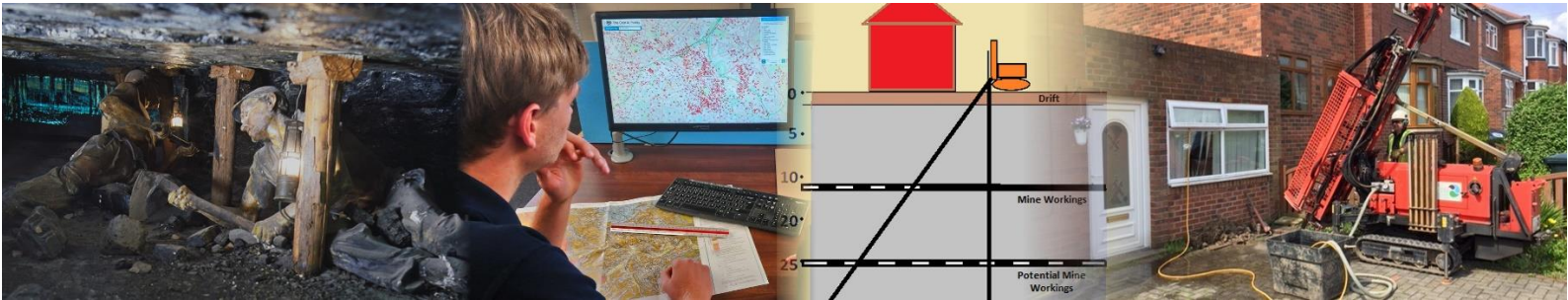




GEOLOGICAL
 GEOTECHNICAL
 GEOENVIRONMENTAL
 CONSULTANCY
 DRILLING & DATA ACQUISITION



GEOINVESTIGATE LIMITED

Coal Mining Risk Assessment (CMRA)_DRAFT

LOCATION	Coleshill Hydrogen Production Facility, Kimberley Clark, Aber Road, Flint, Flintshire CH6 5EX
ISSUE DATE	April 2023
FOR	Hyro Energy Limited c/o Renewable Energy Systems Limited
CLIENT REF.	
OUR REF.	G23010.rev1

Prepared by

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 Geoenvironmental Engineer

Checked by

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

1. CMRA INTRODUCTION

1.1 Site Location and Description:

The approximate centre of this site is at National Grid Reference 323324 E, 373378 N with an elevation between 15mOD at the Tank facility/water treatment works at the far east corner rising to 30mOD in agricultural land to the west. Much of the site is located on a low hilltop with a prominent wooded bank between it and the Kimberley-Clark factory complex on lower ground to the northeast and the water treatment works. The boundary shown in RED on the Coal Authority (CA) report provided in Appendix A corresponds with the planning application area.

A site boundary plan and site images are provided in Appendix B.

1.2 Proposed Development:

It is proposed to establish a hydrogen production facility at the site. The development will be located approximately in the centre of the site. A site boundary plan is provided in Appendix B of this report.

1.3 Historical Development:

The OS map record from 1885 shows the site was mostly undeveloped agricultural land at this early date with New Flint Colliery and pit heaps extending into the southern end of the property currently occupied by dense woodland. Old mine shafts are present within the colliery site, two are close to the site boundary. The colliery is shown as disused by 1892. A historical development plan is presented in Appendix C.

1.4 Anticipated Geology

The location of the site is shown on the extract of British Geological Survey (BGS) 1:50,000 scale Solid and Drift geology map Sheet 108, Flint as presented in Appendix D.

The geology map indicates the site is underlain by drift of unknown thickness, comprising Devensian Glaciofluvial Deposits (Sand and Gravel) and Till, (stoney clay) the latter also known as Boulder Clay - typically a competent load bearing horizon.

The tentative elevation of the site relative to the vertical geology column is shown below the map. The superficial/ soil horizon above the solid geology bedrock is not shown on the column.

Bedrock is the Upper Carboniferous Etruria Formation/Ruabon Marl Formation (RM) comprising red, purple and maroon mudstone, sandstone, and conglomerate with rare coal seams in turn underlain at unknown depth by Middle Coal Measure strata including several named coal horizons. The Ruabon Formation which underlies the site is generally non-coal bearing.

While the BGS's online borehole viewer service identifies numerous borehole logs within and adjacent to the site, few provide useful information on the coal mining geology below the proposed development area.

Log SJ27SW277 on lower ground to the northeast of the site and the water treatment works with collar height approximately 12mOD is included in Appendix E. This log records deep drift comprising Boulder Clay and Sand and Gravel to 29m depth or – (minus) 17mOD with Purple Sandstone and Red Marl both belonging to the non-coal bearing Etruria Marl /Ruabon Marl Formation exceeding 42.5m depth or – 30.5mOD at this locality. No coal horizons are recorded in the bedrock strata at this locality and the borehole did not reach the Coal Measures which lie at greater depth.

1.5 Coal Mine Workings

The CA report identifies seventeen levels of past mine workings beneath the property in the Middle and Lower Coal Measure strata between depths of 49m and 210m. Five of the levels beneath the site dip east at 14 degrees between depths of 49m and 58m with extraction thicknesses of 200 and 230cms.

No probable shallow mine working is identified in the CA report. The CA define 'probable unrecorded shallow workings' as "Areas where the Coal Authority believes there to be unrecorded coal working that exist at or close to the surface" (i.e., less than 30m).

The CA online interactive map information identifies 8.5m drift depth on higher ground to the west of the treatment works at shaft 323373 – 036 (ground level around 20mOD). This places rockhead at + 11.5mOD, suggesting that the hilltop and much of the western portion of the site is possibly underlain by some 40m to 50m thickness of non-coal bearing Etruria Marl/Ruabon Marl strata under which lie worked coal deposits.

