

Mine Workings Consolidation Completion Report

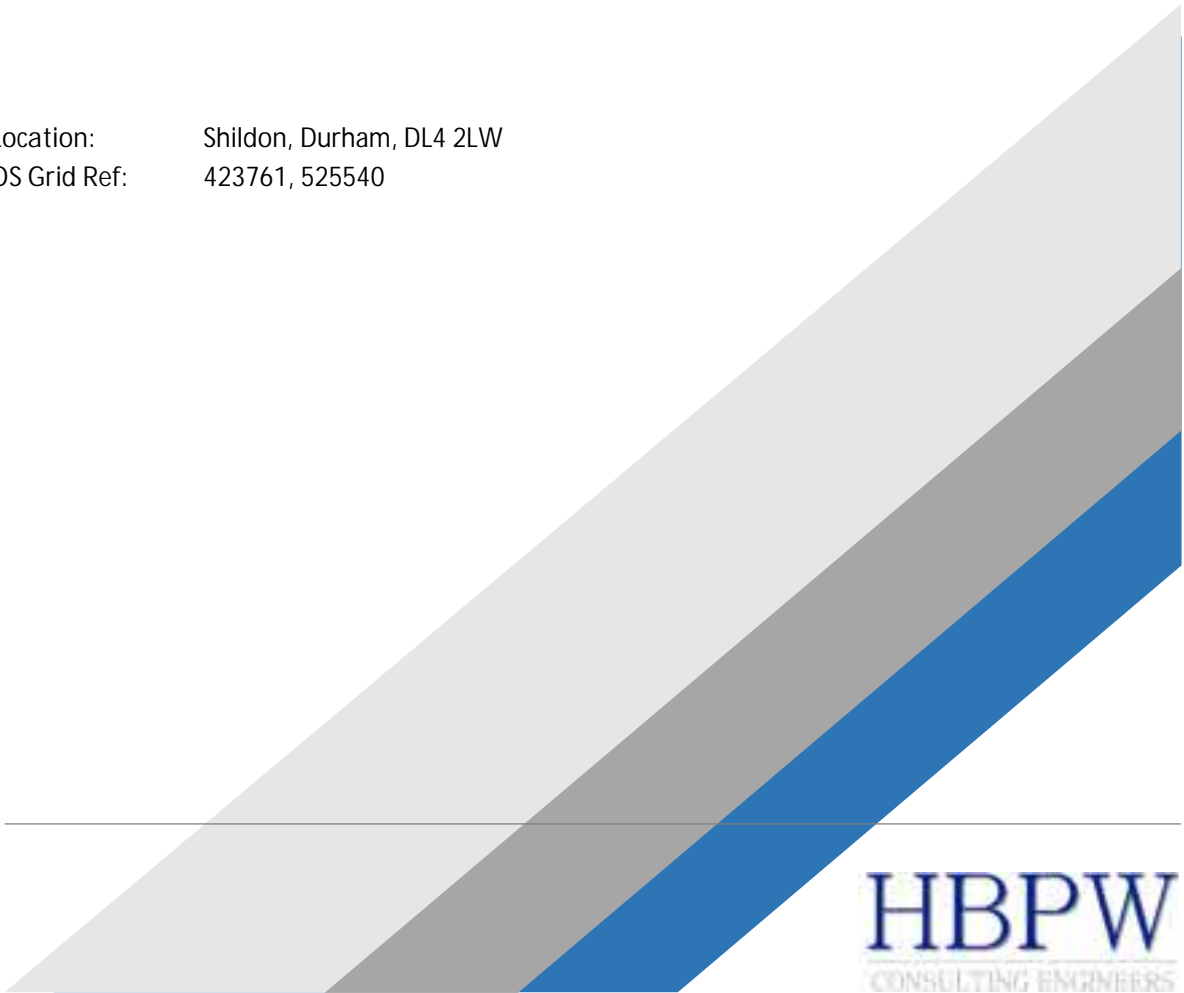
for

***Locomotion New Hall, National
Rail Museum, Shildon, Durham***

Project Ref: SL07622

SL07622-HBPW-DOC-C-GE-MWC Rev A01

Location: Shildon, Durham, DL4 2LW
OS Grid Ref: 423761, 525540





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Document Control Sheet

HBPW Project No.	SL07622
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CONTENTS

