Coal Mining Risk Assessment

This assessment has been written in accordance with guidance contained in The Coal Authority document: *Risk based approach to development management, Guidance for developers, Version 4, 2017.*

The assessment aims to:

- Provide a desk-based report of information on the coal mining issues which are relevant to the application site;
- Use the available information to identify and assess the risks to the proposed development from coal mining legacy, including the cumulative impact or issues;
- Set out appropriate mitigation measures to address the coal mining legacy issues affecting the site, including any necessary remedial works and/or demonstrate how coal mining issues have influenced the proposed development;
- Demonstrate to the Local Planning Authority that the application site is, or can be made, safe and stable to meet the requirements of national planning policy with regard to development on unstable land.

Site Location and Description:

The site is located at Water Royd House Care Home, Dodworth with a central National Grid reference number of 432340, 404799. It is accessed via Locke Road and the proposed development is shown on Drawing Number NT15521/03. The proposed development comprises the erection of a biomass boiler building within the curtilage of Water Royd House Care Home.

Sources of information:

- ***Coal Authority Consultants Mining Report (Appendix A)***
- ***BGS Borehole Records (Appendix B)***
- ***BGS geological mapping - Sheet 87 at 1:50,000 scale, BGS Onshore GeoIndex***
- ***Coal Authority Interactive Map Viewer***

Identification, Assessment and Mitigation of Site-Specific Coal Mining Risk				
Issue	Site Affected (Yes/No)	Hazard	Consequences	Recommended Mitigation Measures
1. Is the proposed development within the zone of likely physical influence of past deep underground mining?	**Yes**: Recorded deep workings in two seams of coal between depths of 77m and 178m beneath the site, the last date of working 1935. Ground subsidence associated with recorded deep underground coal mining should have ceased. Very low risk and magnitude of any residual subsidence arising from recorded deep coal mining workings. It is unlikely that ground movements associated with any former deep mining will cause any significant adverse effect on any likely form of development at the site.	• Ground subsidence. • Ground instability, loss of ground. • Mine gas and mine water migration pathways.	N/A	N/A
2. Is the proposed development within the zone of likely physical influence of recorded underground coal workings at shallow depth (depths of less than 30m)?	**No:** Recorded workings in the Flockton Thick seam of coal at a depth of 17m beneath the site, the last date of working 1903. Extraction thickness of 0.70m. Superficial deposits are recorded as thin or absent in the area. This is confirmed by nearby BGS borehole records located c.100m north of the site (Appendix B) which proved rockhead at c.1.45-1.8m bgl. It is therefore anticipated that that the ratio of intact rock cover to thickness of the Flockton Thick seam is likely to be greater than 10:1. Assuming a 2m depth to rockhead at the site results in a ratio of intact rock cover to seam thickness of approximately 21:1 and is therefore not	• Ground subsidence. • Ground instability, loss of ground, generation of crown holes. • Mine gas and mine water migration pathways.	N/A	N/A

Identification, Assessment and Mitigation of Site-Specific Coal Mining Risk				
Issue	Site Affected (Yes/No)	Hazard	Consequences	Recommended Mitigation Measures
	considered to pose a risk to the development. Any collapse of strata into the recorded workings should therefore result in complete choke filling of the voids before they can migrate to surface and result in crown hole collapse.			
3. Are there any recorded spine roadways at shallow depth either within, or within 10 metres of the site boundary?	**No**	• Ground subsidence. • Ground instability, loss of ground, generation of crown holes. Mine gas and mine water migration pathways.	N/A	N/A
4. Are there any recorded coal mine entries either within, or within 100m of the site boundary?	**Yes**: two shafts located within the site boundary of the Care Home, north of the proposed boiler location. Both shafts are recorded as having been treated and are therefore considered not to pose a risk to the development. Shaft 432404-001is located approximately 20m north of the proposed boiler location. Found and proved to be capped with a 7.6m square concrete cap at approximately 2.0m bgl. Shaft 432404-011is located approximately 30m north of the proposed boiler location beneath the footprint of the existing care home building. Drilled and proved to be filled to full depth and subsequently grouted to the base of the shaft in August 2003.	• Catastrophic collapse of mine entry leading to ground instability or voids at the ground surface. • Settlement of the ground surface above/adjacent to the mine entry. • Potential pathway to the surface for mine gas emissions and mine water.	N/A	N/A

