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Corriemoillie BESS Geoenvironmental and Geotechnical Desk Study

FIELD

Client	**Field Corriemoillie Ltd.**
Document Ref.	24091-R-001-02
Project Title	Corriemoillie BESS
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Report Title:	Geoenvironmental and Geotechnical Desk Study
Document Reference:	24091-R-001-02

Client:	Field Corriemoillie Ltd.
Confidentiality	Client Confidential

REVISION HISTORY

Rev	Date	Reason for Issue	Originator	Reviewer	Approver
00	14/06/2024	Draft	E Cline	R Harrison	J McGrath
01	25/10/2024	Post Client Review and noting updated site planning boundary	A Shepherd	E Cline	R Harrison
02	07/11/2024	Updated RLB including temporary construction compound	A Shepherd	E Cline	R Harrison

DISCLAIMER

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1 INTRODUCTION

1.1 GENERAL

Gavin and Doherty Geosolutions Ltd. (GDG) was commissioned by Field Corriemoillie Ltd. to complete a Desk Study to establish the geoenvironmental and geotechnical ground conditions at Corriemoillie (the Site) located west of Garve, Ross-shire, Scotland. The Site location and Site boundary are shown on Figure 1-1, with the original drawing held in Appendix D.

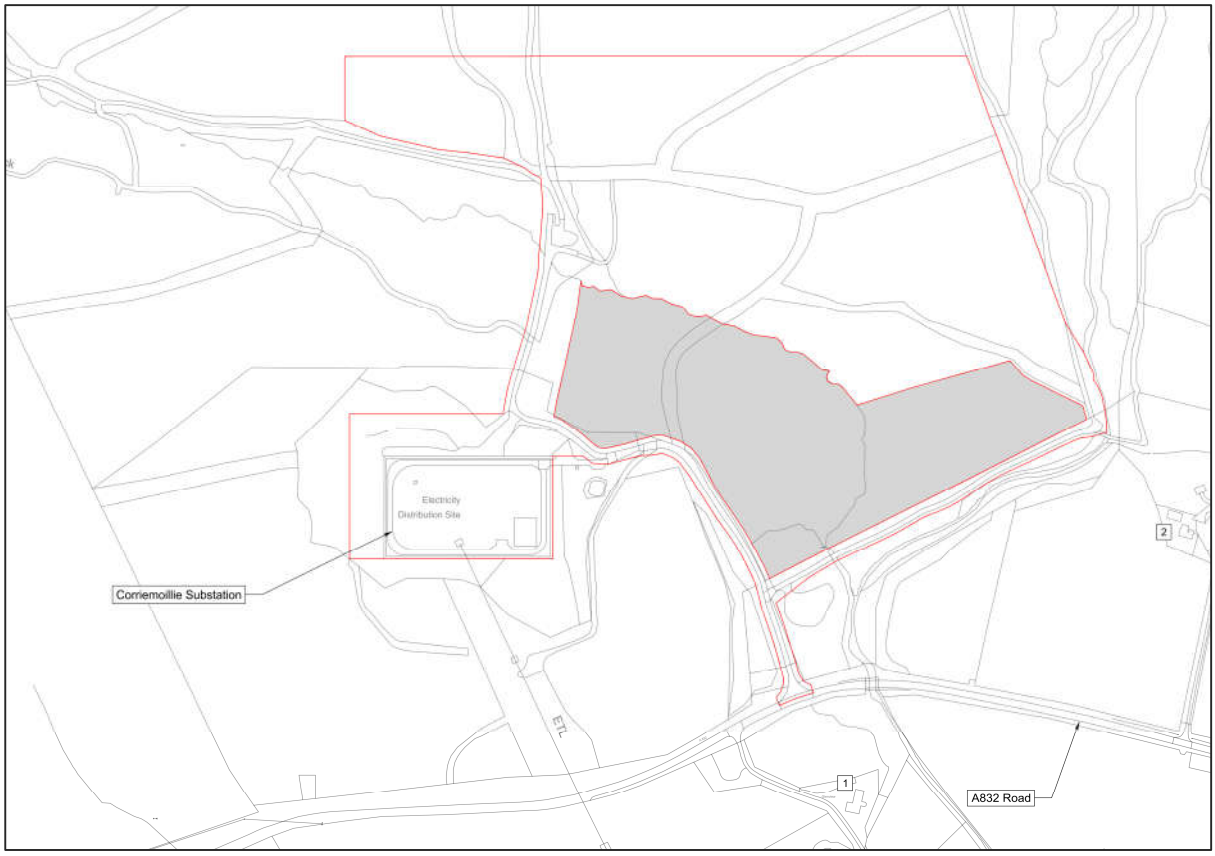


Figure 1-1: Site Location Plan (Extract from BTGBCOR01-002.1.2 Rev 3, Field 2024)

The Desk Study review is intended to inform the proposed development of a Battery Energy Storage System (BESS) of up to 200 MW with associated infrastructure (including cable route to substation), access and ancillary works (including landscaping and biodiversity enhancement).

The proposed development is outlined on Figure 1-2 with the original drawing held in Appendix D.

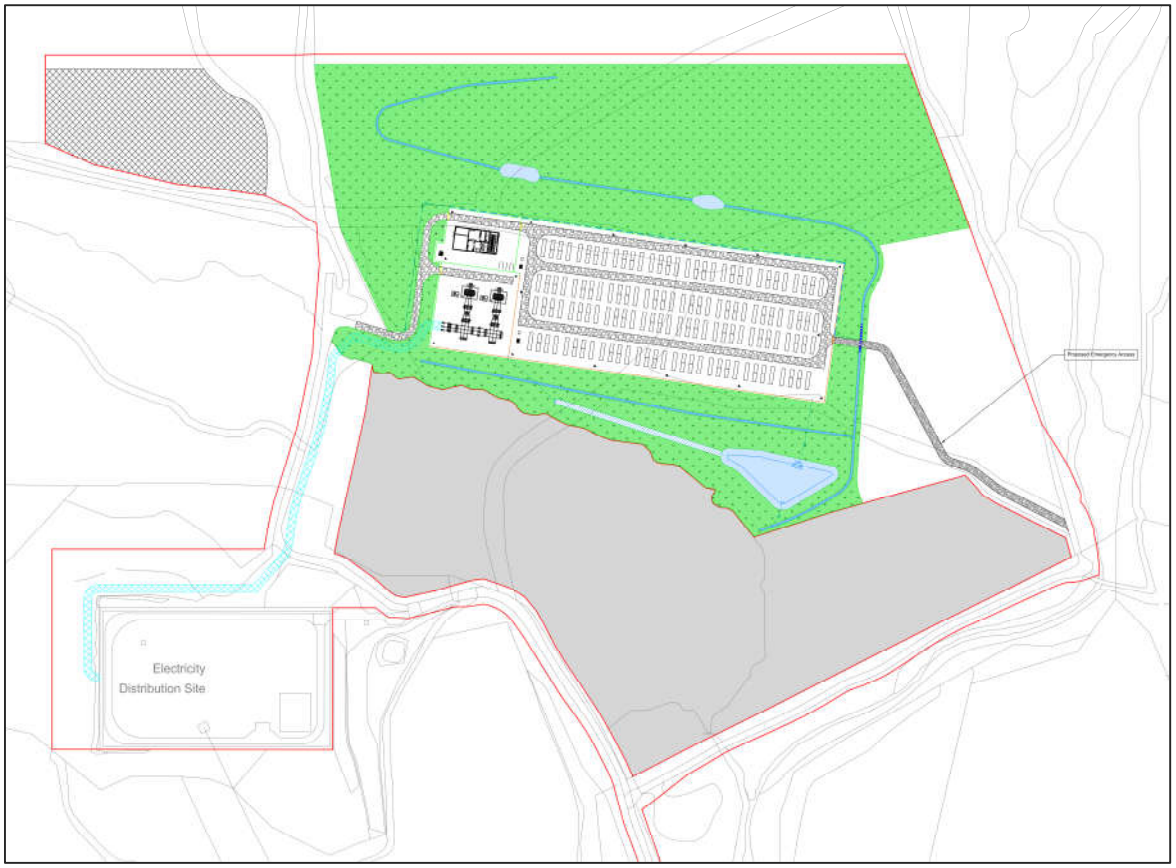


Figure 1-2: Detailed Site Plan (Extract from BTGBCOR01-005.1 Rev 8, Field 2024)

1.2 REPORT STRUCTURE

Desk-based information contained within this report has been compiled through environmental data review and mapping research (historical, geological and hydrogeological). The preparation of this report included the following specific tasks:

- Review the development history of the Site from available historical maps to identify previous uses which may have resulted in contamination issues.
- Review the local geology from the available geological plans and memoirs, together with surface watercourse and hydrogeology classifications.
- Undertake a qualitative risk assessment of potential contamination issues at the Site. The qualitative risk assessment includes the development of an Initial Conceptual Model for the Site and the identification of any Significant Pollutant Linkages.
- Assess potential geotechnical constraints.
- Determine whether additional investigation is necessary to provide further information on the contamination and geotechnical status of the Site.

2 DESK STUDY

2.1 SITE DESCRIPTION

The Site is situated approximately 5km west of the village of Garve in the Highlands, Ross-shire, Scotland, with the development planning boundary (see Figure 1-1) encompassing an area of 18.3 ha in total, of which the main BESS facility forms approximately 2.9ha.

The National Grid Reference for the approximate centre of the Site is 235046, 864110 and the Site location and layout are shown on Figure 1-1 and Figure 1-2.

The Site is predominantly covered by a forestry plantation, the BESS area of the Site exhibits a southward slope from approximately 170m to 135m AOD. Access to the BESS area of the Site will via the western boundary, utilising the existing access track that runs north to south from the existing Corriemoillie Substation and continues down to join the A832 road.

2.2 SITE WALKOVER

A Site walkover was undertaken by a GDG Engineer on 15th May 2024. A selection of representative photographs and associated comments are included in Appendix A. The following section summarises observations collected from the walkover.

The Site is located on a planted forested hillside with the Site topography sloping down to the south. The western half of the Site comprises younger trees and the eastern half of the Site more mature trees. The Site is bounded by the following:

- The western boundary approximately follows the line of an access track and line of a buried cable from the Corriemoillie windfarm to Corriemoillie Substation. There is a fence between the track and the forest area. The area to the west is further plantation.
- The northern boundary follows approximately the northerly fence line for the plantation but continues eastward at the point the fence curves to the northeast. The area north of the boundary is an open hillside of recently harvested trees.
- The eastern boundary is not demarked and is within the plantation. Trees in this area are more mature and access was not possible.
- The southern boundary is delineated by a small stream that flows southeasterly. On the southern side of the stream, there is a fence with forest beyond.

The Site is partly accessible with a former forestry track running north and an open area in the middle of the Site running north-south between the immature trees (west) and mature trees (east). Additionally, the stream can be followed along its northern bank approximately halfway along the southern boundary until the trees increase in size. The northern boundary can be followed along the fence line until the fence curves to the northeast.

Close to the Site entrance (southwest) there is a larger gravel hard standing area. Two old caravans, a yellow mobile office and a metal container/skip are stored. There is also a pile of tree stumps and tarps.

The invasive species Rhododendron ponticum was identified in the southwestern area of the Site.

2.3 SITE HISTORY

The history of the Site has been reviewed using historical 1:10,000 and 1:2,500 scale Ordnance Survey (OS) maps dating from 1865 to the present day (included in Appendix B).

All distances are given from the BESS area of the Site.

The earliest available historical mapping, dated 1875, records the land use across the Site as open moorland, potentially rough pasture. The southern boundary of the Site is largely delineated by a stream that flows in a southeasterly direction. To the south of the Site, the current A832 road is recorded 250m away, and the Kyle of Lochalsh railway line runs approximately 1 km to the south, along the northern bank of Loch Luichart. The 1875 map also shows the Corriemoillie farm and associated buildings 280m to the southeast of the Site, with a sand pit recorded 477m to the southwest between 1875 and 1905.

By 1905, the surrounding area had begun to undergo tree planting for forestry plantations, with a large area developing 500m to the southwest of the Site. The 1969 map shows that the Site has now been planted with trees forming a plantation, with access tracks dissecting the Site through the centre, these tracks exist to the present day.

Between 1969 and 1970, two unspecified pits and two unspecified disused quarries were identified between 264m and 495m to the south and southwest of the Site.

In 2013 the Corriemoillie transmission substation, 200m to the south/southwest of the Site, was completed.

Although not shown on the Ordnance Survey Mapping, the Loch Luichart windfarm and associated access infrastructure was developed to the north-west of the Site from the early 2010's. the closest extent of this facility is located approximately 21.5km from the Site.

No further significant changes or developments have occurred within the Site or the surrounding area up to the present day.

2.4 GROUND INVESTIGATION DATA

This section provides a summary of available historical ground investigation logs relevant to the Site. There is no known historical (pre current development) ground investigation data available within the Site boundary and there are no available BGS logs on the Site or nearby.

The client has provided GDG with borehole logs from an initial ground investigation conducted across the Site in 2024 for this development. Intrusive works were completed by Aitken Laboratories Ltd. for Curtins Consulting Ltd. Ground investigation was undertaken at the Site in February and March 2024, comprising four borehole locations BH01, BH02 (redrilled as BH02A due to obstructions), BH03 (redrilled as BH03A and BH03B due to obstructions), and BH04.

Figure 2-1 shows the approximate borehole locations, and Table 2-1 summarises the available data. Borehole logs are provided in Appendix C.

Figure 2-1: Indicative Borehole Location Plan

Table 2-1: Summary of Available Ground Investigation Logs

Location ID	Strata Summary	Water Stike Summary
BH01	• Sand and Gravel with traces of peat (0.0-1.90m) • Sand and Gravel (1.90-5.70m) • Terminated due to obstruction (bedrock or boulder)	0.75m
BH02	• Made Ground – hardcore and cobbles (0.0-0.10m) • Sand and Gravel (0.10-1.50m) • Terminated due to obstruction (large cobble)	0.80m
BH02A	• Made Ground – hardcore and cobbles (0.0-0.10m) • Sand and Gravel (0.10-3.60m) • Terminated due to obstruction (bedrock or boulder)	0.80m
BH03	• Peat (0.0-0.35m) • Sand and Gravel (0.35-0.80m) • Terminated due to obstruction (boulder)	0.40m
BH03A	• Peat (0.0-0.35m) • Sand and Gravel (0.35-0.70m) • Terminated due to obstruction (boulder)	0.40m
BH03B	• Peat (0.0-0.30m) • Sand and Gravel (0.30-0.80m) • Terminated due to obstruction (boulder)	0.40m
BH04	• Topsoil (0.0-0.10m) • Sand and Gravel (0.10-0.80m) • No reason was given for termination.	0.50m

2.5 ENVIRONMENTAL DESIGNATIONS

A review of NatureScot (formerly Scottish Natural Heritage) data found 17 Designated Ancient Woodlands within 2km of the Site boundary, notably two Ancient woodland types 98m southeast and 111m east of the BESS area, and adjacent to the Site red line boundary.

2.6 PRIVATE WATER SUPPLIES

A review of the Highland Council Open Map data and a freedom of information request regarding Private Water Supplies (PWS) identified a private water supply within the Corriemoillie Substation (234788E, 863823N), classified as a commercial rainwater supply. Two further private (domestic type) water supplies are located 220m southeast of the BESS Area of the Site at Corriemoillie Lodge and Farm. The Lodge supply (235450E, 863852N) is a surface water abstraction, and the Farm supply (235461E, 863843N) is a groundwater spring. Both features are downslope of the site. It should be noted that often the exact location of the PWS is not known as the location provided is associated with the address of the registered user.

Additionally, a review of available BGS borehole records found two water well boreholes situated 213m and 232m southeast of the BESS area of the Site, which were sunk to depths of 46.5m and 60.0m, respectively. There is limited information available regarding whether these wells are extracting groundwater.

Table 2-2 summarises the available details on the private water supplies within 250m of the Site boundary.

Table 2-2: Private Water Supplies Summary

Source	Name	Source Reference	Location (easting, northing)	Source Type	Date	Depth
Highland Council	PWS Corriemoillie Lodge	29,183	235450, 863852	Surface - Watercourse	Unknown	N/A
Highland Council	PWS Corriemoillie Farm	31,287	235461, 863843	Groundwater - Spring	Unknown	Unknown
British Geological Society	TILHILL GARVE	NH36SE13	235425, 863848	Water Well	2013	60.0m
British Geological Society	TILHILL GARVE	NH36SE14	235427, 863885	Water Well	2013	46.5m

2.7 ANTICIPATED GROUND CONDITIONS

2.7.1 ARTIFICIAL GEOLOGY

Available geological mapping shows no records or details of made, infilled or disturbed ground on the Site or within 500m of the Site. When considering the Site history, it is also unlikely that extensive

artificial deposits will be found on the Site. However, there is a potential for made ground to be present along the tracks/roads.