1 INTRODUCTION..... 3

1.1 BACKGROUND..... 3

1.2 PROPOSED DEVELOPMENT..... 3

1.3 SCOPE OF THE REPORT..... 3

1.4 FACTUAL INFORMATION..... 3

1.5 SOURCE OF INFORMATION..... 4

2 GEOLOGY..... 5

2.1 GEOLOGICAL CONDITIONS..... 5

2.2 MINING..... 5

3 CONSOLIDATION WORKS..... 6

3.1 DESIGN METHODOLOGY..... 6

3.2 ENCOUNTERED SITE CONDITIONS..... 7

3.3 DRILLING WORKS..... 7

3.4 GROUTING WORKS..... 7

3.5 CAPPING WORKS..... 8

3.6 SUMMARY OF COMPLETED WORKS..... 8

4 COMPLETION STATEMENT..... 10

5 REFERENCES..... 11

APPENDICES

APPENDIX A Drawings

APPENDIX B Groundshire Limited Factual Report, Mineworking Remediation

1 INTRODUCTION

1.1 BACKGROUND

HBPW have been commissioned by Nationwide Engineering Ltd (the client) to provide engineering advice in relation to the proposed development at a site at Locomotion New Hall, Shildon. The site is located off Dale Road, Shildon, County Durham and is centred on approximate National Grid Reference 423761, 525540.

Two ground investigations have been undertaken on the site, the first by Sirius in 2009 – 2010 and the second by Geotechnical & Environmental in 2021. A ground investigation report was prepared by Dunelm Geotechnical & Environmental. Following the ground investigations, a Coal Mining Risk Assessment was completed by Buro Happold.

The data collected from the ground investigation indicated that abandoned shallow mine workings are present beneath the site and wider area. As a result, consolidation of shallow mine workings was deemed necessary within the zone of influence of the proposed site.

HBPW designed the consolidation works and completes a drilling and grouting specification to treat the shallow mine workings at the location of the proposed development.

Groundshire Limited was appointed by Nationwide Engineering to undertake the consolidation works in accordance with the specification provided by HBPW.

1.2 PROPOSED DEVELOPMENT

The development comprises the construction of a new archive and rail vehicle display building. The new building will provide a footprint of 2000m² to accommodate up to 45 vehicles from the National Collection. The new building is set within a brownfield site covering some 2.6ha situated to the north west of the existing Railway Museum.

The development also comprises the construction of external surfacing, drainage and landscaping works.

1.3 SCOPE OF THE REPORT

The scope of this report is to provide a summary of the geological features at the site as previously reported and to detail the design and treatment of the shallow mine workings located within the zone of influence of the proposed development.

In addition, the report has been produced to confirm the treatment of the shallow mine workings within the zone of influence of the proposed development in accordance with specification for grouting works.

1.4 FACTUAL INFORMATION

This report has been produced on behalf of the Client, Nationwide Engineering Ltd and no responsibility is accepted to any Third Party for all or any part. This report should not be relied upon or transferred to any other parties without the express written authorisation of HBPW. If

any unauthorised Third Party comes into possession of this specification, they rely on it at their own risk and the authors owe them no duty of care or skill.

Findings and opinions conveyed within this specification are based on information obtained from a variety of sources as detailed within, which HBPW believes are reliable. Nevertheless, HBPW cannot and does not guarantee the authenticity or reliability of the information it has relied upon.

The site plans enclosed should not be used for scaling purposes.

1.5 SOURCE OF INFORMATION

The following sources of information have been consulted as part of this report for the site:

- Groundshire Limited Factual Report, Mineworking Remediation (Reference 13485, dated 3rd May 2023)
- HBPW Drilling & Grouting Method Specification (Reference SL7622-HBPW-DOC-C-GE-DGS, dated September 2022)
- Buro Happold Coal Mining Risk Assessment (Reference RWM-BHE-XX-XX-RP-CG-0002 P01, dated June 2021);
- Dunelm Geotechnical & Environmental Factual Report (Reference D10357/00, dated 17th June 2021);
- BGS online Open Viewers, and
- Coal Authority Online Interactive Map.

2 GEOLOGY

2.1 GEOLOGICAL CONDITIONS

According to the inspected published geological information, the underlying superficial deposits shown on site are Glacial Till.

The underlying bedrock strata is shown to be the Pennine Lower Coal Measures Formation (PLCM) described as mudstone, siltstone, sandstone and coal.

There are no dip arrows recorded on the geological maps in close proximity to the site. The maps indicate that there is an anticline present onsite.

There are no recorded geological faults shown on site, an unnamed fault is shown to be located at approximately 1000m north east of the site, trending in a general north west to south east direction, downthrown to the north east by an unknown magnitude.

A number of coal seams are expected to be present within the PLCM as shown on the generalised vertical section on the geological maps. The Busty (split into Top and Bottom) and Brockwell coal seams are shown to be underlying the site.

2.2 MINING

There is no evidence to suggest that the site and/or the surrounding area has been subject to mining activity over the mapped dates on the historical maps. However, shallow coal seams of the PLCM are expected at the site and the Buro Happold mining risk assessment which includes liaison with the Coal Authority suggests that coal mining has taken place at the site and within the local area in the past.

Broken ground was encountered during the ground investigations undertaken at the site. This was identified at the estimated depth of named coal seams, the Busty (Top and Bottom) Coal. Therefore, this was considered to be evidence of mine workings in those seams and drilling and grouting works were required.

