” 2019. [Online]. Available: https://magic.defra.gov.uk/home.htm. [Accessed 02 2023].

[6] British Geological Survey, “Onshore GeoIndex,” 2020. [Online]. Available: http://mapapps.bgs.ac.uk/geologyofbritain/home.html. [Accessed February 2023].

[7] Coal Authority, “Coal Authority Interactive Map,” [Online]. Available: http://mapapps2.bgs.ac.uk/coalauthority/home.html. [Accessed 03 2023].

[8] Zetica, “Unexploded Ordnance Risk Map,” 2023.

[9] UK Health Security Agency, “Uk Radon Maps,” [Online]. Available: http://www.ukradon.org/information/ukmaps. [Accessed January 2022].

[10] Defra, “Environmental Protection Act 1990: Part2A, Contaminated Land Statutory Guidance,” 2012.

[11] Environment Agency, “Land contamination: risk management,” 2023. [Online]. Available: https://www.gov.uk/guidance/land-contamination-how-to-manage-the-risks. [Accessed 02 2023].

[12] HSE, “The Construction (Design and Management) Regulations 2015,” UK Government, 2015.

[13] CIRIA, “Contaminated land risk assessment. A guide to good practice (C552),” 2001.

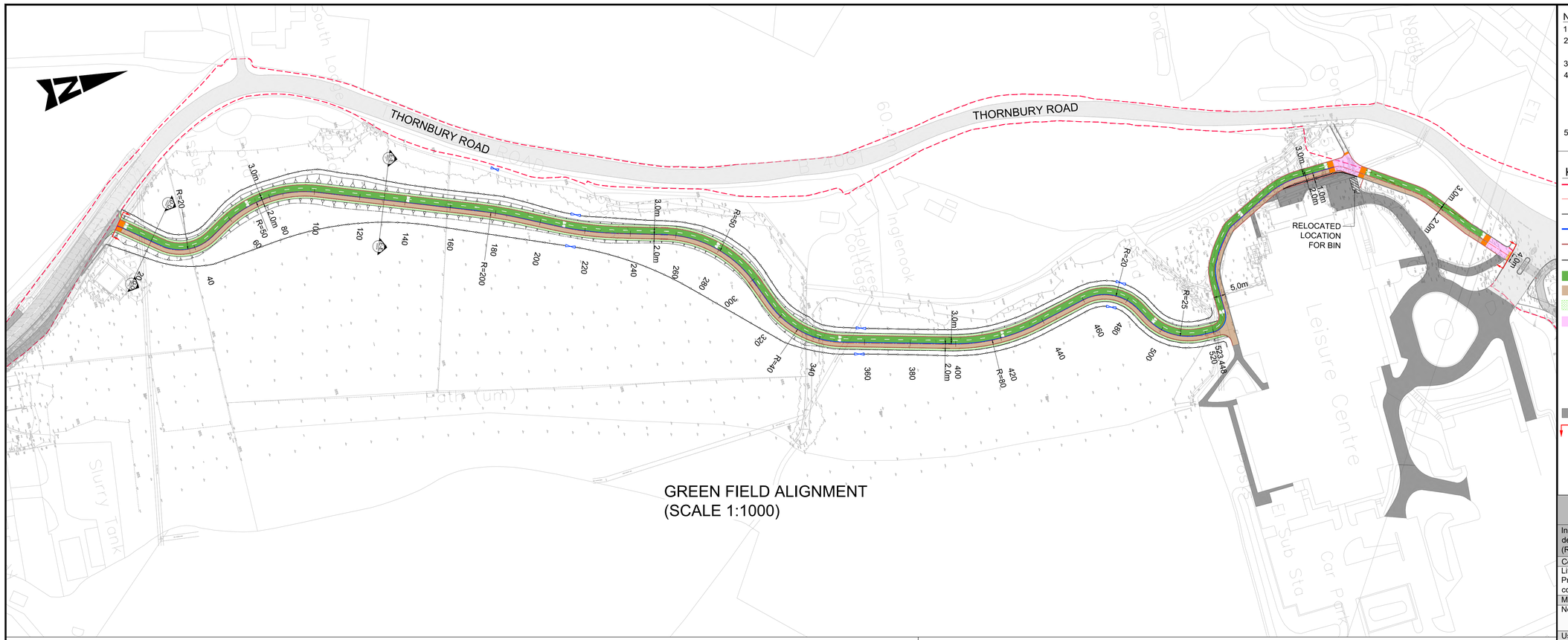
[14] Health and Safety Executive, “Control of Asbestos Regulations 2012,” HMG, 2012.

Appendices

Appendix A. Drawings

DO NOT SCALE

Millimetres 100 10 0



GREEN FIELD ALIGNMENT
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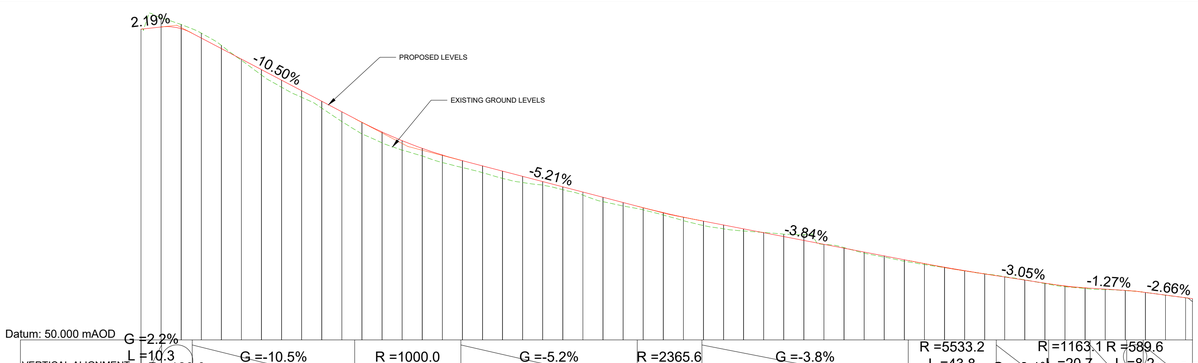
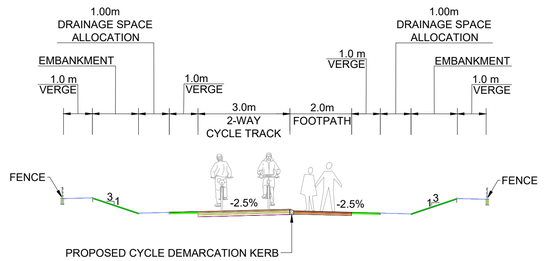


Datum: 50.000 mAOD

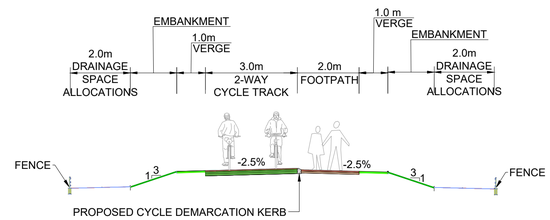
CHAINAGE	DESIGN LEVELS	EXISTING LEVELS	LEVEL DIFFERENCE
0	80.934	80.934	0.000
10	81.153	82.079	-0.925
20	80.978	81.403	-0.426
30	80.053	80.546	-0.492
40	79.004	79.326	-0.323
50	77.954	77.838	0.116
60	76.904	76.367	0.537
70	75.854	75.155	0.699
80	74.805	74.151	0.654
90	73.755	73.077	0.678
100	72.705	71.741	0.964
110	71.662	70.512	1.150
120	70.698	69.614	1.084
130	69.835	68.897	0.938
140	69.071	68.314	0.757
150	68.408	67.659	0.749
160	67.844	67.158	0.686
170	67.324	66.650	0.673
180	66.803	66.086	0.717
190	66.282	65.669	0.614
200	65.762	65.410	0.352
210	65.241	64.950	0.291
220	64.720	64.417	0.304
230	64.200	63.763	0.436
240	63.679	63.337	0.342
250	63.160	62.946	0.214
260	62.673	62.435	0.239
270	62.229	61.872	0.357
280	61.826	61.391	0.436
290	61.442	61.061	0.381
300	61.057	60.845	0.212
310	60.673	60.700	-0.027
320	60.288	60.531	-0.243
330	59.904	60.486	-0.582
340	59.519	59.510	0.009
350	59.135	59.191	-0.056
360	58.750	58.635	0.116
370	58.366	58.248	0.118
380	57.981	57.838	0.144
390	57.603	57.502	0.100
400	57.242	57.199	0.043
410	56.899	56.877	0.022
420	56.574	56.582	-0.007
430	56.266	56.298	-0.032
440	55.961	55.986	-0.025
450	55.655	55.610	0.045
460	55.379	55.302	0.077
470	55.186	55.114	0.072
480	55.056	55.008	0.048
490	54.929	54.910	0.018
500	54.730	54.728	0.002
510	54.464	54.453	0.011
520	54.198	54.200	-0.002

VERTICAL ALIGNMENT	HORIZONTAL CURVES
G =2.2% L =10.3	
R =120.0 L =15.3	R: 20.0 L: 24.1 L=24.9
G =-10.5% L =80.9	L=7.9
R =1000.0 L =52.9	R: 50.0 L: 44.5 L=69.3
G =-5.2% L =87.7	R: 200.0 L: 19.7 L: 1.0 L: 1.0 L=13.8
R =2365.6 L =32.2	R: 150.0 L: 27.9 L: 1.0 L: 3.3 L=17.739
G =-3.8% L =102.7	R: 50.0 L: 43.1 L: 3.281 L=9.704
R =5533.2 L =43.8	R: 40.000 L: 37.466 L =47.9
G =-3.1% L =26.1	R: 80.0 L: 39.9 L =22.2
R =1163.1 L =20.7	R: 20.0 L: 26.2
R =589.6 L =8.2	L =18.2
G =-1.3% L =24.5	R: 25.0 L: 26.4 L=5.5
G =-2.7%	

LONGITUDINAL SECTION
SCALE: NTS



D-D 000004 TYPICAL CROSS SECTION DETAILS
SCALE 1:100



E-E 000004 TYPICAL CROSS SECTION DETAILS
SCALE 1:100

NOTES:
1. DO NOT SCALE FROM THIS DRAWING.
2. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED.
3. ALL PROPOSED KERBS TO TIE IN WITH EXISTING KERBS.
4. HEALTH AND SAFETY:
   THE CONTRACTOR SHALL BE AWARE OF ALL STATUTORY UNDERTAKERS PLANT THAT MAY BE LOCATED WITHIN THE SITE. PLANS SHOWING APPROXIMATE LOCATIONS HAVE BEEN SUPPLIED BY THE ASSET OWNER.
5. ALL ROAD MARKINGS TYPES / COLOURS & DIMENSIONS SHALL BE IN ACCORDANCE WITH TSRGD 2016.

KEY:
- HIGHWAY BOUNDARY
- CENTERLINE
- EXISTING KERB
- PROPOSED CYCLE DEMARCATION KERB
- PROPOSED CONCRETE EDGING
- PROPOSED STOCK PROOF FENCE
- PROPOSED 2 WAY CYCLE TRACK
- PROPOSED FOOTWAY
- PROPOSED VERGE / LANDSCAPE
- PROPOSED SHARED USE PATH
- PROPOSED TACTILE PAVING (UNCONTROLLED CROSSING-BUFF COLOUR)
- PROPOSED TRAMLINE / LADDER PAVING
- PROPOSED HAZARD WARNING (CORDUROY) PAVING
- PROPOSED GATE
- EXISTING CARRIAGEWAY / FOOTWAY
- LIMIT OF WORKS

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following significant residual risks (Reference shall also be made to the design hazard log).

Construction
Live Traffic & Utilities
Presence of soil contamination, asbestos, Hazardous tar and breaking of concrete not known.