Identification, Assessment and Mitigation of Site-Specific Coal Mining Risk				
Issue	Site Affected (Yes/No)	Hazard	Consequences	Recommended Mitigation Measures
5. Is there a possibility of unrecorded shallow mine workings and/or mine entries?	**Unrecorded Shallow Mine Workings:** **No:** The Coal Authority identify that there are no coal outcrops within the site, nor are there any coal outcrops within 50m of the site boundary where the site lies on the dip side of the outcrop. The extent of the Flockton Thick seam at shallow depth beneath the site is occupied entirely by recorded workings (see Issue 2).	• Ground subsidence. • Ground instability, loss of ground, generation of crown holes. • Catastrophic collapse of mine entry leading to ground instability or voids at the ground surface. • Settlement of the ground surface above/adjacent to the mine entry. • Potential mine gas and mine water migration pathways and emissions at surface.	**Unrecorded Shallow Mine Workings:** N/A	**Unrecorded Shallow Mine Workings:** N/A
	Unrecorded Mine Entries: **No:** any unrecorded mine entries would have been intercepted by the recorded shallow workings in the Flockton Thick seam.		**Unrecorded Mine Entries:** N/A	**Unrecorded Mine Entries:** N/A
6. Are there any recorded faults, fissures or break lines within the bedrock beneath the site?	**No**	• Such features may contribute to surface subsidence as a consequence of underground coal mining. • Mine gas and mine water migration pathways.	N/A	N/A
7. Is the proposed development within the boundary of a surface mining/opencast site from which coal has been removed by surface mining/opencast methods?	**No**	• Settlement of poorly compacted opencast backfill due to applied surface loading by built development. • Differential settlement across the opencast excavation high wall. • Ground instability • Opencast backfill material may provide for a ground gas source and / or migration pathway.	N/A	N/A

Identification, Assessment and Mitigation of Site-Specific Coal Mining Risk				
Issue	Site Affected (Yes/No)	Hazard	Consequences	Recommended Mitigation Measures
8. Have the Coal Authority received any alleged subsidence claims or undertaken any remedial works under its Emergency Surface Hazard Call Out procedures either within or within 50m of the site?	**No**	• Indication of past and potential future subsidence issues on site.	N/A	N/A
9. Is there a record of mine gas emissions within 500m of the site?	**No**	• Indication of potential mine gas emissions at surface where noxious or explosive gases may ingress into confined spaces to create an explosive or asphyxiating hazard.	N/A	N/A
10. Is the site within the likely zone of influence of any planned underground coal mining?	**No**	• Ground subsidence. • Ground instability, loss of ground. • Mine gas and mine water migration pathways.	N/A	N/A

Assessment of Cumulative Impact of Coal Mining Issues:

The site is in an area where remnant recorded shallow mine workings are present, associated with the Flockton Thick seam. Based on current information, the presence of recorded workings within this seam is considered to present a **negligible** risk to the stability of the site.

There are no records of mine gas emissions requiring action by the Coal Authority within the boundary of the property, although the presence of mining legacy features beneath the site represent a potential source of mine gas. Based on current information, this hazard is considered to present a **low** risk to the proposed development.

Good engineering practice developed for mining areas should be applied at all stages of any future development. The sensitivity of the proposed development and any mitigating factors are, however, recommended to be considered with respect to the identified potential mining legacy risks at the site. The following investigation/mitigation actions are therefore identified:

- The potential for mine gas hazards shall be considered by the designer of the proposed development with respect to gas protection measures, especially if any confined or enclosed spaces which may be entered by site users are created.