2.7.2 SUPERFICIAL GEOLOGY

The geological mapping records a small area of peat located in the southeastern corner of the Site. The southern half/portion of the Site is underlain by alluvium, comprising a mix of clay silt, sand and/or gravels. The northern half/portion of the Site is underlain by glacial deposits, comprising diamicton, gravel, sand and/or silt.

2.7.3 SOLID GEOLOGY

Geological mapping shows the solid geology beneath the Site to solely comprise the Crom Psammite Formation. The BGS describes the unit as well-stratified psammite with subsidiary pebbly psammite and semipelite.

There do not appear to be any observed or inferred linear features within the bedrock.

2.7.4 GEOLOGICAL HAZARDS

The Groundsure report includes information from the BGS on potential hazards associated with ground conditions, which have been summarised for the Site, as shown in the following Table 2-3. This indicates generally very low risks, with the exception of Natural Ground Subsidence – Compressible Deposits, of which a small area of the Site in the south east was classified as High associated with peat deposits. It is noted that although only limited evidence of peat has been identified on site to date (traces in BH01, 0.35m at surface in BH03 and redrills), investigation has not extended into this location. The BGS data refenced in the Groundsure report classifies the rest of the Site as either Moderate or Negligible risk.

Full details are provided in the appended Groundsure report (Appendix B).

Table 2-3: Geological Hazard

Hazard	Highest Risk Rating	Details	Location
Shrink Swell Clays	Very Low	Ground conditions predominantly low plasticity.	Entire Site.
Natural Ground Subsidence – Running Sands	Low	Running sand conditions may be present. Constraints may apply to land uses involving excavation or the addition or removal of water.	The southern half of the Site (where the alluvium deposits are recorded).
Natural Ground Subsidence – Compressible Deposits	High	Highly compressible strata present. Significant constraint on land use depending on thickness.	The very southeastern corner of the Site, associated with the peat deposits. In the southern half of the Site (where the alluvium deposits are recorded) the risk is Moderate, and the northern half of the Site is considered to be Negligible.
Natural Ground Subsidence – Collapsible Deposits	Very Low	Deposits with the potential to collapse when loaded and saturated are unlikely to be present.	The northern half of the Site (where the glacial deposits are recorded).

Hazard	Highest Risk Rating	Details	Location
Natural Ground Subsidence – Landslide	Low	Slope instability problems may be present or anticipated. Site investigation should consider specifically the slope stability of the site.	The southern half of the Site (where the alluvium deposits are recorded), is associated with steeper slopes.
Natural Ground Subsidence – Ground dissolution of soluble rocks	Negligible	Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.	Entire Site

2.7.5 MINING

The Site is not located within a Coal Mining Reporting Area, as outlined by the Coal Authority.

There is no evidence of mining within the Site, however, a review of the Site identified localised unspecified pitting and quarrying during the late 1800s to the mid-1900s in the surrounding areas. A review of the BGS data found one 'Brit Pit' 138m southwest of the Site boundary, the pit was mining for igneous and metamorphic rock and has now ceased operation.

Mining is not considered to be a significant risk to the stability of the Site.

2.7.6 HYDROLOGY

A review of the OS MasterMap Water Network identified two unnamed watercourses on or within the Site boundary. One of these is a drainage ditch that flows south along the western side of the Site, which then converges into the burn that flows along the southern boundary (the other unnamed watercourse).

During the Site walkover unmapped drainage ditches were observed along the northern fence line and other ditches throughout the forested areas. A small standing body of water was observed on the northern boundary in a dip where material had been excavated.

Not including the two water bodies mapped as within the site, the Groundsure Report identified 21 watercourse features within 250m of the Site boundary including further drainage ditches to the east and a larger river, Allt Coire Mhuilidh located on the eastern planning boundary (106m to the east of the BESS area of the Site) which flows into Loch Luichart 1.3km to the south.

Review of the Scottish Environment Protection Agency (SEPA) Water Environment Hub indicates that Allt Coire Mhuilidh river has been designated as a heavily modified water body on account of physical alterations that cannot be addressed without a significant impact on water storage for hydroelectricity generation. The overall status in 2022 was classified as Moderate ecological potential. Additionally, as of 2022, Loch Luichart was classified as Good ecological potential.

2.7.7 HYDROGEOLOGY

The Hydrogeological Map of Scotland from the BGS indicates that there is not expected to be a superficial aquifer underlying the Site. The bedrock aquifer beneath the entire Site is the Morar Group unit, which is a low-productivity aquifer. Groundwater flow in this aquifer occurs almost entirely

through fractures and other discontinuities, with small amounts present in the near-surface weathered zone and secondary fractures.

It is noted that a historical ground investigation at the Corriemoillie Substation, located 200m southeast of the Site, encountered shallow groundwater strikes between 0.40 and 0.80m below ground level (bgl).

The SEPA Environment Hub classifies the Morar Group, also known as the Northern Highlands, groundwater body as having an over status of Good in 2022.

2.7.8 RADON

A review of the Radon Map of Scotland, published by the UK Health Security Agency, indicates that the Site is not located within a Radon Affected Area, as less than 1% of properties exceed the Action Level.

2.7.9 UNEXPLODED ORDNANCE

A preliminary assessment of Unexploded Ordnance (UXO) risk has been made on the Site history and a review of online maps supplied by Zetica UXO. The risks associated with unexploded ordnance are considered to be Low, no further risk assessment is required.

3 INITIAL CONCEPTUAL SITE MODEL

3.1 GENERAL

Central to the assessment of potentially Contaminated Land, as defined in the 1990 Environmental Protection Act, is the concept of a Significant Pollutant Linkage, i.e. a significant connection between the source of contamination and a sensitive receptor via an appropriate environmental pathway. The degree of significance of a pollutant linkage depends on several factors including the hazardous nature of the source, the type of pathway (such as dermal contact with contaminants in soils), and the sensitivity of the receptor. The first step towards understanding potential pollutant linkages at a site is through the development of an Initial Conceptual Model.

A conceptual model is defined in BS10175 as: *"characteristics of a site that are relevant to the occurrence and potential effects of ground contamination that describe the nature and sources of contamination; the ground, groundwater, surface water, ground gases and volatile organic compounds (VOC) that could be present; the environmental setting; potential migration pathways; and potential receptors...presented in a tabular, textual and/or diagrammatic form".*

3.2 SOURCES

Having reviewed and considered relevant historical features and environmental data, their proximity to the study Site, the local topography and likely surface and groundwater flow direction, the following source(s) of potential contamination will be considered within the Initial Conceptual Site Model.

Table 3-1: Potential Historical Contamination Sources

Source	Description	Distance
1	Localised made ground, associated with the wider forestry plantation	**On-Site** (Site-wide)
2	Ground gas associated with historical quarrying and pitting and the potential infilled ground.	**Off-Site** (within 500m of the Site boundary)

3.3 POTENTIAL CONTAMINATION RECEPTORS

'Receptors' as defined in BS10175 "persons, living organisms, ecological systems, controlled waters, atmosphere, structures and utilities that could be adversely affected by the contaminant(s)". Potential receptors at the Site are discussed below.

3.3.1 HUMAN HEALTH

The study area comprises predominantly rural forestry plantations, and the Site is proposed for a BESS and associated infrastructure. The proposed development is of a low sensitivity; however, construction workers and future maintenance staff are considered to be potential receptors.

3.3.2 SURFACE WATER

Within the study area, two unnamed recorded watercourses feed into the larger Allt Coire Mhuilidh located 106m to the southeast of the Site, which ultimately discharges into Loch Luichart 1.3km to the

south. Additionally, within 250m of the Site boundary 21 other watercourses have been identified. One surface water private water supply was identified.

The watercourses, surface water features and private water supply identified on the site and in proximity are considered to be potential surface water receptors.

3.3.3 GROUNDWATER

The study area is underlain by the Low productivity bedrock aquifer in the Morar Group Unit, the groundwater is often found in the near-surface weathered zone and secondary fractures. Additionally, three potential groundwater abstraction borehole locations were identified as private water supplies within 250m of the Site boundary, without more information on the abstraction they have the potential to be impacted by site activities.

Therefore, groundwater is considered to be a potential receptor, along with any downstream/off-site groundwater fed water supplies or groundwater dependant habitats.

3.3.4 FAUNA AND VEGETATION (ECOLOGY)

No ecological receptors of particular sensitivity likely to be affected by the Site were identified during the desk study research. A groundwater dependant terrestrial ecosystem (GWDTE) study completed by Fluid Environmental Consultants did not identify any on-site GWDTE but does not rule out the presence of such habitats in the wider area.

3.3.5 BUILT ENVIRONMENT

Other than access tracks and forestry, the Site is currently undeveloped. The proposed development includes the construction of buildings and structures, and will likely require earthworks, the use of concrete and the installation of utility infrastructure. Therefore, the built environment is considered to be a potential receptor.

3.4 RISK ASSESSMENT

The following assessment is qualitative, in that professional value judgments have been applied to the available Site data to assess levels of risk. The framework for these assessments is set out in CIRIA C552, “Contaminated Land Risk Assessment, A Guide to Good Practice”. This guidance states that the assessment of risk should be based on both the likelihood of an event and the severity of its potential consequences.

One of the following six risk levels has been assigned to each potential pollutant linkage identified: Very Low, Low, Low/Moderate, Moderate, High and Very High. A risk of Low/Moderate or above indicates that further assessment, investigation or possibly remediation will be required. The following Table 3-2 summarises the potential pollutant linkages and respective qualitative risks.

Table 3-2: Initial Conceptual Site Model

Source	Receptors (with respective pathways)	Risk	
		Current Use	Future Use
1. Localised made ground, associated with the wider forestry plantation (On-Site)	Human Health (dermal contact, soil/dust ingestion/inhalation)	**Very Low**	**Low**
	Human Health (inhalation of vapours and ground gases)	**Very Low**	**Low**
	Groundwater (leaching and migration) including to associate private water supplies (substation site and properties down-gradient to south east)	**Low**	**Low**
	Surface Water (surface runoff, leaching and migration)	**Low**	**Low**
	Buildings and Structures (migration of ground gas/vapour)	**Very Low**	**Low**
	Buildings and Structures (direct contact, permeation)	**Very Low**	**Low**
2. Ground gas associated with historical quarrying and pitting and the potential infilled ground (Off Site within 500m of the Site boundary)	Human Health (inhalation of vapours and ground gases following accumulation within buildings)	**Very Low**	**Low**
	Buildings and Structures (migration and accumulation of ground gases and vapours)	**Low**	**Low**

In summary, the risk associated with contamination at the site is generally Low, considering the low likelihood of significant contamination sources, and the low sensitivity of the proposed development.

4 CONCLUSIONS AND RECOMMENDATIONS

4.1 CONCLUSIONS

The purpose of this Geoenvironmental and Geotechnical Desk Study is to assess potential contamination and geotechnical constraints to the Site and provide outline recommendations for additional investigative works required to address any areas of uncertainty.

A review of the available data, detailed within this report, have identified a low likelihood of significant contamination associated with the historical use of the Site and the surrounding area, although there is the potential for contamination associated with the forestry plantation on-site, and the mining and pitting in the wider area. Potential geotechnical and environmental constraints associated with Private Water Supplies have been identified.

4.1.1 ENVIRONMENTAL PROTECTION ACT (1990), PART IIA

Considering the current use of the Site and the historical use of the Site, the risk associated with the Site is considered to be Low and it is considered unlikely that the Site would constitute Contaminated Land, as defined in Part IIa of the Environmental Protection Act.

4.1.2 PROPOSED USE (PAN 33)

The proposed BESS development is considered to be of low sensitivity. Considering this, and the absence of a likely significant contamination source, the risk associated with this future use has also been categorised as **Low**. Notwithstanding this, some confirmatory investigation is recommended to confirm the findings of this study.

4.1.3 GEOTECHNICAL

The review of the desk study information indicates that the Site generally comprises a sloping forestry plantation underlain by psammite bedrock, natural soils and topsoil of unspecified thickness. Although details of the proposed development are not fully developed, the following potential geotechnical constraints have been identified that require further consideration and potentially intrusive Site investigation.

- Unconfirmed thickness and geotechnical properties of the superficial natural soils and bedrock, particularly the presence of soft alluvial soils and peat in the south of the site.
- The potential presence of shallow groundwater beneath the Site within the shallow soils or bedrock aquifer.
- The potential for localised made ground soils to be chemically aggressive towards buried concrete or pipework.

4.2 RECOMMENDATIONS

Limited initial ground investigation has been undertaken at the Site to date. It is considered that the risks associated with the Site are sufficiently understood for the current use, however, to inform the design and development of the Site for the proposed BESS site, it is recommended that further intrusive works are undertaken to characterise the ground conditions for the following key purposes:

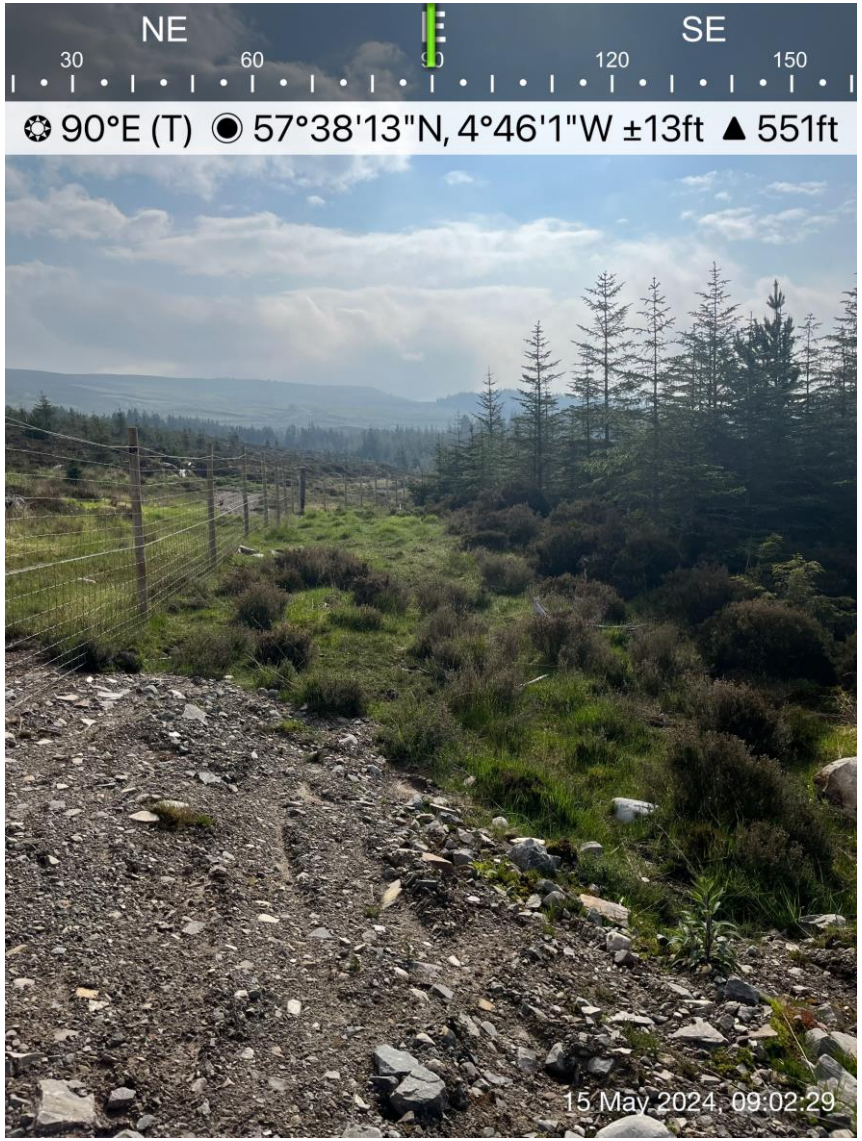
- To investigate the depth, nature, and extent of superficial soils, bedrock and made ground.
- To establish the depth of competent stratum across the Site.
- To assess the groundwater conditions beneath the Site.
- To provide confirmation of the chemical nature of the soils and groundwater across the Site, with respect to potential human health and the water environment risks.
- To assess the potential risk from ground gases.

