



Unity
Environmental

Address: 167 Kennington Road
Nottingham
NG8 1QE

Email: Contact@UnityEnvironmental.com

Phone: 01158 882 204

Phase I Geo-Environmental Assessment

Site Whiston Hall Golf Club
Black Lane
Whiston
ST10 2HZ

Client HARMIL ENVIRONMENTAL LIMITED

Date 15/03/2021

Project Reference UN.109.21

Written & Authorised by		Jake Bayne BSc MSc PIEMA Director
Date	15/03/2021	
Version	1.0	



Executive Summary	
Site Description	The site is made up of two main portions. The eastern portion being broadly rectangular, currently used as a car park, and the western portion being broadly rectangular, currently occupied by woodland. Access to both is gained via Black Lane, which runs along the site's northern boundary. The eastern portion is currently used as a car park. Ground cover is predominantly a combination of medium-coarse gravel and tarmac. A tarmac access road runs along the sites southern boundary providing a through route to Whiston Hall Hotel & Golf Club. Slightly raised planting beds are present occupied by trees. To the east of the site a soil bank raises from the edge of the parking facility providing a grassed area with trees, which is enclosed by a stone wall separating it from Whiston Hall Hotel. A couple of wooden electricity pylons are present on site with multiple over head cables, particularly in the west of the car park. The western portion is currently occupied by woodland. Large boulders are scattered amongst the undergrowth and undulating ground / furrows indicate previous ground workings in this area before being re-claimed by nature. The road facing side is bound by a brick wall, with wooden fencing present on the western side between the adjacent residential property's boundary.
Proposed Development	The proposed development is divided into two zones (east and west), seeking planning permission under separate applications. The western Zone is seeking permission to be developed into a car park (Application number SMD/2020/0735). The Eastern Zone is seeking to be developed into residential dwellings with associated private gardens and parking facilities (Application number SMD/2021/0040).
Geology	Geological maps of the area show the site to be situated upon solid strata of the Rough Rock formation, comprised of sandstone.
Hydrogeology	The underlying Rough Rock Formation is designated as a Secondary A Aquifer, comprising 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.
Hydrology	The nearest surface water feature is a small fishing lake approximately 100m north east from the site. This is at a greater altitude than the site, and it is unlikely that any potentially contamination would migrate in this direction. Therefore, surface water features are not considered as a likely receptor of contamination in relation to this site.



Radon	The Groundsure reports included within Appendix 2 shows that the site is located within an area where the percentage of homes above the radon action level is between 3% - 5%. Therefore, it is considered that basic radon protection measures are required for this development.
Ground Gas	Risk posed by potential ground gas to end users of the site (residents) is considered to be MODERATE. Potential sources of ground gas (CO₂ & CH₄) identified include: - Backfilled historical quarries (immediately east and on-site in the western portion, extending towards the vicinity of the former copper works). Recommendations have been made for a Phase 2 Investigation to quantify this risk and make suitable remedial recommendations if required.
Risk to End Users (organics & inorganics)	risk posed by potential inorganic and organic contaminants to end users of the site (residents) is considered to be MODERATE. Identified significant potential sources and organic & inorganic contaminants of concern include: - Made ground on site in the eastern portion, associated with current use as a car parking facility, as well as siting of overhead wooden power cable pylons. The potential contaminants of concern associated with this potential source includes: - o Heavy Metals, Polyaromatic Hydrocarbon (PAHs), Petroleum Hydrocarbons, asbestos containing materials (ACMs) and fibres, Phenols, PCBs (Polychlorinated Biphenyls). - Made ground on site in the western portion associated with historical quarrying activities, railway sidings and siting of copper works spoil heaps and small historical structures. The potential contaminants of concern associated with this potential source includes: - o Heavy Metals, Polyaromatic Hydrocarbon (PAHs), asbestos containing materials (ACMs) and fibres. Recommendations have been made for a Phase 2 Investigation to quantify this risk and make suitable remedial recommendations if required.
Risk to Controlled Waters	Risk posed by potential inorganic and organic contaminants to controlled waters is considered to be LOW. Identified significant potential sources and contaminants of concern include:



	- Made ground on site in the eastern portion, associated with current use as a car parking facility, as well as siting of overhead wooden power cable pylons. The potential contaminants of concern associated with this potential source includes: - o Heavy Metals, Polyaromatic Hydrocarbon (PAHs), Petroleum Hydrocarbons, Phenols, PCBs (Polychlorinated Biphenyls). - Made ground on site in the western portion associated with historical quarrying activities, railway sidings and siting of copper works spoil heaps and small historical structures. The potential contaminants of concern associated with this potential source includes: - o Heavy Metals, Polyaromatic Hydrocarbon (PAHs). Recommendations have been made for a Phase 2 Investigation to quantify this risk and make suitable remedial recommendations if required.
Recommendations	A Phase II intrusive investigation has been recommended. This should include: - Investigation, sampling and logging of general ground conditions (Superficial deposits and made ground soils) to assess the variability of soils. - Chemical laboratory testing of shallow soils for a range of contaminants, including Heavy Metals, Polyaromatic Hydrocarbon (PAHs), Petroleum Hydrocarbons, asbestos containing materials (ACMs) and fibres, Phenols & PCBs (Polychlorinated Biphenyls). - The installation and monitoring of land gas and groundwater monitoring wells. (6 visits over 6 weeks recommended with assessment of results and recommendations in accordance with BS8485:2015+A1:2019). - The production of a Phase II Geo-Environmental Report to present the above-mentioned findings, conclusions and recommendations. Other recommendations: - The installation of basic radon protection membranes is required in all proposed dwellings. - The developer may also wish to consider the collection of factual geo-technical parameters to assist with foundation design for the proposed development during the Phase 2 Investigation. This may include in-situ testing and laboratory analysis of samples.



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Appendix B – Environmental data summary (Groundsure Report)

Appendix C – Historical Maps



1. Introduction

1.1. Client Brief

Unity Environmental was instructed by HARMIL ENVIRONMENTAL LIMITED to undertake a Phase I Geo-Environmental Assessment for the site known as 'Whiston Hall Golf Club, Black Lane, Whiston, ST10 2HZ'.

The proposed development is divided into two zones (east and west), seeking planning permission under separate applications.

The western Zone is seeking permission to be developed into a car park (Application number SMD/2020/0735).

The Eastern Zone is seeking to be developed into residential dwellings with associated private gardens and parking facilities (Application number SMD/2021/0040).

The site location plan and layout highlighting these two zones are included within Appendix A.

1.2. Report Objectives

This Phase I Geo-Environmental Assessment includes:

- A record of a site inspection walkover, subsequent site description, and appraisal of any observed land contamination, or potential contaminative sources.
- A review of historical maps for the site and surrounding area, with respect to potential sources of contamination.
- A review of the general expected Environmental setting, including geology, hydrogeology and hydrology.
- The development of a preliminary conceptual site model based on the concept of 'contaminant linkage', which considers potential contamination sources, pathways and receptors.
- Conclusions and Recommendations drawn from the qualitative risk assessment.
- An executive Summary.

1.3. References

Assessment guidance and site-specific information has been sought from the following locations:

- EA/DEFRA (2020) LCRM: Land contamination Risk Management (Supersedes (2004), CLR11: Model Procedures for the Assessment of Land Contamination).



- CIRIA. (2001). *Contaminated land risk assessment A guide to good practice*.
- DEFRA. (2018). *MAGIC*. Retrieved from Magic Map: <http://magic.defra.gov.uk/MagicMap.aspx>
- Environment Agency. (March 2017). *New Groundwater Vulnerability Mapping Methodology in England and Wales. Reference SC040016/R*. Environment Agency.
- Environment Agency. (2008). *R&D Publication 66. Guidance for the Safe Development of Housing on Land Affected by Contamination*.
- Scivyer, C. (2015). *BRE 211. Radon: Guidance on protective measures for new buildings (including supplementary advice for extensions, conversions and refurbishment projects). Fifth Edition*.
- The Coal Authority. (2018). *Coal Authority Interactive Viewer*. Retrieved from <http://mapapps2.bgs.ac.uk/coalauthority/home.html>

1.4. Limitations

The recommendations and opinions expressed in this report are based on information obtained as part of the desk study or provided by others. Information provided from other sources is taken in good faith and Unity Environmental cannot guarantee its accuracy.

This report does not include specific investigation for the presence of either Potential Asbestos Containing Material (PACM) or Japanese Knotweed at the subject site however, if obvious evidence of either is observed during site walkover, details will be provided in this report. Specialist contractors should be commissioned to make detailed assessments and recommendations if these materials are suspected.

The information contained in this report is intended for the use of HARMIL ENVIRONMENTAL LIMITED and Unity Environmental can take no responsibility for the use of this information by any third party or for uses other than that described in this report or detailed within the terms of our engagement.



2. Site Information

2.1. Site Location

The site is located approximately 330m east of Whiston town centre. The national grid reference (NGR) for the approximate centre of the site is SK 041 471.

A site location plan is presented within Appendix A.

2.2. Site Description

A site walkover was undertaken by Unity Environmental on 13th March 2021. Photographs of the site in general, and any identified specific potential sources of contamination are presented within Appendix A.

The site is made up of two main portions. The eastern portion being broadly rectangular, currently used as a car park, and the western portion being broadly rectangular, currently occupied by woodland. Access to both is gained via Black Lane, which runs along the site's northern boundary.

The eastern portion is currently used as a car park. Ground cover is predominantly a combination of medium-coarse gravel and tarmac. A tarmac access road runs along the sites southern boundary providing a through route to Whiston Hall Hotel & Golf Club. Slightly raised planting beds are present occupied by trees. To the east of the site a soil bank raises from the edge of the parking facility providing a grassed area with trees, which is enclosed by a stone wall separating it from Whiston Hall Hotel. A couple of wooden electricity pylons are present on site with multiple over head cables, particularly in the west of the car park.

The western portion is currently occupied by woodland. Large boulders are scattered amongst the undergrowth and undulating ground / furrows indicate previous ground workings in this area before being re-claimed by nature. The road facing side is bound by a brick wall, with wooden fencing present on the western side between the adjacent residential property's boundary.

2.3. General Area Context

North: To the north of the site are residential and agricultural properties, beyond which are agricultural fields & occasional agricultural building (farms, barns, etc.)

East: To the immediate east of the site is Whiston Hall Hotel and golf course, beyond which are agricultural fields.

South: To the immediate south of the site is a golf course, beyond which are agricultural fields.

West: To the west of the site is predominantly residential dwellings associated with Whiston Town.



