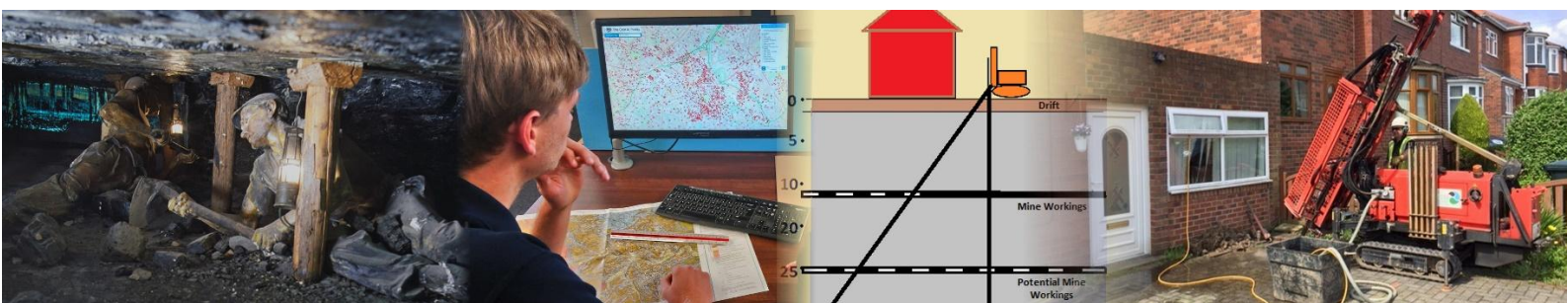




GEOLOGICAL
GEOTECHNICAL
GEOENVIRONMENTAL
CONSULTANCY
DRILLING & DATA ACQUISITION



GEOINVESTIGATE LIMITED

Coal Mining Risk Assessment (CMRA)

LOCATION	Westport Energy Storage, East Ayrshire, KA18 2QH
ISSUE DATE	April 2025
FOR	Westport Energy Storage Ltd.
CLIENT REF.	
OUR REF.	G24206a

Prepared by

A handwritten signature in black ink, appearing to be "JB", written over a light blue horizontal line.

Jonathan Bell BSc (Hons), MSc, FGS
Geotechnical Engineer

Checked by

A handwritten signature in black ink, appearing to be "RN", written over a light blue horizontal line.

Ross Nicolson BSc (Hons) MSc (Eng) CEng MIMMM
Principal Geotechnical Engineer

1. CMRA INTRODUCTION & COAL MINING HAZARDS

1.1 Site Location and Description

The boundary shown in RED on the UK Coal Authority (CA) report provided in Appendix A corresponds with the larger BLUE boundary area of interest including the PINK 'Option Plan' area both shown in Appendix B.

The approximate centre of the larger coal mining search area lies at E 248043, N 621175 with ground height at the south end approaching Creoch Road around 155m aOD falling northwards to 131m at Trabach Burn, thereafter rising northwards to 144m.

It is proposed to develop the site with a Battery Energy Storage System (BESS). The site is currently occupied by undulating open farmland.

The former Killoch Colliery is located to the south of the property. The colliery opened in 1960 and closed in 1987, the land was subsequently used as a distribution depot for Scottish Coal, complete with a fully serviceable railhead.

Site images are provided in Appendix C.

The following link provides a brief history of Killoch Colliery a 'Super Pit' with 2 large diameter mine shafts sunk to depths of 757m and 736m between 1953 and 1958.

<https://www.scottish-places.info/towns/townfirst25462.html>

1.2 Historical Maps

A desk study of limited available historical OS maps dating from the mid-1800s shows the site has remained agricultural land to the present day. Trabach Burn runs east - west through the site. Small 'Whinstone' quarries are present to the west of the site and Creoch Road.

The historical map record shows no evidence of surface coal mining activity, clay, sand or gravel pitting or stone quarrying within the site.

