Proposed Nenthead Mine Water Treatment Scheme

Phase 1 Geo-Environmental & Geotechnical Desk Based Assessment

Coal Authority

Project Reference:
60596575-ACM-RP-EN-00001_A

March 2019

DRAFT

Quality information

Prepared by	Checked by	Verified by	Approved by
Colin Marshall Principal Engineering Geologist	Colin Marshall Principal Engineering Geologist	Sarah d'Agostino Technical Director, GeoServices	Andrew Laird Project Manager
Lucy Bevan Senior Environmental Consultant	Dr Lawrence Bowden Technical Director	Dr Lawrence Bowden Technical Director	

Revision History

Revision	Revision date	Details	Authorized	Name	Position
00	15/03/2019	Issue 01		Andrew Laird	Project Manager

Distribution List

# Hard Copies	PDF Required	Association / Company Name
-	X	Coal Authority

DRAFT

Prepared for:

Coal Authority
200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

Prepared by:

AECOM Infrastructure & Environment UK Limited
6th Floor, 1 New York Street
Manchester, M1 4HD
United Kingdom

T: +44 (161) 602 7500
aecom.com

DRAFT

Limitations

AECOM Infrastructure & Environment UK Limited ("AECOM") has prepared this Report for the sole use of The Coal Authority ("Client") in accordance with the terms and conditions of appointment reference CA18/2311/285 dated 20 April 2017 and subsequent fee proposal (TEB/JM/60543055/CC dated 03 December 2018) for works to fall under the current instruction. No other warranty, expressed or implied, is made as to the professional advice included in this Report or any other services provided by AECOM. This Report may not be relied upon by any other party without the prior and express written agreement of AECOM.

Where any conclusions and recommendations contained in this Report are based upon information provided by others, it has been assumed that all relevant information has been provided by those parties and that such information is accurate. Any such information obtained by AECOM has not been independently verified by AECOM, unless otherwise stated in the Report. AECOM accepts no liability for any inaccurate conclusions, assumptions or actions taken resulting from any inaccurate information supplied to AECOM from others.

The methodology adopted and the sources of information used by AECOM in providing its services are outlined in this Report. The work described in this Report was undertaken between **December 2018** and **February 2019** and is based on the conditions encountered and the information available during the said period of time. The scope of this Report and the services are accordingly factually limited by these circumstances. AECOM disclaim any undertaking or obligation to advise any person of any change in any matter affecting the Report, which may come or be brought to AECOM's attention after the date of the Report.

The site reconnaissance consisted of a general external inspection of the site aimed at identifying any obvious signs of geotechnical hazards and potential sources of ground contamination affecting the site. An environmental compliance audit and/or detailed structural inspection of existing buildings were outside the project brief. Similarly, the site visit excluded detailed consideration of the ecological or archaeological aspects of the site, and if such are believed to be of potential significance then it is recommended that specialist advice is sought.

Any risks identified in this Report are perceived risks, based on the information reviewed during the desk study and therefore partially based on conjecture from available information. The study is limited by the non-intrusive nature of the work and actual risks can only be assessed following a physical investigation of the site.

The opinions expressed in this report and the comments and recommendations given are based on a desk assessment of readily available information and an initial site reconnaissance by an AECOM Engineer. At this stage intrusive investigations have yet to be undertaken at site to establish actual ground and groundwater conditions and to provide data for an assessment of the geo-environmental status of the site.

Reference to historical Ordnance Survey (OS) maps and/or data provides invaluable information regarding the land use history of a site. However, it should be noted that historical evidence will be incomplete for the period pre-dating the first edition and between the release of successive maps and/or data.

Certain statements made in the Report that are not historical facts may constitute estimates, projections or other forward-looking statements and even though they are based on reasonable assumptions as of the date of the Report, such forward-looking statements by their nature involve risks and uncertainties that could cause actual results to differ materially from the results predicted. AECOM specifically does not guarantee or warrant any estimate or projections contained in this Report.

Copyright

DRAFT

Executive Summary

On the instructions of the Coal Authority (the Client), AECOM Infrastructure and Environment UK Limited (AECOM) has carried out a Phase 1 Geotechnical and Geo-environmental Desk Study of the site known as Nenthead Mines (Site 101). The report has been produced on the assumption that a Mine Water Treatment Scheme (MWTS) will be built at the site. The scheme is designed to treat mine water captured from the Caplecleugh Adit discharge only. The site is located in a remote rural area in the vicinity of the existing Nenthead Mines Heritage Centre.

For the purpose of this report “the site” is defined by the red line boundary provided in figures 1 and 2. To aid assessment, the site can be separated into four areas: the adit capture structure at Caplecleugh Adit; the pumping station site; the treatment water transfer pipeline routes; and the mine water treatment scheme (comprising reed bed, settlement ponds and associated access tracks). These areas have been included on Figure 2. The location of the Caplecleugh Adit and the proposed pumping station are located close to / in the public car park for the Nenthead Mines Visitor Centre and the proposed MWTS site is located up the valley adjacent to the north and east of Handsome Mea Reservoir. The access track leading up to the Handsome Mea Reservoir and the active quarry access track are the proposed pipeline route between the pumping station and the mine water treatment pond site.

The majority of the site currently comprises open upland including grassland and post-industrial land with open public access. A formal Public Right of Way (PROW) footpath crosses the site from north to south and a bridleway leads up from the mine museum and joins the quarry track which continues up to Flinty Fells. The Flinty Fell Quarry access track runs from the north where it connects with the A689 to the south of the site, and is in regular use. Access tracks and / or car parks are present on all four areas of the site.

A site walkover was completed by AECOM engineers on 4th January 2019 to undertake a visual inspection of the site and assess current site conditions.

The maps show that land on and within close vicinity to the site has comprised land associated with mining activities since at least 1859, this is the date on the earliest available ordnance survey mapping. On site land uses labelled on historic mapping include mine shafts, levels, kilns, heaps and a smelting mill. Upland parts of the site were also likely used for sheep farming given the presence of sheepfolds historically.

The Nenthead Smelting Mill and associated infrastructure (including “cisterns”) are present on historic mapping from at least 1859 (oldest available mapping). The cisterns were located beneath the most northerly proposed treatment pond and were no longer labelled by 1899. Maps dated 1980 show that the majority of buildings associated with the Mill were no longer present. The main Smelt Mill was located on land to the north and south of the proposed pipeline route, to the west of the MWTS area.

Railways were recorded on the proposed pumping station site from at least 1862 (earliest available mapping); these appear to be associated with Rampgill Mine and the Nenthead Level. Railway features were no longer recorded on maps dated 1980 onwards.

Made Ground is likely to be present on the former railway sidings and areas where spoil was deposited in the MWTS area, particularly in the west and southern parts as noted during the site walkover. Potential contamination at the site as a result of the presence of made ground & extraction wastes, land associated with Smelting Mill and the Railway and sidings is likely to include: heavy metals; hydrocarbons; volatile organic compounds; phenols; herbicides; and asbestos.

Peat is likely to be present beneath some areas of the site but not present in a continuous layer beneath the entire site. Presence of peat will be confirmed during intrusive investigation. Glacial Till, comprising clay, silt, sand and gravel is likely present beneath the adit capture structure site, the proposed pumping station site and the proposed pipeline route. During the site walkover it was noted that areas of exposed gravels and cobbles on land to the east of Handsome Mea Reservoir was likely due to the high rainfall and periods of surface flooding. In these areas finer soils had likely eroded to expose loose gravel and cobbles.

The Stainmore Formation underlies the MWTS area comprising mudstone, sandstone and limestone with potential for some thin coal seams. Firestone Sandstone of the Stainmore Formation outcrops to

the east of the site. The Great Limestone Member (comprising limestone) outcrops close to the River Nent and on land to the west of the Handsome Mea reservoir. The Alston Formation (comprising limestone, sandstone, siltstone and mudstone) outcrops in the west of the site close to the pumping station and adit capture structure.

The Superficial Till deposits have been classified as Secondary (undifferentiated) Aquifers and the bedrock has been classified as a Secondary A Aquifer.

The anticipated depth to the water table in the bedrock aquifer, i.e. the thickness of the unsaturated zone, is anticipated to be in the order of 50m. The regional direction of groundwater flow is expected to be to the southwest. However it is possible that localised perched water may also be present in the shallower bedrock strata and superficial deposits. It is considered likely that the network of deep adits and shafts provide an efficient pathway to transport groundwater to deeper layers.

Historical BGS borehole records are available on and close to the site however these have not provided reliable information to infer ground conditions beneath the site.

The nearest surface water features include: the River Nent, which passes through the western end of the site and adjacent along the route of the proposed transfer pipeline; several man-made and natural leats and small surface water features crossing the MWTS site and carrying water to the hydroelectric station; and Handsome Mea Reservoir.

The Smallcleugh Mine Site of Special Scientific Interest (SSSI) is present on the southern tip of the site. Calaminarian Grassland has been identified from the pumping station site, along the River Nent and on land below (to the west of) the Handsome Mea reservoir). More detailed botanical surveys are recommended in the Preliminary Ecological Assessment (AECOM, 2018) and will most likely include a Habitat Management Plan prior to ground investigation which is likely to include the requirement for an ecological watching brief during the intrusive works.

Identified geotechnical hazards include: fill and made ground which is likely to be unsuitable for bearing foundation loads (including pumping chambers, pumping stations, buildings and any other required structures); high compressibility peat causing problems for slope and foundation stability, and large long term settlement of earthworks access tracks and structures,; risk of erosion of river banks in vicinity of the adit structure and proposed pumping station site without the construction of retaining structures; high water table in the vicinity of the river Nent may require pumping during the construction of the pumping station and catch pits; existing sub-structures, such as the historic flue which runs along the Northern boundary of the MWTS area, may need to be avoided or protected during excavation works.

It is recommended that a combined geo-environmental and geotechnical investigation is undertaken to confirm ground and groundwater conditions and validate the CSM presented in Table 10.4 of the report. This should be achieved through: construction of boreholes sunk by cable percussive/rotary/dynamic sampling drilling techniques; excavation of trial pits; installation of ground gas / groundwater monitoring wells; programme of gas/groundwater monitoring; and geotechnical and geo-environmental laboratory testing.

DRAFT

Table of Contents

1. Introduction 1
2. Site Description and Setting 3
3. Information from Statutory Authorities 9
4. Historical Development 11
5. Soils, Geology and Geochemistry 14
6. Hydrogeology 20
7. Hydrology 21
8. Previous Ground Investigations 23
9. Initial Conceptual Site Model (iCSM) 25
10. Environmental Risk Assessment 28
11. Review of Geotechnical Risk and Foundation Options 35
12. Conclusions 37
13. Recommendations 39
14. Bibliography 40
Appendix A - Background to Legislation on Contaminated Land 41
Appendix B - Assessment of Plausible Contaminant Linkages 45
Appendix C - Groundsure Reports 48
Appendix D - Photo log from Site Reconnaissance 49

Figures

Figure 1 Site location Plan
Figure 2 The Site boundary and proposed development areas

Tables

Table 2.1 Features Surrounding the Proposed Mine Water Treatment Site 3
Table 2.2. Site Description by Area 4
Table 3.1 Summary of Regulatory Information 9
Table 4.1 Summary of Historical Mapping and Enviro Insight Report 11
Table 5.1 Geological Succession from Published Mapping 14
Table 5.2 Quarrying (<1km from Site) 16
Table 5.3 Non-Coal Mining in close proximity to site 17
Table 5.4 Ground Workings (<1km from site) 18
Table 5.5 Estimated Soil Chemistry (Topsoil) 19
Table 7.1 Surface Water Quality 21
Table 7.2 EA Licensed Surface Water Abstractions (<1km of Site) 21
Table 9.1 Potential Sources of Contamination 26
Table 9.2 Potential Pathways 26
Table 9.3 Potential Receptors 27
Table 10.1 Summary of Potential Contaminant Linkages 28
Table 10.2 Likelihood of Risk Occurrence 29
Table 10.3 Risk based on Comparison of Likelihood and Severity 29
Table 10.4 Potential Sources, Pathways and Receptors 30
Table 11.1 Summary of Potential Geotechnical Hazards 35

1. Introduction

1.1 Terms of Appointment

On the instructions of the Coal Authority (the Client), AECOM Infrastructure and Environment UK Limited (AECOM) has carried out a Phase 1 Geotechnical and Geo-environmental Desk Study of the site known as Nenthead Mines (Site 101). The report has been produced on the assumption that the site will be the subject of a Mine Water Treatment Remediation Scheme (MWTS).

The work has been carried out in accordance with the AECOM fee proposal dated 03 December 2018, reference TEB/JM/60543055/CC. This work falls under a prior instruction dated 20 April 2017 with reference CA18/2311/285 (Purchase order: CAP0000789).

1.2 Background

The Department for Environment, Food and Rural Affairs (Defra) set up the “Water and Abandoned Metal Mines” (WAMM) Programme in 2010 to begin to tackle pollution from the hundreds of metal mines across the country. The programme is delivered as a partnership between Defra, the Coal Authority and the Environment Agency.

The River Nent fails to achieve good status for cadmium, lead, zinc, fish and invertebrates. The Northumbria River Basin Management Plan (RBMP), published in 2015, includes steps for addressing pollution from abandoned mines and managing the impacts to 2027. The WAMM programme has ranked the River Nent as the lowest quality in the Northumbria RBMP, and one of the lowest quality rivers in England, with respect to mine water related pollution. The pollution from the River Nent contributes to pollution in the River South Tyne up to 40km downstream. Due to these impacts, the Nent Catchment has been a priority for investigation, assessment and targeted improvement measures.

AECOM has been appointed by the Coal Authority to undertake the feasibility and outline design for a MWTS at the Nenthead Caplecleugh Level Adit (Caplecleugh Adit) which is one of the point source contributors to the failure of the River Nent under the RBMP. The aim is to reduce the metal loading (principally lead, zinc, cadmium) within the mine water discharge from the Haggs Adit by between 70% and 90%, providing betterment to the River Nent, whilst adhering to the conditions required for any consents, licences and permits.

1.3 Proposed Development

The MWTS is expected to comprise removal of water from Caplecleugh Adit at Nenthead to a discharge chamber. It will then be transferred to a pumping station across the river in the public car park of the Nenthead Heritage Centre before being pumped up the valley to land above the Nenthead Heritage Centre into a series of three anaerobic vertical flow compost based treatment ponds and an aerobic reed bed wetland. Additional infrastructure is likely to include an odour abatement building and pipelines to transport the effluent back to a surface water course for discharge. At this stage it is presumed that the water will be taken and returned to the same point within the wooden channel at Caplecleugh Adit at Nenthead.

1.4 Report Objectives and Methodology

The primary objectives of this report are to determine whether potentially contaminative land uses which have taken place within or in close proximity to the site could have led to the contamination of underlying soils or groundwater and to understand the effects of geotechnical properties on site redevelopment.

The aims of this desk study report regarding the site are to:

- assess the potential for geo-environmental and geotechnical constraints and opportunities associated with the use of the site for a mine water treatment scheme and associated infrastructure;
- create a preliminary Conceptual Site Model (CSM) for the site to identify potential sources of contamination, pathways and potential receptors;
- assess the potential for the shallow mining to impose a constraint for all elements of the proposed scheme; and
- recommend further ground investigations based on the identified constraints and opportunities to the proposed development.

The following methodology was adopted to realise the aims of the Desk Study assessment:

- identification of geological and hydrogeological conditions at the site based on available published information sources;
- review of the existing environmental information to assist in the determination of the environmental setting/sensitivity and current/historical land use of the site and surrounding area;
- identification of potential contamination sources (such as historical and current operations, both on and adjacent to the site);
- an evaluation of plausible contaminant migration pathways during the preparation of a preliminary CSM;
- identification of critical current and potential future receptors based upon proposed end use;
- assessment of the degree of risk associated with each identified relevant contaminant linkage;
- preliminary qualitative assessment of the ground and groundwater conditions and determine the geotechnical risks to the development;
- review of the mining information available for site and adjacent area and an assessment of the risk to the development from shallow mining; and
- recommend measures to further assess, delineate and manage potential significant risks identified.

The report concludes with a series of recommendations for undertaking further investigative work. The purpose of such is to substantiate the findings of the preliminary risk assessment and thereby refine the Conceptual Site Model.

This Phase 1 report is prepared to support the design of an intrusive ground investigation to inform an outline planning application under the requirements of the Town and Country Planning Act 1990 (as amended) (1990), the National Planning Policy Framework (NPPF, 2018) and considers the potential implications of Part 2A of the Environmental Protection Act (Part 2A) (1990)and the associated Contaminated Land (England) Regulations (2006) and Contaminated Land Statutory Guidance (2012).

This report has been prepared in general accordance with the technical guidance and procedures described in the Model Procedures for the Management of Land Contamination, CLR 11 (Defra/EA, 2004), BS 5930:2015 (as amended) Code of Practice for Site Investigations, (BSI, 2015), BS:EN Eurocode 7 – Geotechnical Design (BSI, 1997) and BS 10175:2018 Investigation of Potentially Contaminated Sites – Code of Practice (BSI, 2018).

1.5 Sources of Information

This report has been prepared using a combination of published records (e.g. British Geological Survey, Environment Agency, Defra), information provided by the Client and other sources such as the Local Authority. These include statutory records and historical mapping supplied within Groundsure Enviro Insight and Geo Insight Reports, published geological and hydrogeological mapping, historical borehole records, correspondence with the Environmental Health Officer for Eden District Council and observations made during the site reconnaissance. A complete listing of all information sources is included in the Bibliography (section 15) and a background to the relevant legislation is provided in Appendix B.

2. Site Description and Setting

2.1 Location

The site is located in a remote rural area in the vicinity of the existing Nenthead Mines Heritage Centre. The location of the Caplecleugh Adit and the proposed pumping station are located close to / in the public car park for the Nenthead Mines Visitor centre and the proposed water treatment site is located up the valley adjacent to Handsome Mea Reservoir. The access track leading up to the Handsome Mea Reservoir is the proposed pipeline route between the pumping station and the mine water treatment pond site.

The Mine Water Treatment Scheme is centred on National Grid Reference (NGR) 378817, 543168. A site location plan is provided as Figure 1.

For the purpose of this report, the site can be divided into four separate areas of possible development for the proposed Mine Water Treatment facility:

- Adit Capture Structure;
- Pumping Station Site;
- Pipeline Route (via access road);
- Mine Water Treatment Scheme (ponds and reed filter bed).

2.2 Site Setting and Surrounding Land Use

For the purpose of this report and data gathering process an area of approximately 10 hectares (the site) is defined by the red line boundary shown in Figures 1 & 2.

The majority of the site within this red line boundary currently comprises open upland including grassland and post-industrial land with public access. A formal Public Right of Way (PRoW) footpath crosses the site from north to south and a bridleway comes up from the mine museum and joins the quarry track which continues up to Flinty Fells. Access tracks and car parks are present along the site. The Flinty Fell Quarry access track runs from the A689 to the north along to the south of the site, this is in regular use. Relevant features immediately surrounding the site are summarised in Table 2.1.

Table 2.1 Features Surrounding the Proposed Mine Water Treatment Site

Direction	Summary
North	A continuation of the historic mining site including historic mine shafts up to the A689 road.
South	Continuation of the historic mining site and the scheduled ancient monument including historic mine shafts and the River Nent.
East	Continuation of the historic mining site comprising open grassland and heathland with open access to the public including a public footpath and a historic flue chimney.
West	Continuation of the historic mining site, upland grasslands and heathlands and the scheduled ancient monument.

2.3 Site Reconnaissance

An external inspection of the site was completed by AECOM engineers on 4th January 2019. The aim of the visit was to identify the range of activities carried out on the site and any obvious potential sources of ground contamination or geotechnical issues. During the visit the AECOM Engineers were accompanied by Nenthead Mines Heritage Centre trustee members including Peter Jackson. The site was generally of the same layout as the most recent mapping including existing infrastructure and access roads. A photographic record of the visit is included as Appendix D.

Table 2.2. Site Description by Area

Area	Approximate location (NGR)	Description
Adit Capture Structure	387110, 543495	The site is relatively flat and approximately 2m above the level of the adjacent River Nent. Water from the adit is fed into a wooden capture structure (launder) which leads directly into the river Nent. A Public Right of Way (footpath) was identified next to the adit (in the right hand side of Photo 1, below).  It may be necessary to maintain access to the public footpath during construction and operational phases of works. Access to the site was via a pedestrian footbridge (Photo4 and below).  The supporting bank next to the adit and pedestrian footbridge was observed to be in poor repair and will likely require rebuilding as part of the works as the brick wall is currently unsupported (Photos 1 and 4, above).
Pumping Station Site	378111, 543530	The site is relatively flat and approximately 2m above the level of the adjacent River Nent. Some vegetation is present in the area but the majority of the site surface comprises unbound hardcore which acts as the surface for public car parking area. The scheme would require a tank (preferable gravity fed) within an existing work area controlled by Bentley (see Photo 6, below) to approximately 3m depth. The Bentley compound currently contains uncovered stockpiles of arisings from a nearby project.

Area	Approximate location (NGR)	Description
		
Pipeline Route	Start: 378138, 543490 End: 378537, 543227	The access track is narrow and an appropriate traffic management scheme will need to be arranged to facilitate access for trust and other vehicles during the construction works. See photos 7 (below) and 8-10.  Known services in the road include a steel water pipe (access points for valves are visible at various points along the track). There is no gas supply in the area. Services beneath the track join up to services along the A689. A High Voltage cable is present beneath the access track for the hydroelectric power station at the Miners Cottages. A steel plate has previously been identified beneath the access track where the track and bank were recently rebuilt following storms. Approximate location is beneath the orange / brown ground in photo 9 (below) and is adjacent to a small dam in the River Nent. A Ground Penetrating Radar (GPR) survey should be included during the utilities survey prior to any intrusive works.

Area	Approximate location (NGR)	Description
		 Residential properties were identified (Miners Cottages) close to the Heritage Centre. An above ground LPG tank was identified at the Miners Cottages. Access tracks in the eastern end of this area, comprising unbound surfaces, showed evidence of severe erosion from recent high rainfall and flood events. Road conditions and any resulting slope / retaining wall stability issues may impact access. See photos 11, 12 (below) and 14.  Land adjacent to the south of the access track is occupied by the Nenthead Mines heritage centre. This is open to the public and is on the site of the former lead smelting mills which included labs, acid tanks and furnaces in the current staff buildings. A 40ft pit close to the access track was historically used to condense fumes using water baths c.1850s.
Mine Water Treatment Site	378791, 543193	The site comprises open unbound land as part of the wider Nenthead Area. Footpaths and a PRoW were identified. Infrastructure associated with the wider Nenthead Mining Area exists on and adjacent to this area. All industrial activity at the site is historical. Part of this area is included within the boundary of a Scheduled Ancient Monument associated with the historical mining activities in the area. The majority of the treatment site comprises heathland with various mounds of spoil associated with historic mining activities. For example, an area of made ground was identified

Area	Approximate location (NGR)	Description

to the north of the Handsome Mea reservoir on the historical location of lead oxide wash out ponds / cisterns. Some concrete foundations still visible in this area. See photos 22 (below) and 23.

The land to the east of the reservoir, where the treatment ponds are proposed, slopes down towards the reservoir. Given the slope angle, volume of rainfall and historical flood events across this area complete vegetation cover is not present across the whole slope. See photos 17 and 19 (below).

Numerous mine shafts were noted across the wider area on top of the limestone outcrop at the site. According to site trustees one has collapsed recently to the east of the proposed treatment ponds. Evidence of limited subsidence on mineshafts was apparent within and close to the site boundary.

A number of surface water courses were identified onsite and offsite. These predominantly comprised man made leat structures either wood or stone lined. Site trustees noted that these features often flood and overtop the banks to flow down the hillside.

The upper site at the location of the mine water treatment ponds was water logged and boggy with an area of reeds identified to the west of the Handsome Mea reservoir. See photograph 21.

Flinty Fell Quarry to the east is still operational and an access road crosses the site. This access road will remain in use during the construction and operational phases of the proposed

Area	Approximate location (NGR)	Description
		scheme which will likely require discussions with the Quarry. Part of the Quarry access road also goes crosses through the scheduled monument. A section of the Quarry access road passes over a culvert which washed out in recent floods and was rebuilt using a concrete retaining wall. This is already being washed away by recent flood events. Drainage design in this phase of works should consider the existing infrastructure. Historic leats running along the access track and modern pipework running from the two reservoirs (including that associated with Flinty Fell quarry to the east) to the hydroelectric power station are leased by the hydroelectric power company.

Source: Site Reconnaissance

3. Information from Statutory Authorities

3.1 Groundsure Enviro Insight Report

Table 3.1 summarises information contained in the Groundsure Enviro Insight report (Appendix C) in relation to the entire site as a sum of the four parts. The report collates data from a variety of sources including the Environment Agency (EA) and the British Geological Survey (BGS). All data suppliers are referenced in the Groundsure report.

Table 3.1 Summary of Regulatory Information

Subject	Number Present				Details
	On Site	0 - 250m	250-500m	500-1km	
Agency and Hydrological					
Discharge Consents	0	2	5	0	228m North - sewage discharge to sewer storm overflow at Hillersdon TCE SSO, Nenthead. Discharge into River Nent. Revocation date: 22/11/1996 247m North West - sewage discharges to sewer storm overflow at CSO at Hilliersdon Terrace, Nenthead. Discharge into River Nent. Revocation date: 31/03/2018. 369m North West – No longer active 418m North West – No longer active 436m North West – No longer active 444m North West - sewage discharge to sewer storm overflow into River Nent at Holsfoot CSO, Nenthead. Effective date 01/04/2018. No revocation date. 461m West - sewage discharges (final / treated) at Fiddlers Cottage, Nenthead into unnamed tributary of River Nent. Effective 05/09/2005. No revocation date
Significant Pollution Incidents to Controlled Waters	0	2	0	0	8m South Category 2 (Significant) water impact. Unspecified pollutants. Dated 21/04/2018. 15m West Category 1 (Major) water impact. Unspecified (other) pollutants. Dated 03/04/2008
Waste					
Registered Waste Transfer Sites	0	1	0	0	112m North Recycling Facility at Nenthead Triangle, Nenthead. Data source: historical planning application. Planning permission granted by Eden DC. No dates specified.
Industrial Land Use					
Fuel Station Entries	0	0	2	0	Two historical garages located 425m and 446m North West on maps dated 1980.

It should be noted that all discharge consents identified (active and historical) are downgradient from the site and therefore unlikely to cause concern in relation to the proposed development.

3.2 Sensitive Land Uses and Designated Ecological Sites and Sites of Biological Interest (within 1km)

The Sensitive Land Uses Map of the Groundsure Enviro Insight Report (Appendix C) indicates that the Smallcleugh Mine SSSI is present on the southern tip of the site (in the South of the MWTS area) and the Whitesike Mine and Flinty Fell SSSI are located 721m South West. This area 721m to the South West is also labelled as the Tyne & Nent Special Area of Conservation (SAC).

The western part of the site, including the pumping station site and part of the access track are also located within the North Pennines Area of Outstanding Natural Beauty (AONB) and the Pennine Dales which has been classified by Natural England as an environmentally sensitive area.

The following information was identified using Defra's online mapping tool, MAGIC (DEFRA, 2019):

- The majority of the site is listed as "access land – combined open country";
- Calaminarian Grassland has been identified from the pumping station site, along the River Nent and on land to the west of the Handsome Mea reservoir. More detailed botanical surveys are recommended in the Preliminary Ecological Assessment (AECOM, 2018) including a Habitat Management Plan prior to ground investigation which should include an ecological watching brief during the intrusive works;
- The majority of the site lies in "lower spatial priority woodland" as defined by the priority habitat network. Some areas of "high spatial priority woodland" were identified near the mine adit and pumping station;
- A Scheduled Ancient Monument (for lead mines, ore works and smelt mill at Nenthead) is located on site and includes land to the west of the reservoir and the flue which continues uphill along the northern site boundary and to the east of the site. The majority of the pumping station site is not located within the boundary of the scheduled monument;
- The majority of the site is located within a "keeping rivers cool" area. This scheme aims to preserve and improve riparian woodland along rivers; and
- The flood risk management priorities have been classified as "High" across most of site.

3.3 Unexploded Ordnance

According to regional unexploded bomb (UXB) mapping published by Zetica, the site lies within a zone that experiences a low risk of UXB. It is estimated that up to 15 bombs are unexploded within 1,000 acres.

3.4 Landfilling

An attempt has been made to identify any landfilling operations, past and present that have taken place in the vicinity of the site as reported in the Groundsure Enviro Insight Report and historic map records.

No historical or active landfill sites have been identified within 1km however there are likely to have been unofficial landfilling operations within the site boundary and wider area based on the historic land uses in the Nenthead region. A large number of entries for potentially infilled land were reported within the Groundsure Enviro Insight report as being on site and off site. These related to land uses including levels, reservoir, heaps, mines, ponds, shafts and ground workings.

4. Historical Development

4.1 Summary of Findings

The historical Ordnance Survey (OS) maps obtained with the Groundsure Enviro Insight report date between 1859 and 2014.

The maps show that land on and within close vicinity to the site has comprised land associated with mining activities since at least 1859. Land uses labelled on historic mapping have included mine shafts, levels, kilns, heaps and a smelting mill. Upland parts of the site were also likely used for sheep farming given the presence of sheepfolds historically.

The Nenthead Smelting Mill and associated infrastructure (including “cisterns”) are present on historic mapping from at least 1859. The Smelting Mill itself is not located on the site however a flue extends along the northern boundary of the MWTS site. Other below ground infrastructure may be present onsite associated with the Smelting Mills. The cisterns, present within the north of the MWTS site, were no longer labelled by 1899. The cisterns are located approximately beneath northern half of the top proposed settlement pond. According to information obtained on the site reconnaissance these “cisterns” are former lead oxide wash out ponds and may therefore represent a source of land contamination. Maps dated 1980 show that the majority of buildings associated with the Mill were no longer present.

Railways were recorded on the proposed pumping station and adit areas from at least 1862; these appear to be associated with Rampgill Mine and the Nenthead level. Railway features were no longer recorded on maps dated 1980 onwards.

4.2 Detailed Review of Historical Mapping and Aerial Photography

Historical Ordnance Survey (OS) maps of the Site and the wider environs were provided in the Groundsure Mapinsight Report (scales 1:2,500, 1:10,560 and 1:10,000) and are reviewed below. Copies of these maps are presented in Appendix C.

Table 4-1 presents a summary of the main features present on and within approximately 250m radius of the Site Boundary. AECOM notes that only indicative map scales are provided. Where dates are stated, these refer to the dates of maps on which the features are present, have changed use or are no longer annotated, and do not necessarily refer to the exact dates of existence of a particular feature. Development that may have occurred between map editions is recorded as occurring on the latter published map, hence there are some limitations to the accuracy to the date of development unless supplementary evidence is available.

Table 4.1 provides further information which was determined from a review of the historical OS mapping and information contained within the Groundsure Enviro Insight Report.

Table 4.1 Summary of Historical Mapping and Enviro Insight Report

Year (Scale)	Features labelled on-site				Features off site (up to 250m)
Area	Caplecleugh Adit	Proposed Pumping Station	Pipeline Route	MWTS site	
1859 (1:10,560)	Lead and ‘unspecified’ Mines and levels	Railway Sidings	A road	Lime Kiln Unspecified Heaps (multiple) Smelting Mill and infrastructure including cisterns.	Unspecified heap 8m South Unspecified old mine18m South West
1862 (1:2,500)	Railway sidings and land associated with Peatstack Mine	Railway Sidings and land associated with Rampgill Mine	As above	Chimney feature (flue) running along north and north eastern boundary. Cisterns present in the north. Railways present across western part.	Quarry 40m East. Shaft 100m North East. Continuation of smelting mill including railways to the west and south. Mine 150m South. Quarry 250m southwest.

1899	-	-	-	Railways no longer present	
1900 (1:10,560)	As above	As above	As above	Smelting mill and cisterns now labelled as “old”	Unspecified Mine 2m North East Refuse heap 3m South West Unspecified heaps 4m South Unspecified old shaft 10m North East Unspecified Ground workings 25m South West Refuse heap 25m North
1923	-	-	-	-	Old lead mine 7m South West
1924 (1:10,560)	Lead level	Railway sidings	As above	Lead / unspecified Mines and levels Old smelting mill Unspecified heaps (multiple) and ground workings	Unspecified ground workings 11m South Unspecified heap 12m South Old lead shaft 13m North East Unspecified pit 20m North West Unspecified Pit 21 North West
1940 (1:10,560)	As above	Sidings no longer present	As above	Unspecified heaps (multiple)	Unspecified pit 20m North West Unspecified mine 21m North East Unspecified heaps 24m South West
1980 (1:2,500)	As above	As above	As above	Unspecified shafts (disused)	Numerous unspecified shafts (disused) Spoil heap 75m north Depot 120m North
1981 (1:10,000)	Unspecified disused shafts (multiple)	As above	As above	As above	Unspecified disused level 5m South West Unspecified disused shafts 11m West Unspecified shaft 19m North
1994 (1:2,500)	As above	As above	As above	As above	Depot and works 120m North
2002 (1:10,000)	Level (disused)	As above	Track	Unspecified shafts and drains. Course of old flue along northern and north eastern boundary.	Spoil heap 75m north. Disused Mill adjacent to south of pipeline route.
2010 (1:10,000)	Levels	As above	As above	As above	As above
2014 (1:10,000)	As above	As above	As above	As above	As above

“– “ No mapping data available, information gained from Enviro insight Report

4.3 Planning Authority Records

The following information has been summarised from the publicly available information held online by Eden District Council:

- 18/0449 - Proposed embankment stabilisation works to prevent metal mine diffuse pollution to the River Nent. The Coal Authority - Mr J Bagnall. Land To The Eastern Bank Of River Nent Adjacent The Nenthead Mines Nenthead. Decision: Full Approval, Status : Determined, Date of Decision: Aug 23 2018
- 18/0751 - Discharge of condition 3 (materials) attached to approval 18/0449. The Coal Authority - Mr J Bagnall Land to the Eastern Bank of River Nent Adjacent to Nenthead Mines Heritage Car Park Nenthead. Decision: Reserved by Cond Approved, Status: Determined, Date of Decision: Oct 24 2018.

- 04/0792 - Nenthead Mines Heritage Centre and Weardale Estates. To operate a small (375kw) hydroelectric plant (renewable energy). Application status: Determined. Decision date: 18 April 2005.
- 15/0435 - Nenthead Mines Heritage Centre Nenthead Alston Cumbria CA9 3PD. Change of use of former workshops, cafe & mining museum to residential use. Application status: Withdrawn. Decision date: 11 September 2015.
- 15/1013 - Nenthead Mines Heritage Centre Nenthead Alston CA9 3PD. Change of use of former workshops, cafe and museum to residential use. Application status: Determined. Decision date: 17 June 2016.

5. Soils, Geology and Geochemistry

5.1 Soils

Information obtained from Soilscapes (Cranfield University, 2019) describes the soils within the vicinity of the site as slowly permeable wet very acidic upland soils with a peaty surface with impeded drainage. Land within this soil type generally drains via a stream network. As farmed land is drained, it is vulnerable to pollution run-off and rapid through-flow to streams; surface capping can trigger erosion of fine sediment.

Natural England (2019) reports the Agricultural Land Use Classification to be of “very poor” grade.

5.2 Geology

5.2.1 Published Geology

AECOM has reviewed publicly available mapping. The published 1:50,000 scale geological map of the area produced by the BGS (Sheet 25, Alston, Solid and Drift Edition, 1973) indicates the site is underlain by the geological succession summarised in Table 5-1. A check on the BGS website indicates that there are currently no 1:10,000 geological maps or a geological memoir to cover the site.

Extracts of the superficial deposit and bedrock maps are included in the Groundsure Enviro Insight and Geo-Insight Reports (Appendix C).

Table 5.1 Geological Succession from Published Mapping

Age	Group	Geological Stratum	Stratum
Quaternary	-	Made Ground	Artificial Deposits
Quaternary	Devensian	Diamicton Glacial Till: Comprising clay, silt, sand and gravel. Present west of the River Nent to the west of the reservoir, but on both sides of the River Nent further north down the valley towards and beyond the Caplecleugh and Rampgill Mine entrances.	Superficial Deposits
Carboniferous	Firestone Sandstone	Sandstone – upland above reservoir within Stainmore Formation.	Bedrock
	Stainmore Formation	Mudstone, Sandstone and Limestone. With potential for some thin coal seams – upland around and below reservoir.	Bedrock
	Great Limestone Member	Limestone - Outcrop in and around River Nent west of reservoir.	Bedrock
	Alston Formation	Limestone, Sandstone, Siltstone And Mudstone – outcrop further down valley.	Bedrock

Source: BGS

It should be noted that peat is shown to cover the ground to the east of the site, but is unlikely to be present as a continuous stratum beneath the entire site. It is likely to be present locally within the upper part of the site, its presence will be confirmed through a ground investigation. The thickness of superficial deposits, if present, is likely to be limited, forming a thin mantle across the majority of the site, comprising mostly residual soil from the weathering of the rocks of the Stainmore formation.

5.2.2 Made ground

Given the historical mining activity on the site there is likely to be made ground present beneath the site. Made ground is most likely to be present in the lowland sections such as the levelled area at the adit entrance and in the car park, along the banks of the River Nent. There are also spoil tips present associated with the former mining activity at the treatment location. Typically the spoil tips will comprise granular material ranging from sand to cobble size rock fragments occasionally with metal ore or gangue mineral content. The mine tips at Nenthead have commonly been subject to secondary

working to remove ore left by earlier less effective extraction and only a little metalliferous ore is likely to be found in the spoil tips.

5.2.3 Peat

Peat has been excluded from the 1:50,000 solid and drift edition geological map because it is very widespread and would obscure detail of the underlying geology. The Geology of Britain viewer shows peat present on the higher ground to the east of the site, but not within the site boundary.

5.2.4 Glacial Till

Comprising clay to boulder size material, typically consisting of slight sandy or sandy, slightly gravelly clay with a variable cobble and boulder content. It is indicated only to be present on the south west side of the River Nent.

5.2.5 Stainmore Formation

Thick sequence of interbedded mudstone sandstone and limestone with occasional thin coal seams, no coal seams are indicated within the vicinity of the site.

5.2.6 Firestone Sandstone

A persistent sandstone unit occurring within the Stainmore formation, there is no description of the material, but the name suggests that it may have been used for lining furnaces in the smelt mill at Nenthead, in which case it is likely to be a strong silica sandstone with few impurities. The indicative thickness from the 1:50,000 map legend is between 2m and 4m.

5.2.7 Great Limestone

A thick limestone unit which is separated from the Stainmore formation at the site by a fault which follows the Carrs Cross Vein, the indicative thickness is approximately 20 to 25m. This limestone is clearly visible in a small gorge through which the River Nent flows.

5.2.8 Alston Formation

Comprises a thick sequence of sandstone, siltstone, mudstone and limestone below the Great Limestone, it is present in the valley of the River Nent downstream of the site.

5.3 Historical Exploratory Hole Records

The BGS maintains an archive of historical exploratory hole logs throughout the UK. AECOM has searched the database and a summary of those which are considered to provide useful information on the ground profile at the site is given below in order of relevance:

- NY74SE27 – Carrs Engine Shaft (May 1992) NY78764, 43005. Disused mine shaft. “Dry stone”. Ground level and well top circa 500mOD. Shaft is open down to 53m BST. Rest water level 50.85 below well top. Therefore resting water level approximately 450m aOD.
- NY74SE22 – Caplecleugh Level (Jan 1992) NY7812, 4349. Mine level (disused).
- NY74SE30 – Rampgill Horse Level (Aug 1991) NY7816, 4351. Adit, former lead and zinc mine.
- NY74SE28 – Brewery Shaft (May 1990) Disused mine shaft onto adit. Adit discharges at foundry yard Alston into river Nent. Having collected additional flow from a number of mine workings en-route.
- NY74SE18 – Soil Survey for JCP Project Factory – in relation to land at former mill where bus depot currently is. The following additional information was provided:
  - Proposed factory on a landscaped lead mine tip. Landscaping was carried out 1972. Prior to landscaping, two boreholes were excavated in 1969 through a high area of the tip and proved a continuous stratum of made ground (rock waste, boulders, ash and rock fines) for almost 12m.

- 2 TPs February were excavated in 1977:
  - TP1 – 0.7m thickness of large sized rock waste (likely placed during landscaping) over 0.3m of finer made ground. Beneath made ground topsoil over soft grey silty clay. Underlain by stiff brown mottled boulder clay.
  - TP2 – no such division, coarse sized made ground extending to 1.7m. Topsoil absent and soft grey silty clay only in northwest corner. Underlain by stiff brown mottled boulder clay.
- Slight seepages were noted in localised areas of the pits walls at underside of made ground and base of pits. Samples taken of boulder clay for geotechnical testing. The soft, grey, silty clay was not sampled but strength assessed.

5.4 Quarrying and Mining

5.4.1 Planning Policy for Mineral Use

The following information has been summarised from the Cumbria County Council Minerals and Waste Local Plan 2015-2030:

- "There has been interest in recent years in the potential for resurrecting zinc mining in the North Pennines Area of Outstanding Natural Beauty near Nenthead. Geological investigations by borehole have been carried out under permitted development rights, but no development proposals have been discussed. The dormant permissions for underground mining that exist in the area are shown in Figure 5.1, but it is not yet clear where the exploitable resources lie."
- The previous policies in the 1996-2006 Minerals and Waste Local Plan ruled out surface coal extraction in the Alston/Nenthead area of the North Pennines AONB, in East Fellside in the Eden valley, and any such extraction that would inhibit inward investment, economic development and tourism in West Cumbria, or have adverse impacts on designated landscapes. These issues, however, are addressed by other policies in this Local Plan, and by national policy, which states that:
  - "Permission should not be given for the extraction of coal unless the proposal is environmentally acceptable, or can be made so by planning conditions or obligations; or if not, it provides national, local or community benefits which clearly outweigh the likely impacts to justify the grant of planning permission".

5.4.2 Aggregate/ Mineral Quarrying and Mining

An attempt has been made to identify quarrying operations, past and present that have taken place in the vicinity of the site using the Groundsure Enviro, Geo and Map Insight Reports.

These records indicate that a number of closed quarries have been identified within 1km of the site, the closest of which was 34m to the east.

Table 5.2 Quarrying (<1km from Site)

National Grid Reference	Distance and Direction	Name	Operator	Dates	Status/ Material Quarried	Assessment of Likelihood
379122, 543120	34m East	Unspecified Quarry (old)	Not specified	1900-1940	Not specified	NA
379131, 543116	76m East	Nenthead	Not specified	Not specified	Ceased / Sandstone Quarry. A surface mineral working.	NA

National Grid Reference	Distance and Direction	Name	Operator	Dates	Status/ Material Quarried	Assessment of Likelihood
377874, 543763	141 North West	Unspecified Quarry (old)	Not specified	1859-1940	Not specified	NA
Not specified	721m South West	Flinty Fell	Not specified	Not specified	Not specified	Source: Natural England
378666, 542273	716m South	Old Carrs Burn	Not specified	Not specified	Ceased / Sandstone Quarry. A surface mineral working.	NA
379807, 543424	809m East	Slate Hill	Not specified	Not specified	Ceased / Sandstone Quarry. A surface mineral working.	NA
380051, 543178	997m East	Low Hill Quarry	Not specified	Not specified	Ceased / Sandstone Quarry. A surface mineral working.	NA

5.4.3 Non-Coal Mining

With reference to the Groundsure reports there are records of non-coal mining at or in the vicinity of the site. A number of shafts have been identified on the site and within close proximity. The known shafts have been included within the historic mapping and Groundsure Reports. Shallow workings are likely to be present given the historic mining of the site.

Table 5.3 Non-Coal Mining in close proximity to site

Distance and Direction	Name	Commodity	Assessment of Likelihood
On site	North Pennines Orefield Alston	Vein Mineral	Small scale underground mining may have occurred; mine adits, shafts and tunnels may be present. Potential for localised difficult ground conditions are at a level where they should be considered.
	Not available	Vein Mineral	Underground mining is known or considered likely to have occurred within or close to the area. Potential for difficult ground conditions are at a level where they should be considered.
	North Pennines Orefield Alston	Vein Mineral	Small scale underground mining may have occurred; mine adits, shafts and tunnels may be present. Potential for localised difficult ground conditions are at a level where they should be considered.
	Not available	Vein Mineral	Underground mining is known to have occurred within or very close to the area. Potential for difficult ground conditions should be investigated. Potential for localised subsidence is at a level where it should be considered.
39m North East	Not available	Vein Mineral	Underground mining is known or considered likely to have occurred within or close to the area. Potential for difficult ground conditions are at a level where they should be considered.

5.4.4 Coal Mining

With reference to the Groundsure reports there are no records of coal mining at or in the vicinity of the site. The site is not within an area in which there is a high risk of shallow mining for coal and therefore a coal mining report is not required.

5.5 Radon

The Groundsure report indicates that the site is within a Radon Affected Area as between 10 and 30% of properties are above the action level as defined by the Health Protection Agency (HPA). It is advised that full radon protective measures are necessary as described in publication BR211 by the Building Research Establishment (BRE, 2007). It is of note however, that the proposed structures will not include occupied closed spaces; hence radon protection measures may not be applicable unless office accommodation is to be added to the proposed development.

Radon may build up in confined spaces such as manholes and any permanent structures on site, however, these are not likely to be considered "occupied" spaces (i.e. more than 50 hours per year) with presumed sporadic maintenance visits only and then under confined space working procedures. Protective measures are not considered necessary. If any confined spaces are to be occupied for more than 50 hours per year during operation then basic protection measures would be required within buildings or other enclosed spaces (BRE, 2007) (Scivyer, 2011).

5.6 Ground Workings

Table 5.4 Ground Workings (<1km from site)

Potentially Harmful Element	On site	0 – 50m	51 – 250m	251 – 500m	501 – 1000m
*Historical surface ground working features from small scale mapping	15	39	53	Not searched	Not searched
*Historical underground workings from small scale mapping	8	17	71	70	198
*Current ground workings	0	1	1	1	4

* The data are considered accurate.

5.7 Soil Chemistry

British Geological Survey (BGS) Soil Chemistry datasets detail the topsoil concentrations of five potentially harmful elements (PHEs): Arsenic (As), Cadmium (Cd), Chromium (Cr), Nickel (Ni) and Lead (Pb), as presented within the Groundsure Enviro Insight Report. Elevated concentrations of these PHEs can exist because of natural geological conditions or possible anthropogenic sources. The following estimated soil chemistry levels are attributed to the site:

Table 5.5 Estimated Soil Chemistry (Topsoil)

Potentially Harmful Element	Estimated concentration range within the site boundary (mg/kg)
Arsenic	11.15 - 11.93
Cadmium	0.56 – 0.60
Chromium	24.14 – 26.91
Lead	373.78 - 413.47
Nickel	8.28 – 9.11

Source: (UK Soil Observatory, 2016)

6. Hydrogeology

6.1 Aquifer Classification

The EA's Groundwater Protection Policy adopts aquifer designations that are consistent with the Water Framework Directive. According to this system:

- The Superficial Till deposits have been classified as Secondary (undifferentiated) Aquifers. This classification is assigned where it is not possible to attribute a category due to the variable characteristics of the rock type.
- The bedrock comprises Stainmore and Alston Formations with Firestone Sandstone. These have been classified as Secondary A Aquifers. These Aquifers are 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.

6.2 Vulnerability of Groundwater Resources

DEFRA's Groundwater Vulnerability Map (DEFRA, 2019) of the area shows that the soils overlying the Secondary Aquifers have a Low Leaching Potential (L). This classification is given to 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. No other classifications have been identified within 1km of the site.

In terms of identifying the risk of contamination from potential polluting activities in a given area to groundwater sources (wells, boreholes and springs) used for supplying public drinking water, the EA identifies groundwater Source Protection Zones (gSPZ). Mapping produced by the EA and supplied with the Groundsure report shows that the site does not lie within a Source Protection Zone. No gSPZs have been identified within 1km of the site.

6.3 Nitrate Vulnerable Zones

There are no nitrate vulnerable zones within 2km of the study site.

6.4 Groundwater Abstractions

No active ground water abstractions have been identified within 1km of the site.

6.5 Site Characteristics

The anticipated depth to the water table in the bedrock aquifer, i.e. the thickness of the unsaturated zone, is anticipated to be in the order of 50m. The regional direction of groundwater flow is expected to be to the southwest.

However it is possible that localised perched water may also be present in the shallower bedrock strata.

It is considered likely that the network of deep adits and shafts provide an efficient pathway to transport groundwater to deeper layers.

7. Hydrology

7.1 Surface Water Courses and Drainage

A number of surface water features were identified during the site reconnaissance and within the Groundsure Map Insight to be on site and in close proximity. These surface water features include unnamed inland rivers on ground surface and underground. All are within the Tyne catchment. The River Nent (average width 4.0m) and Rampgill Burn (average width 1.4m) are located within the site boundary. These watercourses contain water all year round.

The reservoir has been listed as 1m to the south of the site. This feature also contains water all year round. An unnamed lake, loch or reservoir has also been identified 49m southwest. Dowgang Burn has been identified 54m South West and contains water all year round. Gillgill Burn is located 69m Northwest from the MWTS. The quality of these identified surface water features has not been assessed.

Table 7.1 Surface Water Quality

Surface Water Feature	GQA (Chemical) (Biological)	Distance (m) and Direction	Upstream / Downstream of Site
River Nent	Moderate Fail	On site	Downstream

Source: (Agency, 2016)

7.2 Surface Water Abstractions

At total of four active surface water abstractions have been identified within 1km of the site. These are listed in Table 7.2.

Table 7.2 EA Licensed Surface Water Abstractions (<1km of Site)

Name	(NGR)	Distance and Direction	Operator	Use
Handsome Mea	(378701,543208)	3m Southeast	Nenthead Mines Hydropower Ltd	Hydroelectric Power Generation. Expiry date: 31/03/2030.
Rampgill Burn	(378888,543346)	39m Northeast		
Long Cleugh and Middle Cleugh Diversion	(378884,542645)	358m South		
Old Carrs Burn Diversion	(378863,542615)	381m South		

Source: (Groundsure, 2019)

7.3 Flooding

The indicative floodplain map for the area, published by the EA, shows that the site lies within the predicted Zone 2 flood plain of the River Nent. Therefore the site is considered to be susceptible to fluvial flooding.

The Groundsure Enviro-Insight report data taken from 'the risk of flooding from rivers and seas' indicates the Site is in an area with a High (less than 1 in 30 or greater) chance of flooding in any given year.

Furthermore a British Geological Survey groundwater flooding susceptibility area has been identified within 50m of the Site boundary. This relates to Clearwater flooding from unconfined aquifers.

The highest susceptibility to groundwater flooding is 'potential at surface'. Combined with anecdotal evidence of previous flooding events there may be a groundwater flooding hazard potential at the site.

7.3.1 Planning Policy for Flood Risk

The National Planning Policy Framework (NPPF) for England requires local planning authorities to take account of flood risk and the implications of climate change. It requires that inappropriate development in areas at risk of flooding should be avoided by directing development away from areas

at highest risk, but where development is necessary, making it safe without increasing flood risk elsewhere.

Technical guidance on flood risk accompanies the NPPF and sets out how this policy should be implemented. It stipulates that development proposals in flood risk Zone 2 (medium probability), Zone 3a (high probability) and Zone 3b (the functional floodplain) should be accompanied by a flood risk assessment. It would therefore be prudent to undertake a site specific Flood Risk Assessment for the site.

7.4 River Basin Management Plan

The Water Framework Directive requires a Management Plan to be published for each River Basin District. These are plans that set out the environmental objectives for all the water bodies within the district and how they will be achieved.

The regime has introduced the concept of safeguard zones, which identify a catchment or other zone around a point where water is abstracted for potable use and where actions may be taken to protect water quality, prevent deterioration, and so minimise the need for treatment. Where water is abstracted for human consumption the water body is designated as a Drinking Water Protected Area (DrWPA). If there is reasonable confidence that a DrWPA objective will not be met, a safeguard zone will be identified.

The WFD has also brought about Water Protection Zones. These areas are a regulatory mechanism to address diffuse water pollution by restricting or forbidding activities that are polluting the most vulnerable waters (e.g. DrWPA). They can be used if it appears there is a risk of a water body not achieving good ecological and chemical status by 2015.

Relevant Environment Agency (2019) River Basin Management Plan for Nent from Source to South Tyne. This waterbody has been classed as “heavily modified”. In 2016 the water body was classified as having “moderate” ecological quality and “fail” for chemical quality. The majority of sources for reasons for not achieving good status are from abandoned mines.

8. Previous Ground Investigations

The following information has been obtained from the Nenthead Mine Water Treatment Scheme: Mining & Hydrogeological Conceptual Model dated February 2015 Ref: 47071488/CRRP0001.

- The presence of shallow mine workings, open stopes and old levels are present at the location where workings on Old Carr's vein cross beneath the River Nent. An open stope at the River Nent waterfall was observed to be in hydraulic continuity with water within the waterfall plunge pool. This area represents a known location of water ingress into the underlying workings on Old Carr's level, as reported by Peter Jackson of Nenthead Mines Conservation Society.
- The depth to the standing water level in Carr's Engine Shaft exceeded the 50m dip tape length, indicating that the area is drained by the Rampgill Adit, i.e. drained to approximately 440-445mAOD and just out of reach of the 50m tape from the 500mAOD datum.
- An extensive system of catchment headwater surface water flow capture and impoundment. Four leat systems divert water to the Perry's Dam and Handsome Mea Reservoir. The leats and associated storage reservoirs have a direct impact on the volume of flow within the upper reaches of the River Nent, including the waterfall section.
- The use of impounded water to generate electricity via two separate hydro-electric turbines at Nenthead. With each turbine licensed for an instantaneous flow of 250 l/sec, the hydro-electric operation has the potential to dramatically increase surface water flow within the River Nent, significantly effecting the available dilution at the current mine water discharges.

The potential underground mine drainage connections have been assessed through the review of mine plans supplied by The Coal Authority, discussions / information supplied by Peter Jackson and additional online internet search findings, as appropriate.

The Rampgill Adit system captures shallow mine water flows from the north / east side of the River Nent catchment. Four principal adit branches have been identified, for workings on Scaleburn Vein, Rampgill Vein, the Rampgill Burn area and Old Carr's Vein / Smallcleugh area.

Of these four branches on the Rampgill Adit system, only one branch is believed to generate significant volumes of mine water flow that report to the Rampgill Adit discharge – that is the adit branch most closely aligned to the course of the River Nent. The Hangingshaw Level branch of the Rampgill system drains the workings of Old Carr's Mine and underdrains the workings of Smallcleugh Mine. According to Peter Jackson, the Hangingshaw Level generates a "considerable flow", including the area of water ingress to the Old Carr's Mine workings in the vicinity of the River Nent waterfall. Reduction of inflow into this section of Rampgill Adit would have a direct impact on the hydraulic loading, and potentially on the metal loading of the proposed MWTS.Mine drainage adits are typically designed to intercept groundwater seepage into the underground workings and to divert that water to a pumped sump or gravity drained outfall. Of the remaining three branches of the Rampgill adit system:

- Mine drainage from Scaleburn Mine is interpreted to drain via Brownley Hill Mine to the Nentsberry Hagg's Adit at Nentsberry.
- Mine drainage from Rampgill Mine is interpreted to flow to the Nent Force Level at Alston, via a connection to the deep adit at Rampgill Engine Shaft.
- Mine drainage from the Rampgill Burn area is reported to contribute minor flows into the Rampgill Mine branch, just before it joins with the Hangingshaw Level adit branch.
- The Rampgill Adit discharge rate appears to react very rapidly to rainfall / surface water flow increases within the catchment. Examination of the flow rates for 14th-15th August indicates that the Rampgill discharge increased three-fold over a two hour period preceding the second walkover survey. The rate of flow increase would appear to be consistent with direct surface water recharge to the mine system.
- No monitoring data is available to demonstrate whether the Rampgill Burn loses water to ground over these sections. A branch of the Rampgill Adit passes beneath this area on an approximately N – S orientation, but at an estimated depth of 40-50m below ground level.

DRAFT

Review of the mine plans for the Caplecleugh Adit identifies that the adit extends for over 1.5km to the main workings of Caplecleugh Mine and Middlecleugh Mine, which underlie the high moorlands of Flinty Fell and Knoutsberry Hill.

The Caplecleugh Low Level Adit is the deep mine drainage level for these workings. The adit is an extension of the Dowgang Level, which initially accessed Dowgang lead mine in the vicinity of Dowgang Burn. The deep level has been extended to the Caplecleugh / Middlecleugh working, where it provides the deep level gravity drainage for the workings. At least four higher level adits are also present, but the mine plans suggest that at least two of these (Middlecleugh and Smallcleugh Levels) have a reverse gradient that routes shallow mine water flows back in to the main workings – for collection within the deep sumps drained by the Caplecleugh low Level adit.

Middlecleugh and Smallcleugh levels of Middlecleugh / Caplecleugh Mine also link to the shallow workings of Middlecleugh Mine and Smallcleugh Mine. The shallow workings of Smallcleugh Mine are underlain by Hangingshaw Level of the Rampgill adit system, and are expected to drain to Rampgill portal.

Areas of surface water ingress to the Caplecleugh Adit system are more difficult to identify, compared to the Rampgill Adit system. Extensive areas of shallow workings underlie the headwaters of the Longcleugh, Middlecleugh and Old Carr's Burns (as recorded on Ordnance Survey mapping / aerial photography).

Specific areas of potential surface water ingress to the Caplecleugh Adit system include low lying areas in the vicinity of Perry's Dam and Bogg's Shaft

The management of surface water capture, storage and release associated with the hydro-electric scheme has the potential to significantly alter the surface water flow regime within the River Nent and its tributaries and may also have an impact on underground flows within the adit system.

Targeted investigation, assessment and, where practicable, carefully selected interventions in areas of suspected surface water loss to the underground environment could provide a narrower range of MWTS design flows. It was also noted that improved management of the surface water flows in the upper catchment could further reduce the variability in the dataset and allow further reduction in the design capacity for the MWTS. The rapid response of flow from the adit following rainfall suggests that the additional inflow was derived from a rapid recharge to the mine system, such as would occur through a surface water inflow to the mine. Isolation of such flows could have a significant benefit in terms of the MWTS design parameters, MWTS treatment area / land take and long-term Operational Expenditure (OPEX).

Incorporation of review milestones prior to commencement of the detailed design stages could be considered, so that The Coal Authority can evaluate the merits of proceeding on the basis of the available catchment information or whether further data collection is warranted. This is notwithstanding the requirement to commence construction of a scheme in Spring 2016, however, there is a potential lag following outline design to commencing with detailed design due to land acquisition constraints of up to six months during which time data could be collated for inclusion in the detailed design phase.

On this basis, AECOM recommends that The Coal Authority should review the potential benefits that may be available through a programme of detailed catchment monitoring, conceptual model refinement and locally targeted surface water flow management and surface water integrity improvements.

9. Initial Conceptual Site Model (iCSM)

9.1 Introduction

This section is aimed at identifying possible risks, if any, arising from substances used or deposited on-site, or from other sources of land contamination. Both past and current potentially contaminative land uses have been considered. It is based on the proposed mine water treatment scheme proposed for the area, as identified in Section 1.1 and illustrated in the outline design in Figure 2.

9.2 Assessment Framework

The Site, in terms of potential land contamination, will be regulated by the Local Authority (Eden District Council) under the Town and Country Planning Act 1990 (as amended), taking account of the National Planning Policy Framework 2012, with the Environment Agency, Natural England and English Heritage acting as potential statutory consultees.

Environmental liabilities can arise through provisions contained within statutory legislation including Part 2A of the EPA 1990, the Environmental Damage (Prevention and Remediation) Regulations 2009, the Water Resources Act 1991, the Groundwater Regulations 2009 and the Water Act 2003.

Current best practice recommends that the determination of health hazards due to contaminated land is based on the principle of risk assessment, as outlined in the Statutory Guidance to Part 2A (2012) and CLR 11.

The “suitable for use” approach is adopted for the assessment of contaminated land where remedial measures are undertaken where unacceptable risks to human health or the environment are realised taking into account the use (or proposed use) of the land in question and the environmental setting. The proposed end-use for the Site is industrial use.

The risk assessment process for environmental contaminants is based on a source-pathway-receptor analysis. These terms can be defined as follows:

- **Source:** hazardous substance that has the potential to cause adverse impacts; and
- **Pathway:** route whereby a hazardous substance may come into contact with the receptor: examples include ingestion of contaminated soil and leaching of contaminants from soil into watercourses; and
- **Receptor:** target that may be affected by contamination: examples include human occupants/ users of site, water resources (surface waters or groundwater), or structures.

For a risk to be present, there must be a relevant/ viable contaminant linkage; i.e. a mechanism whereby a source impacts on a sensitive receptor via a pathway.

The following sections details the iCSM which has been developed for the Site with a view to assessing the potential risks/ liabilities and constraints associated with the Site in its current condition prior to any proposed redevelopment. Risks associated with the proposed redevelopment have also been assessed based on an industrial property future land use scenario, including any potential sources of contamination, potential receptors and potential contaminant pathways identified during this desk based assessment.

9.3 Sources of Potential Contamination

The review of historical mapping information and other pertinent sources noted that land on and within close vicinity to the site has comprised land associated with mining activities since at least 1859. Land uses labelled on historic mapping have included mine shafts, levels, kilns, heaps and a smelting mill. Upland parts of the site were also likely used for sheep farming given the presence of sheepfolds historically. Railways were recorded on the proposed pumping station site from at least 1862; these appear to be associated with Rampgill Mine and the Nenthead level. Railway features were no longer recorded on maps dated 1980 onwards.

Geological mapping has not identified Made Ground (artificial deposit) at the site or within 500m, however this is considered to be highly unlikely given the site history and areas of raised ground noted during the site reconnaissance.

Based on the above the following potential sources of contamination may be found at the proposed development site:

- Made Ground & extraction wastes, heavy metals, sulphate, pH, TPH, SVOCs and VOCs, asbestos and asbestos containing materials (ACMs); and
- Fuels including leaded fuels, diesel, oils, greases and hydraulic fluids associated with accidental losses and leakages and emissions associated with trains (historically and current), plant and haulage vehicles.

With reference to the DoE Industry Profile documents (Department of the Environment) for lead works and railway land and the NHBC (NHBC/ EA/ CIEH, 2008). Table 9-1 below indicates the potential contaminants that may be associated with the current land use.

Table 9.1 Potential Sources of Contamination

Source Reference	Location	Potential Sources	Associated Contaminants of Potential Concern (CoPC)
S1	On Site	Made Ground & extraction wastes	Heavy metals and inorganics including sulphate, pH, TPH, SVOCs, VOCs, asbestos and ACMs.
S2	On Site	Flue (associated with Smelting Mill to the north)	Heavy metals, oils and hydrocarbons, PAH, TPH, SVOCs, VOCs, PCBs, acids, alkalis, asbestos.
S3	On Site	Cisterns (associated with Smelting Mill)	Heavy metals, oils and hydrocarbons, PAH, TPH, SVOCs, VOCs, PCBs, acids, alkalis.
S4	Off Site	Railway and sidings	Heavy metals, PAH, TPH, SVOCs, VOCs, PCBs, herbicides, asbestos.

9.4 Potential Pathways

Potential pathways associated with the proposed development are shown in Table 9-2.

Table 9.2 Potential Pathways

Pathway Reference	Receptor	Description
P1	Human Health / Fauna: People (Human Health) and animals (Fauna)	Direct Pathway: Direct contact, dermal absorption or ingestion of soil.
P2	Human Health / Fauna: People (Human Health) and animals (Fauna)	Indirect Pathway: Ingestion of fruit and vegetables and/ or waters.
P3	Human Health / Fauna: People (Human Health) and animals (Fauna)	Indirect Pathway: Inhalation of soil particulates derived from soils.
P4	Human Health / Fauna: People (Human Health) and animals (Fauna)	Indirect Pathway: Inhalation of soil vapour derived from soils.
P5	Human Health / Fauna: People (Human Health) and animals (Fauna)	Indirect Pathway: Migration of hazardous gases/vapours via permeable strata into confined spaces (asphyxiation/ explosion).
P6	Water Environment: Surface water	Direct Pathway: Spillage/loss/run off from surface direct to receiving water.
P7	Water Environment: Surface water / Groundwater	Indirect Pathway: Migration via underground services, leats and adits (including granular backfilling materials).
P8	Water Environment: Surface water / Groundwater	Indirect Pathway: Leaching of chemicals and vertical migration via permeable unsaturated strata to shallow and/ or deep groundwater.
P9	Water Environment: Surface water / Groundwater	Indirect Pathway: Lateral migration of impacted shallow groundwater off-site towards the River Nent.
P10	Water Environment: Surface water / Groundwater	Indirect Pathway: Vertical migration of impacted shallow groundwater to the deeper Secondary Aquifer. Groundwater

		Vulnerability Mapping shows that soils overlying Secondary Aquifers have a low leaching potential.
P11	Water Environment: Surface water / Groundwater	Indirect Pathway: Lateral migration of impacted deeper groundwater present in the Secondary Aquifer towards the off-site groundwater abstractions/ surface water.
P12	Ecosystems: Flora	Direct Pathway: Direct contact with contaminated soils.
P13	Ecosystems: Flora	Indirect Pathway: Uptake via root system.
P14	Ecosystems: Flora	Indirect Pathway: Migration of hazardous gases/vapours via permeable strata.
P15	Ecosystems: Fauna	Leachate/ groundwater entering surface waters.
P16	Buildings & Infrastructure: Concrete	Direct Pathway: Direct contact of buried concrete with contaminated soils (i.e. hydrocarbons) and aggressive ground conditions (pH and sulphate).
P17	Buildings & Infrastructure: Supply pipes	Direct Pathway: Direct contact of services and supply pipes with contaminated soils.
P18	Buildings & Infrastructure: Structures	Indirect Pathway: Migration of hazardous gases/vapours via permeable strata into enclosed spaces and service/utility trenches

9.5 Potential Receptors

Potential receptors associated with the potential development are shown on Table 9-3:

Table 9.3 Potential Receptors

Receptor Reference	Receptor	Description
R1	Human Health: Acute	Current construction and maintenance workers
R2	Human Health: Acute	Current trespassers
R3	Human Health: Acute	Current site visitors
R4	Human Health: Chronic	Future construction and maintenance workers
R5	Human Health: Chronic	Future site users
R6	Human Health: Acute	Adjacent site users during construction phase
R7	Water Environment: Shallow Groundwater	Superficial Deposits: Glacial Till (Secondary (Undifferentiated) Aquifer) and Peat.
R8	Water Environment: Deeper Groundwater	Stainmore and Alston Formations with Firestone Sandstone. Secondary A Aquifer. 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.
R9	Water Environment: Surface Water	Reservoir
R10	Water Environment: Surface Water	Various leats, adits and drainage channels
R11	Water Environment: Surface Water	River Nent
R12	Ecosystems: Flora	Grasses, heather, woodland.
R13	Ecosystems: Fauna	Livestock and wild fowl, fish.
R14	Buildings & Infrastructure: Concrete	Future proposed services at the site may be impacted by contamination in the ground. In particular, any existing concrete foundations if the groundwater has high sulphate levels.
R15	Buildings & Infrastructure: Structures	Proposed structures may be impacted by accumulations of ground gases.
R16	Buildings & Infrastructure: Services	Water supply pipes and other services.
R17	Buildings & Infrastructure: Gas/ damp membranes	Potential for hydrocarbons in soils and ground waters to deteriorate membranes.

10. Environmental Risk Assessment

10.1 Risk Assessment Principles

Current best practice recommends that the determination of hazards due to contaminated land is based on the principle of risk assessment, as outlined in the Environment Agency guidance on Model Procedures for the Management of Land Contamination (CLR11).

For a risk to be present, there must be a viable contaminant linkage; i.e. a mechanism whereby a source impacts on a sensitive receptor via a pathway.

Assessments of risks associated with each of these contaminant linkages are discussed in the following sections.

Using criteria broadly based on those presented in the Construction Industry Research and Information Association publication C552 (CIRIA Report C552) and R&D 66 (NHBC/ EA/ CIEH, 2008), the magnitude of the risk associated with potential contamination at the Site has been assessed. To do this an estimate is made of:

- The magnitude of the potential consequence (i.e. severity);
- The magnitude of probability (i.e. likelihood).

The severity of the risk is classified according to the criteria in Table 10-1.

Table 10.1 Summary of Potential Contaminant Linkages

Severity	*Definition and Examples*
Severe	Acute risks to human health, likely to result in “significant harm” (e.g. very high concentrations of contaminants/ ground gases). Catastrophic damage to buildings/ property (e.g. by explosion, sites with high gassing potential, extensive VOC contamination). Major pollution of controlled waters (e.g. surface watercourses or Principal aquifers/ source protection zones). Short term risk to a particular ecosystem.
Medium	Chronic (long-term) risk to human health likely to result in “significant harm” (e.g. elevated concentration of contaminants/ ground gases). Pollution of sensitive controlled waters (e.g. surface watercourses or Principal/ Secondary aquifers). Significant effects on sensitive ecosystems or species.
Mild	Pollution of non-sensitive waters (e.g. smaller surface watercourses or non-aquifers). Significant damage to crops, buildings, structures or services (e.g. by explosion, sites with medium gassing potential, elevated concentrations of contaminants).
Minor	Non-permanent human health effects (requirement for protective equipment during site works to mitigate health effects). Damage to non-sensitive ecosystems or species. Minor (easily repairable) damage to buildings, structures or services (e.g. by explosion, sites with low gassing potential).

The probability of the risk occurring is classified according to the criteria in Table 10-2.

Table 10.2 Likelihood of Risk Occurrence

Likelihood	*Explanation*
High	Contaminant linkage may be present that appears very likely in the short-term and risk is almost certain to occur in the long term, or there is evidence of harm to the receptor.
Likely	Contaminant linkage may be present, and it is probable that the risk will occur over the long term.
Low	Contaminant linkage may be present and there is a possibility of the risk occurring, although there is no certainty that it will do so.
Unlikely	Contaminant linkage may be present but the circumstances under which harm would occur even in the long-term are improbable.

An overall evaluation of the level of risk is gained from a comparison of the severity and probability, as shown in Table 10-3.

Table 10.3 Risk based on Comparison of Likelihood and Severity

Likelihood	Severity			
	SEVERE	**MEDIUM**	**MILD**	**MINOR**
HIGH	Very High	High	Moderate	Moderate/Low
LIKELY	High	Moderate	Moderate/Low	Low
LOW	Moderate	Moderate/Low	Low	Very Low
UNLIKELY	Moderate/Low	Low	Very Low	Very Low

10.2 Preliminary Risk Assessment

A CSM illustrating plausible contaminant linkages has been formulated for this site. The qualitative preliminary risk assessment of the possible linkages of the above sources (S1 to S4), transport pathways (P1 to P18) and receptors (R1 to R17) is provided in the Table 10-4.

The level of risk is determined based on the current condition of the Site (i.e. the effects of mitigation measures are not included).

The preliminary risk assessment undertaken with in this section does not consider acute linkages for construction and maintenance workers. AECOM anticipates that these acute linkages will be managed by appropriate health and safety measures. Additional information related to risks to construction and maintenance duties are included in Section 11.3.

A qualitative 'source–pathway–receptor' approach has been used to assess the potential risks of harm being caused to human, environmental, or controlled water receptors from contamination sources on or in the vicinity of the site, via transport pathways. Risks to receptors have been assessed using the guidelines given in CIRIA document 552 'Contaminated Land Risk Assessment, A Guide to Good Practice,' (CIRIA Report C552) where the probability and consequences of contamination risks being realised are evaluated. The tables presented in Appendix B summarise the elements of the risk assessment process.

A CSM illustrating plausible contaminant linkages has been formulated for this site. The qualitative risk assessment of the possible linkages of the above sources (S1 to S4), transport pathways (P1 to P18) and receptors (R1 to R17) is provided in the table 10.4 below.

DRAFT

Table 10.4 Potential Sources, Pathways and Receptors

Source	Pathway	Receptor	Potential Severity	Likelihood of Occurrence	Potential Risk	Linkage Reference	Justification
Made Ground & extraction wastes, including asbestos. Smelting Mill and associated infrastructure including flue and cisterns. Railway and sidings.	Direct ingestion	Human Health: Current and future Site Users	Medium	Low	Moderate / Low Risk	L1	Site workers and members of the public are potentially sensitive receptors. Currently the site is used for recreational purposes only, therefore risk of direct ingestion is low.
		Human Health: Construction workers	Medium	Low	Moderate / Low Risk	L2	During excavation and movement of arisings throughout the construction phase there is the potential for contact. Appropriate dust suppression techniques and PPE should be employed to reduce this likelihood to low.
	Direct contact	Ecosystem: Fauna and Flora	Medium	Low	Moderate / Low Risk	L3	Sensitive Calaminarian Grassland has been identified from the pumping station site, along the River Nent and on land below (to the west of) the Handsome Mea reservoir. Special considerations are advised during the construction and operation phases.
		Buildings and Infrastructure	Medium	Unlikely	Low Risk	L4	Made ground is likely to be present beneath the majority of the site given historical land uses. The appropriate specification of materials should be used for supply pipes, buried services and gas / damp membranes. The appropriate specification of materials should be used for supply pipes, buried services and gas / damp membranes. Any future foundations are likely to consist of shallow foundations.
	Indirect ingestion	Human Health: Adjacent residents	Medium	Low	Moderate / Low Risk	L5	Consumption of produce by residents in adjacent residential properties is considered unlikely considering the soil quality
		Ecosystem: Fauna and Flora	Medium	Low	Moderate / Low Risk	L6	Sensitive Calaminarian Grassland has been identified from the pumping station site, along the River Nent and on land below (to the west of) the Handsome Mea reservoir. Special considerations are advised during the construction and operation phases.
	Indirect Inhalation of soil particulates and vapour	Human Health: Current and future site users	Medium	Unlikely	Low Risk	L7	Made ground is likely to be present at all locations across the site. Post development, the potential likelihood for contact with ACM should be considered by use of capping with hardstanding. The risk of vapour inhalation is low due to the proposed end use of the developments as open areas or small buildings not frequently occupied. The likelihood of a build-up of soil-derived gases is

DRAFT

Source	Pathway	Receptor	Potential Severity	Likelihood of Occurrence	Potential Risk	Linkage Reference	Justification
							considered moderate/low.
		Human Health: Construction workers	Medium	Low	Moderate / Low Risk	L8	During the construction phase it is likely that the Made Ground (if present) across the site will be exposed. Any Made Ground found to be contaminated with asbestos should be removed / capped prior to any potential development.
	Indirect Migration of hazardous gases/vapours	Human Health: Nearby residents and site workers / users	Medium	Low	Moderate / Low Risk	L9	Once vapours have been mobilised, there is the potential for them to move off site. The surrounding land consists predominantly of open ground limiting the potential for vapours to build up in enclosed spaces. Some buildings at the heritage museum and residential properties. Appropriate dust suppression methods are to be used during excavation of Made Ground. There is the potential for any ground gas to migrate off site through granular Made Ground or shallow fractured geology, however it is anticipated that there are limited enclosed spaces in the immediate surrounding land.
		Flora	Mild	Low	Low Risk	L10	Sensitive Calaminarian grasslands and other ecologically sensitive zones are present across the site. Suitable protective measures should be incorporated into the construction management plan.
		Buildings & Infrastructure	Medium	Low	Moderate / Low Risk	L11	The appropriate specification of materials should be used for supply pipes, buried services and gas / damp membranes. Any future foundations are likely to consist of shallow foundations.
	Direct Spillage/ loss/ run off from surface	Surface water: Including drainage features, leats, adits, River Nent	Medium	Low	Moderate / Low Risk	L12	It is likely that Made Ground would facilitate lateral surface run off. A number of surface water features run across the site and feed into the River Nent further downstream. There are also a number of man-made leats and adits which would facilitate the migration of any contamination to nearby surface water features.
		Shallow Groundwater: Secondary	Medium	Low	Moderate / Low Risk	L13	Superficial Till deposits (secondary undifferentiated) are likely to be present beneath the adit, pumping station and western end of the proposed pipeline route. It is also considered likely that peat

DRAFT

Source	Pathway	Receptor	Potential Severity	Likelihood of Occurrence	Potential Risk	Linkage Reference	Justification
		(Undifferentiated) Aquifer					deposits will be present across all remaining areas of the site. Migration via underground services, leats and adits. Superficial deposits are likely to be limited in thickness.
		Ecosystems (Flora and Fauna)	Medium	Likely	Moderate Risk	L14	Sensitive Calaminarian grasslands and other ecologically sensitive zones are present across the site. Suitable protective measures should be incorporated into the construction management plan.
		Deeper Groundwater	Medium	Low	Moderate / Low Risk	L15	It is possible that historical mining features will facilitate migration of spillages at the surface directly to deeper groundwater.
	Lateral migration of impacted shallow groundwater	Surface water	Medium	Low	Moderate / Low Risk	L16	There is the potential for lateral migration via permeable unsaturated strata to leats, reservoir and nearby River Nent. Although Groundwater Vulnerability Mapping shows that soils overlying Secondary Aquifers have a low leaching potential, it is likely that Made Ground would facilitate some lateral migration. Groundwater availability as a resource expected to be marginal. Shallow groundwater is unlikely to be present as limited superficial deposits present. Perched groundwater within Made Ground is considered unlikely to be in hydraulic connectivity with the surface waters. The nearest surface watercourse is a stream 175m to the southeast. There is adequate drainage to capture any surface runoff from the surrounding area before it is intercepted by the surface water receptor however this facilitate migration to other water courses, such as the River Nent. Surface water abstraction points have been identified close to the site in relation to the hydroelectric scheme at Nenthead.
		Shallow Groundwater: Secondary (Undifferentiated) Aquifer	Medium	Low	Moderate / Low Risk	L17	Superficial geology has been identified beneath the western parts of the site and classified as Secondary (undifferentiated) aquifer. Groundwater availability as a resource is therefore not considered a sensitive receptor in the local area.
	Vertical migration of impacted	Shallow Groundwater: Secondary	Medium	Low	Moderate / Low Risk	L18	Superficial geology has been identified beneath the western parts of the site and classified as Secondary (undifferentiated) aquifer. Groundwater availability as a resource is therefore not considered

DRAFT

Source	Pathway	Receptor	Potential Severity	Likelihood of Occurrence	Potential Risk	Linkage Reference	Justification
	groundwater	(Undifferentiated) Aquifer					a sensitive receptor in the local area.
		Deeper Groundwater	Medium	Low	Moderate / Low Risk	L19	No Superficial geology has been identified at the site. Given that the sites are located within a Secondary (B) Aquifer, groundwater availability as a resource may be limited to the local area. The potential for vertical migration of COPC is minimal due to the presence of significant thicknesses of clay. The top of the Sidmouth Mudstone Formation comprises clay therefore it is considered unlikely that the geology would facilitate the vertical migration of contaminated waters to the deeper aquifer.
	Lateral migration of deeper groundwater off-site.	Surface water: River Nent	Medium	Low	Moderate / Low Risk	L20	Movement of deeper groundwater would be facilitated by the existing adit systems. The majority of these feed directly into the River Nent.
		Deeper Groundwater: Secondary A Aquifer	Medium	Low	Moderate / Low Risk	L21	Historical mining features may facilitate off site migration of contaminated groundwater to nearby areas.
	Migration of hazardous gases/ vapours via permeable strata	Flora	Mild	Low	Low Risk	L22	Very limited above ground infrastructure is proposed so this should allow for suitable venting of potential vapours. The construction plan will mitigate impacts to flora as much as possible. An odour abatement system will manage vapour pathways to a degree.
		Buildings & Infrastructure	Medium	Low	Moderate / Low Risk	L23	The appropriate specification of materials should be used for supply pipes, buried services and gas / damp membranes. Any future foundations are likely to consist of shallow foundations.