Maintenance / Cleaning
None

Use
None

Decommissioning / Demolition
None

DRAFT

Description	Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
Description	Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
Description	Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
Description	Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
First Issue	S0	P01.1	---	---	---	---	---

Drawing Suitability: WORK IN PROGRESS — Status: S0

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Member of the SNC-Lavalin Group
Aztec West
500 Park Avenue
Almondsbury
Bristol
BS32 4RZ
Tel: +44 (0)1454 662000
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Client: South Gloucestershire Council — Delivering for you

Project Title: WECA SGC- Alveston Hill FBC

Drawing Title: GENERAL ARRANGEMENT LAYOUT (FOR PLANNING APPROVAL)

Drawing Number
Project: WECA_SGC - 5220316 | Originator: ATK | Volume: - HGN - | Location: - DR - | Type: CH - | Role: - | Number: 000007

Original Size:	Scale:	Project Ref. No:	Sheet:	Rev:
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Plotted: 20/09/2023 11:25:42 By: ANWE8219

Appendix B. Groundsure Data Sheet

Groundsure LOCATION INTELLIGENCE

Enviro+Geo Insight

Alveston Hill

Order Details

Date: 16/02/2023

Your ref: Alveston Hill

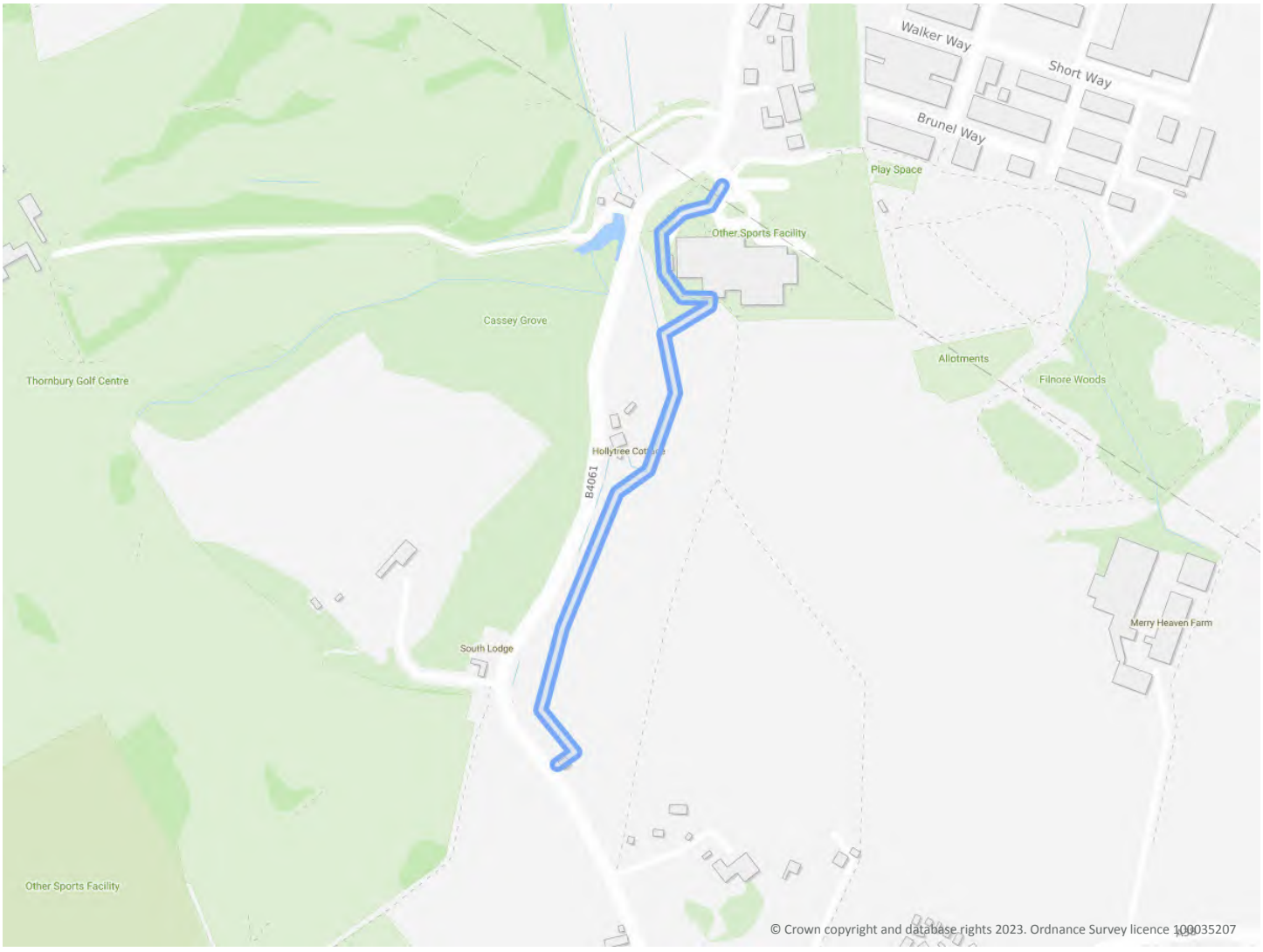
Our Ref: GSIP-2023-13374-12932

Site Details

Location: 363508 189039

Area: 0.75 ha

Authority: South Gloucestershire Council



Contact us with any questions at:
info@groundsure.com
01273 257 755

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	18	37	-
17	1.2	Historical tanks	0	0	6	9	-
17	1.3	Historical energy features	0	0	0	11	-
18	1.4	Historical petrol stations	0	0	0	0	-
18	1.5	Historical garages	0	0	0	0	-
19	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
20	2.1	Historical industrial land uses	0	0	24	59	-
24	2.2	Historical tanks	0	0	10	27	-
25	2.3	Historical energy features	0	0	0	17	-
26	2.4	Historical petrol stations	0	0	0	0	-
26	2.5	Historical garages	0	0	0	0	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
27	3.1	Active or recent landfill	0	0	0	0	-
27	3.2	Historical landfill (BGS records)	0	0	0	0	-
28	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
28	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
28	3.5	Historical waste sites	0	0	0	1	-
28	3.6	Licensed waste sites	0	0	0	5	-
30	3.7	Waste exemptions	0	1	3	2	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
32	4.1	Recent industrial land uses	1	0	14	-	-
33	4.2	Current or recent petrol stations	0	0	0	1	-
34	4.3	Electricity cables	0	0	0	0	-
34	4.4	Gas pipelines	0	0	0	0	-
34	4.5	Sites determined as Contaminated Land	0	0	0	0	-

34	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
35	4.7	Regulated explosive sites	0	0	0	0	-
35	4.8	Hazardous substance storage/usage	0	0	0	0	-
35	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
35	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
35	**4.11**	**Licensed pollutant release (Part A(2)/B)**	0	0	0	1	-
36	4.12	Radioactive Substance Authorisations	0	0	0	0	-
36	4.13	Licensed Discharges to controlled waters	0	0	0	0	-
36	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
36	4.15	Pollutant release to public sewer	0	0	0	0	-
37	4.16	List 1 Dangerous Substances	0	0	0	0	-
37	4.17	List 2 Dangerous Substances	0	0	0	0	-
37	4.18	Pollution Incidents (EA/NRW)	0	0	0	0	-
37	4.19	Pollution inventory substances	0	0	0	0	-
37	4.20	Pollution inventory waste transfers	0	0	0	0	-
38	4.21	Pollution inventory radioactive waste	0	0	0	0	-

Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
39	5.1	Superficial aquifer	None (within 500m)				
40	**5.2**	**Bedrock aquifer**	Identified (within 500m)				
42	**5.3**	**Groundwater vulnerability**	Identified (within 50m)				
44	**5.4**	**Groundwater vulnerability- soluble rock risk**	Identified (within 0m)				
44	5.5	Groundwater vulnerability- local information	None (within 0m)				
45	**5.6**	**Groundwater abstractions**	0	0	0	2	13
49	5.7	Surface water abstractions	0	0	0	0	0
49	5.8	Potable abstractions	0	0	0	0	0
49	5.9	Source Protection Zones	0	0	0	0	-
49	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-

Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
50	**6.1**	**Water Network (OS MasterMap)**	3	14	15	-	-

53	6.2	Surface water features	1	7	10	-	-
53	6.3	WFD Surface water body catchments	1	-	-	-	-
54	6.4	WFD Surface water bodies	0	0	0	-	-
54	6.5	WFD Groundwater bodies	1	-	-	-	-

Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
55	7.1	Risk of flooding from rivers and the sea	High (within 50m)				
56	7.2	Historical Flood Events	0	0	0	-	-
56	7.3	Flood Defences	0	0	0	-	-
56	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
56	7.5	Flood Storage Areas	0	0	0	-	-
57	7.6	Flood Zone 2	Identified (within 50m)				
58	7.7	Flood Zone 3	Identified (within 50m)				

Page	Section	Surface water flooding	
59	8.1	Surface water flooding	1 in 30 year, 0.3m - 1.0m (within 50m)

Page	Section	Groundwater flooding	
61	9.1	Groundwater flooding	Negligible (within 50m)

Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
62	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
63	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
63	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
63	10.4	Special Protection Areas (SPA)	0	0	0	0	0
63	10.5	National Nature Reserves (NNR)	0	0	0	0	0
64	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
64	10.7	Designated Ancient Woodland	0	0	0	0	5
64	10.8	Biosphere Reserves	0	0	0	0	0
65	10.9	Forest Parks	0	0	0	0	0
65	10.10	Marine Conservation Zones	0	0	0	0	0
65	10.11	Green Belt	1	0	0	0	0
65	10.12	Proposed Ramsar sites	0	0	0	0	0

66	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
66	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
66	10.15	Nitrate Sensitive Areas	0	0	0	0	0
66	10.16	Nitrate Vulnerable Zones	0	0	0	0	0
67	**10.17**	**SSSI Impact Risk Zones**	2	-	-	-	-
68	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
69	11.1	World Heritage Sites	0	0	0	-	-
70	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
70	11.3	National Parks	0	0	0	-	-
70	**11.4**	**Listed Buildings**	0	0	2	-	-
71	**11.5**	**Conservation Areas**	0	0	1	-	-
71	11.6	Scheduled Ancient Monuments	0	0	0	-	-
71	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
72	**12.1**	**Agricultural Land Classification**	Urban (within 250m)				
73	12.2	Open Access Land	0	0	0	-	-
73	12.3	Tree Felling Licences	0	0	0	-	-
73	**12.4**	**Environmental Stewardship Schemes**	1	0	1	-	-
74	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
75	**13.1**	**Priority Habitat Inventory**	0	2	12	-	-
76	13.2	Habitat Networks	0	0	0	-	-
76	13.3	Open Mosaic Habitat	0	0	0	-	-
77	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
78	**14.1**	**10k Availability**	Identified (within 500m)				
79	14.2	Artificial and made ground (10k)	0	0	0	0	-
80	14.3	Superficial geology (10k)	0	0	0	0	-

80	14.4	Landslip (10k)	0	0	0	0	-
81	14.5	Bedrock geology (10k)	0	0	0	0	-
81	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
82	**15.1**	**50k Availability**	Identified (within 500m)				
83	15.2	Artificial and made ground (50k)	0	0	0	0	-
83	15.3	Artificial ground permeability (50k)	0	0	-	-	-
84	15.4	Superficial geology (50k)	0	0	0	0	-
84	15.5	Superficial permeability (50k)	None (within 50m)				
84	15.6	Landslip (50k)	0	0	0	0	-
84	15.7	Landslip permeability (50k)	None (within 50m)				
85	**15.8**	**Bedrock geology (50k)**	5	2	6	4	-
86	**15.9**	**Bedrock permeability (50k)**	Identified (within 50m)				
87	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
88	16.1	BGS Boreholes	0	0	0	-	-
Page	Section	Natural ground subsidence					
89	**17.1**	**Shrink swell clays**	Very low (within 50m)				
91	**17.2**	**Running sands**	Negligible (within 50m)				
92	**17.3**	**Compressible deposits**	Negligible (within 50m)				
93	**17.4**	**Collapsible deposits**	Very low (within 50m)				
94	**17.5**	**Landslides**	Low (within 50m)				
96	**17.6**	**Ground dissolution of soluble rocks**	Low (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
98	18.1	Natural cavities	0	0	0	0	-
99	**18.2**	**BritPits**	0	0	2	1	-
99	**18.3**	**Surface ground workings**	5	9	25	-	-
101	18.4	Underground workings	0	0	0	0	0
101	18.5	Historical Mineral Planning Areas	0	0	0	0	-

101	**18.6**	**Non-coal mining**	2	0	0	0	4
102	18.7	Mining cavities	0	0	0	0	0
102	18.8	JPB mining areas	None (within 0m)				
103	18.9	Coal mining	None (within 0m)				
103	18.10	Brine areas	None (within 0m)				
103	18.11	Gypsum areas	None (within 0m)				
103	18.12	Tin mining	None (within 0m)				
103	18.13	Clay mining	None (within 0m)				

Page	Section	Radon	
104	**19.1**	**Radon**	Between 5% and 10% (within 0m)

Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
106	**20.1**	**BGS Estimated Background Soil Chemistry**	10	5	-	-	-
107	20.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
107	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
108	21.1	Underground railways (London)	0	0	0	-	-
108	21.2	Underground railways (Non-London)	0	0	0	-	-
108	21.3	Railway tunnels	0	0	0	-	-
108	21.4	Historical railway and tunnel features	0	0	0	-	-
108	21.5	Royal Mail tunnels	0	0	0	-	-
109	21.6	Historical railways	0	0	0	-	-
109	21.7	Railways	0	0	0	-	-
109	21.8	Crossrail 1	0	0	0	0	-
109	21.9	Crossrail 2	0	0	0	0	-
109	21.10	HS2	0	0	0	0	-

