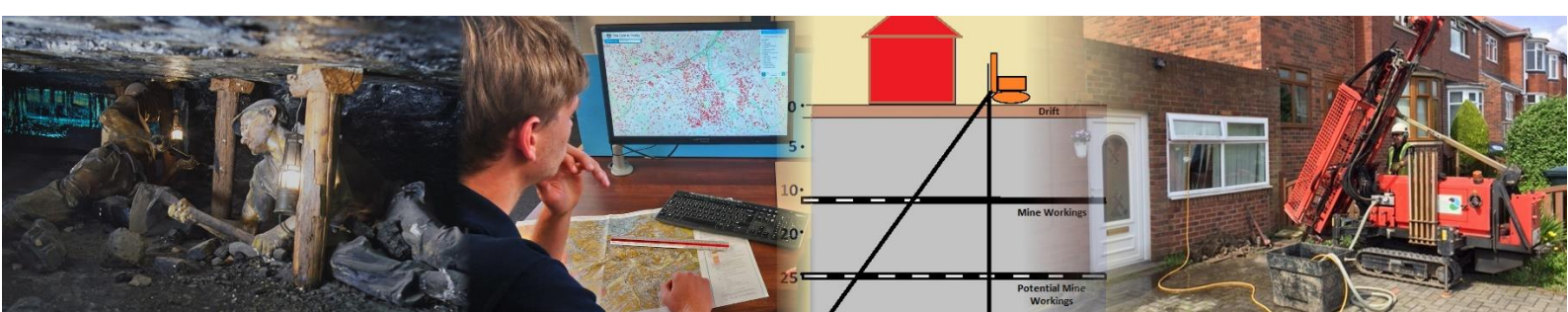




GEOLOGICAL
GEOTECHNICAL
GEOENVIRONMENTAL
CONSULTANCY
DRILLING & DATA ACQUISITION

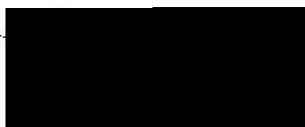


GEOINVESTIGATE LIMITED

Coal Mining Risk Assessment (CMRA)

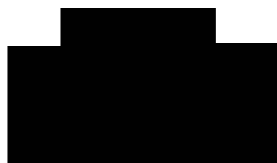
LOCATION	3 Catherine Street, Whitehaven CA28 7PA
ISSUE DATE	28 February 2019
FOR	Cubic Architecture and Design
CLIENT REF.	
OUR REF.	G19080

Prepared by



Jason Pratt BSc(Hons)
Geo-environmental Engineer

Checked by



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

SUMMARY FINDINGS – NO MITIGATION REQUIRED

The outcome of the CMRA report presented below is that **NO mitigation is required with respect to coal mining legacy at this site. No further drilling, special foundation design or gas protection measures are required with regard to coal mining legacy.**

As such planning permission should **not** be withheld in respect of coal mining legacy.

1. CMRA INTRODUCTION

Site Location and Description: The approximate centre of this site is at National Grid Reference E 297571 N 518002 with an elevation of about 9m AOD. The boundary shown RED on the Coal Authority (CA) report provided in Appendix A corresponds with the planning application.

The site comprises the former Catherine Street Doctor's Surgery, a mostly two storey building with a single storey off-shoot to the side. Part of the building contains a cellar. The surgery is connected to 80 Lowther Street (A5094), a two and half storey corner Georgian building. The site is located to the east of Whitehaven Harbour in the 'Old Town' which contains many Georgian and Victorian dwellings and office premises. Ground level rises abruptly to the east of the site and Castle Park.

It is understood that the existing surgery is to be converted to residential accommodation. The redevelopment is minor involving essentially change of use and the addition of a small first floor extension over a single storey off-shoot. The original building footprint remains unchanged.

A brief, limited inspection of buildings, roads and walls in the vicinity of the site using Google Street View found no obvious visible surface evidence indicative of mining subsidence. Some minor cracking of the buildings rendering is noted though this is not expected to be due to movement relating to coal mining legacy. No other buildings nearby exhibit cracking. Current images of the site and a close-up of the crack damage is presented in Appendix B.

The OS map record dating back to 1866 shows the site was mostly occupied by buildings even at this early date. Mining Air Shafts are present to the east of the site. The original building was perhaps extended by 1961. Wellington Coal Pit is shown some 750m to the west of the site.

The map record provides no evidence that the site itself or the immediate locality has been subject to past surface mining, clay, sand or gravel pitting or stone quarrying though underground coal mining activity has occurred in the distant surrounding area.

Description & Layout of Proposed Development: It is proposed erect a small first floor extension above the existing single storey off-shoot to the side of surgery. In addition there is a change of use from commercial/business to residential dwelling. The proposed development layout is presented in Appendix C.