10.3 Discussion of Risks to Construction Workers & Off-site Receptors during construction works.

AECOM understands that the proposed development works will be undertaken in compliance with Construction Design and Management (CDM) 2015 regulations.

Prior to work commencing, a health and safety risk assessment should be carried out by the appointed Principal Contractor / developed in accordance with current health and safety regulations. This assessment should cover potential risks to construction staff, permanent site staff and the local population. Based on the findings of this risk assessment, appropriate mitigation measures should be implemented during the construction period.

The greatest potential for generation of dust will be during the Site works and therefore dust generation should be kept to a minimum in accordance with general best practice, as outlined in, for example, 'Environmental Good Practice on Site', CIRIA Publication C692 to reduce this risk.

The risk to construction workers during the excavation and construction phases in terms of potential exposure to high concentrations of contaminants is considered to be low given the historic and current land uses identified at the Site. Should gross contamination be identified during the construction phase, then this may pose a potential acute risk to construction works. It is likely to be able to be effectively managed through good health and safety practices and protocols. Adoption of appropriate dust suppression techniques would also mitigate the degree of potential particulate migration off-site.

11. Review of Geotechnical Risk and Foundation Options

11.1 Details of the Proposed Development

It is understood that the development is likely to comprise the following Mine Water Treatment Scheme:

- Three settlement ponds which will be formed by excavation below existing ground level, and which will be lined with an impermeable polyethylene liner;
- A wetland area which will also be lined adjacent to the settlement ponds;
- An odour control building;
- Associated access tracks;
- A pipeline through which water will be pumped from locations of mine water capture to the settlement ponds;
- Capture chambers for the water issuing from two mine water outfalls and pipes connecting the Capture chambers to an adjacent pumping station; and
- Pumping station with associated pump well adjacent to the capture chambers.

The development of the site is anticipated to require the following stages:

- Construction of the access to and around the settlement ponds and wetland area;
- Site earthworks, including excavation for the settlement ponds and wetland area;
- Construction of the pipeline connecting the outfalls to the settlement ponds;
- Construction of the capture chambers and associated pipework; and
- Construction and commissioning of the pumping station.

11.2 Geotechnical Hazards

The anticipated ground conditions beneath the site are discussed in Section 4. A summary of commonly occurring ground-related hazards, excluding ground contamination, is given in Table 11-1. The hazards identified as being potentially present on site could have potential implications on ground engineering and foundation design.

Table 11.1 Summary of Potential Geotechnical Hazards

Geotechnical Hazard category (excluding contamination issues)	Engineering Implications
Filled and Made Ground	Unsuitable for bearing foundation loads. Likely to be unstable in excavations. Likely to contain high concentrations of heavy metals. Excavated materials will be contaminated waste and could present a health hazard to construction workers
Highly compressible / low bearing capacity soils, (including peat / soft clay)	Peat likely to be present in the vicinity of the settlement ponds and wetland areas. . Issues are slope stability problems in excavations for the settlement ponds. Access tracks will require thickened pavement probably to base of peat or inclusion of geotextiles to spread load and reduce rutting
Ground subject to or at risk from coastal or river erosion	Risk of erosion in river banks vicinity of capture chambers and pumping station. Could undermine or expose foundations of these structures unless retaining structures are constructed or existing retaining walls strengthened.
High groundwater table and/or flooding	Excavations for pump well and capture chambers

(including waterlogged ground)	which will be close to River Nent may require dewatering and/ or cofferdams
Existing sub-structures (e.g. foundations, basements, and adjacent sub-structures)	Existing structures associated with the former smelt mill may be encountered. These are likely to be listed structures and the alignment of the pipeline may need to be altered

11.3 Foundations and Ground Engineering

11.3.1 Foundations

Only light structures are proposed at the site: the pump housing at the pumping station; and an odour control building.

The pump house is likely to be on made ground on the site of the former visitor centre car park. It is possible that the car park is on an engineered platform, but this will have to be confirmed by penetration tests. Provided that engineered fill is proved the pump house may be placed on shallow spread foundations. However, if soft or loose material is located, then deepened foundations either trench fill or piled foundations depending on the depth to the base of the made ground.

The odour control building is likely to be located on peat or residual soil. Foundations should be taken to rock head below the peat and residual soil which is described from the site walkover as soft and wet. It may be possible to use deepened trench fill foundations, but if the thickness of peat and residual soil exceeds approximately 2.5m, piled foundations may be required. Short bored piles socketed into rock head are likely to be suitable if piling is required.

11.3.2 Ground Floor Slabs

A ground bearing floor slab is not thought to be suitable for the odour control building due to the possible presence of highly compressible peat immediately below the surface.

11.3.3 Excavations

Excavations for the settlement ponds are likely to be required to be cut at a very gentle slope through the residual soil and peat, unless they are retained or the natural ground is strengthened. Excavation through the residual soil and peat is expected to be easy, but if excavations are taken deeper into bedrock, then excavation is likely to prove very difficult, probably requiring ripping or blasting in the bedrock.

Shallow perched groundwater may be encountered and may require groundwater control during excavation. Detailed information regarding the groundwater regime will be available following the ground investigation and subsequent monitoring.

11.3.4 Soakaways

Soakaways are unlikely to be appropriate for this scheme.

12. Conclusions

AECOM has undertaken a Phase 1 geo-environmental and geotechnical desk study across the whole of the Nenthead Mine Water Treatment scheme. The site is located in a remote rural area in the vicinity of the existing Nenthead Mines Heritage Centre. The location of the Caplecleugh Adit and the proposed pumping station are located close to / in the public car park for the Nenthead Mines Visitor centre and the proposed water treatment site is located up the valley adjacent to Handsome Mea Reservoir. The access track leading up to the Handsome Mea Reservoir is the proposed pipeline route between the pumping station and the mine water treatment pond site.

The majority of the area within this red line boundary currently comprises open, gently sloping and poorly drained moorland including grassland and post-industrial land with public access. A formal Public Right of Way (PROW) footpath crosses the site from north to south and a bridleway comes up from the mine museum and joins the quarry track which continues up to Flinty Fells. Access tracks and car parks are present along the site. The Flinty Fell Quarry access track runs from the A689 to the north along to the south of the site, this is in regular use.

AECOM understands that the findings of this report will be used to aid in the design of a mine water treatment scheme at the site. It is understood that the Coal Authority aims to capture, transfer, treat and discharge mine water from the Caplecleugh adit in order to improve the water quality of surface waters within the Nenthead valley.

The conclusions of the desk study are shown below.

12.1 Ground Conditions

Ground conditions are as follows.

Caplecleugh Adit

Made Ground associated with former railways; overlying

Superficial Till deposits (clay, silt, sand and gravel); overlying

Bedrock of the Stainmore Formation and Alston Formation comprising sandstones, siltstones, mudstones and limestone.

Proposed Pumping Station site

River terrace deposits comprising interbedded clays and beds of gravel/ cobbles with shallow groundwater in the northeast part of the site;

Locally, in the channel of the River Nent at the southwest site boundary, alluvium is present.

These superficial deposits overlie bedrock of the Stainmore Formation and Alston Formation comprising sandstones, siltstones, mudstones and limestone.

From the Pumping Station site to the Mine Water Treatment Site:

Road construction materials and made ground associated with historical railway sidings: overlying

Diamicton glacial till; overlying bedrock of the Stainmore Formation and Alston Formation comprising sandstones, siltstones, mudstones and limestone.

Mine Water Treatment Site – eastern part of the site

Some areas of Made Ground / spoil associated with historic mining activities, overlying;

Residual soil and locally peat; overlying

Bedrock of the Stainmore Formation and Alston Formation comprising sandstones, siltstones, mudstones and limestone. Firestone sandstone potentially outcrops in the north; and Little Limestone Formation potentially outcropping in the south.

12.2 Environmental Risk Assessment

Potential sources, pathways and receptors have been identified on all four sites. Natural soils and water are also expected to have naturally elevated background metals concentrations. The findings of the preliminary environmental risk assessment are as follows:

- Railways have been identified on historical maps at the Caplecleugh Adit and the proposed Pumping Station Site. There is a potential source associated with made ground as a result of these historical activities. Potential risks from the made ground beneath these site areas are considered to be low to moderate with respect to controlled waters and human health.
- Potential Sources of contamination across the Mine Water Treatment Scheme area include activities and operations and infrastructure associated with historical metal mining.
- Risks with regards to acute exposure to construction and maintenance workers have not been assessed, and should be addressed prior any earthworks commencing by completion of an appropriate health and safety risk assessment by the Principal Contractor and implementation of any necessary control measures.

12.3 Geotechnical Risk Assessment

The following potential geotechnical risks have been identified relating to the ground conditions and shallow mine workings.

- Difficult excavation for the pipeline through made ground probably derived from coarse granular mine spoil giving high cost
- Risk from mine shafts in vicinity of attenuation ponds and wetlands, potential for collapse
- Risk due to collapse of shallow mine workings
- Risk of damage to pond and wetland liner system due to excavation level likely to be into bedrock with rough hard base, mitigation with use of a thick blinding layer would result in import of expensive blinding layer, locally sourced materials are unlikely to be suitable for blinding

The thickness of superficial deposits will be limited with the potential for outcropping of bedrock on site. If excavations for the settlement ponds are taken deeper into bedrock, then excavation is likely to prove very difficult. Removal of bedrock using blasting has a number of associated nuisance / risks to the locality and residents:

- The site is near to Nenthead village and local people are likely to object on the grounds of potential for damage to property;
- The site is immediately adjacent to a show mine with access to the public. There is a risk of fracturing of the rock and instability of the mine walls or roof both within the show mine and the numerous other mine passages that are accessible to mine exploration groups;
- The site is adjacent to and partly within the Nenthead Mines Scheduled Ancient Monument which includes an number of fragile structures which could be damaged; and
- High financial cost of excavation.

Additional consequences of such blasting works could include disturbance of wildlife, livestock and walkers. If additional rotary core ground investigation is required to facilitate a rippability assessment of bedrock then this can be provided.

Alternatively consideration could be given to ripping the bedrock The risk is of very slow progress and high cost of ripping in the rocks of the Stainmore formation. Also the relatively small scale of the excavations makes it more uneconomical.

A further option may be to raise the level of the ponds to above existing ground level;

but there is a risk of very high cost construction cost due to need to import suitable fill

risk of failure in the superficial materials under the downslope side of the earthworks

13. Recommendations

To assist in the finalisation the layout and nature of the development a ground investigation will be required in order to inform the detailed design of the site. The geo-environmental investigation should be designed with due consideration of the requirements of BS 10175:2011. With the exception that in the area of the settlement ponds and wetlands, where excavation is the principal activity, the sampling frequency may be reduced.

The geotechnical elements of the investigation should be designed in accordance with BS EN 1997-1:2004, BS EN 1997-2:2007 (Eurocode 7: Geotechnical Design – Parts 1 and 2) and BS 5930:1999.

In summary, key objectives to be addressed by the investigation include:

- Confirmation of the ground and groundwater conditions and validation of the CSM;
- Chemical status of Made Ground and natural soils for the purpose of risk assessment to human health, groundwater and for preliminary waste classification;
- Chemical status of groundwater in order to determine risks to controlled waters;
- Ground gas monitoring to determine the potential risks to the proposed development and surrounding properties; and
- Identification of geotechnical design parameters for earthworks and preliminary foundation design.

It is recommended that the ground investigation be designed in accordance with the UK Specification for Ground Investigation (version 2). In brief, the outline scope of works is anticipated to include:

- Boreholes sunk by cable percussive/rotary/dynamic sampling drilling techniques;
- Trial pits;
- Installation of ground gas / groundwater monitoring wells;
- Programme of gas/groundwater monitoring; and
- Geotechnical and geo-environmental laboratory testing.

By undertaking an intrusive ground investigation, an assessment of the ground and groundwater profiles may be carried out and the geotechnical and geo-environmental risks associated with the site made. This will allow a refined risk assessment and CSM to be developed in accordance with CLR11 methodology. The investigation will allow a quantitative assessment as to whether any of the potential risks identified in this study are present and are of material concern to the development.

In addition to the above it is recommended that a detailed review of the mine plans is undertaken to evaluate the risk to the development from shallow mine workings and assist in mitigation measures, if required.

14. Bibliography

AECOM. (2018). *Preliminary Ecological Assessment MWTS-AEC-NC-XX-RP-Y-3104.*
Agency, E. (2016). *Nent from Source to South Tyne.* Retrieved 01 28, 2019, from River Basin Management Plans, Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/WaterBody/GB103023075420
BGS. (1973). Map sheet 25, 1:50,000 series, Alston, Solid and Drift edition.
BGS. (n.d.). *BGS Map Viewer*. Retrieved February 2019, from British Geological Survey: http://mapapps.bgs.ac.uk/geologyofbritain/home.html
BRE. (2007). *BR211 - Radon: Guidance on protective measures for new buildings*.
BSI. (1997). *BS:EN Eurocode 7 - Geotechnical Design.*
BSI. (2015). *BS 5930:2015 Code of Practice for Ground Investigations.* BSI Standards.
BSI. (2018). BS10175 Code of Practice for Potentially Contaminated Sites.
CIRIA Publication C692. (n.d.). Environmental Good Practice on Site.
CIRIA Report C552. (n.d.). Contaminated Land Risk Assessment: A Guide to Good Practice.
CLR11. (2004). Model Procedures for the Management of Land Contamination.
Contaminated Land (England) Regulations. (2006).
Contaminated Land (England) Statutory Guidance. (2012).
Cranfield University. (2019). *Soilscapes*. Retrieved 2019, from Cranfield Soil and Agrifood Institute: http://www.landis.org.uk/soilscapes/
Cumbria County Council. (2017). *Cumbria Minerals and Waste Local Plan 2015 to 2030.* Planning and Compulsory Purchase Act (2004) Town and country Planning (Local Planning) (England) Regulations 2012.
DEFRA. (2019). *Defra Magic Maps application*. Retrieved November 2019, from Defra Magic Map: (http://magic.defra.gov.uk/MagicMap.aspx)
Department of the Environment. (n.d.). *Industry Profile. Metal manufacturing, refining and finishing works: lead works.* Contaminated Land and Liabilities Division.
EA. (n.d.). *"What's in Your Backyard?" tool*. Retrieved January 2019, from Environment Agency website: www.environment-agency.gov.uk
Environmental Protection Act. (1990). Part 2A.
Google. (2019). Retrieved March 2019, from Google Maps: www.google.co.uk/maps
Groundsure. (2019). *Enviro Insight Ref. GS-5745682.*
Groundwater Regulations. (2009).
Natural England. (2010). *1:250,000 Series Agrilcultural Land Classification. North West Region.* Retrieved 01 28, 2019, from Map produced by SWRGIU 05/08/2010 Map Reference 10-111b: www.naturalengland.org
NHBC/ EA/ CIEH. (2008). *Guidance for the Safe Development of Housing on Land Affected by Contamination.* R&D Publication 66. Volume 1.
NPPF. (2018). *The National Planning Policy Framework.* London: Ministry of Housing, Communities and Local Government.
Scivyer, C. (2011). *FB41 - Radon in the Workplace: A guide for building owners and managers.* BRE.
Statutory Guidance to Part 2A. (2012).
Town and Country Planning Act. (1990). (as amended).
UK Soil Observatory. (2016). *Soils Map Viewer*. Retrieved 01 28, 2019, from British Geological Survey: http://mapapps2.bgs.ac.uk/ukso/home.html
Water Act. (2003).
Water Resources Act. (1991).

Appendix A - Background to Legislation on Contaminated Land

Legislative Framework

The contaminated land regime in Part 2A of the Environment Protection Act 1990 was introduced to specifically address the historical legacy of land contamination. Part 2A of the Environmental Protection Act 1990 (Amended April 2012) has introduced the following statutory definition for "contaminated land":

"any land which appears to the local authority in whose area it is situated to be in such a condition by reason of substances in, on, or under the land, that:

(a) significant harm is being caused or there is significant possibility of such harm being caused; or

(b) significant pollution of controlled waters is being caused, or there is a significant possibility of such pollution being caused."

Part 2A provides a means of dealing with unacceptable risks posed by land contamination to human health and the environment. Enforcing authorities are required to identify and deal with such land but Part 2A is only to be used by the Enforcing Authority where no appropriate alternative solution exists.

The Process of Risk Assessment

The assessment of contaminated land can be seen as a two phase risk based process, comprising:

(1) A qualitative assessment of the likelihood of plausible contaminant linkages, i.e. there must not only be a source of contamination, but a pathway and a receptor; and

(2) A quantitative element which will seek to determine the degree of harm and the significance of such harm on a receptor.

A "contaminant" is a substance which is in, on or under the land and which has the potential to cause significant harm to a receptor or to cause significant pollution of controlled waters.

A "pathway" is a route by which a receptor is or might be affected by a contaminant.

A "receptor" is something that could be adversely affected by a contaminant, for example a person, an organism, an ecosystem, property or controlled waters.

The term "contaminant linkage" indicates that all three elements (i.e. a contaminant, a pathway and a receptor) have been identified. The term "significant contaminant linkage" means a contaminant linkage which gives rise to a level of risk sufficient to justify a piece of land being determined as contaminated land (in other words, there is unacceptable risks posed by the land contamination to human health and or the environment). The term "significant contaminant" means the contaminant which forms part of a significant contaminant linkage.

Significant Harm to Human Health

The following health effects constitute significant harm: death, life threatening diseases (cancers), other diseases likely to have a serious impact on health, serious injury, birth defects and impairment of reproductive functions.

Significant Possibility of Significant Harm to Human Health

In deciding whether or not land is contaminated land on the grounds of significant possibility of significant harm to human health, the local authority uses the following categorisations:

Category 1: Human Health

Land should be deemed to be a Category 1: Human Health case where:

(a) the authority is aware that similar land or situations are known, or are strongly suspected on the basis of robust evidence, to have caused such harm before in the United Kingdom or elsewhere; or

(b) the authority is aware that similar degrees of exposure (via any medium) to the contaminant(s) in question are known, or strongly suspected on the basis of robust evidence, to have caused such harm before in the United Kingdom, or elsewhere;

(c) the authority considers that significant harm may already have been caused by contaminants in, on or under land, and that there is an unacceptable risk that it may continue or occur again if no action is taken.

Category 2: Human Health
Land should be placed into Category 2 if the authority concludes, on the basis that there is a strong case for considering that the risks from the land are of sufficient concern, that the land poses a significant possibility of significant harm. Category 2 may include land where there is little or no direct evidence that similar land, situations or levels of exposure have caused harm before, but nonetheless the authority considers on the basis of the available evidence, including expert opinion, that there is a strong case for taking action under Part 2A on a precautionary basis.

Category 3: Human Health
Land should be place into Category 3 if the authority concludes that the strong case of Category 2 does not exist. Category 3 may include land where risks are not low, but nonetheless the authority considers that regulatory intervention under Part 2A is not warranted. This recognises that placing land in Category 3 would not stop others, such as the owner or occupier of the land, from taking action to reduce risks outside of the Part 2A regime if they choose.

Category 4: Human Health
The local authority should consider that the following types of land should be placed into Category 4: Human Health:

(a) Land where no relevant contaminant linkage has been established.

(b) Land where there are only normal levels of contaminants in the soil.

(c) Land that has been excluded from the need for further inspection and assessment because contaminant levels do not exceed generic assessment criteria.

(d) Land where estimated levels of exposure to contaminants in soil are likely to form only a small proportion of what a receptor might be exposed to anyway through other sources of environmental exposure (e.g. in relation to average estimated national levels of exposure to substances commonly found in the environment, to which receptors are likely to be exposed in the normal course of their lives).

"Normal" Presence of Contaminants
"Normal" levels of contaminants in soils should not be considered to cause land to qualify as contaminated land, unless there is particular reason to consider otherwise. "Normal" levels of contaminants in soils may result from:

(a) The natural presence of contaminants (e.g. caused by underlying geology) at levels that might reasonably be considered typical in an area and have not been shown to pose an unacceptable risk.

(b) The presence of contaminants caused by low level diffuse pollution, and common human activity. For example, this would include diffuse pollution from historic use of leaded petrol and the presence of benzo(a)pyrene from vehicle exhausts and the spreading of domestic ash in gardens that might reasonably be considered typical.

Significant Pollution of Controlled Waters
Pollution of controlled water means the entry into controlled waters of any poisonous, noxious or polluting matter or any solid waste matter. The term "controlled water" is as defined in Part 3 of the Water Resources Act 1991, except that ground water does not include waters contained in underground strata but above the saturation zone (i.e. perched water).

The following criteria are used to establish whether significant pollution of controlled waters has occurred:

(a) Pollution equivalent to "environmental damage" to surface water or groundwater as defined by The Environmental Damage (Prevention and Remediation) Regulations 2009.

(b) Inputs resulting in the deterioration of the quality of water abstracted, or intended to be used in the future.

(c) A breach of a statutory surface water Environmental Quality Standard, either directly or via a groundwater pathway.

(d) Input of a substance into groundwater resulting in a significant and sustained upward trend in concentration of contaminants.

The following categories are adopted in relation to determining the significant possibility of significant pollution of controlled waters.

Category 1: Water
This covers land where the authority considers that there is a strong and compelling case for considering that a significant possibility of significant pollution of controlled waters exists. In particular, this would include cases

where there is robust science-based evidence for considering that it is likely that high impact pollution would occur if nothing were done to stop it.

Category 2: Water
This covers land where:

(a) The authority considers the strength of evidence to put the land into Category 1 does not exist; but

(b) Nonetheless, on the basis of the available scientific evidence and expert option, the authority considers that the risks posed by the land are of sufficient concern that the land should be considered to pose a significant possibility of significant pollution of controlled waters on a precautionary basis, with all that this might involve (e.g. likely remediation requirements, and the benefits, costs and other impacts of regulatory intervention). Among other things, this category might include land where there is a relatively low likelihood that the most serious types of significant pollution might occur.

Category 3: Water
This covers land where the authority concludes that the risks are such that (whilst the authority and others might prefer they did not exist) the tests set out in Categories 1 and 2 are not met, and therefore regulatory intervention under Part 2A is not warranted. This category should include land where the authority considers that it is very unlikely that serious pollution would occur; or where there is a low likelihood that less serious types of significant pollution might occur.

Category 4: Water
This covers land where the authority concludes that there is no risk, or that the level of risk posed is low. In particular, the authority should consider that this is the case where:

(a) No contaminant linkage has been established in which controlled waters are the receptor in the linkage; or

(b) the possibility only relates to type of pollution that should not be considered to be significant pollution; or

(c) The possibility of water pollution similar to that which might be caused by “background” contamination.

Terminology
The term ‘Contaminated Land’ is used to mean land which meets the Part 2A definition. Other terms, such as ‘land affected by contamination’ or ‘land contamination’ are used to describe much broader categories of land where contaminants are present but usually not at sufficient level of risk to be Contaminated Land.

Planning Policy and Land Contamination
The National Planning Policy Framework has replaced Planning Policy Statement PPS23: Planning and Pollution Control. Under the Part 2A Statutory Guidance the planning system is highlighted as one of the other ways in which land contamination can be addressed. The key parts of the policy specifically relating to soils, geology and contamination are summarised below (taken from the Section 11 – Conserving and enhancing the natural environment):

DRAFT

109. The planning system should contribute to and enhance the natural and local environment by:

- *protecting and enhancing valued landscapes, geological conservation interests and soils;*
- *preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability; and*
- *remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.*

111. Planning policies and decisions should encourage the effective use of land by re-using land that has been previously developed (brownfield land), provided that it is not of high environmental value. Local planning authorities may continue to consider the case for setting a locally appropriate target for the use of brownfield land.

120. To prevent unacceptable risks from pollution and land instability, planning policies and decisions should ensure that new development is appropriate for its location. The effects (including cumulative effects) of pollution on health, the natural environment or general amenity, and the potential sensitivity of the area or proposed development to adverse effects from pollution, should be taken into account. Where a site is affected by contamination or land stability issues, responsibility for securing a safe development rests with the developer and/or landowner.

121. Planning policies and decisions should also ensure that:

- *the site is suitable for its new use taking account of ground conditions and land instability, including from natural hazards or former activities such as mining, pollution arising from previous uses and any proposals for mitigation including land remediation or impacts on the natural environment arising from that remediation;*
- *after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part 2A of the Environmental Protection Act 1990; and*
- *adequate site investigation information*, prepared by a competent person**, is presented.*

For a site undergoing development or redevelopment it should be the case that upon completion of that work the site should sit within Category 4 in respect of all receptors.

*Site investigation information: Includes a risk assessment of land potentially affected by contamination, or ground stability and slope stability reports, as appropriate. All investigations of land potentially affected by contamination should be carried out in accordance with established procedures (such as BS10175 (2011) Code of Practice for the Investigation of Potentially Contaminated Sites). The minimum information that should be provided by an applicant is the report of a desk study and site reconnaissance.

**Competent person (to prepare site investigation information): A person with a recognised relevant qualification, sufficient experience in dealing with the type(s) of pollution or land stability, and membership of a relevant professional organisation.

Appendix B - Assessment of Plausible Contaminant Linkages

Classification of Consequence

The classifications of consequence (severity) are taken from R&D Publication 66 (NHBC and Environment Agency, 2008). AECOM has chosen to apply the classifications to a broad range of development scenarios.

It should be noted that the categories of pollution incident have no relation to the categories of significant possibility of significant harm to human health or significant possibility of significant pollution of controlled waters in respect of the Part 2A Statutory Guidance.

Table B1 Classification of Consequence

Classification	Definition
Severe	Highly elevated concentrations likely to result in "significant harm" to human health as defined by the EPA 1990, Part 2A, if exposure occurs. Equivalent to EA Category 1 pollution incident including persistent and/or extensive effects on water quality; leading to closure of a potable abstraction point; major impact on amenity value or major damage to agriculture or commerce. Major damage to aquatic or other ecosystems, which is likely to result in a substantial adverse change in its functioning or harm to a species of special interest that endangers the long-term maintenance of the population. Catastrophic damage to crops, buildings or property.
Medium	Elevated concentrations which could result in "significant harm" to human health as defined by the EPA 1990, Part 2A if exposure occurs. Equivalent to EA Category 2 pollution incident including significant effect on water quality; notification required to abstractors; reduction in amenity value or significant damage to agriculture or commerce. Significant damage to aquatic or other ecosystems, which may result in a substantial adverse change in its functioning or harm to a species of special interest that may endanger the long-term maintenance of the population. Significant damage to crops, buildings or property.
Mild	Exposure to human health unlikely to lead to "significant harm". Equivalent to EA Category 3 pollution incident including minimal or short lived effect on water quality; marginal effect on amenity value, agriculture or commerce. Minor or short lived damage to aquatic or other ecosystems, which is unlikely to result in a substantial adverse change in its functioning or harm to a species of special interest that would endanger the long-term maintenance of the population. Minor damage to crops, buildings or property.
Minor	No measurable effect on humans. Equivalent to insubstantial pollution incident with no observed effect on water quality or ecosystems. Repairable effects of damage to buildings, structure and services.

Source: <Source>

Classification of Probability

The classifications of probability are taken from R&D Publication 66 (NHBC and Environment Agency, 2008). AECOM has chosen to apply the classifications to a broad range of development scenarios.

It should be noted that the categories of pollution incident have no relation to the categories of significant possibility of significant harm to human health or significant possibility of significant pollution of controlled waters in respect of the Part 2A Statutory Guidance. Also, in the Part 2A Statutory Guidance "pollutant linkage" is now termed "contaminant linkage", although it is noted that the terms are effectively synonymous.

Table B2 Classification of Probability.

Category	Definition
High Likelihood	There is pollutant linkage and an event would appear very likely in the short-term and almost inevitable over the long-term, or there is evidence at the receptor of harm or pollution.
Likely	There is pollutant linkage and all the elements are present and in the right place which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short-term and likely over the long-term.
Low likelihood	There is pollutant linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a long period such an event would take place, and is less likely in the shorter term.
Unlikely	There is pollutant linkage but circumstances are such that it is improbably that an event would occur even in the very long-term.

Table B3 Categorisation of Risk

		Consequence (Severity)			
		Severe	Medium	Mild	Minor
Probability (Likelihood)	High Likelihood	Very high risk	High risk	Moderate risk	Low risk
	Likely	High risk	Moderate risk	Moderate/low risk	Low risk
	Low Likelihood	Moderate risk	Moderate/low risk	Low risk	Very low risk
	Unlikely	Moderate/low risk	Low risk	Very low risk	Very low risk

Table B4 Description of Risk Levels and Likely Action Required

Term	Description
Very high risk	There is a high probability that severe harm could arise to a designated receptor from an identified hazard at the site without appropriate remediation action or there is evidence that severe harm to a designated receptor is already occurring. Realisation of that risk is likely to present a substantial liability to be site owner or occupier. Investigation is required as a matter of urgency and remediation works likely to follow in the short-term.
High risk	Harm is likely to arise to a designated receptor from an identified hazard at the site without appropriate remediation action. Realisation of the risk is likely to present a substantial liability to the site owner or occupier. Investigation is required as a matter of urgency to clarify the risk. Remediation works may be necessary in the short-term and are likely over the longer term.
Moderate risk	It is possible that without appropriate remediation action, harm would arise to a designated receptor. It is relatively unlikely that any such harm would be severe, and if any harm were to occur it is more likely that the harm would be relatively mild. Further investigative work is normally required to clarify the risk and to determine the potential liability to site owner/occupier. Some remediation works may be required in the longer term.
Low risk	It is possible that harm could arise to a designated receptor from identified hazard. It is likely that, at worst, if any harm was realised any effects would be mild. It is unlikely that the site

	owner/or occupier would face substantial liabilities from such a risk. Further investigative work (which is likely to be limited) to clarify the risk may be required. Any subsequent remediation works are likely to be relatively limited.
Very low risk	It is a low possibility that harm could arise to a designated receptor, but it is likely at worst, that this harm if realised would normally be mild or minor.
No potential risk	There is no potential risk if no pollutant linkage has been established.
Very high risk	There is a high probability that severe harm could arise to a designated receptor from an identified hazard at the site without appropriate remediation action or there is evidence that severe harm to a designated receptor is already occurring. Realisation of that risk is likely to present a substantial liability to be site owner or occupier. Investigation is required as a matter of urgency and remediation works likely to follow in the short-term.

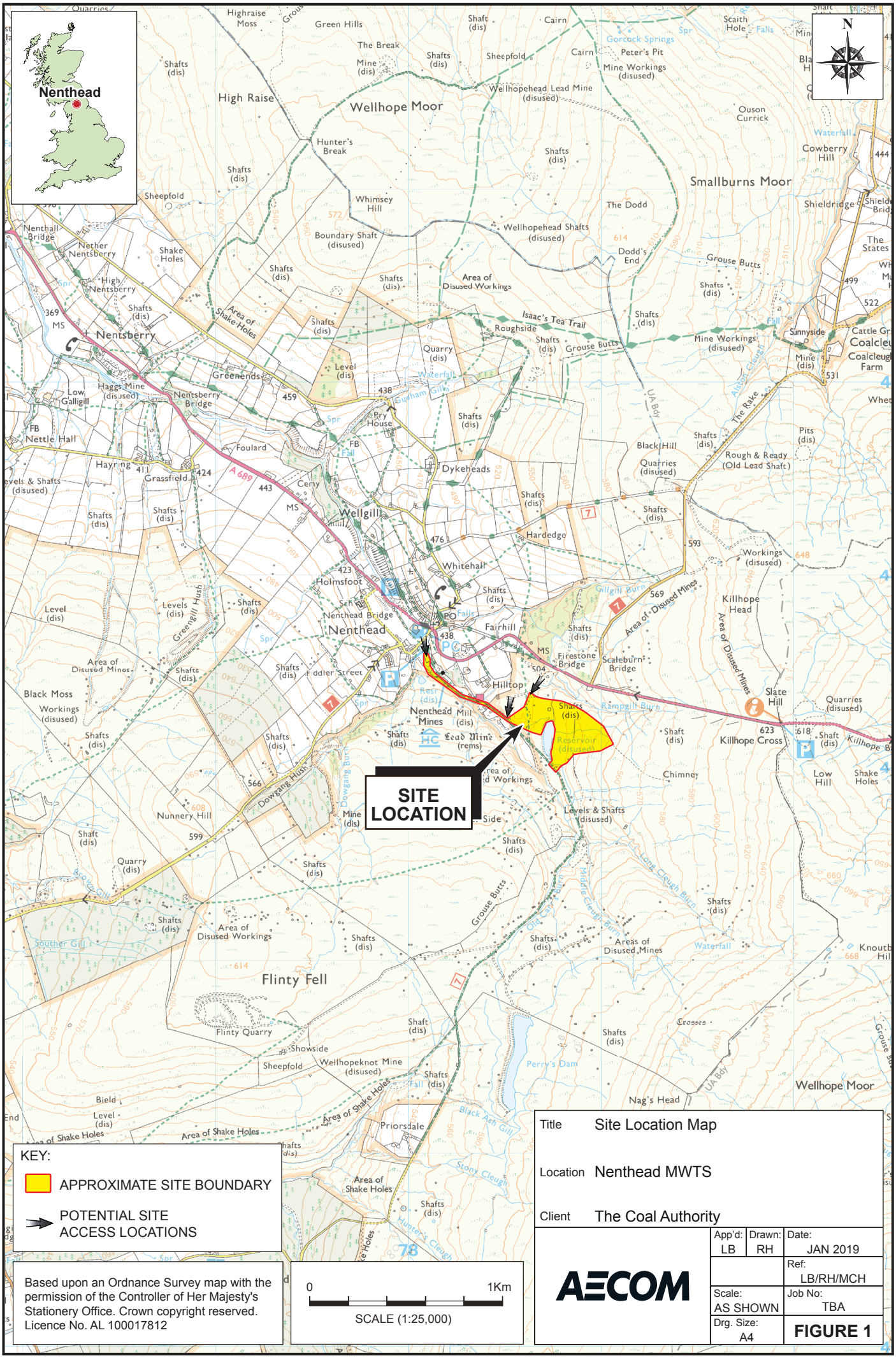
Source: <Source>

Table B5 Summary of Definitions

Term	Description
Hazard	A property or situation which in certain circumstances could lead to harm. (The properties of different hazards must be assessed in relation to their potential to affect the various different receptors).
Consequences	The adverse effects (or harm) arising from a defined hazard which impairs the quality of the environment or human health in the short or longer term.
Probability	The mathematical expression of the chance of a particular event in a given period of time (e.g. probability of 0.2 is equivalent to 20% or a 1 in 5 chance).
Likelihood	Probability; the state of face of being likely.
Risk	A combination of the probability or frequency of the occurrences of a defined hazard AND the magnitude of the consequences of that occurrence.

Appendix C - Groundsure Reports

Appendix D - Photo log from Site Reconnaissance



KEY:

APPROXIMATE SITE BOUNDARY

POTENTIAL SITE ACCESS LOCATIONS

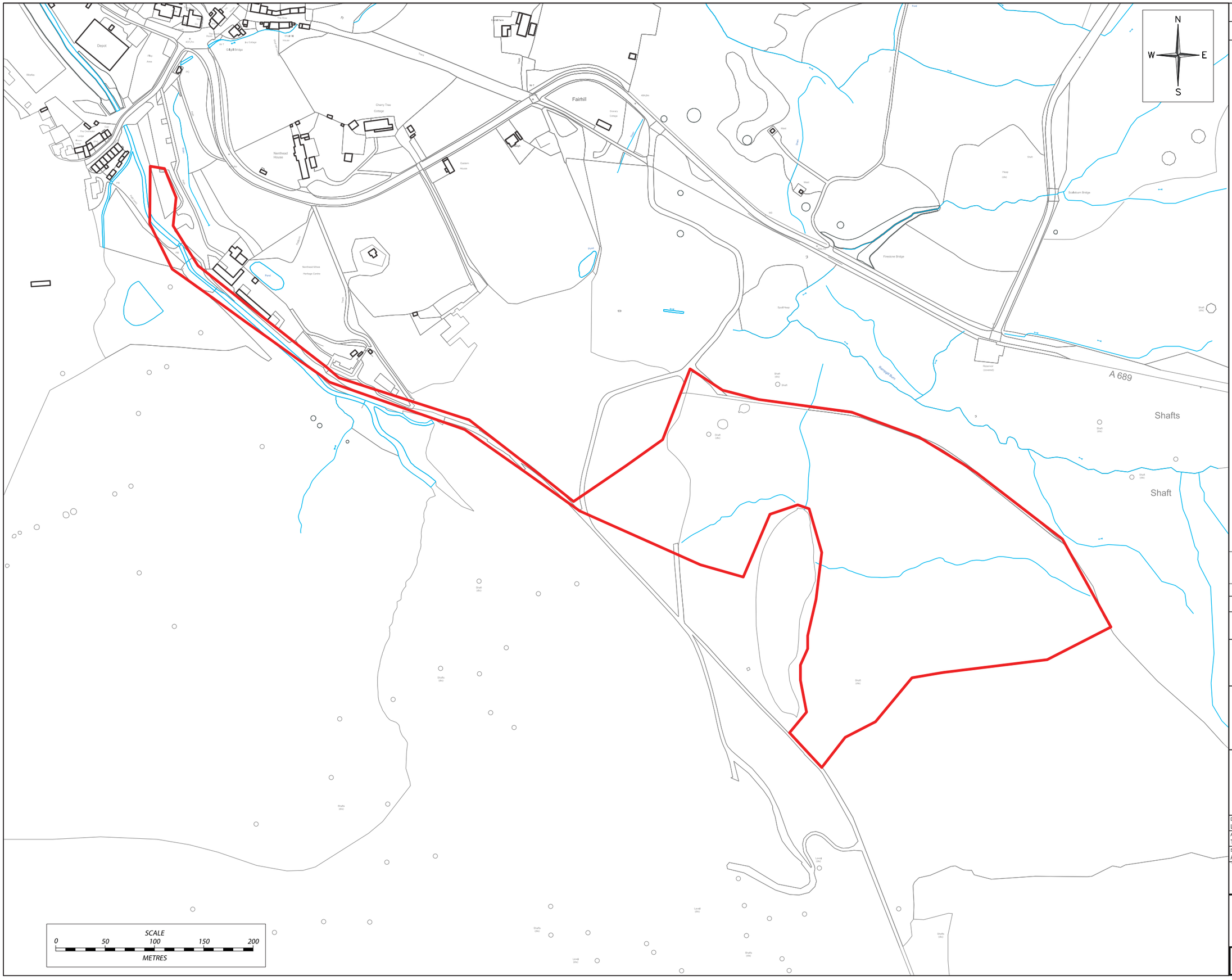
0 1Km

SCALE (1:25,000)

Title	Site Location Map
Location	Nenthead MWTS
Client	The Coal Authority

AECOM

App'd:	Drawn:	Date:
LB	RH	JAN 2019
		Ref: LB/RH/MCH
Scale: AS SHOWN		Job No: TBA
Drg. Size: A4		**FIGURE 1**



IT IS ASSUMED THAT ALL WORKS ON THIS DRAWING WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING WHERE APPROPRIATE, TO AN APPROPRIATE METHOD STATEMENT.

THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT.

NOTES

KEY

SITE BOUNDARY

This drawing is for preliminary purposes only and is subject to amendment during design development. UNDER NO CIRCUMSTANCES MUST THIS DRAWING BE USED FOR CONSTRUCTION PURPOSES

Revision Details	By / Check	Date	Suffix

Purpose of issue

PRELIMINARY

Client

THE COAL AUTHORITY

Project Title

NENTHEAD
MWTS

Drawing Title

FIGURE 2
RED LINE BOUNDAY PLAN

Designed	Drawn	Checked	Approved	Date
LB	RH	LB	LB	JAN 2019

AECOM Internal Project No.	Suitability
TBA	
Scale @ A3	Zone
AS SHOWN	-

AECOM Infrastructure & Environment UK Limited
6th Floor,
1 New York Street,
Manchester, M1 4HD
Tel: +44 (0)161-601-1700
www.aecom.com

AECOM

Drawing Number	Rev
TBA	

Aecom Infrastructure and Environment UK Ltd

4TH FLOOR,BRIDGEWATER HOUSE,60,
WHITWORTH STREET,
MANCHESTER, M1 6LT

Groundsure Reference:	GS-5745682
Your Reference:	Nenthead
Report Date	14 Jan 2019
Report Delivery Method:	Email - pdf

Enviro Insight

Address: 1, HILL TOP COTTAGES, NENTHEAD, CA9 3PB

Dear Sir/ Madam,

Thank you for placing your order with Groundsure. Please find enclosed the **Groundsure Enviro Insight** as requested.

If you need any further assistance, please do not hesitate to contact our helpline on 08444 159000 quoting the above Groundsure reference number.

Yours faithfully,

Managing Director
Groundsure Limited

Enc.
Groundsure Enviroinsight

Enviro Insight

Address:	**1, HILL TOP COTTAGES, NENTHEAD, CA9 3PB**
Date:	**14 Jan 2019**
Reference:	**GS-5745682**
Client:	**Aecom Infrastructure and Environment UK Ltd**

NW N NE

W E

SW S SE

Aerial Photograph Capture date:	15-Aug-2010
Grid Reference:	378684,543283
Site Size:	9.88ha

Report Reference: GS-5745682
Client Reference: Nenthead

Contents Page

Contents Page 3
Overview of Findings 6
Using this report 10
1. Historical Land Use 11
1. Historical Industrial Sites 12
1.1 Potentially Contaminative Uses identified from 1:10,000 scale Mapping....12
1.2 Additional Information – Historical Tank Database....20
1.3 Additional Information – Historical Energy Features Database....21
1.4 Additional Information – Historical Petrol and Fuel Site Database....21
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database....21
1.6 Historical military sites....21
1.7 Potentially Infilled Land....22
2. Environmental Permits, Incidents and Registers Map 31
2. Environmental Permits, Incidents and Registers 32
2.1 Industrial Sites Holding Licences and/or Authorisations....32
2.1.1 Records of historic IPC Authorisations within 500m of the study site:....32
2.1.2 Records of Part A(1) and IPPC Authorised Activities within 500m of the study site:....32
2.1.3 Records of Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500m of the study site:....32
2.1.4 Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site:....32
2.1.5 Records of List 2 Dangerous Substance Inventory Sites within 500m of the study site:....32
2.1.6 Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site: 33
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations:....33
2.1.8 Records of Licensed Discharge Consents within 500m of the study site:....33
2.1.9 Records of Water Industry Referrals (potentially harmful discharges to the public sewer) within 500m of the study site: 34
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site:....34
2.2 Dangerous or Hazardous Sites....34
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents....35
2.3.1 Records of National Incidents Recording System, List 2 within 500m of the study site:....35
2.3.2 Records of National Incidents Recording System, List 1 within 500m of the study site:....35
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990....35
3. Landfill and Other Waste Sites Map 36
3. Landfill and Other Waste Sites 37
3.1 Landfill Sites....37
3.1.1 Records from Environment Agency/Natural Resources Wales landfill data within 1000m of the study site: 37
3.1.2 Records of Environment Agency/Natural Resources Wales historic landfill sites within 1500m of the study site: 37
3.1.3 Records of BGS/DoE non-operational landfill sites within 1500m of the study site:....37
3.1.4 Records of Landfills from Local Authority and Historical Mapping Records within 1500m of the study site:....37
3.2 Other Waste Sites....38
3.2.1 Records of waste treatment, transfer or disposal sites within 500m of the study site: 38
3.2.2 Records of Environment Agency/Natural Resources Wales licensed waste sites within 1500m of the study site: 38
4. Current Land Use Map 39
4. Current Land Uses 40
4.1 Current Industrial Data....40
4.2 Petrol and Fuel Sites....41
4.3 National Grid High Voltage Underground Electricity Transmission Cables....42
4.4 National Grid High Pressure Gas Transmission Pipelines....42

5. Geology 43
5.1 Artificial Ground and Made Ground 43
5.2 Superficial Ground and Drift Geology 43
5.3 Bedrock and Solid Geology 43
6 Hydrogeology and Hydrology 45
6a. Aquifer Within Superficial Geology 45
6b. Aquifer Within Bedrock Geology and Abstraction Licences 46
6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licences 47
6d. Hydrogeology – Source Protection Zones within confined aquifer 48
6e. Hydrology – Watercourse Network and River Quality 49
6.Hydrogeology and Hydrology 50
6.1 Aquifer within Superficial Deposits 50
6.2 Aquifer within Bedrock Deposits 50
6.3 Groundwater Abstraction Licences 51
6.4 Surface Water Abstraction Licences 51
6.5 Potable Water Abstraction Licences 53
6.6 Source Protection Zones 54
6.7 Source Protection Zones within Confined Aquifer 54
6.8 Groundwater Vulnerability and Soil Leaching Potential 55
6.9 River Quality 55
6.9.1 Biological Quality: 55
6.9.2 Chemical Quality: 55
6.10 Ordnance Survey MasterMap Water Network 56
6.11 Surface Water Features 82
7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea) 85
7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Sea (RoFRaS) Map 86
7 Flooding 87
7.1 River and Coastal Zone 2 Flooding 87
7.2 River and Coastal Zone 3 Flooding 87
7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating 87
7.4 Flood Defences 88
7.5 Areas benefiting from Flood Defences 88
7.6 Areas benefiting from Flood Storage 88
7.7 Groundwater Flooding Susceptibility Areas 88
7.8 Groundwater Flooding Confidence Areas 89
8. Designated Environmentally Sensitive Sites Map 90
8. Designated Environmentally Sensitive Sites 91
8.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site: 91
8.2 Records of National Nature Reserves (NNR) within 2000m of the study site: 91
8.3 Records of Special Areas of Conservation (SAC) within 2000m of the study site: 91
8.4 Records of Special Protection Areas (SPA) within 2000m of the study site: 92
8.5 Records of Ramsar sites within 2000m of the study site: 92
8.6 Records of Ancient Woodland within 2000m of the study site: 92
8.7 Records of Local Nature Reserves (LNR) within 2000m of the study site: 92
8.8 Records of World Heritage Sites within 2000m of the study site: 92
8.9 Records of Environmentally Sensitive Areas within 2000m of the study site: 93
8.10 Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site: 93
8.11 Records of National Parks (NP) within 2000m of the study site: 93
8.12 Records of Nitrate Sensitive Areas within 2000m of the study site: 93
8.13 Records of Nitrate Vulnerable Zones within 2000m of the study site: 93

8.14 Records of Green Belt land within 2000m of the study site: 94
9. Natural Hazards Findings 95
9.1 Detailed BGS GeoSure Data 95
9.1.1 Shrink Swell 95
9.1.2 Landslides 95
9.1.3 Soluble Rocks 95
9.1.4 Compressible Ground 96
9.1.5 Collapsible Rocks 96
9.1.6 Running Sand 96
9.2 Radon 97
9.2.1 Radon Affected Areas 97
9.2.2 Radon Protection 97
10. Mining 98
10.1 Coal Mining 98
10.2 Non-Coal Mining 98
10.3 Brine Affected Areas 99
Contact Details 100
Standard Terms and Conditions 102

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.

Section 1: Historical Industrial Sites	On-site	0-50	51-250	251-500
1.1 Potentially Contaminative Uses identified from 1:10,000 scale mapping	27	51	118	125
1.2 Additional Information – Historical Tank Database	0	0	0	0
1.3 Additional Information – Historical Energy Features Database	0	0	0	0
1.4 Additional Information – Historical Petrol and Fuel Site Database	0	0	0	0
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	0	0	0	2
1.6 Historical military sites	0	0	0	0
1.7 Potentially Infilled Land	22	55	112	113

Section 2: Environmental Permits, Incidents and Registers	On-site	0-50m	51-250	251-500
2.1 Industrial Sites Holding Environmental Permits and/or Authorisations				
2.1.1 Records of historic IPC Authorisations	0	0	0	0
2.1.2 Records of Part A(1) and IPPC Authorised Activities	0	0	0	0
2.1.3 Records of Red List Discharge Consents	0	0	0	0
2.1.4 Records of List 1 Dangerous Substances Inventory sites	0	0	0	0
2.1.5 Records of List 2 Dangerous Substances Inventory sites	0	0	0	0
2.1.6 Records of Part A(2) and Part B Activities and Enforcements	0	0	0	0
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0
2.1.8 Records of Licensed Discharge Consents	0	0	3	6
2.1.9 Records of Water Industry Referrals	0	0	0	0
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	0	0	0	0
2.2 Records of COMAH and NIHHS sites	0	0	0	0
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents				
2.3.1 National Incidents Recording System, List 2	0	2	0	0
2.3.2 National Incidents Recording System, List 1	0	0	0	0
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	0	0	0	0

Section 3: Landfill and Other Waste Sites	On-site	0-50m	51-250	251-500	501-1000	1000-1500
3.1 Landfill Sites						
3.1.1 Environment Agency/Natural Resources Wales Registered Landfill Sites	0	0	0	0	0	Not searched
3.1.2 Environment Agency/Natural Resources Wales Historic Landfill Sites	0	0	0	0	0	0
3.1.3 BGS/DoE Landfill Site Survey	0	0	0	0	0	0
3.1.4 Records of Landfills in Local Authority and Historical Mapping Records	0	0	0	0	0	0
3.2 Landfill and Other Waste Sites Findings						
3.2.1 Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	1	0	Not searched	Not searched
3.2.2 Environment Agency/Natural Resources Wales Licensed Waste Sites	0	0	0	0	0	0

Section 4: Current Land Use	On-site	0-50m	51-250	251-500
4.1 Current Industrial Sites Data	5	4	27	Not searched
4.2 Records of Petrol and Fuel Sites	0	0	0	0
4.3 National Grid Underground Electricity Cables	0	0	0	0
4.4 National Grid Gas Transmission Pipelines	0	0	0	0

Section 5: Geology	
5.1 Records of Artificial Ground and Made Ground present beneath the study site	None identified
5.2 Records of Superficial Ground and Drift Geology present beneath the study site	Identified
5.3 For records of Bedrock and Solid Geology beneath the study site see the detailed findings section.	

Section 6: Hydrogeology and Hydrology	0-500m
6.1 Records of Strata Classification in the Superficial Geology within 500m of the study site	Identified
6.2 Records of Strata Classification in the Bedrock Geology within 500m of the study site	Identified

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
6.3 Groundwater Abstraction Licences (within 2000m of the study site)	0	0	0	0	2	2
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	8	0	2	0	5
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	2	2
6.6 Source Protection Zones (within 500m of the study site)	0	0	0	0	Not searched	Not searched
6.7 Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
6.8 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	1	0	#250GWV#	#500GWV#	Not searched	Not searched

Section 6: Hydrogeology and Hydrology

	0-500m					
	On-site	0-50m	51-250	251-500	501-1000	1000-1500
6.9 Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site	No	No	No	No	No	Yes
6.10 Ordnance Survey MasterMap Water Network entries within 500m of the site	18	44	142	102	Not searched	Not searched
6.11 Surface water features within 250m of the study site	Yes	Yes	Yes	Not searched	Not searched	Not searched

Section 7: Flooding

7.1 Enviroment Agency Zone 2 floodplains within 250m of the study site	Identified
7.2 Environment Agency/Natural Resources Wales Zone 3 floodplains within 250m of the study site	Identified
7.3 Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site	High
7.4 Flood Defences within 250m of the study site	None identified
7.5 Areas benefiting from Flood Defences within 250m of the study site	None identified
7.6 Areas used for Flood Storage within 250m of the study site	None identified
7.7 Maximum BGS Groundwater Flooding susceptibility within 50m of the study site	Potential at Surface
7.8 BGS confidence rating for the Groundwater Flooding susceptibility areas	High

Section 8: Designated Environmentally Sensitive Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.1 Records of Sites of Special Scientific Interest (SSSI)	1	0	0	0	1	5
8.2 Records of National Nature Reserves (NNR)	0	0	0	0	0	0
8.3 Records of Special Areas of Conservation (SAC)	0	0	0	0	1	4
8.4 Records of Special Protection Areas (SPA)	0	0	0	0	0	3
8.5 Records of Ramsar sites	0	0	0	0	0	0
8.6 Records of Ancient Woodlands	0	0	0	0	0	0
8.7 Records of Local Nature Reserves (LNR)	0	0	0	0	0	0
8.8 Records of World Heritage Sites	0	0	0	0	0	0
8.9 Records of Environmentally Sensitive Areas	1	0	0	0	0	0

Section 8: Designated Environmentally Sensitive Sites	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.10 Records of Areas of Outstanding Natural Beauty (AONB)	1	0	0	0	1	0
8.11 Records of National Parks	0	0	0	0	0	0
8.12 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
8.13 Records of Nitrate Vulnerable Zones	0	0	0	0	0	0
8.14 Records of Green Belt land	0	0	0	0	0	0

Section 9: Natural Hazards

9.1 Maximum risk of natural ground subsidence	Moderate
9.1.1 Maximum Shrink-Swell hazard rating identified on the study site	Very Low
9.1.2 Maximum Landslides hazard rating identified on the study site	Low
9.1.3 Maximum Soluble Rocks hazard rating identified on the study site	Moderate
9.1.4 Maximum Compressible Ground hazard rating identified on the study site	Negligible
9.1.5 Maximum Collapsible Rocks hazard rating identified on the study site	Very Low
9.1.6 Maximum Running Sand hazard rating identified on the study site	Very Low
9.2 Radon	
9.2.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The site is in a Radon Affected Area, as between 10 and 30% of properties are above the Action Level.
9.2.2 Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?	Full radon protective measures are necessary.

Section 10: Mining

10.1 Coal mining areas within 75m of the study site	Identified
10.2 Non-Coal Mining areas within 50m of the study site boundary	Identified
10.3 Brine affected areas within 75m of the study site	None identified

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. Historical Industrial Sites

Provides information on past land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. Potentially Infilled Land features are also included. This search is conducted using radii of up to 500m.

2. 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.

3. 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.

4. 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 gas pipelines and underground electricity transmission lines.

5. Geology

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

6. Hydrogeology and Hydrology

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

7. Flooding

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

8. 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 and Scheduled Ancient Woodland. These searches are conducted using radii of up to 2000m.

9. 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 and radon..

10. Mining

Provides information on areas of coal and non-coal mining and brine affected areas.

11. 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.

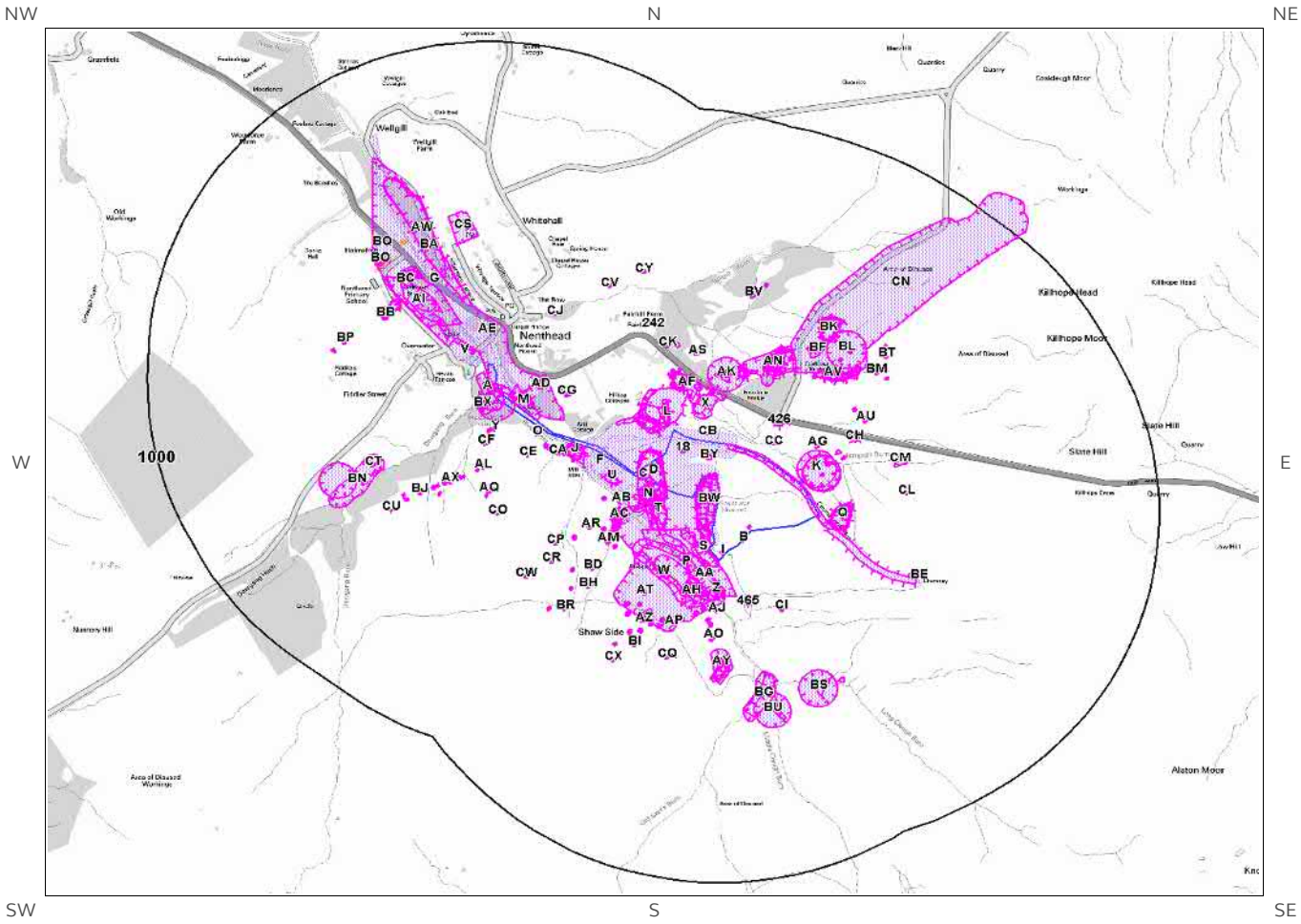
Note: Maps

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. Historical Land Use



Site Outline

250
500
Search Buffers (m)

Historical 1:10,000 and 1:10,560 scale mapping

Industrial Land Use

Potentially Infilled Land

Historical 1:2,500, 1:1,250 and 1:500 scale mapping

Energy Features

Petrol Stations

Historical military sites

Tanks

Garages

1. Historical Industrial Sites

1.1 Potentially Contaminative Uses identified from 1:10,000 scale Mapping

The systematic analysis of data extracted from standard 1:10,560 and 1:10,000 scale historical maps provides the following information:

Records of sites with a potentially contaminative past land use within 500m of the search boundary: 321

ID	Distance [m]	Direction	Use	Date
1A	0	On Site	Lead Mine	1859
2A	0	On Site	Unspecified Level	1859
3B	0	On Site	Unspecified Disused Shafts	1981
4C	0	On Site	Lime Kiln	1859
5D	0	On Site	Unspecified Heaps	1859
6B	0	On Site	Unspecified Disused Shafts	1981
7C	0	On Site	Unspecified Heap	1900
8F	0	On Site	Smelting Mill	1859
9D	0	On Site	Old Smelting Mill	1900
10C	0	On Site	Unspecified Ground Workings	1924
11BZ	0	On Site	Unspecified Heap	1924
12C	0	On Site	Unspecified Heap	1924
13D	0	On Site	Unspecified Heap	1924
14E	0	On Site	Unspecified Old Mill	1924
15E	0	On Site	Old Smelting Mill	1924
16F	0	On Site	Unspecified Disused Mill	1981
17BY	0	On Site	Unspecified Disused Shafts	1981
18	0	On Site	Unspecified Disused Shafts	1981
19I	0	On Site	Unspecified Disused Shafts	1981
20F	0	On Site	Old Smelting Mill	1940
21G	0	On Site	Unspecified Mine	1924
22G	0	On Site	Railway Sidings	1924
23D	0	On Site	Unspecified Heaps	1940
24H	0	On Site	Railway Sidings	1924
25H	0	On Site	Railway Sidings	1900
26A	0	On Site	Lead Levels	1924
27A	0	On Site	Unspecified Levels	1900
28M	2	NE	Unspecified Mine	1900
29I	3	SW	Refuse Heap	1900
30J	4	S	Unspecified Heaps	1900

31A	5	SW	Unspecified Disused Level	1981
32P	7	SW	Old Lead Mine	1923
33J	8	S	Unspecified Heap	1859
34K	10	NE	Unspecified Old Shaft	1900
35J	11	S	Unspecified Ground Workings	1924
36S	11	W	Unspecified Disused Shafts	1981
37J	12	S	Unspecified Heap	1924
38K	13	NE	Old Lead Shaft	1924
39K	14	NE	Old Lead Shaft	1940
40O	18	SW	Unspecified Old Mine	1859
41CB	19	N	Unspecified Shaft	1981
42L	20	NW	Unspecified Pit	1940
43L	20	NW	Unspecified Pit	1924
44M	21	NE	Unspecified Mine	1940
45L	21	NW	Unspecified Pit	1924
46N	24	SW	Unspecified Heaps	1940
47N	25	SW	Unspecified Ground Workings	1900
48L	25	N	Refuse Heap	1900
49L	26	NW	Unspecified Pit	1900
50U	27	SW	Unspecified Heap	1859
51V	28	NW	Flour Mill	1940
52W	30	SW	Unspecified Disused Workings	1981
53BX	31	SW	Lead Levels	1924
54O	32	S	Unspecified Disused Shafts	1981
55Q	34	E	Unspecified Old Quarry	1940
56P	34	SW	Railway Sidings	1900
57P	34	SW	Lead Mine	1900
58Q	36	SE	Unspecified Ground Workings	1859
59Q	36	E	Unspecified Old Quarry	1924
60O	36	S	Unspecified Disused Shafts	1981
61Q	36	E	Unspecified Old Quarry	1924
62T	37	SW	Unspecified Heap	1900
63P	37	SW	Railway Sidings	1923
64Q	37	E	Unspecified Old Quarry	1900
65R	38	W	Unspecified Ground Workings	1924
66R	39	W	Unspecified Pit	1859
67S	39	NW	Unspecified Disused Shafts	1981
68R	39	W	Unspecified Pit	1900
69T	39	SW	Unspecified Heap	1859
70R	40	W	Unspecified Pit	1940

71T	42	SW	Unspecified Level	1924
72U	43	SW	Unspecified Ground Workings	1900
73CA	44	S	Unspecified Disused Shafts	1981
74AA	45	SW	Old Lead Mine	1940
75N	46	SW	Unspecified Level	1900
76CC	49	NE	Unspecified Disused Level	1981
77S	50	W	Unspecified Disused Shafts	1981
78R	50	NW	Unspecified Ground Workings	1900
79L	53	NW	Unspecified Heap	1940
80CD	53	SE	Unspecified Heap	1923
81T	54	SW	Unspecified Level	1924
82V	57	NW	Unspecified Pit	1859
83T	58	SW	Unspecified Level	1859
84W	63	SW	Old Lead Mine	1900
85K	63	NE	Old Lead Shaft	1924
86T	66	SW	Unspecified Pit	1940
87H	66	NW	Unspecified Works	1981
88X	67	N	Refuse Heap	1981
89N	67	SW	Unspecified Disused Level	1981
90N	67	SW	Unspecified Old Level	1940
91V	71	NW	Railway Building	1900
92Y	75	SW	Unspecified Disused Shafts	1981
93X	81	N	Unspecified Level	1859
94AD	82	NE	Unspecified Mine	1924
95P	83	SW	Old Lead Mine	1940
96CE	84	SW	Unspecified Disused Shafts	1981
97AE	84	N	Railway Building	1900
98AB	86	SW	Unspecified Level	1859
99Y	89	SW	Unspecified Disused Shafts	1981
100Z	90	S	Lead Mine	1923
101W	93	SW	Unspecified Heap	1859
102Z	96	SW	Unspecified Ground Workings	1900
103Z	96	S	Unspecified Disused Level	1981
104W	97	SW	Railway Sidings	1859
105K	98	NE	Unspecified Shaft	1981
106AF	99	NE	Unspecified Heap	1859
107K	100	NE	Unspecified Shaft	1859
108AA	105	SW	Unspecified Heap	1859
109Z	106	SW	Unspecified Old Shaft	1940
110AB	107	SW	Unspecified Disused Shafts	1981

111AC	107	SW	Unspecified Pit	1940
112Z	110	S	Unspecified Disused Levels	1981
113AC	111	SW	Unspecified Pit	1924
114AD	113	NE	Lead Mine	1859
115AC	115	SW	Unspecified Pit	1924
116AE	116	N	Railway Building	1900
117Z	119	SW	Unspecified Shaft	1859
118CG	120	NE	Unspecified Shaft	1859
119AC	120	SW	Unspecified Pit	1900
120AC	121	SW	Unspecified Pit	1859
121AG	123	NE	Unspecified Disused Shafts	1981
122AH	126	SW	Unspecified Disused Levels	1981
123Z	127	SW	Unspecified Disused Shafts	1981
124Z	128	SW	Unspecified Old Shaft	1900
125CF	129	SW	Unspecified Disused Shafts	1981
126X	129	N	Unspecified Level	1900
127AF	133	N	Unspecified Heap	1900
128AF	135	N	Unspecified Heap	1924
129AG	137	NE	Unspecified Heap	1859
130AF	138	N	Unspecified Disused Shaft	1981
131AF	138	N	Unspecified Heap	1940
132AF	138	N	Unspecified Heap	1924
133H	138	N	Railway Building	1900
134AF	139	NE	Unspecified Level	1924
135AI	141	NW	Unspecified Quarry	1859
136AH	142	SW	Unspecified Mine	1859
137AH	143	S	Unspecified Shaft	1981
138AG	143	NE	Unspecified Disused Shafts	1981
139AH	144	SW	Unspecified Old Shaft	1923
140AI	146	NW	Unspecified Heap	1940
141AC	147	SW	Unspecified Disused Shafts	1981
142Z	149	SW	Unspecified Disused Shafts	1981
143AH	151	S	Unspecified Disused Shafts	1981
144AF	152	N	Unspecified Level	1924
145AJ	153	S	Unspecified Disused Shafts	1981
146AF	155	N	Lead Mine	1859
147AF	157	N	Unspecified Level	1940
148AJ	157	SE	Unspecified Disused Shafts	1981
149AK	159	N	Old Lead Shaft	1924

150AJ	165	SW	Unspecified Disused Levels	1981
151AJ	175	SW	Unspecified Disused Shafts	1981
152AF	178	N	Unspecified Disused Shaft	1981
153AC	184	SW	Unspecified Disused Shafts	1981
154AJ	186	S	Unspecified Disused Shafts	1981
155AK	188	N	Unspecified Disused Shafts	1981
156AK	193	N	Unspecified Heap	1859
157AL	194	SW	Unspecified Disused Shafts	1981
158AJ	196	S	Unspecified Disused Shafts	1981
159AR	202	SW	Unspecified Disused Shafts	1981
160CH	202	NE	Unspecified Heap	1859
161AK	205	N	Unspecified Disused Shafts	1981
162AN	206	N	Refuse Heap	1900
163AK	208	N	Unspecified Heap	1924
164AL	211	SW	Unspecified Disused Shafts	1981
165AK	211	N	Unspecified Heap	1924
166AK	212	N	Unspecified Old Shaft	1900
167AK	213	N	Old Lead Shaft	1924
168AW	214	N	Unspecified Heap	1924
169AK	214	N	Unspecified Heap	1859
170AK	214	N	Unspecified Heap	1900
171AM	214	SW	Unspecified Disused Shafts	1981
172AK	214	N	Unspecified Heap	1940
173AK	214	N	Old Lead Shaft	1940
174AK	217	N	Unspecified Disused Shafts	1981
175AM	219	SW	Unspecified Disused Shafts	1981
176AT	229	SW	Unspecified Disused Shafts	1981
177AK	229	N	Unspecified Disused Shafts	1981
178CI	231	SE	Unspecified Disused Shafts	1981
179AO	234	S	Unspecified Shafts	1981
180AI	234	NW	Refuse Heap	1900
181CJ	235	NE	Unspecified Disused Level	1981
182AP	236	SW	Unspecified Disused Shafts	1981
183G	237	NW	Railway Building	1900
184AN	238	N	Unspecified Shaft	1859

185AS	241	N	Unspecified Disused Shaft	1981
186AO	243	S	Unspecified Shafts	1981
187AN	243	N	Unspecified Ground Workings	1924
188AQ	244	SW	Unspecified Disused Shafts	1981
189AN	246	N	Unspecified Heap	1859
190AP	246	SW	Unspecified Disused Shafts	1981
191AN	248	N	Unspecified Heap	1859
192AN	249	N	Unspecified Ground Workings	1900
193AN	249	N	Unspecified Heap	1924
194AN	250	N	Unspecified Heaps	1940
195AN	250	N	Unspecified Heap	1900
196AQ	250	SW	Unspecified Disused Shafts	1981
197AP	251	SW	Refuse Heap	1981
198AR	255	SW	Unspecified Disused Shafts	1981
199AS	257	N	Unspecified Disused Shafts	1981
200AL	258	SW	Unspecified Disused Shafts	1981
201AQ	259	SW	Unspecified Disused Shafts	1981
202AT	260	SW	Unspecified Disused Shafts	1981
203CK	261	N	Unspecified Disused Shafts	1981
204CL	261	E	Unspecified Disused Shaft	1981
205AN	264	N	Unspecified Disused Shafts	1981
206CM	267	NE	Unspecified Pit	1924
207AP	268	SW	Unspecified Disused Shafts	1981
208AU	271	NE	Unspecified Disused Shafts	1981
209AY	275	S	Refuse Heap	1981
210AU	279	NE	Unspecified Disused Shafts	1981
211CN	281	NE	Unspecified Disused Mines	1981
212AP	281	SW	Unspecified Disused Shafts	1981
213AN	282	N	Unspecified Ground Workings	1924
214AN	284	N	Unspecified Disused Shafts	1981
215CO	285	SW	Unspecified Disused Shafts	1981
216AX	285	SW	Unspecified Disused Shafts	1981
217AT	288	SW	Unspecified Disused	1981

			Shafts	
218BA	288	NW	Railway Sidings	1859
219AZ	289	SW	Unspecified Disused Level	1981
220AN	290	N	Unspecified Heap	1859
221AV	294	NE	Unspecified Pit	1859
222AV	297	NE	Unspecified Pit	1900
223AW	299	NW	Unspecified Heap	1901
224AX	300	SW	Unspecified Disused Shafts	1981
225CP	303	SW	Unspecified Disused Shafts	1981
226AV	303	NE	Unspecified Pit	1924
227AY	304	S	Unspecified Heaps	1859
228AZ	307	SW	Unspecified Disused Shafts	1981
229BD	308	SW	Unspecified Disused Shafts	1981
230AV	309	NE	Unspecified Pit	1924
231AN	310	N	Unspecified Shaft	1981
232AV	310	NE	Unspecified Pit	1940
233AI	311	NW	Unspecified Heap	1924
234AI	312	NW	Unspecified Heap	1924
235AZ	315	SW	Unspecified Disused Shafts	1981
236AI	315	NW	Unspecified Heap	1900
237AI	315	NW	Unspecified Heap	1940
238AX	317	SW	Unspecified Disused Shafts	1981
239AY	318	S	Unspecified Heap	1940
240AY	323	S	Unspecified Heap	1900
241BA	324	NW	Tramway Sidings	1901
242	324	N	Lime Kiln	1859
243AY	327	S	Unspecified Heap	1923
244AX	328	SW	Unspecified Disused Shafts	1981
245G	330	NW	Unspecified Heap	1859
246BB	332	NW	Unspecified Old Shaft	1924
247BC	332	NW	Unspecified Ground Workings	1900
248AX	333	SW	Unspecified Disused Shafts	1981
249CQ	335	SW	Unspecified Disused Shafts	1981
250BB	335	NW	Unspecified Old Shaft	1940
251BB	335	NW	Unspecified Old Shaft	1900
252BB	335	NW	Unspecified Shaft	1859
253BB	337	NW	Unspecified Old Shaft	1924
254BC	337	NW	Unspecified Ground Workings	1901
255AZ	339	SW	Unspecified Disused	1981

			Shafts	
256BD	340	SW	Unspecified Disused Shafts	1981
257BF	340	NE	Unspecified Heaps	1859
258BE	348	SE	Chimney	1940
259BE	353	SE	Chimney	1981
260CR	354	SW	Unspecified Disused Shafts	1981
261BE	356	SE	Chimney	1900
262BE	357	SE	Chimney	1923
263BF	357	NE	Unspecified Shaft	1859
264BL	357	NE	Unspecified Old Shaft	1900
265BI	358	SW	Unspecified Disused Shafts	1981
266BJ	364	SW	Unspecified Disused Shafts	1981
267BH	365	SW	Unspecified Disused Shafts	1981
268BG	366	S	Old Lead Mine	1940
269BF	377	NE	Unspecified Disused Shafts	1981
270CS	377	N	Grave Yard	1859
271BG	381	S	Refuse Heap	1981
272BN	383	SW	Unspecified Old Level	1900
273AV	385	NE	Unspecified Disused Shafts	1981
274BH	394	SW	Unspecified Disused Shafts	1981
275BI	400	SW	Unspecified Disused Shafts	1981
276BJ	402	SW	Unspecified Disused Shafts	1981
277BK	402	NE	Unspecified Heap	1924
278CT	406	SW	Unspecified Pit	1859
279BK	406	NE	Unspecified Heap	1859
280BJ	407	SW	Unspecified Disused Shafts	1981
281BK	408	NE	Unspecified Heap	1924
282BM	409	NE	Unspecified Disused Shafts	1981
283BK	409	NE	Unspecified Heap	1900
284BK	410	NE	Unspecified Heap	1940
285BL	411	NE	Unspecified Disused Shafts	1981
286BM	412	NE	Unspecified Disused Shafts	1981
287BN	416	SW	Unspecified Disused Level	1981
288CV	416	NE	Unspecified Disused Shaft	1981
289BM	419	NE	Unspecified Disused Shafts	1981
290BP	423	W	Unspecified Disused	1981

			Shafts	
291BM	427	NE	Unspecified Disused Shafts	1981
292BG	431	S	Railway Sidings	1859
293CW	434	S	Unspecified Disused Shafts	1981
294BQ	434	NW	Smithy	1924
295CX	435	SW	Unspecified Shaft	1981
296BS	435	SE	Unspecified Old Shaft	1900
297BO	439	NW	Unspecified Heap	1901
298BU	439	S	Lead Mine	1859
299BO	439	NW	Unspecified Heap	1859
300BO	444	NW	Unspecified Heap	1924
301BO	445	NW	Unspecified Heap	1924
302BP	453	W	Unspecified Disused Shafts	1981
303BR	455	SW	Unspecified Disused Shafts	1981
304BO	457	NW	Lime Kiln	1859
305CU	461	SW	Unspecified Disused Shafts	1981
306BV	463	N	Unspecified Disused Shaft	1981
307BN	466	SW	Unspecified Level	1859
308BT	466	NE	Unspecified Disused Shafts	1981
309BQ	472	NW	Smithy	1924
310BN	475	SW	Unspecified Old Level	1940
311BQ	477	NW	Smithy	1940
312BR	478	SW	Unspecified Disused Shafts	1981
313BS	485	SE	Unspecified Heap	1859
314BS	486	SE	Unspecified Shaft	1981
315BS	486	SE	Old Lead Shaft	1940
316BT	488	NE	Unspecified Disused Shafts	1981
317BU	488	S	Lead Mines	1900
318BS	490	SE	Old Lead Shaft	1923
319BS	490	S	Unspecified Pit	1859
320CY	494	N	Unspecified Disused Shaft	1981
321BV	500	N	Unspecified Disused Shaft	1981

1.2 Additional Information – Historical Tank Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical tanks within 500m of the search boundary: 0

Database searched and no data found.