Recent aerial photograph

Capture Date: 06/05/2020

Site Area: 0.75ha

Recent site history - 2017 aerial photograph

Capture Date: 10/05/2017

Site Area: 0.75ha

Recent site history - 2008 aerial photograph

Capture Date: 27/07/2008

Site Area: 0.75ha

Recent site history - 2006 aerial photograph

Capture Date: 03/06/2006

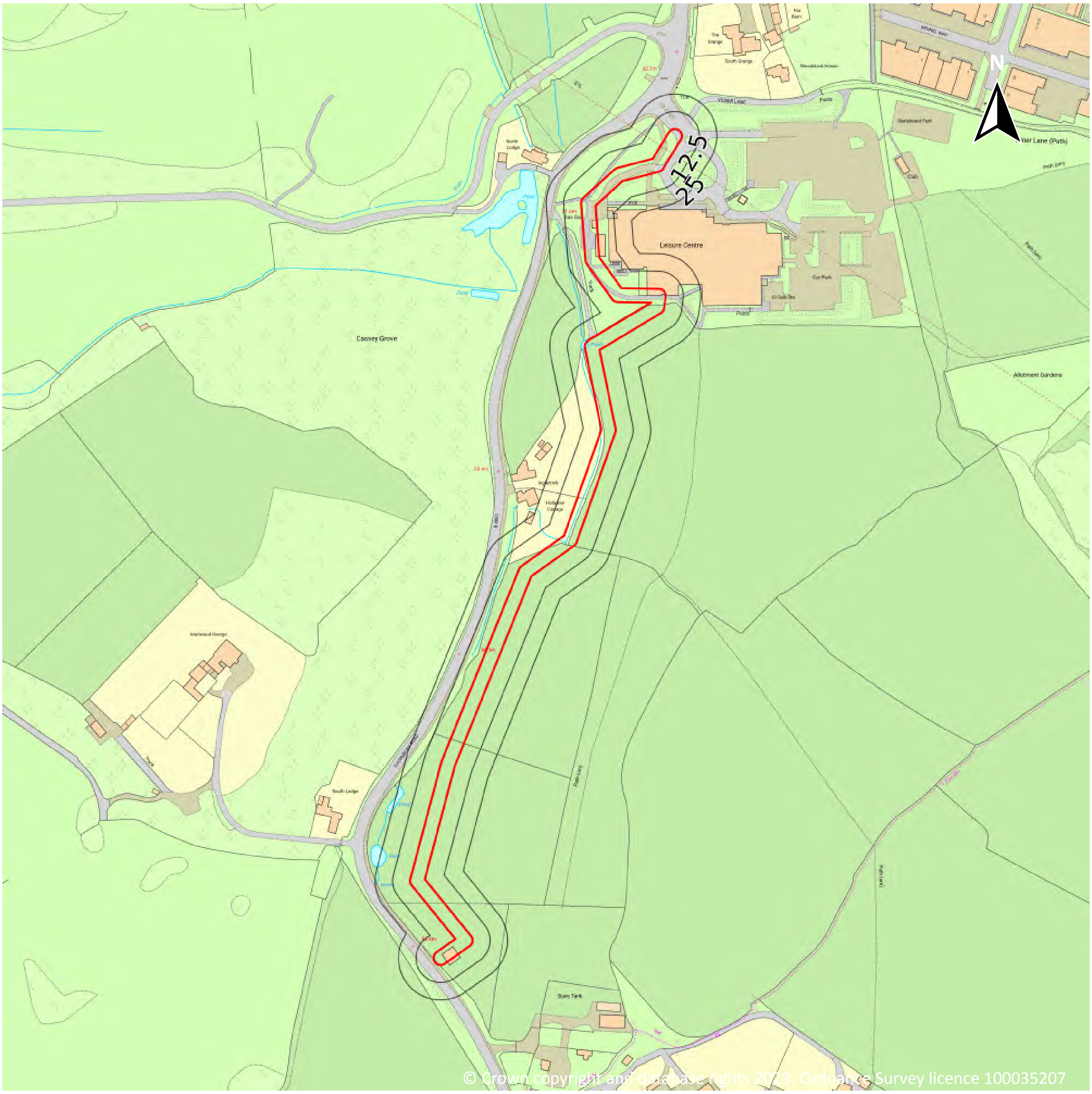
Site Area: 0.75ha

Recent site history - 1999 aerial photograph

Capture Date: 24/07/1999

Site Area: 0.75ha

OS MasterMap site plan



Site Area: 0.75ha

1 Past land use

Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical energy features

1.1 Historical industrial land uses

Records within 500m	55

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
1	60m NE	Unspecified Pump	1886	1187982

ID	Location	Land use	Dates present	Group ID
A	142m S	Unspecified Quarry	1880 - 1886	1254666
A	143m S	Unspecified Old Quarry	1954	1195790
A	147m S	Unspecified Old Quarry	1923	1221333
B	163m S	Unspecified Quarry	1886	1265213
B	163m S	Unspecified Ground Workings	1880	1203437
B	167m S	Unspecified Ground Workings	1901 - 1923	1227559
B	194m S	Unspecified Pit	1954	1186518
B	202m S	Old Lime Kiln	1923	1173910
B	210m S	Unspecified Quarry	1880	1237732
B	212m S	Unspecified Quarry	1880	1196215
B	224m S	Unspecified Old Quarries	1901	1166438
B	230m S	Lime Kiln	1880 - 1886	1214687
B	234m S	Unspecified Old Quarries	1901	1166440
B	239m S	Unspecified Old Quarry	1923	1245505
B	241m S	Unspecified Quarry	1973	1241404
B	241m S	Unspecified Old Quarry	1954	1251326
C	246m NE	Unspecified Pit	1886	1239143
B	252m S	Unspecified Old Quarry	1923	1193286
C	253m NE	Unspecified Pit	1923 - 1954	1197487
B	256m S	Old Lime Kiln	1923	1263429
D	314m NE	Unspecified Depot	1973	1171355
G	359m SE	Old Lime Kiln	1954	1173909
G	380m SE	Unspecified Old Quarry	1954	1180918
G	386m SE	Unspecified Quarry	1880	1199556
2	388m S	Unspecified Pit	1880 - 1886	1203910
G	389m SE	Lime Kiln	1880 - 1886	1248658
H	389m NE	Railway Sidings	1880	1265939
H	393m NE	Railway Sidings	1901 - 1919	1231382

ID	Location	Land use	Dates present	Group ID
4	395m SW	Unspecified Works	1973	1179042
H	395m NE	Railway Sidings	1923	1267283
G	398m SE	Unspecified Old Quarries	1901	1166439
G	398m SE	Unspecified Quarry	1923	1233065
F	399m N	Railway Sidings	1954	1198156
G	401m SE	Unspecified Quarry	1886	1270134
H	403m N	Railway Sidings	1886	1193354
5	405m S	Timber Yard	1880 - 1886	1238868
G	409m SE	Unspecified Quarry	1923	1266688
F	412m NE	Railway Building	1880	1172673
F	415m NE	Railway Building	1901 - 1923	1252602
H	422m N	Railway Building	1886 - 1954	1210625
H	424m N	Railway Station	1880 - 1886	1252764
I	427m NE	Railway Sidings	1901 - 1923	1193355
J	435m N	Railway Building	1901 - 1954	1257554
J	440m N	Railway Building	1880	1265612
F	446m NE	Engine Shed	1923	1215916
F	447m NE	Engine Shed	1901 - 1923	1238127
F	448m NE	Engine Shed	1923 - 1954	1268877
F	450m NE	Railway Sidings	1886	1216375
F	451m NE	Railway Building	1886	1172672
I	453m NE	Railway Sidings	1923	1265413
H	461m N	Railway Station	1954	1200934
I	462m NE	Railway Sidings	1923	1221010
I	462m NE	Railway Sidings	1886	1221543
H	466m N	Railway Station	1901 - 1923	1222948

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	15

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
C	233m NE	Unspecified Tank	1990	186365
C	234m NE	Unspecified Tank	1990	185631
C	235m NE	Unspecified Tank	1983	193801
C	236m NE	Unspecified Tank	1994 - 1996	178535
C	237m NE	Unspecified Tank	1983	180931
C	239m NE	Unspecified Tank	1994 - 1996	193703
C	256m NE	Unspecified Tank	1990	191066
C	257m NE	Unspecified Tank	1983	184039
C	260m NE	Unspecified Tank	1994 - 1996	182601
E	316m NE	Unspecified Tank	1983 - 1996	183494
E	319m NE	Unspecified Tank	1990	189121
E	327m NE	Unspecified Tank	1975 - 1996	193207
D	341m NE	Unspecified Tank	1975 - 1996	186773
3	393m NE	Unspecified Tank	1983 - 1990	182507
H	437m NE	Unspecified Tank	1881 - 1962	181915

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	11

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'.

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

ID	Location	Land use	Dates present	Group ID
D	308m NE	Electricity Substation	1975 - 1996	104146
F	349m NE	Electricity Substation	1996	98114
D	374m NE	Electricity Substation	1990	102018
D	374m NE	Electricity Substation	1990	102369
D	375m NE	Electricity Substation	1983	102061
F	376m NE	Electricity Substation	1990	104418
F	376m NE	Electricity Transformer	1975	99861
F	376m NE	Electricity Substation	1983	105833
D	377m NE	Electricity Substation	1994	102086
D	377m NE	Electricity Substation	1996	102087
F	381m NE	Electricity Substation	1994	98115

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	0

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'.

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 energy features

2.1 Historical industrial land uses

Records within 500m	83

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 20**

ID	Location	Land Use	Date	Group ID
1	60m NE	Unspecified Pump	1886	1187982
A	142m S	Unspecified Quarry	1880	1254666
A	143m S	Unspecified Old Quarry	1954	1195790

ID	Location	Land Use	Date	Group ID
A	144m S	Unspecified Quarry	1886	1254666
A	147m S	Unspecified Old Quarry	1923	1221333
A	149m S	Unspecified Old Quarry	1923	1221333
A	149m S	Unspecified Old Quarry	1923	1221333
B	163m S	Unspecified Quarry	1886	1265213
B	163m S	Unspecified Ground Workings	1880	1203437
B	167m S	Unspecified Ground Workings	1923	1227559
B	167m S	Unspecified Ground Workings	1901	1227559
B	194m S	Unspecified Pit	1954	1186518
B	202m S	Old Lime Kiln	1923	1173910
B	210m S	Unspecified Quarry	1880	1237732
B	212m S	Unspecified Quarry	1880	1196215
B	224m S	Unspecified Old Quarries	1901	1166438
B	230m S	Lime Kiln	1880	1214687
B	231m S	Lime Kiln	1886	1214687
B	234m S	Unspecified Old Quarries	1901	1166440
B	239m S	Unspecified Old Quarry	1923	1245505
B	239m S	Unspecified Old Quarry	1923	1245505
B	241m S	Unspecified Old Quarry	1954	1251326
B	241m S	Unspecified Quarry	1973	1241404
C	246m NE	Unspecified Pit	1886	1239143
B	252m S	Unspecified Old Quarry	1923	1193286
C	253m NE	Unspecified Pit	1923	1197487
C	254m NE	Unspecified Pit	1954	1197487
B	256m S	Old Lime Kiln	1923	1263429
B	258m S	Old Lime Kiln	1923	1263429
D	314m NE	Unspecified Depot	1973	1171355
G	359m SE	Old Lime Kiln	1954	1173909

ID	Location	Land Use	Date	Group ID
G	380m SE	Unspecified Old Quarry	1954	1180918
G	386m SE	Unspecified Quarry	1880	1199556
H	388m S	Unspecified Pit	1880	1203910
G	389m SE	Lime Kiln	1880	1248658
G	389m SE	Lime Kiln	1886	1248658
I	389m NE	Railway Sidings	1880	1265939
H	390m S	Unspecified Pit	1886	1203910
I	393m NE	Railway Sidings	1901	1231382
I	393m NE	Railway Sidings	1919	1231382
2	395m SW	Unspecified Works	1973	1179042
I	395m NE	Railway Sidings	1923	1267283
G	398m SE	Unspecified Quarry	1923	1233065
G	398m SE	Unspecified Quarry	1923	1233065
G	398m SE	Unspecified Old Quarries	1901	1166439
F	399m N	Railway Sidings	1954	1198156
G	401m SE	Unspecified Quarry	1886	1270134
I	403m N	Railway Sidings	1886	1193354
K	405m S	Timber Yard	1886	1238868
G	409m SE	Unspecified Quarry	1923	1266688
F	412m NE	Railway Building	1880	1172673
F	415m NE	Railway Building	1901	1252602
F	415m NE	Railway Building	1919	1252602
F	415m NE	Railway Building	1923	1252602
I	422m N	Railway Building	1954	1210625
I	424m N	Railway Station	1880	1252764
I	425m N	Railway Building	1886	1210625
L	427m NE	Railway Sidings	1923	1193355
L	427m NE	Railway Sidings	1901	1193355

ID	Location	Land Use	Date	Group ID
I	430m N	Railway Building	1901	1210625
I	430m N	Railway Building	1919	1210625
I	430m N	Railway Building	1923	1210625
K	431m S	Timber Yard	1880	1238868
M	435m N	Railway Building	1954	1257554
M	440m N	Railway Building	1880	1265612
M	440m N	Railway Building	1901	1257554
M	440m N	Railway Building	1919	1257554
M	440m N	Railway Building	1923	1257554
F	446m NE	Engine Shed	1923	1215916
F	447m NE	Engine Shed	1923	1238127
F	447m NE	Engine Shed	1901	1238127
F	448m NE	Engine Shed	1954	1268877
F	450m NE	Engine Shed	1923	1268877
F	450m NE	Railway Sidings	1886	1216375
F	451m NE	Railway Building	1886	1172672
L	453m NE	Railway Sidings	1923	1265413
I	457m N	Railway Station	1886	1252764
I	461m N	Railway Station	1954	1200934
L	462m NE	Railway Sidings	1923	1221010
L	462m NE	Railway Sidings	1886	1221543
I	466m N	Railway Station	1901	1222948
I	466m N	Railway Station	1919	1222948
I	466m N	Railway Station	1923	1222948