Subject to the design of a detailed Site investigation, it is considered that the following works will be required:

- ***Trial pitting*** across the Site to characterise any made ground and underlying drift deposits and permit recovery of soil samples for subsequent chemical and geotechnical analysis.
- Drilling of ***boreholes*** across the Site targeting locations associated with infrastructure, to characterise the underlying superficial deposits and depth to a suitable founding stratum, permit recovery of soil samples for geoenvironmental and geotechnical analysis and allow installation of combined gas/groundwater monitoring wells.
- ***Percolation/infiltration tests*** in any areas identified by the developer for potential attenuation/infiltration drainage features to characterise the drainage capabilities of the superficial soils, noting that the potential is considered to be low given the site topography and evidence of surface drainage features.
- ***Chemical analysis*** of the soils and groundwater to assess the potential risk to human health, water environment, and buildings/structures.
- ***Geotechnical testing*** of the soils to obtain geotechnical design parameters (including the aggressivity of the underlying deposits toward buried concrete) for foundation/piling design, and for earthworks design.
- ***Gas and groundwater level monitoring*** of borehole installations and possibly collection of groundwater samples, if present, for subsequent chemical analysis.
- ***Consultation with local landowners to identify the exact location and level of the private water supplies*** to further assess the potential risk associated with development of the Site.

APPENDIX A – SITE WALKOVER 15/05/2024

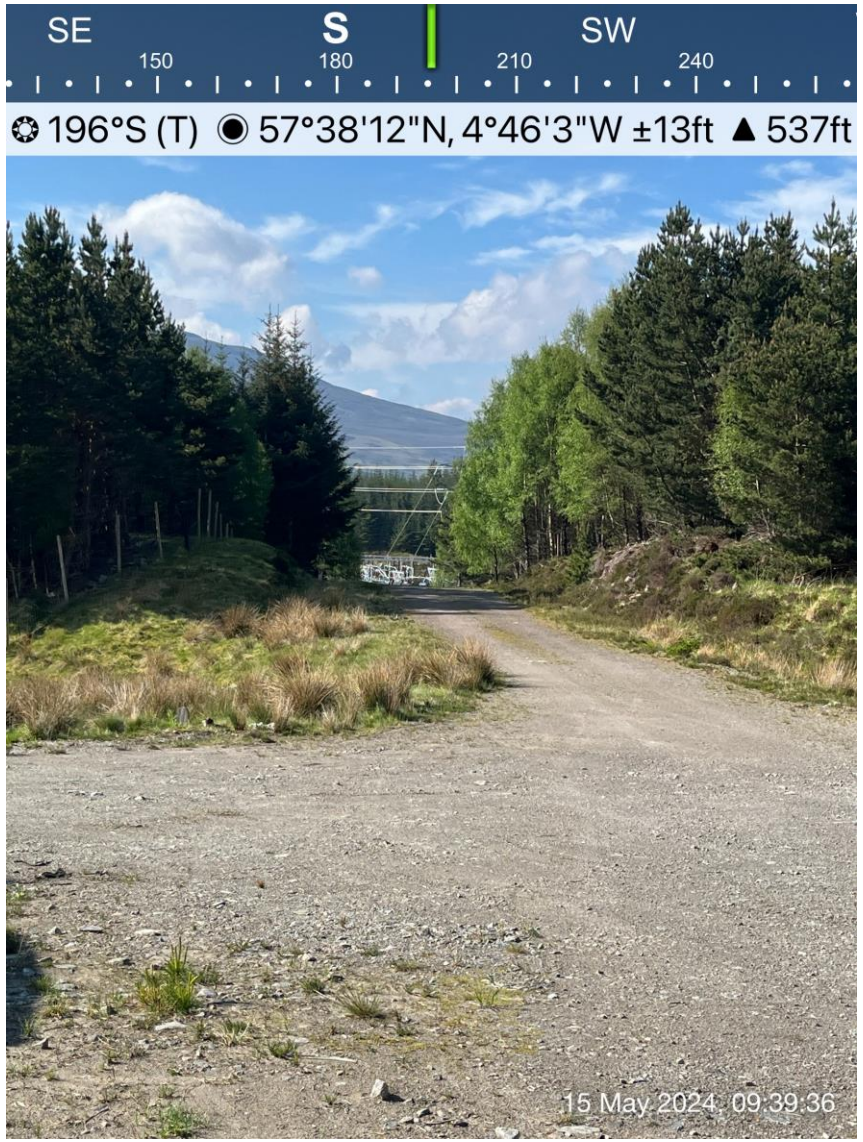
Photograph 1: View west along the northern boundary fence line



Photograph 2: View east from the northern boundary fence

Photograph 3: View north from the northern boundary towards standing water

Photograph 4: A Site overview looking south from the northeastern corner of the Site



Photograph 5: View south along the western boundary towards the Corriemoillie Substation

Photograph 6: A Site overview looking south from the northern boundary

Photograph 7: View north along an access track within the Site

Photograph 8: View southwest towards an exposed eroded bank within the Site

Photograph 9: View north from the Site entrance of the old caravans, yellow mobile office

APPENDIX B – GROUNDSURE REPORT

Groundsure LOCATION INTELLIGENCE

Enviro+Geo Insight

Corriemoillie BESS

Order Details

Date: 28/05/2024

Your ref: 24091/CM/01

Our Ref: GS-A82-C5Y-DGY-C5W

Site Details

Location: 235060 864086

Area: 5.33 ha

Authority: The Highland Council ↗

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

Certified B Corporation

Summary of findings

Page	Section	Past land use >	On site	0-50m	50-250m	250-500m	500-2000m
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14	1.3	Historical energy features	0	0	0	0	-
14	1.4	Historical petrol stations	0	0	0	0	-
15	1.5	Historical garages	0	0	0	0	-
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Page	Section	Past land use - un-grouped >	On site	0-50m	50-250m	250-500m	500-2000m
16 >	2.1 >	Historical industrial land uses >	0	0	0	6	-
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Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
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18	3.2	Historical landfill (BGS records)	0	0	0	0	-
18	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
18	3.4	Licensed waste sites	0	0	0	0	-
18	3.5	Historical waste sites	0	0	0	0	-
Page	Section	Current industrial land use >	On site	0-50m	50-250m	250-500m	500-2000m
19 >	4.1 >	Recent industrial land uses >	0	0	3	-	-
20	4.2	Current or recent petrol stations	0	0	0	0	-
20	4.3	Electricity cables	0	0	0	0	-
20	4.4	Gas pipelines	0	0	0	0	-
20	4.5	Sites determined as Contaminated Land	0	0	0	0	-
20	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
21	4.7	Regulated explosive sites	0	0	0	0	-

21	4.8	Hazardous substance storage/usage	0	0	0	0	-
21	4.9	Part A(1), IPPC and Historic IPC Authorisations	0	0	0	0	-
21	4.10	Part B Authorisations	0	0	0	0	-
21	4.11	Pollution inventory substances	0	0	0	0	-
22	4.12	Pollution inventory waste transfers	0	0	0	0	-
22	4.13	Pollution inventory radioactive waste	0	0	0	0	-
Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
23	5.1	Superficial aquifer	None (within 500m)				
24 >	5.2 >	Bedrock aquifer >	Identified (within 500m)				
Page	Section	Hydrology >	On site	0-50m	50-250m	250-500m	500-2000m
26 >	6.1 >	Water Network (OS MasterMap) >	5	2	16	-	-
28 >	6.2 >	Surface water features >	1	1	10	-	-
Page	Section	River flooding >					
29 >	7.1 >	River flooding >	1 in 30 year, 0.3m - 1.0m (within 50m)				
Page	Section	Coastal flooding					
31	8.1	Coastal flooding	Negligible (within 50m)				
Page	Section	Surface water flooding >					
32 >	9.1 >	Surface water flooding >	1 in 30 year, Greater than 1.0m (within 50m)				
Page	Section	Groundwater flooding >					
34 >	10.1 >	Groundwater flooding >	Low (within 50m)				
Page	Section	Environmental designations >	On site	0-50m	50-250m	250-500m	500-2000m
35	11.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
36	11.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
36	11.3	Special Areas of Conservation (SAC)	0	0	0	0	0
36 >	11.4 >	Special Protection Areas (SPA) >	0	0	0	0	1
37	11.5	National Nature Reserves (NNR)	0	0	0	0	0
37	11.6	Local Nature Reserves (LNR)	0	0	0	0	0
37 >	11.7 >	Designated Ancient Woodland >	0	0	2	0	15
38 >	11.8 >	Biosphere Reserves >	1	0	0	0	0

38	11.9	Forest Parks	0	0	0	0	0
39	11.10	Marine Conservation Zones	0	0	0	0	0
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
40	12.1	World Heritage Sites	0	0	0	-	-
40	12.2	Area of Outstanding Natural Beauty	0	0	0	-	-
40	12.3	National Parks	0	0	0	-	-
40	12.4	Listed Buildings	0	0	0	-	-
41	12.5	Conservation Areas	0	0	0	-	-
41	12.6	Scheduled Ancient Monuments	0	0	0	-	-
41	12.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	**Agricultural designations >**	On site	0-50m	50-250m	250-500m	500-2000m
42 >	**13.1 >**	**Agricultural Land Classification >**	Grade 5.1 (within 250m)				
Page	Section	**Geology 1:10,000 scale >**	On site	0-50m	50-250m	250-500m	500-2000m
43 >	**14.1 >**	**10k Availability >**	Identified (within 500m)				
44	14.2	Artificial and made ground (10k)	0	0	0	0	-
45	14.3	Superficial geology (10k)	0	0	0	0	-
45	14.4	Landslip (10k)	0	0	0	0	-
46	14.5	Bedrock geology (10k)	0	0	0	0	-
46	14.6	Bedrock faults and other linear features (10k)	0	0	0	0	-
Page	Section	**Geology 1:50,000 scale >**	On site	0-50m	50-250m	250-500m	500-2000m
47 >	**15.1 >**	**50k Availability >**	Identified (within 500m)				
48	15.2	Artificial and made ground (50k)	0	0	0	0	-
48	15.3	Artificial ground permeability (50k)	0	0	-	-	-
49 >	**15.4 >**	**Superficial geology (50k) >**	3	0	0	0	-
50 >	**15.5 >**	**Superficial permeability (50k) >**	Identified (within 50m)				
50	15.6	Landslip (50k)	0	0	0	0	-
50	15.7	Landslip permeability (50k)	None (within 50m)				
51 >	**15.8 >**	**Bedrock geology (50k) >**	1	0	0	1	-
52 >	**15.9 >**	**Bedrock permeability (50k) >**	Identified (within 50m)				

52	15.10	Bedrock faults and other linear features (50k)	0	0	0	0	-
Page	Section	**Boreholes >**	On site	0-50m	50-250m	250-500m	500-2000m
53 >	**16.1 >**	**BGS Boreholes >**	0	0	2	-	-
Page	Section	**Natural ground subsidence >**					
55 >	**17.1 >**	**Shrink swell clays >**	Very low (within 50m)				
56 >	**17.2 >**	**Running sands >**	Low (within 50m)				
58 >	**17.3 >**	**Compressible deposits >**	High (within 50m)				
60 >	**17.4 >**	**Collapsible deposits >**	Very low (within 50m)				
61 >	**17.5 >**	**Landslides >**	Low (within 50m)				
63 >	**17.6 >**	**Ground dissolution of soluble rocks >**	Negligible (within 50m)				
Page	Section	**Mining and ground workings >**	On site	0-50m	50-250m	250-500m	500-2000m
65 >	**18.1 >**	**BritPits >**	0	0	1	0	-
66	18.2	Surface ground workings	0	0	0	-	-
66	18.3	Underground workings	0	0	0	0	0
66	18.4	Underground mining extents	0	0	0	0	-
66	18.5	Historical Mineral Planning Areas	0	0	0	0	-
67 >	**18.6 >**	**Non-coal mining >**	0	0	0	0	2
67	18.7	JPB mining areas	None (within 0m)				
67	18.8	The Coal Authority non-coal mining	0	0	0	0	-
68	18.9	Researched mining	0	0	0	0	-
68	18.10	Mining record office plans	0	0	0	0	-
68	18.11	BGS mine plans	0	0	0	0	-
68	18.12	Coal mining	None (within 0m)				
68	18.13	Brine areas	None (within 0m)				
69	18.14	Gypsum areas	None (within 0m)				
69	18.15	Tin mining	None (within 0m)				
69	18.16	Clay mining	None (within 0m)				
Page	Section	Ground cavities and sinkholes	On site	0-50m	50-250m	250-500m	500-2000m
70	19.1	Natural cavities	0	0	0	0	-

70	19.2	Mining cavities	0	0	0	0	0
70	19.3	Reported recent incidents	0	0	0	0	-
70	19.4	Historical incidents	0	0	0	0	-
71	19.5	National karst database	0	0	0	0	-
Page	Section	**Radon** >					
72 >	**20.1** >	**Radon** >	Less than 1% (within 0m)				
Page	Section	**Soil chemistry** >	On site	0-50m	50-250m	250-500m	500-2000m
74 >	**21.1** >	**BGS Estimated Background Soil Chemistry** >	7	2	-	-	-
74	21.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
75	21.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
76	22.1	Underground railways (London)	0	0	0	-	-
76	22.2	Underground railways (Non-London)	0	0	0	-	-
76	22.3	Railway tunnels	0	0	0	-	-
76	22.4	Historical railway and tunnel features	0	0	0	-	-
76	22.5	Royal Mail tunnels	0	0	0	-	-
77	22.6	Historical railways	0	0	0	-	-
77	22.7	Railways	0	0	0	-	-
77	22.8	Crossrail 1	0	0	0	0	-
77	22.9	Crossrail 2	0	0	0	0	-
77	22.10	HS2	0	0	0	0	-