3. Geo-Environmental Setting

3.1. Geology

Geological maps of the area show the site to be situated upon solid strata of the Rough Rock formation, comprised of sandstone.

No superficial deposits are identified as being present on site.

3.2. Hydrogeology

The underlying Rough Rock Formation is designated as a Secondary A Aquifer, comprising 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.

The site is not within a source protection zone. There are no abstraction licenses recorded within 500m of the site.

3.3. Hydrology

The nearest surface water feature is a small fishing lake approximately 100m north east from the site. This is at a greater altitude than the site, and it is unlikely that any potential contamination would migrate in this direction. Therefore, surface water features are not considered as a likely receptor of contamination in relation to this site.

There are no discharge consents listed within 500m of the site.

There are no surface water abstractions reported within 500m of the site.

3.4. Radon

The Groundsure reports included within Appendix 2 shows that the site is located within an area where the percentage of homes above the radon action level is between 3% - 5%. Therefore, it is considered that basic radon protection measures are required for this development.

3.5. Historical Coal Mining

According to the Coal Authority Interactive Viewer (The Coal Authority, 2018), The site is located within a coal mining reporting area however is not located within a high development risk area.



3.6. Landfills

The Groundsure reports included within Appendix 2 show that:

- there are 0 recorded active landfills within 1km of the site.
- there are 0 recorded historical landfills within 1km of the site.

3.7. Industrial Land Use

The Groundsure reports included within Appendix 2 show that:

- there are 0 waste treatment facilities within 250m of the site.
- there are 0 hazardous substances or IPC consents within 250m of the site.
- there are 0 fuel sites located within 250m of the site.

Historical industrial land use identified on site includes:

- An unspecified quarry (Latest 1880).
- Multiple Refuse heaps (Latest 1968).
- Railway sidings. (Latest 1880).
- Copper works. (Latest 1880).

It should be noted that the above-mentioned industrial land uses are all recorded in the portion of the site proposed to be developed into a car park, rather than residential dwellings. It should be noted that an additional small quarry is identified adjacent to the sites eastern boundary.



4. Site History

4.1. Historical Map Review

NOTE – due to mapping inaccuracies / coordinate error on old maps the records contained in Appendix C show the site shifted slightly northwards, which at times suggest the presence of on-site structures which is not accurate. Unity Environmental have made the below summaries based on the sites true location.

Map Date	Changes on Site	Significant Changes in the Surrounding Area
1879	A small railway track which serves the nearby copper works is present running north to south through the approximate centre of the site. A footpath is illustrated running through the sites eastern portion.	Black Lane is present along the site's northern boundary, beyond which is a copper works facility and residential housing. A small quarry is present immediately adjacent to the sites eastern boundary directly beneath Whiston Hall. Whiston Hall is present to the east. Residential & agricultural properties are present to the west, however much of the surrounding land is predominantly fields.
1899	The Railway tracks have been dismantled. Spoil heaps are illustrated where the former railway was located.	The copper works is now identified as disused. The immediately adjacent quarry to the east is no longer in use, and seems to have been infilled.
1924	No significant change.	The copper works building has now been removed.
1966	Three small structures are now present in the sites north western corner, believed to be sheds. The spoil heaps on site now seem to have been cleared.	No significant change.
1989	The three small structures in the sites north western corner have now been removed. An access road now runs through the eastern portion of the site from Black Lane to Whiston Hall.	Residential expansion is noted in the west, extending towards the site. The land to the south of the site is now identified as a golf course.
2003	The small rectangular planting beds noted in the site description are now outlined on the maps. The eastern portion of the site is likely now used as a car park.	No significant change.
2010	The western portion of the site is now shown to be woodland.	No significant change.
2021	No significant change.	No significant change.

Table 1: Summary of site targeted historical map data.

A copy of the historical maps used for this review are included within Appendix C.



4.2. Summary of Historical Data

A review of the historical mapping resources from between 1879 – 2021, provided by Groundsure, shows that the site was originally predominantly disused, with a small railway line facilitating the copper works to the north running through the western portion of the site from north to east. By 1899, the copper works to the north were no longer in use, and the railway on site was dismantled. The western portion of the site was then partially used for siting spoil heaps, which were present until 1966. At this time, three small structures believed to be sheds were constructed in the sites north western corner, which were subsequently demolished by 1989. The western portion of the site was dominated by woodland by 2010. The eastern portion of the site has little history of significance, with an access road being built on it by 1989, and is believed to be being used as a car park from at least 2003.

The surrounding land has a history of copper works and small- scale associated quarrying. One such quarry was immediately adjacent to the site's eastern boundary, disused by 1899. The copper works situated extending from the other side of Black Lane was also disused by 1899, and cleared by 1924. Apart from this, the majority of the surrounding land use has remained residential / agricultural.



5. Conceptual Site Model

5.1. Potential Sources

Significant potential sources of contamination which have been identified for the site include:

- Made ground on site in the eastern portion, associated with current use as a car parking facility, as well as siting of overhead wooden power cable pylons. The potential contaminants of concern associated with this potential source includes:
 - o Heavy Metals, Polyaromatic Hydrocarbon (PAHs), Petroleum Hydrocarbons, asbestos containing materials (ACMs) and fibres, Phenols, PCBs (Polychlorinated Biphenyls).
- Made ground on site in the western portion associated with historical quarrying activities, railway sidings and siting of copper works spoil heaps and small historical structures. The potential contaminants of concern associated with this potential source includes:
 - o Heavy Metals, Polyaromatic Hydrocarbon (PAHs), asbestos containing materials (ACMs) and fibres, Ground Gas (CO₂ & CH₄).
- Backfilled historical quarries (immediately east and on-site in the western portion). The potential contaminants of concern associated with this potential source includes:
 - o Ground Gas (CO₂ & CH₄).
- Natural background Radon levels where the percentage of homes above the radon action level is between 3% - 5%. The potential contaminants of concern associated with this potential source includes:
 - o Radon gas.

5.2. Potential Pathways

Pathways to human receptors:

- Direct dermal contact or ingestion of soils, or inhalation of dust/fibres and/or vapours (i.e. human interaction with surface and subsurface materials).
- The migration and accumulation of ground gases through permeable sub-surface materials and/or preferential pathways.

Pathways to Environmental (controlled waters) receptors:

- Lateral and vertical migration of groundwater through permeable sub-surface materials and/or preferential pathways.

5.3. Potential Receptors

The potential receptors for the site include:



- Site workers during the redevelopment of the site.
- Intended end users of the site (residents & patrons of Whiston Hall Hotel & Golf Course).
- The underlying Secondary A Aquifer within the Rough Rock Sandstone Formation.



6. Phase I Conceptual Site Model

Human Receptors			
Source	Pathway	Receptor	Risk
Made ground on site in the eastern portion, associated with current use as a car parking facility, as well as siting of overhead wooden power cable pylons. The potential contaminants of concern associated with this potential source includes: Heavy Metals, Polyaromatic Hydrocarbon (PAHs), Petroleum Hydrocarbons, asbestos containing materials (ACMs) and fibres, Phenols, PCBs (Polychlorinated Biphenyls).	Direct dermal contact or ingestion of soils, or inhalation of dust/fibres and/or vapours (i.e. human interaction with surface and subsurface materials).	Site workers during the redevelopment of the site.	Low
		Intended end users of the site (residents & patrons of Whiston Hall Hotel & Golf Course).	Moderate
Made ground on site in the western portion associated with historical quarrying activities, railway sidings and siting of spoil heaps and small historical structures. The potential contaminants of concern associated with this potential source includes: Heavy Metals, Polyaromatic Hydrocarbon (PAHs), asbestos containing materials (ACMs) and fibres, Ground Gas (CO ₂ & CH ₄).	Direct dermal contact or ingestion of soils, or inhalation of dust/fibres and/or vapours (i.e. human interaction with surface and subsurface materials).	Site workers during the redevelopment of the site.	Low
	The migration and accumulation of ground gases through permeable sub-surface materials and/ or preferential pathways.	Intended end users of the site (residents & patrons of Whiston Hall Hotel & Golf Course).	Moderate



Backfilled historical quarries (immediately east and on-site in the western portion). The potential contaminants of concern associated with this potential source includes: Ground Gas (CO2 & CH4).	The migration and accumulation of ground gases through permeable sub-surface materials and/ or preferential pathways.	Intended end users of the site (residents).	Moderate
Natural background Radon levels where the percentage of homes above the radon action level is between 3% - 5%. The potential contaminants of concern associated with this potential source includes: Radon gas.			Moderate
Environmental Receptors (Controlled Waters)			
Made ground on site in the eastern portion, associated with current use as a car parking facility, as well as siting of overhead wooden power cable pylons. The potential contaminants of concern associated with this potential source includes: Heavy Metals, Polyaromatic Hydrocarbon (PAHs), Petroleum Hydrocarbons, Phenols, PCBs (Polychlorinated Biphenyls).	Lateral and vertical migration of groundwater through permeable sub-surface materials and/ or preferential pathways.	The underlying Secondary A Aquifer within the Rough Rock Sandstone Formation.	Low
Made ground on site in the western portion associated with historical quarrying activities, railway sidings and siting of spoil heaps and small historical structures. The potential contaminants of concern associated with this potential source includes: Heavy Metals, Polyaromatic Hydrocarbon (PAHs).			



7. Conclusions and Recommendations

An appraisal regarding the potential presence of on-site contamination has been carried out through review of historical maps, environmental records, and a site walkover.

This report concludes that there is at least moderate potential risk to future site users and/or controlled waters. In order to determine whether the potential contaminants of concern are present on-site, and if so in what quantities, a Phase II intrusive investigation is recommended.

The Phase II intrusive investigation should include:

- Investigation, sampling and logging of general ground conditions (Superficial deposits and made ground soils) to assess the variability of soils.
- Chemical laboratory testing of shallow soils for a range of contaminants, including Heavy Metals, Polyaromatic Hydrocarbon (PAHs), Petroleum Hydrocarbons, asbestos containing materials (ACMs) and fibres, Phenols & PCBs (Polychlorinated Biphenyls).
- The installation and monitoring of land gas and groundwater monitoring wells. (6 visits over 6 weeks recommended with assessment of results and recommendations in accordance with BS8485:2015+A1:2019).
- The production of a Phase II Geo-Environmental Report to present the above-mentioned findings, conclusions and recommendations.