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	**37**

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 20**

ID	Location	Land Use	Date	Group ID
C	233m NE	Unspecified Tank	1990	186365
C	233m NE	Unspecified Tank	1990	186365
C	234m NE	Unspecified Tank	1990	185631
C	234m NE	Unspecified Tank	1990	185631
C	235m NE	Unspecified Tank	1983	193801
C	236m NE	Unspecified Tank	1994	178535
C	236m NE	Unspecified Tank	1996	178535
C	237m NE	Unspecified Tank	1983	180931
C	239m NE	Unspecified Tank	1994	193703
C	239m NE	Unspecified Tank	1996	193703
C	256m NE	Unspecified Tank	1990	191066
C	256m NE	Unspecified Tank	1990	191066
C	257m NE	Unspecified Tank	1983	184039
C	260m NE	Unspecified Tank	1994	182601
C	260m NE	Unspecified Tank	1996	182601
E	316m NE	Unspecified Tank	1990	183494
E	316m NE	Unspecified Tank	1990	183494
E	318m NE	Unspecified Tank	1983	183494
E	318m NE	Unspecified Tank	1994	183494
E	318m NE	Unspecified Tank	1996	183494
E	319m NE	Unspecified Tank	1990	189121
E	319m NE	Unspecified Tank	1990	189121
E	327m NE	Unspecified Tank	1975	193207

ID	Location	Land Use	Date	Group ID
E	327m NE	Unspecified Tank	1983	193207
E	327m NE	Unspecified Tank	1994	193207
E	327m NE	Unspecified Tank	1996	193207
D	341m NE	Unspecified Tank	1990	186773
D	341m NE	Unspecified Tank	1990	186773
D	342m NE	Unspecified Tank	1975	186773
D	342m NE	Unspecified Tank	1983	186773
D	344m NE	Unspecified Tank	1994	186773
D	344m NE	Unspecified Tank	1996	186773
J	393m NE	Unspecified Tank	1990	182507
J	393m NE	Unspecified Tank	1990	182507
J	394m NE	Unspecified Tank	1983	182507
I	437m NE	Unspecified Tank	1881	181915
I	441m NE	Unspecified Tank	1962	181915

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m **17**

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'.

Features are displayed on the Past land use - un-grouped map on **page 20**

ID	Location	Land Use	Date	Group ID
D	308m NE	Electricity Substation	1990	104146
D	308m NE	Electricity Substation	1990	104146
D	310m NE	Electricity Substation	1975	104146
D	310m NE	Electricity Substation	1983	104146
D	311m NE	Electricity Substation	1994	104146
D	311m NE	Electricity Substation	1996	104146

ID	Location	Land Use	Date	Group ID
F	349m NE	Electricity Substation	1996	98114
D	374m NE	Electricity Substation	1990	102018
D	374m NE	Electricity Substation	1990	102369
D	375m NE	Electricity Substation	1983	102061
F	376m NE	Electricity Substation	1990	104418
F	376m NE	Electricity Substation	1990	104418
F	376m NE	Electricity Transformer	1975	99861
F	376m NE	Electricity Substation	1983	105833
D	377m NE	Electricity Substation	1994	102086
D	377m NE	Electricity Substation	1996	102087
F	381m NE	Electricity Substation	1994	98115

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.

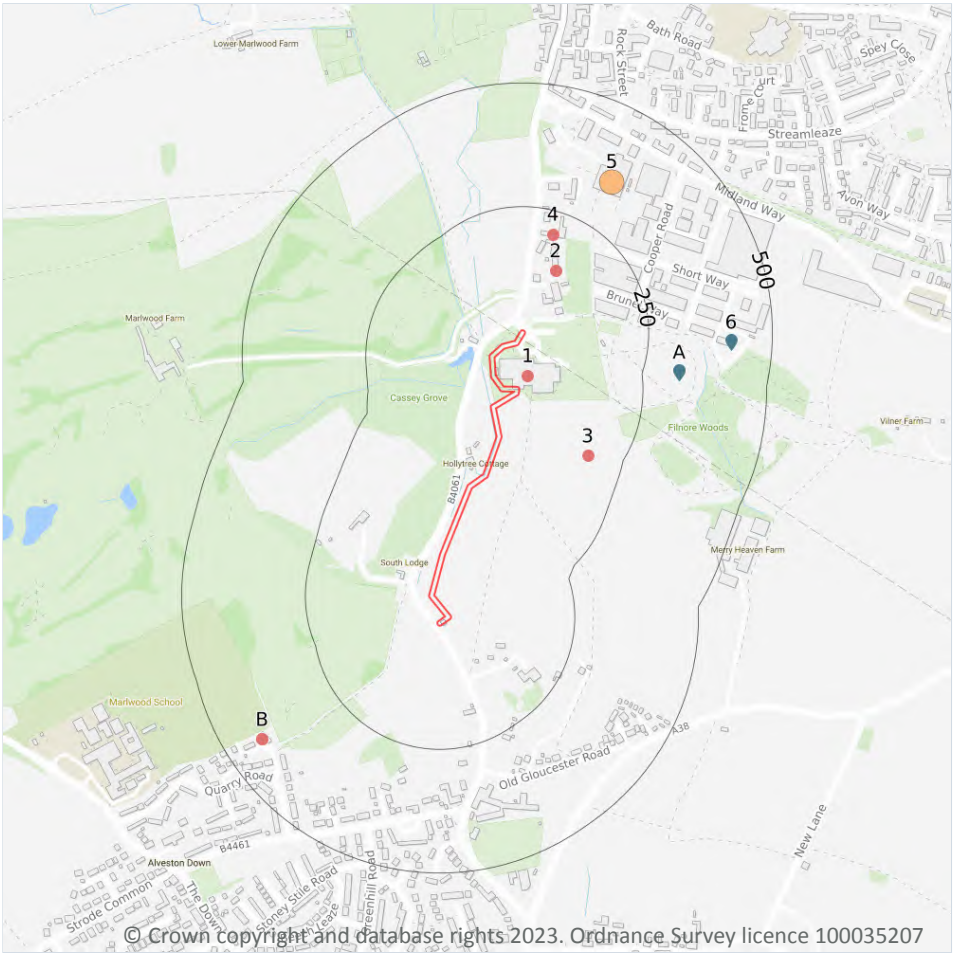
2.5 Historical garages

Records within 500m	**0**

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'.

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill



Site Outline

Search buffers in metres (m)

Historical waste sites

Licensed waste sites

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	1

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

Features are displayed on the Waste and landfill map on **page 27**

ID	Location	Address	Further Details	Date
5	323m NE	Site Address: Tesco Stores Ltd,Midland Way, Thornbury, BRISTOL, Avon, BS35 2BS	Type of Site: Recycling Unit Planning application reference: PT09/1181/F Description: Scheme comprises construction of TOMRA recycling unit with associated works. Construction - steel frame. An application (ref: PT09/1181/F) for detailed planning permission was withdrawn from South Gloucestershire D.C. A detailed planning application ha been withdrawn. Data source: Historic Planning Application Data Type: Point	-

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

3.6 Licensed waste sites

Records within 500m	5

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

Features are displayed on the Waste and landfill map on **page 27**

ID	Location	Details		
A	321m NE	Site Name: Thornbury Household Waste Recycling Facility Site Address: Short Way, Thornbury Ind Est, Thornbury, South Glos Correspondence Address: Dean Road, Yate, South Glos, BS37 5ND	Type of Site: Household Waste Amenity Site Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SIT108 EPR reference: - Operator: Sita (south Gloucestershire) Ltd Waste Management licence No: 26168 Annual Tonnage: 0	Issue Date: 07/06/2005 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued
A	321m NE	Site Name: Thornbury Household Waste Recycling Facility Site Address: Short Way, Thornbury Ind Est, Thornbury, Gloucestershire, BS35 3UT Correspondence Address: Dean Road, Yate, Bristol, Avon, BS37 5ND	Type of Site: Household Waste Amenity Site Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SIT108 EPR reference: EA/EPR/BP3490FM/A001 Operator: S I T A (South Gloucestershire) Ltd Waste Management licence No: 26168 Annual Tonnage: 4269	Issue Date: 6/7/2005 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued
A	321m NE	Site Name: Thornbury Household Waste Recycling Facility Site Address: Land / Premises At, Short Way, Thornbury Ind Est, Thornbury, Gloucestershire, BS35 3UT Correspondence Address: -	Type of Site: Household Waste Amenity Site Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SIT108 EPR reference: EA/EPR/BP3490FM/A001 Operator: Sita (South Gloucestershire) Ltd Waste Management licence No: 26168 Annual Tonnage: 25000	Issue Date: 07/06/2005 Effective Date: - Modified: - Surrendered Date: 0 Expiry Date: - Cancelled Date: - Status: Issued

ID	Location	Details		
A	321m NE	Site Name: Thornbury Household Waste Recycling Facility Site Address: Land / Premises At, Short Way, Thornbury Ind Est, Thornbury, Gloucestershire, BS35 3UT Correspondence Address: -	Type of Site: Household Waste Amenity Site Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SIT108 EPR reference: EA/EPR/BP3490FM/V002 Operator: Suez Recycling And Recovery South Gloucestershire Ltd Waste Management licence No: 26168 Annual Tonnage: 25000	Issue Date: 07/06/2005 Effective Date: - Modified: 30/06/2016 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified
6	416m NE	Site Name: Thornbury Household Waste Recycling Facility Site Address: Land / Premises At, Short Way, Thornbury Ind Est, Thornbury, Gloucestershire, BS35 3UT Correspondence Address: -	Type of Site: Household Waste Amenity Site Size: >= 25000 tonnes 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SIT108 EPR reference: EA/EPR/BP3490FM/V003 Operator: Suez Recycling And Recovery South Gloucestershire Ltd Waste Management licence No: 26168 Annual Tonnage: 25000	Issue Date: 07/06/2005 Effective Date: - Modified: 12/01/2021 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified

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

3.7 Waste exemptions

Records within 500m **6**

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 27**

ID	Location	Site	Reference	Category	Sub-Category	Description
1	29m NE	THORNBURY ROAD, THORNBURY, BRISTOL, BS35 3JB	WEX222598	Treating waste exemption	Not on a farm	Aerobic composting and associated prior treatment

ID	Location	Site	Reference	Category	Sub-Category	Description
2	136m N	Open pasture Land, Running alongside Bristol Road, from the top of the High Street, Thornbury, BS35 3JA	WEX228421	Disposing of waste exemption	On a Farm	Burning waste in the open
3	178m E	npa - Car Park at Thornbury Leisure Centre, Thornbury Road. THORNBURY BS35 3JB	EPR/UF0531QT/A001	Treating waste exemption	Non-Agricultural Waste Only	Aerobic composting and associated prior treatment
4	202m N	Open pasture Land, Running alongside Bristol Road, from the top of the High Street, Thornbury, BS35 3JA	WEX083896	Disposing of waste exemption	On a farm	Burning waste in the open
B	425m SW	THE GABLES, COSTERS CLOSE, ALVESTON, BRISTOL, BS35 3HZ	WEX157552	Disposing of waste exemption	Not on a Farm	Burning waste in the open
B	425m SW	THE GABLES, COSTERS CLOSE, ALVESTON, BRISTOL, BS35 3HZ	WEX157559	Disposing of waste exemption	Not on a Farm	Burning waste in the open

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	15

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 32**

ID	Location	Company	Address	Activity	Category
1	**On site**	**Gas Governor Station**	**Gloucestershire, BS35**	**Gas Features**	**Infrastructure and Facilities**
2	60m NE	Pylon	Gloucestershire, BS35	Electrical Features	Infrastructure and Facilities

