

TEN ACRE DRIVE WHITEFIELD

DESK BASED COAL MINING RISK ASSESSMENT

Job Number: LKC 21 1791
Date: January 2022
Client: Mr. & Mrs. Cohen



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It should be noted this report pertains solely to potential ground stability issues relating to potential shallow mining within the proposed planning boundary only.

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1 Introduction

1.1 Background

LK Consult (LKC) has been commissioned by Mr. & Mrs. Cohen to provide a Desk Based Coal Mining Risk Assessment Report for Ten Acres Lane, Whitefield. The report is required in support of a planning application to develop the site for residential use.

A Coal Mining Risk Assessment Report is required for a planning application within a designated 'Coal Mining Development High Risk Area'. 'Coal Mining Development High Risk Areas' are areas, based upon Coal Authority records, where the potential land instability and other safety risks associated with former coal mining activities are likely mining, recorded mine entries and areas of former surface mining.

This assessment is based upon guidance provided by the Coal Authority¹ and comprises a review of available desk-based information.

The scope of this Coal Mining Risk Assessment (as per Coal Authority guidance) is to:

- Present a desk-based review of all available information on the coal mining issues which are relevant to the application site.
- Use the above information to identify and assess the risks to the proposed development from coal mining legacy, including the cumulative impact of 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.

1.2 Site Details

A summary of the site details is presented in Table 1-1. Figure 1 indicates the site location and boundary.

Location	No. 12, Ten Acres Drive, off the western end of Ringley Drive, Whitefield, Greater Manchester. Centred at approximate National Grid Reference 379550E, 405420N.
Approximate Area	600m ² .
Topography	129 metres Above Ordnance Datum (AOD). Site is approximately level.
Current Land Use	<u>Site</u> Residential property, with hardstanding driveway and soft landscaping to front, and private garden to rear. <u>Surrounding Area</u> Residential properties in all directions.
Proposed Development	Residential dwelling including soft landscaping and car parking.

Table 1-1: Summary of the site details.

¹Risk Based Approach to Development Management. Guidance for Developers. Version 4 2017.

2 Review of Information

2.1 Information Sources

LKC have obtained and reviewed information from the following sources, which is summarised in Section 2:

- Review of Published BGS Geological Mapping including:
 - Sheet 85 Manchester Solid, Published 1975, Scale 1:50,000.
 - Sheet 85 Manchester Bedrock, Published 2010, Scale 1:50,000.
 - Digital Geology, dated 2008, Scale 1:10,000 (Appendix A).
- Geology of the Manchester district, a brief explanation of the geological map Sheet 85 Manchester.
- Coal Authority Consultants Coal Mining Report (Appendix B).
- Coal Authority Interactive Map Viewer².
- Coal Authority List of Combustible Coal Seams³.
- Historical BGS boreholes within the site vicinity⁴ (Appendix C).
- Publicly available historical mapping.

2.2 Geological Mapping

Artificial

No BGS recorded artificial deposits are recorded on site.

Superficial

The superficial geology is mapped as Devensian Glaciofluvial deposits (Sand & Gravel).

Bedrock

The bedrock across the majority of the site is mapped as the Pennine Middle Coal Measures Formation (Mudstone, Siltstone and Sandstone). The north east of the site is mapped as the Newton Heath Sandstone.

No dip data is recorded on site, or in close proximity to site, on 1:50,000 scale BGS mapping dated 2010. However, the dip of strata in the immediate surrounding area on BGS 1:50,000 scaled mapping dated 1975, indicates a dip of between 18-26 degrees to southwest. The Coal Authority have no data on dip of strata beneath site, but their data indicates that the strata to the north east of site dips to the south / south west between 24-35 degrees. This suggests a variable strata dip in the area.

A coal seam is shown to subcrop approximately 145m north east of site, and is expected to dip below the site assuming a dip direction towards the south / southwest. This seam is anticipated to be the Worsley Four Feet coal seam based on BGS 1:50,000 scale sheet mapping. Assuming a dip of between 18-34 degrees, this seam may dip beneath the site at 47-97m below rockhead. Due to the topography of the area, the coal seam could be shallower than this by approximately 5m.

It should be noted that the location of the coal seam on Coal Authority data differs to BGS data and maps the coal seam approximately 115m northeast. This would give a

² <http://mapapps2.bgs.ac.uk/coalauthority/home.html>

³ <https://www.gov.uk/government/publications/coal-seams-with-a-history-of-spontaneous-combustion>

⁴ <http://mapapps2.bgs.ac.uk/geoindex/home.html>

depth below rockhead at the site as 37-77m. Again, due to the topography of the area, the coal seam could be shallower by approximately 5m.

Sheet 85 explanatory notes provide additional information on the coal seams within the Manchester Area. An extract showing a section from the top of the Middle Coal Measures is provided in Plate 2-1. The shallowest coal seam is anticipated to be the Worsley Four Feet, with the coal seams below this in age order. It should be noted that not all coal seams may be present below the site due to geological variation.

Pennine Middle Coal Measures Formation			
Worsley Four Feet	W4	0.2-1.3	Deep mined
Parker	Pr	0.5-0.9	Deep mined
Radley	Ra	0.2	Not worked
Cannel	Can	0.2	Not worked
New Jet Amber	NJA	0.6	Deep mined
Riding	Rd	0.8	Not worked
Park (Pottery)	Pk	0.4-1.4	Deep mined
Park Yard (Ashclough)	PY	0.0-0.3	Not worked
Ince New (Major, Stonedelf)	IN	0.8-1.1	Deep mined
Ince Yard (Bland, Bin, Binn)	IY	0.6-1.3	Deep mined and surface mined (opencast)
Crumbouke (Colonel)	Cb	0.8-1.5	Deep mined and surface mined (opencast)
Ashton Great	AG	0.0-2.2	Deep mined
Brassey (Roger)	BR	0.3-1.2	Deep mined
Top Furnace	TF	0.2-0.7	Deep mined
Rams Coal (Bottom Furnace)	Rams	0.8-2.4	Deep mined and surface mined (opencast)

Coal seams anticipated below the site

Plate 2-1. Extract from the Geology of Manchester district explanatory notes (Figure 5).

2.3 Coal Authority Consultants Coal Mining Report

The consultants coal mining report is summarised in Table 2-2.

Mining Activity and Geology	
Past underground mining	Yes: See Plate 2-3. It should be noted that no past underground mining is recorded beneath site and no shallow workings are recorded.
Probable unrecorded shallow workings	Yes.
Spine roadways at shallow depth	No spine roadway recorded at shallow depth.
Mine entries (within 100m)	None recorded within 100m of the enquiry boundary.
Abandoned mine plan catalogue numbers	NW779, 10707, 16820
Outcrops	No outcrops recorded.
Geological faults, fissures, and break lines	No faults, fissures or break lines recorded.
Opencast mines	None recorded within 500m of the enquiry boundary.
Coal Authority managed tips	None recorded within 500m of the enquiry boundary.
Investigative or Remedial Activity	
Site investigations	1no. recorded within 50m of the enquiry boundary.
Remediated sites	None recorded within 50m of the enquiry boundary.
Coal mining subsidence	Not received a damage notice or claim for the subject property, or any property within 50m, since 1994. No current Stop Notice delaying remedial works or repairs to property. Not aware of any request made to carry out preventative works before coal is worked.
Mine gas	None recorded within 500m of the enquiry boundary.
Mine water treatment schemes	None recorded within 500m of the enquiry boundary.

Table 2-2: Summary of Coal Authority Consultants Coal Mining Report.

