



PHASE 1: DESK TOP STUDY REPORT

(PRELIMINARY ENVIRONMENTAL RISK ASSESSMENT)

PROPOSED RESIDENTIAL DEVELOPMENT OF LAND AT

ELIZABETH CRESCENT

WHITEHAVEN

CUMBRIA, CA28 6JQ

FOR:

Messrs Bowe

GEO Environmental Engineering

DOCUMENT CONTROL SHEET

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CONTENTS

Sect	Section			
1.0	Introduction			
2.0	Site Locat	tion and Development Proposals	5	
3.0	Environmental Setting			
4.0	Conceptual Site Model			
5.0	Preliminary Qualitative Risk Assessment (PQRA)			
6.0	Conclusions			
Appendix I:		Site Location Plan Aerial Photograph Extract Existing Site Layout Plan Site Images		
Арре	ndix II:	Ground Sure Report (GSR – Geoinsight and Enviroinsight)		
Appendix III:		Historical Map Extracts (GSR – Mapinsight)		
Appendix IV:		The Coal Authority Coal Mining Report The Coal Authority On-line Database BGS Geological Map Extract		

1.0 Introduction

1.1 Instruction

Geo Environmental Engineering Ltd (GEO) has completed a Phase 1: Desk Top Study Report (Preliminary Environmental Risk Assessment – PERA) for land at Elizabeth Crescent, Whitehaven, Cumbria to determine any potential geohazards that may affect the residential development of the site. Geo Environmental Engineering Ltd has been commissioned to complete the report by the Consultant, Alpha Design on behalf of the Client, Messrs Bowe.

The Phase 1: Desk Top Study Report is suitable for submission to the Local Authority as part of any potential planning application as the site is currently undergoing consideration by the Client for residential development. The Client is considering the construction of a residential housing estate with associated access roads, infrastructure, private gardens and general areas of soft landscaping. Further development details are available from the Consultant.

1.2 Aims and Objectives

The aims and objectives of this Phase 1: Desk Top Study (DTS) Report are to assess the geological and environmental sensitivity of the development area and the surrounding environs, with particular attention made to any potentially contaminative industries or processes that may have taken place on site or on immediately adjacent sites, which may be considered as potentially posing a risk of ground/groundwater contamination and ground gas that could negatively affect the proposed end users, adjacent sites and controlled waters. This Phase 1: Desk Top Study Report has generally been completed in accordance with the following documents and includes a site visit (February 2017):

- CLR11: Model Procedures for the Management of Land Contamination. DEFRA/EA, 2004.
- BS10175:2011: Code of Practice for the Investigation of Potentially Contaminated Sites.
- BS5930:1999: Code of Practice for Site Investigations.

During the completion of this DTS information has been obtained and reviewed from the following sources:

- British Geological Survey (BGS Appendix IV).
- Environment Agency (EA).
- Ground Sure Report (Geoinsight and Enviroinsight GSR Appendix II and III Incorporating Mapinsight Historical Ordnance Survey (OS) Plans)
- The Coal Authority Coal Mining Report (CA Appendix IV).
- The Coal Authority Online Database (CA Appendix IV).

1.3 Limitations of Use

The information, assessments, conclusions and recommendations presented within this Phase 1: Desk Top Study (DTS) Report are solely based on, and are limited to, the boundaries of the site, the immediate area around the site, and the historical use(s) as described, with the approximate extent of the site marked on the Existing Site Layout Plan in Appendix I.

This DTS has been completed utilising information relating to the physical, environmental and industrial setting of the development area, highlighting, where possible, any potential geohazards that might be encountered when considering the future redevelopment of this land, with this DTS reflecting a proposed end use, as considered by the developer (i.e. "Best Fit" CLEA classification of *Residential*). Therefore, if a change in the proposed end use is envisaged, then a reassessment of the development area should be carried out.

1.0 Introduction (Cont'd)

1.3 Limitations of Use (Cont'd)

Any comments, opinions, diagrams, cross sections and/or sketches contained within the DTS, and/or any configuration of the findings is purely conjectural and given for guidance only as no intrusive investigation works have been completed by Geo Environmental Engineering Ltd and it is recommended that confirmation of the anticipated ground conditions and feasibility of construction be considered by the developer before commencing acquisition or redevelopment.

Agreement for the use or copying of this report by any Third Party must be obtained in writing from Geo Environmental Engineering Ltd. The use and reliance on the report is strictly in accordance with the Geo Environmental Engineering Ltd standard terms and conditions, copies of which are available on request.

The conclusions and recommendations presented within this report are considered reasonable based on the available information. However, these cannot be guaranteed to gain regulatory approval. Therefore, the report should be passed to the appropriate regulatory authorities and/ or other key stakeholders in order to seek their approval of the findings prior to undertaking any works on site. Geo Environmental Engineering Ltd cannot accept responsibility for the accuracy of third party information.

2.0 Site Location and Development Proposals

2.1 Site Location

The development area is roughly rectangular in shape and comprises agricultural land on the northeastern extent of Whitehaven. Residential properties are to the north and agricultural fields are present to the south, east and west. The site is approximately 3.28Ha and is centred on National Grid Reference (NGR) 298586, 519104.

2.2 Existing Site Levels

During the site walkover, the development area was noted as undulating fields, on the site of a steep hill. Taking in to account the variation in topography across the site it would be considered prudent to confirm site features and levels by-way of a Topographical Survey.

2.3 Existing Site Surfacing and Buildings

At the time of the site walkover the site was noted as being free of buildings. The site surfacing was noted as grass for agricultural grazing. Variations in levels have resulted in some areas of standing water and localised ponding of water. The site is surrounded by mature hedgerows and post-wire fences.

There was no visual evidence of fly-tipping or of surface staining (contamination). There was no evidence of recent bonfires. As the land is used for agricultural grazing there was no visual evidence of materials, chemical or fuel storage.

Access to the site was afforded from Elizabeth Crescent, which is a housing estate on the northern site boundary accessed via tarmac roads.

2.4 Surrounding Land Uses

The immediate surrounding area comprises residential estates and agricultural land.

2.0 Site Location and Development Proposals (Cont'd)

2.5 Existing Infrastructure and Utilities

A review of statutory utility supplier records lies outside the scope of this report. However, as the site is bounded by residential housing estates it is considered likely that there will be mains utility connections nearby. Consequently, there should be a review of the statutory utility plans should include correspondence with the utility providers to determine the presence of buried utilities prior to commencing any redevelopment/construction works.

This will determine if any significant or mains utilities are present on site that may require easement strips, alterations to proposed layouts or potentially costly diversions/terminations. Determining the presence of on-site utilities will also protect the workforce by reducing the risk of utility strikes during the construction phase. Overhead powerlines are indicated in the north-east site area.

2.6 Development Proposal

The site is currently being assessed by the Client as to its suitability for residential redevelopment. This is considered to comprise the construction of a residential housing estate, with further development details available from the Consultant.

3.0 Environmental Setting

Section 3.1 refers to the Ground Sure Report (GSR – Geoinsight) contained in Appendix II, with Sections 3.2 to 3.4 referring to the Ground Sure Report (GSR – Enviroinsight) contained in Appendix II. Section 3.5 refers to the historical map extracts presented with the Ground Sure Report (GSR – Mapinsight) and contained within Appendix III.

3.1 Development Area Geology

A geological review of the site has been undertaken using information provided on published geological plans in conjunction with the Ground Sure Report (GSR - Geoinsight) contained in Appendix II.

3.1.1 Made Ground

A review of published geological maps and the GSR indicates that made ground materials are close to the site (north-eastern boundary) associated with former coal mining activities (David Pit and former open cast). However, the made ground is not shown as encroaching on to the site.

Historical plans suggest the site has been agricultural in use for many years. Across much of the development area, it is likely that the site will exhibit topsoil over natural soils, with the potential for localised made ground. Historically, there has been a potential for granular materials to be added to the topsoil through agricultural processes (i.e. ploughing), perhaps to aid drainage, with some soil disturbance also possible during the installation of field drainage. This can sometimes include granular man-made materials such as ash and clinker.

It is therefore recommended that excavations be formed on site to determine the shallow soils and if made ground is identified that includes anthropogenic debris then contamination screening should be undertaken as part of a human health risk assessment. Topsoil materials should also be screened to determine if they are suitable for re-use within a residential context, in accordance with British Standards.

Historical ground workings within close proximity to the site include former quarries and opencast coal mines. These features could pose a risk of ground gas generation and migration.

3.1 Development Area Geology (Cont'd)

3.1.2 Drift Geological Deposits

A review of published geological plans and the GSR indicates that the site lies within an area devoid of Drift geological deposits. As result, residual soils (weathered bedrock) may be present close to ground level. Areas of Glacial Till (typically firm to stiff sandy gravelly clay) are noted to the east and west. The GSR (Geoinsight Section 6.0) within Appendix II identifies the following geohazards and indicates a preliminary level of risk:

- Shrink-swell clays very low level risk.
- Landslides very low to moderate risk. The GSR recommends consideration of ground movement and ground stability for new build.
- Compressible deposits Negligible level risk.
- Collapsible deposits very low level risk.
- Running sands negligible level risk.

It is recommended that reference be made to Section 6.0 of the Geoinsight GSR (Appendix II). Consequently, Phase 2: Ground Investigation works would be prudent to aid the design of foundations, any retaining structures and highways, as per any specific requirements of the Design Team.

3.1.3 Solid Geological Deposits

Solid geological deposits across the development site are indicated by the BGS as being Carboniferous Coal Measures, with the Whitehaven Sandstone Member (WS) underlain by alternations of mudstone, siltstone and sandstone. Subcropping coal seams are noted within close proximity to the site (nearest being c.27m north) that have the potential to pass beneath parts of the site.

The Solid deposits are noted to be variable across the site with Section 6.0 of the GSR Geoinsight (Appendix II) having noted the following:

"Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks".

It is recommended that reference be made to Section 4.0 of the GSR (Appendix II). Consequently, Phase 2: Ground Investigation works would be prudent to aid the design of foundations, retaining structures and highways, should they be deemed necessary by the Design Team.

3.1.4 Historical Investigation Records

Only one historical borehole record is held by the BGS within a representative distance of the site, according to the GSR Geoinsight Section 7.0. This refers to the former Davy Pit (Coal Mine) c.153m north-east. The borehole log is confidential and therefore provides no information on ground conditions.

3.1.5 Geological Features

Geological structural faults are inferred on site and within close proximity to the site. These fault lines have the potential to act as conduits for the migration (horizontally and vertically) of potentially harmful ground gas, should areas of infilling or former mine workings be nearby. The on-site fault may represent a localised area of weathered and weakened ground, particularly as shallow bedrock is considered likely.

3.1 Development Area Geology (Cont'd)

3.1.6 Mining and Quarrying Assessment

Due to the geological setting, site specific reference has been made to the Coal Authority (CA) by way of a CA Coal Mining Report (Appendix IV).

In summary, the CA records deep mining beneath the site area, with David Pit and Davy Pit noted to the east and George Pit to the west. Large areas of opencast coal mining (now reclaimed) are also recorded to the east, although geological plans suggest that they did not encroach on site.

The CA does not record the site as being within a former opencast and they do not record any mine entries within 20m. The CA is not aware of any coal mining subsidence claims.

Reference has also been made to the CA Online Database (Appendix IV) which notes the following:

- The site lies within a CA referral area and therefore a site-specific CA Coal Mining Report has been acquired.
- The CA does not record mine entries on site.
- The CA does not record the site to be in an area which is underlain by shallow coal mine workings.
- The CA does not believe that coal is at or close to the surface which may have been historically worked.
- The CA does not record surface mining (open cast) on site or within the vicinity of the site.
- The CA does not record coal outcrops on site or within the vicinity of the site.
- The CA does not record the site as being within a CA defined "High Risk Development Area".

Due to geological structural faulting, it may be the case that parts of the site (for example the north-east) are underlain by shallow coal and it is recommended that should planning permission be obtained then intrusive investigations include assessments pertaining to potential shallow coal mine workings.

A review of the GSR Geoinsight (Section 5.0) indicates that the following activities have not taken place on site:

- Natural Cavities
- Gypsum Extraction

Tin Mining

Brine Extraction

Clay Mining

Former quarrying activities are recorded within close proximity to the site, to the north and west, which may be associated with former sandstone mining. As previously mentioned, opencast coal mining took place to the east.

The GSR Geoinsight Section 5.0 notes the following with respect to vein mineral mining (i.e. iron ore):

"Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered".

The desk based information provided to GEO does not suggest a significant or unacceptable risk of shallow mining geohazards. However, GEO is not responsible for third party information and records may be inaccurate or incomplete. Therefore, GEO recommends the developer implement a watching brief during the redevelopment and consideration should be made for the potential for historical mining features.

3.1 Development Area Geology (Cont'd)

3.1.7 Radon Gas Assessment

The GSR Geoinsight Section 3.1 indicates that the development site is not located within a Radon Affected Area as defined by the Health Protection Agency (HPA), as less than 1% of properties are above the action level. Consequently, in accordance with BR211 radon protective measures are not currently necessary.

3.2 Development Area Hydrogeology (Groundwater)

3.2.1 Made Ground/Soils

Any made ground materials on site are likely to be classified as high permeability due to the urbanised setting (i.e. worst case scenario assumed until proven otherwise).

3.2.2 Drift Geology

As no Drift geological deposits are considered present by the BGS there is no EA Aquifer status. Any residual soils present may be variable in permeability. Nearby Glacial Till deposits (east and west) are classified as undifferentiated with respect to water resources.

3.2.3 Solid Geology

The site is underlain by Secondary A Aquifers. They are unlikely to be considered as a strategic resource.

3.3 Development Area Hydrology

3.3.1 Groundwater

Groundwater could be present within the Solid geological deposits. A review of the information in the GSR Enviroinsight indicates the following:

- No groundwater abstractions are recorded within c.2km of the site.
- No surface water abstractions are recorded within c.2km of the development area.
- No potable water abstraction licences are held within c.2km of the site.
- The site is not recorded as being within or within c.500m of a Source Protection Zone.