Prior to carrying out any works which may intersect, disturb or enter any coal seams, coal mine workings or mine entries (within the ownership of the Coal Authority), the written permission of the Coal Authority is required (http://coal.decc.gov.uk/en/coal/cms/services/permits/permits.aspx). The legal implications of acceptance of The Coal Authority permit conditions should be considered fully before accepting them.

N/A = Not Applicable

Risk Definitions

For ease of reference and understanding the identified risks have been assigned to one of the following categories:

Negligible risk - site likely to be suitable for the proposed use in its present condition. Mining risk unlikely to be present. Further assessment not considered necessary.

Low risk - site likely to be suitable for the proposed use in its present condition. Mining risk may be present but unlikely to have a significant impact on the proposed use. Further assessment may be beneficial in understanding the level of risk, however remedial action is unlikely to be required.

Moderate risk - site may not be suitable for the proposed use in its present condition. Mining risk probably present and may have a significant impact on the proposed use. Further assessment is required to confirm the risk and remedial action may be required.

High risk - site unlikely to be suitable for the proposed use in its present condition. Mining risk almost certainly present and likely to have a significant impact on the proposed use. Further assessment is required to confirm the risk and remedial action likely to be required.

Prepared By:	Reviewed By:	Approved By:
[redacted]	[redacted]	[redacted]
BSc, MSc	BSc. Geology, MSc. Mining Geology, CGeol	CEng
Geoenvironmental Consultant	**Principal Mining Geologist**	**Technical Director**

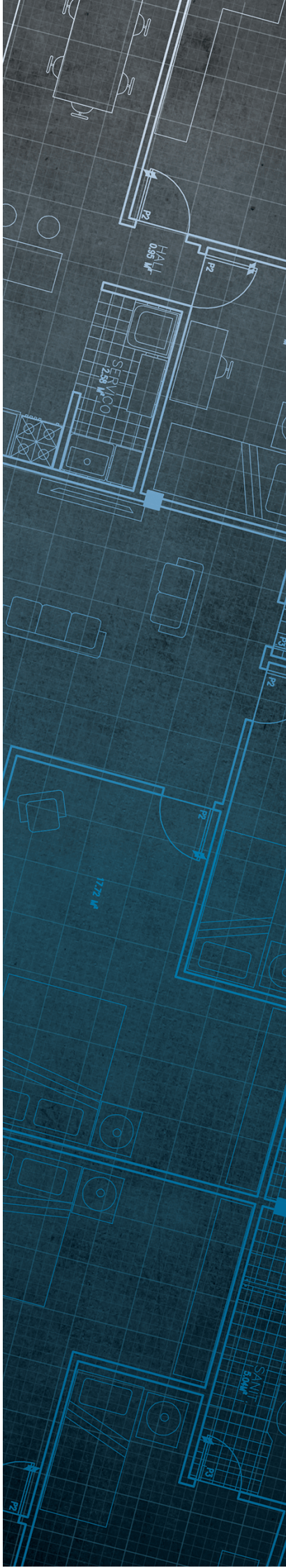
The Coal Authority

Consultants

Coal Mining Report

Water Royd House
Locke Road
Dodworth
Barnsley
S75 3QH

Date of enquiry:	**10 September 2021**
Date enquiry received:	**10 September 2021**
Issue date:	**10 September 2021**
Our reference:	**51002674437001**
Your reference:	**NT14235**