Recent aerial photograph

Capture Date: 02/07/2021

Site Area: 5.33ha

Recent site history - 2018 aerial photograph

Capture Date: 27/06/2018

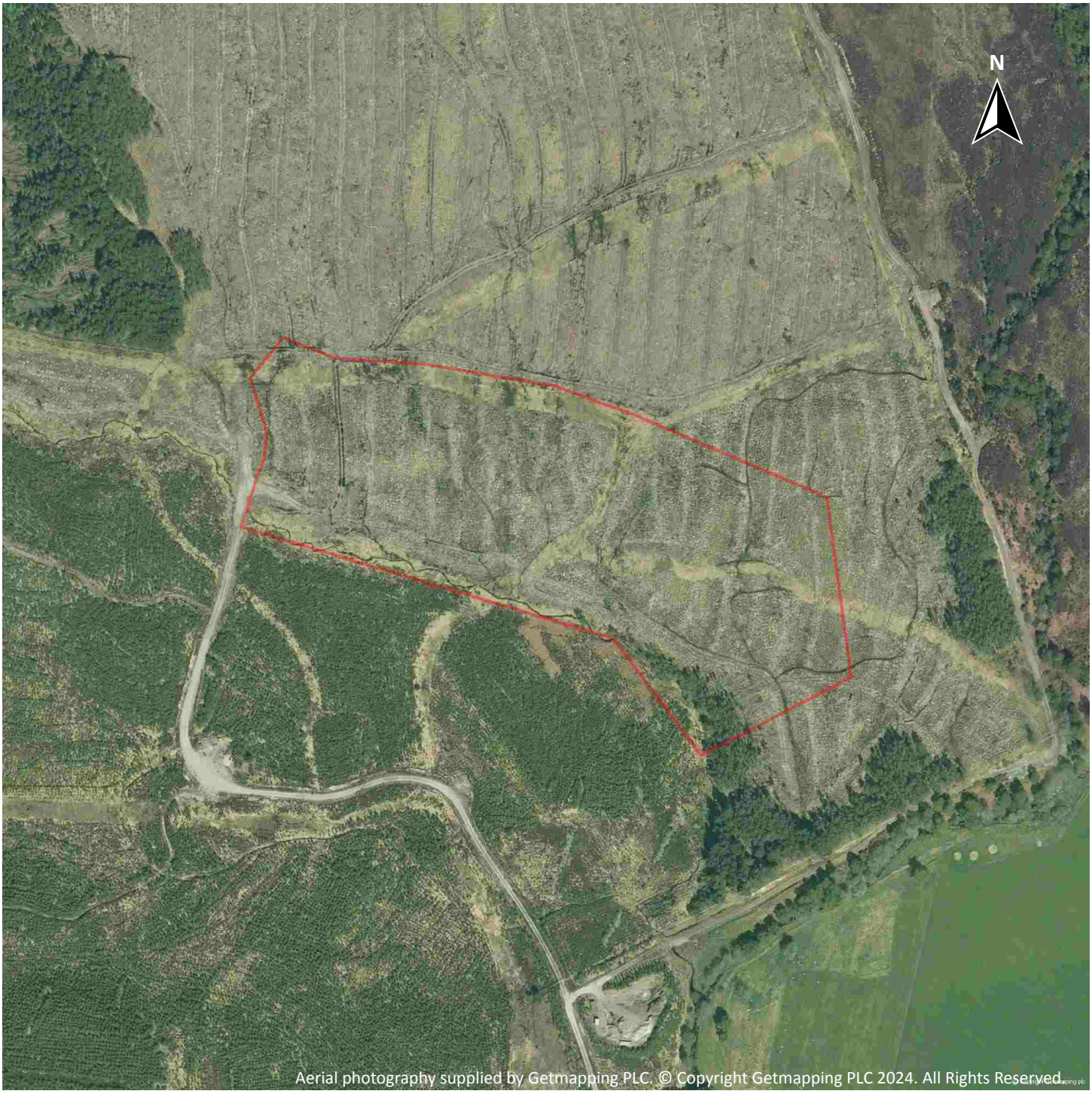
Site Area: 5.33ha

Recent site history - 2014 aerial photograph

Capture Date: 27/08/2014

Site Area: 5.33ha

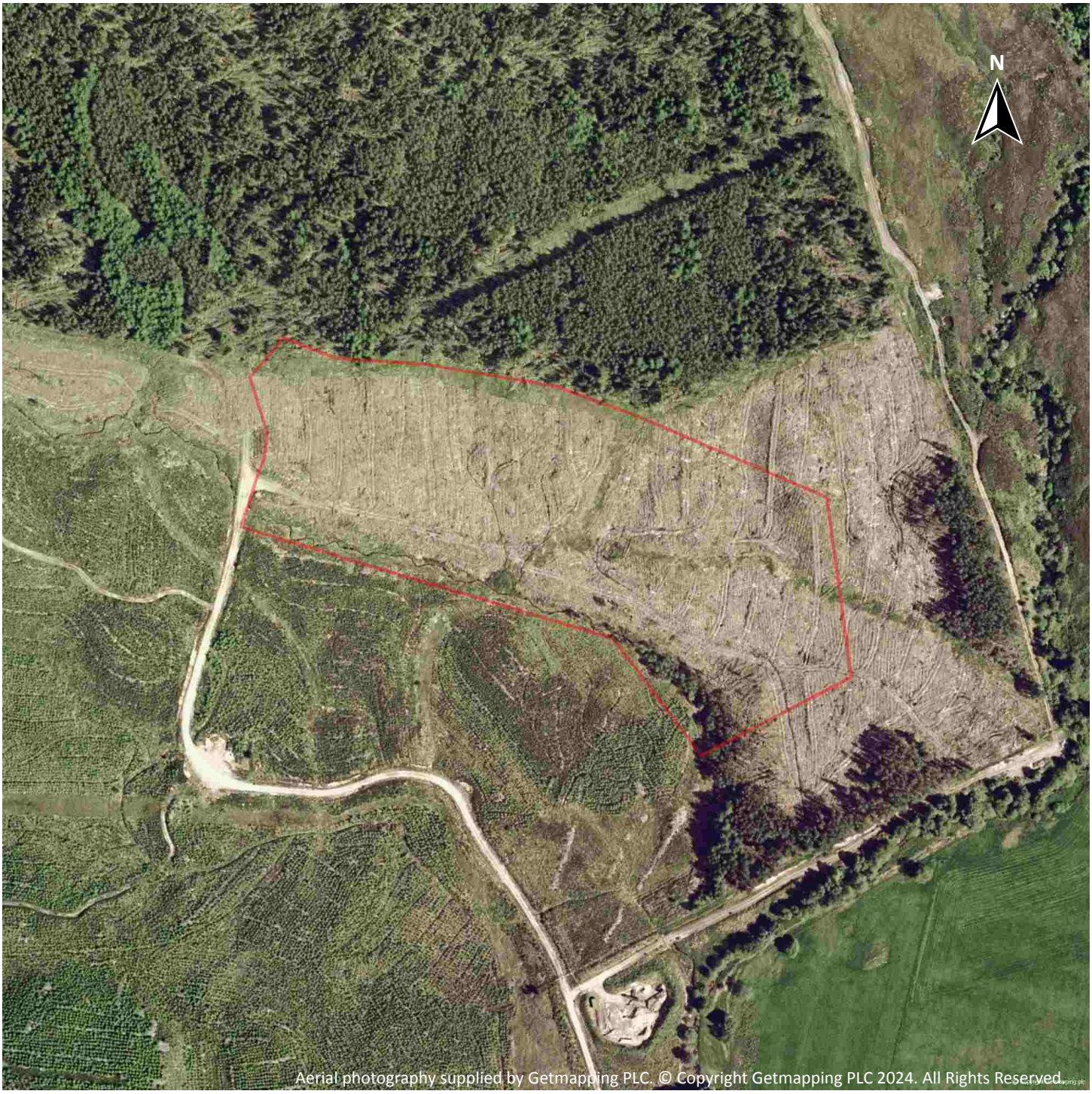
Recent site history - 2009 aerial photograph



Capture Date: 13/05/2009

Site Area: 5.33ha

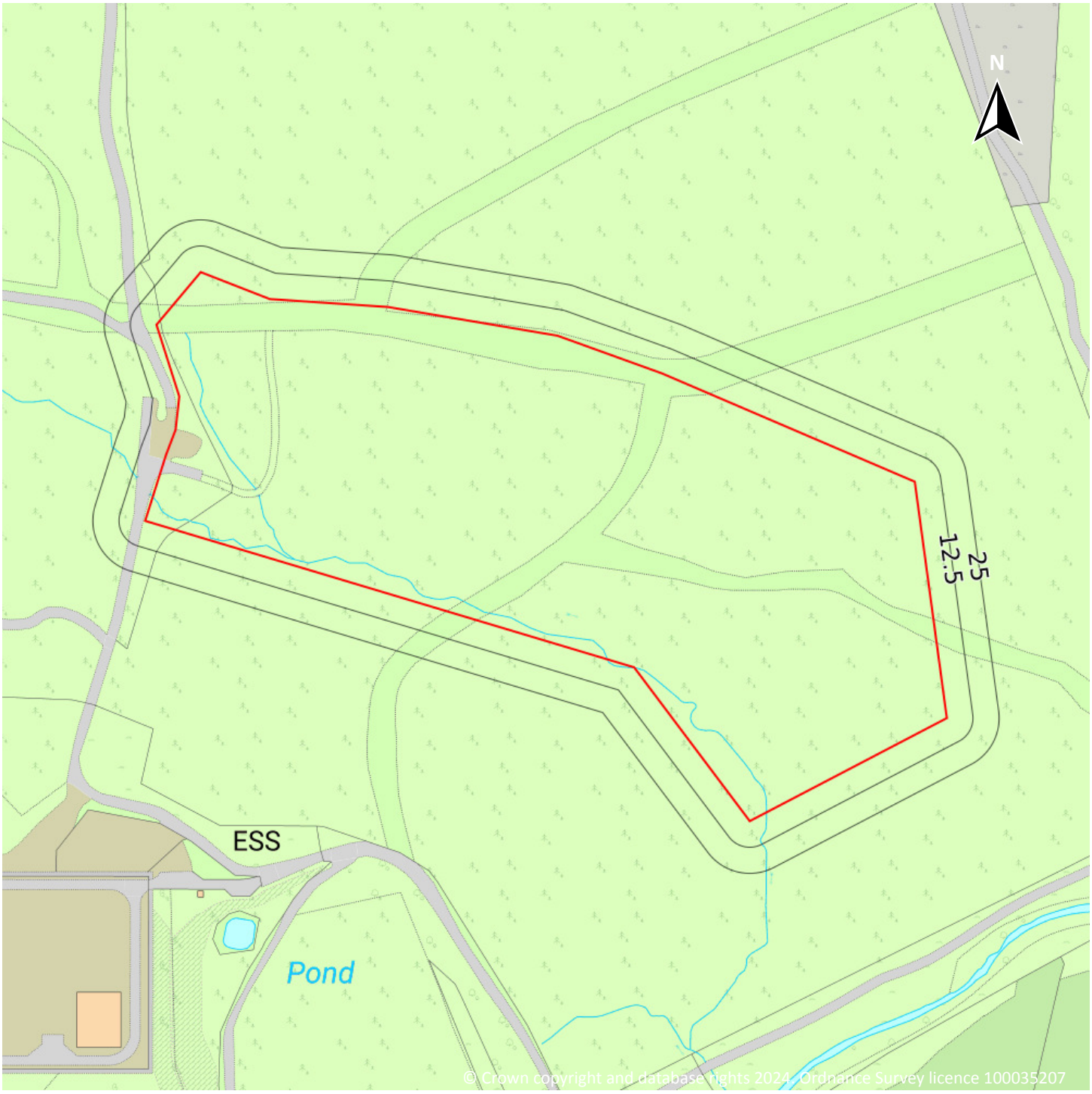
Recent site history - 2006 aerial photograph



Capture Date: 28/06/2006

Site Area: 5.33ha

OS MasterMap site plan



Site Area: 5.33ha

1 Past land use

Site Outline

Search buffers in metres (m)

Historical industrial land uses

1.1 Historical industrial land uses

Records within 500m	5

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

Features are displayed on the Past land use map on **page 13 >**

ID	Location	Land use	Dates present	Group ID
1	264m S	Unspecified Pit	1969	65243

ID	Location	Land use	Dates present	Group ID
2	328m S	Unspecified Pit	1969	65244
3	475m SW	Unspecified Disused Quarries	1970	65109
A	477m SW	Sand Pits	1875 - 1905	68218
A	495m SW	Unspecified Disused Quarries	1970	65108

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	0

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

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	0

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

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m	0

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

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m	0

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

This data is sourced from Ordnance Survey / Groundsure.

1.6 Historical military land

Records within 500m	0

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

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

2 Past land use - un-grouped

Site Outline

Search buffers in metres (m)

Historical industrial land uses

2.1 Historical industrial land uses

Records within 500m	6

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

Features are displayed on the Past land use - un-grouped map on **page 16 >**

ID	Location	Land Use	Date	Group ID
1	264m S	Unspecified Pit	1969	65243
2	328m S	Unspecified Pit	1969	65244
3	475m SW	Unspecified Disused Quarries	1970	65109

ID	Location	Land Use	Date	Group ID
A	477m SW	Sand Pits	1905	68218
A	484m SW	Sand Pits	1875	68218
A	495m SW	Unspecified Disused Quarries	1970	65108

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	0

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

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	0

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

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m	0

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

This data is sourced from Ordnance Survey / Groundsure.

2.5 Historical garages

Records within 500m	0

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

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill

3.1 Active or recent landfill

Records within 500m	0

Active or recently closed landfill sites under Scottish Environment Protection (SEPA) regulation.

This data is sourced from the Scottish Environment Protection Agency.

3.2 Historical landfill (BGS records)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

3.3 Historical landfill (LA/mapping records)

Records within 500m	0

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

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

3.4 Licensed waste sites

Records within 500m	0

Active or recently closed waste sites under Scottish Environment Protection Acency (SEPA) regulation.

This data is sourced from the Scottish Environment Protection Agency.

3.5 Historical waste sites

Records within 500m	0

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

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

4 Current industrial land use

Site Outline

Search buffers in metres (m)

Recent industrial land uses

4.1 Recent industrial land uses

Records within 250m	3

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 19 >**

ID	Location	Company	Address	Activity	Category
1	163m SW	Electricity Sub Station	Ross and Cromarty, IV23	Electrical Features	Infrastructure and Facilities
2	172m S	Workings	Ross and Cromarty, IV23	Unspecified Quarries Or Mines	Extractive Industries
3	228m SW	Electricity Sub Station	Ross and Cromarty, IV23	Electrical Features	Infrastructure and Facilities

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m	0

Open, closed, under development and obsolete petrol stations.

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m	0

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m	0

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m	0

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

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m	0

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

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m	0

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

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m	0

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

This data is sourced from Local Authority records.

4.9 Part A(1), IPPC and Historic IPC Authorisations

Records within 500m	0

Records of Part A installations regulated for the release of substances to the environment.

This data is sourced from the Scottish Environment Protection Agency.

4.10 Part B Authorisations

Records within 500m	0

Records of Part B installations regulated for the release of substances to the environment.

This data is sourced from the Scottish Environment Protection Agency.

4.11 Pollution inventory substances

Records within 500m	0

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

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

4.12 Pollution inventory waste transfers

Records within 500m	0

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

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

4.13 Pollution inventory radioactive waste

Records within 500m	0

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

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

5 Hydrogeology - Superficial aquifer

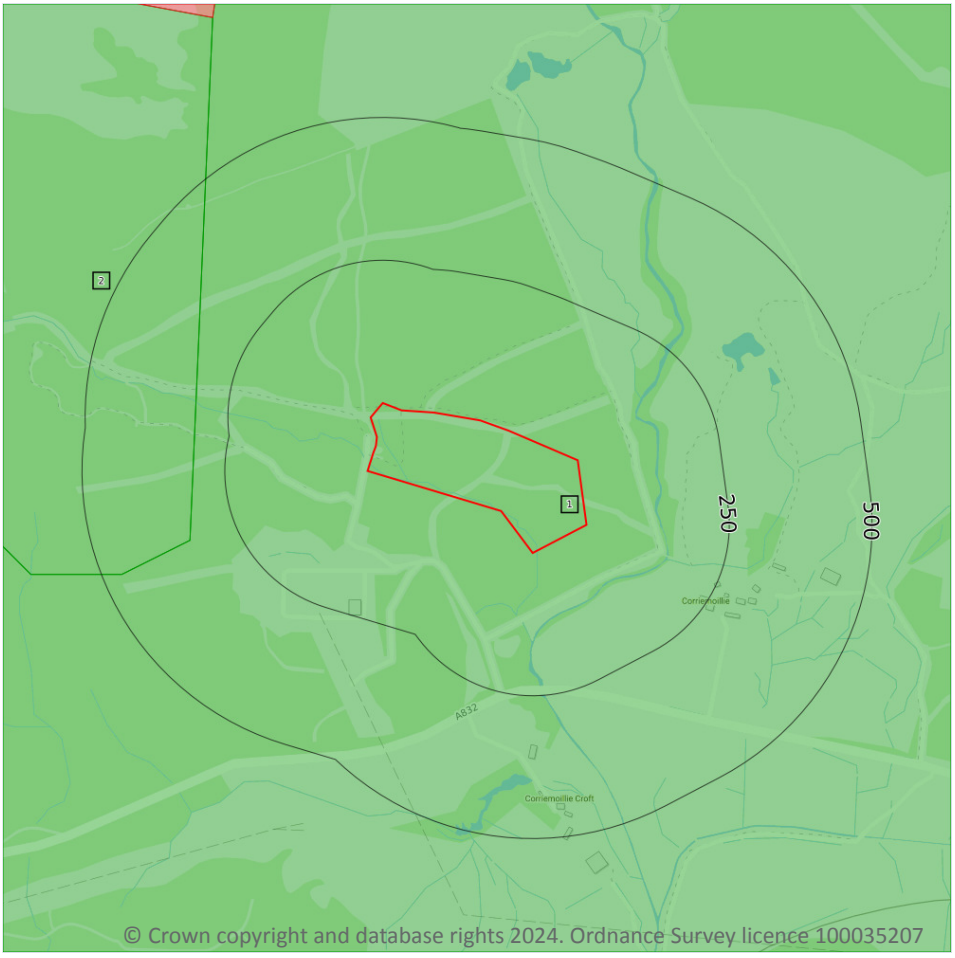
5.1 Superficial aquifer

Records within 500m	0

Records of groundwater classification within superficial geology.

This data is sourced from the British Geological Survey.

Bedrock aquifer



Site Outline

Search buffers in metres (m)

- Highly productive - fissures/discontinuities
- Highly productive - intergranular
- Moderately productive - fissures/discontinuities
- Moderately productive - intergranular
- Low productive - fissures/discontinuities
- Low productive - intergranular
- No significant groundwater

5.2 Bedrock aquifer

Records within 500m **2**

Records of groundwater classification within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 24 >**

ID	Location	Description	Flow	Summary	Rock description
1	**On site**	**Low productivity aquifer**	**Flow is virtually all through fractures and other discontinuities**	**Small amounts of groundwater in near surface weathered zone and secondary fractures.**	**MORAR GROUP**
2	305m W	Low productivity aquifer	Flow is virtually all through fractures and other discontinuities	Small amounts of groundwater in near surface weathered zone and secondary fractures.	UNNAMED IGNEOUS INTRUSION, NEOPROTEROZOIC

This data is sourced from the British Geological Survey.