Based on the above information the site is not considered to lie within a particularly sensitive environmental setting with respect to water resources.

3.3.2 Surface Water Features

The nearest surface water feature is thought to be a beck c.174m north-east. No Environment Agency (EA) GQA classified rivers, canals, ponds or lakes (i.e. biological or chemical monitoring points) are thought to be recorded within c.250m of the development area.

3.3 Development Area Hydrology (Cont'd)

3.3.3 Current Surface Water Run-off

It is considered that a large portion of the current surface water interception will infiltrate directly into the made ground/topsoil as hard-standing is not present. Some overland flow (with the topography) is likely during heavy rainfall events and standing water may occur, as identified during the site walkover.

3.4 Development Area Environmental Sensitivity

3.4.1 Site Ecology

- No Sites of Special Scientific Interest (SSSI) is noted within c.250m.
- No Local Nature Reserves (LNR) are present within c.250m.
- No Special Areas of Conservation (SAC) are noted within c.250m.
- No Special Protection Areas (SPA) are present within c.250m.
- No records of Ancient Woodland are recorded within c.250m.
- No World Heritage Sites are recorded within c.250m.
- No RAMSAR Sites are noted within c.250m.
- No Areas of Outstanding Natural Beauty (AONB) are recorded within c.250m.
- No National Parks are recorded within c.250m.
- No Nitrate Vulnerable Zones (NVZ) are within c.250m.
- No Nitrate Sensitive Areas are within c.250m.
- No records of Green Belt are recorded within c.250m.

The Design Team should refer to Section 8.0 of the GSR (Enviroinsight – Appendix II).

3.4.2 Authorisations, Incidents and Registers

- No records of IPC Authorisations are held within c.250m.
- No records of IPPC Authorisations are held within c.250m.
- No records of Water Industry Referrals (potentially harmful discharges to the public sewer) are held within c.250m.
- No records of Red List Discharge Consents (potentially harmful discharges to controlled waters) are held within c.250m.
- No records of List 1 Dangerous Substances Inventory sites are held within c.250m.
- No records of List 2 Dangerous Substances Inventory sites are held within c.250m.
- No records of Part A (2) and Part B Activities and Enforcements are noted within c.250m.
- No records of Category 3 or 4 Radioactive Substances Authorisations are held within c.250m.
- One Licensed Discharge Consent is held within c.250m. This does not appear to be attributable to the site.
- No records of Planning Hazardous Substance Consents or Enforcements are within c.250m.
- No records of COMAH and NIHHS sites are held within c.250m.
- No Environment Agency Recorded Pollution Incidents are recorded within c.250m.

The Design Team should refer to Section 2.0 of the GSR (Enviroinsight – Appendix II).

3.4 Development Area Environmental Sensitivity (Cont'd)

3.4.3 Determination of Contaminated Land (Part IIA)

A review of the GSR Enviroinsight has indicated that the site is not currently recorded as Contaminated Land under Part IIA EPA 1990. In addition, no sites determined as Contaminated Land under Part IIA EPA 1990 are recorded within c.500m of the development area.

3.4.4 Historical Industrial Land Uses

A review of Section 1.0 in the GSR (EnviroInsight) identifies the following:

- Potentially Contaminative Uses Identified within c.250m Thirty-three entries noted within c.250m.
- Historical Tank Database One entry noted within c.250m.
- Historical Energy Features No entries noted within c.250m.
- Historical Petrol and Fuel Site Database None noted within c.250m.
- Historical Garage and Motor Vehicle Repair Database None noted within c.250m.
- Potentially Infilled Land within c.250m Thirty-nine entries are noted within c.250m.

It is recommended that reference be made to Section 1.0 of the GSR for further information (Enviroinsight – Appendix II). Potential "geohazards" noted within c.250m of the site include: disused mine, colliery, pit, shafts and quarries. None of the activities are recorded as taking place directly on site.

3.4.5 Current Industrial Land Uses

Due to the rural and residential nature of the site and immediate surrounding area there are only three current industrial land uses noted within c.250m of the development site. They relate to essential infrastructure comprising pylons and an electricity substation. It is recommended that reference be made to Section 4.0 of the GSR for further information (Enviroinsight – Appendix II).

3.4.6 Fuel Station Entries

According to information provided by Catalist and presented in the GSR Enviroinsight Section 4.0 there are no fuel filling sites recorded within c.250m of the development area.

3.4.7 Landfill and Waste Regulation/Management - Landfill Sites/Other Waste Sites

- No Environment Agency Registered Landfill Sites are recorded within c.250m.
- No Environment Agency Historic Landfill Sites are recorded within c.250m.
- The BGS/DoE Landfill Site Survey does not record any Landfill Sites within c.250m.
- No GroundSure Local Authority Landfill sites are recorded within c.250m.
- No Operational and Non-Operational Waste Treatment, Transfer or Disposal Sites are recorded within c.250m.
- No Environment Agency Licensed Waste Sites are recorded within c.250m.

It is recommended that reference be made to Section 3.0 of the GSR Enviroinsight (Appendix II) for further information. Although no landfills are recorded within c.250m of the site, as discussed earlier, the site is bounded by historical ground workings which includes former quarries and opencast coal mines. These features could pose a risk of ground gas generation and migration.

3.5 Development Area Historical Plan Appraisal

Section 3.5 is based on historical plans (Ordnance Survey extracts) obtained as part of the parcel of information within the GSR and provides a summary of the site history, highlighting any industries, processes or activities that may be considered as Geohazards. Copies of old survey plans (1:10,560, 1:10,000, 1:2,500 and 1:1,250 Scale) covering the site and adjacent areas have been reviewed with selected extracts included within Appendix III. Attention is made to the greater detail presented in the 1:2,500 and 1:1,250 scale plans dating between c.1862 and c.1994.

Historical plans note the site as agricultural land so long as OS records have been available. No significant variations are therefore noted on site.

Potential "geohazards" noted on historical plans and the GSR Enviroinsight for the immediate area surrounding the site (within c.250m) include: old quarries (now infilled), old shafts/pits (coal) and covered reservoirs.

At the time of the site walkover the site was noted as being free of buildings. The site surfacing was noted as grass for agricultural grazing. As previously mentioned, variations in levels have resulted in some areas of standing water and localised ponding of water. The site is surrounded by mature hedgerows and post-wire fences.

There was no visual evidence of fly-tipping or of surface staining (contamination). There was no evidence of recent bonfires. As the land is used for agricultural grazing there was no visual evidence of bulk materials, chemical or fuel storage.

4.0 Conceptual Site Model

A Conceptual Site Model (CSM) has been designed using the information presented within this P1 DTS to provide a tabulated representation of the anticipated ground, groundwater and ground gas conditions below the development area (Existing Site CSM). The CSM is presented within Section 4.0 and aids the completion of the Preliminary Qualitative Risk Assessment (PQRA – Section 5.0).

The CSM utilises the established *Source – Pathway – Receptor* pollutant linkage model and is designed to provide an improved understanding of the site characteristics, designing a Preliminary Screening Strategy (PSS) for the Potential Contaminants of Concern (PCOC's). This ensures adequate and appropriate Phase 2: Ground Investigation (P2 GI) Works are designed and undertaken for wide spread and targeted investigations, should they be deemed necessary.

During the P2 GI the CSM can be refined depending upon the outcomes of the intrusive works to ensure that appropriate remediation (if required) is completed to ensure the development area is "fit for purpose" in relation to the proposed end use. The matrix CSM is presented on the following page.

4.0 Conceptual Site Model (Cont'd)

Sources:

S1 = Generic/Organic Made Ground – NO significant sources of widespread of pervasive contamination noted.

The historical information available for the site suggests that the site has been agricultural land for many years.

Across much of the development area, it is likely that the site will exhibit topsoil over natural soils with localised pockets of made ground. Historically, there has been a potential for granular materials to be added to the topsoil within agricultural fields through agricultural processes (i.e. ploughing), perhaps to aid drainage, with some additional soil disturbance during the installation of field drainage. This can sometimes include granular man-made materials such as ash and clinker. It is therefore recommended that excavations be formed on site to determine the shallow soils and if made ground is identified that includes anthropogenic debris then contamination screening should be undertaken as part of a human health risk assessment. Topsoil materials should also be screened to determine if they are suitable for re-use within a residential context, in accordance with British Standards.

If made ground (that includes anthropogenic debris, i.e. ash, clinker etc.) and/or visual/olfactory (malodorous) evidence of potential contamination are identified then contamination screening with appropriate Human Health Risk Assessment can be completed. Potential Contaminants of Concern (PCOC's) include Arsenic, Cadmium, Chromium (III and VI), Copper, Lead, Mercury, Nickel, Selenium, Zinc, Cyanide (free), pH, Soluble Sulphate, Total Organic Carbon, Speciated PAH, and Asbestos.

To determine suitability for re-use in accordance with current British Standards, the topsoil on site should also be tested for similar analytes as discussed above.

A watching brief should be implemented during the development/construction works to ensure that if made ground (that includes anthropogenic debris, i.e. ash, clinker etc.) and/or visual/olfactory (malodorous) evidence of potential contamination are identified then works should be stopped, the Local Authority notified and advice should be sought from an appropriately qualified and experienced Geo-environmental Engineer (i.e. contamination screening with appropriate Human Health Risk Assessment).

S2 = Ground Gas – Potential sources include nearby mining activities (former coal mines/shafts/opencast) and areas of infilling (former quarries). Areas of re-graded made ground to the east may also potentially be a source.

PCOC's include Carbon Dioxide and Methane. Movement of ground gas could be facilitated by geological structural faulting.

Pathways:

P1 = Inhalation of indoor / outdoor air (wind-blown particles)

P2 = Dermal/direct contact (limited risk present through areas of private gardens and soft landscaping)

- P3 = Ingestion (limited risk present through areas of private gardens and soft landscaping)
- P4 = Migration through existing services
- P5 = Direct contact with building materials

P6 = Surface Run-Off

P7 = Leaching from Soils

Receptors:

R1 = Human Health (Residents)

R2 = Human Health (Construction Workforce) – Not considered within this assessment

R3 = Groundwater (Secondary A Aquifers and off-site surface water features) – Not considered to be at significant risk

R4 = Building Materials and Buried Utilities

R5 = Flora and Fauna (future private gardens and soft landscaping)

5.0 Preliminary Qualitative Risk Assessment (PQRA)

5.1 Qualitative Geotechnical Risk Assessment – Risk Meter

The following Preliminary Geotechnical Risk Meter determines the potential level of risk associated with the geotechnical properties of the site, considering any potential geohazards identified by the information presented within the DTS.

Geotechnical:	Ţ					
RISK =	NEGLIGIBLE	VERY LOW	LOW	MODERATE	HIGH	VERY HIGH

A risk level of MODERATE is currently determined appropriate for this development area for the following reasons:

- Localised pockets of made ground could be present.
- Residual soils/Drift geological deposits could be variable.
- Shallow bedrock could require rock breaking plant for deep excavations.
- A geological structural fault could form a localised area of weathered/weak strata.
- Parts of the site could potentially be underlain by shallow coal/workings.
- Shallow groundwater could be present that could affect excavation stability and ground bearing pressures of residual soils.

Consequently, Phase 2: Ground Investigation works are recommended, should planning permission be obtained, to determine ground/groundwater/gas conditions and to aid the design of foundations, retaining structures and highways, as per any specific requirements of the Design Team.

5.2 Qualitative Contamination Risk Assessment – Risk Meter

The following Preliminary Ground Contamination, Groundwater Contamination and Ground Gas Risk Meter determines the potential level of risk associated with the redevelopment of the site when considering the anticipated *Sources – Pathways – Receptors* within the pollutant linkage model and CSM.

Ground Contamination:		Ţ				
RISK =	NEGLIGIBLE	VERY LOW	LOW	MODERATE	HIGH	VERY HIGH
Groundwater Contamination:	\bigcup					
RISK =	NEGLIGIBLE	VERY LOW	LOW	MODERATE	HIGH	VERY HIGH
Ground Gas:		Ţ				
RISK =	NEGLIGIBLE	VERY LOW	LOW	MODERATE	HIGH	VERY HIGH

A risk level of VERY LOW is currently determined appropriate for this development with respect to ground contamination. In summary, the historical information available suggests that much of the site has remained agricultural land.

5.0 Preliminary Qualitative Risk Assessment (PQRA) (Cont'd)

5.2 Qualitative Contamination Risk Assessment – Risk Meter (Cont'd)

However, to confirm this risk assessment and to determine if the topsoil materials on site are suitable for re-use in a residential context, it is recommended that excavations be formed on site as part of a Phase 2: Ground Investigation to confirm the shallow ground conditions and to ensure that if made ground (that includes anthropogenic debris, i.e. ash, clinker etc.) and/or visual/olfactory (malodorous) evidence of potential contamination are identified, then contamination screening with appropriate Human Health Risk Assessment can be completed. Topsoil materials should also be screened to determine if they are suitable for re-use within a residential context, in accordance with current British Standards. The Potential Contaminants of Concern (PCOC's) are presented within Section 4.0 (CSM).

A watching brief should also be implemented during the development/construction works to ensure that if made ground (that includes anthropogenic debris, i.e. ash, clinker etc.) and/or visual/olfactory (malodorous) evidence of potential contamination are identified then works should be stopped, the Local Authority notified and advice should be sought from an appropriately qualified and experienced Geo-environmental Engineer (i.e. contamination screening with appropriate Human Health Risk Assessment).

A risk level of NEGLIGIBLE is currently considered appropriate for the site with respect to potential risks to controlled waters (groundwater, nearby surface water features). In summary, no significant sources have been recorded and potential receptors are considered to be limited.