Risk Methodology Applied: This document and the risk assessment methodology adopted herein 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 adopted with minor amendments made by Geoinvestigate Limited.

2. SOURCES OF INFORMATION USED TO INFORM THIS REPORT

- An up-to-date Coal Mining Report from the CA dated 25 February 2019 ref. 5100205469001
- Geological information from the British Geological Survey (BGS) Sheet 28 Whitehaven at 1:50,000 scale
- The Coal Authority's online interactive map viewer
- A site history based on limited Ordnance Survey map records of the area dating back to 1866
- BGS historic borehole logs
- Google Street View and Satellite imagery
- Other web sourced information

3. ASSESSMENT OF SITE SPECIFIC COAL MINING ISSUES

The table below summarises the potential risks associated with coal mining legacy for the proposed development site, identified from list sources of information.

Coal Mining Issues	Yes	No	Risk Assessment/Remarks
Past underground coal mining	Yes		<i>The CA report in Appendix A records one level of past underground coal mining below the site at 124m depth with an extraction thickness of 177cm. In our opinion such deep working is unlikely to affect surface ground stability within the development area.</i>
Probable unrecorded shallow workings		No	<i>According to the CA report the site is NOT within an area of probable shallow unrecorded working. However in our opinion the site may be underlain, or is in close proximity, to coal outcrop which could perhaps have been worked.</i>
Spine roadways at shallow depth		No	<i>None recorded.</i>
Mine entries		No	<i>None recorded within 100m of site boundary</i>
Outcrops	Yes		<i>The Main Coal Seam is noted by the CA to outcrop 2m/3.3m southeast of site. The Yard Coal Seam is noted as outcropping 44.4m southeast.</i>
Geological faults, fissures and breaklines		No	<i>None recorded.</i>
Opencast Mines		No	<i>None recorded within 500m of the enquiry boundary.</i>
Coal mining subsidence		No	<i>According to the CA there has been no subsidence claim at the property itself or within 50m of it since October 1994.</i>
Mine Gas		No	<i>None recorded within 500m of the enquiry boundary</i>

Note: For those coal mining issues above identified as 'Yes' or highlighted 'Yellow' a more detailed discussion and assessment are made of the risks to the application site and the proposed development.

1. The CA interactive map shows the site is located within a Development High Risk Area (DHRA) corresponding with coal outcrop.
2. According to the CA report there is one level of past recorded underground coal mining below the site within the Six Quarters Seam at 124m depth with an extraction thickness of 1.77m. In our opinion this working lies too deep to affect surface ground stability within the proposed development area.
3. According to the CA report there is NO probable unrecorded shallow workings below the site.
4. The CA report notes 3 outcrops. Two relating to the Main Coal Seam 2m and 3.3m southeast of site, which is likely to be the same outcrop, as well as the Yard Coal seam outcropping 44.4m southeast of the site.
5. The location of the site is shown on the extract of the BGS geology map presented in Appendix D. The vertical geology column is shown below the map. The tentative elevation of the site is shown relative to the column.
6. Drift depth beneath site is unknown.
7. BGS Borehole logs NX91NE191-194, some 85m northeast of site, show drift of alternating sand, clay and silt with Shale bedrock at around 22m to 23m depth. NX91NE/190 at the same locality records drift >26m
8. NX91NE, 250m north of site, records predominantly clay drift to 19.8m then Mudstone bedrock.
9. Borehole positions are shown on the geology map. The logs of NX91NE/190 & 193 are presented in Appendix E.
10. Though drift/bedrock level is not confirmed by past site specific drilling it can in our opinion be reliably assumed to occur between 22m to 26m or perhaps a little deeper below the development.
11. CA mining information records strata and coal seam dip of 8.1 deg. West.
12. The Main and Yard Coal Seams are therefore be expected to dip westwards and lie at very shallow or shallow depth below rockhead with around 26m thickness of drift above the later.
13. Whether coal seam and mine workings exist within shallow depth (i.e. < 30m) beneath this site depends on whether one or both seams have been removed by geological erosion processes and replaced by deep drift deposit.
14. As the outcrop positions are tentative it is our opinion more likely that the higher Main Coal seam is absent and the deeper Yard is present. This however is speculation.
15. The Main Seam and Yard Coal Seam are identified in 'UK Coal Resource for New Exploitation Technologies Final Report - CR/04/015N' as being 0.80m - 3.60m and 0.30m - 1.10m thick respectively. Both seams are described in the CA report as workable.