6 Hydrology

Site Outline

Search buffers in metres (m)

Water Network (OS MasterMap)

Surface water features (wider than 5m)

Surface water features (narrower than 5m)

6.1 Water Network (OS MasterMap)

Records within 250m	23

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

Features are displayed on the Hydrology map on **page 26 >**

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

ID	Location	Type of water feature	Ground level	Permanence	Name
B	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
B	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
B	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
B	**On site**	**Inland river not influenced by normal tidal action.**	**Underground**	**Watercourse contains water year round (in normal circumstances)**	**-**
B	1m W	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
C	10m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
D	101m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
2	106m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Allt Coire Mhuilidh
E	113m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
3	124m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Allt Coire Mhuilidh
E	147m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
G	151m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Allt Coire Mhuilidh
G	152m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Allt Coire Mhuilidh

ID	Location	Type of water feature	Ground level	Permanence	Name
G	152m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
H	155m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
4	156m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Allt Coire Mhuilidh
F	157m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Allt Coire Mhuilidh
I	176m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
G	194m SE	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
J	198m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
I	201m SW	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
I	209m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m	**12**

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

Features are displayed on the Hydrology map on **page 26 >**

This data is sourced from the Ordnance Survey.

7 River flooding

Site Outline
Search buffers in metres (m)

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

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

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

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

7.1 River flooding

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

This is an assessment of flood risk for rivers in Scotland produced using modelled data, provided by Ambiental Risk Analytics. It also takes account of flood defence information provided by the Scottish Environment Protection Agency (SEPA). It shows the chance of flooding from rivers presented in the following categories:

- 1 in 30 year (3.33%)
- 1 in 100 year (1%)

- 1 in 250 year (0.4%)
- and 1 in 1,000 year (0.1%)

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

Features are displayed on the River flooding map on **page 29 >**

Return period	Maximum modelled depth
1 in 1000 year	Between 0.3m and 1.0m
1 in 250 year	Between 0.3m and 1.0m
1 in 100 year	Between 0.3m and 1.0m
1 in 30 year	Between 0.3m and 1.0m

This data is sourced from Ambiental Risk Analytics.

8 Coastal flooding - Coastal flooding

8.1 Coastal flooding

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

This is an assessment of coastal flood risk in Scotland produced using modelled data, provided by Ambiental Risk Analytics. It also takes account of flood defence information provided by the Scottish Environment Protection Agency (SEPA). It shows the chance of coastal flooding presented in the following categories:

- 1 in 30 year (3.33%)
- 1 in 100 year (1%)
- 1 in 250 year (0.4%)
- and 1 in 1,000 year (0.1%)

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

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

This data is sourced from Ambiental Risk Analytics.

9 Surface water flooding

Site Outline
Search buffers in metres (m)

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

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

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

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

9.1 Surface water flooding

Highest risk on site	**1 in 30 year, Greater than 1.0m**
Highest risk within 50m	**1 in 30 year, Greater than 1.0m**

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

Features are displayed on the Surface water flooding map on **page 32 >**

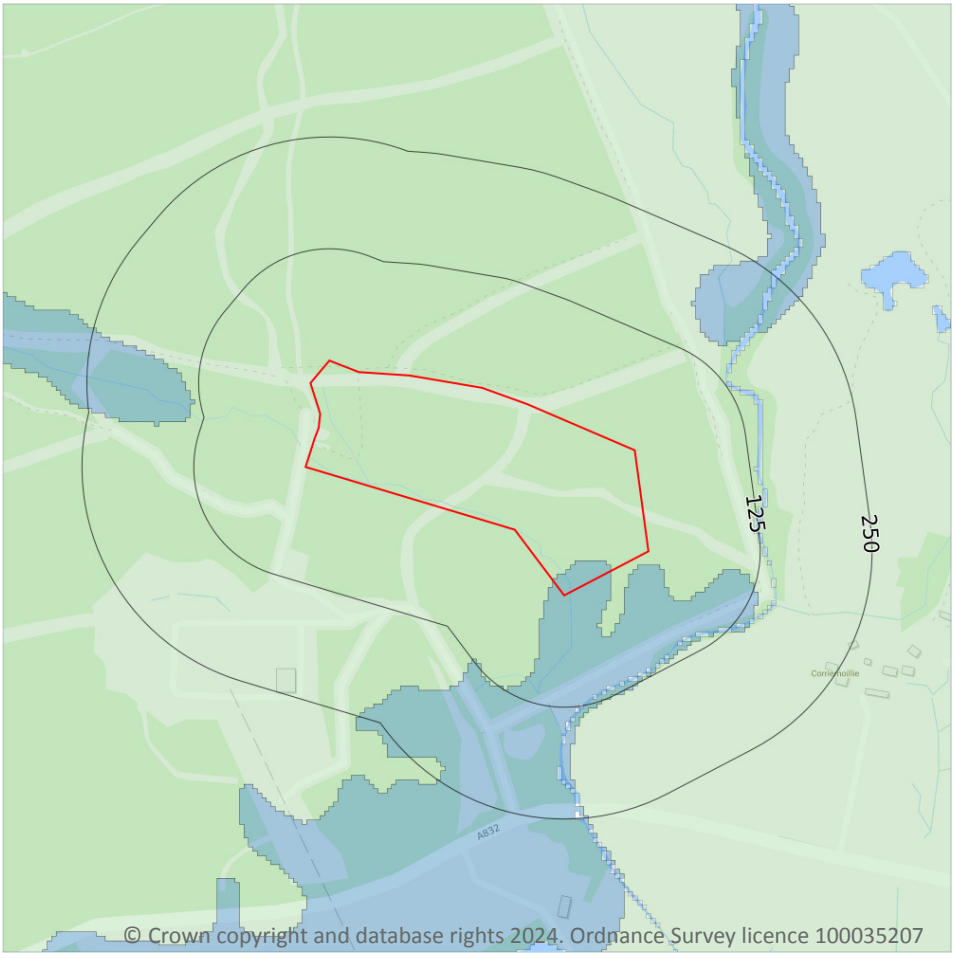
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on

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

Return period	Maximum modelled depth
1 in 1000 year	Greater than 1.0m
1 in 250 year	Greater than 1.0m
1 in 100 year	Greater than 1.0m
1 in 30 year	Greater than 1.0m

This data is sourced from Ambiental Risk Analytics.

10 Groundwater flooding



Site Outline

Search buffers in metres (m)

High

Moderate - High

Moderate

Low

Negligible

10.1 Groundwater flooding

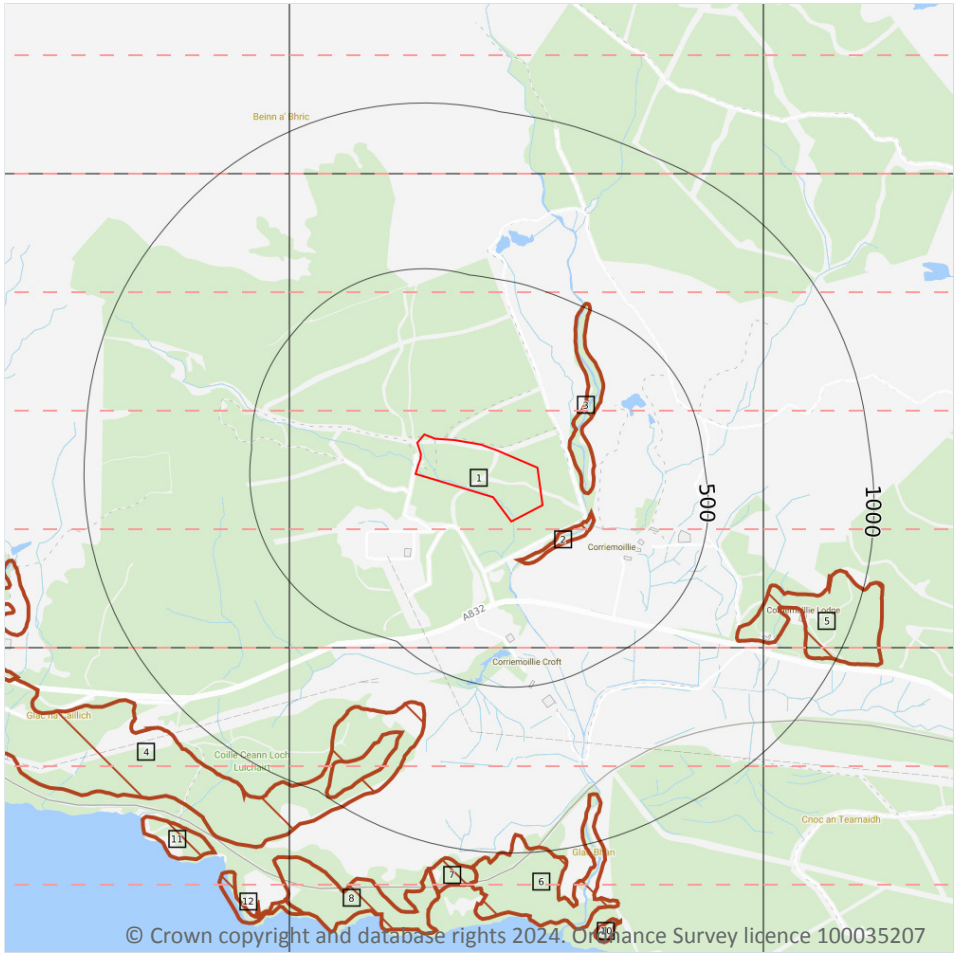
Highest risk on site	**Low**
Highest risk within 50m	**Low**

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

Features are displayed on the Groundwater flooding map on **page 34 >**

This data is sourced from Ambiental Risk Analytics.

11 Environmental designations



Site Outline

Search buffers in metres (m)

Special Protection Areas (SPA)

Designated Ancient Woodland

Biosphere Reserves

11.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	0

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

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

11.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	0

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

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

11.3 Special Areas of Conservation (SAC)

Records within 2000m	0

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

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

11.4 Special Protection Areas (SPA)

Records within 2000m	1

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

Features are displayed on the Environmental designations map on **page 35 >**

ID	Location	Name	Species of interest	Habitat description	Data source
-	1997m S	Glen Affric to Strathconon	Golden eagle	Inland water bodies (Standing water, Running water); Mixed woodland; Humid grassland, Mesophile grassland; Bogs, Marshes, Water fringed vegetation, Fens; Coniferous woodland; Inland rocks, Screes, Sands, Permanent Snow and ice; Broad-leaved deciduous woodland; Heath, Scrub, Maquis and Garrigue, Phygrana; Improved grassland; Alpine and sub-Alpine grassland	Scottish Natural Heritage

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

11.5 National Nature Reserves (NNR)

Records within 2000m	0

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

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

11.6 Local Nature Reserves (LNR)

Records within 2000m	0

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

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

11.7 Designated Ancient Woodland

Records within 2000m	17

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

Features are displayed on the Environmental designations map on **page 35 >**

ID	Location	Name	Woodland Type
2	98m SE	Unknown	Ancient (of semi-natural origin)
3	111m E	Unknown	Ancient (of semi-natural origin)
4	614m S	Coille Ceann Loch Luichart	Ancient (of semi-natural origin)
5	699m SE	Unknown	Long-Established (of plantation origin)
6	858m S	Unknown	Ancient (of semi-natural origin)
7	1033m S	Unknown	Ancient (of semi-natural origin)
8	1076m S	Innis Choille	Ancient (of semi-natural origin)
9	1232m W	Coille Ceann Loch Luichart	Ancient (of semi-natural origin)
10	1237m S	Unknown	Ancient (of semi-natural origin)

ID	Location	Name	Woodland Type
11	1269m SW	Unknown	Ancient (of semi-natural origin)
12	1321m SW	Innis Choille	Ancient (of semi-natural origin)
-	1484m SE	Coille Coire Mhuilidh	Ancient (of semi-natural origin)
-	1504m S	Coille Coire Mhuilidh	Ancient (of semi-natural origin)
-	1514m SE	Coille Coire Mhuilidh	Ancient (of semi-natural origin)
-	1610m W	Unknown	Ancient (of semi-natural origin)
-	1795m E	Unknown	Ancient (of semi-natural origin)
-	1875m E	Unknown	Ancient (of semi-natural origin)

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

11.8 Biosphere Reserves

Records within 2000m	**1**

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

Features are displayed on the Environmental designations map on **page 35 >**

ID	Location	Name	Status
1	**On site**	**Wester Ross**	**Current**

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

11.9 Forest Parks

Records within 2000m	**0**

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

This data is sourced from the Forestry Commission.

11.10 Marine Conservation Zones

Records within 2000m	0

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

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

12 Visual and cultural designations

12.1 World Heritage Sites

Records within 250m	0

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

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

12.2 Area of Outstanding Natural Beauty

Records within 250m	0

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

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

12.3 National Parks

Records within 250m	0

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

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

12.4 Listed Buildings

Records within 250m	0

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

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

12.5 Conservation Areas

Records within 250m	0

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

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

12.6 Scheduled Ancient Monuments

Records within 250m	0

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

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

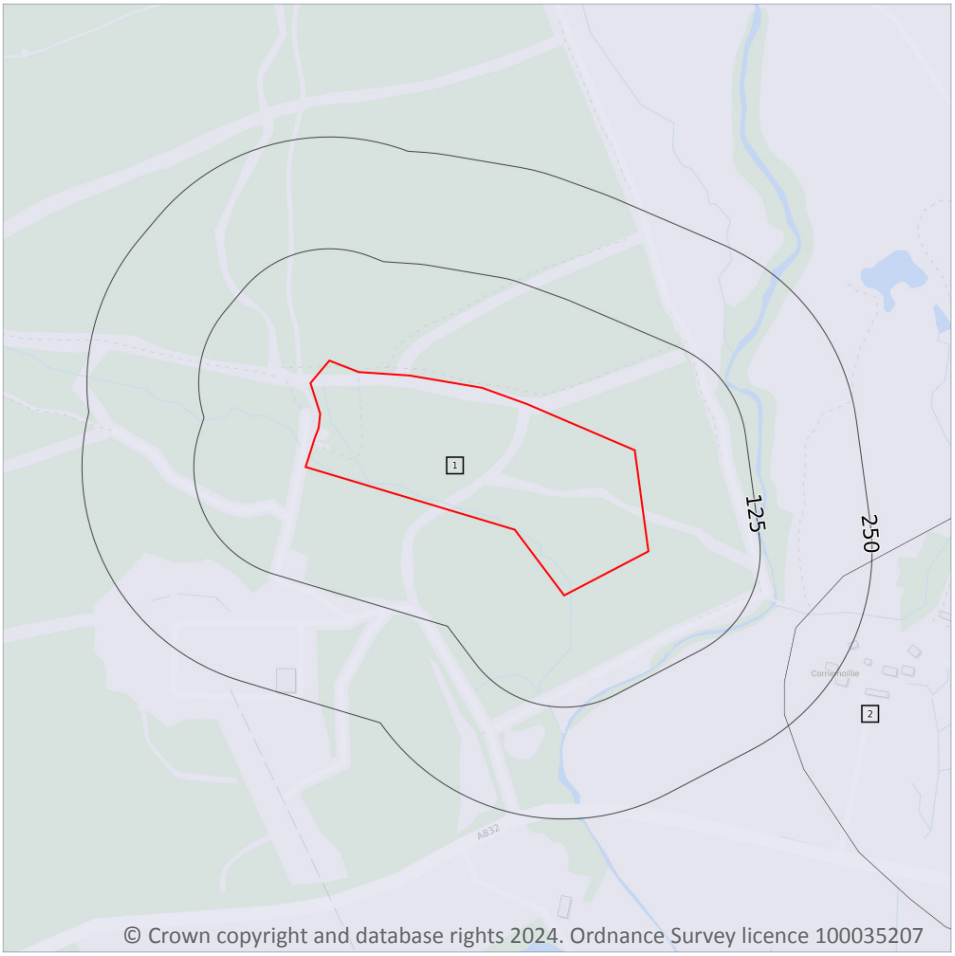
12.7 Registered Parks and Gardens

Records within 250m	0

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

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

13 Agricultural designations



Site Outline

Search buffers in metres (m)

- Grade 1 - excellent quality
- Grade 2 - very good quality
- Grade 3 - good to moderate quality
- Grade 4 - good quality
- Grade 5 - moderate quality
- Grade 6 - poor quality
- Grade 7 - very poor quality

13.1 Agricultural Land Classification

Records within 250m	2

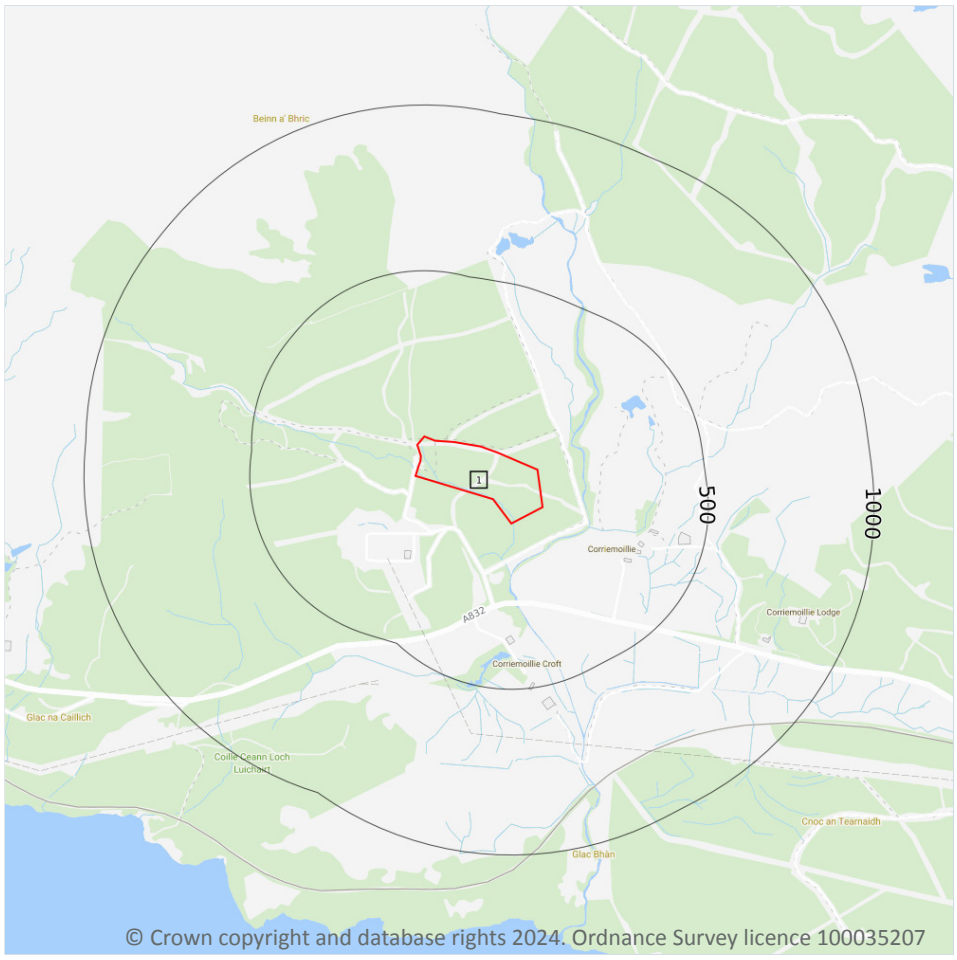
Classification of the quality of agricultural land taking into consideration multiple factors inclusing climate, physical geography and soil properties. It should be noted that the categories for the grading of agricultural land are not consistent across England, Wales and Scotland.