Consultants
Coal Mining Report

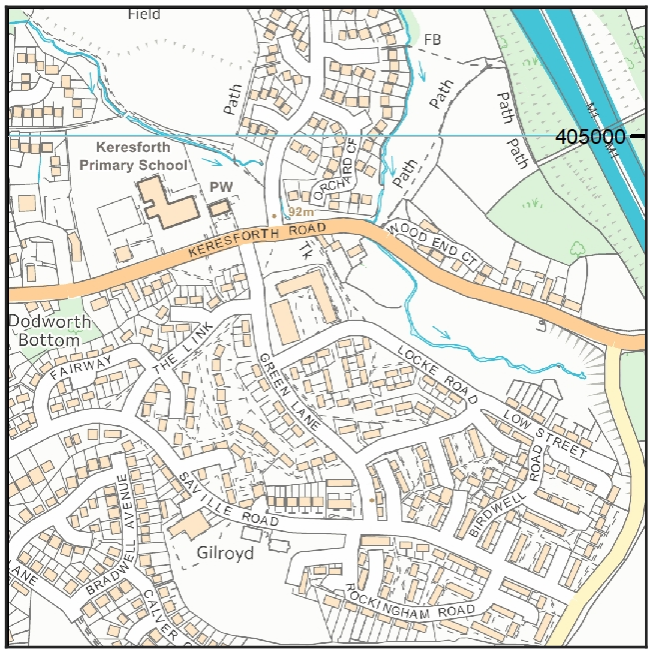
This report is based on and limited to the records held by the Coal Authority at the time the report was produced.

Client name

WARDELL ARMSTRONG LLP

Enquiry address

Water Royd House
Locke Road
Dodworth
Barnsley
S75 3QH



Approximate position of property

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NG18 4RG

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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
ROSEHILL	FLOCKTON THICK	Coal	64F4	17	Beneath Property	4.1	North-East	70	1903
unnamed	PARKGATE	Coal	64FF	77	North-West	4.4	South-West	178	1934
unnamed	PARKGATE	Coal	64FE	88	Beneath Property	4.5	East	178	1933
ROB ROYD	SILKSTONE	Coal	64FL	178	Beneath Property	5.5	East	167	1935

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	432404-001	432327 404818	was found and proved to be capped with a 7.6m square concrete cap that was found approximately 2.0m bgl	Coal	
Shaft	432404-011	432344 404827	was drilled and proved filled to full depth and subsequently grouted to the base of the shaft by Groundshire on behalf of the Richard Brooke Partnership Ltd in August 2003	Coal	

Abandoned mine plan catalogue numbers

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

NE565	12461	NE584
9170	SY113	SY95
PO0	NE762	

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

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Outcrops
No outcrops recorded.

Geological faults, fissures and breaklines
No faults, fissures or breaklines recorded.

Opencast mines
Please refer to the “Summary of findings” map (on separate sheet) for details of any opencast areas 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.

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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.

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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.

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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.

