



**COMPLETION REPORT FOR THE PROOF
DRILLING OF POTENTIAL SHALLOW MINE
WORKINGS**

Former Greenside Mills, Skelmanthorpe
for Lovell Partnerships Ltd

Date: **September 2024**

Report reference: C9297C/D&G

A large, stylized version of the Sirius logo is centered on a dark grey background. The word "Sirius" is in a bold, green, sans-serif font, with a green star above the 'i'. The background features a large, faint, light grey star shape behind the text.

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QUALITY ASSURANCE

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APPENDIX A FIGURES AND DRAWINGS

Drawing No.	Title	Scale
C9297C/DG/01	Site Location Plan	1:25,000
C9297C/DG/02	Site Features Plan	1:1,000
C9297C/DG/03	Shallow Mine Workings Proof Drilling Location Plan	1:500
2156.01 RevN	STEN Architecture Planning Layout, last dated June 2023	1:500
21374 155 P10	Dudleys Structural and Civil Consultants, External Levels Plan, last dated January 2023	1:250

1. Introduction

1.1 Background

It is understood that Lovell Partnerships Limited (Lovell) are proposing re-development of land at the former Greenside Mills, off Saville Road, Skelmanthorpe (the “site”). The re-development will comprise 46 no. low rise (2-3 storey) residential properties with private gardens and associated infrastructure, including areas of hardstanding, access roads and public open space (POS). A proposed development layout has been provided to Sirius (STEN Architecture drawing ref. 2156.01 Rev N, last dated June 2023), a copy of which is included in Appendix A of this report.

Previous site investigations identified a potential risk to surface stability from localised possible shallow mine workings underlying the central area of the site. This potential risk indicated that a programme of proof drilling of boreholes, followed by stabilisation where / if necessary was required. A Specification for the Investigation and Treatment of Shallow Mine Workings (hereafter, ‘the Specification’) was prepared by SGL, which included a Proposed Shallow Mine Workings Investigation and Treatment Plan (Drawing No. C9297/DG/04). The Specification is provided in Appendix D.

Boreholes were to be drilled to sufficient depth to encounter the Whinmoor (Top and / or Low Whinmoor) coal seams unless otherwise instructed by the supervising engineer, or where sufficient thickness of intact rock is proven in individual boreholes. Where the seam(s) were encountered, boreholes were to be extended through the seam and at least 0.5m into the underlying strata.

1.2 Appointment

Lovell Partnerships Ltd (Lovell) appointed Sirius Drilling Limited (SDL) as a specialist contractor to investigate and stabilise possible shallow mine workings across central areas of the proposed development. SGL acted as Supervising Engineer for the works.

On behalf of Lovell, a permit to undertake the investigation and grouting of the shallow mine workings within the treatment area was obtained by SGL from the Coal Authority (CA) prior to commencement of works. A copy of this permit is included within Appendix B.

1.3 Sources of Information

The site has been subject to previous site investigation by SGL, with relevant reports detailed below:

- Geo-environmental Appraisal of Land at Greenside Mills, Skelmanthorpe (Ref. C7340, dated December 2020).
- Supplementary Site Investigation Letter Report for land at the former Greenside Mills, Skelmanthorpe (Ref. C7340/RC/9607, dated June 2021).
- Geotechnical Assessment Letter Report for land at the former Greenside Mills, Skelmanthorpe (Ref. C9297/10330/AEC) dated December 2023).

This document should be read in conjunction with the previous reports for the site, which present in detail the site setting and the findings of the previous phases of intrusive investigation. Relevant findings are summarised in Section 2.4 of this document.

1.4 Reporting

This Completion Report includes the following information:

- A summary of the works undertaken and presentation of the findings of further investigations;
- A drawing showing the location of boreholes and ground conditions encountered (Appendix A - Drawing No. C9297C/DG/03); and,
- Confirmation that the works have been undertaken in accordance with the Specification.

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1.5 Relevant Parties

The principal parties to the contract are:

- Lovell Partnerships Ltd: Client and Landowner
- Sirius Drilling Ltd: Contractor for the drilling and grouting works
- Sirius Geotechnical Ltd: Supervising Engineer

2. Site Details and Description

2.1 Site Details

A summary of the pertinent site details are summarised Table 2.1, below.

Table 2.1 - Current Site Overview

Location	The overall site comprises an irregularly shaped parcel of land covering an area of approximately 2 hectares, located to the north of Saville Road and west of Marsden Street in the village of Skelmanthorpe. The location of the site is shown on Drawing No. C9297C/DG/01, presented in Appendix A.
National Grid Ref.	423390mE, 410930mN
Topography and Features	<p>In general, the site slopes downward from northwest to southeast / east, with levels of approximately 156.5m AOD adjacent to the northwestern site boundary, and 138m AOD to the eastern site boundary, and is formed by approximately four development plateaus. The site is currently undergoing earthworks (by third party contractors), to enable residential development by Lovell. The perimeter of the site is secured by bunding formed by crushed demolition materials and herras fencing, with several stockpiles of crushed demolition materials present across the site.</p> <p>Overhead cables run northwest-southeast across the eastern site area. Newly constructed overhead electricity cables and an associated temporary wooden pole is located within the southeast of the site, orientated approximately southwest-northeast.</p> <p>The key, post-demolition, site features are summarised on Drawing C9297C/DG/02, in Appendix A. The site is bound to the north by Kirklees Light Railway and residential properties, with open fields beyond. The site is bound to the east by Marsden Street and residential properties, a car garage, and open fields beyond. The site is bound to the south and west by Saville Road, with residential properties beyond. Laurel Bank is located to the northwest, with residential properties beyond.</p>

2.2 Geological Setting

A summary of available published geological information is provided in Table 2.2 below.

Table 2.2 - Published Geological Summary

Sources of Information	<p>BGS 1:10,000 scale geological map (Sheet name, SE21SW).</p> <p>BGS 1:50,000 scale geological map (Glossop, Sheet 86).</p> <p>The Geology of the Country around Holmfirth and Glossop, Memoirs of the Geological Survey, Explanation of Sheet 86, dated 1933.</p> <p>Geology of the Glossop District, a brief explanation of the geological map Sheet 86 Glossop, dated 2012.</p> <p>BGS Geology of Britain Viewer (on-line service).</p>
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	<p>BGS Lexicon of Named Rock Units (on-line service).</p> <p>BGS borehole records (on-line service).</p> <p>Coal Authority (CA) Interactive Map Viewer (on-line service).</p> <p>Non-Residential Coal Authority Mining Report (ref. 51001106919001), dated 24th February 2016.</p>
<p>Published Geology</p>	<p>No made ground or superficial deposits are recorded to underlie the site.</p> <p>The site is shown to be underlain by Carboniferous Pennine Lower Coal Measures (LCM) strata, comprising undifferentiated ‘mudstones, siltstones and sandstones with subordinate coal, ironstone and fireclay’ in the centre and southwest of the site. An unnamed sandstone unit is recorded to be present in the east of the site.</p> <p>The site is shown to be located within three fault blocks. Two conjectured faults, orientated northwest-southeast, with a downthrow to the northeast are recorded to cross the central area of the site. A conjectured fault orientated northeast-southwest, with a downthrow to the southeast, is located to the immediate northwest of the site.</p> <p>The strata in the vicinity of the site are recorded to be dipping c.5° to the northeast.</p>
<p>Coal Seams</p>	<p>The BGS map conjectures the presence of a ‘thin’ coal seam c. 30m northwest of the site (dipping to the south), beyond the northeast-southwest fault.</p> <p>The Whinmoor (Top Whinmoor) and Low Whinmoor coal seams are conjectured to outcrop c. 10m north and c. 15m northeast of the site respectively, dipping to the northwest. The Whinmoor (Top Whinmoor) and Low Whinmoor coal seams are shown to outcrop beyond the northern most conjectured northwest-southeast orientated fault on site. The seams are recorded to be between 0.4m-0.8m and 0.2m-0.6m in thickness, respectively.</p> <p>The stratigraphical column included on the BGS 1:10,000 geological map indicates the Low Whinmoor to be approximately 10m stratigraphically below the Whinmoor (Top Whinmoor). The Cumberworth Thin Coal (recorded to be c.0-0.4m in thickness) is recorded to be 20m below the Whinmoor (Top Whinmoor) coal.</p> <p>The 1933 geological memoir notes that <i>‘the Whinmoor Coal...has been or is being worked wherever present at shallow depth...it is usually in three bands being separated by dirt partings...’</i></p> <p>The memoir notes that the Cumberworth Thin Coal is seldom over 1ft 3in thick (37cm), but commonly has up to 4ft (1.2m) of fireclay, and locally gannister, associated with it.</p> <p>There appears to be a disparity between BGS records and the CA interactive viewer, with CA records indicating an un-named coal seam to outcrop immediately west of the site, with a second seam shown to outcrop c. 100m west and 140m south. The dips and dip directions of the coal seams are not recorded by the CA.</p>
<p>Mining and Quarrying</p>	<p>The CA report states that the site is not within the zone of likely physical influence on the surface from past underground or opencast workings, but that the property is in an area where the Coal Authority believe there is coal at or close to the surface; this coal may have been worked at some time in the past.</p> <p>In the northeast of the site the CA online viewer shows there is a risk of ‘probable unrecorded shallow workings’; the same area of the site is recorded as a ‘development high risk area’.</p>

Correspondence with the CA indicates ‘Our information indicates the Whinmoor and an unnamed coal seam crop in the vicinity of the site. Records of surface workings in the wider locality to the north of the site show the Whinmoor as three leaves at that location’.

The 1:10,000 scale geological map shows two areas of made ground, one located c. 55m north of the site where the Whinmoor Coal seam appears to have been worked from surface and c. 135m northeast of the site, where an unknown seam has been worked from surface.

The CA Mining Report states that there are no known mine entries within 20m of the site. The online CA interactive viewer shows no recorded shafts are present within 250m of the site, with the nearest shaft shown c. 280m south of the site.

The CA’s Mining Report states that it is not aware of any evidence of damage arising due to geological faults or other lines of weakness that have been affected by coal mining.

2.3 Previous Investigations

Sirius were commissioned in 2020 to undertake a (pre-demolition) geoenvironmental appraisal of the site. The investigation included three rotary open hole boreholes (RO01 to RO03), although access was limited at that stage. The rotary investigation identified two seams / leaves of intact coal within the north of the site at depths of 2.4m and 4.2m bgl, with evidence of possible mine workings towards the south at a depth of 3.8m bgl. No coal or evidence of mine workings were identified within the western area of the site.

Fieldwork forming a supplementary site investigation was carried out by Sirius in May 2021, which included twelve rotary open hole boreholes (RO101 to RO112). A recent programme of post demolition rotary drilling was undertaken in October 2023, which included fourteen rotary open hole boreholes (RO201 to RO214), and a series of trial pits (TP201 to TP223).

2.4 Summary of Relevant Findings

2.4.1 Shallow Coal Mine Workings

Several phases of rotary drilling have been undertaken to investigate the presence of shallow coal seams and any associated shallow mine workings beneath the site, and to confirm the conjectured fault locations (and fault blocks). The locations and depths where coal / associated mine workings have been identified at the site as part of each phase of investigation, in addition to the inferred fault block, are summarised in Table 2.3 below.

Table 2.3 - Coal Seams Encountered

Borehole	Depth to Base of Coal / Workings (m bgl)	Depth to Base of Coal Seam/Workings (m AOD)	Thickness of Coal / Workings Encountered (m)	Thickness of Overlying Competent Strata (m)	Inferred Fault Block
RO102	16.8	122.85	0.3	11.9	Eastern
RO103	13.2	126.25	0.2	9.5	
RO208	14.1	128.47	0.1	12.0	
RO213	11.6	128.09	0.1	9.5	

Borehole	Depth to Base of Coal / Workings (m bgl)	Depth to Base of Coal Seam/Workings (m AOD)	Thickness of Coal / Workings Encountered (m)	Thickness of Overlying Competent Strata (m)	Inferred Fault Block
RO2	3.8	139.27	2.2*	2.8	Central
RO3	2.4	142.73	1.0	NA^	
	4.2	140.93	1.3	0.8	
RO105	2.5	141.00	0.6	NA^	
	4.0	139.50	0.5	0.9	
RO110	10.0	137.93	0.2	8.0	
RO207	3.6	141.71	0.3	1.3	
TP206	0.4	144.2	0.5	NA^	
TP209	2.5	142.8	0.7	NA^	
RO111	10.5	142.77	0.2	9.5	
RO112	21.0	126.93	0.6	18.0	

*Broken ground

^Overlain by weathered, residual LCM

NA - Not Applicable

Evidence of shallow mine workings, in the form of broken ground, was recorded in one location in the central fault block (RO02) from top depths of 3.8m to 6.0m bgl (139.2 to 137.0m AOD). Up to two seams / leaves of intact coal were encountered in two locations (RO03 and RO105) within the central fault block. The upper seam was recorded from top depths of between 2.4m and 2.5m bgl (142.7m and 141.0m AOD respectively) and the lower seam was recorded from top depths of between 4.0m and 4.2m bgl (139.5m and 140.9m AOD respectively). Insufficient rock cover was considered to exist above the identified coal seam(s) to mitigate the risk of surface instability from localised shallow mine workings within the central fault block, and as such further plot specific investigation / assessment, and subsequent treatment, as necessary was recommended.

On the basis of the maximum recorded thickness and depths of the inconsistent coal seam(s) across the eastern and western fault blocks, the risk of surface instability if mine workings were to be present was considered to be low, not requiring treatment.

2.4.2 Unrecorded Mine Entries

No mine entries are known to exist on the site. However, the possibility of encountering unrecorded mine entries, including bell pits and crop workings, could not be discounted, and a site strip down to natural subsoil, plus 0.3m, under the supervision of a suitably experienced consultant, to observe for evidence of crown holes, mine entries and bell pits was recommended.

This is currently underway and will be reported under separate cover.

3. Proof Drilling and Stabilisation Works

3.1 Overview

The objective of the works was to investigate the potential for shallow mine workings within the central development area and treat and stabilise where / if necessary.

The objective was achieved through a process of drilling on a domino-5 pattern across building footprints within the central fault block. Boreholes were drilled to approximately 3.5m - 12m bgl in order to target the Whinmoor (Top and / or Low Whinmoor) coal or where sufficient thickness of intact rock was proven. Where the seam(s) were encountered, boreholes were extended through the seam and at least 0.5m into the underlying strata. No evidence of shallow mine workings was encountered.

All boreholes were subsequently backfilled with neat cement grout, to ensure they were appropriately sealed.

3.2 Programme

The works were conducted as a continuous operation between the 18th and 23rd July 2024.

3.3 Drilling Procedure

Boreholes were drilled using open-hole rotary percussive drilling rigs with water flush. Holes were drilled with a minimum diameter of 75mm.

Each rotary borehole was extended to the base of the coal seam, with a minimum 0.5m thickness of solid strata penetrated to prove the presence of competent rock. Sacrificial plastic casing was installed at the top of each borehole to depths of c.1-2m bgl to maintain integrity of the borehole prior to backfilling and sealing.

50 No. boreholes were drilled in total to depths of between 3.5m and 12.0m bgl, to target the Whinmoor (Top and / or Low Whinmoor) coal, where present. This amounts to a total of 419m of drilling. The layout of boreholes, together with the presence of solid coal (where encountered) is shown on Drawing No. C9297C/DG/03 within Appendix A. No evidence of mine workings was recorded.

The ground conditions encountered in each borehole are detailed within SDL's daily drill log sheets, included within Appendix C of this report and are summarised below.

3.4 Ground Conditions Encountered

The rotary boreholes encountered intact coal below plots 22 to 26, inferred to represent the Whinmoor Coal (Top Whinmoor). A second deeper seam was encountered within rotary borehole locations 22/23.1 and 25.2, possibly representing the Low Whinmoor coal seam outcrop within the northern most area of the site. No coal was encountered within plots 8, 9, indicating the Whinmoor coal seam(s) outcrop is to the north of these plots (and dipping to the north, away from plots 8 and 9). The coal was also not encountered within plots 27 to 29, indicating these plots may lie to the west of the conjectured fault (i.e. located within the western fault block).

Solid coal was encountered in 23 No. boreholes (approx. 46%), ranging in thickness between 0.2m and 1.3m, with an average thickness of 0.5m. A second lower coal seam / leaf was encountered in 2 No. of the boreholes (approx. 4%) with thicknesses of 0.2m and 0.4m.

The loss of flush encountered within the original rotary borehole RO02, may represent the fault location, or possibly naturally occurring fractured sandstone in that locality. No other evidence of shallow mine workings have been found across the remainder of the site.

3.5 Gas Monitoring

Continuous gas monitoring was undertaken throughout the drilling works using calibrated Altair 4X Multi-Gas Detectors, worn by the drillers. Elevated gas readings were not observed during the works.

3.6 Grouting Procedure

All boreholes were backfilled with hydrated Ordinary Portland Cement (OPC) up to surface level. This was undertaken to ensure each borehole was appropriately sealed upon completion. A total of 2 tonnes of OPC was added into the boreholes.

4. Conclusions

Key Points

A total of 50 No. boreholes were drilled on site to depths of between 3.5m and 12.0m bgl, using a domino-5 pattern across centrally located proposed plots to assess the presence / absence of any shallow mine workings associated with the outcrop of the Whinmoor Coal (Top and / or Low Whinmoor) coal seams). No evidence of workings was recorded in the Whinmoor Coal seams, and the outcrop was proven to the north of the original area of loss of flush (which was initially attributed to possible shallow mine workings). The loss of flush initially noted within a rotary borehole located to the south of the site is likely to be attributable to naturally occurring geological features (i.e. faulting / fractured sandstone etc), rather than related to shallow mine workings.

2 tonnes of OPC was utilised to backfill the boreholes upon completion to ensure each drill location was adequately sealed.

Closing Statement

The site observations and drilling records indicate that the proof drilling has been carried out to a satisfactory standard in accordance with the requirements of the Coal Authority permit and the Specification, and that no shallow coal mine workings have been encountered below the site which are considered to pose a risk to surface stability.

5. Regulatory Approvals

This Completion Report is considered suitable and appropriate based on the works completed. However, it cannot be guaranteed to gain regulatory approval and, therefore, should be passed to the appropriate regulatory authorities and/or other organisations including but not limited to the Coal Authority for their comment and approval prior to commencing any works on site.



APPENDICES

APPENDIX A

Drawings



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NOTES

 Site Location

REVISION		CLIENT	DRAWING NO.	REVISION NO.	
0	For Information	Lovell Partnerships Ltd	C9297C/DG/01	0	
A	>>				
B	>>				
C	>>				
D	>>	SITE	DRAWN BY	APPROVED BY	
		Former Greenside Mills, Skelmanthorpe	MF	GH	
SIRIUS GEOTECHNICAL LTD 4245 Park Approach, Thorpe Park, Leeds LS15 8GB www.thesiriusgroup.com TEL: 0113 264 9960 FAX: 0113 264 9962		DRAWING TITLE	DATE	SCALE	
		Site Location Plan	September 2024	1:25,000	A4





1. Photo of pond within east of the site, looking southeast.



2. Photo of pond and surface water feature looking south.



3. Photo of stockpile within east of site, including wooden pole, with area of former infilling and pond beyond to the east.



