28 November 2012

MB694-09/NM/HB

For the attention of:

Gladman Developments Limited
Gladman House
Alexandria Way
Congleton
Cheshire
CW12 1LB

PHASE 1 DESK STUDY REPORT
For
LAND OFF NORTH ROAD,
GLOSSOP, DERBYSHIRE

This report was carried out in accordance with JPB Quality Management procedures.

Report prepared by:

Helen Bayliss BSc CSci MIEnvSc
Senior Environmental Scientist

Report checked and approved by:

Neil Moorby BSc MRICS
Director

www.jpb.co.uk
Harris & Pearson Building, Brettell Lane,
Brierley Hill, West Midlands DY5 3LH
Tel: (01384) 262000 : Fax: (01384) 262001
E-mail: enquiries@jpb.co.uk

Also at: Glasgow, Cardiff and Wells

Practical Solutions to Technical Problems

Johnson Poole & Bloomer is the trading name of Johnson Poole & Bloomer Limited
Registered Office: Harris & Pearson Building,, Brettell Lane, Brierley Hill DY5 3LH. Registered in England Number 2319513

CONTENTS

Text		Page No.
1.0	**INTRODUCTION**	**1**
2.0	**SITE DESCRIPTION AND SITE HISTORY**	**2**
2.1	Site Description	2
2.2	Site History	5
3.0	**GEOLOGY, MINING, GROUND STABILITY HAZARDS AND RADON GAS**	**8**
3.1	Geology	8
3.2	Mining and Mineral Extraction	8
3.3	Ground Stability Hazards	8
3.4	Radon	9
4.0	**ENVIRONMENTAL SETTING**	**10**
4.1	General	10
4.2	Hydrogeology	10
4.3	Hydrology	11
4.4	Flood Risk	12
4.5	Landfill and Waste Management Sites	13
4.6	Storage of Hazardous Substances and Authorisations	13
4.7	Other Environmental Information	13
5.0	**CONCEPTUAL SITE MODEL AND QUALITATIVE RISK ASSESSMENT**	**15**
6.0	**GEOTECHNICAL CONSIDERATIONS**	**17**
7.0	**CONCLUSIONS**	**18**
8.0	**RECOMMENDATIONS**	**20**
9.0	**GENERAL**	**21**

Drawings

MB694/01 Study Location Plan

MB694/02 Study Boundaries and Layout

Appendices

Appendix A Information Consulted

Appendix B GroundSure Report

Appendix C Historical Plans

1.0 INTRODUCTION

1.1 Further to the written instructions received on 8 October 2012 from Gladman Developments Limited (GDL), Johnson Poole and Bloomer Limited (JPB) is pleased to present a Phase 1 Desk Study Report for the site known as Land off North Road, Glossop, Derbyshire. The site's general location and study boundaries are shown on JPB Drawings MB694/01 and MB694/02, respectively.

1.2 This report has been written for GDL and is required in order to highlight any potential environmental risks and liabilities associated with the proposed development of the site, arising from its past and present uses. Information is also provided relating to the on site ground conditions, together with any issues which could lead to potential financial liabilities that may affect the land value or impact upon potential redevelopment options.

1.3 At the time of writing, it is understood that GDL is intending to obtain outline planning permission for a residential development.

1.4 This report is based on desktop research, which has included a search of the JPB Archive containing geological maps and memoirs, historical Ordnance Survey plans and other published information as detailed in Appendix A.

1.5 A site walkover inspection was carried out on 25 October 2012, as part of this commission, and a GroundSure EnviroInsight and GeoInsight Report has been purchased on behalf of GDL for the site. Relevant information from the GroundSure Report is cited in this report and a full copy of the report is presented in Appendix B. Historical plans for the site are presented in Appendix C.

1.6 Based on the information held within the JPB Archive and available from the British Geological Survey, The Coal Authority Gazetteer and the Law Society's Guidance Notes (2006), a Non-Residential Coal Authority Mining Report was not required for the site.

1.7 This report and related documents have been prepared for the sole use of the specified client in response to an agreed brief, for a stated purpose and at a particular time and its application must be made accordingly. No duty of care extends to any other party who may make use of the information contained therein. The information discussed in Section 9.0 – General of this Phase 1 Desk Study Report should be consulted and noted.

2.0 SITE DESCRIPTION AND SITE HISTORY

2.1 Site Description

General

2.1.1 The site is located off North Road, which is situated approximately 1km north of Glossop town centre, Derbyshire. The centre of the site is recorded at National Grid Reference SK 032 952 and the site's general location is shown on JPB Drawing MB694/01.

2.1.2 Occupying an approximate total area of 5.8ha (hectares), the site comprised three fields. The site generally sloped down gradually to the south as indicated by the contour lines on JPB Drawing MB694/01, from a level of approximately 215m Above Ordnance Datum (AOD) in the far north of the site down to approximately 205m AOD in the south.

2.1.3 The site walkover was undertaken by JPB on 25 October 2012 and the following information is a description of the conditions on site at the time of the visit. The site's boundaries and layout are shown on JPB Drawing MB694/02.

Site Layout and Boundaries

2.1.4 **Field 1** formed a generally triangular shaped plot of land in plan view, which occupied approximately 1.5ha of the total site area. In the main, the field comprised short grasses. Areas of long grasses / rough ground were present in the northwest, northeast and southern corners of the field which comprised sedges, sorrel, nettles, brambles and rosebay willowherb. A number of willow trees and shrubs were also present in the far south of the site. Ponded surface waters were noted in the central north-eastern part of the field together with waterlogged ground and rushes generally being present in the northern half of the field. A 0.3m deep grassed ditch was noted in the northwest of the field which appeared to promote surface water runoff in a south-westerly direction towards the main field access point off North Road. Surface water run off from the field was observed to flow out onto North Road.

2.1.5 The western field boundary was marked by a 1m high dry stone retaining wall, with the field being approximately 1m to 1.5m higher than the adjacent North Road. Occasional trees (oak, ash and maple) were noted to be growing in the field at the top of the retaining wall. The northern field boundary was marked by a 1m high post and wire fence, which was part vegetated (oak, holly and hawthorn trees). A shallow ditch was noted immediately beyond the northern field boundary line which prevented runoff from flowing down onto the site but may have connected to the shallow channel through the northwest of Field 1.

2.1.6 The south-eastern field boundary was marked by the route of the on site land drain, which varied between 0.5m and 1.5m deep. A 0.5m drop was noted in the channel approximately halfway along the boundary line where it switched to flow on the opposite side of the 1m high post and wire fence line. It then switched back to the other side of the fence line towards the southern corner, as shown on JPB Drawing MB694/02. The south-eastern boundary line was also marked by established holly and hawthorn trees. The southern field boundary was screened by the on site vegetation but appeared to be marked by a 1m high post and wire fence.

2.1.7 **Field 2** was broadly triangular in plan view and generally comprised short grasses, although rushes were also noted across the northern part of the field where the ground was noted to be waterlogged. Occupying an area of approximately 2.0ha, the field sloped down moderately steeply to the south towards a land drain mapped on the current Ordnance Survey (OS) plan, which is shown to be located along the central section of this southern boundary line.

2.1.8 The OS mapped land drain was not identified during the site walkover, with the area being vegetated by long grasses, sedges, nettles and brambles. In the southwest corner of Field 2, a 400mm diameter plastic pipe was noted to discharge into the land drain trending between Fields 1 and 2 and it is possible that it had been culverted. No water was noted to be flowing out of the 400mm diameter pipework. A 600mm diameter concrete pipe (with catch grid), set within a concrete headwall, was also noted in the southwest corner of Field 2. This accepted the water from the identified land drain between Fields 1 and 2. However, water from the identified land drain was also flowing beneath the 400mm diameter pipe into an opening in the ground. The 600mm culvert is noted to discharge to the tributary of Glossop Brook located in the off site Howard Park, as indicated on JPB Drawing MB694/02 and in the GroundSure Report.

2.1.9 The north-western field boundary of Field 2 was marked by the on site land drain as previously described for Field 1. The north-eastern field boundary was marked predominantly by 1m high post and wire fencing with the remains of a dry stone wall along the base of the south-western reservoir embankment. A gate was also located along this boundary line, situated in the far east of the field, which led through to Field 3. Post and wire fencing and a dry stone wall then marked the short south-eastern field boundary, with the off site residential properties. Finally, the southern boundary of Field 2 was predominantly marked by a 1m high post and wire and wooden fence panels in a poor state of repair. Trees (hawthorn, mountain ash and holly) and vegetation (brambles and nettles) were also noted along the southern field boundary.

2.1.10 **Field 3** was irregular in plan view and occupied 2.3ha of the total site area. The main part of the field comprised short grasses at the time of the site walkover, with wide strips of long grasses, sedges, brambles, nettles and rosebay willowherb at the field edges. However, the south-western part of the field located to the southeast of the off site reservoir was left as long grasses, sedges and common sorrel with the area adjacent to Field 2 being noted to be waterlogged with rushes present; this was the lowest area of the field.

2.1.11 A shallow grassed ditch was located within the north-western field boundary which was dry along its main length. However, waterlogged ground was noted in the far north of the field which appeared to be being promoted down onto the site from the embankment of the off site playing fields. Small stands of Japanese Knotweed were noted along the northern and north-eastern field boundary, which appeared to be spreading along the route of a public footpath immediately beyond the boundary line, as indicated on JPB Drawing MB694/02.

2.1.12 Two soil mounds were noted centrally along the eastern field boundary, which were densely vegetated with Himalayan Balsam, brambles and nettles. The mound appeared to be predominantly manure and soil. The Himalayan Balsam was also noted to have spread off site along the route of the off site public footpath as shown on JPB Drawing MB694/02.

2.1.13 An area of rough ground was noted in the southeast of the Field 3, which comprised long grasses sedges and brambles. A number of large tree stumps were also identified together with two remaining mature trees. A small waste stockpile was noted in the south of Field 3, which consisted of inert construction materials i.e. chipboard, timber, wooden pallets, cardboard, plastic pipework, cut vegetation, fence panels, polythene, plyboard, buckets and steel girders.

2.1.14 The boundaries of Field 3 were entirely marked by a combination of 1m high post and wire fencing, 1m high timber post and rail fencing and the remains of a dry stone wall. Hawthorn and holly trees were also present along the north-western and eastern boundaries, with hawthorn and coniferous trees in the far south.

Adjacent Site Uses

2.1.15 The land to the immediate north was occupied by a combination of open fields, reservoir and playing fields which have been terraced into the hillside. A steep 1.5m high grassed embankment to the off site playing field was noted approximately 2m north of Field 3, with part of the open area land to the east of the playing field occupied by numerous stands of Japanese Knotweed. This area of open land was accessed from Cemetery Road and the Japanese Knotweed was noted to have started to spread along a public footpath to the immediate north and northeast of Field 3. The stands of knotweed appeared to be contained within soil mounds tipped onto the off site land.

2.1.16 The off site reservoir to the north of the site, has steep grassed embankments along its south-western and south-eastern edges which varied in height from 0.5m high in the east, to approximately 3.5m to 4m in the south and approximately 1m high in the west. Large oak trees surrounded the reservoir both at the top of the embankment and along the slopes. The water level was noted to be approximately 0.5m to 1m lower than the adjacent site levels in Field 3 to the northeast, and was approximately 3m to 3.5m higher than the adjacent site levels in Field 2 to the southwest.

2.1.17 A ‘depot’ building of profiled steel construction with a pitched roof was present to the east of the site, which was accessible from Cemetery Road, to the northeast of the site, and from The Heath (road), to the southeast of the site. A further small area of open land was located to the southeast of the site, with residential properties extending beyond the southern site boundary, which fronted onto Heath Road.

2.1.18 North Road was present to the immediate west of the site with open land and a number of reservoirs located on its far side. The reservoirs were noted to drain down into a tributary of Glossop Brook which trended and flowed through Howard Park, which is located approximately 40m southwest of the site.

Site Access

2.1.19 North Road provided direct vehicular access to Field 1 in the west of the site, with two further gated vehicular accesses noted at the southernmost point of Field 2 and in the east of Field 3 off The Heath (road). A grassed track was also noted to trend immediately beyond part of the northern boundary of Field 3, although it did not provide access to the subject site.

2.1.20 A public footpath trended immediately beyond the southern site boundary between The Heath (road) and Bexley Close in the east and North Road in the west. This path was heavily overgrown and did not appear to be in frequent use. It was generally separated from the site by 1m high post and wire fencing.

Services

2.1.21 No manhole covers were noted on site during the site walkover. However, a number of manholes were noted in North Road to the southwest of the site, one of which appeared to be associated with the culverted watercourse.

2.1.22 No overhead electricity or BT overhead cables were noted to cross the subject site.

2.1.23 A natural stone building with a flat roof was located immediately beyond the southern site boundary, situated within the route of the public footpath, as shown on JPB Drawing MB694/02. This appeared to be a possible service housing although there was no signage to indicate which service or whose responsibility it was.

2.1.24 Consultation of the National Grid gas plans indicates low pressure gas mains to be laid to the south of the site within the roads The Heath, Heath Road and North Road. No gas mains are shown to cross the site.

2.1.25 A search has been undertaken to determine the proximity of underground oil/fuel pipelines, national electricity and gas transmission lines/routes, HV cables and fibre optic cable networks. The search determined that the site is not in the zone of interest for any of the following service operators.

- BOC Limited (A Member of the Linde Group)
- BPA
- Centrica Energy
- ConocoPhillips UK Ltd
- Coryton Energy Co Limited (Gas Pipeline)
- E-on UK Plc (Gas Pipelines Only)
- ESSAR
- Esso Petroleum Company Limited
- FibreSpeed Limited
- Geo Networks Limited
- Government Pipelines & Storage System
- HV Cables
- INEOS Manufacturing (Scotland and TSEP)
- Ineos Enterprises Limited
- Mainline Pipelines Limited
- Manchester Jetline Limited
- Marchwood Power Ltd (Gas Pipeline)
- NPower CHP Pipelines
- National Grid Gas and Electricity Transmission
- Oikos Storage Limited
- Perenco UK Limited (Purbeck Southampton Pipeline)
- Phillips 66
- Premier Transmission Limited (SNIP)
- RWEnpower (Little Barford and South Haven)
- SABIC UK Petrochemicals
- Scottish Power Generation
- Shell Pipelines
- Star Energy
- Total UK (Finaline, Colnbrook & Colwick Pipelines)
- Wingas Storage UK Limited

2.1.26 The above observations / services search does not constitute a full services search and this should be undertaken prior to any intrusive works on site.

2.2 Site History

2.2.1 A review of the relevant County Series (CS) and Ordnance Survey (OS) historical maps has been undertaken to determine the previous usage of the site and its surroundings. The relevant plans are reproduced in Appendix C.

On site

2.2.2 The first available CS plan for the site is dated 1881 at 1:2,500 scale. The site is shown to have been part of a wider area of farmland, divided into six areas by partially tree lined field boundaries. A possible pond and a 'well' are annotated in the far south of the present day Field 2, with a further 'well' shown to have been located in the west of the present day Field 3. A reservoir is shown off site to the immediate north, with steep embankments sloping down to the central part of the northern boundary. An area of woodland is shown immediately within the south-eastern boundary of the present day Field 3. A road concurrent with the present day North Road is located along the western boundary and public footpaths are shown to have trended immediately beyond the eastern and southern site boundaries, as present today. By the publication of the 1898 CS plan at 1:2,500 scale the 'well' and possible pond are no longer shown in the south of Field 2. However, a watercourse (land drain) is shown to trend and flow in a south-westerly direction along the boundary line between the present day Fields 1 and 2, for the first time.

2.2.3 A watercourse (land drain) is shown to trend within the central part of the southern boundary of Field 2 on the 1967 OS plan at 1:2,500 scale, similar to the present day OS plan. The 1975 OS plan at 1:2,500 scale indicates this watercourse (land drain) to 'issue' in the east and 'sink' in the west. The internal field boundaries are also shown to have been removed at this time, with the site being divided into three fields as observed during the site walkover. The 'well' in the west of Field 3 remains annotated until the publication of the 1980 OS plan at 1:10,000 scale.

2.2.4 The current 2012 OS plan at 1:2,500 scale shown the former area of woodland in the southeast of Field 3 to be 'scrub land' and a number of tree stumps were noted in this area during the site walkover, indicating that the woodland has been cleared in recent times. Whilst a watercourse (land drain) remains annotated along the central part of the southern boundary of Field 2, this was not observed during the site walkover, as previously discussed. However, it is possible that this has been culverted as a concrete pipe was noted to discharge into the watercourse (land drain) along the western boundary of Field 2 in the south-western corner of Field 2.

