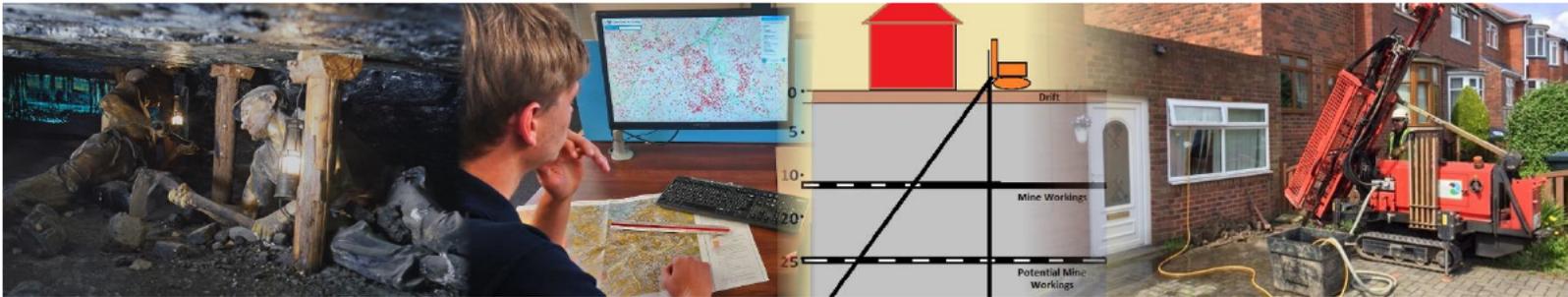




GEOLOGICAL
 GEOTECHNICAL
 GEOENVIRONMENTAL
 CONSULTANCY
 DRILLING & DATA ACQUISITION



GEOINVESTIGATE LIMITED

Coal Mining Risk Assessment (CMRA)

LOCATION	53 Garden Place, Dewsbury Moor, Dewsbury, Kirklees WF13 4EP
ISSUE DATE	July 2022
FOR	R Reid
CLIENT REF.	
OUR REF.	G22332

Prepared by

Checked by

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 Geoenvironmental Engineer

Fay Morgan MGeol (Hons) FGS
 Senior Geoenvironmental Engineer

SUMMARY FINDINGS

OUTCOME MITIGATION REQUIRED (YES/NO?)

YES. The proposed development is possibly underlain by up to two levels of very shallow/shallow coal seams, with the possibility for unrecorded underground mine workings within them. These possible workings have the potential to significantly impact surface ground stability within the proposed building area.

The site is shown to lie within close proximity to an area of worked ground, with the potential to be a source of contamination and hazardous ground gas. Further Phase 2 investigation is recommended to establish the severity of the risks from contamination and ground gas risk to the development.

Whether unrecorded workings will impact the development depends on drift/bedrock depth, mine working (if any) depth and rock cover thickness. Intrusive ground investigation is therefore required to establish these parameters within the site.

Notwithstanding, on the basis of the CMRA work to date, we are of the opinion that the mining stability and mine gas risks posed by the strata beneath this site from coal mining legacy can be mitigated by routinely adopted measures and should not preclude planning permission being registered in the interim with regard to coal mining legacy issues conditional upon the work being carried out at a later date.

WHAT TO DO NEXT

Obtain quotes for the intrusive site investigation works (if considered appropriate). The cost of the SI works should be a **"lump sum" fixed price**. Geoinvestigate can provide advice and assistance with helping you find suitable site investigation & drilling contractors. Call us on 01642 713779 or email enquiries@geoinvestigate.co.uk.

1. CMRA INTRODUCTION

Site Location and Description:

The approximate centre of this site is at National Grid Reference 422988 E, 422010 N with an elevation of 94mOD. The sites topography is generally flat. The boundary shown in RED on the Coal Authority (CA) report provided in Appendix A corresponds with the planning application area.

Google Satellite Imagery and Google Street Viewer shows the site is currently occupied by a garden area for 53 Garden Place and the surrounding houses. It is occupied by multiple small storage buildings/sheds/garages and lawn/grassed areas. There also appears to be an area of concrete hardstanding to the southwest corner (adjacent to and not including Garden Place road).

Proposed Development:

It is proposed to demolish the central shed and southern garage currently present on the site and erect a residential dwelling and joined garage and redevelop the surrounding garden areas. The northern shed will remain on the site. Development and site plans are provided in Appendix B.