Based on the foregoing analysis, Geoinvestigate would not expect mine working to be present within 50m to 60m depth of the surface in the main higher western portion of the site, or within 43m depth on the lower eastern end, in the vicinity of the water treatment works where log 277 is closest to.

Therefore, the past coal mine workings identified in the CA report, beneath the site, between depths of 49m to 58m are unlikely to pose a significant surface ground stability risk to the proposed development, providing there is adequate thickness of rock cover above them and based on nearby BGS boreholes and recorded working information from the CA, this is likely the case. In Geoinvestigate's opinion the CA are unlikely to object to this development on the basis of surface ground stability arising from coal seam mine working.

1.6 Mine Entries

The CA report identifies three mine shafts close to the site boundary and one (323373- 034) located the site's southeast corner.

Approximate ('best fit') mine shaft positions are shown on the plan provided in Appendix F.

The CA report records shafts 323373-055, & 076 to be untreated, while shafts 034 (depth 109.7m) and 036 (depth 205.7m) are noted as treated. Shaft 034 was filled and capped in 1979, shaft 036 was initially filled in 1968 and subsequently 'topped up' (presumably because the shaft infill had settled) and capped in 1979. The CA report states that both of these shafts are marked on the ground with pillars.

The best-case scenario zones of influence (ZOI) have been calculated and are presented in Table 1 below, based on 8.5m of drift at the location of each shaft.

Table 1: Best case ZOI based on 8.5m drift depth.

Shaft	Drift Depth (m)	Diameter/ Assumed Diameter (m)	Departure (m)	Zone of Influence (ZOI) (m)
034	8.5	3.7	5	15.5
035	8.5	2.4	5	14.7
036	8.5	3	5	15
055	8.5	2	8	17.5
057	8.5	2	8	17.5
076	8.5	2	10	19.5

The ZOI plan, presented in Appendix F, uses the Zones of Influence outlined in Table 2 below. These are based off a worst-case drift depth scenario of 29m. The plan in Appendix F shows that all of the shafts ZOIs are outside of the site developmental boundary. Therefore, the proposed development will not be affected by any mineshaft.

Table 2: Worst case ZOIs based on 29m drift depth - (Untreated shafts highlighted YELLOW)

Shaft	Drift Depth (m)	Diameter/ Assumed Diameter (m)	Departure (m)	Zone of Influence (ZOI) (m)
034	29	3.7	5	35.85
035	29	2.4	5	35.2
036	29	3	5	35.2
055	29	2	8	38
057	29	2	8	38
076	29	2	10	40

1.7 Geological Faults, Fissures & Breaklines

The CA report identifies seven geological faults trending north – south beneath the proposed development area.

While past mine working can give rise to creep movement along geological faults resulting in surface ground displacement and surface subsidence damage such surface displacement is typically rare, localised and of small magnitude. In light of this and because there has been no notified subsidence claim within or nearby to the site in this instance the risk is considered low. However, the proposed development should consider reinforced foundations and movement joints for the proposed commercial hydrogen structures.

1.8 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 bgl) unroofed mine workings or roadway tunnels, coal seams with a history of spontaneous combustion, natural or artificial pathways providing routes for gas migration e.g. 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.

The proposed development consists of temporary porta-cabin structures, with no foundations, placed onto a concrete slab. Therefore, the gas risk is considered to be low due to there being no pathways for the gas to reach the end user (receptor). Furthermore, there has been no confirmed mine gas incident/remediation at this locality or adjacent to it.

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 below 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	L	Recorded workings are too deep to affect the proposed development
Probable unrecorded shallow workings	NONE	
Outcrop	NONE	
Spine roadways at shallow depth	NONE	
Mine entries within 50m	L	Although there are mine entries equal to 38m from the site boundary. All worst case (29m drift) mine shaft ZOIs are outside the proposed developmental boundary.
Geological faults, fissures and breaklines	L	Consider reinforced foundation and slabs. Movement joints.
Opencast mines	NONE	
Mine gas	L	Proposed development consists of temporary porta-cabin like structures with no foundations and commercial hydrogen structures with no enclosed spaces. No pathway exists for mine gas to reach end user (receptor) in the low likelihood that it exists.
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?	YES	As the proposed developmental boundary is excluded from the larger 'worst case' mine shaft ZOIs identified in this CMRA and not affected by potential or existing coal mining workings then there is no reason why planning permission should not be granted with regard to coal mining legacy issues as the risk is deemed to be low.

Assessed risk level – High, Medium Low. NONE, N/A Not Applicable/not relevant

MGRA – specialist mine gas risk assessment required.

3. CMRA OUTCOME & RECOMMENDATIONS

This CMRA has shown that the site is unlikely to be impacted by shallow coal mining hazards and that the past shallow mine workings identified in the CA report between 49m and 58m depth are unlikely to pose a significant surface ground stability risk to development. In our opinion, the CA are unlikely to object to a planning application in respect of seam mine working stability hazard.

The proposed developmental boundary is excluded from the larger 'worst case' mine shaft ZOIs. Therefore, the mine shafts pose no risk to the ground stability of the development.

Furthermore, the proposed development consists of temporary porta-cabin like structures with foundations and commercial hydrogen structures with no enclosed spaces. Therefore, the gas risk is considered to be very limited.

4. CMRA SUMMARY

In summary this CMRA has indicated that the proposed development is safe with regard to coal mining legacy issues and no further investigation is likely necessary.

The mine shafts and their respective ZOI's are not considered to pose a risk to the proposed development. A summary plan is provided in Appendix G showing ZOI areas impacted by 'worst case' mine shaft ground stability hazard assuming a very/overly conservative drift depth of 29m.