Licensing and Future Mining Activity	
Future underground mining	None recorded.
Coal mining licensing	None recorded within 200m of the enquiry boundary.
Court Orders	None recorded.
Section 46 notices	No notices have been given, stating that the land is at risk of subsidence.
Withdrawal of support notices	The property is in an area where a notice to withdraw support was given in 1959.
Payments to owners of former copyhold land	Not in an area where a relevant notice has been published.
Further Information	
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. Site Investigations The site is within an area of previous interest. It is close to where the Coal Authority has received information relating to past site investigation.	

Table 2-2 (continued): Summary of Coal Authority Consultants Coal Mining Report.

Plate 2-3 shows the past underground mining. This is defined by the Coal Authority as *'details of all recorded underground mining relative to the enquiry boundary. Only 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'*.

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	ROGER	Coal	3YVT	365	North-East	34.9	South-West	120	1972
unnamed	ROGER	Coal	3YPF	482	North-East	30.5	South	120	1971
unnamed	ROGER	Coal	3YVF	495	East	24.8	South-West	120	1970

Plate 2-3: Extract from Coal Authority Report showing past underground mining.

Probable unrecorded shallow workings are defined as *'areas where the Coal Authority believes there to be unrecorded coal workings that exist at or close to the surface (less than 30m deep)'*.

Plate 2-4 shows an extract of the plan provided with the Coal Authority Consultants Coal Mining Report.

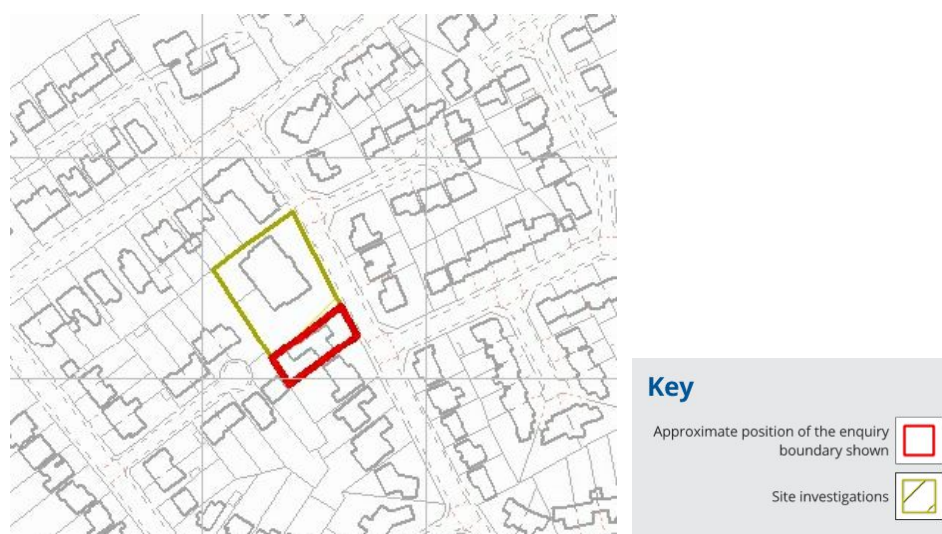


Plate 2-4: Extract from Coal Authority Consultants Coal Mining Report – Summary of Findings. showing outcrops.

2.4 Coal Authority Interactive Mapping

Plate 2-5 shows the development high risk areas.



Plate 2-5: Development High Risk Area

The north-eastern part of the site lies within a Development High Risk Area, shown as 'Probable Shallow Coal Mine Workings'. The remainder of the site lies outside the Development High Risk Area.

2.5 Combustible Coal Seams

Some coal seams have been known to suffer from occurrences of spontaneous combustion and are consequently regarded as at 'high risk' of succumbing to spontaneous combustion when being entered, worked, or disturbed. The Coal Authority have produced a list of seams for different areas of the UK.

None of the coal seams listed are expected at shallow depth below the site. However, if roof coal has been left, this could also pose a risk.

2.6 Historical BGS Logs

No BGS boreholes are available within 50m of site. The nearest available borehole recorded is located approximately 230m northeast of site (Ref: SD70NE71), which shows MUDSTONE from 23.62metres below ground level (mbgl), and **COAL** at approximately 27mbgl.

It should be noted that the ground conditions beneath the study site may differ to the described borehole record given the distance.

2.7 Historical Mapping

Available historical mapping has not identified any significant coal mining features within influencing distance.

3 Coal Mining Risk Assessment

Table 3-1 below summarises the potential risks associated with coal mining legacy for the proposed development site.

Coal Mining Issue	Potential Risk	Risk Assessment
Underground coal mining (recorded at shallow depths)	X	No recorded shallow underground workings below the site. No further assessment required.
Underground coal mining (probable at shallow depths)	✓	Probable underground shallow workings recorded by the Coal Authority. Based on information provided by the Coal Authority and geological mapping, the Worsley Four Feet Coal seam is anticipated to be present at shallow depth below the site (<50m below rockhead). Further coal seams may also be present. If shallow coal seams have been worked there could be a risk of ground instability at the surface. Investigation work recommended and a watching brief during groundworks.
Mine entries (shafts / adits)	?	No recorded mine entries within influencing distance of the site. However, there is also a risk of unrecorded mine entries as the site is within a coal mining area. No specific investigation work is advised. However, a watching brief should be undertaken during any intrusive investigation work and groundworks to check for any signs of unrecorded mine entries.
Coal mining geology (geological faults, fissures, and break lines)	X	Not recorded on Coal Authority data.
Record of past mine gas emissions	?	Not recorded on Coal Authority data. However, shallow potentially worked coal seams may be present below the site, which have the potential to be a source of ground gas. Investigation work recommended. This should include monitoring during any intrusive mining investigation. In addition, either precautionary gas protection measures of gas monitoring in line with CIRIA 655 ⁵ may be required depending on the outcome of the mining investigation.
Recorded coal mining surface hazard	X	No recorded coal mining surface hazard.
Surface mining (opencast workings)	X	No recorded surface mining (opencast workings).

Table 3-1: Potential Coal Mining Risks.

Notes:

✓ = Risk identified; X = No risk identified; = Possible risk identified

⁵ CIRIA (2007). "Assessing Risks Posed by Hazardous Ground Gases to Buildings". CIRIA C665.

4 Conclusions and Recommendations

Summary

Based upon the available information, LKC have identified potential shallow coal mining risks which are summarised in Table 4-1.

Coal Mining Issue	Potential Risk
Underground coal mining (recorded at shallow depths)	X
Underground coal mining (probable at shallow depths)	✓
Mine entries (shafts / adits)	?
Coal mining geology (fissures)	X
Record of past mine gas emissions	?
Recorded coal mining surface hazard	X
Surface mining (opencast workings)	X

Table 4-1: Summary of coal mining potential risks.

Site Investigation Recommendations

Considering the available information and guidance given in CIRIA C758⁶, LKC consider that intrusive investigation work should be carried out to confirm the risk associated with coal mining. The intrusive investigation works should be designed by a suitably qualified mining engineer; these works are likely to include the options detailed in Table 4-2.

Coal Mining Issue	Investigation Work
Underground coal mining (recorded at shallow depths)	N/A
Underground coal mining (probable at shallow depths)	Rotary drilling across the site to confirm the depth to coal seam, the thickness of seams and any signs of workings. Watching brief during groundworks to check for any signs of mining related ground instability (see below).
Mine entries (shafts / adits)	No specific investigation work required. However, watching brief during intrusive investigation work and groundworks to check for any signs of mine entries (see below).
Coal mining geology (fissures)	N/A
Record of past mine gas emissions	Gas monitoring during mining investigation (rotary drilling). Depending on findings of mining investigation, possible precautionary gas protection measures or gas monitoring in line with CIRIA 665 ⁷ .
Recorded coal mining surface hazard	N/A
Surface mining (opencast workings)	N/A

Table 4-2: Summary of investigation requirements.