4. Evidence of former brick lined mill pond and adjacent structures prior to backfilling / clearance.



5. Newly constructed overhead cables and wooden pole, located in close proximity to former AST and sub-station.



6. View of former AST, prior to demolition and clearance.

NOTES

- Site boundary
- ① Photo Location and Direction
- Existing pond and surface water feature
- Former brick lined mill pond
- Existing stockpile
- Former above ground storage tank

Topographical survey reproduced from Sirius Remediation Ltd, Post Demolition Survey, ref. SR4358-TS-001, dated October 2023

- Notes**
1. This drawing should not be viewed in isolation from the accompanying report.
 2. The locations of services shown on this drawing are approximate and are based on utility plans provided by the client. Locations of services are given for the purposes of indicating constraints to the site investigation only. Reference should be made to original utility plans and HSG47 for locating of services within the site.
 3. All marked site features (including historical features, potential contaminant constraints, and any other potential constraint or feature of note) shown on this drawing are given for indicative purposes only. This drawing should not be undertaken in isolation to determine proposed development layouts. Reference should be made to the accompanying report for commentary on the potential location of these features including coordinates if available and any further works required to locate features if required.

REVISION	BY	DATE
0	For Information	MF 08/11/23
A	>>	>> >>
B	>>	>> >>
C	>>	>> >>
D	>>	>> >>

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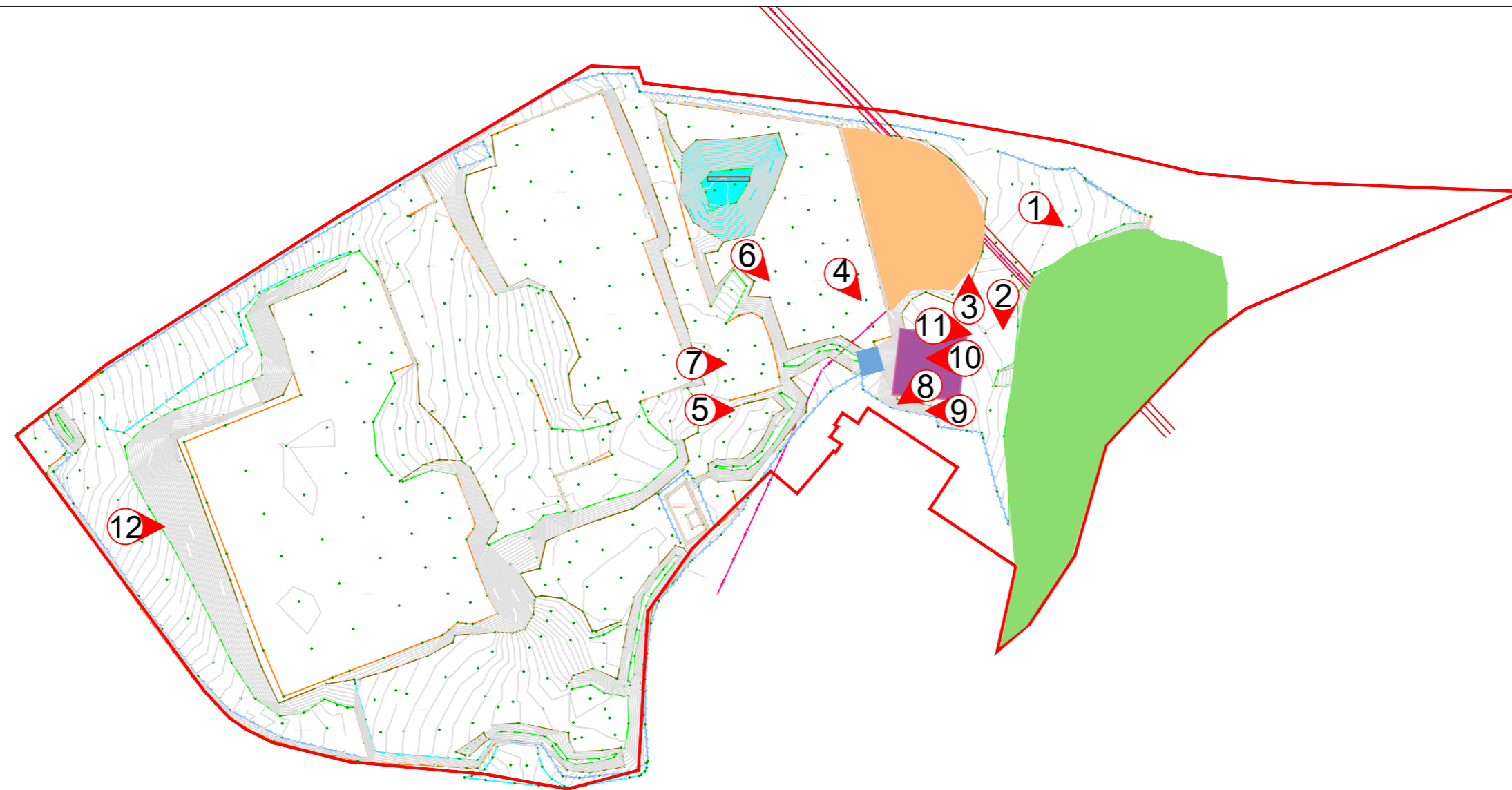
SITE

**Former Greenside Mills,
Skelmanthorpe**

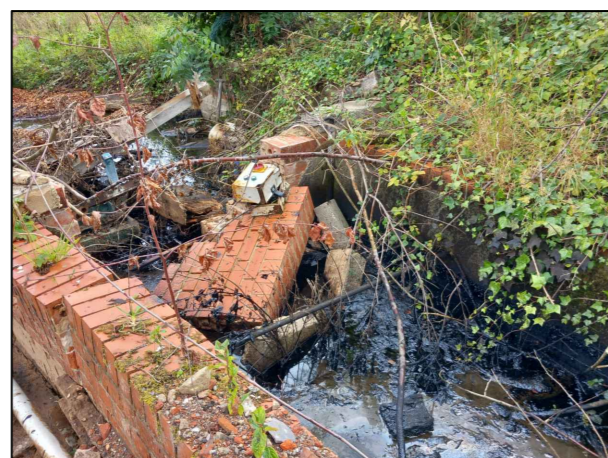
DRAWING TITLE

Site Features Plan

DRAWING NO. C9297C/DG/02	REVISION NO. 0
DRAWN BY MF	APPROVED BY GH
DATE September 2024	SCALE 1:1000
	PAPER SIZE A2



7. View of former sub-station prior to demolition and clearance.



8. Surface water culvert located in southeast, with black oily substance noted.



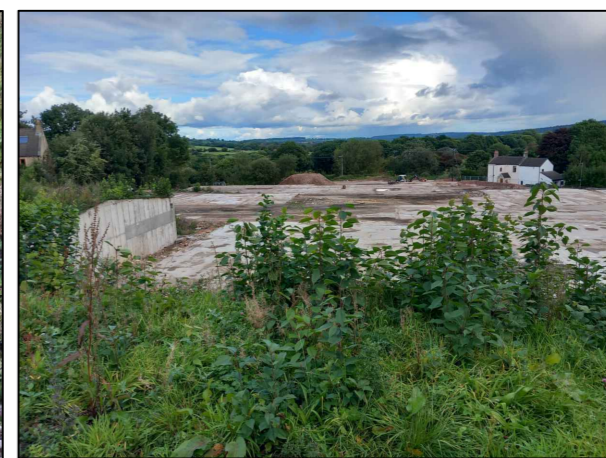
9. View of surface water culvert with discarded containers.



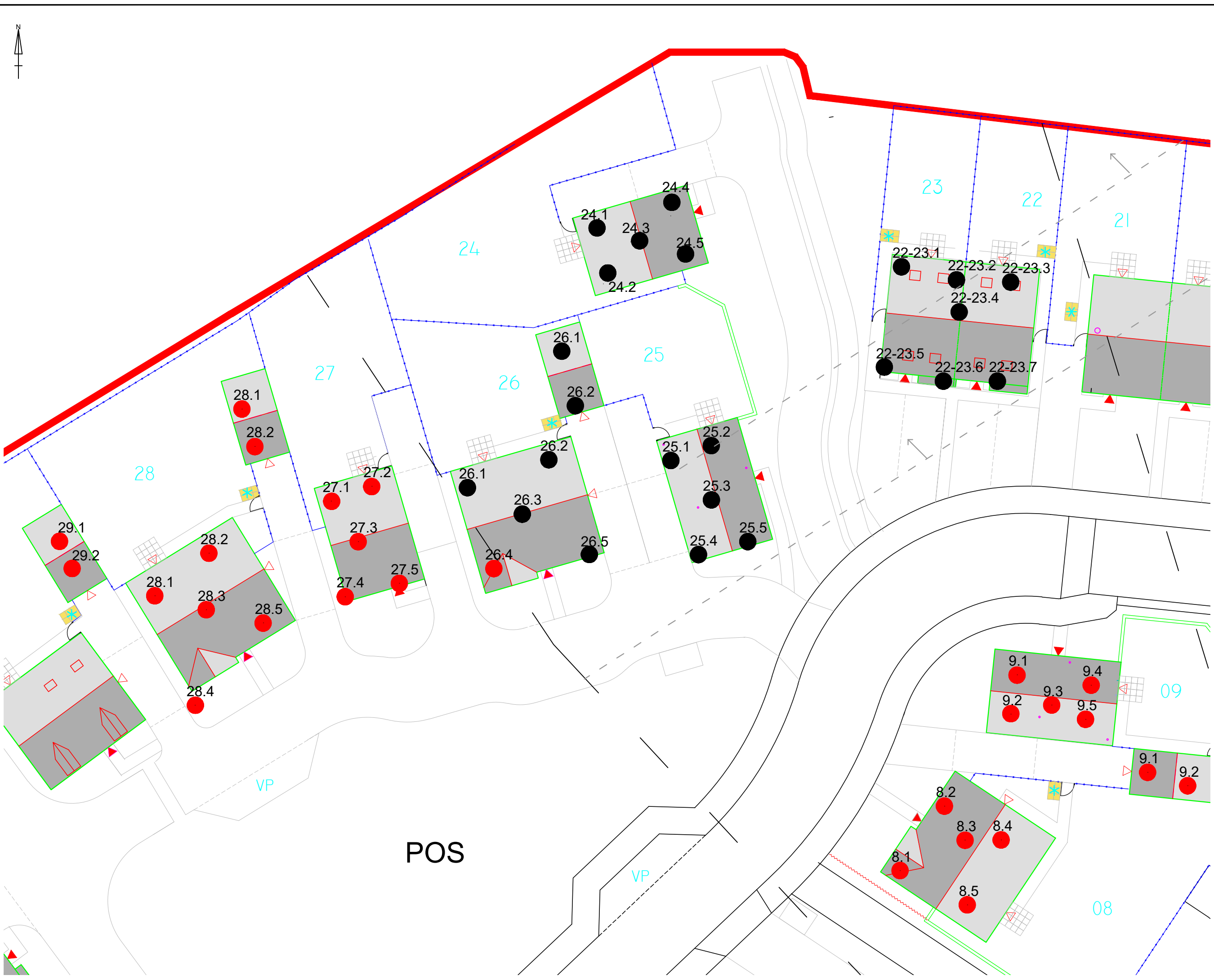
10. Evidence of hydrocarbon staining within backfilled mill pond (trial pit TP218).



11. View of black saturated pond sediments during trial pitting.



12. View of varying topography of the site, looking east.

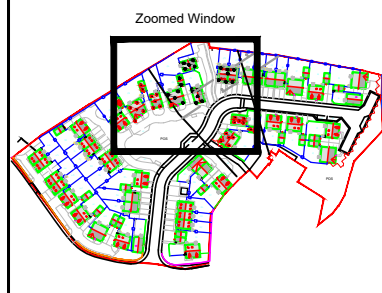


- NOTES**
- Development site boundary
 - Drill hole location (no coal encountered)
 - Drill hole location (intact coal encountered)
 - ↗ Conjectured coal seam outcrops (with direction of dip)
 - Conjectured fault outcrop

Notes

1. This drawing should not be viewed in isolation from the accompanying report.

2. All marked site features shown on this drawing are given for indicative purposes only. This drawing should not be underlain in isolation to determine proposed development layouts. Reference should be made to the accompanying report for commentary on the potential location of these features including coordinates if available and any further works required to locate features if required.



REVISION	BY	DATE
0	For Information	MF 16/09/24
A	>>	>> >>
B	>>	>> >>
C	>>	>> >>
D	>>	>> >>

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SITE

**Former Greenside Mills,
 Skelmanthorpe**

DRAWING TITLE






**Shallow Mine
 Workings Proof
 Drilling Location Plan**

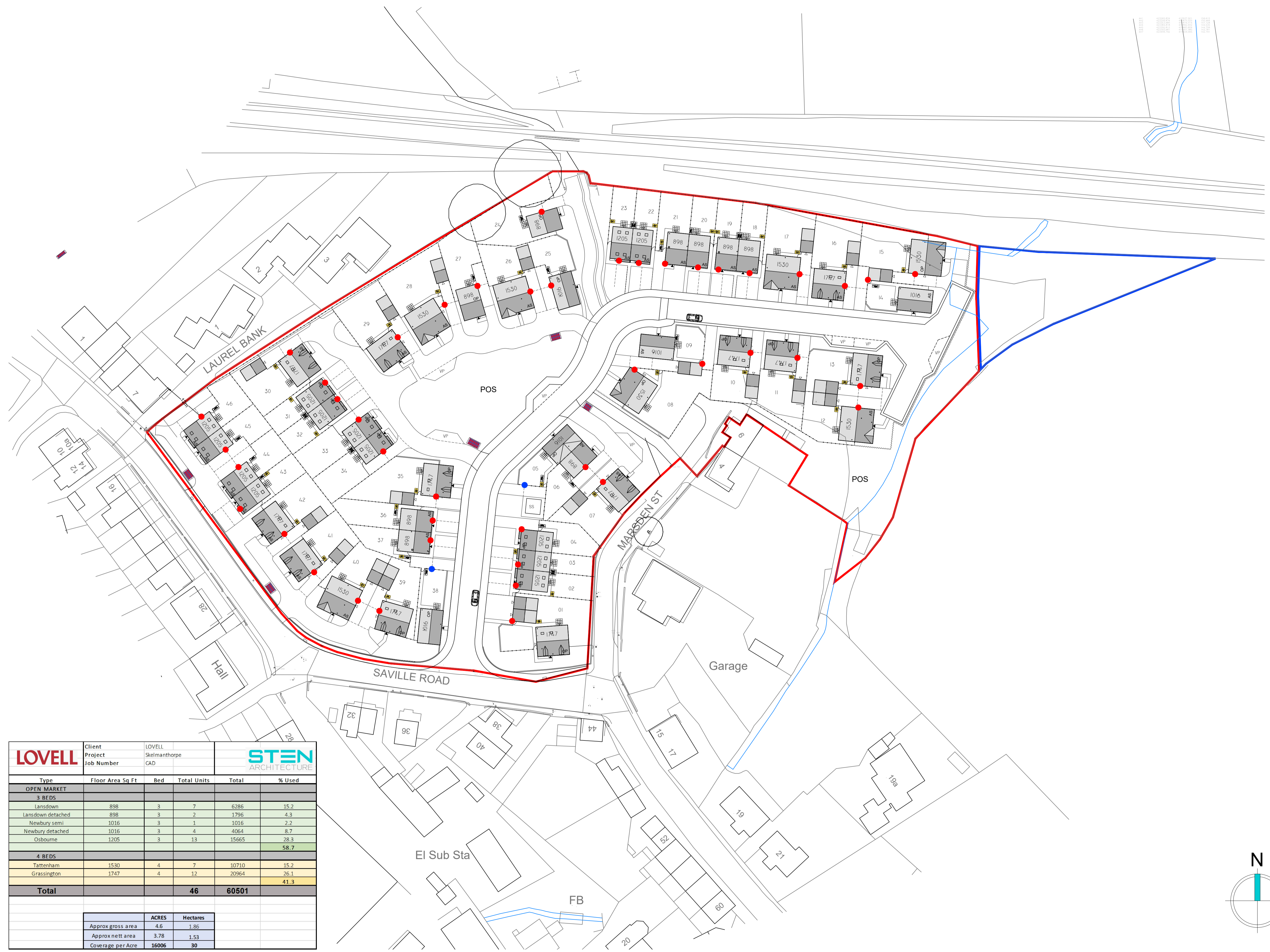
DRAWING NO. C9297C/DG/03	REVISION NO. 0
DRAWN BY MF	APPROVED BY GH
DATE September 2024	SCALE 1:500
	PAPER SIZE A3

Notes:
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 All Dimensions are to be verified on site before any work commences. If any discrepancies, errors or omissions are noted, these are to be reported to STEN Architecture immediately.
 If any other drawings are referenced within this layout, please refer to the specific detailed drawing for design, materials and specific working practices.

PLANNING LAYOUT KEY:

Boundary treatments (see separate drawing for details)

-  Bin collection point (bin collection day only)
-  Secure 6ft (length) x 2ft (width) x 4ft (height) timber cycle store on 8no. 450sq.flags (900mm x 1800mm). Dwellings with garages to have bicycle hook within for storage.
-  Bin storage area on 6no. 450sq.flags (900mm x 1350mm)
-  Wall mounted - Mode 3, Type 2, 7kW Electric Vehicle Charging Point
-  Post mounted - Mode 3, Type 2, 7kW Electric Vehicle Charging Point



N	plot 09 moved east by 0.5m	BMS	21.06.23
M	'Puttenham' house type renamed as 'Newbury'	BMS	23.03.23
L	EV charging point locations added	BMS	15.03.23
K	Tweaks to bin and cycle store positions as per client mark up	BMS	10.01.23
J	Cycle stores, bin store areas and patios added. Central path added between parking spaces.	BMS	06.01.23
H	'AS' and 'OP' notes added to blocks, 1747 type handing corrected and side door added. Plot 1 amended to client's comments.	DS	08.11.22
G	Bin collection point serving plots 30-34 relocated closer to adoptable highway as per clients comments.	LS	20.07.22
F	Turning head serving plots 12-15 amended., positions of plots 12 and 14 amended to suit. Knee railing introduced to edge of turning head. All as per clients comments.	LS	01.07.22
E	Garage for plot 1 moved away from Saville Road. Plots 35-37 re-orientated to enable adjacent road to be reduced to private drive. Plots 33-34 moved forward to reduce height of retaining walls at rear. Other minor updates to Planning Officer comments.	BMS	17.06.22
D	Green walls moved back from footpath	BMS	31.03.22
C	Semi detached plots handed so entrance doors are on the high side	BMS	24.03.22
B	Plots to Saville Road amended to provide more roontage and opportunities for landscaping. Detached Osborne removed. Additional footpaths and visitor parking added	BMS	18.03.22
A	Parking arrangement amended for plot 45	BMS	25.11.21
REV:	DESCRIPTION:	BY:	DATE:

LOVELL	Client Project Job Number	LOVELL Skelmanthorpe CAD	STEN ARCHITECTURE		
Type	Floor Area Sq Ft	Bed	Total Units	Total	% Used
OPEN MARKET					
3 BFDs					
Lansdown	898	3	7	6286	15.2
Lansdown detached	898	3	2	1796	4.3
Newbury semi	1016	3	1	1016	2.2
Newbury detached	1016	3	4	4064	8.7
Osbourne	1205	3	13	15665	28.3
4 BFDs					
Tattenham	1530	4	7	10710	15.2
Grassington	1747	4	12	20964	26.1
Total			46	60501	41.3
		ACRES	Hectares		
Approx gross area		4.6	1.86		
Approx nett area		3.78	1.53		
Coverage per Acre		16006	30		

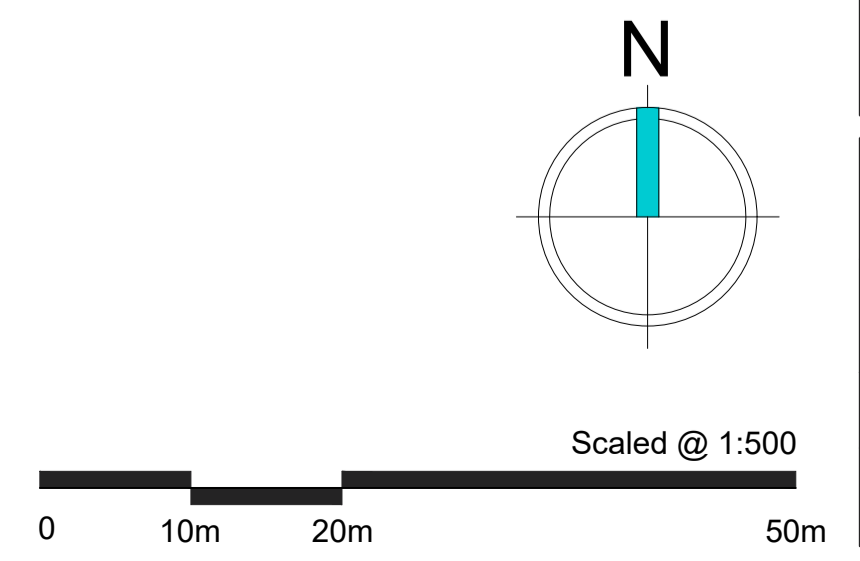
STEN ARCHITECTURE
 STEN Architecture Ltd
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 Web: www.sten-architecture.co.uk
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 LinkedIn: Sten Architecture

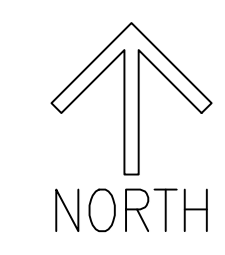
CLIENT: LOVELL PARTNERSHIPS

SITE: Greenside Mills Skelmanthorpe

TITLE: Planning Layout

SCALE AT A1: 1:500	DATE: 29.09.21	DRAWN: BMS	CHECKED: --
PROJECT NO: 2156	DRAWING NO: 2156.01	REVISION: N	





DO NOT SCALE

DESIGNERS HAZARD IDENTIFICATION

IT IS ASSUMED THAT ALL WORKS WILL BE UNDERTAKEN BY A COMPETENT CONTRACTOR WORKING, WHERE APPROPRIATE, TO AN APPROVED METHOD STATEMENT IN ADDITION TO THE HAZARDS TYPICALLY ASSOCIATED WITH THE TYPES OF CONSTRUCTION DETAILED ON THIS DRAWING. ANY KNOWN ABNORMAL HAZARDS SPECIFIC TO THIS DRAWING HAVE BEEN IDENTIFIED.