Features are displayed on the Agricultural designations map on **page 42 >**

ID	Location	Classification	Description
1	**On site**	**Grade 5.3**	**Land Suited only to Improved Grassland and Rough Grazings**
2	186m SE	Grade 5.1	Land Suited only to Improved Grassland and Rough Grazings

This data is sourced from the James Hutton Institute.

14 Geology 1:10,000 scale - Availability



Site Outline

Search buffers in metres (m)

Full coverage

Partial coverage

No coverage

14.1 10k Availability

Records within 500m	1

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

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 43 >**

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

This data is sourced from the British Geological Survey.

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

14.2 Artificial and made ground (10k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Superficial

14.3 Superficial geology (10k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

14.4 Landslip (10k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Bedrock

14.5 Bedrock geology (10k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

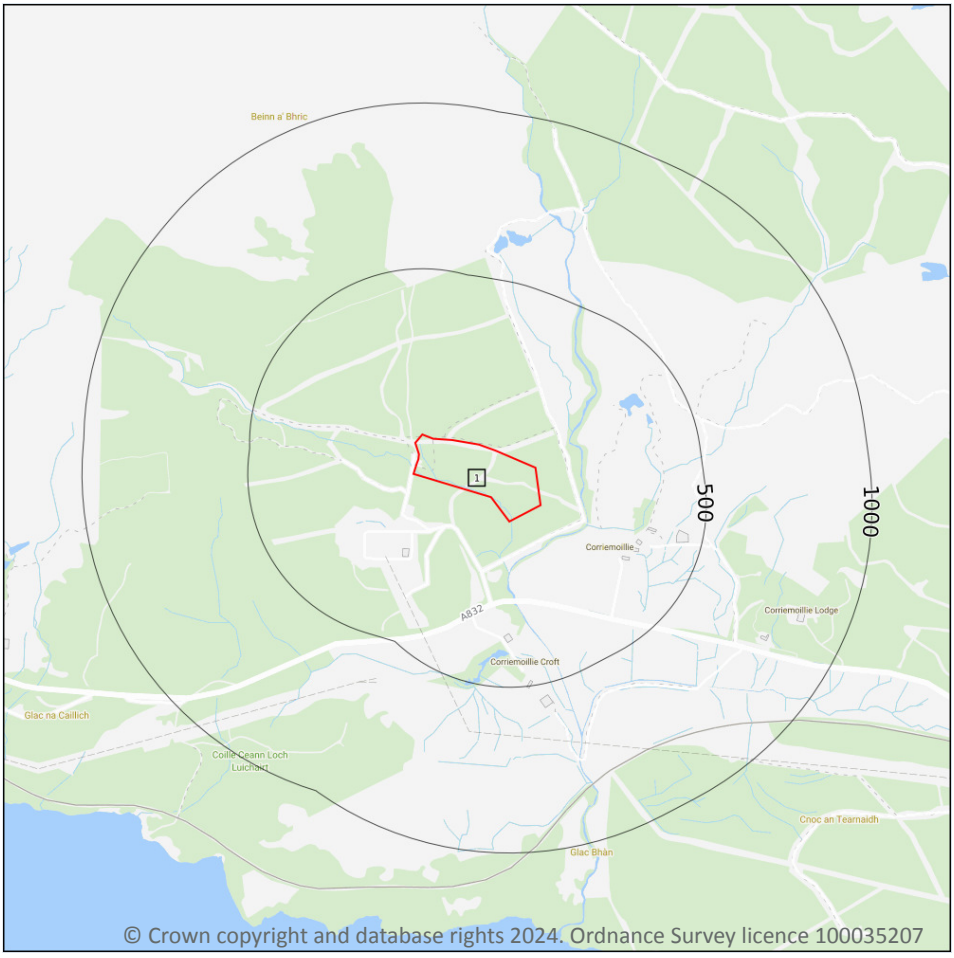
14.6 Bedrock faults and other linear features (10k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

15 Geology 1:50,000 scale - Availability



Site Outline

Search buffers in metres (m)

Geological map tile

15.1 50k Availability

Records within 500m	1

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

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 47 >**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**No coverage**	**Full**	**Full**	**Full**	**SC093w_Ben_Wyvis_v4**

This data is sourced from the British Geological Survey.

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

15.2 Artificial and made ground (50k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

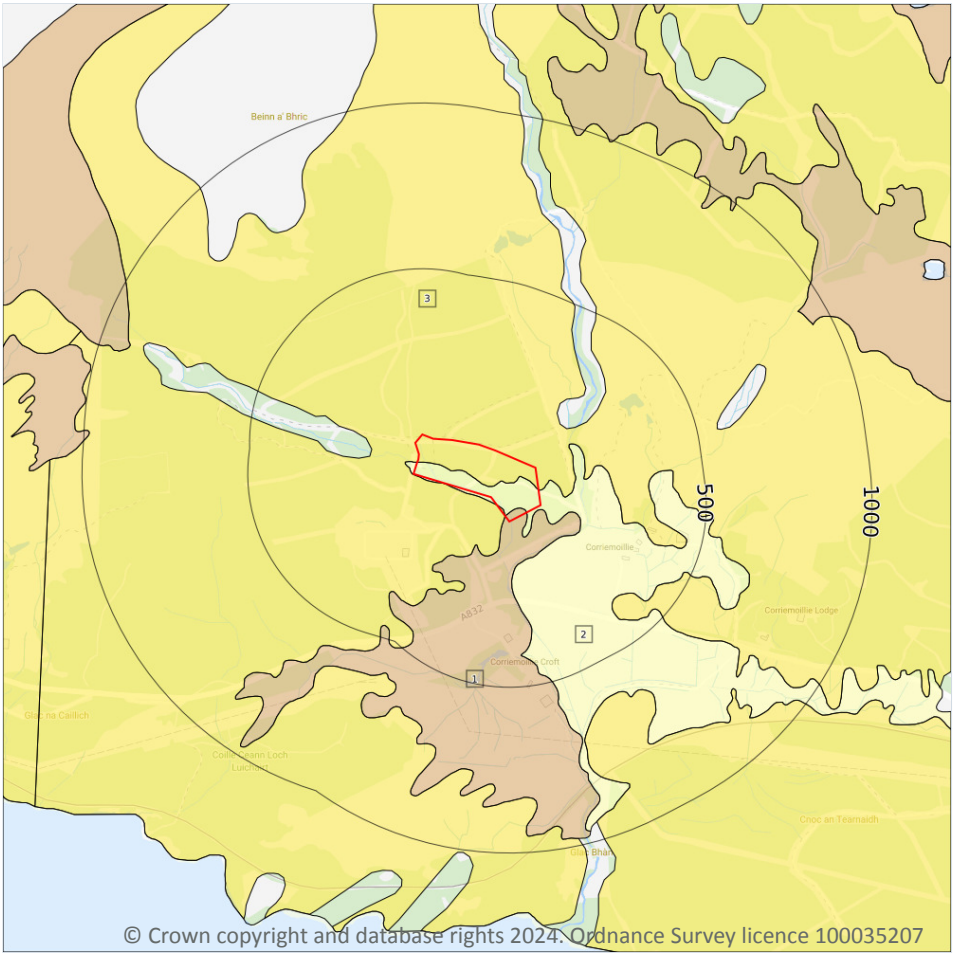
15.3 Artificial ground permeability (50k)

Records within 50m	0

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

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (50k)

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

15.4 Superficial geology (50k)

Records within 500m **3**

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

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 49 >**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**PEAT-P**	**PEAT**	**PEAT**
2	**On site**	**ALV-XCZSV**	**ALLUVIUM**	**CLAY, SILT, SAND AND GRAVEL**
3	**On site**	**GDU-XDVSZ**	**GLACIAL DEPOSITS**	**DIAMICTON, GRAVEL, SAND AND SILT**

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m	6

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

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Intergranular**	**High**	**Very Low**
On site	**Intergranular**	**High**	**Very Low**
On site	**Mixed**	**High**	**Low**
On site	**Mixed**	**High**	**Low**
On site	**Mixed**	**High**	**Low**
On site	**Mixed**	**Low**	**Very Low**

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

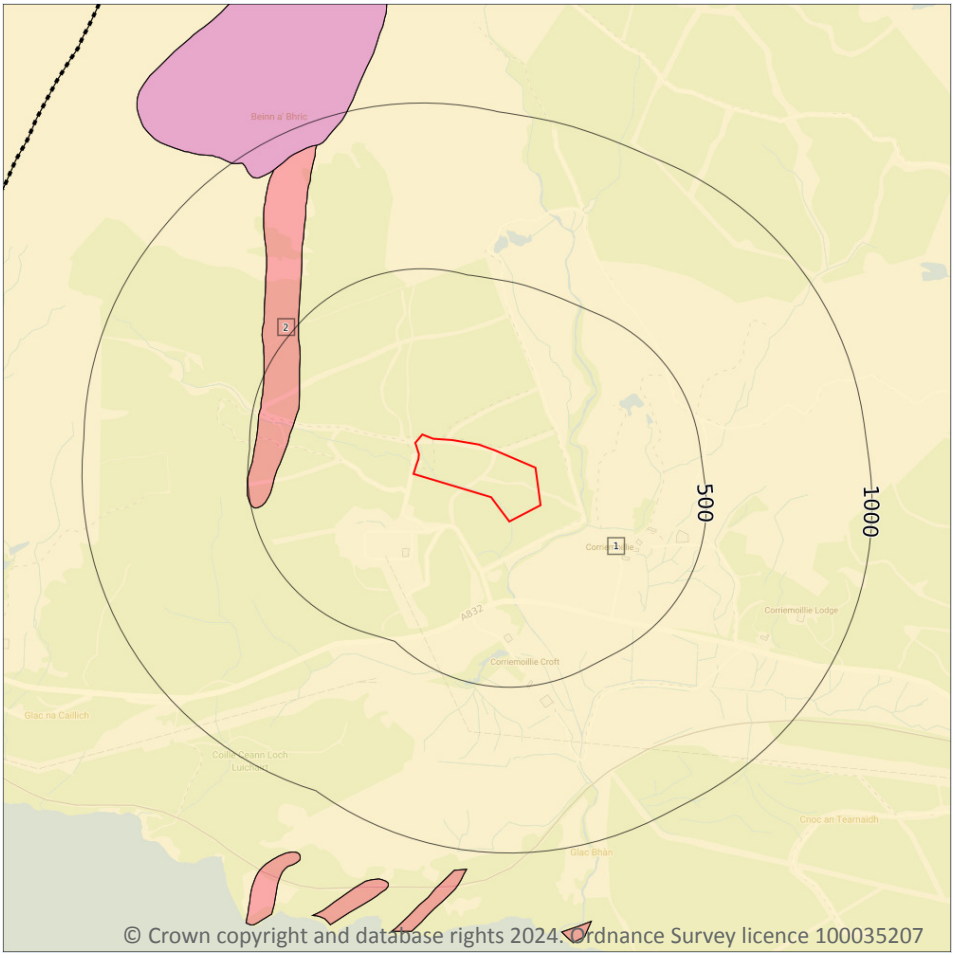
15.7 Landslip permeability (50k)

Records within 50m	0

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

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (50k)

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

15.8 Bedrock geology (50k)

Records within 500m	2

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

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 51 >**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**CMPS-PSAMM**	**CROM PSAMMITE FORMATION - PSAMMITE**	**-**
2	366m W	CCIA-GNGNS	CARN CHUINNEAG AND INCHBAE AUGEN GNEISS - GRANITE, GNEISSOSE	-

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m	2

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

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

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

16 Boreholes

Site Outline

Search buffers in metres (m)

Confidential

0 - 10m

10 - 30m

30m+

Unknown

16.1 BGS Boreholes

Records within 250m	2

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

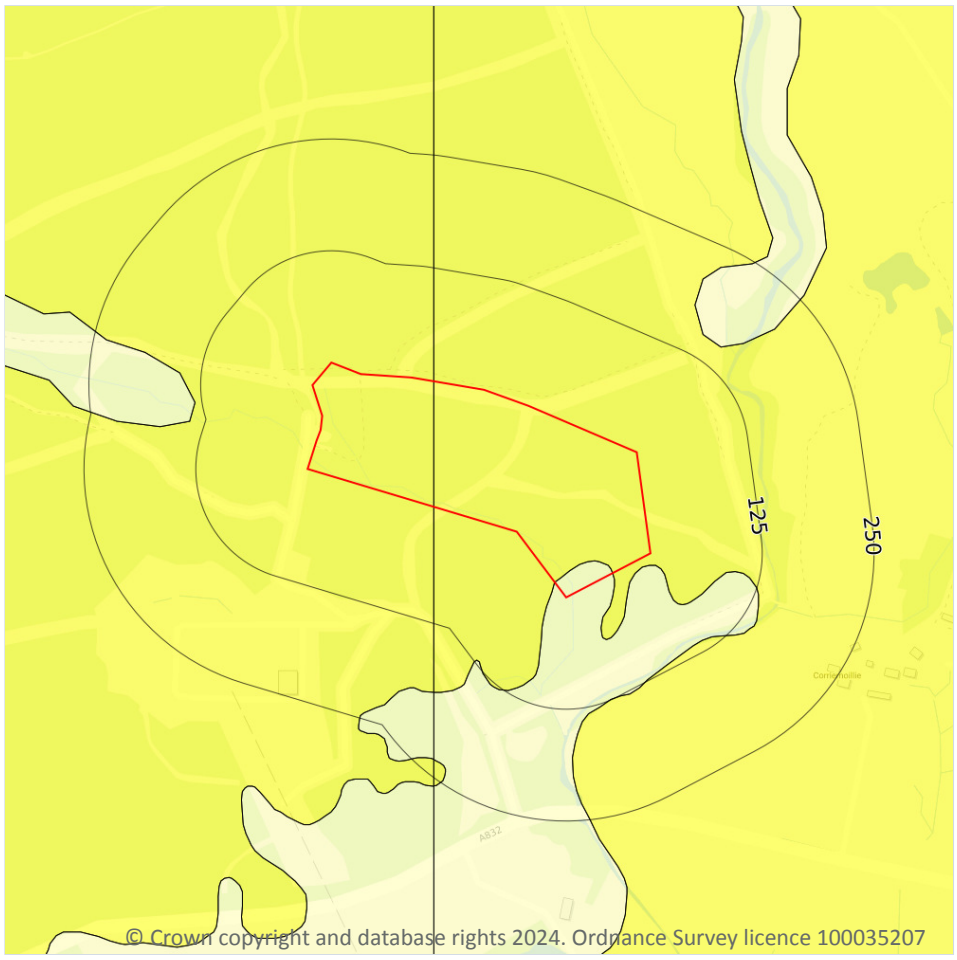
Features are displayed on the Boreholes map on **page 53 >**

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	213m SE	235427 863885	TILHILL GARVE	46.5	N	19979534 ↗

ID	Location	Grid reference	Name	Length	Confidential	Web link
2	232m SE	235425 863848	TILHILL GARVE	60.0	N	19979531 ↗

This data is sourced from the British Geological Survey.