Investigation work should be carried out in line with CIRIA C758 and Coal Authority guidance.

A Coal Authority Permit⁸ is required for intrusive activities which will disturb or enter any coal seams, coal mine workings or coal mine entries (shafts and adits).

⁶ CIRIA (2019). "Abandoned Mine Workings Manual". CIRIA C758

⁷ CIRIA (2007). "Assessing Risks Posed by Hazardous Ground Gases to Buildings". CIRIA C665.

⁸ <https://www.gov.uk/get-a-permit-to-deal-with-a-coal-mine-on-your-property>

Watching Brief

A watching brief is recommended in all coal mining areas. This could be undertaken by experienced site staff on low-risk sites or by a suitably qualified coal mining engineer or consultant on high-risk sites. This site is considered to be a low risk at this stage as no mining has been recorded on site. However, this may need to be revised following the findings of the mining investigation.

The watching brief should cover the period in which any earthworks, reduce level dig or foundation excavation works are being undertaken. Particular care should be taken to identify any potential features which may indicate the presence of shallow coal mining hazards.

Such hazards may include, but not limited to, features such as unexplained depressions or voids, outcropping coal seams, localised areas of deep made ground (which could represent backfilled areas of coal mining related ground subsidence, crown holes or mine entries), or unexpected man-made items at depth (e.g., brickwork, concrete, timber, or steelwork).

Mine entries may manifest during excavation works as circular, square, or rectangular areas of deep Made Ground (typically several metres in size) set against the natural strata (e.g., Glacial Till or weathered rock). Mine shafts may also be covered with a large, thick concrete cap.

If any of the above features are identified during the course of the development works then work should be stopped to allow the mining engineer / consultant to assess them and if necessary, design further or additional investigation and / or remediation works.

Mitigation Measures

Depending on the findings of the mining investigation, mitigation measures may be required. Table 4-3 provides possible mitigation options.

Coal Mining Issue	Mitigation Measures
Underground coal mining (recorded at shallow depths)	N/A
Underground coal mining (probable at shallow depths)	Move structures to 'safe' areas of the site. Stabilisation of the ground (i.e., grouting) and suitable foundations to be implemented.
Mine entries (shafts / adits)	Move structures to 'safe' areas of the site. Treat mine entry (backfill, cap). Follow The Coal Authority's 'Policy for Building Over or Within The Influencing Distance of A Mine Entry' ⁹ .
Coal mining geology (fissures)	N/A
Record of past mine gas emissions	Gas protection measures.
Recorded coal mining surface hazard	N/A
Surface mining (opencast workings)	N/A

Table 4-3: Summary of potential mitigation measures.

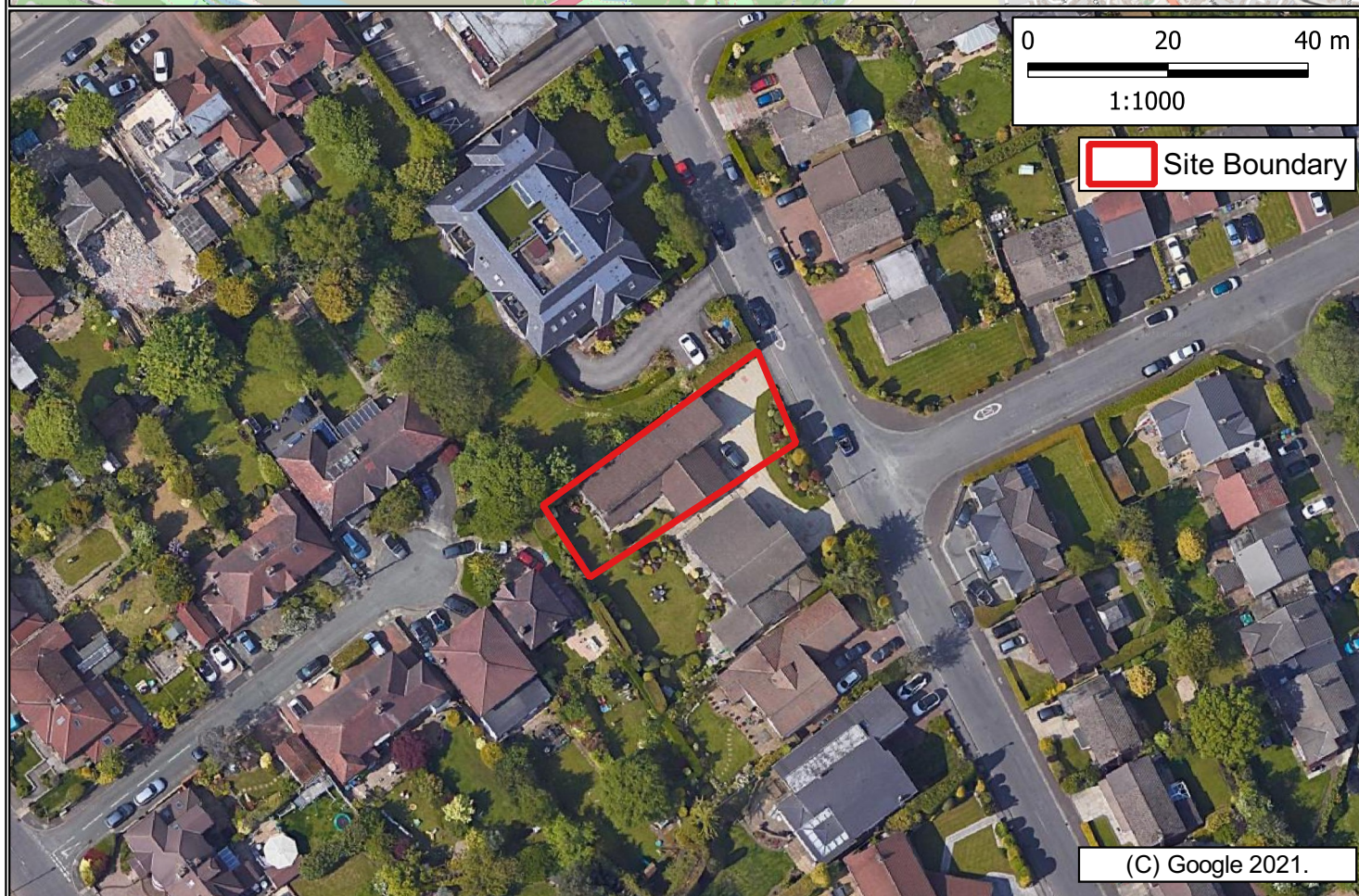
⁹ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/363064/policy-for-building-over-or-within-the-influencing.pdf

Conclusions and Safe Development

At this stage the possibility for shallow workings can only be ascertained from site investigation; however, LKC consider that the site could be safely developed with regards to shallow mining subject to an appropriate site investigation and, if required, appropriate mitigation measures which may include some of those measures as detailed above.

Therefore, LKC consider the study site should be capable of being made safe and stable to meet the requirements of national planning policy with regard to development on unstable land.