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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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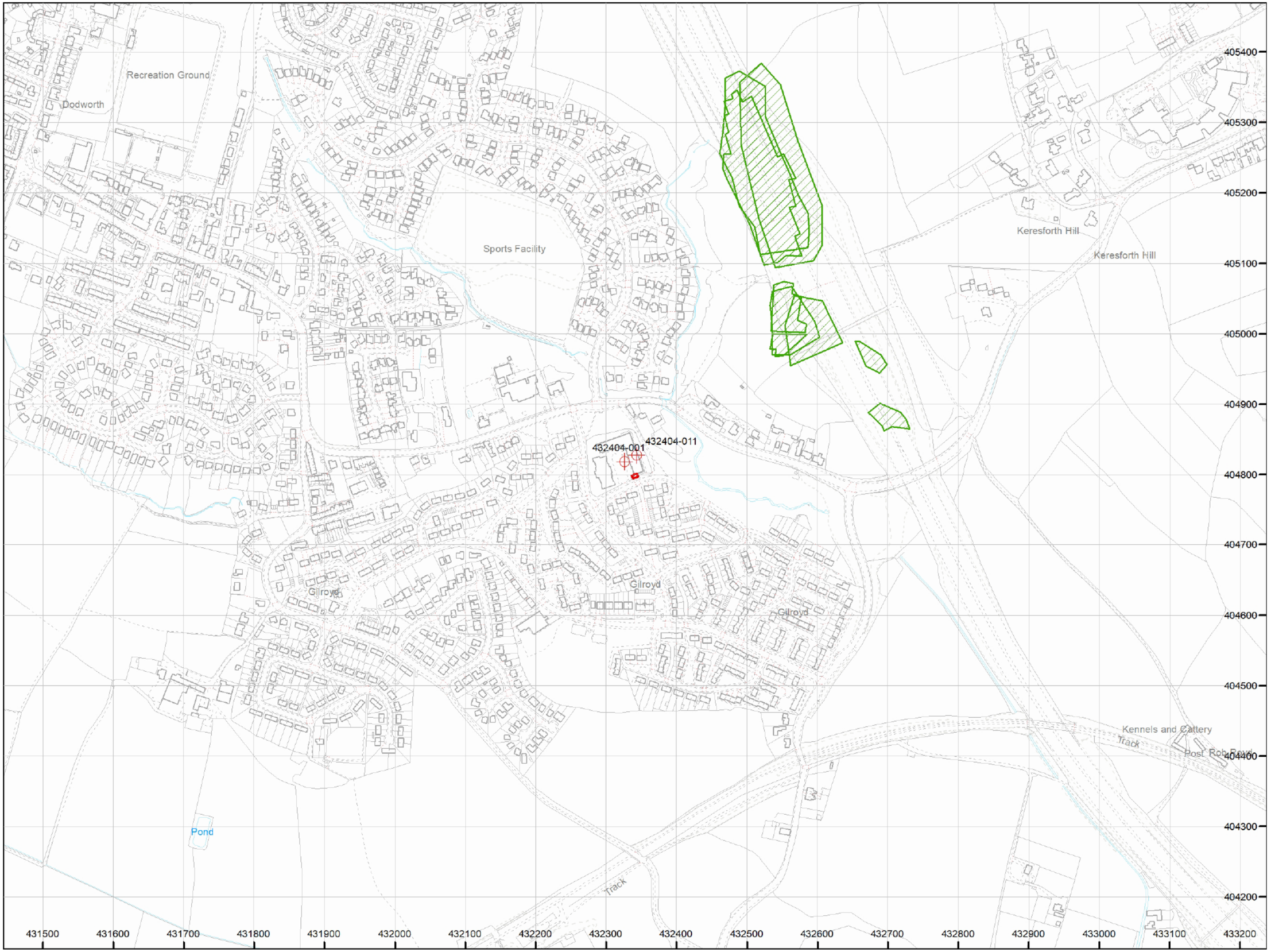
Summary of findings

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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
- Unlicensed opencast site



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www.groundstability.com

EASTWOOD & PARTNERS

TRIAL PIT LOG

SE30SW 115
3232 0492

CLIENT	GEORGE LONGDEN HOMES	PIT NO.
SITE	LAND AT KERESFORTH ROAD, DODWORTH	1
JOB NO.	10884	
DATE DUG	9.11.88	

DEPTH (m)	DESCRIPTION
0.00-0.25	Firm/stiff grey brown TOPSOIL, some roots and rootlets. Occasional shale and sandstone fragments.
0.25-0.90	Firm/stiff yellow-brown gry mottled slightly sandy CLAY with occasional shale fragments.
0.90-1.45	Grey brown highly weathered clayey silty SHALE
1.45-2.30	Grey moderately weathered slightly clayey silty SHALE
	(P values 0.10 m - 160, 170, 140, 130
	0.65 m - 150 , 160)

P and V values where given refer to the unconfined compressive strength in kN/m^2 measured with a hand penetrometer (P) or hand vane (V)

Groundwater	High groundwater flow into the trial pit from the shale horizon 0.90-1.45
Side Stability	Sides stable above 0.90, some collapse with inflowing water below this.
Ease of Digging	Moderately easy in shale, easy in clay
Other	Water collected in trial pit, 30 minutes after completion of digging standing at 0.60 m from bottom. After 6 hours standing at 1.65 m, after 7 hours standing at 1.75 m.

