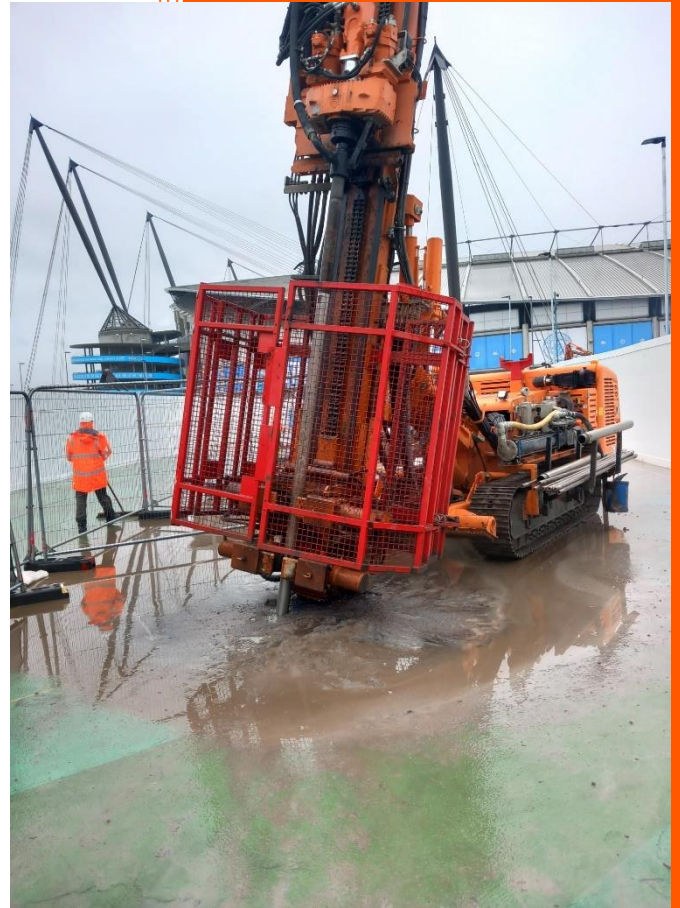


233927

Osborne Yard, Manchester



Factual Report

Probing, Locating, Drilling and Treatment of Shallow
Mine Workings

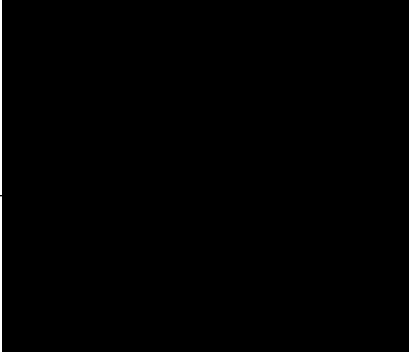
Van Elle
Summit Close
Kirkby-in-Ashfield
Nottinghamshire
NG17 8GJ
01773 580580

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Control Sheet

This report has been prepared for the sole benefit, use and information of MPH Ancoats Limited / Innov8 Development Solutions (IDS) for the purposes set out in the instructions commissioning it. The liability of Van Elle Ltd in respect of the information contained in the report will not extend to any third party. It is now the client's responsibility to fulfil the Coal Authority's requirements with regards to the Coal Authority Permit.

Prepared by	Paul Grocott MIMMM FGS		Date 05/03/2024
Approved by	Dave Bourne		Date 05/03/2024

Introduction

The site is located off Oldham Road, Miles Platting within Greater Manchester. The site is to be redeveloped to allow the construction of new residential properties. As part of the pre-construction phase of the redevelopment, a site investigation was commissioned and carried out.

The site investigation was to check the underlying geological conditions including any potential mine workings, due to the area being within a mining reporting area. A screenshot of the Coal Authority Interactive Viewer is shown below in Figure 1.