ABNORMAL HAZARD REFERENCE

- THIS DRAWING IS BASED FROM:
 - 1.1. TOPO SURVEY - 2456/001 (MAR 21)
 - 1.2. ARCHITECT LAYOUT - 2156.01 K (12/01/23)
- DO NOT SCALE FROM THIS DRAWING AS IT MAY NOT BE REPRODUCED TO SCALE.
- THIS DRAWING IS TO BE REPRODUCED IN COLOUR.

PLEASE REPORT ANY DISCREPANCIES TO DUDLEYS CONSULTING ENGINEERS CONSTRUCTION.

- KEY**
- +31.940 PROPOSED LEVELS
 - +8.909 EXISTING TOPO SURVEY LEVELS
 - FFL: 39.000 FINISHED FLOOR LEVEL
 - 1:4 EMBANKMENT SLOPE
 - 1:4 TRADITIONAL BRICK RETAINING WALL (WITH WEEPHOLES)
 - OB 0.15m OVERBUILD RETAINING WALL DETAIL
 - OB 0.15m INDICATES THAT EXTERNAL GR IS THE SAME AS THE FFL - DETAIL TO BE CONFIRMED BY ARCHITECT
 - WATERCOURSE DIVERSION
 - ROOT LOCK - GEOWORK) OR (FLEX M RETENTION TBC.
 - RW 0.15m TANKING (DETAIL TBC)



FOR MORE DETAIL ON THE WATERCOURSE DIVERSION PLEASE SEE DRAWING 1B0

REFER TO NOTE 2 REQUIREMENTS FOR METER BOXES IN THE VICINITY OF

REFER TO NOTE 2 REQUIREMENTS FOR METER BOXES IN THE VICINITY OF

27.01.23	TANKING ADDED TO GARAGES	MDJ	PD	P10
12.01.23	PLOT 1 UPDATED TO SUIT NEW MDJ LAYOUT	MDJ	PD	P9
09.01.23	REVIEWED AT DETAILED DESIGN	MDJ	PD	P8
29.11.22	UPDATED TO SUIT COMMENTS	MDJ	PD	P7
28.06.22	UPDATED TO SUIT NEW LAYOUT	MDJ	PD	P6
08.04.22	UPDATED TO SUIT NEW LAYOUT	MDJ	PD	P5
25.11.21	UPDATED TO SUIT NEW LAYOUT	MDJ	PD	P4
24.11.21	UPDATED TO SUIT CLIENT	MDJ	PD	P3
08.11.21	REVIEWED INTERNALLY	MDJ	PD	P2
05.11.21	INITIAL ISSUE	SR	PD	P1

dudleys Tile House
35 Town Street
Leeds
LS18 5JL
T 0113 258 3611
E info@dudleys.co.uk

Structural & Civil Consultants

Project
**LOVELL HOMES
SAVILLE ROAD, SKELMANTHORPE
HD8 9EF**

Title
EXTERNAL LEVELS PLAN

Scale	1:250	Paper	A0	Drawn	SDR	Check	PD
Date	NOV 21	Status	PRELIMINARY				
Job No.	21374	Eng. No.	155	Rev.			P10

APPENDIX B

Coal Authority Permit



The Coal
Authority

Granted Permit Boundary

Permit Ref: 28129

Permit Boundary:



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APPENDIX C

Drill Logs and Summary Table



C9297C Skelmanthorpe
Drilling Summary

Borehole ID	Drilled by	Date Drilled	Superficials (m bgl)	Seam 1				Seam 2				BH Depth (m bgl)	Casing (m bgl)
				Strata	From (m bgl)	To (m bgl)	Thickness (m)	Strata	From (m bgl)	To (m bgl)	Thickness (m)		
8.1	R. EDWARDS	23/07/2024	1.00									9.00	1.00
8.2	R. EDWARDS	22/07/2024	1.00									9.00	1.00
8.3	R. EDWARDS	23/07/2024	1.30									12.00	1.00
8.4	R. EDWARDS	23/07/2024	1.50									9.00	1.00
8.5	R. EDWARDS	23/07/2024	1.00									9.00	1.00
G9.1	R. EDWARDS	22/07/2024	1.20									12.00	1.00
G9.2	R. EDWARDS	22/07/2024	1.20									12.00	1.00
9.1	R. EDWARDS	22/07/2024	1.40									9.00	1.00
9.2	R. EDWARDS	22/07/2024	1.50									9.00	1.00
9.3	R. EDWARDS	22/07/2024	1.40									9.00	1.00
9.4	R. EDWARDS	22/07/2024	1.50									9.00	1.00
9.5	R. EDWARDS	22/07/2024	1.50									9.00	1.00
22/23.1	R. EDWARDS	19/07/2024	1.40	COAL	1.40	2.20	0.80	COAL	2.80	3.00	0.20	6.00	1.00
22/23.2	R. EDWARDS	19/07/2024	1.30	COAL	1.30	1.60	0.30					6.00	1.00
22/23.3	R. EDWARDS	19/07/2024	1.50	COAL	1.50	1.80	0.30					6.00	1.00
22/23.4	R. EDWARDS	19/07/2024	1.20	COAL	1.80	2.50	0.70					4.00	1.00
22/23.5	R. EDWARDS	19/07/2024	2.80	COAL	3.20	3.50	0.30					6.00	1.00
22/23.6	R. EDWARDS	19/07/2024	2.80	COAL	2.80	3.30	0.50					6.00	1.00
22/23.7	R. EDWARDS	19/07/2024	2.50	COAL	2.70	3.00	0.30					9.00	1.00
24.1	R. EDWARDS	18/07/2024	3.00	COAL	3.60	4.20	0.60					5.00	2.00
24.2	R. EDWARDS	18/07/2024	2.60	COAL	3.20	4.00	0.80					5.00	2.00
24.3	R. EDWARDS	18/07/2024	3.00	COAL	3.20	4.00	0.80					5.00	2.00
24.4	R. EDWARDS	18/07/2024	3.00	COAL	3.60	4.00	0.40					9.00	2.00
24.5	R. EDWARDS	18/07/2024	2.70	COAL	3.20	4.00	0.80					5.00	2.00
25.1	R. EDWARDS	19/07/2024	2.00	COAL	3.50	4.00	0.50					6.00	1.00
25.2	R. EDWARDS	19/07/2024	1.80	COAL	1.80	2.10	0.30	COAL	3.60	4.00	0.40	5.00	1.00
25.3	R. EDWARDS	19/07/2024	2.50	COAL	2.70	3.00	0.30					9.00	1.00
25.4	R. EDWARDS	19/07/2024	1.50	COAL	1.50	2.00	0.50					6.00	1.00
25.5	R. EDWARDS	19/07/2024	1.50	COAL	1.50	2.00	0.50					6.00	1.00
G26.1	R. EDWARDS	18/07/2024	1.70	COAL	2.00	3.00	1.00					3.50	1.70
G26.2	R. EDWARDS	18/07/2024	1.30	COAL	1.50	2.50	1.00					3.50	1.00
26.1	R. EDWARDS	18/07/2024	0.50	COAL	2.00	2.30	0.30					9.00	1.00
26.2	R. EDWARDS	18/07/2024	0.50	COAL	0.70	2.00	1.30					5.00	1.00
26.3	R. EDWARDS	18/07/2024	0.70	COAL	2.00	2.20	0.20					9.00	1.00
26.4	R. EDWARDS	19/07/2024	0.80									9.00	1.00
26.5	R. EDWARDS	19/07/2024	0.70	COAL	0.70	1.20	0.50					6.00	1.00
27.1	R. EDWARDS	22/07/2024	1.00									9.00	1.00
27.2	R. EDWARDS	22/07/2024	0.80									9.00	1.00
27.3	R. EDWARDS	22/07/2024	1.20									9.00	1.00
27.4	R. EDWARDS	22/07/2024	1.50									9.00	1.00
27.5	R. EDWARDS	22/07/2024	1.50									9.00	1.00
G28.1	R. EDWARDS	22/07/2024	4.00									12.00	2.00
G28.2	R. EDWARDS	22/07/2024	3.80									12.00	2.00
28.1	R. EDWARDS	22/07/2024	3.00									12.00	2.00
28.2	R. EDWARDS	22/07/2024	3.50									12.00	2.00
28.3	R. EDWARDS	22/07/2024	3.00									12.00	2.00
28.4	R. EDWARDS	22/07/2024	2.00									12.00	2.00
28.5	R. EDWARDS	22/07/2024	3.20									12.00	2.00
G29.1	R. EDWARDS	22/07/2024	2.30									12.00	2.00
G29.2	R. EDWARDS	22/07/2024	2.30									12.00	2.00



OPENHOLE DRILL LOG

Job No. SDL 4119a
 Contract Name: SKELMAN THORPE
 Working Day: Thursday

Date: 18-7-2024
 Client: LEVELL Homes
 Sheet: 1 of

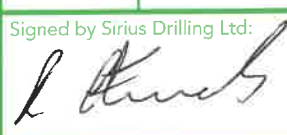

Hole No.	From	To	Flush (W/A/M)	Casing T/S (m)	Strata Description	Rig Type: CGP-3
24.4	Gr	3.0	W	2.0	Overburden	Crew Details: R EDWARDS S woodham
		3.0			Mudstone	
		3.6			Coal	
		4.0			Mudstone	
24.5	Gr	2.7	W	2.0	Overburden	Remarks: NO STANDPIPE STANDING RIG 08.00 - 14.00.
		2.7			Mudstone	
		3.2			Coal	
		4.0			Mudstone	
24.3	Gr	3.0	"	2.0	Overburden	Gas Monitoring % O ₂ CO ₂ CH ₄ CO Start 20.8 0 0 0 Mid 20.8 0 0 0 End 20.8 0 0 0
		3.0			Mudstone	
		3.2			Coal	
		4.0			Mudstone	
24.1	Gr	3.0	"	2.0	Overburden	Weather Conditions: FINE
		3.0			Mudstone	
		3.6			Coal	
		4.2			Mudstone	
24.2	Gr	2.6	"	2.0	Overburden	Boreholes Total Today 9 Previous To Date
		2.6			Mudstone	
		3.2			Coal	
		4.0			Mudstone	
G26.1	Gr	1.7	"	1.7	Overburden	Drilled Total Today 50.0 Previous To Date
		1.7			Mudstone	
		2.0			Coal	
		3.0			Mudstone	
G26.2	Gr	1.3	"	1.0	Overburden	Casing Total Today 14.7 Previous To Date
		1.3			Mudstone	
		1.5			Coal	
		2.5			Mudstone	
26.2	Gr	0.5	"	1.0	Overburden	Signed by Sirius Drilling Ltd:
		0.5			Mudstone	
		0.7			Coal	
		2.0			Mudstone	
26.1	Gr	0.5	"	1.0	Overburden	Signed by Client:
		0.5			Mudstone	
		2.0			Coal	
		2.3			Mudstone / Sandstone	



OPENHOLE DRILL LOG

Job No. SDL 4119a
 Contract Name: SKELMANTHORPE
 Working Day: Friday

Date: 19th July 2024
 Client: LOVELL
 Sheet: 1 of

Hole No.	From	To	Flush (P/A/M)	Casing T/S (m)	Strata Description	Rig Type: CCXP-3				
						Crew Details: R EDWARDS S WOODHALL				
26.3	Gz	0.7	0	1.0	Overburden	Remarks:				
	0.7	2.0			Mudstone					
	2.0	2.2			Coal					
	2.2	9.0			Mudstone.					
26.4	Gz	0.8	"	"	Overburden	Remarks:				
	0.8	9.0			Sandstone / Mudstone.					
26.5	Gz	0.7	"	"	Overburden	Remarks:				
	0.7	1.2			Coal					
	1.2	6.0			Sandstone / Mudstone.					
25.3	Gz	2.5	"	"	Overburden	Gas Monitoring				
	2.5	2.7			Mudstone.	%	O ₂	CO ₂	CH ₄	CO
	2.7	3.0			Coal	Start	20.8	0	0	0
	3.0	9.0			Mudstone / Sandstone.	Mid	20.8	0	0	0
25.1	Gz	2.0	"	"	Overburden	Weather Conditions:				
	2.0	3.5			Mudstone	Hot / Fine				
	3.5	4.0			Coal					
	4.0	6.0			Mudstone.					
Boreholes Total										
25.2	Gz	1.8	"	"	Overburden	Previous				
	1.8	2.1			Coal	To Date				
	2.1	3.6			Mudstone	Drilled Total				
	3.6	4.0			Coal	Today				
	4.0	5.0			Mudstone.	Previous				
25.4	Gz	1.5	"	"	Overburden	To Date				
	1.5	2.0			Coal	Casing Total				
	2.0	6.0			Mudstone.	Today				
22/23.1	Gz	1.4	"	"	Overburden	Previous				
	1.4	2.2			Coal	To Date				
	2.2	2.8			Mudstone	Signed by Sirius Drilling Ltd:				
	2.8	3.0			Coal					
3.0	6.0			Mudstone.						
22/23.5	Gz	2.8	"	"	Overburden	Signed by Client:				
	2.8	3.2			Mudstone					
	3.2	3.5			Coal					
	3.5	6.0			Mudstone.					



OPENHOLE DRILL LOG

Job No. 4119a
 Contract Name: SKELMANTHORPE
 Working Day: Fri 19th

Date: 19th July 2024
 Client: LOVELL
 Sheet: 2 of 2

Hole No.	From	To	Flush (O/A/M)	Casing T/S (m)	Strata Description	Rig Type:					
						CG+P-3					
22/23.6	Gr	2.8	w	1.0	Overburden	Crew Details: R EDWARDS S woodhall					
		2.8			Coal						
		3.3			Mudstone.						
22/23.4	Gr	1.2	"	"	Overburden	Remarks: NO AREAS READY STANDANCE TIME 13.00 - 15.00					
		1.2			Mudstone						
		1.8			Coal						
		2.5			Mudstone.						
22/23.7	Gr	2.5	"	"	Overburden	Gas Monitoring					
		2.5			Mudstone						
		2.7			Coal						
		3.0			Mudstone / Sandstone						
22/23.2	Gr	1.3	"	"	Overburden	%	O ₂	CO ₂	CH ₄	CO	
		1.3			Coal	Start					
		1.6			Mudstone.	Mid					
22/23.3	Gr	1.5	"	"	Overburden	End					
		1.5			Coal	Weather Conditions:					
		1.8			Mudstone.	Boreholes Total					
						Today	15				
NO AREAS READY STANDANCE 13.00 - 15.00 SITE CLOSED AT 15.00						Previous					
						To Date					
						Drilled Total					
						Today	99.0				
						Previous					
						To Date					
						Casing Total					
						Today	15.0				
						Previous					
						To Date					
						Signed by Sirius Drilling Ltd:					
						<i>[Signature]</i>					
						Signed by Client:					
						<i>[Signature]</i>					