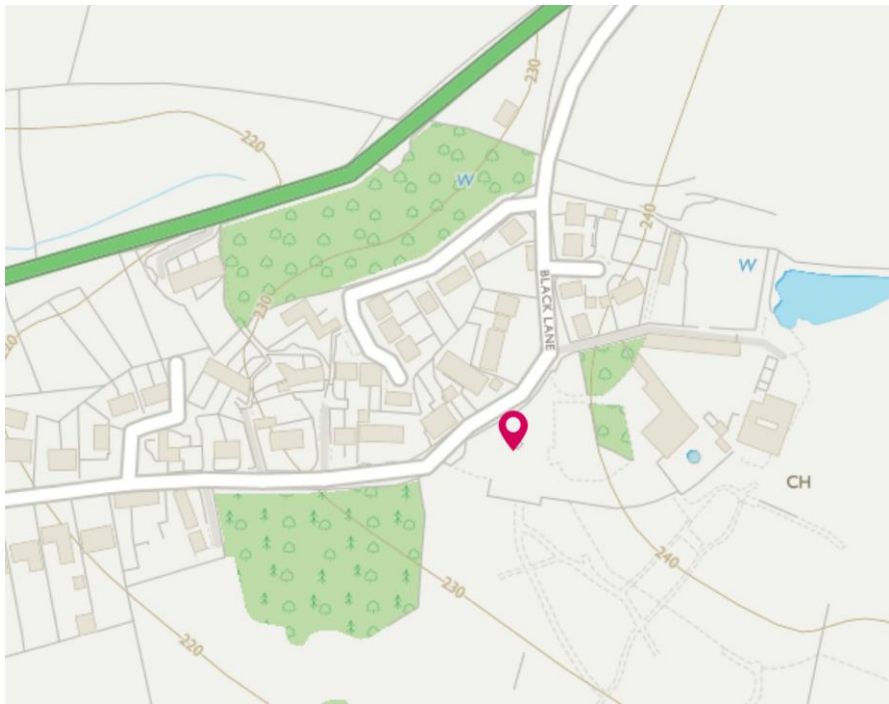
Other recommendations:

- The installation of basic radon protection membranes is required in all proposed dwellings.
- The developer may also wish to consider the collection of factual geo-technical parameters to assist with foundation design for the proposed development during the Phase 2 Investigation. This may include in-situ testing and laboratory analysis of samples.



Unity Environmental

APPENDIX A



Unity
Environmental

Title

Site Location

Reference

UN.109.21

Date

13/03/21

Site Address

Whiston Hall Golf Club
Black Lane
Whiston
ST10 2HZ

Legend



Approximate Site Centre

Scale

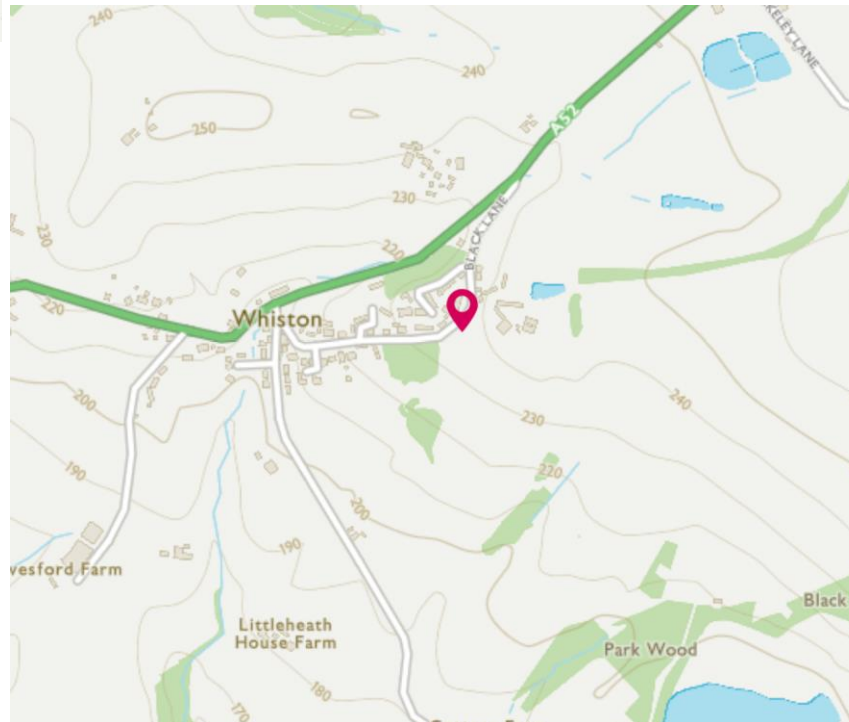
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Drawn

JJB

Figure Number

Fig.1





Unity
Environmental

Title

Site Layout

Reference

UN.109.21

Date

13/03/21

Site Address

Whiston Hall Golf Club
Black Lane
Whiston
ST10 2HZ

Legend



Approximate Boundary of proposed residential
development



Approximate Boundary of proposed car park

Scale

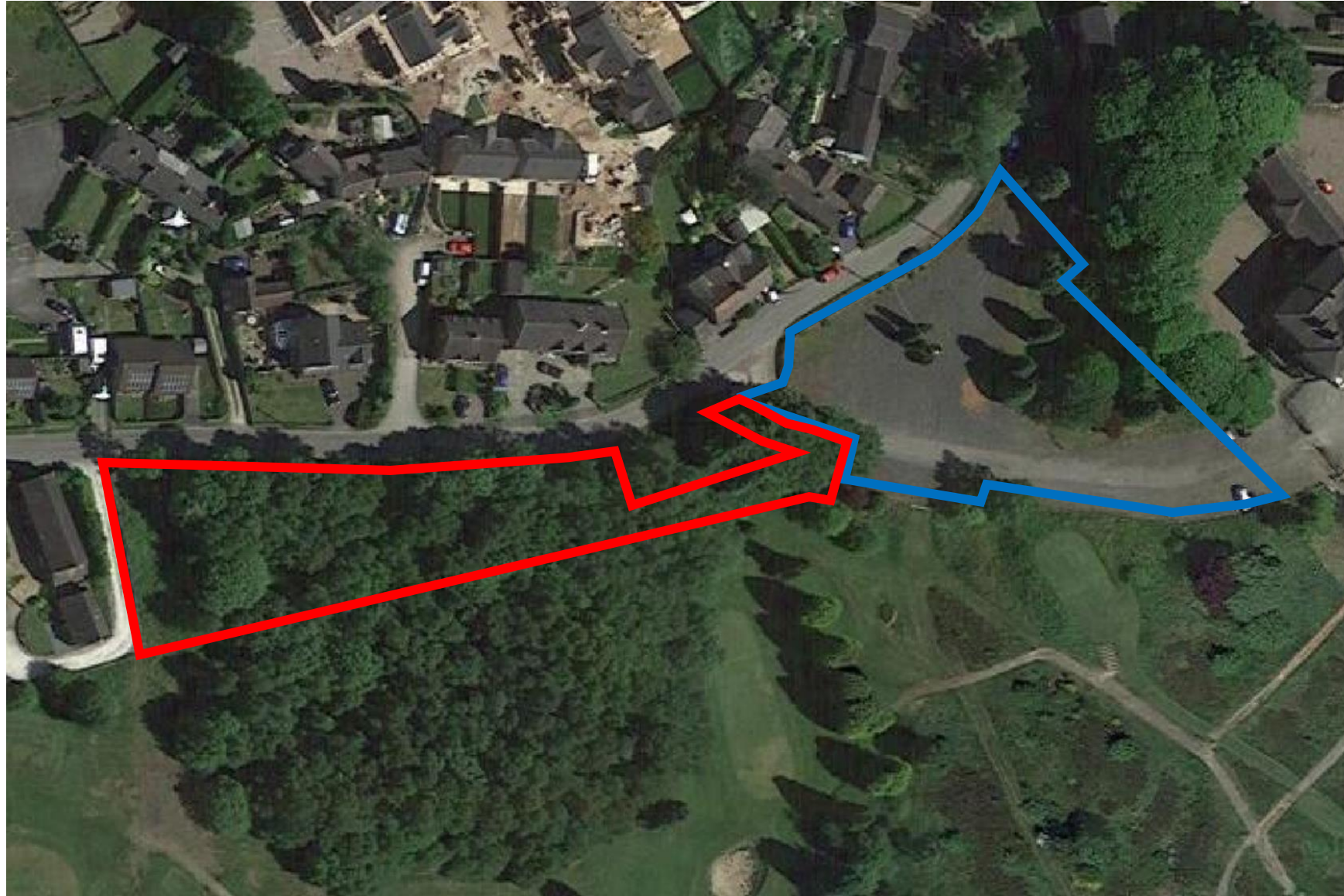
NTS

Drawn

JJB

Figure Number

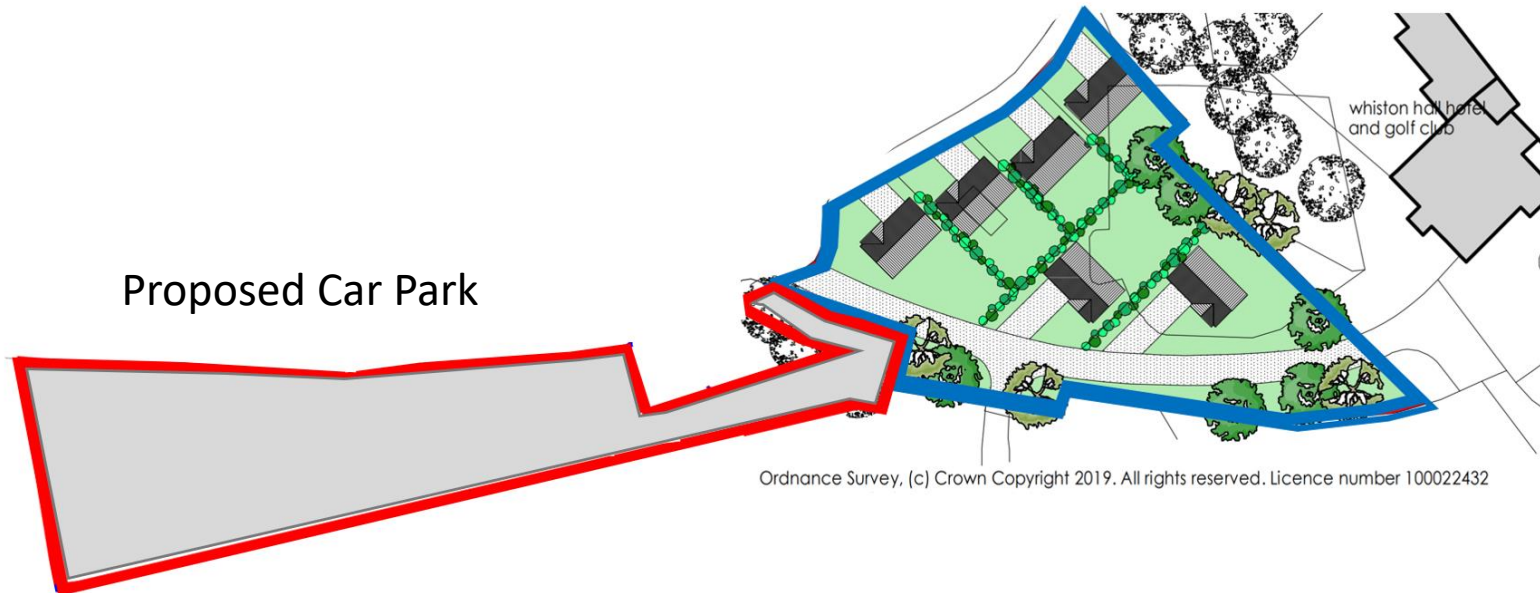
Fig.2





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Proposed Residential Dwellings