1.3 Additional Information – Historical Energy Features Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical energy features within 500m of the search boundary: 0

Database searched and no data found.

1.4 Additional Information – Historical Petrol and Fuel Site Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical petrol stations and fuel sites within 500m of the search boundary: 0

Database searched and no data found.

1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical garage and motor vehicle repair sites within 500m of the search boundary: 2

ID	Distance (m)	Direction	Use	Date
322BO	425	NW	Garage	1980
323BQ	446	NW	Garage	1980

1.6 Historical military sites

Certain military installations were not noted on historic mapping for security reasons. Whilst not all military land is necessarily of concern, Groundsure has researched and digitised a number of Ordnance Factories and other military industrial features (e.g. Ordnance Depots, Munitions Testing Grounds) which may be of contaminative concern. This research was drawn from a number of different sources, and should not be regarded as a definitive or exhaustive database of potentially contaminative military installations. The boundaries of sites within this database have been estimated from the best evidence available to Groundsure at the time of compilation.

Records of historical military sites within 500m of the search boundary: 0

Database searched and no data found.

1.7 Potentially Infilled Land

Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 302

The following Historical Potentially Infilled Features derived from the Historical Mapping information is provided by Groundsure:

ID	Distance(m)	Direction	Use	Date
324A	0	On Site	Unspecified Levels	1900
325BW	0	On Site	Disused Reservoir	1981
326BW	0	On Site	Reservoir	1940
327BX	0	On Site	Lead Levels	1924
328C	0	On Site	Unspecified Heaps	1859
329C	0	On Site	Unspecified Heap	1900
330A	0	On Site	Lead Mine	1859
331BW	0	On Site	Pond	1859
332N	0	On Site	Unspecified Heap	1924
333C	0	On Site	Unspecified Heap	1924
334A	0	On Site	Unspecified Level	1859
335B	0	On Site	Unspecified Disused Shafts	1981
336B	0	On Site	Unspecified Disused Shafts	1981
337B	0	On Site	Unspecified Disused Shafts	1981
338C	0	On Site	Unspecified Heaps	1940
339BY	0	On Site	Unspecified Disused Shafts	1981
340BY	0	On Site	Unspecified Disused Shafts	1981
341G	0	On Site	Unspecified Mine	1924
342BZ	0	On Site	Unspecified Heap	1924
343N	0	On Site	Unspecified Ground Workings	1924
344BW	0	On Site	Reservoir	1900
345BW	0	S	Reservoir	1924
346BW	1	S	Reservoir	1924
347M	2	NE	Unspecified Mine	1900
348P	3	SW	Refuse Heap	1900
349CA	4	S	Unspecified Heaps	1900
350A	5	SW	Unspecified Disused Level	1981
351AA	7	SW	Old Lead Mine	1923
352CA	8	S	Unspecified Heap	1859
353K	10	NE	Unspecified Old Shaft	1900
354CA	11	S	Unspecified Ground Workings	1924

355S	11	W	Unspecified Disused Shafts	1981
356CA	12	S	Unspecified Heap	1924
357K	13	NE	Old Lead Shaft	1924
358K	14	NE	Old Lead Shaft	1940
359O	18	SW	Unspecified Old Mine	1859
360CB	19	N	Unspecified Shaft	1981
361L	20	NW	Unspecified Pit	1940
362L	20	NW	Unspecified Pit	1924
363M	21	NE	Unspecified Mine	1940
364L	21	NW	Unspecified Pit	1924
365M	23	NE	Pond	1924
366N	24	SW	Unspecified Heaps	1940
367AB	25	SW	Unspecified Ground Workings	1900
368L	25	N	Refuse Heap	1900
369L	26	NW	Unspecified Pit	1900
370M	26	NE	Pond	1924
371U	27	SW	Unspecified Heap	1859
372BX	27	SW	Disused Reservoir	1981
373M	29	NE	Pond	1859
374W	30	SW	Unspecified Disused Workings	1981
375M	31	NE	Pond	1940
376BX	31	SW	Lead Levels	1924
377BX	31	SW	Pond	1924
378O	32	S	Unspecified Disused Shafts	1981
379Q	34	E	Unspecified Old Quarry	1940
380AA	34	SW	Lead Mine	1900
381Q	36	SE	Unspecified Ground Workings	1859
382Q	36	E	Unspecified Old Quarry	1924
383O	36	S	Unspecified Disused Shafts	1981
384Q	36	E	Unspecified Old Quarry	1924
385T	37	SW	Unspecified Heap	1900
386Q	37	E	Unspecified Old Quarry	1900
387L	38	W	Unspecified Ground Workings	1924
388L	39	W	Unspecified Pit	1859
389S	39	NW	Unspecified Disused Shafts	1981
390R	39	W	Unspecified Pit	1900
391T	39	SW	Unspecified Heap	1859
392L	40	W	Unspecified Pit	1940
393N	42	SW	Unspecified Level	1924
394U	43	SW	Unspecified Ground Workings	1900

395CA	44	S	Unspecified Disused Shafts	1981
396AA	45	SW	Old Lead Mine	1940
397AB	46	SW	Unspecified Level	1900
398CC	49	NE	Unspecified Disused Level	1981
399S	50	W	Unspecified Disused Shafts	1981
400L	50	NW	Unspecified Ground Workings	1900
401L	53	NW	Unspecified Heap	1940
402CD	53	SE	Unspecified Heap	1923
403N	54	SW	Unspecified Level	1924
404AE	57	NW	Unspecified Pit	1859
405N	58	SW	Unspecified Level	1859
406P	63	SW	Old Lead Mine	1900
407K	63	NE	Old Lead Shaft	1924
408T	66	SW	Unspecified Pit	1940
409X	67	N	Refuse Heap	1981
410AB	67	SW	Unspecified Disused Level	1981
411AB	67	SW	Unspecified Old Level	1940
412Y	75	SW	Unspecified Disused Shafts	1981
413X	81	N	Unspecified Level	1859
414AD	82	NE	Unspecified Mine	1924
415AA	83	SW	Old Lead Mine	1940
416CE	84	SW	Unspecified Disused Shafts	1981
417AB	86	SW	Unspecified Level	1859
418CF	89	SW	Unspecified Disused Shafts	1981
419AH	90	S	Lead Mine	1923
420P	93	SW	Unspecified Heap	1859
421AA	96	SW	Unspecified Ground Workings	1900
422Z	96	S	Unspecified Disused Level	1981
423K	98	NE	Unspecified Shaft	1981
424AF	99	NE	Unspecified Heap	1859
425K	100	NE	Unspecified Shaft	1859
426	103	NE	Covered Reservoir	1981
427AH	105	SW	Unspecified Heap	1859
428AH	106	SW	Unspecified Old Shaft	1940
429AB	107	SW	Unspecified Disused Shafts	1981
430AC	107	SW	Unspecified Pit	1940
431AH	110	S	Unspecified Disused Levels	1981
432AC	111	SW	Unspecified Pit	1924
433AD	113	NE	Lead Mine	1859
434AC	115	SW	Unspecified Pit	1924

435AH	119	SW	Unspecified Shaft	1859
436CG	120	NE	Unspecified Shaft	1859
437AC	120	SW	Unspecified Pit	1900
438AC	121	SW	Unspecified Pit	1859
439AG	123	NE	Unspecified Disused Shafts	1981
440AH	126	SW	Unspecified Disused Levels	1981
441AH	127	SW	Unspecified Disused Shafts	1981
442AH	128	SW	Unspecified Old Shaft	1900
443CF	129	SW	Unspecified Disused Shafts	1981
444X	129	N	Unspecified Level	1900
445AF	133	N	Unspecified Heap	1900
446AF	135	N	Unspecified Heap	1924
447AG	137	NE	Unspecified Heap	1859
448AF	138	N	Unspecified Disused Shaft	1981
449AF	138	N	Unspecified Heap	1940
450AF	138	N	Unspecified Heap	1924
451AF	139	NE	Unspecified Level	1924
452AI	141	NW	Unspecified Quarry	1859
453AH	142	SW	Unspecified Mine	1859
454AH	143	S	Unspecified Shaft	1981
455AG	143	NE	Unspecified Disused Shafts	1981
456AH	144	SW	Unspecified Old Shaft	1923
457AI	146	NW	Unspecified Heap	1940
458AR	147	SW	Unspecified Disused Shafts	1981
459AH	149	SW	Unspecified Disused Shafts	1981
460AH	151	S	Unspecified Disused Shafts	1981
461AF	152	N	Unspecified Level	1924
462AJ	153	S	Unspecified Disused Shafts	1981
463AF	155	N	Lead Mine	1859
464AF	157	N	Unspecified Level	1940
465	157	SE	Unspecified Disused Shafts	1981
466AK	159	N	Old Lead Shaft	1924
467AH	165	SW	Unspecified Disused Levels	1981
468AP	175	SW	Unspecified Disused Shafts	1981
469AF	178	N	Unspecified Disused Shaft	1981
470AR	184	SW	Unspecified Disused Shafts	1981
471AJ	186	S	Unspecified Disused Shafts	1981

472AK	188	N	Unspecified Disused Shafts	1981
473AK	193	N	Unspecified Heap	1859
474AL	194	SW	Unspecified Disused Shafts	1981
475AO	196	S	Unspecified Disused Shafts	1981
476AR	202	SW	Unspecified Disused Shafts	1981
477CH	202	NE	Unspecified Heap	1859
478AK	205	N	Unspecified Disused Shafts	1981
479AN	206	N	Refuse Heap	1900
480AK	208	N	Unspecified Heap	1924
481AL	211	SW	Unspecified Disused Shafts	1981
482AK	211	N	Unspecified Heap	1924
483AK	212	N	Unspecified Old Shaft	1900
484AK	213	N	Old Lead Shaft	1924
485AW	214	N	Unspecified Heap	1924
486AK	214	N	Unspecified Heap	1859
487AK	214	N	Unspecified Heap	1900
488AM	214	SW	Unspecified Disused Shafts	1981
489AK	214	N	Unspecified Heap	1940
490AK	214	N	Old Lead Shaft	1940
491AK	217	N	Unspecified Disused Shafts	1981
492AM	219	SW	Unspecified Disused Shafts	1981
493AT	229	SW	Unspecified Disused Shafts	1981
494AK	229	N	Unspecified Disused Shafts	1981
495CI	231	SE	Unspecified Disused Shafts	1981
496AO	234	S	Unspecified Shafts	1981
497AI	234	NW	Refuse Heap	1900
498CJ	235	NE	Unspecified Disused Level	1981
499AP	236	SW	Unspecified Disused Shafts	1981
500AN	238	N	Unspecified Shaft	1859
501AS	241	N	Unspecified Disused Shaft	1981
502AO	243	S	Unspecified Shafts	1981
503AN	243	N	Unspecified Ground Workings	1924
504AQ	244	SW	Unspecified Disused Shafts	1981
505AN	246	N	Unspecified Heap	1859
506AP	246	SW	Unspecified Disused Shafts	1981

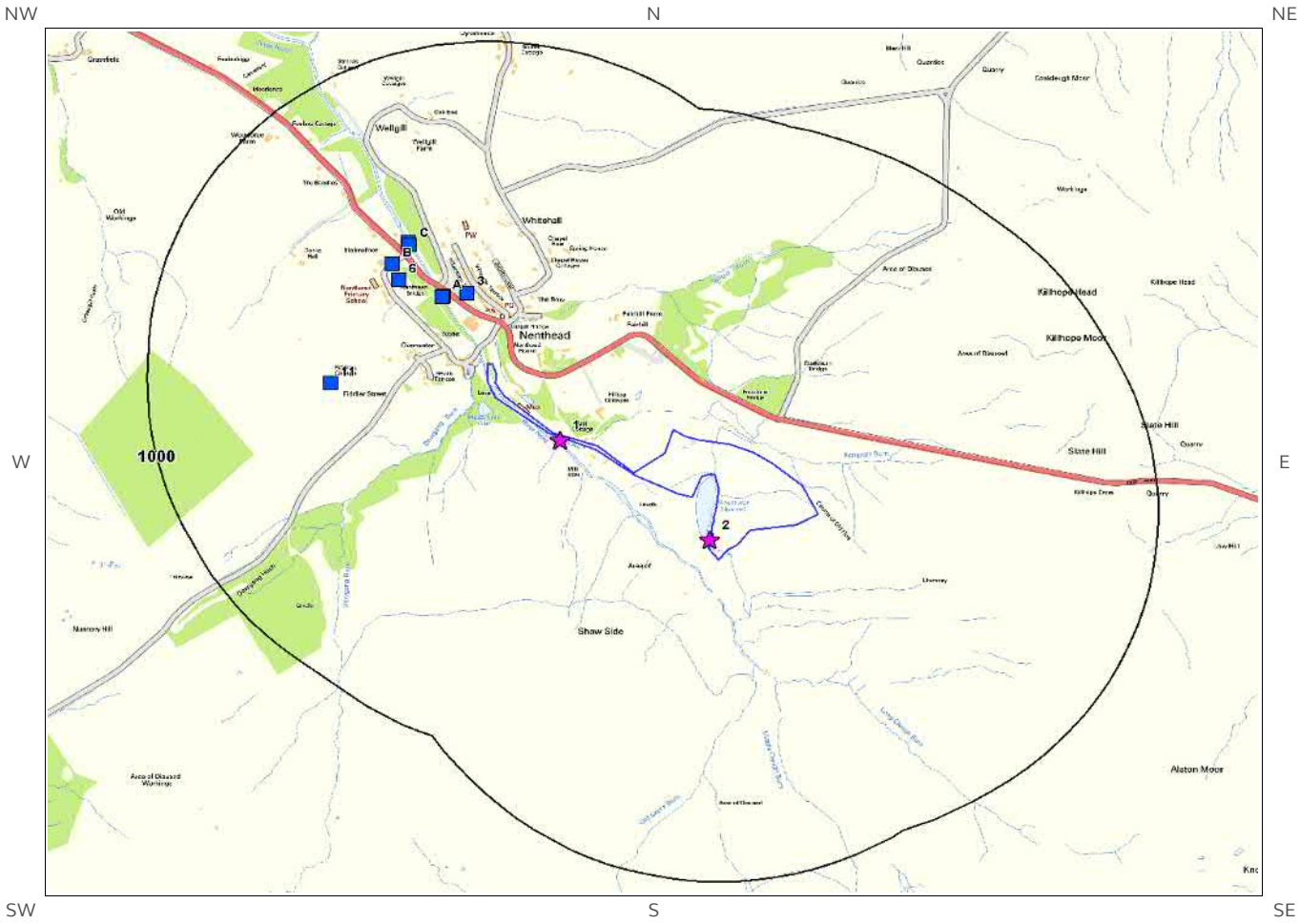
507AN	248	N	Unspecified Heap	1859
508AN	249	N	Unspecified Ground Workings	1900
509AN	249	N	Unspecified Heap	1924
510AN	250	N	Unspecified Heaps	1940
511AN	250	N	Unspecified Heap	1900
512AQ	250	SW	Unspecified Disused Shafts	1981
513AP	251	SW	Refuse Heap	1981
514AR	255	SW	Unspecified Disused Shafts	1981
515AS	257	N	Unspecified Disused Shafts	1981
516AL	258	SW	Unspecified Disused Shafts	1981
517AQ	259	SW	Unspecified Disused Shafts	1981
518AT	260	SW	Unspecified Disused Shafts	1981
519CK	261	N	Unspecified Disused Shafts	1981
520CL	261	E	Unspecified Disused Shaft	1981
521AN	264	N	Unspecified Disused Shafts	1981
522CM	267	NE	Unspecified Pit	1924
523AP	268	SW	Unspecified Disused Shafts	1981
524AU	271	NE	Unspecified Disused Shafts	1981
525AY	275	S	Refuse Heap	1981
526AU	279	NE	Unspecified Disused Shafts	1981
527CN	281	NE	Unspecified Disused Mines	1981
528AP	281	SW	Unspecified Disused Shafts	1981
529AN	282	N	Unspecified Ground Workings	1924
530AN	284	N	Unspecified Disused Shafts	1981
531CO	285	SW	Unspecified Disused Shafts	1981
532AX	285	SW	Unspecified Disused Shafts	1981
533AT	288	SW	Unspecified Disused Shafts	1981
534AZ	289	SW	Unspecified Disused Level	1981
535AN	290	N	Unspecified Heap	1859
536AV	294	NE	Unspecified Pit	1859
537AV	297	NE	Unspecified Pit	1900
538AW	299	NW	Unspecified Heap	1901
539BJ	300	SW	Unspecified Disused Shafts	1981

540CP	303	SW	Unspecified Disused Shafts	1981
541AV	303	NE	Unspecified Pit	1924
542AY	304	S	Unspecified Heaps	1859
543AZ	307	SW	Unspecified Disused Shafts	1981
544BD	308	SW	Unspecified Disused Shafts	1981
545AV	309	NE	Unspecified Pit	1924
546AN	310	N	Unspecified Shaft	1981
547AV	310	NE	Unspecified Pit	1940
548BB	311	NW	Unspecified Heap	1924
549BB	312	NW	Unspecified Heap	1924
550BI	315	SW	Unspecified Disused Shafts	1981
551BB	315	NW	Unspecified Heap	1900
552BB	315	NW	Unspecified Heap	1940
553BJ	317	SW	Unspecified Disused Shafts	1981
554AY	318	S	Unspecified Heap	1940
555AY	323	S	Unspecified Heap	1900
556AY	327	S	Unspecified Heap	1923
557BJ	328	SW	Unspecified Disused Shafts	1981
558BC	330	NW	Unspecified Heap	1859
559BB	332	NW	Unspecified Old Shaft	1924
560BC	332	NW	Unspecified Ground Workings	1900
561BJ	333	SW	Unspecified Disused Shafts	1981
562CQ	335	SW	Unspecified Disused Shafts	1981
563BB	335	NW	Unspecified Old Shaft	1940
564BB	335	NW	Unspecified Old Shaft	1900
565BB	335	NW	Unspecified Shaft	1859
566BB	337	NW	Unspecified Old Shaft	1924
567BC	337	NW	Unspecified Ground Workings	1901
568BI	339	SW	Unspecified Disused Shafts	1981
569BD	340	SW	Unspecified Disused Shafts	1981
570BF	340	NE	Unspecified Heaps	1859
571CR	354	SW	Unspecified Disused Shafts	1981
572BF	357	NE	Unspecified Shaft	1859
573BL	357	NE	Unspecified Old Shaft	1900
574BI	358	SW	Unspecified Disused Shafts	1981
575BJ	364	SW	Unspecified Disused Shafts	1981

576BH	365	SW	Unspecified Disused Shafts	1981
577BG	366	S	Old Lead Mine	1940
578BF	377	NE	Unspecified Disused Shafts	1981
579CS	377	N	Grave Yard	1859
580BU	381	S	Refuse Heap	1981
581BN	383	SW	Unspecified Old Level	1900
582AV	385	NE	Unspecified Disused Shafts	1981
583BH	394	SW	Unspecified Disused Shafts	1981
584BI	400	SW	Unspecified Disused Shafts	1981
585BJ	402	SW	Unspecified Disused Shafts	1981
586BK	402	NE	Unspecified Heap	1924
587CT	406	SW	Unspecified Pit	1859
588BK	406	NE	Unspecified Heap	1859
589CU	407	SW	Unspecified Disused Shafts	1981
590BK	408	NE	Unspecified Heap	1924
591BM	409	NE	Unspecified Disused Shafts	1981
592BK	409	NE	Unspecified Heap	1900
593BK	410	NE	Unspecified Heap	1940
594BL	411	NE	Unspecified Disused Shafts	1981
595BM	412	NE	Unspecified Disused Shafts	1981
596CT	416	SW	Unspecified Disused Level	1981
597CV	416	NE	Unspecified Disused Shaft	1981
598BT	419	NE	Unspecified Disused Shafts	1981
599BP	423	W	Unspecified Disused Shafts	1981
600BM	427	NE	Unspecified Disused Shafts	1981
601CW	434	S	Unspecified Disused Shafts	1981
602CX	435	SW	Unspecified Shaft	1981
603BS	435	SE	Unspecified Old Shaft	1900
604BO	439	NW	Unspecified Heap	1901
605BU	439	S	Lead Mine	1859
606BO	439	NW	Unspecified Heap	1859
607BO	444	NW	Unspecified Heap	1924
608BO	445	NW	Unspecified Heap	1924
609BP	453	W	Unspecified Disused Shafts	1981
610BR	455	SW	Unspecified Disused Shafts	1981

611CU	461	SW	Unspecified Disused Shafts	1981
612BV	463	N	Unspecified Disused Shaft	1981
613BN	466	SW	Unspecified Level	1859
614BT	466	NE	Unspecified Disused Shafts	1981
615BN	475	SW	Unspecified Old Level	1940
616BR	478	SW	Unspecified Disused Shafts	1981
617BS	485	SE	Unspecified Heap	1859
618BS	486	SE	Old Lead Shaft	1940
619BS	486	SE	Unspecified Shaft	1981
620BT	488	NE	Unspecified Disused Shafts	1981
621BU	488	S	Lead Mines	1900
622BS	490	SE	Old Lead Shaft	1923
623BS	490	S	Unspecified Pit	1859
624CY	494	N	Unspecified Disused Shaft	1981
625BV	500	N	Unspecified Disused Shaft	1981

2. Environmental Permits, Incidents and Registers Map



Site Outline

250
500
Search Buffers (m)

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

2. Environmental Permits, Incidents and Registers

2.1 Industrial Sites Holding Licences and/or Authorisations

Searches of information provided by the Environment Agency/Natural Resources Wales and Local Authorities reveal the following information:

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

0

Database searched and no data found.

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

0

Database searched and no data found.

2.1.3 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.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations:

0

Database searched and no data found.

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

9

The following Licensed Discharge Consents records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
3	228	N	378020 543810	Address: HILLERSDON TCE SSO, NENTHEAD Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 232/0916 Permit Version: 1	Receiving Water: NENT Status: REVOKED - UNSPECIFIED Issue date: 21/09/1989 Effective Date: 21-Sep-1989 Revocation Date: 22/11/1996
4A	247	NW	377949 543799	Address: CSO AT HILLIERSON TERRACE, HILLERSDON TERRACE, NENTHEAD, ALSTON, CUMBRIA, CA9 3PG Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 232/1022 Permit Version: 2	Receiving Water: RIVER NENT Status: VARIED UNDER EPR 2010 Issue date: 26/03/2018 Effective Date: 01-Apr-2018 Revocation Date: -
5A	247	NW	377950 543800	Address: CSO AT HILLIERSON TERRACE, HILLERSDON TERRACE, NENTHEAD, ALSTON, CUMBRIA, CA9 3PG Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 232/1022 Permit Version: 1	Receiving Water: NENT Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 22/08/1996 Effective Date: 22-Nov-1996 Revocation Date: 31/03/2018
6	369	NW	377820 543850	Address: HOLMSFOOT SSO, NENTHEAD Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 232/0915 Permit Version: 1	Receiving Water: NENT Status: REVOKED - UNSPECIFIED Issue date: 21/09/1989 Effective Date: 21-Sep-1989 Revocation Date: 22/11/1996
7B	418	NW	377800 543900	Address: NENTHEAD SEWAGE TREATMENT WORKS, NENTHEAD Effluent Type: SEWAGE DISCHARGES - STW STORM OVERFLOW/STORM TANK - WATER COMPANY Permit Number: 232/F/0475 Permit Version: 1	Receiving Water: NENT Status: REVOKED - UNSPECIFIED Issue date: 04/05/1964 Effective Date: 04-May-1964 Revocation Date: 25/12/1965
8B	418	NW	377800	Address: NENTHEAD SEWAGE TREATMENT	Receiving Water: NENT

ID	Distance (m)	Direction	NGR	Details	
			543900	WORKS, NENTHEAD Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: 232/F/0474 Permit Version: 1	Status: REVOKED - UNSPECIFIED Issue date: 04/05/1964 Effective Date: 04-May-1964 Revocation Date: 15/09/1982
9C	436	NW	377850 543960	Address: HOLMSFOOT CSO, NEAR CRANMER COTTAGE, NENTHEAD, ALSTON, CUMBRIA, CA9 3LR Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 232/1021 Permit Version: 1	Receiving Water: NENT Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 22/08/1996 Effective Date: 22-Nov-1996 Revocation Date: 31/03/2018
10C	444	NW	377847 543968	Address: HOLMSFOOT CSO, NEAR CRANMER COTTAGE, NENTHEAD, ALSTON, CUMBRIA, CA9 3LR Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 232/1021 Permit Version: 2	Receiving Water: RIVER NENT Status: VARIED UNDER EPR 2010 Issue date: 23/03/2018 Effective Date: 01-Apr-2018 Revocation Date: -
11	461	W	377620 543530	Address: FIDDLERS COTTAGE, FIDDLER STREET, NENTHEAD, ALSTON, CUMBRIA, CA9 3PX Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: 232/1173 Permit Version: 1	Receiving Water: NENT, UNNAMED TRIB. OF Status: NEW CONSENT, BY APPLICATION (WRA 91, SECTION 88) Issue date: 05/09/2005 Effective Date: 05-Sep-2005 Revocation Date: -

2.1.9 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.

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

0

Database searched and no data found.

2.2 Dangerous or Hazardous Sites

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

Database searched and no data found.

2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents

2.3.1 Records of National Incidents Recording System, List 2 within 500m of the study site:

2

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

ID	Distance (m)	Direction	NGR	Details	
1	8	S	378293 543354	Incident Date: 21-Apr-2018 Incident Identification: 1607921 Pollutant: Pollutant Not Identified Pollutant Description: Not Identified	Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
2	15	W	378732 543045	Incident Date: 03-Apr-2008 Incident Identification: 582701 Pollutant: Other Pollutant Pollutant Description: Other	Water Impact: Category 1 (Major) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)

2.3.2 Records of National Incidents Recording System, List 1 within 500m of the study site:

0

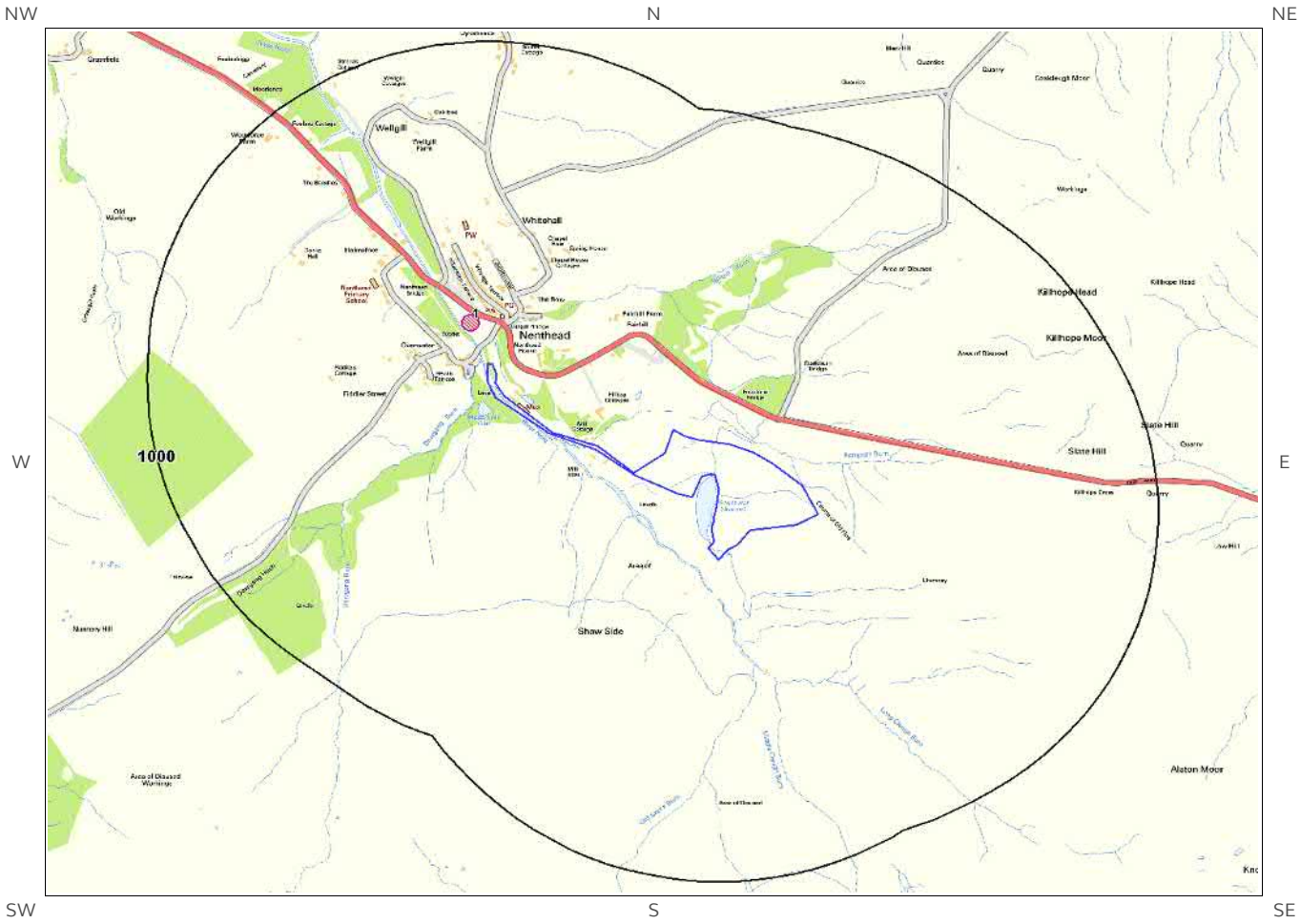
Database searched and no data found.

2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990

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.

3. Landfill and Other Waste Sites Map



Site Outline

250
500
Search Buffers (m)

EA/NRW Active Landfill

EA/NRW Historic Landfill

BGS / DoE Survey Landfill

Historic and Planned Waste Sites

EA/NRW Licensed Waste Site

Local Authority/Historical Mapping Landfill Records

3. Landfill and Other Waste Sites

3.1 Landfill Sites

3.1.1 Records from Environment Agency/Natural Resources Wales landfill data within 1000m of the study site:

0

Database searched and no data found.

3.1.2 Records of Environment Agency/Natural Resources Wales historic landfill sites within 1500m of the study site:

0

Database searched and no data found.

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

0

Database searched and no data found.

3.1.4 Records of Landfills from Local Authority and Historical Mapping Records within 1500m of the study site:

0

Database searched and no data found.

3.2 Other Waste Sites

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

1

The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

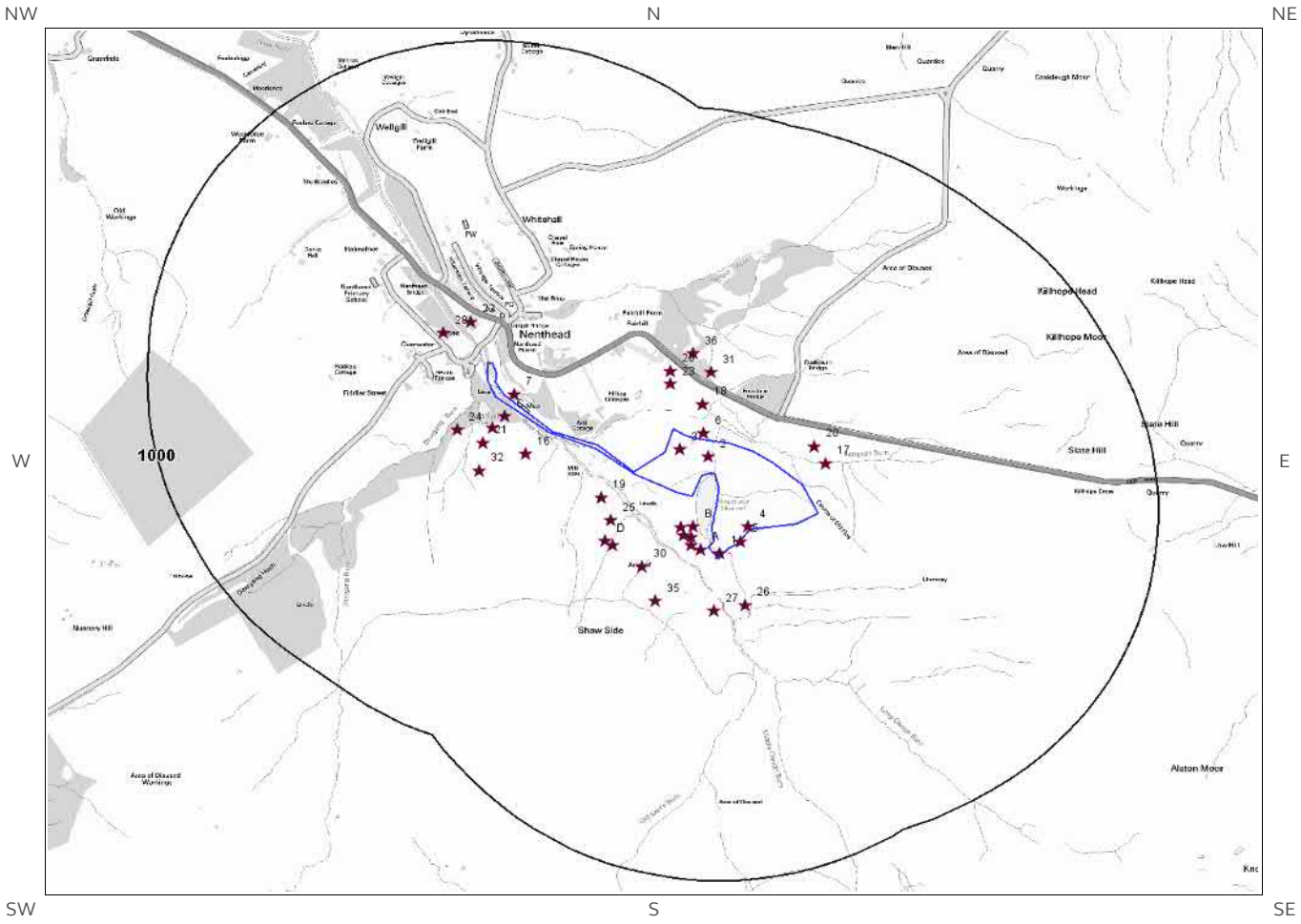
ID	Distance (m)	Direction	NGR	Details		
1	112	N	378031 543718	Type of Site: Recycling Facilities Site Address: Nenthead Triangle, Nenthead, ALSTON, Cumbria, CA9 3	Planning Application Reference: 06/0696 Date: -	Further Details: Scheme comprises redevelopment of derelict land to provide improved recycling facilities and associated landscaping. Construction - planting site works. An application (ref: 06/0696) for detailed planning permission was granted by Eden D.C. Planning desion obtained Data Source: Historic Planning Application Data Type: Point

3.2.2 Records of Environment Agency/Natural Resources Wales licensed waste sites within 1500m of the study site:

0

Database searched and no data found.

4. Current Land Use Map



Site Outline

Search Buffers (m)
250
500

Current Industrial Sites

Petrol & Fuel Sites

Electricity Transmission Cables

Gas Transmission Pipelines

4. Current Land Uses

4.1 Current Industrial Data

Records of potentially contaminative industrial sites within 250m of the study site: 36

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

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	0	On Site	Shaft	378764 543002	Cumbria, CA9	Unspecified Quarries Or Mines	Extractive Industries
2	0	On Site	Shaft (Disused)	378729 543301	Cumbria, CA9	Unspecified Quarries Or Mines	Extractive Industries
3	0	On Site	Shaft (Disused)	378646 543323	Cumbria, CA9	Unspecified Quarries Or Mines	Extractive Industries
4	0	On Site	Shaft (Disused)	378847 543084	Cumbria, CA9	Unspecified Quarries Or Mines	Extractive Industries
5	0	SE	Shaft (Disused)	378826 543038	Cumbria, CA9	Unspecified Quarries Or Mines	Extractive Industries
6	20	N	Shaft	378715 543373	Cumbria, CA9	Unspecified Quarries Or Mines	Extractive Industries
7	21	NE	Mine (Disused)	378159 543495	Cumbria, CA9	Unspecified Quarries Or Mines	Extractive Industries
8A	22	W	Shaft (Disused)	378709 543013	Cumbria, CA9	Unspecified Quarries Or Mines	Extractive Industries
9C	34	SW	Shaft (Disused)	378131 543426	Cumbria, CA9	Unspecified Quarries Or Mines	Extractive Industries
10A	51	W	Shaft (Disused)	378681 543027	Cumbria, CA9	Unspecified Quarries Or Mines	Extractive Industries
11B	55	W	Shaft (Disused)	378687 543084	Cumbria, CA9	Unspecified Quarries Or Mines	Extractive Industries
12A	60	NW	Shaft (Disused)	378680 543050	Cumbria, CA9	Unspecified Quarries Or Mines	Extractive Industries
13B	82	NW	Shaft (Disused)	378659 543058	Cumbria, CA9	Unspecified Quarries Or Mines	Extractive Industries
14C	83	SW	Shaft (Disused)	378096 543391	Cumbria, CA9	Unspecified Quarries Or Mines	Extractive Industries
15B	92	W	Shaft (Disused)	378650 543081	Cumbria, CA9	Unspecified Quarries Or Mines	Extractive Industries
16	93	SW	Shaft (Disused)	378192 543310	Cumbria, CA9	Unspecified Quarries Or Mines	Extractive Industries
17	96	NE	Shaft	379076 543280	Cumbria, CA9	Unspecified Quarries Or Mines	Extractive Industries
18	109	N	Spoil Heap	378713 543464	Cumbria, CA9	Waste Storage, Processing and Disposal	Infrastructure and Facilities
19	116	SW	Shaft (Disused)	378415 543174	Cumbria, CA9	Unspecified Quarries Or Mines	Extractive Industries
20	118	NE	Shaft	379043	Cumbria, CA9	Unspecified Quarries Or	Extractive Industries

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
				543334		Mines	
21	137	SW	Shaft (Disused)	378068 543345	Cumbria, CA9	Unspecified Quarries Or Mines	Extractive Industries
22	138	N	Depot	378032 543720	Cumbria, CA9	Container and Storage	Transport, Storage and Delivery
23	142	N	Shaft (Disused)	378618 543527	Cumbria, CA9	Unspecified Quarries Or Mines	Extractive Industries
24	152	SW	Shaft	377992 543385	Cumbria, CA9	Unspecified Quarries Or Mines	Extractive Industries
25	158	SW	Shaft (Disused)	378442 543104	Cumbria, CA9	Unspecified Quarries Or Mines	Extractive Industries
26	160	SE	Shaft	378839 542841	Cumbria, CA9	Unspecified Quarries Or Mines	Extractive Industries
27	160	S	Shaft	378746 542823	Cumbria, CA9	Unspecified Quarries Or Mines	Extractive Industries
28	161	NW	Works	377951 543685	Cumbria, CA9	Unspecified Works Or Factories	Industrial Features
29	181	N	Shaft (Disused)	378618 543567	Cumbria, CA9	Unspecified Quarries Or Mines	Extractive Industries
30	203	W	Mine Workings (Disused)	378536 542960	Cumbria, CA9	Unspecified Quarries Or Mines	Extractive Industries
31	207	NE	Shaft (Disused)	378738 543563	Cumbria, CA9	Unspecified Quarries Or Mines	Extractive Industries
32	214	SW	Shafts	378056 543258	Cumbria, CA9	Unspecified Quarries Or Mines	Extractive Industries
33D	222	SW	Shaft (Disused)	378427 543040	Cumbria, CA9	Unspecified Quarries Or Mines	Extractive Industries
34D	226	SW	Shaft (Disused)	378450 543026	Cumbria, CA9	Unspecified Quarries Or Mines	Extractive Industries
35	226	SW	Spoil Heap	378575 542853	Cumbria, CA9	Waste Storage, Processing and Disposal	Infrastructure and Facilities
36	242	N	Shaft (Disused)	378686 543621	Cumbria, CA9	Unspecified Quarries Or Mines	Extractive Industries

4.2 Petrol and Fuel Sites

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

Database searched and no data found.

4.3 National Grid High Voltage Underground Electricity Transmission Cables

This dataset identifies the high voltage electricity transmission lines running between generating power plants and electricity substations. The dataset does not include the electricity distribution network (smaller, lower voltage cables distributing power from substations to the local user network). This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high voltage underground electricity transmission cables within 500m of the study site: 0

Database searched and no data found.

4.4 National Grid High Pressure Gas Transmission Pipelines

This dataset identifies high-pressure, large diameter pipelines which carry gas between gas terminals, power stations, compressors and storage facilities. The dataset does not include the Local Transmission System (LTS) which supplies gas directly into homes and businesses. This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high pressure gas transmission pipelines within 500m of the study site: 0

Database searched and no data found.

---

5. Geology

5.1 Artificial Ground and Made Ground

Database searched and no data found.

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

5.2 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

5.3 Bedrock and Solid Geology

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

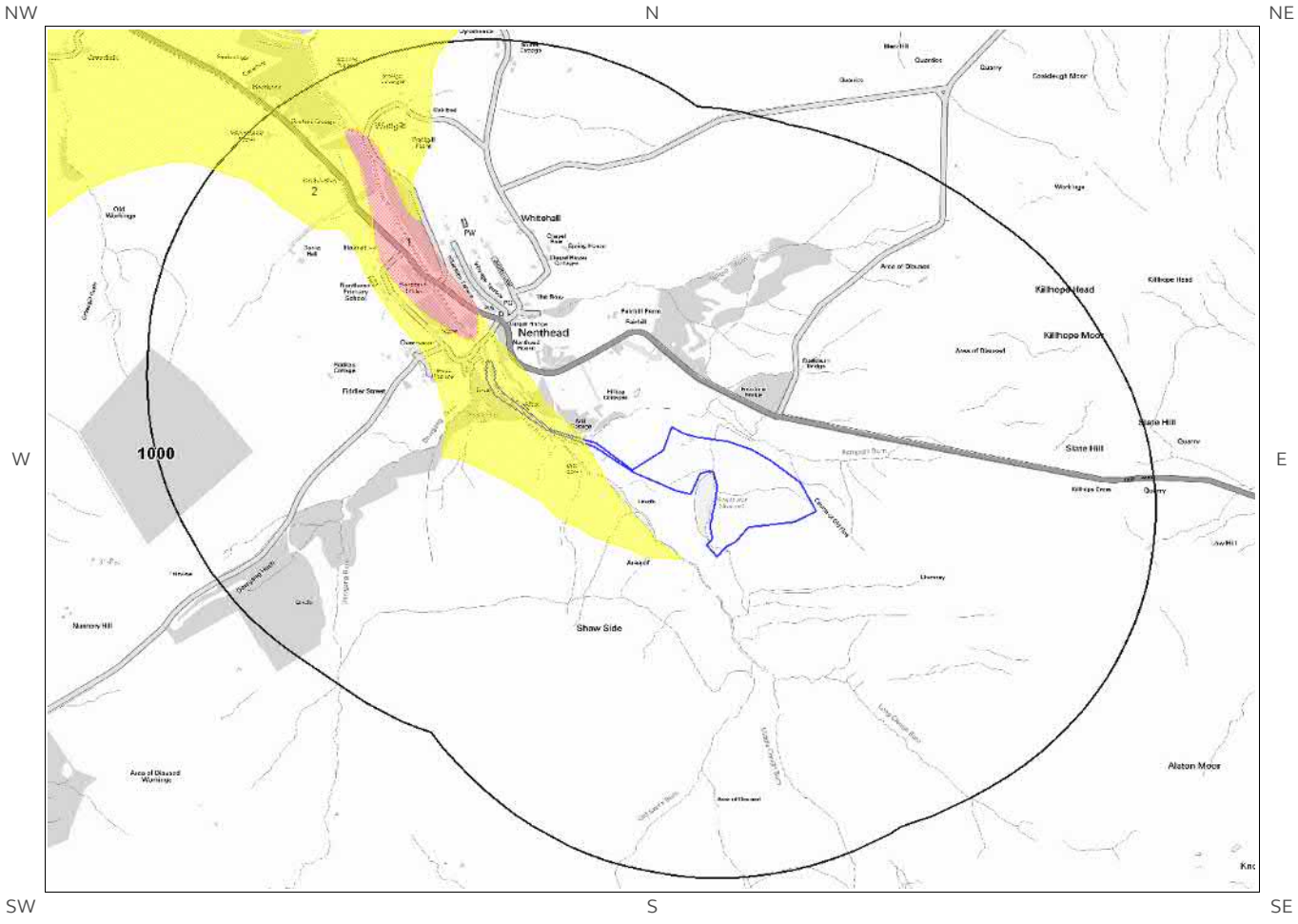
Lex Code	Description	Rock Type
SMGP-MDSL	STAINMORE FORMATION	MUDSTONE, SANDSTONE AND LIMESTONE
AG-LSSM	ALSTON FORMATION	LIMESTONE, SANDSTONE, SILTSTONE AND MUDSTONE
FS-SDST	FIRESTONE SANDSTONE	SANDSTONE
SMGP-MDSL	STAINMORE FORMATION	MUDSTONE, SANDSTONE AND LIMESTONE
GL-LMST	GREAT LIMESTONE MEMBER	LIMESTONE
AG-LSSM	ALSTON FORMATION	LIMESTONE, SANDSTONE, SILTSTONE AND MUDSTONE
GL-LMST	GREAT LIMESTONE MEMBER	LIMESTONE
SMGP-MDSL	STAINMORE FORMATION	MUDSTONE, SANDSTONE AND LIMESTONE
SMGP-MDSL	STAINMORE FORMATION	MUDSTONE, SANDSTONE AND LIMESTONE
AG-LSSM	ALSTON FORMATION	LIMESTONE, SANDSTONE, SILTSTONE AND MUDSTONE
FS-SDST	FIRESTONE SANDSTONE	SANDSTONE
LTLS-LMST	LITTLE LIMESTONE	LIMESTONE
SMGP-MDSL	STAINMORE FORMATION	MUDSTONE, SANDSTONE AND LIMESTONE
FS-SDST	FIRESTONE SANDSTONE	SANDSTONE

Lex Code	Description	Rock Type
SMGP-MDSL	STAINMORE FORMATION	MUDSTONE, SANDSTONE AND LIMESTONE
SMGP-MDSL	STAINMORE FORMATION	MUDSTONE, SANDSTONE AND LIMESTONE
SMGP-MDSL	STAINMORE FORMATION	MUDSTONE, SANDSTONE AND LIMESTONE

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

6 Hydrogeology and Hydrology

6a. Aquifer Within Superficial Geology



Site Outline

250
500
Search Buffers (m)

Principal Aquifer

Secondary (A) Aquifer - Permeable Layers

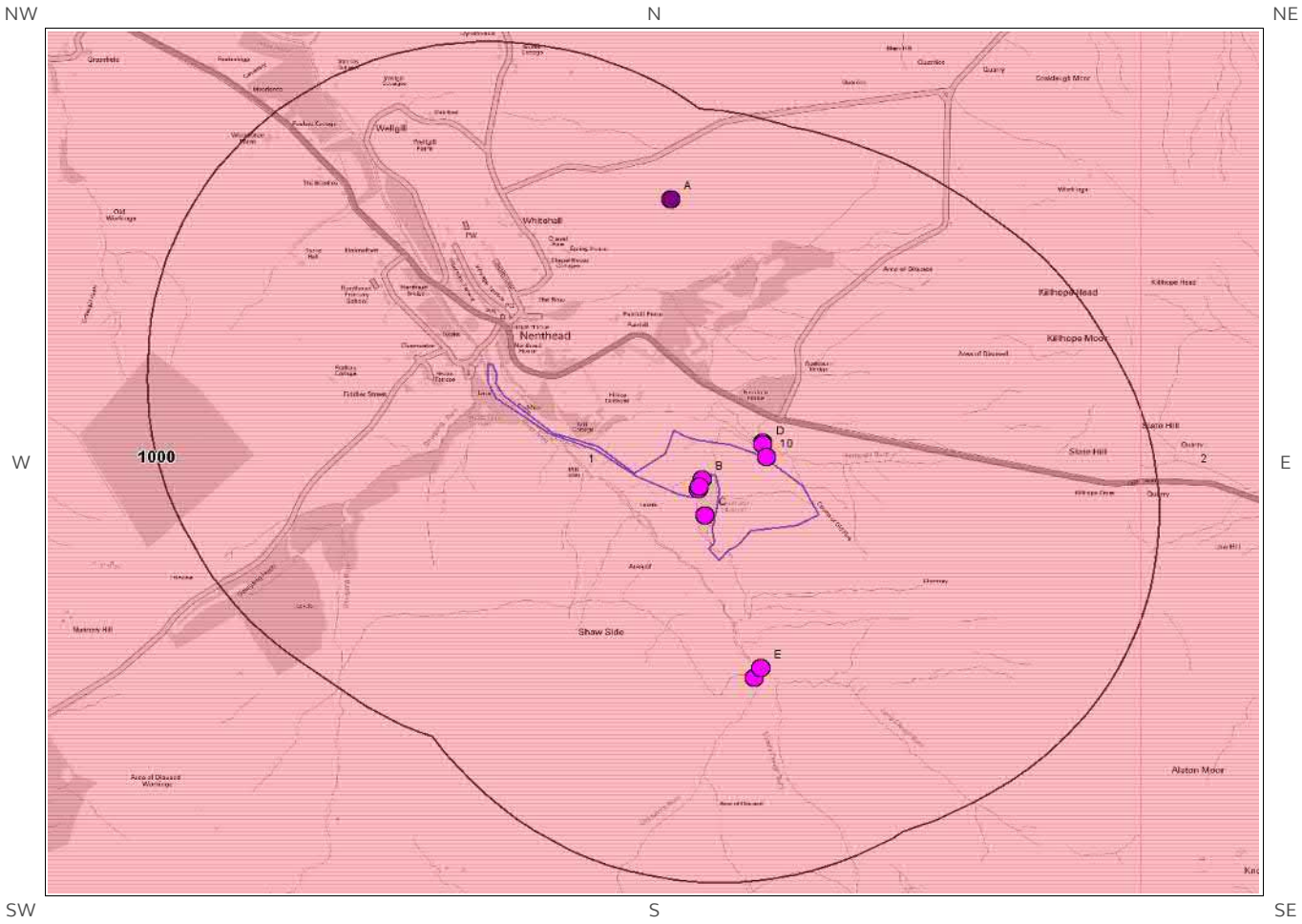
Secondary (B) Aquifer - Lower Permeability Layers

Secondary Aquifer - Undifferentiated Layers

Unproductive

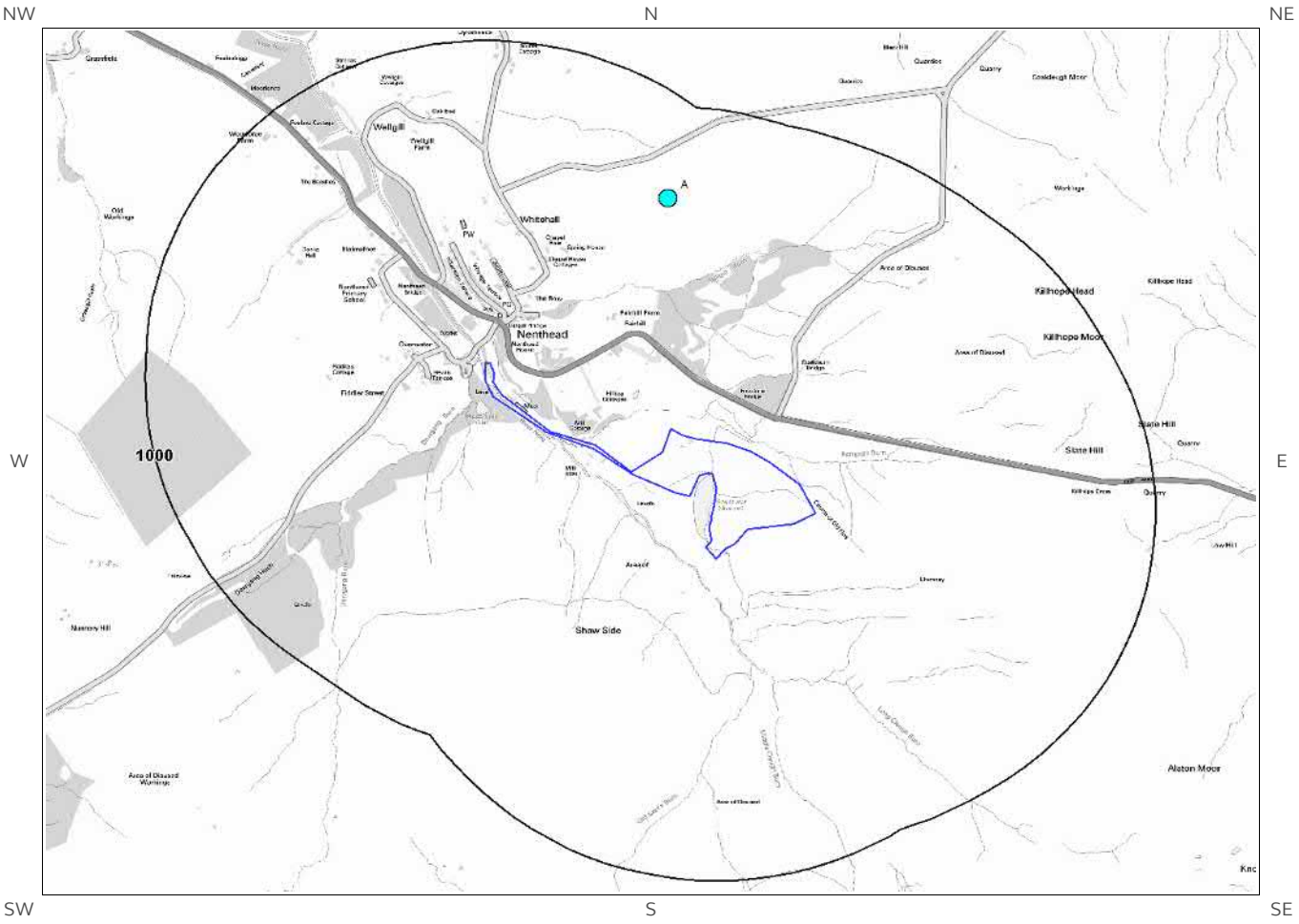
Unknown (lakes and landslip)

6b. Aquifer Within Bedrock Geology and Abstraction Licences



Site Outline
250
500
Search Buffers (m)
Principal Aquifer
Secondary (A) Aquifer - Permeable Layers
Secondary (B) Aquifer - Lower Permeability Layers
Groundwater Abstraction Licence
Secondary Aquifer - Undifferentiated Layers
Unproductive
Unknown (lakes and landslip)
Surface Water Abstraction Licence

6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licences



Site Outline

250
500
Search Buffers (m)

Source Protection Zone 1 - Inner Catchment

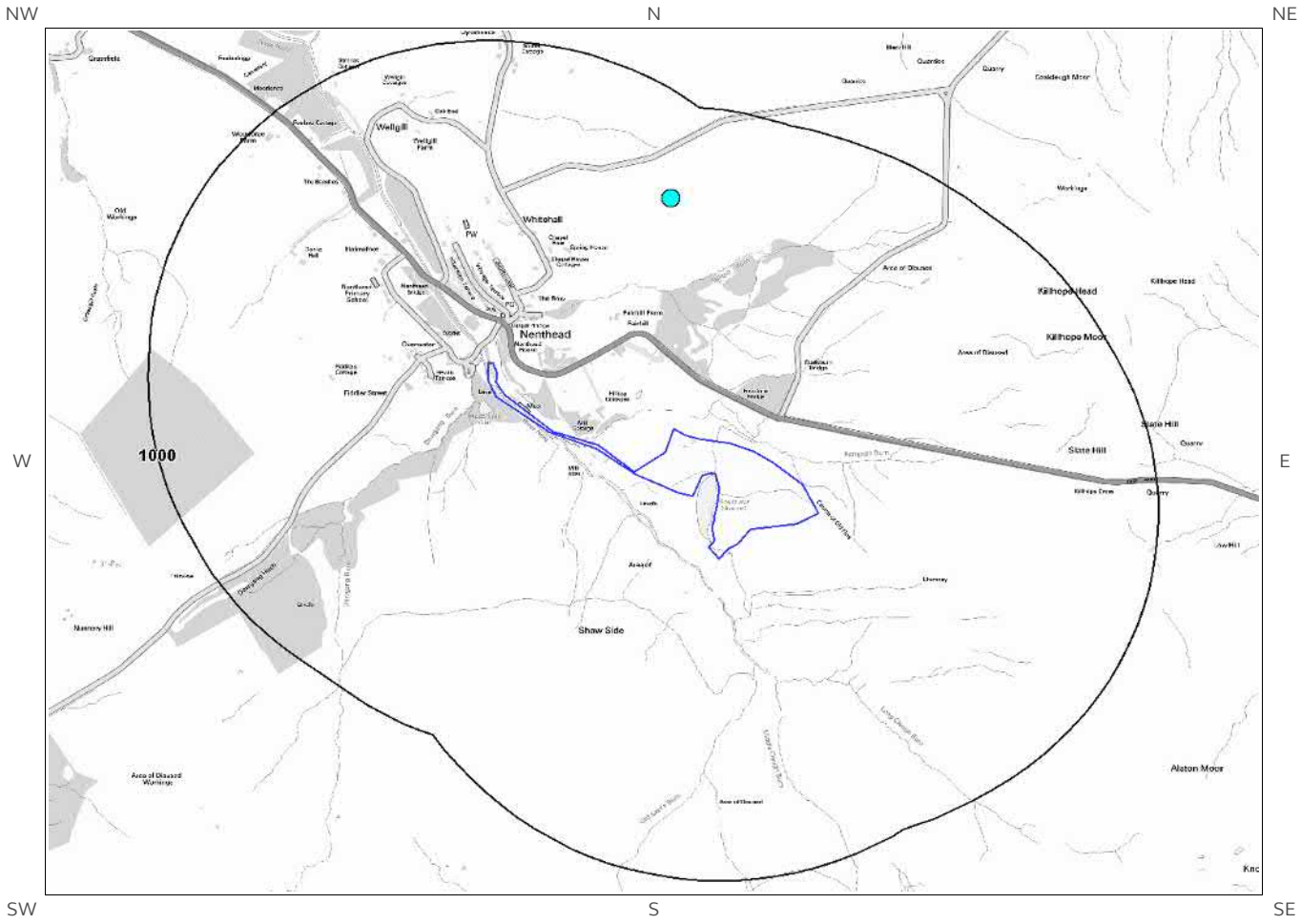
Source Protection Zone 2 - Outer Catchment

Source Protection Zone 3 - Total Catchment

Source Protection Zone 4 - Zone of Special Interest

Potable Water Abstraction Licence

6d. Hydrogeology – Source Protection Zones within confined aquifer



Site Outline

250
500
Search Buffers (m)

Source Protection Zone 1 - Inner Catchment

Source Protection Zone 2C - Outer Catchment within Confined Aquifer

Source Protection Zone 3C - Total Catchment within Confined Aquifer

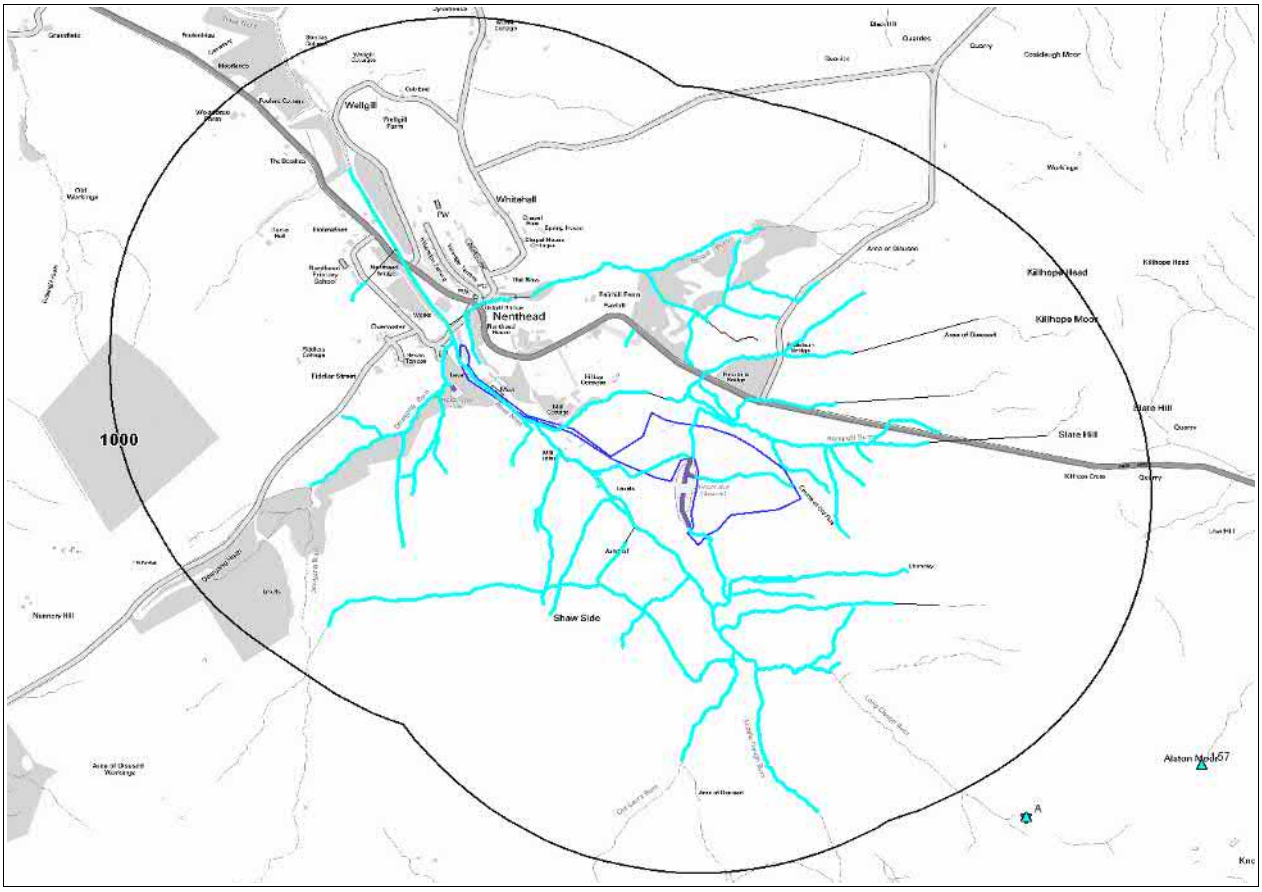
Potable Water Abstraction Licence

6e. Hydrology – Watercourse Network and River Quality

NW N NE

W E

SW S SE



Site Outline

250 Search Buffers (m)
500

Tidal River
Inland River
Underground or Elevated Tidal River
Underground or Elevated Inland River
Foreshore
General Quality Assessment: Chemistry

Canal
Underground or Elevated Canal
Lock or Flight of Locks
Lake, Reservoir, or Marsh
Drain or Transfer
General Quality Assessment: Biology

6.Hydrogeology and Hydrology

6.1 Aquifer within Superficial Deposits

Records of strata classification within the superficial geology at or in proximity to the property Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales'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 Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Superficial Geology Map (6a):

ID	Distance (m)	Direction	Designation	Description
2	0	On Site	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
1	78	NW	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

6.2 Aquifer within Bedrock Deposits

Records of strata classification within the bedrock geology at or in proximity to the property Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales'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 Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	Designation	Description
1	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

6.3 Groundwater Abstraction Licences

Groundwater Abstraction Licences within 2000m of the study site — Identified

The following Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	NGR	Details	
3A	714	N	378620 544100	Status: Historical Licence No: 1/23/02/132 Details: Potable Water Supply - Direct Direct Source: GROUNDWATERS Point: BOREHOLE - UPPER LIMESTONE & MILLSTONE GRIT - HARDEDGE Data Type: Point Name: UNITED UTILITIES WATER PLC	Annual Volume (m^3): 54750 Max Daily Volume (m^3): 150 Original Application No: - Original Start Date: 01/09/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/09/2001 Version End Date:
4A	714	N	378620 544100	Status: Historical Licence No: 1/23/02/132 Details: Potable Water Supply - Direct Direct Source: GROUNDWATERS Point: HARDEDGE (UPPER LIMESTONE & MILLSTONE GRIT) Data Type: Point Name: NORTH WEST WATER LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 01/09/1966 Expiry Date: - Issue No: 100 Version Start Date: 18/09/1992 Version End Date:
Not shown	1691	NW	376740 544620	Status: Historical Licence No: 1/23/02/187 Details: Potable Water Supply - Direct Direct Source: GROUNDWATERS Point: MINE ADIT - UPPER LIMESTONE & MILLSTONE GRIT Data Type: Point Name: UNITED UTILITIES WATER PLC	Annual Volume (m^3): 73000 Max Daily Volume (m^3): 200 Original Application No: - Original Start Date: 11/11/1969 Expiry Date: - Issue No: 102 Version Start Date: 01/09/2001 Version End Date:
Not shown	1691	NW	376740 544620	Status: Historical Licence No: 1/23/02/187 Details: Potable Water Supply - Direct Direct Source: GROUNDWATERS Point: MINE ADIT (UPPER LIMESTONE & MILLSTONE GRIT) Data Type: Point Name: NORTH WEST WATER LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 11/11/1969 Expiry Date: - Issue No: 100 Version Start Date: 18/09/1992 Version End Date:

6.4 Surface Water Abstraction Licences

Surface Water Abstraction Licences within 2000m of the study site — Identified

The following Surface Water Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	NGR	Details	
7B	3	SE	378710 543230	Status: Historical Licence No: 1/23/02/229 Details: Hydroelectric Power Generation Direct Source: SURFACE WATER Point: HANSOME MEA Data Type: Point Name: NENTHEAD MINES HYDROPOWER LTD	Annual Volume (m^3): 5e+006 Max Daily Volume (m^3): 20300 Application No: - Original Start Date: 29/04/2005 Expiry Date: 31/03/2018 Issue No: 2 Version Start Date: 09/04/2008 Version End Date:
8B	3	SE	378701	Status: Active	Annual Volume (m^3): 5e+006

ID	Distance (m)	Direction	NGR	Details	
			543208	Licence No: 1/23/02/229/R01 Details: Hydroelectric Power Generation Direct Source: SURFACE WATER Point: HANSOME MEA Data Type: Point Name: NENTHEAD MINES HYDROPOWER LTD	Max Daily Volume (m³): 20300 Application No: - Original Start Date: 01/04/2018 Expiry Date: 31/03/2030 Issue No: 1 Version Start Date: 01/04/2018 Version End Date:
9B	5	SE	378700 543200	Status: Historical Licence No: 1/23/02/229 Details: Hydroelectric Power Generation Direct Source: SURFACE WATER Point: HANSOME MEA Data Type: Point Name: NENTHEAD MINES HYDROPOWER LTD	Annual Volume (m³): 5e+006 Max Daily Volume (m³): 20300 Application No: - Original Start Date: 29/04/2005 Expiry Date: 31/03/2018 Issue No: 1 Version Start Date: 29/04/2005 Version End Date:
10	6	NE	378900 543300	Status: Historical Licence No: 1/23/02/229 Details: Hydroelectric Power Generation Direct Source: SURFACE WATER Point: HANSOME MEA Data Type: Point Name: NENTHEAD MINES HYDROPOWER LTD	Annual Volume (m³): 5e+006 Max Daily Volume (m³): 20300 Application No: - Original Start Date: 29/04/2005 Expiry Date: 31/03/2018 Issue No: 1 Version Start Date: 29/04/2005 Version End Date:
11C	29	W	378720 543120	Status: Historical Licence No: 1/23/02/093 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: SURFACE WATER Point: RESERVOIR (INLAND WATER NON TIDAL) Data Type: Point Name: THE TRUSTEES FOR THE ROMAN CATHOLIC PURPOSES REGISTERED	Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: 01/09/1966 Expiry Date: - Issue No: 100 Version Start Date: 26/10/1984 Version End Date:
12C	29	W	378720 543120	Status: Historical Licence No: 1/23/02/093 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: SURFACE WATER Point: RESERVOIR - NENTHEAD Data Type: Point Name: TRUSTEES FOR ROMAN CATHOLIC PURPOSES	Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: 01/09/1966 Expiry Date: - Issue No: 100 Version Start Date: 26/10/1984 Version End Date:
13D	34	NE	378890 543340	Status: Historical Licence No: 1/23/02/229 Details: Hydroelectric Power Generation Direct Source: SURFACE WATER Point: HANSOME MEA Data Type: Point Name: NENTHEAD MINES HYDROPOWER LTD	Annual Volume (m³): 5e+006 Max Daily Volume (m³): 20300 Application No: - Original Start Date: 29/04/2005 Expiry Date: 31/03/2018 Issue No: 2 Version Start Date: 09/04/2008 Version End Date:
14D	39	NE	378888 543346	Status: Active Licence No: 1/23/02/229/R01 Details: Hydroelectric Power Generation Direct Source: SURFACE WATER Point: RAMPGILL BURN Data Type: Point Name: NENTHEAD MINES HYDROPOWER LTD	Annual Volume (m³): 5e+006 Max Daily Volume (m³): 20300 Application No: - Original Start Date: 01/04/2018 Expiry Date: 31/03/2030 Issue No: 1 Version Start Date: 01/04/2018 Version End Date:
15E	358	S	378884 542645	Status: Active Licence No: 1/23/02/229/R01 Details: Hydroelectric Power Generation Direct Source: SURFACE WATER Point: LONG CLEUGH AND MIDDLE CLEUGH DIVERSION Data Type: Point Name: NENTHEAD MINES HYDROPOWER LTD	Annual Volume (m³): 5e+006 Max Daily Volume (m³): 20300 Application No: - Original Start Date: 01/04/2018 Expiry Date: 31/03/2030 Issue No: 1 Version Start Date: 01/04/2018 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
16E	381	S	378863 542615	Status: Active Licence No: 1/23/02/229/R01 Details: Hydroelectric Power Generation Direct Source: SURFACE WATER Point: OLD CARRS BURN DIVERSION Data Type: Point Name: NENTHEAD MINES HYDROPOWER LTD	Annual Volume (m^3): 5e+006 Max Daily Volume (m^3): 20300 Application No: - Original Start Date: 01/04/2018 Expiry Date: 31/03/2030 Issue No: 1 Version Start Date: 01/04/2018 Version End Date:
Not shown	1152	S	379293 541950	Status: Active Licence No: 1/23/02/230/R01 Details: Hydroelectric Power Generation Direct Source: SURFACE WATER Point: NORTH LEAT REACH Data Type: Line Name: NENTHEAD MINES HYDROPOWER LTD	Annual Volume (m^3): 5e+006 Max Daily Volume (m^3): 21600 Application No: - Original Start Date: 01/04/2018 Expiry Date: 31/03/2030 Issue No: 1 Version Start Date: 01/04/2018 Version End Date:
Not shown	1288	S	378552 541712	Status: Active Licence No: 1/23/02/230/R01 Details: Hydroelectric Power Generation Direct Source: SURFACE WATER Point: PERRY'S DAM Data Type: Point Name: NENTHEAD MINES HYDROPOWER LTD	Annual Volume (m^3): 5e+006 Max Daily Volume (m^3): 21600 Application No: - Original Start Date: 01/04/2018 Expiry Date: 31/03/2030 Issue No: 1 Version Start Date: 01/04/2018 Version End Date:
Not shown	1299	S	378560 541700	Status: Historical Licence No: 1/23/02/230 Details: Hydroelectric Power Generation Direct Source: SURFACE WATER Point: PERRY'S DAM Data Type: Point Name: NENTHEAD MINES HYDROPOWER LTD	Annual Volume (m^3): 5e+006 Max Daily Volume (m^3): 21600 Application No: - Original Start Date: 29/04/2005 Expiry Date: 31/03/2018 Issue No: 2 Version Start Date: 09/04/2008 Version End Date:
Not shown	1309	S	378500 541700	Status: Historical Licence No: 1/23/02/230 Details: Hydroelectric Power Generation Direct Source: SURFACE WATER Point: PERRY'S DAM Data Type: Point Name: NENTHEAD MINES HYDROPOWER LTD	Annual Volume (m^3): 5e+006 Max Daily Volume (m^3): 21600 Application No: - Original Start Date: 29/04/2005 Expiry Date: 31/03/2018 Issue No: 1 Version Start Date: 29/04/2005 Version End Date:
Not shown	1866	S	378578 541126	Status: Active Licence No: 1/23/02/230/R01 Details: Hydroelectric Power Generation Direct Source: SURFACE WATER Point: BLACK ASH GILL Data Type: Point Name: NENTHEAD MINES HYDROPOWER LTD	Annual Volume (m^3): 5e+006 Max Daily Volume (m^3): 21600 Application No: - Original Start Date: 01/04/2018 Expiry Date: 31/03/2030 Issue No: 1 Version Start Date: 01/04/2018 Version End Date:

6.5 Potable Water Abstraction Licences

Potable Water Abstraction Licences within 2000m of the study site — Identified

The following Potable Water Abstraction Licences records are represented as points, lines and regions on the SPZ and Potable Water Abstraction Licences Map (6c):

ID	Distance (m)	Direction	NGR	Details	
1A	714	N	378620 544100	Status: Historical Licence No: 1/23/02/132 Details: Potable Water Supply - Direct	Annual Volume (m^3): 54750 Max Daily Volume (m^3): 150 Original Application No: -

ID	Distance (m)	Direction	NGR	Details	
				Direct Source: GROUNDWATERS Point: BOREHOLE - UPPER LIMESTONE & MILLSTONE GRIT - HARDEDGE Data Type: Point Name: UNITED UTILITIES WATER PLC	Original Start Date: 01/09/1966 Expiry Date: - Issue No: 102 Version Start Date: Version End Date:
2A	714	N	378620 544100	Status: Historical Licence No: 1/23/02/132 Details: Potable Water Supply - Direct Direct Source: GROUNDWATERS Point: HARDEDGE (UPPER LIMESTONE & MILLSTONE GRIT) Data Type: Point Name: NORTH WEST WATER LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 01/09/1966 Expiry Date: - Issue No: 100 Version Start Date: Version End Date:
Not shown	1691	NW	376740 544620	Status: Historical Licence No: 1/23/02/187 Details: Potable Water Supply - Direct Direct Source: GROUNDWATERS Point: MINE ADIT - UPPER LIMESTONE & MILLSTONE GRIT Data Type: Point Name: UNITED UTILITIES WATER PLC	Annual Volume (m^3): 73000 Max Daily Volume (m^3): 200 Original Application No: - Original Start Date: 11/11/1969 Expiry Date: - Issue No: 102 Version Start Date: Version End Date:
Not shown	1691	NW	376740 544620	Status: Historical Licence No: 1/23/02/187 Details: Potable Water Supply - Direct Direct Source: GROUNDWATERS Point: MINE ADIT (UPPER LIMESTONE & MILLSTONE GRIT) Data Type: Point Name: NORTH WEST WATER LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 11/11/1969 Expiry Date: - Issue No: 100 Version Start Date: Version End Date:

6.6 Source Protection Zones

Source Protection Zones within 500m of the study site — None identified

Database searched and no data found.

6.7 Source Protection Zones within Confined Aquifer

Source Protection Zones within the Confined Aquifer within 500m of the study site — None identified

Historically, Source Protection Zone maps have been focused on regulation of activities which occur at or near the ground surface, such as prevention of point source pollution and bacterial contamination of water supplies. Sources in confined aquifers were often considered to be protected from these surface pressures due to the presence of a low permeability confining layer (e.g. glacial till, clay). The increased interest in subsurface activities such as onshore oil and gas exploration, ground source heating and cooling requires protection zones for confined sources to be marked on SPZ maps where this has not already been done.