1.3 Anticipated Geology

The location of the property is shown on the extract of British Geological Survey (BGS) 1:50,000 Solid geology map (Sheet 14E - Cumnock) presented in Appendix D. The drift map and the BGS's online Geoindex service shows the site underlain with an unknown thickness of superficial deposits of Devensian Till/Boulder Clay underlain by bedrock of the Mauchline Volcanic Formation, in turn underlain at unknown depth by the Scottish Upper Coal Measures Formation passing downwards into the Scottish Middle Coal Measures Formation.

At this locality, the Scottish Coalfield is concealed by the Mauchline Volcanic Formation comprising non-coal bearing volcanic rocks of mostly basaltic lava with intercalated tuff, agglomerate, sandstone and mudstone.

According to Geoindex the Scottish Upper Coal Measures comprises sandstone, siltstone and mudstone in repeated cycles, most commonly fining upwards; argillaceous rocks commonly as structureless beds and seatearth; commonly reddish brown or purple due to oxidation of originally grey strata, some reddening may be primary.

BGS borehole record NS42SE/9 of Killoch No 1 Shaft to the south of the site records drift/bedrock depth of 3.7m underlain by volcanic basalt strata to a depth of 36.6m in turn underlain by the Scottish Upper Coal Measures Strata. The log's first mention of very thin coal is a depth of 395m with the first reference to thicker (107cm) coal at 543m. Similar coal mining geology may be expected beneath the BESS development area to the north though the volcanic horizon may perhaps extend deeper than 36m.

Based on Shaft 1 underground coal mine workings would not be expected within 543m depth of the surface beneath the BESS development area and perhaps deeper because the site lies down dip of the shaft.

1.4 Mine Workings & Mine Shafts

The CA report in Appendix A identifies 4 levels of past underground mining beneath the site in the Lugar Main seam between depths of 597m and 671m depth dipping 6.4 degrees to 9.8 degrees north and northwest with an extraction thickness between 178cm to 196cm and last worked between 1970 and 1972. In Geoinvestigates opinion these workings lie too deep to impact surface ground stability within the BESS development area. The Lugar Main Coal is found in the Scottish Middle Coal Measures Formation.

An extract of CA online interactive mining information beneath the site is provided in Appendix E. The plan shows 4 large mining panels 78IP, 78IQ, 78IR 78IU (all seam code SC130A) extracted between 1900 and 1972 in the Lugar Main Coal at minus (-) 432m OD in the southeast corner of the search area to (-) 560m in the northeast corner placing these workings between 590m to 700m depth beneath the development area broadly corresponding with the CA reports working depths for the Lugar Main.

In Geoinvestigate's opinion these coal panels were probably worked using modern mechanised longwall/total extraction mining methods with total closure of the mine cavity following soon after mining and surface mining subsidence largely complete within 2 years thereafter. Consequently, no further surface movement is expected with the BESS development area.

The CA report places the site in an area of NO probable shallow coal mine workings. The CA define Probable Unrecorded Shallow Workings as *"Areas where the Coal Authority believes there to be unrecorded coal workings that exist at or close to the surface"* (i.e., less than 30m).

Based on the geological mapping and the log of Killoch Shaft 1 Geoinvestigate concurs with the CAs opinion that unrecorded shallow underground coal mining does not exist beneath the BESS development area and furthermore, NO other working is expected within several hundred metres of the surface.

The CA report does not identify any known mine shafts within 100m of the site boundary. Killoch Shafts 1 and 2 to the south of the property are too distant to impact the site development.

1.5 Geological Faults Fissures & Breaklines

The geological mapping and the CA report do not identify any faults, fissures, or breaklines within the site or within influencing distance of it.

1.6 Mine Gas

According to the CA report no mine gas incident or remediation has been recorded within 500m of the enquiry boundary and typically on the UK coalfields mine gas risk to surface development is low. Circumstances where gas risk increases include proximity (typically < 50m) to mine entries (adits and shafts), proximity to recorded mine gas incidents, where development is located above or adjacent to very shallow and shallow (< 30m) unflooded mine workings or roadway tunnels. In addition, increased gas risk may be attributable to coal seams with a history of spontaneous combustion, natural or artificial pathways providing routes for gas migration eg permeable soil cover, pathways created by geological faults, mining induced breaklines/fractures, collapsed mine roof strata, mining subsidence, mining sinkholes/crown holes and unsealed boreholes.