Ordnance Survey, (c) Crown Copyright 2019. All rights reserved. Licence number 100022432

Title

Development Proposal

Reference

UN.109.21

Date

13/03/21

Site Address

Whiston Hall Golf Club
Black Lane
Whiston
ST10 2HZ

Legend



Approximate Boundary of proposed residential development



Approximate Boundary of proposed car park

Scale

NTS

Drawn

JJB

Figure Number

Fig.3



West side (proposed car park). Facing the eastern end of the woodland strip proposed to be developed into a car park. A stone wall runs along the road facing boundary.



East side (proposed residential dwellings). North west corner looking south east. Gated access to an existing car park area with stone wall facing adjacent road. Multiple overhead cables and pylons were noted on site.



West side (proposed car park). Representative photo of the vast majority of ground cover in the area proposed to be developed with a car park. Ground is undulating, with large boulders scattered throughout. Dense vegetation / trees dominate ground cover.



East side (proposed residential dwellings). Existing car park is comprised of gravel and tarmac hardstanding. Curbed planting bed with trees present



West side (proposed car park). Facing the eastern boundary of the woodland strip to be developed into a car park. A wooden fence separates the plot from an access road serving adjacent residential properties.



East side (proposed residential dwellings). To the south east of the site a soil bank features a grassed area with trees.



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Environmental

Title
Photos

Reference
UN.109.21

Date
13/03/21

Site Address

Whiston Hall Golf Club
Black Lane
Whiston
ST10 2HZ

Legend

Scale
NTS

Drawn
JJB

Figure Number
Fig.3



Unity Environmental

APPENDIX B

404061 347126

Order Details

Date: 12/03/2021
Your ref: EMS_676802_890012
Our Ref: EMS-676802_890012
Client: emapsite

Site Details

Location: 404061 347126
Area: 0.51 ha
Authority: [Staffordshire Moorlands District Council](#)



Summary of findings

p. 2

Aerial image

p. 8

OS MasterMap site plan

p.13

groundsure.com/insightuserguide

Contact us with any questions at:

info@groundsure.com

08444 159 000

Summary of findings

Page	Section	Past land use	On site	0-50m	50-250m	250-500m	500-2000m
14	1.1	<u>Historical industrial land uses</u>	6	3	8	3	-
15	1.2	Historical tanks	0	0	0	0	-
16	1.3	<u>Historical energy features</u>	0	0	1	0	-
16	1.4	Historical petrol stations	0	0	0	0	-
16	1.5	<u>Historical garages</u>	0	0	0	2	-
17	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
18	2.1	<u>Historical industrial land uses</u>	7	4	10	3	-
19	2.2	Historical tanks	0	0	0	0	-
20	2.3	<u>Historical energy features</u>	0	0	2	0	-
20	2.4	Historical petrol stations	0	0	0	0	-
20	2.5	<u>Historical garages</u>	0	0	0	3	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
21	3.1	Active or recent landfill	0	0	0	0	-
21	3.2	Historical landfill (BGS records)	0	0	0	0	-
22	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
22	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
22	3.5	Historical waste sites	0	0	0	0	-
22	3.6	Licensed waste sites	0	0	0	0	-
22	3.7	<u>Waste exemptions</u>	0	1	0	0	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
24	4.1	<u>Recent industrial land uses</u>	0	0	2	-	-
25	4.2	<u>Current or recent petrol stations</u>	0	0	0	1	-
25	4.3	Electricity cables	0	0	0	0	-
25	4.4	Gas pipelines	0	0	0	0	-
25	4.5	Sites determined as Contaminated Land	0	0	0	0	-



25	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
26	4.7	Regulated explosive sites	0	0	0	0	-
26	4.8	Hazardous substance storage/usage	0	0	0	0	-
26	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
26	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
26	4.11	Licensed pollutant release (Part A(2)/B)	0	0	0	0	-
27	4.12	Radioactive Substance Authorisations	0	0	0	0	-
27	4.13	Licensed Discharges to controlled waters	0	0	0	0	-
27	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
27	4.15	Pollutant release to public sewer	0	0	0	0	-
27	4.16	List 1 Dangerous Substances	0	0	0	0	-
28	4.17	List 2 Dangerous Substances	0	0	0	0	-
28	4.18	Pollution Incidents (EA/NRW)	0	0	0	0	-
28	4.19	Pollution inventory substances	0	0	0	0	-
28	4.20	Pollution inventory waste transfers	0	0	0	0	-
28	4.21	Pollution inventory radioactive waste	0	0	0	0	-
Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
29	5.1	<u>Superficial aquifer</u>	Identified (within 500m)				
30	5.2	<u>Bedrock aquifer</u>	Identified (within 500m)				
31	5.3	<u>Groundwater vulnerability</u>	Identified (within 50m)				
32	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
32	5.5	Groundwater vulnerability- local information	None (within 0m)				
33	5.6	<u>Groundwater abstractions</u>	0	0	0	0	5
35	5.7	<u>Surface water abstractions</u>	0	0	0	0	4
36	5.8	Potable abstractions	0	0	0	0	0
36	5.9	Source Protection Zones	0	0	0	0	-
36	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-
Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
37	6.1	<u>Water Network (OS MasterMap)</u>	0	0	5	-	-



38	<u>6.2</u>	<u>Surface water features</u>	0	0	4	-	-
38	<u>6.3</u>	<u>WFD Surface water body catchments</u>	1	-	-	-	-
39	<u>6.4</u>	<u>WFD Surface water bodies</u>	0	0	0	-	-
39	<u>6.5</u>	<u>WFD Groundwater bodies</u>	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
40	7.1	Risk of Flooding from Rivers and Sea (RoFRaS)	None (within 50m)				
40	7.2	Historical Flood Events	0	0	0	-	-
40	7.3	Flood Defences	0	0	0	-	-
40	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
41	7.5	Flood Storage Areas	0	0	0	-	-
42	7.6	Flood Zone 2	None (within 50m)				
42	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding					
43	8.1	Surface water flooding	Negligible (within 50m)				
Page	Section	Groundwater flooding					
44	<u>9.1</u>	<u>Groundwater flooding</u>	Negligible (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
45	<u>10.1</u>	<u>Sites of Special Scientific Interest (SSSI)</u>	0	0	0	0	9
46	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
46	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
47	10.4	Special Protection Areas (SPA)	0	0	0	0	0
47	10.5	National Nature Reserves (NNR)	0	0	0	0	0
47	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
47	<u>10.7</u>	<u>Designated Ancient Woodland</u>	0	0	0	0	35
49	10.8	Biosphere Reserves	0	0	0	0	0
49	10.9	Forest Parks	0	0	0	0	0
49	10.10	Marine Conservation Zones	0	0	0	0	0
49	<u>10.11</u>	<u>Green Belt</u>	0	0	0	0	1
50	10.12	Proposed Ramsar sites	0	0	0	0	0



50	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
50	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
50	10.15	Nitrate Sensitive Areas	0	0	0	0	0
51	10.16	Nitrate Vulnerable Zones	0	0	0	0	0
52	<u>10.17</u>	<u>SSSI Impact Risk Zones</u>	1	-	-	-	-
53	<u>10.18</u>	<u>SSSI Units</u>	0	0	0	0	25
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
62	11.1	World Heritage Sites	0	0	0	-	-
63	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
63	11.3	National Parks	0	0	0	-	-
63	<u>11.4</u>	<u>Listed Buildings</u>	0	3	2	-	-
64	11.5	Conservation Areas	0	0	0	-	-
64	11.6	Scheduled Ancient Monuments	0	0	0	-	-
64	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
65	<u>12.1</u>	<u>Agricultural Land Classification</u>	Grade 4 (within 250m)				
66	12.2	Open Access Land	0	0	0	-	-
66	12.3	Tree Felling Licences	0	0	0	-	-
66	12.4	Environmental Stewardship Schemes	0	0	0	-	-
66	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
67	<u>13.1</u>	<u>Priority Habitat Inventory</u>	1	0	0	-	-
68	<u>13.2</u>	<u>Habitat Networks</u>	2	0	0	-	-
68	<u>13.3</u>	<u>Open Mosaic Habitat</u>	0	1	0	-	-
68	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
70	<u>14.1</u>	<u>10k Availability</u>	Identified (within 500m)				
71	14.2	Artificial and made ground (10k)	0	0	0	0	-
72	14.3	Superficial geology (10k)	0	0	0	0	-

72	14.4	Landslip (10k)	0	0	0	0	-
73	14.5	Bedrock geology (10k)	0	0	0	0	-
73	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
74	15.1	<u>50k Availability</u>	Identified (within 500m)				
75	15.2	<u>Artificial and made ground (50k)</u>	1	0	0	0	-
76	15.3	<u>Artificial ground permeability (50k)</u>	1	0	-	-	-
77	15.4	<u>Superficial geology (50k)</u>	0	0	0	1	-
78	15.5	Superficial permeability (50k)	None (within 50m)				
78	15.6	Landslip (50k)	0	0	0	0	-
78	15.7	Landslip permeability (50k)	None (within 50m)				
79	15.8	<u>Bedrock geology (50k)</u>	1	0	3	4	-
80	15.9	<u>Bedrock permeability (50k)</u>	Identified (within 50m)				
80	15.10	<u>Bedrock faults and other linear features (50k)</u>	1	0	2	1	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
81	16.1	<u>BGS Boreholes</u>	0	0	1	-	-
Page	Section	Natural ground subsidence					
82	17.1	<u>Shrink swell clays</u>	Negligible (within 50m)				
83	17.2	<u>Running sands</u>	Very low (within 50m)				
85	17.3	<u>Compressible deposits</u>	Very low (within 50m)				
87	17.4	<u>Collapsible deposits</u>	Very low (within 50m)				
88	17.5	<u>Landslides</u>	Very low (within 50m)				
89	17.6	<u>Ground dissolution of soluble rocks</u>	Negligible (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
91	18.1	Natural cavities	0	0	0	0	-
92	18.2	<u>BritPits</u>	0	1	0	1	-
92	18.3	<u>Surface ground workings</u>	5	3	11	-	-
93	18.4	Underground workings	0	0	0	0	0
93	18.5	Historical Mineral Planning Areas	0	0	0	0	-