Off Site

2.2.5 The site's surroundings throughout the late 1800s and first half of the 1900s are shown to have been predominantly open land with a number of reservoirs present, including a reservoir to the immediate north of the site. Numerous quarries are also to be present within the wider surroundings from the 1800s to present day, a number of which are still active. Residential and agricultural buildings are shown to have been located from 10m to 60m southeast of the site, which are annotated as 'The Heath' (now known as 'Heath Farm'). These properties are accessed off the road 'The Heath' that remains present today. The main present day roads 'Cemetery Road' and 'North Road' are also already present on the 1881 CS plan at 1:2,500 scale.

2.2.6 'The Park' (now known as 'Howard Park') is annotated 40m southwest of the site on the 1898 CS plan at 1:2,500 scale and a hospital 'Wood's Hospital' has been constructed within the parkland located 180m southwest of the site. Residential properties and a 'convalescent home' are shown to front onto North Road, to the east of 'The Park' by the 1920s.

2.2.7 The reservoir to the immediate north of the site is annotated as 'Glossop Corporation – disused' on the 1951 CS plan at 1:10,560 scale. The reservoirs to the immediate west of North Road are also annotated as 'disused' at this time. Residential dwellings have been constructed to the immediate south of the site by the publication of the 1975 OS plan at 1:2,500 scale, with playing fields formed to the north of the site. The 2002 OS plan at 1:10,000 scale shows a depot to have been constructed to the east of the site. No further significant changes are noted to the site's surroundings from this time to present day.

3.0 GEOLOGY, MINING, GROUND STABILITY HAZARDS AND RADON GAS

3.1 Geology

3.1.1 Made Ground (artificial) deposits are not mapped across the site by the British Geological Survey (BGS). However, a limited thickness of Made Ground, most likely comprising reworked natural materials, is anticipated across the site as a result of agricultural activities on site and the historic construction of the off site reservoir to the immediate north of the site. There is also potential for relatively small amounts of construction materials, i.e. brick and concrete, to be present along the site boundaries with the off site residential properties and roads. Waterlogged ground was also noted across part of the site, which appeared to be longstanding due to the presence of rushes. As such, localised peat deposits may be present across parts of the site. Infilled materials may also be associated with the former possible pond and wells.

3.1.2 Information published by the BGS on Sheet 86 (solid and drift) indicates natural superficial deposits of Glacial Till to be present across the surface of the site. The Glacial Till deposits are predicted as having a 'low' to 'high' permeability by the BGS within the GroundSure Report, with their permeability depending upon their exact composition i.e. the proportions of sand, silt, gravel and clay. However, given the presence of waterlogged ground on site, their actual permeability is likely to be low.

3.1.3 The solid geology, beneath any Made Ground and natural superficial deposits, is recorded by the BGS as the Carboniferous aged Readycon Dean Flags, which is a member of the Millstone Grit Group, and comprises sandstone, typically described as fine micaceous sandstones, interbedded with siltstones and mudstones. The Millstone Grit Group is present beneath the productive Coal Measures in the stratigraphical sequence and, as such, the Coal Measures are not present beneath the site.

3.1.4 The region surrounding the site is shown by the BGS to be fairly heavily faulted, with the site itself being located in a faulted block. Two north to south orientated geological faults are inferred approximately 320m west and 700m east of the site, which downthrow strata to the west and east, respectively. Two northeast to southwest orientated geological faults are then also inferred approximately 700m north and south of the site, which downthrow strata to the south and northwest, respectively. The identified geological faults all displace strata within Millstone Grit Group itself and no geological faults are recorded by the BGS on site.

3.1.5 The permeability of the bedrock is indicated to be 'moderate' to 'high' in the GroundSure Report, with groundwater movement likely to be predominantly through fracture flow.

3.2 Mining and Mineral Extraction

3.2.1 The Law Society's Guidance Notes, Directory of Coal Mining Searches (2006) and the Coal Authority Gazetteer, indicated that a Non-residential Coal Authority Mining Report for coal and brine was not required for the subject site.

3.2.2 Consultation of the Department of the Environment (DOE) Review of Mining Instability in Great Britain (1991) indicates that the site is not located in an area where there is evidence of ground

instability relating to mining or mineral extraction. However, it should be noted that the GroundSure Report indicates the site to be located within an area where localised small scale mineral vein extraction may have occurred but is restricted in extent. Consequently, such mineral extraction on site is 'highly unlikely'.

3.2.3 A review of the historical plans has identified a number of 'old quarries' and other surface ground workings in the local area i.e. the local reservoirs and a cemetery. No such activities are shown to have occurred directly on site, although there is a reservoir located to the immediate north of the site, where some engineering works have occurred along part of the northern site boundary to retain the water.

3.2.4 Two active quarrying operations are recorded by the BGS at Mouselow Quarry. These records indicate that both clay and shale, and sandstone extraction, occur at locations approximately 650m west and 785m southwest of the site, respectively. A further nine inactive quarries for sandstone extraction are recorded by the BGS in the GroundSure Report. These features were confirmed to be off site during the review of the historical plans.

3.2.5 On consideration of the information discussed above, mining and mineral extraction activities are considered **not significant** to the future development of the site.

3.3 Ground Stability Hazards

3.3.1 The GroundSure Report, citing information provided by the BGS, records the following ground stability hazards for the site:

- Very low risk of shrinking and swelling clays, associated with the Glacial Till deposits;
- Very low risk from landslides (natural features only);
- Negligible (null) risk of ground dissolution (soluble rocks);
- Negligible risk of compressible deposits, with the exception of any localised peat deposits;
- Very low risk of collapsible deposits recorded across the site;
- Very low risk of running sand.

3.3.2 The ground stability hazards are likely to be attributed to the underlying natural geology and the surrounding topography of the site and are considered **not significant** to the future development of the site. This is providing that the future foundations take account of the site specific ground conditions, particularly should any compressible peat like deposits be identified in the areas of waterlogged ground.

3.4 Radon

3.4.1 Citing the BGS and Health Protection Agency (HPA), the GroundSure Report for the site indicates that the site is not located within a radon affected area, as less than 1% of homes are above the residential action level. Consultation of BRE 211 – Radon, Guidance on Protection Measures for New Buildings indicates that radon protective measures are not required in the construction of new dwellings or extensions.

3.4.2 Radon gas is considered to be **not significant** in relation to the site's future development.

4.0 ENVIRONMENTAL SETTING

4.1 General

4.1.1 In reading the following sections, reference to the sensitivity plans reproduced from the GroundSure Report, presented in Appendix B, should be made. The information provided below has been sourced from the GroundSure Report and other information sources as detailed in Appendix A.

4.2 Hydrogeology

4.2.1 The Environment Agency's (EA) groundwater vulnerability map for Derbyshire and North Staffordshire, Sheet 17, and their web site, indicates that the classification of the aquifers at the site and its environs are as follows:

Table 4.1 Aquifer and Leachability Classification

Inferred Strata	Aquifer	Overlying Soil Leachability
Glacial Till	Unproductive [(1)]	-
Readycon Dean Flags	Secondary A [(2)]	Low [(3)]

[(1)] **Unproductive Strata** - rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.

[(2)] **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.

[(3)] **Low Leaching Potential** – soils in which pollutants are unlikely to penetrate the soil layer because either water movement is largely horizontal, or they have the ability to attenuate diffuse pollutants. Lateral flow from these soils may contribute to groundwater recharge elsewhere in the catchment.

4.2.2 Information from the GroundSure Report and the EA website indicates that the site is not located within a groundwater Source Protection Zone (SPZ) and there are no records of potable groundwater abstraction within a 2km radius of the site. There are twenty records of non-potable groundwater abstraction licences relating to six abstraction locations for a variety of uses, including process, general cooling and boiler feed. The closest to the site is recorded approximately 260m northwest of the site, from spring fed collecting tanks at Bettenhill Farm for 'general use'. Not all groundwater abstractions are required to be licensed and other local abstractions may exist in the local area.

4.2.3 There are no reported pollution incidents or discharge consents affecting groundwaters within a 250m radius of the site recorded within the GroundSure Report.

4.2.4 The Water Framework Directive (WFD) is European Legislation to ensure waters are managed to achieve good quality water across Europe. In the UK, the WFD is governed by the EA who is responsible for making plans to protect and improve lakes, rivers, groundwaters and coastal water habitats. Risk assessments of these water bodies are based on point and diffuse sources of pollution, water abstraction and flow regulation, physical and morphological alteration to water bodies and alien sources. Information from the EA website indicates that groundwaters underlying, and immediately surrounding the site, are classified as 'good' for their current quantitative quality, with the current chemical quality being 'poor (deteriorating)'.

4.2.5 Drinking Water Protected Areas (DrWPAs) are water bodies (e.g. rivers, reservoirs, canals, groundwater) where 'raw' water is abstracted for human consumption at a rate of at least 10m3/day or over 50 people are served. In some DrWPAs raw water quality needs to be improved to avoid the need for extra treatment at drinking water treatment plants. The site is located within a groundwater DrWPA where groundwaters are recorded as 'probably at risk'.

4.2.6 On the basis of the available researched information groundwaters underlying the site are considered to be of **moderate sensitivity**, given that there are a number of groundwater abstractions recorded in the area and that groundwaters are likely to be providing base flow to surface watercourses.

4.3 Hydrology

4.3.1 The nearest surface water features have been identified from the site walkover inspection, current Ordnance Survey plans and the GroundSure Report. Table 4.2 below summarises the distance and bearing of local surface water features from the site and their flow direction.

Table 4.2: Location of Surface Water Features

Surface Water Feature	Distance and Bearing from Site	Flow Direction
Land drain from reservoir (part culverted off site). Discharges to tributary of Glossop Brook in Howard Park.	On site – between Fields 1 and 2	north to southwest
Land drain - not identified as open watercourse on site. Potentially culverted, pipe observed to discharge to land drain between Fields 1 and 2.	On site – southern boundary of Field 2	east to west
Tributary of Glossop (Shelf) Brook (watercourse in Howard Park)	95m west	north to south
Glossop (Shelf) Brook	1km south	east to west
Reservoirs	0m north, 44m northwest, 90m west, 330m south, 405m south	n/a
Tributary of Beeley Clough	175m northeast	northwest to southeast
Beeley Clough (tributary of Shelf Brook)	440m east	north to south
Shelf Brook (feeds into Glossop Brook)	820m southeast	east to southwest

4.3.2 The on site land drains and the tributary of the Glossop Brook (watercourse in Howard Park), into which they feed, are not monitored for their water quality by the EA. However, they feed into the catchment of the Glossop (Shelf) Brook, which is classified as a main river by the EA and is assessed under the WFD as having a 'poor' ecological quality and does not require assessment for its current chemical quality.

4.3.3 There is one active EA recorded discharge consent listed in the GroundSure Report, located approximately 495m south-southwest of the site for sewage storm overflow to the tributary of the Glossop Brook.

4.3.4 Information within the GroundSure Report indicates three records relating to two licensed potable surface water abstractions, recorded within a 2km radius of the site. These are located approximately 860m east of the site at Swineshaw Reservoir (impounding water from Glossop Brook tributaries) and 1.3km north of the site from Torside Goyt (tributary of River Etherow), and are both upstream of the site. In addition, a further sixteen records relating to six abstraction locations are recorded within 2km of the site. These are for a variety of uses, including process waters, boiler feed and general cooling. The closest non-potable surface water abstraction to the site is 940m east of the site from Blackshaw Clough.

4.3.5 The GroundSure Report also indicates that there are no EA recorded pollution incidents associated with the local surface waters within a 250m radius of the site.

4.3.6 The site itself is not located in a DrWPA for surface waters. However, the land to the north is recorded to be within a 'safeguard zone', meaning that the EA monitors the water quality in this area to ensure it does impact upon the adjoining Drinking Water Protected Areas.

4.3.7 Based on the researched information, surface waters in the proximity of the site are considered to be of **moderate to high sensitivity** given that they feed into the catchment of the Glossop Brook.

4.4 Flood Risk

4.4.1 The EA flood maps indicate the site to be located in Flood Zone 1 where the risk of fluvial flooding is considered to be low. However, the on site land drains are not modelled by the EA and there is potential for localised flooding. The site is not located in an area where the EA issue Flood Warnings or Flood Alerts.

4.4.2 The BGS indicates the site to be located within a 50m radius of an area recorded as having a 'moderate' susceptibility of groundwater flooding, with 'high' confidence rating.

4.4.3 The reservoir to the immediate north of the site was observed to receive waters from a land drain feeding into its north-western corner, where a watercourse was also noted to outfall to the land drain located between Fields 1 and 2. A review of the EA maps for reservoir flooding indicates that the flood risk from this reservoir is not mapped by the EA. Should the engineered embankments along the central section of the site's northern boundary fail, flood waters could impact upon the site and further consideration of this should be made as part of a site specific Flood Risk Assessment (FRA). The Reservoir Act 1975 applies to bodies of water >25,000m^3 and from the surface area of this reservoir it is considered unlikely that this will apply.

4.4.4 Flooding is considered **potentially significant** to the future development of the site, as a result of the on site land drains and their relationship with the off site reservoir, and the reservoir itself. A site specific Flood Risk Assessment should assess the risks from the land drains and watercourses to ensure that the proposed development proceeds safely. Any new development will need to manage surface water discharges in a suitable manner to prevent increased fluvial

flood risks both on and off site, and address potential pluvial (overland) and groundwater flooding issues, together with assessing risks from artificial drainage systems and from infrastructure failure.

4.5 Landfill and Waste Management Sites

4.5.1 One historic landfill site is mapped by the EA approximately 15m northwest of the site, on the far side of North Road, at Bettenhill Farm. It was operational between January and June 1985 and is recorded by the EA to have accepted inert wastes. A further landfill record for Bettenhill Farm is also listed in the GroundSure Report, which indicates a landfill site for putrescible wastes located approximately 260m northwest of the site. This record is also dated January 1985 and it is likely that this relates to the previous entry. The landfill boundaries provided by the EA indicating it to be from 15m north west of the site are considered to be accurate.

4.5.2 Landfill sites are considered to pose a potential risk when they are located within a 250m radius of the site under consideration. Therefore, the identified historic landfill site is considered to be **potentially significant** to the future development of the site, although the presence of the lower permeability Glacial Till in the vicinity should impede gas and leachate migration on site.

4.6 Storage of Hazardous Substances and Authorisations

4.6.1 Notification of Installations Handling Hazardous Substances (NIHHS) Authorisations prohibit the handling of certain hazardous substances unless the Health and Safety Executive (HSE) has been notified. There are no recorded NIHHS authorisations recorded in the vicinity of the site, within the GroundSure Report.

4.6.2 The Control of Major Accident Hazards (COMAH) amendments came into force on 30 June 2005 replacing the previous COMAH 1999 regulations. These aim to prevent and mitigate the effects on people and the environment of those major incidents involving dangerous substances such as natural gas, oil or explosives (not exhaustive). There are no COMAH sites recorded in the vicinity of the site, within the GroundSure Report.

4.6.3 There are no historic IPC Authorisations, IPPC authorised, Part A(1), Part A(2) or Part B licensed activities recorded within a 500m radius of the site.

4.6.4 There are no recorded authorisations for potentially contaminative activities recorded within the vicinity of the site and as such these authorisations can be considered **not significant** to the development of the site.

4.7 Other Environmental Information

4.7.1 There are no recorded Sites of Special Scientific Interest (SSSI), Special Areas of Conservation, Nature Reserves etc, located within a 500m radius of the site.

4.7.2 Himalayan Balsam was identified on site within a mound of imported soils located in the east of Field 3. Japanese Knowteed was also identified immediately beyond the northern and eastern boundaries of Field 3 and appeared to be spreading along the route of the public footpath from

large established stands of knotweed. Himlayan Balsam was also noted to have spread along the route of the off site public footpath. The locations of these plants are indicated on JPB Drawing MB694/02.

4.7.3 The release of both Himalayan Balsam and Japanese Knotweed into the wild is controlled under the Wildlife and Countryside Act 1981 and it is an offence under section 14(2) of the Act to 'plant or otherwise cause to grow in the wild' any plant listed in Schedule 9, Part II, which includes Japanese Knotweed and Himalayan Balsam. The plant material is also considered a 'controlled waste' and must be disposed of in accordance with the Environmental Permitting (England and Wales) Regulations 2010. The presence of Japanese Knotweed and Himalayan Balsam on site, or in close proximity to the site, is considered **significant** to the development of the site.