Figures



Client: Gary Deane Associates				Title: Site Location & Boundary Plan			
Site: Ten Acre Drive, Whitefield				Scale (see scale bar): 1:25,000 & 1:1,000 @ A4			
Job No.: LKC 21 1791	Drawn By: PW	Checked By: JT	Drawn: Jan 2022	Figure: 1	Revision:		

Appendix A

Geological Mapping

Geology 1:10,000 Maps Legends

Artificial Ground and Landslip

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	WMGR	Infilled Ground	Artificial Deposit	Holocene - Holocene
	WGR	Worked Ground (Undivided)	Void	Holocene - Holocene
	MGR	Made Ground (Undivided)	Artificial Deposit	Holocene - Holocene
	LSGR	Landscaped Ground (Undivided)	Artificial Deposit	Holocene - Holocene
	SLIP	Landslide Deposit	Unknown/Unclassified Entry	Quaternary - Quaternary

Superficial Geology

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	ALV	Alluvium	Clay, Silt, Sand and Gravel	Flandrian - Pleistocene
	GFDUD	Glaciofluvial Deposits, Devensian	Sand and Gravel	Devensian - Ipswichian
	TILLD	Till, Devensian	Diamicton	Devensian - Ipswichian
	HMGDD	Hummocky (Moundy) Glacial Deposits, Devensian	Sand and Gravel	Devensian - Ipswichian
	GFSDD	GLACIOFLUVIAL SHEET DEPOSITS, DEVANSIAN	Sand and Gravel	Devensian - Ipswichian
	GFICD	Glaciofluvial Ice Contact Deposits, Devensian	Sand and Gravel	Devensian - Ipswichian
	RTD1	River Terrace Deposits, 1	Sand and Gravel	Quaternary - Ryazanian
	RTD2	River Terrace Deposits, 2	Sand and Gravel	Quaternary - Ryazanian

Bedrock and Faults

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	CPB	Chester Pebble Beds Formation	Sandstone	Early Triassic - Early Triassic
	MM	Manchester Marls Formation	Mudstone	Late Permian - Late Permian
	CS	Collyhurst Sandstone Formation	Sandstone	Cisuralian - Cisuralian
	NHSS	Newton Heath Sandstone	Sandstone	Bolsovian - Bolsovian
	PUCM	Pennine Upper Coal Measures Formation	Mudstone, Siltstone and Sandstone	Westphalian D - Bolsovian
	WDR	Worsley Delf Rock	Sandstone	Bolsovian - Bolsovian
	NR	Nob End Rock	Sandstone	Bolsovian - Bolsovian
	PMCM	Pennine Middle Coal Measures Formation	Mudstone, Siltstone and Sandstone	Bolsovian - Duckmantian
	Fault			
	Rock			



Geology 1:10,000 Maps

This report contains geological map extracts taken from the BGS Digital Geological map of Great Britain at 1:10,000 scale and is designed for users carrying out preliminary site assessments who require geological maps for the area around a site. This mapping may be more up to date than previously published paper maps.

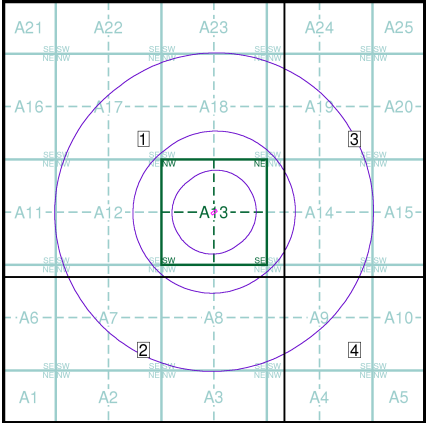
The various geological layers - artificial and landslip deposits, superficial geology and solid (bedrock) geology are displayed in separate maps, but superimposed on the final 'Combined Surface Geology' map. All map legends feature on this page.

Please Note: Not all of the layers have complete nationwide coverage, so availability of data for relevant map sheets is indicated below.

Geology 1:10,000 Maps Coverage

Map ID:	2	Map ID:	4
Map Name:	SD70SE	Map Name:	SD80SW
Map Date:	2008	Map Date:	2008
Bedrock Geology:	Available	Bedrock Geology:	Available
Superficial Geology:	Available	Superficial Geology:	Available
Artificial Geology:	Available	Artificial Geology:	Available
Faults:	Available	Faults:	Available
Landslip:	Available	Landslip:	Available
Rock Segments:	Available	Rock Segments:	Available
Map ID:	1	Map ID:	3
Map Name:	SD70NE	Map Name:	SD80NW
Map Date:	2008	Map Date:	2008
Bedrock Geology:	Available	Bedrock Geology:	Available
Superficial Geology:	Available	Superficial Geology:	Available
Artificial Geology:	Available	Artificial Geology:	Available
Faults:	Available	Faults:	Available
Landslip:	Available	Landslip:	Available
Rock Segments:	Available	Rock Segments:	Available

Geology 1:10,000 Maps - Slice A



Order Details

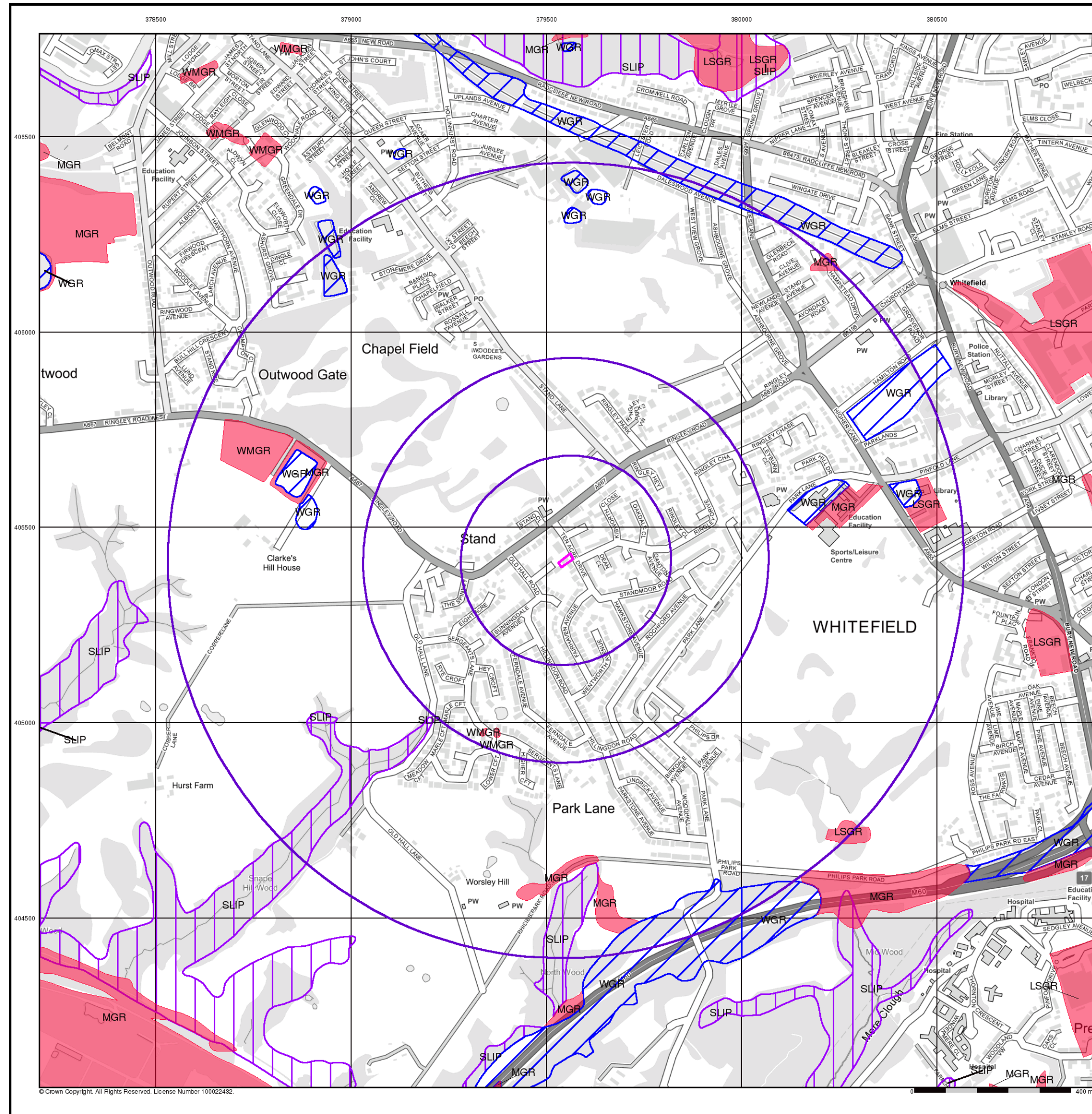
Order Number:	288841034_1_1
Customer Ref:	LKC 21 1791
National Grid Reference:	379550, 405420
Slice:	A
Site Area (Ha):	0.06
Search Buffer (m):	1000