16. In summary this CMRA has identified the possible presence of 1 or 2 levels of coal seam below the site. Mine workings if present in these seams will lie > 26m depth below a thick covering of sand, gravel and boulders. With regard to the likelihood of the occurrence of unrecorded shallow workings beneath the site the CA report concludes that there are "NONE".
17. The available evidence including the absence of subsidence claims and obvious visible surface building damage within the site and its vicinity suggests that mine working if present at depth beneath this property is unlikely to significantly impact surface ground stability within the development area.
18. The presence of the existing building together with some 22m to 26m depth of sand and gravel with boulders beneath it raises obstacles with respect to intrusive investigation.
19. Given the foregoing and because the development does not involve changing the existing building footprint it is our opinion neither practical nor necessary to carry out further intrusive deep investigation of the coal mining geology beneath this site.
20. With regard to mine gas hazard, because there is no site specific mine gas warning at this locality and in its general vicinity and because mine gas is rarely a problem in the UK the risk is assessed by us to be LOW.
21. Therefore, it is concluded that NO mitigation is required for this development either with regard to further intrusive site investigation, special foundation design or mine gas protection measures.
22. It is assumed however that a structural/geotechnical engineer would have assessed the capacity of the near surface ground conditions to carry the extra loadings from alteration of the buildings and from the addition of a new first floor extension over the current single storey building.

4. MITIGATION STRATEGY PROPOSED

MITIGATION RESPONSE

1. NO mitigation required at site.

5. CONCLUSION

The Coal Authority has identified the development site as falling within a Development High Risk Area (DHRA) corresponding with coal outcrop.

According to the Coal Authority the site **does not** fall within an area of probable shallow mine working.

It is our opinion that there is no information indicating that the site is at risk from surface ground instability arising from coal mining legacy. Therefore in our opinion further investigation and mitigation is neither warranted nor practical at this site.

Consequently further mitigation is NOT considered necessary either with regard to intrusive site investigation, special foundation design or mine gas protection measures.

In conclusion we see no reason why Planning Permission should not be granted for this development with regard to coal mining legacy.

Appendices:

- A. CA Report dated 25 February 2019 ref. 5100205469001
- B. Site images
- C. Existing and Proposed Development Layouts
- D. BGS Solid Geology Map, Sheet 28 Whitehaven at 1:50,000 scale
- E. BGS Logs NX91NE/190 & NX91NE/193

Other historical OS maps, borehole logs, site images and photographs have not been included because it was considered that they did not provide significant useful additional information.

APPENDIX A
COAL AUTHORITY REPORT

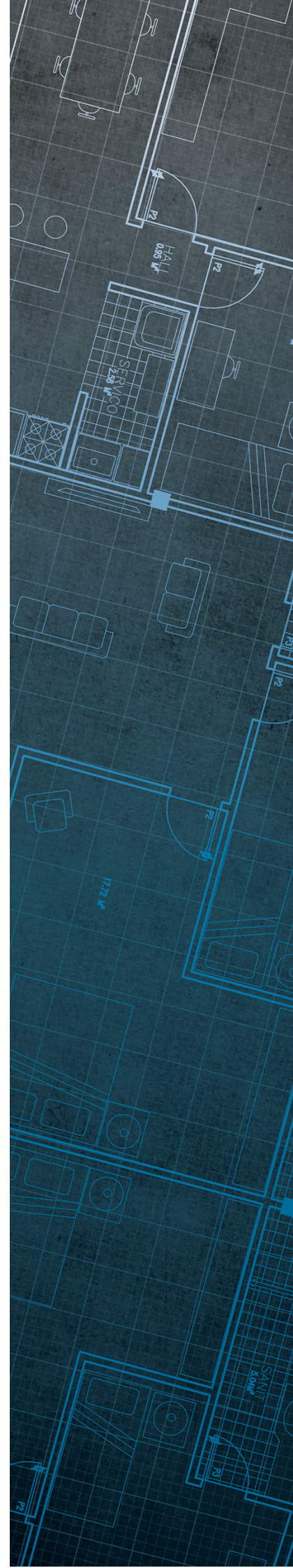


The Coal
Authority

Consultants Coal Mining Report

3 Catherine Street
Whitehaven
Cumbria
CA28 7PA

Date of enquiry:	25 February 2019
Date enquiry received:	25 February 2019
Issue date:	25 February 2019
Our reference:	51002054696001
Your reference:	G19080