Throughout the site this CMRA has shown that surface ground stability is likely safely maintained by more than 20m of rock cover overlying the past mine workings identified in the CA report in three coal seams between depths of 49m and 58m.

In terms of ground gas, the proposed development consists of temporary porta-cabin like structures with foundations and commercial hydrogen structures with no enclosed spaces. No pathway will be present for mine gas to reach the end user (receptor). Therefore, the gas risk is considered to be very limited.

Appendices:

- A. CA Consultants Coal Mining Report issued 11 January 2023 ref. 51003332985001.
- B. Site Boundary & Site Images.
- C. Historic OS Map Overlay.
- D. Extracts of BGS Geology Map.
- E. BGS Borehole Log.
- F. Summary Coal Mining Hazard Map Showing 'Worst Case' ZOIs.

APPENDIX A
COAL AUTHORITY REPORT

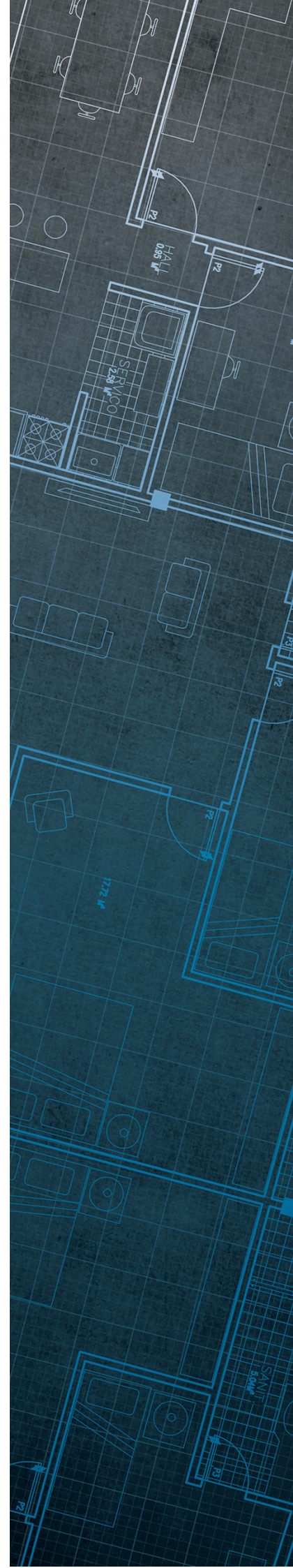


The Coal
Authority

Consultants Coal Mining Report

Coleshill Hydrogen Production
Facility
Kimberley Clark, Aber Road
Flint
Flintshire
CH6 5EX

Date of enquiry:	11 January 2023
Date enquiry received:	11 January 2023
Issue date:	11 January 2023
Our reference:	51003332985001
Your reference:	G23010



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

Coleshill Hydrogen Production Facility
Kimberley Clark, Aber Road
Flint
Flintshire
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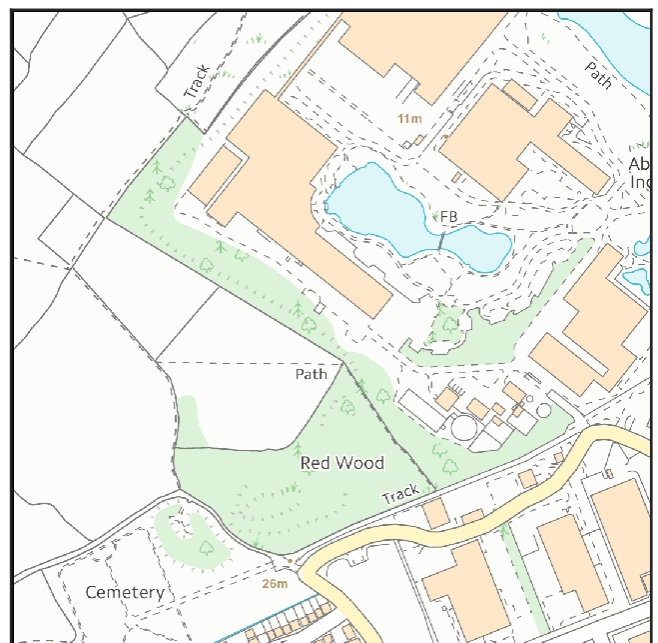
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Approximate position of property



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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	FIVE YARD	Coal	79D5	49	Beneath Property	14.0	East	200	1909
unnamed	FIVE YARD	Coal	3UKM	50	Beneath Property	14.0	East	200	1909
unnamed	THREE YARD	Coal	79CT	55	Beneath Property	14.0	East	230	1904
unnamed	MAIN	Coal	79CT	58	Beneath Property	14.0	East	230	1904
unnamed	THREE YARD	Coal	37Q3	58	Beneath Property	14.0	East	230	1904
unnamed	FIVE YARD	Coal	3UKN	109	South-West	14.0	East	200	1909
unnamed	YARD	Coal	390R	113	Beneath Property	14.0	East	60	1909
unnamed	YARD	Coal	37SX	131	Beneath Property	14.0	East	60	1909
unnamed	HARD FIVE QUARTERS	Coal	79D3	143	Beneath Property	14.0	East	180	1909
unnamed	HARD FIVE QUARTERS	Coal	37PC	149	Beneath Property	14.0	East	180	1909
unnamed	STONE	Coal	37P5	153	Beneath Property	14.0	East	160	1901
unnamed	BRASSEY	Coal	37SV	162	Beneath Property	14.0	East	130	1909
unnamed	BRASSEY	Coal	46YT	170	Beneath Property	14.0	East	130	1909
unnamed	THREE YARD	Coal	37Q2	174	Beneath Property	14.0	North-East	230	1904
unnamed	STONE	Coal	79O6	181	Beneath Property	14.0	East	160	1892
unnamed	STONE	Coal	79EG	185	North-East	14.0	East	160	1890
unnamed	NANT (SOFT 5 QTRS)	Coal	7903	206	Beneath Property	14.0	East	140	1909
unnamed	HARD FIVE QUARTERS	Coal	7H1H	206	North-East	14.0	East	180	1909
unnamed	NANT (SOFT 5 QTRS)	Coal	37RG	207	Beneath Property	14.0	East	140	1909
unnamed	HARD FIVE QUARTERS	Coal	7H3N	210	Beneath Property	14.0	East	180	1909
unnamed	BRASSEY	Coal	39C0	233	North-East	14.0	East	130	1909
unnamed	NANT (SOFT 5 QTRS)	Coal	7H1I	261	North-East	14.0	East	140	1909