Site Details

12 Ten Acre Drive, Whitefield, MANCHESTER, M45 7LP



Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



Artificial Ground and Landslip

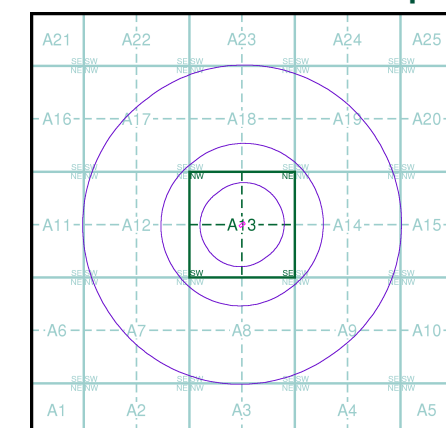
Artificial ground is a term used by BGS for those areas where the ground surface has been significantly modified by human activity. Information about previously developed ground is especially important, as it is often associated with potentially contaminated material, unpredictable engineering conditions and unstable ground.

Artificial ground includes:

- Made ground - man-made deposits such as embankments and spoil heaps on the natural ground surface.
- Worked ground - areas where the ground has been cut away such as quarries and road cuttings.
- Infilled ground - areas where the ground has been cut away then wholly or partially backfilled.
- Landscaped ground - areas where the surface has been reshaped.
- Disturbed ground - areas of ill-defined shallow or near surface mineral workings where it is impracticable to map made and worked ground separately.

Mass movement (landslip) deposits on BGS geological maps are primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground. The dataset also includes founded strata, where the ground has collapsed due to subsidence.

Artificial Ground and Landslip Map - Slice A

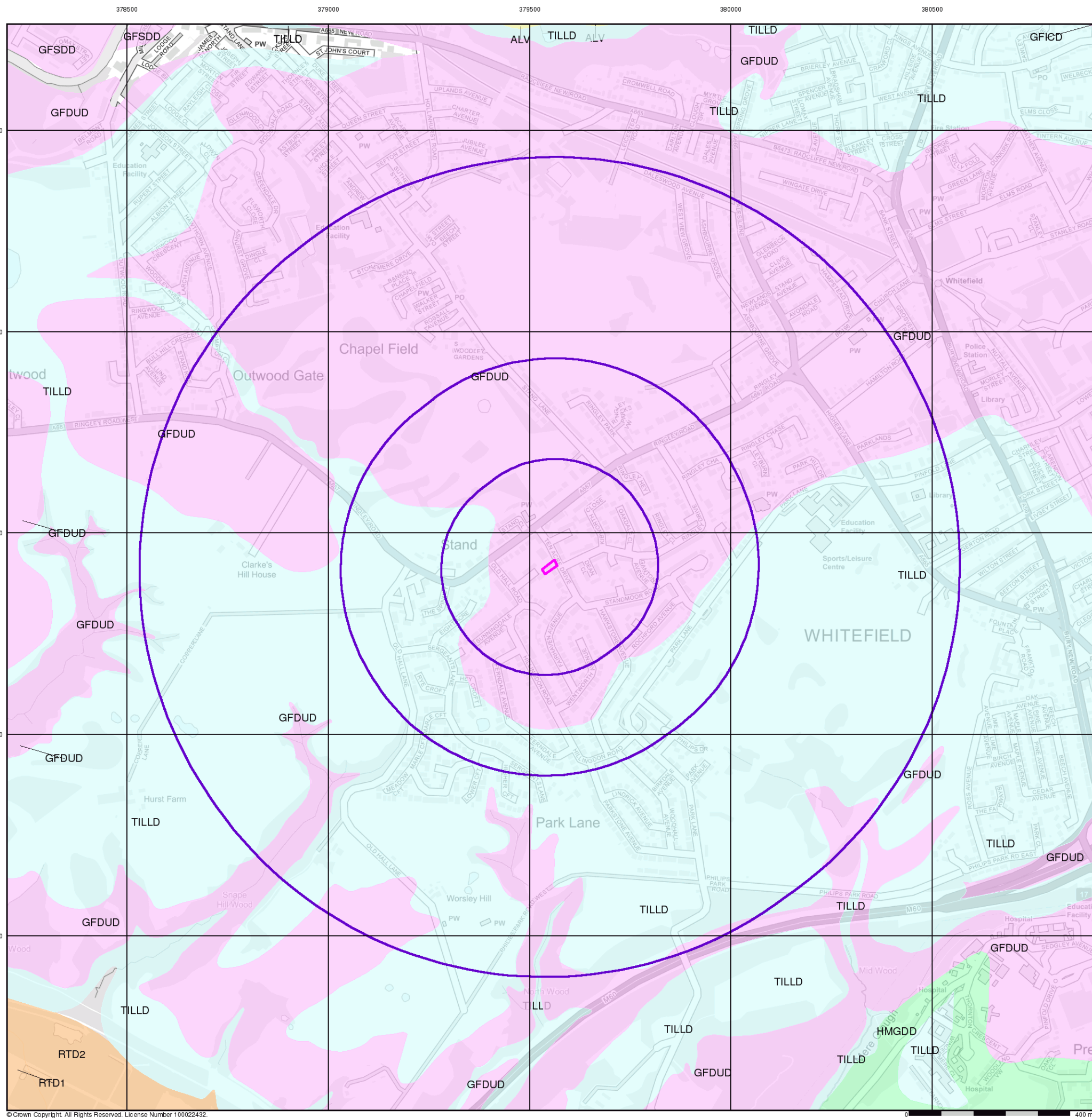


Order Details

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Customer Ref: LKC 21 1791
National Grid Reference: 379550, 405420
Slice: A
Site Area (Ha): 0.06
Search Buffer (m): 1000

Site Details

12 Ten Acre Drive, Whitefield, MANCHESTER, M45 7LP



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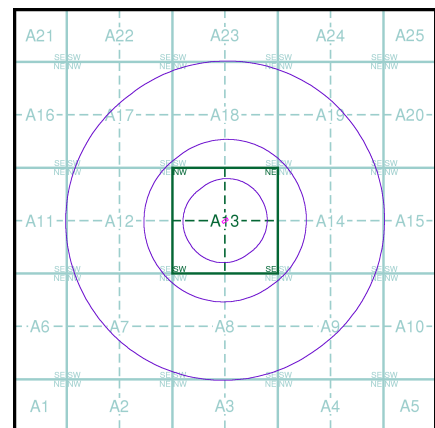
Superficial Geology

BGS 1:10,000 Superficial Deposits are the youngest geological deposits formed during the most recent period of geological time, which extends back about 1.8 million years from the present.

They rest on older deposits or rocks referred to as Bedrock. This dataset contains Superficial deposits that are of natural origin and 'in place'. Other superficial strata may be held in the Mass Movement dataset where they have been moved, or in the Artificial Ground dataset where they are of man-made origin.

Most of these Superficial deposits are unconsolidated sediments such as gravel, sand, silt and clay, and onshore they form relatively thin, often discontinuous patches or larger spreads.