Historical Development:

The OS map record from 1855 shows the site is occupied by undeveloped field. Dewsbury Moor Quarry (sandstone) is located 225m to the west of the site.

By 1894, the site remains undeveloped. The quarry to the west appears filled, and Conyers Colliery had been established 260m to the south, with various shafts and groundworks associated with it.

By 1915, 53 Garden Place and the neighbouring houses had been built.

The OS map record provides no evidence that the site itself has been subject to sand, clay or gravel pitting, stone quarrying, or surface mining activity. Although a large amount of quarrying and mining has taken place historically within the surrounding area.

Anticipated Geology:

The British Geological Survey (BGS) 1:10,000 scale sheet map (SE22SW, Heckmondwike) for the area indicates that little to no drift deposits are present at the site, with bedrock of the Pennine Lower Coal Measures comprising mudstone, siltstone, sandstone, and interbedded coal seam of varying thickness commencing from shallow depth. Although no drift is recorded on site, it is likely that thin topsoil/drift is present.

The location of the site is shown on the extract of BGS solid geology map presented in Appendix C. The tentative elevation of the site relative to the vertical geology column is shown below the map. The drift/ soil horizon above the solid geology bedrock is not shown on the column.

There are no BGS borehole records located close to the site but other more distant boreholes in areas of similar mapped geology generally found clay drift to 1.80m, followed by bedrock of mudstone, sandstone, and coal seams. The borehole also recorded 0.35m thick "Broken Ground" at 10.05m bgl.

Furthermore, the BGS show multiple confidential boreholes to the west and east of the site and their presence raises further concerns regarding the potential for unrecorded shallow workings beneath the site.

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. 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		2.1.1 (refer below)
Probable unrecorded shallow workings	Yes		2.1.2
Spine roadways at shallow depth		No	
Mine entries		No	
Outcrop	Yes		2.1.3
Geological faults, fissures and breaklines		No	
Opencast Mines		No	2.1.4
Coal Mining Subsidence		No	
Mine Gas		No	2.1.5
Site investigations		No	

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.

2.1 DETAILED DISCUSSION & ASSESSMENT RESPONSE

2.1.1 Past Underground Mining

According to the Coal Authority (CA) report in Appendix A, eight (8) levels of past underground coal mining has historically occurred beneath the site at depth. The Silkstone coal seam was mined at a depth of 46m, dipping 4.0 degrees North-East, with an extraction thickness of 46cm. An additional level within the Silkstone seam was mined at a depth of 54m, dipping 3.0 degrees east, with an extraction thickness of 46cm. The other six levels were worked at depths greater than 100m. Although all eight of these seams have been mined directly below the site, they are unlikely to impact the ground stability of the proposed development at the surface, due to their depth.

The two levels of mine workings recorded within the Silkstone coal seam are considered to be the same, however, each of their depths has been taken from a different spot height. The closest spot height is thought to be from the

workings at 54m depth. This may mean the workings lie at a similar depth directly beneath the site. However, it is difficult to ascertain this without intrusive investigation.

According to the CA report the site falls within an area identified as 'Probable Unrecorded Shallow Workings'. Although no shallow recorded workings have been identified, it is plausible that unrecorded workings may be present beneath the site which could significantly impact the proposed development.

2.1.2 Probable Unrecorded Shallow Workings

According to the CA report the site falls within a zone of probable unrecorded shallow workings. 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).

There are no BGS borehole records located within influencing distance to the site, however, other more distant boreholes in areas of similar mapped geology generally found clay drift to 1.80m, followed by bedrock of mudstone, sandstone, and coal seams. One borehole also records a 0.35m thick band of "Broken Ground" at 10.05m.

Furthermore, the BGS show multiple classified boreholes to the west and east of the site, their presence raises further concern for the potential unrecorded shallow workings beneath the site.

According to the BGS report "A stratigraphical framework for the Upper Langestian and Duckmantian of the East Pennine Coal fields", The Middleton Eleven Yard Coal is a lateral continuation of the Silkstone coal seam.

Given this, according to the 1:10,000 BGS vertical column, presented within Appendix C, two (2) major coal seams (the Middleton Coal (0.7m – 1.0) and Wheatley Line Coal (WL (0.7m – 0.8m)) and two minor (thin) coal seams, could occur within very shallow (<10m) to shallow depth (<30m) beneath the site.