Probable unrecorded shallow workings

None.

Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

Mine entries

Entry type	Reference	Grid reference	Treatment description	Mineral	Conveyancing details
Shaft	323373-034	323285 373244	The shaft was filled with spoil and reinforced concrete capped by the NCB in 1979. The cap consists of three 4.7m long RSJ's with 35m ³ of concrete and steel mesh reinforcing. A marker pillar and fence were erected.	Coal	
Shaft	323373-035	323296 373134	The shaft was originally filled to within 4.5m of the surface by the Local Authority in 1968 to an unknown specification. It was topped up and reinforced concrete capped by the NCB in 1979. The cap consists of two 3.7m long RSJ's with 11m ³ of concrete and steel mesh reinforcing. A marker pillar and fence were erected.	Coal	
Shaft	323373-036	323517 373213	The shaft was originally covered with a concrete cap pre 1968. It was filled to the surface in 1975. The specifications for these treatments are unknown.	Coal	
Shaft	323373-055	323614 373224		Coal	
Shaft	323373-057	323610 373187		Coal	
Shaft	323373-076	323200 373360		Coal	

Abandoned mine plan catalogue numbers

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

2162	4193	R145F
PO0	NW1516	5441

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

Please refer to the 'Summary of findings' map (on separate sheet) for details of any geological faults, fissures or breaklines either within or intersecting the enquiry boundary.

Faults under or close to the property 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

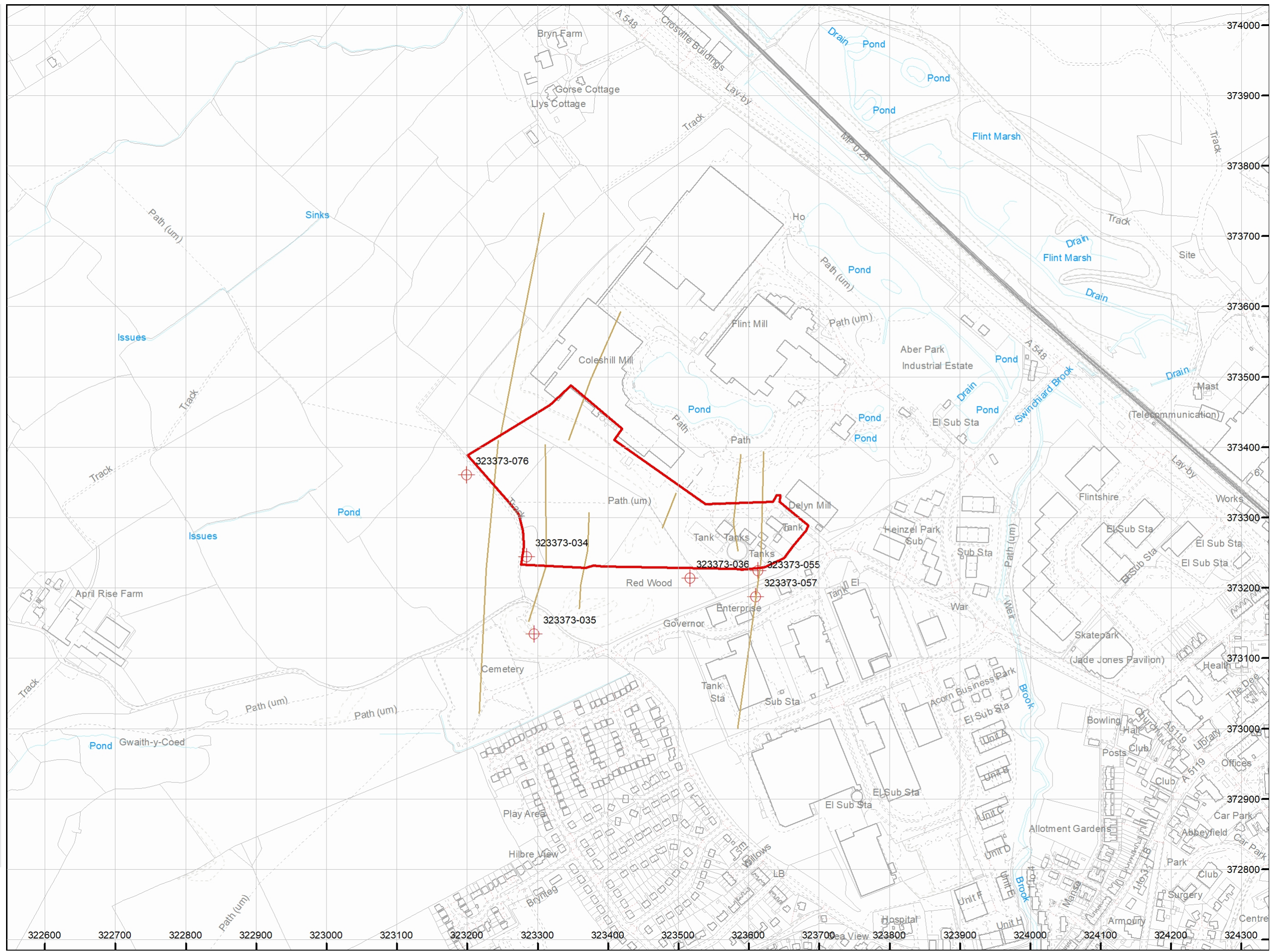
Relevant notices which may affect the property and any subsequent notice of retained interests in coal and coal mines, acceptance or rejection notices and whether any compensation has been paid to a claimant.