4.7.4 A pollution incident is recorded to have occurred, by the EA in the GroundSure Report, approximately 70m east of the site, which had a Category 3 (minor) impact on land. The pollutant is recorded to have been inert materials and wastes (soils and clay) and occurred in April 2002. This is likely to be associated with the off site depot, which is first shown to be present of the 2002 OS plan at 1:10,000 scale.

4.7.5 Information within the GroundSure Report indicates that the site has not been determined as Contaminated Land under the Environmental Protection Act 1990. There are no sites designated as Contaminated Land within a 500m radius of the site.

5.0 CONCEPTUAL SITE MODEL AND QUALITATIVE RISK ASSESSMENT

5.1 In the UK, the currently adopted method of assessment of potential contamination risk is to consider contamination in terms of **source, pathway and receptor,** thus deriving a conceptual model for the site. This method is broadly termed as a 'risk assessment' approach. The first stage in such an assessment is to identify whether a potential source exists as a result of the presence of contaminated soil, groundwater or ground gas beneath the site or neighbouring sites. The second step is to identify sensitive receptors to such contamination and finally, the third stage identifies how such sources of contamination might be transferred, via a specific pathway to identified receptors, either on, or in the vicinity of the site. Consequently, the possible risk posed can be considered.

5.2 Based on the researches undertaken using historical plans of the site, the site walkover inspection and from other information sources, the following are considered to be potential historic and present **on site sources** of contamination.

- Agricultural land. Reworked natural materials from agricultural activities. Limited contamination may be present from agricultural machinery i.e. fuel and oil hydrocarbons etc and potential for pesticides and herbicides (where used for arable farming);
- Potential for limited amounts of construction/demolition materials along the boundaries with the off site roads, residential properties and from the construction of the historic reservoir embankments and potentially culverted land drains;
- Waste stockpile. Generally inert materials including chipboard, timber, wooden pallets, cardboard, plastic pipework, cut vegetation, fence panels, polythene, plyboard, buckets and steel girders;
- Soil mounds of unknown composition in east of Field 3, most likely soil and manure. Contains Himalayan Balsam;
- On site land drain(s) and waterlogged ground. Potential for localised organic peaty materials that may produce ground gases;
- Former pond in south of Field 2. Potential for infilled materials of unknown origin and localised organic peaty materials that may produce ground gases;
- Former wells. Potential for infilled materials or (partially) open void.

5.3 The potential **off site sources** of contamination, either historic, recent or current, possibly affecting the site are considered to include:

- Made Ground materials most likely comprising reworked natural materials from agricultural activities, with the potential for construction/demolition materials from the development of surrounding roads, residential and commercial properties and farm buildings. Made Ground to north of Field 3 includes Japanese Knotweed;
- Agricultural land. Limited contamination may be present from agricultural machinery i.e. fuel and oil hydrocarbons etc. Potential for pesticides and herbicides (where used for arable farming);
- Existing depot. Potential for oil and fuel storage. Land also associated with pollution incident in 2002. Record lists pollutant as inert materials and wastes (soils and clay);
- Existing watercourse and ponds. Potential for localised organic peaty materials that may produce ground gases;
- Landfill site at Bettenhill Farm. Potential for ground gases and leachate.

5.4 It is understood that the site is proposed to be developed for a residential end use. Therefore, the potential **receptors** to the identified contamination sources described above are considered to be:

- Construction workers;
- Future residents;
- Neighbouring site users (residential and commercial end use);
- Controlled waters. Groundwater of moderate sensitivity and surface waters of moderate to high sensitivity.

5.5 The potential **pathways** linking the identified probable contamination **sources** and the **receptors** are considered to be:

- Direct contact with any contaminated soils, standing water and groundwater;
- Surface water run-off via land likely to discharge to the on site land drain which feed into the tributary of Glossop Brook in Howard Park and potentially into any highways drainage within North Road;
- Leaching of elements and compounds from soils and their mobilisation, both vertically and horizontally, through the strata. The presence of the low permeability Glacial Till deposits across the site will minimise vertical migration to the underlying Secondary A aquifer and horizontal migration to the base flow of local surface waters;
- Preferential migration pathways may exist vertically through the Glacial Till deposits in the locations of the former 'wells' in the south of Field 2 and west of Field 3;
- Dust and vapour inhalation - outdoor air and/or the indoor air of buildings constructed as part of the development and or existing buildings. Migration pathway from off site landfill site possibly reduced by presence of low permeability Glacial Till deposits;
- Ingestion of contaminated home grown vegetables.

5.6 On the basis of the researched information, it is considered from the above that there are limited potentially complete **source, pathway, receptor linkages** at the site, whether in its current state or as a newly developed residential site.

5.7 The current and future risk to site users and construction workers from contamination, from on or off site sources, is considered to be **very low to low**. Materials of unknown composition may be present within the location of the possible former pond and former wells, together with the soil mounds in the east of Field 3. The risk from these localised materials is considered to be **low to moderate**.

5.8 On the basis of groundwater and surface water sensitivities, environmental setting and previous site use; the environmental risk from the site is generally considered to be **low**, with a potential **moderate risk** associated with any infilled materials within the former wells, pond or existing soil mounds.

5.9 A **low risk** to site users is considered to be present from ground gases associated with the off site landfill site and any on site organic peaty materials associated with waterlogged ground across the site or along the route of the on site land drains and potentially infilled former pond and wells.

6.0 GEOTECHNICAL CONSIDERATIONS

6.1 The BGS records the presence of Glacial Till at the surface of the site, underlain by the Readycon Readycon Dean Flags (sandstone). A limited thickness of Made Ground is anticipated on site and based upon the site walkover, BGS supplied information and historic records they are likely to comprise reworked natural materials from agricultural activities. There is also potential for relatively small amounts of construction materials, i.e. brick and concrete, to be present along the site boundaries with the off site residential properties and roads. The presence, location and thicknesses of these strata should be confirmed by intrusive ground investigation to assist with foundation and pavement design, together with determining the strength and maximum bearing capacities of each stratum.

6.2 Shallow foundations are likely to be suitable in the Glacial Till deposits depending upon its thickness and composition and subject to the findings of intrusive ground investigation works. Alternatively deeper foundations into underlying sandstone strata will be feasible.

6.3 Waterlogged ground was noted across part of the site, which appeared to be longstanding due to the presence of rushes. As such, localised peat deposits may be present across these parts of the site as well as being associated with the on site land drain(s) and possible former pond. Observations should be made during future ground investigation works, and during any earth works for the development, for such deposits, as they are highly compressible in nature and their presence would require further consideration during foundation and pavement design.

6.4 Infilled materials may also be associated with the possible former pond in the south of Field 2 and the two former wells in the south of Field 2 and west of Field 3. The nature and extent of such materials should be confirmed through intrusive ground investigations. Alternatively, the former wells may remain as (partially) open voids. The locations of the wells should be investigated and, if found, stabilised, where they impact upon the development layout.

6.5 Himalayan Balsam and Japanese Knotweed have been identified on site and along the site boundary and treatment works to control its spread should be implemented at an early stage. The plant materials are considered to be a ‘controlled waste’ and must be disposed of in accordance with the Environmental Permitting (England and Wales) Regulations 2010, unless an exemption under Schedule 3 applies. The composition of the soil mounds within which the Himalayan Balsam is contained should also be determined.

6.6 Significant tree root systems are likely to remain in the southeast of Field 3 where the former area of woodland was present. This area was observed as rough ground with a number of large tree stumps and two mature trees (birch and maple) present during the site walkover.

7.0 CONCLUSIONS

7.1 The site is located off North Road to the north of the town of Glossop, Derbyshire. Historically, the site was divided into six agricultural fields, with two wells located in the south of Field 2 and west of Field 3. A possible pond was also potentially present in the south of Field 2. A reservoir is located to the north of the site and has been present since at least the 1880s and a land drain flows down from the reservoir, in a south-westerly direction, between the present day Fields 1 and 2. A further land drain is mapped along the central part of the southern site boundary. The field boundaries were removed to form the present day layout in the late 1960s / early 1970s. Public footpaths have trended immediately beyond southern and eastern site boundaries since at least the late 1800s.

7.2 The presence of Himalayan Balsam on site and Japanese Knotweed immediately beyond the northern / north-eastern boundary of Field 3 is considered to be **significant** to the future development of the site.

7.3 A layer of Made Ground is anticipated across the site, most likely comprising reworked natural materials, with the potential for some limited construction/demolition materials associated with the development of adjacent residential and commercial properties, roads and the historic reservoir embankment. Infilled materials may also be associated with the possible former pond and former wells. Waterlogged ground was noted across parts of the site and this, together with the former possible pond and existing land drain(s) may be associated with peat-like deposits. BGS published information indicates superficial deposits of Glacial Till to be present across the majority of the site, underlain by the Readycon Dean Flags, which comprises sandstone.

7.4 Shallow foundations may be possible within the shallow natural superficial deposits, dependent upon their thickness and competency and subject to the findings of future ground investigation works. If the superficial deposits are found to be an unsuitable founding stratum, deeper foundations in the underlying sandstone may be required.

7.5 The potential presence of peat-like materials associated with waterlogged ground and the historic or existing water features is considered **potentially significant** to the development of the site and a **low risk** from ground gases is associated with these materials.

7.6 The ground stability hazards (shrinking and swelling clays/running sand etc) identified by the BGS are considered **not significant** to the development of the site providing that the future foundations take account of the site specific ground conditions. This is providing that the future foundations take account of the site specific ground conditions, particularly should any compressible peat like deposits be identified in the areas of waterlogged ground.

7.7 The presence of a historic landfill site located within a 250m radius of the site is considered **potentially significant** to the future development of the site. However, the presence of the lower permeability Glacial Till in the vicinity of the site should impede gas and leachate migration on site and a **low risk** from ground gases is considered to be present.

7.8 Mining and mineral extraction activities, radon gas, waste management sites, COMAH & NIHHS consents, pollution prevention control authorisations and oil/fuel pipelines are considered **not significant** to the future development of the site.

7.9 The Glacial Till deposits are classified by the EA as unproductive strata. The underlying Readycon Dean Flags (sandstone) is classified as a Secondary A aquifer. The site is not located within a groundwater Source Protection Zone and there are no potable groundwater abstractions within a 2km radius of the site. However, a number of non-potable groundwater abstractions are recorded in the local area. Groundwaters underlying and surrounding the site are considered to be of **moderate sensitivity** but at generally **low risk** from contamination on site. A **moderate risk** to groundwaters is considered to be associated with any infilled materials within the former wells or possible former pond.

7.10 A reservoir is located to the immediate north of the site, with an overflow into a land drain trending along the boundary between Fields 1 and 2. This flows into a culvert at the southwest corner of Field 2, which ultimately discharges to the tributary of Glossop Brook, located in the off site Howard Park. A further land drain is also mapped along the central section of the southern site boundary. However, this was not identified during the site walkover. Pipework was noted to discharge into the land drain in the southwest corner of Field 2 and it is possible that its route has been culverted. The receiving watercourse for the on site land drains, the Glossop Brook, is classified by the EA as a main river and is recorded as having a 'poor' ecological quality, under the WFD, by the EA. Surface waters are considered to be of **moderate to high sensitivity** but at **low risk** from contamination on site. A **moderate risk** to groundwaters is considered to be associated with any infilled materials within the former wells, possible former pond or any contaminated runoff from the existing soil mounds.

7.11 The site is located within the EA Flood Zone 1, which is at low risk from fluvial flooding, although there is potential for localised flooding on site from the land drain(s). The BGS indicates the highest susceptibility to groundwater flooding, within a 50m radius of the site, to be 'moderate' with a 'high' confidence rating. The reservoir to the immediate north of the site was observed to receive waters from a land drain feeding into it's the north-western corner, where a watercourse was also noted to outfall to the land drain located between Fields 1 and 2. The Reservoir Act 1975 is not considered to apply to the off site reservoir and should the embankments fail the site would be impacted by flood waters. Flooding is considered **potentially significant** to the future development of the site, as a result of the on site land drains and their relationship with the off site reservoir, and the reservoir itself.

7.12 There are no environmentally sensitive sites located within a 2km radius of the site.

7.13 There are no sites designated as Contaminated Land within a 500m radius of the site and on the basis of the researched information indicating the former use of the site and the environmental setting, it is considered that from potential on site contamination there is generally a **very low to low risk** to the future site users and construction workers. However, materials of unknown composition may be present within the location of the possible former pond and former wells, together with the soil mounds in the east of Field 3. The risk from these localised materials is considered to be **low to moderate**.

8.0 RECOMMENDATIONS

8.1 A Flood Risk Assessment **will be required** in accordance with the requirements of National Planning Policy Framework.

8.2 Prior to the development of the site, it is **recommended** that a suitably designed intrusive geotechnical ground investigation is carried out to confirm the anticipated ground conditions at the site. Particular attention should be paid to the presence of any Made Ground across the site, particularly in the vicinity of the possible former pond. The compressible nature of any peat-like deposits should also be confirmed, together with the capacity of the Glacial Till deposits to shrink and swell. The composition of and depth to competent strata within the natural superficial deposits and the underlying solid strata should be confirmed to aid with foundation design. The permeability of the superficial deposits should also be determined, to aid with the disposal of storm waters from the developed site and the depth to groundwater should be confirmed.

8.3 The locations of the former wells on site should be investigated and if identified, it is **recommended** that they are stabilised where they impact upon the development layout.

8.4 It is **recommended** that a baseline environmental investigation is carried out, at the same time as the geotechnical investigation, in line with current best practices. The potential areas of Made Ground i.e. possible former pond, wells and existing soil mounds should be targeted. A broad suite of soil analysis should be carried out and this should also be designed to assist with Human Health risk assessment, concrete classification and the degree of protection required for water supply pipes.

8.5 It is **recommended** that a ground gas risk assessment is carried out in line with current best practices. This should aim to determine the presence of the ground gases, carbon dioxide, methane, carbon monoxide, hydrogen sulphide and any reduced oxygen levels. Sufficient data should be collated in order to determine whether ground gas protection measures are required in line with the requirements of CIRIA C665 and other associated guidance.

8.6 It is **recommended** that the route of the potentially culverted land drain along the central part of the southern site boundary is confirmed.

8.7 The presence of the public right of ways immediately beyond the southern and eastern site boundaries should be considered during the formulation of the masterplan.

8.8 An ecological survey **should be completed** prior to development of the site and it is **recommended** that works are carried out to eradicate the presence of Himalayan Balsam and Japanese Knotweed, at an early stage. The plant materials are considered to be a 'controlled waste' and must be disposed of in accordance with the Environmental Permitting (England and Wales) Regulations 2010, unless an exemption under Schedule 3 applies.

8.9 It would be **prudent** to consult further with Local Authority Contaminated Land Officer prior to the commencement of any intrusive ground investigation works, to ensure that the investigation is appropriately designed and will satisfy any planning conditions.

9.0 GENERAL

9.1 Whilst confident in the findings of our report we are unable to give an assurance that they will be accepted by the authorities without question. We therefore advise that where appropriate our report and associated matters are submitted to approving bodies and approval obtained or sought before detailed design, site works or other irrevocable action is embarked upon.

9.2 The recommendations contained in this report do not constitute any form of specification for the undertaking of the works required.