2.1.3 Outcrop

The BGS and the CA record no coal outcrops within the site boundary. The CA report shows the nearest coal outcrop (Middleton Main), 35m to the west, which is projected to occur with very shallow (<10m depth) to shallow (<30m depth) beneath the proposed development. The CA note this seam as workable.

The BGS places the Middleton Main outcrop slightly further north, but given the stratigraphic position of the site, this seam will still underlie the site.

2.1.4 Opencast Mines

The CA report records no opencast mines within 500m of the site. However, the BGS 1:10,000 map shows an area of worked ground next door to the site to the east. It is unclear if this ground is coal mining related or related to an earthworks 'cut and fill' exercise during the construction of the school in this location. However, if present, it will possibly encroach on to the site from the western boundary.

If the worked ground does encroach onto the site, it has the potential to impact the surface ground stability of the proposed development. If it doesn't, it still has the potential to impact the site as a source of hazardous ground gas and contamination.

2.1.5 Mine Gas

No mine gas incidents or remediation are recorded within 500m of the proposed development and in the UK the risk from mine gas is typically low. However, given the possible presence of shallow mine working beneath the proposed development area and the serious nature of mine gas it is recommended that the risk is raised to **MODERATE**, until observed otherwise by gas testing during drilling.

However, given the very close proximity of potential worked ground to the west, longer term gas monitoring may be required, in consultation with the local authority, to establish if hazardous ground gas exists beneath the site.

3. SUMMARY AND OUTCOME

This CMRA has identified the possible presence of up to two (2) major (workable) coal seams horizons with the potential to host unrecorded mine working within them. These coal seams occur within very shallow and shallow depth beneath the proposed building footprint.

There is the possibility that an area of worked ground, directly to the west of the site, might encroach on the site's western boundary and may present a possible source of hazardous ground gas and/or contamination to the proposed development.

In our opinion, whether shallow mine workings pose a significant risk to the development, cannot be properly assessed without additional information, namely drift depth, coal seam depth and mine workings (if any), depth and rock cover thickness at this locality. Exploratory drilling is required to obtain this information and enable further assessment of the risks posed by shallow mine working at this locality.

Gas monitoring must be carried out during drilling.

4. MITIGATION STRATEGY PROPOSED AND CONCLUSION

To properly determine the coal mining risk at this site it is proposed to drill 3 boreholes at the property to target depths up to 30m (but not necessarily needed to 30m depending on ground conditions encountered) to locate shallow coal seams and mine workings (if any) below the new development, as well as establishing drift and bedrock depth.

It is also recommended that further Phase 2 investigation, such as hazardous ground gas monitoring and a contamination survey, is carried out onsite, to establish the potential risks from the possible infilled ground directly to the west of the site.

Gas monitoring **MUST** be carried out during drilling.

Risks for Different Drilling Scenarios					
Air flush	Mist flush	Foam flush	Water flush	Mud flush	Additional controls
HIGH	HIGH / MED'M	HIGH / MED'M	LOW	LOW	<ul style="list-style-type: none">Monitoring at rig and other open holes.Seal boreholes

A Coal Authority Permit needs to be obtained (ahead of) further intrusive exploratory drilling. Water Drill Flush to be used when drilling. The permit application must state **WATER ONLY DRILL FLUSH** for the safety of the public and drill crew.

On the basis of the CMRA work to date, we are of the opinion that the mining stability and mine gas risks posed by the strata beneath this site from coal mining legacy can be mitigated by routinely adopted measures and should not preclude planning permission being registered with regard to coal mining legacy issues.

In conclusion we see no reason why Planning Permission should not be granted in the interim with respect to coal mining legacy issues and that these works form a condition on the planning approval.

Appendices:

- CA Consultants Coal Mining Report issued 22nd July 2022 ref. 51003255918001
- Proposed Development Plans
- Extracts of 1:10,000 BGS Geology Map, Sheet SE22SW – Heckmondwike