LOGGED CJS TYPED JS CHECKED CJS

EASTWOOD & PARTNERS

ROTARY PERCUSSION BOREHOLE LOG

CLIENT	McLean Homes Northern Ltd	**BOREHOLE NO.**
SITE	Keresforth Road, Dodworth	
JOB NO.	10884 SE30SW 117	1
DATE DRILLED	8 June 1989 3235 0498	

DEPTH (m)	DESCRIPTION
0.00 - 0.20	TOPSOIL
0.20 - 0.80	Brown sandy CLAY.
0.80 - 1.70	Grey brown SANDSTONE.
1.70 - 4.40	Grey brown MUDSTONE.
4.40 - 8.60	Dark grey shaley MUDSTONE.
8.60 - 8.80	Hard grey MUDSTONE.
8.80 - 14.90	Hard grey SILTSTONE.
14.90 - 18.80	Dark grey shaley MUDSTONE.
18.80 - 19.30	Dark grey shaley COAL.
19.30 - 20.50	Dark grey shaley MUDSTONE.

GROUNDWATER	At 7.30m - fewer returns here - probably hit the coal seam
VOIDS OR BROKEN GROUND	None.
AIR LOSS	None.
OTHERS	

LOGGED CJS **TYPED** KDR **CHECKED** CJS

EASTWOOD & PARTNERS

ROTARY PERCUSSION BOREHOLE LOG

CLIENT	McLean Homes Northern Ltd	BOREHOLE NO.
SITE	Keresforth Road, Dodworth	
JOB NO.	10884 SE30SW 119	3
DATE DRILLED	8 June 1989 3235 C494	

DEPTH (m)	DESCRIPTION
0.00 - 0.40	CLAY.
0.40 - 0.90	Grey brown CLAY.
0.90 - 1.80	Grey brown shaley MUDSTONE.
1.80 - 4.30	Grey MUDSTONE.
4.30 - 11.30	Grey silty MUDSTONE.