OPENHOLE DRILL LOG

Job No. SOL 4199a
 Contract Name: SKELMAUTHORPE
 Working Day: Monday

Date: 22nd July
 Client: LOVELL
 Sheet: 1 of 2

Hole No.	From	To	Flush (D/A/M)	Casing T/S (m)	Strata Description	Rig Type: <u>COTP-3</u>																								
						Crew Details: <u>REDWATERS</u> <u>S woodhall</u>																								
<u>28.5</u>	<u>G2</u> <u>3.2</u>	<u>3.2</u> <u>12.0</u>	<u>W</u>	<u>2.0</u>	<u>Overburden</u> <u>Mudstone / Sandstone</u>	Remarks:																								
<u>G28.2</u>	<u>G2</u> <u>3.8</u>	<u>3.8</u> <u>12.0</u>	<u>W</u>	<u>2.0</u>	<u>Overburden</u> <u>Mudstone / Sandstone</u>																									
<u>G28.1</u>	<u>G2</u> <u>4.0</u>	<u>4.0</u> <u>12.0</u>	<u>W</u>	<u>2.0</u>	<u>Overburden</u> <u>Mudstone / Sandstone</u>																									
<u>28.2</u>	<u>G2</u> <u>3.5</u>	<u>3.5</u> <u>12.0</u>	<u>"</u>	<u>"</u>	<u>Overburden</u> <u>Mudstone / Sandstone</u>	Gas Monitoring <table border="1"> <thead> <tr> <th>%</th> <th>O₂</th> <th>CO₂</th> <th>CH₄</th> <th>CO</th> </tr> </thead> <tbody> <tr> <td>Start</td> <td><u>20.8</u></td> <td><u>0</u></td> <td><u>0</u></td> <td><u>0</u></td> </tr> <tr> <td>Mid</td> <td><u>20.8</u></td> <td><u>0</u></td> <td><u>0</u></td> <td><u>0</u></td> </tr> <tr> <td>End</td> <td><u>20.8</u></td> <td><u>0</u></td> <td><u>0</u></td> <td><u>0</u></td> </tr> </tbody> </table>					%	O ₂	CO ₂	CH ₄	CO	Start	<u>20.8</u>	<u>0</u>	<u>0</u>	<u>0</u>	Mid	<u>20.8</u>	<u>0</u>	<u>0</u>	<u>0</u>	End	<u>20.8</u>	<u>0</u>	<u>0</u>	<u>0</u>
%	O ₂	CO ₂	CH ₄	CO																										
Start	<u>20.8</u>	<u>0</u>	<u>0</u>	<u>0</u>																										
Mid	<u>20.8</u>	<u>0</u>	<u>0</u>	<u>0</u>																										
End	<u>20.8</u>	<u>0</u>	<u>0</u>	<u>0</u>																										
<u>28.1</u>	<u>G2</u> <u>3.0</u>	<u>3.0</u> <u>12.0</u>	<u>"</u>	<u>"</u>	<u>Overburden</u> <u>Mudstone / Sandstone</u>																									
<u>28.3</u>	<u>G2</u> <u>3.0</u>	<u>3.0</u> <u>12.0</u>	<u>"</u>	<u>"</u>	<u>Overburden</u> <u>Mudstone / Sandstone</u>																									
<u>G29.1</u>	<u>G2</u> <u>2.3</u>	<u>2.3</u> <u>12.0</u>	<u>"</u>	<u>"</u>	<u>Overburden</u> <u>Mudstone / Sandstone</u>	Weather Conditions: <u>FINE</u>																								
<u>G29.2</u>	<u>G2</u> <u>2.3</u>	<u>2.3</u> <u>12.0</u>	<u>"</u>	<u>"</u>	<u>Overburden</u> <u>Mudstone / Sandstone</u>																									
<u>28.4</u>	<u>G2</u> <u>2.0</u>	<u>2.0</u> <u>12.0</u>	<u>"</u>	<u>"</u>	<u>Overburden</u> <u>Mudstone / Sandstone</u>																									
<u>27.2</u>	<u>G2</u> <u>0.8</u>	<u>0.8</u> <u>9.0</u>	<u>"</u>	<u>1.0</u>	<u>Overburden</u> <u>Mudstone / Sandstone</u>	Boreholes Total																								
<u>27.1</u>	<u>G2</u> <u>1.0</u>	<u>1.0</u> <u>9.0</u>	<u>"</u>	<u>"</u>	<u>Overburden</u> <u>Mudstone / Sandstone</u>	Today																								
<u>27.3</u>	<u>G2</u> <u>1.2</u>	<u>1.2</u> <u>9.0</u>	<u>"</u>	<u>"</u>	<u>Overburden</u> <u>Mudstone / Sandstone</u>	Previous																								
<u>27.4</u>	<u>G2</u> <u>1.5</u>	<u>1.5</u> <u>9.0</u>	<u>"</u>	<u>"</u>	<u>Overburden</u> <u>Mudstone / Sandstone</u>	To Date																								
<u>27.5</u>	<u>G2</u> <u>1.5</u>	<u>1.5</u> <u>9.0</u>	<u>"</u>	<u>"</u>	<u>Overburden</u> <u>Mudstone / Sandstone</u>	Drilled Total																								
<u>9.3</u>	<u>G2</u> <u>1.4</u>	<u>1.4</u> <u>9.0</u>	<u>"</u>	<u>"</u>	<u>Overburden</u> <u>Mudstone / Sandstone</u>	Today																								
<u>9.1</u>	<u>G2</u> <u>1.4</u>	<u>1.4</u> <u>9.0</u>	<u>"</u>	<u>"</u>	<u>Overburden</u> <u>Mudstone / Sandstone</u>	Previous																								
						To Date																								
						Casing Total																								
						Today																								
						Previous																								
						To Date																								
						Signed by Sirius Drilling Ltd:																								
						<u>R. Thomas</u>																								
						Signed by Client:																								



OPENHOLE DRILL LOG

Job No. 4199a
 Contract Name: SKELMANSTORPE
 Working Day: Monday

Date: 22-7-24
 Client: LOVELL
 Sheet: 2 of 2

Hole No.	From	To	Flush ⊙(A/M)	Casing T/S (m)	Strata Description	Rig Type:				
						Cbxp-3				
9.2	Gr	1.5	W	1.0	Aeroburden	Crew Details:				
	1.5	9.0			Mudstone / Sandstone					
G9.1	Gr	1.2	"	"	Aeroburden	Remarks:				
	1.2	12.0			Mudstone / Sandstone					
G9.2	Gr	1.2	"	"	Aeroburden	Hydraulic Hose Burst 1.45 psi				
	1.2	12.0			Mudstone / Sandstone					
9.4	Gr	1.5	"	"	Aeroburden	Gas Monitoring				
	1.5	9.0			Mudstone / Sandstone					
9.5	Gr	1.5	"	"	Aeroburden	%	O ₂	CO ₂	CH ₄	CO
	1.5	9.0			Mudstone / Sandstone	Start				
8.2	Gr	1.0	"	"	Aeroburden	Mid				
	1.0	9.0			Mudstone / Sandstone	End				
Weather Conditions:						Boreholes Total				
						Today				
						Previous				
						To Date				
						Drilled Total				
						Today				
						Previous				
						To Date				
						Casing Total				
						Today				
						Previous				
						To Date				
						Signed by Sirius Drilling Ltd:				
						Signed by Client:				



OPENHOLE DRILL LOG

Job No. 4199a
 Contract Name: SKELMANSHORPE
 Working Day: Tuesday

Date: 23-7-24
 Client: LOVELL HOMES
 Sheet: 1 of 1

Hole No.	From	To	Flush (D/A/M)	Casing T/S (m)	Strata Description	Rig Type: <u>CGXP-3</u>
8.1	Gz 1.0	1.0 9.0	W	1.0	Overburden Mudstone / Sandstone	Crew Details: <u>R EDWARDS</u> <u>S woodhall</u>
8.3	Gz 1.3	1.3 12.0	"	"	Overburden Mudstone / Sandstone	
8.4	Gz 1.5	1.5 9.0	"	"	Overburden Mudstone / Sandstone	
8.5	Gz 1.0	1.0 9.0	"	"	Overburden Mudstone / Sandstone	
					ALL HOLES GROUTED WITH NEET OPC 80 BAG'S USED	Gas Monitoring
						% O ₂ CO ₂ CH ₄ CO
						Start <u>20.8</u> <u>0</u> <u>0</u> <u>0</u>
						Mid <u>20.8</u> <u>0</u> <u>0</u> <u>0</u>
						End <u>20.8</u> <u>0</u> <u>0</u> <u>0</u>
					NO GAS DETECTED	Weather Conditions:
						Boreholes Total
					WATER STANDPIPE READING	Today
					START <u>396</u>	Previous
					FINISH <u>434</u>	To Date
						Drilled Total
						Today
						Previous
						To Date
						Casing Total
						Today
						Previous
						To Date
						Signed by Sirius Drilling Ltd: <u>R. Lewis</u>
						Signed by Client:

APPENDIX D

Drill and Grout Specification Report



**SPECIFICATION FOR THE INVESTIGATION
AND STABILISATION BY DRILLING AND
GROUTING OF SHALLOW MINeworkINGS**

Former Greenside Mills, Skelmanthorpe
for Lovell Partnerships Ltd

Date: **November 2023**

Report reference: C9297/D&G

A large, semi-transparent watermark of the Sirius logo is centered on the bottom half of the page. It features the word "sirius" in a bold, green, sans-serif font with a green star above the 'i'. The background of this section is a dark grey gradient with a large, faint, light grey star shape behind the logo.

sirius

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QUALITY ASSURANCE

Issue / Revision	First Issue	Second Issue	Third Issue
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Prepared For	Lovell Partnerships Ltd		
Prepared By	Gemma Halliday Principal Engineer		
Signature			
Checked By	A G Thomas		
Signature			
Report Reference	C9297/D&G		
Report Revision	0		

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APPENDIX A FIGURES AND DRAWINGS

Drawing No.	Title	Scale
C9297/DG/01	Site Location Plan	1:25,000
C9297/DG/02	Post Demolition Site Features Plan	1:1,000
C9297/DG/03	Indicative Mining Risk Plan	1:1,000
C9297/DG/04	Proposed Shallow Mine Workings Investigation and Treatment Plan	1:1,000
2156.01 RevN	STEN Architecture Planning Layout, last dated June 2023	1:500
21374 155 P10	Dudleys Structural and Civil Consultants, External Levels Plan, last dated January 2023	1:250

1. Introduction

1.1 Authorisation

Sirius Geotechnical Ltd (Sirius) were commissioned by Lovell Partnerships Ltd (Lovell) to prepare a specification for the investigation and stabilisation of shallow mine workings below land at the former Greenside Mills, Skelmanthorpe (henceforth referred to as the 'site').

1.2 Development Plans

It is understood that Lovell are proposing the development of the site for 46 no. low rise (2-3 storey) residential properties with private gardens and associated infrastructure, including areas of hardstanding, access roads and public open space (POS). A proposed development layout has been provided to Sirius (STEN Architecture drawing ref. 2156.01 Rev N, last dated June 2023), a copy of which is included in Appendix A of this report.

Review of the proposed development levels (as shown on Dudleys Structural and Civil Consultants, External Levels Plan, drawing ref. 21374 155 P10, last dated January 2023, a copy of which is included in Appendix A of this report) indicates that proposed finished floor levels will range between 138.225m and 155.750m Above Ordnance Datum (AOD). This will necessitate localised cut and fill earthworks, with a maximum cut of c.2.5m and a maximum uplift of c.3.5m, in conjunction with the construction of a number of retaining walls up to a maximum of c.3m in height.

The red line site boundary shown in Figure 1.1 below indicates the proposed development area, whilst the blue line boundary indicates an extended area of ownership.

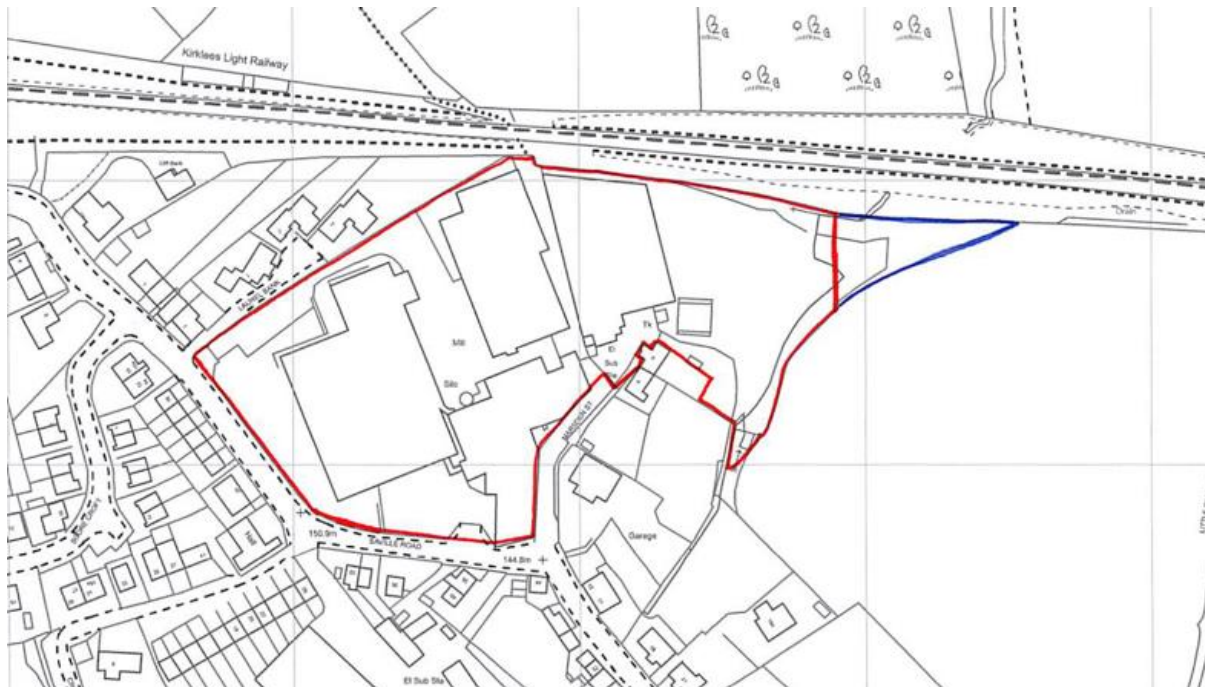


Figure 1.1 Plan showing Development and Ownership Site Boundaries

1.3 Sources of Information

The site has been subject to a number of previous reports, as detailed below:

- Geo-environmental Appraisal of Land at Greenside Mills, Skelmanthorpe (Ref. C7340, dated December 2020).
- Gas Risk Assessment Letter Report for Greenside Mills, Skelmanthorpe (Ref. C7340/GH/9548, dated April 2021).
- Supplementary Site Investigation Letter Report for land at the former Greenside Mills, Skelmanthorpe (Ref. C7340/RC/9607, dated June 2021).
- Supplementary Contamination Assessment Letter Report, Greenside Mills, Skelmanthorpe (Ref. C9297/AEC/10326, dated 15th November 2023).
- Strategy for Remedial and Preparatory Works, Former Greenside Mills, Skelmanthorpe (Ref. C9297, dated November 2023).

This document should be read in conjunction with the previous reports for the site, which present in detail the site setting and the findings of the previous phases of intrusive investigation – the findings are summarised in Section 4 of this document.

Previous site investigations have identified a potential risk to surface stability from localised shallow mine workings underlying the central area of the site. This potential risk indicates that a programme of proof drilling of boreholes, followed by stabilisation where / if necessary, by means of injecting a PFA/ cement grout into workings, is required.

Boreholes shall be drilled to sufficient depth to encounter the Whinmoor (Top and / or Low Whinmoor) coal seams unless otherwise instructed by the supervising engineer, or where sufficient thickness of intact rock is proven in individual boreholes. Where the seam(s) are encountered, boreholes shall extend through the seam and at least 0.5m into the underlying strata. Evidence of shallow mine workings have been identified within one rotary borehole (RO02) located towards the south of the site.

Boreholes will be initially drilled on a domino-5 pattern across building footprints within affected areas. Should shallow mine workings be encountered then drilling should revert to a 3m x 3m grid, with the nominal zone of consolidation extending up to 3m beyond the plot and / or beyond the fault lines once confirmed. Treatment of any retaining walls/structures greater than 1.5m in height (or where the retaining feature is considered integral to supporting plot / highway stability) should also be undertaken utilising a 3m x 3m grid, where considered necessary.

Should extensive mineworkings be encountered, treatment of adoptable highways will be undertaken utilising a 3m x 3m grid across the highway footprint within affected areas with the nominal zone of consolidation extending up to 3m beyond the highway and / or fault lines (once confirmed). Treatment of unadopted roads and areas of hardstand may be treated on a 6m grid with central borehole within affected areas if considered necessary by the supervising engineer.

Stabilisation works will be undertaken (where necessary) by injecting a PFA / cement grout into any identified workings via the boreholes with the aim of substantially filling any mining related voiding.

A mineworkings risk plan summarising the areas of identified coal mining is included as Drawing No. C9297/DG/03 within Appendix A of this specification. A plan showing the proposed areas of investigation and mineworkings treatment, together with the development proposals, is included as Drawing No. C9297/DG/04 in Appendix A. It should be noted that the position of the on-site faults marked within the drawings have in parts been inferred from BGS mapping. The specific alignment of both faults is therefore subject to change during drilling / treatment works.

The Client will supply the Contractor with details of all known underground and above ground services, equipment, property etc. prior to commencing operations.

All works shall be carried out in accordance with the Construction Design Management (CDM) Regulations and the Construction Phase Health and Safety Plan.

This specification is divided into two sections; the first including general site details and previous investigations and their findings, and the second part comprising a general specification for the works to be undertaken.

Based upon currently available information, it appears that proposed plot refs. 8, 9 and 22 to 28 are underlain by the Whinmoor (Top and / or Low Whinmoor) coal seams within the central site area and will require proof drilling and stabilisation (where necessary, and where within influencing depth).

Notwithstanding this, as works progress, seam thicknesses, seam depths and the nature and form of the seams, in addition to the location of the faults, will be reviewed in order to assess the effect on the anticipated zones of consolidation.

On completion of the programme of investigation and treatment, a validation report containing copies of borehole records, a borehole location plan, procedures followed during the works, the results of validation boreholes and pressure tests, and a record of any deviation from this specification will be produced and issued to the Client and all other relevant parties.

This specification has been prepared for the sole use of Lovell Partnerships Ltd. No other third party may rely upon or reproduce the contents of this report without the written approval of Sirius. If any unauthorised third party comes into possession of this report, they rely on it entirely at their own risk and the authors do not owe them any Duty of Care or Skill.

2. Site Details and Description

2.1 Site Details

A summary of the pertinent site details are summarised Table 2.1, below.

Table 2.1 - Current Site Overview

Location	The overall site comprises an irregularly shaped parcel of land covering an area of approximately 2 hectares, located to the north of Saville Road and west of Marsden Street in the village of Skelmanthorpe, approximately 10km southeast of Huddersfield town centre. The location of the site is shown on Drawing No. C9297/DG/01, presented in Appendix A.
Site Area (ha)	2 hectares.
National Grid Ref.	423390mE, 410930mN
Topography and Features	<p>In general, the site slopes downward from northwest to southeast / east, with levels of approximately 156.5m AOD adjacent to the northwestern site boundary, and 138m AOD to the eastern site boundary, and is formed by approximately four development plateaus.</p> <p>The western and central site areas formerly comprised a number of mill buildings and associated structures, with areas of asphalt hardstanding and roughly overgrown areas of landscaping. The site has recently undergone demolition and clearance (by a third party demolition contractor), leaving concrete slabs and crushed demolition hardsurfaced ground / remnant asphalt hardstand elsewhere. The perimeter of the site is secured by bunding formed by crushed demolition materials and herras fencing, with several stockpiles of crushed demolition materials present across the site. Steep vegetated slopes are present along the western site boundary retaining the off site adjacent highway (Saville Road), with level changes of c. 6m within the northwest and c.2m within the southwest, sloping down towards the east / southeast. An approximately 3m high concrete retaining wall is located to the north of the slope, orientated approximately east-west.</p> <p>The eastern area of the site comprises a former mill pond (which has recently undergone infilling with crushed demolition materials) and an unlined reservoir / pond feature to the east with water levels at 137.5m AOD. The reservoir / pond feature is largely filled with sediment and vegetation, with an unnamed stream recorded to run from south to north, within the locality of the pond. An overgrown stockpile of soil arisings (c. 1m to 2m high and covering an area of c. 0.06 hectares) is present within the northwest of the eastern site area. Overhead cables run northwest-southeast across the site area, with associated wooden pylons located within the stockpile. Newly constructed overhead electricity cables and an associated temporary wooden pole is located within the southeast of the site, orientated approximately southwest-northeast.</p> <p>The key, post-demolition, site features are summarised on Drawing C9297/DG/02, in Appendix A.</p>

Invasive Plants	An ecological assessment is outwith the scope of this report, and it is recommended that advice is sought from a suitably qualified ecologist. The treatment of any invasive plant species, if identified, should be undertaken prior to construction.
Site Boundaries	<p>The site is bound to the north by Kirklees Light Railway and residential properties, with open fields beyond.</p> <p>The site is bound to the east by Marsden Street and residential properties, a car garage, and open fields beyond.</p> <p>The site is bound to the south and west by Saville Road, with residential properties beyond.</p> <p>Laurel Bank is located to the northwest, with residential properties beyond.</p>

3. Geological Setting

A summary of available published geological information is provided in Table 3.1 below.