ID	Location	Company	Address	Activity	Category
3	73m S	Slurry Tank	Gloucestershire, BS35	Waste Storage, Processing and Disposal	Infrastructure and Facilities
4	76m NE	Electricity Sub Station	Gloucestershire, BS35	Electrical Features	Infrastructure and Facilities
A	194m NE	Kennedy Grinding Ltd	Unit 4, Brunel Way, Thornbury, Gloucestershire, BS35 3UR	Tool Repairs	Repair and Servicing
B	198m NE	Orchard Materials	Unit 7, Brunel Way, Thornbury, Gloucestershire, BS35 3UR	Metals Manufacturers, Fabricators and Stockholders	Industrial Products
A	204m NE	Paperbliss	Unit 5, Brunel Way, Thornbury, Gloucestershire, BS35 3UR	Published Goods	Industrial Products
5	218m N	Pylon	Gloucestershire, BS35	Electrical Features	Infrastructure and Facilities
B	224m NE	Mechatech Systems	Unit 9, Brunel Way, Thornbury, Gloucestershire, BS35 3UR	Pumps and Compressors	Industrial Products
6	234m N	Protective Wall Coatings	Cedar Cottage, Bristol Road, Thornbury, Gloucestershire, BS35 3JA	Industrial Coatings and Finishings	Industrial Products
B	237m NE	Thorite	14, Walker Way, Thornbury, Gloucestershire, BS35 3US	Pumps and Compressors	Industrial Products
B	240m NE	Phoenix Flooring Ltd	13, Walker Way, Thornbury, Gloucestershire, BS35 3US	Construction Completion Services	Construction Services
7	241m S	Limekiln (Dis)	Gloucestershire, BS35	Lime Kilns	Industrial Features
B	244m NE	Tank	Gloucestershire, BS35	Tanks (Generic)	Industrial Features
B	245m NE	Tank	Gloucestershire, BS35	Tanks (Generic)	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 32**

ID	Location	Company	Address	LPG	Status
9	454m N	TESCO	Midland Way, Thornbury, Bristol, South Gloucestershire, BS35 2BS	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 32**

ID	Location	Address	Details	
8	395m N	Tesco Stores Ltd, Midland Way, Thornbury, Bristol, BS35 2BS	Process: Unloading of Petrol into Storage at Service Stations Status: Current Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement 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

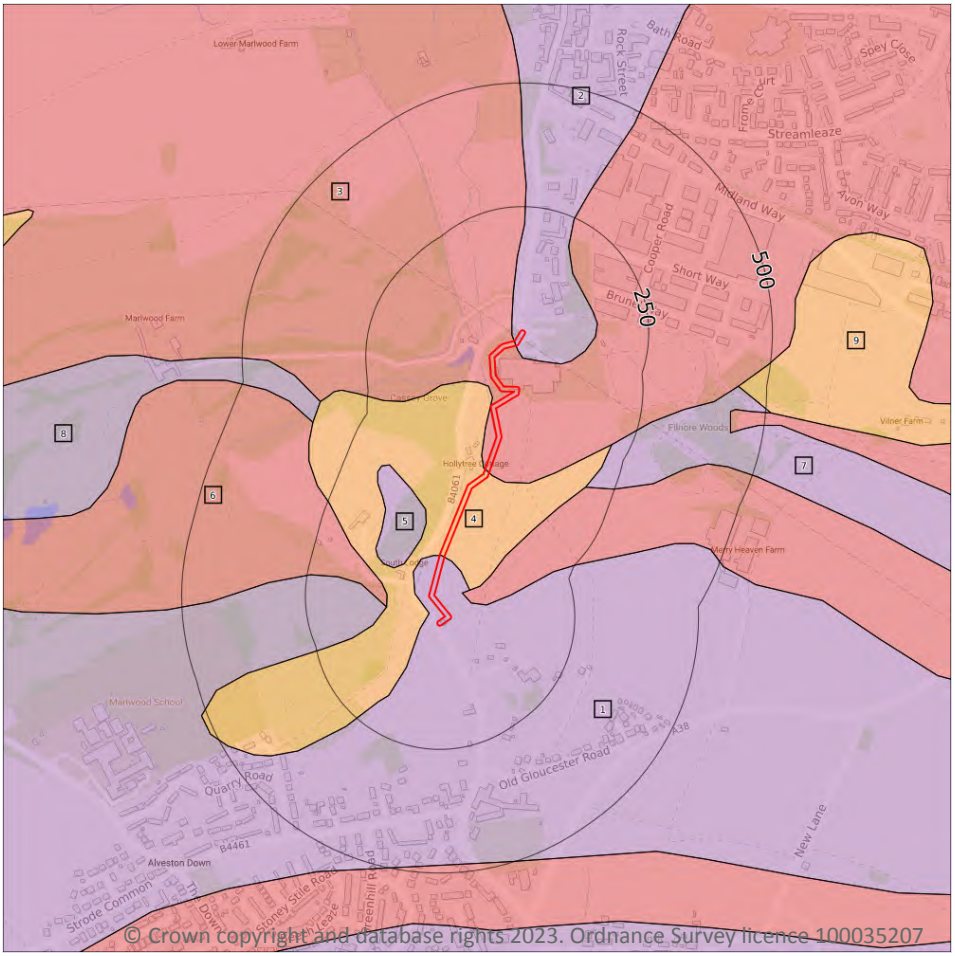
5.1 Superficial aquifer

Records within 500m	0

Aquifer status of groundwater held within superficial geology.

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	9

Aquifer status of groundwater held within bedrock geology.

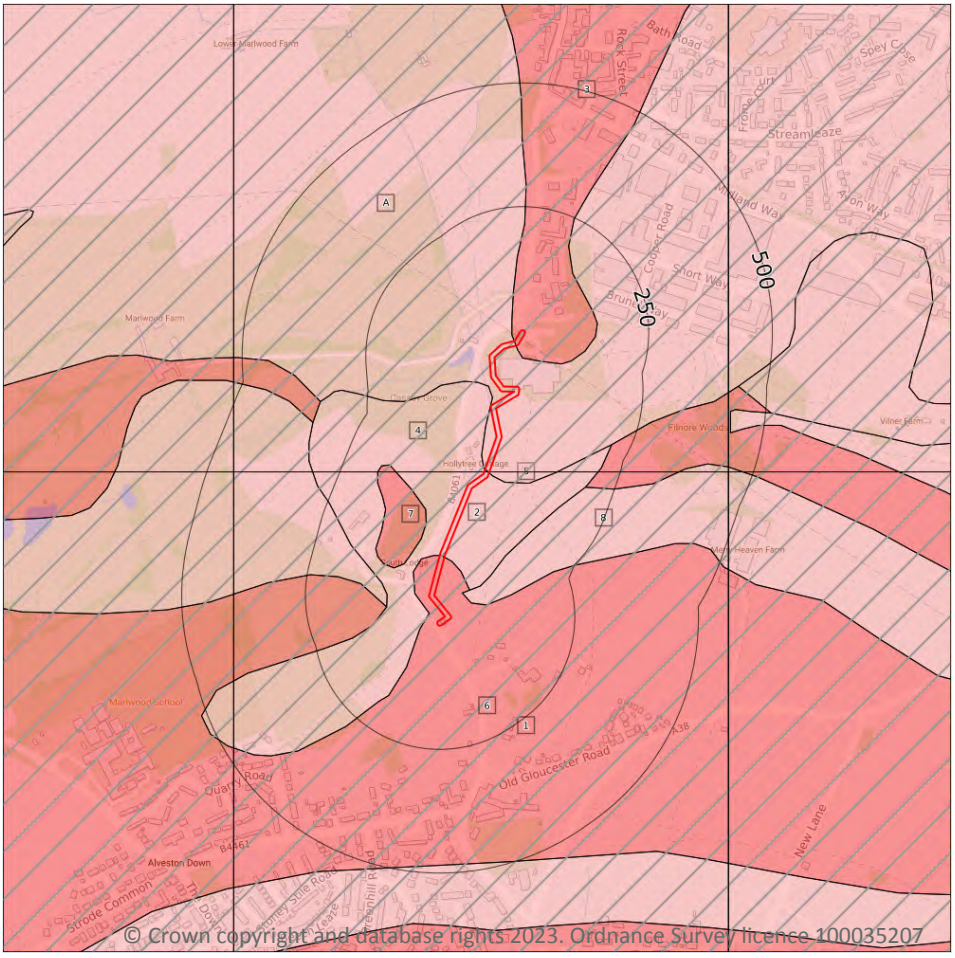
Features are displayed on the Bedrock aquifer map on **page 40**

ID	Location	Designation	Description
1	On site	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers
2	On site	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers

ID	Location	Designation	Description
3	**On site**	**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**
4	**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**
5	47m SW	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers
6	85m SW	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
7	194m E	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers
8	338m W	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers
9	443m E	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

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	8

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 42**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	**On site**	**Summary Classification: Principal 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: Principal Flow mechanism: Well connected fractures**
2	**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	**On site**	**Summary Classification: Principal bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer**	**Leaching class: Intermediate Infiltration value: >70% Dilution value: 300-550mm/year**	**Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data**	**Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures**
4	**On site**	**Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer**	**Leaching class: Intermediate 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**
5	**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**
A	**On site**	**Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer**	**Leaching class: Intermediate 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**
7	46m SW	Summary Classification: Principal 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: Principal Flow mechanism: Well connected fractures

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
8	47m S	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

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	**2**

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
6	**Significant soluble rocks are likely to be present. Low possibility of localised subsidence or dissolution-related degradation of bedrock occurring naturally, but may be possible in adverse conditions such as high surface or subsurface water flow.**	**68.0%**
A	**Significant soluble rocks are likely to be present. Low possibility of localised subsidence or dissolution-related degradation of bedrock occurring naturally, but may be possible in adverse conditions such as high surface or subsurface water flow.**	**18.0%**

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

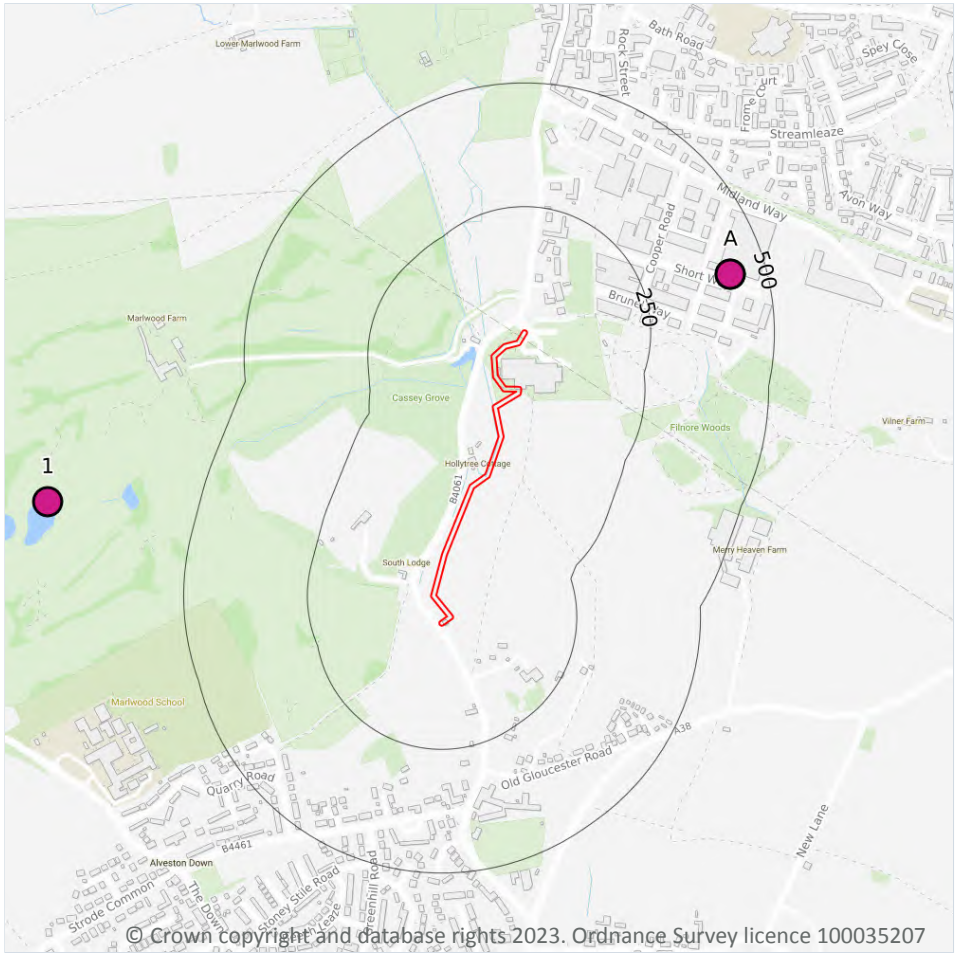
5.5 Groundwater vulnerability- local information

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	15

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.