3 CONSOLIDATION WORKS

3.1 DESIGN METHODOLOGY

Based on the various sources of information made available to HBPW, it was considered likely that the site of the proposed development would be underlain by abandoned shallow mine workings and that these would require treatment prior to any construction works taking place.

The abandoned shallow mine workings present beneath the site represented a significant potential risk to the safety of any development and its users. As a result, the following design methodology was developed in accordance with Ciria Guidance C758 'Abandoned mine workings' and Ciria Special Publication 32 'Construction over abandoned mine workings' to mitigate this risk.

From the assessment of historical mining activity as described in Section 2, it was considered that the likely presence of workings within the Busty (Top and Bottom) Coal seams at depths of between 16.60m and 30.25m below the site would pose the greatest risk to the proposed development and, as such, would form the focus of the treatment works.

Assuming successful treatment of the Busty (Top and Bottom) Coal seams. The underlying Brockwell Coal, anticipated to be approximately 50m below the Busty (Top and Bottom) Coal seams, would be at sufficient depth not to pose a risk to the proposed development.

The extent of the grouting works is shown on Drawing SL07622-HBPW-00-ZZ-DR-C-900_C04 provided in Appendix A.

3.1.1 Perimeter Grouting

The perimeter grout curtain was offset from the footprint of the proposed structure by 6m in all directions with the exception of the north western corner as there is insufficient distance between the building and site boundary. The offset was reduced to the sites boundary in these areas. However, assuming a grout spread of 1.5 to 3.0m from the perimeter holes it was considered that sufficient area of treatment would be undertaken in these areas.

The design of the perimeter grout holes specified that the boreholes were bored at 1.5m to 3.0m centres and grouted using a grout mix of 1:6:1 Ordinary Portland Cement (OPC) to Pulverised Fuel Ash (PFA) to Sand with a flowability readings of 300 to 600mm.

The boreholes were specified to be drilled to 1.5m beneath the base of the coal seam and/or workings. The base of the workings is anticipated to be at approximately 18.20 to 33.00m below ground level across the site. The minimum diameter of holes for the perimeter curtain wall was specified to be 100mm.

3.1.2 Infill Grouting

The infill grouting was initially specified to be completed in a grid pattern at 6m centres. The boreholes were specified to be drilled to 1.5m beneath the base of the coal seam and/or workings. The base of the workings is anticipated to be at approximately 18.20 to 33.00m below ground level across the site. The minimum diameter of holes for the infill treatment holes was to be 75mm.

During the infill drilling and grouting the grid spacing was reduced down to 3m x 3m as a result of high grout takes and test hole S11 suggesting that the grout was not infilling the 6m grid.

It is not unusual for consolidation works to evolve as the works are undertaken as it is difficult to know for sure what the ground conditions are until drilling has taken place and grout takes have been confirmed.

3.1.3 Testing

Six 100mm³ grout cubes were specified to be cast each week or when directed and crushed at 7, 14 and 28 days in accordance with BS1881. The minimum 28 day crushing strength to be achieved was 1.0MN/m².

Test holes were to be specified by the Engineer once grouting at the initial holes has been completed. The test holes were to be located as specified by the Engineer and were deemed successful if the quantity of grout accepted was less than 0.5 tonnes. As discussed above, the initial test holes were inconclusive and therefore the grid spacing was reduced.

Following the reduction in grid spacing the further test holes (Be27, Am25, Ao19, Q11, E3 and Y3) confirmed that the drilling and grouting works had been successful.

3.2 ENCOUNTERED SITE CONDITIONS

Full records of Groundshire drilling and grouting operations are provided in Appendix B.

Overburden was recorded within all boreholes underlain by PLCM.

Evidence of abandoned mine workings was encountered in one seam believed to have been the Busty (Top and Bottom) Coal seams at the anticipated depths, this was generally encountered as broken ground. Voids were only encountered within two boreholes.

No unrecorded mine entries were encountered during the drilling works.

3.3 DRILLING WORKS

Site works were carried out between 22nd February and 30th March 2023. The drilling records are provided within Appendix B.

The works comprised 97No. perimeter boreholes and 175No. infill boreholes combined totalling 8963m of drilling. Details of the number of holes bored and the length of drilling for the perimeter, infill, and test holes are summarised in Table 3.3.

The locations of the grout holes are identified on the borehole location plan in Appendix A.

3.4 GROUTING WORKS

Site works were carried out between 22nd February and 30th March 2023. A record of the grouting progress is provided in within Appendix B.

Approximately 445 tonnes of grout were injected into the perimeter and infill boreholes. A summary of the grout takes for the perimeter, infill and test holes is displayed in Table 3.3.

The grout mixes utilised were a PFA to OPC ratio of 10:1 and 12:1 for the perimeter wall and infill grouting respectively flow rate of 460-480mm for the perimeter and infill grouting. The flow rate results are displayed in Table 3.1.