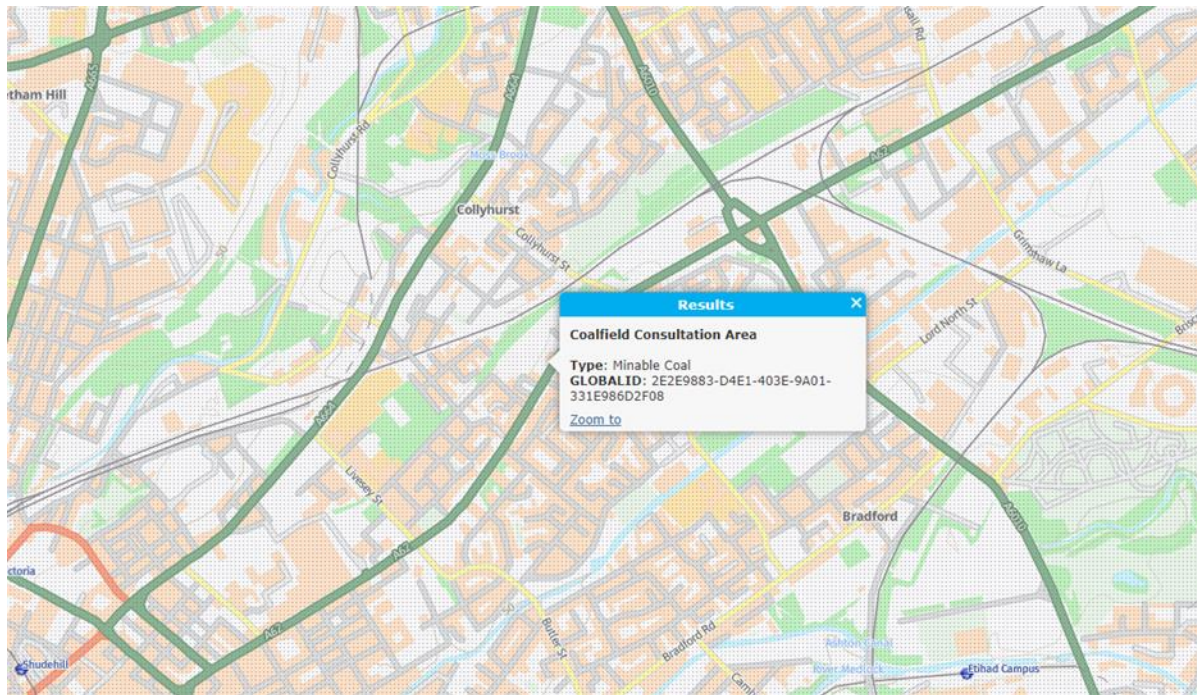


Figure 1: Coalfield Area (Taken from Coal Authority Interactive Viewer)

The site investigation report concluded that there was chance of underlying Coal seams which may have been worked in the past. As such, a drill and grouting exercise should be undertaken to investigate and, if necessary, treat the former workings.

IDS, acting as Principal Contractor, therefore instructed Van Elle to investigate, locate and, if required, treat any underlying former coal workings to prevent future ground collapse.

All works were carried out in line with recommendations given in CIRIA Publication 758D and Van Elle Specification dated February 2024 (see Appendix 1)

The works were carried out between 12 February and 15 February 2024 and involved the drilling of 20 boreholes totalling 800m and the injection of 6 tonnes of cementitious grout. All drilled holes were grouted as part of the works.

Methodology – Drill and Grouting

The works involved the drilling of 101mm/72mm diameter boreholes to access the underlying workings/geology to ascertain if treatment was required.

All works were carried out by a Casagrande C6 rotary percussive drill rig, using water as the flushing medium to assist in the drilling through hard strata and to reduce the risk of releasing perched mine gases.

The drill crew set up the drill rig at the drilling location with the initial lengths of 101mm casing installed on the mast. The driller then commenced drilling and installed the first lengths casing into the ground. With the initial casing lengths installed, the driller split off the drill head from the casing, then raising the drill head to a suitable position for accepting the next length of the casing. This process was repeated until the casing reached rockhead, where it was socketed in to give a tight seal, thus preventing grout loss.

Once the casing was installed to rockhead and sealed, the smaller diameter drill rods (T38) were added to the mast and a 72mm drill bit fitted to drill down to the target seam.

Once the target seam had been reached and an open borehole achieved, the borehole was further cleaned out by moving the rods up and down on the mast, allowing any materials that had spalled into the borehole to be removed.

The entire drill string was then removed, and the borehole deemed complete and ready for grouting.

During the drilling process, accurate logs of depths, loss of flush, geology and any workings encountered were recorded. Logs attached and can be found in Appendix 2.

Grouting works commenced once there were enough holes drilled out within the treatment area to permit and accommodate the batching of a full grout mix with minimal wastage.

The grout consisted of neat OPC mixed with water. All boreholes were grouted to surface.

Conclusion

The boreholes drilled to investigate former coal workings encountered solid geology with coal traces, and no evidence of past workings.

Each borehole was backfilled with OPC mixed with water to close the borehole and prevent any potential for mine gases to escape into the atmosphere.

Van Elle are satisfied that there are no mine workings beneath the area investigated during this phase of works.

As with all formerly mined sites, there is always a possibility of unknown mineshafts/bell pits/adits and previously formed crown holes being present on site. We would suggest that there is a watching brief whilst undertaking any excavation/earthworks on site and any changes in fill material or colour are noted and investigated.

The principal purpose of the works was to ensure that no abnormal movement occurred as a result of the site's mining past that could potentially affect the proposed foundation solution. Van Elle is confident that due to the fact there are no underlying workings at shallow depth (30m below existing ground level) any abnormal movement which could affect the foundations proposed for this site would not be caused by movement/collapse of former shallow workings.

The works have been carried out in line with Industry Guidelines and recommendations made in CIRIA Special Publication 758D.

Appendix 1:

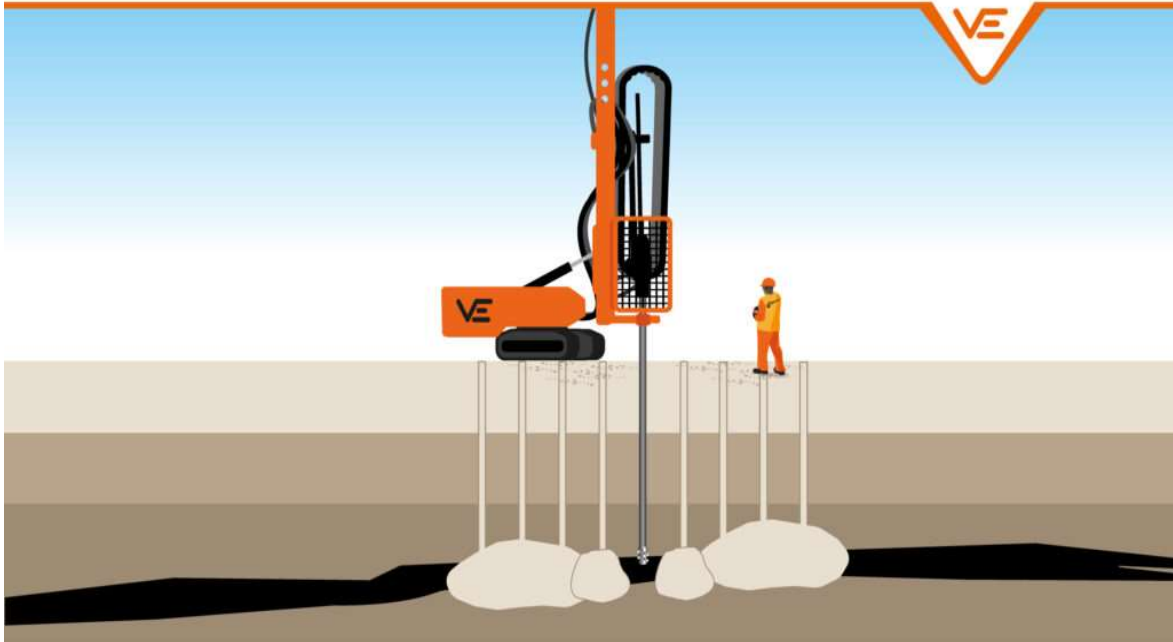
Drill and Grout Specification



233927

Osbourne's Yard, Manchester

Specification for Consolidation of Mine Workings by Drilling and Grouting



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Control Sheet

This report has been prepared for the sole benefit, use and information of MPH Ancoats Limited/Innov8ds for the purposes set out in the instructions commissioning it. The liability of Van Elle Ltd in respect of the information contained in the report will not extend to any third party.

Prepared by	Sam Palmer MEng GMICE	Signed <i>S.Palmer</i>	Date 07/02/2024
Approved by	Paul Grocott BSc MIMMM FGS	Signed <i>Paul Grocott</i>	Date 07/02/2024

1.0 Introduction

Innov8 Development Solutions (IDS), in their capacity as Principal Contractor, has instructed Van Elle (VE) to prepare a design and specification to allow the stabilisation and consolidation of underlying Coal seams and any workings found within them only. Any geological / manmade features above the coal seams will not form part of these works.

The stabilisation of the workings / coal seams will be carried out by Drilling and Grouting, an industry wide term, used to describe the processes identified and described below.

Figure 1 shows the area to be treated from suspected workings within the footprint of the proposed development.

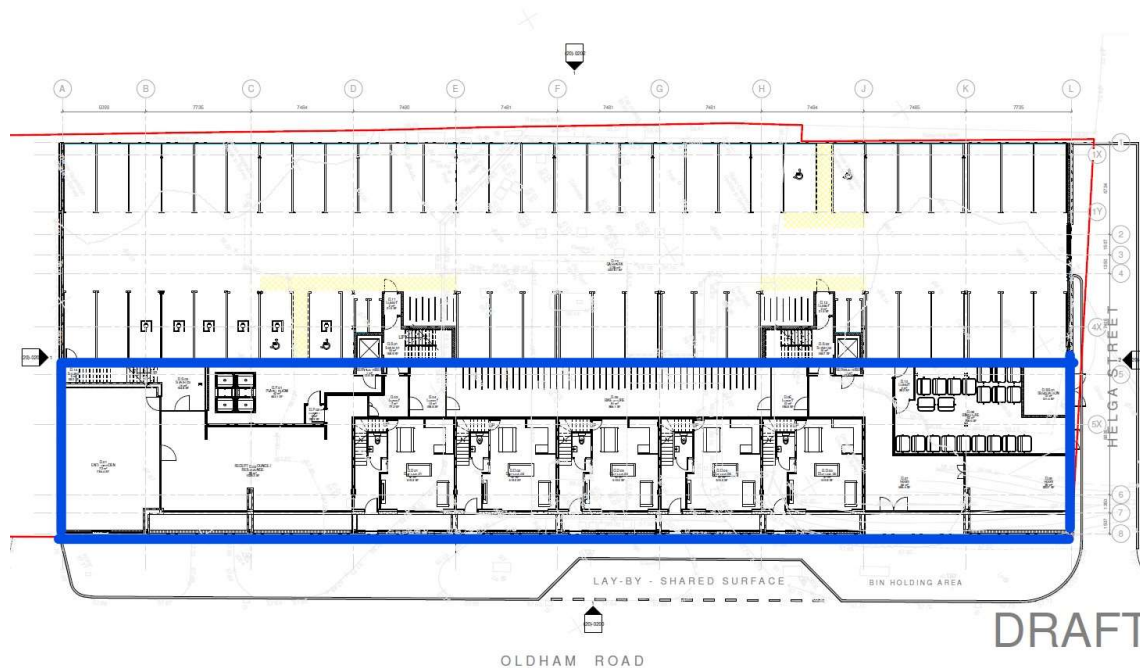


Figure 1 – Stabilisation area.

1.1 Location and Description

The site is located off Oldham Road, Miles Platting, Manchester and is currently being redeveloped for a proposed block of residential apartments. The site location is shown below on Figure 2.