APPENDIX A
COAL AUTHORITY REPORT



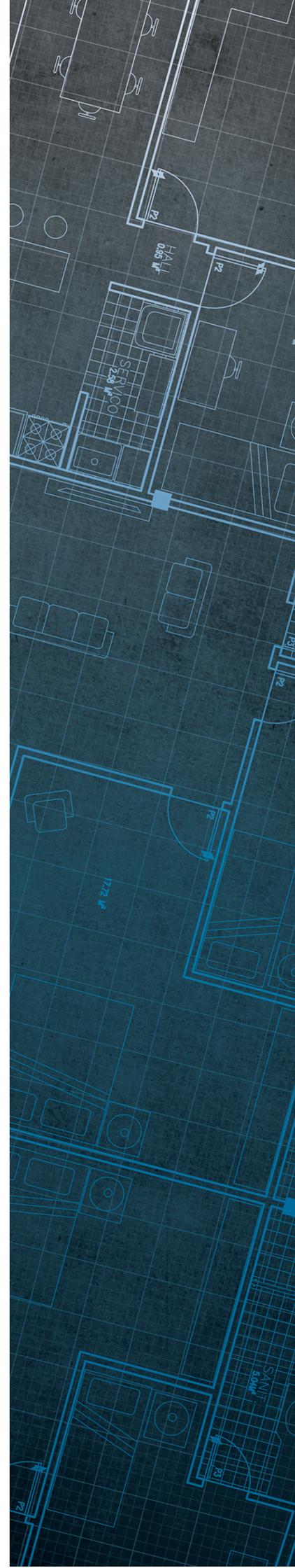
The Coal
Authority

Consultants Coal Mining Report

53 Garden Place
Dewsbury Moor
Dewsbury
Kirklees
WF13 4EP

Date of enquiry: 22 July 2022
Date enquiry received: 22 July 2022
Issue date: 22 July 2022

Our reference: 51003255918001
Your reference: G22332



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

53 Garden Place
Dewsbury Moor
Dewsbury
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WF13 4EP

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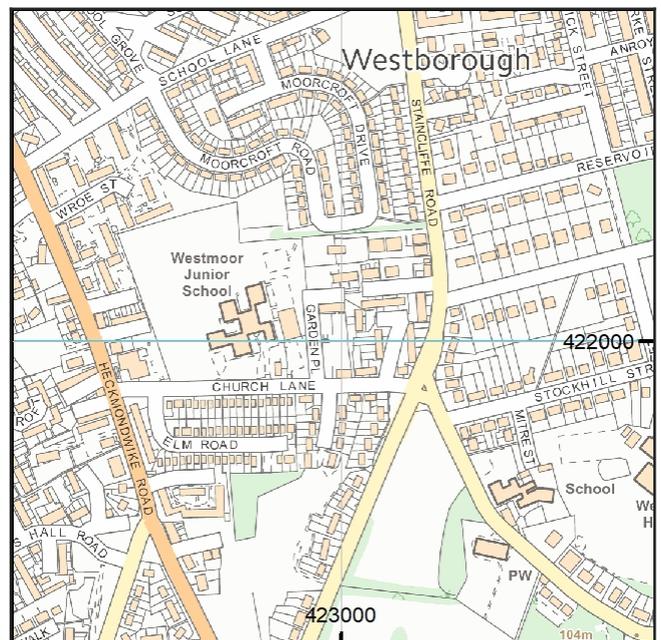
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Approximate position of property



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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	SILKSTONE	Coal	6HPU	46	Beneath Property	4.0	North-East	46	1870
unnamed	SILKSTONE	Coal	62MX	54	Beneath Property	3.0	East	46	1870
unnamed	WHINMOOR	Coal	62N0	120	West	2.8	East	69	1909
unnamed	WHINMOOR	Coal	62M1	125	Beneath Property	2.8	East	69	1909
unnamed	WHINMOOR	Coal	6HQ6	126	Beneath Property	2.3	South-East	69	1909
unnamed	BLACK BED	Coal	62N5	207	South-West	3.0	East	74	1900
unnamed	BLACK BED	Coal	62N7	209	Beneath Property	3.0	East	74	1895
unnamed	BLACK BED	Coal	6HQB	211	Beneath Property	1.7	East	74	1895
unnamed	BETTER BED	Coal	62N2	250	West	2.5	East	38	1900
unnamed	BETTER BED	Coal	62N3	251	Beneath Property	2.5	East	38	1900
unnamed	BETTER BED	Coal	6HQF	252	West	4.1	East	38	1902
unnamed	BETTER BED	Coal	6HQE	252	Beneath Property	4.1	East	38	1900

Probable unrecorded shallow workings

Yes.

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:

FGB356	FGB739	FGB717
5372	FGB627	FGB547
FGB709	M549	FGB278

Our records show we have more plans than those shown above which could affect the enquiry boundary.