Table 3.1 Flow Test Results		
Date	Grout Mix (PFA:OPC)	Flow Rate (mm)
09/03/2023	12:1	480
10/03/2023	12:1	480
	12:1	460
14/03/2023	12:1	470
	12:1	470
16/03/2023	10:1	480
	12:1	470
17/03/2023	10:1	480
	12:1	470
20/03/2023	10:1	460
	10:1	460
	12:1	480
21/03/2023	10:1	470
	12:1	480
22/03/2023	10:1	460
	12:1	480
23/03/2023	10:1	470
	12:1	480
27/03/2023	12:1	480
	12:1	470
	12:1	480
28/03/2023	12:1	470
29/03/2023	12:1	470
	12:1	480
30/03/2023	12:1	480

As specified in the contract specification, 6 No. sets of 100mm³ grout cubes were cast weekly to provide samples for crushing at 7, 14 and 28 days in order to obtain the compressive strength of the grout. A selection of the results from the cube tests are shown in table 3.2.

The cube test results are provided within Appendix B. Table 3.2 documents some of the results from the cube tests. The target compressive strength at 28 days was 1MPa and, as the results demonstrate, this was achieved.

Table 3.2 Grout Cube Test Results		
Date Cubes Cast	Age at Testing (days)	Compressive Strength (MPa)
10/03/2023	28	2.4
10/03/2023	28	1.7
14/03/2023	28	5.9
14/03/2023	28	5.5
22/03/2023	28	5.7
22/03/2023	28	5.5
22/03/2023	28	4.4
22/03/2023	28	4.5
29/03/2023	28	4.1
29/03/2023	28	4.0

3.5 SUMMARY OF COMPLETED WORKS

Table 3.3 below summarises the total drilling and grouting works carried out across the site for the purposes of consolidating the historical mine workings.



Report No: SL7622-HBPW-DOC-C-GE-MWC

Client: Nationwide Engineering

Revision: A01

Grid Ref: 423761, 525540

Date: June 2023

Title: Mine Workings Consolidation Completion Report

Table 3.3 Consolidation Works Summary			
	Number of Boreholes	Meters Bored (m)	Grout Injected (tonnes)
Perimeter	97	8963	445
Infill	169		
Test	6		

4 COMPLETION STATEMENT

The Grouting Completion Report has been produced to provide a record of the treatment works carried out at the site, in order to mitigate the risk posed to the future development of the site by abandoned shallow mine workings.

The consolidation works were carried out by Groundshire and were completed in accordance with the Specification for Grouting produced by HBPW.

HBPW can confirm that Groundshire carried out the grouting works in accordance with the grouting specification which was prepared using guidance as set out in the Ciria Special Publication 32 'Construction over abandoned mine workings' and Ciria C758D 'Abandoned mine workings'.

HBPW provided office support for the duration of the works to ensure that the works were completed in accordance with the specification. It can be confirmed that all drilling and grouting works associated with the specified treatment of abandoned shallow mine workings across the site have been undertaken and are now complete.

A total of 272No. boreholes were drilled as part of the contract, giving a total drilled length of 8963m. A total of 445No. tonnes of grout were mixed and injected into the encountered mine workings.