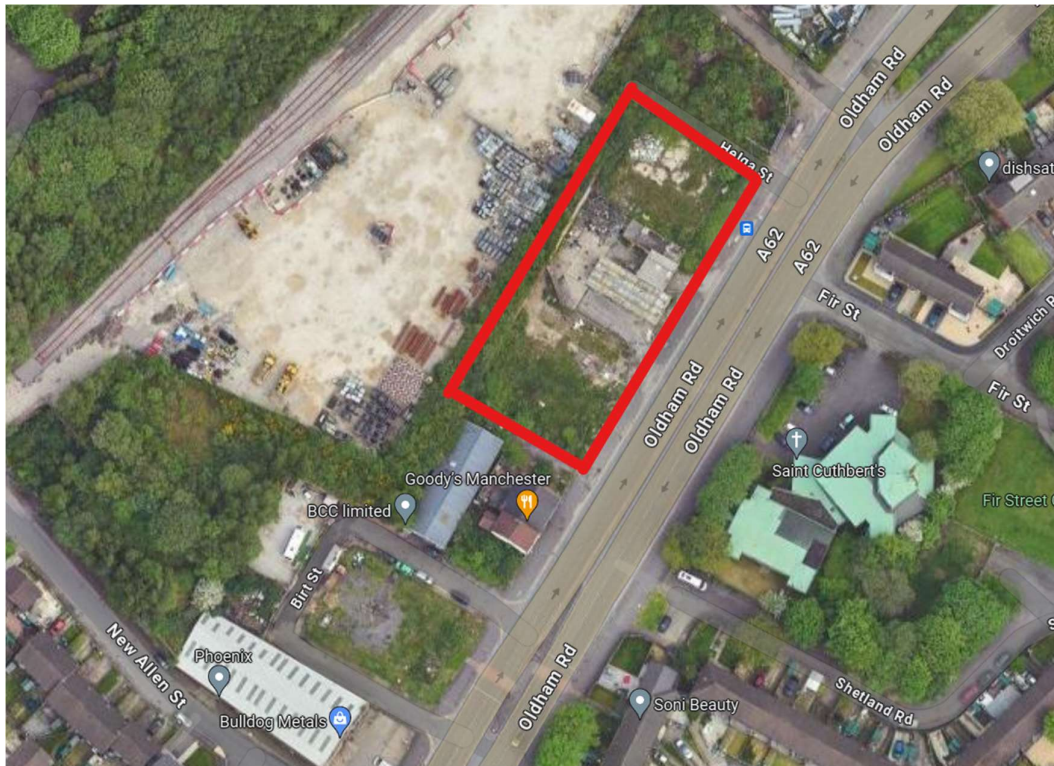


Figure 2: Site plan

1.2 Ground Conditions & Geology

A check of the BGS GeoIndex online resource shows the site to be underlain by the Pennine Middle Coal Measures consisting of Mudstones, Sandstones, Siltstones and Coal. Screenshot shown below on Figure 3.

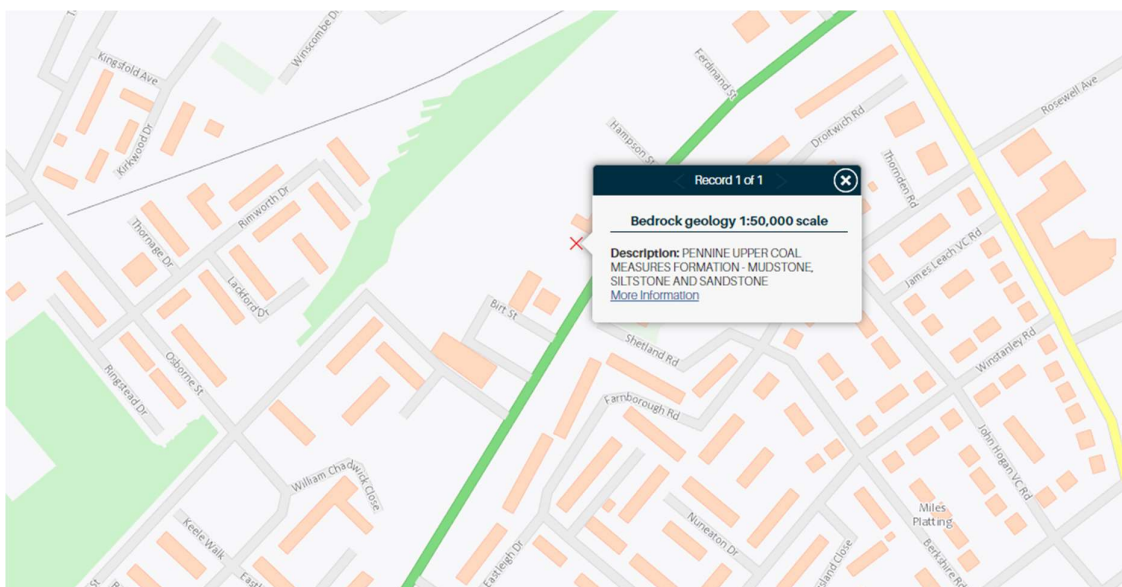


Figure 3: Geological Background

A further check of the Coal Authority Interactive viewer also revealed that the site is within a former coal mining area. It was therefore recommended that this area be investigated and if found to be showing evidence of workings to be consolidating by drilling and grouting. A screenshot is shown below as Figure 4.