This CMRA has indicated that no conditions exist at this site increasing mine gas risk which is assessed to negligible.

2. RISK ASSESSMENT OF SITE-SPECIFIC COAL MINING ISSUES

The risk assessment methodology adopted in this section is based on CA publication RISK BASED APPROACH TO DEVELOPMENT MANAGEMENT - GUIDANCE FOR DEVELOPERS Version 3, 2014 and Version 4 - 2017. The template contained therein is broadly adopted in the table below with amendments made by Geoinvestigate Limited. The factual information it is based on, is derived mostly from the CA Consultants Coal Mining Report and additional desk study information including available historical maps, geological maps & memoirs, BGS boreholes, online articles etc.

It is not an exhaustive desk study review. Therefore, if new information is released or found in the future, this CMRA may require updating.

The table also provides advice on next step mitigation and the likely planning decision.

RISK ASSESSMENT & MITIGATION		
Coal Mining Issues/Hazards	Risk	Next Step Mitigation
Past underground coal mining	YES	Too deep to impact surface development
Probable unrecorded shallow workings	NONE	
Outcrop	NONE	
Spine roadways at shallow depth	NONE	
Mine entries	NONE	
Geological faults, fissures and breaklines	NONE	
Mine gas	NONE	
Opencast mines within 500m	NONE	
Coal mining subsidence claims within 50m	NONE	
Site investigations within 50m	NONE	
Likely Planning Decision	Yes/No	Reason
Is planning permission likely to be given with respect to coal mining legacy issues CONDITIONAL upon carrying out further intrusive investigation leading to possible building design mitigation at a future date but before construction begins?	Yes	Yes. Because the site is NOT impacted by coal mining legacy hazards. Therefore, NO further mitigation and NO planning CONDITION is required.

Assessed risk level – **High** **Medium** **Low** NONE

3. CMRA OUTCOME & RECOMMENDATIONS

This CMRA has identified NO risk to the proposed development from coal mining legacy. Therefore, NO further mitigation is required in this regard neither further drilling investigation, drilling and grouting, special foundation design or mine gas protection. This outcome applies both to the larger search area and the Option Plan/Area within it.

Therefore, in Geoinvestigate's opinion planning permission should NOT be withheld for this development with respect to coal mining legacy issues and NO condition need be placed upon it either.

Notwithstanding the client may wish to consider carrying out some limited shallow geo-environmental site investigation to check the land for the presence of ground contamination and to enable foundation design though no significant problems are expected in either regard.

Appendices:

- CA Consultants Coal Mining Report issued 2 July 2024 ref. 51003434581001
- Coal Mining Search Area including Smaller 'Option Plan' area
- Site Images
- Geology Map Extracts
- Extract CA Online Interactive Mapping

APPENDIX A
COAL MINING REPORT



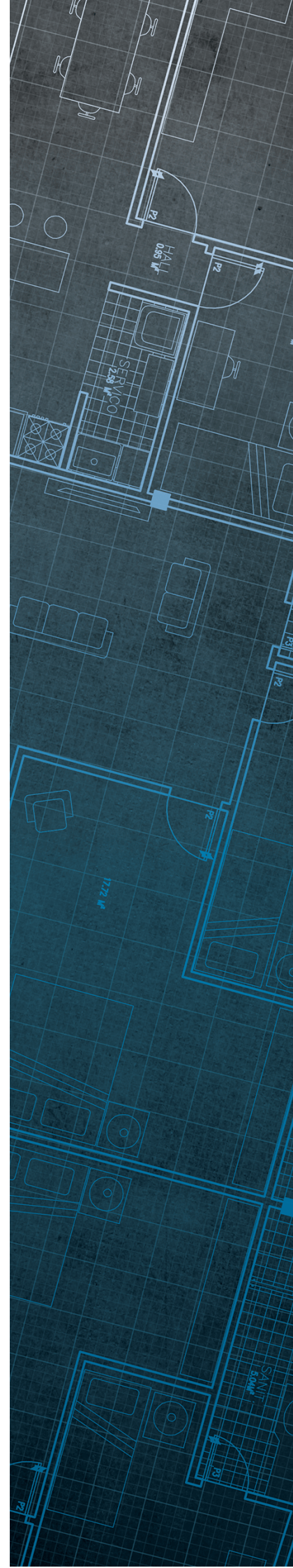
The Coal
Authority

Consultants Coal Mining Report

Westport Energy Storage Facility
East Ayrshire
KA18 2QH

Date of enquiry:	25 April 2025
Date enquiry received:	25 April 2025
Issue date:	25 April 2025