5 REFERENCES

1. CIRIA Special Publication 32 "Construction over Abandoned Mine Workings"
2. CIRIA C758D 'Abandoned mine workings'



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Engineering

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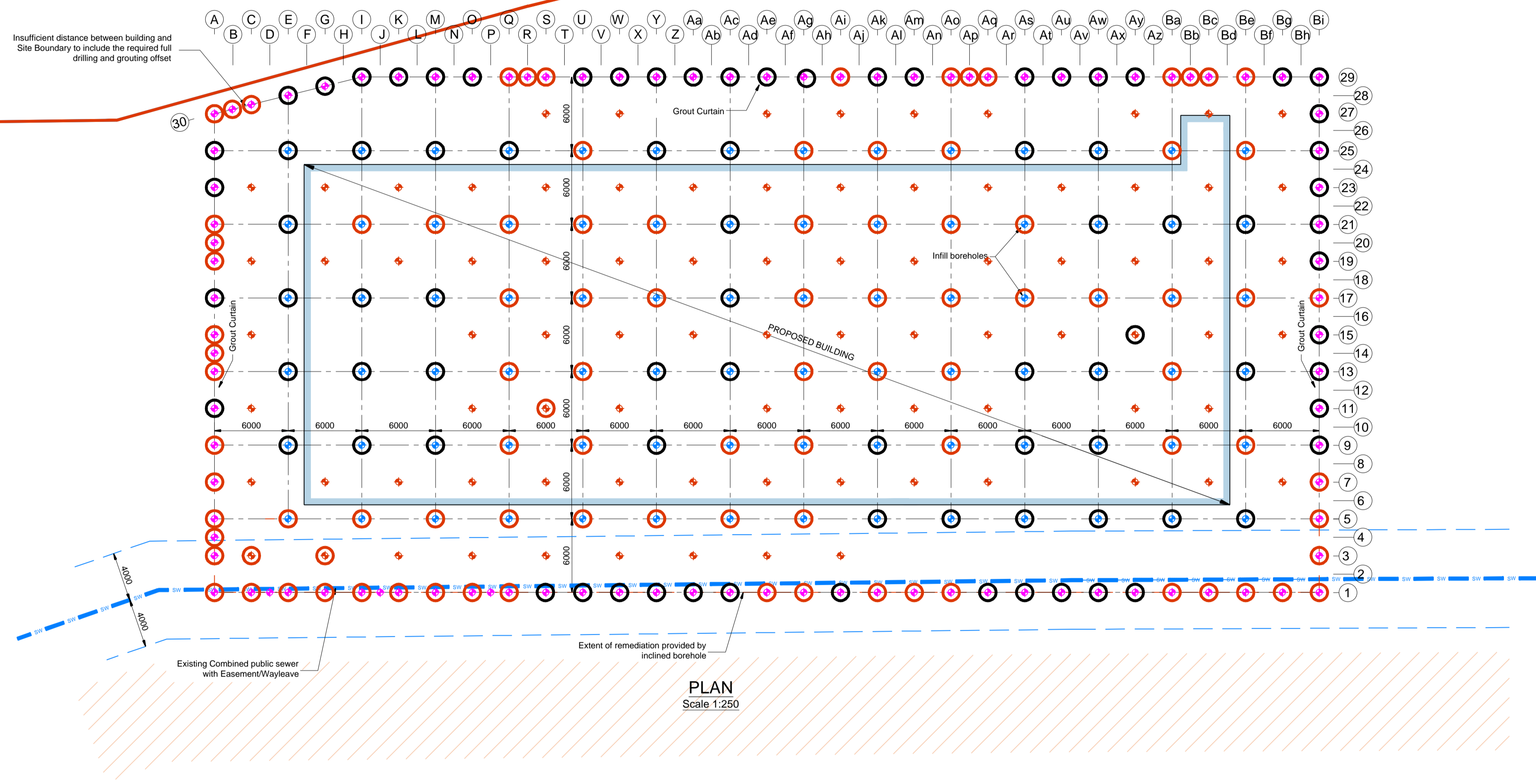
Title: Mine Workings Consolidation Completion Report

APPENDIX A

Drawings

KEY:

- Perimeter Grout Curtain Boreholes at 3.0m c/c
- Infill Boreholes at 6.0m c/c
- Infill boreholes at 6.0 c/c to form 3m x 3m grid or 4.24m c/c
- Site of Proposed Development
- Land Ownership Boundary
- Borehole encountering voids/broken ground
- Borehole encountering solid ground