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

Key

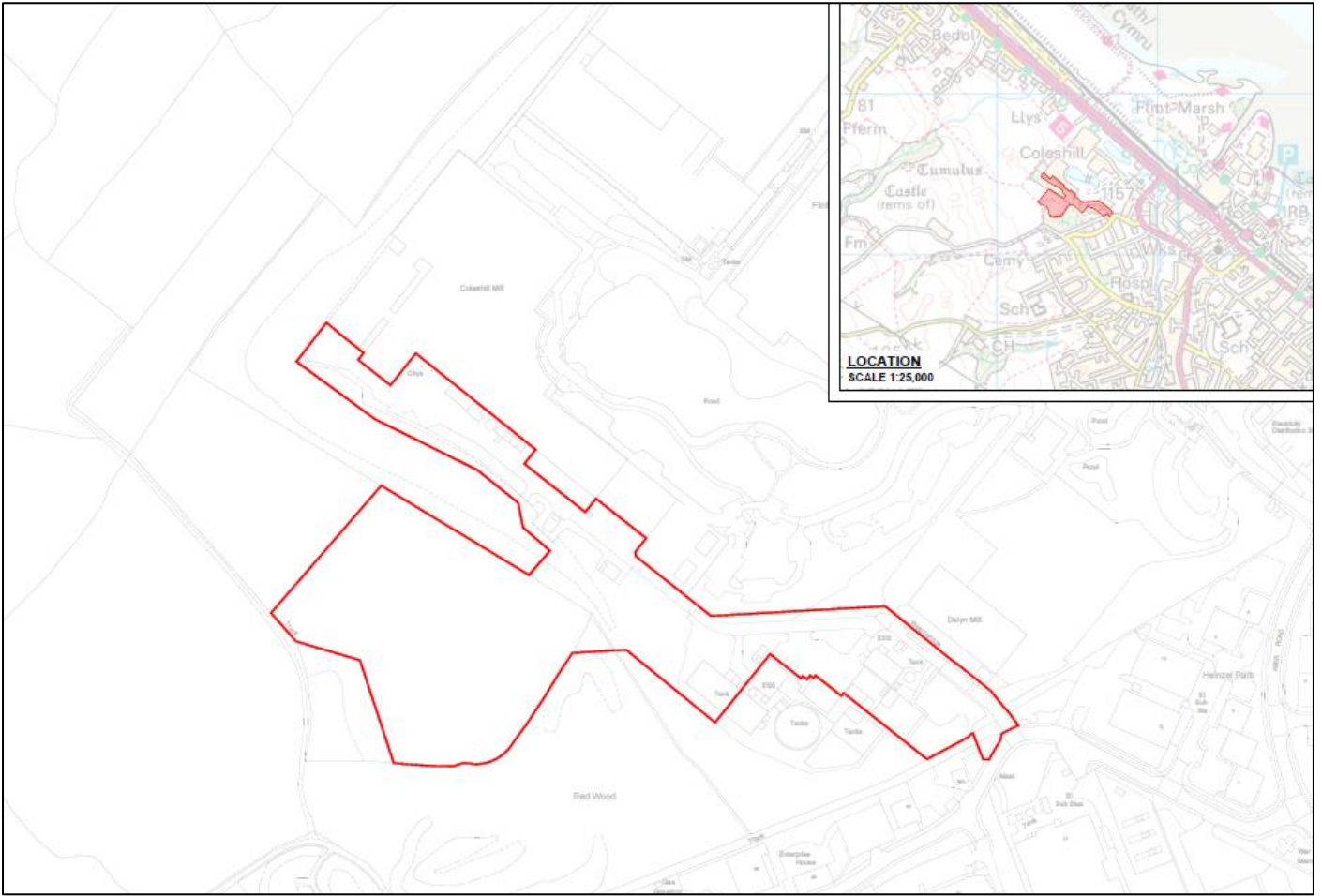
- Approximate position of the enquiry boundary shown 
- Disused mine shaft 
- Geological faults 