Table 3.1 - Published Geological Summary

Sources of Information	<p>BGS 1:10,000 scale geological map (Sheet name, SE21SW).</p> <p>BGS 1:50,000 scale geological map (Glossop, Sheet 86).</p> <p>The Geology of the Country around Holmfirth and Glossop, Memoirs of the Geological Survey, Explanation of Sheet 86, dated 1933.</p> <p>Geology of the Glossop District, a brief explanation of the geological map Sheet 86 Glossop, dated 2012.</p> <p>BGS Geology of Britain Viewer (on-line service).</p> <p>BGS Lexicon of Named Rock Units (on-line service).</p> <p>BGS borehole records (on-line service).</p> <p>Coal Authority (CA) Interactive Map Viewer (on-line service).</p> <p>Non-Residential Coal Authority Mining Report (ref. 51001106919001), dated 24th February 2016.</p>
Made Ground	<p>None recorded on the published maps.</p> <p>Two large areas of made ground are shown on the 1:10,000 scale geological map to the north of the light railway, one located c. 55m north of the site, which appears to relate to opencast working of the Whinmoor coal seam. The second is located c. 135m northeast of the site and appears to relate to coal mining, though no seam name is given.</p>
Drift Geology	<p>No superficial deposits are recorded to underlie the site.</p>
Solid Geology	<p>The site is shown to be underlain by Carboniferous Pennine Lower Coal Measures (LCM) strata, comprising undifferentiated ‘mudstones, siltstones and sandstones with subordinate coal, ironstone and fireclay’ in the centre and southwest of the site. An unnamed sandstone unit is recorded to be present in the east of the site.</p> <p>The site is shown to be located within three fault blocks. Two conjectured faults, orientated northwest-southeast, with a downthrow to the northeast are recorded to cross the central area of the site. A conjectured fault orientated northeast-southwest, with a downthrow to the southeast, is located to the immediate northwest of the site.</p> <p>The strata in the vicinity of the site are recorded to be dipping c.5° to the northeast.</p>
Coal Seams	<p>The BGS map conjectures the presence of a ‘thin’ coal seam c. 30m northwest of the site (dipping to the south), beyond the northeast-southwest fault.</p> <p>The Whinmoor (Top Whinmoor) and Low Whinmoor coal seams are conjectured to outcrop c. 10m north and c. 15m northeast of the site respectively, dipping to the northwest. The Whinmoor (Top Whinmoor) and Low Whinmoor coal seams are shown</p>

	<p>to outcrop beyond the northern most conjectured northwest-southeast orientated fault on site. The seams are recorded to be between 0.4m-0.8m and 0.2m-0.6m in thickness, respectively.</p> <p>The stratigraphical column included on the BGS 1:10,000 geological map indicates the Low Whinmoor to be approximately 10m stratigraphically below the Whinmoor (Top Whinmoor). The Cumberworth Thin Coal (recorded to be c.0-0.4m in thickness) is recorded to be 20m below the Whinmoor (Top Whinmoor) coal.</p> <p>The 1933 geological memoir notes that <i>'the Whinmoor Coal...has been or is being worked wherever present at shallow depth...it is usually in three bands being separated by dirt partings...'</i></p> <p>The memoir notes that the Cumberworth Thin Coal is seldom over 1ft 3in thick (37cm), but commonly has up to 4ft (1.2m) of fireclay, and locally gannister, associated with it.</p> <p>There appears to be a disparity between BGS records and the CA interactive viewer, with CA records indicating an un-named coal seam to outcrop immediately west of the site, with a second seam shown to outcrop c. 100m west and 140m south. The dips and dip directions of the coal seams are not recorded by the CA.</p>
<p>Mining and Quarrying</p>	<p>The CA report states that the site is not within the zone of likely physical influence on the surface from past underground or opencast workings, but that the property is in an area where the Coal Authority believe there is coal at or close to the surface; this coal may have been worked at some time in the past.</p> <p>In the northeast of the site the CA online viewer shows there is a risk of 'probable unrecorded shallow workings'; the same area of the site is recorded as a 'development high risk area'.</p> <p>Correspondence with the CA indicates 'Our information indicates the Whinmoor and an unnamed coal seam crop in the vicinity of the site. Records of surface workings in the wider locality to the north of the site show the Whinmoor as three leaves at that location'.</p> <p>The 1:10,000 scale geological map shows two areas of made ground, one located c. 55m north of the site where the Whinmoor Coal seam appears to have been worked from surface and c. 135m northeast of the site, where an unknown seam has been worked from surface.</p> <p>The CA Mining Report states that there are no known mine entries within 20m of the site. The online CA interactive viewer shows no recorded shafts are present within 250m of the site, with the nearest shaft shown c. 280m south of the site.</p> <p>The CA's Mining Report states that it is not aware of any evidence of damage arising due to geological faults or other lines of weakness that have been affected by coal mining.</p>

4. Previous Investigations

Sirius were commissioned in 2020 to undertake a (pre-demolition) geoenvironmental appraisal of the site. The investigation included three rotary open hole boreholes (RO01 to RO03). Access was not possible within the eastern site area at the time of the 2020 investigation due to overgrown dense brambles / vegetation and fencing. Access was also limited across the remainder of the site because of former buildings and buried / overhead services.

Made ground was encountered within the accessible parts of the site, typically to depths less than 1 to 2m bgl, in turn underlain by a variable thickness of natural residual LCM soils, to depths of between 0.95m and >2.7m bgl. The weathering profile of the LCM was generally found to comprise medium to high strength clays underlain by destructured siltstone bedrock. The rotary investigation identified two seams / leaves of intact coal within the north of the site at depths of 2.4m and 4.2m bgl, with evidence of mine workings towards the south at a depth of 3.8m bgl. No coal or evidence of mine workings were identified within the western area of the site.

Fieldwork forming a supplementary site investigation were carried out by Sirius following clearance of the eastern site area in May 2021. The fieldworks included twelve rotary open hole boreholes (RO101 to RO112), which were positioned across both the previously inaccessible eastern site area, and the wider site area.

Ground conditions were found to comprise made ground across the eastern site area to depths of up to 2 to 3m bgl, underlain by locally softened / low strength residual LCM strata, recorded from depths of between 1.6m and 3.5m bgl, grading into competent LCM sandstone bedrock. A 0.2m to 0.3m thick intact coal seam was encountered at a depth of 13m and 16.5m bgl within the eastern site area within RO102 and RO103. No evidence of coal or associated mine workings were identified within RO101 or RO104 to a maximum depth of 30m bgl, indicating a generally thin and inconsistent coal seam.

The rotary investigation also identified a 0.6m thick intact coal seam within the western site area, at a depth of 21m bgl within RO112. In addition, a 0.2m thick intact coal seam was encountered within RO110 and RO111 at depths of 10.0m and 10.5m bgl. RO105, positioned centrally within the site, encountered intact coal seams / leaves at depths of 2.5m and 4.0m (at respective thicknesses of 0.6m and 0.5m). No evidence of coal and / or associated mine workings were recorded within RO106 to RO109 located within central and western site areas to a maximum depth of 30m bgl.

A recent programme of post demolition rotary drilling was undertaken in October 2023 to further investigate the presence of shallow mine workings and shallow coal seams beneath the central site area, and to further assess and delineate the two conjectured fault locations. The fieldworks included fourteen rotary open hole boreholes (RO201 to RO214), and a series of trial pits (TP201 to TP223).

The locations and depths where coal / associated mine workings have been identified at the site as part of each phase of investigation are summarised in Table 4.1 below. Copies of all rotary borehole logs are included within Appendix B.

Table 4.1 - Coal Seams Encountered

Borehole	Depth to Base of Coal / Workings (m bgl)	Depth to Base of Coal Seam/Workings (m AOD)	Thickness of Coal / Workings Encountered (m)	Thickness of Overlying Competent Strata (m)	Inferred Fault Block
RO102	16.8	122.85	0.3	11.9	Eastern
RO103	13.2	126.25	0.2	9.5	
RO208	14.1	128.47	0.1	12.0	
RO213	11.6	128.09	0.1	9.5	

Borehole	Depth to Base of Coal / Workings (m bgl)	Depth to Base of Coal Seam/Workings (m AOD)	Thickness of Coal / Workings Encountered (m)	Thickness of Overlying Competent Strata (m)	Inferred Fault Block
RO2	3.8	139.27	2.2*	2.8	Central
RO3	2.4	142.73	1.0	NA^	
	4.2	140.93	1.3	0.8	
RO105	2.5	141.00	0.6	NA^	
	4.0	139.50	0.5	0.9	
RO110	10.0	137.93	0.2	8.0	
RO207	3.6	141.71	0.3	1.3	
TP206	0.4	144.2	0.5	NA^	
TP209	2.5	142.8	0.7	NA^	
RO111	10.5	142.77	0.2	9.5	
RO112	21.0	126.93	0.6	18.0	

*Broken ground

^Overlain by weathered, residual LCM

NA - Not Applicable

4.1 Summary of Relevant Findings

4.1.1 Shallow Coal Mine Workings

Published geological information indicates that the site is located within three fault blocks. Two conjectured faults, orientated northwest-southeast, with a downthrow to the northeast are recorded to cross the central area of the site. The Whinmoor (Top Whinmoor) and Low Whinmoor coal seams are conjectured to outcrop c. 10m north and c. 15m northeast of the site respectively, dipping to the northwest. The Whinmoor (Top Whinmoor) and Low Whinmoor coal seams are shown to outcrop beyond the northern most conjectured northwest-southeast orientated fault on site. The seams are recorded to be between 0.4m-0.8m and 0.2m-0.6m in thickness, respectively.

Phases of rotary drilling has been undertaken to investigate the presence of shallow coal seams and any associated shallow mine workings beneath the site, and to confirm the two central conjectured fault locations.

Drawing No. C9297/DG/03, included within Appendix A, indicates the locations of the inferred faults and coal outcrops, and a proposed shallow mineworkings investigation and treatment plan is included as Drawing No. C9297/DG/04.

Central Fault Block

Evidence of shallow mine workings, in the form of broken ground, has been recorded in one location in the central fault block (RO02) from top depths of 3.8m to 6.0m bgl (139.2 to 137.0m AOD). Up to two seams / leaves of intact coal have been encountered in two locations (RO03 and RO105) within the central fault block. The upper seam has been recorded from top depths of between 2.4m and 2.5m bgl (142.7m and 141.0m AOD respectively) and the lower seam has been recorded from top depths of between 4.0m and 4.2m bgl (139.5m and 140.9m AOD respectively).

Single seams of intact coal have been recorded at top depths of between 0.4m bgl (142.6m AOD) and 3.3m bgl (142.0m AOD) in TP206, TP209 and RO207. A single thin intact seam (0.2m thickness) was identified within RO110 at a depth of 10.0m bgl (137.9m AOD).

The coal appears to only locally be split into two seams / leaves, and inconsistent in thickness across the central site area. The inconsistency of the Whinmoor (Top Whinmoor) and Low Whinmoor coal seams are indicative of the complex geology and likely fault disturbance within the site area. Insufficient rock cover exists above the identified coal seam(s) to mitigate the risk of surface instability from localised shallow mine workings however, and as such should be subject to further plot specific investigation / assessment, and subsequent treatment, as necessary.

Eastern Fault Block

Within the inferred eastern fault block, intact coal and coal traces of up to 0.3m in thickness were recorded in four locations (RO102, RO103, RO208 and RO213) from depths of between 11.5m and 16.5m bgl (123.1m to 128.1m AOD).

Sufficient rock cover exists above the inconsistent coal seam to mitigate the risk of surface instability if mine workings were to be present, and as such is considered to pose a low risk to surface stability, not requiring treatment.

Western Fault Block

In the northwest of the western fault block, a 0.2m intact coal seam was recorded in RO111 at a depth of 10.5m bgl (142.7m AOD), and a 0.6m thick intact coal seam was recorded in RO112 from 21m bgl (126.9m AOD), located within the southwest of the inferred western fault block. It is unclear which seam(s) these relate to, although the BGS reference the conjectured presence of a 'thin' coal seam c. 30m northwest of the site (dipping to the south), beyond the northeast-southwest fault.

On the basis of the maximum recorded thickness and depths of the inconsistent coal seam(s), the risk of surface instability if mine workings were to be present is considered to be low, not requiring treatment.

4.1.2 Unrecorded Mine Entries

No mine entries are known to exist on the site. However, the possibility of encountering unrecorded mine entries, including bell pits and crop workings, cannot be discounted. It is therefore recommended that the central area of the site be stripped down to natural subsoil, plus 0.3m, under the supervision of a suitably experienced consultant, to observe for evidence of crown holes, mine entries and bell pits.

All other excavations into natural ground site wide made during enabling and earthworks should be inspected for evidence of crown holes, mine entries and bell pits etc.

Drawing No. C9297/DG/04 included within Appendix A, indicates the proposed extent of the site to be stripped and inspected for shallow mine entries.

5. Construction Design Management Requirements

The Drilling and Grouting Contractor (the 'Contractor') will be supplied with details of all known underground services prior to commencement of the Contract. It shall be the Contractor's responsibility to confirm that each borehole is clear of all underground services, above ground services, equipment and property prior to commencing operations.

The Contractor shall be responsible for preparing and providing a Method Statement and Risk Assessment for the works, and for gaining all approvals and Permissions for undertaking the work from the Coal Authority, prior to commencing operations. No works shall commence without obtaining Permission from the Coal Authority.

All works shall be carried out in accordance with the Construction Design Management (CDM) Regulations current at the time of the contract, and the Contractor's Method Statement and Risk Assessment, as agreed with the Coal Authority, and where applicable, with the Client's Health and Safety Plan.

6. Supervising Resident Engineer

In advance of commencement of the Contract, the Client shall appoint a suitably experienced and qualified Resident Engineer (RE) to supervise the works as required, and to provide support and advise on relevant matters.

The RE shall attend site as required to ensure that the requirements of this specification are complied with. The responsibilities of the RE shall include, but not be limited to, the following:

- Liaison with the Client and statutory bodies in relation to the treatment works;
- Supervision and quality control of the works;
- Implementation of contingency measures if unexpected conditions are found during the works;
- Review of site records and test results as they become available and make comment and act upon those results accordingly; and,
- Production of a validation report, covering the treatment of the mine workings.

7. General Specification

7.1 Constituent Materials for Grouting

Water shall be from the mains supply or other source approved by the RE and supplied by the Client.

Cement shall be CEM II 32.5 conforming to BS EN 197-1:2011.

Pulverised Fuel Ash (PFA) complying with BS EN 12715: 2020 shall be conditioned hopper ash, or dry powder ash, or a type suitable as a constituent for grout and obtained from an approved supplier.

Sand shall generally comply with BS882 and be of a grading suitable for use in the Contractor's plant and approved by the RE.

Pea gravel shall comply with BS882:1992, and be of grading approved by the RE.

Thixotropic admixtures shall be bentonite or another admixture approved by the RE.

7.2 Storage and Use of Materials

Storage of materials shall be such as to prevent contamination and deterioration. Cement shall be kept in a dry location, and the sequence of deliveries recorded so that cement can be used in rotation.

PFA shall be stored within a pre-defined area and will be kept dampened to mitigate against fugitive dust.

7.3 Grouting Plant

The Contractor shall submit to the RE, for approval, details of the proposed method of mixing, and pumping of grout to the injection points, together with the means of monitoring grouting pressures and the quantities injected. The materials shall be introduced into the mixer via approved volumetric methods.

The grout mixer shall be capable of producing a homogenous mix, all particles being thoroughly wetted without segregation.

7.4 Grout Mixes

With consideration to the future use of the area, the filling material shall generally consist of a PFA: cement grout which should be generally mixed in the proportions of up to 10:1.

The mixes shall produce cubes with crushing strengths of not less than 1.0 MN/m² at 28 days (Note: the 7 day test is performed to indicate that the 28 day strength is achievable i.e. a 7 day value of about 0.4MN/m² would probably be considered on target).

Where excessive lateral flow of grout is anticipated or when voids greater than 500mm are encountered, sand or pea gravel may be introduced into the workings in accordance with CIRIA C758D. The specified grout mix shall have the minimum water content consistent with effective pumping.

The actual proportions to be used initially for the various grouts shall be agreed with the RE paying due regard of the conditions met in drilling and the results of any trial grouting carried out before work commences.

7.5 Grout Properties and Testing

With water / (cement and PFA) ratios generally in the range of 0.4 to 0.45, (including the moisture in the aggregates), the mixes proposed should produce pumpable grout with flowability readings of between 300 to 600mm, when measured in a flowmeter of the "Colcrete" type.

The sample for the flowability test shall be obtained by the grouting Contractor at the point of injection i.e. from the end of the tremie pipe.

A minimum of two flowability tests per week shall be performed by the Contractor or as directed by the RE.

High-bleed grouts shall be avoided. Bleed capacity should be limited to 5% maximum unless agreed otherwise with the RE.

A minimum of two bleed capacity tests shall be performed by the Contractor per shift or as directed by the RE. The sample of grout for the test shall be taken from the point of injection i.e. the end of the tremie pipe.

Bleed capacity shall be measured in a clear plastic or glass graduated cylinder which has an internal diameter not less than 50mm and with a volume of approximately 1000ml. After placing the grout, a cover shall be placed over the cylinder to avoid evaporation. Bleed capacity shall be read at hourly intervals for neat cement grout, and readings should continue for not less than 3 hours. For PFA: cement grouts, readings should continue for not less than 6 hours.

The Contractor shall prepare two sets of test cubes of grout per week, or as directed by the RE. Each cube shall be of 100mm side, or as agreed with the RE, and shall be taken from the grout at the point of injection i.e. the end of the tremie pipe.

At the instruction of the RE, the Contractor shall arrange for them to be tested by crushing at 7 and 28 days in accordance with BS1881-101:1983.

The testing shall be carried out by an independent laboratory or as agreed with the RE.

As stated previously mixes shall produce cubes with crushing strengths of not less than 1.0 MN/m² at 28 days.

If the RE considers the results of the test indicate that a change of mix proportions is required, the Contractor shall make such modifications as the RE may direct.

7.6 Drilling Procedures for the Investigation and Treatment of Shallow Mineworkings

All boreholes to be used for the investigation of shallow mineworkings and potential treatment by the injection of grout, including those which strike coal pillars, shall be drilled by rotary or rotary percussive techniques down to a minimum of 0.5m beyond the base of the old workings in the seam or the floor of the seam itself whichever is greater. The drilling system and flushing medium to be used shall be as instructed on the Coal Authority Permit, and approved by the RE. The Contractor shall allow for the provision of appropriate dust suppression for those holes that are to be drilled near sensitive receptors (e.g., nearby houses, highways, active commercial properties, car parks and public footpaths).

The Contractor shall undertake gas monitoring at the drill rig during the drilling operation.

Boreholes shall be drilled to sufficient depth to encounter the Whinmoor (Top and / or Low Whinmoor) coal seams unless otherwise instructed by the supervising engineer, or where sufficient thickness of intact rock is proven in individual boreholes. Where the seam(s) are encountered, boreholes shall extend through the lower seam and at least 0.5m into the underlying strata.

Due to the uncertainty regarding the extent of potential shallow mining at the site, the works will be undertaken in a staged manner, with treatment only undertaken where the initial probe drilling proves it is required. Boreholes will be drilled on a domino-5 pattern across building footprints within central site areas. Should evidence of shallow mine workings exhibiting inadequate competent rock cover be encountered then treatment will be undertaken utilising a 3m x 3m grid of holes extending across the nominal zone of consolidation i.e. up to 3m beyond the plot and / or beyond the fault lines once confirmed. Treatment of any retaining walls/structures greater than 1.5m in height (or where the retaining feature is considered integral to supporting

plot / highway stability) within central site areas should also be undertaken utilising a 3m x 3m grid where considered necessary.

Should extensive mineworkings be encountered, treatment of adoptable highways will be undertaken utilising a 3m x 3m grid across the highway footprint within affected areas with the nominal zone of consolidation extending up to 3m beyond the highway and / or fault lines (once confirmed). Treatment of unadopted roads and areas of hardstand will be treated on a 6m grid with central borehole within affected areas.

Stabilisation works will be undertaken (where necessary) by injecting a PFA / cement grout into any identified workings via the boreholes with the aim of substantially filling any mining related voiding.

Site investigation monitoring well boreholes should be grouted during mine treatment works to prevent them acting as potential preferential pathways for mines gases.

The minimum diameter of the holes shall be 75mm unless otherwise specified by the RE. When it is impracticable to drill at the minimum diameter for the full depth, the diameter of the boreholes shall be increased in the upper lengths.

Boreholes shall be temporarily cased through any made ground and residual deposits down to the rockhead. The boreholes shall be kept open until grout injection into the workings and rock is complete.