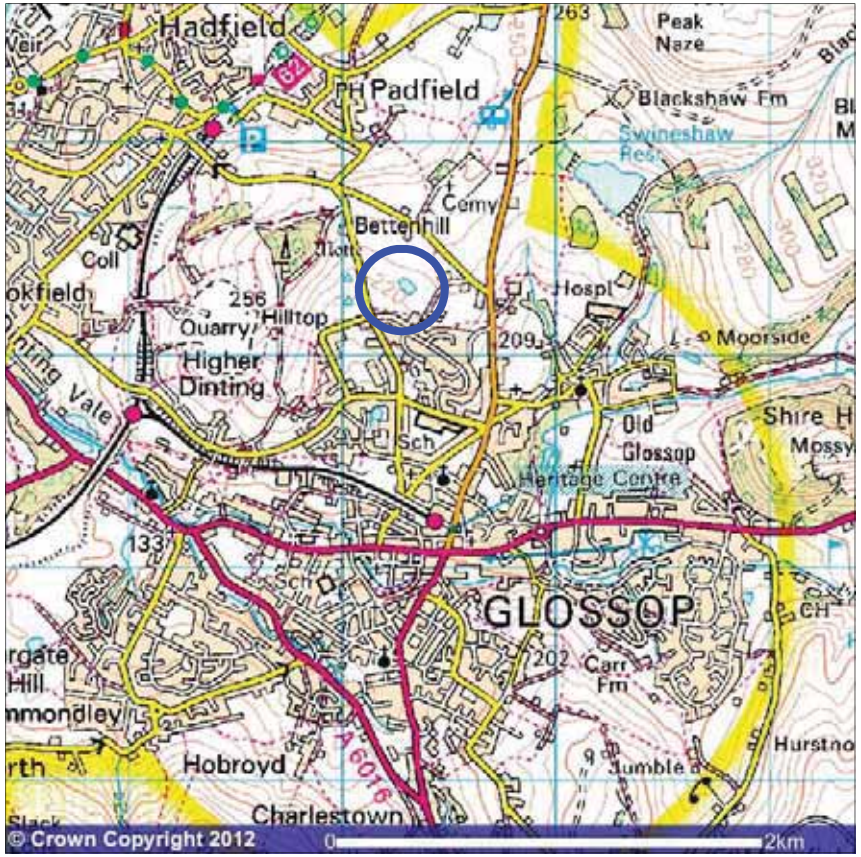
9.3 The conclusions reached in this report are necessarily restricted to those that can be determined from the information consulted and may be subject to amendment in the light of additional information becoming available.

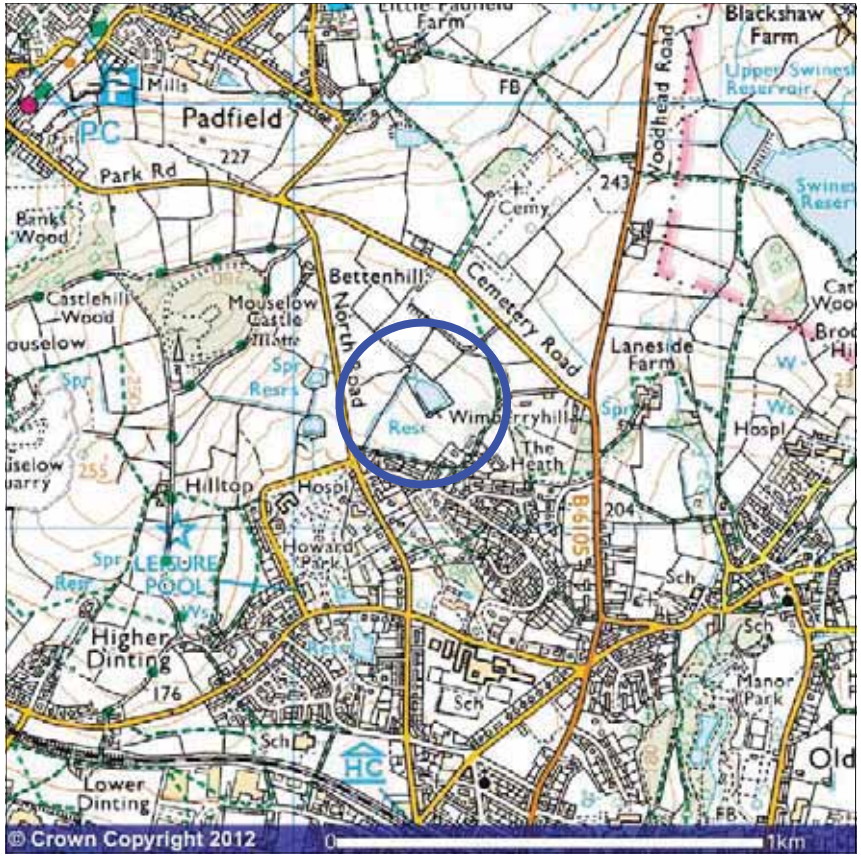
9.4 This report has been prepared for the sole use of the specified client in the intended context stated above. It should not be relied upon or used for any other project or by any other party without written authority from Johnson Poole and Bloomer Limited.

9.5 The copyright in this report is owned by Johnson Poole and Bloomer Limited and may not be reproduced, published or adapted without their written permission. Subject to satisfaction of copyright conditions required by the Ordnance Survey, GroundSure and any other third part supplied information; complete copies of this report may be made and distributed by the client as an expedient in dealing with matters directly related to its commission.

DRAWINGS

(Note – these plans are reproduced in colour)



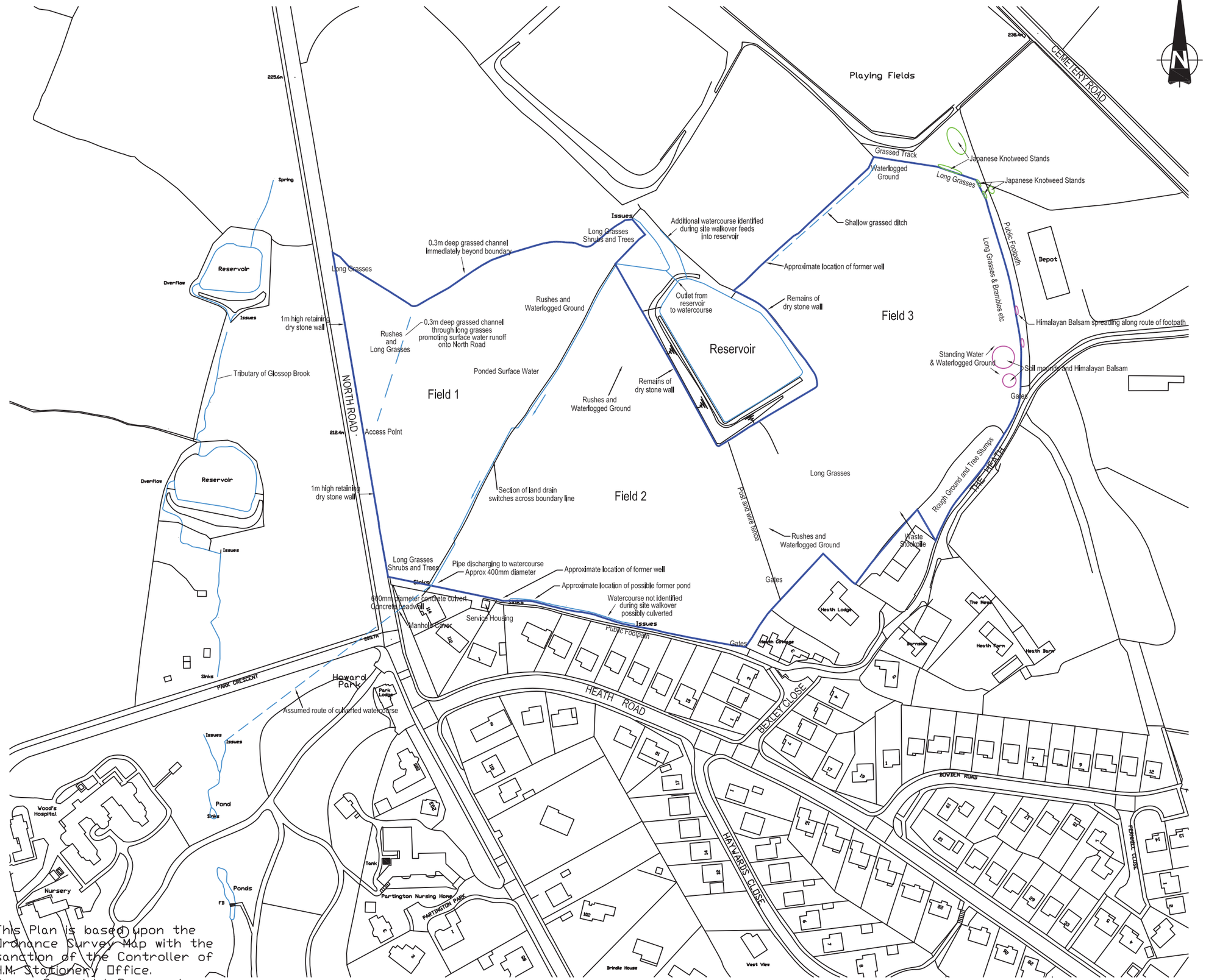


Ke

Approximate Study Location

JOHNSON POOLE & BLOOMER CONSULTANTS	Engineer HB	Client GLADMAN DEVELOPMENTS LTD	Title STUDY LOCATION PLAN
	Checked HB	Project LAND OFF NORTH ROAD, GLOSSOP, DERBYSHIRE	
	Approved ACJ	Date 23/11/2012 / Scale SEE SCALE BAR	Drawing MB694/01

This Plan is based upon the Ordnance Survey Map with the sanction of the Controller of H.M. Stationery Office. Crown Copyright AL 100002652.



This Plan is based upon the Ordnance Survey Map with the sanction of the Controller of H.M. Stationery Office. Crown Copyright Reserved.

KEY

- Study Boundary
- Stands of Japanese Knotweed
- Soil mound and Himalayan Balsam
- Watercourses

No.	REVISION	Date	Approved

Engineer	Checked	Approved
HB	HB	ACJ

Client

Gladman Developments Limited

Project

Land off North Road, Glossop

Title

Study Boundaries and Layout

JOHNSON POOLE & BLOOMER CONSULTANTS

Land Engineering • The Environment • Mining and Quarrying

Scale	Date
1:2,000 @ A3	23/11/2012
	Drawn HB

Drawing

MB694/02

Plan laid out by HB Office BRIERLEY HILL

Copyright of Johnson Poole & Bloomer Ltd

APPENDICES

APPENDIX A

Information Consulted

INFORMATION CONSULTED:

In preparation of this report, the following information has been consulted:

General

- JPB Archive
- Historical Ordnance Survey Plans

Geology and Mining

- British Geological Survey, Sheet 86, 1:50,000 scale (drift geology and solid geology);
- British Geological Survey website – http://www.bgs.ac.uk;
- Department of the Environment (1991) "Review of Mining Instability in Great Britain";
- GroundSure Report (EnviroInsight and GeoInsight) dated 10 October 2012 and referenced CMAPS-CM-182161-21446-101012GEO;
- The Coal Authority Gazetteer and the Law Society's Guidance Notes (2006)

Environmental Setting

- Environment Agency Groundwater Vulnerability Map for Derbyshire and North Staffordshire, Sheet 17;
- Environment Agency website - http://www.environment-agency.gov.uk;
- Environment Agency Flood Risk Standing Advice
- GroundSure Report (EnviroInsight and GeoInsight) dated 10 October 2012 and referenced CMAPS-CM-182161-21446-101012EDR;
- Linesearch website – http://www.linesearch.org/;
- MAGIC website – http://www.magic.gov.uk/website/magic;
- PPS25: Development and Flood Risk and associated Practice Guide;
- Technical Guidance to the National Planning Policy Framework.

Contamination Qualitative Risk Assessment

- British Geological Survey (2012) The Advanced Soil and Geochemical Atlas of England and Wales
- CIRIA (1995) CLR6 "Prioritisation and Categorisation Procedure for Sites which may be Contaminated"
- CIRIA (2001) C552 "Contaminated Land Risk Assessment: A Guide to Good Practice"
- DETR (2000) "Guidelines for Environmental Risk Assessment and Management"
- Department of Environment Industry Profiles
- Environment Agency (2000) "Guidance for the Safe Development of Housing on Land Affected by Contamination" R & D Publication 66
- Environment Protection Act 1990: Part IIA Contaminated Land

APPENDIX B

GroundSure Report

centremapslive.com
the mapping portal from Laser Surveys

CENTREMAPS
Brockamin House, ,
Worcester, WR6 5JU

GroundSure Reference:	CMAPS-CM-182161-21446-101012EDR
Your Reference:	21446
Report Date:	Oct 10, 2012
Report Delivery Method:	**Email - pdf**
Client Email:	andy@centremaps.com

GroundSure EnviroInsight

Address: Land of North Road, Glossop

Dear Sir/Madam,

Thank you for placing your order with CENTREMAPS. Please find enclosed the GroundSure EnviroInsight as requested

If you need any further assistance, please do not hesitate to contact our helpline on 01886 832972 quoting the above CENTREMAPS reference number.

Yours faithfully,

CENTREMAPS

Enc.
GroundSure EnviroInsight

centremapslive.com
the mapping portal from Laser Surveys

GroundSure
ENVIRONMENTAL INSIGHT

GroundSure EnviroInsight

Address: Land of North Road, Glossop

Date: Oct 10, 2012

GroundSure Reference: CMAPS-CM-182161-21446-101012EDR

Your Reference: 21446

Client: CENTREMAPS



Brought to you by CENTREMAPS

Aerial Photograph of Study Site

NW ▲ N NE



◄W E►

SW ▼ S SE

Aerial photography supplied by Getmapping PLC.
© Copyright Getmapping PLC 2003. All Rights Reserved.

Site Name: Land of North Road, Glossop
Grid Reference: 403296,395286
Size of Site: 5.90 ha

Overview of Findings

For further details on each dataset, please refer to each individual section in the main report as listed. Where the database has been searched a numerical result will be recorded. Where the database has not been searched '-' will be recorded.

Report Section	Number of records found within (X) m of the study site boundary					
1. Environmental Permits, Incidents and Registers	on-site	0-50	51-250	251-500	501-1000	1000-1500
1.1 Industrial Sites Holding Environmental Permits and/or Authorisations						
Records of historic IPC Authorisations	0	0	0	0	-	-
Records of Part A(1) and IPPC Authorised Activities	0	0	0	0	-	-
Records of Water Industry Referrals (potentially harmful discharges to the public sewer)	0	0	0	0	-	-
Records of Red List Discharge Consents (potentially harmful discharges to controlled waters)	0	0	0	0	-	-
Records of List 1 Dangerous Substances Inventory sites	0	0	0	0	-	-
Records of List 2 Dangerous Substances Inventory sites	0	0	0	0	-	-
Records of Part A(2) and Part B Activities and Enforcements	0	0	0	0	-	-
Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0	-	-
Records of Licensed Discharge Consents	0	0	0	2	-	-
Records of Planning Hazardous Substance Consents and Enforcements	0	0	0	0		
1.2 Records of COMAH and NIHHS sites	0	0	0	0	-	-
1.3 Environment Agency Recorded Pollution Incidents						
National Incidents Recording System, List 2	0	0	1	-	-	-
National Incidents Recording System, List 1	0	0	0	-	-	-
1.4 Sites Determined as Contaminated Land under Part IIA EPA 1990	0	0	0	0	-	-
2. Landfill and Other Waste Sites	on-site	0-50	51-250	251-500	501-1000	1000-1500
2.1 Landfill Sites						
Environment Agency Registered Landfill Sites	0	0	0	0	0	-
Landfill Data – Operational Landfill Sites	0	0	0	0	0	-
Environment Agency Historic Landfill Sites	0	1	0	0	2	6
Landfill Data – Non-Operational Landfill Sites	0	0	0	1	1	-
BGS/DoE Landfill Site Survey	0	0	0	0	0	0
GroundSure Local Authority Landfill Sites Data	0	0	0	0	0	2
2.2 Landfill and Other Waste Sites Findings						
Operational Waste Treatment, Transfer and Disposal Sites	0	0	0	0	-	-
Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	0	0	-	-
Environment Agency Licensed Waste Sites	0	0	0	0	0	0

3. Current Land Uses	on-site	0-50	51-250	251-500	501-1000	1000-1500
3.1 Current Industrial Sites Data	0	1	2	-	-	-
3.2 Records of Petrol and Fuel Sites	0	0	0	0	-	-
3.3 Underground High Pressure Oil and Gas Pipelines	0	0	0	0	-	-

4. Geology	Description
4.1 Are there any records of Artificial Ground and Made Ground present beneath the study site? *	No
4.2 Are there any records of Superficial Ground and Drift Geology present beneath the study site? *	Yes
4.3 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
Source: Scale: 1:50,000 BGS Sheet 086	

* This includes an automatically generated 50m buffer zone around the site.