Features are displayed on the Abstractions and Source Protection Zones map on **page 45**

ID	Location	Details	
A	428m NE	Status: Historical Licence No: 18/54/020/G/293 Details: General Washing/Process Washing Direct Source: Ground Water - Fresh Point: "BOREHOLE, THORNBURY" Data Type: Point Name: Dairy Crest Ltd Easting: 364000 Northing: 189400	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 19/11/1996 Expiry Date: - Issue No: 101 Version Start Date: 01/04/2003 Version End Date: -
A	428m NE	Status: Historical Licence No: 18/54/020/G/293 Details: General Washing/Process Washing Direct Source: Ground Water - Fresh Point: BOREHOLE, THORNBURY Data Type: Point Name: Dairy Crest Ltd Easting: 364000 Northing: 189400	Annual Volume (m^3): 262800 Max Daily Volume (m^3): 720 Original Application No: - Original Start Date: 19/11/1996 Expiry Date: - Issue No: 101 Version Start Date: 01/04/2003 Version End Date: -
1	797m W	Status: Active Licence No: 18/54/020/G/294 Details: Spray Irrigation - Storage Direct Source: Ground Water - Fresh Point: THORNBURY GOLF CENTRE Data Type: Point Name: Burhill Golf Centres Ltd Easting: 362620 Northing: 188940	Annual Volume (m^3): 20,455 Max Daily Volume (m^3): 136 Original Application No: N103 Original Start Date: 21/01/1998 Expiry Date: - Issue No: 100 Version Start Date: 21/01/1998 Version End Date: -
-	1115m NW	Status: Historical Licence No: 18/54/020/G/294 Details: General use relating to Secondary Category (High Loss) Direct Source: Ground Water - Fresh Point: THORNBURY GOLF CENTRE Data Type: Point Name: Burghill Golf Centres Limited Easting: 362660 Northing: 189950	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 21/01/1998 Expiry Date: - Issue No: 100 Version Start Date: 21/01/1998 Version End Date: -
-	1115m NW	Status: Historical Licence No: 18/54/020/G/294 Details: Spray Irrigation - Storage Direct Source: Ground Water - Fresh Point: THORNBURY GOLF CENTRE Data Type: Point Name: Burghill Golf Centres Ltd Easting: 362660 Northing: 189950	Annual Volume (m^3): 20455 Max Daily Volume (m^3): 136 Original Application No: - Original Start Date: 21/01/1998 Expiry Date: - Issue No: 100 Version Start Date: 21/01/1998 Version End Date: -

ID	Location	Details	
-	1591m S	Status: Historical Licence No: 17/53/002/G/067 Details: Make-Up Or Top Up Water Direct Source: Ground Water - Fresh Point: TRENCH LANE BOERHOLE A Data Type: Point Name: Thompson Easting: 362780 Northing: 187230	Annual Volume (m^3): 7300 Max Daily Volume (m^3): 20 Original Application No: - Original Start Date: 13/03/1985 Expiry Date: - Issue No: 103 Version Start Date: 29/04/2013 Version End Date: -
-	1747m S	Status: Historical Licence No: 18/54/020/G/295 Details: General Farming & Domestic Direct Source: Ground Water - Fresh Point: ALMONDSBURY Data Type: Point Name: P Pinker (Game Farm) Ltd Easting: 363050 Northing: 186980	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 22/02/1999 Expiry Date: - Issue No: 100 Version Start Date: 22/02/1999 Version End Date: -
-	1747m S	Status: Historical Licence No: 18/54/020/G/295 Details: Non-Evaporative Cooling Direct Source: Ground Water - Fresh Point: ALMONDSBURY Data Type: Point Name: P Pinker (Game Farm) Ltd Easting: 363050 Northing: 186980	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 22/02/1999 Expiry Date: - Issue No: 100 Version Start Date: 22/02/1999 Version End Date: -
-	1769m N	Status: Historical Licence No: 18/54/020/G/296 Details: General Farming & Domestic Direct Source: Ground Water - Fresh Point: BOREHOLE AT PARK MILL FARM Data Type: Point Name: E J Garrett & Partners Easting: 362980 Northing: 190950	Annual Volume (m^3): 20075 Max Daily Volume (m^3): 55 Original Application No: - Original Start Date: 18/11/2004 Expiry Date: 31/03/2015 Issue No: 101 Version Start Date: 01/04/2008 Version End Date: -
-	1771m N	Status: Historical Licence No: 18/54/020/G/296 Details: General Farming & Domestic Direct Source: Ground Water - Fresh Point: BOREHOLE AT PARK MILL FARM Data Type: Point Name: E J Garrett & Partners Easting: 362981 Northing: 190952	Annual Volume (m^3): 20075 Max Daily Volume (m^3): 55 Original Application No: - Original Start Date: 18/11/2004 Expiry Date: 31/03/2015 Issue No: 101 Version Start Date: 01/04/2008 Version End Date: -

ID	Location	Details	
-	1771m N	Status: Active Licence No: 18/54/020/G/296/R01 Details: General Farming & Domestic Direct Source: Ground Water - Fresh Point: BOREHOLE AT PARK MILL FARM Data Type: Point Name: E J Garrett & Partners Easting: 362981 Northing: 190952	Annual Volume (m^3): 20,075 Max Daily Volume (m^3): 55 Original Application No: NPS/WR/017050 Original Start Date: 01/04/2015 Expiry Date: 31/03/2027 Issue No: 1 Version Start Date: 01/04/2015 Version End Date: -
-	1800m W	Status: Historical Licence No: 18/54/020/G/167 Details: General Farming & Domestic Direct Source: Ground Water - Fresh Point: "WELL, ELBERTON" Data Type: Point Name: Bernays Easting: 361600 Northing: 188600	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 24/08/1966 Expiry Date: - Issue No: 100 Version Start Date: 24/08/1966 Version End Date: -
-	1800m W	Status: Historical Licence No: 18/54/020/G/167 Details: General Farming & Domestic Direct Source: Ground Water - Fresh Point: WELL, ELBERTON Data Type: Point Name: Bernays Easting: 361600 Northing: 188600	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 24/08/1966 Expiry Date: - Issue No: 100 Version Start Date: 24/08/1966 Version End Date: -
-	1926m W	Status: Historical Licence No: 18/54/020/G/043 Details: General Farming & Domestic Direct Source: Ground Water - Fresh Point: "BOREHOLE, THORNBURY" Data Type: Point Name: King & Co (Thornbury) Ltd Easting: 361500 Northing: 189100	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 25/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 25/02/1966 Version End Date: -
-	1926m W	Status: Historical Licence No: 18/54/020/G/043 Details: General Farming & Domestic Direct Source: Ground Water - Fresh Point: BOREHOLE, THORNBURY Data Type: Point Name: King & Co (Thornbury) Ltd Easting: 361500 Northing: 189100	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 25/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 25/02/1966 Version End Date: -

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

5.7 Surface water abstractions

Records within 2000m	0

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.

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	0

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

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

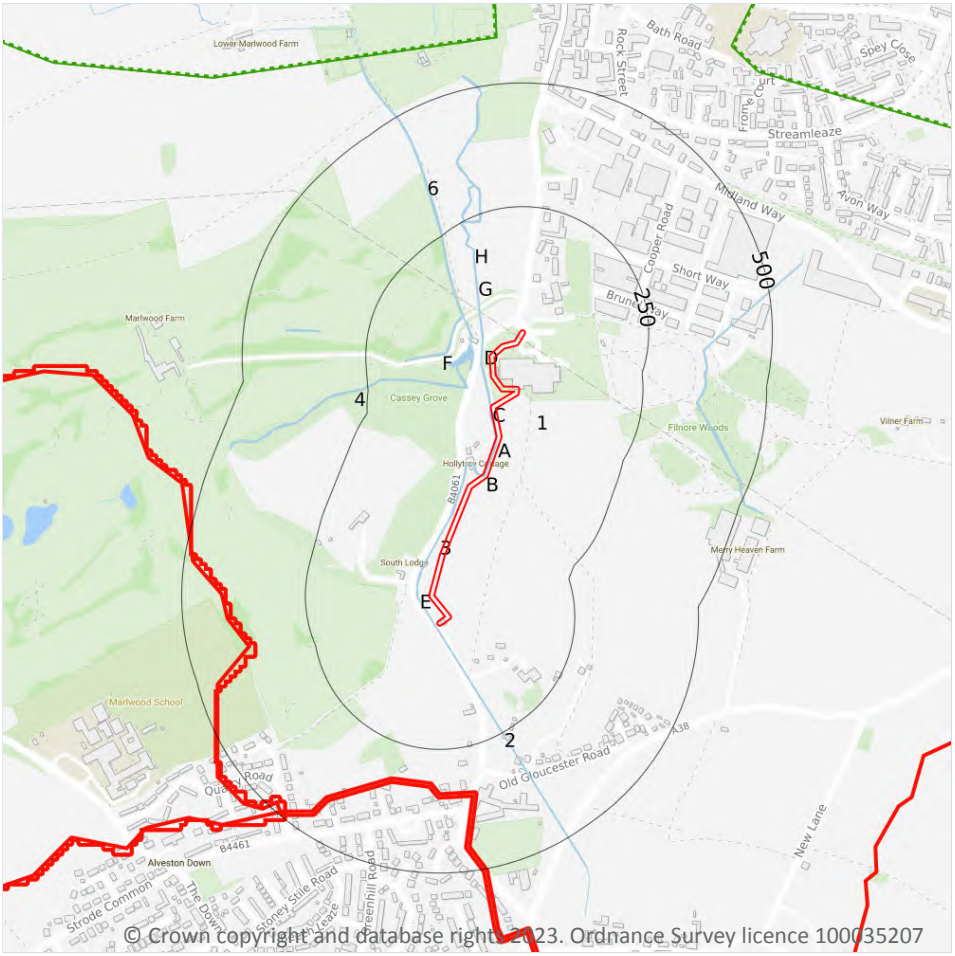
5.10 Source Protection Zones (confined aquifer)

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	**32**

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 50**

ID	Location	Type of water feature	Ground level	Permanence	Name
A	**On site**	**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	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
B	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
C	**On site**	**Lake, loch or reservoir.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
C	1m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
2	5m S	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
B	7m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
3	8m SW	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
D	16m N	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
E	22m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
E	22m SW	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
E	25m SW	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
E	27m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	29m NW	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	37m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
D	41m N	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
D	44m N	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
D	52m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
4	52m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
D	73m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
D	76m N	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
D	81m N	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
F	82m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
G	91m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
D	92m N	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
D	92m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
D	92m N	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
6	92m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
H	179m N	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
H	207m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
H	236m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
H	248m N	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	**18**

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 50**

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 50**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
1	**On site**	**River**	**Oldbury Naite Rhine**	**GB109054026670**	**Severn Lower Vale**	**Avon Bristol and Somerset Nort**

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 50**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
-	3688m NW	River	Oldbury Naite Rhine	GB109054026670	Moderate	Fail	Moderate	2019

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

6.5 WFD Groundwater bodies

Records on site	**1**

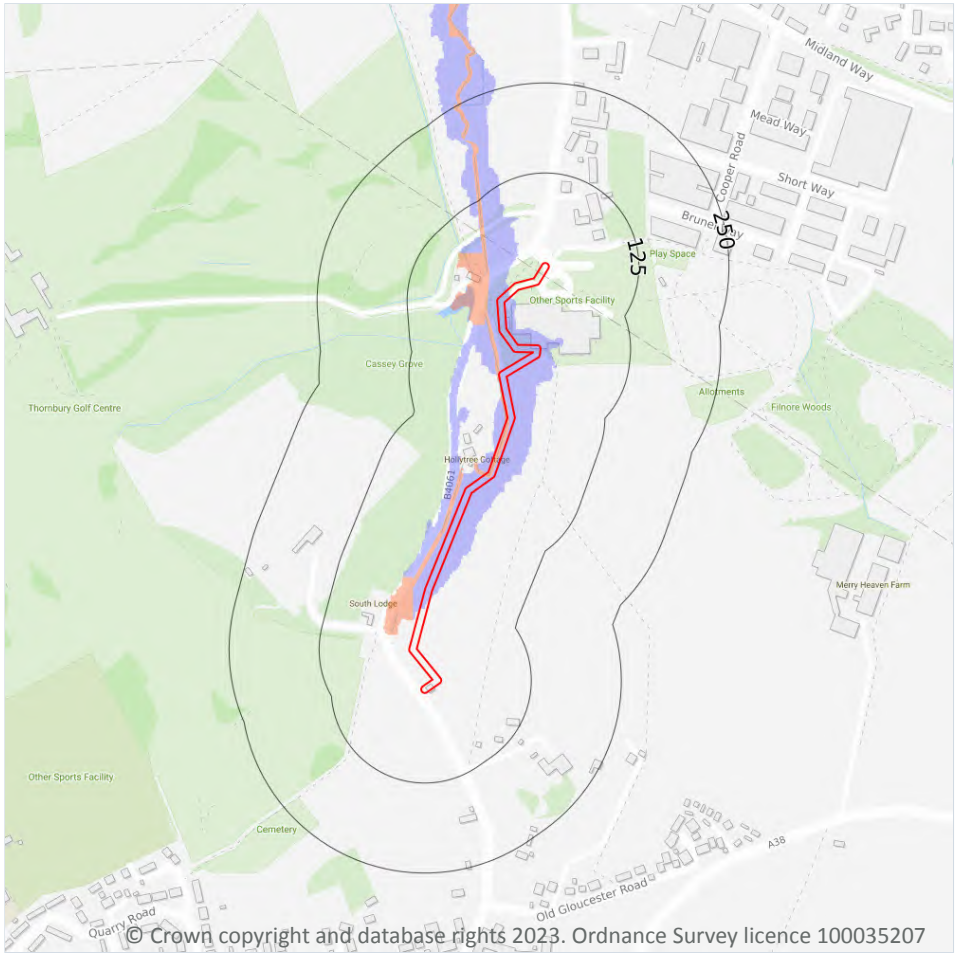
Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each groundwater body listed.