- NOTES**
- DO NOT SCALE OFF THIS DRAWING.
 - SHOULD THERE BE ANY CONFLICT BETWEEN THE DETAILS INDICATED ON THIS DRAWING AND THOSE INDICATED ON OTHER DRAWINGS THE ENGINEER SHOULD BE INFORMED PRIOR TO CONSTRUCTION ON SITE.
 - ALL DRAWINGS ARE IN MILLIMETERS UNLESS OTHERWISE STATED.
 - IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO EXECUTE THE WORKS AT ALL TIMES IN STRICT ACCORDANCE WITH THE REQUIREMENTS OF THE HEALTH AND SAFETY AT WORK ACT 1974 AND CDM REGULATIONS 2015.
 - THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE DRILLING & GROUTING METHOD SPECIFICATION AND ALL OTHER RELEVANT DRAWINGS. THE FOLLOWING DRAWING NOTES IDENTIFY KEY ELEMENTS OF THE SPECIFICATION WHICH THE SPECIALIST CONTRACTOR SHALL MAKE SPECIFIC REFERENCE TO THE SPECIFICATION FOR WHERE CONFLICT ARISES BETWEEN THE DRAWING NOTES AND SPECIFICATION, THE SPECIFICATION SHALL TAKE PRECEDENCE.
 - THE CONTRACTOR SHALL SUBMIT SUITABLE METHOD STATEMENTS FOR ALL ASPECTS OF THE WORKS INCLUDING TRIAL TESTING, DRILLING, GROUTING AND VERIFICATION OF THE WORKS FOR APPROVAL BY THE ENGINEER.
 - THE CONTRACTOR SHALL SUBMIT A CEMENT/PFA DESIGN MIX THAT COMPLIES WITH THE SPECIFICATION AND MEETS THE OBJECTIVE OF TREATMENT WORKS FOR AGREEMENT BY THE ENGINEER BEFORE THE GROUTING WORKS COMMENCE.
 - PRIOR TO COMMENCEMENT OF THE GROUTING WORKS THE CONTRACTOR SHALL UNDERTAKE A TRIAL DRILLING AND GROUTING OPERATION IN AN AREA TO BE AGREED WITH THE ENGINEER TO DETERMINE SUITABILITY OF PROPOSED METHODOLOGIES, GROUT MIXES AND TO OPTIMISE THE SPACING FOR THE PERIMETER AND INFILL BOREHOLES.
 - ALL BOREHOLES FOR GROUTING PURPOSES SHALL EXTEND TO AT LEAST 1.5m BELOW SEAM PAVEMENT LEVEL.
 - DRILLING AND GROUTING SHALL PROCEED FROM THE DEEPEST POINT OF THE SEAM AND PROGRESS TOWARDS THE SHALLOWEST POINT OF THE SEAM.
 - A GROUT CURTAIN SHALL INITIALLY BE FORMED AROUND THE AREA TO BE GROUTED FROM GROUT HOLES INITIALLY SPACED AT 1.5m CENTRES TO BE CONFIRMED/OPTIMISED BY THE TRIAL DRILLING AND GROUTING OPERATION AND AGREED WITH THE ENGINEER. WHERE NECESSARY TO SUCCESSFULLY FORM THE PERIMETER CURTAIN, PEA GRAVEL AND/OR BENTONITE SHALL BE PLACED WITH THE GROUT AT A RATIO OF 1:1 BY WEIGHT.
 - INFILL GROUTING SHALL THEN BE UNDERTAKEN FROM GROUT HOLES SET OUT IN A DIAMOND PATTERN AT INITIALLY 6m CENTRES (TO BE CONFIRMED/OPTIMISED BY THE TRIAL DRILLING AND GROUTING OPERATION AND AGREED WITH ENGINEER).
 - DRILLING RECORDS DETAILING GROUND CONDITIONS ENCOUNTERED WITHIN EACH GROUTING BOREHOLE SHALL BE IMMEDIATELY AVAILABLE ON COMPLETION OF THE BOREHOLE FOR ASSESSMENT BY THE CONTRACTOR AND THE ENGINEER.
 - VERIFICATION TESTING BY PRESSURE INJECTION OF GROUT WITHIN FRESH BOREHOLES DRILLED THROUGH THE INFILLED MASS SHALL BE CARRIED OUT THROUGHOUT THE WORKS. LOCATION OF VERIFICATION BOREHOLES SHALL BE AGREED WITH THE ENGINEER.
 - GROUT INJECTION SHALL BE CARRIED OUT AT THE APPROVED RATES UNTIL EITHER A LIMITING PRESSURE OF 10KPA PER METRE OF OVERBURDEN OR A MAXIMUM OF 200KPA IS REACHED.
 - GROUT MIXES SHALL HAVE A MINIMUM CUBE CRUSHING STRENGTH OF 1.0N/m² AT 28 DAYS.
 - THE CONTRACTOR SHALL ALLOW FOR TAKING ALL NECESSARY HEALTH AND SAFETY PRECAUTIONS AND CONSIDER THE POTENTIAL FOR MIGRATION OF MINE GAS TO ADJACENT PROPERTIES.
 - THE CONTRACTOR SHALL TAKE ALL APPROPRIATE MEASURES TO ENSURE ADEQUATE POLLUTION CONTROL INCLUDING PREVENTING FLUSH GROUT OR ANY OTHER ARISING EMANATING FROM INJECTION HOLES OR ANY OTHER AREAS OF WORKS FROM ENTERING WATER COURSES.
 - THE CONTRACTOR SHALL TAKE ALL APPROPRIATE MEASURES TO ENSURE THAT NUISANCE FROM NOISE, DUST AND VIBRATIONS ARE KEPT TO A MINIMUM.
 - THE CONTRACTORS ATTENTION IS DRAWN TO EXISTING UNDERGROUND DRAINAGE. THE PATTERN OF DRILLING AND GROUTING IS TO BE ADJUSTED LOCALLY.
 - THE CONTRACTORS ATTENTION IS DRAWN TO THE POSSIBLE PRESENCE OF UNIDENTIFIED UNRECORDED MINE SHAFTS AT THE SITE. THE CONTRACTOR SHALL TAKE ALL NECESSARY HEALTH AND SAFETY PRECAUTIONS ASSOCIATED WITH THE POSSIBLE PRESENCE OF UNRECORDED ABANDONED MINE SHAFTS.
 - THE DRILLING & GROUTING LAYOUT DOES NOT TAKE INTO ACCOUNT ANY FUTURE EXTENSIONS TO THE BUILDING LAYOUT. IF THE CONFIGURATION/LOCATION OF THE BUILDINGS CHANGES THE RISK ASSOCIATED WITH SHALLOW MINE WORKINGS WILL NEED TO BE RE-ASSESSED.
 - THE DRAWING SHOWS AN ARRANGEMENT OF INFILL BOREHOLES AT 6m c/c. IN THE EVENT THAT EXTENSIVE WORKINGS BE ENCOUNTERED THE SPACING OF INFILL BOREHOLES SHALL BE REDUCED TO BEING 3m c/c.