5. Hydrogeology and Hydrology	on-site	0-50	51-250	251-500	501-1000	1001-2000
5.1 Are there any records of Productive Strata in the Superficial Geology within 500m of the study site?				Yes		
5.2 Are there any records of Productive Strata in the Bedrock Geology within 500m of the study site?				Yes		
5.3 Groundwater Abstraction Licences (within 2000m of the study site).	0	0	0	2	4	15
5.4 Surface Water Abstraction Licences (within 2000m of the study site).	0	0	0	0	5	14
5.5 Potable Water Abstraction Licences (within 2000m of the study site).	0	0	0	0	1	2
5.6 Are there any Source Protection Zones within 500m of the study site?					No	
5.7 River Quality	on-site	0-50	51-250	251-500	501-1000	1001-1500
Is there any Environment Agency information on river quality within 1500m of the study site?	No	No	No	No	No	Yes
5.8 Detailed River Network entries within 500m of the site	3	2	18	18	-	-
5.9 Surface water features within 250m of the study site	Yes	Yes	Yes	-	-	-

6. Flooding	
6.1 Are there any Environment Agency indicative Zone 2 floodplains within 250m of the study site?	No
6.2 Are there any Environment Agency indicative Zone 3 floodplains within 250m of the study site?	No
6.3 Are there any Flood Defences within 250m of the study site?	No
6.4 Are there any areas benefiting from Flood Defences within 250m of the study site?	No
6.5 Are there any areas used for Flood Storage within 250m of the study site?	No
6.6 What is the maximum BGS Groundwater Flooding susceptibility within 50m of the study site?	Moderate
6.7 What is the BGS confidence rating for the Groundwater Flooding susceptibility areas?	High

7. Designated Environmentally Sensitive Sites	on-site	0-50	51-250	251-500	501-1000	1001-2000
7.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	0	0	0	1
7.2 Records of National Nature Reserves (NNR)	0	0	0	0	0	0

7.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	0	0	0	1
7.3 Records of Local Nature Reserves (LNR)	0	0	0	0	0	0
7.4 Records of Special Areas of Conservation (SAC)	0	0	0	0	0	1
7.5 Records of Special Protection Areas (SPA)	0	0	0	0	0	1
7.6 Records of Ramsar sites	0	0	0	0	0	0
7.7 Records of World Heritage Sites	0	0	0	0	0	0
7.8 Records of Environmentally Sensitive Areas	0	0	0	0	1	0
7.9 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	0
7.10 Records of National Parks	0	0	0	1	0	0
7.11 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
7.12 Records of Nitrate Vulnerable Zones	0	0	0	0	0	0
7.13 Records of Ancient Woodlands	0	0	0	0	0	3

8. Natural Hazards

8.1 What is the maximum risk of natural ground subsidence?	Very Low

9. Mining

9.1 Are there any coal mining areas within 75m of the study site?	No
9.2 What is the risk of subsidence relating to shallow mining within 150m of the study site?	Negligible
9.3 Are there any brine affected areas within 75m of the study site?	No

Using this Report

The following report is designed by Environmental Consultants for Environmental Professionals bringing together the most up-to-date market leading environmental data. This report is provided under and subject to the Terms & Conditions agreed between GroundSure and the Client. The document contains the following sections:

1. Environmental Permits, Incidents and Registers

Provides information on Regulated Industrial Activities and Pollution Incidents as recorded by Regulatory Authorities, and sites determined as Contaminated Land. This search is conducted using radii up to 500m.

2. Landfills and Other Waste Sites

Provides information on landfills and other waste sites that may pose a risk to the study site. This search is conducted using radii up to 1500m.

3. Current Land Uses

Provides information on current land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. These searches are conducted using radii of up to 500m. This includes information on potentially contaminative industrial sites, petrol stations and fuel sites as well as high pressure underground oil and gas pipelines.

4. Geology

Provides information on artificial and superficial deposits and bedrock beneath the study site.

5. Hydrogeology and Hydrology

Provides information on productive strata within the bedrock and superficial geological layers, abstraction licenses, Source Protection Zones (SPZs) and river quality. These searches are conducted using radii of up to 2000m.

6. Flooding

Provides information on surface water flooding, flood defences, flood storage areas and groundwater flood areas. This search is conducted using radii of up to 250m.

7. Designated Environmentally Sensitive Sites

Provides information on the Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites, Local Nature Reserves (LNR), Areas of Outstanding Natural Beauty (AONB), National Parks (NP), Environmentally Sensitive Areas, Nitrate Sensitive Areas, Nitrate Vulnerable Zones and World Heritage Sites. These searches are conducted using radii of up to 500m.

8. Natural Hazards

Provides information on a range of natural hazards that may pose a risk to the study site. These factors include natural ground subsidence.

9. Mining

Provides information on areas of coal and shallow mining.

10. Contacts

This section of the report provides contact points for statutory bodies and data providers that may be able to provide further information on issues raised within this report. Alternatively, GroundSure provide a free Technical Helpline (08444 159000) for further information and guidance.

Note: Maps

Only certain features are placed on the maps within the report. All features represented on maps found within this search are given an identification number. This number identifies the feature on the mapping and correlates it to the additional information provided below. This identification number precedes all other information and takes the following format -Id: 1, Id: 2, etc. Where numerous features on the same map are in such close proximity that the numbers would obscure each other a letter identifier is used instead to represent the features. (e.g. Three features which overlap may be given the identifier "A" on the map and would be identified separately as features 1A, 3A, 10A on the data tables provided).

Where a feature is reported in the data tables to a distance greater than the map area, it is noted in the data table as "Not Shown".

All distances given in this report are in Metres (m). Directions are given as compass headings such as N: North, E: East, NE: North East from the nearest point of the study site boundary.

1. Environmental Permits, Incidents and Registers Map

NW N NE



W E

SW S SE

Authorisations,Incidents and Registers Legend

Enabled by Ordnance Survey

Crown Copyright. All Rights Reserved
Licence Number: 100035207

- Site Outline
- Search Buffers (m) — 250 — 500
- Recorded Pollution Incident
- Dangerous Substances (List 1)
- Dangerous Substances (List 2)
- Water Industry Referrals
- Licenced Discharge Consents
- Red List Discharge Consents
- RAS 3 & 4 Authorisations
- Part A(1) Authorised Processes and Historic IPC Authorisations
- Part A(2) and Part B Authorised Processes
- COMAH / NIHHS Sites
- Sites Determined as Contaminated Land
- Hazardous Substance Consents and Enforcements

1.Environmental Permits, Incidents and Registers

1.1 Industrial Sites Holding Licences and/or Authorisations

Searches of information provided by the Environment Agency and Local Authorities reveal the following information:

Records of historic IPC Authorisations within 500m of the study site: **0**

Database searched and no data found.

Records of Part A(1) and IPPC Authorised Activities within 500m of the study site: **0**

Database searched and no data found.

Records of Water Industry Referrals (potentially harmful discharges to the public sewer) within 500m of the study site: **0**

Database searched and no data found.

Records of Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500m of the study site: **0**

Database searched and no data found.

Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site: **0**

Database searched and no data found.

Records of List 2 Dangerous Substance Inventory Sites within 500m of the study site: **0**

Database searched and no data found.

Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site: **0**

Database searched and no data found.

Records of Category 3 or 4 Radioactive Substance Licences within 500m of the study site: **0**

Database searched and no data found.

Records of Licensed Discharge Consents within 500m of the study site: **2**

The following Licensed Discharge Consents records are represented as points on the Authorisations, Incidents and Registers map:

ID	Distance	Direction	NGR	Details	
2A	494.0	S	403130, 394690	Address: Dinting Road, High Peak, Derbyshire Effluent Type: Sewage Discharges - Sewer Storm Overflow - Water Company Permit Number: 01PEA0062 Permit Version: 1	Receiving Water: Glossop Brook Status: Consent Revoked Or Revised - New Consent Issued (37(1)) Issue date: - Effective Date: 1/1/1995 Revocation Date: 16/3/2005
3A	494.0	S	403130, 394690	Address: Dinting Road, High Peak, Derbyshire Effluent Type: Sewage Discharges - Sewer Storm Overflow - Water Company Permit Number: 01PEA0062 Permit Version: 2	Receiving Water: Glossop Brook Status: Modified - (wra 91 Sched 10 - As Amended By Env Act 1995) Issue date: 17/3/2005 Effective Date: 17/3/2005 Revocation Date: -

Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site: 0

Database searched and no data found.

1.2 Dangerous or Hazardous Sites

Records of COMAH & NIHHS sites within 500m of the study site: 0

Database searched and no data found.

1.3 Environment Agency Recorded Pollution Incidents

Records of National Incidents Recording System, List 2 within 250m of the study site: 1

The following NIRS List 2 records are represented as points on the Authorisations, Incidents and Registers Map:

ID	Distance	Direction	NGR	Details	
1	72.0	E	403552, 395303	Incident Date: 25/4/2002 Incident Identification: 74596 Pollutant: Inert Materials and Wastes Pollutant Description: Soils and Clay	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)

Records of National Incidents Recording System, List 1 within 250m of the study site: 0

Database searched and no data found.

1.4 Sites Determined as Contaminated Land under Part IIA EPA 1990

How many records of sites determined as contaminated land under Section 78R of the Environmental Protection Act 1990 are there within 500m of the study site? 0

Database searched and no data found.

2. Landfill and Other Waste Sites Map

NW N NE



W E

SW S SE

Landfill & Other Waste Sites Legend

Enabled by Ordnance Survey

Crown Copyright. All Rights Reserved
Licence Number: 100035207

Site Outline

Search Buffers (m)

E.A. Active Landfill

E.A. Historic Landfill (Area Data)

E.A. Historic Landfill (Point Data)

BGS / DoE Survey Landfill

Local Authority Landfill (Area Data)

Local Authority Landfill (Point Data)

Operational Waste Treatment Licence

Closed Waste Treatment Licence

REGIS Waste Licence

Operational Landfill

Closed Landfill

2. Landfill and Other Waste Sites

2.1 Landfill Sites

Records from Environment Agency landfill data within 1000m of the study site: **0**

Database searched and no data found.

Records of operational landfill sites sourced from Landmark within 1000m of the study site: **0**

Database searched and no data found.

Records of Environment Agency historic landfill sites within 1500m of the study site: **9**

The following landfill records are represented as either points or polygons on the Landfill and Other Waste Sites map:

ID	Distance	Direction	NGR	Details	
6	15.0	NW	403000, 395400	Site Address: Bettenhill Farm, North Road, Padfield, Glossop, Derbyshire Waste Licence: Yes Site Reference: U037, LG15 Waste Type: Inert, Regis Reference: -	Licence Issue: 14/01/1985 Licence Surrendered: 30/06/1985 Licence Hold Address: - Operator: Mr D Clarke
Not shown	936.0	NW	402600, 396200	Site Address: Longdendale Trial (Site 2), Disused Railway Embankment, Longdendale, Derbyshire Waste Licence: Yes Site Reference: LC49, GDO U049 Waste Type: Inert, Regis Reference: -	Licence Issue: 07/03/1991 Licence Surrendered: 30/06/1993 Licence Hold Address: - Operator: -
Not shown	980.0	N	402700, 396300	Site Address: Off Platt Street, Padfield, Derbyshire Waste Licence: - Site Reference: GDO U008 Waste Type: Household, Regis Reference: -	Licence Issue: - Licence Surrendered: - Licence Hold Address: - Operator: -
Not shown	1103.0	W	401900, 395000	Site Address: Land adjacent to Shaw Lane, Glossop, Derbyshire Waste Licence: Yes Site Reference: LG10, U035 Waste Type: Inert, Regis Reference: -	Licence Issue: 28/01/1980 Licence Surrendered: 23/12/1986 Licence Hold Address: - Operator: Wildedge Properties Limited
Not shown	1121.0	N	403300, 396500	Site Address: Disused Quarry, Padfield Main Road, Padfield, Glossop, Derbyshire Waste Licence: Yes Site Reference: U039, LG21 Waste Type: Inert, Industrial, Commercial, Household, Special, Liquid sludge, Regis Reference: -	Licence Issue: 08/09/1988 Licence Surrendered: 30/09/1993 Licence Hold Address: - Operator: Mr B Cooper
Not shown	1258.0	W	401800, 394700	Site Address: Dinting Lodge Industrial Estate, Dinting Lodge Waste Licence: Yes Site Reference: LG24 Waste Type: Inert, Industrial, Regis Reference: -	Licence Issue: 01/12/1992 Licence Surrendered: - Licence Hold Address: - Operator: E R Carpenter Plc
Not shown	1339.0	SE	404200, 394000	Site Address: Off Silk Street, Glossop, Derbyshire Waste Licence: - Site Reference: U007 Waste Type: - Regis Reference: -	Licence Issue: - Licence Surrendered: - Licence Hold Address: - Operator: -

Not shown	1394.0	SW	401900, 394100	Site Address: Simmondley Lane, Glossop, Derbyshire Waste Licence: - Site Reference: U005 Waste Type: Industrial, Commercial, Household, Regis Reference: -	Licence Issue: - Licence Surrendered: - Licence Hold Address: - Operator: -
Not shown	1479.0	NW	401800, 396300	Site Address: Paradise Quarry, Paradise Street, Glossop Waste Licence: - Site Reference: U003 Waste Type: Industrial, Commercial, Household, Regis Reference: -	Licence Issue: - Licence Surrendered: - Licence Hold Address: - Operator: -

Records of non-operational landfill sites sourced from Landmark within 1000m of the study site: 2

The following landfill records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance	Direction	NGR	Details	
1	259.0	NW	403000, 395600	Site Address: Bettenhill Farm, North Road, GLOSSOP, Derbyshire, SK13 9QG Landfill Licence: 100AMEAL Agency Reference: Waste Type: Putrescible Waste Description: Putrescible Landfill Known Restrictions: No known restriction on source of waste	Record Date: 01-Jan-1985 Transfer Date: Modification Date: Status: Licence lapsed/cancelled/defunct/not applicable/surrendered Category: LANDFILL Regulator: EA - Midlands Region - Lower Trent Area (Alfreton) Size: Undefined
Not shown	979.0	NW	402600, 396200	Site Address: Longendale Trail, Longendale Valley, Hadfield, HYDE, Cheshire, Landfill Licence: 100ATVAL Agency Reference: Waste Type: Inert Waste Description: Inert Landfill Known Restrictions: No known restriction on source of waste	Record Date: 01-Mar-1991 Transfer Date: Modification Date: Status: Licence lapsed/cancelled/defunct/not applicable/surrendered Category: LANDFILL Regulator: EA - Midlands Region - Lower Trent Area (Alfreton) Size: Undefined

Records of BGS/DoE non-operational landfill sites within 1500m of the study site: 0

Database searched and no data found.

Records of Local Authority landfill sites within 1500m of the study site: 2

The following landfill records are represented as points or polygons on the Landfill and Other Waste Sites map:

ID	Distance	Direction	Site Address	Source	Data Type
Not shown	1473.0	SW	Refuse Tip	1973 mapping	Polygon
Not shown	1497.0	SW	Refuse Tip	1973 mapping	Polygon

2.2 Other Waste Sites

Records of operational waste treatment, transfer or disposal sites within 500m of the study site: 0

Database searched and no data found.

Records of non-operational waste treatment, transfer or disposal sites within 500m of the study site: 0

Database searched and no data found.

Records of Environment Agency licensed waste sites within 1500m of the study site: **0**

Database searched and no data found.

3. Current Land Use Map

NW N NE



◄W E►

SW S SE

Current Land Use Legend

Enabled by Ordnance Survey

Crown Copyright. All Rights Reserved
Licence Number: 100035207



3. Current Land Uses

3.1 Current Industrial Data

Records of potentially contaminative industrial sites within 250m of the study site: **3**

The following records are represented as points on the Current Land Uses map.

ID	Distance	Direction	Company	Address	Activity	Category
1	12.0	E	Depot	SK13	Container and Storage	Transport, Storage and Delivery
2	152.0	S	Tank	SK13	Tanks (Generic)	Industrial Features
3	191.0	SE	Tank	SK13	Tanks (Generic)	Industrial Features

3.2 Petrol and Fuel Sites

Records of petrol or fuel sites within 500m of the study site: **0**

Database searched and no data found.

3.3 Underground High Pressure Oil and Gas Pipelines

Records of high pressure underground pipelines within 500m of the study site: **0**

Database searched and no data found.

4. Geology

4.1 Artificial Ground and Made Ground

Database searched and no data found.

The database has been searched on site, including a 50m buffer.

4.2 Superficial Ground and Drift Geology

The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON

(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

4.3 Bedrock and Solid Geology

The database has been searched on site, including a 50m buffer.