Where a borehole proves abortive because it becomes obstructed, it shall be re-drilled in a suitable location as directed by the RE, at a larger diameter and re-cased.

A mineworkings risk plan summarising the areas of identified coal mining is included as Drawing No. C9297/DG/03 within Appendix A of this specification. A plan showing the proposed areas of mineworkings treatment, together with the development proposals, is included as Drawing No. C9297/DG/04 in Appendix A. It should be noted that the position of the on-site faults marked within the drawings have in parts been inferred from BGS mapping. The specific alignment of both faults is therefore subject to change during drilling / treatment works.

Any deviation from this proposed layout shall be recorded by the Contractor and a revised plan provided to the RE.

During the course of the works, the RE will review the borehole records generated, and will review the potential for the presence of workings at shallow depth below rockhead elsewhere on the site.

If so required, the RE shall instruct the Contractor to undertake supplementary investigation boreholes in areas outwith the proposed drill and grout programme, to confirm the presence or otherwise of workings at shallow depth. If such workings are suspected or identified, the drill and grout programme shall be extended to treat such areas.

The Principal Contractor shall be responsible for managing surface water run-off from site as part of the stabilisation works.

7.7 Grouting Procedures for Treatment of Shallow Mineworkings

The aim of the stabilisation work is to substantially fill any old workings within the identified seams as well as any voids or broken ground found within the overlying strata in order to mitigate the development of crown holes at the surface \ foundation level.

Perimeter grout walls, if required, shall be formed by filling boreholes with a viscous grout composed of appropriate proportions of cement, PFA, sand or pea gravel and water. The mix, proportions and method must be agreed with the RE.

Pressure need not be applied to the grout in affected boreholes unless required by the RE.

Unless specified otherwise, the section of the perimeter wall at the deepest part of the seam shall be constructed first if required .

Immediately prior to grouting each borehole, the Contractor shall check that it is unobstructed to the required depth to receive the tubing or tremie pipes for grout injection. Obstructions shall be dealt with as described in 'drilling procedures' above.

Grout shall be injected into each hole via an approved flexible tube with grout placed to the base of the hole.

Grouting shall proceed upwards from the base of each borehole to the base of the surface deposits. It is not intended that, as a general rule, significant quantities of grout shall be injected into the surface deposits unless specified otherwise. This requirement will be subject to RE review.

The grout shall be injected at the approved rates until grout appears near the point of injection, when the borehole shall be deemed complete. If this criteria is reached quickly, the grout tubes shall be lifted to check that a local obstruction is not preventing flow of the grout into the strata.

Hydrostatic pressure shall be applied to the grout in every borehole. If grout has not appeared at the point of injection after 5 tonnes of grouting materials have been introduced, then sand and/or pea gravel (gravel which passes through a 6.33mm sieve and is retained on a 2.36mm sieve) may be added to the mix or placed down the borehole.

7.8 Stabilisation Procedures for the Treatment of Unrecorded Mine Shafts

Should any unrecorded mine shafts be identified on site, they shall be stabilised in accordance with the recommendations given in the NCB handbook 'The Treatment of Disused Mine Shafts and Adits.' and CIRIA C758D.

All work on or about mine shafts must be carried out from a safety platform of adequate dimensions that will span the potential collapse zone and support the crew and equipment should a catastrophic failure of the shaft occur.

Prior to work commencing the area will be inspected to ensure that the safe movement of heavy equipment can proceed. This will be carried out by a competent, experienced person who will be securely fastened to the surface by means of a full body harness anchored at an appropriate safe distance away from the potential shaft collapse zone.

If any shaft is found to be open from the surface, then it shall be backfilled with graded material. Any such material will be introduced directly into the shaft from the surface utilising equipment such as a 360 excavator or conveyor.

If the shaft is backfilled then reversed stage pressure grouting of the infill material will be undertaken. Such treatment is achieved by a combination of permeation grouting and low pressure compaction grouting of the infill material which forms an enhanced bond between the infill and the shaft lining \ country rock.

Treatment will therefore be undertaken in the following manner:-

A rigid steel and wooden shaft frame will be mounted over the shaft mouth to ensure that any slumping of the shaft infill will not jeopardise the stability of the drilling rig and the safety of the crew.

Once the safety frame is in place, the drill rig will be positioned over the shaft to allow the sinking of a centrally located borehole through fill material.

Treatment will involve the drilling of a single borehole to the base of the shaft and at least six metres into natural strata, this is to ensure that no “staging” is present within the shaft and that the actual shaft base has been reached. Shaft staging would typically be encountered within the first 50m below ground within shafts although no hard or fast rules can be applied to this. Staging can be a problem if, over time, it deteriorates to such an extent that catastrophic failure of the infill material occurs.

On completion of the first borehole temporary steel casing may then be inserted into the borehole. This casing forms the basis of the reversed stage pressure grouting technique.

The grouting operation will commence on completion of the borehole and will involve direct injection down the borehole under pressure through the drill rods or casing in ascending 3.0m stages.

The grout will possess water: solids ratio of no more than 40% giving an approximate compressive strength of 1.0 MN/m² @ 28 days.

Grout will be mixed by loading hopper conditioned PFA and bagged cement directly into the mixer via a front-loading shovel and by hand. Water supplied from the approved water source will then be added to the mix to produce grout of the correct consistency.

The grout mixer will be capable of producing a homogenous mix, with all particles being thoroughly wetted without segregation occurring.

The grout will be mixed and injected using a 50mm diaphragm pump operating at around 100 psi and will be pumped via 50mm reinforced grout hoses into borehole. This will continue until either a maximum pressure is reached, or refusal of grout occurs. A length of casing will then be extracted, and the process repeated until the complete length of the shaft has been treated.

Should any significant thickness of permeable / granular fill be present on site, grouting may need to be terminated at the level of the base of such material.

If any significant voids are encountered during the operation, a grout \ pea gravel mix will be introduced into the borehole to restrict excessive movement of grout. However, should any major mining feature such as roadways running off the shaft are suspected these will require investigation and treating separately from the shaft.

Depending on the location of the shaft, a capping solution may be required such as a reinforced concrete cap.

Any cap will be designed by a competent structural engineer with its orientation founding depth and ultimate design agreed by the Coal Authority prior to construction. As a minimum any reinforced cap will be typically twice the shaft diameter.

7.9 Services

The Contractor shall take all necessary precautions, including making all reasonable liaison with the Client and Principal Contractor to ascertain the positions and depths of underground services and drains passing through the site, making full allowance for working around and protecting live services and drains.

The Principal Contractor and Contractor shall be responsible for maintaining close liaison with the Local Authority and the Public Utility Authorities so as to avoid any disruption of the existing services.

When introducing grout into any borehole the Contractor shall ensure by regular inspections throughout the day that the grout is not entering adjacent drains, services, culverts and ducts. In the event that any such leakage is detected the Contractor shall immediately suspend the grouting operations and commence to remove any accumulated grout.

7.10 In Situ Testing

When directed by the RE, the Contractor shall test the consolidated ground for permeability and strength.

Permeability by grout acceptance testing shall be checked by drilling test holes in positions to be selected by the RE and injecting grout at pressures appropriate to the depth, all in accordance with the requirements for infilling grouting. If the RE considers that the quantities of grout accepted are excessive, further holes shall be drilled and grouted at the rates and prices agreed.

After testing, boreholes shall be completed in accordance with the requirements for grouting infill holes.

7.11 Records

The Contractor shall prepare and keep available for inspection on site, plans showing the positions of all boreholes, daily drilling records (see below), together with the total amounts of grout injected. Levels shall be given with reference to a datum to be confirmed by the RE.

The plans shall be updated daily in conformity with the Records noted below. On completion of the works, the Contractor shall give fair copies of the plans and sections to the RE within one week of completion of the programme of grouting.

As works proceed, the Contractor shall maintain separate daily records for drilling, for grouting and for materials and plant received in a form to be approved by the RE. The daily records signed by the Contractor's agent shall be submitted each day to the RE for their agreement. The Contractor shall provide one copy of the agreed record for the RE's retention and keep a further copy available for inspection on site.

Daily drilling records shall be provided for each borehole and contain the following information:

1. Job title and location
2. Borehole reference number
3. Date
4. Contractor's name
5. Plant in use, crew members and hours worked
6. Method of boring or drilling
7. Type, diameter and depth of casing used
8. Diameter and depth of hole at the beginning and end of each working day or shift
9. Loss of any flushing medium during drilling
10. Standing time, with reason, or time lost overcoming obstructions
11. Details of underground services located
12. Details of any settlement or ground heave
13. Daily and cumulative length drilled
14. Depth to each major change of stratum
15. Description, with identification, of the stratum and whether it is intact or broken
16. Each depth at which groundwater is encountered (if apparent), the depth to which it rose and any steps taken to stop the flow

17. Depths at which any samples are taken
18. Details and results of any permeability tests instructed by the RE
19. Details of any voids or suspected workings
20. Details of any emissions of gas, water, etc.
21. Depth of completed borehole

Daily grouting records shall be provided for each borehole and contain the following information:

1. Job title and location
2. Borehole reference number
3. Date
4. Contractor's name
5. Plant in use, crew members and hours worked
6. Details of type of injection grout-line dimensions and length of standpipes inserted
7. Type of grout mix and volumetric quantity injected including total quantity by weight by each type of grouting material introduced
8. Grout pressures recorded, with the corresponding depths
9. The results of all flow and bleed tests
10. Details of casing abandoned
11. Details of grouting materials delivered to the site and a running total of each of the materials delivered
12. The nature, frequency and results of all inspections of services to check for grout penetration
13. Details of all stoppages or delays and any other relevant information.

The daily records of materials and plant received shall show in particular that day's quantities by weight of each type of material and cumulative quantities. With the daily records, the Contractor shall submit to the RE copies of receipts or invoices for all materials delivered and he shall keep them on site until the works are complete.

Notwithstanding the information listed above, the Contractor shall provide any other information required by the RE.

On completion of the drill and grout programme, the RE shall prepare a validation report containing copies of borehole records, a borehole location plan, procedures followed during the works, the results of validation boreholes and pressure tests, and a record of any deviation from this specification.

8. Regulatory Approvals

This Specification is considered suitable and appropriate based on the findings of the site investigations. However, it cannot be guaranteed to gain regulatory approval and, therefore, should be passed to the appropriate regulatory authorities and/or other organisations including but not limited to the Coal Authority for their comment and approval prior to commencing any works on site.

APPENDICES

APPENDIX A

Drawings



Reproduced from the Ordnance Survey 1:50,000 scale Landranger® map with the permission of The Controller of Her Majesty's Stationary Office, © Crown Copyright. All rights reserved. Sirius Geotechnical Ltd, Suite 2, Russel House, Mill Road, Langley Moor, Durham DH7 8HJ. Licence No. 100042005

NOTES

 Site Location

REVISION

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A	>>
B	>>
C	>>
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CLIENT

Lovell Partnerships Ltd

SITE

**Former Greenside Mills,
Skelmanthorpe**

DRAWING TITLE

Site Location Plan

DRAWING NO.

C9297/DG/01

DRAWN BY

MF

DATE

**November
2023**

REVISION NO.

0

APPROVED BY

GH

SCALE

1:25,000

A4



1. Photo of pond within east of the site, looking southeast.



2. Photo of pond and surface water feature looking south.



3. Photo of stockpile within east of site, including wooden pole, with area of former infilling and pond beyond to the east.



4. Evidence of former brick lined mill pond and adjacent structures prior to backfilling / clearance.



5. Newly constructed overhead cables and wooden pole, located in close proximity to former AST and sub-station.



6. View of former AST, prior to demolition and clearance.

NOTES

- Site boundary
- ① Photo Location and Direction
- Existing pond and surface water feature
- Former brick lined mill pond
- Existing stockpile
- Former above ground storage tank

Topographical survey reproduced from Sirius Remediation Ltd, Post Demolition Survey, ref. SR4358-TS-001, dated October 2023

Notes

1. This drawing should not be viewed in isolation from the accompanying report.
2. The locations of services shown on this drawing are approximate and are based on utility plans provided by the client. Locations of services are given for the purposes of indicating constraints to the site investigation only. Reference should be made to original utility plans and HSG47 for locating of services within the site.
3. All marked site features (including historical features, potential contaminant constraints, and any other potential constraint or feature of note) shown on this drawing are given for indicative purposes only. This drawing should not be underlain in isolation to determine proposed development layouts. Reference should be made to the accompanying report for commentary on the potential location of these features including coordinates if available and any further works required to locate features if required.

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CLIENT

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SITE

**Former Greenside Mills,
Skelmanthorpe**

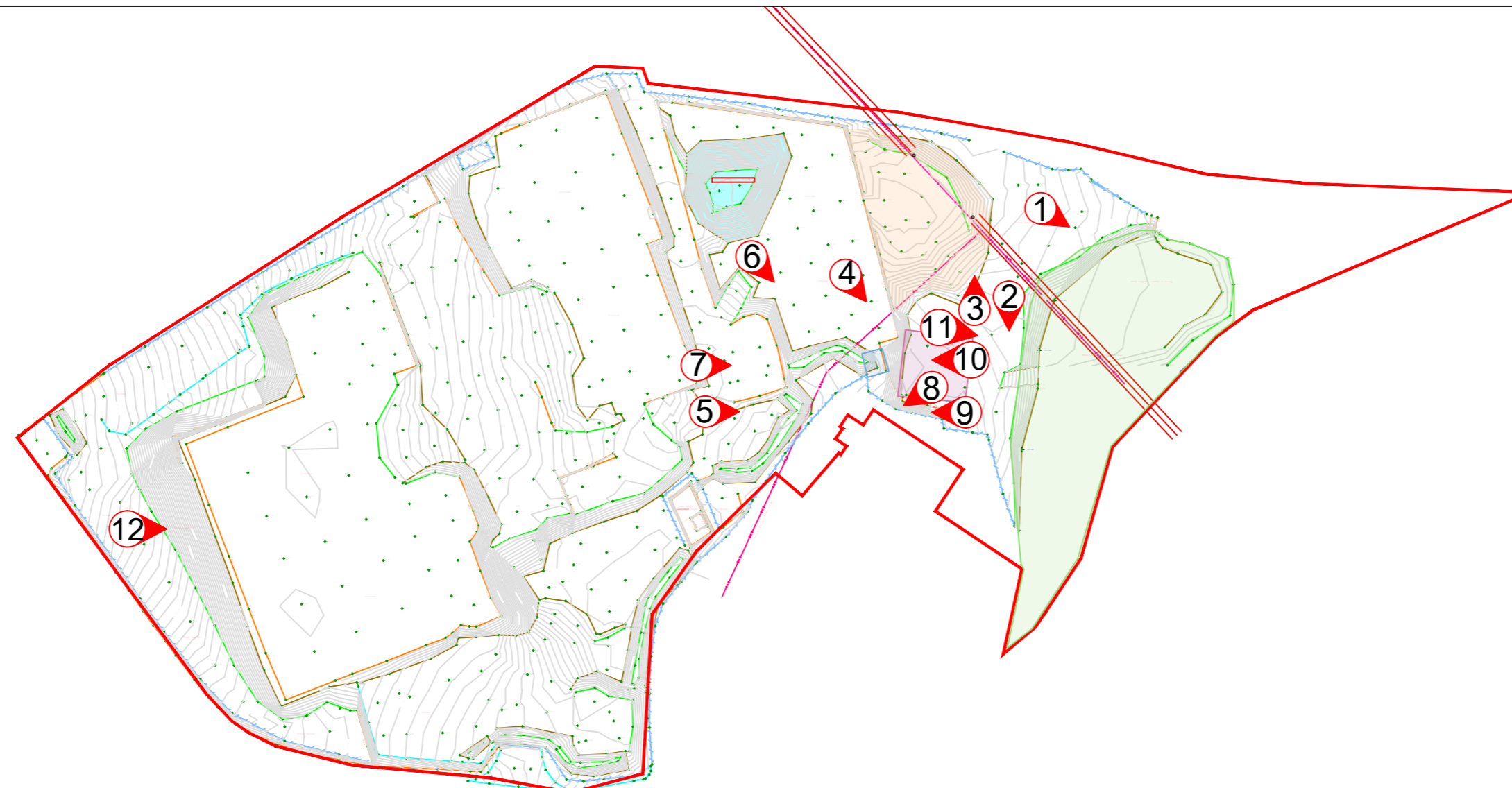
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Site Features Plan

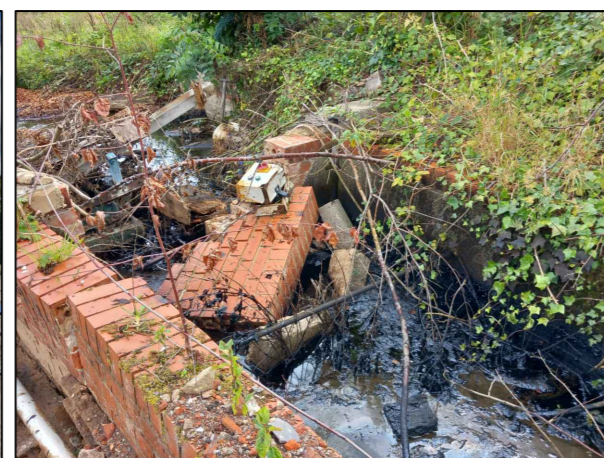
DRAWING NO. **C9297/DG/02** REVISION NO. **0**

DRAWN BY **MF** APPROVED BY **GH**

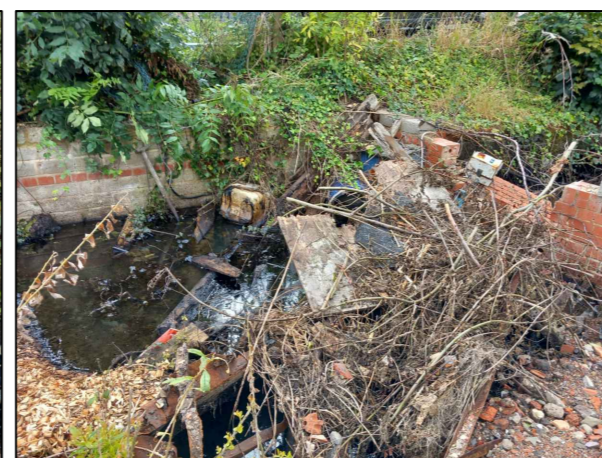
DATE **November 2023** SCALE **1:1000** PAPER SIZE **A2**



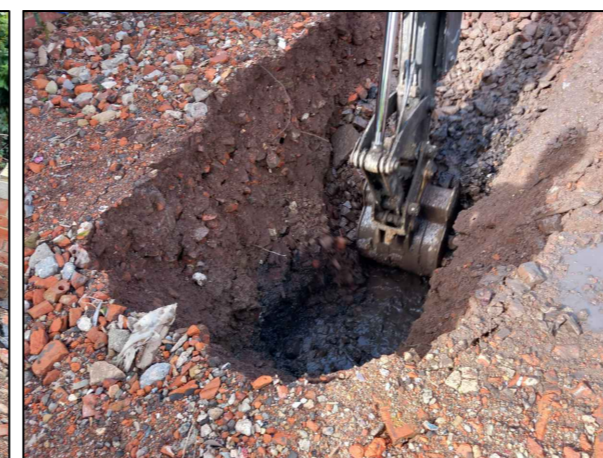
7. View of former sub-station prior to demolition and clearance.