A risk level of VERY LOW is considered appropriate for the site with respect to potential harmful ground gas. In summary, sources have been identified beneath the site and surrounding the site, with potential pathways including the inferred geological structural faulting.

GEO also recommends that a "watching brief" and "observational technique" be applied to this site to ensure that if ground conditions appear to vary from those identified within this investigation report then advice should be sought from a suitably qualified and experienced Engineering Geologist, Geotechnical or Geo-Environmental Engineer.

6.0 Conclusions

When considering the results of this DTS report the following can be seen:

- The development site is currently considered to represent a moderate geotechnical risk.
- The site is currently considered to pose a very low risk to the proposed end users (ground contamination).
- The site is currently considered to pose a negligible risk to adjacent sites (the surrounding environment) and controlled waters with respect to potential ground/groundwater contamination.
- A very low risk is currently considered present of ground gas.

Consequently, it would be considered appropriate for the Local Planning Authority Environmental Health Department to attach the appropriate conditions relating to Phase 2: Ground Investigation works to any planning permission granted for this site. This is to ensure the *"geohazards"* identified are appropriately assessed to ensure the appropriateness of the site for the proposed end use prior to commencing redevelopment/construction.

The combination of the Phase 1: Desk Top Study Report and any subsequent Phase 2: Ground Investigation should be suitable for submission to the Local Authority for planning purposes and for the appointed Design Team.

6.0 Conclusions (Cont'd)

A Consulting Engineer should be contacted to determine if any potential items are identified or considered present on site that may mean redevelopment is not possible (from a construction) or cost perspective.

GEO also recommends that a "watching brief" and "observational technique" be applied to this site to ensure that if ground conditions appear to vary from those identified within this investigation report then advice should be sought from a suitably qualified and experienced Engineering Geologist, Geotechnical or Geo-Environmental Engineer.

The conclusions and recommendations presented within this report are considered reasonable based on the available information. However, these cannot be guaranteed to gain regulatory approval. Therefore, the report should be passed to the appropriate regulatory authorities and/ or other key stakeholders in order to seek their approval of the findings prior to undertaking any works on site.

End of Report

Appendix I

- Site Location Plan
- Aerial Photograph Extract
- Existing Site Layout Plan
- Site Images





GEO2017-2356: Site Location Plan (Not to Scale)





GEO2017-2356: Aerial Photograph Extract



 Aerial Photograph Capture date:
 05-Oct-2008

 Grid Reference:
 298586,519104

 Site Size:
 3.28ha



GEO2017-2356: Existing Site Layout Plan (Not to Scale) – Supplied by Client





GEO2017-2356: Site Images (February 2017)



Appendix II

Ground Sure Report (GSR – Geoinsight and Enviroinsight)





Land at , Elizabeth Crescent, Whitehaven, CA28 6JQ,

Reference:

Address:

Date:

Client:

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EMS-419950_561197

10 May 2017

NW

W

NE



S

SW

Aerial Photograph Capture date:05-Oct-2008Grid Reference:298586,519104Site Size:3.28ha

SE





Contents Page

Contents Page	3
Overview of Findings	5
1:10,000 Scale Availability	8
Availability of 1:10,000 Scale Geology Mapping	9
1 Geology (1:10.000 scale)	10
1 1 Artificial Ground Map (1:10,000 scale)	10
1 Geology 1:10 000 scale	11
1 1 Artificial Ground	11
1.2 Superficial Deposits and Landslins Map (1:10.000 scale)	12
1.2 Superficial Deposits and Landslips	13
1.2.1 Superficial Deposits/ Drift Geology	13
1.2.2 Landslip	13
1.3 Bedrock and Faults Map (1:10,000 scale)	14
1.3 Bedrock and Faults	15
1.3.1 Bedrock/ Solid Geology	15
1.3.2 Faults	15
2 Geology 1:50,000 Scale	10
2. C A TATITICIAL Ground Map	16
2. Geology 1:50,000 scale	17
2.1 Artificial Ground	17
2.1.1 Artificial/ Made Ground	17
2.2 Superficial Deposits and Landslips Map (1:50.000 scale)	
2.2 Superficial Deposits and Landslips	19
2.2.1 Superficial Deposits/ Drift Geology	19
2.2.2 Permeability of Superficial Ground	19
2.2.3 Landslip	19
2.2.4 Landslip Permeability	19
2.3 Bedrock and Faults Map (1:50,000 scale)	20 21
2.3 Bedrock, Solid Geology & Faults	2 I 21
2.3.2 Permeability of Bedrock Ground	22
2.3.3 Faults	22
3 Radon Data	24
3.1 Radon Affected Areas	24
3.2 Radon Protection	24
4 Ground Workings Map	25
4 Ground Workings	26
4.1 Historical Surface Ground Working Features derived from Historical Mapping	26
4.2 Historical Underground Working Features derived from Historical Mapping	27
4.3 Current Ground Workings	28
5 Mining, Extraction & Natural Cavities	31
5.1 Historical Mining	31
5.2 Coal Mining	32
5.3 Johnson Poole and Bloomer	32
5.4 Non-Coal Mining	33
5.5 Non-Coal Mining Cavities	33
5.6 Natural Cavities	33
5.7 Brine Extraction	33
5.8 Gypsum Extraction	34
5.9 Tin Mining	34
5.10 Clay Mining	34
6 Natural Ground Subsidence	35
6.1 Shrink-Swell Clay Map	35
6.2 Landslides Map	36
6.3 Ground Dissolution of Soluble Rocks Map	37
6.4 Compressible Deposits Map	38
6.5 Collapsible Deposits Map	39
6.6 Running Sand Map	40





6 Natural Ground Subsidence	41
6.1 Shrink-Swell Clays	41
6.2 Landslides	41
6.3 Ground Dissolution of Soluble Rocks	42
6.4 Compressible Deposits	42
6.5 Collapsible Deposits	43
6.6 Running Sands	43
7 Borehole Records	45
8 Estimated Background Soil Chemistry	46
9 Railways and Tunnels Map	47
9 Railways and Tunnels	48
9.1 Tunnels	48
9.2 Historical Railway and Tunnel Features	48
9.3 Historical Railways	49
9.4 Active Railways	49
9.5 Railway Projects	49





Overview of Findings

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

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

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

Section 1: Geology 1:10,000 Scale

1.1 Artificial Ground	1.1 Is there any Artificial Ground/ Made Ground present beneath the study site at 1:10,000 scale?	Yes
1.2 Superficial Geology and Landslips	1.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site at 1:10,000 scale?*	No
	1.2.2 Are there any records of landslip within 500m of the study site boundary at 1:10,000 scale?	No
1.3 Bedrock, Solid Geology and Faults	1.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
	1.3.2 Are there any records of faults within 500m of the study site boundary at 1:10,000 scale?	No
Section 2: Geolo	gy 1:50,000 Scale	
2.1 Artificial Ground	2.1.1 Is there any Artificial Ground/ Made Ground present beneath the study site?	Yes
	2.1.2 Are there any records relating to permeability of artificial ground within the study site*boundary?	Yes
2.2 Superficial Geology and Landslips	2.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site?*	Yes
	2.2.2 Are there any records of permeability of superficial ground within 500m of the study site?	Yes
	2.2.3 Are there any records of landslip within 500m of the study site boundary?	No
	2.2.4 Are there any records relating to permeability of landslips within the study site* boundary?	No



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Section 2: Geolo	gy 1:50,000 Scale						
2.3 Bedrock, Solid Geology and Faults	2.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.						
	2.3.2 Are there any records relating to perm ground within the study site boundary?	Yes					
	2.3.3 Are there any records of faults within 5 boundary?	Yes					
Section 3: Rador	1						
 Radon 3. Radon 3.11s the property in a Radon Affected A Protection Agency (HPA) and if so what above the Action Level? 		a as defined by the Health ercentage of homes are		The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.			
	3.2Radon Protection			No radon	protective me necessary.	easures are	
Section 4: Groun	d Workings	On-site	0-50m	51-250	251-500	501-1000	
4.1 Historical Surfac Scale Mapping	e Ground Working Features from Small	0	0	24	Not Searched	Not Searched	
4.2 Historical Under	ground Workings from Small Scale Mapping	0	0	6	3	24	
4.3 Current Ground	Workings	0	0	3	0	7	
Section 5: Mining	g, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000	
5.1 Historical Mining	J	0	0	6	3	19	
5.2 Coal Mining		1	0	0	0	0	
5.3 Johnson Poole a	nd Bloomer Mining Area	0	0	0	0	0	
5.4 Non-Coal Mining	*	1	0	0	0	1	
5.5 Non-Coal Mining	g Cavities	0	0	0	0	0	
5.5 Natural Cavities		0	0	0	0	0	

Report Reference: EMS-419950_561197 Client Reference: EMS_419950_561197



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Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.6 Brine Extraction	0	0	0	0	0
5.7 Gypsum Extraction	0	0	0	0	0
5.8 Tin Mining	0	0	0	0	0
5.9 Clay Mining	0	0	0	0	0
Section 6: Natural Ground Subsidence	On-sit	te			
6.1 Shrink-Swell Clay	Very Lo	W			
6.2 Landslides	Modera	ite			
6.3 Ground Dissolution of Soluble Rocks	Negligik	ole			
6.4 Compressible Deposits	Negligik	ole			
6.5 Collapsible Deposits	Very Lo	W			
6.5 Running Sand	Negligik	ole			
Section 7: Borehole Records	On-si	te	0-50m	5	1-250
7 BGS Recorded Boreholes	0		0		2
Section 8: Estimated Background Soil Chemistry	On-si	te	0-50m	5	1-250
8 Records of Background Soil Chemistry	5		7		0
Section 9: Railways and Tunnels	On-site	0-50m	51-250	250-500	
9.1 Tunnels	0	0	0	Not Searched	1
9.2 Historical Railway and Tunnel Features	0	0	0	Not Searched	1
9.3 Historical Railways	0	0	0	Not Searchec	1
9.4 Active Railways	0	0	0	Not Searched	1
9.5 Railway Projects	0	0	0	0	





1:10,000 Scale Availability



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Availability of 1:10,000 Scale Geology Mapping

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

ID	Distance	Artificial Coverage	Superficial Coverage	Bedrock Coverage	Mass Movement Coverage
1	0.0	No deposits are mapped	No coverage	No coverage	No coverage
2	1252.0	No deposits are mapped	No coverage	No coverage	No coverage

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

The definitions of coverage are as follows:

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

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1 Geology (1:10,000 scale). 1.1 Artificial Ground Map (1:10,000 scale)







1. Geology 1:10,000 scale

1.1 Artificial Ground

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

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

Database searched and no data found.





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



Artificial Ground Legend

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1.2 Superficial Deposits and Landslips

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

1.2.1 Superficial Deposits/ Drift Geology

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

Database searched and no data found.

1.2.2 Landslip

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

No

Database searched and no data found.

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

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





1.3 Bedrock and Faults Map (1:10,000 scale)



SW

Bedrock and Faults Legend

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1.3 Bedrock and Faults

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

1.3.1 Bedrock/ Solid Geology

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

Database searched and no data found at this scale.

1.3.2 Faults

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

No

Database searched and no data found at this scale.

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

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




2 Geology 1:50,000 Scale 2.1 Artificial Ground Map



Worked Ground

Infilled Ground

(undivided)

1000

Search Buffers (m)

Landscaped Ground

Reclaimed Ground

(undivided)





Yes

2. Geology 1:50,000 scale

2.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 028

2.1.1 Artificial/ Made Ground

Are there any records of Artificial/ Made Ground within 500m of the study site boundary?

ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	3.0	E	LSGR-ARTGR	LANDSCAPED GROUND (UNDIVIDED)	ARTIFICIALLY MODIFIED GROUND
2	145.0	SE	WMGR-ARTDP	INFILLED GROUND	ARTIFICIAL DEPOSIT
3	414.0	S	WMGR-ARTDP	INFILLED GROUND	ARTIFICIAL DEPOSIT
4	429.0	E	WMGR-ARTDP	INFILLED GROUND	ARTIFICIAL DEPOSIT
5	470.0	SE	WMGR-ARTDP	INFILLED GROUND	ARTIFICIAL DEPOSIT

2.1.2 Permeability of Artificial Ground

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

Dista	ance (m)	Direction	Flow Type	Maximum Permeability	Minimum Permeability
	3.0	E	Mixed	Very High	Low





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



Ground Workings Legend

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Search Buffers (m)





2.2 Superficial Deposits and Landslips

2.2.1 Superficial Deposits/ Drift Geology

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

ID	Distance	Direction	LEX Code Description	Rock Description
2	3.0	E	TILLD-DMTN TILL, DEVENSIAN	DIAMICTON
3	484.0	W	TILLD-DMTN TILL, DEVENSIAN	DIAMICTON

2.2.2 Permeability of Superficial Ground

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

Distance (m)	Direction	Flow Type	Maximum Permeability	Minimum Permeability
3.0	E	Mixed	High	Low

2.2.3 Landslip

Are there any records of Landslip within 500m of the study site boundary?

No

Database searched and no data found.

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

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

2.2.4 Landslip Permeability

Are there any records relating to permeability of landslips within the study site boundary?

No

Database searched and no data found.