17 Natural ground subsidence - Shrink swell clays



Site Outline

Search buffers in metres (m)

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

17.1 Shrink swell clays

Records within 50m	2

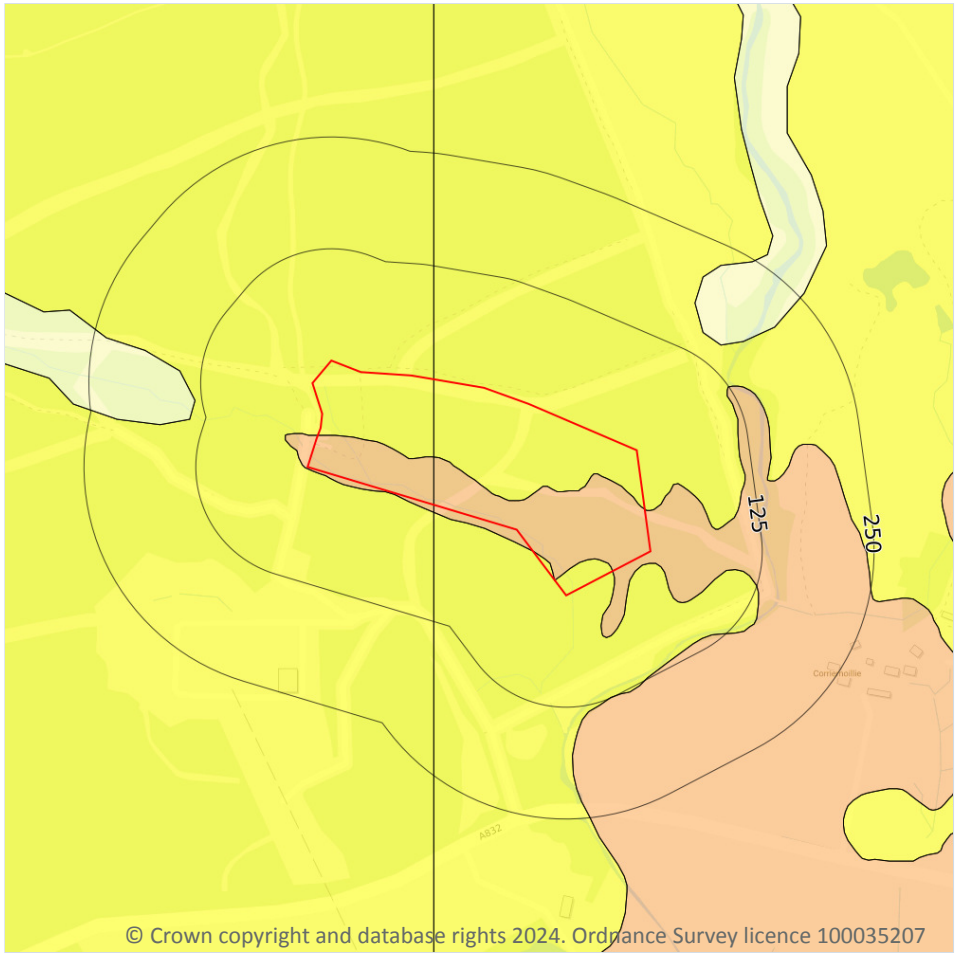
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and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

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 55 >**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Running sands



Site Outline

Search buffers in metres (m)

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

17.2 Running sands

Records within 50m	2

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

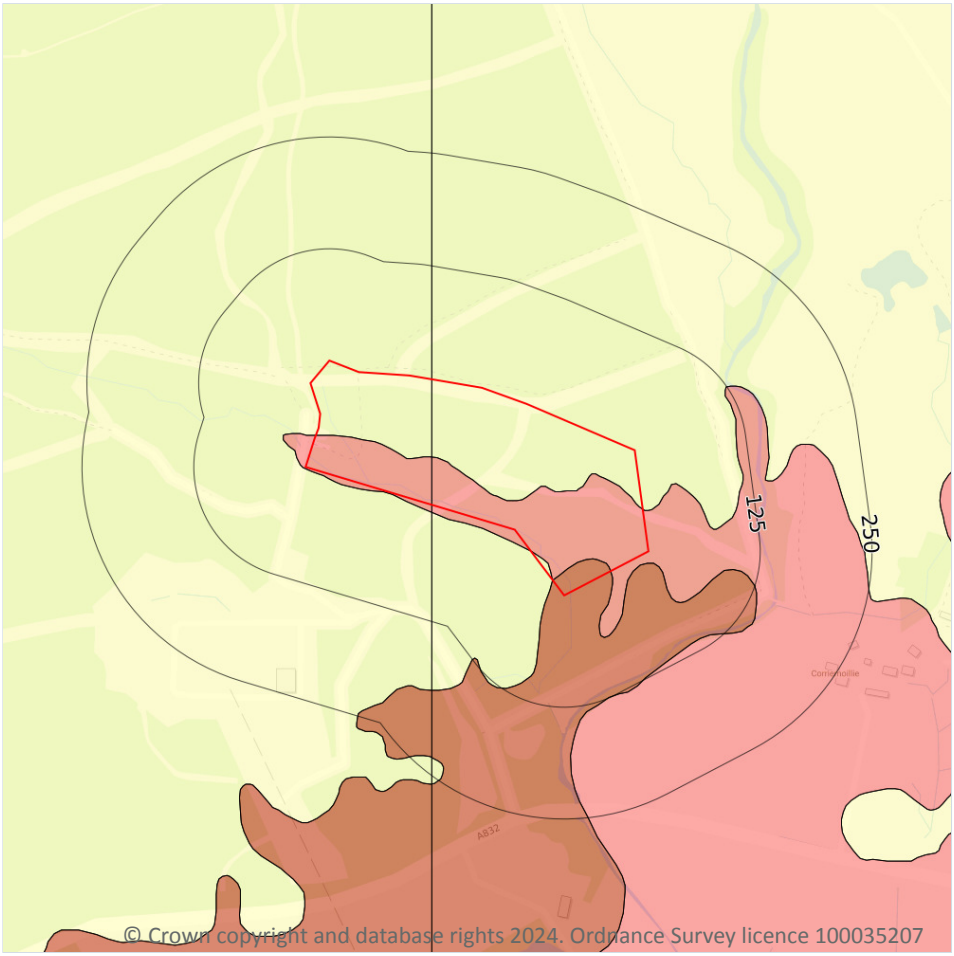
Features are displayed on the Natural ground subsidence - Running sands map on **page 56 >**

Location	Hazard rating	Details
On site	**Very low**	**Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.**

Location	Hazard rating	Details
On site	**Low**	**Running sand conditions may be present. Constraints may apply to land uses involving excavation or the addition or removal of water.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Compressible deposits



Site Outline

Search buffers in metres (m)

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

17.3 Compressible deposits

Records within 50m	3

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

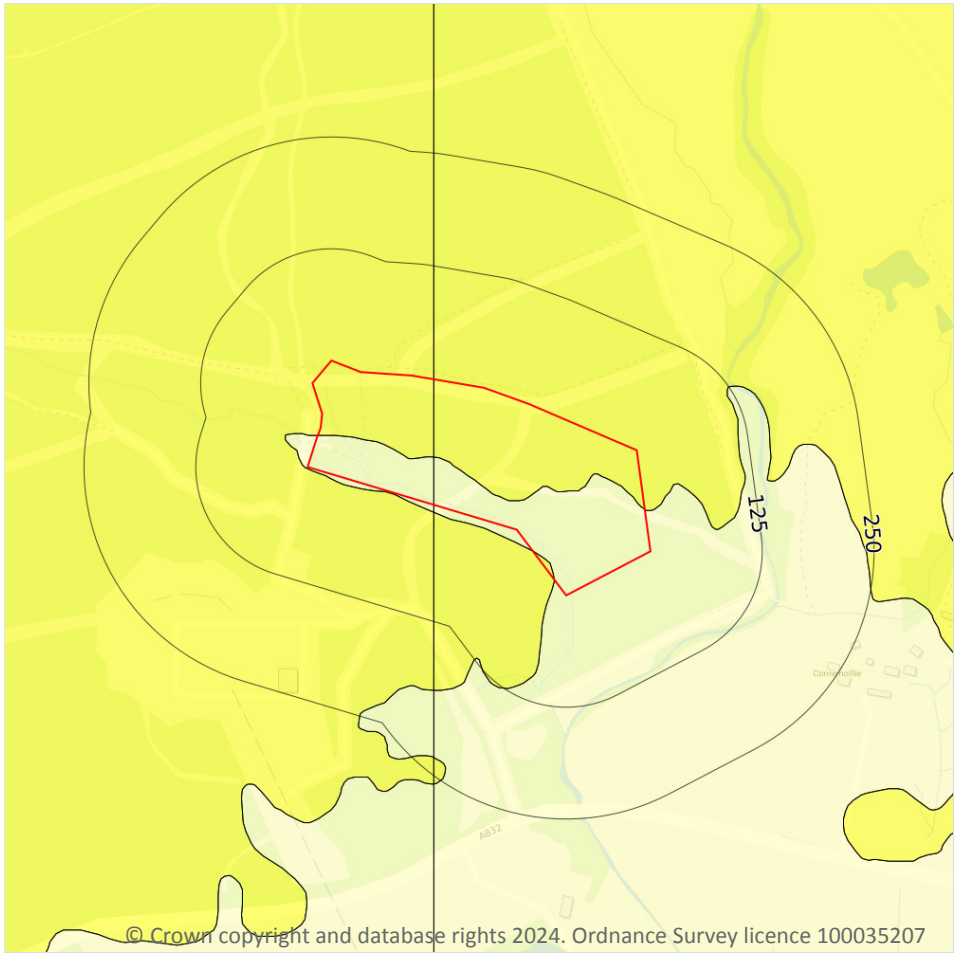
Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 58 >**

Location	Hazard rating	Details
On site	**Negligible**	**Compressible strata are not thought to occur.**
On site	**Moderate**	**Compressibility and uneven settlement hazards are probably present. Land use should consider specifically the compressibility and variability of the site.**

Location	Hazard rating	Details
On site	**High**	**Highly compressible strata present. Significant constraint on land use depending on thickness.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Collapsible deposits



Site Outline

Search buffers in metres (m)

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

17.4 Collapsible deposits

Records within 50m	2

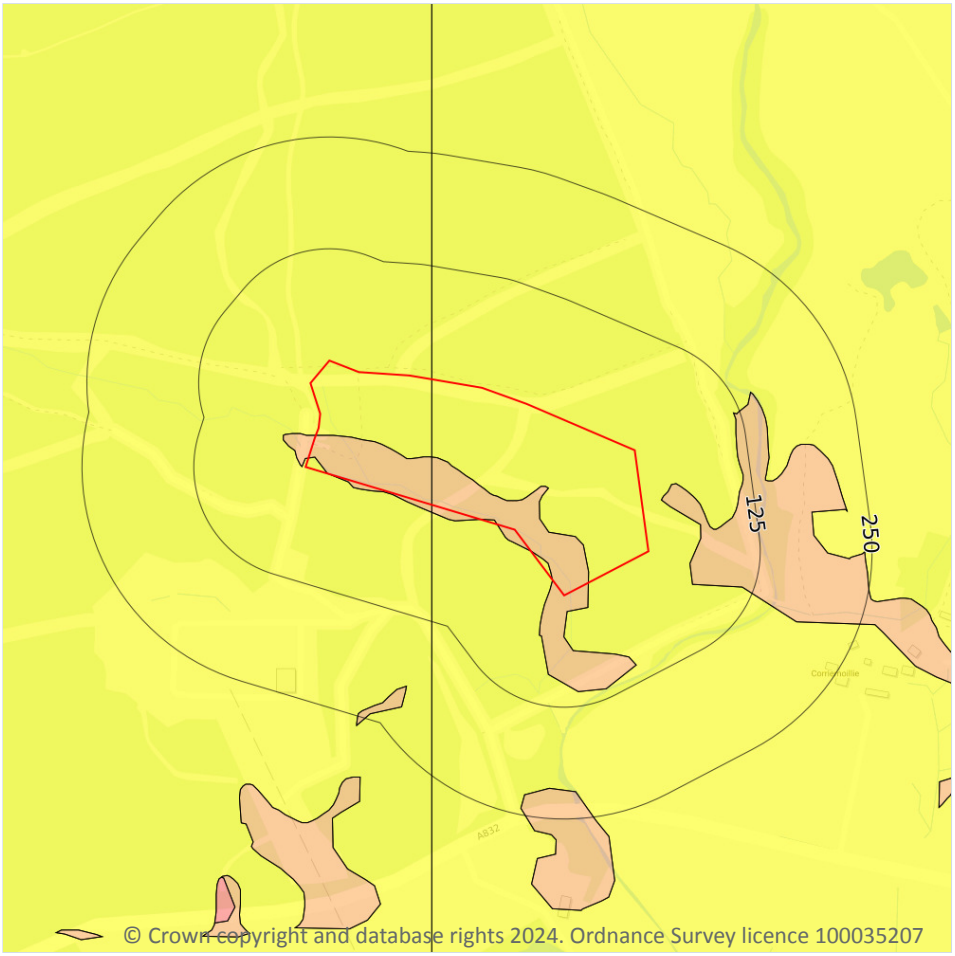
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 60 >**

Location	Hazard rating	Details
On site	**Negligible**	**Deposits with potential to collapse when loaded and saturated are believed not to be present.**
On site	**Very low**	**Deposits with potential to collapse when loaded and saturated are unlikely to be present.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Landslides



Site Outline

Search buffers in metres (m)

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

17.5 Landslides

Records within 50m	3

The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

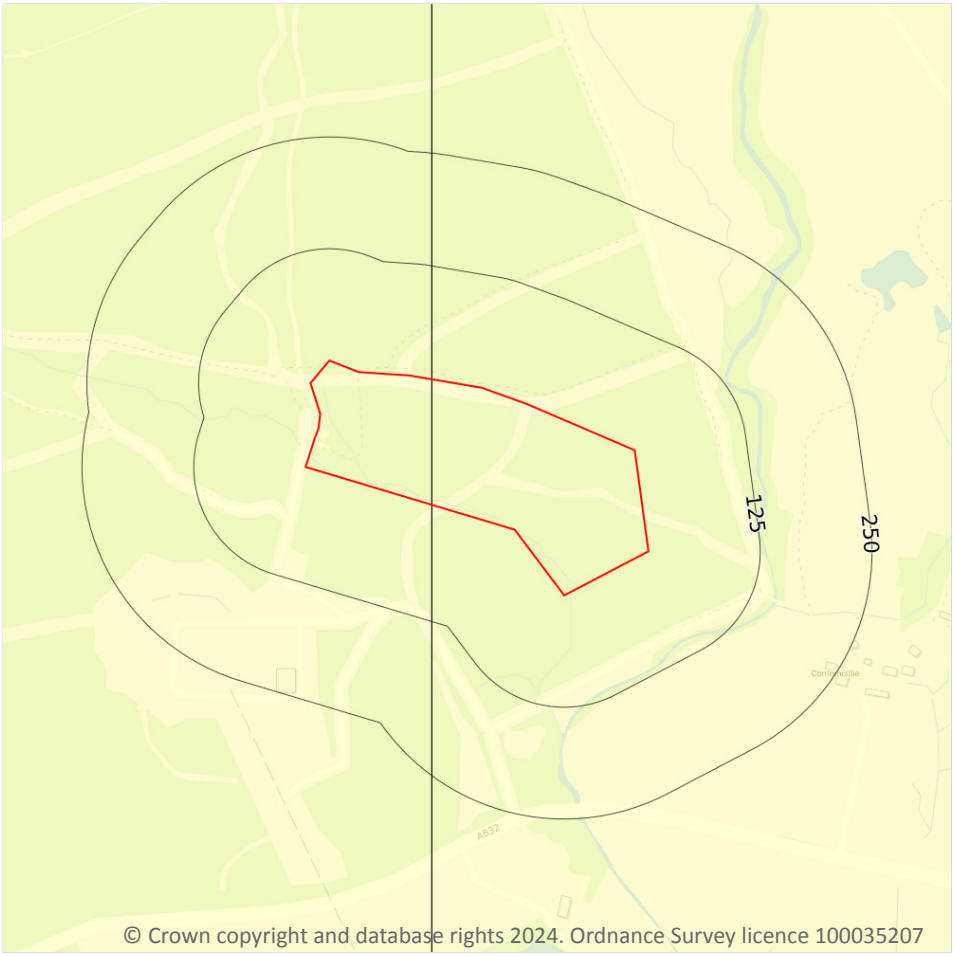
Features are displayed on the Natural ground subsidence - Landslides map on **page 61 >**