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

3 Catherine Street
Whitehaven
Cumbria
CA28 7PA


How to contact us

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

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

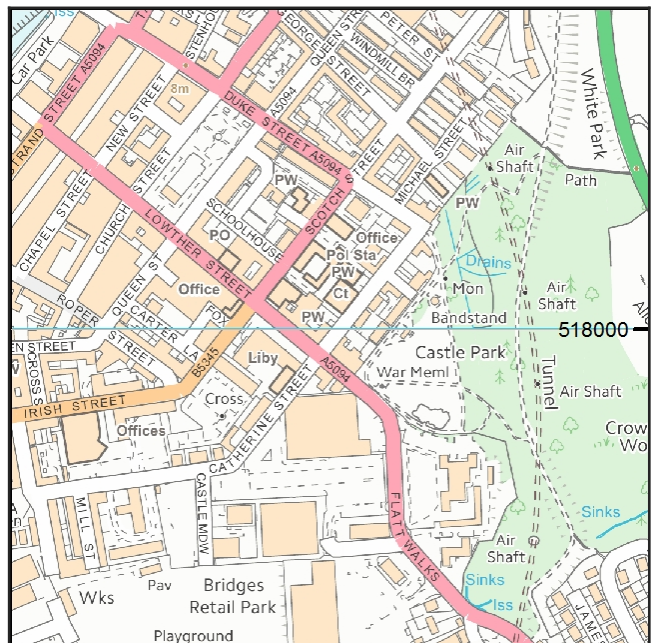
www.groundstability.com

 @coalauthority

 /company/the-coal-authority

 /thecoalauthority

 /thecoalauthority



Approximate position of property



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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
unnamed	SIX QUARTERS	Coal	0097	124	Beneath Property	8.1	West	177	1800

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:

NW1390	OM0	0
PO0	NW1387	NW1380
NW1393		

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

Outcrops

Seam name	Mineral	Seam workable	Distance to outcrop (m)	Direction to outcrop	Bearing of outcrop
MAIN	Coal	Yes	2.0	South-East	223
MAIN	Coal	Yes	3.3	South-East	243
YARD	Coal	Yes	44.4	South-East	39

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.

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.

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

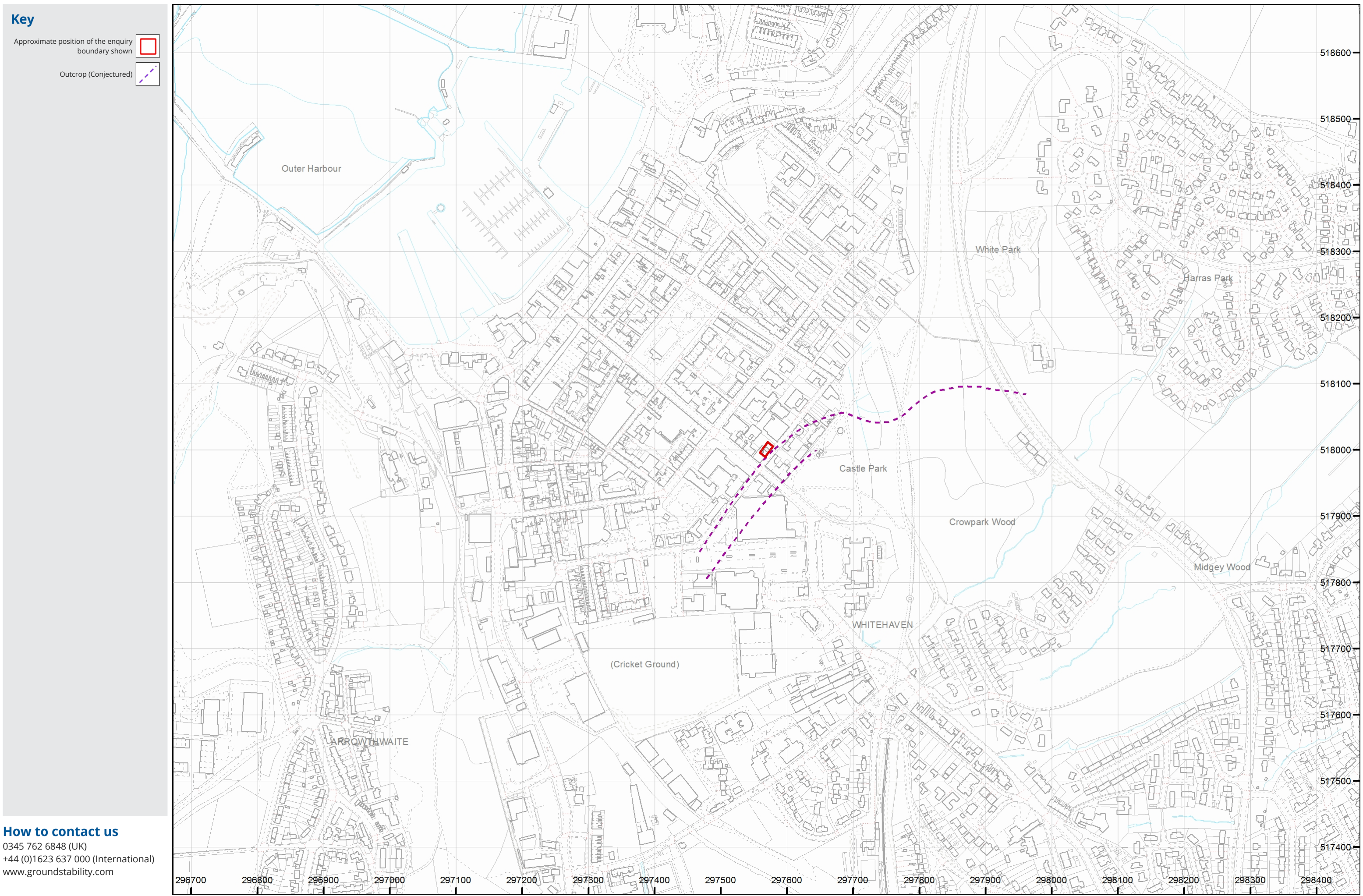
Relevant notices which may affect the property and any subsequent notice of retained interests in coal and coal mines, acceptance or rejection notices and whether any compensation has been paid to a claimant.