2.3 Bedrock and Faults Map (1:50,000 scale)



Ground Workings Legend

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2.3 Bedrock, Solid Geology & Faults

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 028

2.3.1 Bedrock/Solid Geology

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

ID	Distance	Direction	LEX Code	Rock Description	Rock Age
1	0.0	On Site	WS-SDST	WHITEHAVEN SANDSTONE FORMATION - SANDSTONE	WESTPHALIAN
2	0.0	On Site	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
3	0.0	On Site	PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
4	0.0	On Site	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
5C	18.0	NW	PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
6E	51.0	NW	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
7	169.0	E	PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
8	186.0	E	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
9A	211.0	SW	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
10A	239.0	SW	PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
11	263.0	Ν	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
12D	269.0	NW	PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
13	272.0	NE	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
14	303.0	Ν	WS-SDST	WHITEHAVEN SANDSTONE FORMATION - SANDSTONE	WESTPHALIAN
15	306.0	NE	WS-SDST	WHITEHAVEN SANDSTONE FORMATION - SANDSTONE	WESTPHALIAN
16B	368.0	SW	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
17	380.0	S	WS-SDST	WHITEHAVEN SANDSTONE FORMATION - SANDSTONE	WESTPHALIAN
18	393.0	N	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
19	393.0	E	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
20B	409.0	SW	PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN

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	LOCATION	NILLUOLINCE			-
ID	Distance	Direction	LEX Code	Rock Description	Rock Age
21	425.0	S	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
22	427.0	SW	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
23	444.0	S	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
24	465.0	SW	PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
25	482.0	NW	PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
26G	488.0	E	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN

2.3.2 Permeability of Bedrock Ground

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

Distanc e	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Fracture	High	Moderate
0.0	On Site	Fracture	Moderate	Low
0.0	On Site	Fracture	High	Moderate
18.0	NW	Fracture	High	Moderate

2.3.3 Faults

Are there any records of Faults within 500m of the study site boundary?

Yes

ID	Distance	Direction	Category Description	Feature Description
53	0.0	On Site	FAULT	Fault, inferred, displacement unknown
54	27.0	Ν	ROCK	Coal seam, inferred
55C	100.0	NW	ROCK	Coal seam, inferred
56	185.0	S	FAULT	Fault, inferred, displacement unknown
57D	263.0	Ν	FAULT	Fault, inferred, displacement unknown
58	290.0	SW	ROCK	Coal seam, inferred
59	295.0	SE	FAULT	Fault, inferred, displacement unknown
60	303.0	Ν	FAULT	Fault, inferred, displacement unknown
61E	303.0	W	ROCK	Coal seam, inferred
62	306.0	NE	FAULT	Fault, inferred, displacement unknown
63	318.0	E	ROCK	Coal seam, inferred
64H	338.0	S	FAULT	Fault, inferred, displacement unknown
65	380.0	S	FAULT	Fault, inferred, displacement unknown
66F	393.0	Ν	FAULT	Fault, inferred, displacement unknown
67G	393.0	E	FAULT	Fault, inferred, displacement unknown
68E	401.0	NW	ROCK	Coal seam, inferred



Distance	Direction	Category Description	Feature Description
420.0	SE	ROCK	Coal seam, inferred
452.0	W	ROCK	Coal seam, inferred
452.0	SW	ROCK	Coal seam, inferred
461.0	W	LANDFORM	Glacial meltwater channel centre line, undifferentiated
466.0	S	ROCK	Coal seam, inferred
488.0	E	FAULT	Fault, inferred, displacement unknown
497.0	S	ROCK	Coal seam, inferred
	Distance 420.0 452.0 452.0 461.0 466.0 488.0 497.0	Distance Direction 420.0 SE 452.0 W 452.0 SW 461.0 W 466.0 S 488.0 E 497.0 S	DistanceDirectionCategory Description420.0SEROCK452.0WROCK452.0SWROCK461.0WLANDFORM466.0SROCK488.0EFAULT497.0SROCK

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

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





3.1 Radon Affected Areas

Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

3.2 Radon Protection

Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment? No radon protective measures are necessary.







4 Ground Workings

4.1 Historical Surface Ground Working Features derived from Historical Mapping

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

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

ID	Distance (m)	Direction	NGR	Use	Date
1A	83.0	W	298300 519077	Unspecified Pit	1938
2A	83.0	W	298300 519077	Unspecified Old Quarry	1898
3	84.0	W	298325 519070	Unspecified Pit	1863
4A	85.0	W	298296 519076	Unspecified Pit	1977
5A	90.0	W	298295 519074	Unspecified Pit	1951
6	122.0	NE	298911 519233	Unspecified Pit	1863
7C	127.0	S	298721 518877	Unspecified Heap	1951
8B	130.0	S	298682 518881	Reservoir	1951
9B	130.0	S	298682 518881	Reservoirs	1977
10C	131.0	S	298727 518881	Covered Reservoir	1898
11C	131.0	S	298727 518881	Reservoir	1938
12C	132.0	S	298727 518879	Reservoirs	1977
13G	132.0	NE	298854 519223	Unspecified Disused Pit	1951
14D	159.0	NE	298899 519193	Unspecified Pit	1898
15D	159.0	NE	298899 519193	Unspecified Pit	1926
16E	168.0	Ν	298627 519345	Unspecified Quarry	1947
17E	168.0	Ν	298627 519345	Unspecified Old Quarry	1898
18E	171.0	Ν	298629 519349	Unspecified Ground Workings	1951
19F	172.0	SW	298323 518911	Unspecified Ground Workings	1938
20F	172.0	SW	298323 518911	Unspecified Old Quarry	1898
21F	174.0	SW	298318 518910	Unspecified Ground Workings	1951



ID	Distance (m)	Direction	NGR	Use	Date
22	178.0	Ν	298633 519361	Unspecified Heap	1864
23F	188.0	SW	298325 518900	Unspecified Ground Workings	1977
24H	206.0	E	298947 519181	Unspecified Level	1863

4.2 Historical Underground Working Features derived from Historical Mapping

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

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

The following Historical Underground Working Features are provided by Groundsure:

ID	Distance (m)	Direction	NGR	Use	Date
25G	133.0	NE	298847 519224	Unspecified Old Shaft	1898
26G	133.0	NE	298847 519224	Unspecified Old Shaft	1926
27G	143.0	NE	298850 519224	Old Coal Shaft	1863
28G	147.0	NE	298857 519227	Unspecified Shaft	1977
29G	148.0	NE	298853 519230	Unspecified Old Shaft	1951
30H	206.0	E	298947 519181	Unspecified Level	1863
31	277.0	E	299102 519134	Coal Pit	1863
32	406.0	SW	298074 518721	Old Coal Pit	1863
Not shown	424.0	E	299163 519022	Air Shaft	1863
Not shown	531.0	S	298592 518454	Old Coal Pit	1863
Not shown	548.0	SW	297993 518732	Air Shaft	1938
Not shown	548.0	SW	297993 518732	Air Shaft	1898
Not shown	553.0	SW	297989 518729	Air Shaft	1951
Not shown	568.0	S	298614 518458	Unspecified Shaft	1863
Not shown	594.0	S	298844 518435	Old Coal Shaft	1863
Not shown	657.0	SE	298962 518410	Old Coal Shaft	1951
Not shown	659.0	S	298963 518407	Unspecified Disused Shaft	1977

Report Reference: EMS-419950_561197 Client Reference: EMS_419950_561197



ID	Distance (m)	Direction	NGR	Use	Date
Not shown	660.0	SE	298964 518408	Old Coal Shaft	1926
Not shown	660.0	SE	298964 518408	Unspecified Old Shaft	1898
Not shown	662.0	S	298962 518406	Old Coal Shaft	1863
Not shown	732.0	SE	299210 518484	Old Coal Shaft	1863
Not shown	898.0	SW	297758 518468	Coal Pit	1863
Not shown	924.0	E	299675 519135	Air Shaft	1863
Not shown	925.0	E	299677 519140	Old Air Shaft	1926
Not shown	925.0	E	299677 519140	Old Air Shaft	1898
Not shown	926.0	E	299678 519142	Old Air Shaft	1951
Not shown	926.0	E	299678 519142	Air Shaft	1977
Not shown	980.0	W	297391 519020	Coal pit	1863
Not shown	986.0	SW	297760 518110	Railway Tunnel	1938
Not shown	986.0	SW	297760 518110	Railway Tunnel	1898
Not shown	990.0	SW	297757 518105	Tunnel	1977
Not shown	990.0	SW	297757 518105	Tunnel	1951
Not shown	993.0	SW	297759 518101	Tunnel	1863

4.3 Current Ground Workings

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

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

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

ID	Distanc e (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
58A	104.0	W	298312 519084	Sandstone	Harras Park	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
59E	184.0	Ν	298612 519347	Sandstone	Aikbank	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
60F	197.0	SW	298324 518911	Sandstone	Harras Park	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased



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ID	Distanc e (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
Not shown	541.0	NW	298095 519571	Sandstone	Aikbank Lodge	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	618.0	NE	299274 519445	Clay & Shale	Quality Corner Brick Field	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	655.0	E	299403 519124	Sandstone	Roundclose Quarry	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	877.0	S	298815 518150	Sandstone	Standing Stones	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	877.0	SW	297961 518335	Sandstone	Harras Park	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	881.0	Ν	298717 520036	Sandstone	Huntinghow	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	958.0	SW	297928 518260	Sandstone	Harras Park	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased



5 Mining, Extraction & Natural Cavities Map





5 Mining, Extraction & Natural Cavities

5.1 Historical Mining

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

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

Yes

Distance (m)	Direction	NGR	Details	Date
133.0	NE	298847 519224	Unspecified Old Shaft	1926
133.0	NE	298847 519224	Unspecified Old Shaft	1898
143.0	NE	298850 519224	Old Coal Shaft	1863
147.0	NE	298857 519227	Unspecified Shaft	1977
148.0	NE	298853 519230	Unspecified Old Shaft	1951
206.0	Е	298947 519181	Unspecified Level	1863
277.0	Е	299102 519134	Coal Pit	1863
406.0	SW	298074 518721	Old Coal Pit	1863
424.0	Е	299163 519022	Air Shaft	1863
531.0	S	298592 518454	Old Coal Pit	1863
548.0	SW	297993 518732	Air Shaft	1938
548.0	SW	297993 518732	Air Shaft	1898
553.0	SW	297989 518729	Air Shaft	1951
568.0	S	298614 518458	Unspecified Shaft	1863
594.0	S	298844 518435	Old Coal Shaft	1863
657.0	SE	298962 518410	Old Coal Shaft	1951
659.0	S	298963 518407	Unspecified Disused Shaft	1977
660.0	SE	298964 518408	Unspecified Old Shaft	1898
660.0	SE	298964 518408	Old Coal Shaft	1926
662.0	S	298962 518406	Old Coal Shaft	1863
	Distance (m) 133.0 133.0 143.0 143.0 144.0 206.0 277.0 406.0 277.0 406.0 531.0 531.0 548.0 531.0 548.0 553.0 558.0 558.0 558.0 659.0 659.0 659.0 660.0	Distance (m)Direction133.0NE133.0NE143.0NE143.0NE147.0NE206.0E207.0E277.0E424.0SW531.0SW548.0SW553.0SW558.0SW568.0S594.0SE657.0SE660.0SE660.0SE662.0S	Distance (m) Direction NGR 133.0 NE 298847 519224 133.0 NE 298847 519224 143.0 NE 298850 519224 143.0 NE 298857 519227 147.0 NE 298853 519230 206.0 E 298947 519181 277.0 E 299102 519134 406.0 SW 299102 519134 424.0 E 299163 519022 531.0 SW 298592 518454 548.0 SW 297993 518732 548.0 SW 297993 518732 548.0 SW 297993 518732 553.0 SW 297993 518732 548.0 SW 297993 518732 553.0 SW 298614 518458 594.0 SE 298864 518407 660.0 SE 298964 518408 660.0 SE 298964 518408 660.0 SE 298964 518408 660.0 SE 298962 518406 <td>Distance (m)NGRDetails133.0NE298847Unspecified Old Shaft133.0NE298847Unspecified Old Shaft133.0NE298857Unspecified Old Shaft143.0NE298857Old Coal Shaft143.0NE298857Unspecified Old Shaft143.0NE298857Unspecified Old Shaft144.0NE298857Unspecified Old Shaft148.0NE298857Unspecified Old Shaft206.0E298947Unspecified Old Shaft206.0E298074Coal Pit207.0E299102Coal Pit406.0SW299132Old Coal Pit519.1SW299132Air Shaft510.0S29854Old Coal Pit511.0SW297933Air Shaft513.0SW297933Air Shaft513.0SW297933Air Shaft513.0SW297933Air Shaft514.0SW298643Old Coal Shaft515.0SE298641Unspecified Shaft516.0SE298642Old Coal Shaft660.0SE298964Unspecified Old Shaft660.0SE298964Unspecified Old Shaft660.0SE298964Old Coal Shaft660.0SE298964Old Coal Shaft660.0SE298964Old Coal Shaft660.0SE298964Old Coal Shaft<</td>	Distance (m)NGRDetails133.0NE298847Unspecified Old Shaft133.0NE298847Unspecified Old Shaft133.0NE298857Unspecified Old Shaft143.0NE298857Old Coal Shaft143.0NE298857Unspecified Old Shaft143.0NE298857Unspecified Old Shaft144.0NE298857Unspecified Old Shaft148.0NE298857Unspecified Old Shaft206.0E298947Unspecified Old Shaft206.0E298074Coal Pit207.0E299102Coal Pit406.0SW299132Old Coal Pit519.1SW299132Air Shaft510.0S29854Old Coal Pit511.0SW297933Air Shaft513.0SW297933Air Shaft513.0SW297933Air Shaft513.0SW297933Air Shaft514.0SW298643Old Coal Shaft515.0SE298641Unspecified Shaft516.0SE298642Old Coal Shaft660.0SE298964Unspecified Old Shaft660.0SE298964Unspecified Old Shaft660.0SE298964Old Coal Shaft660.0SE298964Old Coal Shaft660.0SE298964Old Coal Shaft660.0SE298964Old Coal Shaft<

The following Historical Mining information is provided by Groundsure:



ID	Distance (m)	Direction	NGR	Details	Date
Not shown	732.0	SE	299210 518484	Old Coal Shaft	1863
Not shown	898.0	SW	297758 518468	Coal Pit	1863
Not shown	924.0	Е	299675 519135	Air Shaft	1863
Not shown	925.0	Е	299677 519140	Old Air Shaft	1898
Not shown	925.0	Е	299677 519140	Old Air Shaft	1926
Not shown	926.0	Е	299678 519142	Air Shaft	1977
Not shown	926.0	Е	299678 519142	Old Air Shaft	1951
Not shown	980.0	W	297391 519020	Coal pit	1863

5.2 Coal Mining

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

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

Yes

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

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

5.3 Johnson Poole and Bloomer

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

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

No

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





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

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

Yes

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

ID	D	Distance (m)	Direction	Name	Commodity	Assessment of likelihood
	1	0.0	On Site	Not available	Iron Ore (Bedded)	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
	Not shown	822.0	Ν	Not available	Iron Ore (Bedded)	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered

5.5 Non-Coal Mining Cavities

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

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

No

Database searched and no data found.