LEX Code	Description	Rock Type
RDG-SDST	READYCON DEAN FLAGS	SANDSTONE
MG-MDSS	MILLSTONE GRIT GROUP [SEE ALSO MIGR]	MUDSTONE, SILTSTONE AND SANDSTONE

(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

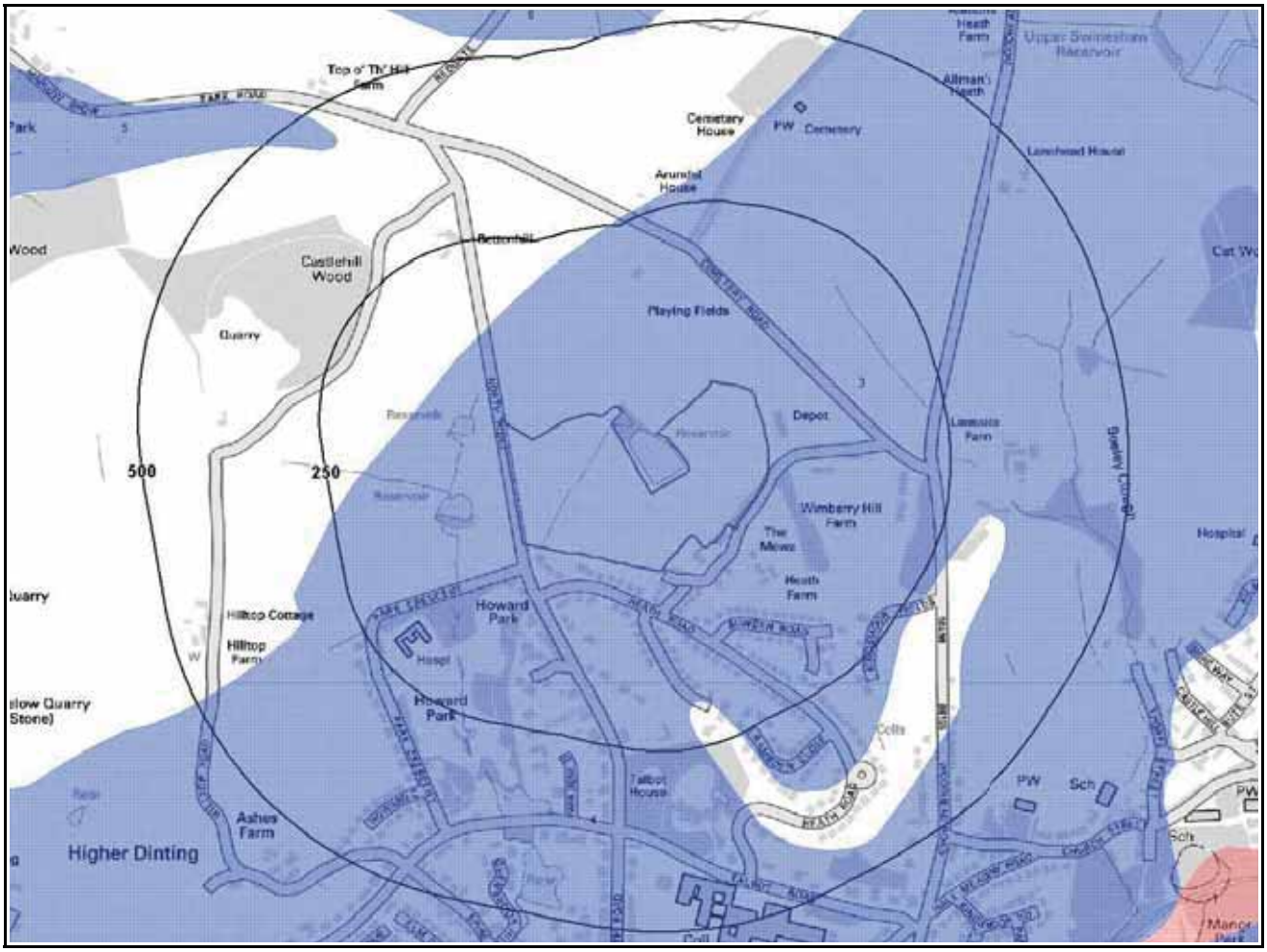
For more detailed geological and ground stability data please refer to the "GroundSure GeoInsight". Available from our website.

5a. Hydrogeology - Aquifer Within Superficial Geology

NW N NE

W E

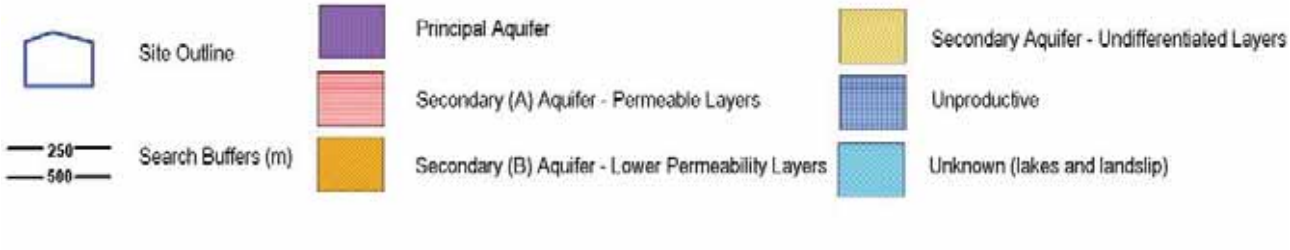
SW S SE



Aquifer Within Superficial Geology Legend

Enabled by Ordnance Survey

Crown Copyright. All Rights Reserved
Licence Number: 100035207



5b. Hydrogeology - Aquifer Within Bedrock Geology and Abstraction Licenses

NW N NE



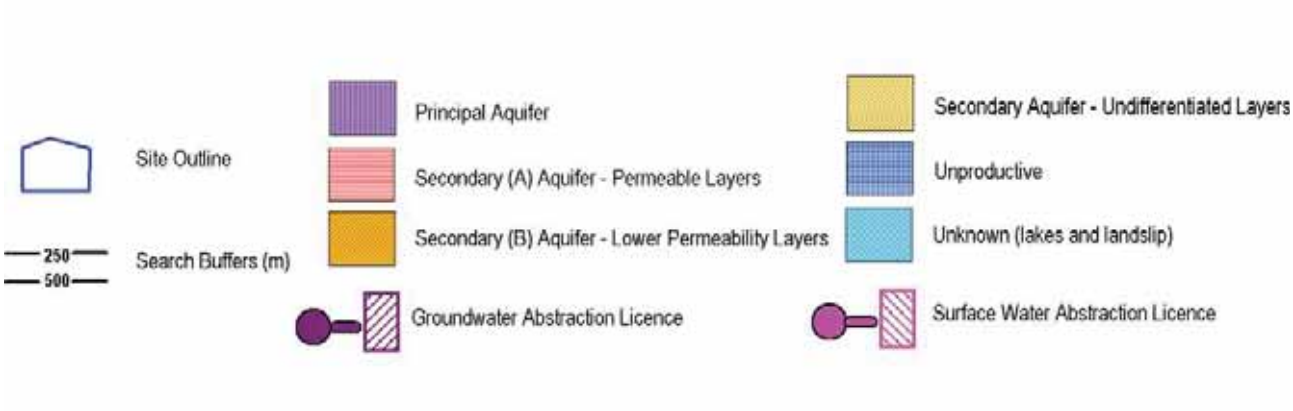
W E

SW S SE

Aquifer Within Bedrock Geology Legend

Enabled by Ordnance Survey

Crown Copyright. All Rights Reserved
Licence Number: 100035207

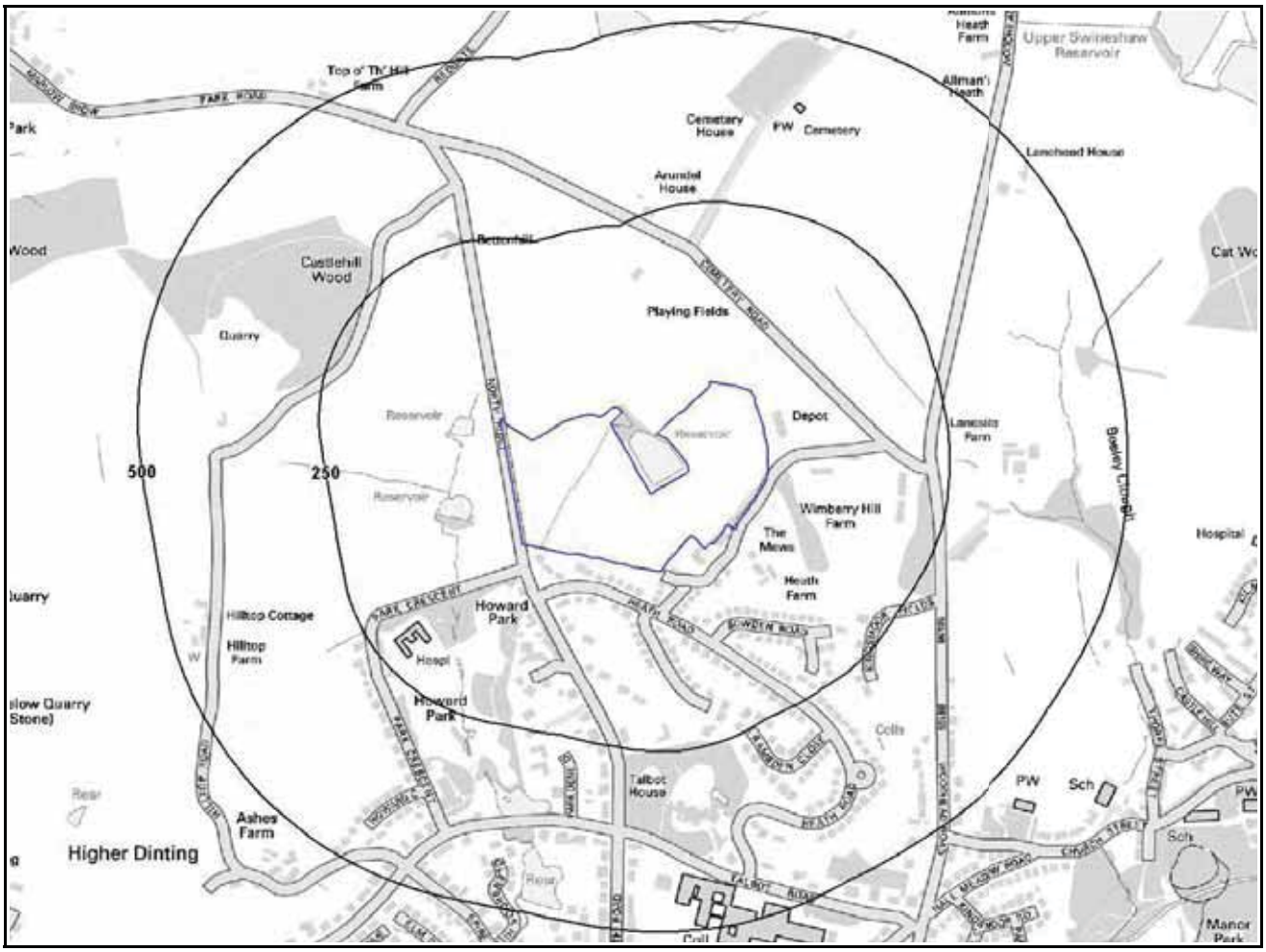


5c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licenses

NW N NE

W E

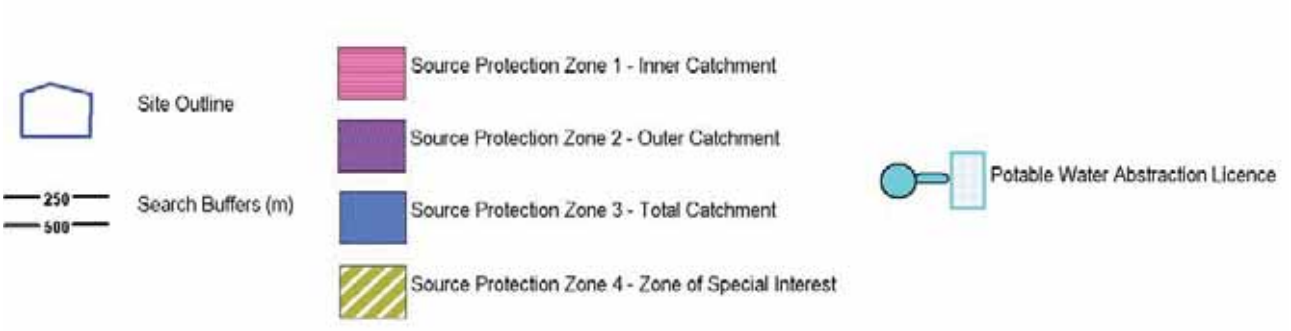
SW S SE



SPZ and Potable Water Abstraction Licenses Legend

Enabled by Ordnance Survey

Crown Copyright. All Rights Reserved
Licence Number: 100035207

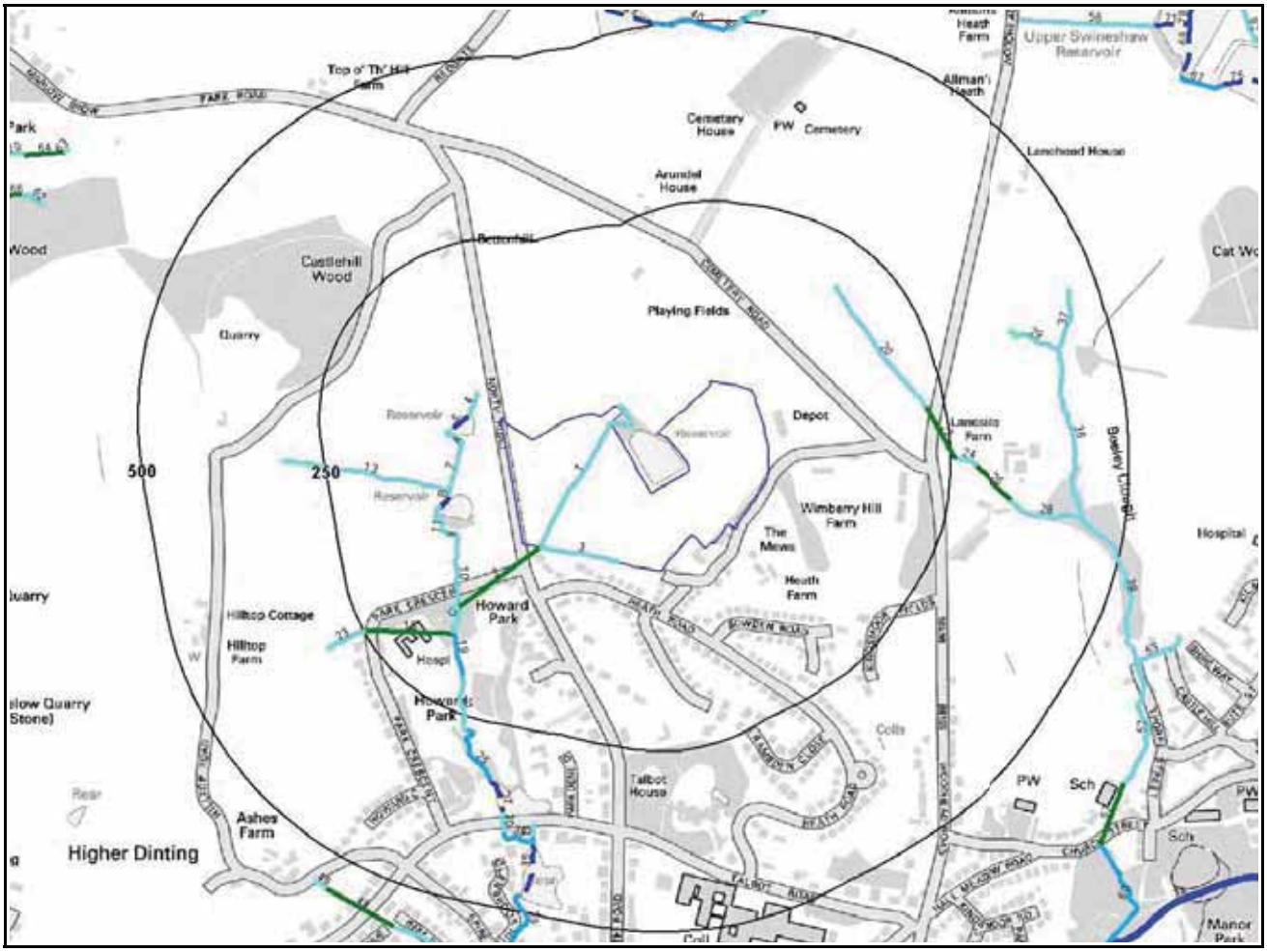


5d. Hydrology – Detailed River Network and River Quality

NW N NE

W E

SW S SE



Hydrology Legend

Enabled by Ordnance Survey

Crown Copyright. All Rights Reserved
Licence Number: 100035207



5.Hydrogeology and Hydrology

5.1 Aquifer within Superficial Deposits

Are there records of productive strata within the superficial geology at or in proximity to the property? Yes

From 1 April 2010, the Environment Agency's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the GroundSure Enviroinsight User Guide.