GROUT CURTAIN CORNER BOREHOLE SETTING OUT

GRID REF	EASTING (m)	NORTHING (m)
A/1	423708.823	525582.796
Bi/1	423766.998	525514.126
Bi/29	423799.044	525541.274
I/30	423748.626	525600.789
A/30	423739.580	525608.006

CONSTRUCTION

REV	DESCRIPTION	BY	CHK	APP	DATE
C03	DRAWING UPDATED	EP	SS	EP	23/03/23
C02	GRIDLINES UPDATED	EP	SS	EP	03/03/23
C01	ISSUED FOR CONSTRUCTION	EP	SS	EP	07/02/23
01	FIRST ISSUE	EP	SS	EP	12/09/22

REVISION TABLE

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DN22 7UX
TEL. (01777) 869896
www.hbpw.co.uk

HAZARD SUMMARY TABLE

SIGNIFICANT DESIGNER'S IDENTIFIED HAZARDS	LIFE SAVING RULES
<p>SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION</p> <p>THE FOLLOWING NOTES HIGHLIGHT SIGNIFICANT RESIDUAL HAZARD IDENTIFIED BY THE DESIGNER. TYPICAL HAZARDS THAT SHOULD BE IDENTIFIED BY A COMPETENT CONTRACTOR ARE WORKS USING AN APPROVED SAFE SYSTEM OF WORK</p> <p>SHOULD ANY ADDITIONAL HAZARDS BE IDENTIFIED DURING THE COURSE OF THE WORKS, THE CONTRACTOR SHALL NOTIFY ALL RELEVANT MEMBERS OF THE PROJECT TEAM</p> <p> </p>	<p>01 Buried Services - Injury or death due to striking or damaging buried cables</p> <p>02 Existing drainage exists on site refer to survey drawing - Damage to existing underground from grouting works</p> <p>03 Collapse of mine workings and/or unrecorded abandoned mine shafts resulting in collapse of ground</p> <p>04 Combustion of mine gases & combustion of coal seam during grouting operation</p> <p>05 Grouting of abandoned mine workings - ground heave, collapse of workings, danger to public in working areas</p>

CLIENT:

NATIONWIDE ENGINEERING

CONTRACTOR:

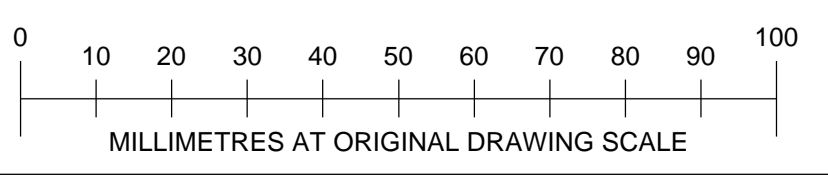
HBPW PROJECT NUMBER:
SL07622

PROJECT:
LOCOMOTION NEW HALL
NATIONAL RAIL MUSEUM, SHILDON, DURHAM

DRAWING:
DRILLING AND GROUTING PLAN

PROJECT ENGINEER: E. PARRY	DRAWN: E. PARRY
CHECKED: J. OLIVER	APPROVED: E. PARRY
DATE: 12/09/2022	SCALE: AS SHOWN
SUITABILITY: A1	REVISION: S0 C03

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SL07622-HBPW-00-ZZ-DR-C-0900