5.6 Natural Cavities

This dataset provides information based on Peter Brett Associates natural cavities database.

Are there any Natural Cavities within 1000m of the study site boundary?

No

Database searched and no data found.

5.7 Brine Extraction

This data provides information from the Coal Authority issued on behalf of the Cheshire Brine Subsidence Compensation Board.

Are there any Brine Extraction areas within 1000m of the study site boundary?

No

Database searched and no data found.





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

Are there any Gypsum Extraction areas within 1000m of the study site boundary?

No

Database searched and no data found.

5.9 Tin Mining

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

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

No

Database searched and no data found.

5.10 Clay Mining

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

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

No

Database searched and no data found.





6 Natural Ground Subsidence 6.1 Shrink-Swell Clay Map







6.2 Landslides Map





6.3 Ground Dissolution of Soluble Rocks Map





6.4 Compressible Deposits Map





6.5 Collapsible Deposits Map







6.6 Running Sand Map







6 Natural Ground Subsidence

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

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

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

6.1 Shrink-Swell Clays

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

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Ground conditions predominantly low plasticity. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.
2	0.0	On Site	Negligible	Ground conditions predominantly non-plastic. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely likely due to potential problems with shrink-swell clays.

6.2 Landslides

The following Landslides information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.
2	0.0	On Site	Low	Possibility of slope instability problems after major changes in ground conditions. Consideration should be given to stability if changes to drainage or excavations take place. Possible increase in construction cost to reduce potential slope stability problems. Existing property - no significant increase in insurance risk due to natural slope instability problems.

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



ID	Distance (m)	Direction	Hazard Rating	Details
3	0.0	On Site	Moderate	Significant potential for slope instability with relatively small changes in ground conditions. Avoid large amounts of water entering the ground through pipe leakage or soak-aways. Do not undercut or place large amounts of material on slopes without technical advice. For new build - consider the potential and consequences of ground movement during excavations, or consequence of changes to loading or drainage. For existing property - probable increase in insurance risk is likely due to potential natural slope instability after changes to ground conditions such as a very long, excessively wet winter.
4	1.0	Ν	Moderate	Significant potential for slope instability with relatively small changes in ground conditions. Avoid large amounts of water entering the ground through pipe leakage or soak-aways. Do not undercut or place large amounts of material on slopes without technical advice. For new build - consider the potential and consequences of ground movement during excavations, or consequence of changes to loading or drainage. For existing property - probable increase in insurance risk is likely due to potential natural slope instability after changes to ground conditions such as a very long, excessively wet winter.

6.3 Ground Dissolution of Soluble Rocks

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

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

6.4 Compressible Deposits

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

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.





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

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

6.6 Running Sands

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

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for running sand identified. No special actions required to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.





7 Borehole Records Map







7 Borehole Records

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

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

2

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
1	153.0	NE	298855 519231	NX91NE31	71.0	DAVY PIT, WHINGILL COLLIERY
2	242.0	W	298178 519127	NX91NE8	-1.0	GEORGE PIT WHITEHAVEN

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

#1: scans.bgs.ac.uk/sobi_scans/boreholes/819796

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8 Estimated Background Soil Chemistry

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

12

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

Distance (m)	Direction	Sample Type	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Nickel (Ni)	Lead (Pb)
0.0	On Site	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
3.0	E	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
4.0	Ν	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
5.0	E	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
18.0	NW	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
20.0	S	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
21.0	S	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
41.0	E	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg

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



9 Railways and Tunnels Map







9 Railways and Tunnels

9.1 Tunnels

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

Have any underground railway lines been identified within the study site boundary?	No
Have any underground railway lines been identified within 250m of the study site boundary?	No
Database searched and no data found.	
Any records that have been identified are represented on the Railways and Tunnels Map.	

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

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

Database searched and no data found.

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

9.2 Historical Railway and Tunnel Features

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

Have any historical railway or tunnel features been identified within the study site boundary? No

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

Database searched and no data found.

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





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

Have any historical railway lines been identified within the study site boundary?	No
Have any historical railway lines been identified within 250m of the study site boundary?	No
Database searched and no data found.	
Multiple sections of the same track may be listed in the detail above Any records that have been identified are represented on the Railways and Tunnels Map.	
9.4 Active Railways	
9.4 Active Railways These datasets are derived from Ordnance Survey mapping and OpenStreetMap and provide inform on the possible locations of active railway lines in proximity to the study site.	ation

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

Database searched and no data found.

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

9.5 Railway Projects

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

Is the study site within 5km of the route of the High Speed 2 rail project?	No
Is the study site within 500m of the route of the Crossrail 1 rail project?	No

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

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

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





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Standard Terms and Conditions

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Groundsure Enviro Insight

Address:	Land at , Elizabeth Crescent, Whitehaven, CA28 6JQ,
Date:	10 May 2017
Reference:	EMS-419950_561198
Client:	emapsite

NW

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Aerial Photograph Capture date:05-Oct-2008Grid Reference:298586,519104Site Size:3.28ha

S

SE

NE

Е

Report Reference: EMS-419950_561198 Client Reference: EMS_419950_561198





Contents Page

Contents Page	3
Overview of Findings	6
Using this report	10
1. Historical Land Use	11
1. Historical Industrial Sites	12
1.1 Potentially Contaminative Uses identified from 1:10,000 scale Mapping	12
1.2 Additional Information – Historical Tank Database	13
1.3 Additional Information – Historical Energy Features Database	13
1.4 Additional Information – Historical Petrol and Fuel Site Database	14
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	14
1.6 Potentially Infilled Land	14
2. Environmental Permits, Incidents and Registers Map	17
2. Environmental Permits, Incidents and Registers	18
2.1 Industrial Sites Holding Licences and/or Authorisations	18
2.1.1 Records of historic IPC Authorisations within 500m of the study site:	18
2.1.2 Records of Part A(1) and IPPC Authorised Activities within 500m of the study site:	18
2.1.3 Records of Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500m of study sites	of the
2.1.4 Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site [.]	10 18
2.1.5 Records of List 2 Dangerous Substance Inventory Sites within 500m of the study site:	18
2.1.6 Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site:	19
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations:	19
2.1.8 Records of Licensed Discharge Consents within 500m of the study site:	19
2.1.9 Records of Water Industry Referrals (potentially harmful discharges to the public sewer) within 500m c	of the
study site:	19
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within Soom of the study site	20
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents	20
2.3.1 Records of National Incidents Recording System, List 2 within 500m of the study site:	20
2.3.2 Records of National Incidents Recording System, List 1 within 500m of the study site:	20
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	20
3. Landfill and Other Waste Sites Map	21
3. Landfill and Other Waste Sites	22
3.1 Landfill Sites	
3.1.1 Records from Environment Agency/Natural Resources Wales landfill data within 1000m of the study site:	22
3.1.2 Records of Environment Agency/Natural Resources Wales historic landfill sites within 1500m of the study	site:
	22
3.1.3 Records of BGS/DoE non-operational landfill sites within 1500m of the study site:	22
3.1.4 Records of Landfills from Local Authority and Historical Mapping Records within 1500m of the study site:	22
3.2 Other Waste Siles	ב∠ בכ
3.2.2 Records of Environment Agency/Natural Resources Wales licensed waste sites within 1500m of the study	site [.]
	23
4. Current Land Use Map	24
4. Current Land Uses	25
4.1 Current Industrial Data	25
4.2 Petrol and Fuel Sites	25
4.3 National Grid High Voltage Underground Electricity Transmission Cables	25
4.4 National Grid High Pressure Gas Transmission Pipelines	26

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5.1 Artificial Ground and Made Ground	
	27
5.2 Superficial Ground and Drift Geology	
5.3 Bedrock and Solid Geology	
6 Hydrogeology and Hydrology	28
6a. Aquifer Within Superficial Geology	28
6b. Aquifer Within Bedrock Geology and Abstraction Licenses	29
6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licenses	30
6d. Hydrogeology – Source Protection Zones within confined aquifer	31
6e. Hydrology – Detailed River Network and River Quality	32
6.Hydrogeology and Hydrology	33
6.1 Aquifer within Superficial Deposits	
6.2 Aquifer within Bedrock Deposits	
6.3 Groundwater Abstraction Licences	
6.4 Surface Water Abstraction Licences	34
6.5 Potable Water Abstraction Licences	
6.6 Source Protection Zones	
6.7 Source Protection Zones within Confined Aquifer	
6.8 Groundwater Vulnerability and Soil Leaching Potential	
6.9 1 Biological Quality:	
6.9.2 Chemical Quality:	
6.10 Detailed River Network	
6.11 Surface Water Features	
7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers a	nd the sea) 38
7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Se	a (RoFRaS)
Мар	39
7 Flooding	
7 1 Diver and Coastal Zone 2 Flooding	40
7.1 River and Coastal Zone Z Flooding	40 40
7.2 River and Coastal Zone 3 Flooding	40 40 40
7.1 River and Coastal Zone 2 Flooding 7.2 River and Coastal Zone 3 Flooding 7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating	40 40 40 40
 7.1 River and Coastal Zone 2 Flooding	40 40 40 40 40
 7.1 River and Coastal Zone 2 Flooding	40 40 40 40 40 40
 7.1 River and Coastal Zone 2 Flooding	40 40 40 40 40 40 41 41
 7.1 River and Coastal Zone 2 Flooding. 7.2 River and Coastal Zone 3 Flooding. 7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating. 7.4 Flood Defences. 7.5 Areas benefiting from Flood Defences. 7.6 Areas benefiting from Flood Storage. 7.7 Groundwater Flooding Susceptibility Areas. 7.7.1 Are there any British Geological Survey groundwater flooding susceptibility areas within 50m of the 	40 40 40 40 40 40 41 41 2 boundary of
 7.1 River and Coastal Zone 2 Flooding	40 40 40 40 40 40 41 ≥ boundary of 41
 7.1 River and Coastal Zone 2 Flooding. 7.2 River and Coastal Zone 3 Flooding. 7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating. 7.4 Flood Defences. 7.5 Areas benefiting from Flood Defences. 7.6 Areas benefiting from Flood Storage. 7.7 Groundwater Flooding Susceptibility Areas. 7.7.1 Are there any British Geological Survey groundwater flooding susceptibility areas within 50m of the study site? Yes. 7.2 What is the highest susceptibility to groundwater flooding in the search area based on the underly conditions? 	40 40 40 40 40 40 41 e boundary of 41 ing geological 41
 7.1 River and Coastal Zone 2 Flooding. 7.2 River and Coastal Zone 3 Flooding. 7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating. 7.4 Flood Defences. 7.5 Areas benefiting from Flood Defences. 7.6 Areas benefiting from Flood Storage. 7.7 Groundwater Flooding Susceptibility Areas. 7.7.1 Are there any British Geological Survey groundwater flooding susceptibility areas within 50m of the study site? Yes. 7.2 What is the highest susceptibility to groundwater flooding in the search area based on the underly conditions? 7.8 Groundwater Flooding Confidence Areas. 	40 40 40 40 40 40 41 e boundary of 41 ing geological 41
 7.1 River and Coastal Zone 2 Flooding. 7.2 River and Coastal Zone 3 Flooding. 7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating. 7.4 Flood Defences. 7.5 Areas benefiting from Flood Defences. 7.6 Areas benefiting from Flood Storage. 7.7 Groundwater Flooding Susceptibility Areas. 7.7.1 Are there any British Geological Survey groundwater flooding susceptibility areas within 50m of the study site? Yes. 7.7.2 What is the highest susceptibility to groundwater flooding in the search area based on the underly conditions? 7.8 Groundwater Flooding Confidence Areas. 8. Designated Environmentally Sensitive Sites Map 	40 40 40 40 40 40 41 e boundary of 41 ing geological 41 41 42
 7.1 River and Coastal Zone 2 Flooding	40 40 40 40 40 40 41 e boundary of 41 41 41 41 42 43
 7.1 River and Coastal Zone 2 Flooding. 7.2 River and Coastal Zone 3 Flooding. 7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating. 7.4 Flood Defences. 7.5 Areas benefiting from Flood Defences. 7.6 Areas benefiting from Flood Storage. 7.7 Groundwater Flooding Susceptibility Areas. 7.7.1 Are there any British Geological Survey groundwater flooding susceptibility areas within 50m of the study site? Yes. 7.7.2 What is the highest susceptibility to groundwater flooding in the search area based on the underly conditions? 7.8 Groundwater Flooding Confidence Areas. 8. Designated Environmentally Sensitive Sites Map 8. Designated Environmentally Sensitive Sites 8.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site: 	40 40 40 40 40 40 41 e boundary of 41 ing geological 41 41 42 43 43
 7.1 River and Coastal Zone 2 Frooting. 7.2 River and Coastal Zone 3 Flooding. 7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating. 7.4 Flood Defences. 7.5 Areas benefiting from Flood Defences. 7.6 Areas benefiting from Flood Storage. 7.7 Groundwater Flooding Susceptibility Areas. 7.7.1 Are there any British Geological Survey groundwater flooding susceptibility areas within 50m of the study site? Yes. 7.7.2 What is the highest susceptibility to groundwater flooding in the search area based on the underly conditions? 7.8 Groundwater Flooding Confidence Areas. 8. Designated Environmentally Sensitive Sites Map 8. Designated Environmentally Sensitive Sites 8.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site: 8.2 Records of National Nature Reserves (NNR) within 2000m of the study site: 	40 40 40 40 40 40 41 41 e boundary of 41 41 41 41 41 41 43 43
 7.1 River and Coastal Zone 2 Flooding	40 40 40 40 40 40 40 41 41 e boundary of 41 ing geological 41 42 43 43 43 43 43
 7.1 River and Coastal Zone 2 Flooding. 7.2 River and Coastal Zone 3 Flooding. 7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating. 7.4 Flood Defences. 7.5 Areas benefiting from Flood Defences. 7.6 Areas benefiting from Flood Storage. 7.7 Groundwater Flooding Susceptibility Areas. 7.7 Groundwater Flooding Susceptibility Areas. 7.7.1 Are there any British Geological Survey groundwater flooding susceptibility areas within 50m of the study site? Yes. 7.7.2 What is the highest susceptibility to groundwater flooding in the search area based on the underly conditions? 7.8 Groundwater Flooding Confidence Areas. 8. Designated Environmentally Sensitive Sites Map 8. Designated Environmentally Sensitive Sites 8.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site: 8.2 Records of National Nature Reserves (NNR) within 2000m of the study site: 8.3 Records of Special Areas of Conservation (SAC) within 2000m of the study site: 8.4 Records of Special Protection Areas (SPA) within 2000m of the study site: 	40 40 40 40 40 40 41 e boundary of 41 ing geological 41 41 42 43 43 43 43
 7.1 River and Coastal Zone 2 Frooting. 7.2 River and Coastal Zone 3 Flooding. 7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating. 7.4 Flood Defences. 7.5 Areas benefiting from Flood Defences. 7.6 Areas benefiting from Flood Storage. 7.7 Groundwater Flooding Susceptibility Areas. 7.7.1 Are there any British Geological Survey groundwater flooding susceptibility areas within 50m of the study site? Yes. 7.7.2 What is the highest susceptibility to groundwater flooding in the search area based on the underly conditions? 7.8 Groundwater Flooding Confidence Areas. 8. Designated Environmentally Sensitive Sites Map 8. Designated Environmentally Sensitive Sites 8.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site: 8.2 Records of National Nature Reserves (NNR) within 2000m of the study site: 8.3 Records of Special Areas of Conservation (SAC) within 2000m of the study site: 8.4 Records of Special Protection Areas (SPA) within 2000m of the study site: 8.5 Records of Ramsar sites within 2000m of the study site: 8.5 Records of Ramsar sites within 2000m of the study site: 	40 40 40 40 40 40 40 41 41 e boundary of 41 ing geological 41 42 43 43 43 43 43
 7.1 River and Coastal Zone 2 Flooding	40 40 40 40 40 40 40 41 41 e boundary of 41 ing geological 41 42 43 43 43 43 43 43 43 43
 7.1 River and Coastal Zone 2 Flooding. 7.2 River and Coastal Zone 3 Flooding. 7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating. 7.4 Flood Defences. 7.5 Areas benefiting from Flood Defences. 7.6 Areas benefiting from Flood Storage. 7.7 Groundwater Flooding Susceptibility Areas. 7.7.1 Are there any British Geological Survey groundwater flooding susceptibility areas within 50m of th the study site? Yes. 7.7.2 What is the highest susceptibility to groundwater flooding in the search area based on the underly conditions? 7.8 Groundwater Flooding Confidence Areas. 8. Designated Environmentally Sensitive Sites Map 8. Designated Environmentally Sensitive Sites 8.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site: 8.3 Records of Special Areas of Conservation (SAC) within 2000m of the study site: 8.4 Records of Special Protection Areas (SPA) within 2000m of the study site: 8.5 Records of Ramsar sites within 2000m of the study site: 8.6 Records of Ancient Woodland within 2000m of the study site: 8.7 Records of Local Nature Reserves (LNR) within 2000m of the study site: 8.8 Records of World Heritage Sites within 2000m of the study site: 	40 40 40 40 40 40 40 41 41 e boundary of 41 ing geological 41 42 43 43 43 43 43 43 43 43 43 43 43 43 43
 7.1 River and Coastal Zone 3 Flooding	40 40 40 40 40 40 40 41 41 e boundary of 41 ing geological 41 42 43 43 43 43 43 43 43 43 43 43 43 43 43