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



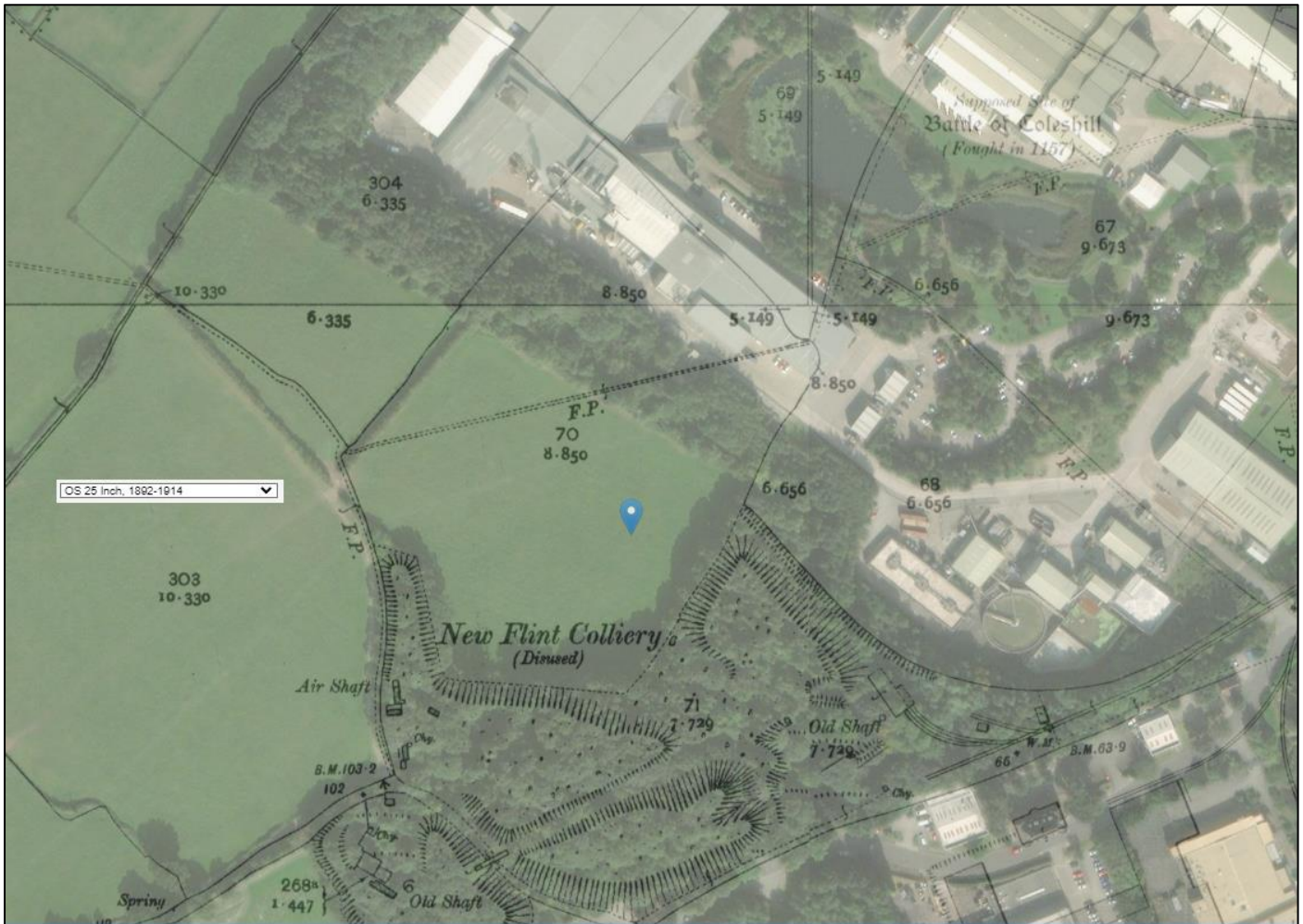
APPENDIX B

SITE LOCATION AND DEVELOPMENT PLANS



APPENDIX C

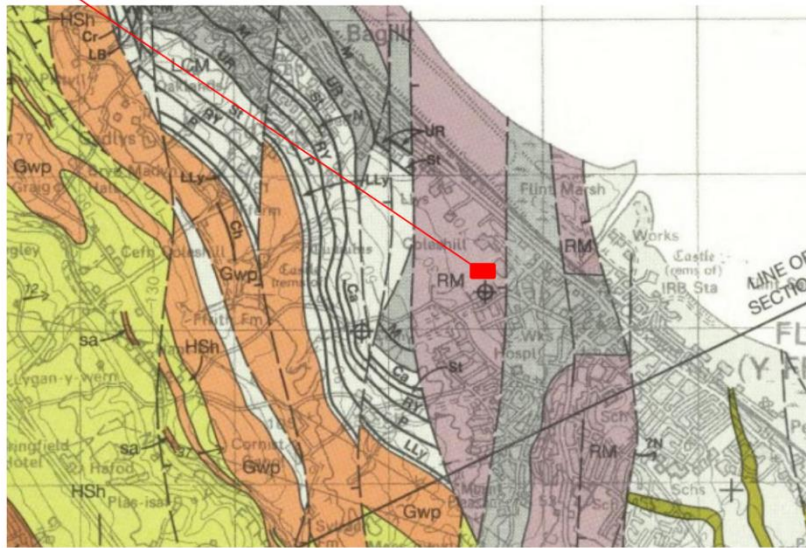
HISTORIC OS MAP OVERLAY 1892 - 1914



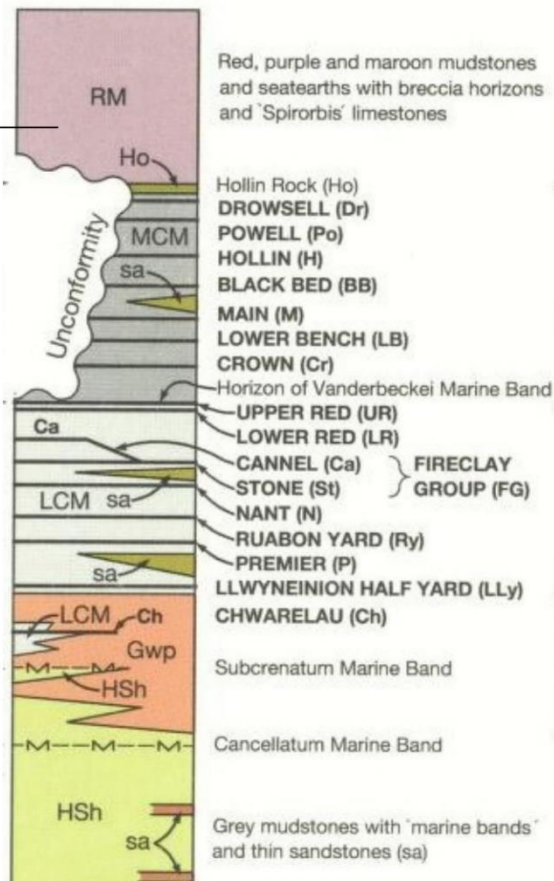
APPENDIX D

EXTRACTS OF BGS GEOLOGY MAP

APPROXIMATE
SITE LOCATION



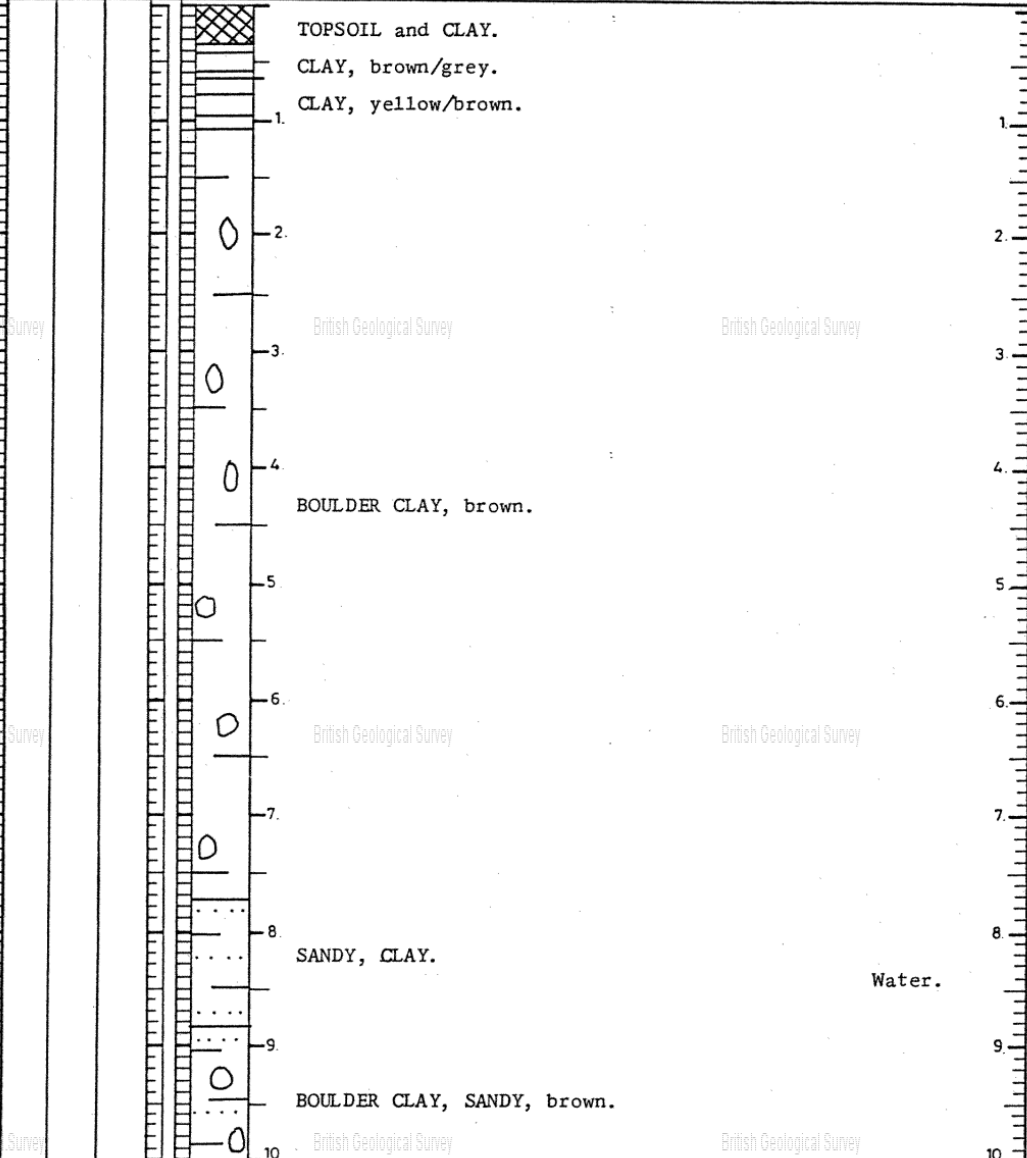
Tentative elevation
of site relative to
vertical geology
section



APPENDIX E BOREHOLE LOG

CONTRACTOR Groundworks Ltd.	DATE OF DRILLING 5/5/81-	DRILLING METHOD Rotary openhole with air flush.	BOREHOLE No 25 <i>58275W/277</i>
GROUND LEVEL	ORIENTATION 90°	CO-ORDINATES See Drg. No. 6/3421/2	SITE Greenfields Site, Flint. PAGE 1 OF 4

TOTAL CORE RECDY %	SOLID CORE RECDY %	R. Q. D.	FRACTURE LOG	STRATA DESCRIPTION	2378 7338
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KEY.	REMARKS. Artesian water inside casing 4 gpm. Water standing at ground level after pulling casing.
LOGGED BY N. R. W.	SCALE 1/50 METRES
K. WARDELL & PTNRS.	CLIENT R. T. James & Partners.
	JOB No 3421/2

SITE: Greenfield Site, Flint.

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BOREHOLE No. 25

SJ27SW/277

TOTAL CORE RECOV %	TOTAL CORE RECOV %	R O D	FRACTURE LOG	STRATA DESCRIPTION
				As above.
				BOULDER CLAY, red/brown.
				SAND, SILTY, brown with clay bands.