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
MIDDLETON MAIN	Coal	Yes	35.0	West	340
MIDDLETON MAIN	Coal	Yes	38.9	West	341

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

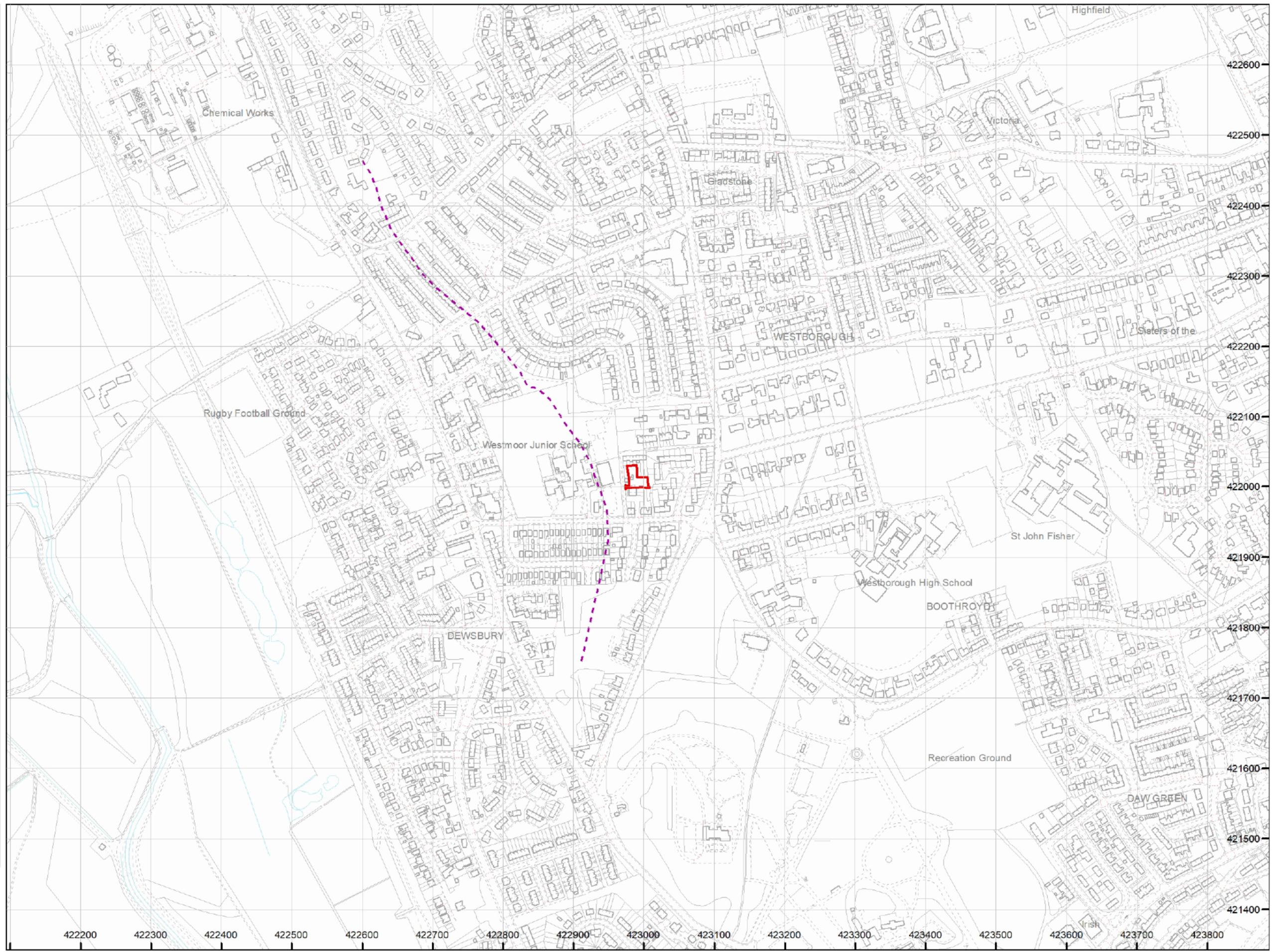
Relevant notices which may affect the property and any subsequent notice of retained interests in coal and coal mines, acceptance or rejection notices and whether any compensation has been paid to a claimant.