8.10 Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site:	45
8.11 Records of National Parks (NP) within 2000m of the study site:	45
8.12 Records of Nitrate Sensitive Areas within 2000m of the study site:	45
8.13 Records of Nitrate Vulnerable Zones within 2000m of the study site:	45
8.14 Records of Green Belt land within 2000m of the study site:	45
9. Natural Hazards Findings	46
9.1 Detailed BGS GeoSure Data	46
9.1.1 Shrink Swell	46
9.1.2 Landslides	46
9.1.3 Soluble Rocks	46
9.1.4 Compressible Ground	47
9.1.5 Collapsible Rocks	47
9.1.6 Running Sand	47
9.2 Radon	47
9.2.1 Radon Affected Areas	47
9.2.2 Radon Protection	
10. Mining	49
10.1 Coal Mining	49
10.2 Non-Coal Mining	49
10.3 Brine Affected Areas	49
Contact Details	50
Standard Terms and Conditions	52





Overview of Findings

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

Section 1: Historical Industrial Sites	On-site	0-50	51-250	251-500
1.1 Potentially Contaminative Uses identified from 1:10,000 scale mapping	0	0	33	17
1.2 Additional Information - Historical Tank Database	0	0	1	4
1.3 Additional Information – Historical Energy Features Database	0	0	0	0
1.4 Additional Information – Historical Petrol and Fuel Site Database	0	0	0	0
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	0	0	0	7
1.6 Potentially Infilled Land	0	0	39	20
Section 2: Environmental Permits, Incidents and Registers	On-site	0-50m	51-250	251-500
2.1 Industrial Sites Holding Environmental Permits and/or Authorisations				
2.1.1 Records of historic IPC Authorisations	0	0	0	0
2.1.2 Records of Part A(1) and IPPC Authorised Activities	0	0	0	0
2.1.3 Records of Red List Discharge Consents	0	0	0	0
2.1.4 Records of List 1 Dangerous Substances Inventory sites	0	0	0	0
2.1.5 Records of List 2 Dangerous Substances Inventory sites	0	0	0	0
2.1.6 Records of Part A(2) and Part B Activities and Enforcements	0	0	0	1
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0
2.1.8 Records of Licensed Discharge Consents	0	0	1	0
2.1.9 Records of Water Industry Referrals	0	0	0	0
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	0	0	0	0
2.2 Records of COMAH and NIHHS sites	0	0	0	0
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents				
2.3.1 National Incidents Recording System, List 2	0	0	0	1
2.3.2 National Incidents Recording System, List 1	0	0	0	0
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	0	0	0	0



Section 3: Landfill and Other Waste Sites	On-site	0-50m	51-250	251-500	501-1000	1000- 1500
3.1 Landfill Sites						
3.1.1 Environment Agency/Natural Resources Wales Registered Landfill Sites	0	0	0	0	0	Not searched
3.1.2 Environment Agency/Natural Resources Wales Historic Landfill Sites	0	0	0	0	0	1
3.1.3 BGS/DoE Landfill Site Survey	0	0	0	0	0	0
3.1.4 Records of Landfills in Local Authority and Historical Mapping Records	0	0	0	0	0	0
3.2 Landfill and Other Waste Sites Findings						
3.2.1 Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	0	0	Not searched	Not searched
3.2.2 Environment Agency/Natural Resources Wales Licensed Waste Sites	0	0	0	0	1	0
Section 1: Current Land Lice	On-site	۵	0-50m	51-25	0 2	51-500
	OT SIC		0.0011	5125	- Z	0.000
4.1 Current Industrial Sites Data	0		1	2	No	ot searched
4.2 Records of Petrol and Fuel Sites	0		0	0		1
4.3 National Grid Onderground Electricity Cables	0		0	0		0
4.4 National Grid Gas Transmission Pipelines	0		0	0		0
Section 5: Geology						
5.1 Are there any records of Artificial Ground and Made Ground present beneath the study site?			Y	′es		
5.2 Are there any records of Superficial Ground and Drift Geology present beneath the study site?	gy Yes					
5.3 For records of Bedrock and Solid Geology beneath the study site see the detailed findings section.						
Section 6. Hydrogoology and Hydrology			0-5	00m		
6.1 Are there any records of Strata Classification in the Superficial Geology within 500m of the study site?			Y	′es		
6.2 Are there any records of Strata Classification in the Bedrock Geology within 500m of the study site?			Y	′es		
	On-site	0-50m	51-250	251-500	501-1000	1000- 2000
6.3 Groundwater Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.6 Source Protection Zones (within 500m of the study site)	0	0	0	0	Not searched	Not searched
6.7 Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
6.8 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	2	1	0	1	Not searched	Not searched





Section 6: Hydrogeology and Hydrology	0-500m					
	On-site	0-50m	51-250	251-500	501-1000	1000- 1500
6.9 Is there any Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site?	No	No	No	No	No	No
6.10 Detailed River Network entries within 500m of the site	0	0	5	11	Not searched	Not searched
6.11 Surface water features within 250m of the study site	No	No	Yes	Not searched	Not searched	Not searched
Section 7: Flooding						
7.1 Are there any Enviroment Agency Zone 2 floodplains within 250m of the study site?			٢	10		
7.2 Are there any Environment Agency/Natural Resources Wales Zone 3 floodplains within 250m of the study site			Ν	10		
7.3 What is the Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site?			Very	/ Low		
7.4 Are there any Flood Defences within 250m of the study site?			٢	10		
7.5 Are there any areas benefiting from Flood Defences within 250m of the study site?			٢	10		
7.6 Are there any areas used for Flood Storage within 250m of the study site?	the No					
7.7 What is the maximum BGS Groundwater Flooding susceptibility within 50m of the study site?	ility Limited potential					
7.8 What is the BGS confidence rating for the Groundwater Flooding susceptibility areas?			Lo	w		
Section 8: Designated Environmentally Sensitive Sites	On-site	0-50m	51-250	251-500	501-1000	1000- 2000
8.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	0	0	0	0
8.2 Records of National Nature Reserves (NNR)	0	0	0	0	0	0
8.3 Records of Special Areas of Conservation (SAC)	0	0	0	0	0	0
8.4 Records of Special Protection Areas (SPA)	0	0	0	0	0	0
8.5 Records of Ramsar sites	0	0	0	0	0	0
8.6 Records of Ancient Woodlands	0	0	0	0	0	6
8.7 Records of Local Nature Reserves (LNR)	0	0	0	0	0	0
8.8 Records of World Heritage Sites	0	0	0	0	0	1
8.9 Records of Environmentally Sensitive Areas	0	0	0	0	0	0

9
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LOCATION INTELLIGENCE

LOCATION INTELLIGENCE



Section 8: Designated Environmentally Sensitive Sites	On-site	0-50m	51-250	251-500	501-1000	1000- 2000
8.10 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	0
8.11 Records of National Parks	0	0	0	0	0	0
8.12 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
8.13 Records of Nitrate Vulnerable Zones	0	0	0	0	0	0
8.14 Records of Green Belt land	0	0	0	0	0	0
Section 9: Natural Hazards						
9.1 What is the maximum risk of natural ground subsidence?			Very	/ Low		
9.1.1 What is the maximum Shrink-Swell hazard rating identified on the study site?			Very	/ Low		
9.1.2 What is the maximum Landslides hazard rating identified on the study site?	n Moderate					
9.1.3 What is the maximum Soluble Rocks hazard rating identified on the study site?	Negligible					
9.1.4 What is the maximum Compressible Ground hazard rating identified on the study site?	Negligible					
9.1.5 What is the maximum Collapsible Rocks hazard rating identified on the study site?			Very	/ Low		
9.1.6 What is the maximum Running Sand hazard rating identified on the study site?	Negligible					
9.2 Radon						
9.2.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The prop	perty is not i proper	in a Radon A ties are abo	Affected Area ve the Actior	a, as less thar 1 Level.	ו 1% of
9.2.2 Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?	No radon protective measures are necessary.					
Section 10: Mining						
10.1 Are there any coal mining areas within 75m of the study site?			Y	'es		
10.2 Are there any Non-Coal Mining areas within 50m of the study site boundary?			Y	es		
10.3 Are there any brine affected areas within 75m of the study site?			١	No		





Using this report

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

1. Historical Industrial Sites

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

2. Environmental Permits, Incidents and Registers

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

3. Landfills and Other Waste Sites

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

4. Current Land Uses

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

5. Geology

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

6. Hydrogeology and Hydrology

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

7. Flooding

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

8. Designated Environmentally Sensitive Sites

Provides information on the Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites, Local Nature Reserves (LNR), Areas of Outstanding Natural Beauty (AONB), National Parks (NP), Environmentally Sensitive Areas, Nitrate Sensitive Areas, Nitrate Vulnerable Zones and World Heritage Sites and Scheduled Ancient Woodland. These searches are conducted using radii of up to 2000m.