Our reference:	51003494171001
Your reference:	G24206a



Consultants

Coal Mining Report

This report is based on and limited to the records held by the Coal Authority at the time the report was produced.

Client name

GEOINVESTIGATE

Enquiry address

Westport Energy Storage Facility
East Ayrshire
KA18 2QH

How to contact us

0345 762 6848 (UK)
+44 (0)1623 637 000 (International)

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

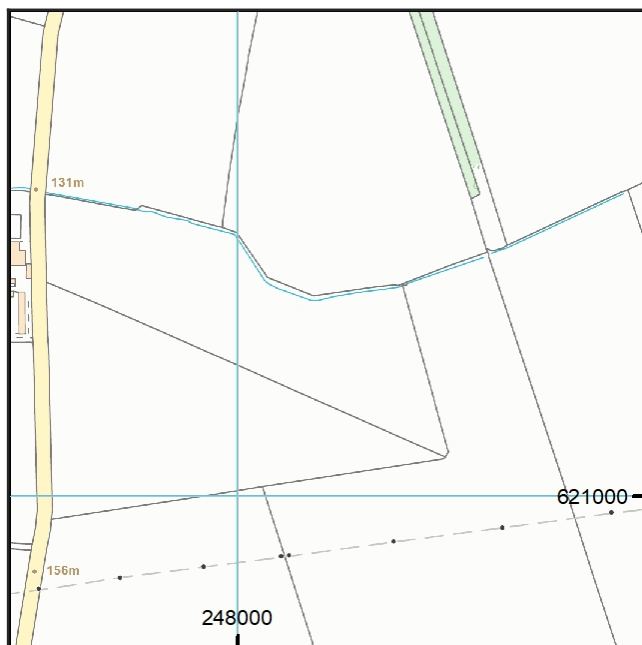
www.groundstability.com

 @coalauthority

 /company/the-coal-authority

 /thecoalauthority

 /thecoalauthority



Approximate position of property



Reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown copyright and database right 2018. All rights reserved.

Ordnance Survey Licence number: AC0000820577

Section 1 – Mining activity and geology

Past underground mining

Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
KILLOCH	LUGAR MAIN	Coal	78LL	554	South-East	11.6	North	190	1973
KILLOCH	LUGAR MAIN	Coal	78LK	557	South	6.2	North	213	1972
KILLOCH	LUGAR MAIN	Coal	78IJ	576	South-East	9.5	North	185	1972
unnamed	ELL	Coal	78I3	578	East	8.7	North	112	1980
KILLOCH	LUGAR MAIN	Coal	78L7	593	West	6.2	North	229	1973
KILLOCH	LUGAR MAIN	Coal	78IU	597	Beneath Property	6.4	North-West	178	1972
KILLOCH	LUGAR MAIN	Coal	78IR	605	Beneath Property	6.4	North-West	178	1972
KILLOCH	LUGAR MAIN	Coal	78II	605	East	9.5	North	185	1973
unnamed	LUGAR MAIN	Coal	78GU	610	West	8.2	North	198	1971
unnamed	LUGAR MAIN	Coal	78IS	642	West	6.8	North	178	1972
unnamed	LUGAR MAIN	Coal	78IT	648	West	8.2	North	193	1972
unnamed	LUGAR MAIN	Coal	78IQ	656	Beneath Property	9.8	North	190	1970
unnamed	LUGAR MAIN	Coal	78GV	658	West	8.2	North	198	1972
unnamed	LUGAR MAIN	Coal	78IP	676	Beneath Property	9.5	North	196	1971
BARONY	LUGAR MAIN	Coal	78IL	696	North-East	8.8	North	196	1974
unnamed	LUGAR MAIN	Coal	78IO	718	West	9.5	North	196	1979
unnamed	LUGAR MAIN	Coal	78GW	722	West	8.2	North	198	1979
unnamed	LUGAR MAIN	Coal	78IM	722	North	8.3	North	208	1974
unnamed	LUGAR MAIN	Coal	78IN	757	North-West	8.3	North	208	1973

Probable unrecorded shallow workings

None.

Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

Mine entries

None recorded within 100 metres of the enquiry boundary.

Abandoned mine plan catalogue numbers

The following abandoned mine plan catalogue numbers intersect with some, or all, of the enquiry boundary:

S872		
------	--	--

Please contact us on 0345 762 6848 to determine the exact abandoned mine plans you require based on your needs.

Outcrops

No outcrops recorded.

Geological faults, fissures and breaklines

No faults, fissures or breaklines recorded.

Opencast mines

None recorded within 500 metres of the enquiry boundary.

Coal Authority managed tips

None recorded within 500 metres of the enquiry boundary.

Section 2 – Investigative or remedial activity

Please refer to the 'Summary of findings' map (on separate sheet) for details of any activity within the area of the site boundary.

Site investigations

None recorded within 50 metres of the enquiry boundary.

Remediated sites

None recorded within 50 metres of the enquiry boundary.

Coal mining subsidence

The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, 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.

Mine gas

None recorded within 500 metres of the enquiry boundary.

Mine water treatment schemes

None recorded within 500 metres of the enquiry boundary.

Section 3 – Licensing and future mining activity

Future underground mining

None recorded.

Coal mining licensing

None recorded within 200 metres of the enquiry boundary.

Court orders

None recorded.

Section 46 notices

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

Withdrawal of support notices

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.

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.

Section 4 – Further information

The following potential risks have been identified and as part of your risk assessment should be investigated further.

Future development

If development proposals are being considered, technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site. All proposals should apply specialist engineering practice required for former mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or coal mines without first obtaining the permission of the Coal Authority.

MINE GAS: Please note, if there are no recorded instances of mine gas within 500m of the enquiry boundary, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded. Developers should be aware that the investigation of coal seams, mine workings or mine entries may have the potential to generate and/or displace underground gases. Associated risks both to the development site and any neighbouring land or properties should be fully considered when undertaking any ground works. The need for effective measures to prevent gases migrating onto any land or into any properties, either during investigation or remediation work, or after development must also be assessed and properly addressed. In these instances, the Coal Authority recommends that a more detailed Gas Risk Assessment is undertaken by a competent assessor.

Development advice

The site is within an area of historical coal mining activity. Should you require advice and/or support on understanding the mining legacy, its risks to your development or what next steps you need to take, please contact us.

For further information on specific site or ground investigations in relation to any issues raised in Section 4, please call us on 0345 762 6848 or email us at groundstability@coal.gov.uk.

Section 5 – Data definitions

The datasets used in this report have limitations and assumptions within their results. For more guidance on the data and the results specific to the enquiry boundary, please **call us on 0345 762 6848** or **email us at groundstability@coal.gov.uk**.

Past underground coal mining

Details of all recorded underground mining relative to the enquiry boundary. Only past underground workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination, will be included.

Probable unrecorded shallow workings

Areas where the Coal Authority believes there to be unrecorded coal workings that exist at or close to the surface (less than 30 metres deep).

Spine roadways at shallow depth

Connecting roadways either, working to working, or, surface to working, both in-seam and cross measures that exist at or close to the surface (less than 30 metres deep), either within or within 10 metres of the enquiry boundary.

Mine entries

Details of any shaft or adit either within, or within 100 metres of the enquiry boundary including approximate location, brief treatment details where known, the mineral worked from the mine entry and conveyance details where the mine entry has previously been sold by the Authority or its predecessors British Coal or the National Coal Board.