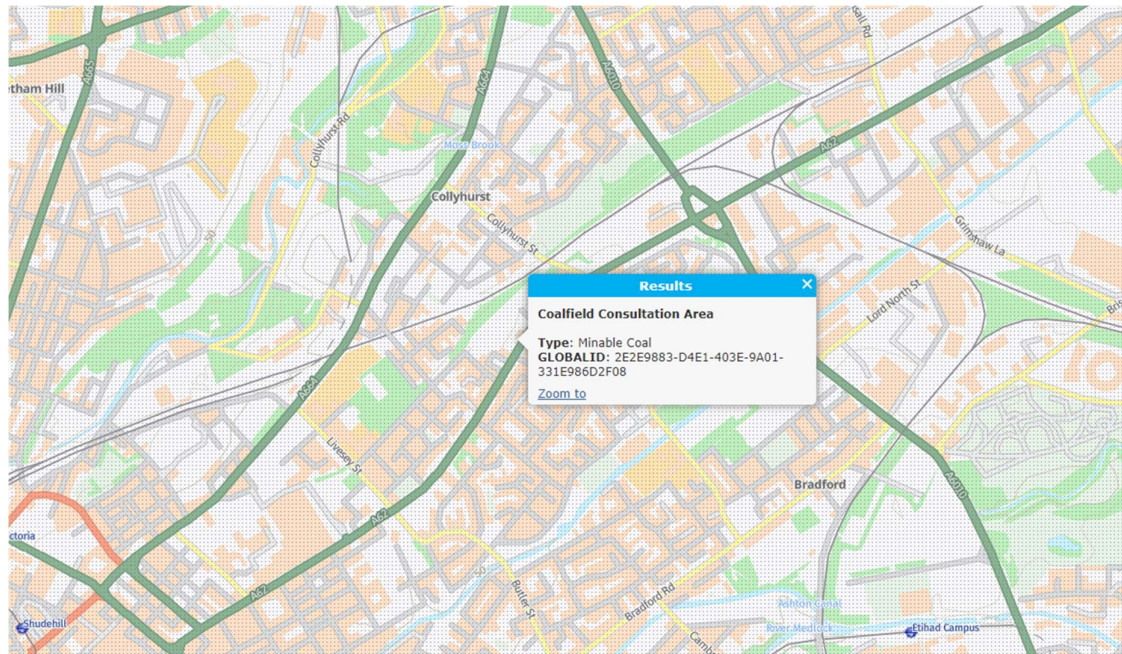


Figure 4: Showing former coal mining area.

1.3 Purpose of the Works

Treatment of coal seams / workings is required where less than ten times seam thickness of rock cover exists between the top of the worked seam and the base of the proposed piles/rock head.

This 10T rule is an industry adopted common practice based on information and guidance given within Section 5.3 of CIRIA Publication C758D published in 2019.

1.4 Permissions

1.4.1 Coal Authority

A permit to treat workings will be obtained from the Coal Authority. A copy of the permit shall be kept on site by the foreman.

1.4.2 Environment Agency

Any permits required by the EA must be obtained by the Client / Principal Contractor unless otherwise agreed.

1.5 Services

All services must be identified on site and shown to the Foreman and drill crew. All protection, diversion, and reinstatement of any service under CDM fall under the responsibility of the Principal Contractor and permits to work must be issued.

2.0 Specification

2.1 Design

A 12m grid with centre bores (effective 8.5m grid) has been superimposed on the proposed residential development, with boreholes to be drilled to a max depth of 40m below existing ground level to intercept the target seam(s). If workings are encountered, the grid will be closed in line with section 2.3 of this specification.

Treatment will be afforded to the **Coal Seams Only**.

2.2 Supervision

A qualified foreman will be on site during the project, who will be responsible for ensuring the works comply with the specification. He will liaise with VE contract management staff daily.

The Foreman will be supported by a visiting Contracts Supervisor/Contracts Manager, further IT and Engineering support will be provided from back in the office and if required on site.

2.3 Drilling

Drilling will be carried out using hydraulic driven rotary percussive drill rig, advancing 101mm steel casing to rockhead. Once this casing has been socketed in at this horizon, drilling will continue down to target seam. A nominal 72mm diameter borehole into the target seam to allow grouting and consolidation. Rotary percussive drilling techniques will be used with water as the flushing medium. The rigs will be fitted with a fully interlocked guard, which will be in operation at all times that drilling is being carried out.

2.3.1 Primary Grid

A primary grid of 12m with centre bores (effective 8.5m grid) will be drilled with boreholes extending to max depth 40m bgl. If workings are encountered, a reduced grid spacing will be drilled around this position to assist with consolidating the workings in this area.

2.3.2 Perimeter

This does not appear necessary since there is no great dip in the workings or significant voids.

2.3.3 Records

Full records shall be maintained during the works, showing job name and location, hole reference number, date, plant in use and crew members, inclination of borehole, daily and cumulative length drilled depth to each major change in stratum, description noting where stratum is broken, details of any voids or suspected workings and depth of completed borehole.

2.3.4 Unknown Mineshafts

Should unknown mineshafts be encountered it will be necessary to probe drill the shaft to work out its diameter. The PC should then record the position via GPS and VE will inform the Coal Authority as the permit holder. The CA will amend the permit to allow treatment.

A shaft safety platform would then need to be mobilised to allow treatment. Methodology and risks will be covered in an amended set of RAMS and Specification.

2.4 Grouting

2.4.1 Materials & Mix

If solid coal / no evidence of workings is encountered, the holes will be backfilled with Portland Cement.

Should workings be encountered, a 12:1 PFA (Pulverised Fuel Ash):OPC grout mix will be injected with a water solids ratio of no more than 40%. No thixotropic or thickening agents will be added during agitation. Cement shall comply with BS12 and PFA shall be in accordance with BS 3892: part 2.

If open voids are encountered the introduction of pea gravel shall be used within the grout mix as per CIRIA guidance.

2.4.2 Equipment

If needed, grout will be batched on site using an agitator mixer powered using an electric motor powered by a diesel generator. Constituent materials shall be introduced by a loading shovel and pumped to each treatment borehole using an electric MAPP pump and pressure head atop the steel casing. All plant shall be certified safe and maintained properly throughout the operation.

2.4.3 Water

A source of water will be provided to Van Elle from a hydrant with a standpipe.

2.4.5 Testing

If grout mixing is required, sets of 4 Grout cubes shall be taken and tested 7-, 14- and 28-day intervals to achieve a minimum strength of 1N/mm² after 28 days.

The foreman shall ensure that mixes are tested regularly for flow and bleed using a Colcrete type flowmeter and graduated beaker respectively. Flows should be with the range of 300-600mm and bleed should be no more than 2% by volume.