9. Natural Hazards

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

10. Mining

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

11. Contacts

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

Note: Maps

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

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

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





1. Historical Land Use



Energy Features

Tanks

Garages

- 500-





1. Historical Industrial Sites

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

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

Records of sites with a potentially contaminative past land use within 500m of the search boundary: 50

ID	Distance [m]	Direction	Use	Date
1A	83	W	Unspecified Old Quarry	1898
2A	83	W	Unspecified Pit	1938
3A	84	W	Unspecified Pit	1926
4A	84	W	Unspecified Pit	1926
5K	84	W	Unspecified Pit	1863
6A	85	W	Unspecified Pit	1977
7A	90	W	Unspecified Pit	1951
8L	122	NE	Unspecified Pit	1863
9M	127	S	Unspecified Heap	1951
10B	132	NE	Unspecified Pit	1938
11B	132	NE	Unspecified Pit	1938
12B	132	NE	Unspecified Disused Pit	1951
13B	133	NE	Unspecified Old Shaft	1926
14B	133	NE	Unspecified Old Shaft	1898
15B	143	NE	Old Coal Shaft	1863
16B	147	NE	Unspecified Shaft	1977
17B	148	NE	Unspecified Old Shaft	1951
18B	149	NE	Unspecified Old Shaft	1938
19B	149	NE	Unspecified Old Shaft	1938
20C	159	NE	Unspecified Pit	1898
21C	159	NE	Unspecified Pit	1926
22D	163	SW	Unspecified Ground Workings	1926
23D	163	SW	Unspecified Ground Workings	1926
24E	168	Ν	Unspecified Old Quarry	1898
25E	168	Ν	Unspecified Quarry	1947
26E	171	Ν	Unspecified Ground Workings	1951
27D	172	SW	Unspecified Ground Workings	1938
28D	172	SW	Unspecified Old Quarry	1898
29D	174	SW	Unspecified Ground Workings	1951
30E	178	Ν	Unspecified Heap	1864

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31D	188	SW	Unspecified Ground Workings	1977
320	206	E	Unspecified Level	1863
33F	226	E	Unspecified Disused Pit	1951
34F	276	E	Unspecified Pit	1938
35F	276	E	Unspecified Pit	1938
36P	277	E	Coal Pit	1863
37F	277	E	Unspecified Pit	1926
38F	277	E	Unspecified Pit	1898
39Q	315	E	Brick Kiln	1863
40	324	S	Wireless Station	1977
41	353	E	Old Pottery	1863
42R	406	SW	Old Coal Pit	1863
43G	409	NW	Cuttings	1864
44G	418	NW	Cuttings	1898
45	423	E	Old Brick Kilns	1898
46G	423	NW	Cuttings	1923
47S	440	NE	Brick Field	1864
48H	478	S	Unspecified Disused Pit	1938
49H	478	S	Unspecified Disused Pit	1898
50	479	SW	Bone Manure Works	1863

1.2 Additional Information – Historical Tank Database

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

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

5

ID	Distance (m)	Direction	Use	Date
51	201	W	Tank or Trough	1865
52	294	Ν	Tank or Trough	1862
53	488	W	Tank or Trough	1865
541	492	W	Tank or Trough	1864
551	492	W	Tank or Trough	1862

1.3 Additional Information – Historical Energy Features Database

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

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

Database searched and no data found.

0





0

1.4 Additional Information – Historical Petrol and Fuel Site Database

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

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

Database searched and no data found.

1.5 Additional Information - Historical Garage and Motor Vehicle Repair Database

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

Records of historical garage and motor vehicle repair sites within 500m of the search boundary: 7

ID	Distance (m)	Direction	Use	Date
56	408	NW	Garage	1978
57J	454	NW	Garage	1961
58J	454	NW	Garage	1985
59J	454	NW	Garage	1989
60J	454	NW	Garage	1961
61J	454	NW	Garage	1970
62J	454	NW	Garage	1970

1.6 Potentially Infilled Land

Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 59

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

ID	Distance(m)	Direction	Use	Date
63K	83	W	Unspecified Old Quarry	1898
64K	83	W	Unspecified Pit	1938
65K	84	W	Unspecified Pit	1926
66K	84	W	Unspecified Pit	1926
67K	84	W	Unspecified Pit	1863
68A	85	W	Unspecified Pit	1977
69A	90	W	Unspecified Pit	1951
70L	122	NE	Unspecified Pit	1863
71M	126	S	Reservoir	1926
72M	127	S	Unspecified Heap	1951

Groundsure

LOCATION INTELLIGENCE				
73N	130	S	Reservoirs	1977
74N	130	S	Reservoir	1951
75M	131	S	Reservoir	1938
76M	131	S	Covered Reservoir	1898
77B	132	NE	Unspecified Pit	1938
78B	132	NE	Unspecified Pit	1938
79M	132	S	Reservoirs	1977
80B	132	NE	Unspecified Disused Pit	1951
81B	133	NE	Unspecified Old Shaft	1926
82B	133	NE	Unspecified Old Shaft	1898
83B	143	NE	Old Coal Shaft	1863
84B	147	NE	Unspecified Shaft	1977
85B	148	NE	Unspecified Old Shaft	1951
86B	149	NE	Unspecified Old Shaft	1938
87B	149	NE	Unspecified Old Shaft	1938
88C	159	NE	Unspecified Pit	1898
89C	159	NE	Unspecified Pit	1926
90D	163	SW	Unspecified Ground Workings	1926
91D	163	SW	Unspecified Ground Workings	1926
92E	168	Ν	Unspecified Quarry	1947
93E	168	Ν	Unspecified Old Quarry	1898
94E	171	Ν	Unspecified Ground Workings	1951
95D	172	SW	Unspecified Ground Workings	1938
96D	172	SW	Unspecified Old Quarry	1898
97D	174	SW	Unspecified Ground Workings	1951
98E	178	Ν	Unspecified Heap	1864
99D	188	SW	Unspecified Ground Workings	1977
1000	206	E	Unspecified Level	1863
101F	226	E	Unspecified Disused Pit	1951
102F	276	E	Unspecified Pit	1938
103F	276	E	Unspecified Pit	1938
104P	277	E	Coal Pit	1863
105F	277	E	Unspecified Pit	1898
106F	277	E	Unspecified Pit	1926
107Q	315	E	Brick Kiln	1863
108R	406	SW	Old Coal Pit	1863
109G	409	NW	Cuttings	1864
110G	418	NW	Cuttings	1898
111G	423	NW	Cuttings	1923
112	424	E	Air Shaft	1863
1135	440	NE	Brick Field	1864
114T	460	E	Pond	1951



115T	460	E	Pond	1977
116T	460	E	Pond	1938
117T	463	E	Pond	1898
118T	463	E	Pond	1926
119	473	SW	Pond	1863
120H	478	S	Unspecified Disused Pit	1898
121H	478	S	Unspecified Disused Pit	1938



2. Environmental Permits, Incidents and Registers Map







2. Environmental Permits, Incidents and Registers

2.1 Industrial Sites Holding Licences and/or Authorisations

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

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

Database searched and no data found.

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

Database searched and no data found.

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

0

0

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0



1

The following Part A(2) and Part B Activities are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	De	tails
3	495	NW	298060 519470	Address: Hills of Lakeland Ltd, Pelican Self Serve, Loop Road North, Whitehaven, Cumbria, CA28 6AE Process: Unloading into storage of petrol Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified

2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations:

0

Database searched and no data found.

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

1

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

ID	Distance (m)	Direction	NGR	Deta	ils
2	235	NE	298900 519300	Address: NCB MORESBY KEEKLE OCCS, COPELAND, CUMBRIA Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017490066 Permit Version: 1	Receiving Water: TRIB.WHITEHAVEN DOCK Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 29-Nov-1980 Revocation Date: 13/02/1991

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

0



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

0

0

Database searched and no data found.

2.2 Dangerous or Hazardous Sites

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

Database searched and no data found.

2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents

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

1

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

ID	Distance (m)	Direction	NGR	De	tails
1	395	NW	298134 519403	Incident Date: 22-Mar-2002 Incident Identification: 65858 Pollutant: Sewage Materials Pollutant Description: Grey Water	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)

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

0

Database searched and no data found.

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

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



3. Landfill and Other Waste Sites Map







3. Landfill and Other Waste Sites

3.1 Landfill Sites

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

0

Database searched and no data found.

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

1

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

ID	Distance (m)	Direction	NGR	Deta	ils
Not shown	1022	E	299800 519000	Site Address: Moresby Railway Junction, Moresby Parks, Whitehaven Waste Licence: - Site Reference: - Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: Thomas Milburn Limited Licence Holder: - First Recorded: - Last Recorded: 30-Sep-1987

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

0

Database searched and no data found.

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

0





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

0

Database searched and no data found.

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

1

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

Not shown920SE299398 518411Site Address: Whitehaven, Cumbria, CA28 8UDIssue Date: 10/02/2012 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: IssuedNot shown920SE299398 518411Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: LAW038 EPR reference: EA/EPR/BB3839RK/A001 Operator: Western Lakes Ltd Waste Management licence No: 103322Issue Date: 10/02/2012 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued	ID	Distance (m)	Direction	NGR	Deta	ils
Annual Tonnage: 99999.0	Not shown	920	SE	299398 518411	Site Address: Whitehaven Golf Course, Red Lonning, Whitehaven, Cumbria, CA28 8UD Type: Use of waste for reclamation etc <100,000 tps Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: LAW038 EPR reference: EA/EPR/BB3839RK/A001 Operator: Western Lakes Ltd Waste Management licence No: 103322 Annual Tonnage: 99999.0	Issue Date: 10/02/2012 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Whitehaven Golf Course Correspondence Address: -









4. Current Land Uses

4.1 Current Industrial Data

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

3

1

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

ID	Distance (m)	Directio n	Company	NGR	Address	Activity	Category
1	28	Ν	Pylon	298752 519150	Pylon, CA28	Electrical Features	Infrastructure and Facilities
2	155	W	Electricity Sub Station	298268 519129	Electricity Sub Station, CA28	Electrical Features	Infrastructure and Facilities
3	170	SE	Pylon	298836 518908	Pylon, CA28	Electrical Features	Infrastructure and Facilities

4.2 Petrol and Fuel Sites

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

The following petrol or fuel site records provided by Catalist are represented as points on the Current Land Use map:

ID	Distance (m)	Directio n	NGR	Company	Address	LPG	Status
4	500	NW	298076 519496	BP	Pelican Self Serve, Loop Road North, Loop Road North, New Road, Whitehaven, Cumbria, CA28 6EH	No	Open

4.3 National Grid High Voltage Underground Electricity Transmission Cables

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

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





4.4 National Grid High Pressure Gas Transmission Pipelines

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

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

0







5.1 Artificial Ground and Made Ground

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

Lex Code	Description	Rock Type
LSGR-ARTGR	LANDSCAPED GROUND (UNDIVIDED)	ARTIFICIALLY MODIFIED GROUND

5.2 Superficial Ground and Drift Geology

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

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

5.3 Bedrock and Solid Geology

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

Lex Code	Description	Rock Type
PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION	MUDSTONE, SILTSTONE AND SANDSTONE
PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION	SANDSTONE
PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION	MUDSTONE, SILTSTONE AND SANDSTONE
WS-SDST	WHITEHAVEN SANDSTONE FORMATION	SANDSTONE
PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION	SANDSTONE

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



6 Hydrogeology and Hydrology 6a. Aquifer Within Superficial Geology

NW





6b. Aquifer Within Bedrock Geology and Abstraction Licenses



 Site Outline
 Site Outline
 Principal Aquifer
 Secondary Aquifer - Undifferentiated Layers

 250
 Search Buffers (m)
 Secondary (A) Aquifer - Permeable Layers
 Unproductive

 Secondary (B) Aquifer - Lower Permeability Layers
 Unknown (lakes and landslip)

 Groundwater Abstraction Licence
 Surface Water Abstraction Licence

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

6d. Hydrogeology – Source Protection Zones within confined aquifer

6e. Hydrology – Detailed River Network and River Quality

6.Hydrogeology and Hydrology

6.1 Aquifer within Superficial Deposits

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

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

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

ID	Distanc e (m)	Direction	Designation	Description
1	3	E	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
2	484	W	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type

6.2 Aquifer within Bedrock Deposits

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

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

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

ID	Distanc e (m)	Direction	Designation	Description
1	0	On Site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

6.3 Groundwater Abstraction Licences

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

No

Are there any Surface Water Abstraction Licences within 2000m of the study site? No

Database searched and no data found.

6.5 Potable Water Abstraction Licences

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

No

No

Database searched and no data found.

6.6 Source Protection Zones

Are there any Source Protection Zones within 500m of the study site?

Database searched and no data found.

6.7 Source Protection Zones within Confined Aquifer

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

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

6.8 Groundwater Vulnerability and Soil Leaching Potential

Is there any Environment Agency/Natural Resources Wales information on groundwater vulnerability and soil leaching potential within 500m of the study site? Yes

Distance (m)	Direction	Classification	Soil Vulnerability Category	Description
0	On Site	Minor Aquifer/High Leaching Potential	HU	Soil information for urban areas and restored mineral workings. These soils are therefore assumed to be highly permeable in the absence of site-specific information.
0	On Site	Minor Aquifer/Low Leaching Potential	L	Soils in which pollutants are unlikely to penetrate the soil layer because either water movement is largely horizontal, or they have the ability to attenuate diffuse pollutants.
27	E	Minor Aquifer/High Leaching Potential	HU	Soil information for urban areas and restored mineral workings. These soils are therefore assumed to be highly permeable in the absence of site-specific information.
380	N	Minor Aquifer/High Leaching Potential	H3	Coarse textured or moderately shallow soils which readily transmit non-adsorbed pollutants and liquid discharges but have some ability to attenuate adsorbed pollutants because of their clay or organic matter content.

6.9 River Quality

Is there any Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site? No

6.9.1 Biological Quality:

Database searched and no data found.

6.9.2 Chemical Quality:

Database searched and no data found.

6.10 Detailed River Network

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

Yes

The following Detailed River Network records are represented on the Hydrology Map (6e):

ID	Distanc e (m)	Direction		Details
1	174	NE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
2	208	Ν	River Name: - Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
3	208	Ν	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
4	241	NW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
5	241	Ν	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
6	262	SW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
7	324	SW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
8	396	NW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
9	397	NW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
10	410	W	River Name: - Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
11	419	W	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
12	469	W	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
13	474	W	River Name: - Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
14	480	W	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
15	492	SW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
16A	494	W	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined




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

Yes

The following surface water records are not represented on mapping:

Distance (m)	Direction
174	NE
174	NE
208	Ν
217	Ν
241	Ν
241	NW



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





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







7 Flooding

7.1 River and Coastal Zone 2 Flooding

Is the site within 250m of an Environment Agency/Natural Resources Wales Zone 2 floodplain? No

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

Database searched and no data found.