Abandoned mine plan catalogue numbers

Plan numbers extracted from the abandoned mines catalogue containing details of coal and other mineral abandonment plans deposited via the Mines Inspectorate in accordance with the Coal Mines Regulation Act and Metalliferous Mines Regulation Act 1872. A maximum of 9 plan extents that intersect with the enquiry boundary will be included. This does not infer that the workings and/or mine entries shown on the abandonment plan will be relevant to the site/property boundary.

Outcrops

Details of seam outcrops will be included where the enquiry boundary intersects with a conjectured or actual seam outcrop location (derived by either the British Geological Survey or the Coal Authority) or intersects with a defined 50 metres buffer on the coal (dip) side of the outcrop. An indication of whether the Coal Authority believes the seam to be of sufficient thickness and/or quality to have been worked will also be included.

Geological faults, fissures and breaklines

Geological disturbances or fractures in the bedrock. Surface fault lines (British Geological Survey derived data) and fissures and breaklines (Coal Authority derived data) intersecting with the enquiry boundary will be included. In some circumstances faults, fissures or breaklines have been known to contribute to surface subsidence damage as a consequence of underground coal mining.

Opencast mines

Opencast coal sites from which coal has been removed in the past by opencast (surface) methods and where the enquiry boundary is within 500 metres of either the licence area, site boundary, excavation area (high wall) or coaling area.

Coal Authority managed tips

Locations of disused colliery tip sites owned and managed by the Coal Authority, located within 500 metres of the enquiry boundary.

Site investigations

Details of site investigations within 50 metres of the enquiry boundary where the Coal Authority has received information relating to coal mining risk investigation and/or remediation by third parties.

Remediated sites

Sites where the Coal Authority has undertaken remedial works either within or within 50 metres of the enquiry boundary following report of a hazard relating to coal mining under the Coal Authority's Emergency Surface Hazard Call Out procedures.

Coal mining subsidence

Details of alleged coal mining subsidence claims made since 31 October 1994 either within or within 50 metres of the enquiry boundary. Where the claim relates to the enquiry boundary confirmation of whether the claim was accepted, rejected or whether liability is still being determined will be given. Where the claim has been discharged, whether this was by repair, payment of compensation or a combination of both, the value of the claim, where known, will also be given.

Details of any current 'Stop Notice' deferring remedial works or repairs affecting the property/site, and if so the date of the notice.

Details of any request made to execute preventative works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991. If yes, whether any person withheld consent or failed to comply with any request to execute preventative works.

Mine gas

Reports of alleged mine gas emissions received by the Coal Authority, either within or within 500 metres of the enquiry boundary that subsequently required investigation and action by the Coal Authority to mitigate the effects of the mine gas emission. Please note, if there are no recorded instances of mine gas reported, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded.

Mine water treatment schemes

Locations where the Coal Authority has constructed or operates assets that remove pollutants from mine water prior to the treated mine water being discharged into the receiving water body.

These schemes are part of the UK's strategy to meet the requirements of the Water Framework Directive. Schemes fall into 2 basic categories: Remedial – mitigating the impact of existing pollution or Preventative – preventing a future pollution incident.

Mine water treatment schemes generally consist of one or more primary settlement lagoons and one or more reed beds for secondary treatment. A small number are more specialised process treatment plants.

Future underground mining

Details of all planned underground mining relative to the enquiry boundary. Only those future workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination will be included.

Coal mining licensing

Details of all licenses issued by the Coal Authority either within or within 200 metres of the enquiry boundary in relation to the under taking of surface coal mining, underground coal mining or underground coal gasification.

Court orders

Orders in respect of the working of coal under the Mines (Working Facilities and Support) Acts of 1923 and 1966 or any statutory modification or amendment thereof.

Section 46 notices

Notice of proposals relating to underground coal mining operations that have been given under section 46 of the Coal Mining Subsidence Act 1991.

Withdrawal of support notices

Published notices of entitlement to withdraw support and the date of the notice. Details of any revocation notice withdrawing the entitlement to withdraw support given under Section 41 of the Coal Industry Act 1994.