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VAT receipt

Issued by	The Coal Authority 200 Lichfield Lane Mansfield Nottinghamshire NG18 4RG
Tax point date	25 February 2019
Issued to	GEOINVESTIGATE TERRY DICKEN INDUSTRIAL ESTATE TERRY DICKEN INDUSTRIAL ESTATE, ELLERBECK WAY STOKESLEY NORTH YORKSHIRE TS9 7AE
Property search for	3 CATHERINE STREET WHITEHAVEN CUMBRIA CA28 7PA
Reference number	51002054696001
Date of issue	25 February 2019
Cost	£106.79
VAT @ 20%	£21.36
Total received	£128.15
VAT registration	598 5850 68

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

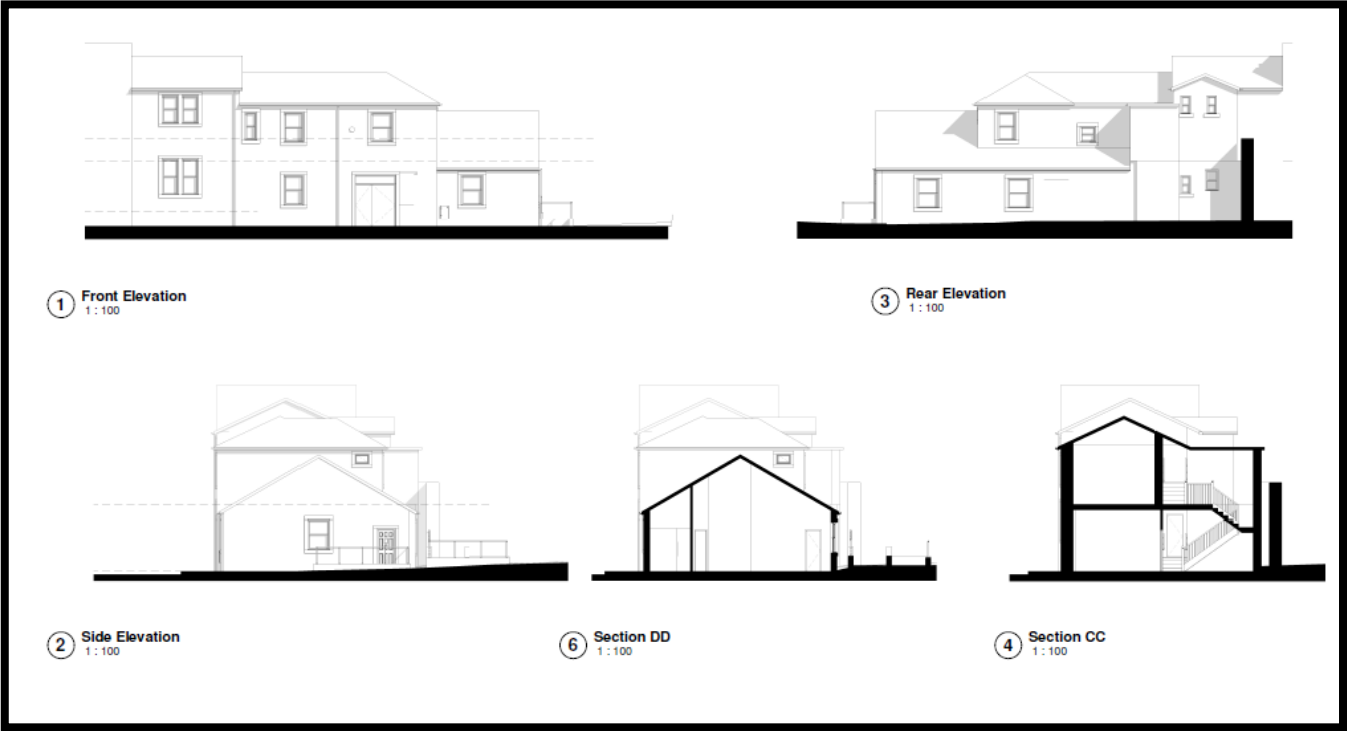


APPENDIX B CURRENT SITE IMAGES



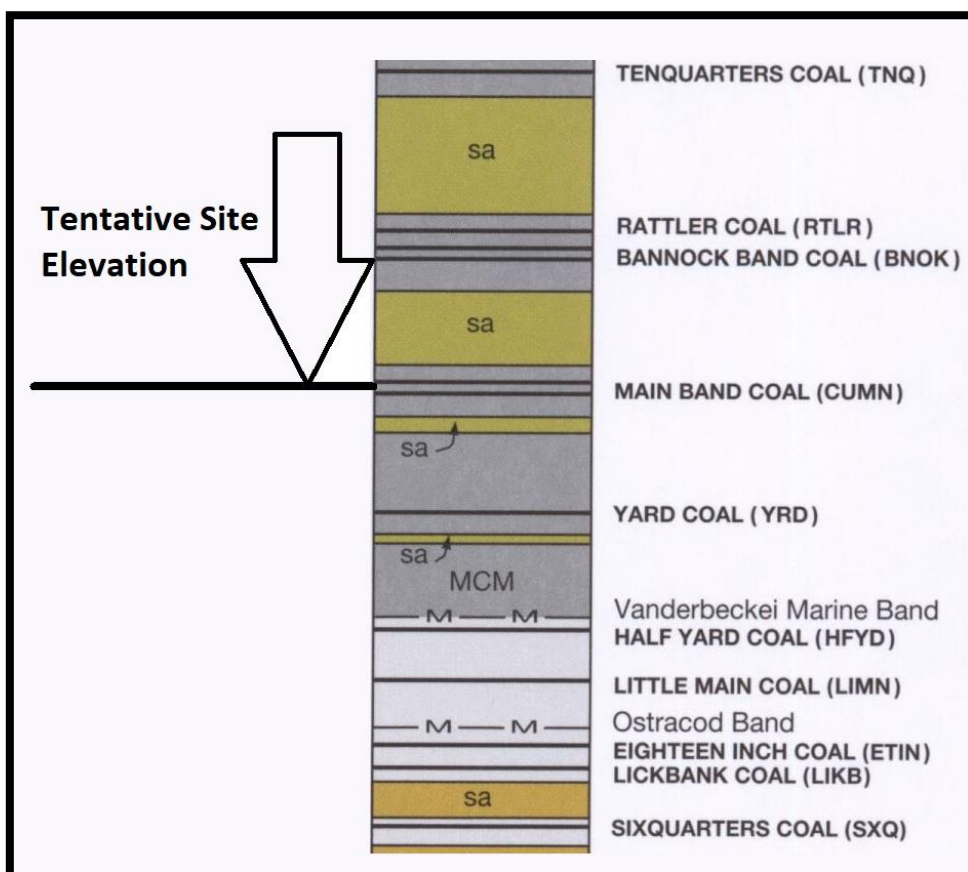
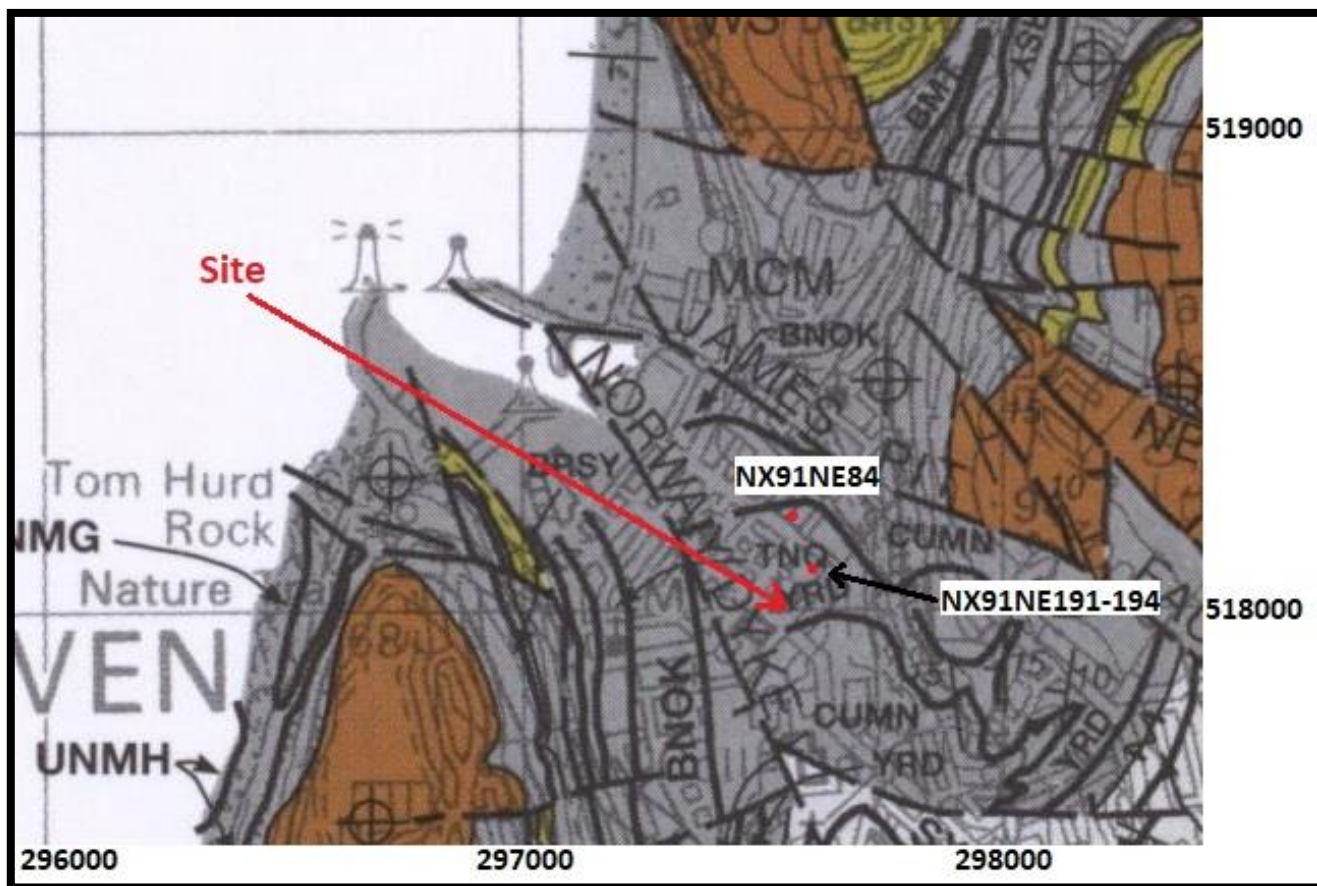