Database searched and no data found.

6.8 Groundwater Vulnerability and Soil Leaching Potential

Environment Agency/Natural Resources Wales information on groundwater vulnerability and soil leaching potential within 500m of the study site Identified

Distance (m)	Direction	Classification	Soil Vulnerability Category	Description
0	On Site	Minor Aquifer/Low Leaching Potential	L	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.

6.9 River Quality

Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site Identified

6.9.1 Biological Quality:

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 (6e):

ID	Distance (m)	Direction	NGR	River Quality Grade	Biological Quality Grade				
					2005	2006	2007	2008	2009
155A	1168	SE	379700 542150	River Name: Nent Reach: Source South Tyne End/Start of Stretch: End of Stretch NGR	C	C	C	C	C

6.9.2 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 (6e):

ID	Distance (m)	Direction	NGR	River Quality Grade	Chemical Quality Grade				
					2005	2006	2007	2008	2009
156A	1168	SE	379700 542150	River Name: Nent Reach: Source South Tyne End/Start of Stretch: Start of Stretch NGR	A	A	A	A	A
157	1404	SE	380200 542310	River Name: Kilhope Burn Reach: Source Burnhope Burn End/Start of Stretch: Start of Stretch NGR	A	A	A	A	A

6.10 Ordnance Survey MasterMap Water Network

Ordnance Survey MasterMap Water Network entries within 500m of the study site

This watercourse information is provided by Ordnance Survey MasterMap Water Network. The data provides a detailed centre line following the curve of the waterway precisely, so all distances provided in the report should be understood as measurements to the centreline rather than a measurement to the nearest point of the watercourse. Underground watercourses are inferred from entry and exit points so caution is advised in using these to indicate precise locations of underground watercourses when planning site investigation and development.

The following Ordnance Survey MasterMap Water Network records are represented on the Hydrology Map (6e):

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
1	0 On Site	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
2	0 On Site	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
3	0 On Site	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
4	0 On Site	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
5	0 On Site	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
6	0 On Site	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
7	0 On Site	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
8	0 On Site	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.0
9	0 On Site	Rampgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				conditions) Average Width in Watercourse Section (m): 1.4
22	0 On Site	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
23	0 On Site	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
24	0 On Site	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
25	0 On Site	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
26	0 On Site	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
27	0 On Site	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
28	0 On Site	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
29	0 On Site	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.0
30	0 On Site	Rampgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.4
10	1 S	Not Specified	Reservoir. An area of non-tidal water used for storing water.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 34.2
31	1 S	Not Specified	Reservoir. An area of non-tidal water used for storing water.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 34.2
11	3 S	Not Specified	Reservoir. An area of non-tidal water used for storing water.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
32	3 S	Not Specified	Reservoir. An area of non-tidal water used for storing water.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
12	4 S	Not Specified	Reservoir. An area of non-tidal water used for storing water.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 34.2
33	4 S	Not Specified	Reservoir. An area of non-tidal water used for storing water.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 34.2
13	5 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
34	5 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
14	6 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
15	6 S	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.4
35	6 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
36	6 S	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.4
16	8 NW	Not Specified	Reservoir. An area of non-tidal water used for storing water.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
17	8 S	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
37	8 NW	Not Specified	Reservoir. An area of non-tidal water used for storing water.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
38	8	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	S			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
18	9 W	Not Specified	Reservoir. An area of non-tidal water used for storing water.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 34.2
19	9 S	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 6.1
39	9 W	Not Specified	Reservoir. An area of non-tidal water used for storing water.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 34.2
40	9 S	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 6.1
20	15 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
21	15 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
41	15 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
42	15 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
22	16 E	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
43	16 E	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
23	20 E	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
44	20 E	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				Average Width in Watercourse Section (m): Not Provided
24	26 NW	Dowgang Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.8
25	26 NW	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.3
45	26 NW	Dowgang Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.8
46	26 NW	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.3
26	33 N	Rampgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
27	33 N	Rampgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
47	33 N	Rampgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
48	33 N	Rampgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
28	35 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
29	35 N	Rampgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
49	35 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
50	35 N	Rampgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
30	43 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
31	43 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
51	43 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
52	43 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
32	49 SW	Not Specified	Lake, loch or reservoir.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.9
53	49 SW	Not Specified	Lake, loch or reservoir.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.9
33	52 NE	Rampgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
34	52 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
54	52 NE	Rampgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
55	52 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
35	53 N	Rampgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
56	53 N	Rampgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
36	54	Dowgang Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	SW			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.9
57	54 SW	Dowgang Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.9
37	57 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
58	57 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
38	58 N	Rampgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
39	58 NE	Rampgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
59	58 N	Rampgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
60	58 NE	Rampgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
40	60 N	Rampgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.8
61	60 N	Rampgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.8
41	61 SW	Dowgang Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.6
62	61 SW	Dowgang Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.6
42	62 SW	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				Average Width in Watercourse Section (m): 7.7
63	62 SW	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 7.7
43	63 S	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 7.7
64	63 S	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 7.7
44	67 SW	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 11.2
45	67 SW	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 6.8
65	67 SW	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 11.2
66	67 SW	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 6.8
46	69 NW	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.1
47	69 NW	Gillgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
48	69 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
49	69 SW	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 14.2
67	69 NW	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.1

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
68	69 NW	Gillgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
69	69 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
70	69 SW	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 14.2
50	77 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
51	77 SW	Dowgang Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.3
71	77 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
72	77 SW	Dowgang Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.3
52	81 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 0.5
53	81 SW	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 7.7
73	81 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 0.5
74	81 SW	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 7.7
54	84 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
75	84	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	N			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
55	87 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
76	87 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
56	93 N	Gillgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
77	93 N	Gillgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
57	98 S	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.4
58	98 S	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.4
78	98 S	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.4
79	98 S	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.4
59	100 S	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
60	100 S	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
80	100 S	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
81	100 S	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				Average Width in Watercourse Section (m): Not Provided
61	102 E	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
62	102 SW	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 6.2
82	102 E	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
83	102 SW	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 6.2
63	103 SW	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 11.5
84	103 SW	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 11.5
64	109 N	Gillgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.9
85	109 N	Gillgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.9
65	111 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
66	111 SW	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 5.8
86	111 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
87	111 SW	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 5.8

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
67	118 S	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.9
88	118 S	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.9
68	119 N	Gillgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
89	119 N	Gillgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
69	134 N	Gillgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.2
90	134 N	Gillgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.2
70	136 SW	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 7.5
91	136 SW	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 7.5
71	139 NE	Rampgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
92	139 NE	Rampgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
72	145 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
73	145 NE	Gillgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
93	145	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	NE			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
94	145 NE	Gillgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
74	146 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
75	146 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
95	146 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
96	146 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
76	151 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
97	151 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
77	154 NE	Rampgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
98	154 NE	Rampgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
78	166 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
99	166 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
79	175 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				Average Width in Watercourse Section (m): Not Provided
100	175 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
80	176 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
81	176 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
101	176 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
102	176 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
82	177 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
83	177 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
103	177 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
104	177 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
84	179 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
105	179 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
85	181 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
106	181 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
86	185 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
87	185 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
107	185 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
108	185 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
88	188 S	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
109	188 S	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
89	197 S	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 5.3
110	197 S	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 5.3
90	199 NE	Gillgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
111	199 NE	Gillgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
91	214 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
112	214	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	NE			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
92	216 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
113	216 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
93	220 NE	Rampgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
114	220 NE	Rampgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
94	232 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
115	232 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
95	234 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
96	234 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
116	234 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
117	234 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
97	235 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
118	235 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				Average Width in Watercourse Section (m): Not Provided
98	236 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
119	236 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
99	239 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
120	239 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
100	243 NE	Gillgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
121	243 NE	Gillgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
101	245 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
122	245 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
102	246 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
103	246 SW	Dowgang Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.7
123	246 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
124	246 SW	Dowgang Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.7

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
104	253 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
125	253 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
105	257 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
106	257 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
107	257 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
108	257 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
109	257 NE	Rampgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
126	257 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
127	257 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
128	257 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
129	257 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
130	257 NE	Rampgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
110	259	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	NE			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
131	259 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
111	260 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
132	260 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
112	270 S	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 5.7
133	270 S	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 5.7
113	274 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
134	274 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
114	278 SW	Dowgang Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
135	278 SW	Dowgang Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
115	285 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
136	285 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
116	290 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				Average Width in Watercourse Section (m): Not Provided
137	290 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
117	296 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
138	296 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
118	301 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
119	301 SW	Dowgang Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
139	301 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
140	301 SW	Dowgang Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
120	307 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
141	307 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
121	313 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
142	313 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
122	317 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
123	317 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
143	317 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
144	317 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
124	323 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
125	323 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
145	323 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
146	323 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
126	333 NW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
127	333 NW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
147	333 NW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
148	333 NW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
128	338 S	Long Cleugh Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
129	338	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	S			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
149	338 S	Long Cleugh Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
150	338 S	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
130	346 NW	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 6.1
151	346 NW	River Nent	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 6.1
131	359 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
152	359 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
132	362 S	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
133	362 S	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
153	362 S	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
154	362 S	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
134	365 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
155	365 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				Average Width in Watercourse Section (m): Not Provided
135	366 S	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
156	366 S	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
136	372 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
157	372 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
137	382 S	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
158	382 S	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
138	397 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
139	397 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
159	397 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
160	397 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
140	399 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
161	399 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
141	403 NE	Rampgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
162	403 NE	Rampgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
142	412 SE	Middle Cleugh Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
143	412 SE	Long Cleugh Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
163	412 SE	Middle Cleugh Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
164	412 SE	Long Cleugh Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
144	416 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
165	416 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
145	423 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
146	423 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
166	423 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
167	423 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
147	430	Gillgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	N			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
168	430 N	Gillgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
148	432 N	Gillgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
169	432 N	Gillgill Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
149	438 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
170	438 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
150	441 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
151	441 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
171	441 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
172	441 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
152	479 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
173	479 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
153	489 S	Long Cleugh Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				Average Width in Watercourse Section (m): Not Provided
174	489 S	Long Cleugh Burn	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
154	498 S	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
175	498 S	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Tyne Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided

6.11 Surface Water Features

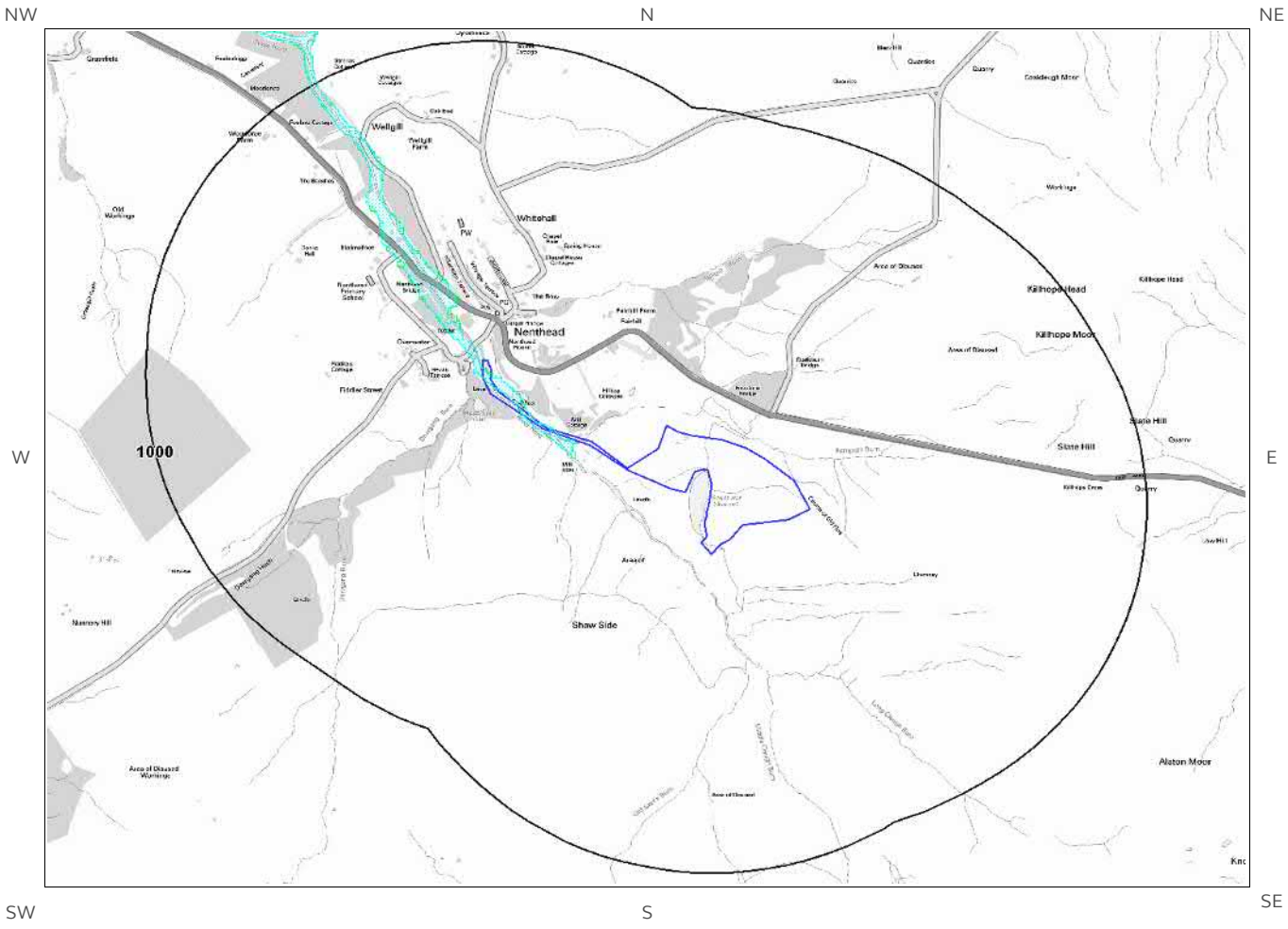
Surface water features within 250m of the study site	Identified

The following surface water records are not represented on mapping:

Distance (m)	Direction
0	On Site
0	On Site
0	On Site
0	On Site
0	On Site
0	On Site
0	On Site
0	On Site
1	S
5	SE
6	NE
9	SW
10	S
14	SW
15	SE
19	E
34	SW
35	N
35	N
35	N
42	W
43	N
43	N
52	NE
52	SW
57	SW
58	NE
69	NW
72	SW
77	SW
84	N
100	E
115	SW
117	S
136	NE
139	NE
145	NE
145	NE
146	SE
154	NE
165	N
175	N
176	SE
176	SE
177	SE

Distance (m)	Direction
177	SE
179	W
181	SW
185	SW
185	SW
188	S
191	SE
214	NE
216	N
220	NE
234	SW
234	SW
235	N
239	NE
243	NE
245	SW
246	SE

7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea)



Site Outline

100
250
Search Buffers (m)

Zone 2 Floodplain

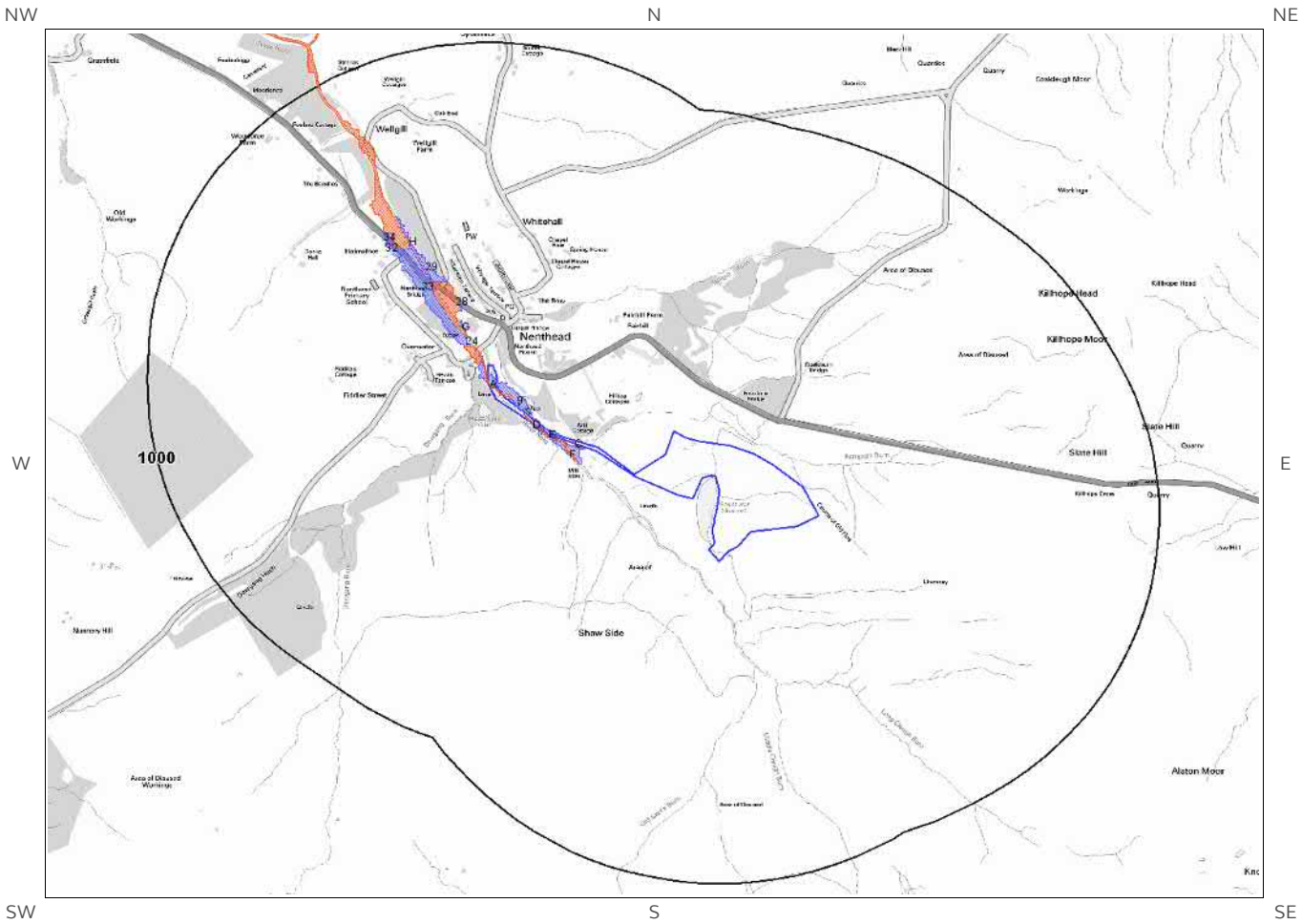
Zone 3 Floodplain

Flood Defences

Area used for Flood Storage

Area Benefiting from Flood Defences

7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Sea (RoFRaS) Map



Site Outline

100
250
Search Buffers (m)

RoFRaS Rating

Very Low

Low

Medium

High

7 Flooding

7.1 River and Coastal Zone 2 Flooding

Environment Agency/Natural Resources Wales Zone 2 floodplain within 250m — Identified

Environment Agency/Natural Resources Wales Zone 2 floodplains estimate the annual probability of flooding as between 1 in 1000 (0.1%) and 1 in 100 (1%) from rivers and between 1 in 1000 (0.1%) and 1 in 200 (0.5%) from the sea. Any relevant data is represented on Map 7a – Flood Map for Planning:

ID	Distance (m)	Direction	Update	Type
1A	0	On Site	12-Oct-2018	Zone 2 - (Fluvial /Tidal Models)

7.2 River and Coastal Zone 3 Flooding

Environment Agency/Natural Resources Wales Zone 3 floodplain within 250m — Identified

Zone 3 shows the extent of a river flood with a 1 in 100 (1%) or greater chance of occurring in any year or a sea flood with a 1 in 200 (0.5%) or greater chance of occurring in any year. Any relevant data is represented on Map 7a – Flood Map for Planning.

ID	Distance (m)	Direction	Update	Type
1A	0	On Site	12-Oct-2018	Zone 3 - (Fluvial Models)

7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating

Highest risk of flooding onsite — High

The Environment Agency/Natural Resources Wales RoFRaS database provides an indication of river and coastal flood risk at a national level on a 50m grid with the flood rating at the centre of the grid calculated and given above. The data considers the probability that the flood defences will overtop or breach by considering their location, type, condition and standard of protection.

RoFRaS data for the study site indicates the property is in an area with a High (1 in 30 or greater) chance of flooding in any given year.

Any relevant data within 250m is represented on the RoFRaS Flood map. Data to 50m is reported in the table below.

ID	Distance (m)	Direction	RoFRas flood Risk
1D	0.0	On Site	Medium
2A	0.0	On Site	Medium

3A	0.0	On Site	Medium
4A	0.0	On Site	Medium
5A	0.0	On Site	Medium
6B	0.0	On Site	High
7E	0.0	On Site	High
8A	0.0	On Site	Medium
9	0.0	On Site	Medium
10C	3.0	S	Medium
11B	3.0	W	Medium
12C	5.0	S	High
13B	7.0	W	Medium
14C	7.0	S	Medium
15D	8.0	SW	Medium
16C	8.0	S	High
17E	8.0	S	Medium
18E	9.0	SW	Medium
19B	13.0	W	Medium
20B	25.0	NW	Medium
21F	42.0	S	Medium
22F	49.0	S	High

7.4 Flood Defences

Flood Defences within 250m of the study site — None identified

Database searched and no data found.

7.5 Areas benefiting from Flood Defences

Areas benefiting from Flood Defences within 250m of the study site — None identified

7.6 Areas benefiting from Flood Storage

Areas used for Flood Storage within 250m of the study site — None identified

7.7 Groundwater Flooding Susceptibility Areas

7.7.1 British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site — Identified

Clearwater Flooding or Superficial Deposits Flooding — Clearwater Flooding

Notes: Groundwater flooding may either be associated with shallow unconsolidated sedimentary aquifers which overlie unproductive aquifers (Superficial Deposits Flooding), or with unconfined aquifers (Clearwater Flooding).

7.7.2 Highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions

Potential at Surface

Where potential for groundwater flooding to occur at surface is indicated, this means that given the geological conditions in the area groundwater flooding hazard should be considered in all land-use planning decisions. It is recommended that other relevant information e.g. records of previous incidence of groundwater flooding, rainfall, property type, and land drainage information be investigated in order to establish relative, but not absolute, risk of groundwater flooding.

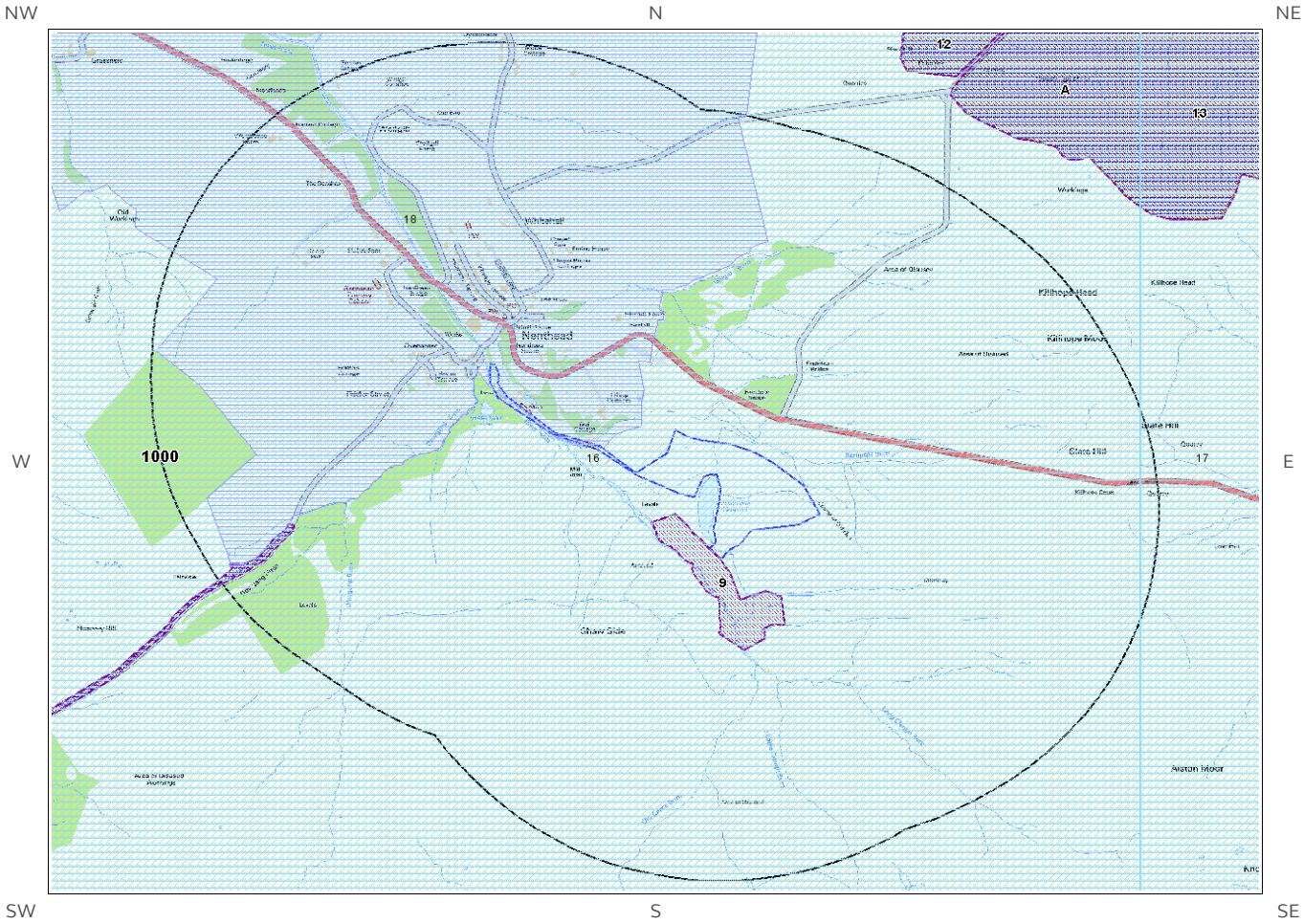
7.8 Groundwater Flooding Confidence Areas

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.

8. Designated Environmentally Sensitive Sites Map



Site Outline

100
250
Search Buffers (m)

AONB
National Park
SSSI
Special Protection Areas
Nitrate Vulnerable Zones
Green Belt
Environmentally Sensitive Areas
Special Areas of Conservation
World Heritage Sites
Nitrate Sensitive Areas
Ancient Woodland
National Nature Reserve
Local Nature Reserves
Ramsar Sites

8. Designated Environmentally Sensitive Sites

Designated Environmentally Sensitive Sites within 2000m of the study site | Identified

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

7

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

ID	Distance (m)	Direction	SSSI Name	Data Source
9	0	SW	Smallcleugh Mine	Natural England
10	721	SW	Whitesike Mine and Flinty Fell	Natural England
11A	1226	NE	Allendale Moors	Natural England
12	1269	N	Allendale Moors	Natural England
13	1320	NE	Allendale Moors	Natural England
Not shown	1669	SW	Whitesike Mine and Flinty Fell	Natural England
Not shown	1982	NW	Haggs Bank	Natural England

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

0

Database searched and no data found.

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

5

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

ID	Distance (m)	Direction	SAC Name	Data Source
1	721	SW	Tyne & Nent	Natural England
2A	1226	NE	North Pennine Moors	Natural England
3	1269	N	North Pennine Moors	Natural England

ID	Distance (m)	Direction	SAC Name	Data Source
4	1320	NE	North Pennine Moors	Natural England
Not shown	1982	NW	Tyne & Nent	Natural England

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

3

The following Special Protection Area (SPA) records provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	SPA Name	Data Source
6A	1227	NE	North Pennine Moors	Natural England
7	1269	N	North Pennine Moors	Natural England
8	1320	NE	North Pennine Moors	Natural England

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

8.9 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 (m)	Direction	ESA Name	Data Source
18	0	On Site	Pennine Dales	Natural England

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

2

The following Area of Outstanding Natural Beauty (AONB) records provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	AONB/NSA Name	Data Source
16	0	On Site	North Pennines	Natural England
17	944	E	North Pennines	Natural England

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

8.14 Records of Green Belt land within 2000m of the study site:

0

Database searched and no data found.

9. Natural Hazards Findings

9.1 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 Geo Insight, available from our website. The following information has been found:

9.1.1 Shrink Swell

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.

9.1.2 Landslides

Maximum Landslide* hazard rating identified on the study site — Low

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

Hazard
Possibility of slope instability problems after major changes in ground conditions. Consideration should be given to stability if changes to drainage or excavations take place. Possible increase in construction cost to reduce potential slope stability problems. Existing property no significant increase in insurance risk due to natural slope instability problems.

9.1.3 Soluble Rocks

Maximum Soluble Rocks* hazard rating identified on the study site — Moderate

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

Hazard
Very significant soluble rocks are present, with a moderate possibility of local natural subsidence due to high surface or subsurface water flow. Do not load the land or undertake building work before obtaining specialist advice. Do not dispose of drainage to the ground. Some possibility groundwater pollution. Maintain drainage infrastructure. For new build specialist site investigation and stability assessment may be necessary before construction. Construction work may cause subsidence. Increased construction costs are likely. For existing property probable increase in insurance risk due to soluble rocks.

* This indicates an automatically generated 50m buffer and site.

9.1.4 Compressible Ground

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.

9.1.5 Collapsible Rocks

Maximum Collapsible Rocks* 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
Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

9.1.6 Running Sand

Maximum Running Sand*[*] 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
Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

* This indicates an automatically generated 50m buffer and site.

9.2 Radon

9.2.1 Radon Affected Areas

Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The site is in a Radon Affected Area, as between 10 and 30% of properties are above the Action Level.

The radon data in this report is supplied by the BGS/Public Health England and is the definitive map of Radon Affected Areas in Great Britain and Northern Ireland. The dataset was created using long-term radon measurements in over 479,000 homes across Great Britain and 23,000 homes across Northern Ireland, combined with geological data. The dataset is considered accurate to 50m to allow for the margin of error in geological lines, and the findings of this report supercede any answer given in the less accurate Indicative Atlas of Radon in Great Britain, which simplifies the data to give the highest risk within any given 1km grid square. As such, the radon atlas is considered indicative, whereas the data given in this report is considered definitive.

9.2.2 Radon Protection

Is the property in an area where Radon Protection are required for new properties or extensions to existing
ones as described in publication BR211 by the Building Research Establishment? Full radon protective measures are necessary.

10. Mining

10.1 Coal Mining

Coal mining areas within 75m of the study site — Identified

The following coal mining information provided by the Coal Authority is not represented on Mapping:

Distance (m)	Direction	Details
0	On Site	The study site is located within the specified search distance of an identified mining area. Further details concerning this can be obtained from the Coal Authority Helpline on 0845 762 6848.

10.2 Non-Coal Mining

Non-Coal Mining areas within 50m of the study site boundary — Identified

The following non-coal mining information is provided by the BGS:

Distance (m)	Direction	Name	Commodity	Assessment of likelihood
0.0	On Site	North Pennines Orefield Alston	Vein Mineral	Small scale underground mining may have occurred; mine adits, shafts and tunnels may be present. Potential for localised difficult ground conditions are at a level where they should be considered
0.0	On Site	Not available	Vein Mineral	Underground mining is known or considered likely to have occurred within or close to the area. Potential for difficult ground conditions are at a level where they should be considered
0.0	On Site	North Pennines Orefield Alston	Vein Mineral	Small scale underground mining may have occurred; mine adits, shafts and tunnels may be present. Potential for localised difficult ground conditions are at a level where they should be considered
0.0	On Site	Not available	Vein Mineral	Underground mining is known to have occurred within or very close to the area. Potential for difficult ground conditions should be investigated. Potential for localised subsidence is at a level where it should be considered
39.0	NE	Not available	Vein Mineral	Underground mining is known or considered likely to have occurred within or close to the area. Potential for difficult ground conditions are at a level where they should be considered

These are areas known or suspected to contain past underground mining for minerals and/or other materials where workings are likely to be extensive. In the case of mineral veins these are areas within 200m of mapped mineral veins within which it is likely that mining activities may have occurred. It should be noted, however, that there is always the possibility of the existence of other sub-surface excavations, such as wells, cess pits, follies, air raid shelters/bunkers and other military structures etc. that could affect surface ground stability but which are outside the scope of this dataset. However, if in a coalfield area you should still consider a Coal Authority mining search for the area of interest.

10.3 Brine Affected Areas

Brine affected areas within 75m of the study site	None identified

Guidance: No Guidance Required.

Contact Details

Groundsure Helpline
Telephone: 08444 159 000
info@groundsure.com

British Geological Survey Enquiries
Kingsley Dunham Centre
Keyworth, Nottingham NG12 5GG
Tel: 0115 936 3143.
Fax: 0115 936 3276.
Email:
Web:**www.bgs.ac.uk**
BGS Geological Hazards Reports and general geological enquiries:
enquiries@bgs.ac.uk

Environment Agency
National Customer Contact Centre, PO Box 544
Rotherham, S60 1BY
Tel: 03708 506 506
Web: **www.environment-agency.gov.uk**
Email: enquiries@environment-agency.gov.uk

Public Health England
Public information access office
Public Health England, Wellington House
133-155 Waterloo Road, London, SE1 8UG
www.gov.uk/phe
Email:**enquiries@phe.gov.uk**
Main switchboard**: 020 7654 8000**

The Coal Authority
200 Lichfield Lane
Mansfield
Notts NG18 4RG
Tel: 0345 7626 848
DX 716176 Mansfield 5
www.coal.gov.uk

Ordnance Survey
Adanac Drive, Southampton
SO16 0AS
Tel: 08456 050505

Local Authority
Authority: Eden District Council
Phone: 01768 817 817
Web: http://www.eden.gov.uk
Address: Town Hall, Penrith, Cumbria, CA11 7QF

Gemapping PLC
Virginia Villas, High Street, Hartley Witney,
Hampshire RG27 8NW
Tel: 01252 845444

Standard Terms and Conditions

Groundsure's Terms and Conditions can be viewed online at this link:

https://www.groundsure.com/terms-and-conditions-may25-2018

Aecom Infrastructure and Environment UK Ltd

4TH FLOOR,BRIDGEWATER HOUSE,60,
WHITWORTH STREET,
MANCHESTER, M1 6LT

Groundsure Reference:	GS-5745683
Your Reference:	Nenthead
Report Date	14 Jan 2019
Report Delivery Method:	Email - pdf

Geo Insight

Address: 1, HILL TOP COTTAGES, NENTHEAD, CA9 3PB

Dear Sir/ Madam,

Thank you for placing your order with Groundsure. Please find enclosed the **Groundsure Geo Insight** as requested.

If you need any further assistance, please do not hesitate to contact our helpline on 08444 159000 quoting the above Groundsure reference number.

Yours faithfully,

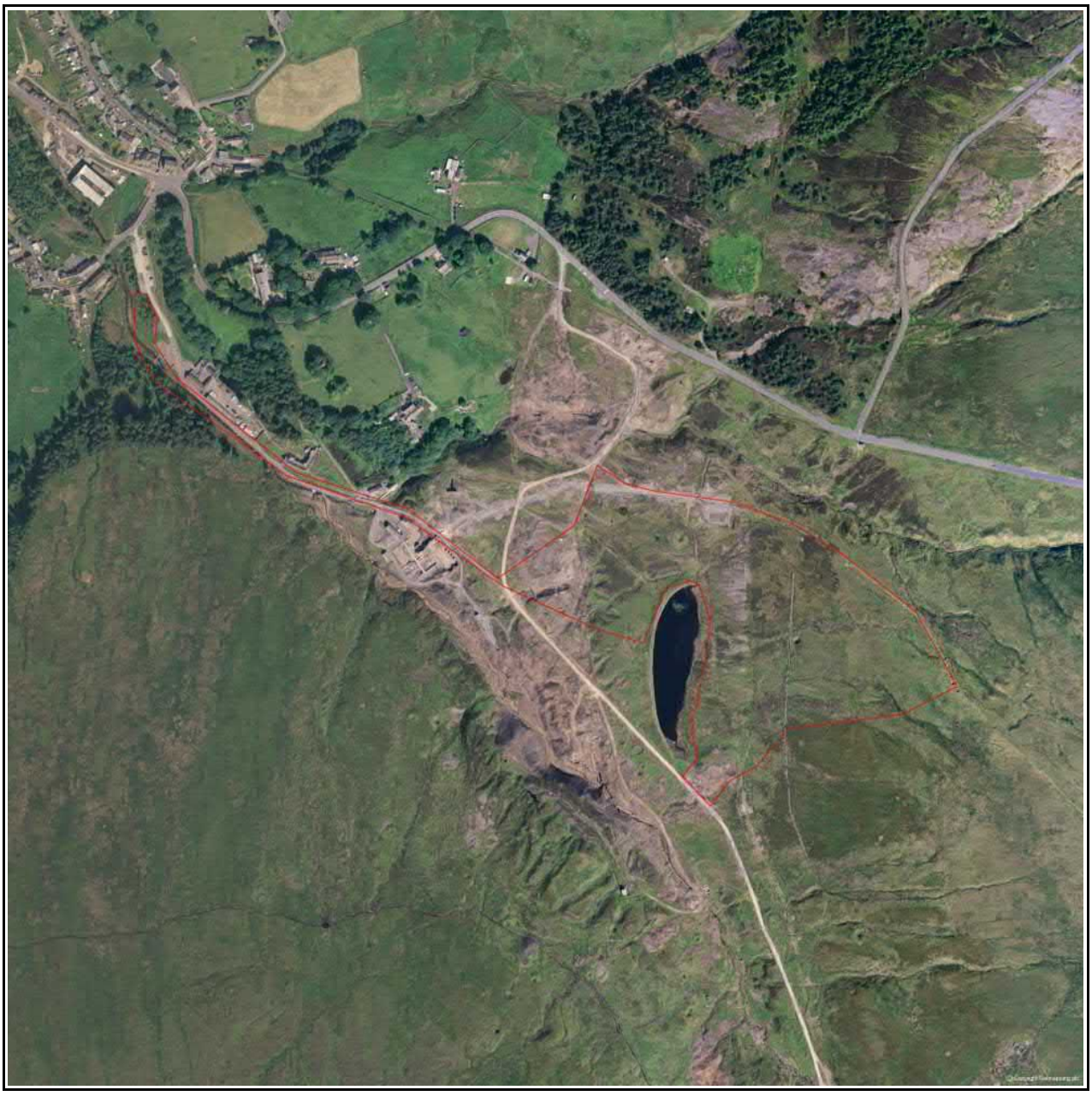
Managing Director
Groundsure Limited

Enc.
Groundsure Geo Insight

Geo Insight

Address:	**1, HILL TOP COTTAGES, NENTHEAD, CA9 3PB**
Date:	**14 Jan 2019**
Reference:	**GS-5745683**
Client:	**Aecom Infrastructure and Environment UK Ltd**

NW N NE



W E

SW S SE

Aerial Photograph Capture date:	15-Aug-2010
Grid Reference:	378684,543283
Site Size:	9.88ha

Groundsure
LOCATION INTELLIGENCE

Contents Page

Contents Page ... 3
Overview of Findings ... 5
1:10,000 Scale Availability ... 8
Availability of 1:10,000 Scale Geology Mapping ... 9
1 Geology (1:10,000 scale) ... 10
1.1 Artificial Ground map (1:10,000 scale) ... 10
1. Geology 1:10,000 scale ... 11
1.1 Artificial Ground ... 11
1.2 Superficial Deposits and Landslips map (1:10,000 scale) ... 12
1.2 Superficial Deposits and Landslips ... 13
1.2.1 Superficial Deposits/ Drift Geology ... 13
1.2.2 Landslip ... 13
1.3 Bedrock and linear features map (1:10,000 scale) ... 14
1.3 Bedrock and linear features ... 15
1.3.1 Bedrock/ Solid Geology ... 15
1.3.2 Linear features ... 15
2 Geology 1:50,000 Scale ... 16
2.1 Artificial Ground map ... 16
2. Geology 1:50,000 scale ... 17
2.1 Artificial Ground ... 17
2.1.1 Artificial/ Made Ground ... 17
2.1.2 Permeability of Artificial Ground ... 17
2.2 Superficial Deposits and Landslips map (1:50,000 scale) ... 18
2.2 Superficial Deposits and Landslips ... 19
2.2.1 Superficial Deposits/ Drift Geology ... 19
2.2.2 Permeability of Superficial Ground ... 19
2.2.3 Landslip ... 19
2.2.4 Landslip Permeability ... 19
2.3 Bedrock and linear features map (1:50,000 scale) ... 20
2.3 Bedrock, Solid Geology & linear features ... 21
2.3.1 Bedrock/Solid Geology ... 21
2.3.2 Permeability of Bedrock Ground ... 24
2.3.3 Linear features ... 24
3 Radon Data ... 26
3.1 Radon Affected Areas ... 26
3.2 Radon Protection ... 26
4 Ground Workings map ... 27
4 Ground Workings ... 28
4.1 Historical Surface Ground Working Features derived from Historical Mapping ... 28
4.2 Historical Underground Working Features derived from Historical Mapping ... 32
4.3 Current Ground Workings ... 45
5 Mining, Extraction & Natural Cavities ... 47
5.1 Historical Mining ... 47
5.2 Coal Mining ... 60
5.3 Johnson Poole and Bloomer ... 60
5.4 Non-Coal Mining ... 60
5.5 Non-Coal Mining Cavities ... 61
5.6 Natural Cavities ... 63
5.7 Brine Extraction ... 63
5.8 Gypsum Extraction ... 63
5.9 Tin Mining ... 63
5.10 Clay Mining ... 63
6 Natural Ground Subsidence ... 64
6.1 Shrink-Swell Clay map ... 64
6.2 Landslides map ... 65
6.3 Ground Dissolution of Soluble Rocks map ... 66
6.4 Compressible Deposits map ... 67
6.5 Collapsible Deposits map ... 68
6.6 Running Sand map ... 69

6 Natural Ground Subsidence 70
6.1 Shrink-Swell Clays 70
6.2 Landslides 71
6.3 Ground Dissolution of Soluble Rocks 72
6.4 Compressible Deposits 72
6.5 Collapsible Deposits 73
6.6 Running Sands 73
7 Borehole Records 75
8 Estimated Background Soil Chemistry 76
9 Railways and Tunnels map 78
9 Railways and Tunnels 79
9.1 Tunnels 79
9.2 Historical Railway and Tunnel Features 79
9.3 Historical Railways 80
9.4 Active Railways 80
9.5 Railway Projects 80

Overview of Findings

The Groundsure Geo Insight provides high quality geo-environmental information that allows geo-environmental professionals and their clients to make informed decisions and be forewarned of potential ground instability problems that may affect the ground investigation, foundation design and possibly remediation options that could lead to possible additional costs.

The report is based on the BGS 1:50,000 and 1:10,000 Digital Geological Map of Great Britain, BGS Geosure data; BRITPITS database; Non-coal mining data and Borehole Records, Coal Authority data including brine extraction areas, PBA non-coal mining and natural cavities database, Johnson Poole and Bloomer mining data and Groundsure's unique database including historical surface ground and underground workings.

For further details on each dataset, please refer to each individual section in the 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.

Section 1: Geology 1:10,000 Scale		
1.1 Artificial Ground	1.1 Is there any Artificial Ground/ Made Ground present beneath the study site at 1:10,000 scale?	No
1.2 Superficial Geology and Landslips	1.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site at 1:10,000 scale?*	No
	1.2.2 Are there any records of landslip within 500m of the study site boundary at 1:10,000 scale?	No
1.3 Bedrock, Solid Geology and linear features	1.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
	1.3.2 Are there any records of linear features within 500m of the study site boundary at 1:10,000 scale?	No

Section 2: Geology 1:50,000 Scale		
2.1 Artificial Ground	2.1.1 Is there any Artificial Ground/ Made Ground present beneath the study site?	No
	2.1.2 Are there any records relating to permeability of artificial ground within the study site*boundary?	No
2.2 Superficial Geology and Landslips	2.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site?*	Yes
	2.2.2 Are there any records of permeability of superficial ground within 500m of the study site?	Yes
	2.2.3 Are there any records of landslip within 500m of the study site boundary?	No
	2.2.4 Are there any records relating to permeability of landslips within the study site* boundary?	No

Section 2: Geology 1:50,000 Scale

2.3 Bedrock, Solid Geology and linear features	2.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
	2.3.2 Are there any records relating to permeability of bedrock ground within the study site boundary?	Yes
	2.3.3 Are there any records of linear features within 500m of the study site boundary?	Yes

Section 3: Radon

3. Radon	3.1Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The property is in a Radon Affected Area, as between 10 and 30% of properties are above the Action Level.
	3.2Radon Protection	Full radon protective measures are necessary.

Section 4: Ground Workings	On-site	0-50m	51-250	251-500	501-1000
4.1 Historical Surface Ground Working Features from Small Scale Mapping	15	39	53	Not Searched	Not Searched
4.2 Historical Underground Workings from Small Scale Mapping	8	17	71	70	198
4.3 Current Ground Workings	0	1	1	1	4

Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.1 Historical Mining	8	17	71	70	198
5.2 Coal Mining	1	0	0	0	0
5.3 Johnson Poole and Bloomer Mining Area	0	0	0	0	0
5.4 Non-Coal Mining*	4	1	1	0	6
5.5 Non–Coal Mining Cavities	9	2	10	5	3
5.5 Natural Cavities	0	0	0	0	0

Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.6 Brine Extraction	0	0	0	0	0
5.7 Gypsum Extraction	0	0	0	0	0
5.8 Tin Mining	0	0	0	0	0
5.9 Clay Mining	0	0	0	0	0

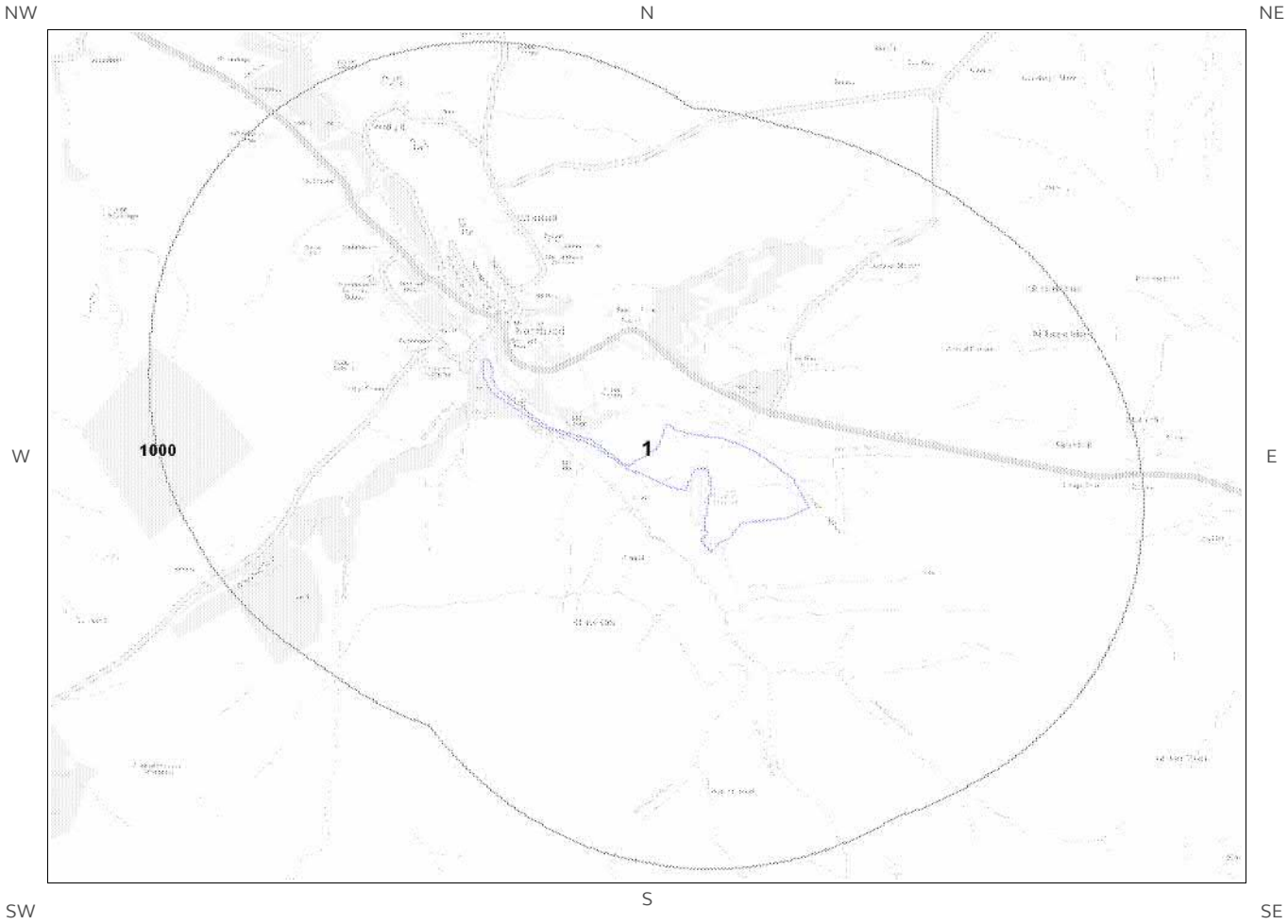
Section 6: Natural Ground Subsidence	On-site
6.1 Shrink-Swell Clay	Very Low
6.2 Landslides	Low
6.3 Ground Dissolution of Soluble Rocks	Moderate
6.4 Compressible Deposits	Negligible
6.5 Collapsible Deposits	Very Low
6.5 Running Sand	Very Low

Section 7: Borehole Records	On-site	0-50m	51-250
7 BGS Recorded Boreholes	2	2	3

Section 8: Estimated Background Soil Chemistry	On-site	0-50m	51-250
8 Records of Background Soil Chemistry	16	13	0

Section 9: Railways and Tunnels	On-site	0-50m	51-250	250-500
9.1 Tunnels	0	0	0	Not Searched
9.2 Historical Railway and Tunnel Features	3	2	1	Not Searched
9.3 Historical Railways	0	0	0	Not Searched
9.4 Active Railways	0	0	0	Not Searched
9.5 Railway Projects	0	0	0	0

1:10,000 Scale Availability



1_10,000 Availability Legend

Site Outline

Full Coverage

Partial Coverage

No Coverage

50
250
Search Buffers (m)

Availability of 1:10,000 Scale Geology Mapping

The following information represents the availability of the key components of the 1:10,000 scale geological data.

ID	Distance	Artificial Coverage	Superficial Coverage	Bedrock Coverage	Mass Movement Coverage
1	0.0	No deposits are mapped	No coverage	No coverage	No coverage

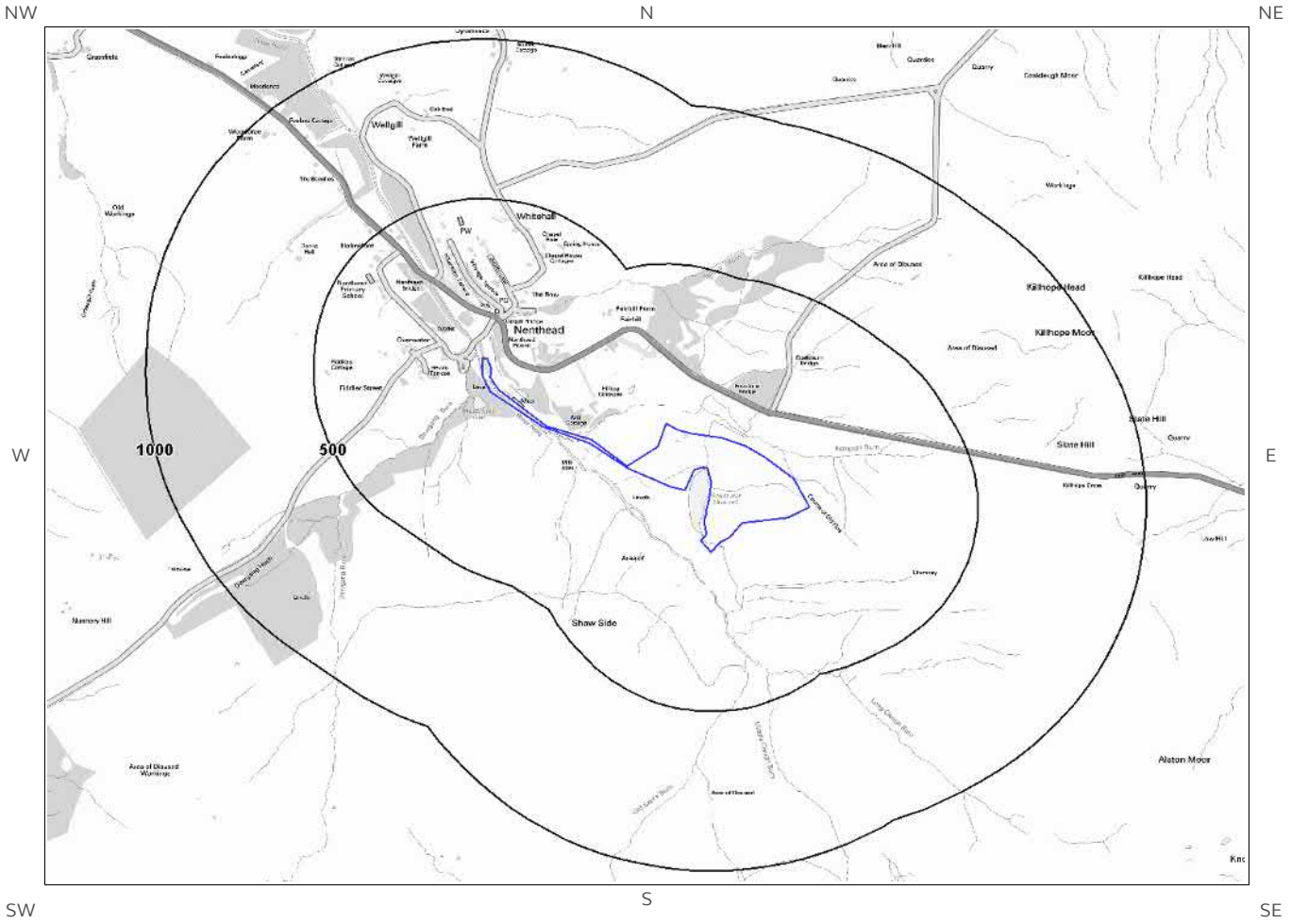
Guidance: The 1:10,000 scale geological interpretation is the most detailed generally available from BGS and is the scale at which most geological surveying is carried out in the field. The database is presented as four types of geology (artificial, mass movement, superficial and bedrock), although not all themes are mapped or available on every map sheet. Therefore a coverage layer showing the availability of the four themes is presented above.

The definitions of coverage are as follows:

Geology	Full Coverage	Partial Coverage	No Coverage
Bedrock	The whole tile has been mapped	Some but not all the tile has been mapped	No coverage
Superficial	The whole tile has been mapped	Some but not all of the tile has been mapped	No coverage
Artificial	Some deposits are mapped on this tile	-	No deposits are mapped
Mass Movement	Some deposits are mapped on this tile	-	No coverage

1 Geology (1:10,000 scale).

1.1 Artificial Ground map (1:10,000 scale)



Artificial Ground Legend

Site Outline

500
1000
Search Buffers (m)

Made Ground (undivided)

Disturbed Ground (undivided)

Worked Ground (undivided)

Landscaped Ground (undivided)

Infilled Ground

Reclaimed Ground

1. Geology 1:10,000 scale

1.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping.

Are there any records of Artificial/ Made Ground within 500m of the study site boundary at 1:10,000 scale? No

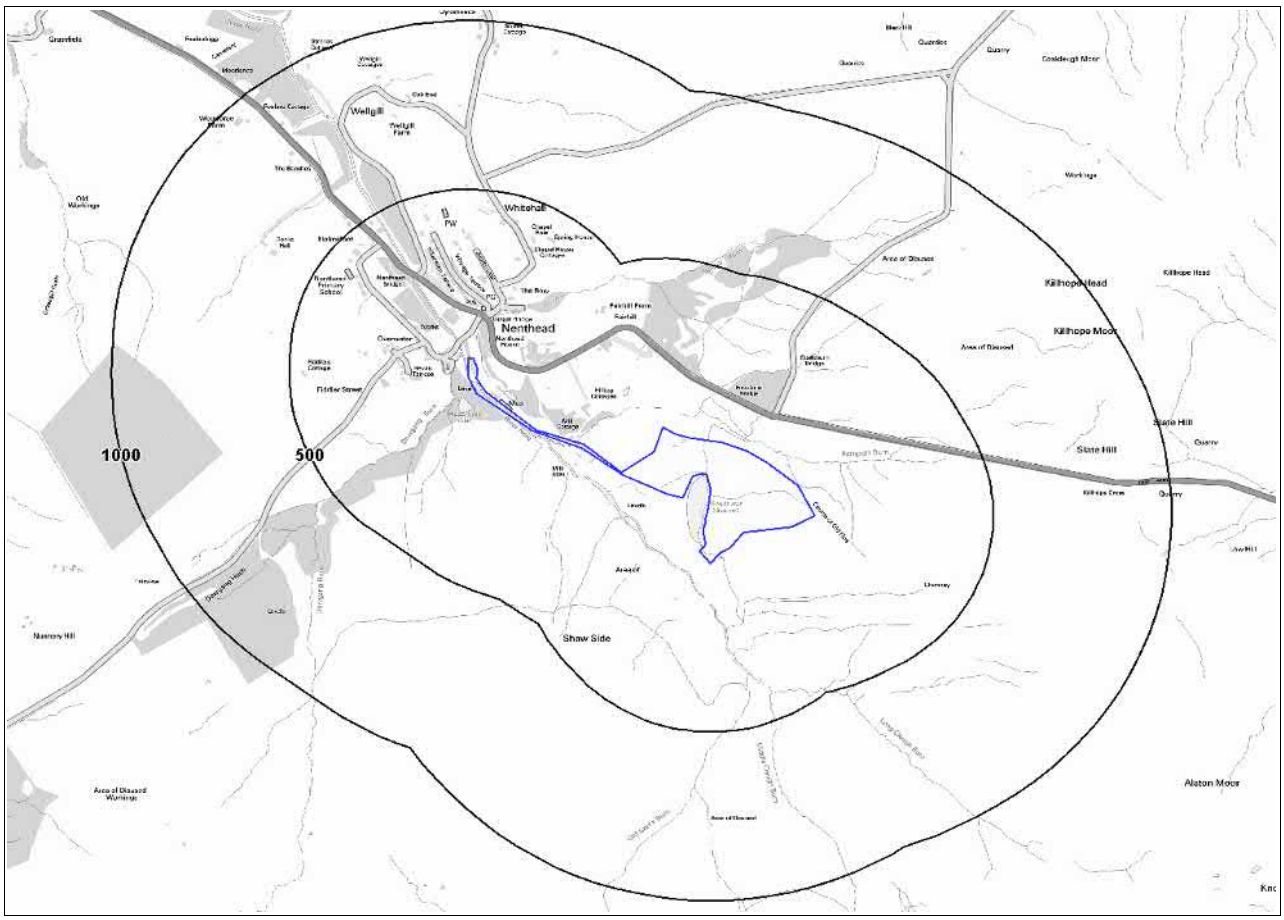
Database searched and no data found.

1.2 Superficial Deposits and Landslips map (1:10,000 scale)

NW N NE

W E

SW S SE



Artificial Ground Legend

Site Outline

500
1000
Search Buffers (m)

1.2 Superficial Deposits and Landslips

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping

1.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary at 1:10,000 scale? No

Database searched and no data found.

1.2.2 Landslip

Are there any records of Landslip within 500m of the study site boundary at 1:10,000 scale?

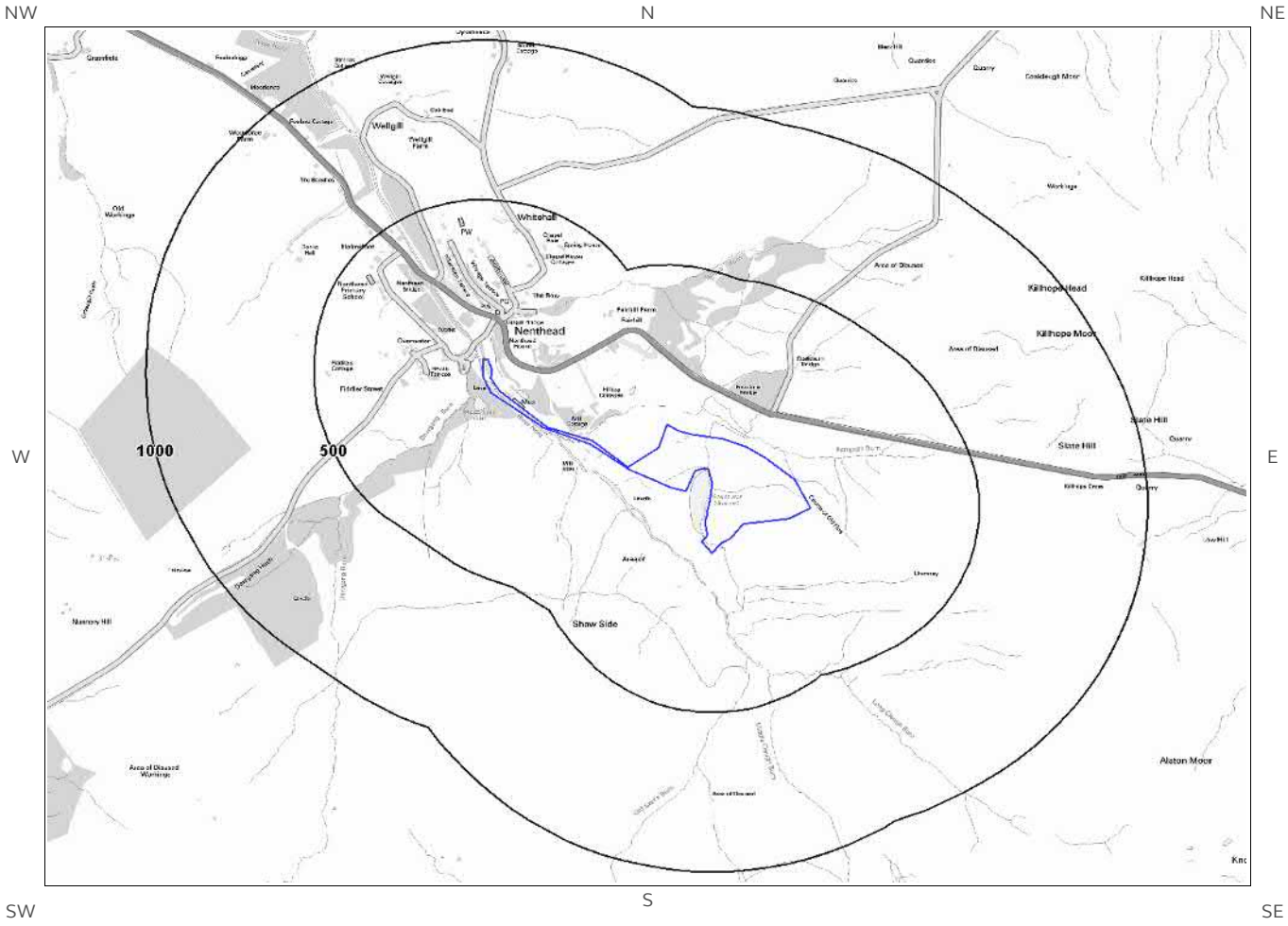
No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:10,000 scale

This Geology shows the main components as discrete layers, these are: Artificial / Made Ground, Superficial / Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

1.3 Bedrock and linear features map (1:10,000 scale)



Bedrock and linear features Legend

Site Outline

500
1000
Search Buffers (m)

1.3 Bedrock and linear features

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping.

1.3.1 Bedrock/ Solid Geology

Records of Bedrock/Solid Geology within 500m of the study site boundary at 1:10,000 scale.

Database searched and no data found at this scale.

1.3.2 Linear features

Are there any records of linear features within 500m of the study site boundary at 1:10,000 scale? No

Database searched and no data found at this scale.

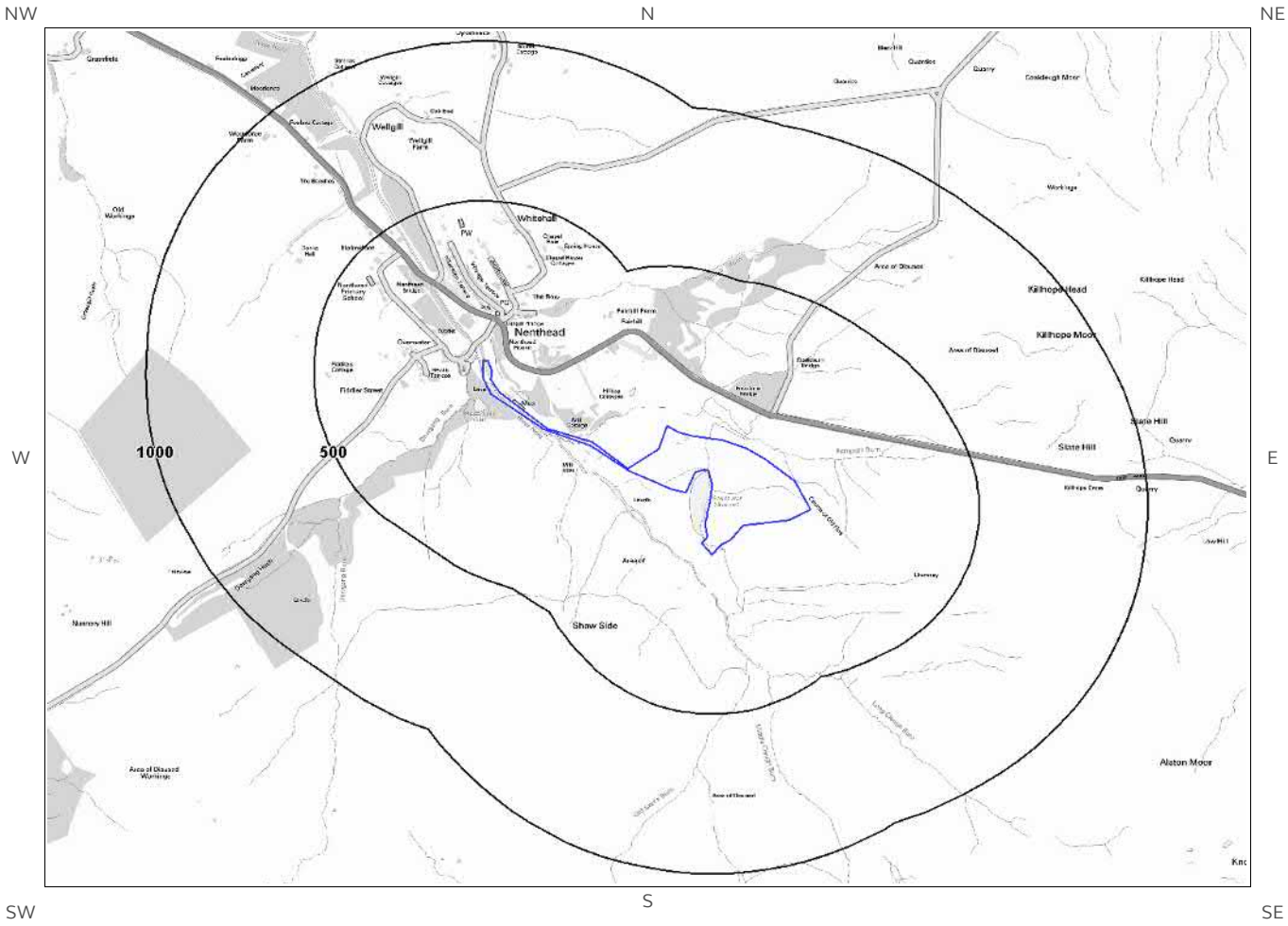
The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of great Britain at 1:10,000 scale.

This Geology shows the main components as discrete layers, these are: Bedrock/ Solid Geology and linear features such as faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

---

2 Geology 1:50,000 Scale

2.1 Artificial Ground map



Site Outline

500
1000
Search Buffers (m)

Made Ground (undivided)

Disturbed Ground (undivided)

Worked Ground (undivided)

Landscaped Ground (undivided)

Infilled Ground

Reclaimed Ground

2. Geology 1:50,000 scale

2.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 025

2.1.1 Artificial/ Made Ground

Are there any records of Artificial/ Made Ground within 500m of the study site boundary? No

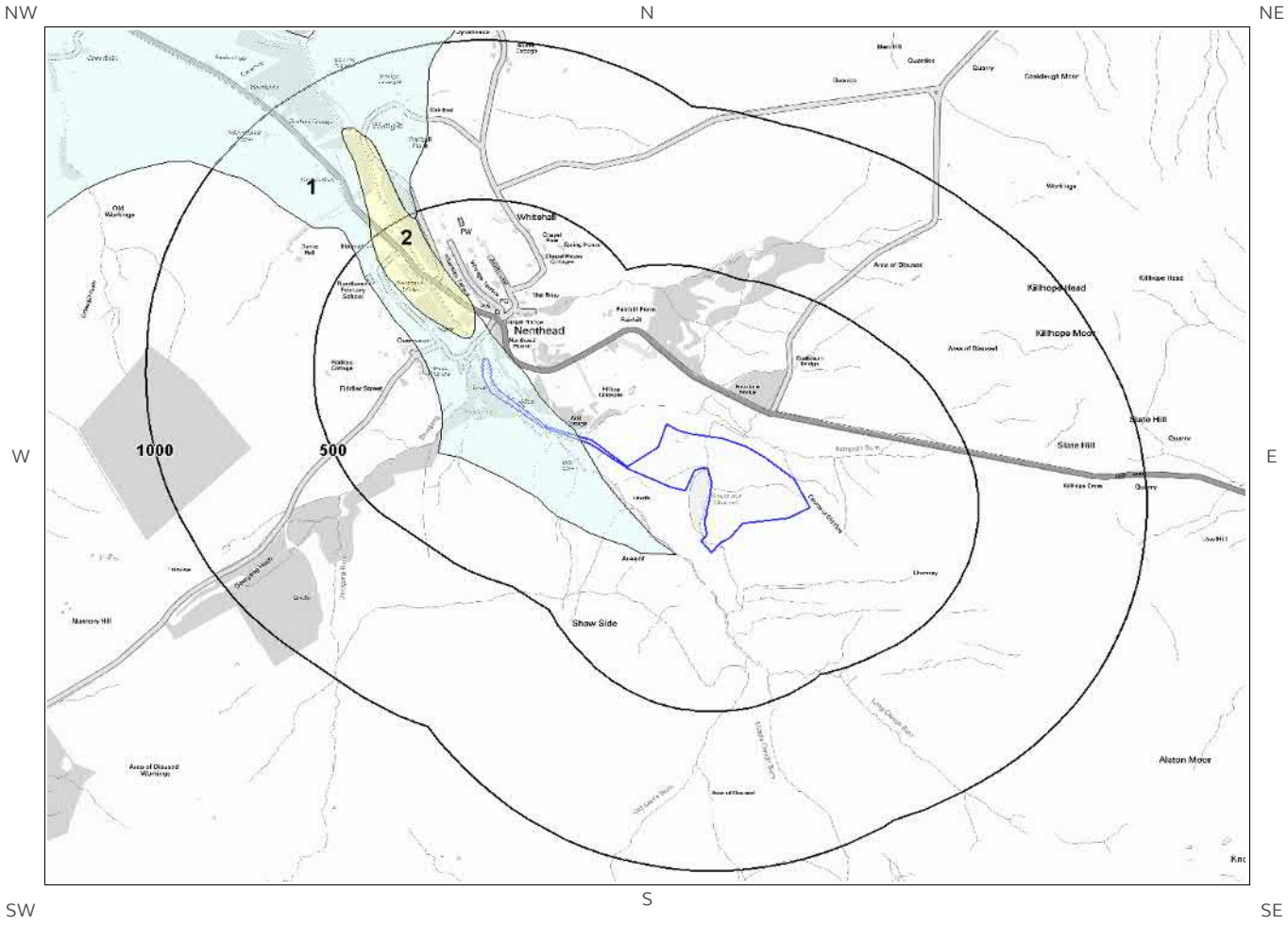
Database searched and no data found.

2.1.2 Permeability of Artificial Ground

Are there any records relating to permeability of artificial ground within the study site boundary? No

Database searched and no data found.

2.2 Superficial Deposits and Landslips map (1:50,000 scale)



Site Outline

500
1000
Search Buffers (m)

2.2 Superficial Deposits and Landslips

2.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary? Yes

ID	Distance	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
2	78.0	NW	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL

2.2.2 Permeability of Superficial Ground

Are there any records relating to permeability of superficial ground within the study site boundary? Yes

Distance (m)	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Mixed	High	Low

2.2.3 Landslip

Are there any records of Landslip within 500m of the study site boundary? No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:50,000 scale.

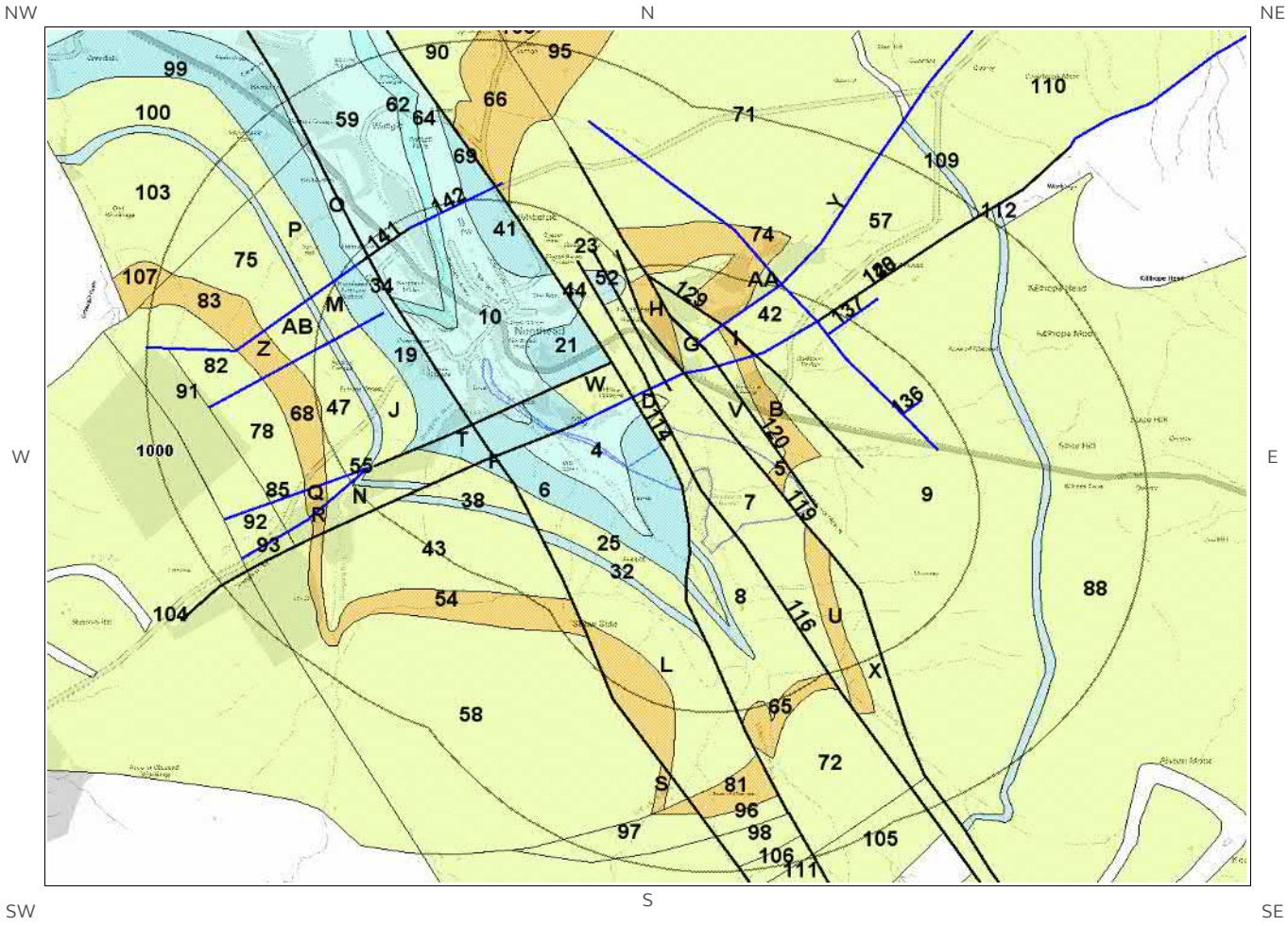
This Geology shows the main components as discrete layers, there are: Artificial/ Made Ground, Superficial/ Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

2.2.4 Landslip Permeability

Are there any records relating to permeability of landslips within the study site boundary? No

Database searched and no data found.