Features are displayed on the Hydrology map on **page 50**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
B	**On site**	**Carboniferous Limestone (Alveston)**	**GB40901G806200**	**Poor**	**Good**	**Poor**	**2019**

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

7 River and coastal flooding



Site Outline

Search buffers in metres (m)

River and coastal flooding:

- High
- Medium
- Low
- Very Low
- Historical Flood Events
- Areas Used for Flood Storage
- Areas Benefiting from Flood Defences
- Flood Defences

7.1 Risk of flooding from rivers and the sea

Records within 50m	8

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m within the Risk of Flooding from Rivers and Sea (RoFRaS)/Flood Risk Assessment Wales (FRAW) models. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition. The risk categories for RoFRaS for rivers and the sea and FRAW for rivers are; 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). The risk categories for FRAW for the sea are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 200 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 200 chance) or High (greater than or equal to 1 in 30 chance).

Features are displayed on the River and coastal flooding map on **page 55**

Distance	Flood risk category
On site	**High**
0 - 50m	High

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.

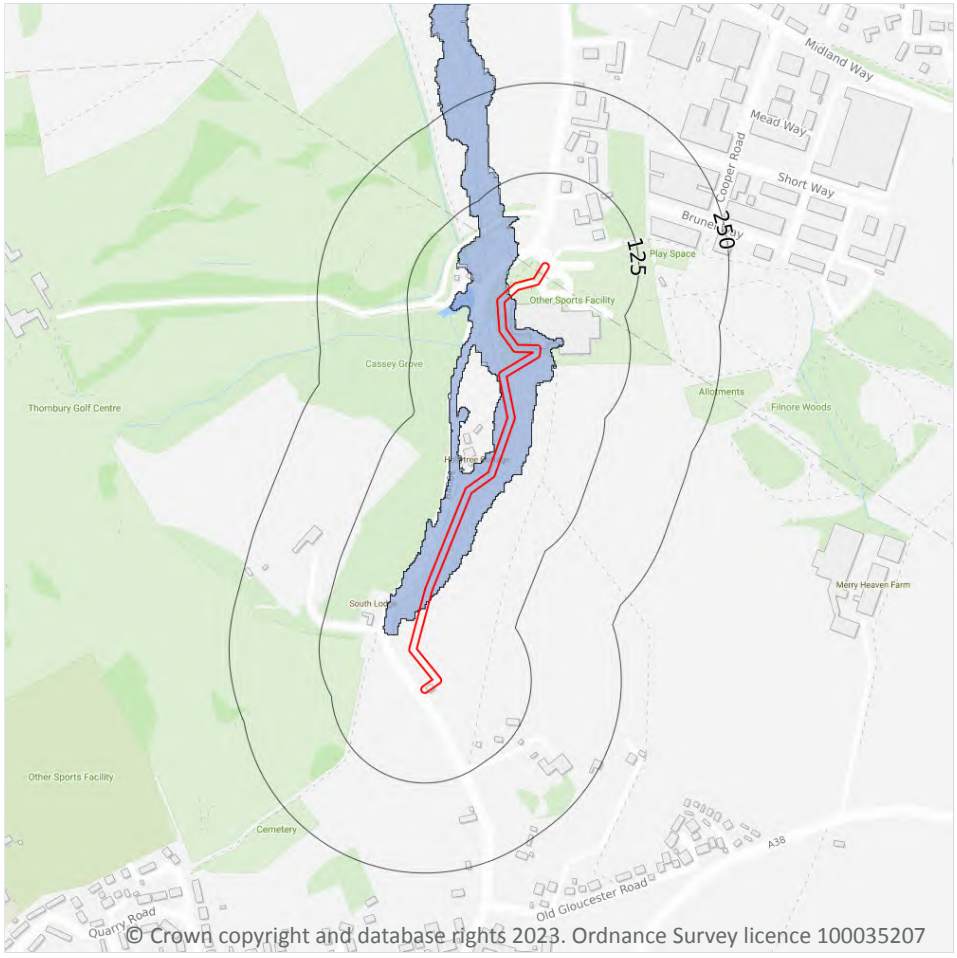
7.5 Flood Storage Areas

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



Site Outline

Search buffers in metres (m)

Flood zone 2

Flood zone 3

7.6 Flood Zone 2

Records within 50m	1

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.

Features are displayed on the River and coastal flooding map on **page 55**

Location	Type
On site	**Zone 2 - (Fluvial /Tidal Models)**

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

7.7 Flood Zone 3

Records within 50m	1

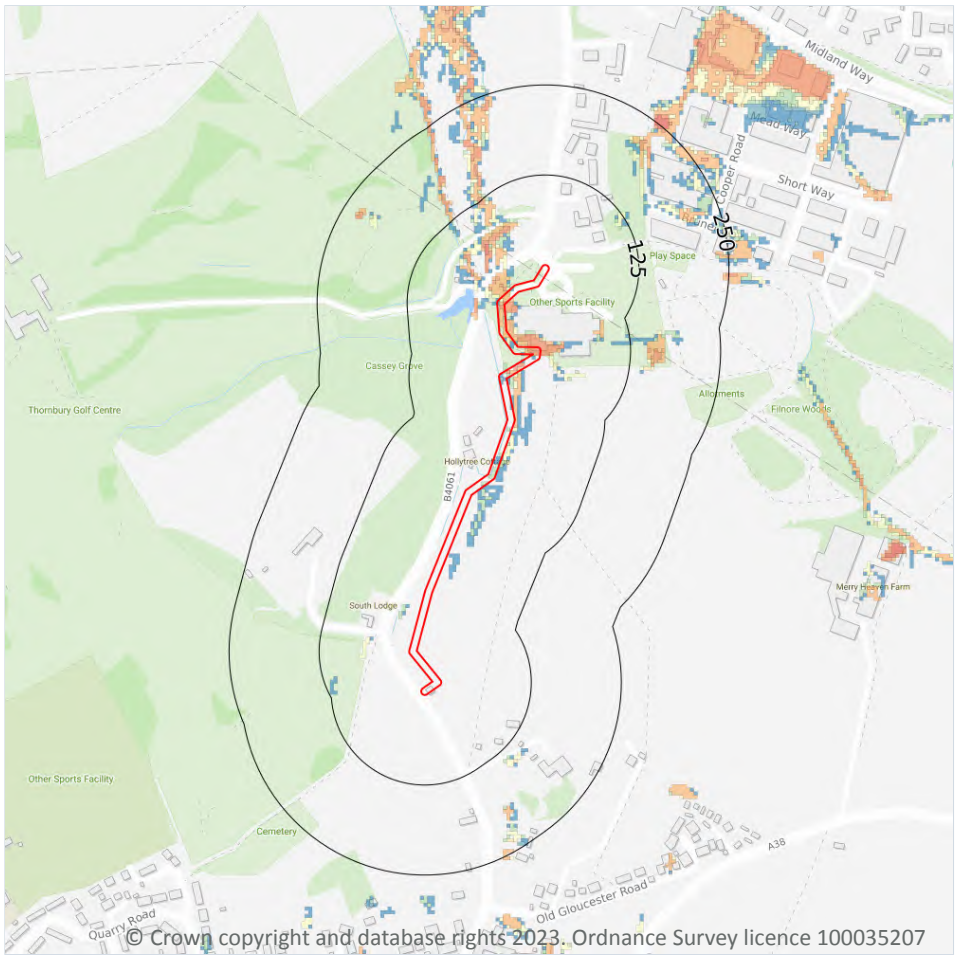
Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

Features are displayed on the River and coastal flooding map on **page 55**

Location	Type
On site	**Zone 3 - (Fluvial /Tidal Models)**

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	**1 in 30 year, 0.3m - 1.0m**
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 59**

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	Between 0.3m and 1.0m
1 in 250 year	Between 0.3m and 1.0m
1 in 100 year	Between 0.3m and 1.0m
1 in 30 year	Between 0.3m and 1.0m

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

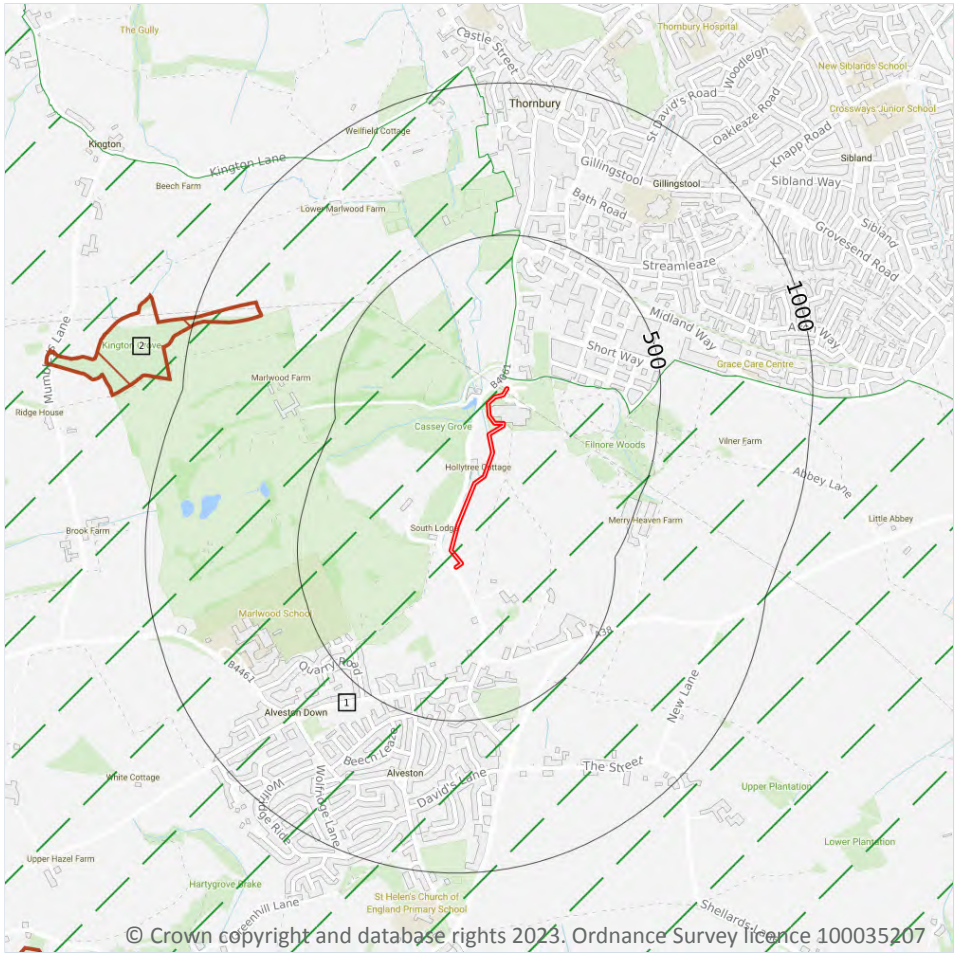
Highest risk on site	**Negligible**
Highest risk within 50m	**Negligible**

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 61**

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations



Site Outline

Search buffers in metres (m)

Designated Ancient Woodland

Green Belt

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 62**

ID	Location	Name	Woodland Type
2	795m NW	Kington Grove	Ancient Replanted Woodland
-	1423m S	Unknown	Ancient & Semi-Natural Woodland
-	1752m NE	Unknown	Ancient & Semi-Natural Woodland
5	1857m SW	Sheepcombe Brake	Ancient & Semi-Natural Woodland
-	1922m E	Cleve Wood	Ancient & Semi-Natural 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	1

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

Features are displayed on the Environmental designations map on **page 62**

ID	Location	Name	Local Authority name
1	**On site**	**Bath and Bristol**	**South Gloucestershire**

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.