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

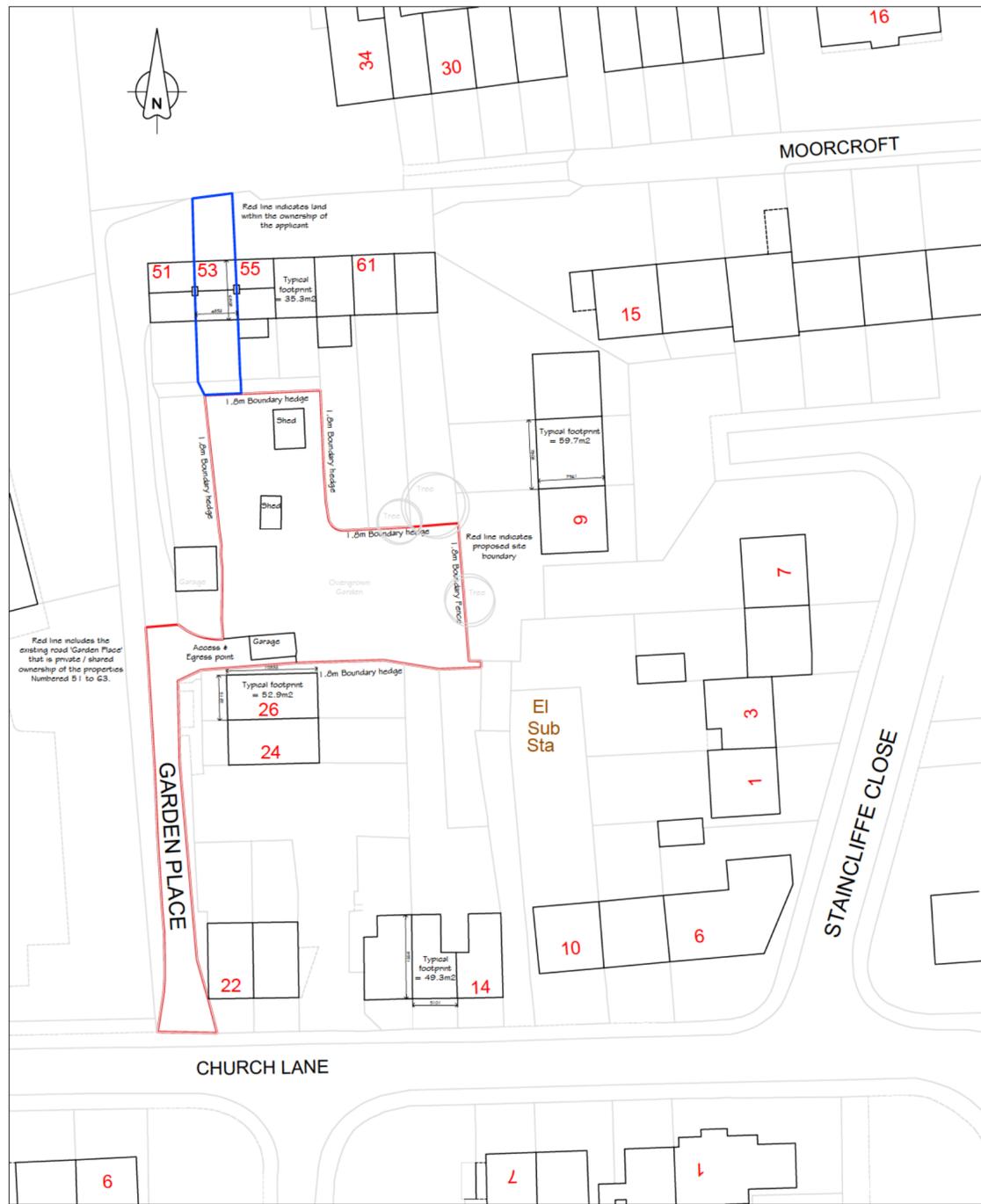
Key

- Approximate position of the enquiry boundary shown 
- Outcrop (Conjectured) 

How to contact us
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www.groundstability.com