2.5 Testing

2.5.1 Test holes

Test holes will be drilled as necessary at the site to validate the works. The position of the test holes will be chosen to correspond with the areas of the site where the highest grout takes are recorded. The position of the test holes will be indicated on the Grout borehole layout plan. All test holes will be pressurised to correspond with the amount of overburden (i.e., 10kN/m of overburden) for 2 minutes. The test shall be considered a pass where not more than 1t can be injected, and the pressure drops by no more than 10% for 2 minutes. Drill and Grout records of test holes will be kept.

2.5.2 Gas testing

A gas monitor shall be used throughout the consolidation program to monitor for the presence of four harmful gases, carbon monoxide (CO), carbon dioxide (CO₂), hydrogen sulphide (H₂S) and Methane (CH₄). Levels of airborne Oxygen (O₂) will also be monitored. The gas alarms have visible and aural alarms should concentrations of any of these gases touch pre-determined trigger levels. Records of the gas monitoring shall be kept.

3.0 Reporting

A completion report will be compiled within 28 days of the works being completed. The report will include drilling records, grouting records, testing records and an as-built location plan showing the location of the boreholes and any test holes carried out. It will also summarise total length drilled, and quantities of grout materials.

4.0 References

CIRIA Special Publication C758D –Abandoned Mine workings.

Report on coal mining related site investigation works, Ref: T190 SFK (TLC1140), Dated June 2021.

Appendix 1

Sample Drilling & Grouting Records

CON 10 R2 31/03/15



Kirkby Lane, Pinxton, Nottinghamshire NG16 6JA
Telephone: (01773) 580580 Fax: (01773) 862100
Website: www.van-elle.co.uk E-mail: info@van-elle.co.uk

Open Hole Drillers Log

[illegible]



DAILY & ACCUMULATIVE GROUTING RETURN

Job No. Client Site Address

HOLE REF.	DEPT H (M)	ANGLE/ PRESSURE	BRIEF LOG OF HOLE	QUANT OF GROUT (T)	OPC	PFA	SAND	PEA GRAVEL		CEMENT	PFA	SAND	PEA GRAVEL
									Today's Deliveries				
									Previous Deliveries				
									Total Deliveries				
									Total Used				
									Stock on Site				
OPERATIVES ON SITE													
REMARKS													
I CONFIRM THIS IS A TRUE RECORD VAN ELLE OPERATIVE SIGNATURE													
..... CLIENTS SIGNATURE													
..... DATE													
TOTAL HOLES GROUTED TODAY		TODAY'S TOTAL GROUT											
PREVIOUS TOTAL		PREVIOUS TOTAL											
TOTAL TODATE		TOTAL GROUTING											

Appendix 2:

Drill Logs

Kirkby Lane, Pinxton, Nottinghamshire NG16 6JA
Telephone: (01773) 580580 Fax: (01773) 862100
Website: www.van-elle.co.uk E-mail: info@van-elle.co.uk

[illegible]

BH	Casing		Water			Totals	BH	Drill	Case	Install
	Dia	Depth	Strike	Rise	Sealed	Today	5	200	70	
						Previous	0	0	0	
						To Date	5	200	70	

I confirm this is a true record

CU	CU	Si	Da
----	----	----	----

Kirkby Lane, Pinxton, Nottinghamshire NG16 6JA
Telephone: (01773) 580580 Fax: (01773) 862100
Website: www.van-elle.co.uk E-mail: info@van-elle.co.uk

* NO GAS RECORDED.

[illegible]

Kirkby Lane, Pinxton, Nottinghamshire NG16 6JA
Telephone: (01773) 580580 Fax: (01773) 862100
Website: www.van-elle.co.uk E-mail: info@van-elle.co.uk

~~NO~~ NO GAS DETECTED.

[illegible]

BH	Casing		Water			Totals	BH	Drill	Case	Install
	Dia	Depth	Strike	Rise	Sealed	Today	7	280	98	
						Previous	13	520	182	
						To Date	20	800	280	

CCSD

Appendix 3:

Grout Logs



DAILY & ACCUMULATIVE GROUTING RETURN

Job No. 233927	Client Heatley Developments	Site Address Osborne Yard.
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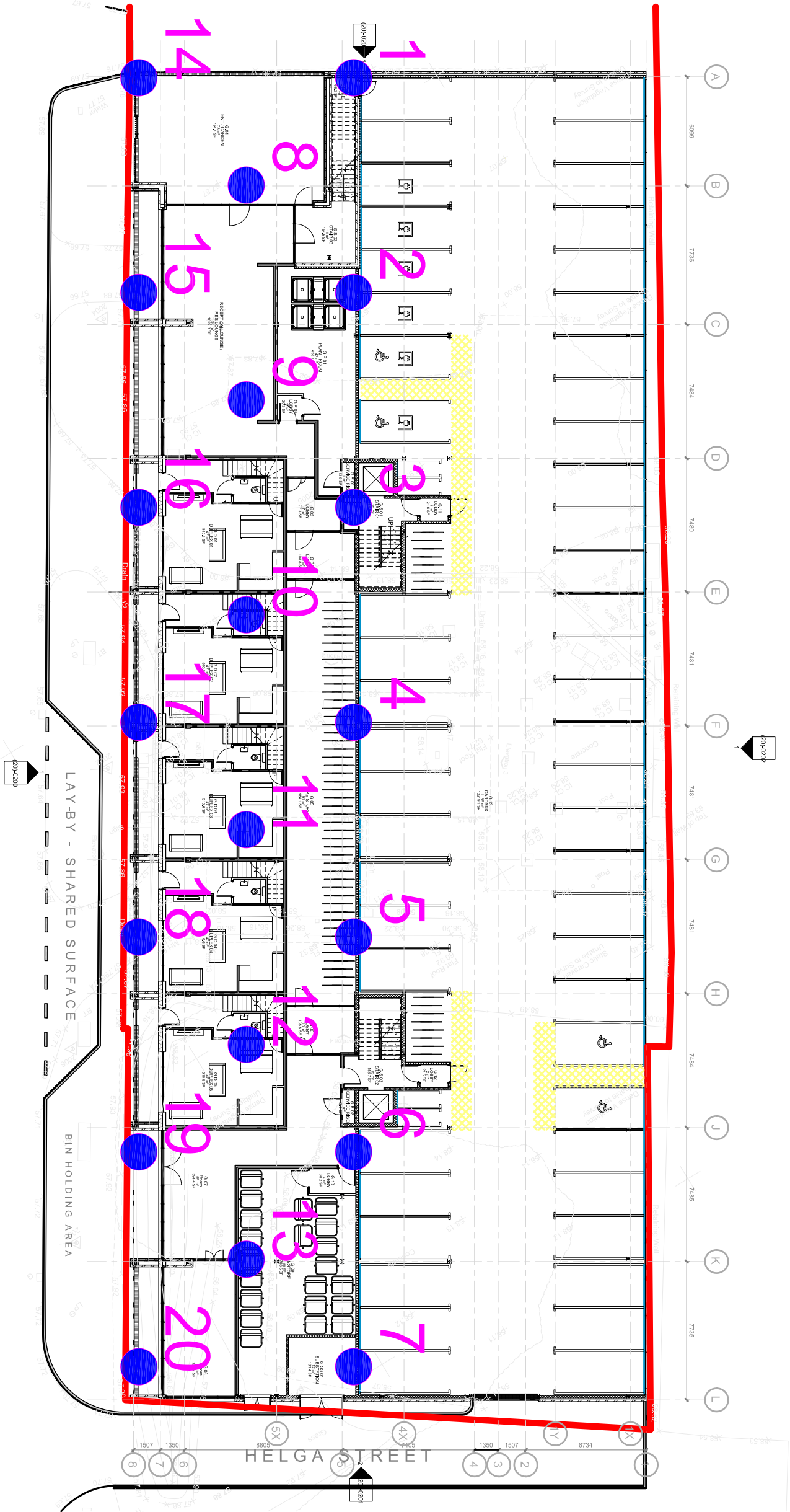
HOLE REF.	DEPT H (M)	ANGLE/ PRESSURE	BRIEF LOG OF HOLE	QUANT OF GROUT (T)	OPC	PFA	SAND	PEA GRAVEL		CEMENT	PFA	SAND	PEA GRAVEL
1	40M	✓	SOUND (COAL TRACE)	0.30	0.30				Today's Deliveries	✓			
20			*	0.30 X 20 HAES FILLED WITH NEAT OPC					Previous Deliveries	6.00			
									Total Deliveries	6.00			
									Total Used	6.00			
									Stock on Site	0.			
OPERATIVES ON SITE													
									M. CAE / J. OGDON				
REMARKS													
									12-1 MIX				
20			TODAY'S TOTAL GROUT	6.00	6.00								
0			PREVIOUS TOTAL	0	0								
20.			TOTAL GROUTING	6.00	6.00								

Appendix 4:

Drilling Summary Drawing

NOTES:

 Solid (Coal Trace)



REVISION NOTES:



Van Elle Limited
Summit Close
Kirkby in Ashfield
Nottinghamshire
NG17 8GJ
Tel: 01773 580560

CLIENT:

Innov8ds

CONTRACT:

Osbourne's Yard

DRAWING TITLE

Drilling Summary

DATE: 05/03/2024

DRAWN BY: SP

CHECKED BY: PG

SCALE: NTS

SHEET SIZE: A3

DRAWING NO: 233927VEDS

REV: -

Appendix 5:

Grouting Summary

Drawing

NOTES:

0.3T

REVISION NOTES:



Van Elle Limited
Summit Close
Kirkby in Ashfield
Nottinghamshire
NG17 8GJ
Tel: 01773 580560

CLIENT:

Innov8ds

CONTRACT:

Osbourne's Yard

DRAWING TITLE

Grouting Summary

DATE: 05/03/2024

DRAWN BY: SP

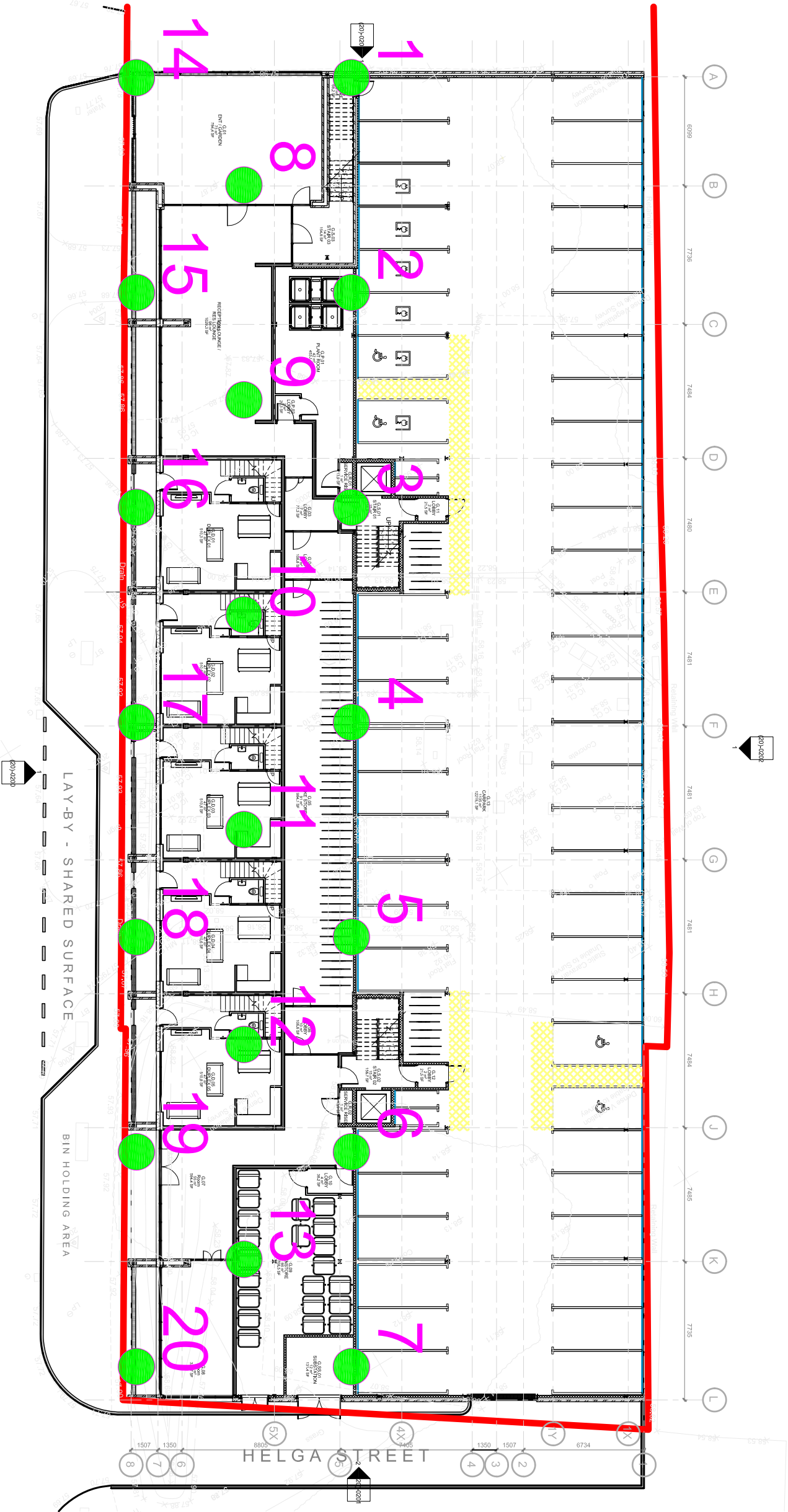
CHECKED BY: PG

SCALE: NTS

SHEET SIZE: A3

DRAWING NO: 233927VEGS

REV: -



Appendix 6:

Coal Authority Permit & Closure Form



The Coal
Authority

Permit to Enter or Disturb Coal Authority Interests

Permit 27891

Name and Address of Permit Holder:

MPH Ancoats
Hilton House
26-28 Hilton Street
Manchester
M1 2EH

Site Location:

Osbourne's Yard
Oldham Road
Miles Platting
Manchester
M40 7PS

This certificate hereby grants the above named Permit Holder a Permit to carry out:-

Treatment of shallow mine workings by drilling and grouting to 40m on 12m grid within the Authority's interests at the identified site location above as shown on the Grant Permit Boundary (overleaf) for the period of **12 months** from the granted date shown below. *The granting of this Permit does not constitute advice given by the Authority in relation to the proposed operations. It is the Permit Holder's responsibility to obtain appropriate health, safety, environmental, technical and legal advice.*

Conditions:

- *Manned entry (i.e.) into mine entries/workings) is strictly prohibited.*
- *Water flush*
- *Gas Monitoring CO, CH₄, CO₂, O₂, H₂S at borehole and rig*
- *Operators undertaking the work must be in possession of this certificate and the Permit boundary plan at the time of works*
- *Appropriate borehole sealing without delay and to withstand site level changes*

Signed: _____ Granted Date: **08/02/2024**

For and on behalf of The Coal Authority

Nominated Representative: Jake Morris, Permitting Manager;

The Coal Authority, Permitting Office, 200 Lichfield Lane, Mansfield, Notts, NG18 4RG

Tel: _____ E-Mail: permissions@coal.gov.uk



The Coal
Authority

Granted Permit Boundary

Permit Ref: 27891

Permit Boundary:



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Permit Ref.	27891	Project / Site Location	Osbourne's Yard, Oldham Road, Miles Platting, Manchester, M40 7PS
-------------	-------	-------------------------	---

Please supply all relevant documents, including this completed form within 3 months of the permitted works being completed.

Where relevant the report should include; borehole logs and details of mine or mine entry treatment works carried out (incl. engineering drawings, grout takes etc.) and a scaled site layout plan (correlated to O.S N' Grid) showing all relevant mine entry positions, coal seams, voids and broken ground proved by the works.

Summary of works**Start date**

12/02/2024

Finish date

16/02/2024

Have any variations occurred?No ☐ Yes**If so was the Authority notified?**No ☐ Yes

Please describe;

Did if any of the following incidents occur?

- ☐ Spontaneous combustion ☐ Water emission ☐ Gas emission (elevated or above action levels)
☐ Geotechnical instability ☐ Legal issues incl. damage or potential claims ☒ **None**

If yes, please detail each item;

Were any of the following encountered? Please give a brief summary of the works undertaken.

- ☐ Intact coal only ☐ Broken ground ☐ Backfilled ground ☐ Voids

Description;

No workings were encountered all solid geology with rare coal traces

Will further works be necessary that require a Permit? ☒ No ☐ Yes

If yes, please describe, including any recommendations;

Name:**Company**