8. Surface water culvert located in southeast, with black oily substance noted.



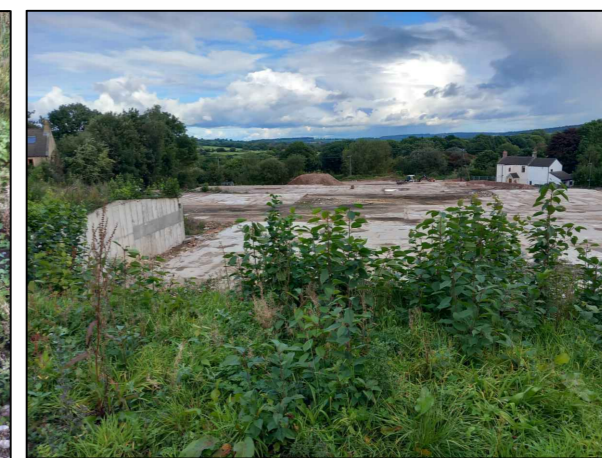
9. View of surface water culvert with discarded containers.



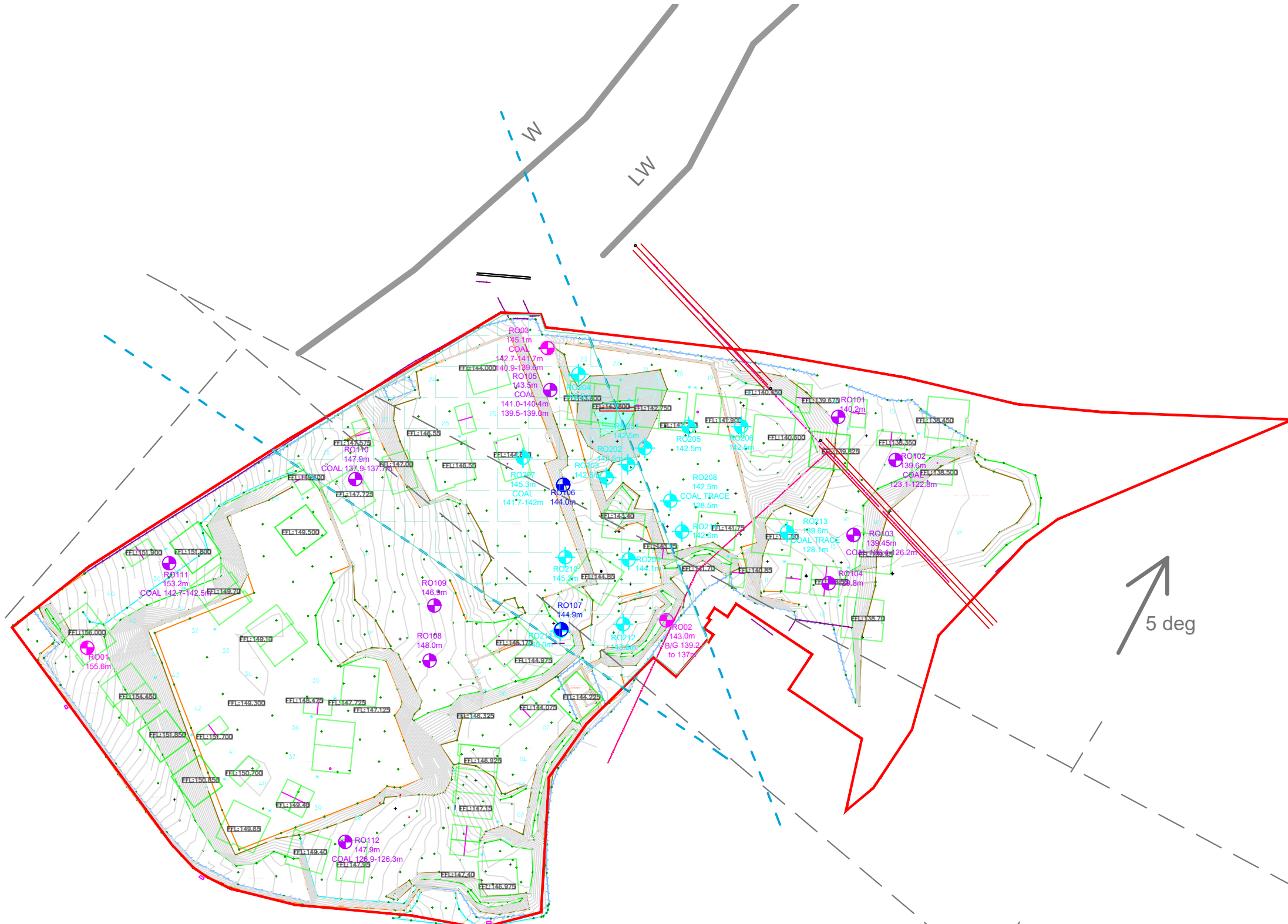
10. Evidence of hydrocarbon staining within backfilled mill pond (trial pit TP218).



11. View of black saturated pond sediments during trial pitting.



12. View of varying topography of the site, looking east.



NOTES

- Site boundary
- 2023 Site Investigation Rotary Borehole (RO200 series)
- 2021 Site Investigation Rotary Borehole (RO100 series)
- 2020 Site Investigation Rotary borehole location (RO01 series)
- Inferred fault lines (based on findings of site investigation undertaken to date).
- Conjectured fault lines (based on published BGS data)
- Conjectured coal outcrops (based on published BGS data)
- Approximate extent of area required for inspection of mine entries.
- Existing overhead electricity cables

Topographical survey reproduced from Sirius Remediation Ltd, Post Demolition Survey, ref. SR4358-TS-001, dated October 2023

Notes

1. This drawing should not be viewed in isolation from the accompanying report.
2. All exploratory hole locations are approximate and based on handheld GPS coordinates unless stated otherwise on the exploratory hole logs.
3. The locations of services shown on this drawing are approximate and are based on utility plans provided by the client. Locations of services are given for the purposes of indicating constraints to the site investigation only. Reference should be made to original utility plans and HSG47 for locating of services within the site.
4. All marked site features shown on this drawing are given for indicative purposes only. This drawing should not be underlain in isolation to determine proposed development layouts. Reference should be made to the accompanying report for commentary on the potential location of these features including coordinates if available and any further works required to locate features if required.

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CLIENT

Lovell Partnerships Ltd

SITE

**Former Greenside Mills,
 Skelmanthorpe**

DRAWING TITLE

**Indicative Mining
 Risk Plan**

DRAWING NO. C9297/DG/03	REVISION NO. 0
DRAWN BY MF	APPROVED BY GH
DATE November 2023	SCALE 1:1000
	PAPER SIZE A3



NOTES

- Development site boundary
- Proposed borehole grid pattern
- Proposed plots for drill and subsequent grout stabilisation, where necessary.
- Proposed extent of site for stripping of unrecorded mine entries (such as bell pits / crop workings etc).

Notes

1. This drawing should not be viewed in isolation from the accompanying report.
2. All marked site features shown on this drawing are given for indicative purposes only. This drawing should not be underlaid in isolation to determine proposed development layouts. Reference should be made to the accompanying report for commentary on the potential location of these features including coordinates if available and any further works required to locate features if required.

REVISION	BY	DATE
0	For Information	MF 20/11/23
A	>>	>> >>
B	>>	>> >>
C	>>	>> >>
D	>>	>> >>

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CLIENT

Lovell Partnerships Ltd

SITE

**Former Greenside Mills,
 Skelmanthorpe**

DRAWING TITLE






**Proposed Shallow Mine
 Workings Investigation and
 Treatment Plan**

DRAWING NO. CS297/DG/04	REVISION NO. 0	
DRAWN BY MF	APPROVED BY GH	
DATE November 2023	SCALE 1:1000	PAPER SIZE A3

Notes:
 This drawing, design and concept are copyright of STEN Architecture.
 All Dimensions are to be verified on site before any work commences. If any discrepancies, errors or omissions are noted, these are to be reported to STEN Architecture immediately.
 If any other drawings are referenced within this layout, please refer to the specific detailed drawing for design, materials and specific working practices.

PLANNING LAYOUT KEY:

Boundary treatments (see separate drawing for details)

-  Bin collection point (bin collection day only)
-  Secure 6ft (length) x 2ft (width) x 4ft (height) timber cycle store on 8no. 450sq.flags (900mm x 1800mm). Dwellings with garages to have bicycle hook within for storage.
-  Bin storage area on 6no. 450sq.flags (900mm x 1350mm)
-  Wall mounted - Mode 3, Type 2, 7kW Electric Vehicle Charging Point
-  Post mounted - Mode 3, Type 2, 7kW Electric Vehicle Charging Point



N	plot 09 moved east by 0.5m	BMS	21.06.23
M	'Puttenham' house type renamed as 'Newbury'	BMS	23.03.23
L	EV charging point locations added	BMS	15.03.23
K	Tweaks to bin and cycle store positions as per client mark up	BMS	10.01.23
J	Cycle stores, bin store areas and patios added. Central path added between parking spaces.	BMS	06.01.23
H	'AS' and 'OP' notes added to blocks, 1747 type handing corrected and side door added. Plot 1 amended to client's comments.	DS	08.11.22
G	Bin collection point serving plots 30-34 relocated closer to adoptable highway as per clients comments.	LS	20.07.22
F	Turning head serving plots 12-15 amended., positions of plots 12 and 14 amended to suit. Knee railing introduced to edge of turning head. All as per clients comments.	LS	01.07.22
E	Garage for plot 1 moved away from Saville Road. Plots 35-37 re-orientated to enable adjacent road to be reduced to private drive. Plots 33-34 moved forward to reduce height of retaining walls at rear. Other minor updates to Planning Officer comments.	BMS	17.06.22
D	Green walls moved back from footpath	BMS	31.03.22
C	Semi detached plots handed so entrance doors are on the high side	BMS	24.03.22
B	Plots to Saville Road amended to provide more frontage and opportunities for landscaping. Detached Osborne removed. Additional footpaths and visitor parking added	BMS	18.03.22
A	Parking arrangement amended for plot 45	BMS	25.11.21
REV:	DESCRIPTION:	BY:	DATE:

LOVELL	Client Project Job Number	LOVELL Skelmanthorpe CAD	STEN ARCHITECTURE		
Type	Floor Area Sq Ft	Bed	Total Units	Total	% Used
OPEN MARKET					
3 BFDs					
Lansdown	898	3	7	6286	15.2
Lansdown detached	898	3	2	1796	4.3
Newbury semi	1016	3	1	1016	2.2
Newbury detached	1016	3	4	4064	8.7
Osbourne	1205	3	13	15665	28.3
4 BFDs					
Tattenham	1530	4	7	10710	15.2
Grassington	1747	4	12	20964	26.1
Total			46	60501	41.3
		ACRES	Hectares		
Approx gross area		4.6	1.86		
Approx nett area		3.78	1.53		
Coverage per Acre		16006	30		

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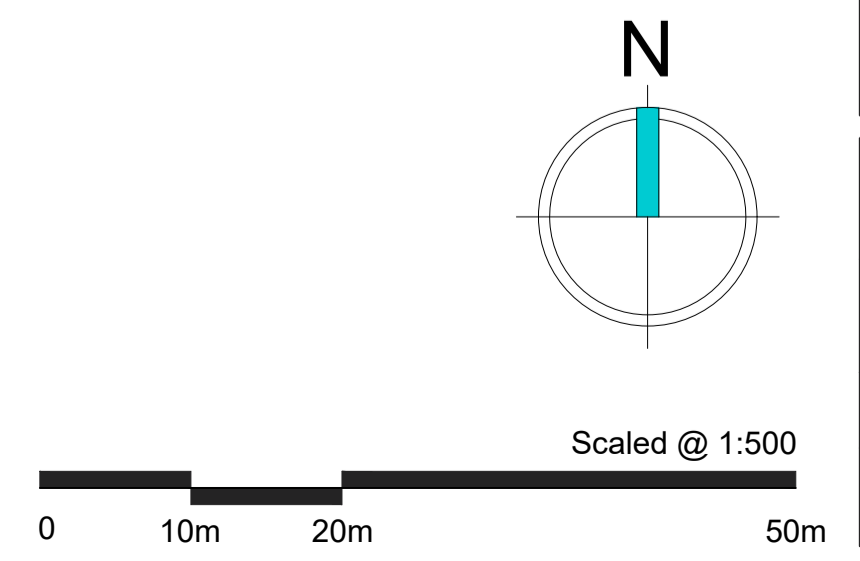
CLIENT: **LOVELL PARTNERSHIPS**

SITE: Greenside Mills Skelmanthorpe

TITLE: Planning Layout

SCALE AT A1: 1:500 DATE: 29.09.21 DRAWN: BMS CHECKED: --

PROJECT NO: 2156 DRAWING NO: 2156.01 REVISION: N



APPENDIX B

Rotary Borehole Logs



TRIAL PIT RECORD

TP No. **TP206**
Sheet 1 of 1

Site: Greenside Mills, Skelmanthorpe

Contract No: C9297

Client: Lovell Partnerships Ltd

Date:
18/05/2023

Method: 20 Tonne excavator with 6ft bucket.

Scale: 1:25

SAMPLE DETAILS

STRATA RECORD

Logged By: J.C | Checked By: G.H

Type	Depth From - To(m)	Vane Results (kN/m ²) (ppm)	Ground -water	Description	Depth (m)	Level (m AOD)	Legend	Backfill
				MADE GROUND: Light grey reinforced CONCRETE.				
ES	0.30			MADE GROUND: Reddish brown slightly clayey sandy GRAVEL with low cobble content. Gravel is angular to subangular fine to coarse of brick and concrete. Cobbles are angular of brick with slight solvent odour.	0.20	142.87		
ES	0.50			<i>At 0.20m bgl: Standing water noted to have sheen and slight solvent odour.</i> <i>From 0.20 to 0.80m bgl: Intact wall in eastern and southern wall of trial pit - potential sump?</i>	0.40	142.67		
				MADE GROUND: Firm dark orangish brown slightly sandy gravelly CLAY. Low plasticity (field description). Gravel is angular to subangular fine to coarse of brick, mudstone and sandstone.	0.60	142.47		
				<i>Bed of weak black COAL encountered dipping from south to north in eastern wall of trial pit. Encountered at 0.40m bgl shallowest and 2.00m bgl deepest. Approx 0.50m thick.</i>				
ES	1.20		1	Weak orangish brown SANDSTONE. Recovered as angular to subangular fine to coarse gravel.				
			2					
			3	End of trial pit at 2.80m	2.80	140.27		
			4					
			5					

Remarks and Groundwater Observations
 1. Trial pit complete at 2.80m bgl in bedrock. 2. Trial pit remained stable throughout excavation. 3. Perched water encountered at 0.20m bgl. 4. Backfilled with arisings upon completion.

GL (m AOD)
143.07
Easting:
423359.07
Northing:
410976.79

Fig No.

TP206



TRIAL PIT RECORD

TP No. **TP209**
Sheet 1 of 1

Site: Greenside Mills, Skelmanthorpe

Contract No: C9297

Client: Lovell Partnerships Ltd

Date:
18/05/2023

Method: 20 Tonne excavator with 6ft bucket.

Scale: 1:25

SAMPLE DETAILS

STRATA RECORD

Logged By: J.C Checked By: G.H

Type	Depth From - To(m)	Vane Results (kN/m ²) (ppm)	Ground -water	Description	Depth (m)	Level (m AOD)	Legend	Backfill
ES	0.40			MADE GROUND: Light grey reinforced CONCRETE.	0.20	150.74		
				MADE GROUND: Yellow sandy GRAVEL with low cobble content. Gravel is angular to subangular fine to coarse of sandstone and occasional brick. Cobbles are angular of sandstone.				
D	1.20	74.0 82.0 90.0	1	Firm to stiff medium to high strength bluish grey slightly sandy gravelly CLAY. Medium plasticity (field description). Gravel is angular to subangular fine to coarse gravel of mudstone.	0.90	150.04		
				Weak black COAL. Recovered as angular to subangular fine to coarse gravel.	1.80	149.14		
D	1.90			Moderately weak light grey MUDSTONE. Recovered as angular to subangular fine to coarse gravel.	2.50	148.44		
				End of trial pit at 3.00m	3.00	147.94		

Remarks and Groundwater Observations

1. Trial pit complete at 3.00m bgl in bedrock. 2. Trial pit remained dry and stable throughout excavation. 3. Backfilled with arisings upon completion.

GL (m AOD)
150.94
Easting:
423373.56
Northing:
410995.50

Fig No.

TP209



BOREHOLE RECORD

BH No. **RO01**
Sheet 1 of 1

Site: Greenside Mills, Skelmanthorpe

Contract No: C7340

Client: Paramount Retail Group Holdco Ltd

Date(s):
28/10/2020

Method: Rotary Top Hammer Drill Rig

Scale: 1:150

SAMPLE DETAILS

STRATA RECORD

Logged By: SDS Checked By: GH

Driller: SDS

Depth From - To(m)	TCR	SCR	RQD	FI	Ground -water	Description	Depth (m)	Level (m AOD)	Legend	Well
						MADE GROUND: Brown CLAY.				
1						Brown SANDSTONE. [PENNINE LOWER COAL MEASURES FORMATION]	1.20	154.40		
2										
3										
4										
5										
6										
7										
8						Grey SILTSTONE. [PENNINE LOWER COAL MEASURES FORMATION]	7.50	148.10		
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30						End of Borehole at 30.00m				

Remarks and Groundwater Observations:
 1. The borehole was drilled using water flush. 2. No visual or olfactory evidence of hydrocarbon contamination was encountered. 3. Due to the drilling method, no groundwater strikes were recorded. 4. The hole was installed with 63mm standpipe as detailed above.

GL (m AOD)
155.60
Eastings:
423281.28
Northings:
410941.26

Fig No.

RO01



BOREHOLE RECORD

BH No. **RO02**
Sheet 1 of 1

Site: Greenside Mills, Skelmanthorpe

Contract No: C7340

Client: Paramount Retail Group Holdco Ltd

Date(s):
29/10/2020

Method: Rotary Top Hammer Drill Rig

Scale: 1:150

SAMPLE DETAILS

STRATA RECORD

Logged By: SDS Checked By: GH

Driller: SDS

Depth From - To(m)	TCR	SCR	RQD	FI	Ground -water	Description	Depth (m)	Level (m AOD)	Legend	Well
						MADE GROUND: Black bound macadam / concrete.	0.20	142.87		
						MADE GROUND: Brown CLAY.	1.00	142.07		
						Brown MUDSTONE.				
						[PENNINE LOWER COAL MEASURES FORMATION]				
						Broken Ground (worked COAL).	3.80	139.27		
						[PENNINE LOWER COAL MEASURES FORMATION]				
						Brown SANDSTONE.	6.00	137.07		
						[PENNINE LOWER COAL MEASURES FORMATION]				
						SILTSTONE.	16.50	126.57		
						[PENNINE LOWER COAL MEASURES FORMATION]				
						End of Borehole at 30.00m	30.00	113.07		

Remarks and Groundwater Observations:

1. The borehole was drilled using water flush. 2. No visual or olfactory evidence of hydrocarbon contamination was encountered. 3. Due to the drilling method, no groundwater strikes were recorded. 4. The hole was installed with 63mm standpipe as detailed above.

GL (m AOD)
143.07
Eastings:
423411.82
Northings:
410937.02

Fig No.