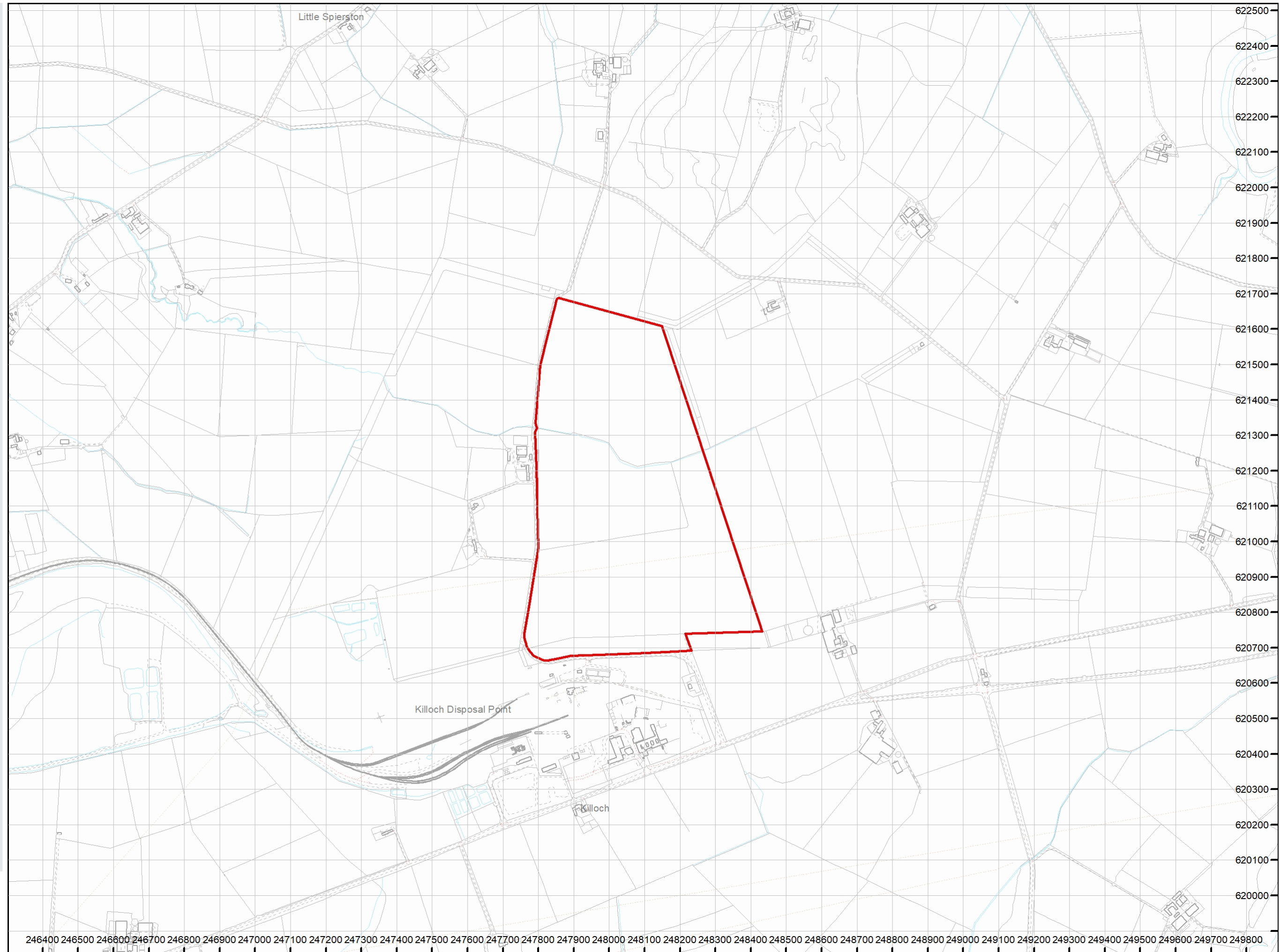
Payment to owners of former copyhold land

Relevant notices which may affect the property and any subsequent notice of retained interests in coal and coal mines, acceptance or rejection notices and whether any compensation has been paid to a claimant.

The map highlights any specific surface or subsurface features within or near to the boundary of the site.