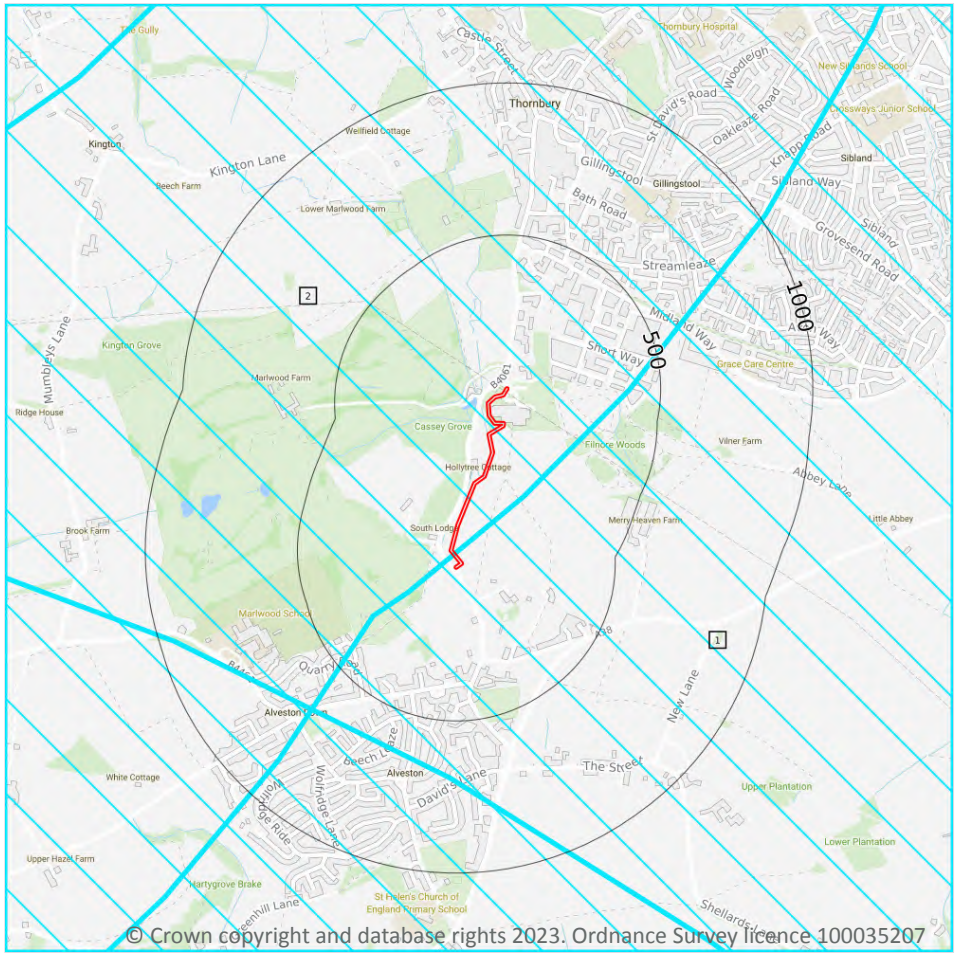
10.16 Nitrate Vulnerable Zones

Records within 2000m	0

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.

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 67**

ID	Location	Type of developments requiring consultation
1	On site	**Infrastructure - Airports, helipads and other aviation proposals. Air pollution - Livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 4000m². Combustion - General combustion processes >50mw energy input. incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion. Discharges - Any discharge of water or liquid waste of more than 20m³/day to ground (ie to seep away) or to surface water, such as a beck or stream.**
2	On site	**Infrastructure - Airports, helipads and other aviation proposals. Air pollution - Any industrial/agricultural development that could cause air pollution (incl: industrial processes, livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 750m², manure stores > 3500t). Combustion - General combustion processes >50mw energy input. incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion. Discharges - Any discharge of water or liquid waste of more than 20m³/day to ground (ie to seep away) or to surface water, such as a beck or stream.**

This data is sourced from Natural England.

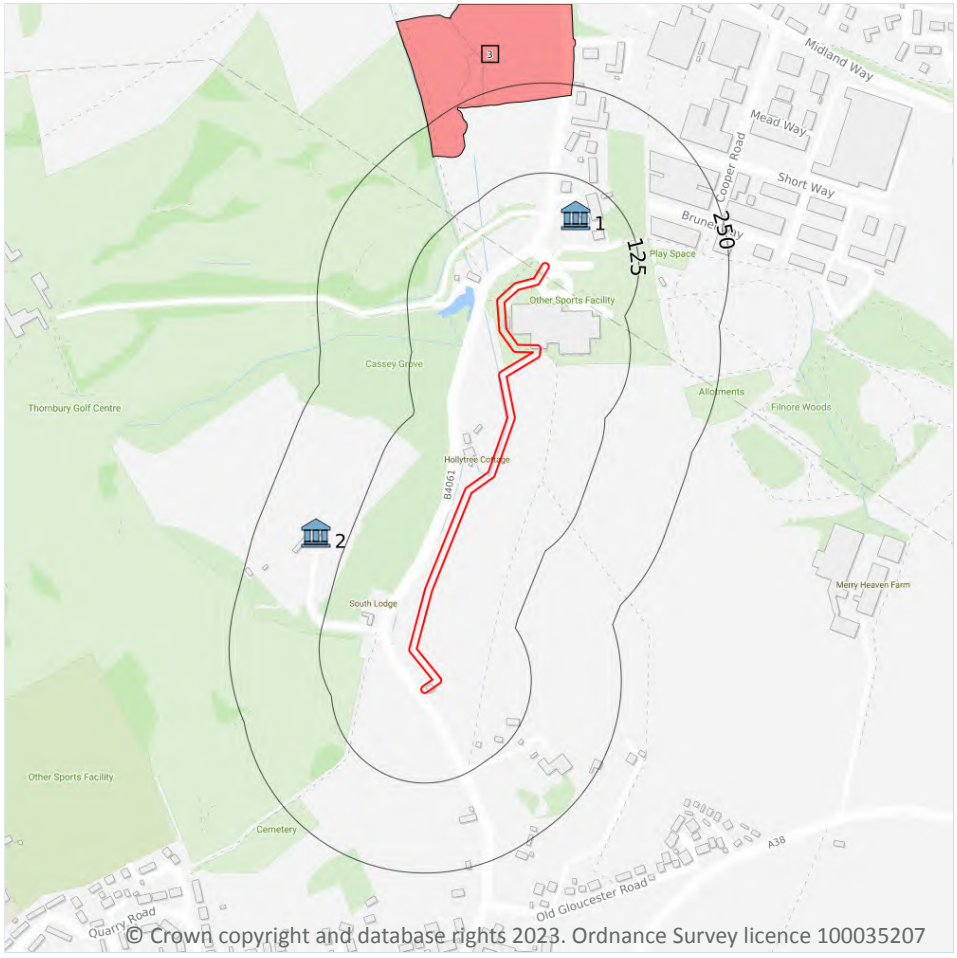
10.18 SSSI Units

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	0

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.

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	2

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 69**

ID	Location	Name	Grade	Reference Number	Listed date
1	77m N	Thornbury Grange, Thornbury, South Gloucestershire, BS35	II	1128777	17/12/1984
2	170m W	Marlwood Grange, Main Residential Block Only, Thornbury, South Gloucestershire, BS35	II	1128823	17/12/1984

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 69**

ID	Location	Name	District	Date of designation
3	190m N	Thornbury	South Gloucestershire	30/07/1975

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

11.6 Scheduled Ancient Monuments

Records within 250m	0

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.

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

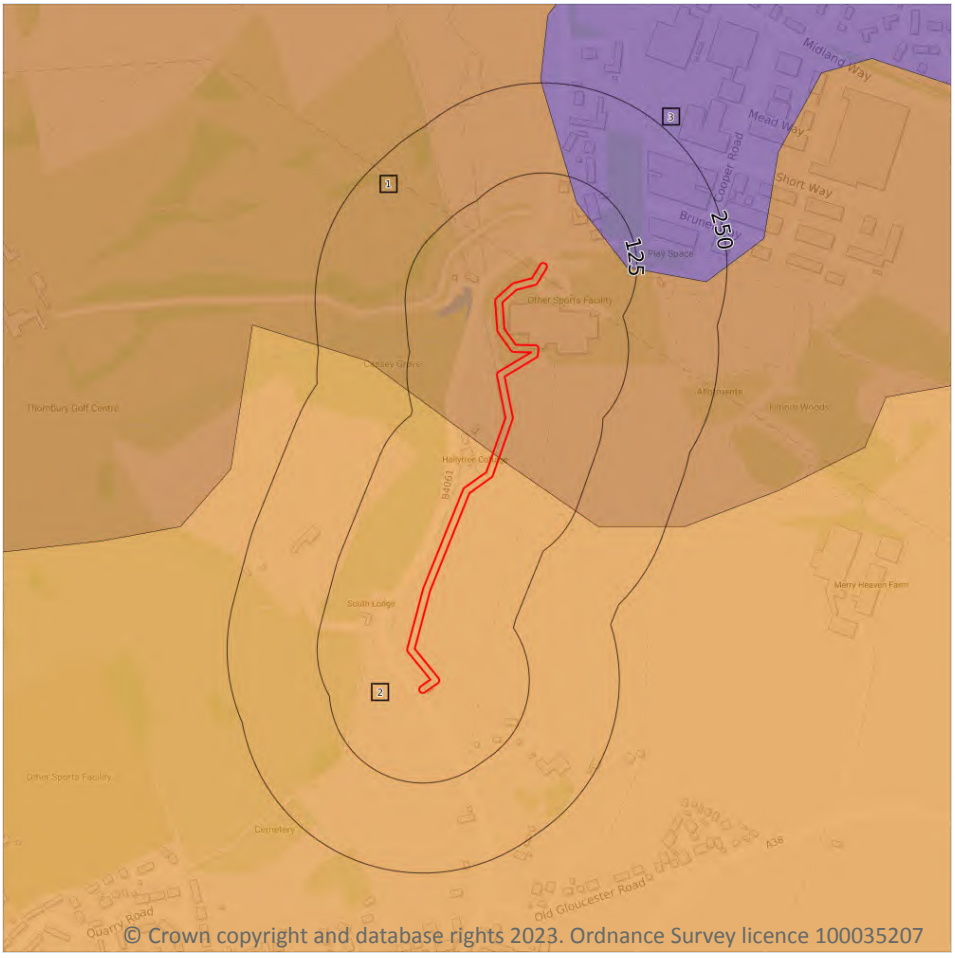
11.7 Registered Parks and Gardens

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	3

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 72**

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.**
3	86m NE	Urban	-

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	**2**

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	**AG00447688**	**Entry Level Stewardship**	**01/08/2013**	**31/07/2018**
208m SE	AG00447688	Entry Level Stewardship	01/08/2013	31/07/2018

This data is sourced from Natural England.

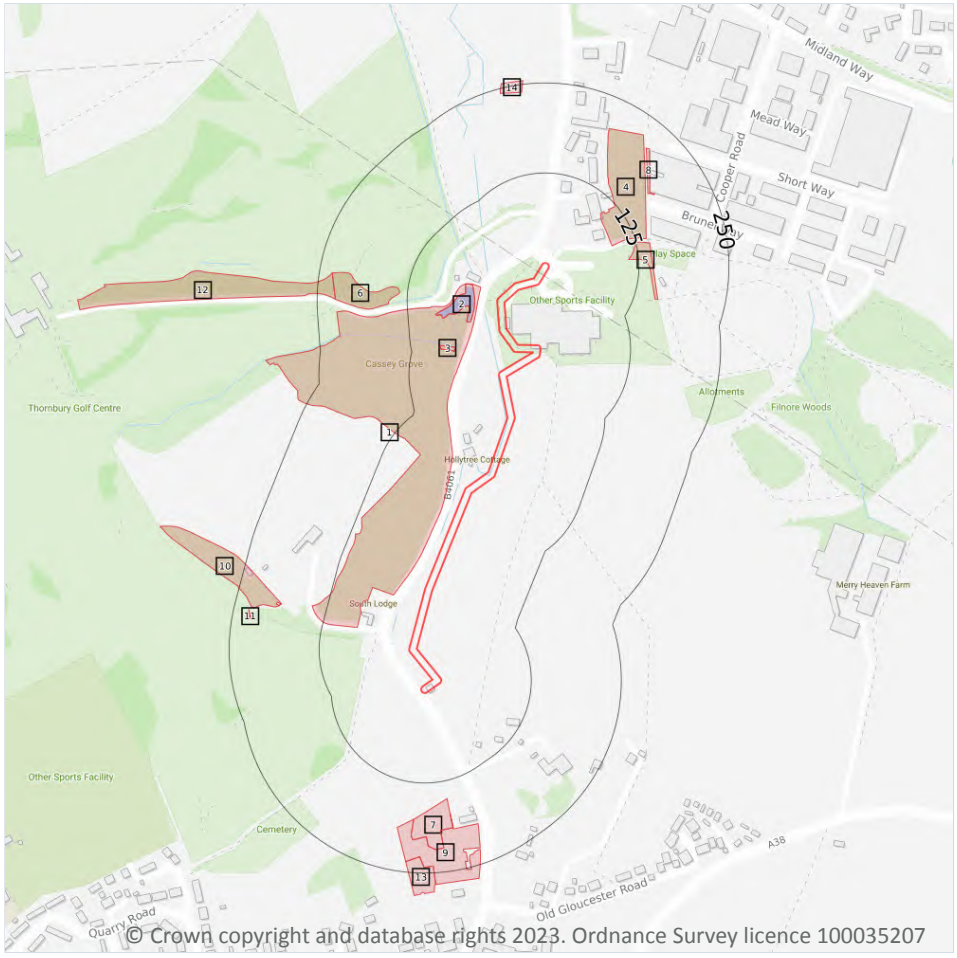
12.5 Countryside Stewardship Schemes

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	14

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 75**

ID	Location	Main Habitat	Other habitats
1	20m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
2	31m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
3	66m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
4	92m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

ID	Location	Main Habitat	Other habitats
5	111m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
6	136m NW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
7	150m S	Traditional orchard	Overruled by Traditional Orchards HAP Inventory dataset
8	170m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
9	173m S	No main habitat but additional habitats present	Additional: TORCH (INV 50%)
10	187m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
11	224m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
12	225m NW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
13	228m S	Traditional orchard	Overruled by Traditional Orchards HAP Inventory dataset
14	239m N	Traditional orchard	Overruled by Traditional Orchards HAP Inventory dataset

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.