94	18.6	<u>Non-coal mining</u>	1	0	0	0	3
94	18.7	Mining cavities	0	0	0	0	0
95	18.8	<u>JPB mining areas</u>	Identified (within 0m)				
95	18.9	<u>Coal mining</u>	Identified (within 0m)				
95	18.10	Brine areas	None (within 0m)				
96	18.11	Gypsum areas	None (within 0m)				
96	18.12	Tin mining	None (within 0m)				
96	18.13	Clay mining	None (within 0m)				
Page	Section	Radon					
97	19.1	<u>Radon</u>	Between 3% and 5% (within 0m)				
Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
98	20.1	<u>BGS Estimated Background Soil Chemistry</u>	3	0	-	-	-
98	20.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
98	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
99	21.1	Underground railways (London)	0	0	0	-	-
99	21.2	Underground railways (Non-London)	0	0	0	-	-
100	21.3	Railway tunnels	0	0	0	-	-
100	21.4	<u>Historical railway and tunnel features</u>	1	0	0	-	-
100	21.5	Royal Mail tunnels	0	0	0	-	-
100	21.6	<u>Historical railways</u>	0	0	1	-	-
101	21.7	Railways	0	0	0	-	-
101	21.8	Crossrail 1	0	0	0	0	-
101	21.9	Crossrail 2	0	0	0	0	-
101	21.10	HS2	0	0	0	0	-



Recent aerial photograph



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Capture Date: 29/06/2018

Site Area: 0.51ha



Recent site history - 2015 aerial photograph



Capture Date: 23/04/2015

Site Area: 0.51ha



Recent site history - 2011 aerial photograph



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Capture Date: 28/09/2011

Site Area: 0.51ha



Recent site history - 2006 aerial photograph



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Capture Date: 17/07/2006

Site Area: 0.51ha



Recent site history - 1999 aerial photograph



Capture Date: 01/09/1999

Site Area: 0.51ha



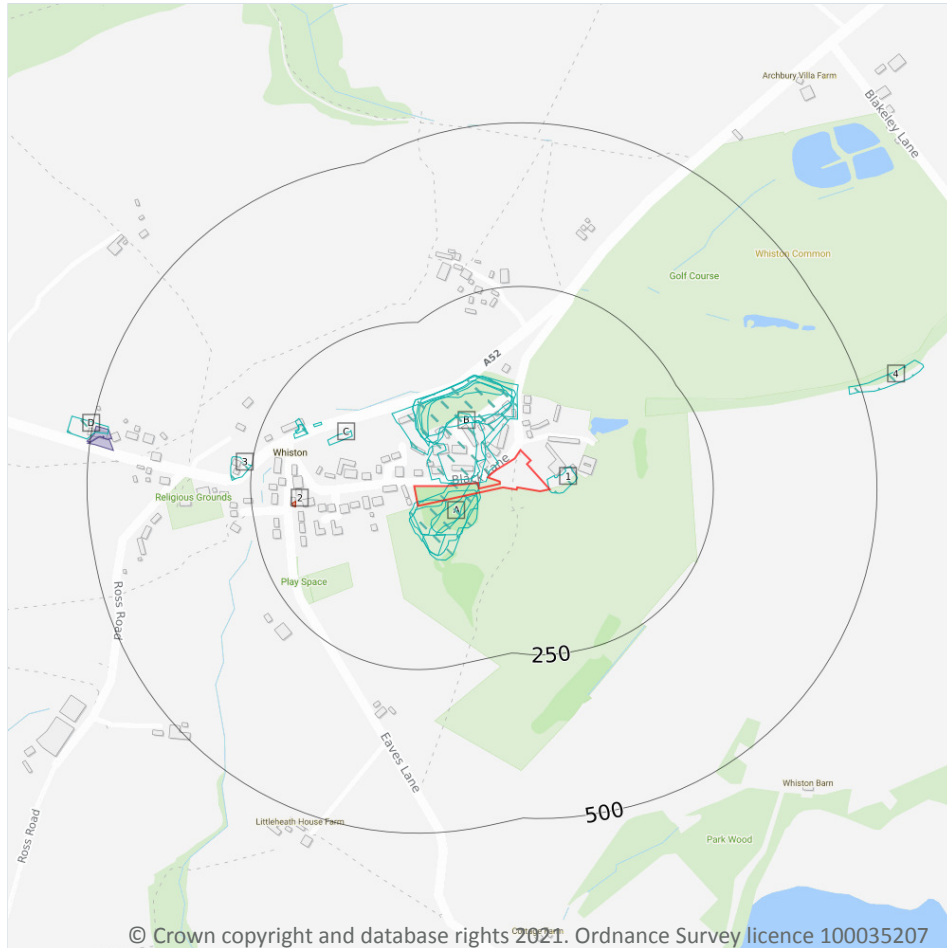
OS MasterMap site plan



Site Area: 0.51ha



1 Past land use



- Site Outline
- Search buffers in metres (m)
- Historical industrial land uses
- Historical energy features
- Historical garages

1.1 Historical industrial land uses

Records within 500m

20

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	On site	Unspecified Quarry	1880	1581070



ID	Location	Land use	Dates present	Group ID
A	On site	Railway Sidings	1880	1560795
A	On site	Refuse Heap	1898	1660324
A	On site	Refuse Heap	1954 - 1968	1666207
A	On site	Refuse Heap	1925	1719934
B	On site	Copper Works	1880	1573797
A	3m S	Refuse Heap	1898	1660325
B	7m N	Disused Copper Works	1898	1579506
A	45m S	Refuse Heap	1898	1679455
B	59m NW	Refuse Heap	1925	1742819
B	62m NW	Refuse Heap	1954 - 1968	1744641
B	63m N	Unspecified Heap	1880	1567913
B	71m N	Refuse Heap	1898	1726809
C	122m NW	Refuse Heap	1880	1596030
C	170m NW	Smithy	1954	1612603
C	181m NW	Smithy	1880	1723951
C	187m NW	Smithy	1898 - 1925	1713473
3	251m W	Unspecified Old Quarry	1880	1600461
D	475m W	Garage	1968	1613463
4	481m E	Cuttings	1880	1673130

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m

0

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'.

This data is sourced from Ordnance Survey / Groundsure.



1.3 Historical energy features

Records within 500m

1

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
2	182m W	Electricity Substation	1989	166317

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

2

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

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

ID	Location	Land use	Dates present	Group ID
D	463m W	Garage	1989	54004
D	468m W	Garage	1966	50723

This data is sourced from Ordnance Survey / Groundsure.



1.6 Historical military land

Records within 500m

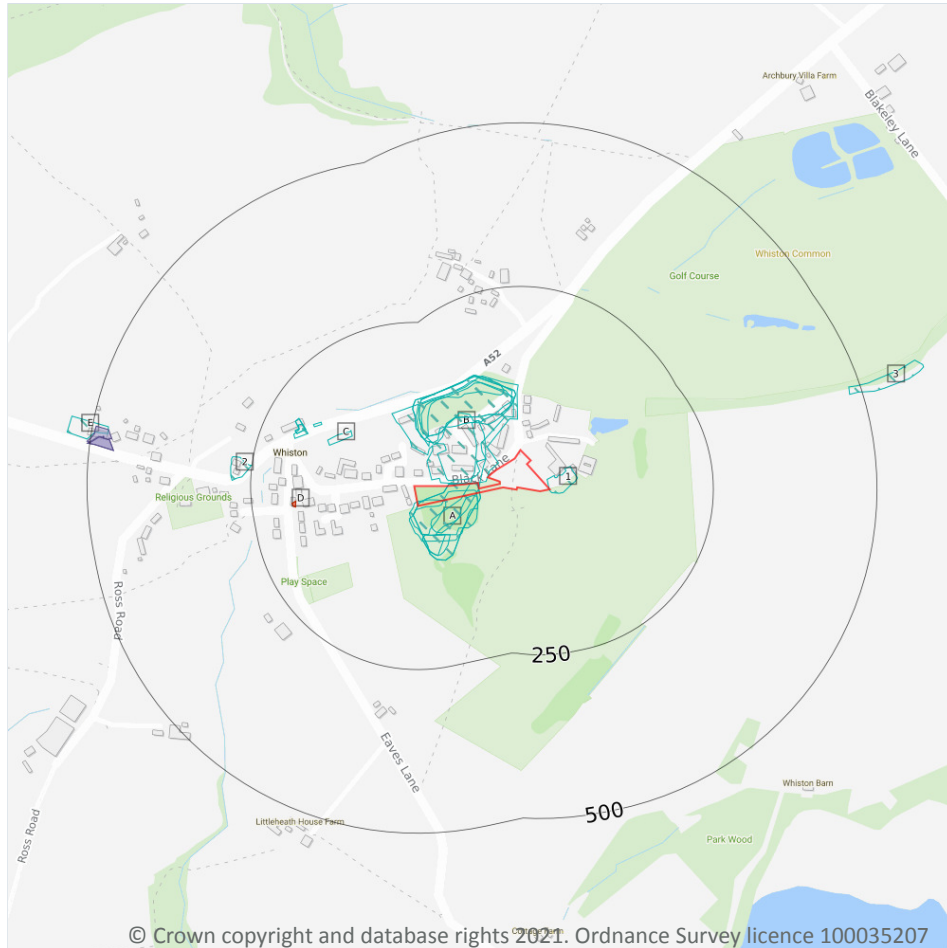
0

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 energy features
- Historical garages

2.1 Historical industrial land uses

Records within 500m

24

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 18**

ID	Location	Land Use	Date	Group ID
1	On site	Unspecified Quarry	1880	1581070
A	On site	Refuse Heap	1925	1719934
A	On site	Refuse Heap	1898	1660324



ID	Location	Land Use	Date	Group ID
A	On site	Refuse Heap	1968	1666207
A	On site	Railway Sidings	1880	1560795
A	On site	Refuse Heap	1954	1666207
B	On site	Copper Works	1880	1573797
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B	7m N	Disused Copper Works	1898	1579506
A	45m S	Refuse Heap	1898	1679455
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C	122m NW	Refuse Heap	1880	1596030
C	170m NW	Smithy	1954	1612603
C	181m NW	Smithy	1880	1723951
C	187m NW	Smithy	1925	1713473
C	187m NW	Smithy	1898	1713473
2	251m W	Unspecified Old Quarry	1880	1600461
E	475m W	Garage	1968	1613463
3	481m E	Cuttings	1880	1673130

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m

0

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'.