Key

Approximate position of the enquiry
boundary shown

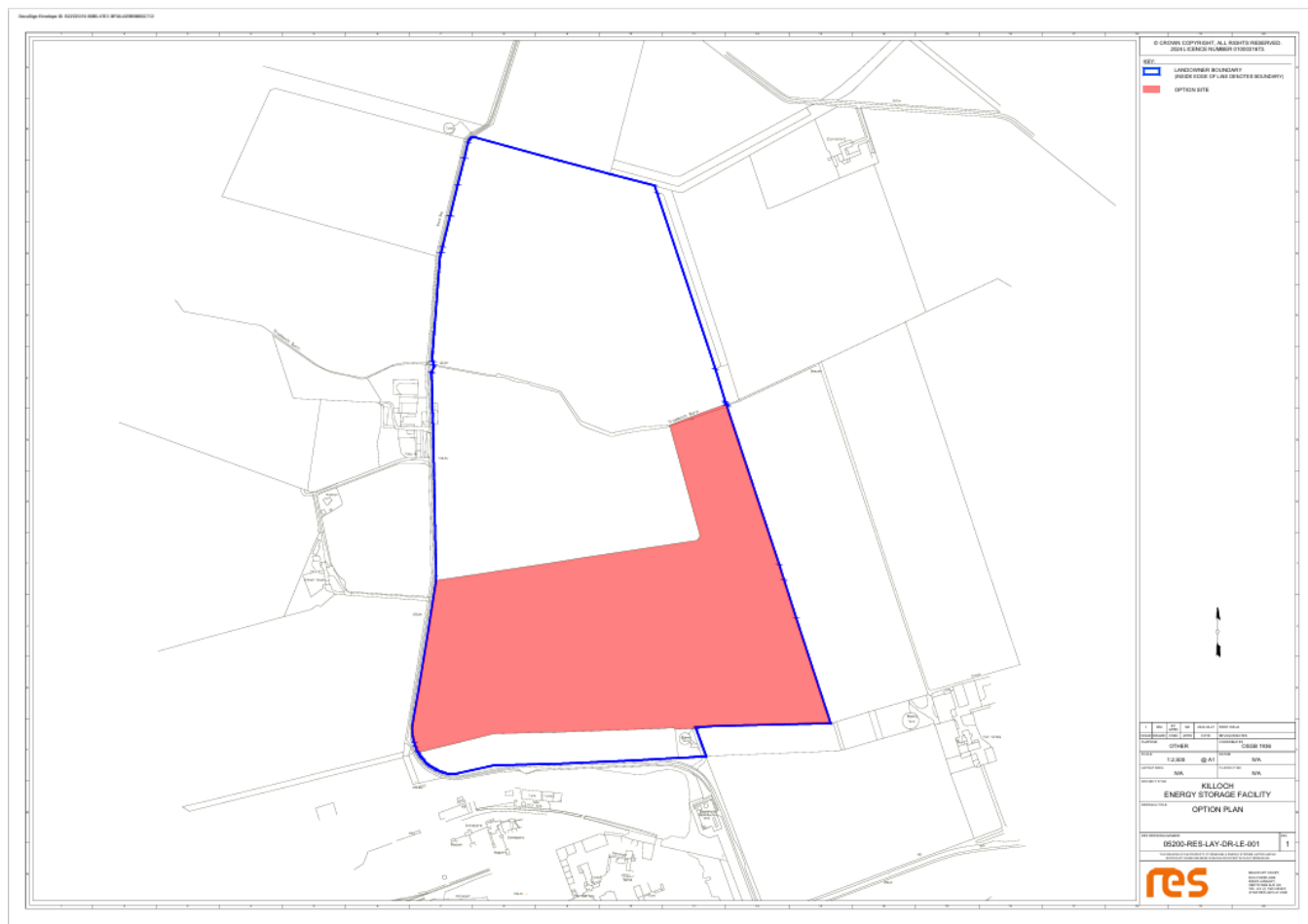


How to contact us

0345 762 6848 (UK)
+44 (0)1623 637 000 (International)
www.groundstability.com

APPENDIX B

COAL MINING SEARCH AREA



APPENDIX C SITE IMAGES



APPENDIX E

EXTRACT CA INTERACTIVE MAPPING