K. WARDELL & PTNRS.

CLIENT: R. T. James & Partners.

JOB No. 3421/2

TOTAL CORE RECOV %	TOTAL CORE RECOV %	DEPTH	FRACTURE LOG	STRATA DESCRIPTION	DEPTH
		22.		British Geological Survey	22.
		23.			23.
		24.		As above.	24.
		25.		British Geological Survey	25.
		26.		British Geological Survey	26.
		27.		BOULDER CLAY, hard.	27.
		28.		GRAVEL and BOULDERS.	28.
		29.		ROCKHEAD.	29.
		30.			30.
		31.		SANDSTONE, purple.	31.
		32.			32.
		33.			33.
		34.			34.

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British Geological Survey

British Geological Survey

British Geological Survey

British Geological Survey

British Geological Survey

British Geological Survey

British Geological Survey

British Geological Survey

British Geological Survey

British Geological Survey

British Geological Survey

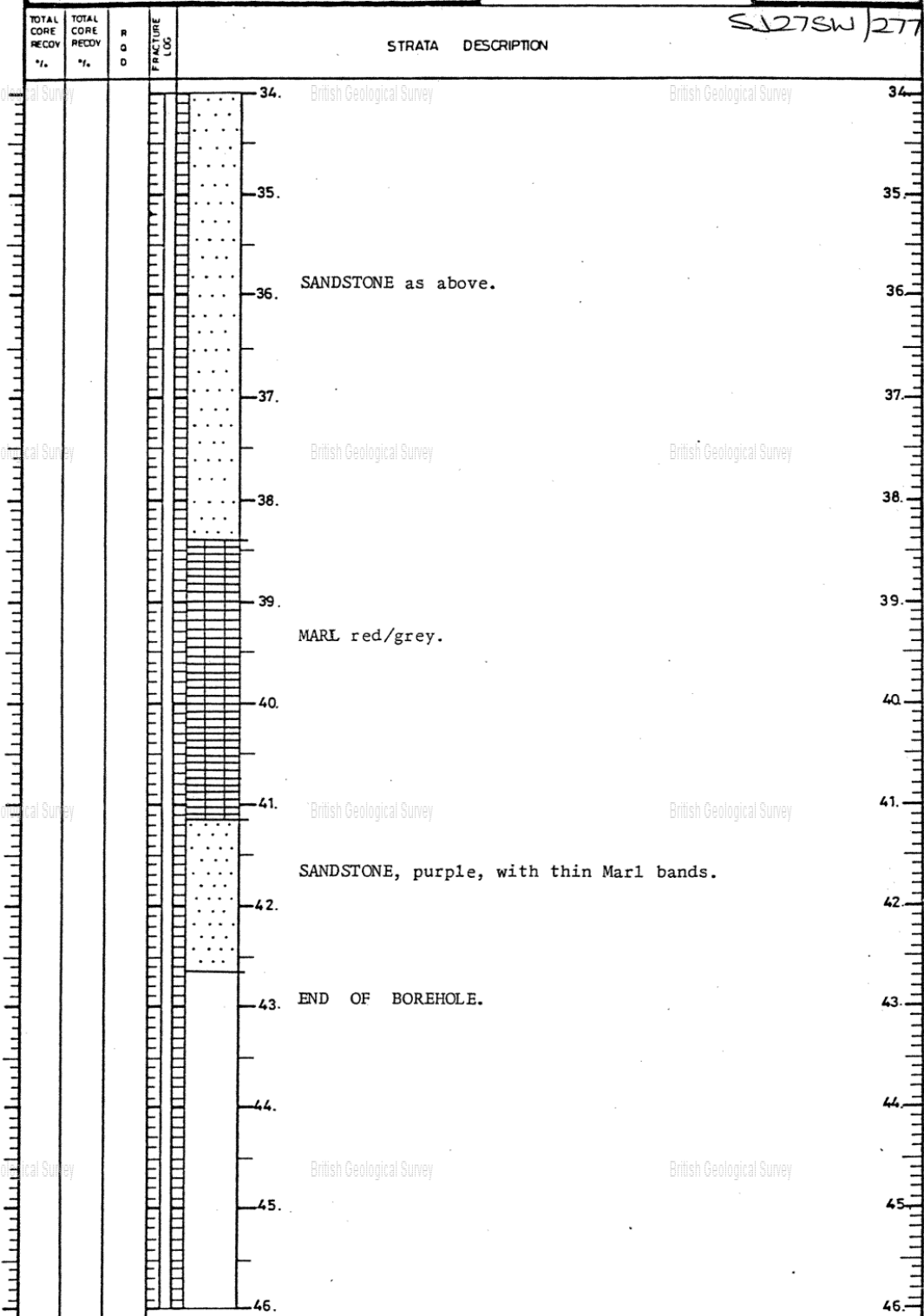
British Geological Survey

SITE: Greenfield Site, Flint.

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BOREHOLE No. 25

SJ27SW/277



K. WARDELL & PTNRS.

CLIENT: R. T. James & Partners.

JOB No. 3421/2

APPENDIX F

WORST CASE MINE SHAFT ZONE OF INFLUENCE (ZOI) BASED ON 29m DRIFT DEPTH

Mine Shaft ZOI Based on 29m Drift Depth

Shaft	Drift Depth (m)	Diameter/ Assumed Diameter (m)	Departure (m)	Zone of Influence (ZOI) (m)
034	29	3.7	5	35.85
035	29	2.4	5	35.2
036	29	3	5	35.2
055	29	2	8	38
057	29	2	8	38
076	29	2	10	40