This data is sourced from Ordnance Survey / Groundsure.



2.3 Historical energy features

Records within 500m

2

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 18**

ID	Location	Land Use	Date	Group ID
D	182m W	Electricity Substation	1989	166317
D	182m W	Electricity Substation	1989	166317

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

3

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

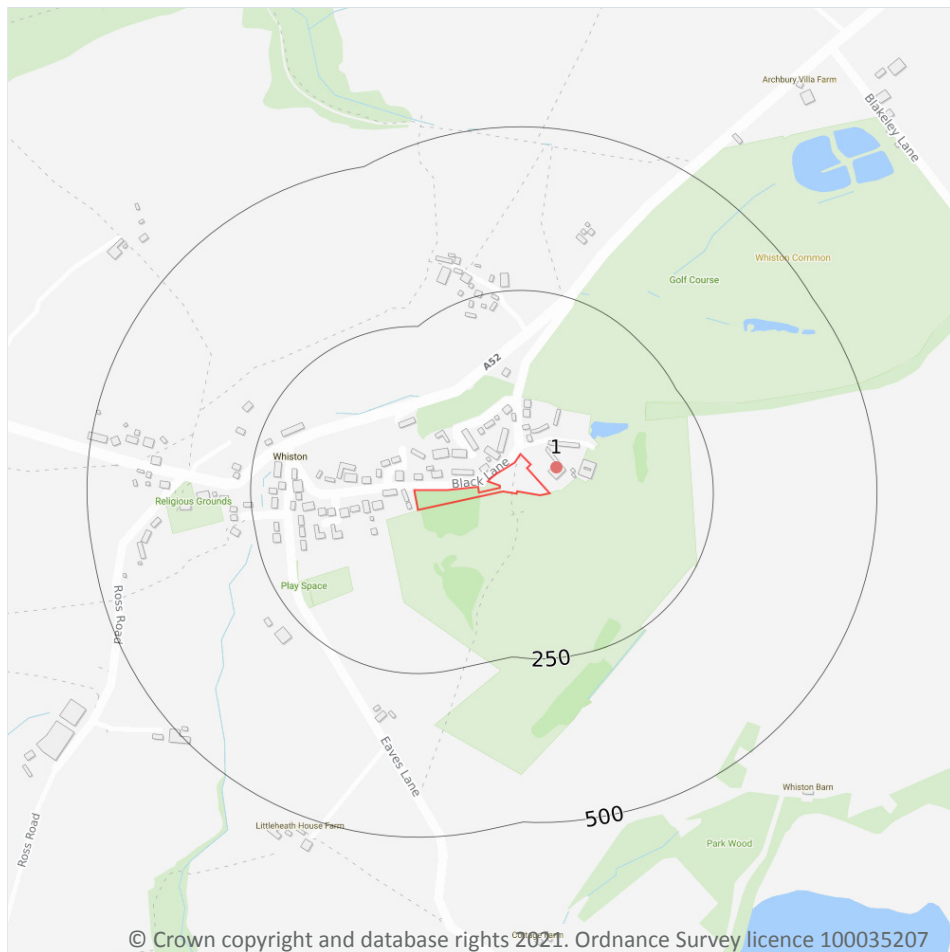
Features are displayed on the Past land use - un-grouped map on **page 18**

ID	Location	Land Use	Date	Group ID
E	463m W	Garage	1989	54004
E	463m W	Garage	1989	54004
E	468m W	Garage	1966	50723

This data is sourced from Ordnance Survey / Groundsure.



3 Waste and landfill



- Site Outline
- Search buffers in metres (m)
- Waste exemptions

3.1 Active or recent landfill

Records within 500m

0

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

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

3.2 Historical landfill (BGS records)

Records within 500m

0

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

This data is sourced from the British Geological Survey.

3.3 Historical landfill (LA/mapping records)

Records within 500m
0

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

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

3.4 Historical landfill (EA/NRW records)

Records within 500m
0

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

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

3.5 Historical waste sites

Records within 500m
0

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

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

3.6 Licensed waste sites

Records within 500m
0

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

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

3.7 Waste exemptions

Records within 500m
1

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 21**

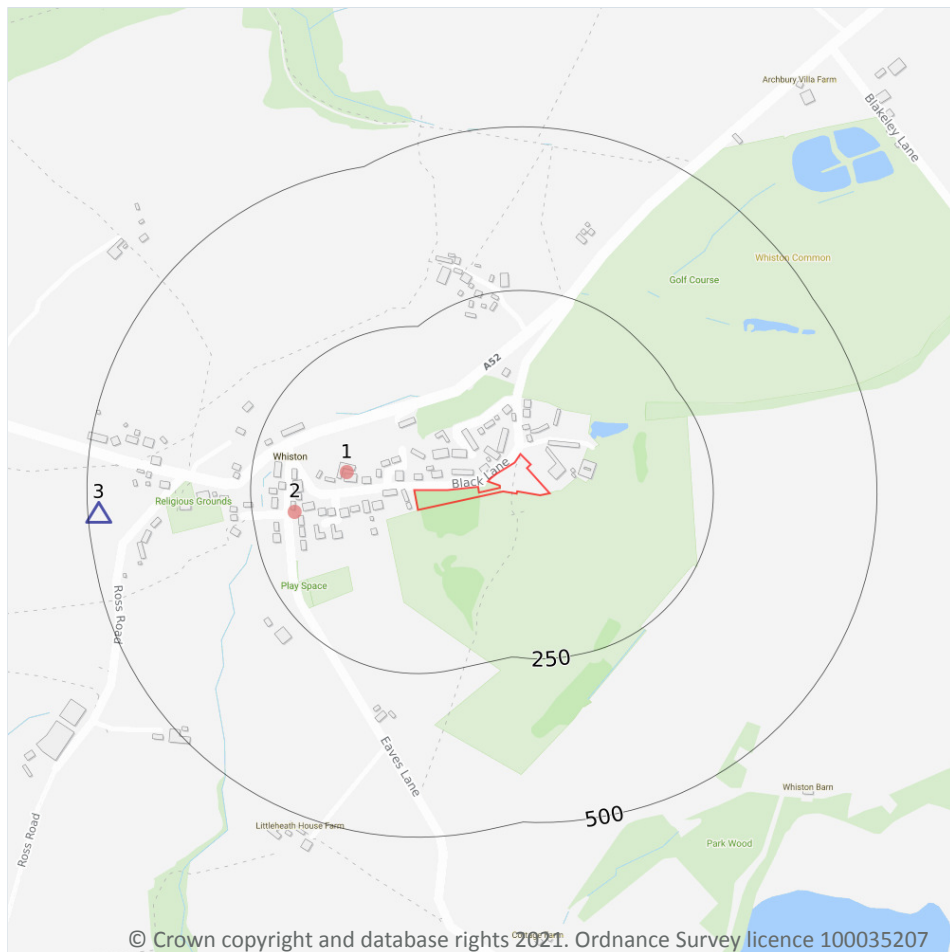
ID	Location	Site	Reference	Category	Sub-Category	Description
1	33m NE	-	WEX241933	Disposing of waste exemption	Not on a farm	Burning waste in the open



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

4.1 Recent industrial land uses

Records within 250m

2

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 24**

ID	Location	Company	Address	Activity	Category
1	107m W	Works	Staffordshire, ST10	Unspecified Works Or Factories	Industrial Features
2	185m W	Electricity Sub Station	Staffordshire, ST10	Electrical Features	Infrastructure and Facilities

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 24**

ID	Location	Company	Address	LPG	Status
3	484m W	OBSOLETE	A52, Whiston, Stoke-On-Trent, Staffordshire, ST10 2JE	Not Applicable	Obsolete

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

0

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.

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m**0**

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

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

4.13 Licensed Discharges to controlled waters

Records within 500m**0**

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

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

4.14 Pollutant release to surface waters (Red List)

Records within 500m**0**

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

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

4.15 Pollutant release to public sewer

Records within 500m**0**

Discharges of Special Category Effluents to the public sewer.

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

4.16 List 1 Dangerous Substances

Records within 500m**0**

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

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

4.17 List 2 Dangerous Substances

Records within 500m

0

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

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

4.18 Pollution Incidents (EA/NRW)

Records within 500m

0

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

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

4.19 Pollution inventory substances

Records within 500m

0

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

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

4.20 Pollution inventory waste transfers

Records within 500m

0

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

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

4.21 Pollution inventory radioactive waste

Records within 500m

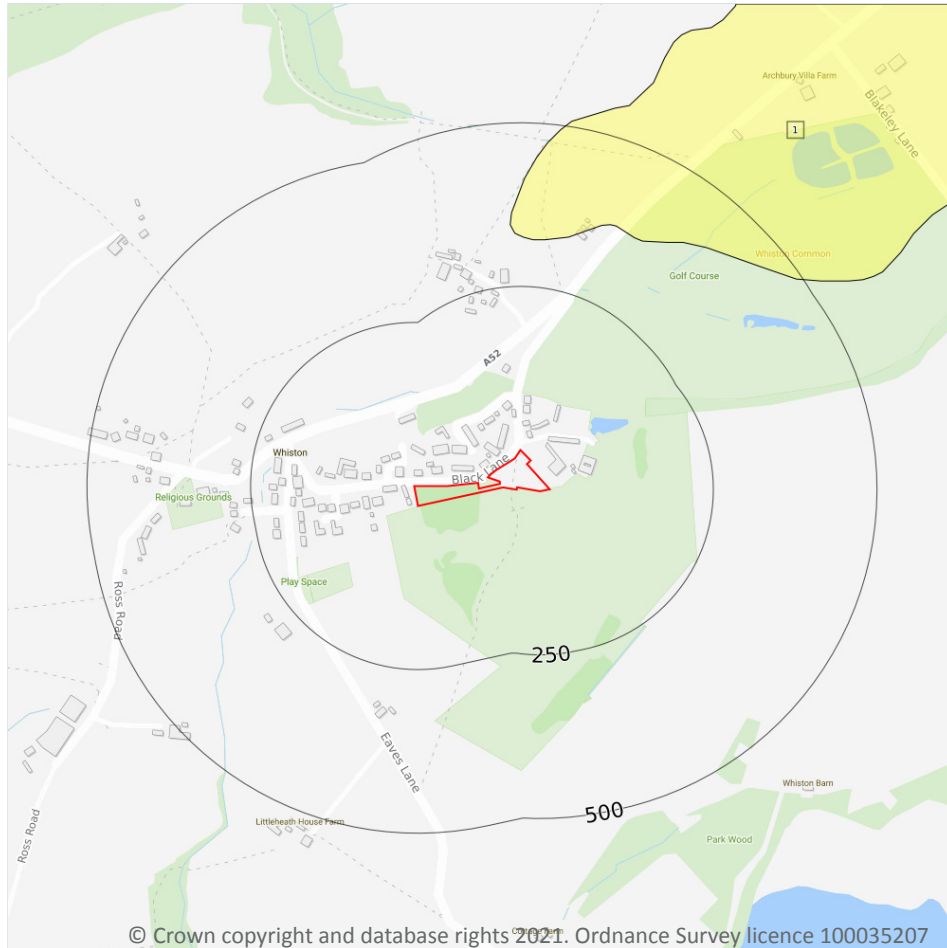
0

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

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



5 Hydrogeology - Superficial aquifer



- Site Outline**
- Search buffers in metres (m)**
- Principal
 - Secondary A
 - Secondary B
 - Secondary Undifferentiated
 - Unproductive
 - Unknown