RO02



BOREHOLE RECORD

BH No. **RO03**
Sheet 1 of 1

Site: Greenside Mills, Skelmanthorpe

Contract No: C7340

Client: Paramount Retail Group Holdco Ltd

Date(s):
28/10/2020

Method: Rotary Top Hammer Drill Rig

Scale: 1:150

SAMPLE DETAILS

STRATA RECORD

Logged By: SDS Checked By: GH

Driller: SDS

Depth From - To(m)	TCR	SCR	RQD	FI	Ground -water	Description	Depth (m)	Level (m AOD)	Legend	Well
						MADE GROUND: Black bound macadam.	0.20	144.93		
1						MADE GROUND: Brown CLAY.	1.20	143.93		
2						Weathered SANDSTONE / MUDSTONE. [PENNINE LOWER COAL MEASURES FORMATION]	2.40	142.73		
3						COAL (intact). [PENNINE LOWER COAL MEASURES FORMATION]	3.40	141.73		
4						MUDSTONE. [PENNINE LOWER COAL MEASURES FORMATION]	4.20	140.93		
5						COAL (intact) [PENNINE LOWER COAL MEASURES FORMATION]	5.50	139.63		
6						SANDSTONE. [PENNINE LOWER COAL MEASURES FORMATION]	6.00	139.13		
7						SILTSTONE. [PENNINE LOWER COAL MEASURES FORMATION]				
8										
9										
10						SANDSTONE. [PENNINE LOWER COAL MEASURES FORMATION]	9.50	135.63		
11										
12										
13										
14										
15										
16						CLAY band. [PENNINE LOWER COAL MEASURES FORMATION]	16.00	129.13		
17						MUDSTONE / SILTSTONE. [PENNINE LOWER COAL MEASURES FORMATION]	16.30	128.83		
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30						End of Borehole at 30.00m	30.00	115.13		

Remarks and Groundwater Observations:

1. The borehole was drilled using air mist. 2. No visual or olfactory evidence of hydrocarbon contamination was encountered. 3. Groundwater was encountered at 16m bgl. 4. The hole was installed with 63mm standpipe as detailed above.

GL (m AOD)
145.13
Eastings:
423384.51
Northings:
410999.08

Fig No.

RO03



BOREHOLE RECORD

BH No. **RO101**
Sheet 1 of 1

Site: Greenside Mills, Skelmanthorpe

Contract No: C7340A

Client: Paramount Retail Group HoldCo

Date(s):
13/05/2021

Method: C6 XP 4 Casagrande Rotary Rig

Scale: 1:150

SAMPLE DETAILS

STRATA RECORD

Logged By: Driller Checked By: GH

Driller:

Depth From - To(m)	TCR	SCR	RQD	FI	Ground -water	Description	Depth (m)	Level (m AOD)	Legend	Well
						OVERBURDEN				
						MUDSTONE / SANDSTONE BANDS	2.60	137.68		
						End of Borehole at 30.00m	30.00	110.28		

Remarks and Groundwater Observations:
 1. No significant groundwater strikes recorded. 2. Borehole drilled to 30m depth using water flush methods.
 3. Rotary borehole backfilled with arisings / gravel and bentonite seal upon completion.

GL (m AOD)
140.29
Eastings:
423451.52
Northings:
410986.00

Fig No.
RO101



BOREHOLE RECORD

BH No. **RO103**
Sheet 1 of 1

Site: Greenside Mills, Skelmanthorpe

Contract No: C7340A

Client: Paramount Retail Group HoldCo

Date(s):
13/05/2021

Method: C6 XP 4 Casagrande Rotary Rig

Scale: 1:150

SAMPLE DETAILS

STRATA RECORD

Logged By: Driller Checked By: GH

Driller:

Depth From - To(m)	TCR	SCR	RQD	FI	Ground -water	Description	Depth (m)	Level (m AOD)	Legend	Well
						ORANGE CLAY				
						MUDSTONE	3.50	135.95		
						COAL	13.00	126.45		
						MUDSTONE / SANDSTONE BANDS	13.20	126.25		
						End of Borehole at 30.00m	30.00	109.45		

Remarks and Groundwater Observations:

- No significant groundwater strikes recorded.
- Borehole drilled to 30m depth using water flush methods.
- Rotary borehole backfilled with arisings / gravel and bentonite seal upon completion.

GL (m AOD)
139.45
Eastings:
423454.96
Northings:
410959.41

Fig No.

RO103



BOREHOLE RECORD

BH No. **RO104**
Sheet 1 of 1

Site: Greenside Mills, Skelmanthorpe

Contract No: C7340A

Client: Paramount Retail Group HoldCo

Date(s):
13/05/2021

Method: C6 XP 4 Casagrande Rotary Rig

Scale: 1:150

SAMPLE DETAILS

STRATA RECORD

Logged By: Driller Checked By: GH

Driller:

Depth From - To(m)	TCR	SCR	RQD	FI	Ground -water	Description	Depth (m)	Level (m AOD)	Legend	Well
						MADE GROUND				
						MUDSTONE / SANDSTONE BANDS	4.00	135.80		
						End of Borehole at 30.00m	30.00	109.80		

Remarks and Groundwater Observations:

1. No significant groundwater strikes recorded.
2. Borehole drilled to 30m depth using water flush methods.
3. Rotary borehole backfilled with arisings / gravel and bentonite seal upon completion.

GL (m AOD)
139.81
Eastings:
423449.34
Northings:
410948.57

Fig No.

RO104



BOREHOLE RECORD

BH No. **RO105**
Sheet 1 of 1

Site: Greenside Mills, Skelmanthorpe

Contract No: C7340A

Client: Paramount Retail Group HoldCo

Date(s):
12/05/2021

Method: C6 XP 4 Casagrande Rotary Rig

Scale: 1:150

SAMPLE DETAILS

STRATA RECORD

Logged By: Driller Checked By: GH

Driller:

Depth From - To(m)	TCR	SCR	RQD	FI	Ground -water	Description	Depth (m)	Level (m AOD)	Legend	Well
						MADE GROUND				
					1	CLAY	1.00	142.50	[Cross-hatch pattern]	
					2				[Cross-hatch pattern]	
					3	COAL	2.50	141.00	[Solid black]	
						MUDSTONE	3.10	140.40	[Horizontal lines]	
					4	SOFT COAL	4.00	139.50	[Solid black]	
					5	MUDSTONE / SANDSTONE BANDS	4.50	139.00	[Horizontal lines]	
					6				[Horizontal lines]	
					7				[Horizontal lines]	
					8				[Horizontal lines]	
					9				[Horizontal lines]	
					10				[Horizontal lines]	
					11				[Horizontal lines]	
					12				[Horizontal lines]	
					13				[Horizontal lines]	
					14				[Horizontal lines]	
					15				[Horizontal lines]	
					16				[Horizontal lines]	
					17				[Horizontal lines]	
					18				[Horizontal lines]	
					19				[Horizontal lines]	
					20				[Horizontal lines]	
					21				[Horizontal lines]	
					22				[Horizontal lines]	
					23				[Horizontal lines]	
					24				[Horizontal lines]	
					25				[Horizontal lines]	
					26				[Horizontal lines]	
					27				[Horizontal lines]	
					28				[Horizontal lines]	
					29				[Horizontal lines]	
					30	End of Borehole at 30.00m	30.00	113.50	[Horizontal lines]	

Remarks and Groundwater Observations:
 1. No groundwater strikes recorded. 2. Borehole drilled to 30m depth using air / air mist methods. 3. Rotary borehole backfilled with arisings / gravel and bentonite seal upon completion.

GL (m AOD)
143.50
 Eastings:
423386.64
 Northings:
410992.08

Fig No.
RO105



BOREHOLE RECORD

BH No. **RO107**
Sheet 1 of 1

Site: Greenside Mills, Skelmanthorpe

Contract No: C7340A

Client: Paramount Retail Group HoldCo

Date(s):
14/05/2021

Method: C6 XP 4 Casagrande Rotary Rig

Scale: 1:150

SAMPLE DETAILS

STRATA RECORD

Logged By: Driller Checked By: GH

Driller:

Depth From - To(m)	TCR	SCR	RQD	FI	Ground -water	Description	Depth (m)	Level (m AOD)	Legend	Well
						ORANGE CLAY				
						MUDSTONE / SANDSTONE BANDS	5.00	139.97		
						End of Borehole at 30.00m	30.00	114.97		

Remarks and Groundwater Observations:

1. No significant groundwater strikes recorded.
2. Borehole drilled to 30m depth using water flush methods.
3. Rotary borehole backfilled with arisings / gravel and bentonite seal upon completion.

GL (m AOD)
144.97
Eastings:
423389.13
Northings:
410938.16

Fig No.

RO107



BOREHOLE RECORD

BH No. **RO110**
Sheet 1 of 1

Site: Greenside Mills, Skelmanthorpe

Contract No: C7340A

Client: Paramount Retail Group HoldCo

Date(s):
14/05/2021

Method: C6 XP 4 Casagrande Rotary Rig

Scale: 1:150

SAMPLE DETAILS

STRATA RECORD

Logged By: Driller Checked By: GH

Driller:

Depth From - To(m)	TCR	SCR	RQD	FI	Ground -water	Description	Depth (m)	Level (m AOD)	Legend	Well
						OVERBURDEN				
						MUDSTONE	2.00	145.93		
						COAL	10.00	137.93		
						MUDSTONE	10.20	137.73		
						End of Borehole at 30.00m	30.00	117.93		

Remarks and Groundwater Observations:

1. No significant groundwater strikes recorded.
2. Borehole drilled to 30m depth using water flush methods.
3. Rotary borehole backfilled with arisings / gravel and bentonite seal upon completion.

GL (m AOD)
147.93
Eastings:
423342.74
Northings:
410972.01

Fig No.

RO110



BOREHOLE RECORD

BH No. **RO111**
Sheet 1 of 1

Site: Greenside Mills, Skelmanthorpe

Contract No: C7340A

Client: Paramount Retail Group HoldCo

Date(s):
14/05/2021

Method: C6 XP 4 Casagrande Rotary Rig

Scale: 1:150

SAMPLE DETAILS

STRATA RECORD

Logged By: Driller Checked By: GH

Driller:

Depth From - To(m)	TCR	SCR	RQD	FI	Ground -water	Description	Depth (m)	Level (m AOD)	Legend	Well
						MADE GROUND				
					1	MUDSTONE	1.00	152.27		
					2					
					3					
					4					
					5					
					6					
					7					
					8					
					9					
					10					
					11	COAL	10.50	142.77		
					12	MUDSTONE	10.70	142.57		
					13					
					14					
					15					
					16					
					17					
					18					
					19					
					20					
					21					
					22					
					23					
					24					
					25					
					26					
					27					
					28					
					29					
					30	End of Borehole at 30.00m	30.00	123.27		

Remarks and Groundwater Observations:
 1. No significant groundwater strikes recorded. 2. Borehole drilled to 30m depth using water flush methods.
 3. Rotary borehole backfilled with arisings / gravel and bentonite seal upon completion.

GL (m AOD)
153.27
 Eastings:
423300.82
 Northings:
410953.09

Fig No.
RO111



BOREHOLE RECORD

BH No. **RO112**
Sheet 1 of 1

Site: Greenside Mills, Skelmanthorpe

Contract No: C7340A

Client: Paramount Retail Group HoldCo

Date(s):
14/05/2021

Method: C6 XP 4 Casagrande Rotary Rig

Scale: 1:150

SAMPLE DETAILS

STRATA RECORD

Logged By: Driller Checked By: GH

Driller:

Depth From - To(m)	TCR	SCR	RQD	FI	Ground -water	Description	Depth (m)	Level (m AOD)	Legend	Well
						CLAY				
						MUDSTONE	3.00	144.93		
						COAL	21.00	126.93		
						MUDSTONE	21.60	126.33		
						End of Borehole at 30.00m	30.00	117.93		

Remarks and Groundwater Observations:
 1. No significant groundwater strikes recorded. 2. Borehole drilled to 30m depth using water flush methods.
 3. Rotary borehole backfilled with arisings / gravel and bentonite seal upon completion.

GL (m AOD)
147.93
Eastings:
423340.49
Northings:
410890.34

Fig No.
RO112



BOREHOLE RECORD

BH No. **RO201**
Sheet 1 of 1

Site: Greenside Mills, Skelmanthorpe

Contract No: C9297

Client: Lovell Partnerships Ltd

Date(s):
09/10/2023

Method: Tracked open hole rotary drilling rig.

Scale: 1:150

SAMPLE DETAILS

STRATA RECORD

Logged By: JC Checked By: G.H

Driller: Sirius Drilling Services

Depth From - To(m)	TCR	SCR	RQD	FI	Ground -water	Description	Depth (m)	Level (m AOD)	Legend	Well
						OVERBURDEN (** Driller's description)				
					1					
					2	Yellowish brown SANDSTONE (** Driller's description).	2.00	140.56		
					3					
					4					
					5					
					6					
					7	Grey MUDSTONE (** Driller's description).	7.00	135.56		
					8					
					9					
					10	Strong yellowish brown SANDSTONE (** Driller's description).	9.50	133.06		
					11					
					12	Grey MUDSTONE (** Driller's description).	11.50	131.06		
					13					
					14					
					15	Grey MUDSTONE with SANDSTONE bands (** Driller's description).	15.00	127.56		
					16					
					17					
					18	▼				
					19					
					20					
					21	Yellowish brown SANDSTONE (** Driller's description).	21.00	121.56		
					22					
					23	Grey MUDSTONE with SANDSTONE bands (** Driller's description).	23.00	119.56		
					24					
					25					
					26					
					27					
					28					
					29					
					30	End of Borehole at 30.00m	30.00	112.56		

Remarks and Groundwater Observations:

1. Drilled using air flush. 2. Backfilled with gravel and capped with bentonite. 3. Co-ordinates and elevations surveyed on site using survey grade GPS

GL (m AOD)

142.56

Eastings:

423408.00

Northings:

410979.01

Fig No.

RO201



BOREHOLE RECORD

BH No. **RO203**
Sheet 1 of 1

Site: Greenside Mills, Skelmanthorpe

Contract No: C9297

Client: Lovell Partnerships Ltd

Date(s):
09/10/2023

Method: Tracked open hole rotary drilling rig.

Scale: 1:150

SAMPLE DETAILS

STRATA RECORD

Logged By: JC Checked By: G.H

Driller: Sirius Drilling Services

Depth From - To(m)	TCR	SCR	RQD	FI	Ground -water	Description	Depth (m)	Level (m AOD)	Legend	Well
						OVERBURDEN (** Driller's description).				
						Yellowish brown SANDSTONE (** Driller's description).	2.00	140.54		
						Grey MUDSTONE (** Driller's description).	8.00	134.54		
						Yellowish brown SANDSTONE (** Driller's description).	10.00	132.54		
						End of Borehole at 12.00m	12.00	130.54		

Remarks and Groundwater Observations:
1. Drilled using air flush. 2. Backfilled with gravel and capped with bentonite. 3. Co-ordinates and elevations surveyed on site using survey grade GPS

GL (m AOD)
142.54
Eastings:
423399.30
Northings:
410972.32

Fig No.
RO203



BOREHOLE RECORD

BH No. **RO205**
Sheet 1 of 1

Site: Greenside Mills, Skelmanthorpe

Contract No: C9297

Client: Lovell Partnerships Ltd

Date(s):
09/10/2023

Method: Tracked open hole rotary drilling rig.

Scale: 1:150

SAMPLE DETAILS

STRATA RECORD

Logged By: JC Checked By: G.H

Driller: Sirius Drilling Services

Depth From - To(m)	TCR	SCR	RQD	FI	Ground -water	Description	Depth (m)	Level (m AOD)	Legend	Well
						OVERBURDEN (** Drillers description).				
						SANDSTONE (** Drillers description).	2.50	140.04		
						GREY MUDSTONE (** Drillers description).	7.50	135.04		
						SANDSTONE with alternating mudstone bands (** Drillers description).	12.00	130.54		
						SANDSTONE (** Drillers description).	21.00	121.54		
						End of Borehole at 30.00m	30.00	112.54		

Remarks and Groundwater Observations:

1. Drilled using air flush. 2. Backfilled with gravel and capped with bentonite. 3. Co-ordinates and elevations surveyed on site using survey grade GPS

GL (m AOD)
142.54

Eastings:
423417.79

Northings:
410983.81

Fig No.

RO205



BOREHOLE RECORD

BH No. **RO206**
Sheet 1 of 1

Site: Greenside Mills, Skelmanthorpe

Contract No: C9297

Client: Lovell Partnerships Ltd

Date(s):
09/10/2023

Method: Tracked open hole rotary drilling rig.

Scale: 1:150

SAMPLE DETAILS

STRATA RECORD

Logged By: JC Checked By: G.H

Driller: Sirius Drilling Services

Depth From - To(m)	TCR	SCR	RQD	FI	Ground -water	Description	Depth (m)	Level (m AOD)	Legend	Well
						OVERBURDEN (** Drillers description).				
						SANDSTONE (** Drillers description).	2.20	140.33		
						GREY MUDSTONE with alternating sandstone bands (** Drillers description).	9.00	133.53		
						SANDSTONE (** Drillers description).	13.00	129.53		
						GREY MUDSTONE (** Drillers description).	21.00	121.53		
						SANDSTONE with alternating mudstone bands (** Drillers description).	25.50	117.03		
						End of Borehole at 30.00m	30.00	112.53		

Remarks and Groundwater Observations:

1. Drilled using air flush. 2. Backfilled with gravel and capped with bentonite. 3. Co-ordinates and elevations surveyed on site using survey grade GPS

GL (m AOD)
142.53
Eastings:
423429.65
Northings:
410983.84

Fig No.

RO206



BOREHOLE RECORD

BH No. **RO208**
Sheet 1 of 1

Site: Greenside Mills, Skelmanthorpe

Contract No: C9297

Client: Lovell Partnerships Ltd

Date(s):
10/10/2023

Method: Tracked open hole rotary drilling rig.

Scale: 1:150

SAMPLE DETAILS

STRATA RECORD

Logged By: JC Checked By: G.H

Driller: Sirius Drilling Services

Depth From - To(m)	TCR	SCR	RQD	FI	Ground -water	Description	Depth (m)	Level (m AOD)	Legend	Well
						OVERBURDEN (** Drillers description).				
1										
2						SANDSTONE (** Drillers description).	2.00	140.57		
3										
4										
5										
6										
7						GREY MUDSTONE (** Drillers description).	7.00	135.57		
8										
9										
10										
11										
12						SANDSTONE with alternating mudstone bands (** Drillers description).	12.00	130.57		
13										
14						COAL TRACE (** Drillers description).	14.00	128.57		
15						GREY MUDSTONE (** Drillers description).	14.10	128.47		
16						SANDSTONE with alternating mudstone bands (** Drillers description).	16.00	126.57		
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30						End of Borehole at 30.00m	30.00	112.57		

Remarks and Groundwater Observations:
1. Drilled using water flush. 2. Backfilled with gravel and capped with bentonite. 3. Co-ordinates and elevations surveyed on site using survey grade GPS

GL (m AOD)
142.57
Eastings:
423413.69
Northings:
410967.14

Fig No.
RO208



BOREHOLE RECORD

BH No. **RO209**
Sheet 1 of 1

Site: Greenside Mills, Skelmanthorpe

Contract No: C9297

Client: Lovell Partnerships Ltd

Date(s):
10/10/2023

Method: Tracked open hole rotary drilling rig.

Scale: 1:150

SAMPLE DETAILS

STRATA RECORD

Logged By: JC Checked By: G.H

Driller: Sirius Drilling Services

Depth From - To(m)	TCR	SCR	RQD	FI	Ground -water	Description	Depth (m)	Level (m AOD)	Legend	Well
						OVERBURDEN (** Drillers description).				
1										
2						SANDSTONE (** Drillers description).	2.00	142.17		
3										
4										
5										
6										
7										
8										
9						GREY MUDSTONE (** Drillers description).	9.00	135.17		
10										
11						SANDSTONE (** Drillers description).	11.00	133.17		
12										
13										
14										
15										
16						GREY MUDSTONE (** Drillers description).	16.00	128.17		
17										
18										
19						DARK MUDSTONE (** Drillers description).	19.00	125.17		
20						GREY MUDSTONE (** Drillers description).	19.40	124.77		
21						End of Borehole at 21.00m	21.00	123.17		
22										
23										
24										
25										
26										
27										
28										
29										
30										

Remarks and Groundwater Observations:
1. Drilled using water flush. 2. Backfilled with gravel and capped with bentonite. 3. Co-ordinates and elevations surveyed on site using survey grade GPS

GL (m AOD)
144.17
Eastings:
423404.30
Northings:
410953.90

Fig No.
RO209

SIRIUS GEOTECHNICAL LTD

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