2.3 Bedrock and linear features map (1:50,000 scale)



Site Outline

500
1000
Search Buffers (m)

2.3 Bedrock, Solid Geology & linear features

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 025

2.3.1 Bedrock/Solid Geology

Records of Bedrock/Solid Geology within 500m of the study site boundary:

ID	Distance	Direction	LEX Code	Rock Description	Rock Age
1A	0.0	On Site	GL-LMST	GREAT LIMESTONE MEMBER - LIMESTONE	NAMURIAN
2A	0.0	On Site	AG-LSSM	ALSTON FORMATION - LIMESTONE, SANDSTONE, SILTSTONE AND MUDSTONE	VISEAN
3V	0.0	On Site	SMGP-MDSL	STAINMORE FORMATION - MUDSTONE, SANDSTONE AND LIMESTONE	NAMURIAN
4	0.0	On Site	AG-LSSM	ALSTON FORMATION - LIMESTONE, SANDSTONE, SILTSTONE AND MUDSTONE	VISEAN
5	0.0	On Site	FS-SDST	FIRESTONE SANDSTONE - SANDSTONE	NAMURIAN
6	0.0	On Site	GL-LMST	GREAT LIMESTONE MEMBER - LIMESTONE	NAMURIAN
7	0.0	On Site	SMGP-MDSL	STAINMORE FORMATION - MUDSTONE, SANDSTONE AND LIMESTONE	NAMURIAN
8	0.0	On Site	SMGP-MDSL	STAINMORE FORMATION - MUDSTONE, SANDSTONE AND LIMESTONE	NAMURIAN
9	0.0	On Site	SMGP-MDSL	STAINMORE FORMATION - MUDSTONE, SANDSTONE AND LIMESTONE	NAMURIAN
10	0.0	On Site	AG-LSSM	ALSTON FORMATION - LIMESTONE, SANDSTONE, SILTSTONE AND MUDSTONE	VISEAN
11B	15.0	NE	FS-SDST	FIRESTONE SANDSTONE - SANDSTONE	NAMURIAN
12C	20.0	SW	LTLS-LMST	LITTLE LIMESTONE - LIMESTONE	NAMURIAN
13B	30.0	NE	SMGP-MDSL	STAINMORE FORMATION - MUDSTONE, SANDSTONE AND LIMESTONE	NAMURIAN
14U	41.0	SE	FS-SDST	FIRESTONE SANDSTONE - SANDSTONE	NAMURIAN
15C	43.0	SW	SMGP-MDSL	STAINMORE FORMATION - MUDSTONE, SANDSTONE AND LIMESTONE	NAMURIAN
16D	45.0	NW	SMGP-MDSL	STAINMORE FORMATION - MUDSTONE, SANDSTONE AND LIMESTONE	NAMURIAN
17D	48.0	NW	SMGP-MDSL	STAINMORE FORMATION - MUDSTONE, SANDSTONE AND LIMESTONE	NAMURIAN
18W	62.0	N	SMGP-MDSL	STAINMORE FORMATION - MUDSTONE, SANDSTONE AND LIMESTONE	NAMURIAN

ID	Distance	Direction	LEX Code	Rock Description	Rock Age
19	99.0	SW	GL-LMST	GREAT LIMESTONE MEMBER - LIMESTONE	NAMURIAN
20D	102.0	NW	SMGP-MDSL	STAINMORE FORMATION - MUDSTONE, SANDSTONE AND LIMESTONE	NAMURIAN
21	105.0	NE	GL-LMST	GREAT LIMESTONE MEMBER - LIMESTONE	NAMURIAN
22T	113.0	SW	GL-LMST	GREAT LIMESTONE MEMBER - LIMESTONE	NAMURIAN
23	123.0	NW	SMGP-MDSL	STAINMORE FORMATION - MUDSTONE, SANDSTONE AND LIMESTONE	NAMURIAN
24E	127.0	NW	FFL-LMST	FOUR FATHOM LIMESTONE MEMBER - LIMESTONE	VISEAN
25	131.0	SW	SMGP-MDSL	STAINMORE FORMATION - MUDSTONE, SANDSTONE AND LIMESTONE	NAMURIAN
26X	148.0	SE	SMGP-MDSL	STAINMORE FORMATION - MUDSTONE, SANDSTONE AND LIMESTONE	NAMURIAN
27F	158.0	SW	GL-LMST	GREAT LIMESTONE MEMBER - LIMESTONE	NAMURIAN
28G	169.0	N	SMGP-MDSL	STAINMORE FORMATION - MUDSTONE, SANDSTONE AND LIMESTONE	NAMURIAN
29H	169.0	N	FS-SDST	FIRESTONE SANDSTONE - SANDSTONE	NAMURIAN
30E	189.0	NW	AG-LSSM	ALSTON FORMATION - LIMESTONE, SANDSTONE, SILTSTONE AND MUDSTONE	VISEAN
31F	197.0	SW	SMGP-MDSL	STAINMORE FORMATION - MUDSTONE, SANDSTONE AND LIMESTONE	NAMURIAN
32	207.0	SW	LTLS-LMST	LITTLE LIMESTONE - LIMESTONE	NAMURIAN
33J	212.0	SW	SMGP-MDSL	STAINMORE FORMATION - MUDSTONE, SANDSTONE AND LIMESTONE	NAMURIAN
34	218.0	W	AG-LSSM	ALSTON FORMATION - LIMESTONE, SANDSTONE, SILTSTONE AND MUDSTONE	VISEAN
35G	221.0	N	SMGP-MDSL	STAINMORE FORMATION - MUDSTONE, SANDSTONE AND LIMESTONE	NAMURIAN
36L	234.0	SW	SMGP-MDSL	STAINMORE FORMATION - MUDSTONE, SANDSTONE AND LIMESTONE	NAMURIAN
37I	246.0	N	FS-SDST	FIRESTONE SANDSTONE - SANDSTONE	NAMURIAN
38	270.0	S	LTLS-LMST	LITTLE LIMESTONE - LIMESTONE	NAMURIAN
39H	272.0	N	SMGP-MDSL	STAINMORE FORMATION - MUDSTONE, SANDSTONE AND LIMESTONE	NAMURIAN
40I	273.0	N	SMGP-MDSL	STAINMORE FORMATION - MUDSTONE, SANDSTONE AND LIMESTONE	NAMURIAN
41	279.0	N	GL-LMST	GREAT LIMESTONE MEMBER - LIMESTONE	NAMURIAN
42	279.0	N	SMGP-MDSL	STAINMORE FORMATION - MUDSTONE, SANDSTONE AND LIMESTONE	NAMURIAN

ID	Distance	Direction	LEX Code	Rock Description	Rock Age
43	303.0	S	SMGP-MDSL	STAINMORE FORMATION - MUDSTONE, SANDSTONE AND LIMESTONE	NAMURIAN
44	309.0	NE	SMGP-LMST	STAINMORE FORMATION - LIMESTONE	NAMURIAN
45J	331.0	W	LTLS-LMST	LITTLE LIMESTONE - LIMESTONE	NAMURIAN
46K	350.0	NE	FS-SDST	FIRESTONE SANDSTONE - SANDSTONE	NAMURIAN
47	359.0	W	SMGP-MDSL	STAINMORE FORMATION - MUDSTONE, SANDSTONE AND LIMESTONE	NAMURIAN
48N	371.0	SW	SMGP-MDSL	STAINMORE FORMATION - MUDSTONE, SANDSTONE AND LIMESTONE	NAMURIAN
49K	372.0	N	SMGP-MDSL	STAINMORE FORMATION - MUDSTONE, SANDSTONE AND LIMESTONE	NAMURIAN
50M	380.0	W	SMGP-MDSL	STAINMORE FORMATION - MUDSTONE, SANDSTONE AND LIMESTONE	NAMURIAN
51L	381.0	SW	FS-SDST	FIRESTONE SANDSTONE - SANDSTONE	NAMURIAN
52	383.0	NE	SMGP-LMST	STAINMORE FORMATION - LIMESTONE	NAMURIAN
53AA	403.0	N	SMGP-MDSL	STAINMORE FORMATION - MUDSTONE, SANDSTONE AND LIMESTONE	NAMURIAN
54	426.0	SW	FS-SDST	FIRESTONE SANDSTONE - SANDSTONE	NAMURIAN
55	434.0	SW	LTLS-LMST	LITTLE LIMESTONE - LIMESTONE	NAMURIAN
56M	444.0	W	LTLS-LMST	LITTLE LIMESTONE - LIMESTONE	NAMURIAN
57	446.0	NE	SMGP-MDSL	STAINMORE FORMATION - MUDSTONE, SANDSTONE AND LIMESTONE	NAMURIAN
58	452.0	SW	SMGP-MDSL	STAINMORE FORMATION - MUDSTONE, SANDSTONE AND LIMESTONE	NAMURIAN
59	461.0	NW	AG-LSSM	ALSTON FORMATION - LIMESTONE, SANDSTONE, SILTSTONE AND MUDSTONE	VISEAN
60AB	463.0	W	SMGP-MDSL	STAINMORE FORMATION - MUDSTONE, SANDSTONE AND LIMESTONE	NAMURIAN
61N	464.0	SW	SMGP-MDSL	STAINMORE FORMATION - MUDSTONE, SANDSTONE AND LIMESTONE	NAMURIAN
62	467.0	N	FFL-LMST	FOUR FATHOM LIMESTONE MEMBER - LIMESTONE	VISEAN
63O	469.0	NW	AG-LSSM	ALSTON FORMATION - LIMESTONE, SANDSTONE, SILTSTONE AND MUDSTONE	VISEAN
64	472.0	N	AG-LSSM	ALSTON FORMATION - LIMESTONE, SANDSTONE, SILTSTONE AND MUDSTONE	VISEAN
65	475.0	SE	FS-SDST	FIRESTONE SANDSTONE - SANDSTONE	NAMURIAN
66	476.0	N	FS-SDST	FIRESTONE SANDSTONE - SANDSTONE	NAMURIAN
67O	480.0	NW	GL-LMST	GREAT LIMESTONE MEMBER - LIMESTONE	NAMURIAN

ID	Distance	Direction	LEX Code	Rock Description	Rock Age
68	490.0	W	FS-SDST	FIRESTONE SANDSTONE - SANDSTONE	NAMURIAN
69	497.0	N	GL-LMST	GREAT LIMESTONE MEMBER - LIMESTONE	NAMURIAN

2.3.2 Permeability of Bedrock Ground

Are there any records relating to permeability of bedrock ground within the study site boundary? Yes

Distance	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Fracture	High	Low
0.0	On Site	Fracture	High	Low
0.0	On Site	Fracture	High	Moderate
0.0	On Site	Fracture	Very High	High
0.0	On Site	Fracture	High	Low
20.0	SW	Fracture	Very High	High
41.0	SE	Fracture	High	Moderate
43.0	SW	Fracture	High	Low

2.3.3 Linear features

Are there any records of linear features within 500m of the study site boundary? Yes

ID	Distance	Direction	Category Description	Feature Description
113A	0.0	On Site	FAULT	Fault, inferred, displacement unknown
114	0.0	On Site	FAULT	Fault, inferred, displacement unknown
115T	0.0	On Site	FAULT	Fault, inferred, displacement unknown
116	0.0	On Site	FAULT	Fault, inferred, displacement unknown
117U	0.0	On Site	FAULT	Fault, inferred, displacement unknown
118V	0.0	On Site	MINERAL_VEIN	Mineral vein, observed
119	0.0	On Site	MINERAL_VEIN	Mineral vein, observed
120	7.0	NE	FAULT	Fault, inferred, displacement unknown
121D	31.0	N	MINERAL_VEIN	Mineral vein, observed
122D	31.0	N	FAULT	Fault, observed, displacement unknown
123W	95.0	NE	FAULT	Fault, observed, displacement unknown
124W	95.0	NE	MINERAL_VEIN	Mineral vein, observed
125T	99.0	SW	FAULT	Fault, inferred, displacement unknown
126H	106.0	N	FAULT	Fault, inferred, displacement unknown
127X	148.0	SE	MINERAL_VEIN	Mineral vein, observed
128	169.0	N	MINERAL_VEIN	Mineral vein, observed
129	178.0	NE	FAULT	Fault, inferred, displacement unknown
130R	183.0	SW	FAULT	Fault, observed, displacement unknown
131R	183.0	SW	MINERAL_VEIN	Mineral vein, observed
132Y	272.0	N	MINERAL_VEIN	Mineral vein, observed
133Y	272.0	N	FAULT	Fault, observed, displacement unknown
134Z	327.0	NW	MINERAL_VEIN	Mineral vein, observed

ID	Distance	Direction	Category Description	Feature Description
135AA	373.0	NE	MINERAL_VEIN	Mineral vein, observed
136	380.0	NE	MINERAL_VEIN	Mineral vein, observed
137	426.0	NE	MINERAL_VEIN	Mineral vein, observed
138Q	434.0	SW	MINERAL_VEIN	Mineral vein, observed
139Q	434.0	SW	MINERAL_VEIN	Mineral vein, observed
140	446.0	NE	FAULT	Fault, observed, displacement unknown
141	461.0	NW	FAULT	Fault, observed, displacement unknown
142	465.0	NW	MINERAL_VEIN	Mineral vein, observed
143AB	476.0	NW	MINERAL_VEIN	Mineral vein, observed

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:50,000 scale.

This Geology shows the main components as discrete layers, these are: Bedrock/Solid Geology and linear features such as faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nation wide coverage.

3 Radon Data

3.1 Radon Affected Areas

Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?The property is in a Radon Affected Area, as between 10 and 30% of properties are above the Action Level.

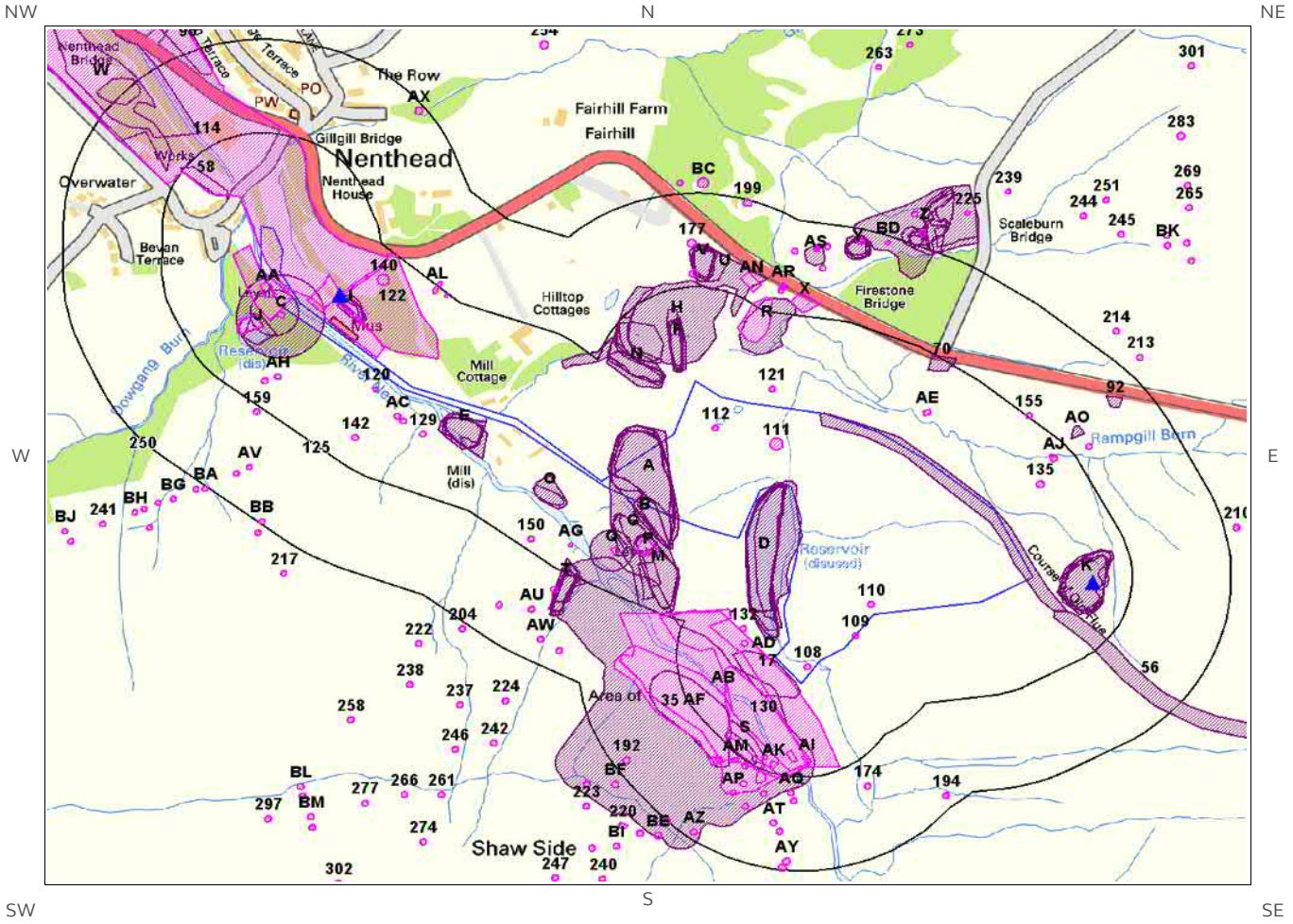
The radon data in this report is supplied by the BGS/Public Health England and is the definitive map of Radon Affected Areas in Great Britain and Northern Ireland. The dataset was created using long-term radon measurements in over 479,000 homes across Great Britain and 23,000 homes across Northern Ireland, combined with geological data. The dataset is considered accurate to 50m to allow for the margin of error in geological lines, and the findings of this report supercede any answer given in the less accurate Indicative Atlas of Radon in Great Britain, which simplifies the data to give the highest risk within any given 1km grid square. As such, the radon atlas is considered indicative, whereas the data given in this report is considered definitive.

3.2 Radon Protection

Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment? Full radon protective measures are necessary.

---

4 Ground Workings map



Ground Workings Legend

Site Outline

125 / 250 Search Buffers (m)

Historic Surface Ground Workings

Historic Underground Workings

Current Ground Workings

4 Ground Workings

4.1 Historical Surface Ground Working Features derived from Historical Mapping

This dataset is based on Groundsure's unique Historical Land Use Database derived from 1:10,560 and 1:10,000 scale historical mapping

Are there any Historical Surface Ground Working Features within 250m of the study site boundary? Yes

ID	Distance (m)	Direction	NGR	Use	Date
1A	0.0	On Site	378565 543240	Unspecified Heaps	1859
2	0.0	On Site	378997 543211	Unspecified Heap	1924
3A	0.0	On Site	378563 543244	Unspecified Heap	1900
4B	0.0	On Site	378566 543197	Unspecified Ground Workings	1924
5A	0.0	On Site	378564 543247	Unspecified Heaps	1940
6B	0.0	On Site	378575 543197	Unspecified Heap	1924
7A	0.0	On Site	378564 543261	Unspecified Heap	1924
8D	0.0	On Site	378717 543146	Reservoir	1900
9AA	0.0	On Site	378090 543507	Unspecified Level	1859
10C	0.0	On Site	378106 543471	Unspecified Levels	1900
11C	0.0	On Site	378099 543476	Lead Levels	1924
12D	0.0	On Site	378719 543144	Reservoir	1940
13D	0.0	On Site	378735 543154	Disused Reservoir	1981
14D	0.0	On Site	378717 543144	Pond	1859
15D	0.0	S	378718 543162	Reservoir	1924
16D	1.0	S	378717 543162	Reservoir	1924
17	3.0	SW	378720 542994	Refuse Heap	1900
18E	4.0	S	378338 543319	Unspecified Heaps	1900
19C	5.0	SW	378107 543474	Unspecified Disused Level	1981
20E	8.0	S	378341 543312	Unspecified Heap	1859
21E	11.0	S	378333 543316	Unspecified Ground Workings	1924

ID	Distance (m)	Direction	NGR	Use	Date
22E	12.0	S	378336 543317	Unspecified Heap	1924
23F	20.0	NW	378607 543435	Unspecified Pit	1940
24F	20.0	NW	378606 543432	Unspecified Pit	1924
25F	21.0	NW	378604 543431	Unspecified Pit	1924
26I	23.0	NE	378192 543478	Pond	1924
27G	24.0	SW	378553 543184	Unspecified Heaps	1940
28G	25.0	SW	378537 543185	Unspecified Ground Workings	1900
29H	25.0	N	378608 543462	Refuse Heap	1900
30H	26.0	NW	378604 543442	Unspecified Pit	1900
31I	26.0	NE	378196 543480	Pond	1924
32O	27.0	SW	378447 543238	Unspecified Heap	1859
33J	27.0	SW	378080 543455	Disused Reservoir	1981
34I	29.0	NE	378197 543483	Pond	1859
35	30.0	SW	378614 542956	Unspecified Disused Workings	1981
36I	31.0	NE	378198 543485	Pond	1940
37J	31.0	SW	378068 543461	Lead Levels	1924
38J	31.0	SW	378068 543461	Pond	1924
39K	34.0	E	379122 543120	Unspecified Old Quarry	1940
40K	36.0	SE	379117 543114	Unspecified Ground Workings	1859
41K	36.0	E	379119 543116	Unspecified Old Quarry	1924
42K	36.0	E	379120 543116	Unspecified Old Quarry	1924
43M	37.0	SW	378580 543131	Unspecified Heap	1900
44K	37.0	E	379124 543117	Unspecified Old Quarry	1900
45L	38.0	W	378541 543444	Unspecified Ground Workings	1924
46N	39.0	W	378554 543403	Unspecified Pit	1859
47L	39.0	W	378526 543414	Unspecified Pit	1900
48M	39.0	SW	378582 543130	Unspecified Heap	1859
49N	40.0	W	378539 543411	Unspecified Pit	1940
50G	42.0	SW	378570 543162	Unspecified Level	1924

ID	Distance (m)	Direction	NGR	Use	Date
51O	43.0	SW	378446 543233	Unspecified Ground Workings	1900
52Q	46.0	SW	378524 543159	Unspecified Level	1900
53AE	49.0	NE	378922 543344	Unspecified Disused Level	1981
54L	50.0	NW	378539 543440	Unspecified Ground Workings	1900
55L	53.0	NW	378561 543437	Unspecified Heap	1940
56	53.0	SE	379178 542994	Unspecified Heap	1923
57P	54.0	SW	378570 543156	Unspecified Level	1924
58	57.0	NW	378010 543650	Unspecified Pit	1859
59P	58.0	SW	378568 543154	Unspecified Level	1859
60M	66.0	SW	378572 543119	Unspecified Pit	1940
61R	67.0	N	378721 543458	Refuse Heap	1981
62Q	67.0	SW	378528 543159	Unspecified Disused Level	1981
63Q	67.0	SW	378528 543159	Unspecified Old Level	1940
64R	81.0	N	378705 543467	Unspecified Level	1859
65AG	86.0	SW	378473 543166	Unspecified Level	1859
66AF	93.0	SW	378624 542935	Unspecified Heap	1859
67S	96.0	SW	378692 542904	Unspecified Ground Workings	1900
68AI	96.0	S	378770 542881	Unspecified Disused Level	1981
69U	99.0	NE	378675 543518	Unspecified Heap	1859
70	103.0	NE	378941 543409	Covered Reservoir	1981
71S	105.0	SW	378688 542897	Unspecified Heap	1859
72T	107.0	SW	378466 543120	Unspecified Pit	1940
73AK	110.0	S	378728 542874	Unspecified Disused Levels	1981
74T	111.0	SW	378465 543109	Unspecified Pit	1924
75T	115.0	SW	378461 543109	Unspecified Pit	1924
76T	120.0	SW	378469 543104	Unspecified Pit	1900
77T	121.0	SW	378461 543100	Unspecified Pit	1859
78AM	126.0	SW	378679 542881	Unspecified Disused Levels	1981
79X	129.0	N	378768 543489	Unspecified Level	1900

ID	Distance (m)	Direction	NGR	Use	Date
80U	133.0	N	378648 543542	Unspecified Heap	1900
81V	135.0	N	378639 543540	Unspecified Heap	1924
82AO	137.0	NE	379112 543317	Unspecified Heap	1859
83V	138.0	N	378641 543543	Unspecified Heap	1940
84V	138.0	N	378640 543544	Unspecified Heap	1924
85AN	139.0	NE	378700 543518	Unspecified Level	1924
86W	141.0	NW	377874 543763	Unspecified Quarry	1859
87W	146.0	NW	377911 543801	Unspecified Heap	1940
88X	152.0	N	378738 543506	Unspecified Level	1924
89AR	157.0	N	378740 543512	Unspecified Level	1940
90AP	165.0	SW	378677 542837	Unspecified Disused Levels	1981
91AS	193.0	N	378781 543553	Unspecified Heap	1859
92	202.0	NE	379158 543358	Unspecified Heap	1859
93Z	206.0	N	378908 543584	Refuse Heap	1900
94Y	208.0	N	378835 543559	Unspecified Heap	1924
95Y	211.0	N	378835 543562	Unspecified Heap	1924
96	214.0	N	377898 543981	Unspecified Heap	1924
97Y	214.0	N	378833 543566	Unspecified Heap	1859
98Y	214.0	N	378835 543565	Unspecified Heap	1900
99Y	214.0	N	378835 543566	Unspecified Heap	1940
100W	234.0	NW	377902 543771	Refuse Heap	1900
101AX	235.0	NE	378280 543745	Unspecified Disused Level	1981
102Z	243.0	N	378927 543594	Unspecified Ground Workings	1924
103Z	246.0	N	378903 543578	Unspecified Heap	1859
104Z	248.0	N	378933 543579	Unspecified Heap	1859
105Z	249.0	N	378933 543599	Unspecified Ground Workings	1900
106Z	249.0	N	378909 543575	Unspecified Heap	1924
107Z	250.0	N	378928 543605	Unspecified Heaps	1940

4.2 Historical Underground Working Features derived from Historical Mapping

This data is derived from the Groundsure unique Historical Land Use Database. It contains data derived from 1:10,000 and 1:10,560 historical Ordnance Survey Mapping and includes some natural topographical features (Shake Holes for example) as well as manmade features that may have implications for ground stability. Underground and mining features have been identified from surface features such as shafts. The distance that these extend underground is not shown.

Are there any Historical Underground Working Features within 1000m of the study site boundary? Yes

The following Historical Underground Working Features are provided by Groundsure:

ID	Distance (m)	Direction	NGR	Use	Date
108	0.0	On Site	378771 543004	Unspecified Disused Shafts	1981
109	0.0	On Site	378832 543046	Unspecified Disused Shafts	1981
110	0.0	On Site	378852 543087	Unspecified Disused Shafts	1981
111	0.0	On Site	378732 543301	Unspecified Disused Shafts	1981
112	0.0	On Site	378655 543323	Unspecified Disused Shafts	1981
113AA	0.0	On Site	378083 543517	Lead Mine	1859
114	0.0	On Site	377880 543856	Unspecified Mine	1924
115AA	0.0	On Site	378090 543507	Unspecified Level	1859
116I	2.0	NE	378188 543472	Unspecified Mine	1900
117J	5.0	SW	378107 543474	Unspecified Disused Level	1981
118AB	7.0	SW	378670 542966	Old Lead Mine	1923
119AD	11.0	W	378716 543017	Unspecified Disused Shafts	1981
120	18.0	SW	378226 543374	Unspecified Old Mine	1859
121	19.0	N	378727 543374	Unspecified Shaft	1981
122	21.0	NE	378240 543486	Unspecified Mine	1940
123J	31.0	SW	378068 543461	Lead Levels	1924
124AC	32.0	S	378254 543338	Unspecified Disused Shafts	1981
125AB	34.0	SW	378680 542970	Lead Mine	1900
126AC	36.0	S	378261 543332	Unspecified Disused Shafts	1981
127AD	39.0	NW	378692 543036	Unspecified Disused Shafts	1981
128G	42.0	SW	378570 543162	Unspecified Level	1924
129	44.0	S	378286 543315	Unspecified Disused Shafts	1981

ID	Distance (m)	Direction	NGR	Use	Date
130	45.0	SW	378722 542936	Old Lead Mine	1940
131AE	49.0	NE	378922 543344	Unspecified Disused Level	1981
132	50.0	W	378690 543055	Unspecified Disused Shafts	1981
133P	54.0	SW	378570 543156	Unspecified Level	1924
134P	58.0	SW	378568 543154	Unspecified Level	1859
135	63.0	NE	379065 543248	Old Lead Shaft	1924
136Q	67.0	SW	378528 543159	Unspecified Disused Level	1981
137Q	67.0	SW	378528 543159	Unspecified Old Level	1940
138AH	75.0	SW	378103 543391	Unspecified Disused Shafts	1981
139R	81.0	N	378705 543467	Unspecified Level	1859
140	82.0	NE	378236 543520	Unspecified Mine	1924
141AF	83.0	SW	378643 542934	old Lead Mine	1940
142	84.0	SW	378200 543310	Unspecified Disused Shafts	1981
143AG	86.0	SW	378473 543166	Unspecified Level	1859
144AH	89.0	SW	378086 543386	Unspecified Disused Shafts	1981
145AI	90.0	S	378751 542885	Lead Mine	1923
146AI	96.0	S	378770 542881	Unspecified Disused Level	1981
147AJ	98.0	NE	379082 543282	Unspecified Shaft	1981
148AJ	100.0	NE	379079 543286	Unspecified Shaft	1859
149AK	106.0	SW	378717 542884	Unspecified Old Shaft	1940
150	107.0	SW	378422 543175	Unspecified Disused Shafts	1981
151AK	110.0	S	378728 542874	Unspecified Disused Levels	1981
152AL	113.0	NE	378304 543510	Lead Mine	1859
153AK	119.0	SW	378715 542871	Unspecified Shaft	1859
154AL	120.0	NE	378315 543499	Unspecified Shaft	1859
155	123.0	NE	379051 543339	Unspecified Disused Shafts	1981
156AM	126.0	SW	378679 542881	Unspecified Disused Levels	1981
157AK	127.0	SW	378692 542873	Unspecified Disused Shafts	1981
158AK	128.0	SW	378712 542857	Unspecified Old Shaft	1900

ID	Distance (m)	Direction	NGR	Use	Date
159	129.0	SW	378076 543344	Unspecified Disused Shafts	1981
160X	129.0	N	378768 543489	Unspecified Level	1900
161V	138.0	N	378628 543528	Unspecified Disused Shaft	1981
162AN	139.0	NE	378700 543518	Unspecified Level	1924
163AM	142.0	SW	378659 542880	Unspecified Mine	1859
164AQ	143.0	S	378750 542836	Unspecified Shaft	1981
165AO	143.0	NE	379126 543298	Unspecified Disused Shafts	1981
166AM	144.0	SW	378656 542879	Unspecified Old Shaft	1923
167T	147.0	SW	378451 543108	Unspecified Disused Shafts	1981
168AP	149.0	SW	378690 542849	Unspecified Disused Shafts	1981
169AQ	151.0	S	378716 542836	Unspecified Disused Shafts	1981
170X	152.0	N	378738 543506	Unspecified Level	1924
171AQ	153.0	S	378754 542826	Unspecified Disused Shafts	1981
172X	155.0	N	378740 543509	Lead Mine	1859
173AR	157.0	N	378740 543512	Unspecified Level	1940
174	157.0	SE	378847 542845	Unspecified Disused Shafts	1981
175AP	165.0	SW	378677 542837	Unspecified Disused Levels	1981
176AP	175.0	SW	378693 542818	Unspecified Disused Shafts	1981
177	178.0	N	378625 543569	Unspecified Disused Shaft	1981
178AU	184.0	SW	378423 543081	Unspecified Disused Shafts	1981
179AT	186.0	S	378728 542796	Unspecified Disused Shafts	1981
180AS	188.0	N	378790 543536	Unspecified Disused Shafts	1981
181AV	194.0	SW	378067 543270	Unspecified Disused Shafts	1981
182AT	196.0	S	378736 542785	Unspecified Disused Shafts	1981
183AU	202.0	SW	378382 543087	Unspecified Disused Shafts	1981
184AS	205.0	N	378755 543559	Unspecified Disused Shafts	1981
185AV	211.0	SW	378051 543262	Unspecified Disused Shafts	1981
186AS	212.0	N	378783 543561	Unspecified Old Shaft	1900
187AS	213.0	N	378783 543562	Old Lead Shaft	1924

ID	Distance (m)	Direction	NGR	Use	Date
188AW	214.0	SW	378434 543041	Unspecified Disused Shafts	1981
189AS	214.0	N	378783 543563	Old Lead Shaft	1940
190AS	217.0	N	378796 543565	Unspecified Disused Shafts	1981
191AW	219.0	SW	378458 543026	Unspecified Disused Shafts	1981
192	229.0	SW	378543 542880	Unspecified Disused Shafts	1981
193Y	229.0	N	378839 543571	Unspecified Disused Shafts	1981
194	231.0	SE	378946 542832	Unspecified Disused Shafts	1981
195AY	234.0	S	378745 542745	Unspecified Shafts	1981
196AX	235.0	NE	378280 543745	Unspecified Disused Level	1981
197AZ	236.0	SW	378628 542784	Unspecified Disused Shafts	1981
198BD	238.0	N	378873 543570	Unspecified Shaft	1859
199	241.0	N	378695 543623	Unspecified Disused Shaft	1981
200AY	243.0	S	378739 542736	Unspecified Shafts	1981
201BB	244.0	SW	378083 543198	Unspecified Disused Shafts	1981
202AZ	246.0	SW	378594 542799	Unspecified Disused Shafts	1981
203BA	250.0	SW	378011 543242	Unspecified Disused Shafts	1981
204	255.0	SW	378336 543055	Unspecified Disused Shafts	1981
205BC	257.0	N	378640 543650	Unspecified Disused Shafts	1981
206BA	258.0	SW	377999 543241	Unspecified Disused Shafts	1981
207BB	259.0	SW	378078 543183	Unspecified Disused Shafts	1981
208BF	260.0	SW	378529 542848	Unspecified Disused Shafts	1981
209BC	261.0	N	378610 543649	Unspecified Disused Shafts	1981
210	261.0	E	379313 543190	Unspecified Disused Shaft	1981
211BD	264.0	N	378916 543582	Unspecified Disused Shafts	1981
212BE	268.0	SW	378583 542779	Unspecified Disused Shafts	1981
213	271.0	NE	379191 543417	Unspecified Disused Shafts	1981
214	279.0	NE	379161 543452	Unspecified Disused Shafts	1981
215BE	281.0	SW	378560 542782	Unspecified Disused Shafts	1981
216Z	284.0	N	378907 543608	Unspecified Disused Shafts	1981

ID	Distance (m)	Direction	NGR	Use	Date
217	285.0	SW	378110 543129	Unspecified Disused Shafts	1981
218BG	285.0	SW	377971 543228	Unspecified Disused Shafts	1981
219BF	288.0	SW	378493 542847	Unspecified Disused Shafts	1981
220	289.0	SW	378539 542793	Unspecified Disused Level	1981
221BG	300.0	SW	377952 543223	Unspecified Disused Shafts	1981
222	303.0	SW	378280 543035	Unspecified Disused Shafts	1981
223	307.0	SW	378492 542818	Unspecified Disused Shafts	1981
224	308.0	SW	378390 542959	Unspecified Disused Shafts	1981
225	310.0	N	378973 543609	Unspecified Shaft	1981
226BI	315.0	SW	378530 542765	Unspecified Disused Shafts	1981
227BG	317.0	SW	377934 543214	Unspecified Disused Shafts	1981
228BH	328.0	SW	377923 543210	Unspecified Disused Shafts	1981
Not shown	332.0	NW	377780 543741	Unspecified Old Shaft	1924
230BH	333.0	SW	377941 543190	Unspecified Disused Shafts	1981
Not shown	335.0	SW	378608 542682	Unspecified Disused Shafts	1981
Not shown	335.0	NW	377781 543746	Unspecified Old Shaft	1940
Not shown	335.0	NW	377778 543740	Unspecified Old Shaft	1900
Not shown	335.0	NW	377779 543742	Unspecified Shaft	1859
Not shown	337.0	NW	377779 543740	Unspecified Old Shaft	1924
236BI	339.0	SW	378499 542763	Unspecified Disused Shafts	1981
237	340.0	SW	378332 542953	Unspecified Disused Shafts	1981
238	354.0	SW	378269 542981	Unspecified Disused Shafts	1981
239	357.0	NE	379025 543638	Unspecified Shaft	1859
240	358.0	SW	378513 542721	Unspecified Disused Shafts	1981
241	364.0	SW	377882 543195	Unspecified Disused Shafts	1981
242	365.0	SW	378375 542903	Unspecified Disused Shafts	1981
Not shown	366.0	S	378894 542563	Old Lead Mine	1940
244	377.0	NE	379119 543605	Unspecified Disused Shafts	1981
245	385.0	NE	379167 543581	Unspecified Disused Shafts	1981

ID	Distance (m)	Direction	NGR	Use	Date
246	394.0	SW	378326 542894	Unspecified Disused Shafts	1981
247	400.0	SW	378453 542723	Unspecified Disused Shafts	1981
248BJ	402.0	SW	377834 543185	Unspecified Disused Shafts	1981
249BJ	407.0	SW	377842 543171	Unspecified Disused Shafts	1981
250BK	409.0	NE	379226 543566	Unspecified Disused Shafts	1981
251	411.0	NE	379148 543627	Unspecified Disused Shafts	1981
252BK	412.0	NE	379256 543546	Unspecified Disused Shafts	1981
Not shown	416.0	SW	377752 543258	Unspecified Disused Level	1981
254	416.0	NE	378439 543833	Unspecified Disused Shaft	1981
255BK	419.0	NE	379225 543579	Unspecified Disused Shafts	1981
Not shown	423.0	W	377661 543661	Unspecified Disused Shafts	1981
257BK	427.0	NE	379250 543570	Unspecified Disused Shafts	1981
258	434.0	S	378195 542934	Unspecified Disused Shafts	1981
Not shown	435.0	SW	378450 542675	Unspecified Shaft	1981
Not shown	453.0	W	377627 543633	Unspecified Disused Shafts	1981
261	455.0	SW	378309 542834	Unspecified Disused Shafts	1981
Not shown	461.0	SW	377797 543138	Unspecified Disused Shafts	1981
263	463.0	N	378861 543804	Unspecified Disused Shaft	1981
Not shown	466.0	SW	377716 543227	Unspecified Level	1859
265	466.0	NE	379253 543616	Unspecified Disused Shafts	1981
266	478.0	SW	378263 542834	Unspecified Disused Shafts	1981
Not shown	486.0	SE	379077 542607	Unspecified Shaft	1981
Not shown	486.0	SE	379077 542607	Old Lead Shaft	1940
269	488.0	NE	379251 543646	Unspecified Disused Shafts	1981
Not shown	488.0	S	378928 542519	Lead Mines	1900
Not shown	490.0	SE	379081 542604	Old Lead Shaft	1923
Not shown	494.0	N	378541 543877	Unspecified Disused Shaft	1981
273	500.0	N	378901 543834	Unspecified Disused Shaft	1981
274	505.0	SW	378286 542771	Unspecified Disused Shafts	1981

ID	Distance (m)	Direction	NGR	Use	Date
Not shown	506.0	SW	378444 542585	Unspecified Disused Shafts	1981
Not shown	512.0	SW	378472 542557	Unspecified Disused Shafts	1981
277	515.0	SW	378213 542823	Unspecified Disused Shafts	1981
Not shown	520.0	SW	378501 542529	Unspecified Disused Shafts	1981
Not shown	521.0	S	378956 542493	Unspecified Disused Level	1981
Not shown	524.0	S	378746 542455	Unspecified Disused Shaft	1981
Not shown	525.0	S	378947 542486	Lead Mine	1923
Not shown	531.0	SW	377671 543175	Unspecified Shaft	1859
283	534.0	NE	379243 543712	Unspecified Disused Shaft	1981
284BL	539.0	S	378132 542845	Unspecified Disused Shafts	1981
Not shown	539.0	SW	378538 542489	Unspecified Disused Shafts	1981
Not shown	539.0	W	377538 543592	Unspecified Disused Shafts	1981
287BL	550.0	S	378134 542832	Unspecified Disused Shafts	1981
Not shown	560.0	W	377517 543552	Unspecified Disused Shafts	1981
Not shown	563.0	W	377541 543761	Unspecified Disused Shafts	1981
290BM	569.0	SW	378144 542805	Unspecified Disused Shafts	1981
Not shown	577.0	W	377500 543571	Unspecified Disused Shafts	1981
292BM	580.0	SW	378146 542790	Unspecified Disused Shafts	1981
Not shown	581.0	S	378783 542398	Unspecified Disused Shafts	1981
Not shown	585.0	W	377492 543540	Unspecified Disused Shafts	1981
Not shown	587.0	S	378807 542393	Unspecified Disused Shafts	1981
Not shown	589.0	S	378712 542365	Old Lead Level	1940
297	593.0	S	378090 542802	Unspecified Disused Shafts	1981
Not shown	595.0	S	378706 542360	Old Lead Level	1923
Not shown	595.0	S	378714 542361	Unspecified Old Level	1900
Not shown	596.0	S	378699 542342	Lead Mine	1859
301	619.0	NE	379256 543806	Unspecified Shaft	1981
302	623.0	SW	378179 542716	Unspecified Disused Shafts	1981
Not shown	629.0	W	377448 543542	Unspecified Disused Shafts	1981

ID	Distance (m)	Direction	NGR	Use	Date
Not shown	640.0	S	378759 542338	Unspecified Disused Shafts	1981
Not shown	643.0	S	378548 542372	Unspecified Old Shaft	1858
Not shown	650.0	N	378971 543971	Unspecified Disused Level	1981
Not shown	652.0	S	378741 542327	Unspecified Disused Shafts	1981
Not shown	655.0	W	377435 543708	Unspecified Shaft	1981
Not shown	656.0	SW	377613 543048	Unspecified Old Level	1940
Not shown	661.0	SW	377613 543041	Unspecified Old Level	1900
Not shown	663.0	SW	377611 543041	Unspecified Level	1859
Not shown	668.0	S	378802 542312	Unspecified Disused Shafts	1981
Not shown	681.0	W	377412 543734	Unspecified Disused Shaft	1981
Not shown	698.0	NE	379614 543691	Old Lead Workings	1924
Not shown	700.0	S	378815 542281	Unspecified Disused Shafts	1981
Not shown	704.0	S	378658 542282	Unspecified Disused Shafts	1981
Not shown	706.0	SW	377478 543153	Unspecified Shafts	1981
Not shown	708.0	NE	379638 543602	Old Lead Workings	1900
Not shown	709.0	S	378648 542279	Unspecified Disused Shafts	1981
Not shown	713.0	SW	377475 543149	Unspecified Shaft	1859
Not shown	728.0	S	378699 542255	Unspecified Disused Level	1981
Not shown	745.0	NE	379696 543532	Old Lead Workings	1924
Not shown	756.0	S	379019 542267	Unspecified Disused Shafts	1981
Not shown	756.0	S	378928 542144	Unspecified Disused Mines	1981
Not shown	759.0	SW	377536 542980	Unspecified Old Level	1900
Not shown	766.0	S	378587 542232	Unspecified Shafts	1981
Not shown	766.0	S	378587 542232	Unspecified Shafts	1981
Not shown	766.0	S	378587 542232	Unspecified Shafts	1981
Not shown	770.0	SW	377493 543012	Unspecified Disused Level	1981
Not shown	772.0	S	378561 542234	Old Lead Shafts	1940
Not shown	773.0	S	378578 542229	Unspecified Shaft	1859
Not shown	774.0	S	378574 542228	Unspecified Shafts	1981

ID	Distance (m)	Direction	NGR	Use	Date
Not shown	779.0	S	378572 542225	Unspecified Old Shafts	1900
Not shown	780.0	SW	377470 543025	Unspecified Disused Shafts	1981
Not shown	780.0	S	378563 542224	Old Lead Shafts	1923
Not shown	783.0	S	378692 542199	Unspecified Disused Shafts	1981
Not shown	784.0	SW	377408 543119	Unspecified Shafts	1981
Not shown	799.0	S	378550 542208	Unspecified Shafts	1981
Not shown	804.0	SW	377578 542863	Old Coal Mines	1900
Not shown	806.0	SW	377571 542878	Coal Mine	1859
Not shown	807.0	S	378900 542181	Unspecified Disused Shafts	1981
Not shown	808.0	SW	377448 543006	Unspecified Disused Shafts	1981
Not shown	809.0	SW	377571 542870	Unspecified Disused Levels	1981
Not shown	810.0	SW	377636 542819	Unspecified Disused Level	1981
Not shown	815.0	SW	377588 542849	Unspecified Disused Levels	1981
Not shown	816.0	SW	377574 542864	Coal Mine	1859
Not shown	816.0	SE	379095 542232	Unspecified Disused Shafts	1981
Not shown	818.0	SW	377420 543028	Unspecified Disused Shafts	1981
Not shown	824.0	SW	377579 542849	Coal Mine	1859
Not shown	825.0	S	378945 542172	Unspecified Disused Shafts	1981
Not shown	826.0	S	378932 542169	Unspecified Disused Shafts	1981
Not shown	830.0	N	379147 544101	Unspecified Disused Shafts	1981
Not shown	831.0	S	378883 542154	Unspecified Disused Shafts	1981
Not shown	831.0	SW	377637 542740	Unspecified Disused Mine	1981
Not shown	833.0	SE	379118 542224	Unspecified Disused Shafts	1981
Not shown	834.0	S	378542 542175	Old Lead Shafts	1940
Not shown	835.0	S	378905 542156	Unspecified Disused Shafts	1981
Not shown	835.0	S	378814 542145	Unspecified Disused Shafts	1981
Not shown	839.0	S	379006 542175	Unspecified Disused Shafts	1981
Not shown	839.0	SE	379086 542204	Unspecified Disused Shafts	1981
Not shown	839.0	NE	379613 543968	Old Lead Mine	1901

ID	Distance (m)	Direction	NGR	Use	Date
Not shown	840.0	S	378553 542167	Unspecified Shaft	1859
Not shown	841.0	S	378554 542165	Unspecified Old Shafts	1900
Not shown	842.0	S	378589 542155	Unspecified Disused Shafts	1981
Not shown	842.0	S	378545 542165	Old Lead Shafts	1923
Not shown	842.0	S	379307 542306	Unspecified Disused Shafts	1981
Not shown	845.0	S	378910 542146	Old Lead Shaft	1940
Not shown	845.0	S	378490 542178	Unspecified Disused Shafts	1981
Not shown	845.0	S	378817 542135	Unspecified Disused Shafts	1981
Not shown	847.0	NE	379491 543914	Old Air Shaft	1924
Not shown	847.0	NE	379489 543916	Old Air Shaft	1901
Not shown	850.0	S	378787 542129	Unspecified Disused Shafts	1981
Not shown	851.0	SE	379175 542234	Unspecified Disused Shafts	1981
Not shown	851.0	NE	379490 543921	Unspecified Shaft	1981
Not shown	851.0	NE	379490 543921	Old Air Shaft	1940
Not shown	851.0	NE	379493 543919	Old Air Shaft	1924
Not shown	851.0	NE	378526 544328	Unspecified Disused Shaft	1981
Not shown	854.0	S	378906 542138	Old Lead Shaft	1923
Not shown	855.0	SE	379158 542220	Unspecified Disused Shafts	1981
Not shown	857.0	SE	379149 542213	Unspecified Disused Shafts	1981
Not shown	858.0	S	378802 542122	Unspecified Disused Shafts	1981
Not shown	858.0	N	378688 544247	Unspecified Disused Shaft	1981
Not shown	858.0	S	378917 542135	Unspecified Old Shaft	1900
Not shown	859.0	S	378910 542134	Unspecified Shaft	1859
Not shown	859.0	S	378918 542133	Unspecified Disused Shafts	1981
Not shown	861.0	S	378535 542149	Unspecified Shaft	1981
Not shown	861.0	SE	379140 542204	Unspecified Disused Shafts	1981
Not shown	861.0	S	378748 542118	Unspecified Disused Shafts	1981
Not shown	861.0	SE	379127 542197	Unspecified Disused Shafts	1981
Not shown	866.0	S	378986 542142	Unspecified Disused Shafts	1981

ID	Distance (m)	Direction	NGR	Use	Date
Not shown	867.0	SE	379119 542188	Unspecified Disused Shafts	1981
Not shown	868.0	S	378765 542111	Unspecified Disused Shafts	1981
Not shown	869.0	SW	377336 543075	Unspecified Shaft	1981
Not shown	869.0	W	377222 543740	Unspecified Shafts	1981
Not shown	872.0	SW	377595 542755	Old Coal Mines	1900
Not shown	874.0	S	378959 542127	Unspecified Disused Shafts	1981
Not shown	878.0	SW	377601 542766	Coal Mine	1859
Not shown	878.0	W	377213 543734	Unspecified Shafts	1981
Not shown	878.0	S	378925 542116	Unspecified Disused Shafts	1981
Not shown	878.0	S	378720 542102	Unspecified Disused Shafts	1981
Not shown	879.0	S	378511 542136	Unspecified Disused Shafts	1981
Not shown	879.0	SE	379504 542363	Unspecified Disused Shafts	1981
Not shown	882.0	SW	377710 542676	Unspecified Disused Level	1981
Not shown	883.0	W	377196 543604	Unspecified Shafts	1981
Not shown	885.0	SW	377600 542756	Coal Mine	1859
Not shown	885.0	S	378915 542107	Unspecified Disused Shafts	1981
Not shown	885.0	NW	377297 544008	Unspecified Disused Shafts	1981
Not shown	886.0	SE	379531 542371	Unspecified Disused Shafts	1981
Not shown	886.0	NE	379521 543940	Unspecified Disused Shaft	1981
Not shown	888.0	SE	379561 542389	Unspecified Disused Shafts	1981
Not shown	890.0	S	378666 542094	Unspecified Disused Shafts	1981
Not shown	890.0	S	379077 542145	Unspecified Disused Shafts	1981
Not shown	892.0	NE	379225 544136	Unspecified Disused Shafts	1981
Not shown	893.0	S	378446 542144	Unspecified Disused Shafts	1981
Not shown	893.0	SW	377598 542748	Coal Mine	1859
Not shown	897.0	S	378881 542090	Unspecified Disused Shafts	1981
Not shown	897.0	S	379336 542258	Unspecified Disused Shafts	1981
Not shown	900.0	SW	377599 542740	Coal Mine	1859
Not shown	901.0	NW	377304 544053	Unspecified Disused Shafts	1981

ID	Distance (m)	Direction	NGR	Use	Date
Not shown	903.0	N	379203 544157	Unspecified Disused Shafts	1981
Not shown	904.0	S	379052 542122	Unspecified Disused Shafts	1981
Not shown	907.0	S	378855 542076	Unspecified Disused Shafts	1981
Not shown	908.0	S	378887 542079	Unspecified Disused Shafts	1981
Not shown	910.0	SW	377627 542705	Unspecified Disused Level	1981
Not shown	911.0	NW	377379 544177	Unspecified Disused Shaft	1981
Not shown	914.0	SE	379144 542147	Unspecified Disused Shafts	1981
Not shown	916.0	E	379979 543123	Unspecified Old Shafts	1895
Not shown	917.0	SE	379132 542138	Unspecified Disused Shafts	1981
Not shown	918.0	W	377161 543601	Unspecified Shafts	1981
Not shown	922.0	SE	379475 542299	Unspecified Disused Shafts	1981
Not shown	922.0	SE	379475 542299	Unspecified Disused Shafts	1981
Not shown	926.0	NW	377235 543975	Unspecified Disused Shafts	1981
Not shown	930.0	SW	377608 542694	Unspecified Shaft	1981
Not shown	931.0	S	378826 542050	Unspecified Disused Shafts	1981
Not shown	931.0	E	380000 543094	Unspecified Old Shafts	1900
Not shown	932.0	S	378451 542100	Unspecified Disused Shafts	1981
Not shown	937.0	NE	378673 544332	Unspecified Disused Shaft	1981
Not shown	938.0	SW	377323 542962	Unspecified Old Shaft	1940
Not shown	939.0	E	380001 543089	Unspecified Old Shafts	1895
Not shown	941.0	S	378762 542038	Unspecified Disused Shafts	1981
Not shown	943.0	E	380001 543087	Old Lead Shafts	1858
Not shown	944.0	SW	377323 542954	Unspecified Old Shaft	1900
Not shown	946.0	E	380161 543215	Old Lead Workings	1940
Not shown	951.0	E	380017 542986	Old Lead Workings	1899
Not shown	954.0	E	380028 543009	Old Lead Workings	1858
Not shown	954.0	E	380028 543009	Old Lead Workings	1923
Not shown	954.0	E	380015 542976	Old Lead Workings	1940
Not shown	956.0	SW	377289 542977	Unspecified Disused Shafts	1981

ID	Distance (m)	Direction	NGR	Use	Date
Not shown	957.0	SW	377279 542993	Unspecified Disused Shafts	1981
Not shown	957.0	SW	377298 542963	Unspecified Disused Shafts	1981
Not shown	958.0	SE	379169 542111	Unspecified Disused Shafts	1981
Not shown	959.0	W	377184 543937	Unspecified Disused Shafts	1981
Not shown	964.0	E	380040 543174	Old Lead Workings	1924
Not shown	964.0	S	378590 542030	Unspecified Disused Shafts	1981
Not shown	968.0	SW	377311 542930	Unspecified Shaft	1859
Not shown	970.0	SW	377246 543026	Unspecified Shaft	1981
Not shown	976.0	S	378695 542005	Unspecified Disused Shafts	1981
Not shown	978.0	S	378458 542050	Unspecified Disused Shaft	1981
Not shown	980.0	E	380057 543167	Old Lead Workings	1895
Not shown	980.0	E	380057 543167	Old Lead Workings	1924
Not shown	981.0	NE	379315 544192	Unspecified Disused Shafts	1981
Not shown	982.0	E	380090 543290	Old Lead Workings	1858
Not shown	984.0	S	378981 541954	Unspecified Disused Mines	1981
Not shown	985.0	SW	377567 542655	Unspecified Shaft	1981
Not shown	987.0	SE	379707 542376	Unspecified Shaft	1981
Not shown	989.0	W	377138 543898	Unspecified Disused Shafts	1981
Not shown	989.0	NE	379266 544224	Unspecified Disused Shafts	1981
Not shown	989.0	S	378979 542013	Unspecified Disused Shaft	1981
Not shown	992.0	SE	379561 542266	Unspecified Disused Shafts	1981
Not shown	994.0	SE	379529 542245	Unspecified Disused Shafts	1981
Not shown	995.0	SE	379641 542315	Unspecified Disused Shafts	1981

4.3 Current Ground Workings

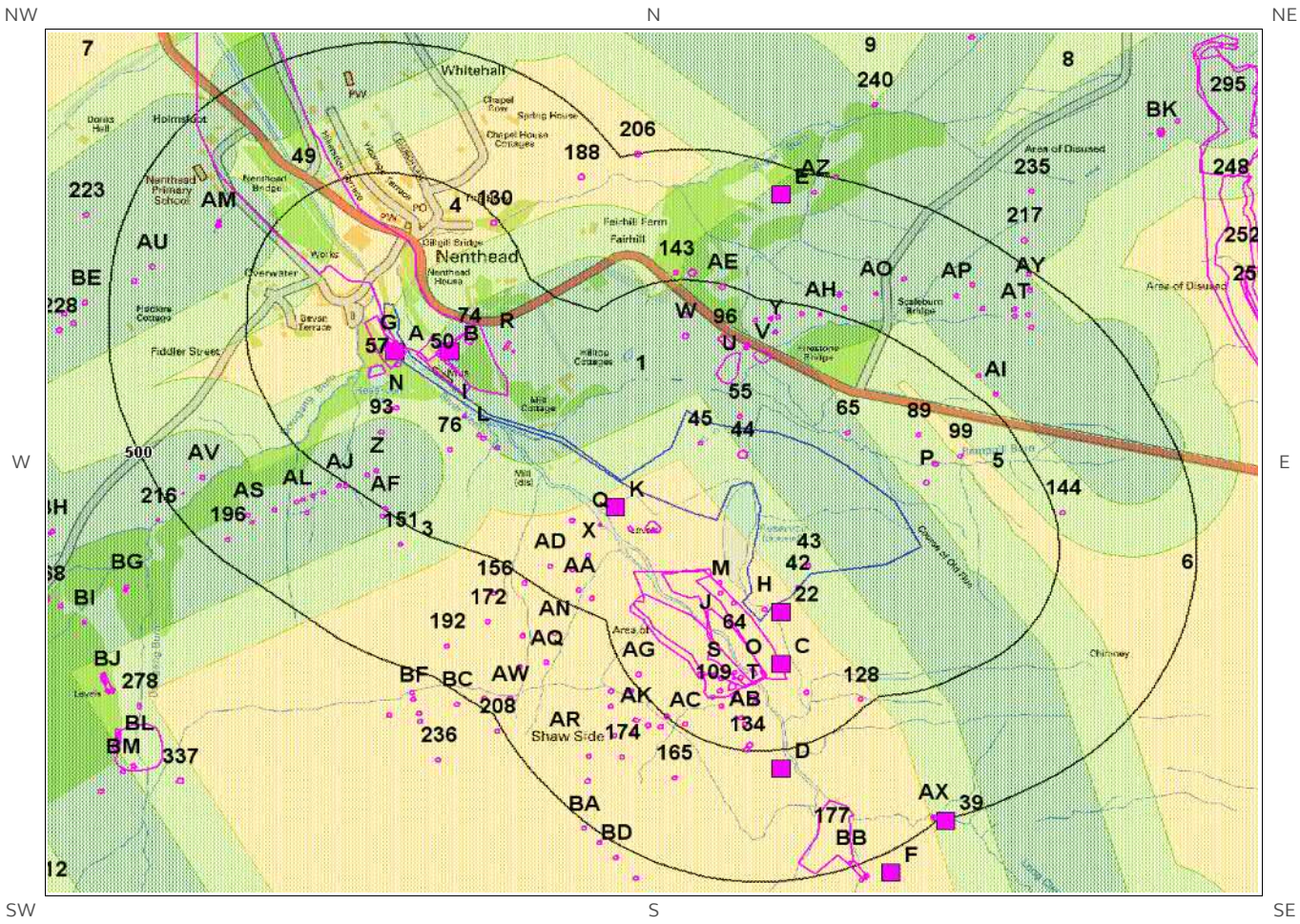
This dataset is derived from the BGS BRITPITS database covering active; inactive mines; quarries; oil wells; gas wells and mineral wharves; and rail deposits throughout the British Isles.

Are there any BGS Current Ground Workings within 1000m of the study site boundary? Yes

The following Current Ground Workings information is provided by British Geological Survey:

ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
472I	38.0	NE	378180 543500	Vein Minerals	Rampgill Mine	Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)	Ceased
473K	76.0	E	379131 543116	Sandstone	Nenthead	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	497.0	NW	377800 544000	Lead	Nentshead Mines	Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)	Ceased
Not shown	716.0	S	378666 542273	Sandstone	Old Carrs Burn	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	809.0	E	379807 543424	Sandstone	Slate Hill	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	926.0	SW	377625 542691	Coal, Deep	Shawside Colliery	Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)	Ceased
Not shown	997.0	E	380051 543178	Sandstone	Low Hill Quarry	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased

5 Mining, Extraction & Natural Cavities map



Mining, Extraction and Natural Cavities Legend

Site Outline

Search Buffers (m)

250

500

Historical Mining

Non-Coal Mining Cavities

Natural Cavities (point data)

Natural Cavities (polygon data)

Non-Coal Mining

Highly likely

Likely

Unlikely

Highly unlikely

Rare

5 Mining, Extraction & Natural Cavities

5.1 Historical Mining

This dataset is derived from Groundsure unique Historical Land-use Database that are indicative of mining or extraction activities.

Are there any Historical Mining areas within 1000m of the study site boundary? Yes

The following Historical Mining information is provided by Groundsure:

ID	Distance (m)	Direction	NGR	Details	Date
42	0.0	On Site	378832 543046	Unspecified Disused Shafts	1981
43	0.0	On Site	378852 543087	Unspecified Disused Shafts	1981
44	0.0	On Site	378732 543301	Unspecified Disused Shafts	1981
45	0.0	On Site	378655 543323	Unspecified Disused Shafts	1981
46G	0.0	On Site	378090 543507	Unspecified Level	1859
47G	0.0	On Site	378083 543517	Lead Mine	1859
48H	0.0	On Site	378771 543004	Unspecified Disused Shafts	1981
49	0.0	On Site	377880 543856	Unspecified Mine	1924
50	2.0	NE	378188 543472	Unspecified Mine	1900
51A	5.0	SW	378107 543474	Unspecified Disused Level	1981
52J	7.0	SW	378670 542966	Old Lead Mine	1923
53H	11.0	W	378716 543017	Unspecified Disused Shafts	1981
54I	18.0	SW	378226 543374	Unspecified Old Mine	1859
55	19.0	N	378727 543374	Unspecified Shaft	1981
56B	21.0	NE	378240 543486	Unspecified Mine	1940
57	31.0	SW	378068 543461	Lead Levels	1924
58I	32.0	S	378254 543338	Unspecified Disused Shafts	1981
59J	34.0	SW	378680 542970	Lead Mine	1900
60L	36.0	S	378261 543332	Unspecified Disused Shafts	1981
61M	39.0	NW	378692 543036	Unspecified Disused Shafts	1981

ID	Distance (m)	Direction	NGR	Details	Date
62K	42.0	SW	378570 543162	Unspecified Level	1924
63L	44.0	S	378286 543315	Unspecified Disused Shafts	1981
64	45.0	SW	378722 542936	Old Lead Mine	1940
65	49.0	NE	378922 543344	Unspecified Disused Level	1981
66M	50.0	W	378690 543055	Unspecified Disused Shafts	1981
67K	54.0	SW	378570 543156	Unspecified Level	1924
68K	58.0	SW	378568 543154	Unspecified Level	1859
69P	63.0	NE	379065 543248	Old Lead Shaft	1924
70K	67.0	SW	378528 543159	Unspecified Disused Level	1981
71K	67.0	SW	378528 543159	Unspecified Old Level	1940
72N	75.0	SW	378103 543391	Unspecified Disused Shafts	1981
73U	81.0	N	378705 543467	Unspecified Level	1859
74	82.0	NE	378236 543520	Unspecified Mine	1924
75J	83.0	SW	378643 542934	old Lead Mine	1940
76	84.0	SW	378200 543310	Unspecified Disused Shafts	1981
77Q	86.0	SW	378473 543166	Unspecified Level	1859
78N	89.0	SW	378086 543386	Unspecified Disused Shafts	1981
79O	90.0	S	378751 542885	Lead Mine	1923
80O	96.0	S	378770 542881	Unspecified Disused Level	1981
81P	98.0	NE	379082 543282	Unspecified Shaft	1981
82P	100.0	NE	379079 543286	Unspecified Shaft	1859
83O	106.0	SW	378717 542884	Unspecified Old Shaft	1940
84Q	107.0	SW	378422 543175	Unspecified Disused Shafts	1981
85O	110.0	S	378728 542874	Unspecified Disused Levels	1981
86R	113.0	NE	378304 543510	Lead Mine	1859
87O	119.0	SW	378715 542871	Unspecified Shaft	1859
88R	120.0	NE	378315 543499	Unspecified Shaft	1859
89	123.0	NE	379051 543339	Unspecified Disused Shafts	1981
90S	126.0	SW	378679 542881	Unspecified Disused Levels	1981

ID	Distance (m)	Direction	NGR	Details	Date
91S	127.0	SW	378692 542873	Unspecified Disused Shafts	1981
92O	128.0	SW	378712 542857	Unspecified Old Shaft	1900
93	129.0	SW	378076 543344	Unspecified Disused Shafts	1981
94V	129.0	N	378768 543489	Unspecified Level	1900
95W	138.0	N	378628 543528	Unspecified Disused Shaft	1981
96	139.0	NE	378700 543518	Unspecified Level	1924
97S	142.0	SW	378659 542880	Unspecified Mine	1859
98T	143.0	S	378750 542836	Unspecified Shaft	1981
99	143.0	NE	379126 543298	Unspecified Disused Shafts	1981
100S	144.0	SW	378656 542879	Unspecified Old Shaft	1923
101X	147.0	SW	378451 543108	Unspecified Disused Shafts	1981
102S	149.0	SW	378690 542849	Unspecified Disused Shafts	1981
103T	151.0	S	378716 542836	Unspecified Disused Shafts	1981
104U	152.0	N	378738 543506	Unspecified Level	1924
105T	153.0	S	378754 542826	Unspecified Disused Shafts	1981
106V	155.0	N	378740 543509	Lead Mine	1859
107V	157.0	N	378740 543512	Unspecified Level	1940
108C	157.0	SE	378847 542845	Unspecified Disused Shafts	1981
109	165.0	SW	378677 542837	Unspecified Disused Levels	1981
110T	175.0	SW	378693 542818	Unspecified Disused Shafts	1981
111W	178.0	N	378625 543569	Unspecified Disused Shaft	1981
112X	184.0	SW	378423 543081	Unspecified Disused Shafts	1981
113T	186.0	S	378728 542796	Unspecified Disused Shafts	1981
114Y	188.0	N	378790 543536	Unspecified Disused Shafts	1981
115Z	194.0	SW	378067 543270	Unspecified Disused Shafts	1981
116AB	196.0	S	378736 542785	Unspecified Disused Shafts	1981
117AD	202.0	SW	378382 543087	Unspecified Disused Shafts	1981
118Y	205.0	N	378755 543559	Unspecified Disused Shafts	1981
119Z	211.0	SW	378051 543262	Unspecified Disused Shafts	1981

ID	Distance (m)	Direction	NGR	Details	Date
120Y	212.0	N	378783 543561	Unspecified Old Shaft	1900
121Y	213.0	N	378783 543562	Old Lead Shaft	1924
122AA	214.0	SW	378434 543041	Unspecified Disused Shafts	1981
123Y	214.0	N	378783 543563	Old Lead Shaft	1940
124Y	217.0	N	378796 543565	Unspecified Disused Shafts	1981
125AA	219.0	SW	378458 543026	Unspecified Disused Shafts	1981
126AG	229.0	SW	378543 542880	Unspecified Disused Shafts	1981
127Y	229.0	N	378839 543571	Unspecified Disused Shafts	1981
128	231.0	SE	378946 542832	Unspecified Disused Shafts	1981
129AB	234.0	S	378745 542745	Unspecified Shafts	1981
130	235.0	NE	378280 543745	Unspecified Disused Level	1981
131AC	236.0	SW	378628 542784	Unspecified Disused Shafts	1981
132AH	238.0	N	378873 543570	Unspecified Shaft	1859
133AE	241.0	N	378695 543623	Unspecified Disused Shaft	1981
134	243.0	S	378739 542736	Unspecified Shafts	1981
135AF	244.0	SW	378083 543198	Unspecified Disused Shafts	1981
136AC	246.0	SW	378594 542799	Unspecified Disused Shafts	1981
137Z	250.0	SW	378011 543242	Unspecified Disused Shafts	1981
138AD	255.0	SW	378336 543055	Unspecified Disused Shafts	1981
139AE	257.0	N	378640 543650	Unspecified Disused Shafts	1981
140AJ	258.0	SW	377999 543241	Unspecified Disused Shafts	1981
141AF	259.0	SW	378078 543183	Unspecified Disused Shafts	1981
142AG	260.0	SW	378529 542848	Unspecified Disused Shafts	1981
143	261.0	N	378610 543649	Unspecified Disused Shafts	1981
144	261.0	E	379313 543190	Unspecified Disused Shaft	1981
145AH	264.0	N	378916 543582	Unspecified Disused Shafts	1981
146AC	268.0	SW	378583 542779	Unspecified Disused Shafts	1981
147AI	271.0	NE	379191 543417	Unspecified Disused Shafts	1981
148AI	279.0	NE	379161 543452	Unspecified Disused Shafts	1981

ID	Distance (m)	Direction	NGR	Details	Date
149AC	281.0	SW	378560 542782	Unspecified Disused Shafts	1981
150AH	284.0	N	378907 543608	Unspecified Disused Shafts	1981
151	285.0	SW	378110 543129	Unspecified Disused Shafts	1981
152AJ	285.0	SW	377971 543228	Unspecified Disused Shafts	1981
153AG	288.0	SW	378493 542847	Unspecified Disused Shafts	1981
154AK	289.0	SW	378539 542793	Unspecified Disused Level	1981
155AJ	300.0	SW	377952 543223	Unspecified Disused Shafts	1981
156	303.0	SW	378280 543035	Unspecified Disused Shafts	1981
157AK	307.0	SW	378492 542818	Unspecified Disused Shafts	1981
158AN	308.0	SW	378390 542959	Unspecified Disused Shafts	1981
159AO	310.0	N	378973 543609	Unspecified Shaft	1981
160AK	315.0	SW	378530 542765	Unspecified Disused Shafts	1981
161AJ	317.0	SW	377934 543214	Unspecified Disused Shafts	1981
162AL	328.0	SW	377923 543210	Unspecified Disused Shafts	1981
163AM	332.0	NW	377780 543741	Unspecified Old Shaft	1924
164AL	333.0	SW	377941 543190	Unspecified Disused Shafts	1981
165	335.0	SW	378608 542682	Unspecified Disused Shafts	1981
166AM	335.0	NW	377781 543746	Unspecified Old Shaft	1940
167AM	335.0	NW	377778 543740	Unspecified Old Shaft	1900
168AM	335.0	NW	377779 543742	Unspecified Shaft	1859
169AM	337.0	NW	377779 543740	Unspecified Old Shaft	1924
170AK	339.0	SW	378499 542763	Unspecified Disused Shafts	1981
171AN	340.0	SW	378332 542953	Unspecified Disused Shafts	1981
172	354.0	SW	378269 542981	Unspecified Disused Shafts	1981
173AO	357.0	NE	379025 543638	Unspecified Shaft	1859
174	358.0	SW	378513 542721	Unspecified Disused Shafts	1981
175AL	364.0	SW	377882 543195	Unspecified Disused Shafts	1981
176AQ	365.0	SW	378375 542903	Unspecified Disused Shafts	1981
177	366.0	S	378894 542563	Old Lead Mine	1940

ID	Distance (m)	Direction	NGR	Details	Date
178AP	377.0	NE	379119 543605	Unspecified Disused Shafts	1981
179AP	385.0	NE	379167 543581	Unspecified Disused Shafts	1981
180AQ	394.0	SW	378326 542894	Unspecified Disused Shafts	1981
181AR	400.0	SW	378453 542723	Unspecified Disused Shafts	1981
182AS	402.0	SW	377834 543185	Unspecified Disused Shafts	1981
183AS	407.0	SW	377842 543171	Unspecified Disused Shafts	1981
184AT	409.0	NE	379226 543566	Unspecified Disused Shafts	1981
185AP	411.0	NE	379148 543627	Unspecified Disused Shafts	1981
186AT	412.0	NE	379256 543546	Unspecified Disused Shafts	1981
187AV	416.0	SW	377752 543258	Unspecified Disused Level	1981
188	416.0	NE	378439 543833	Unspecified Disused Shaft	1981
189AT	419.0	NE	379225 543579	Unspecified Disused Shafts	1981
190AU	423.0	W	377661 543661	Unspecified Disused Shafts	1981
191AT	427.0	NE	379250 543570	Unspecified Disused Shafts	1981
192	434.0	S	378195 542934	Unspecified Disused Shafts	1981
193AR	435.0	SW	378450 542675	Unspecified Shaft	1981
194AU	453.0	W	377627 543633	Unspecified Disused Shafts	1981
195AW	455.0	SW	378309 542834	Unspecified Disused Shafts	1981
196	461.0	SW	377797 543138	Unspecified Disused Shafts	1981
197AZ	463.0	N	378861 543804	Unspecified Disused Shaft	1981
198AV	466.0	SW	377716 543227	Unspecified Level	1859
199AY	466.0	NE	379253 543616	Unspecified Disused Shafts	1981
200AW	478.0	SW	378263 542834	Unspecified Disused Shafts	1981
201AX	486.0	SE	379077 542607	Unspecified Shaft	1981
202AX	486.0	SE	379077 542607	Old Lead Shaft	1940
203AY	488.0	NE	379251 543646	Unspecified Disused Shafts	1981
204BB	488.0	S	378928 542519	Lead Mines	1900
205AX	490.0	SE	379081 542604	Old Lead Shaft	1923
206	494.0	N	378541 543877	Unspecified Disused Shaft	1981

ID	Distance (m)	Direction	NGR	Details	Date
207AZ	500.0	N	378901 543834	Unspecified Disused Shaft	1981
208	505.0	SW	378286 542771	Unspecified Disused Shafts	1981
209BA	506.0	SW	378444 542585	Unspecified Disused Shafts	1981
210BA	512.0	SW	378472 542557	Unspecified Disused Shafts	1981
211BC	515.0	SW	378213 542823	Unspecified Disused Shafts	1981
212BD	520.0	SW	378501 542529	Unspecified Disused Shafts	1981
213BB	521.0	S	378956 542493	Unspecified Disused Level	1981
Not shown	524.0	S	378746 542455	Unspecified Disused Shaft	1981
215BB	525.0	S	378947 542486	Lead Mine	1923
216	531.0	SW	377671 543175	Unspecified Shaft	1859
217	534.0	NE	379243 543712	Unspecified Disused Shaft	1981
218BC	539.0	S	378132 542845	Unspecified Disused Shafts	1981
219BD	539.0	SW	378538 542489	Unspecified Disused Shafts	1981
220BE	539.0	W	377538 543592	Unspecified Disused Shafts	1981
221BF	550.0	S	378134 542832	Unspecified Disused Shafts	1981
222BE	560.0	W	377517 543552	Unspecified Disused Shafts	1981
223	563.0	W	377541 543761	Unspecified Disused Shafts	1981
224BC	569.0	SW	378144 542805	Unspecified Disused Shafts	1981
225BE	577.0	W	377500 543571	Unspecified Disused Shafts	1981
226BC	580.0	SW	378146 542790	Unspecified Disused Shafts	1981
Not shown	581.0	S	378783 542398	Unspecified Disused Shafts	1981
228	585.0	W	377492 543540	Unspecified Disused Shafts	1981
Not shown	587.0	S	378807 542393	Unspecified Disused Shafts	1981
Not shown	589.0	S	378712 542365	Old Lead Level	1940
231BF	593.0	S	378090 542802	Unspecified Disused Shafts	1981
Not shown	595.0	S	378706 542360	Old Lead Level	1923
Not shown	595.0	S	378714 542361	Unspecified Old Level	1900
Not shown	596.0	S	378699 542342	Lead Mine	1859
235	619.0	NE	379256 543806	Unspecified Shaft	1981

ID	Distance (m)	Direction	NGR	Details	Date
236	623.0	SW	378179 542716	Unspecified Disused Shafts	1981
Not shown	629.0	W	377448 543542	Unspecified Disused Shafts	1981
Not shown	640.0	S	378759 542338	Unspecified Disused Shafts	1981
Not shown	643.0	S	378548 542372	Unspecified Old Shaft	1858
240	650.0	N	378971 543971	Unspecified Disused Level	1981
Not shown	652.0	S	378741 542327	Unspecified Disused Shafts	1981
Not shown	655.0	W	377435 543708	Unspecified Shaft	1981
243BG	656.0	SW	377613 543048	Unspecified Old Level	1940
244BG	661.0	SW	377613 543041	Unspecified Old Level	1900
245BG	663.0	SW	377611 543041	Unspecified Level	1859
Not shown	668.0	S	378802 542312	Unspecified Disused Shafts	1981
Not shown	681.0	W	377412 543734	Unspecified Disused Shaft	1981
248	698.0	NE	379614 543691	Old Lead Workings	1924
Not shown	700.0	S	378815 542281	Unspecified Disused Shafts	1981
Not shown	704.0	S	378658 542282	Unspecified Disused Shafts	1981
251BH	706.0	SW	377478 543153	Unspecified Shafts	1981
252	708.0	NE	379638 543602	Old Lead Workings	1900
Not shown	709.0	S	378648 542279	Unspecified Disused Shafts	1981
254BH	713.0	SW	377475 543149	Unspecified Shaft	1859
Not shown	728.0	S	378699 542255	Unspecified Disused Level	1981
256	745.0	NE	379696 543532	Old Lead Workings	1924
Not shown	756.0	S	379019 542267	Unspecified Disused Shafts	1981
Not shown	756.0	S	378928 542144	Unspecified Disused Mines	1981
259BI	759.0	SW	377536 542980	Unspecified Old Level	1900
Not shown	766.0	S	378587 542232	Unspecified Shafts	1981
Not shown	766.0	S	378587 542232	Unspecified Shafts	1981
Not shown	766.0	S	378587 542232	Unspecified Shafts	1981
263BI	770.0	SW	377493 543012	Unspecified Disused Level	1981
Not shown	772.0	S	378561 542234	Old Lead Shafts	1940

ID	Distance (m)	Direction	NGR	Details	Date
Not shown	773.0	S	378578 542229	Unspecified Shaft	1859
Not shown	774.0	S	378574 542228	Unspecified Shafts	1981
Not shown	779.0	S	378572 542225	Unspecified Old Shafts	1900
268	780.0	SW	377470 543025	Unspecified Disused Shafts	1981
Not shown	780.0	S	378563 542224	Old Lead Shafts	1923
Not shown	783.0	S	378692 542199	Unspecified Disused Shafts	1981
Not shown	784.0	SW	377408 543119	Unspecified Shafts	1981
Not shown	799.0	S	378550 542208	Unspecified Shafts	1981
273BJ	804.0	SW	377578 542863	Old Coal Mines	1900
274BJ	806.0	SW	377571 542878	Coal Mine	1859
Not shown	807.0	S	378900 542181	Unspecified Disused Shafts	1981
Not shown	808.0	SW	377448 543006	Unspecified Disused Shafts	1981
277BJ	809.0	SW	377571 542870	Unspecified Disused Levels	1981
278	810.0	SW	377636 542819	Unspecified Disused Level	1981
279BJ	815.0	SW	377588 542849	Unspecified Disused Levels	1981
280BJ	816.0	SW	377574 542864	Coal Mine	1859
Not shown	816.0	SE	379095 542232	Unspecified Disused Shafts	1981
Not shown	818.0	SW	377420 543028	Unspecified Disused Shafts	1981
283BJ	824.0	SW	377579 542849	Coal Mine	1859
Not shown	825.0	S	378945 542172	Unspecified Disused Shafts	1981
Not shown	826.0	S	378932 542169	Unspecified Disused Shafts	1981
286	830.0	N	379147 544101	Unspecified Disused Shafts	1981
Not shown	831.0	S	378883 542154	Unspecified Disused Shafts	1981
288BL	831.0	SW	377637 542740	Unspecified Disused Mine	1981
Not shown	833.0	SE	379118 542224	Unspecified Disused Shafts	1981
Not shown	834.0	S	378542 542175	Old Lead Shafts	1940
Not shown	835.0	S	378905 542156	Unspecified Disused Shafts	1981
Not shown	835.0	S	378814 542145	Unspecified Disused Shafts	1981
Not shown	839.0	S	379006 542175	Unspecified Disused Shafts	1981

ID	Distance (m)	Direction	NGR	Details	Date
Not shown	839.0	SE	379086 542204	Unspecified Disused Shafts	1981
295	839.0	NE	379613 543968	Old Lead Mine	1901
Not shown	840.0	S	378553 542167	Unspecified Shaft	1859
Not shown	841.0	S	378554 542165	Unspecified Old Shafts	1900
Not shown	842.0	S	378589 542155	Unspecified Disused Shafts	1981
Not shown	842.0	S	378545 542165	Old Lead Shafts	1923
Not shown	842.0	S	379307 542306	Unspecified Disused Shafts	1981
Not shown	845.0	S	378910 542146	Old Lead Shaft	1940
Not shown	845.0	S	378490 542178	Unspecified Disused Shafts	1981
Not shown	845.0	S	378817 542135	Unspecified Disused Shafts	1981
304BK	847.0	NE	379491 543914	Old Air Shaft	1924
305BK	847.0	NE	379489 543916	Old Air Shaft	1901
Not shown	850.0	S	378787 542129	Unspecified Disused Shafts	1981
Not shown	851.0	SE	379175 542234	Unspecified Disused Shafts	1981
308BK	851.0	NE	379490 543921	Unspecified Shaft	1981
309BK	851.0	NE	379490 543921	Old Air Shaft	1940
310BK	851.0	NE	379493 543919	Old Air Shaft	1924
Not shown	851.0	NE	378526 544328	Unspecified Disused Shaft	1981
Not shown	854.0	S	378906 542138	Old Lead Shaft	1923
Not shown	855.0	SE	379158 542220	Unspecified Disused Shafts	1981
Not shown	857.0	SE	379149 542213	Unspecified Disused Shafts	1981
Not shown	858.0	S	378802 542122	Unspecified Disused Shafts	1981
Not shown	858.0	N	378688 544247	Unspecified Disused Shaft	1981
Not shown	858.0	S	378917 542135	Unspecified Old Shaft	1900
Not shown	859.0	S	378910 542134	Unspecified Shaft	1859
Not shown	859.0	S	378918 542133	Unspecified Disused Shafts	1981
Not shown	861.0	S	378535 542149	Unspecified Shaft	1981
Not shown	861.0	SE	379140 542204	Unspecified Disused Shafts	1981
Not shown	861.0	S	378748 542118	Unspecified Disused Shafts	1981

ID	Distance (m)	Direction	NGR	Details	Date
Not shown	861.0	SE	379127 542197	Unspecified Disused Shafts	1981
Not shown	866.0	S	378986 542142	Unspecified Disused Shafts	1981
Not shown	867.0	SE	379119 542188	Unspecified Disused Shafts	1981
Not shown	868.0	S	378765 542111	Unspecified Disused Shafts	1981
Not shown	869.0	SW	377336 543075	Unspecified Shaft	1981
Not shown	869.0	W	377222 543740	Unspecified Shafts	1981
329BL	872.0	SW	377595 542755	Old Coal Mines	1900
Not shown	874.0	S	378959 542127	Unspecified Disused Shafts	1981
331BL	878.0	SW	377601 542766	Coal Mine	1859
Not shown	878.0	W	377213 543734	Unspecified Shafts	1981
Not shown	878.0	S	378925 542116	Unspecified Disused Shafts	1981
Not shown	878.0	S	378720 542102	Unspecified Disused Shafts	1981
Not shown	879.0	S	378511 542136	Unspecified Disused Shafts	1981
Not shown	879.0	SE	379504 542363	Unspecified Disused Shafts	1981
337	882.0	SW	377710 542676	Unspecified Disused Level	1981
Not shown	883.0	W	377196 543604	Unspecified Shafts	1981
339BL	885.0	SW	377600 542756	Coal Mine	1859
Not shown	885.0	S	378915 542107	Unspecified Disused Shafts	1981
Not shown	885.0	NW	377297 544008	Unspecified Disused Shafts	1981
Not shown	886.0	SE	379531 542371	Unspecified Disused Shafts	1981
343BK	886.0	NE	379521 543940	Unspecified Disused Shaft	1981
Not shown	888.0	SE	379561 542389	Unspecified Disused Shafts	1981
Not shown	890.0	S	378666 542094	Unspecified Disused Shafts	1981
Not shown	890.0	S	379077 542145	Unspecified Disused Shafts	1981
Not shown	892.0	NE	379225 544136	Unspecified Disused Shafts	1981
Not shown	893.0	S	378446 542144	Unspecified Disused Shafts	1981
349BL	893.0	SW	377598 542748	Coal Mine	1859
Not shown	897.0	S	378881 542090	Unspecified Disused Shafts	1981
Not shown	897.0	S	379336 542258	Unspecified Disused Shafts	1981

ID	Distance (m)	Direction	NGR	Details	Date
352BL	900.0	SW	377599 542740	Coal Mine	1859
Not shown	901.0	NW	377304 544053	Unspecified Disused Shafts	1981
Not shown	903.0	N	379203 544157	Unspecified Disused Shafts	1981
Not shown	904.0	S	379052 542122	Unspecified Disused Shafts	1981
Not shown	907.0	S	378855 542076	Unspecified Disused Shafts	1981
Not shown	908.0	S	378887 542079	Unspecified Disused Shafts	1981
358BL	910.0	SW	377627 542705	Unspecified Disused Level	1981
Not shown	911.0	NW	377379 544177	Unspecified Disused Shaft	1981
Not shown	914.0	SE	379144 542147	Unspecified Disused Shafts	1981
Not shown	916.0	E	379979 543123	Unspecified Old Shafts	1895
Not shown	917.0	SE	379132 542138	Unspecified Disused Shafts	1981
Not shown	918.0	W	377161 543601	Unspecified Shafts	1981
Not shown	922.0	SE	379475 542299	Unspecified Disused Shafts	1981
Not shown	922.0	SE	379475 542299	Unspecified Disused Shafts	1981
Not shown	926.0	NW	377235 543975	Unspecified Disused Shafts	1981
367BM	930.0	SW	377608 542694	Unspecified Shaft	1981
Not shown	931.0	S	378826 542050	Unspecified Disused Shafts	1981
Not shown	931.0	E	380000 543094	Unspecified Old Shafts	1900
Not shown	932.0	S	378451 542100	Unspecified Disused Shafts	1981
Not shown	937.0	NE	378673 544332	Unspecified Disused Shaft	1981
Not shown	938.0	SW	377323 542962	Unspecified Old Shaft	1940
Not shown	939.0	E	380001 543089	Unspecified Old Shafts	1895
Not shown	941.0	S	378762 542038	Unspecified Disused Shafts	1981
Not shown	943.0	E	380001 543087	Old Lead Shafts	1858
Not shown	944.0	SW	377323 542954	Unspecified Old Shaft	1900
Not shown	946.0	E	380161 543215	Old Lead Workings	1940
Not shown	951.0	E	380017 542986	Old Lead Workings	1899
Not shown	954.0	E	380028 543009	Old Lead Workings	1858
Not shown	954.0	E	380028 543009	Old Lead Workings	1923

ID	Distance (m)	Direction	NGR	Details	Date
Not shown	954.0	E	380015 542976	Old Lead Workings	1940
Not shown	956.0	SW	377289 542977	Unspecified Disused Shafts	1981
Not shown	957.0	SW	377279 542993	Unspecified Disused Shafts	1981
Not shown	957.0	SW	377298 542963	Unspecified Disused Shafts	1981
Not shown	958.0	SE	379169 542111	Unspecified Disused Shafts	1981
Not shown	959.0	W	377184 543937	Unspecified Disused Shafts	1981
Not shown	964.0	E	380040 543174	Old Lead Workings	1924
Not shown	964.0	S	378590 542030	Unspecified Disused Shafts	1981
Not shown	968.0	SW	377311 542930	Unspecified Shaft	1859
Not shown	970.0	SW	377246 543026	Unspecified Shaft	1981
Not shown	976.0	S	378695 542005	Unspecified Disused Shafts	1981
Not shown	978.0	S	378458 542050	Unspecified Disused Shaft	1981
Not shown	980.0	E	380057 543167	Old Lead Workings	1895
Not shown	980.0	E	380057 543167	Old Lead Workings	1924
Not shown	981.0	NE	379315 544192	Unspecified Disused Shafts	1981
Not shown	982.0	E	380090 543290	Old Lead Workings	1858
Not shown	984.0	S	378981 541954	Unspecified Disused Mines	1981
398BM	985.0	SW	377567 542655	Unspecified Shaft	1981
Not shown	987.0	SE	379707 542376	Unspecified Shaft	1981
Not shown	989.0	W	377138 543898	Unspecified Disused Shafts	1981
Not shown	989.0	NE	379266 544224	Unspecified Disused Shafts	1981
Not shown	989.0	S	378979 542013	Unspecified Disused Shaft	1981
Not shown	992.0	SE	379561 542266	Unspecified Disused Shafts	1981
Not shown	994.0	SE	379529 542245	Unspecified Disused Shafts	1981
Not shown	995.0	SE	379641 542315	Unspecified Disused Shafts	1981

5.2 Coal Mining

This dataset provides information as to whether the study site lies within a known coal mining affected area as defined by the coal authority.