7.2 River and Coastal Zone 3 Flooding

Is the site within 250m of an Environment Agency/Natural Resources Wales Zone 3 floodplain? No

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

Database searched and no data found.

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

What is the highest risk of flooding onsite?

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

RoFRaS data for the study site indicates the property is in an area with a Very Low (less than 1 in 1000) chance of flooding in any given year.

7.4 Flood Defences

Are there any Flood Defences within 250m of the study site? Database searched and no data found.

7.5 Areas benefiting from Flood Defences

Are there any areas benefiting from Flood Defences within 250m of the study site?

Very Low

No

No





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

7.7 Groundwater Flooding Susceptibility Areas

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

Does this relate to Clearwater Flooding or Superficial Deposits Flooding? Clearwater Flooding

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

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

Limited potential Where limited potential for groundwater flooding to occur is indicated, this means that although given the geological conditions there may be a groundwater flooding hazard, unless other relevant information, e.g. records of previous flooding, suggests groundwater flooding has occurred before in this area, you need take no further action in relation to groundwater flooding hazard.

7.8 Groundwater Flooding Confidence Areas

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

Low

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

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



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8. Designated Environmentally Sensitive Sites Map



Special Areas of

World Heritage

Nitrate Sensitive

Conservation

Sites

Areas

Local Nature

Ramsar Sites

Reserves



Site Outline

Search Buffers (m)

SSSI

Areas

Zones

Special Protection

Nitrate Vulnerable



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8. Designated Environmentally Sensitive Sites

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

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

Database searched and no data found.

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

0

0

Yes

Database searched and no data found.

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

0

0

Database searched and no data found.

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

Database searched and no data found.

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

0

Database searched and no data found.





6

The following records of Designated Ancient Woodland provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	Ancient Woodland Name	Data Source
2	1005	S	UNKNOWN	Ancient and Semi-Natural Woodland
3	1052	S	UNKNOWN	Ancient and Semi-Natural Woodland
Not shown	1173	S	UNKNOWN	Ancient and Semi-Natural Woodland
5	1210	NE	UNKNOWN	Ancient Replanted Woodland
Not shown	1258	S	UNKNOWN	Ancient and Semi-Natural Woodland
Not shown	1637	Ν	UNKNOWN	Ancient Replanted Woodland

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

0

Database searched and no data found.

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

1

The following World Heritage Site records provided by English Heritage and Cadw are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	World Heritage Site Name	Data Source
Not shown	1504	Ν	Hadrian's Wall	English Heritage

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

0

Database searched and no data found.



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

 Database searched and no data found.

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

 Database searched and no data found.

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

 Database searched and no data found.

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

 Database searched and no data found.

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

 Database searched and no data found.

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

 Database searched and no data found.





Very Low

Moderate

9. Natural Hazards Findings

9.1 Detailed BGS GeoSure Data

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

9.1.1 Shrink Swell

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

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

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

9.1.2 Landslides

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

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

Significant potential for slope instability with relatively small changes in ground conditions. Avoid large amounts of water entering the ground through pipe leakage or soak-aways. Do not undercut or place large amounts of material on slopes without technical advice. For new build consider the potential and consequences of ground movement during excavations, or consequence of changes to loading or drainage. For existing property probable increase in insurance risk is likely due to potential natural slope instability after changes to ground conditions such as a very long, excessively wet winter.

Hazard

9.1.3 Soluble Rocks

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

Negligible

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

Hazard

Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

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

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

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

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

Hazard

9.1.5 Collapsible Rocks

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

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

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

Hazard

9.1.6 Running Sand

What is the maximum Running Sand** hazard rating identified on the study site?

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

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

9.2 Radon

9.2.1 Radon Affected Areas

Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

This indicates an automatically generated 50m buffer and site.



Negligible

Hazard





Is the property in an area where Radon Protection are required for new properties or extensions to existing

ones as described in publication BR211 by the Building Research Establishment?

No radon protective measures are necessary.





10. Mining

10.1 Coal Mining

Are there any coal mining areas within 75m of the study site?

Yes

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

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

10.2 Non-Coal Mining

Are there any Non-Coal Mining areas within 50m of the study site boundary?

Yes

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

Distance (m)	Direction	Name	Commodity	Assessment of likelihood
0.0	On Site	Not available	lron Ore (Bedded)	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered

Past underground mine workings may occur. The rock types present in these areas are such that small mineral veins may be present on which it is possible that small scale mining has been undertaken and/or it is possible that limited underground extraction of other materials may have occurred. All such occurrences are likely to be of minor localised extent and infrequent. It should be noted, however, that there is always the possibility of the existence of other sub-surface excavations, such as wells, cess pits, follies, air raid shelters/bunkers and other military structures etc. that could affect surface ground stability but which are outside the scope of this dataset. However, if in a coalfield area you should still consider a Coal Authority mining search for the area of interest.

10.3 Brine Affected Areas

Are there any brine affected areas within 75m of the study site? Guidance: No Guidance Required.

No



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Contact Details

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British Geological Survey Enquiries Kingsley Dunham Centre Keyworth, Nottingham NG12 5GG Tel: 0115 936 3143. Fax: 0115 936 3276. Email:

Web:www.bgs.ac.uk BGS Geological Hazards Reports and general geological enquiries: enquiries@bgs.ac.uk

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

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

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

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

Local Authority Authority: Copeland Borough Council Phone: 0845 054 8600 Web: http://www.copeland.gov.uk Address: The Copeland Centre, Catherine Street, Whitehaven,

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



British Geological Survey NATURAL ENVIRONMENT RESEARCH COUNCIL





The Coal Authority









Acknowledgements: Site of Special Scientific Interest, National Nature Reserve, Ramsar Site, Special Protection Area, Special Area of Conservation data is provided by, and used with the permission of, Natural England who retain the Copyright and Intellectual Property Rights for the data.

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Appendix III

Ground Sure Report Historical Map Extracts (GSR – Mapinsight)





To view map legend click here Legend



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W



Map date: 1862-1865

Scale: 1:2,500

Printed at: 1:2,500







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Edition N/A Copyright N/A Levelled N/A

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

Copyright N/A

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Production date: 10 May 2017



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Map date: 1925

Scale: 1:2,500

Printed at: 1:2,500







Τı



Site Details:

Land at ,Elizabeth Crescent,Whitehaven,CA28 6JQ



Printed at: 1:2,500







Production date: 10 May 2017





Land at ,Elizabeth Crescent,Whitehaven,CA28 6JQ







Production date: 10 May 2017





Land at ,Elizabeth Crescent,Whitehaven,CA28 6JQ

Client Ref: Report Ref: Grid Ref:	EMS_419950_561196 EMS-419950_561196 298582, 519099	
Map Name:	National Grid	Ν
Map date:	1961	
Scale:	1:2,500	
Printed at:	1:2,500	S

Surveyed 1961 Revised 1961 Edition 1962 Copyright 1962 Levelled 1956

Surveyed 1961 Revised 1961 Edition 1962 Copyright 1962 Levelled 1956







Land at ,Elizabeth Crescent,Whitehaven,CA28 6JQ











Land at ,Elizabeth Crescent,Whitehaven,CA28 6JQ

Client Ref: Report Ref: Grid Ref:	EMS_419950_561196 EMS-419950_561196 298582, 519099	
Map Name:	National Grid	Ν
Map date:	1970	
Scale:	1:2,500	
Printed at:	1:2,500	S

Surveyed 1960 Revised 1970 Edition N/A Copyright 1972 Levelled 1971









Land at ,Elizabeth Crescent,Whitehaven,CA28 6JQ











Land at ,Elizabeth Crescent,Whitehaven,CA28 6JQ







Production date: 10 May 2017





Land at ,Elizabeth Crescent,Whitehaven,CA28 6JQ

Client Ref: Report Ref: Grid Ref:	EMS_419950_561196 EMS-419950_561196 298582, 519099	
Map Name:	National Grid	
Map date:	1985	14/
Scale:	1:2,500	vv
Printed at:	1:2,500	



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Production date: 10 May 2017





Land at ,Elizabeth Crescent,Whitehaven,CA28 6JQ

Client Ref: Report Ref: Grid Ref:	EMS_419950_561196 EMS-419950_561196 298582, 519099
Map Name:	National Grid
Map date:	1989-1990
Scale:	1:2,500
Printed at:	1:2,500



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Production date: 10 May 2017





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Production date: 10 May 2017





Land at ,Elizabeth Crescent,Whitehaven,CA28 6JQ





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Appendix IV

- The Coal Authority Coal Mining Report
- The Coal Authority On-line Database
- BGS Geological Plan Extract





Resolving the impacts of mining

CON29M Non-Residential Mining Report

ELIZABETH CRESCENT WHITEHAVEN CUMBRIA CA28 6JQ







Date of enquiry: Date enquiry received: Issue date: 10 May 2017 10 May 2017 10 May 2017

Our reference: Your reference: 51001466053001 GEO2017-2356

CON29M Non-Residential Mining Report

This report is based on, and limited to, the records held by the Coal Authority and the Cheshire Brine Subsidence Compensation Board's records, at the time we answer the search.

Client name

Curtis Evans

Enquiry address

ELIZABETH CRESCENT, WHITEHAVEN, CUMBRIA, CA28 6|Q

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Approximate position of property



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Summary

Has the search report highlighted evidence or potential of			
1	Past underground coal mining	Yes	
2	Present underground coal mining	No	
3	Future underground coal mining	Yes	
4	Mine entries	No	
5	Coal mining geology	No	
6	Past opencast coal mining	No	
7	Present opencast coal mining	No	
8	Future opencast coal mining	No	
9	Coal mining subsidence	No	
10	Mine gas	No	
11	Hazards related to coal mining	No	
12	Withdrawal of support	No	
13	Working facilities order	No	
14	Payments to owners of former copyhold land	No	
15	Information from the Cheshire Brine Subsidence Compensation Board	No	

For detailed findings, please go to page 4.

Detailed findings

1. Past underground coal mining

The property is in a surface area that could be affected by underground mining in 3 seams of coal at 170m to 280m depth, and last worked in 1961.

Any movement in the ground due to coal mining activity should have stopped.

2. Present underground coal mining

The property is not within a surface area that could be affected by present underground mining.

3. Future underground coal mining

The property is not in an area where the Coal Authority has plans to grant a licence to remove coal using underground methods.

The property is not in an area where a licence has been granted to remove or otherwise work coal using underground methods.

The property is not in an area likely to be affected from any planned future underground coal mining.

However, reserves of coal exist in the local area which could be worked at some time in the future.

No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

4. Mine entries

There are no known coal mine entries within, or within 20 metres of, the boundary of the property.

5. Coal mining geology

The Coal Authority is not aware of any damage due to geological faults or other lines of weakness that have been affected by coal mining.
6. Past opencast coal mining

The property is not within the boundary of an opencast site from which coal has been removed by opencast methods.

7. Present opencast coal mining

The property does not lie within 200 metres of the boundary of an opencast site from which coal is being removed by opencast methods.

8. Future opencast coal mining

There are no licence requests outstanding to remove coal by opencast methods within 800 metres of the boundary.

The property is not within 800 metres of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted.

9. Coal mining subsidence

The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres, since 31 October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

10. Mine gas

The Coal Authority has no record of a mine gas emission requiring action.

11. Hazards related to coal mining

The property has not been subject to remedial works, by or on behalf of the Authority, under its Emergency Surface Hazard Call Out procedures.

12. Withdrawal of support

The property is not in an area where a notice to withdraw support has been given.

The property is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.

13. Working facilities order

The property is not in an area where an order has been made, under the provisions of the Mines (Working Facilities and Support) Acts 1923 and 1966 or any statutory modification or amendment thereof.

14. Payments to owners of former copyhold land

The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

15. Information from the Cheshire Brine Subsidence Compensation Board

The property lies outside the Cheshire Brine Compensation District.

Additional remarks

Information provided by the Coal Authority in this report is compiled in response to the Law Society's Con29M Coal Mining and Brine Subsidence Claim enquiries. The said enquiries are protected by copyright owned by the Law Society of 113 Chancery Lane, London WC2A 1PL. Please note that Brine Subsidence Claim enquiries are only relevant for England and Wales. This report is prepared in accordance with the Law Society's Guidance Notes 2006, the User Guide 2006 and the Coal Authority and Cheshire Brine Board's Terms and Conditions applicable at the time the report was produced.

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If you would like this report in an alternative format, please contact our communications team.

Enquiry boundary

Key

Approximate position of enquiry boundary shown

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VAT receipt

Issued by	The Coal Authority 200 Lichfield Lane Mansfield Nottinghamshire NG18 4RG
Tax point date	10 May 2017
Issued to	CURTIS EVANS 4 CULGARTH AVENUE COCKERMOUTH CUMBRIA CA13 9PL
Property search for	ELIZABETH CRESCENT WHITEHAVEN CUMBRIA CA28 6JQ
Reference number	51001466053001
Date of issue	10 May 2017
Cost	£78.30
VAT @ 20%	£15.66
Total received	£93.96
VAT registration	598 5850 68



GEO2017-2356: Coal Authority Online Database



Website: www.geoenvironmentalengineering.com Email: info@geoenvironmentalengineering.com Telephone: 08456 768 895



GEO2017-2356: Coal Authority Online Database



Approximate Site Location marked with the

Website: www.geoenvironmentalengineering.com Email: info@geoenvironmentalengineering.com Telephone: 08456 768 895



GEO2017-2356: BGS Geological Map Extract (Approximate Site Location)



Website: www.geoenvironmentalengineering.com Email: info@geoenvironmentalengineering.com Telephone: 08456 768 895



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