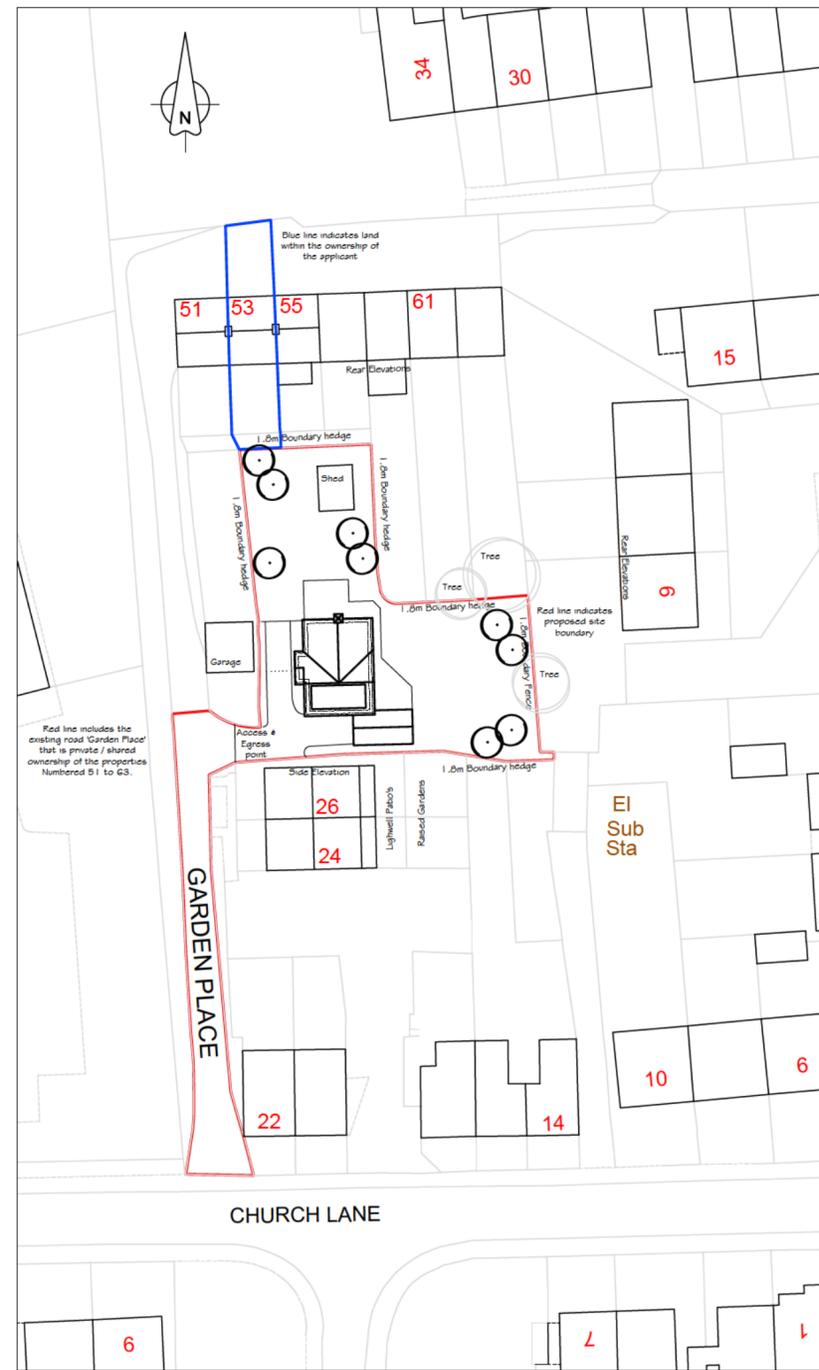


APPENDIX B
PROPOSED DEVELOPMENT PLANS



Site Location Plan as Existing

0 5m 10m 20m
1:500



Site Plan as Proposed.

0 5m 10m 20m
1:500



Aerial Photo as Existing. 05



Exist Photo site access. 06



Exist Photo Front of Adjacent house No 26. 07



Exist Photo Rear of Adjacent house No 26. 08



Exist Site Photo 01



Exist Site Photo 02



Exist Site Photo 03



Exist Site Photo 04



Phone: 0113 8314 079 Email: info@cka.design www.ckarchitecturalleeds.co.uk

PROJECT TITLE Proposed Detached Dwelling	CLIENT Mr Reid, 53 Garden Place, Dewsbury, WF13 4EP	CHK JG	DRAWN BY MS
SHEET TITLE Location & Site plans as Existing & as Proposed	SCALE 1:500 @ A2	STAGE PLN	REV A
PROJECT STAGE PLANNING	PROJECT NUMBER WF13-3047	STAGE PLN	SHT 001

DATE	NOTES	BY	REV
05/07/22	PLANNING	MS	A