Are there any Coal Mining areas within 1000m of the study site boundary? Yes

The following Coal Mining information provided by the Coal Authority is not represented on Mapping:

Distance (m)	Direction	Details
0.0	On Site	The study site is located within the specified search distance of an identified mining area. Further details concerning this can be obtained from the Coal Authority Helpline on 0845 762 6848.

5.3 Johnson Poole and Bloomer

This dataset provides information as to whether the study site lies within an area where JPB hold information relating to mining.

Are there any JPB Mining areas within 1000m of the study site boundary? No

The following information provided by JPB is not represented on mapping: Database searched and no data found.

5.4 Non-Coal Mining

This dataset provides information as to whether the study site lies within an area which may have been subject to non-coal historic mining.

Are there any Non-Coal Mining areas within 1000m of the study site boundary? Yes

The following non-coal mining information is provided by the BGS:

ID	Distance (m)	Direction	Name	Commodity	Assessment of likelihood
1	0.0	On Site	Not available	Vein Mineral	Underground mining is known to have occurred within or very close to the area. Potential for difficult ground conditions should be investigated. Potential for localised subsidence is at a level where it should be considered
2AR	0.0	On Site	North Pennines Orefield Alston	Vein Mineral	Small scale underground mining may have occurred; mine adits, shafts and tunnels may be present. Potential for localised difficult ground conditions are at a level where they should be considered
3	0.0	On Site	Not available	Vein Mineral	Underground mining is known or considered likely to have occurred within or close to the area. Potential for difficult ground conditions are at a level where they should be considered
4	0.0	On Site	North Pennines Orefield Alston	Vein Mineral	Small scale underground mining may have occurred; mine adits, shafts and tunnels may be present. Potential for localised difficult ground conditions are at a level where they should be considered
5	39.0	NE	Not available	Vein Mineral	Underground mining is known or considered likely to have occurred within or close to the area. Potential for difficult ground conditions are at a level where they should be considered

ID	Distance (m)	Direction	Name	Commodity	Assessment of likelihood
6	141.0	NE	North Pennines Orefield Alston	Vein Mineral	Small scale underground mining may have occurred; mine adits, shafts and tunnels may be present. Potential for localised difficult ground conditions are at a level where they should be considered
7	639.0	NW	North Pennines Orefield Alston	Vein Mineral	Small scale underground mining may have occurred; mine adits, shafts and tunnels may be present. Potential for localised difficult ground conditions are at a level where they should be considered
8	650.0	NE	Not available	Vein Mineral	Underground mining is known or considered likely to have occurred within or close to the area. Potential for difficult ground conditions are at a level where they should be considered
9	661.0	N	Not available	Vein Mineral	Underground mining is known or considered likely to have occurred within or close to the area. Potential for difficult ground conditions are at a level where they should be considered
Not shown	818.0	N	North Pennines Orefield Alston	Vein Mineral	Small scale underground mining may have occurred; mine adits, shafts and tunnels may be present. Potential for localised difficult ground conditions are at a level where they should be considered
Not shown	944.0	E	North Pennines Orefield Alston	Vein Mineral	Small scale underground mining may have occurred; mine adits, shafts and tunnels may be present. Potential for localised difficult ground conditions are at a level where they should be considered
12	997.0	W	Not available	Vein Mineral	Underground mining is known or considered likely to have occurred within or close to the area. Potential for difficult ground conditions are at a level where they should be considered

5.5 Non-Coal Mining Cavities

This dataset provides information from the Peter Brett Associates (PBA) mining cavities database (compiled for the national study entitled “Review of mining instability in Great Britain, 1990” PBA has also continued adding to this database) on mineral extraction by mining.

Are there any Non-Coal Mining cavities within 1000m of the study site boundary? Yes

The following Non-Coal Mining Cavities information provided by Peter Brett Associates:

ID	Distance (m)	Direction	NGR	Address	Superficial Deposits	Bedrock Deposits	Extracted Mineral
13A	0.0	On Site	378100 543500	BRIGAL BURN, Cumbria	-	-	Silver
14A	0.0	On Site	378100 543500	DOWGANG, Cumbria	-	-	Lead
15A	0.0	On Site	378100 543500	BRIGAL BURN, Cumbria	-	-	Lead
16A	0.0	On Site	378100 543500	DOWGANG, Cumbria	-	-	Silver
17A	0.0	On Site	378100 543500	DOWGANG, Cumbria	-	-	Blende, Zinc, Sphalerite, Smithsonite
18A	0.0	On Site	378100 543500	NENTHEAD, Cumbria	-	-	Lead
19A	0.0	On Site	378100 543500	BRIGAL BURN, Cumbria	-	-	Blende, Zinc, Sphalerite, Smithsonite
20A	0.0	On Site	378100 543500	CLEUGH,CAPEL, Cumbria	-	-	Silver

ID	Distance (m)	Direction	NGR	Address	Superficial Deposits	Bedrock Deposits	Extracted Mineral
21A	0.0	On Site	378100 543500	CLEUGH,CAPEL, Cumbria	-	-	Lead
22	17.0	SE	378800 543000	Nenthead, Cumbria	-	Great Limestone Member, Stainmore Formation	Lead
23K	47.0	SW	378500 543200	COW HILL, Cumbria	-	-	Lead
24B	51.0	NE	378200 543500	RAMPGILL, Cumbria	-	-	Silver
25B	51.0	NE	378200 543500	CARRS & HANGING SHAW, Cumbria	-	-	Silver
26B	51.0	NE	378200 543500	CARRS & HANGING SHAW, Cumbria	-	-	Lead
27B	51.0	NE	378200 543500	RAMPGILL, Cumbria	-	-	Lead
28C	90.0	SE	378800 542900	CLEUGH,LONG, Cumbria	-	-	Silver
29C	90.0	SE	378800 542900	CLEUGH,SMALL, Cumbria	-	-	Silver
30C	90.0	SE	378800 542900	CLEUGH,LONG, Cumbria	-	-	Lead
31C	90.0	SE	378800 542900	CLEUGH,LONG, Cumbria	-	-	Barytes, Witherite
32C	90.0	SE	378800 542900	CLEUGH,SMALL, Cumbria	-	-	Lead
33C	90.0	SE	378800 542900	CLEUGH,LONG 2ND SUN, Cumbria	-	-	Lead
34D	285.0	S	378800 542700	CARRS WEST OF NENT, Cumbria	-	-	Silver
35D	285.0	S	378800 542700	CARRS WEST OF NENT, Cumbria	-	-	Blende, Zinc, Sphalerite, Smithsonite
36D	285.0	S	378800 542700	CARRS WEST OF NENT, Cumbria	-	-	Lead
37E	448.0	N	378800 543800	SCALEBURN, Cumbria	-	-	Silver
38E	448.0	N	378800 543800	SCALEBURN, Cumbria	-	-	Lead
39	503.0	S	379100 542600	CLEUGH FLATS, Cumbria	-	-	Lead
40F	537.0	SE	379000 542500	CLEUGH,MIDDLE, Cumbria	-	-	Silver
41F	537.0	SE	379000 542500	CLEUGH,MIDDLE, Cumbria	-	-	Lead

5.6 Natural Cavities

This dataset provides information based on the Peter Brett Associates natural cavities database. The dataset is made up of points and polygons. Where polygons are used these represent an area in which it is expected the cavities could be found. It does not indicate that cavities are present everywhere within the polygon, and caution should be used in the interpretation of this data.

Are there any Natural Cavities within 1000m of the study site boundary? No

Database searched and no data found.

5.7 Brine Extraction

This data provides information from the Cheshire Brine Subsidence Compensation Board.

Are there any Brine Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

5.8 Gypsum Extraction

This dataset provides information on Gypsum extraction from British Gypsum records.

Are there any Gypsum Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

5.9 Tin Mining

This dataset provides information on tin mining areas and is derived from tin mining records. This search is based upon postcode information to a sector level..

Are there any Tin Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

5.10 Clay Mining

This dataset provides information on Kaolin and Ball Clay mining from relevant mining records.

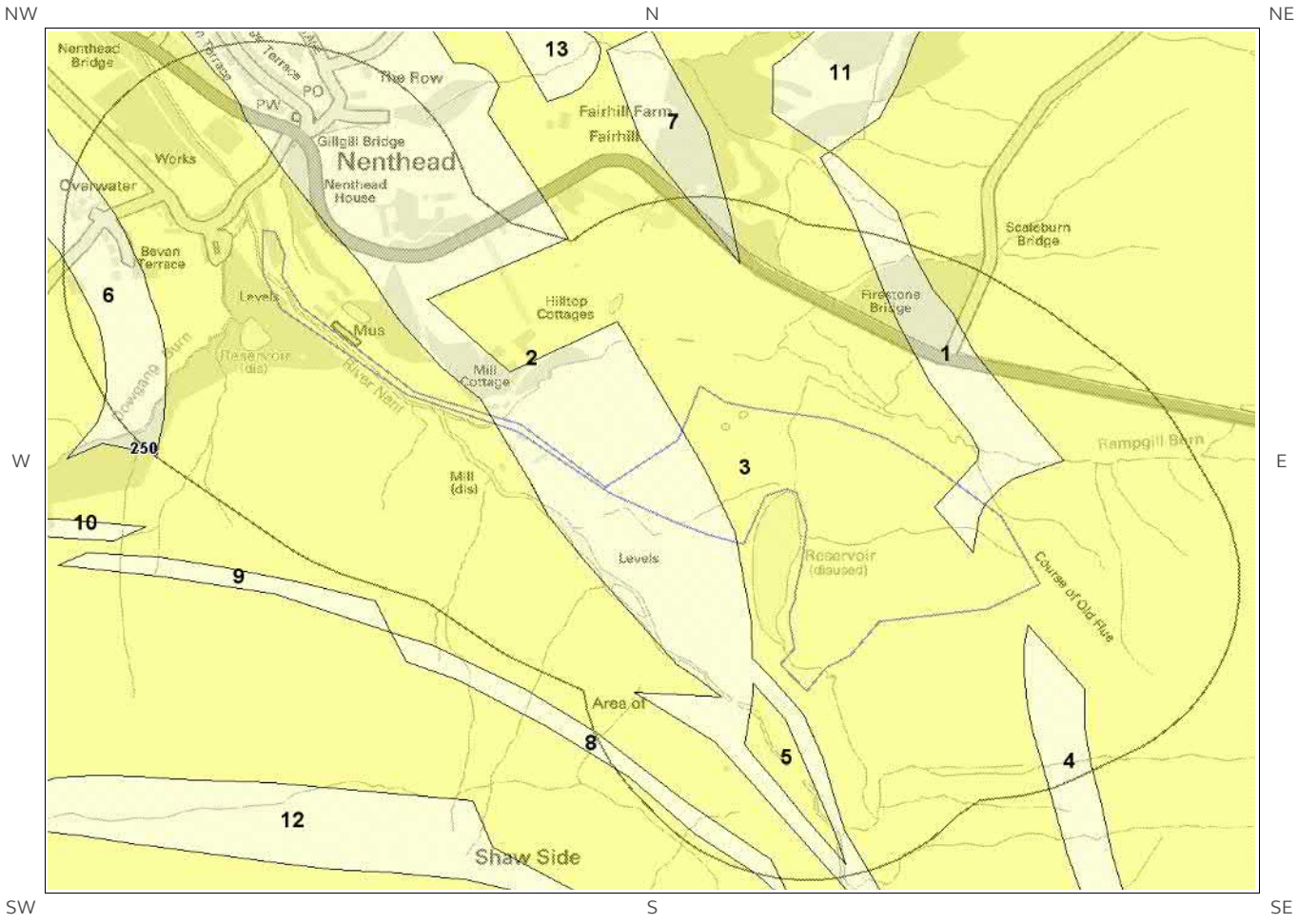
Are there any Clay Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

---

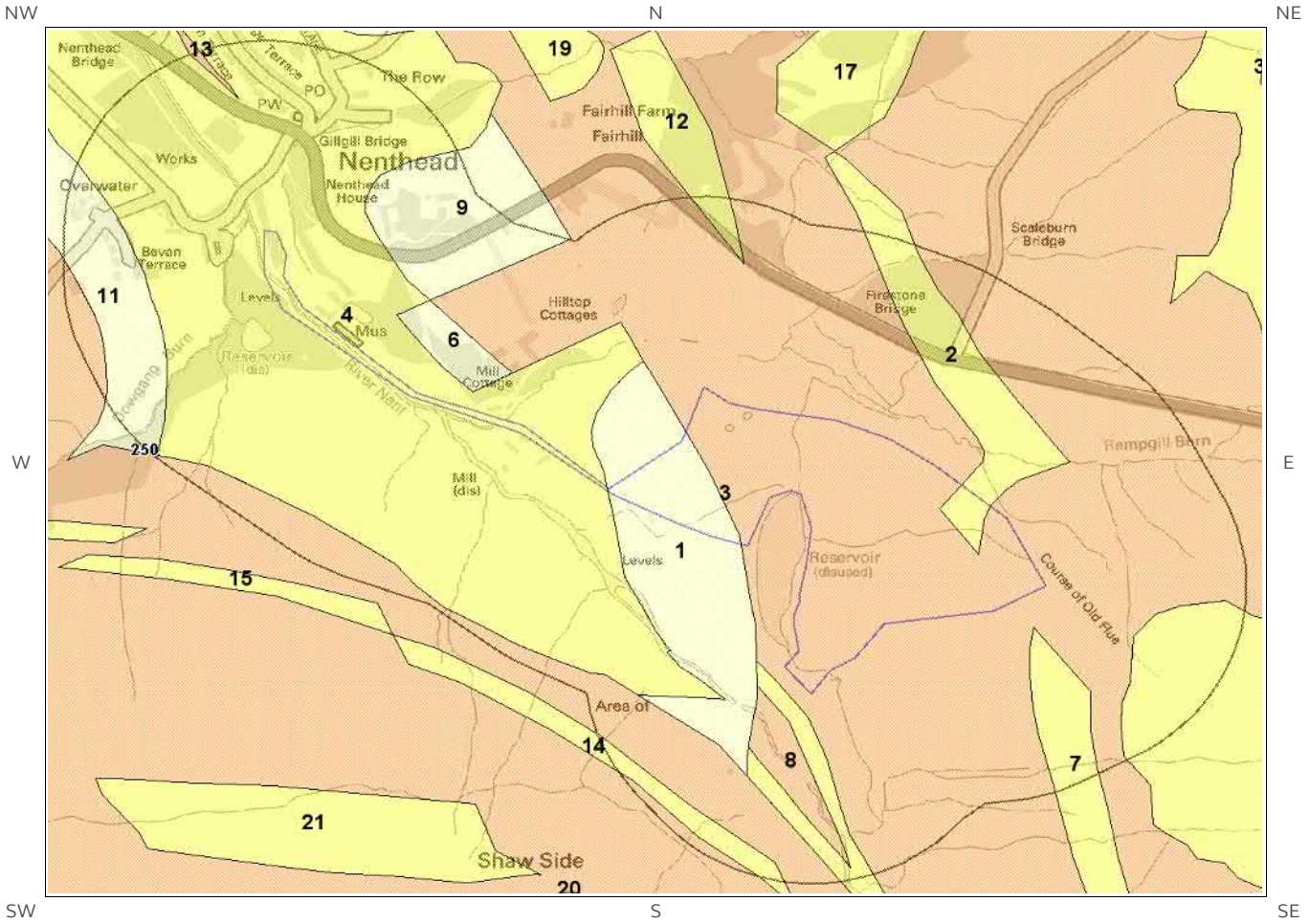
6 Natural Ground Subsidence

6.1 Shrink-Swell Clay map



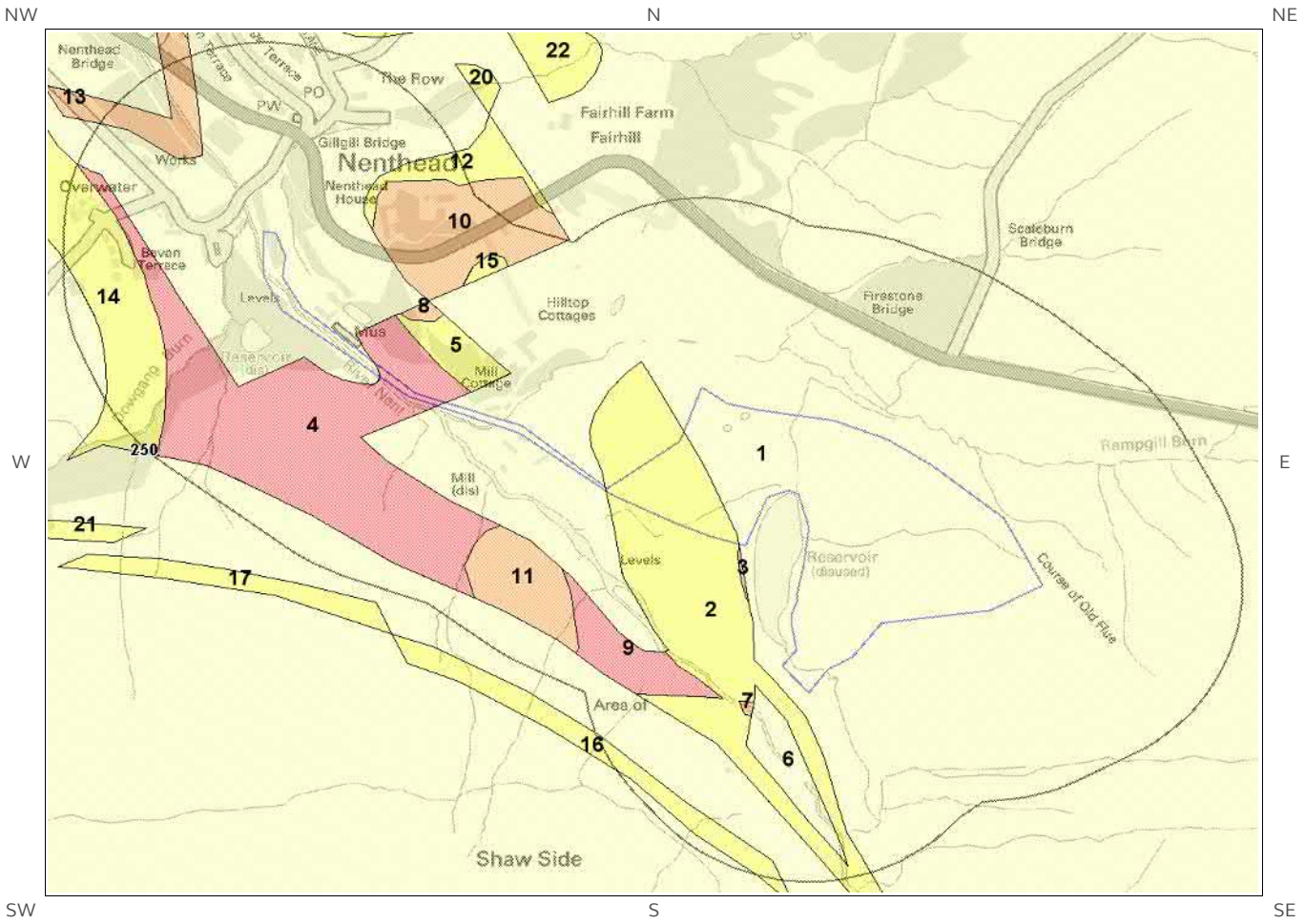
Shrink Swell Clay Legend

6.2 Landslides map



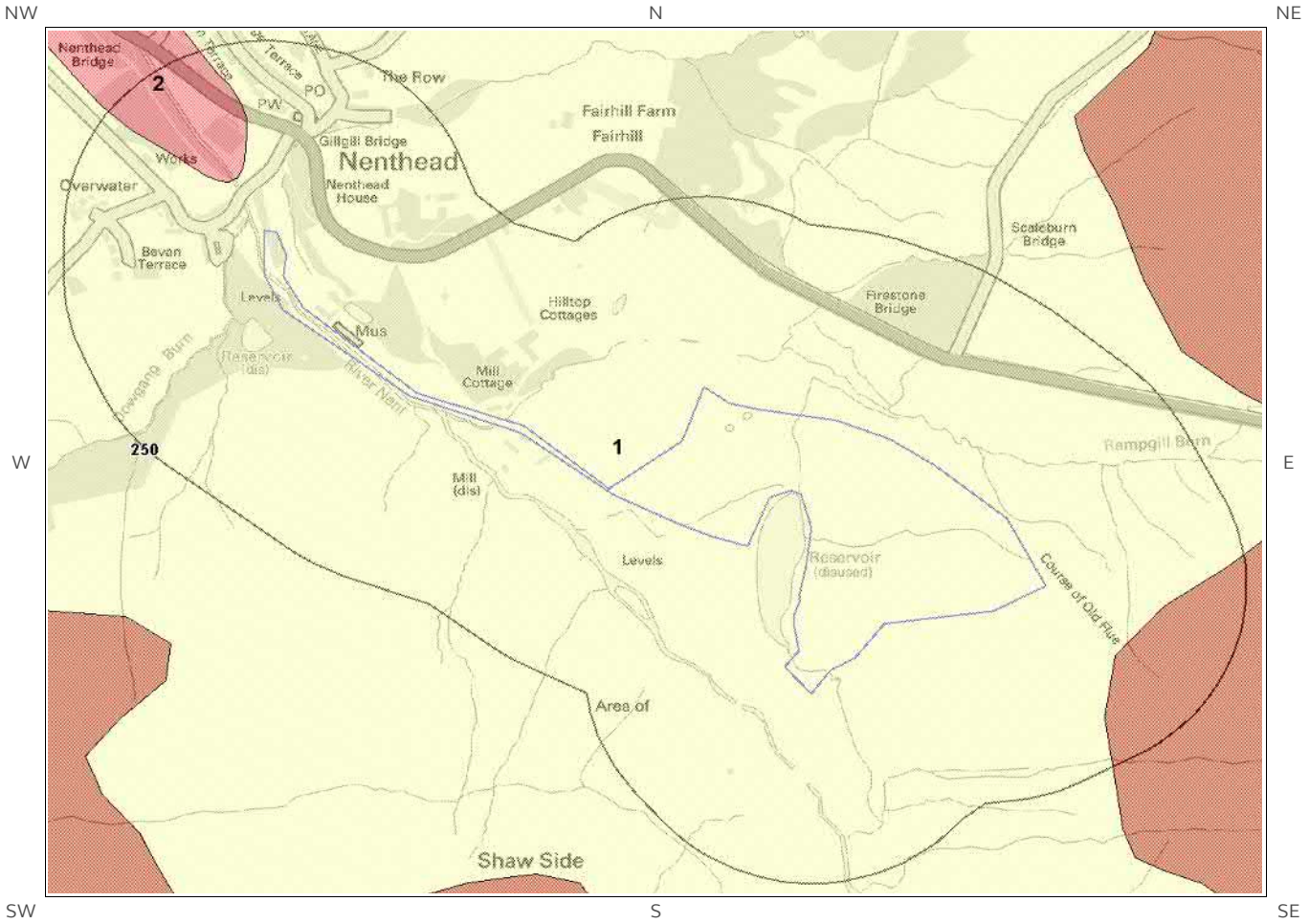
Landslides Legend

6.3 Ground Dissolution of Soluble Rocks map



Ground Dissolution Soluble Rocks Legend

6.4 Compressible Deposits map



Compressible Deposits Legend

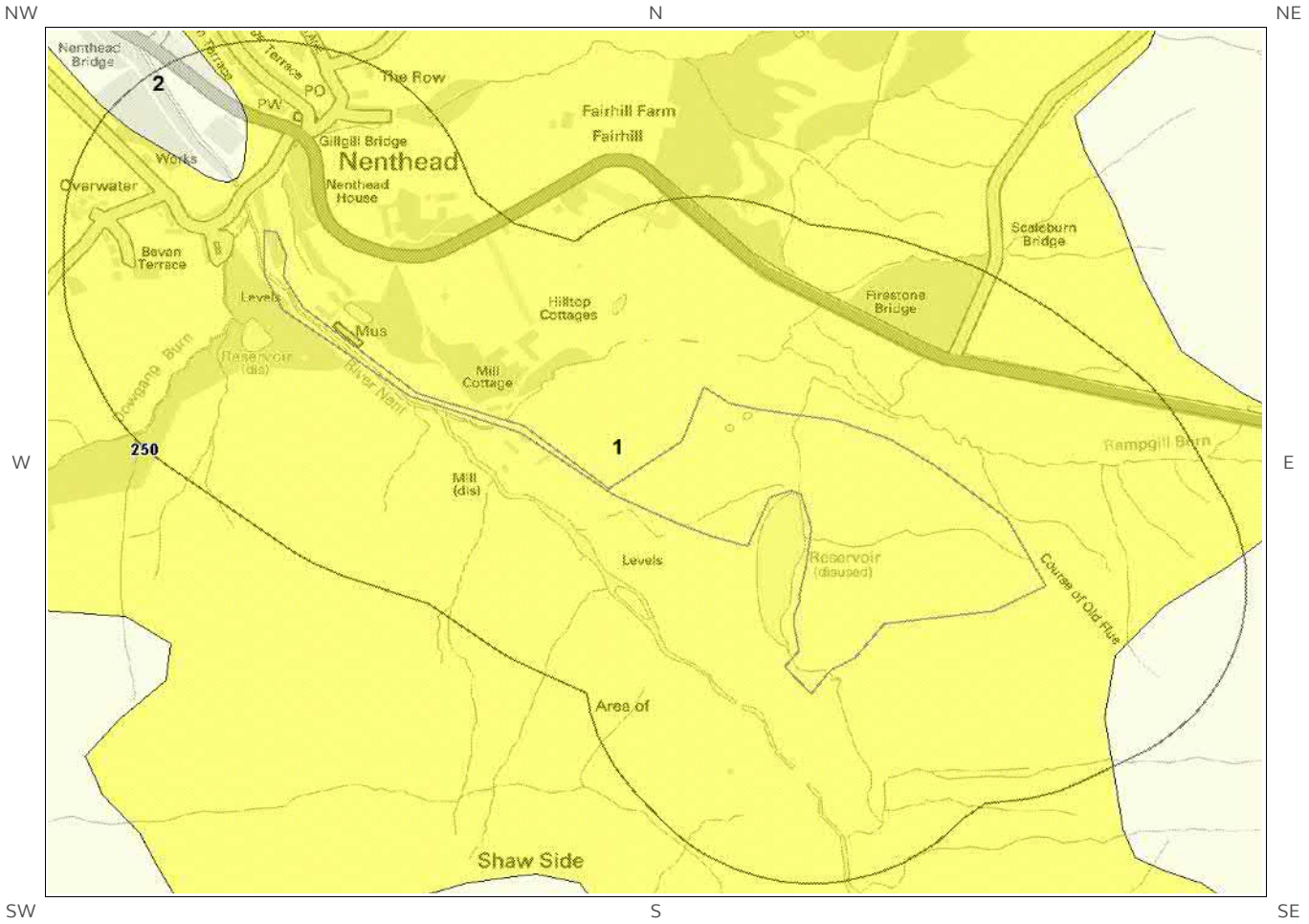
Site Outline

125
250
Search Buffers (m)

No Data / Null
Negligible
Very Low

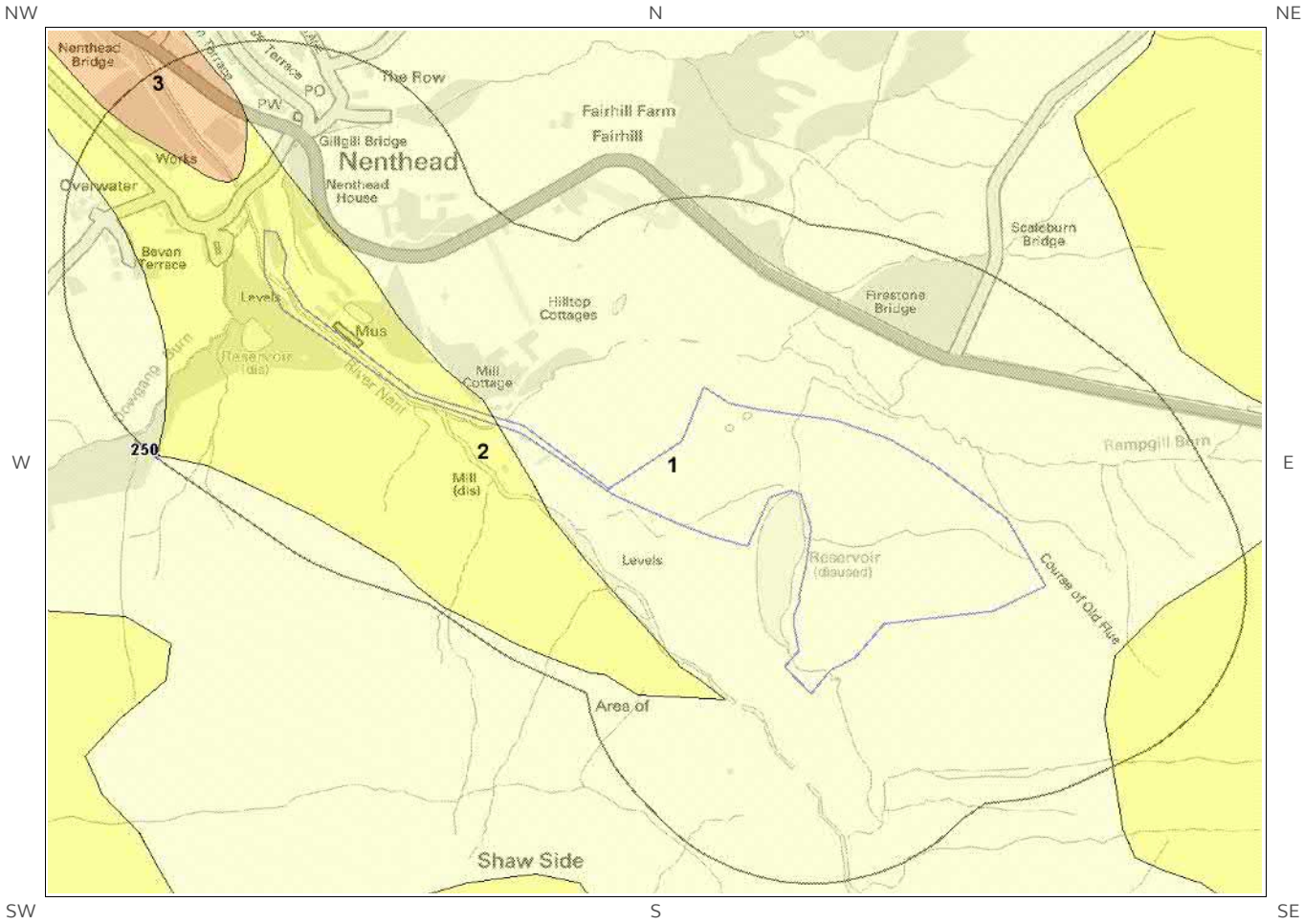
Low
Moderate
High

6.5 Collapsible Deposits map



Collapsible Deposits Legend

6.6 Running Sand map



Running Sand Legend

Site Outline

125
250
Search Buffers (m)

No Data / Null
Negligible
Very Low

Low
Moderate
High

6 Natural Ground Subsidence

The National Ground Subsidence rating is obtained through the 6 natural ground stability hazard datasets, which are supplied by the British Geological Survey (BGS).

The following GeoSure data represented on the mapping is derived from the BGS Digital Geological map of Great Britain at 1:50,000 scale.

What is the maximum hazard rating of natural subsidence within the study site*[*] boundary? Moderate

6.1 Shrink-Swell Clays

The following Shrink Swell information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	Ground conditions predominantly non-plastic. 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 likely due to potential problems with shrink-swell clays.
2	0.0	On Site	Negligible	Ground conditions predominantly non-plastic. 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 likely due to potential problems with shrink-swell clays.
3	0.0	On Site	Very Low	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.
4	41.0	SE	Negligible	Ground conditions predominantly non-plastic. 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 likely due to potential problems with shrink-swell clays.
5	43.0	SW	Very Low	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.

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

6.2 Landslides

The following Landslides information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for slope instability identified. 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.
2	0.0	On Site	Very Low	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.
3	0.0	On Site	Low	Possibility of slope instability problems after major changes in ground conditions. Consideration should be given to stability if changes to drainage or excavations take place. Possible increase in construction cost to reduce potential slope stability problems. Existing property - no significant increase in insurance risk due to natural slope instability problems.
4	0.0	On Site	Very Low	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.
5	20.0	SW	Very Low	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.
6	23.0	N	Negligible	No indicators for slope instability identified. 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.
7	41.0	SE	Very Low	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	43.0	SW	Low	Possibility of slope instability problems after major changes in ground conditions. Consideration should be given to stability if changes to drainage or excavations take place. Possible increase in construction cost to reduce potential slope stability problems. Existing property - no significant increase in insurance risk due to natural slope instability problems.

6.3 Ground Dissolution of Soluble Rocks

The following Ground Dissolution information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. 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.
2	0.0	On Site	Very Low	Significant soluble rocks are present. Problems unlikely except with considerable surface or subsurface water flow. No special actions required to avoid problems due to soluble rocks. No special ground investigation required or increased construction costs are likely. An increase in financial risk due to potential problems with soluble rocks is unlikely.
3	0.0	On Site	Low	Significant soluble rocks are present. Low possibility of subsidence occurring naturally, but may be possible in adverse conditions such as high surface or subsurface water flow. Consider implications for stability when changes to drainage or new construction are planned. For new build - site investigation should consider potential for dissolution problems on the site and its surroundings. Care should be taken with local drainage into the bedrock. Some possibility groundwater pollution. For existing property - possible increase in insurance risk due to soluble rocks.
4	0.0	On Site	Moderate	Very significant soluble rocks are present, with a moderate possibility of local natural subsidence due to high surface or subsurface water flow. Do not load the land or undertake building work before obtaining specialist advice. Do not dispose of drainage to the ground. Some possibility groundwater pollution. Maintain drainage infrastructure. For new build - specialist site investigation and stability assessment may be necessary before construction. Construction work may cause subsidence. Increased construction costs are likely. For existing property - probable increase in insurance risk due to soluble rocks.
5	23.0	N	Very Low	Significant soluble rocks are present. Problems unlikely except with considerable surface or subsurface water flow. No special actions required to avoid problems due to soluble rocks. No special ground investigation required or increased construction costs are likely. An increase in financial risk due to potential problems with soluble rocks is unlikely.
6	43.0	SW	Negligible	Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. 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.

6.4 Compressible Deposits

The following Compressible Deposits information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	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.

6.5 Collapsible Deposits

The following Collapsible Rocks information provided by the British Geological Survey:

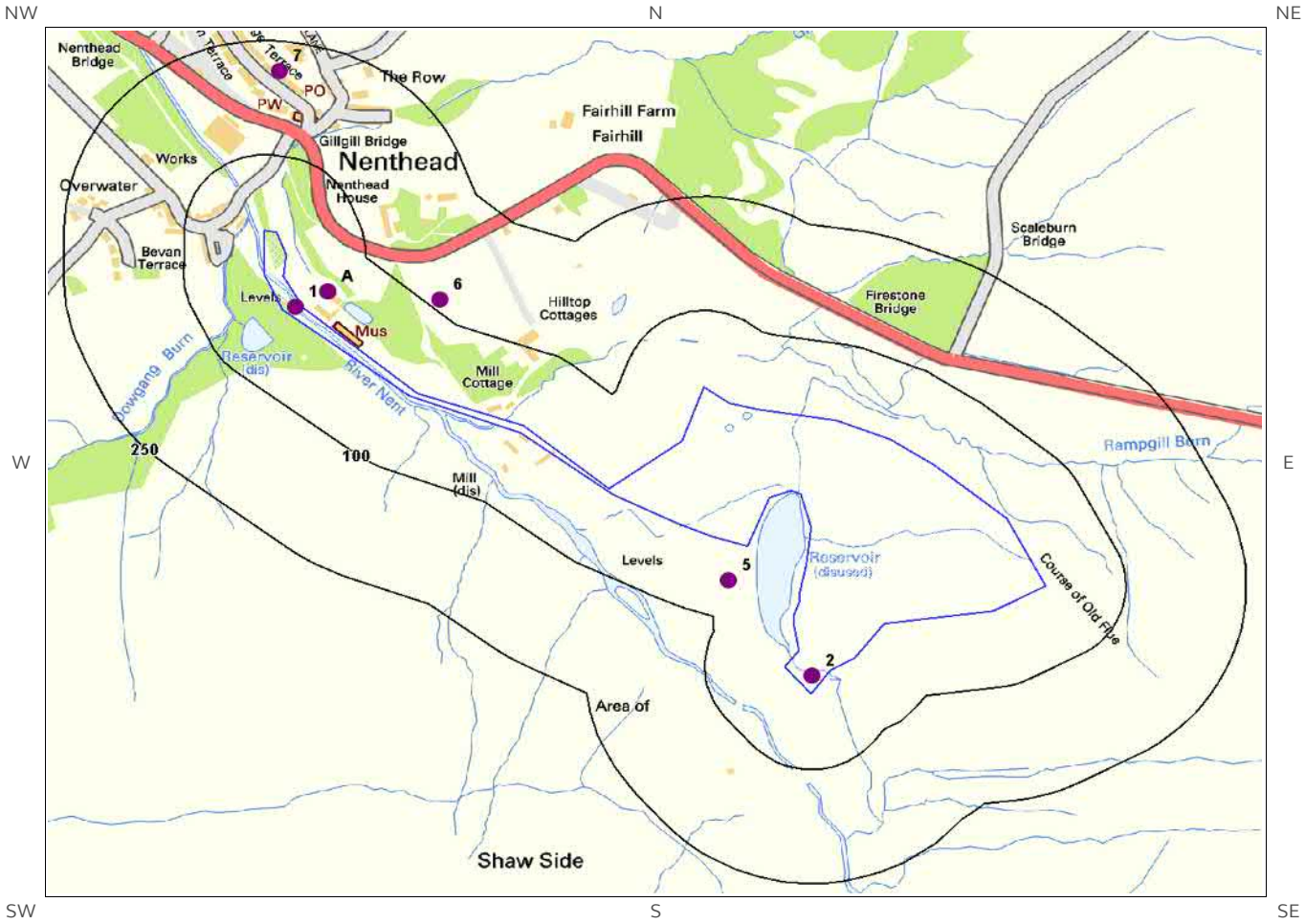
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

6.6 Running Sands

The following Running Sands information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for running sand identified. No special actions required to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.
2	0.0	On Site	Very Low	Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

7 Borehole Records map



Borehole Records Legend

Site Outline

Borehole Locations

125
250
Search Buffers (m)

7 Borehole Records

The systematic analysis of data extracted from the BGS Borehole Records database provides the following information.

Records of boreholes within 250m of the study site boundary: 7

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
1	0.0	On Site	378120 543490	NY74SE22	-1.0	CAPLECLEUGH LEVEL
2	0.0	On Site	378764 543005	NY74SE27	53.0	CARRS ENGINE SHAFT
3A	34.0	NE	378160 543510	NY74SE30	-1.0	RAMPGILL HORSE LEVEL
4A	34.0	NE	378160 543510	NY74SE18	3.0	JCP FACTORY NENTHEAD
5	51.0	S	378660 543130	NY74SE25	-1.0	ALSTON WITH GARRIGILL
6	113.0	NE	378300 543500	NY74SE28	-1.0	BREWERY SHAFT
7	210.0	N	378100 543800	NY74SE16	-1.0	TIPS AT NENTHEAD 1 - 4

The borehole records are available using the hyperlinks below: Please note that if the donor of the borehole record has requested the information be held as commercial-in-confidence, the additional data will be held separately by the BGS and a formal request must be made for its release.

#1: scans.bgs.ac.uk/sobi_scans/boreholes/624306
#2: scans.bgs.ac.uk/sobi_scans/boreholes/624311
#3A: scans.bgs.ac.uk/sobi_scans/boreholes/624314
#4A: scans.bgs.ac.uk/sobi_scans/boreholes/624302
#5: scans.bgs.ac.uk/sobi_scans/boreholes/624309
#6: scans.bgs.ac.uk/sobi_scans/boreholes/624312
#7: scans.bgs.ac.uk/sobi_scans/boreholes/624300

8 Estimated Background Soil Chemistry

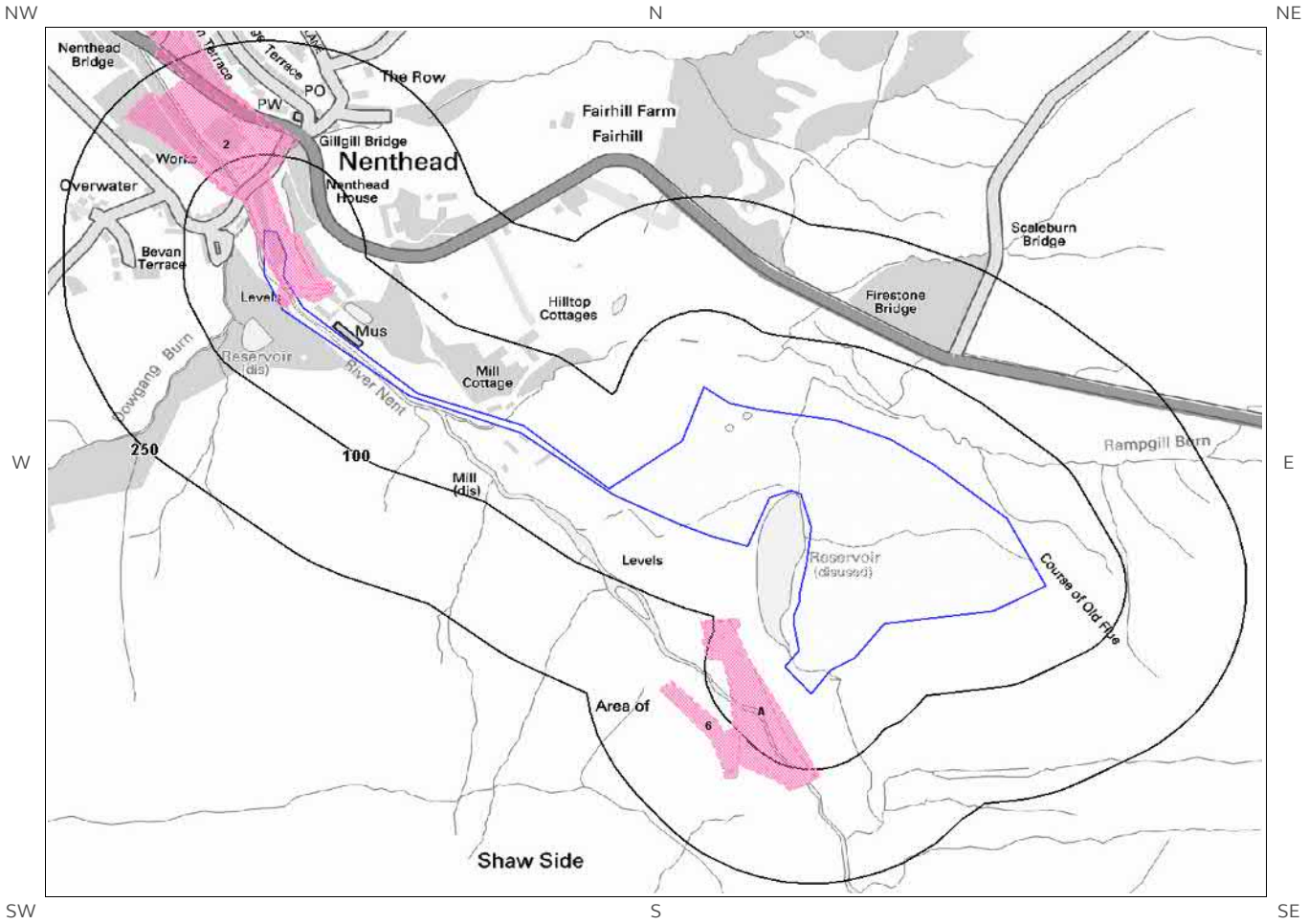
Records of background estimated soil chemistry within 250m of the study site boundary: 29

For further information on how this data is calculated and limitations upon its use, please see the Groundsure Geo Insight User Guide, available on request.

Distance (m)	Direction	Sample Type	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Nickel (Ni)	Lead (Pb)
0.0	On Site	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	>1200 mg/kg
0.0	On Site	Sediment	<15 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg	600 - 1200 mg/kg
0.0	On Site	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	>1200 mg/kg
0.0	On Site	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	600 - 1200 mg/kg
0.0	On Site	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	>1200 mg/kg
0.0	On Site	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	>1200 mg/kg
0.0	On Site	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	>1200 mg/kg
0.0	On Site	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	600 - 1200 mg/kg
0.0	On Site	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	600 - 1200 mg/kg
0.0	On Site	Sediment	<15 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg	600 - 1200 mg/kg
0.0	On Site	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	>1200 mg/kg
0.0	On Site	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	>1200 mg/kg
0.0	On Site	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	600 - 1200 mg/kg
0.0	On Site	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	>1200 mg/kg
0.0	On Site	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	>1200 mg/kg
0.0	On Site	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	600 - 1200 mg/kg
15.0	NE	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	>1200 mg/kg
19.0	NE	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	600 - 1200 mg/kg
20.0	SW	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	>1200 mg/kg
21.0	NE	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	600 - 1200 mg/kg
21.0	SW	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	>1200 mg/kg
23.0	N	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	600 - 1200 mg/kg
30.0	NE	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	>1200 mg/kg
32.0	N	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	600 - 1200 mg/kg
39.0	SW	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	>1200 mg/kg
41.0	SE	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	600 - 1200 mg/kg
43.0	SW	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	>1200 mg/kg
45.0	NW	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	>1200 mg/kg
48.0	NW	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	>1200 mg/kg

*As this data is based upon underlying 1:50,000 scale geological information, a 50m buffer has been added to the search radius.

9 Railways and Tunnels map



Railways and Tunnels Legend

- Site Outline
- Search Buffers (m): 250, 500
- Underground or Partially Underground Railway / Subway System
- Railway Tunnel (OS Mapping)
- Abandoned or Dismantled Railway (OpenStreetMap)
- Railway Track (OS Mapping)
- Railway Track (OpenStreetMap)
- High Speed 2
- High Speed 2 Revised Proposed Route
- Crossrail 1
- Railway and/or Tunnel Feature from Historical Mapping

9 Railways and Tunnels

9.1 Tunnels

This data is derived from OpenStreetMap and provides information on the possible locations of underground railway systems in the UK - the London Underground, the Tyne & Wear Metro and the Glasgow Subway.

Have any underground railway lines been identified within the study site boundary? No

Have any underground railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

Any records that have been identified are represented on the Railways and Tunnels map.

This data is derived from Ordnance Survey mapping and provides information on the possible locations of railway tunnels forming part of the UK overground railway network.

Have any other railway tunnels been identified within the site boundary? No

Have any other railway tunnels been identified within 250m of the site boundary? No

Database searched and no data found.

Any records that have been identified are represented on the Railways and Tunnels map.

9.2 Historical Railway and Tunnel Features

This data is derived from Groundsure's unique Historical Land-use Database and contains features relating to tunnels, railway tracks or associated works that have been identified from historical Ordnance Survey mapping.

Have any historical railway or tunnel features been identified within the study site boundary? Yes

Have any historical railway or tunnel features been identified within 250m of the study site boundary? Yes

ID	Distance (m)	Direction	NGR	Details	Date
1	0	On Site	378007 543683	Railway Sidings	1900
2	0	On Site	377956 543902	Railway Sidings	1924
3	0	On Site	378023 543777	Railway Sidings	1924
4A	34	SW	378703 542970	Railway Sidings	1900
5A	37	SW	378690 542964	Railway Sidings	1923
6	97	SW	378629 542934	Railway Sidings	1859

Any records that have been identified are represented on the Railways and Tunnels map.

9.3 Historical Railways

This data is derived from OpenStreetMap and provides information on the possible alignments of abandoned or dismantled railway lines in proximity to the study site.

Have any historical railway lines been identified within the study site boundary? No

Have any historical railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

Multiple sections of the same track may be listed in the detail above
Any records that have been identified are represented on the Railways and Tunnels map.

9.4 Active Railways

These datasets are derived from Ordnance Survey mapping and OpenStreetMap and provide information on the possible locations of active railway lines in proximity to the study site.

Have any active railway lines been identified within the study site boundary? No

Have any active railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

Multiple sections of the same track may be listed in the detail above
Any records that have been identified are represented on the Railways and Tunnels map.

9.5 Railway Projects

These datasets provide information on the location of large scale railway projects High Speed 2 and Crossrail 1 .

Is the study site within 5km of the route of the High Speed 2 rail project? No

Is the study site within 500m of the route of the Crossrail 1 rail project? No

Further information on proximity to these routes, the project construction status and associated works can be obtained through the purchase of a ***Groundsure HS2 and Crossrail 1 Report****.*

The route data has been digitised from publicly available maps by Groundsure. The route as provided relates to the Crossrail 1 project only, and does not include any details of the Crossrail 2 project, as final details of the route for Crossrail 2 are still under consultation.

Please note that this assessment takes account of both the original Phase 2b proposed route and the amended route proposed in 2016. As the Phase 2b route is still under consultation, Groundsure are providing information on both options until the final route is formally confirmed. Practitioners should take account of this uncertainty when advising clients.

Contact Details

Groundsure Helpline

Telephone: 08444 159 000
info@groundsure.com

British Geological Survey Enquiries

Kingsley Dunham Centre
Keyworth, Nottingham NG12 5GG
Tel: 0115 936 3143.
Fax: 0115 936 3276.
Email:**enquiries@bgs.ac.uk**
Web:**www.bgs.ac.uk**
BGS Geological Hazards Reports and general geological enquiries

British Gypsum

British Gypsum Ltd
East Leake
Loughborough
Leicestershire
LE12 6HX

The Coal Authority

200 Lichfield Lane
Mansfield
Notts NG18 4RG
Tel: 0345 7626 848
DX 716176 Mansfield 5
www.coal.gov.uk

Public Health England

Public information access office
Public Health England, Wellington House
133-155 Waterloo Road, London, SE1 8UG
https://www.gov.uk/government/organisations/public-health-england
Email: **enquiries@phe.gov.uk**
Main switchboard: 020 7654 8000

Johnson Poole & Bloomer Limited

Harris and Pearson Building, Brettel Lane
Brierley Hill, West Midlands
DY5 3LH
Tel: +44 (0) 1384 262 000
Email:**enquiries.gs@jpb.co.uk**
Website: **www.jpb.co.uk**

Ordnance Survey

Adanac Drive, Southampton
SO16 0AS

Tel: 08456 050505
Website: http://www.ordnancesurvey.co.uk/

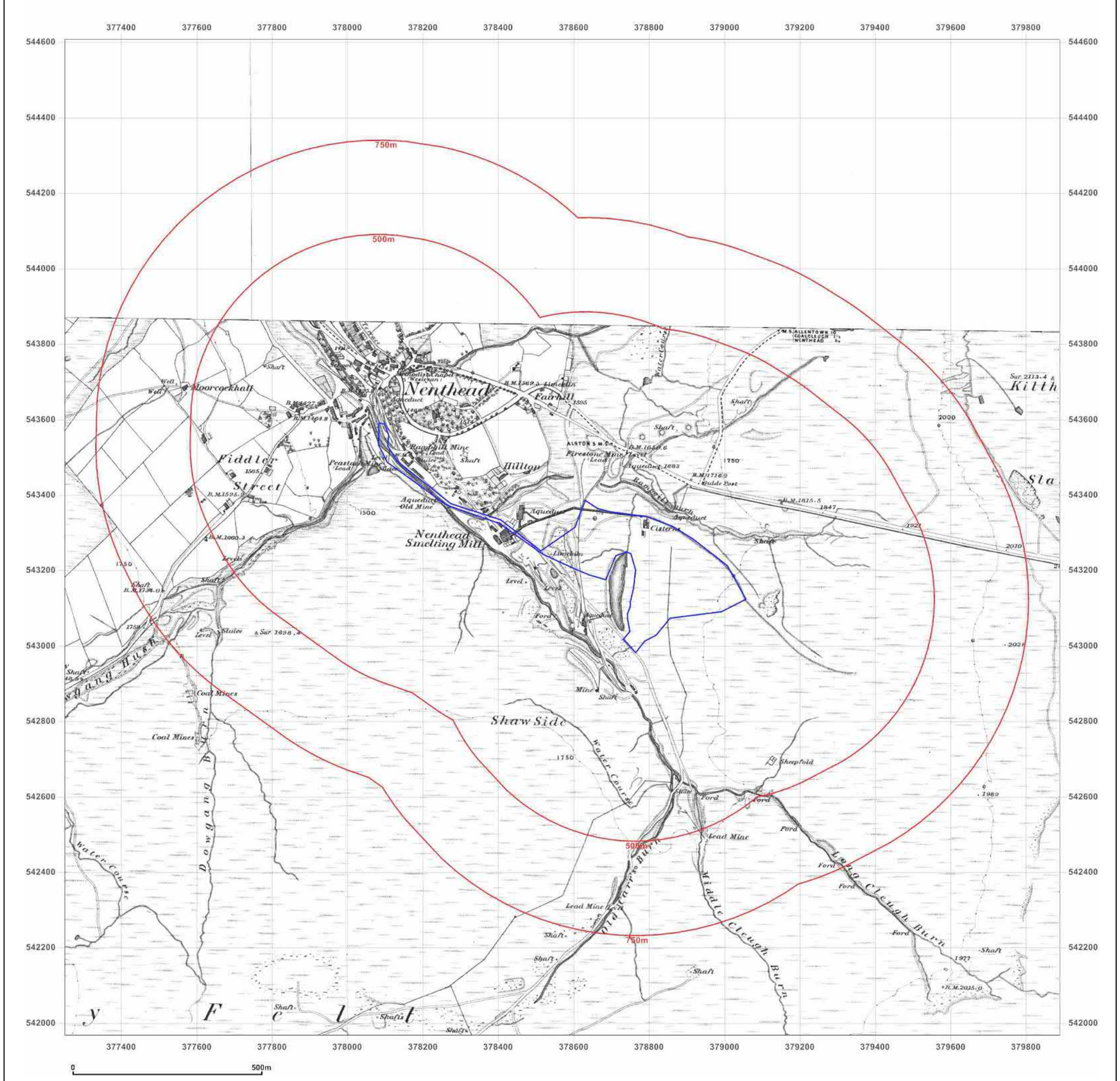
Getmapping PLC

Virginia Villas, High Street, Hartley Witney,
Hampshire RG27 8NW
Tel: 01252 845444
Website:**http://www1.getmapping.com/**

Peter Brett Associates
Caversham Bridge House
Waterman Place
Reading
Berkshire RG1 8DN
Tel: +44 (0)118 950 0761 E-mail:**reading@pba.co.uk**
Website:**http://www.peterbrett.com/home**

Standard Terms and Conditions

Groundsure's Terms and Conditions can be viewed online at this link:
https://www.groundsure.com/terms-and-conditions-may25-2018



Groundsure INSIGHTS

Site Details:

1, HILL TOP COTTAGES,
NENTHEAD, CA9 3PB

Client Ref: Nenthead
Report Ref: GS-5745684
Grid Ref: 378569, 543287

Map Name: County Series

Map date: **1858-1859**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1858
Revised 1858
Edition N/A
Copyright N/A
Levelled N/A

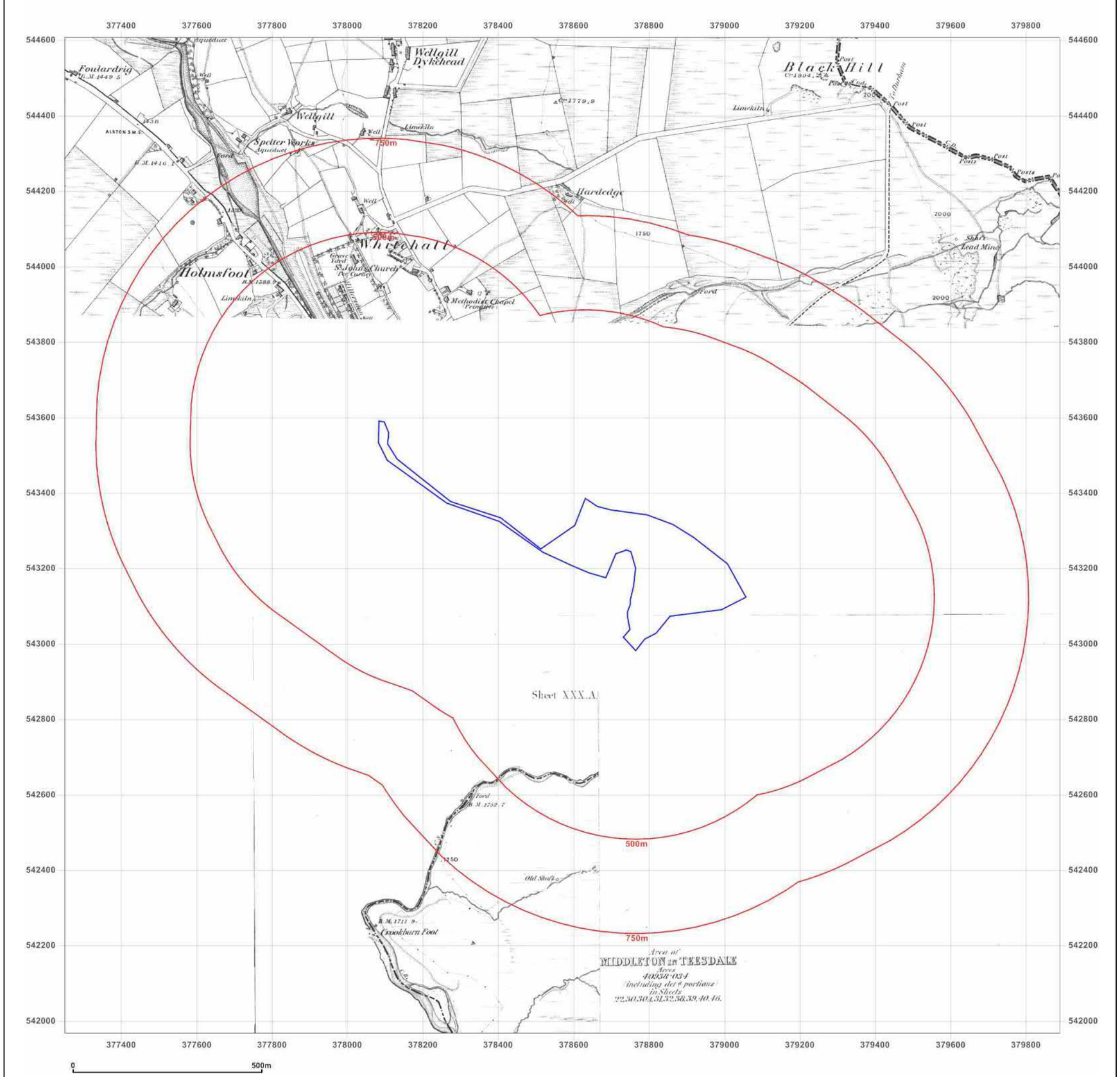
Surveyed 1859
Revised 1859
Edition N/A
Copyright N/A
Levelled N/A

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 14 January 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

1, HILL TOP COTTAGES,
NENTHEAD, CA9 3PB

Client Ref: Nenthead
Report Ref: GS-5745684
Grid Ref: 378569, 543287

Map Name: County Series

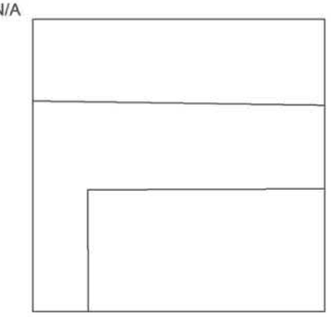
Map date: **1858-1859**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1859
Revised 1859
Edition N/A
Copyright N/A
Levelled N/A



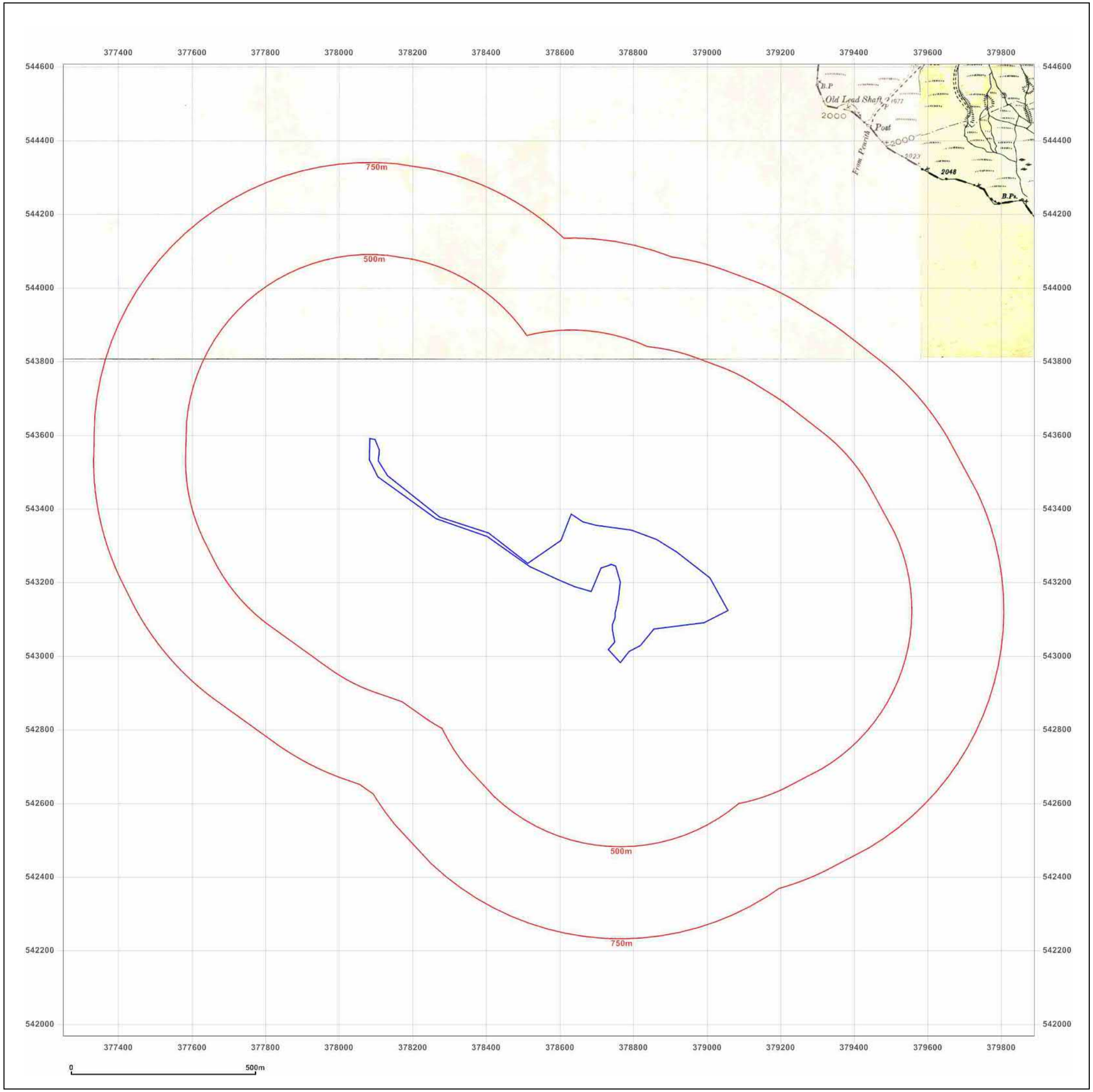
Surveyed 1858
Revised 1858
Edition N/A
Copyright N/A
Levelled N/A

Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 14 January 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

1, HILL TOP COTTAGES,
NENTHEAD, CA9 3PB

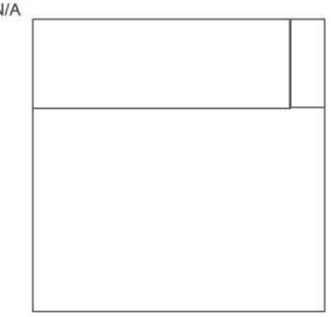
Client Ref: Nenthead
Report Ref: GS-5745684
Grid Ref: 378569, 543287

Map Name: County Series
Map date: **1895-1899**
Scale: 1:10,560
Printed at: 1:10,560

N
W E
S

Surveyed 1859
Revised 1895
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1859
Revised 1895
Edition N/A
Copyright N/A
Levelled N/A