Location	Hazard rating	Details
On site	**Very low**	**Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.**

Location	Hazard rating	Details
On site	**Low**	**Slope instability problems may be present or anticipated. Site investigation should consider specifically the slope stability of the site.**
22m E	Low	Slope instability problems may be present or anticipated. Site investigation should consider specifically the slope stability of the site.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Ground dissolution of soluble rocks



Site Outline

Search buffers in metres (m)

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

17.6 Ground dissolution of soluble rocks

Records within 50m	1

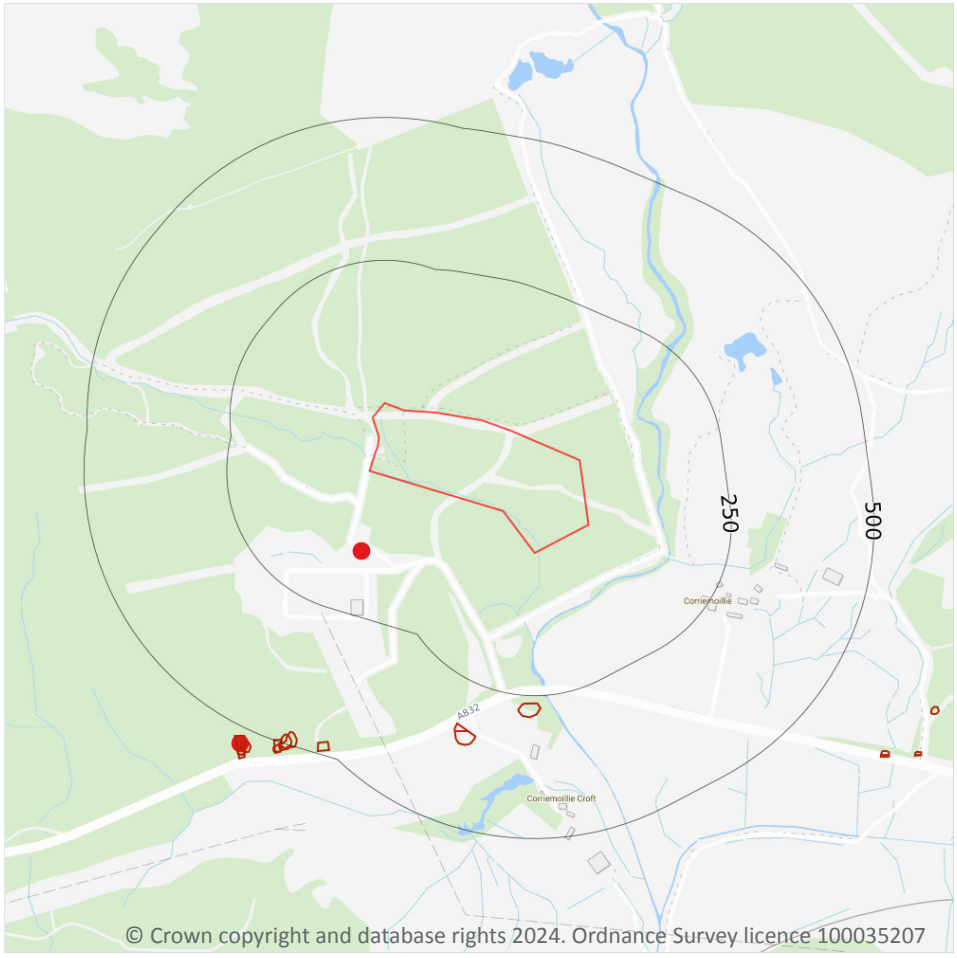
The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 63 >**

Location	Hazard rating	Details
On site	**Negligible**	**Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.**

This data is sourced from the British Geological Survey.

18 Mining and ground workings



Site Outline

Search buffers in metres (m)

BritPits

Surface ground workings

Underground workings

Underground mining extents

Historical mineral planning areas

TCA non-coal mining

Non Coal Mining

Sporadic underground mining of restricted extent possible

Localised small scale underground mining possible

Small scale mining possible

Underground mining known or likely within or in close proximity

Underground mining known within or in very close proximity

18.1 BritPits

Records within 500m	1

BritPits (an abbreviation of British Pits) is a database maintained by the British Geological Survey of currently active and closed surface and underground mineral workings. Details of major mineral handling sites, such as wharfs and rail depots are also held in the database.

Features are displayed on the Mining and ground workings map on **page 65 >**

ID	Location	Details	Description
1	138m SW	Name: Corriemoillie Address: Corriemoillie, GARVE, Ross and Cromarty Commodity: Igneous & Metamorphic Rock Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority

This data is sourced from the British Geological Survey.

18.2 Surface ground workings

Records within 250m	**0**

Historical land uses identified from Ordnance Survey mapping that involved ground excavation at the surface. These features may or may not have been subsequently backfilled.

This is data is sourced from Ordnance Survey/Groundsure.

18.3 Underground workings

Records within 1000m	**0**

Historical land uses identified from Ordnance Survey mapping that indicate the presence of underground workings e.g. mine shafts.

This is data is sourced from Ordnance Survey/Groundsure.

18.4 Underground mining extents

Records within 500m	**0**

This data identifies underground mine workings that could present a potential risk, including adits and seam workings. These features have been identified from BGS Geological mapping and mine plans sourced from the BGS and various collections and sources.

This data is sourced from Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m	**0**

Boundaries of mineral planning permissions for England and Wales. This data was collated between the 1940s (and retrospectively to the 1930s) and the mid 1980s. The data includes permitted, withdrawn and refused permissions.

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m	2

The potential for historical non-coal mining to have affected an area. The assessment is drawn from expert knowledge and literature in addition to the digital geological map of Britain. Mineral commodities may be divided into seven general categories - vein minerals, chalk, oil shale, building stone, bedded ores, evaporites and 'other' commodities (including ball clay, jet, black marble, graphite and chert).

Features are displayed on the Mining and ground workings map on **page 65 >**

ID	Location	Name	Commodity	Class	Likelihood
-	914m NW	Not available	Vein Mineral	A	Underground mine workings are uncommon, although the geology is similar to that worked elsewhere. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.
-	915m NW	Not available	Vein Mineral	A	Underground mine workings are uncommon, although the geology is similar to that worked elsewhere. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.

This data is sourced from the British Geological Survey.

18.7 JPB mining areas

Records on site	0

Areas which could be affected by former coal and other mining. This data includes some mine plans unavailable to the Coal Authority.

This data is sourced from Johnson Poole and Bloomer.

18.8 The Coal Authority non-coal mining

Records within 500m	0

This data provides an indication of the potential zone of influence of recorded underground non-coal mining workings. Any and all analysis and interpretation of Coal Authority Data in this report is made by Groundsure, and is in no way supported, endorsed or authorised by the Coal Authority. The use of the data is restricted to the terms and provisions contained in this report. Data reproduced in this report may be the copyright of the Coal Authority and permission should be sought from Groundsure prior to any re-use.

This data is sourced from The Coal Authority.

18.9 Researched mining

Records within 500m	0

This data indicates areas of potential mining identified from alternative or archival sources, including; BGS Geological paper maps, Lidar data, aerial photographs (from World War II onwards), archaeological data services, websites, Tithe maps, and various text/plans from collected books and reports. Some of this data is approximate and Groundsure have interpreted the resultant risk area and, where possible, specific areas of risk have been captured.

This data is sourced from Groundsure.

18.10 Mining record office plans

Records within 500m	0

This dataset is representative of Mining Record Office and/or plan extents held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

18.11 BGS mine plans

Records within 500m	0

This dataset is representative of BGS mine plans held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

18.12 Coal mining

Records on site	0

Areas which could be affected by past, current or future coal mining.

This data is sourced from the Coal Authority.

18.13 Brine areas

Records on site	0

The Cheshire Brine Compensation District indicates areas that may be affected by salt and brine extraction in Cheshire and where compensation would be available where damage from this mining has occurred. Damage from salt and brine mining can still occur outside this district, but no compensation will be available.

This data is sourced from the Cheshire Brine Subsidence Compensation Board.

18.14 Gypsum areas

Records on site	0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.15 Tin mining

Records on site	0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

18.16 Clay mining

Records on site	0

Generalised areas that may be affected by kaolin and ball clay extraction.

This data is sourced from the Kaolin and Ball Clay Association (UK).

19 Ground cavities and sinkholes

19.1 Natural cavities

Records within 500m	0

Industry recognised national database of natural cavities. Sinkholes and caves are formed by the dissolution of soluble rock, such as chalk and limestone, gulls and fissures by cambering. Ground instability can result from movement of loose material contained within these cavities, often triggered by water.

This data is sourced from Stantec UK Ltd.

19.2 Mining cavities

Records within 1000m	0

Industry recognised national database of mining cavities. Degraded mines may result in hazardous subsidence (crown holes). Climatic conditions and water escape can also trigger subsidence over mine entrances and workings.

This data is sourced from Stantec UK Ltd.

19.3 Reported recent incidents

Records within 500m	0

This data identifies sinkhole information gathered from media reports and Groundsure's own records. This data goes back to 2014 and includes relative accuracy ratings for each event and links to the original data sources. The data is updated on a regular basis and should not be considered a comprehensive catalogue of all sinkhole events. The absence of data in this database does not mean a sinkhole definitely has not occurred during this time.

This data is sourced from Groundsure.

19.4 Historical incidents

Records within 500m	0

This dataset comprises an extract of 1:10,560, 1:10,000, 1:2,500 and 1:1,250 scale historical Ordnance Survey maps held by Groundsure, dating back to the 1840s. It shows shakeholes, deneholes and other 'holes' as noted on these maps. Dene holes are medieval chalk extraction pits, usually comprising a narrow shaft with a number of chambers at the base of the shaft. Shakeholes are an alternative name for suffusion sinkholes, most commonly found in the limestone landscapes of North Yorkshire but also extensively noted around the Brecon Beacons National Park.

Not all 'holes' noted on Ordnance Survey mapping will necessarily be present within this dataset.

This data is sourced from Groundsure.

19.5 National karst database

Records within 500m	0

This is a comprehensive database of national karst information gathered from a wide range of sources. BGS have collected data on five main types of karst feature: Sinkholes, stream links, caves, springs, and incidences of associated damage to buildings, roads, bridges and other engineered works.

Since the database was set up in 2002 data covering most of the evaporite karst areas of the UK have now been added, along with data covering about 60% of the Chalk, and 35% of the Carboniferous Limestone outcrops. Many of the classic upland karst areas have yet to be included. Recorded so far are: Over 800 caves, 1300 stream sinks, 5600 springs, 10,000 sinkholes.

The database is not yet complete, and not all records have been verified. The absence of data does not mean that karst features are not present at a site. A reliability rating is included with each record.

This data is sourced from the British Geological Survey.

20 Radon

Site Outline

Search buffers in metres (m)

Greater than 30%

Between 10% and 30%

Between 5% and 10%

Between 3% and 5%

Between 1% and 3%

Less than 1%

20.1 Radon

Records on site	1

The Radon Potential data classifies areas based on their likelihood of a property having a radon level at or above the Action Level in Great Britain. The dataset is intended for use at 1:50,000 scale and was derived from both geological assessments and indoor radon measurements (more than 560,000 records). A minimum 50m buffer should be considered when searching the maps, as the smallest detectable feature at this scale is 50m. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain (1:100,000 scale).

Features are displayed on the Radon map on **page 72 >**

Location	Estimated properties affected	Radon Protection Measures required
On site	**Less than 1%**	**None**

This data is sourced from the British Geological Survey and UK Health Security Agency.

21 Soil chemistry

21.1 BGS Estimated Background Soil Chemistry

Records within 50m **9**

The estimated values provide the likely background concentration of the potentially harmful elements Arsenic, Cadmium, Chromium, Lead and Nickel in topsoil. The values are estimated primarily from rural topsoil data collected at a sample density of approximately 1 per 2 km^2. In areas where rural soil samples are not available, estimation is based on stream sediment data collected from small streams at a sampling density of 1 per 2.5 km^2; this is the case for most of Scotland, Wales and southern England. The stream sediment data are converted to soil-equivalent concentrations prior to the estimation.

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	**15 mg/kg**	**-**	**100 mg/kg**	**60 mg/kg**	**No data**	**40 - 60 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**-**	**100 mg/kg**	**60 mg/kg**	**No data**	**40 - 60 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**-**	**100 mg/kg**	**60 mg/kg**	**No data**	**40 - 60 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**-**	**100 mg/kg**	**60 mg/kg**	**No data**	**40 - 60 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**-**	**100 mg/kg**	**60 mg/kg**	**No data**	**40 - 60 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**-**	**100 mg/kg**	**60 mg/kg**	**No data**	**40 - 60 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**-**	**100 mg/kg**	**60 mg/kg**	**No data**	**40 - 60 mg/kg**	**15 - 30 mg/kg**
8m SW	15 mg/kg	-	100 mg/kg	60 mg/kg	No data	40 - 60 mg/kg	15 - 30 mg/kg
41m SW	15 mg/kg	-	100 mg/kg	60 mg/kg	No data	40 - 60 mg/kg	15 - 30 mg/kg

This data is sourced from the British Geological Survey.

21.2 BGS Estimated Urban Soil Chemistry

Records within 50m **0**

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per km^2).

This data is sourced from the British Geological Survey.

21.3 BGS Measured Urban Soil Chemistry

Records within 50m	0

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km^2.

This data is sourced from the British Geological Survey.

22 Railway infrastructure and projects

22.1 Underground railways (London)

Records within 250m	0

Details of all active London Underground lines, including approximate tunnel roof depth and operational hours.

This data is sourced from publicly available information by Groundsure.

22.2 Underground railways (Non-London)

Records within 250m	0

Details of the Merseyrail system, the Tyne and Wear Metro and the Glasgow Subway. Not all parts of all systems are located underground. The data contains location information only and does not include a depth assessment.

This data is sourced from publicly available information by Groundsure.

22.3 Railway tunnels

Records within 250m	0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

22.4 Historical railway and tunnel features

Records within 250m	0

Railways and tunnels digitised from historical Ordnance Survey mapping as scales of 1:1,250, 1:2,500, 1:10,000 and 1:10,560.

This data is sourced from Ordnance Survey/Groundsure.

22.5 Royal Mail tunnels

Records within 250m	0

The Post Office Railway, otherwise known as the Mail Rail, is an underground railway running through Central London from Paddington Head District Sorting Office to Whitechapel Eastern Head Sorting Office. The line is 10.5km long. The data includes details of the full extent of the tunnels, the depth of the tunnel, and the depth to track level.

This data is sourced from Groundsure/the Postal Museum.

22.6 Historical railways

Records within 250m	0

Former railway lines, including dismantled lines, abandoned lines, disused lines, historic railways and razed lines.

This data is sourced from OpenStreetMap.

22.7 Railways

Records within 250m	0

Currently existing railway lines, including standard railways, narrow gauge, funicular, trams and light railways.

This data is sourced from Ordnance Survey and OpenStreetMap.

22.8 Crossrail 1

Records within 500m	0

The Crossrail railway project links 41 stations over 100 kilometres from Reading and Heathrow in the west, through underground sections in central London, to Shenfield and Abbey Wood in the east.

This data is sourced from publicly available information by Groundsure.

22.9 Crossrail 2

Records within 500m	0

Crossrail 2 is a proposed railway linking the national rail networks in Surrey and Hertfordshire via an underground tunnel through London.

This data is sourced from publicly available information by Groundsure.

22.10 HS2

Records within 500m	0

HS2 is a proposed high speed rail network running from London to Manchester and Leeds via Birmingham. Main civils construction on Phase 1 (London to Birmingham) of the project began in 2019, and it is currently anticipated that this phase will be fully operational by 2026. Construction on Phase 2a (Birmingham to Crewe) is anticipated to commence in 2021, with the service fully operational by 2027. Construction on Phase 2b (Crewe to Manchester and Birmingham to Leeds) is scheduled to begin in 2023 and be operational by 2033.

This data is sourced from HS2 ltd.

Data providers

Groundsure works with respected data providers to bring you the most relevant and accurate information. To find out who they are and their areas of expertise see https://www.groundsure.com/sources-reference ↗.

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