Superficial Geology Map - Slice A



Order Details

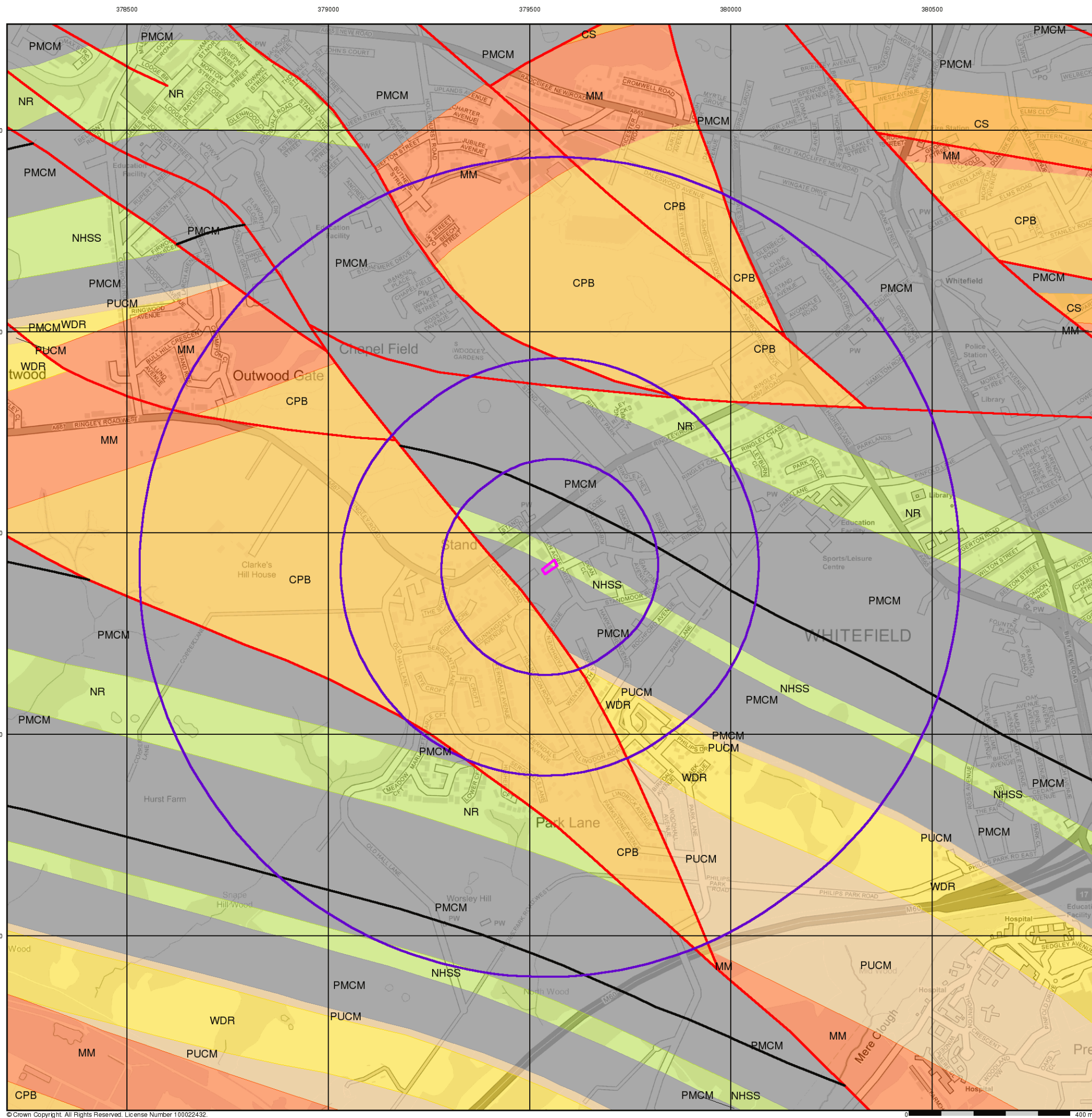
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Customer Ref: LKC 21 1791
National Grid Reference: 379550, 405420
Slice: A
Site Area (Ha): 0.06
Search Buffer (m): 1000

Site Details

12 Ten Acre Drive, Whitefield, MANCHESTER, M45 7LP

Landmark
INFORMATION GROUP

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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Bedrock and Faults

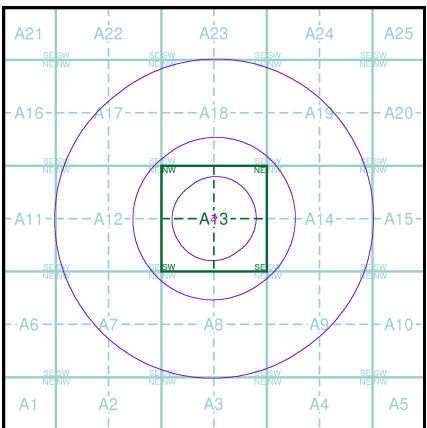
Bedrock geology is a term used for the main mass of rocks forming the Earth and are present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

The bedrock has formed over vast lengths of geological time ranging from ancient and highly altered rocks of the Proterozoic, some 2500 million years ago, or older, up to the relatively young Pliocene, 1.8 million years ago.

The bedrock geology includes many lithologies, often classified into three types based on origin: igneous, metamorphic and sedimentary.

The BGS Faults and Rock Segments dataset includes geological faults and thin beds mapped as lines such as coal seams and mineral veins. These are not restricted by age and could relate to features of any of the 1:10,000 geology datasets.

Bedrock and Faults Map - Slice A



Order Details

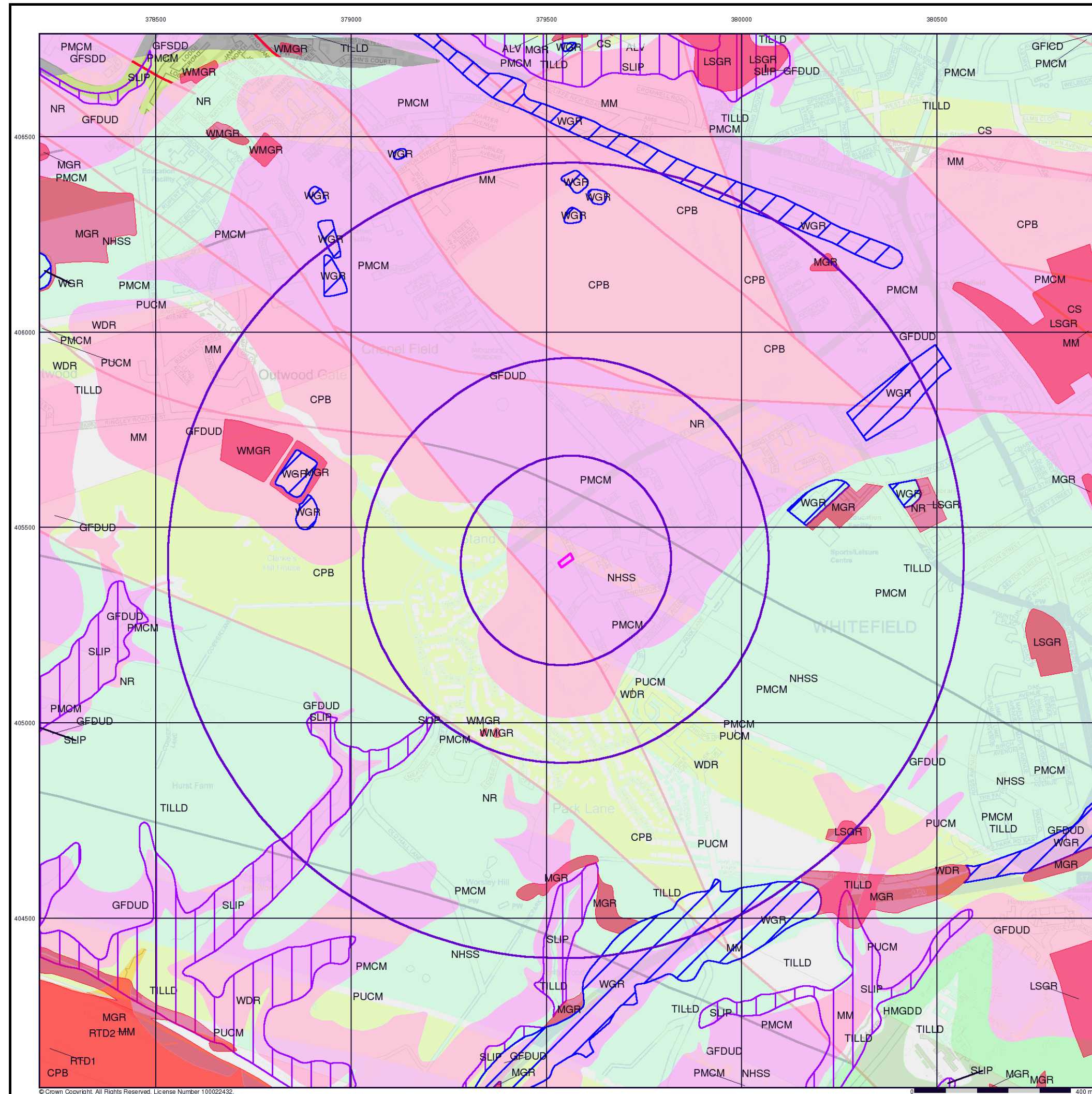
Order Number: 288841034_1_1
Customer Ref: LKC 21 1791
National Grid Reference: 379550, 405420
Slice: A
Site Area (Ha): 0.06
Search Buffer (m): 1000