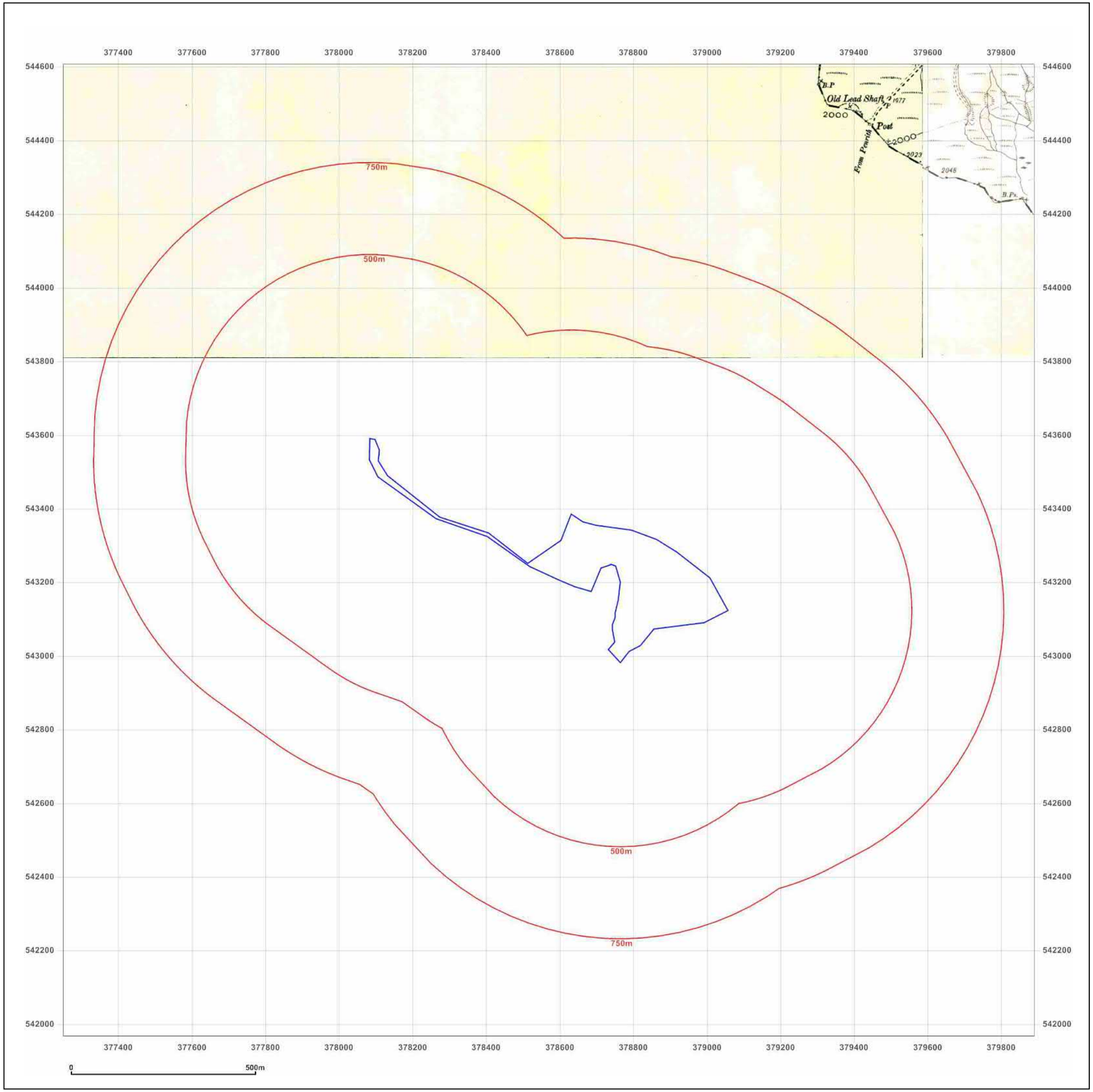


Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 14 January 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

1, HILL TOP COTTAGES,
NENTHEAD, CA9 3PB

Client Ref: Nenthead
Report Ref: GS-5745684
Grid Ref: 378569, 543287

Map Name: County Series

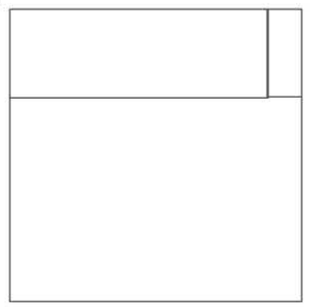
Map date: **1895-1899**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1859
Revised 1895
Edition N/A
Copyright N/A
Levelled N/A



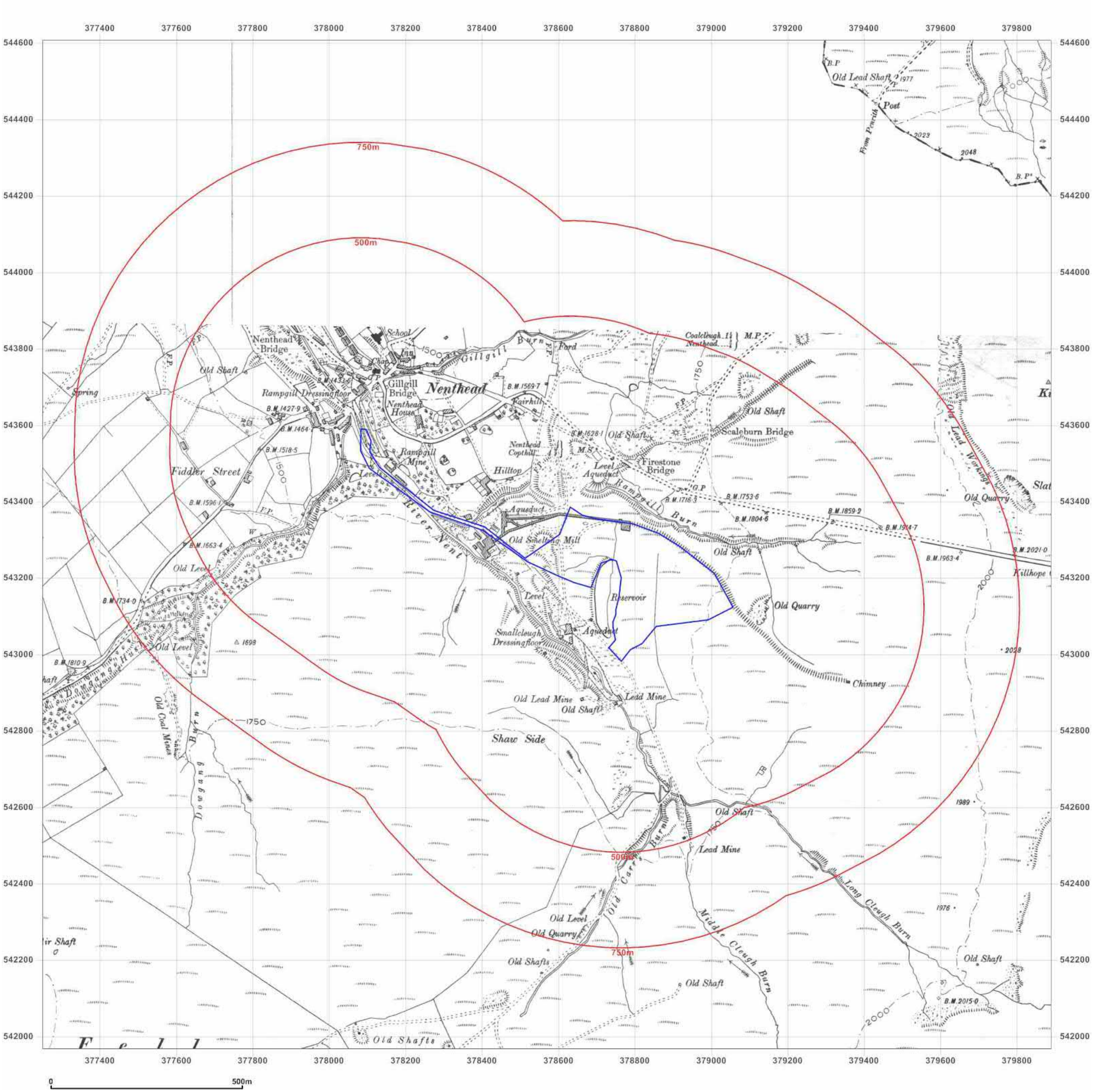
Surveyed 1859
Revised 1895
Edition N/A
Copyright N/A
Levelled N/A

Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 14 January 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

1, HILL TOP COTTAGES,
NENTHEAD, CA9 3PB

Client Ref: Nenthead
Report Ref: GS-5745684
Grid Ref: 378569, 543287

Map Name: County Series

Map date: **1895-1900**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1858
Revised 1895
Edition N/A
Copyright N/A
Levelled N/A

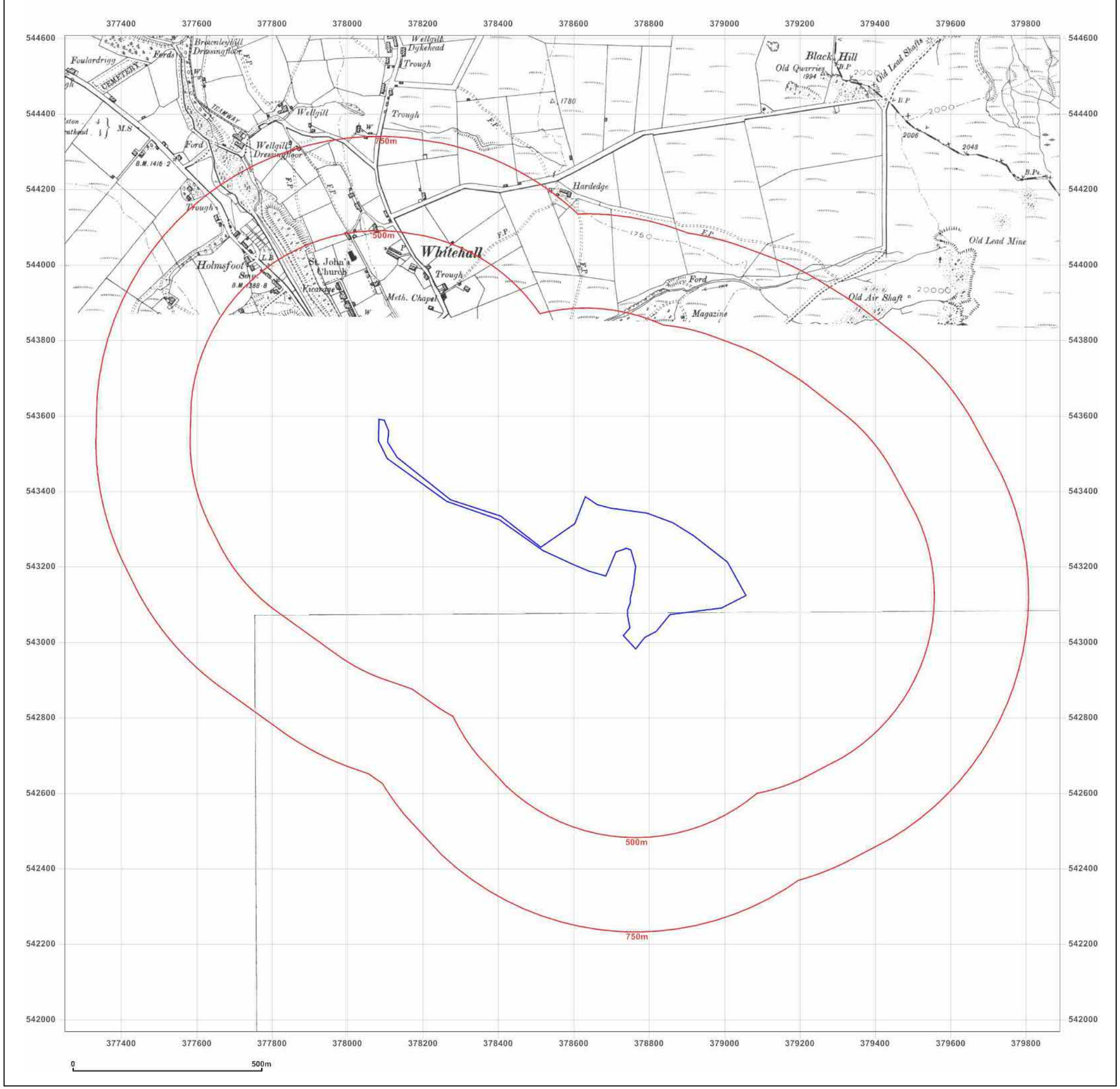
Surveyed 1859
Revised 1900
Edition N/A
Copyright N/A
Levelled N/A

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 14 January 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

1, HILL TOP COTTAGES,
NENTHEAD, CA9 3PB

Client Ref: Nenthead
Report Ref: GS-5745684
Grid Ref: 378569, 543287

Map Name: County Series

Map date: **1899-1901**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1859
Revised 1901
Edition N/A
Copyright N/A
Levelled N/A

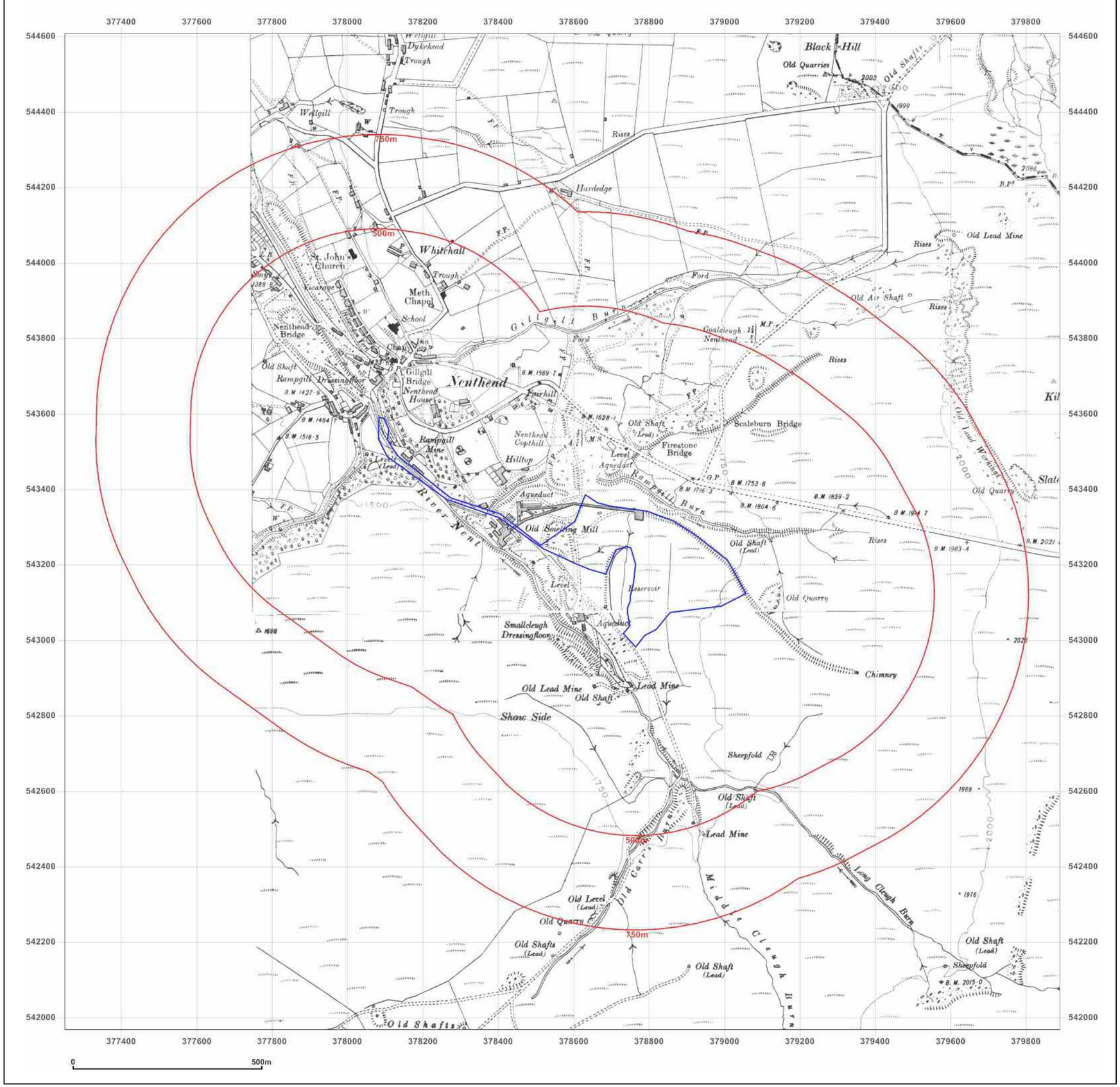
Surveyed 1858
Revised 1899
Edition N/A
Copyright N/A
Levelled N/A

Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 14 January 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

1, HILL TOP COTTAGES,
NENTHEAD, CA9 3PB

Client Ref: Nenthead
Report Ref: GS-5745684
Grid Ref: 378569, 543287

Map Name: County Series

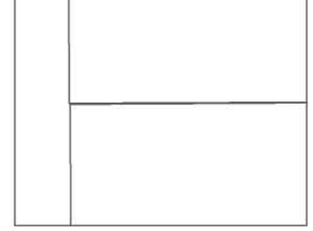
Map date: **1923-1924**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1858
Revised 1924
Edition N/A
Copyright N/A
Levelled N/A



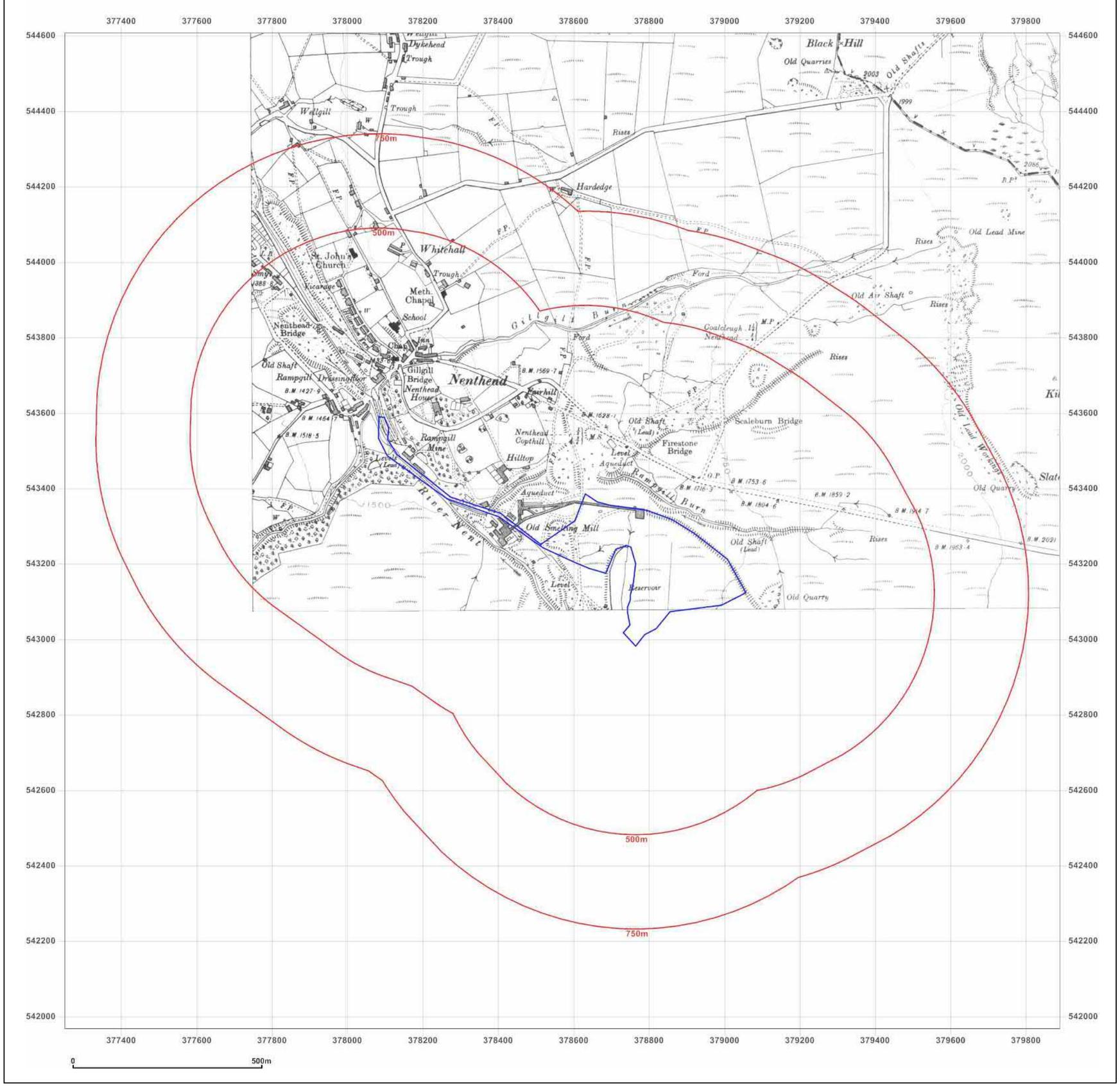
Surveyed 1858
Revised 1923
Edition N/A
Copyright N/A
Levelled N/A

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 14 January 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

1, HILL TOP COTTAGES,
NENTHEAD, CA9 3PB

Client Ref: Nenthead
Report Ref: GS-5745684
Grid Ref: 378569, 543287

Map Name: County Series

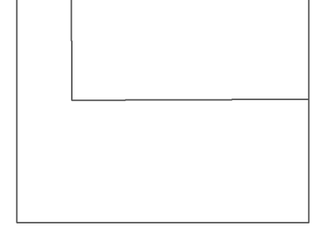
Map date: **1924**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1858
Revised 1924
Edition N/A
Copyright N/A
Levelled N/A

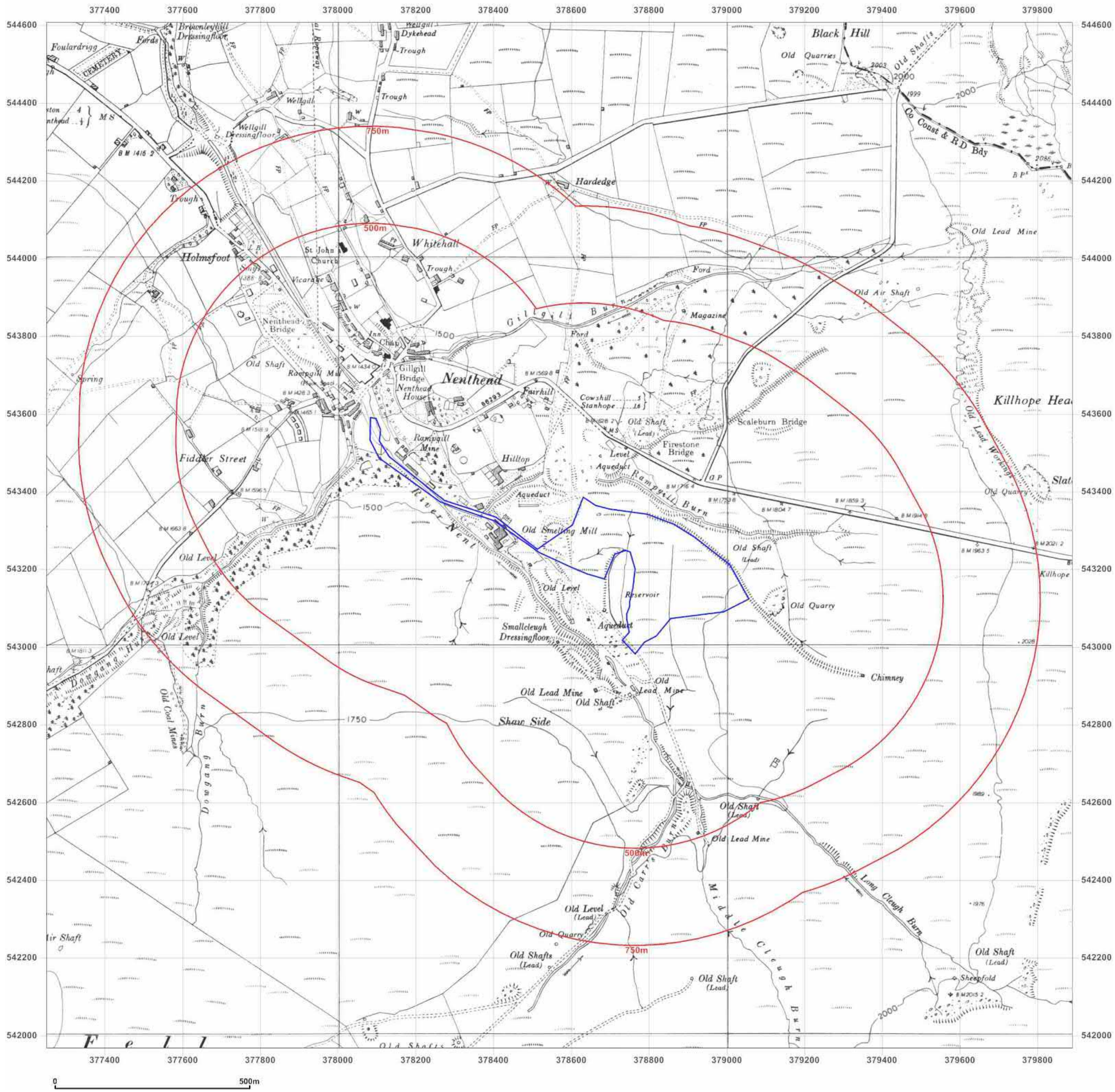


Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 14 January 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

1, HILL TOP COTTAGES,
NENTHEAD, CA9 3PB

Client Ref: Nenthead
Report Ref: GS-5745684
Grid Ref: 378569, 543287

Map Name: Provisional

Map date: **1940**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

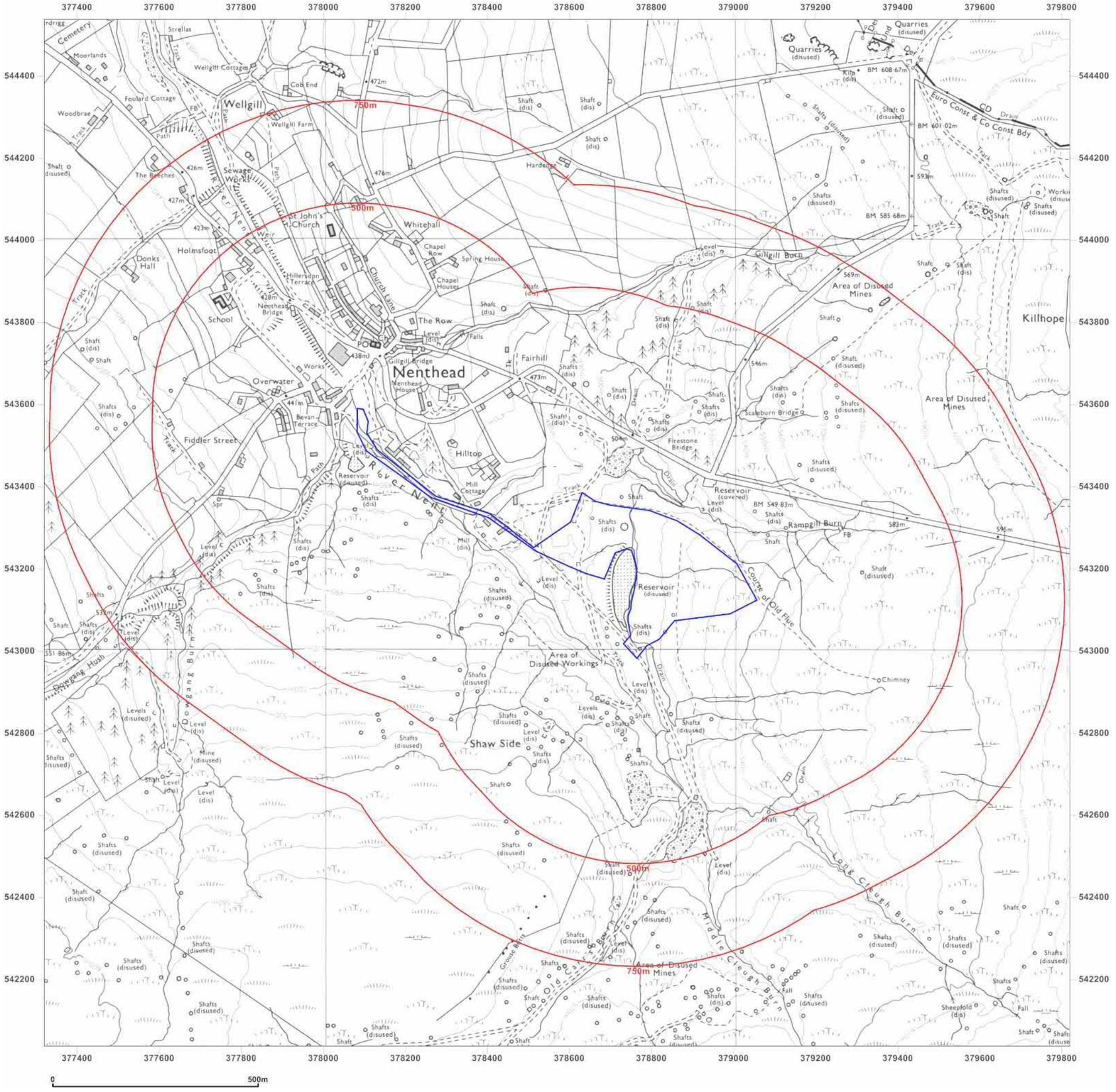
Surveyed 1940
Revised 1940
Edition N/A
Copyright N/A
Levelled N/A

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 14 January 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

1, HILL TOP COTTAGES,
NENTHEAD, CA9 3PB

Client Ref: Nenthead
Report Ref: GS-5745684
Grid Ref: 378569, 543287

Map Name: National Grid

Map date: **1981**

Scale: 1:10,000

Printed at: 1:10,000

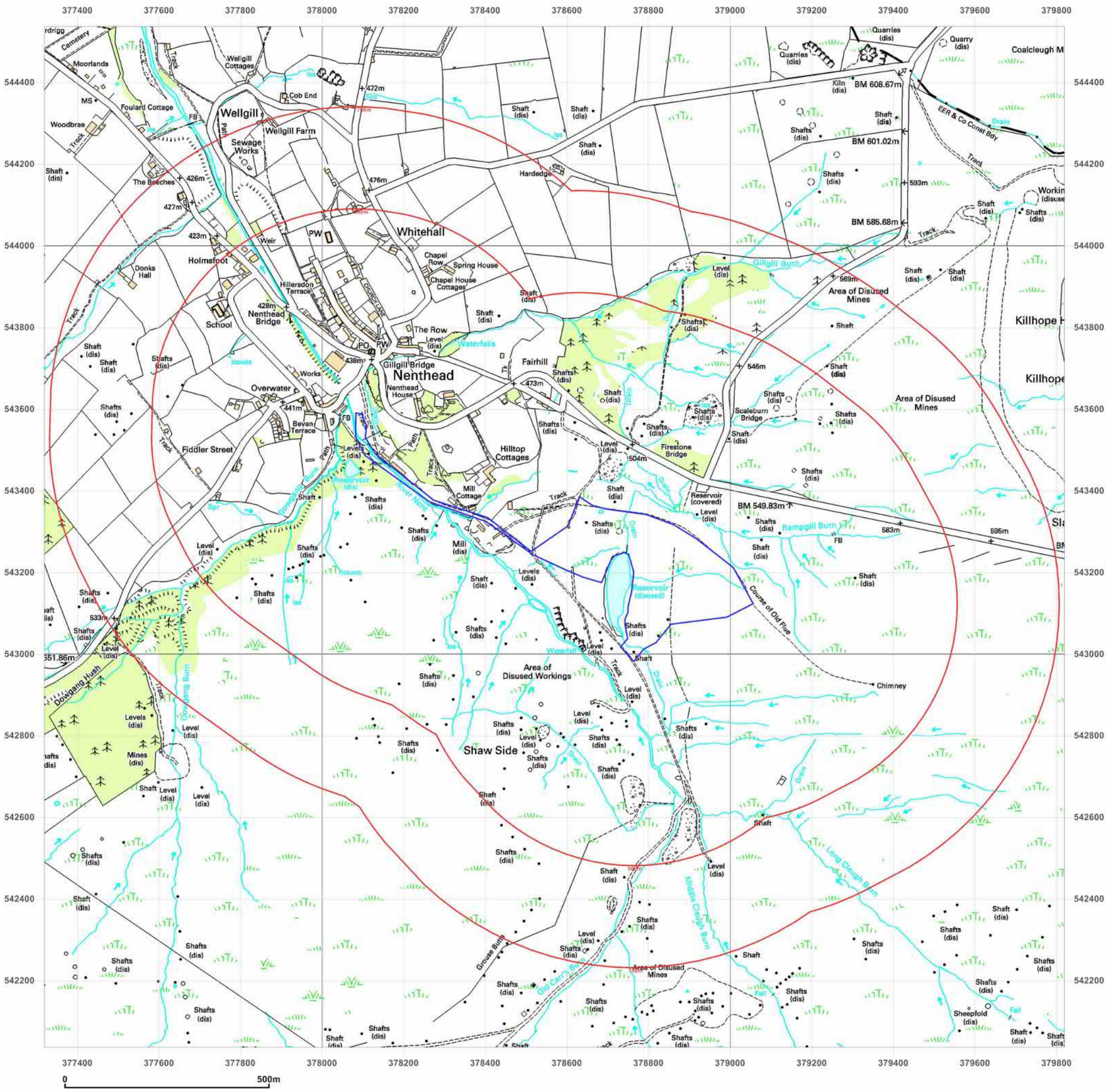
N
W E
S

Surveyed 1980
Revised 1981
Edition N/A
Copyright N/A
Levelled N/A

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 14 January 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

1, HILL TOP COTTAGES,
NENTHEAD, CA9 3PB

Client Ref: Nenthead
Report Ref: GS-5745684
Grid Ref: 378569, 543287

Map Name: 1:10,000 Raster

Map date: **2002**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

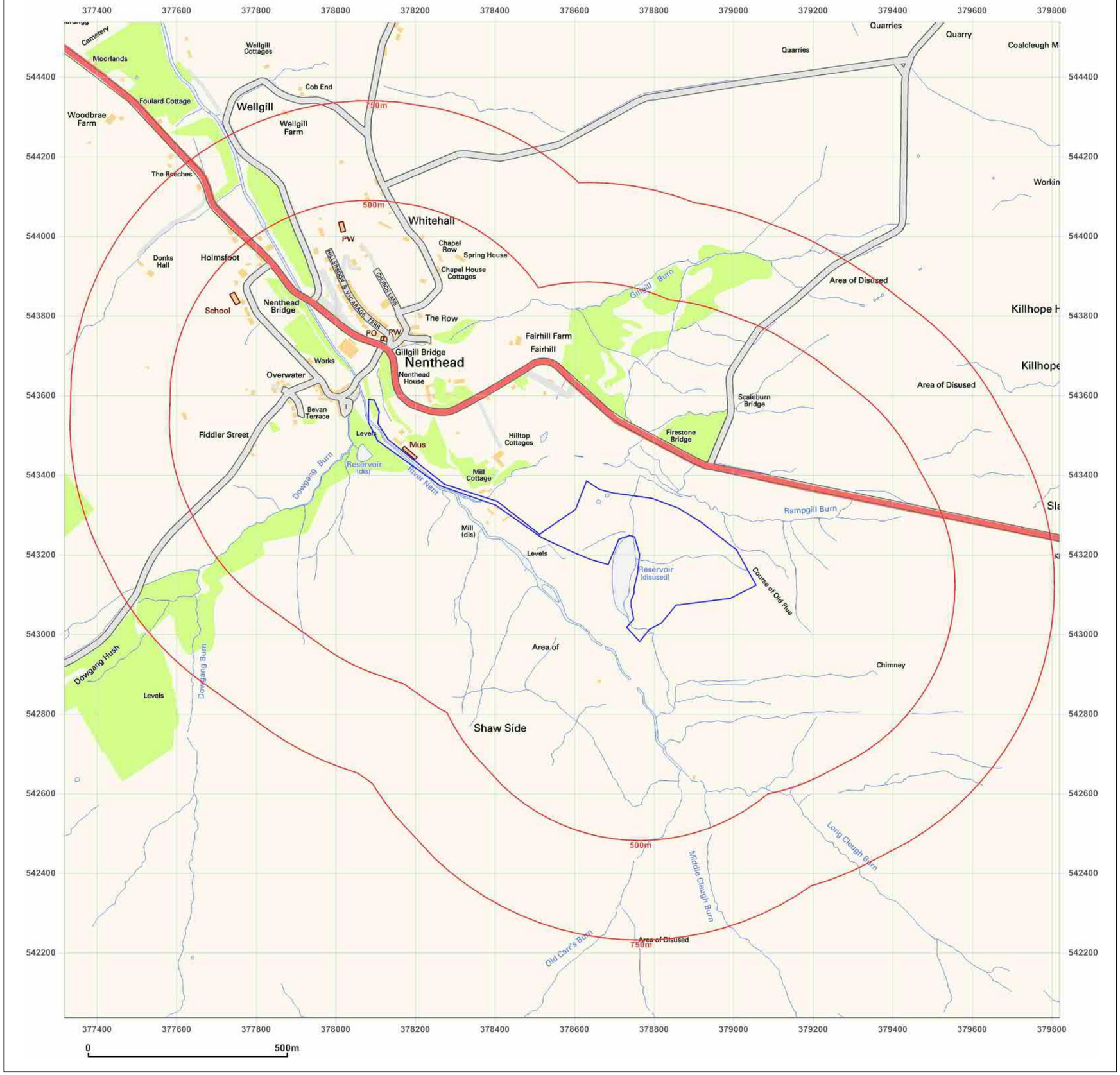
2002

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 14 January 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

1, HILL TOP COTTAGES,
NENTHEAD, CA9 3PB

Client Ref: Nenthead
Report Ref: GS-5745684
Grid Ref: 378569, 543287

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

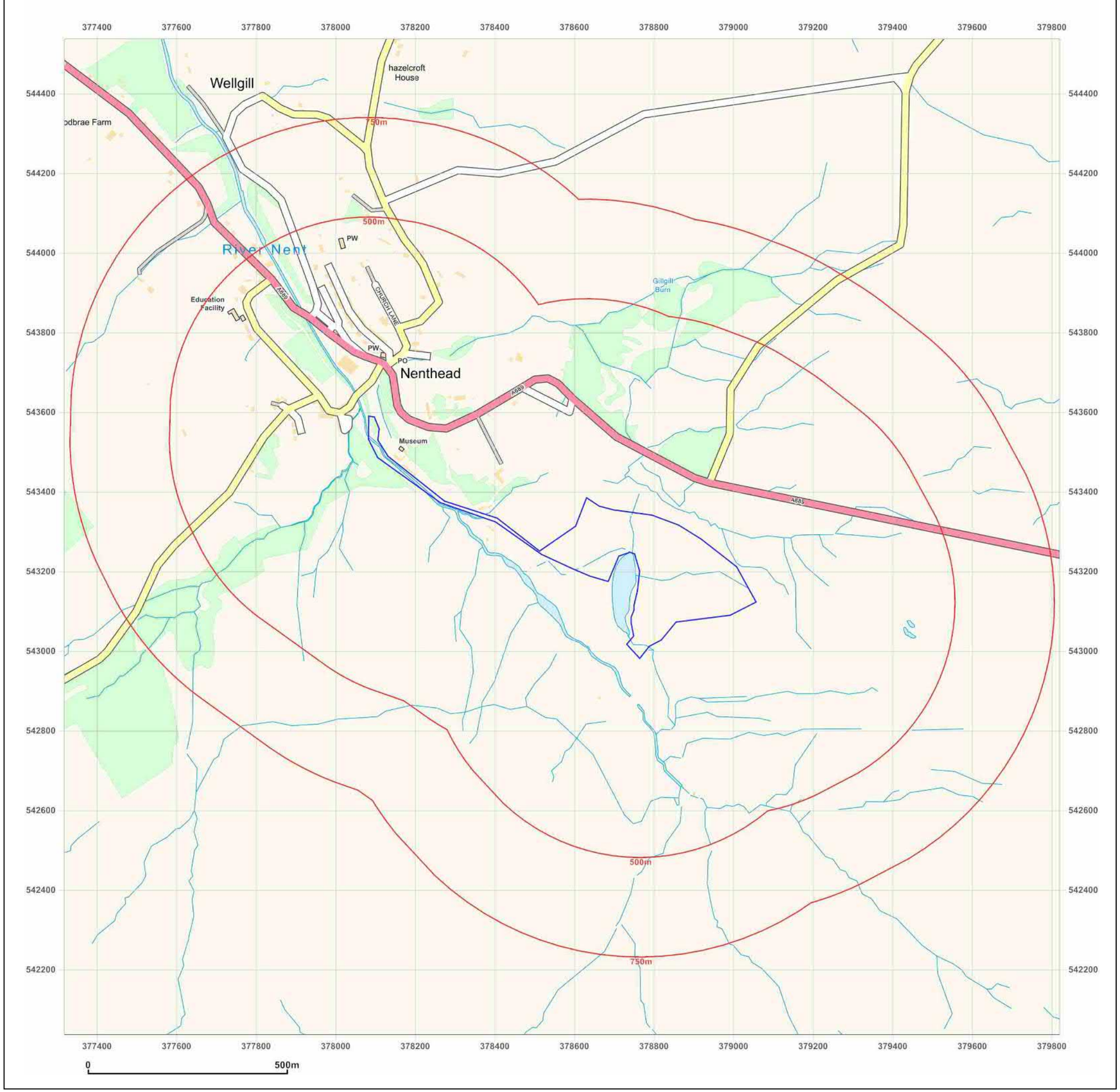
2010

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 14 January 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

1, HILL TOP COTTAGES,
NENTHEAD, CA9 3PB

Client Ref: Nenthead
Report Ref: GS-5745684
Grid Ref: 378569, 543287

Map Name: National Grid

Map date: **2014**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

2014

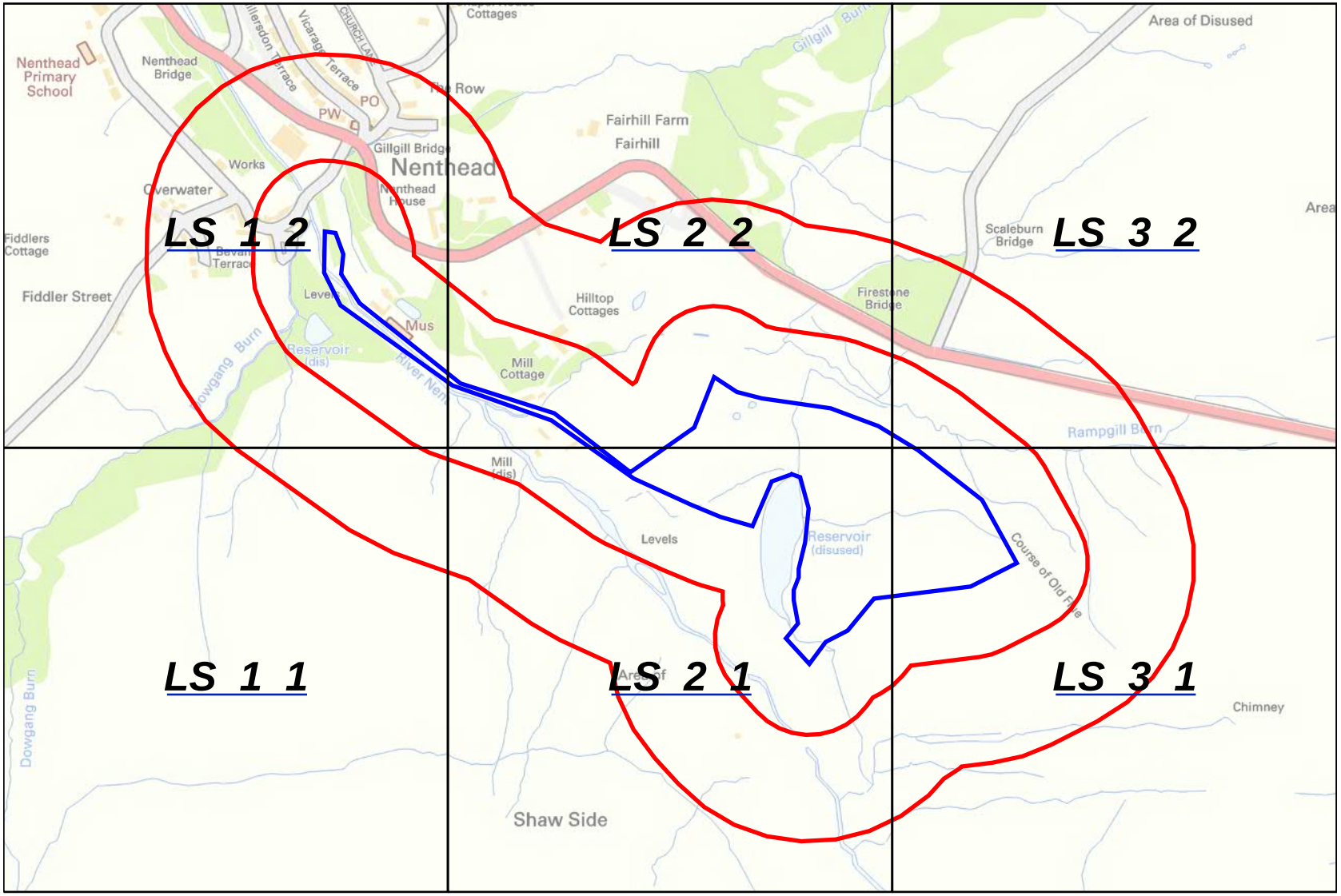
Powered by OS

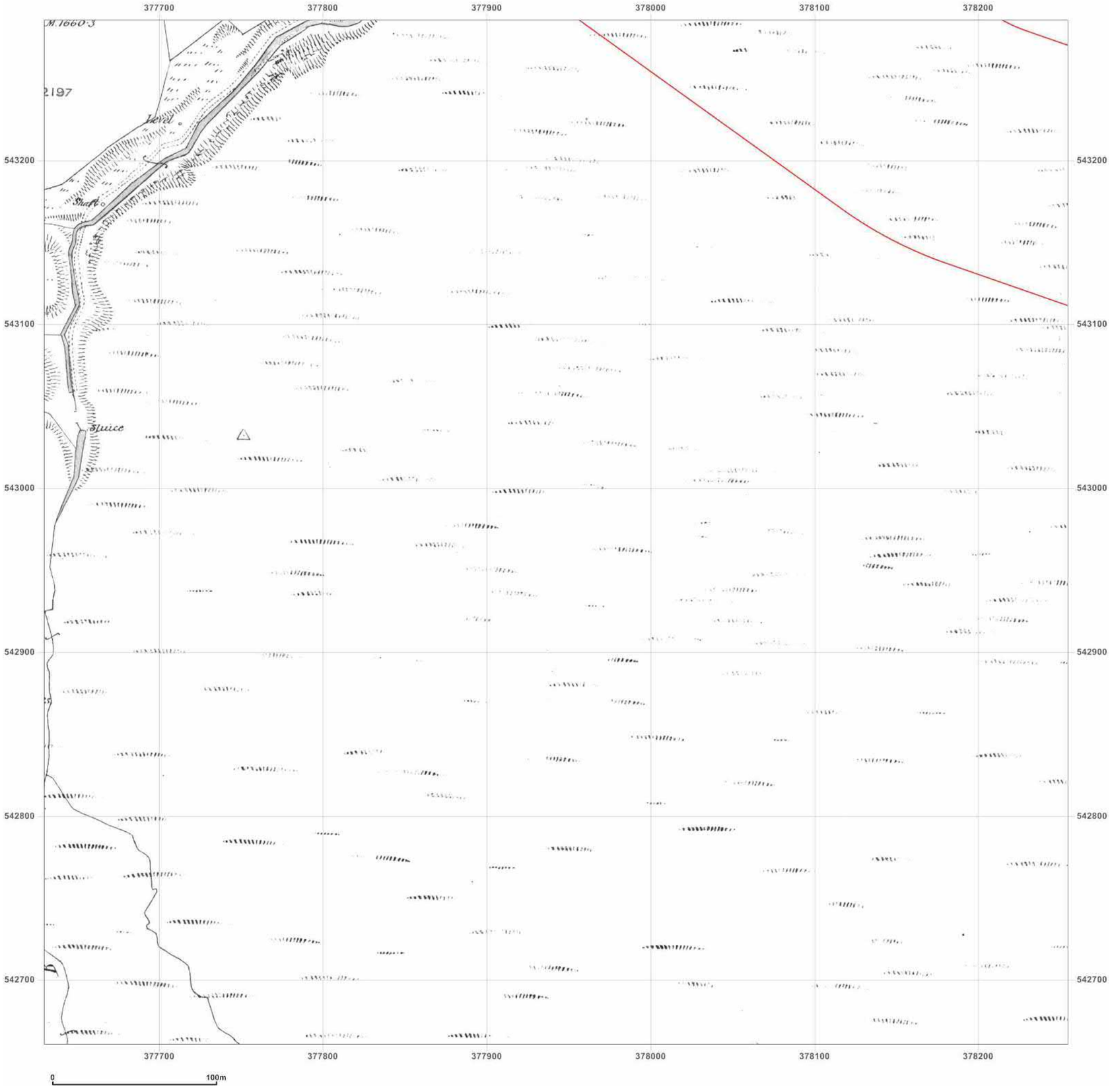
Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 14 January 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf

1:2500 Scale Grid Index





Groundsure INSIGHTS

Site Details:

1, HILL TOP COTTAGES,
NENTHEAD, CA9 3PB

Client Ref: Nenthead
Report Ref: GS-5745684_LS_1_1
Grid Ref: 377942, 542973

Map Name: County Series

Map date: **1862**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

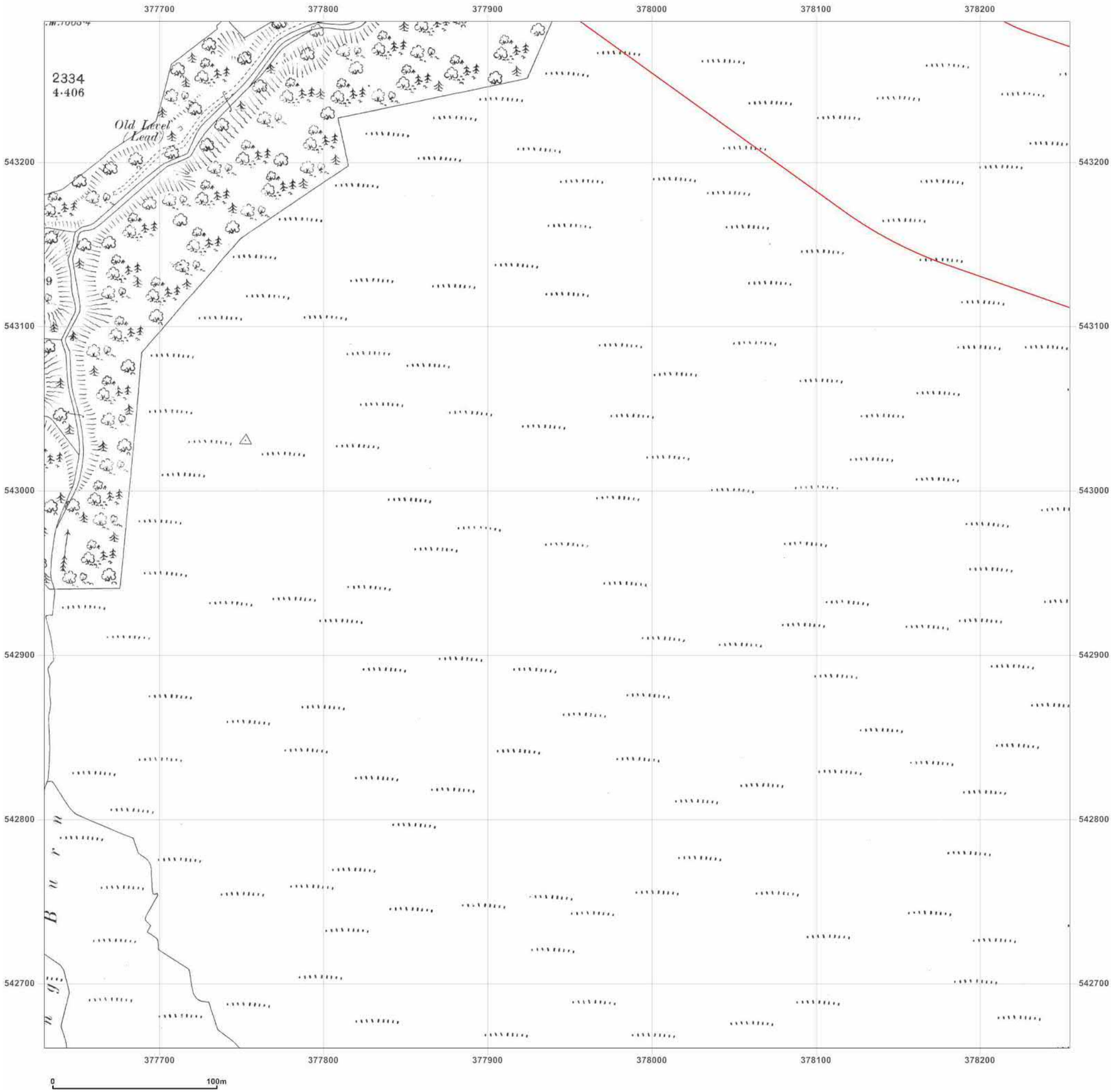
Surveyed 1862
Revised 1862
Edition N/A
Copyright N/A
Levelled N/A

Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 14 January 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

1, HILL TOP COTTAGES,
NENTHEAD, CA9 3PB

Client Ref: Nenthead
Report Ref: GS-5745684_LS_1_1
Grid Ref: 377942, 542973

Map Name: County Series

Map date: **1899**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

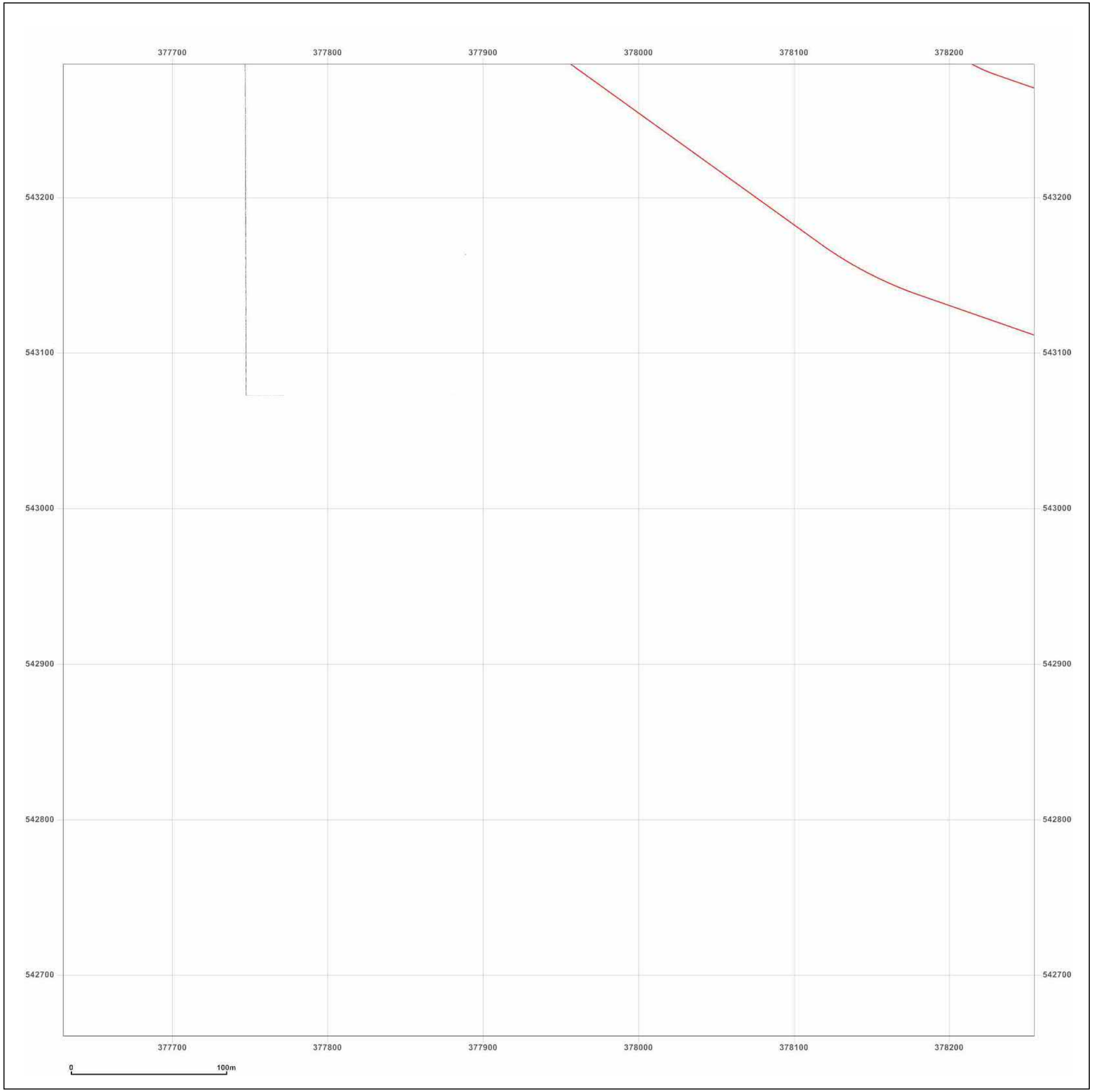
Surveyed 1899
Revised 1899
Edition N/A
Copyright N/A
Levelled N/A

Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 14 January 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

1, HILL TOP COTTAGES,
NENTHEAD, CA9 3PB

Client Ref: Nenthead
Report Ref: GS-5745684_LS_1_1
Grid Ref: 377942, 542973

Map Name: County Series

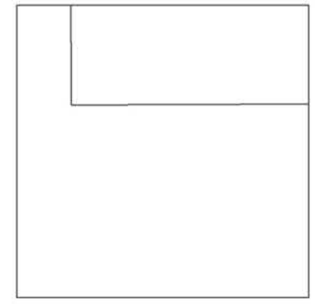
Map date: **1922**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1922
Revised 1922
Edition N/A
Copyright N/A
Levelled N/A

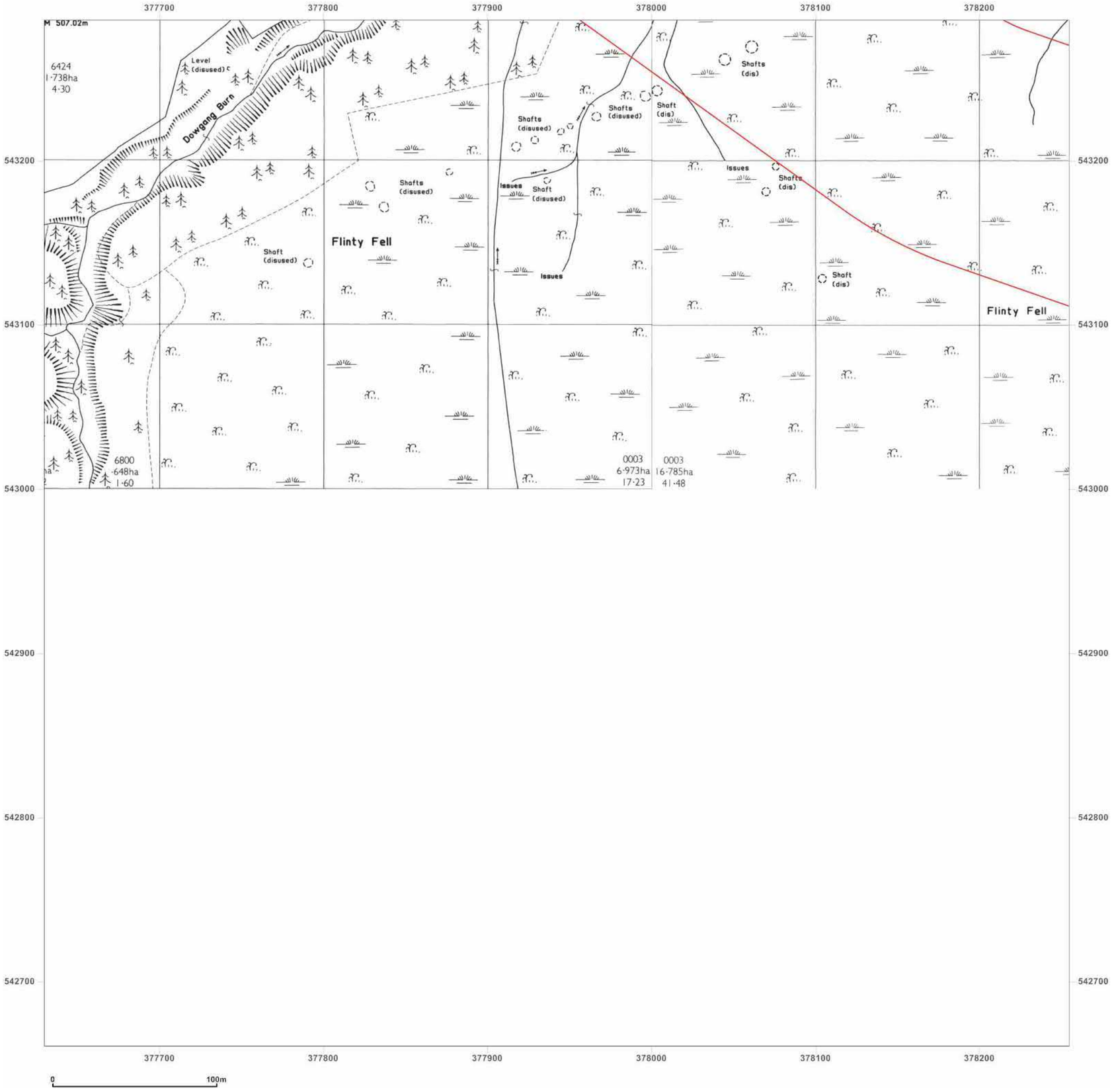


Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 14 January 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

1, HILL TOP COTTAGES,
NENTHEAD, CA9 3PB

Client Ref: Nenthead
Report Ref: GS-5745684_LS_1_1
Grid Ref: 377942, 542973

Map Name: National Grid

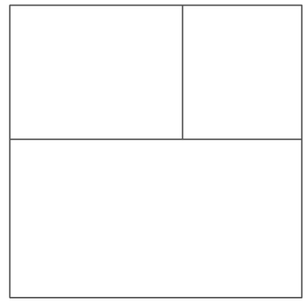
Map date: **1980**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1980
Revised 1980
Edition N/A
Copyright 1981
Levelled 1955



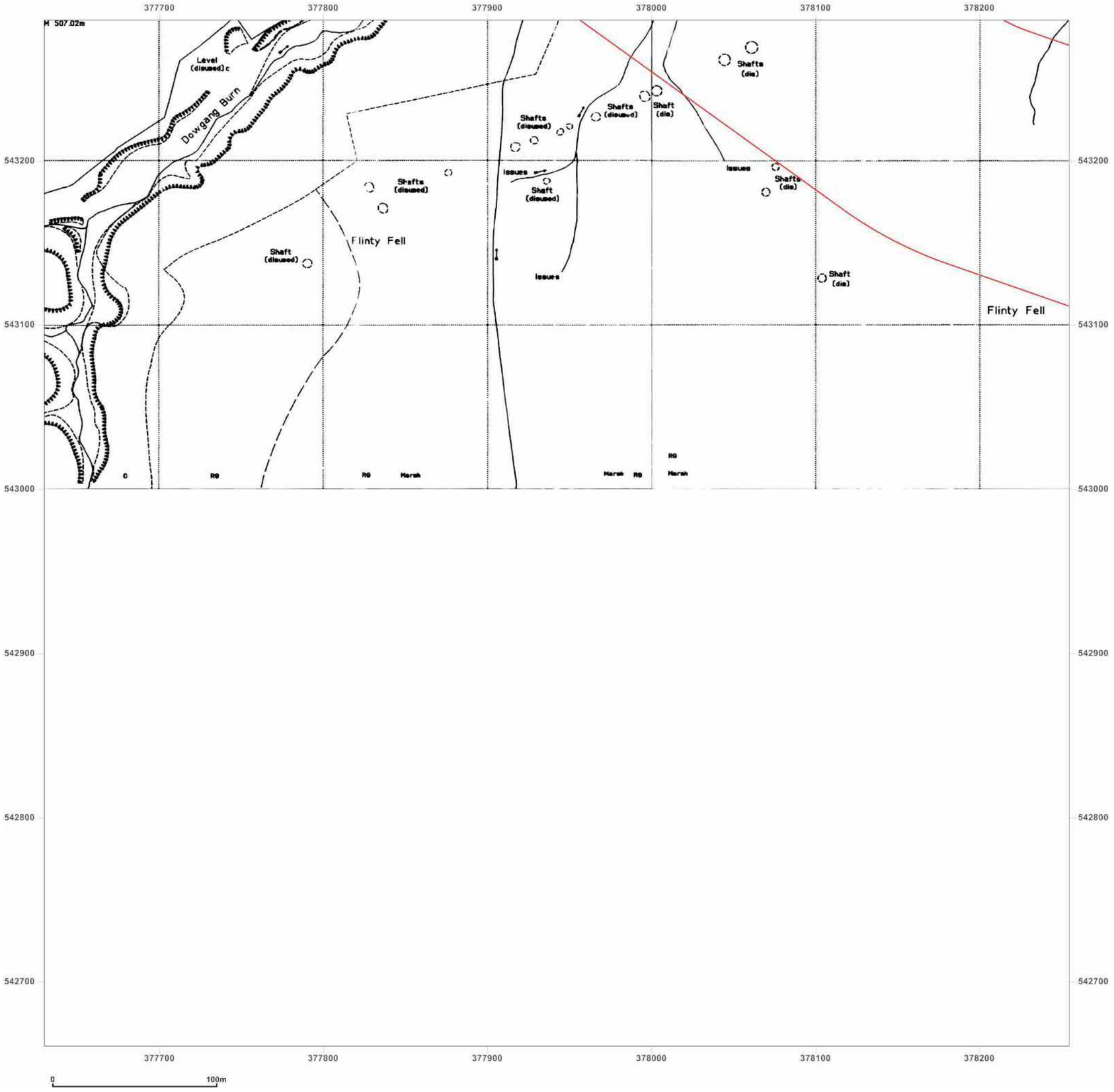
Surveyed 1980
Revised 1980
Edition N/A
Copyright 1981
Levelled 1955

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 14 January 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

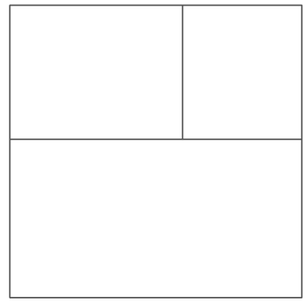
1, HILL TOP COTTAGES,
NENTHEAD, CA9 3PB

Client Ref: Nenthead
Report Ref: GS-5745684_LS_1_1
Grid Ref: 377942, 542973

Map Name: National Grid
Map date: **1994**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S

Surveyed 1994
Revised N/A
Edition N/A
Copyright 1994
Levelled N/A



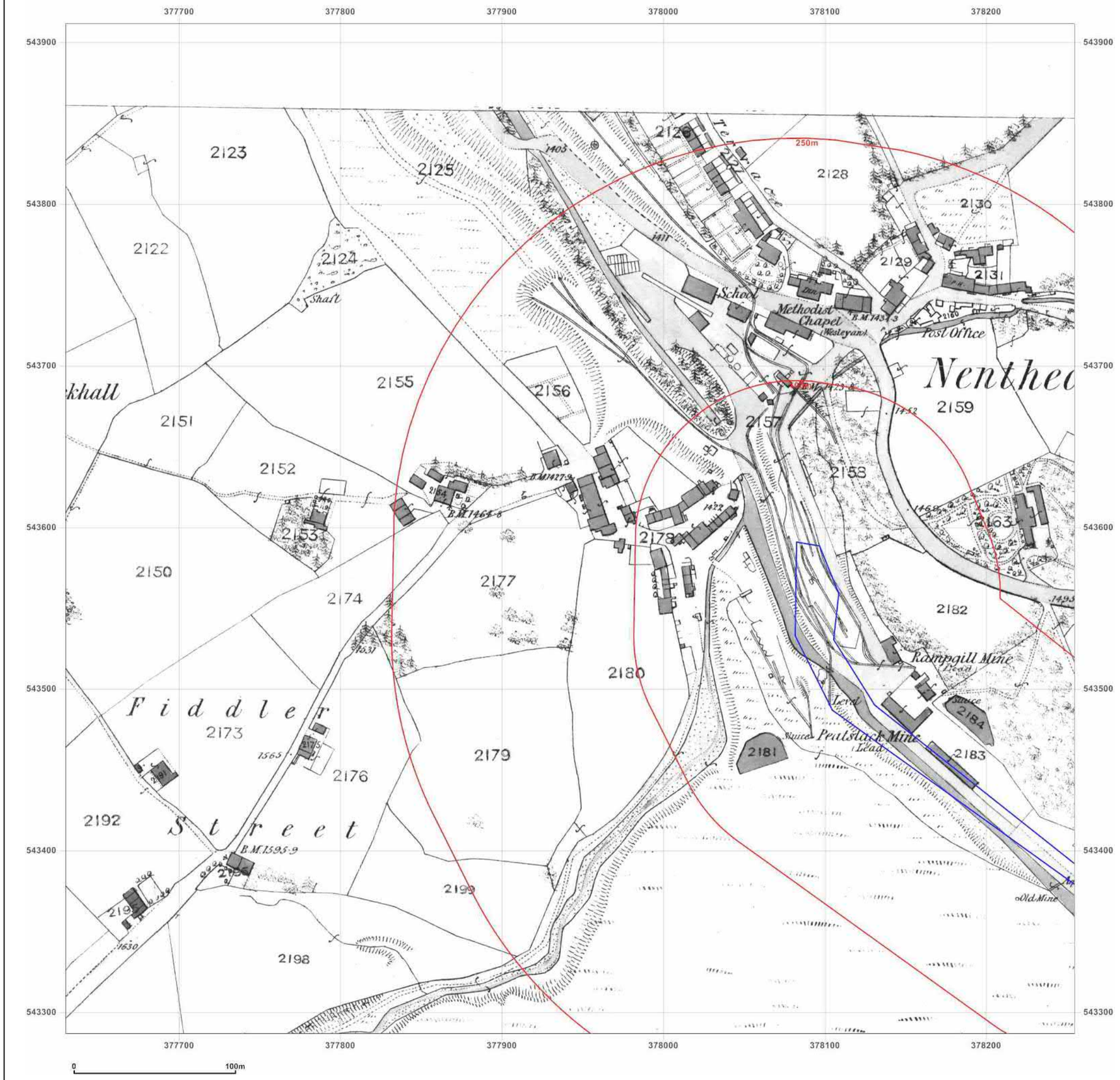
Surveyed 1994
Revised N/A
Edition N/A
Copyright 1994
Levelled N/A

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 14 January 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

1, HILL TOP COTTAGES,
NENTHEAD, CA9 3PB

Client Ref: Nenthead
Report Ref: GS-5745684_LS_1_2
Grid Ref: 377942, 543599

Map Name: County Series
Map date: **1858-1862**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S

Surveyed 1858
Revised 1858
Edition N/A
Copyright N/A
Levelled N/A

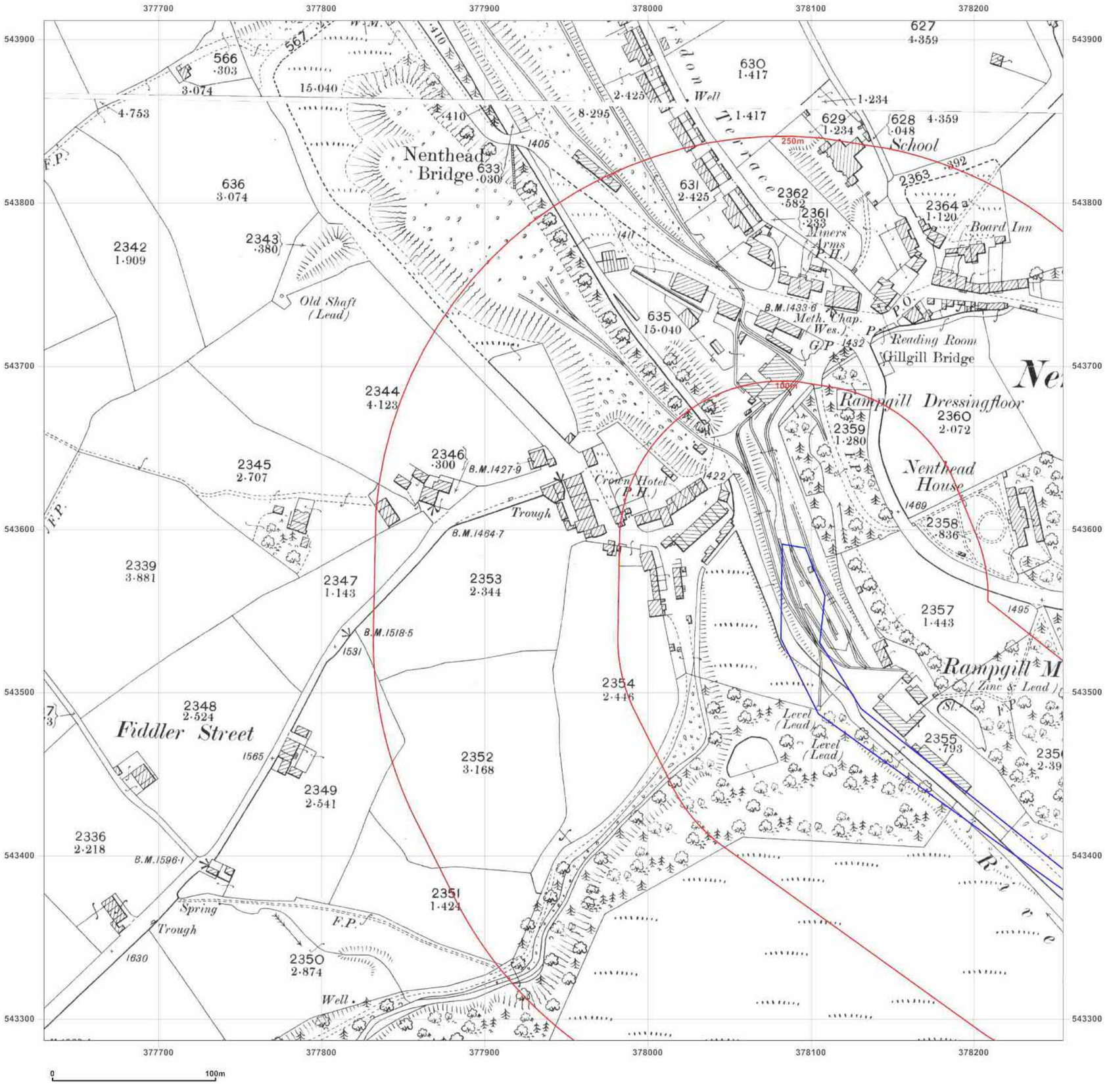
Surveyed 1862
Revised 1862
Edition N/A
Copyright N/A
Levelled N/A

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 14 January 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

1, HILL TOP COTTAGES,
NENTHEAD, CA9 3PB

Client Ref: Nenthead
Report Ref: GS-5745684_LS_1_2
Grid Ref: 377942, 543599

Map Name: County Series

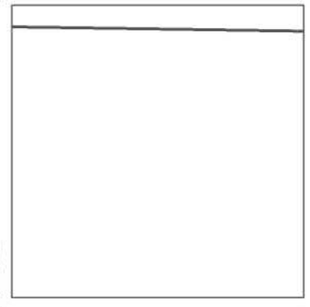
Map date: **1899**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1899
Revised 1899
Edition N/A
Copyright N/A
Levelled N/A



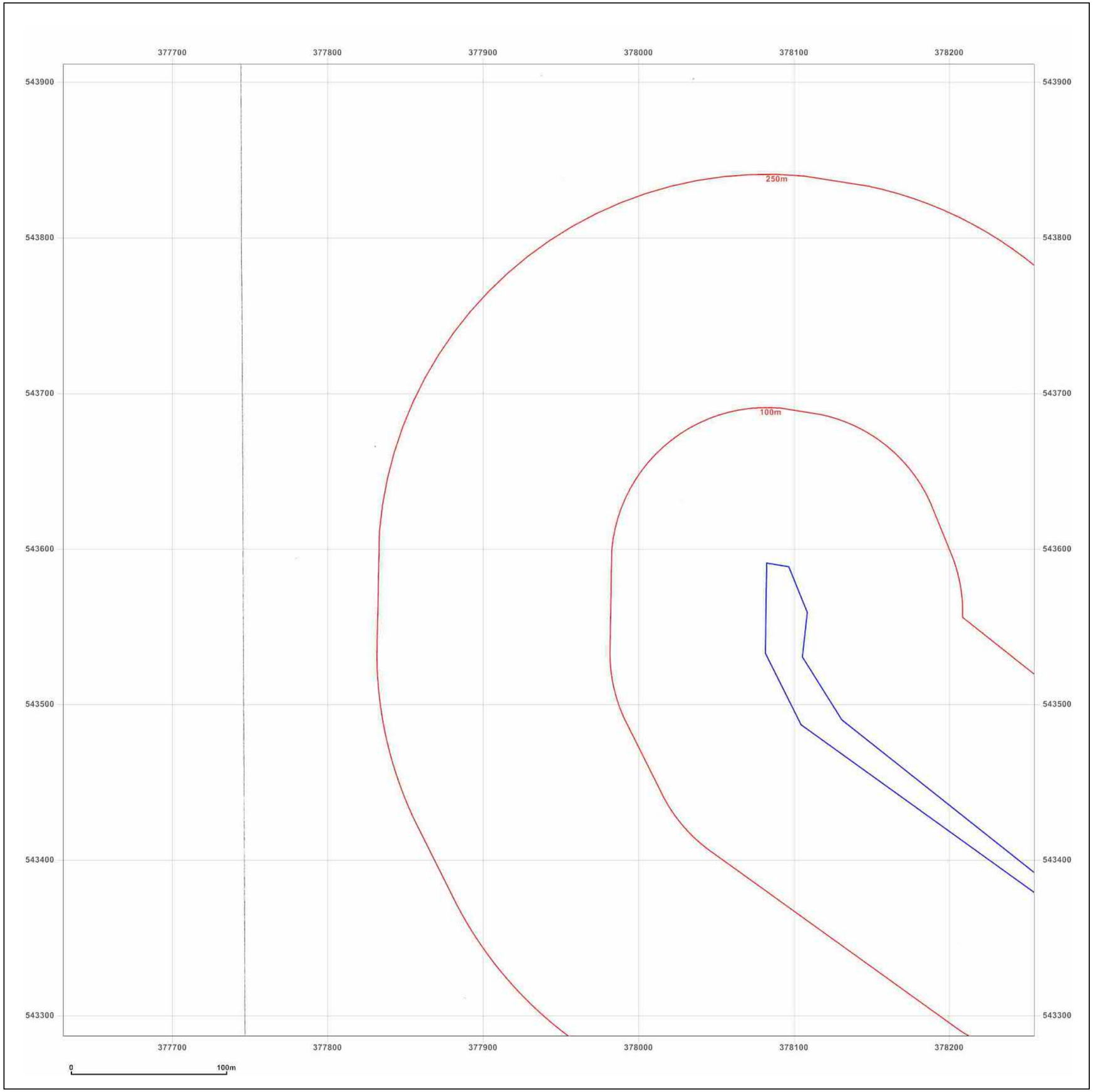
Surveyed 1899
Revised 1899
Edition N/A
Copyright N/A
Levelled N/A