5.1 Superficial aquifer

Records within 500m

1

Aquifer status of groundwater held within superficial geology.

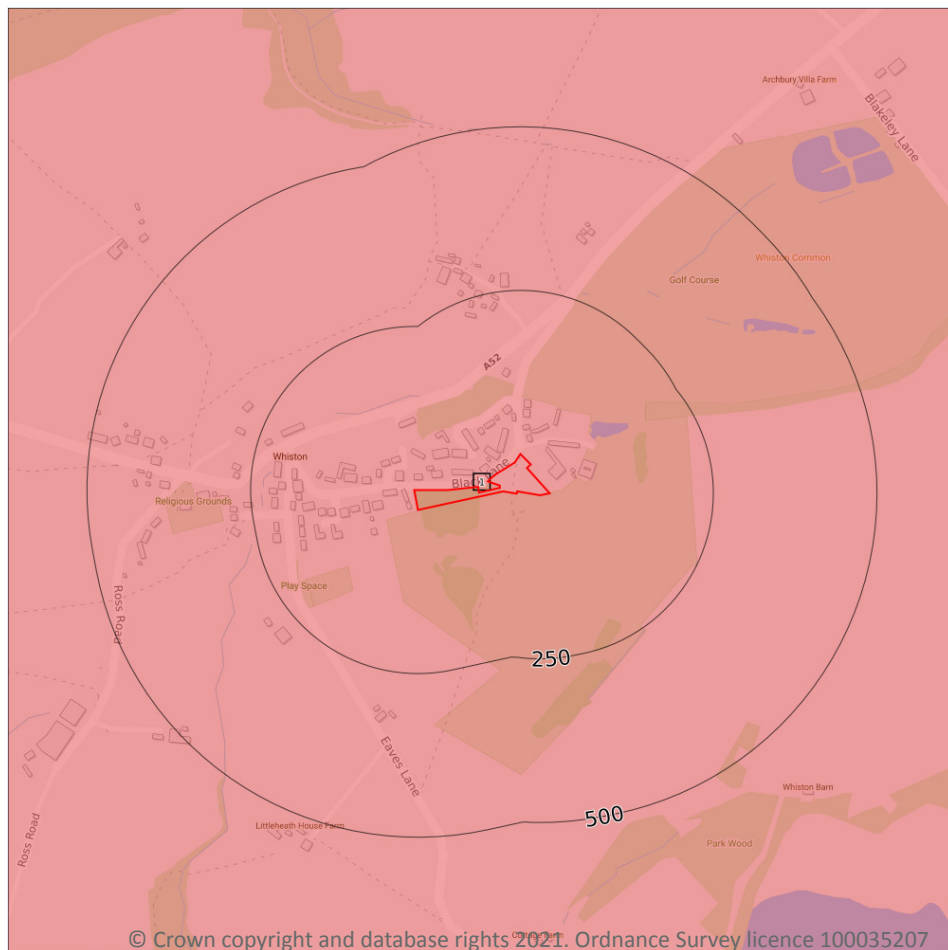
Features are displayed on the Hydrogeology map on **page 29**

ID	Location	Designation	Description
1	322m N	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type

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



Bedrock aquifer



- Site Outline
- Search buffers in metres (m)
- Principal
 - Secondary A
 - Secondary B
 - Secondary Undifferentiated
 - Unproductive

5.2 Bedrock aquifer

Records within 500m

1

Aquifer status of groundwater held within bedrock geology.

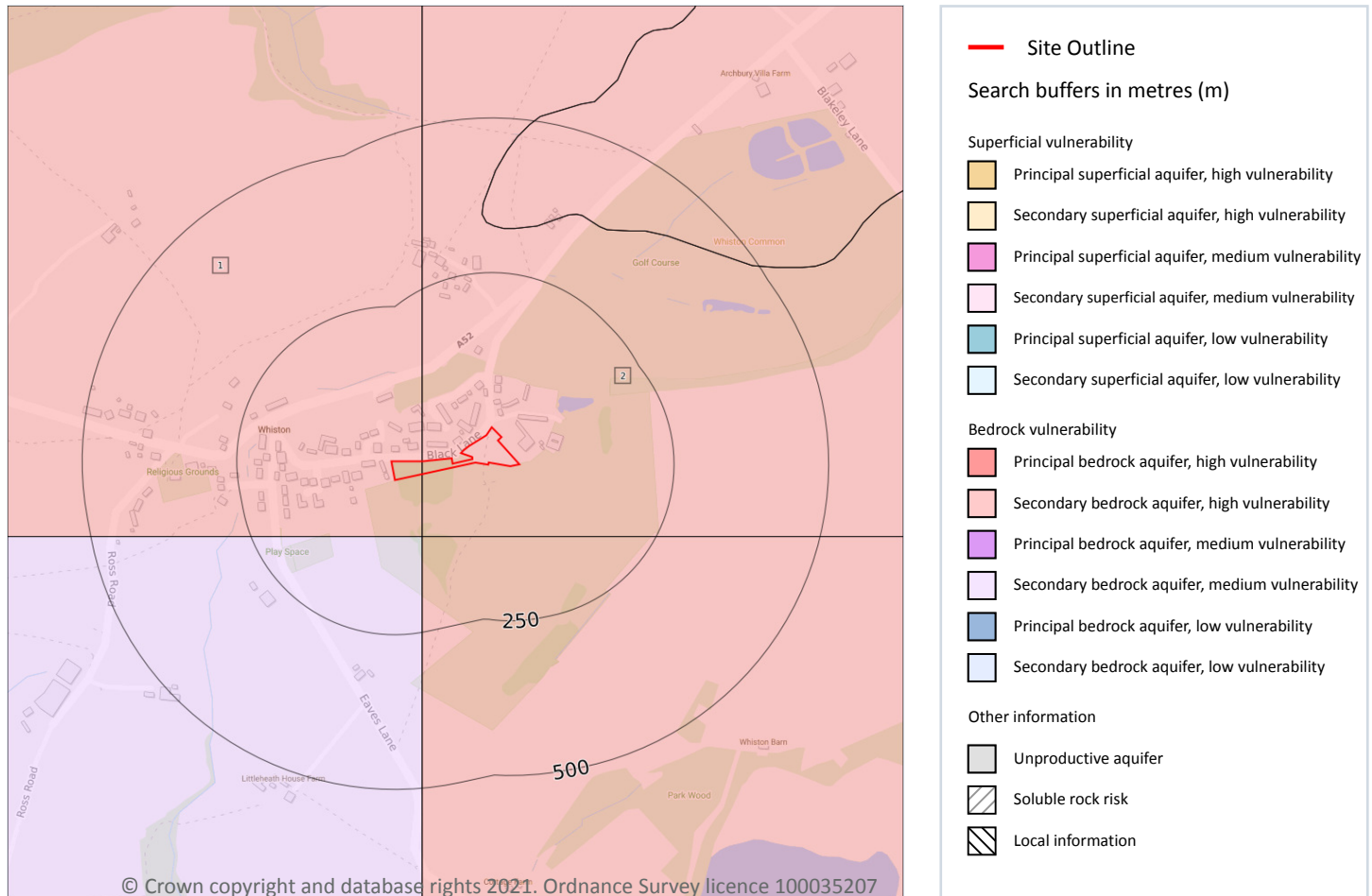
Features are displayed on the Bedrock aquifer map on **page 30**

ID	Location	Designation	Description
1	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

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



Groundwater vulnerability



5.3 Groundwater vulnerability

Records within 50m

2

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

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

Features are displayed on the Groundwater vulnerability map on **page 31**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: High Aquifer type: Secondary 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: Low Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: High	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