Site Details

12 Ten Acre Drive, Whitefield, MANCHESTER, M45 7LP

Landmark
INFORMATION GROUP

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



GROUP
Combined Surface Geology

The Combined Surface Geology map combines all the previous maps into one combined geological overview of your site.

Please consult the legends to the previous maps to interpret the Combined "Surface Geology" map.

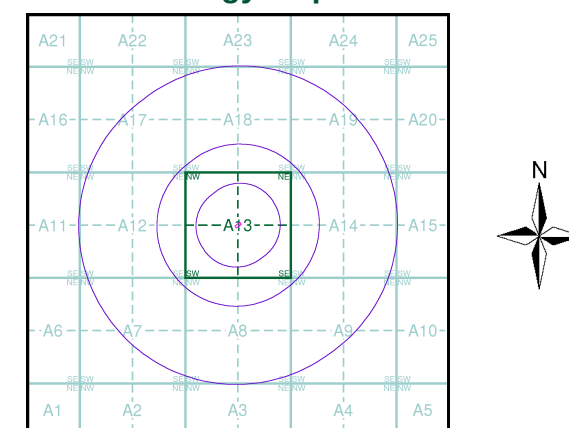
Additional Information

More information on 1:10,000 Geological mapping and explanations of rock classifications can be found on the BGS website. Using the LEX Codes in this report, further descriptions of rock types can be obtained by interrogating the 'BGS Lexicon of Named Rock Units'. This database can be accessed by following the 'Information and Data' link on the BGS website.

Contact

British Geological Survey
 Kingsley Dunham Centre
 Keyworth
 Nottingham
 NG12 5GG
 Telephone: 0115 936 3143
 Fax: 0115 936 3276
 email: enquiries@bgs.ac.uk
 website: www.bgs.ac.uk

Combined Geology Map - Slice A



Order Details

Order Number: 288841034_1_1
Customer Ref: LKC 21 1791
National Grid Reference: 379550, 405420
Slice: A
Site Area (Ha): 0.06
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Site Details

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Appendix B

Coal Authority Consultants Coal Mining Report



The Coal
Authority

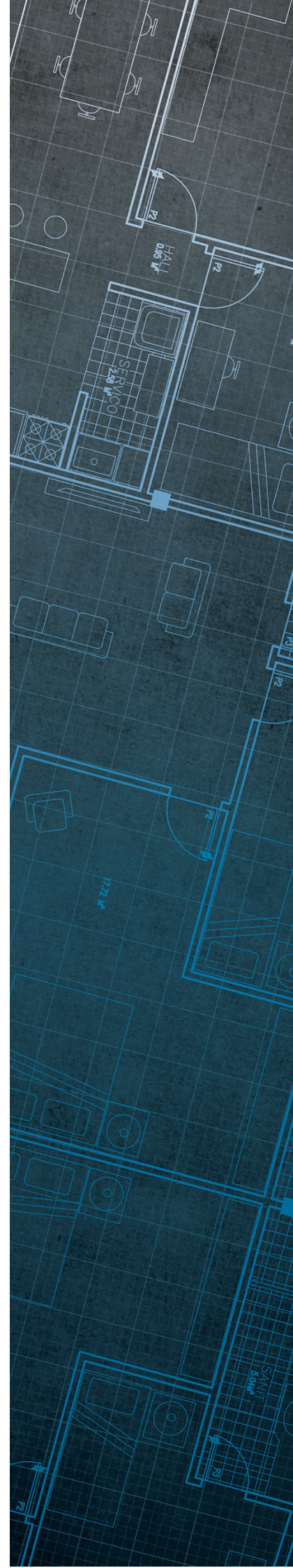
Consultants Coal Mining Report

12

Ten Acre Drive
Whitefield
Manchester
Greater Manchester
M45 7LP

Date of enquiry:	13 December 2021
Date enquiry received:	13 December 2021
Issue date:	13 December 2021

Our reference:	51002774662001
Your reference:	288841034_2



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

NLIS Hub

Enquiry address

12
Ten Acre Drive
Whitefield
Manchester
Greater Manchester
M45 7LP

How to contact us

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

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

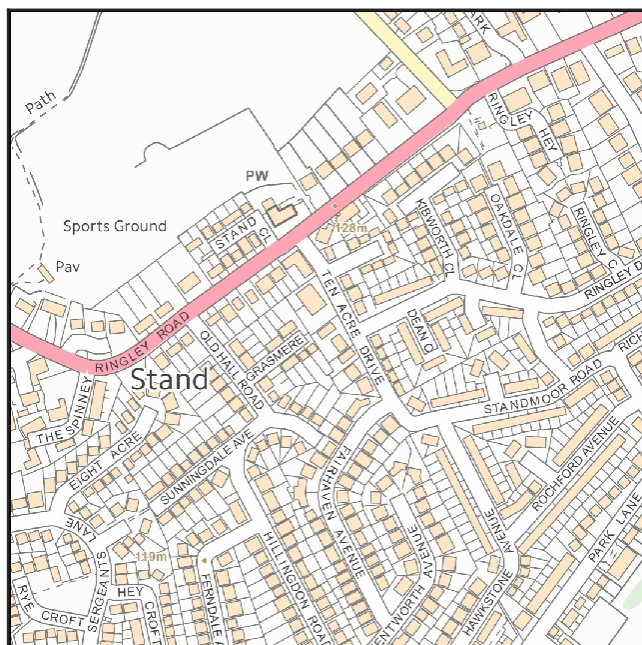
www.groundstability.com

 @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	ROGER	Coal	3YVT	365	North-East	34.9	South-West	120	1972
unnamed	ROGER	Coal	3YPF	482	North-East	30.5	South	120	1971
unnamed	ROGER	Coal	3YVF	495	East	24.8	South-West	120	1970

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:

NW779	10707	16820
-------	-------	-------

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

Outcrops

No outcrops recorded.

Geological faults, fissures and breaklines

No faults, fissures or breaklines recorded.