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 14 January 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

1, HILL TOP COTTAGES,
NENTHEAD, CA9 3PB

Client Ref: Nenthead
Report Ref: GS-5745684_LS_1_2
Grid Ref: 377942, 543599

Map Name: County Series

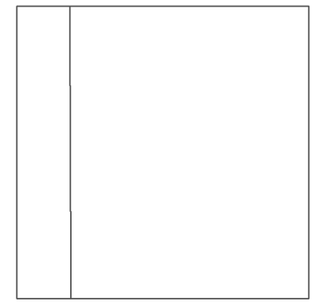
Map date: **1922**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1922
Revised 1922
Edition N/A
Copyright N/A
Levelled N/A

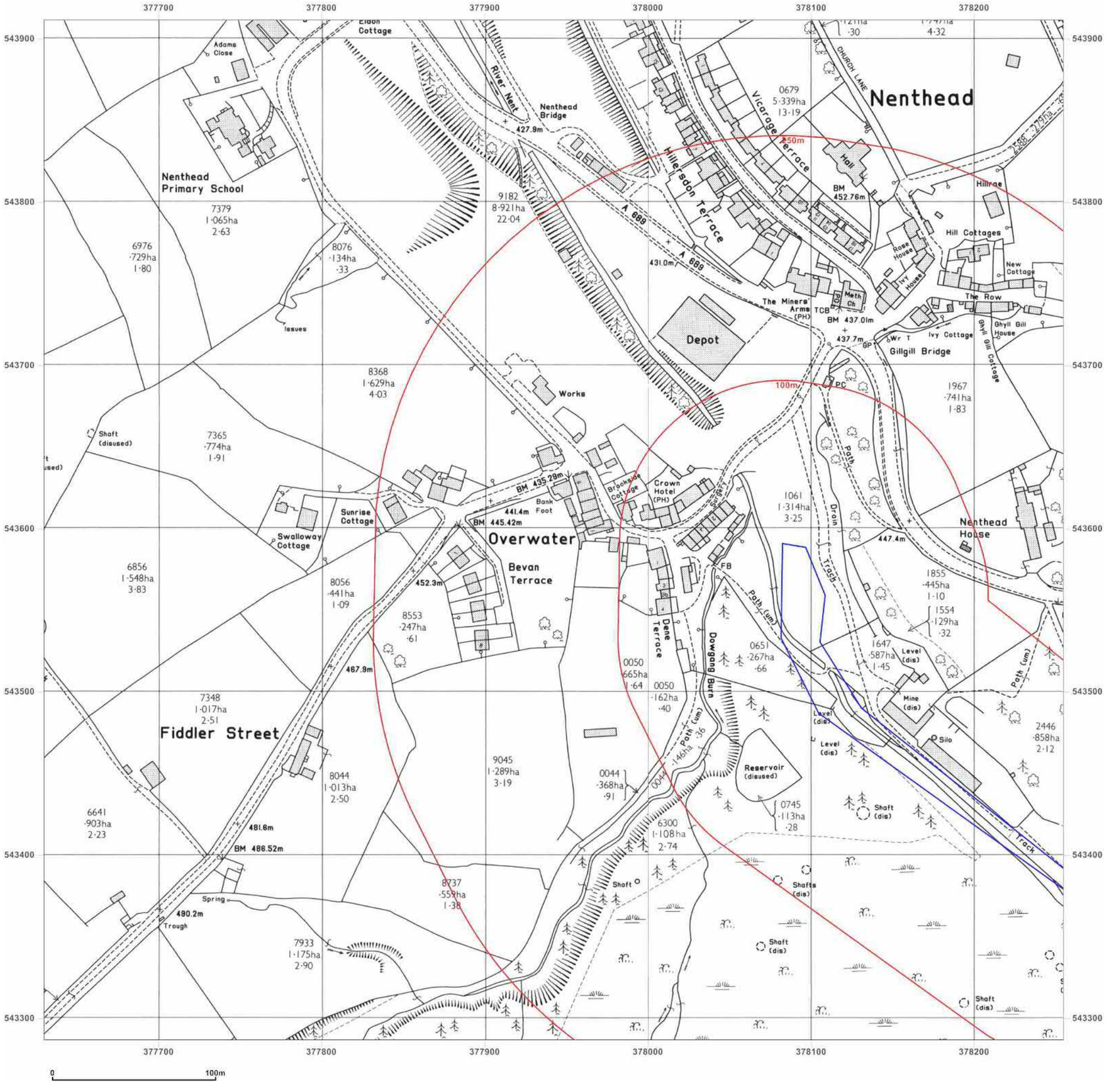


Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 14 January 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

1, HILL TOP COTTAGES,
NENTHEAD, CA9 3PB

Client Ref: Nenthead
Report Ref: GS-5745684_LS_1_2
Grid Ref: 377942, 543599

Map Name: National Grid

Map date: **1980**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

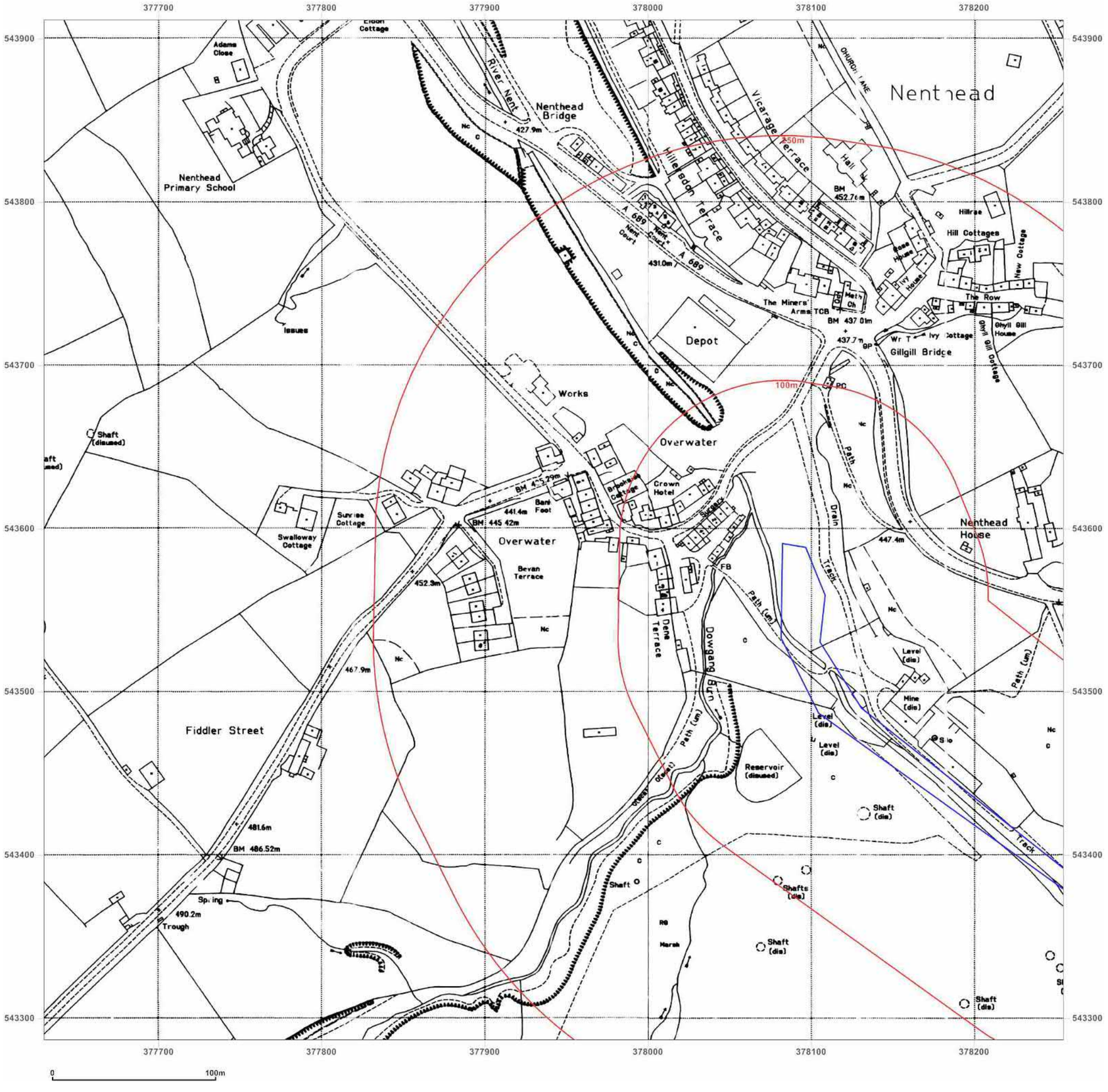
Surveyed 1980 Revised 1980 Edition N/A Copyright 1981 Levelled 1955	Surveyed 1980 Revised 1980 Edition N/A Copyright 1981 Levelled 1955

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 14 January 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

1, HILL TOP COTTAGES,
NENTHEAD, CA9 3PB

Client Ref: Nenthead
Report Ref: GS-5745684_LS_1_2
Grid Ref: 377942, 543599

Map Name: National Grid

Map date: **1994**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1994
Revised N/A
Edition N/A
Copyright 1994
Levelled N/A

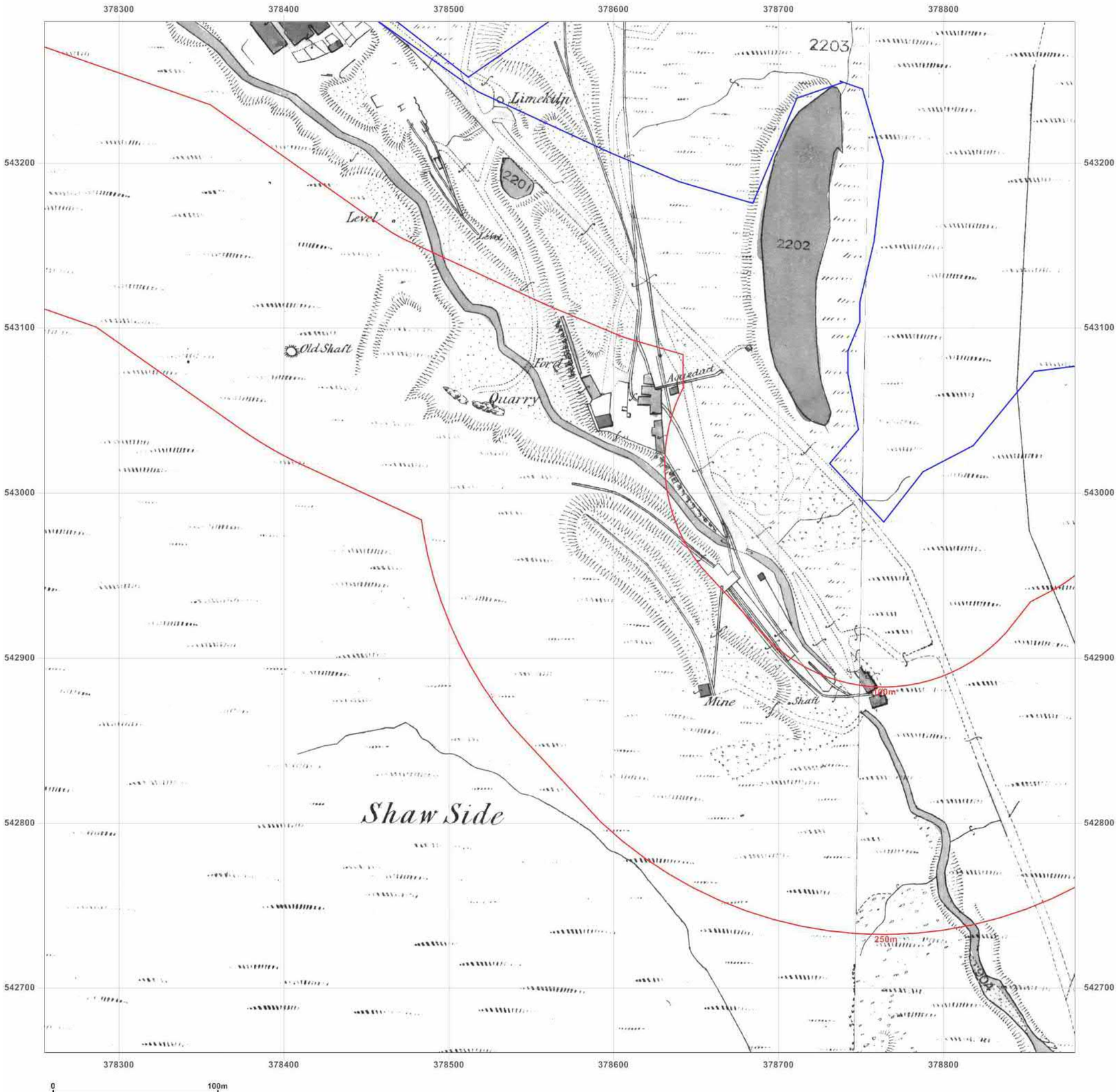
Surveyed 1994
Revised N/A
Edition N/A
Copyright 1994
Levelled N/A

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 14 January 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

1, HILL TOP COTTAGES,
NENTHEAD, CA9 3PB

Client Ref: Nenthead
Report Ref: GS-5745684_LS_2_1
Grid Ref: 378567, 542973

Map Name: County Series
Map date: **1862**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S

Surveyed 1862
Revised 1862
Edition N/A
Copyright N/A
Levelled N/A

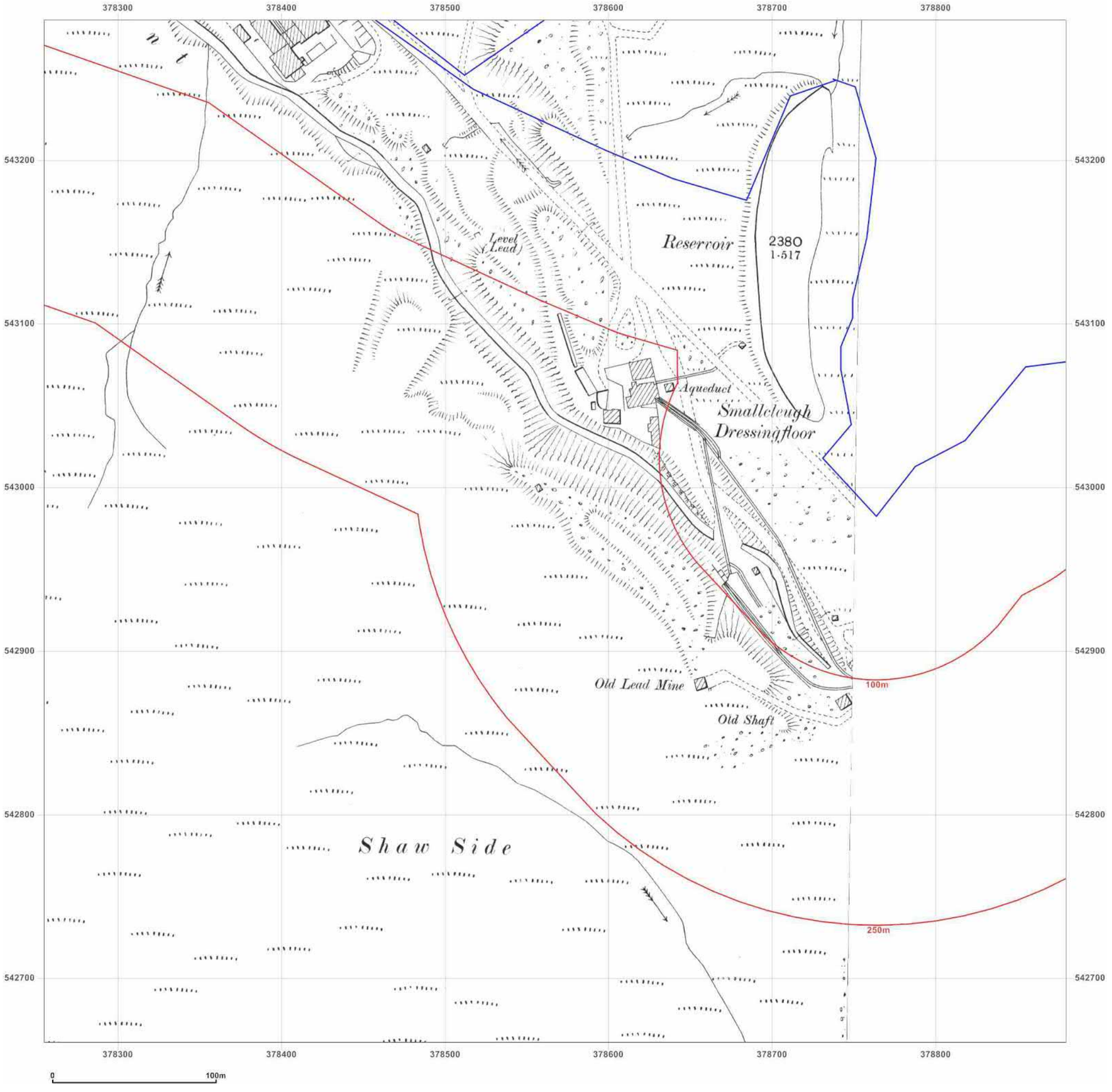
Surveyed 1862
Revised 1862
Edition N/A
Copyright N/A
Levelled N/A

Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 14 January 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

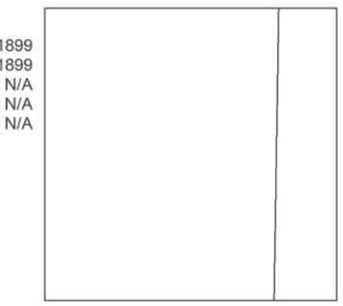
1, HILL TOP COTTAGES,
NENTHEAD, CA9 3PB

Client Ref: Nenthead
Report Ref: GS-5745684_LS_2_1
Grid Ref: 378567, 542973

Map Name: County Series
Map date: **1899**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S

Surveyed 1899
Revised 1899
Edition N/A
Copyright N/A
Levelled N/A

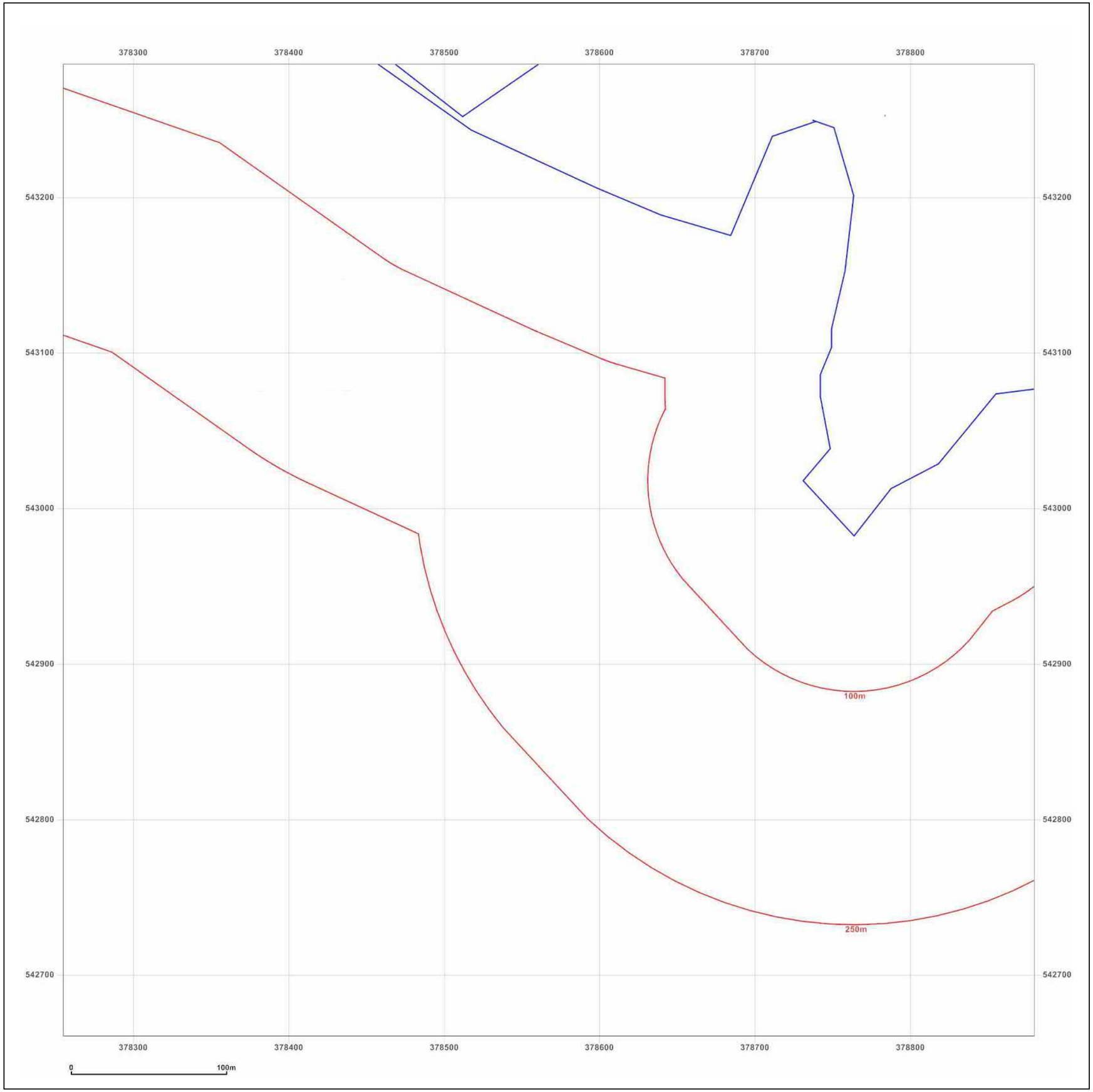


Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 14 January 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

1, HILL TOP COTTAGES,
NENTHEAD, CA9 3PB

Client Ref: Nenthead
Report Ref: GS-5745684_LS_2_1
Grid Ref: 378567, 542973

Map Name: County Series

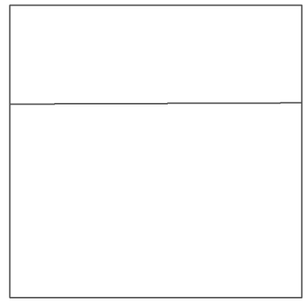
Map date: **1922**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1922
Revised 1922
Edition N/A
Copyright N/A
Levelled N/A

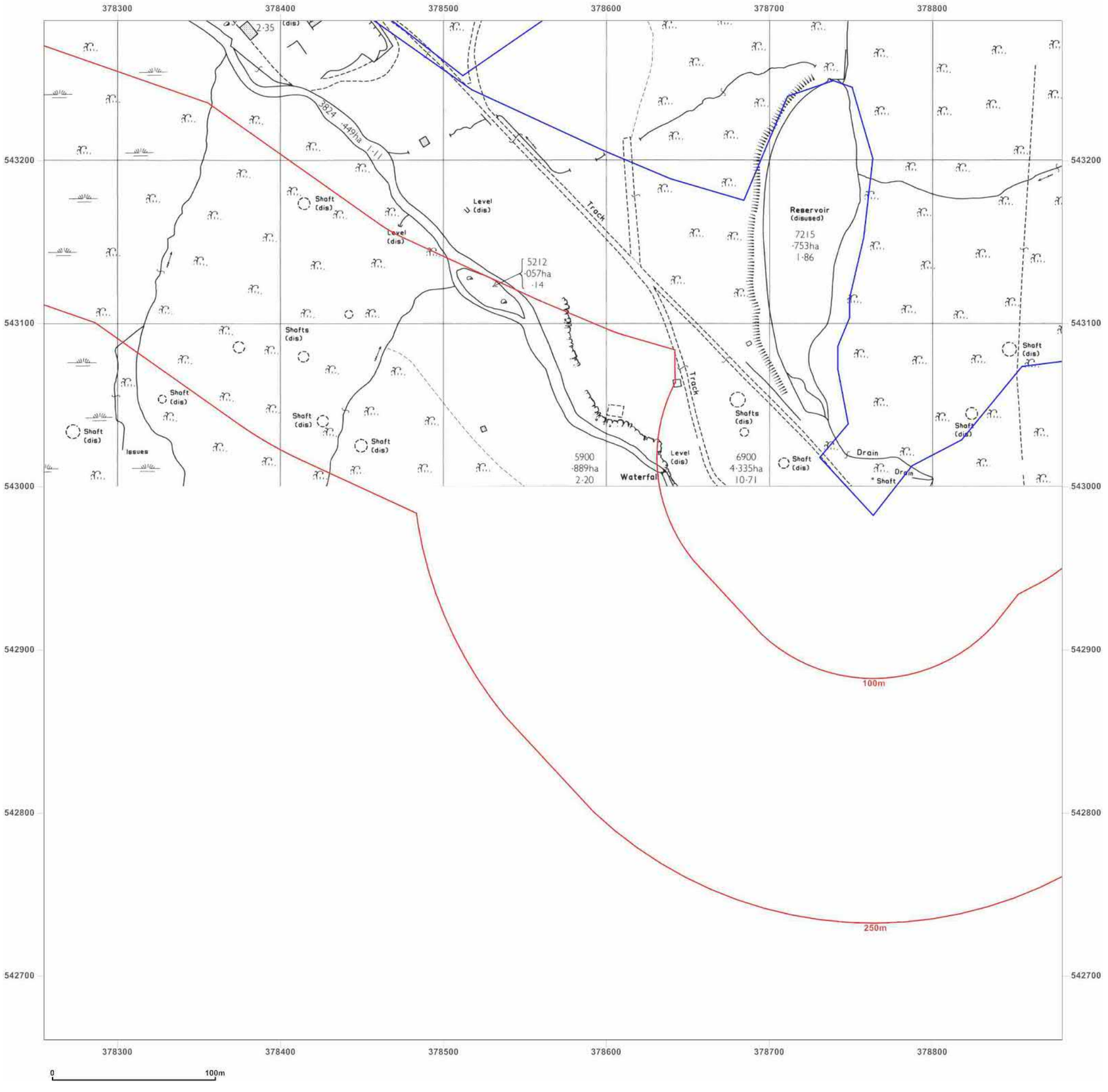


Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 14 January 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

1, HILL TOP COTTAGES,
NENTHEAD, CA9 3PB

Client Ref: Nenthead
Report Ref: GS-5745684_LS_2_1
Grid Ref: 378567, 542973

Map Name: National Grid

Map date: **1980**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

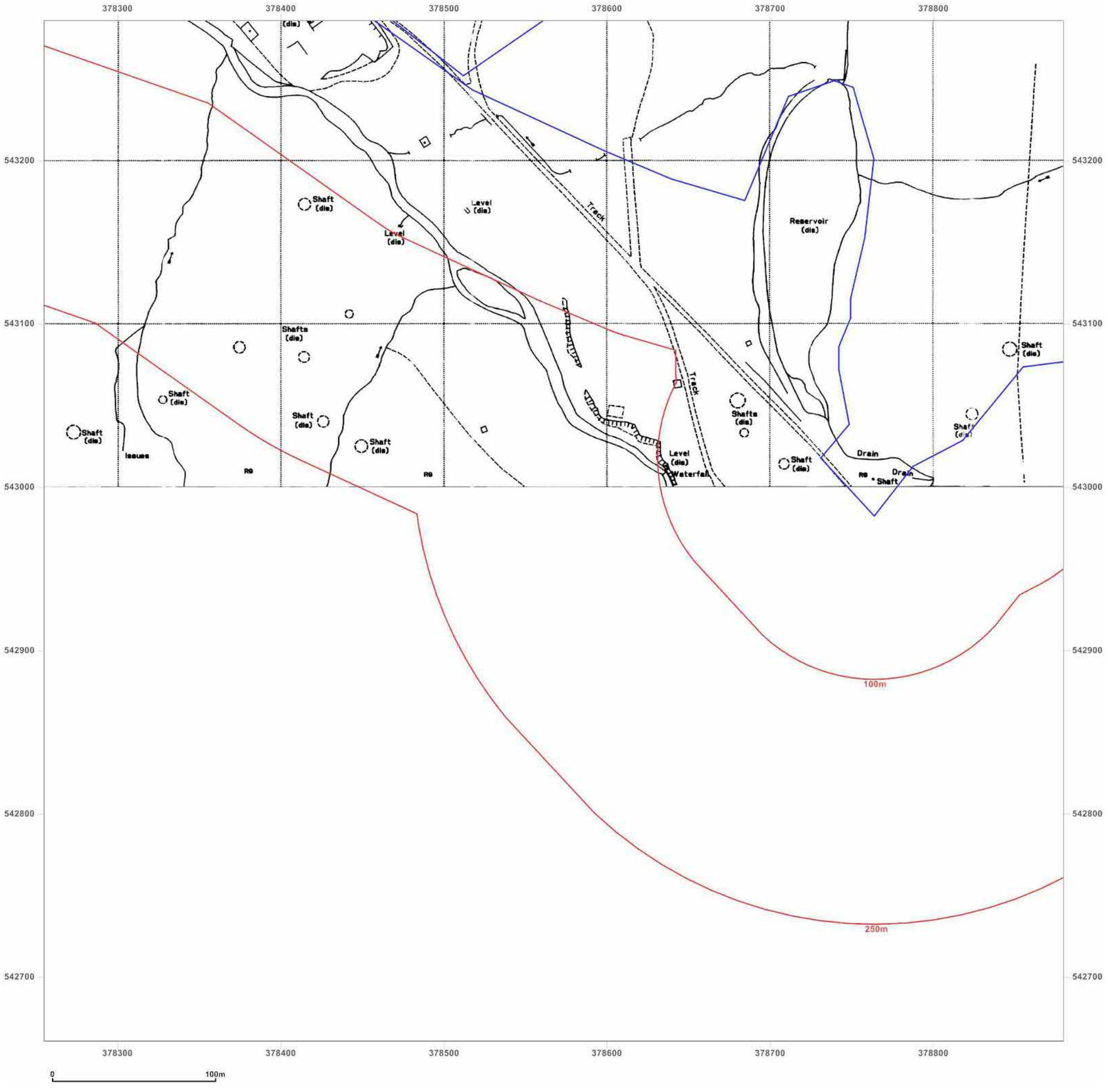
Surveyed 1980
Revised 1980
Edition N/A
Copyright 1981
Levelled 1955

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 14 January 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

1, HILL TOP COTTAGES,
NENTHEAD, CA9 3PB

Client Ref: Nenthead
Report Ref: GS-5745684_LS_2_1
Grid Ref: 378567, 542973

Map Name: National Grid

Map date: **1994**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

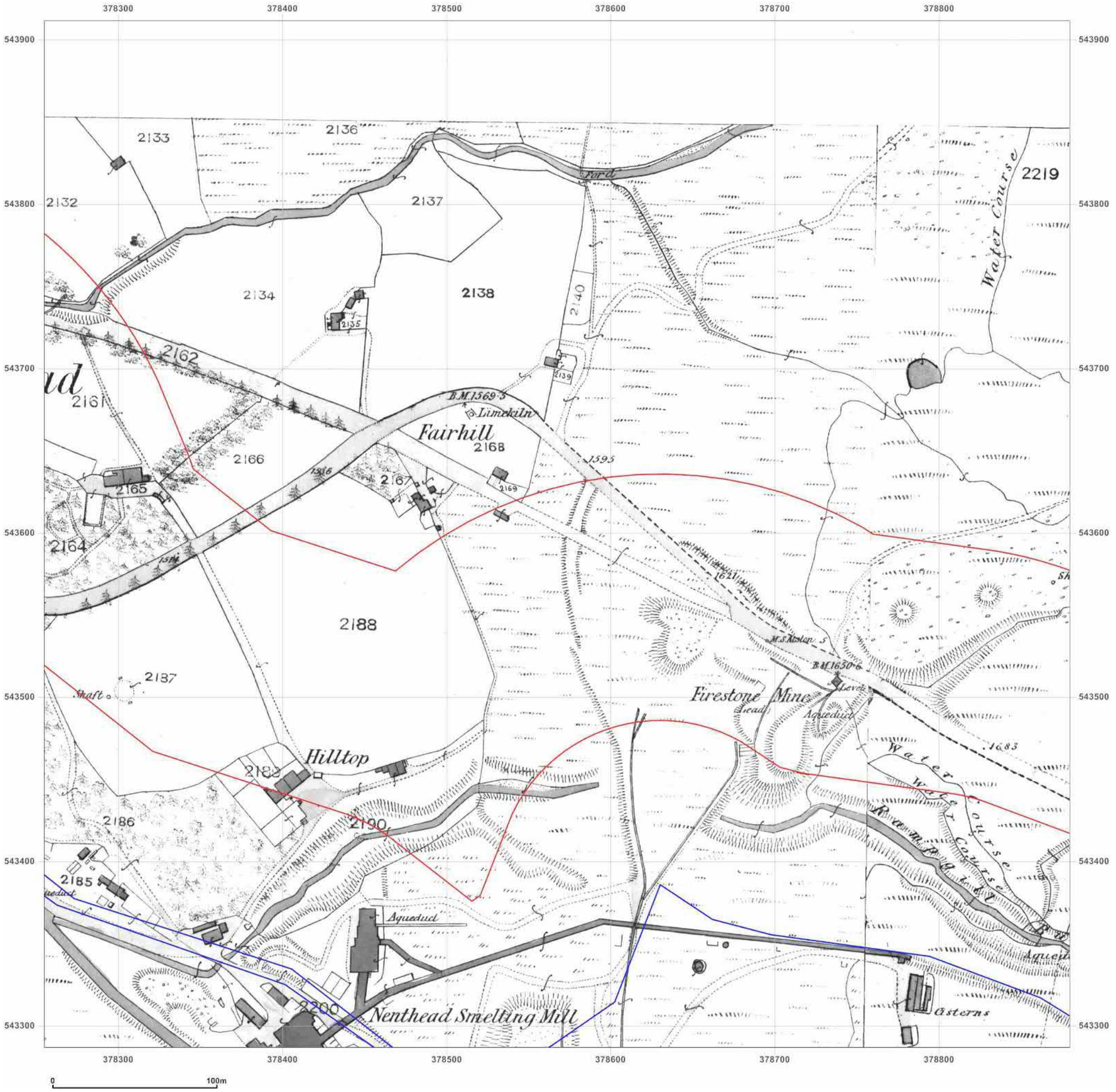
Surveyed 1994
Revised N/A
Edition N/A
Copyright 1994
Levelled N/A

Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 14 January 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

1, HILL TOP COTTAGES,
NENTHEAD, CA9 3PB

Client Ref: Nenthead
Report Ref: GS-5745684_LS_2_2
Grid Ref: 378567, 543599

Map Name: County Series
Map date: **1858-1862**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S

Surveyed 1858
Revised 1858
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1862
Revised 1862
Edition N/A
Copyright N/A
Levelled N/A

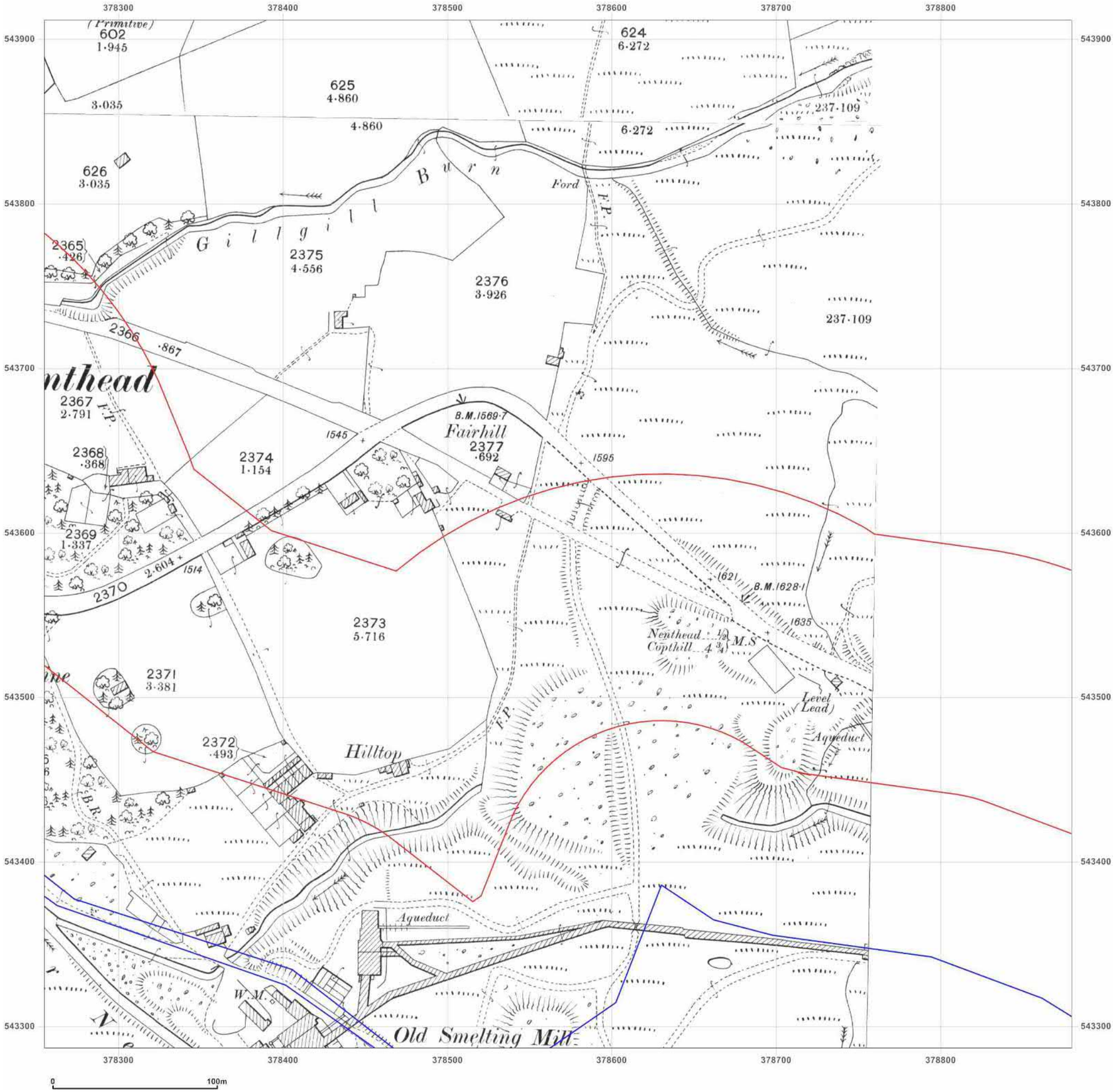
Surveyed 1862
Revised 1862
Edition N/A
Copyright N/A
Levelled N/A

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 14 January 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

1, HILL TOP COTTAGES,
NENTHEAD, CA9 3PB

Client Ref: Nenthead
Report Ref: GS-5745684_LS_2_2
Grid Ref: 378567, 543599

Map Name: County Series

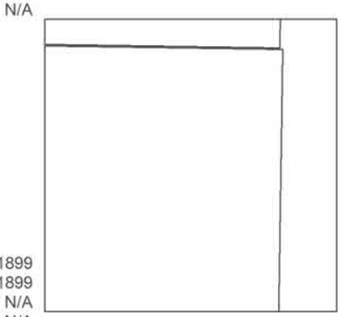
Map date: **1899**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1899
Revised 1899
Edition N/A
Copyright N/A
Levelled N/A



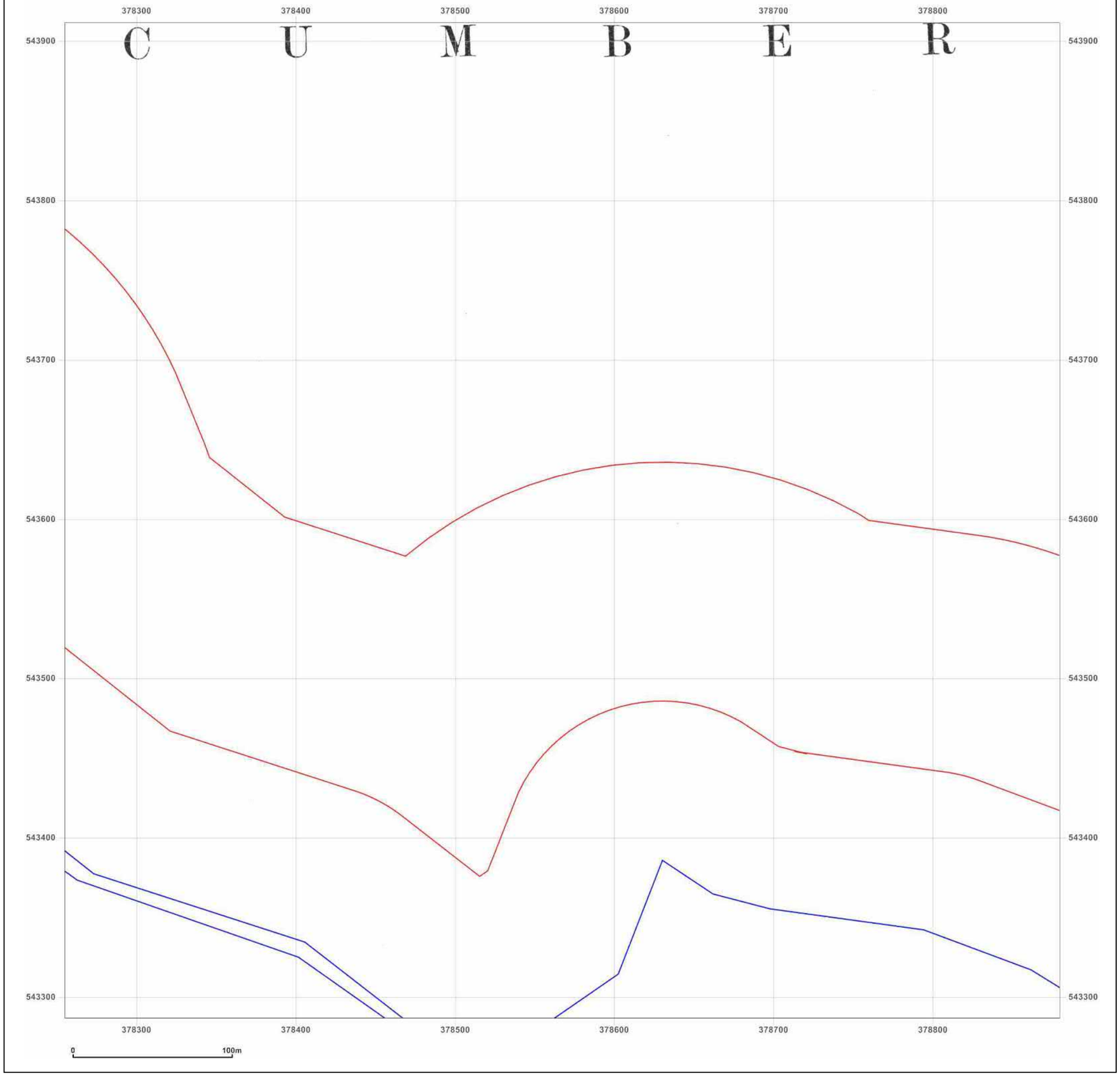
Surveyed 1899
Revised 1899
Edition N/A
Copyright N/A
Levelled N/A

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 14 January 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

1, HILL TOP COTTAGES,
NENTHEAD, CA9 3PB

Client Ref: Nenthead
Report Ref: GS-5745684_LS_2_2
Grid Ref: 378567, 543599

Map Name: County Series
Map date: **1922**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S

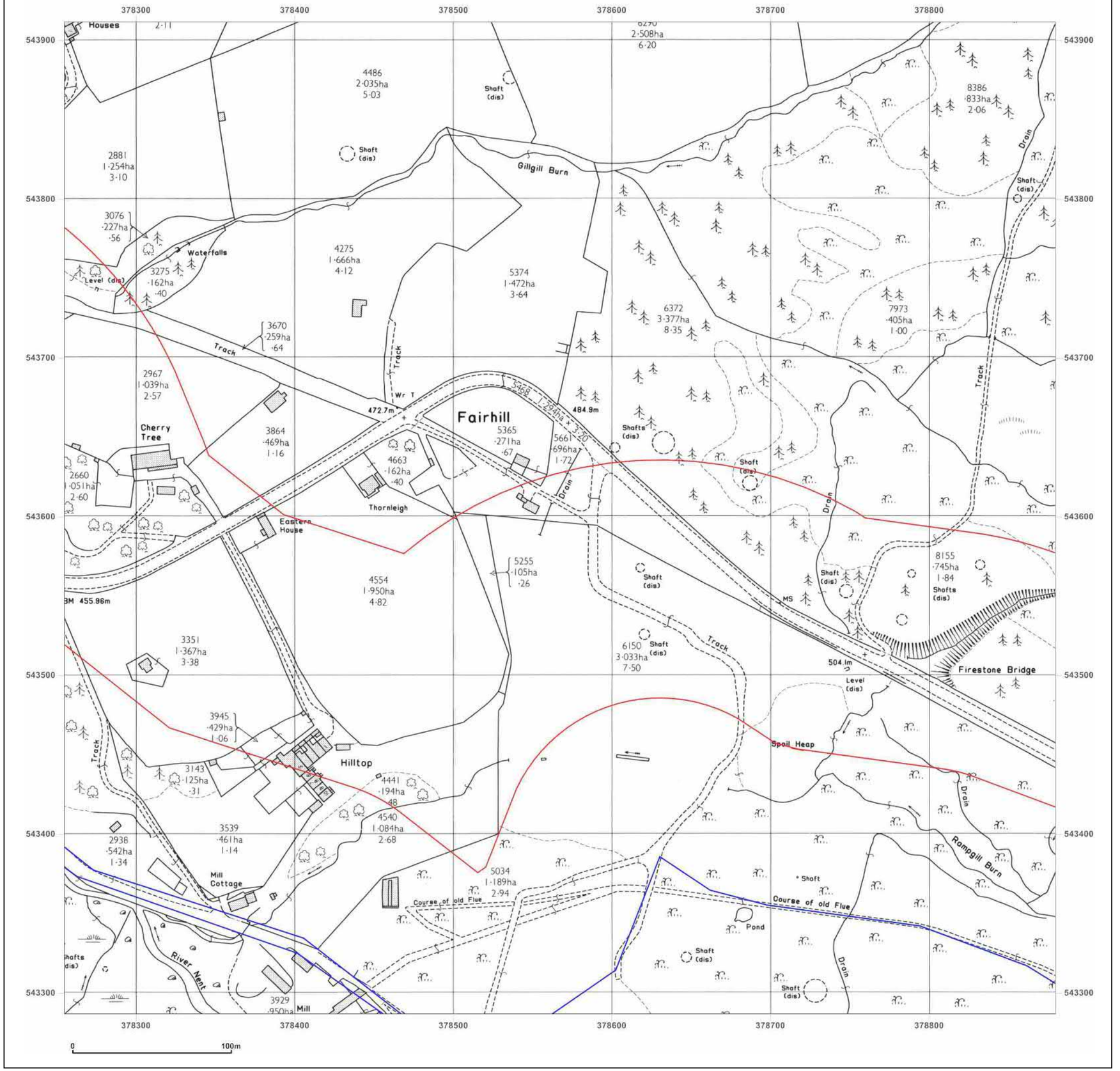
Surveyed 1922
Revised 1922
Edition N/A
Copyright N/A
Levelled N/A

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 14 January 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

1, HILL TOP COTTAGES,
NENTHEAD, CA9 3PB

Client Ref: Nenthead
Report Ref: GS-5745684_LS_2_2
Grid Ref: 378567, 543599

Map Name: National Grid

Map date: **1980**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

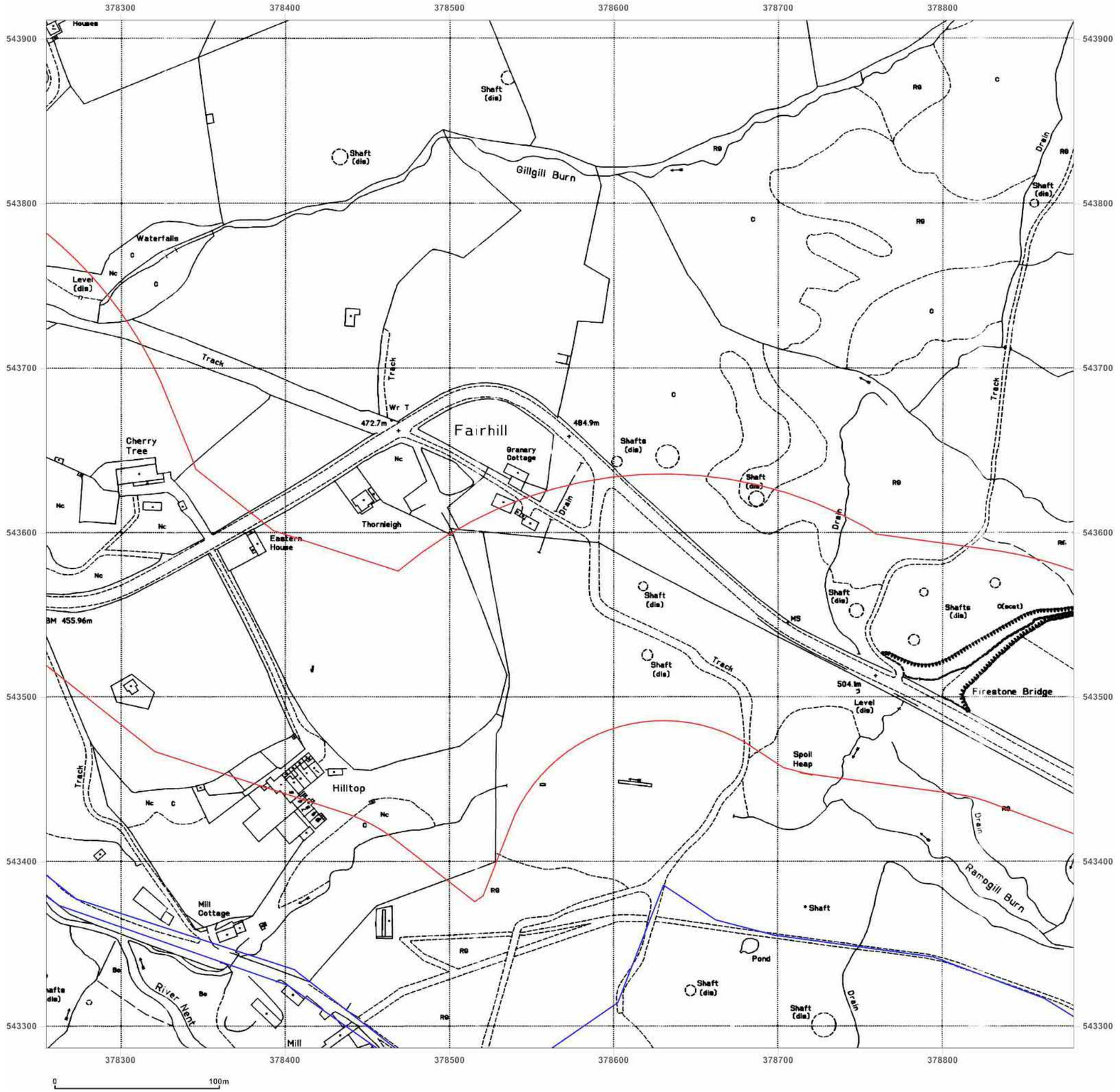
Surveyed 1980
Revised 1980
Edition N/A
Copyright 1981
Levelled 1955

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 14 January 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

1, HILL TOP COTTAGES,
NENTHEAD, CA9 3PB

Client Ref: Nenthead
Report Ref: GS-5745684_LS_2_2
Grid Ref: 378567, 543599

Map Name: National Grid

Map date: **1994**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

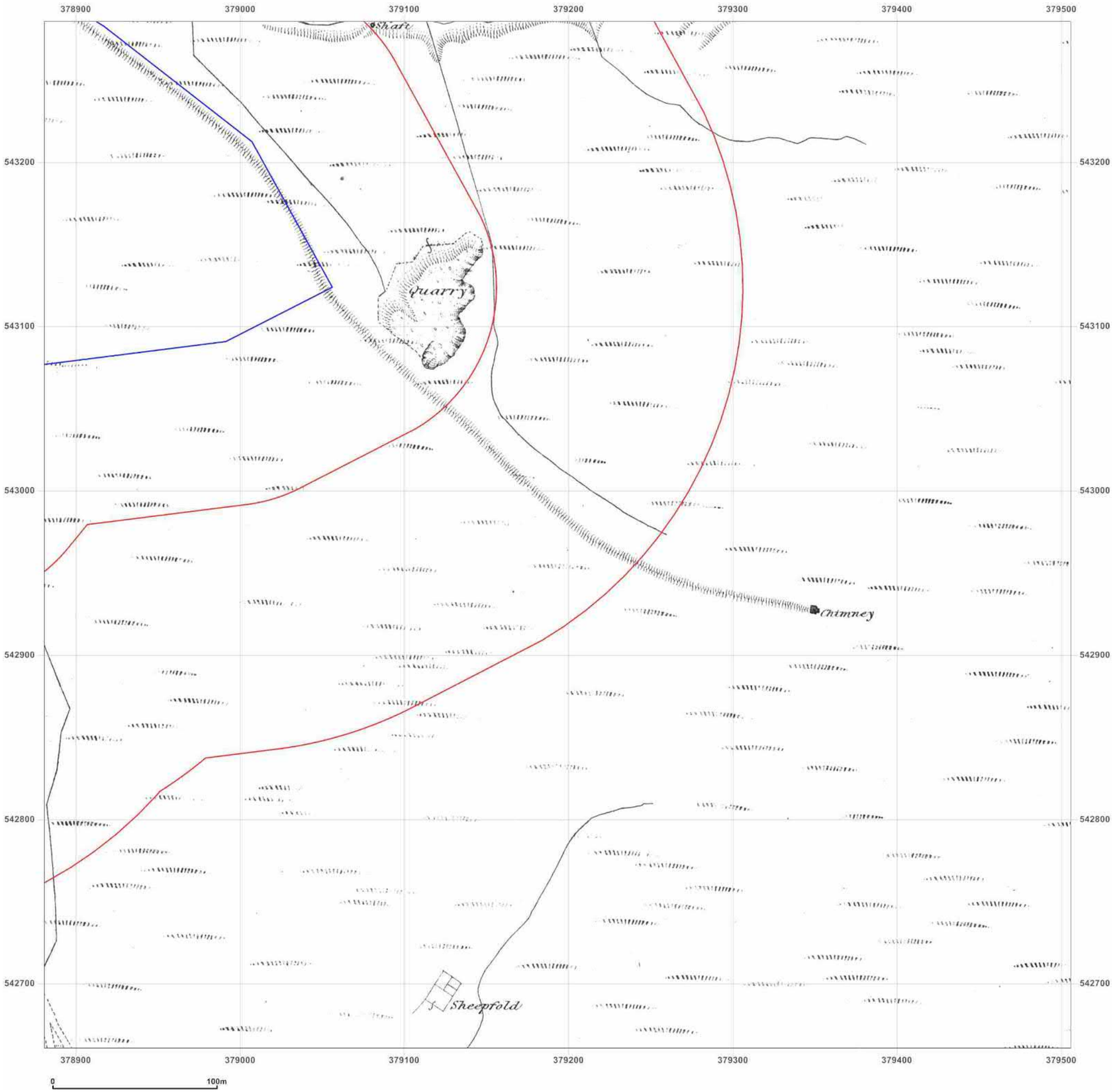
Surveyed 1994
Revised N/A
Edition N/A
Copyright 1994
Levelled N/A

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 14 January 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

1, HILL TOP COTTAGES,
NENTHEAD, CA9 3PB

Client Ref: Nenthead
Report Ref: GS-5745684_LS_3_1
Grid Ref: 379193, 542973

Map Name: County Series

Map date: **1862**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

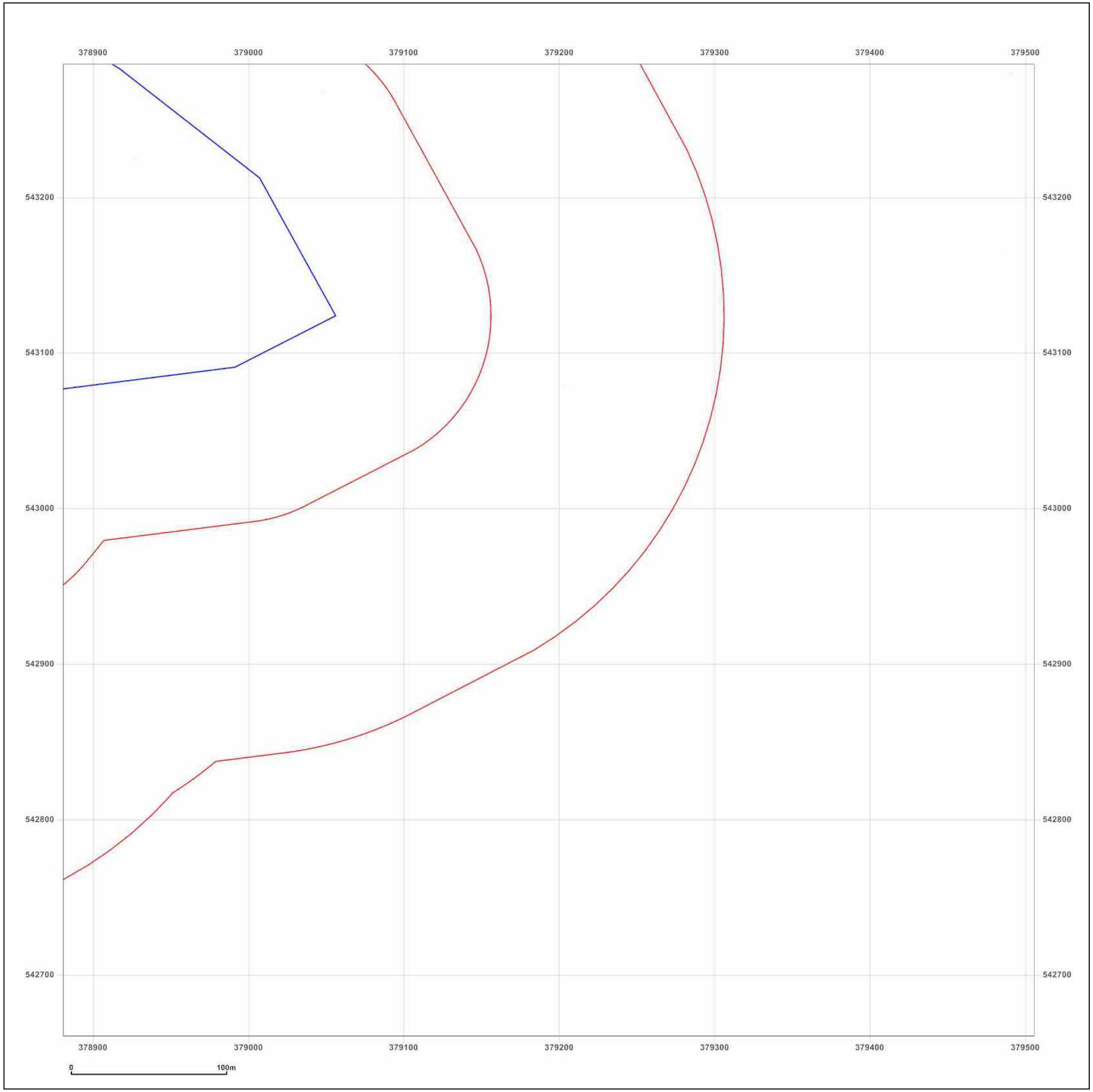
Surveyed 1862
Revised 1862
Edition N/A
Copyright N/A
Levelled N/A

Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 14 January 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

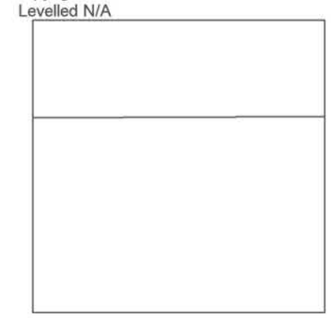
1, HILL TOP COTTAGES,
NENTHEAD, CA9 3PB

Client Ref: Nenthead
Report Ref: GS-5745684_LS_3_1
Grid Ref: 379193, 542973

Map Name: County Series
Map date: **1922**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S

Surveyed 1922
Revised 1922
Edition N/A
Copyright N/A
Levelled N/A

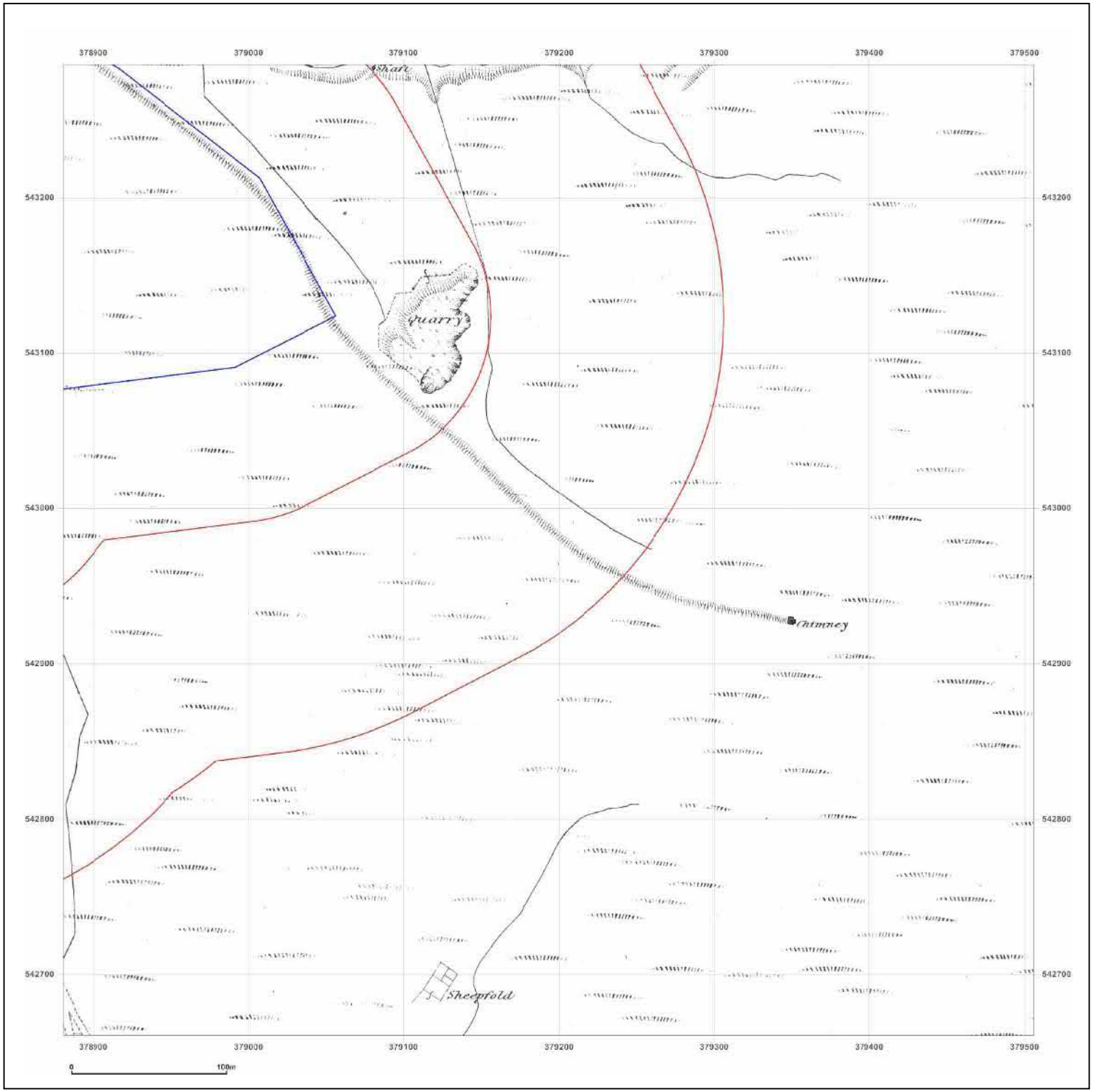


Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 14 January 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

1, HILL TOP COTTAGES,
NENTHEAD, CA9 3PB

Client Ref: Nenthead
Report Ref: GS-5745684_LS_3_1
Grid Ref: 379193, 542973

Map Name: County Series
Map date: 1862
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S

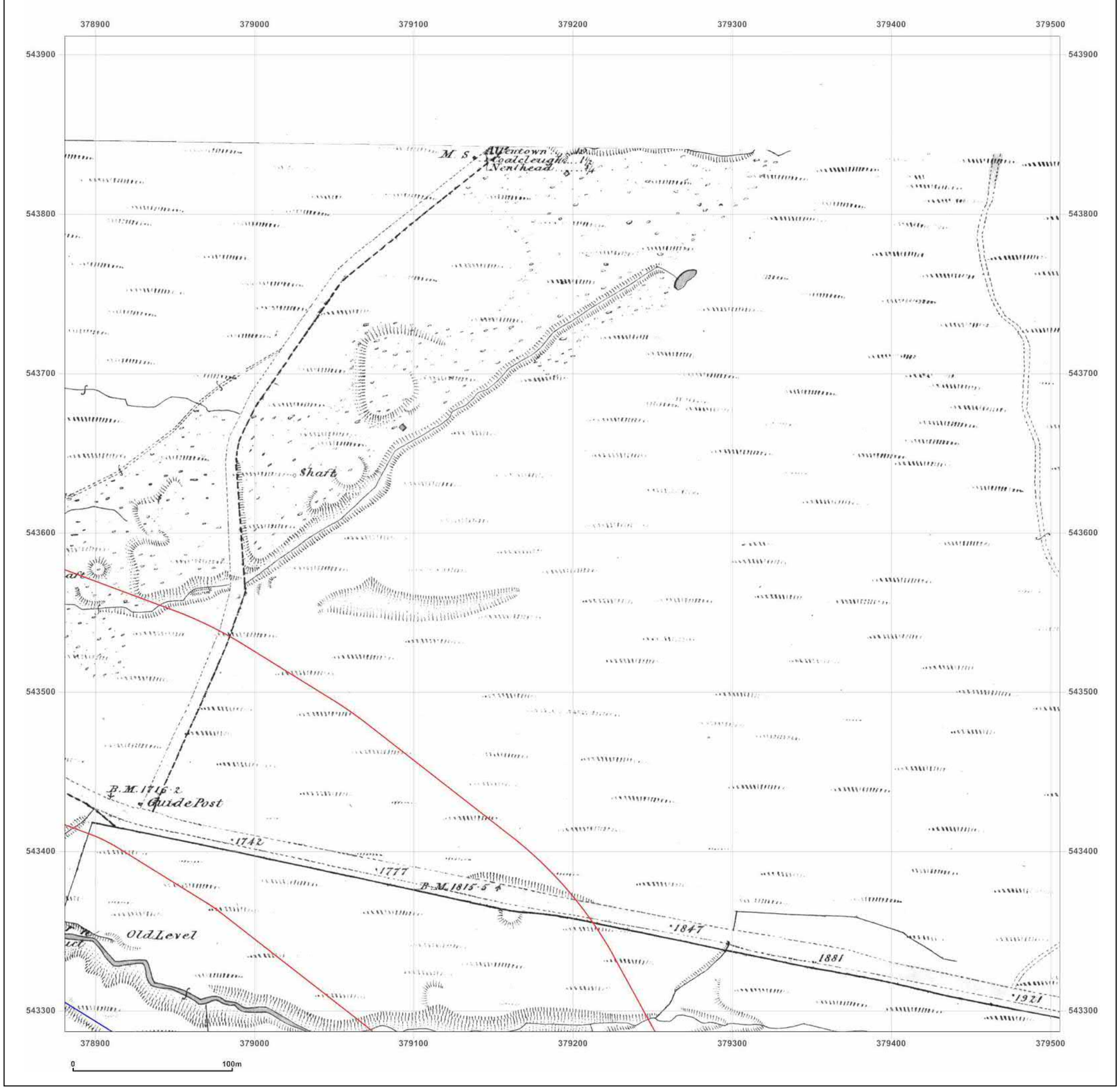
Surveyed 1862
Revised 1862
Edition N/A
Copyright N/A
Levelled N/A

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 14 January 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

1, HILL TOP COTTAGES,
NENTHEAD, CA9 3PB

Client Ref: Nenthead
Report Ref: GS-5745684_LS_3_2
Grid Ref: 379193, 543599

Map Name: County Series

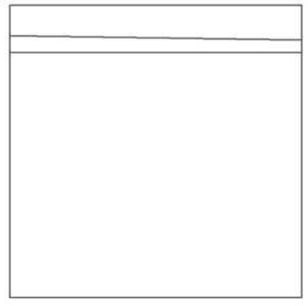
Map date: **1858-1862**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1858
Revised 1858
Edition N/A
Copyright N/A
Levelled N/A



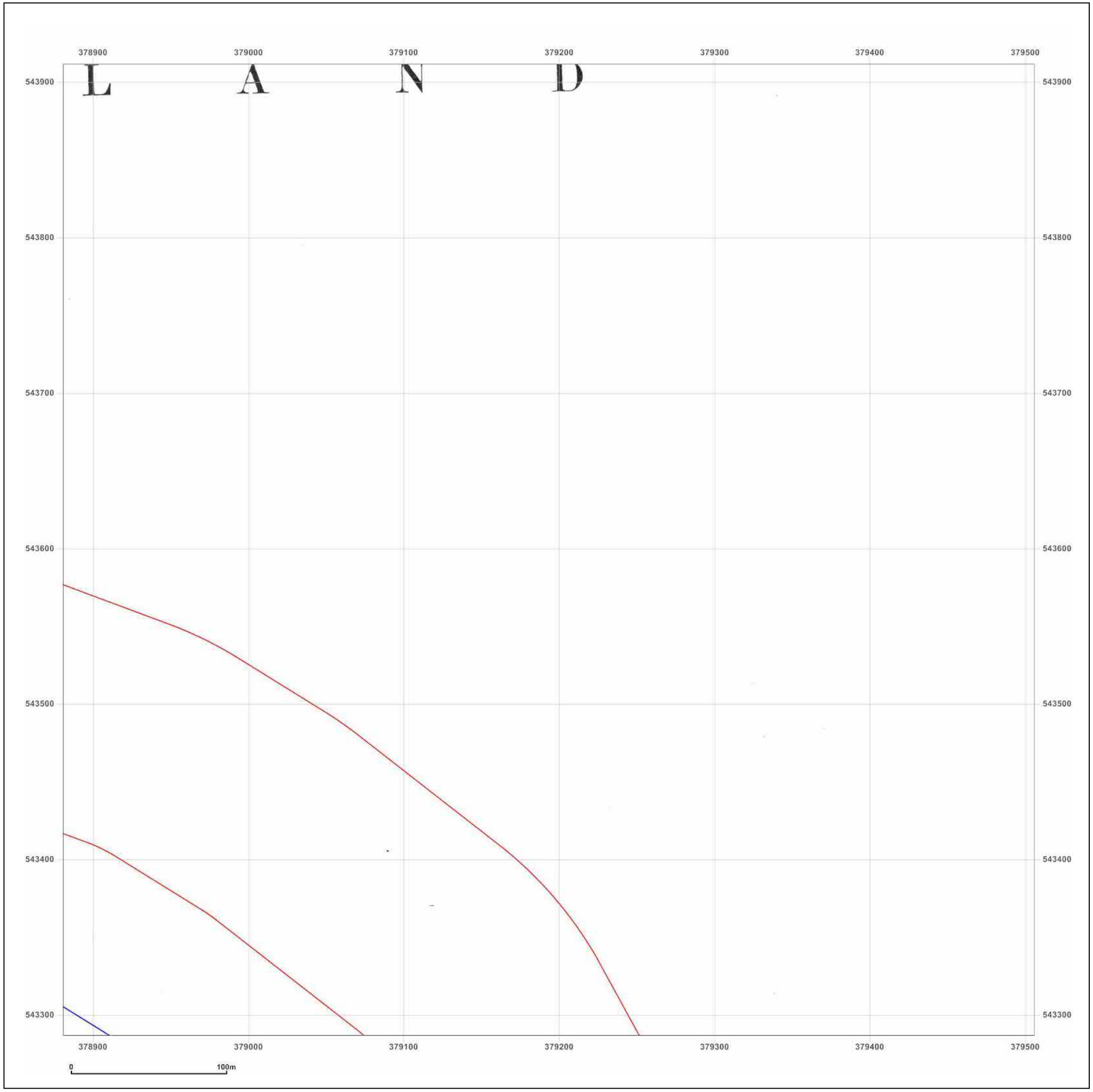
Surveyed 1862
Revised 1862
Edition N/A
Copyright N/A
Levelled N/A

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 14 January 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

1, HILL TOP COTTAGES,
NENTHEAD, CA9 3PB

Client Ref: Nenthead
Report Ref: GS-5745684_LS_3_2
Grid Ref: 379193, 543599

Map Name: County Series
Map date: **1922**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S

Surveyed 1922
Revised 1922
Edition N/A
Copyright N/A
Levelled N/A

Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 14 January 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf

Appendix C – Photographic Log

Photo 1.

Description: Adit entrance, public right of way (PRoW) on the right

Photo 2.

Description: View up the valley, wooden adit capture structure and sign for PRoW

Photo 3.

Description: Dry stone wall separating public car par k from River Nent. Pedestrian footbridge part of PRoW. Engineered banks of the River Nent are undercut at this location.

Photo 4.

Description: Dry stone wall separating public car par k from River Nent. Pedestrian footbridge part of PRoW. Engineered banks of the River Nent are undercut at this location. Existing contractor compound on the right.

Photo 5.

Description: View up towards proposed MWTS site showing public car park and access track up towards proposed MWTS

Photo 6.

Description: The visitor car park and access from A689. Existing contractors compound on the left.

Photo 7.

Description: View looking up valley along the access track(east) towards heritage centre. Infrastructure on the land in the left of this photograph is currently being dismantled. Road access could potentially be widened at this point.

Photo 8.

Description: View looking west along access track towards visitor car park. River Nent adjacent to the left of the track in this image. Low structure in right of photograph was labelled gas. Site trustees present during the walkover confirmed this is an access hatch for the existing steel water pipe running along the access track. This was not opened during the walkover.

Photo 9.

Description: View looking west long heritage centre access track. Point of road turn is where previously identified steel plate underlies road, at location of dam in River Nent. River Nent adjacent to the left of the track in this image.

Photo 10.

Description: Access road to heritage centre. Gate on left is access to proposed MWTS up the hill and potential route of pipe line for treatment water.

Photo 11.

Description: View looking north east up access track from Heritage centre. Proposed pipeline route. Hydroelectric power station directly adjacent to the left of this photograph.

Photo 12.

Description: View looking east up access track (proposed treatment water pipeline route) from the Heritage centre. Narrowest point is location of historic flue.

Photo 13.

Description: A number of leats and drains were present underlying existing roads.

Photo 14.

Description: Confluence of access roads for Flinty Fell Quarry vehicles and access from the visitor centre (proposed pipeline route).

Photo 15.

Description: Numerous examples of historic infrastructure present on site and in close vicinity.

Photo 16.

Description: View looking north across area of proposed MWTS ponds.

Photo 17.

Description: View looking west across area of proposed MWTS ponds.

Photo 18.

Description: View looking south across area of proposed MWTS ponds.

Photo 19.

Description: View west from area of proposed odour abatement building. Evidence of previous flood events. Very little vegetation in parts due to poor thickness of topsoil. Area of proposed reed bed location in middle distance to the right of the reservoir.

Photo 20.

Description: View to south from proposed location of MWTS ponds at upper site, above historic dry stone wall.

Photo 21.

Description: Evidence of ponding at the surface on land above the historic cisterns site.

Photo 22.

Description: View south towards reservoir taken from position of historic cisterns structure.

Photo 23.

Description: Site of former cisterns structure. Adjacent to the east of the scheduled monument. Circular mine shafts visible.

Photo 24.

Description: Historic leat along the boundary of the scheduled monument. Potential route of access track.