APPENDIX C
EXISTING AND PROPOSED SITE LAYOUTS



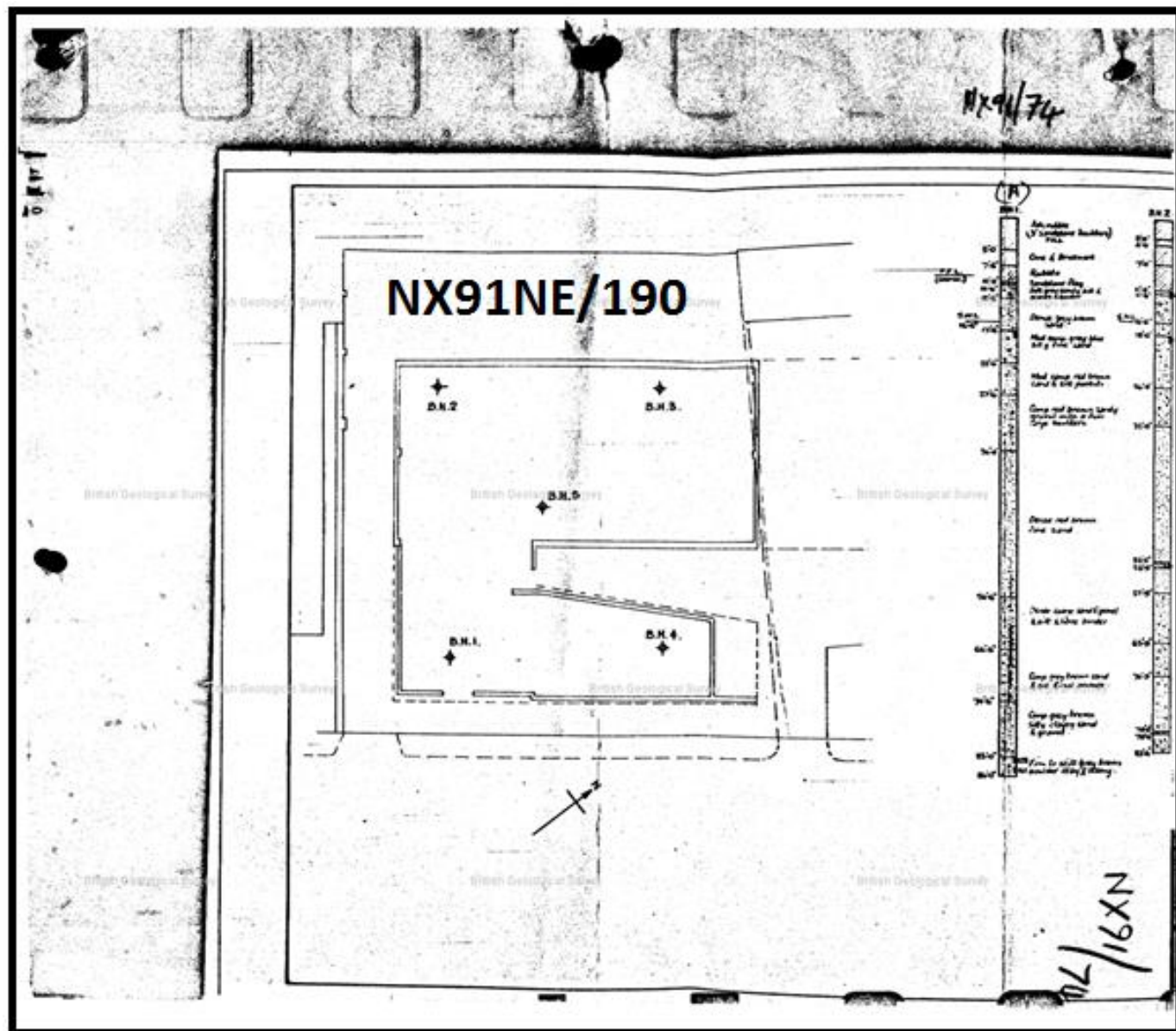
APPENDIX D

EXTRACTS OF BGS GEOLOGY MAP



APPENDIX E

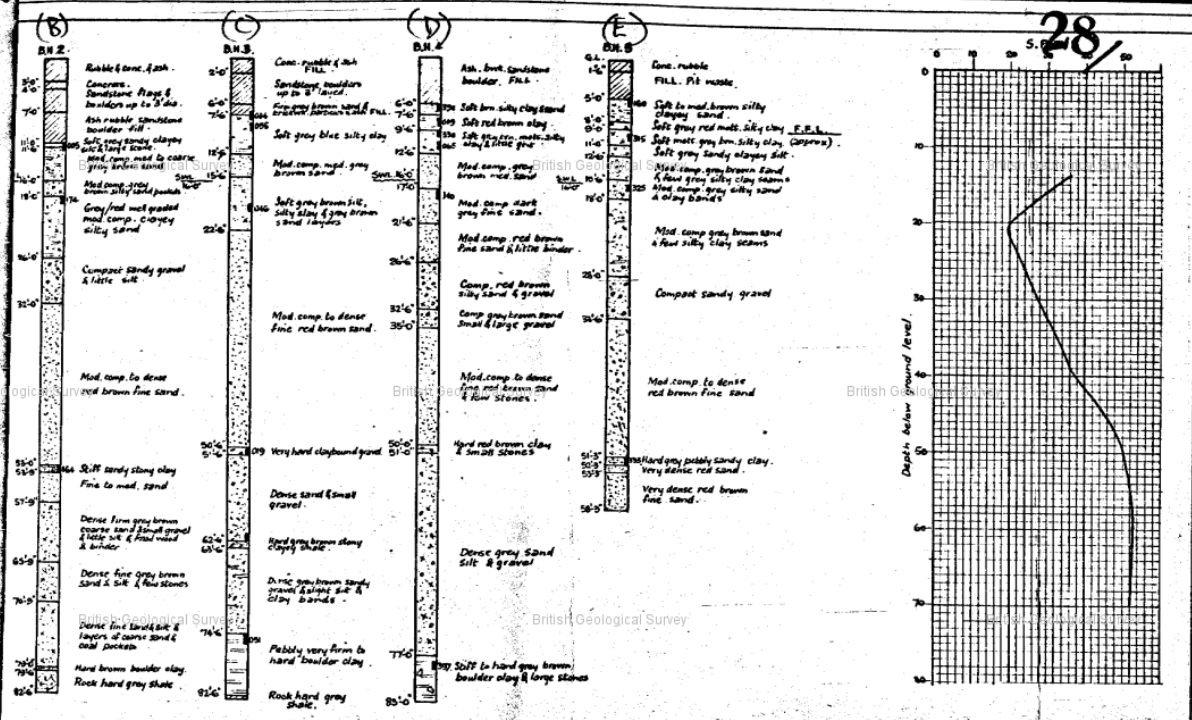
BGS LOGS NX91NE/190 & NX91NE/193



NX 9/74

NX 9/74

28



WHITEHAVEN T.E.		
CUMULATIVE		
BOREHOLE LOCATION & SECTIONS		
SCALES:	DATE:	NAT. GRID REF.
1/10" & 1/10" TO 1 FOOT.	FEB. 1958	
FILE REF. C.S.E/52/4/379	MINISTRY OF WORKS, SOIL MECHANICS SECTION, KIDBROOKE, S.E. 3.	
JOB No. 747		