Opencast mines

None recorded within 500 metres of the enquiry boundary.

Coal Authority managed tips

None recorded within 500 metres of the enquiry boundary.

Section 2 – Investigative or remedial activity

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

Site investigations

Distance to site investigation (m)	Direction
Within	N/A

See Section 4 for further information.

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 in an area where a notice to withdraw support was given in 1959.

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.

Site investigations

The site is within an area of previous interest. It is close to where the Coal Authority has received information relating to past site investigations.

The site requires further investigation and may influence how you approach your risk assessment.

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.

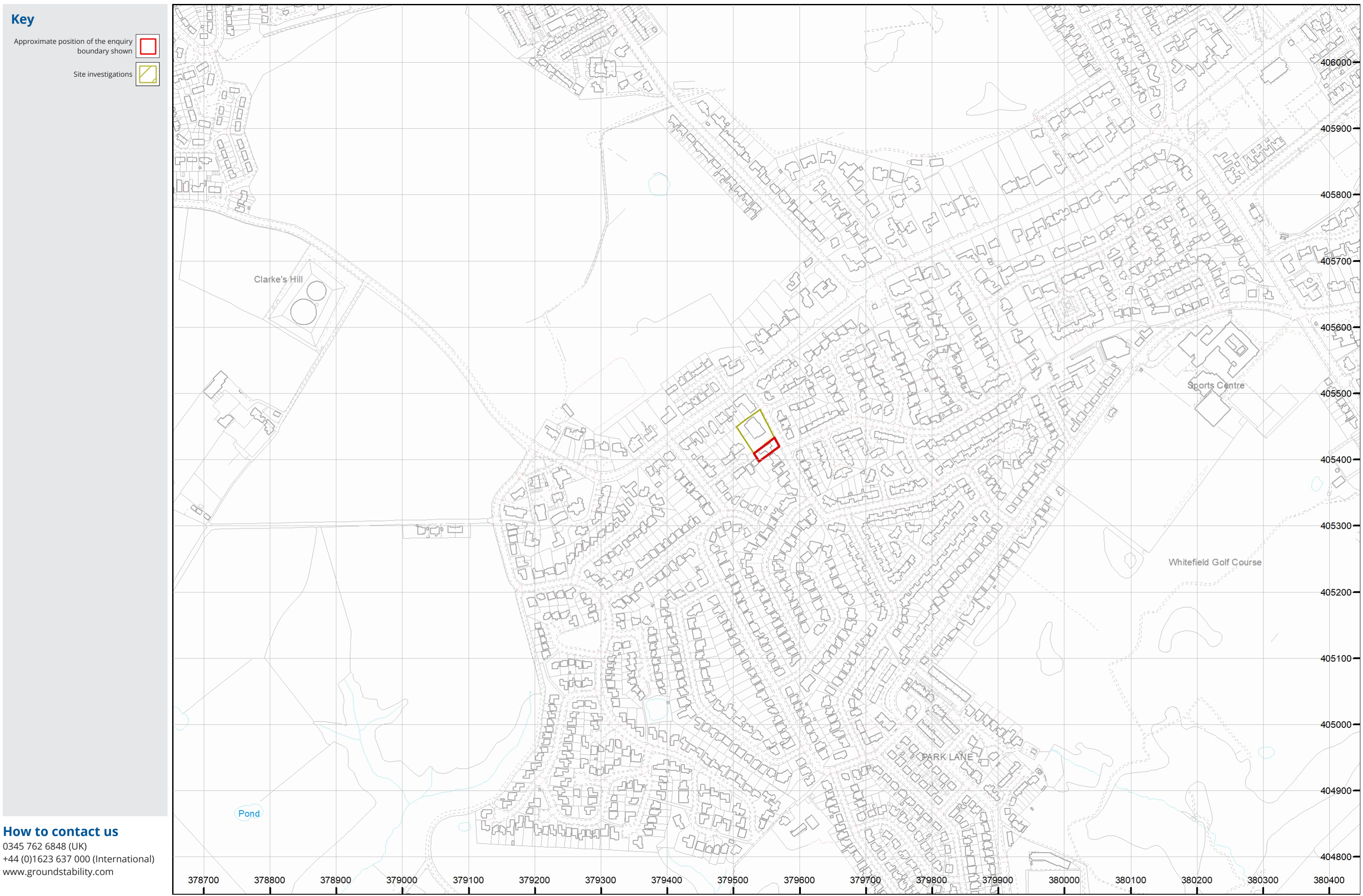
Withdrawal of support notices

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.



Appendix C

Historical BGS Borehole Log

SD 70 NE/71

6-inch Map

S.W.
Regd. No.

(County, Sheet and Qtr.)

SD 70 NE

502

(Nat. Grid, Sheet and Qtr.)

Attach tracing from a map or
sketch map if possible

SECTION OF Aggroft Colliery Borehole u/g 7
inclined 62° - normal to bedding - down
PURPOSE To prove Rams Seam.

EXACT SITE Rags Seam, R63's Top Road.

N.G. Co-ords E. 379, 736 N. 405, 582

LEVEL AT WHICH ~~shot~~
bore COMMENCED RELATIVE TO ^{N.D.} ~~0-0~~ 9080 Ft.DATE OF SINKING OR BORING 9th August 1970SINKER OR BORER National Coal Board, Regional

British Geological Geological Service, Stoke-on-Trent.

British Geological Survey

GEOLOGICAL CLASSIFICATION	NATURE OF STRATA	THICKNESS		DEPTH	
		FEET	IN.	FEET	IN.
					1
	Rock Bit to			77	6
	cludstone, grey, close bedding, ophaeosiderite, grain coarsens downwards	2	-	79	6 1/2
	cludstone, silty, plant @ 79' 5"	2	2	81	8 1/2
	cludstone, brownish grey, much siderite	-	1 1/2	81	9 1/2
	cludstone, grey, 1/2" ironstone band @ 80' 11 1/2"				6 1/2
	cludstone, siderite increases from 82' 0"				
	becoming dark grey	8 1/2		82	6 1/2
	cludstone, grey, fine grain, carbonaceous bedding @ 82' 7 1/2", ironstone band 2 1/2" @ 83' 1", plant fragments, ophaeosiderite	1	-	83	6 1/2
	cludstone, plants 2 in. to 8 1/2", 2" ironstone band 8 1/2", SLIP 8 1/2", 1" ironstone band 87' 2"	4	6	89	7 1/2
	FAULT? braccia		3	89	3 1/2
	cludstone, grey, very small ironstone nodules		9	89	0 1/2
	cludstone, carbonaceous		2 1/2	89	2 1/2
	cludstone, small fragments, soft, muddy		3 1/2	90	0 1/2
	cludstone, carbonaceous,		2	90	2 1/2
	COAL, pyritic		- 1/2	90	2 1/2
	COAL, in part		1	90	3 1/2
	COAL	2	2 1/2	92	6 1/2
	Fragmentary coal & dirt		4	92	10 1/2
	COAL	3	1	95	11 1/2
	Seatearth, hard, many rootlets	1	7	97	6 1/2
	Bottom of Hole 97' 6"				
	Remarks:- Datum 179 3/4 below floor of Rags. The 4 inches of fragmentary coal & dirt @ 92 ft 10 inches, occurred at the top of a cone of is probably relaxed material.				

British Geological Survey

British Geological Survey

British Geological Survey

Based across the UK with
offices in Manchester,
London, Liverpool and Glasgow.

Manchester (Head Office)

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M26 2ZS

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e: info@thelkgroup.com



- » Geotechnical
- » Contaminated Land
- » Flood Risk and Drainage
- » Asbestos
- » Invasive Species
- » Land Remediation
- » Project Management
- » Land Drilling