The following aquifer records are shown on the Aquifer within Superficial Geology Map (5a):

ID	Distance [m]	Direction	Designation	Description
3	0.0	On Site	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
4	155.0	S	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
5	442.0	NW	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
6	494.0	N	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

5.2 Aquifer within Bedrock Deposits

Are there records of productive strata within the bedrock geology at or in proximity to the property? Yes

From 1 April 2010, the Environment Agency's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the GroundSure Enviroinsight User Guide.

The following aquifer records are shown on the Aquifer within Bedrock Geology Map (5b):

ID	Distance [m]	Direction	Designation	Description
1	0.0	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
2	155.0	S	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

5.3 Groundwater Abstraction Licences

Are there any Groundwater Abstraction Licences within 2000m of the study site? Yes

The following Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (5b):

ID	Distance	Direction	NGR	Details

3A	259.0	NW	403000, 395600	Licence No: 2569010027 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: Spring Fed Collecting Tanks (2) At Bettenhill Farm, North R Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: 1536 Original Start Date: 7/2/1966 Expiry Date: - Issue No: 100 Version Start Date: 7/2/1966 Version End Date:
4A	259.0	NW	403000, 395600	Licence No: 2569010027 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: "spring Fed Collecting Tanks (2) At Bettenhill Farm, North R" Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: 1536 Original Start Date: 7/2/1966 Expiry Date: - Issue No: 100 Version Start Date: 7/2/1966 Version End Date:
Not shown	789.0	N	403300, 396200	Licence No: 2569010017 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: "spring Fed Well At Little Padfield Farm, Hadfield, Hyde" Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: 2035 Original Start Date: 8/2/1966 Expiry Date: - Issue No: 100 Version Start Date: 8/2/1966 Version End Date:
Not shown	789.0	N	403300, 396200	Licence No: 2569010017 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: Spring Fed Well At Little Padfield Farm, Hadfield, Hyde Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: 2035 Original Start Date: 8/2/1966 Expiry Date: - Issue No: 100 Version Start Date: 8/2/1966 Version End Date:
Not shown	992.0	S	403600, 394200	Licence No: 2569010008 Details: Laundry Use Direct Source: Ground Water - North West Region Point: "borehole At Premises, Glossop" Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: CW 0588 Original Start Date: 7/2/1966 Expiry Date: - Issue No: 101 Version Start Date: 18/10/1996 Version End Date:
Not shown	992.0	S	403600, 394200	Licence No: 2569010008 Details: Laundry Use Direct Source: Ground Water - North West Region Point: Borehole At Premises, Glossop Data Type: Point	Annual Volume (m³): 59098 Max Daily Volume (m³): 227.3 Original Application No: CW 0588 Original Start Date: 7/2/1966 Expiry Date: - Issue No: 101 Version Start Date: 18/10/1996 Version End Date:
Not shown	1144.0	S		Licence No: 2569010048 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Ground Water - North West Region Point: Spring At Wren Nest Mill, Glossop Data Type: Point	Annual Volume (m³): 203890 Max Daily Volume (m³): 627.36 Original Application No: 2710 Original Start Date: 5/12/1985 Expiry Date: - Issue No: 102 Version Start Date: 18/8/2004 Version End Date:
Not shown	1160.0	SW		Licence No: 2569010036 Details: Boiler Feed Direct Source: Ground Water - North West Region Point: Borehole At High Street West, Glossop, Derbyshire Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: 2098 Original Start Date: 23/12/1965 Expiry Date: - Issue No: 101 Version Start Date: 31/3/2005 Version End Date:
Not shown	1160.0	SW		Licence No: 2569010036 Details: Process water Direct Source: Ground Water - North West Region Point: Borehole At High Street West, Glossop, Derbyshire Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: 2098 Original Start Date: 23/12/1965 Expiry Date: - Issue No: 101 Version Start Date: 31/3/2005 Version End Date:
Not shown	1160.0	SW		Licence No: 2569010036 Details: Boiler Feed Direct Source: Ground Water - North West Region Point: Borehole At High Street West Glossop Derbyshire Data Type: Point	Annual Volume (m³): 50006 Max Daily Volume (m³): 272.76 Original Application No: NPSWR001139 Original Start Date: 23/12/1965 Expiry Date: - Issue No: 102 Version Start Date: 2/6/2009 Version End Date:

Not shown	1160.0	SW	Licence No: 2569010036 Details: Boiler Feed Direct Source: Ground Water - North West Region Point: "borehole At High Street West, Glossop, Derbyshire" Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: 2098 Original Start Date: 23/12/1965 Expiry Date: - Issue No: 100 Version Start Date: 23/12/1965 Version End Date:
Not shown	1160.0	SW	Licence No: 2569010036 Details: Process water Direct Source: Ground Water - North West Region Point: "borehole At High Street West, Glossop, Derbyshire" Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: 2098 Original Start Date: 23/12/1965 Expiry Date: - Issue No: 100 Version Start Date: 23/12/1965 Version End Date:
Not shown	1160.0	SW	Licence No: 2569010036 Details: Process Water Direct Source: Ground Water - North West Region Point: Borehole At High Street West Glossop Derbyshire Data Type: Point	Annual Volume (m³): 50006 Max Daily Volume (m³): 272.76 Original Application No: NPSWR001139 Original Start Date: 23/12/1965 Expiry Date: - Issue No: 102 Version Start Date: 2/6/2009 Version End Date:
Not shown	1722.0	NW	Licence No: 2569010010 Details: General Cooling (Existing Licences Only) (High Loss) Direct Source: Ground Water - North West Region Point: "a Borehole At Hadfield,hyde,cheshire" Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: CW 0502 Original Start Date: 7/2/1966 Expiry Date: - Issue No: 101 Version Start Date: 20/2/1998 Version End Date:
Not shown	1722.0	NW	Licence No: 2569010010 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Ground Water - North West Region Point: "a Borehole At Hadfield,hyde,cheshire" Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: CW 0502 Original Start Date: 7/2/1966 Expiry Date: - Issue No: 101 Version Start Date: 20/2/1998 Version End Date:
Not shown	1722.0	NW	Licence No: 2569010010 Details: Boiler Feed Direct Source: Ground Water - North West Region Point: "a Borehole At Hadfield,hyde,cheshire" Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: CW 0502 Original Start Date: 7/2/1966 Expiry Date: - Issue No: 101 Version Start Date: 20/2/1998 Version End Date:
Not shown	1722.0	NW	Licence No: 2569010010 Details: Process water Direct Source: Ground Water - North West Region Point: "a Borehole At Hadfield,hyde,cheshire" Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: CW 0502 Original Start Date: 7/2/1966 Expiry Date: - Issue No: 101 Version Start Date: 20/2/1998 Version End Date:
Not shown	1722.0	NW	Licence No: 2569010010 Details: General Cooling (Existing Licences Only) (High Loss) Direct Source: Ground Water - North West Region Point: A Borehole At Hadfield,hyde,cheshire Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: CW 0502 Original Start Date: 7/2/1966 Expiry Date: - Issue No: 101 Version Start Date: 20/2/1998 Version End Date:
Not shown	1722.0	NW	Licence No: 2569010010 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Ground Water - North West Region Point: A Borehole At Hadfield,hyde,cheshire Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: CW 0502 Original Start Date: 7/2/1966 Expiry Date: - Issue No: 101 Version Start Date: 20/2/1998 Version End Date:
Not shown	1722.0	NW	Licence No: 2569010010 Details: Boiler Feed Direct Source: Ground Water - North West Region Point: A Borehole At Hadfield,hyde,cheshire Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: CW 0502 Original Start Date: 7/2/1966 Expiry Date: - Issue No: 101 Version Start Date: 20/2/1998 Version End Date:

Not shown	1722.0	NW		Licence No: 2569010010 Details: Process water Direct Source: Ground Water - North West Region Point: A Borehole At Hadfield,hyde,cheshire Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: CW 0502 Original Start Date: 7/2/1966 Expiry Date: - Issue No: 101 Version Start Date: 20/2/1998 Version End Date:

5.4 Surface Water Abstraction Licences

Are there any Surface Water Abstraction Licences within 2000m of the study site? **Yes**

The following Surface Water Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (5b):

ID	Distance	Direction	NGR	Details	
Not shown	862.0	E	404300, 395600	Licence No: 2569010038 Details: Potable Water Supply - Direct Direct Source: Surface, Non-tidal - North West Region Point: Swineshaw Reservoir Impounding Tribsof Glossop Brk At Glosso Data Type: Point	Annual Volume (m³): 1272880 Max Daily Volume (m³): 4546 Application No: 1684 Original Start Date: 23/3/1966 Expiry Date: - Issue No: 100 Version Start Date: 23/3/1966 Version End Date:
Not shown	939.0	E	404400, 395100	Licence No: 2569010014 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: "surface, Non-tidal - North West Region" Point: "blackshaw Clough At Premises, Hawkshead Mill, Glossop" Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Application No: 2091 Original Start Date: 7/2/1966 Expiry Date: - Issue No: 100 Version Start Date: 11/2/1991 Version End Date:
Not shown	939.0	E	404400, 395100	Licence No: 2569010014 Details: Process water Direct Source: "surface, Non-tidal - North West Region" Point: "blackshaw Clough At Premises, Hawkshead Mill, Glossop" Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Application No: 2091 Original Start Date: 7/2/1966 Expiry Date: - Issue No: 100 Version Start Date: 11/2/1991 Version End Date:
Not shown	939.0	E	404400, 395100	Licence No: 2569010014 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Surface, Non-tidal - North West Region Point: Blackshaw Clough At Premises, Hawkshead Mill, Glossop Data Type: Point	Annual Volume (m³): 81828 Max Daily Volume (m³): 327.312 Application No: CW2091 Original Start Date: 7/2/1966 Expiry Date: - Issue No: 101 Version Start Date: 1/1/2001 Version End Date:
Not shown	939.0	E	404400, 395100	Licence No: 2569010014 Details: Process water Direct Source: Surface, Non-tidal - North West Region Point: Blackshaw Clough At Premises, Hawkshead Mill, Glossop Data Type: Point	Annual Volume (m³): 81828 Max Daily Volume (m³): 327.312 Application No: CW2091 Original Start Date: 7/2/1966 Expiry Date: - Issue No: 101 Version Start Date: 1/1/2001 Version End Date:
Not shown	1049.0	S	402800, 394200	Licence No: 2569010032 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Surface, Non-tidal - North West Region Point: Glossop Brk At Glossop Data Type: Point	Annual Volume (m³): 203890 Max Daily Volume (m³): 627.4 Application No: 619 Original Start Date: 16/2/1966 Expiry Date: - Issue No: 104 Version Start Date: 7/1/2008 Version End Date:
Not shown	1144.0	S	402800, 394100	Licence No: 2569010048 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: "surface, Non-tidal - North West Region" Point: "spring At Wren Nest Mill, Glossop" Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Application No: 2710 Original Start Date: 5/12/1985 Expiry Date: - Issue No: 100 Version Start Date: 5/12/1985 Version End Date:

Not shown	1144.0	S	402800, 394100	Licence No: 2569010033 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Surface, Non-tidal - North West Region Point: Glossop Brk At Glossop Data Type: Point	Annual Volume (m³): 0 Max Daily Volume (m³): 627.34 Application No: 0619 Original Start Date: 17/2/1966 Expiry Date: - Issue No: 102 Version Start Date: 18/8/2004 Version End Date:
Not shown	1182.0	SW	402500, 394200	Licence No: 2569010030 Details: Process water Direct Source: Surface, Non-tidal - North West Region Point: Glossop Brk And Gamesley Brk At Glossop $155 Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Application No: 1370 Original Start Date: 23/2/1966 Expiry Date: - Issue No: 100 Version Start Date: 18/10/1991 Version End Date:
Not shown	1182.0	SW	402500, 394200	Licence No: 2569010030 Details: Boiler Feed Direct Source: Surface, Non-tidal - North West Region Point: Glossop Brk And Gamesley Brk At Glossop $155 Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Application No: 1370 Original Start Date: 23/2/1966 Expiry Date: - Issue No: 100 Version Start Date: 18/10/1991 Version End Date:
Not shown	1198.0	SE	403900, 394100	Licence No: 2569010005 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: "surface, Non-tidal - North West Region" Point: "reservoir Fed By Shelf Brk At Milltown Works, Glossop" Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Application No: 618 Original Start Date: 16/3/1966 Expiry Date: - Issue No: 100 Version Start Date: 18/7/1991 Version End Date:
Not shown	1198.0	SE	403900, 394100	Licence No: 2569010005 Details: Boiler Feed Direct Source: Surface, Non-tidal - North West Region Point: Reservoir Fed By Shelf Brk At Milltown Works, Glossop Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Application No: 618 Original Start Date: 16/3/1966 Expiry Date: - Issue No: 100 Version Start Date: 18/7/1991 Version End Date:
Not shown	1198.0	SE	403900, 394100	Licence No: 2569010005 Details: Process water Direct Source: Surface, Non-tidal - North West Region Point: Reservoir Fed By Shelf Brk At Milltown Works, Glossop Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Application No: 618 Original Start Date: 16/3/1966 Expiry Date: - Issue No: 100 Version Start Date: 18/7/1991 Version End Date:
Not shown	1198.0	SE	403900, 394100	Licence No: 2569010005 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Surface, Non-tidal - North West Region Point: Reservoir Fed By Shelf Brk At Milltown Works, Glossop Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Application No: 0618 Original Start Date: 16/3/1966 Expiry Date: - Issue No: 101 Version Start Date: 22/11/2001 Version End Date:
Not shown	1198.0	SE	403900, 394100	Licence No: 2569010005 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Surface, Non-tidal - North West Region Point: Reservoir Fed By Shelf Brook At Milltown Works Glossop Data Type: Point	Annual Volume (m³): 657533.44 Max Daily Volume (m³): 2400.28 Application No: 0618 Original Start Date: 16/3/1966 Expiry Date: - Issue No: 101 Version Start Date: 22/11/2001 Version End Date:
Not shown	1309.0	SW	402100, 394400	Licence No: 2569010030 Details: Process water Direct Source: Surface, Non-tidal - North West Region Point: Glossop Brk And Gamesley Brk At Glossop Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Application No: 1370 Original Start Date: 23/2/1966 Expiry Date: - Issue No: 100 Version Start Date: 18/10/1991 Version End Date:
Not shown	1309.0	SW	402100, 394400	Licence No: 2569010030 Details: Boiler Feed Direct Source: Surface, Non-tidal - North West Region Point: Glossop Brk And Gamesley Brk At Glossop Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Application No: 1370 Original Start Date: 23/2/1966 Expiry Date: - Issue No: 100 Version Start Date: 18/10/1991 Version End Date:

Not shown	1339.0	N	403800, 396700	Licence No: 2569010039 Details: Potable Water Supply - Direct Direct Source: "surface, Non-tidal - North West Region" Point: "torside Goyt- Trib Of R Etherow Nearpadfield, Chapel-en-le-f" Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Application No: 1685 Original Start Date: 23/3/1966 Expiry Date: - Issue No: 100 Version Start Date: 13/12/1989 Version End Date:
Not shown	1339.0	N	403800, 396700	Licence No: 2569010039 Details: Potable Water Supply - Direct Direct Source: Surface, Non-tidal - North West Region Point: Torside Goyt- Trib Of R Etherow Nearpadfield, Chapel-en-le-f Data Type: Point	Annual Volume (m³): 1642500 Max Daily Volume (m³): 4500 Application No: 1685 Original Start Date: 23/3/1966 Expiry Date: - Issue No: 100 Version Start Date: 13/12/1989 Version End Date:

5.5 Potable Water Abstraction Licences

Are there any Potable Water Abstraction Licences within 2000m of the study site? **Yes**

The following Potable Water Abstraction Licences records are represented as points, lines and regions on the SPZ and Potable Water Abstraction Licences Map (5c):

ID	Distance	Direction	NGR	Details	
Not shown	862.0	E	404300, 395600	Licence No: 2569010038 Details: Potable Water Supply - Direct Direct Source: Surface, Non-tidal - North West Region Point: Swineshaw Reservoir Impounding Tribsof Glossop Brk At Glosso Data Type: Point	Annual Volume (m³): 1272880 Max Daily Volume (m³): 4546 Original Application No: 1684 Original Start Date: 23/3/1966 Expiry Date: - Issue No: 100 Version Start Date: Version End Date:
Not shown	1339.0	N	403800, 396700	Licence No: 2569010039 Details: Potable Water Supply - Direct Direct Source: "surface, Non-tidal - North West Region" Point: "torside Goyt- Trib Of R Etherow Nearpadfield, Chapel-en-le-f" Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: 1685 Original Start Date: 23/3/1966 Expiry Date: - Issue No: 100 Version Start Date: Version End Date:
Not shown	1339.0	N	403800, 396700	Licence No: 2569010039 Details: Potable Water Supply - Direct Direct Source: Surface, Non-tidal - North West Region Point: Torside Goyt- Trib Of R Etherow Nearpadfield, Chapel-en-le-f Data Type: Point	Annual Volume (m³): 1642500 Max Daily Volume (m³): 4500 Original Application No: 1685 Original Start Date: 23/3/1966 Expiry Date: - Issue No: 100 Version Start Date: Version End Date:

5.6 Source Protection Zones

Are there any Source Protection Zones within 500m of the study site? **No**

Database searched and no data found.