GROUNDWATER	At 3.50m.
VOIDS OR BROKEN GROUND	None.
AIR LOSS	None.
OTHERS	

LOGGED CJS TYPED KDR CHECKED C33

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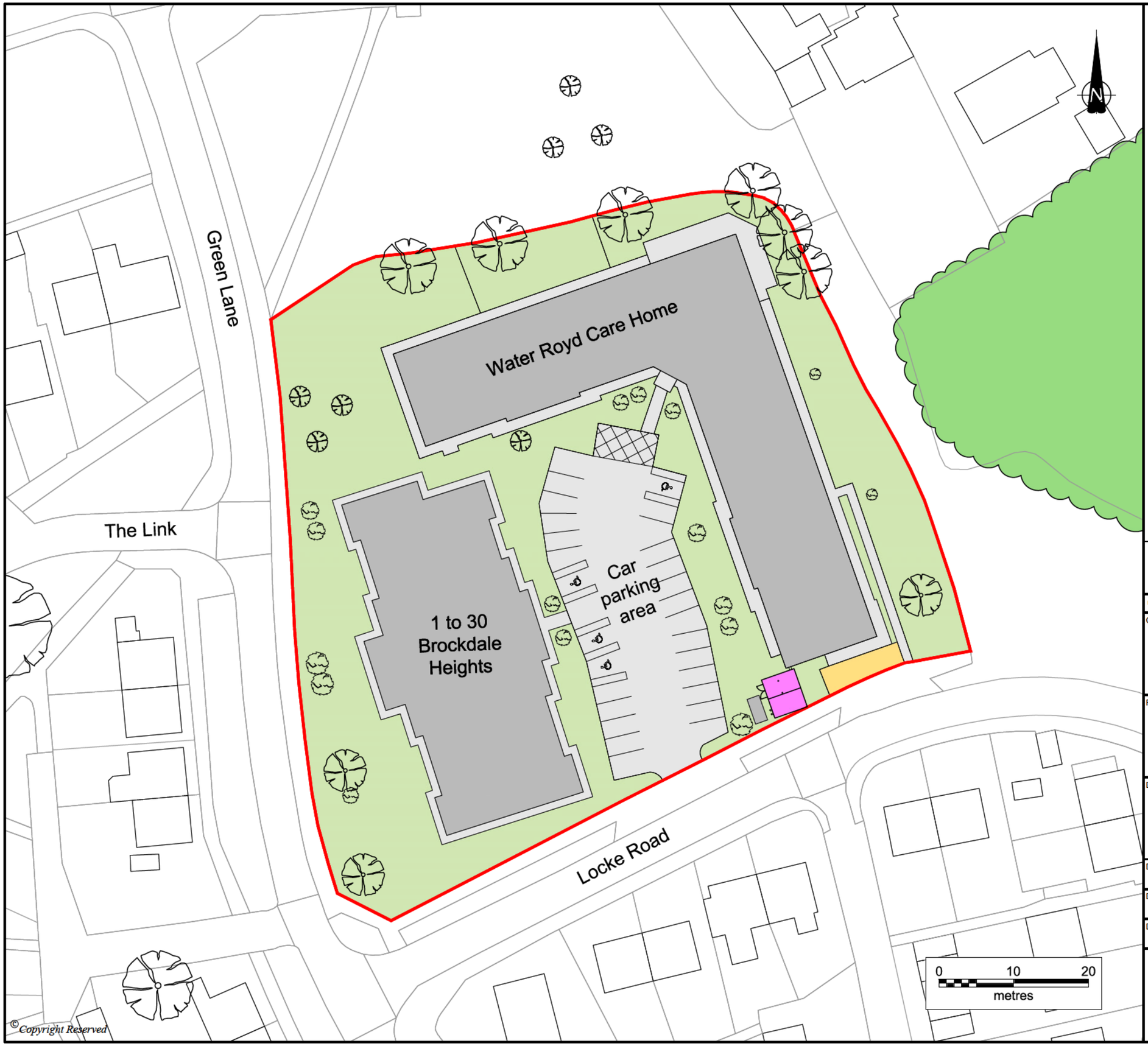
ROTARY PERCUSSION BOREHOLE LOG

CLIENT	McLean Homes Northern Ltd	**BOREHOLE NO.**
SITE	Keresforth Road, Dodworth	4
JOB NO.	10884 SE30SW 120	
DATE DRILLED	8 June 1989 3235 0492	

DEPTH (m)	DESCRIPTION
0.00 - 1.60	Soft dark brown CLAY.
1.60 - 1.80	Very stiff dark brown CLAY.
1.80 - 5.40	Grey MUDSTONE.
5.40 - 9.90	Hard grey silty MUDSTONE.
9.90 - 10.50	Black shaley MUDSTONE.
10.50 - 11.20	Dark grey hard MUDSTONE.
11.20 - 13.20	Black shaley MUDSTONE.

GROUNDWATER	At 4.50m.
VOIDS OR BROKEN GROUND	None.
AIR LOSS	None.
OTHERS	

LOGGED CJS **TYPED** KDR **CHECKED** CJS



Key

- Application boundary
- Existing Buildings
- Soft landscape area (grass)
- Hardstanding area
- Bin Store
- Proposed biocabin location
- Indicative tree locations
- Shrubbery/ bushes
- Woodland

REVISION	DETAILS	DATE	DR'N	CHK'D	APP'D

CLIENT

The UK Development Group Ltd

PROJECT

Water Royd Care Home
Biomass Boiler

DRAWING TITLE

Proposed Site Plan

DRG No.	REV
NT15521/03	-

DRG SIZE	SCALE	DATE
A3	1:500	24-08-2021

DRAWN BY	CHECKED BY	APPROVED BY
PAG	AB	HK

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\\WA.LOCAL\PROJECTS\NT\NT15521 - WATER ROYD BIOMASS BOILER\03 - DESIGN\AUTOCAD\NT15521-03- PROPOSED SITE PLAN.DWG