0

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

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

5.5 Groundwater vulnerability- local information

Records on site

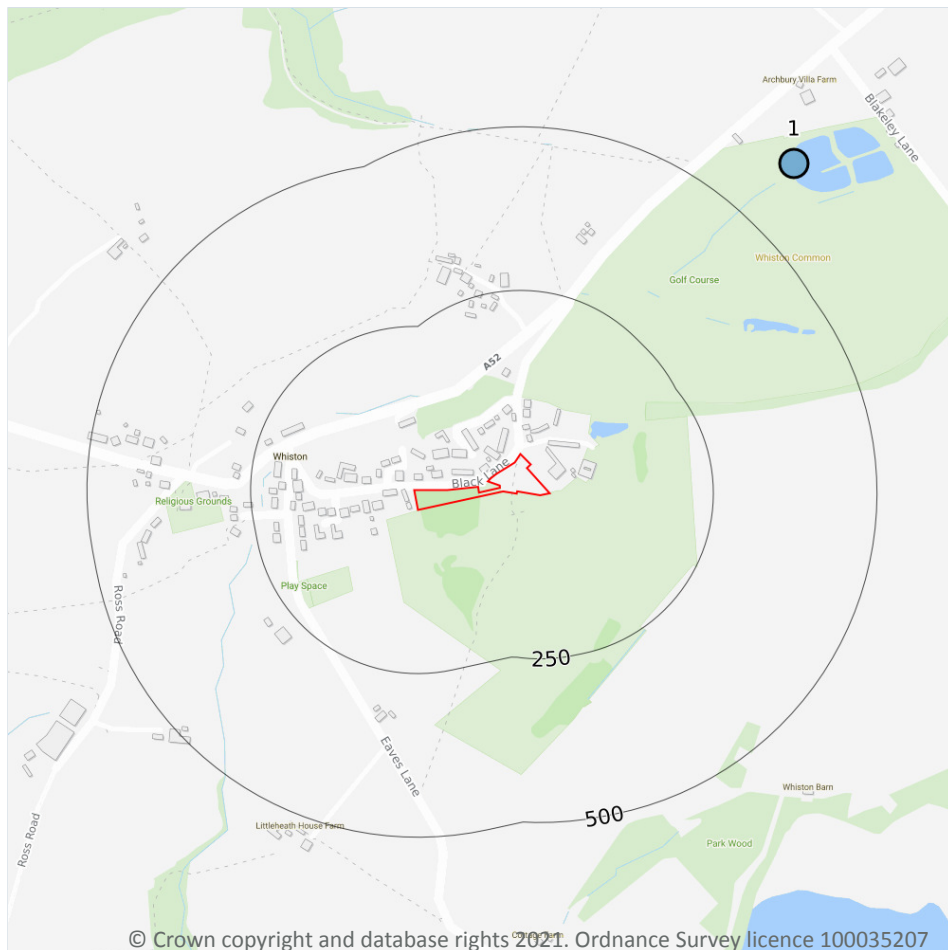
0

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
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

5

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 33**

ID	Location	Details	
-	1694m N	Status: Historical Licence No: 03/28/30/0103 Details: General Farming & Domestic Direct Source: Groundwater Midlands Region Point: LOWER SHAW WALLS - WELL Data Type: Point Name: WARD Easting: 404600 Northing: 348800	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 06/12/1965 Expiry Date: - Issue No: 100 Version Start Date: 06/12/1965 Version End Date: -
-	1888m W	Status: Historical Licence No: 03/28/30/0098 Details: Non-Evaporative Cooling Direct Source: Groundwater Midlands Region Point: FROGHALL,STOKE - BOREHOLE 1 Data Type: Point Name: BOLTON COPPER LIMITED Easting: 402100 Northing: 347500	Annual Volume (m ³): 236392 Max Daily Volume (m ³): 1309.25 Original Application No: - Original Start Date: 02/12/1965 Expiry Date: - Issue No: 102 Version Start Date: 01/04/2002 Version End Date: -
-	1888m W	Status: Historical Licence No: 03/28/30/0098 Details: Process Water Direct Source: Groundwater Midlands Region Point: FROGHALL,STOKE - BOREHOLE 1 Data Type: Point Name: BOLTON COPPER LIMITED Easting: 402100 Northing: 347500	Annual Volume (m ³): 236392 Max Daily Volume (m ³): 1309.25 Original Application No: - Original Start Date: 02/12/1965 Expiry Date: - Issue No: 102 Version Start Date: 01/04/2002 Version End Date: -
-	1986m W	Status: Historical Licence No: 03/28/30/0098 Details: Non-Evaporative Cooling Direct Source: Groundwater Midlands Region Point: FROGHALL,STOKE - BOREHOLE 2 Data Type: Point Name: BOLTON COPPER LIMITED Easting: 402000 Northing: 347500	Annual Volume (m ³): 236392 Max Daily Volume (m ³): 1309.25 Original Application No: - Original Start Date: 02/12/1965 Expiry Date: - Issue No: 102 Version Start Date: 01/04/2002 Version End Date: -
-	1986m W	Status: Historical Licence No: 03/28/30/0098 Details: Process Water Direct Source: Groundwater Midlands Region Point: FROGHALL,STOKE - BOREHOLE 2 Data Type: Point Name: BOLTON COPPER LIMITED Easting: 402000 Northing: 347500	Annual Volume (m ³): 236392 Max Daily Volume (m ³): 1309.25 Original Application No: - Original Start Date: 02/12/1965 Expiry Date: - Issue No: 102 Version Start Date: 01/04/2002 Version End Date: -

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



5.7 Surface water abstractions

Records within 2000m

4

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

Features are displayed on the Abstractions and Source Protection Zones map on **page 33**

ID	Location	Details	
1	608m NE	Status: Historical Licence No: 03/28/30/0192 Details: Spray Irrigation - Direct Direct Source: Surface Water Midlands Region Point: WHISTON HALL GOLF CLUB - WHISTON BROOK Data Type: Point Name: CLIFF Easting: 404530 Northing: 347620	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 29/10/1982 Expiry Date: - Issue No: 101 Version Start Date: 08/04/2002 Version End Date: -
-	1527m W	Status: Historical Licence No: 03/28/30/0099 Details: Non-Evaporative Cooling Direct Source: Surface Water Midlands Region Point: FROGHALL PREMISES,STOKE - BLACK BANK BROOK Data Type: Point Name: BOLTON COPPER LIMITED Easting: 402500 Northing: 347600	Annual Volume (m ³): 102285 Max Daily Volume (m ³): 522.79 Original Application No: - Original Start Date: 29/11/1965 Expiry Date: - Issue No: 102 Version Start Date: 01/04/2002 Version End Date: -
-	1527m W	Status: Historical Licence No: 03/28/30/0099 Details: Process Water Direct Source: Surface Water Midlands Region Point: FROGHALL PREMISES,STOKE - BLACK BANK BROOK Data Type: Point Name: BOLTON COPPER LIMITED Easting: 402500 Northing: 347600	Annual Volume (m ³): 102285 Max Daily Volume (m ³): 522.79 Original Application No: - Original Start Date: 29/11/1965 Expiry Date: - Issue No: 102 Version Start Date: 01/04/2002 Version End Date: -



ID	Location	Details	
-	1628m NW	Status: Historical Licence No: 03/28/30/0185 Details: Lake & Pond Throughflow Direct Source: Surface Water Midlands Region Point: WILDWOOD - BLACK BROOK, TRIBUTARY OF CHURNET Data Type: Point Name: SHAW Easting: 402470 Northing: 347800	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 08/02/1979 Version End Date: -

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

5.8 Potable abstractions

Records within 2000m	0
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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
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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.

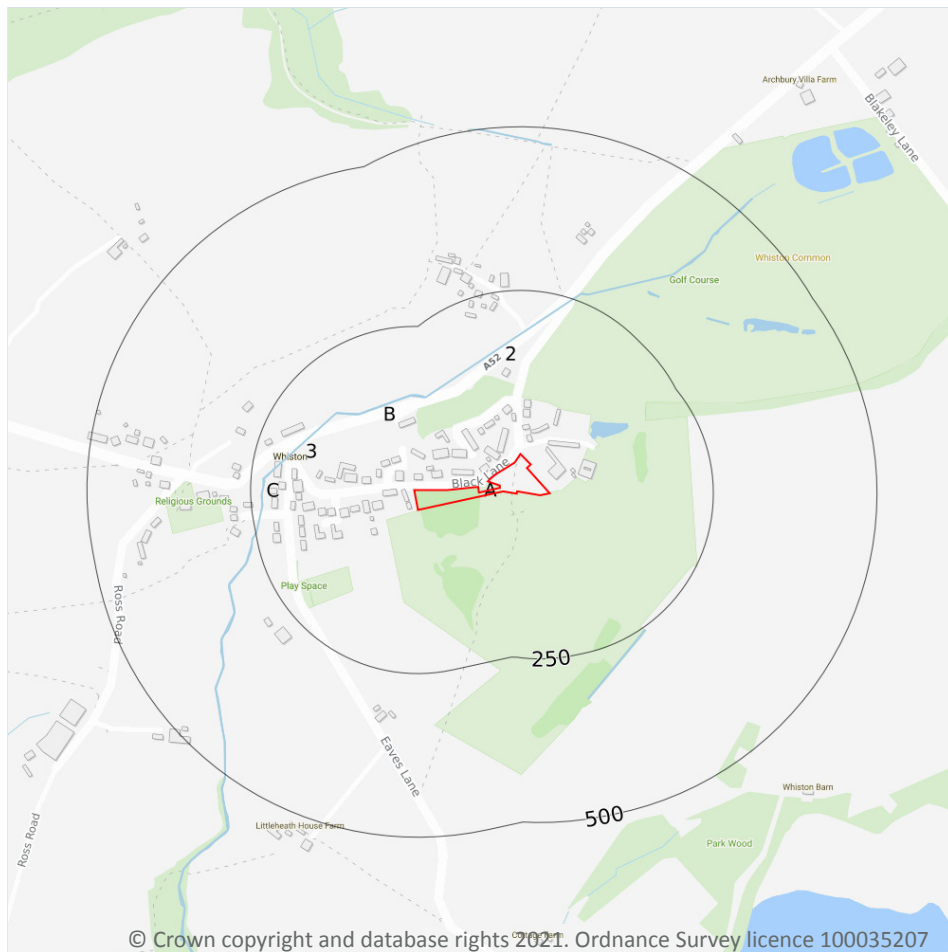
5.10 Source Protection Zones (confined aquifer)

Records within 500m	0
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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

5

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 37**

ID	Location	Type of water feature	Ground level	Permanence	Name
B	137m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-



ID	Location	Type of water feature	Ground level	Permanence	Name
2	141m N	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
3	167m NW	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
C	220m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	233m W	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

4

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 37**

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 37**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
A	On site	River WB catchment	Churnet from Consall to River Dove	GB104028052652	Churnet Rivers and Lakes	Dove

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 37**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
-	1291m W	River	Churnet from Consall to River Dove	GB104028052652	Moderate	Good	Moderate	2016

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 37**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
A	On site	Dove - Millstone Grit/ Coal Measures	GB40402G303000	Good	Good	Good	2015

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



7 River and coastal flooding

7.1 Risk of Flooding from Rivers and Sea (RoFRaS)

Records within 50m

0

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

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

7.2 Historical Flood Events

Records within 250m

0

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

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

7.3 Flood Defences

Records within 250m

0

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

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

7.4 Areas Benefiting from Flood Defences

Records within 250m

0

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

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



7.5 Flood Storage Areas

Records within 250m

0

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

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



River and coastal flooding - Flood Zones

7.6 Flood Zone 2

Records within 50m

0

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

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

7.7 Flood Zone 3

Records within 50m

0

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

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



8 Surface water flooding

8.1 Surface water flooding

Highest risk on site

Negligible

Highest risk within 50m

Negligible

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.

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

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

This data is sourced from Ambiental Risk Analytics.