5.7 River Quality

Is there any Environment Agency information on river quality within 1500m of the study site? **Yes**

Biological Quality:

Report Reference: CMAPS-CM-182161-21446-101012EDR

Biological Quality data describes water quality in terms of 83 groups of macroinvertebrates, some of which are pollution sensitive. The results are graded from A ('Very Good') to F ('Bad').

The following Biological Quality records are shown on the Hydrology Map (5d):

ID	Distance [m]	Direction	NGR	River Details	Biological Quality Grade				
					2005	2006	2007	2008	2009
Not shown	1175.0	SE	404550, 394800	River Name: Glossop Bk Reach: Old Glossop To Etherow End/Start of Stretch: Start of Stretch NGR	C	C	D	D	D
Not shown	1175.0	SE	404550, 394800	River Name: Shelf Bk Reach: Qsl At Yellowstacks Bk. To Old Glossop End/Start of Stretch: End of Stretch NGR	C	C	D	D	D

Chemical Quality:

Chemical quality data is based on the General Quality Assessment Headline Indicators scheme (GQAHI). In England, each chemical sample is measured for ammonia and dissolved oxygen. In Wales, the samples are measured for biological oxygen demand (BOD), ammonia and dissolved oxygen. The results are graded from A ('Very Good') to F ('Bad').

The following Chemical Quality records are shown on the Hydrology Map (5d):

ID	Distance [m]	Direction	NGR	River Details	Chemical Quality Grade (Headline Indicator)				
					2005	2006	2007	2008	2009
Not shown	1175.0	SE	404550, 394800	River Name: Glossop (shelf) Bk. Reach: Old Glossop To Etherow End/Start of Stretch: Start of Stretch NGR	A	A	A	A	A

5.8 Detailed River Network

Are there any Detailed River Network entries within 500m of the study site? **Yes**

The following Detailed River Network records are represented on the Hydrology Map (5d):

ID	Distance	Direction		Details
1	0.0	On Site	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
2	0.0	On Site	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Extended Culvert (greater than 50m) Catchment: - Drain: NO Main River Status: Currently Undefined
3	0.0	On Site	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
4	43.0	NW	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
5	44.0	W	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Lake/Reservoir Catchment: - Drain: NO Main River Status: Currently Undefined
6A	56.0	W	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined

7	60.0	W	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
8A	60.0	W	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
9	86.0	W	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
10	86.0	W	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
11	86.0	W	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
12B	87.0	W	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
13	89.0	W	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
14B	89.0	W	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Lake/Reservoir Catchment: - Drain: NO Main River Status: Currently Undefined
15C	124.0	SW	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
16C	130.0	SW	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
17C	138.0	SW	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
18	155.0	SW	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Extended Culvert (greater than 50m) Catchment: - Drain: NO Main River Status: Currently Undefined
19	155.0	SW	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Catchment: - Drain: NO Main River Status: Currently Undefined
20	174.0	NE	River Name: Drain Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: YES Main River Status: Currently Undefined
21	201.0	SW	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
22	224.0	E	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Extended Culvert (greater than 50m) Catchment: - Drain: NO Main River Status: Currently Undefined
23	247.0	SW	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
24	258.0	E	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
25	269.0	S	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Catchment: - Drain: NO Main River Status: Currently Undefined
26	287.0	E	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Extended Culvert (greater than 50m) Catchment: - Drain: NO Main River Status: Currently Undefined

27	331.0	S	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Lake/Reservoir Catchment: - Drain: NO Main River Status: Currently Undefined
28	340.0	E	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
29	367.0	E	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
30	370.0	S	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
31D	377.0	S	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
32D	394.0	S	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Catchment: - Drain: NO Main River Status: Currently Undefined
33	396.0	S	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Catchment: - Drain: NO Main River Status: Currently Undefined
34D	401.0	S	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Catchment: - Drain: NO Main River Status: Currently Undefined
35	405.0	S	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Lake/Reservoir Catchment: - Drain: NO Main River Status: Currently Undefined
36	413.0	E	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
37	423.0	E	River Name: Beeley Clough Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
38	442.0	E	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
39	476.0	S	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Catchment: - Drain: NO Main River Status: Currently Undefined
40	488.0	N	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Catchment: - Drain: NO Main River Status: Currently Undefined
41E	489.0	N	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined

5.9 Surface Water Features

Are there any surface water features within 250m of the study site? **Yes**

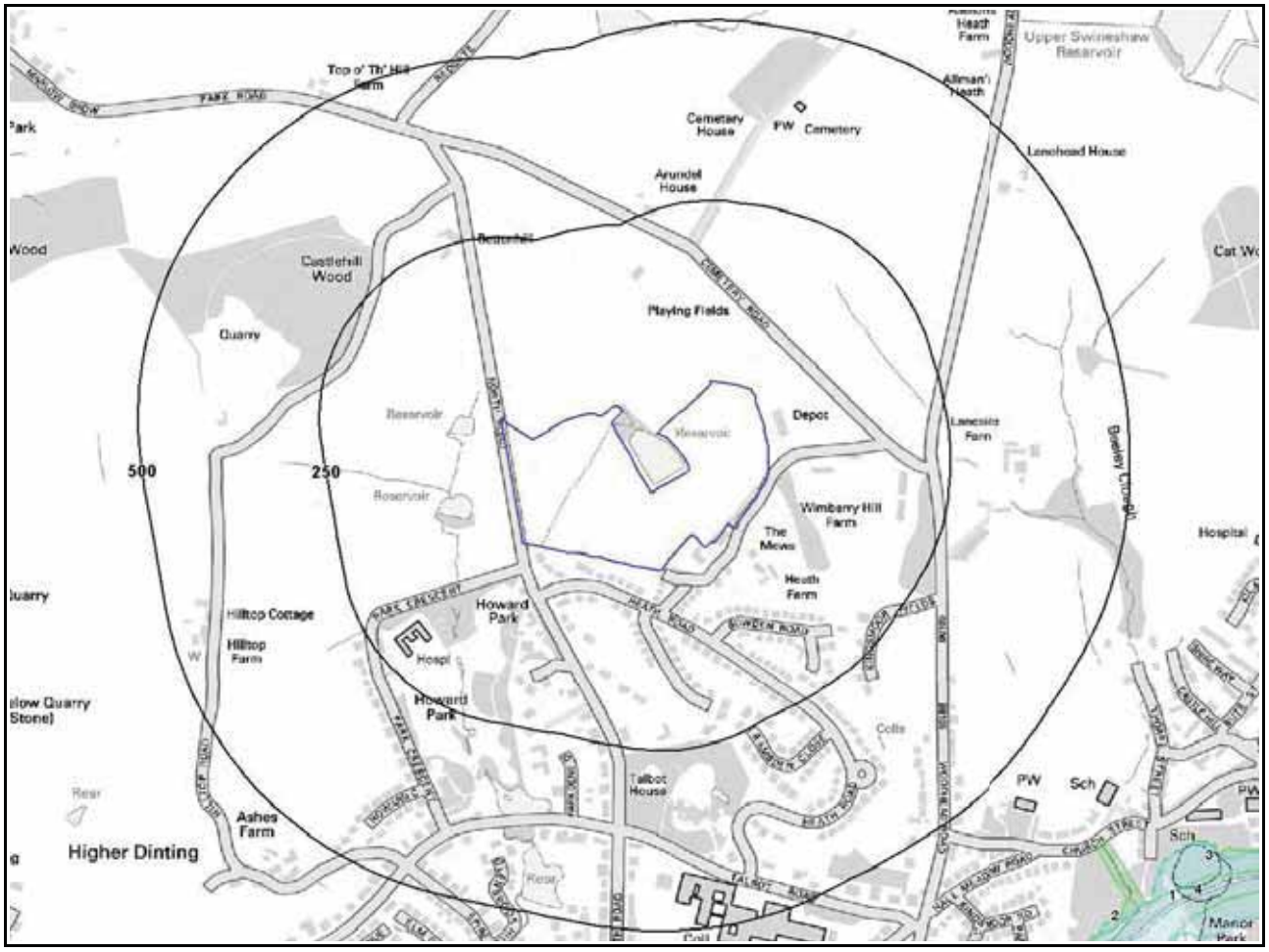
The following surface water records are not represented on mapping:

Distance to Surface Water (m)	on-site	0-50	51-250
Surface water features within 250m of the study site	Yes	Yes	Yes

6. Environment Agency Flood Map

NW ▲ N NE

◄W



E►

SW ▼ S SE

Environment Agency Flood Legend

Enabled by Ordnance Survey

Crown Copyright. All Rights Reserved
Licence Number: 100035207

Site Outline

250
500
Search Buffers (m)

Zone 2 Floodplain

Zone 3 Floodplain

Flood Storage Area

Area Benefiting from Flood Defences

Flood Defences

6. Flooding

6.1 Zone 2 Flooding

Zone 2 floodplain estimates the annual probability of flooding as one in one thousand (0.1%) or greater from rivers and the sea but less than 1% from rivers or 0.5% from the sea. Alternatively, where information is available they may show the highest known flood level.

Is the site within 250m of an Environment Agency indicative Zone 2 floodplain? **No**

Database searched and no data found.

6.2 Zone 3 Flooding

Zone 3 estimates the annual probability of flooding as one in one hundred (1%) or greater from rivers and a one in two hundred (0.5%) or greater from the sea. Alternatively, where information is available they may show the highest known flood level.

Is the site within 250m of an Environment Agency indicative Zone 3 floodplain? **No**

Database searched and no data found.

6.3 Flood Defences

Are there any Flood Defences within 250m of the study site? **No**

6.4 Areas benefiting from Flood Defences

Are there any areas benefiting from Flood Defences within 250m of the study site? **No**

6.5 Areas used for Flood Storage

Are there any areas used for Flood Storage within 250m of the study site? **No**

6.6 Groundwater Flooding Susceptibility Areas

Are there any British Geological Survey groundwater flooding susceptibility flood areas within 50m of the boundary of the study site? **Yes**

What is the highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions? **Moderate**

6.7 Groundwater Flooding Confidence Areas

What is the British Geological Survey confidence rating in this result? **High**

Notes:

Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

The **confidence rating** is on a threefold scale - Low, Moderate and High. This provides a relative indication of the BGS confidence in the accuracy of the susceptibility result for groundwater flooding. This is based on the amount and precision of the information used in the assessment. In areas with a relatively lower level of confidence the susceptibility result should be treated with more caution. In other areas with higher levels of confidence the susceptibility result can be used with more confidence.

7.Designated Environmentally Sensitive Sites Map

NW ▲ N NE



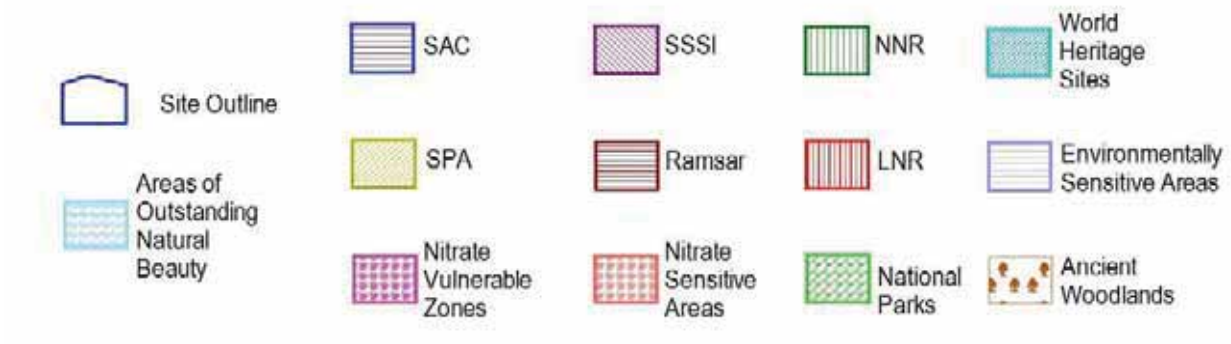
◄W E►

SW ▼ S SE

Designated Environmentally Sensitive Sites Legend

Enabled by Ordnance Survey

Crown Copyright. All Rights Reserved
Licence Number: 100035207



7.Designated Environmentally Sensitive Sites

Presence of Designated Environmentally Sensitive Sites within 2000m of the study site? Yes

Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site: 1

The following Site of Special Scientific Interest (SSSI) records provided by Natural England/Countryside Council for Wales and Scottish Natural Heritage are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance	Direction	SSSI Name	Data Source
Not shown	1777.0	NE	The Dark Peak	Natural England

Records of National Nature Reserves (NNR) within 2000m of the study site: 0

Database searched and no data found.

Records of Special Areas of Conservation (SAC) within 2000m of the study site: 1

The following Special Area of Conservation (SAC) records provided by Natural England/Countryside Council for Wales and Scottish Natural Heritage are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance	Direction	SAC Name	Data Source
Not shown	1777.0	NE	South Pennine Moors	Natural England

Records of Special Protection Areas (SPA) within 2000m of the study site: 1

The following Special Protection Area (SPA) records provided by Natural England/Countryside Council for Wales and Scottish Natural Heritage are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance	Direction	SPA Name	Data Source
Not shown	1777.0	NE	Peak District Moors (South Pennine Moors Phase 1)	Natural England

Records of Ramsar sites within 2000m of the study site: 0

Database searched and no data found.

Records of Local Nature Reserves (LNR) within 2000m of the study site: 0

Database searched and no data found.

Records of World Heritage Sites within 2000m of the study site: 0

Database searched and no data found.

Records of Environmentally Sensitive Areas within 2000m of the study site: 1

The following Environmentally Sensitive Area records produced by DEFRA are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance	Direction	ESA Name	Data Source
5	565.0	NE	North Peak	Natural England

Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site: 0

Database searched and no data found.

Records of National Parks (NP) within 2000m of the study site: 1

The following National Park (NP) records provided by Natural England/Countryside Council for Wales/Scottish Natural Heritage are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance	Direction	NP Name	Data Source
4	439.0	NE	Peak District	Natural England

Records of Nitrate Sensitive Areas within 2000m of the study site: 0

Database searched and no data found.

Records of Nitrate Vulnerable Zones within 2000m of the study site: 0

Database searched and no data found.

Records of Ancient Woodland within 2000m of the study site: 3

The following Ancient Woodland records are supplied by English Nature/Scottish Natural Heritage/Countryside Council for Wales and are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance	Direction	Ancient Woodland Name	Type
6	1442.0	SE	SHIRE HILL	Ancient and Semi-Natural Woodland
7	1489.0	SW	DINTING VALE WOOD	Ancient and Semi-Natural Woodland
8	1609.0	SE	SHIRE HILL	Ancient Replanted Woodland

8. Natural Hazards Findings

8.1 Detailed BGS GeoSure Data

BGS GeoSure Data has been searched to 50m. The data is included in tabular format. If you require further information on geology and ground stability, please obtain a GroundSure GeoInsight, available from our website. The following information has been found:

8.1.1 Shrink Swell

What is the maximum Shrink-Swell* hazard rating identified on the study site? **Very Low**

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Ground conditions predominantly low plasticity. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.

8.1.2 Landslides

What is the maximum Landslide* hazard rating identified on the study site? **Very Low**

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

8.1.3 Soluble Rocks

What is the maximum Soluble Rocks* hazard rating identified on the study site? **Null - Negligible**

Soluble rocks are not present in the search area. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

8.1.4 Compressible Ground

What is the maximum Compressible Ground* hazard rating identified on the study site? **Negligible**

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.