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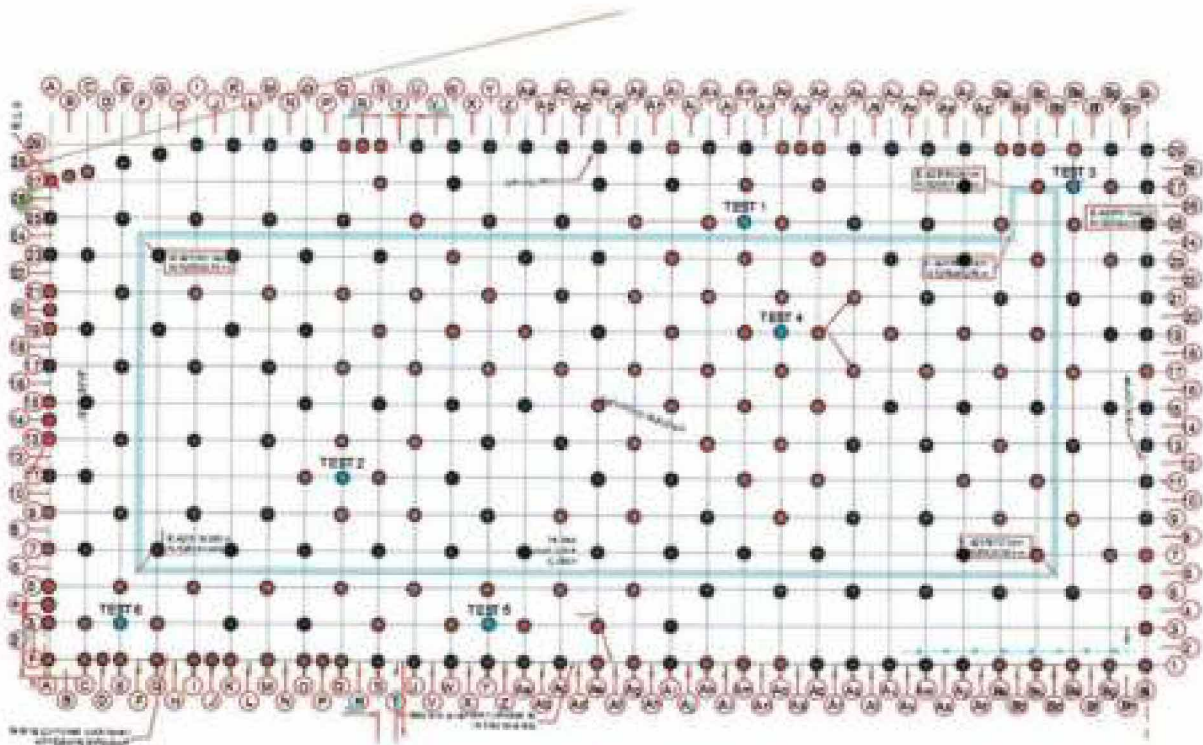
APPENDIX B

Groundshire Limited Factual Report, Mineworking Remediation

FACTUAL REPORT, MINEWORKINGS REMEDIATION

Locomotion 2, New Hall, Shildon, DL2 2RE

For Nationwide Engineering,



Report prepared for:
Nationwide Engineering,
Units 19-20,
The Bluestone Centre,
Sun Rise Way,
Amesbury,
Salisbury,
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Report prepared by:
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Order Number: 742/12/Gro
Coal Authority Permit: 26202
Planning Reference: DM/22/00717

Dated: 03/06/2023
Contract No: 13485

Contents

1	INTRODUCTION	2
1.1	General	2
1.2	Objectives	2
2	THE SITE	3
3	FIELDWORK	3
3.1	Drilling and Grouting Operations	3
3.2	Plant and Equipment	3
4	RESULTS	4
4.1	Drilling and Grouting	4
4.2	Testing	4
4.3	Gas Monitoring	4
5	NOTES	5
6	COPYRIGHT	5

APPENDIX

1	Coal Authority Permit Ref: 26202
2	Grout Hole Layout 13485-001
3	Daily Drilling Records
4	Daily Grouting Records
5	Materials Delivery Tickets
6	Test Results
7	Notes and Limitations

1 INTRODUCTION

1.1 General

This report describes the grout drilling and pressure grouting works carried below a brownfield residential development site known Locomotion 2, New Hall, Shildon, DL2 2RE.

The works were undertaken by Groundshire Limited, Littleburn House, Littleburn Industrial Estate, Langley Moor, DN17 8HL.

The Client for Groundshire works (the employer) was Nationwide Engineering, Units 19-20, The Bluesone Centre, Sun Rise Way, Amesbury, Salisbury, SP4 7YR.

HBPW Consulting Engineers of 13 Bridgegate, Relford, Nottinghamshire, DN22 7JX, are the Designer for these works and prepared a:

'Drilling & Grouting Method Specification for Locomotion New Hall, National R&M Museum, Shildon, Durham Project Ref: SLD7622, September 2022'

This document re-assessed existing site information including:

Buro Happold Coal Mining Risk Assessment RUM-DRHACN-XX-RPOG-0002 of June 2021

The HBPW document included a number of site investigation boreholes put down at, or in the vicinity of, the site by others including The Sirlus Group and Dunelm Geotechnical and Environmental.

Groundshire have no Contractual relationship with HBPW or Buro Happold regarding these works.

1.2 Objectives

Buro Happold prepared a Coal Mining Risk Assessment at the subject site during June 2021. The report conclusions were [amongst others] that:

'The risk to the site associated with former coal mining activities is thus considered to be medium to the western portion of the site (i.e. the area shown to contain workings within the Busby seam on the abandonment pits). Given the nature of the development and the degree of risk from coal mining, it is considered that the associated risks of subsidence beneath the proposed building requires additional risk mitigation and requires remediation (i.e. grouting). The additional risk mitigation measures are detailed below:

• The Contractor should remain vigilant for evidence of unrecorded mining features/potential shafts during site clearance and excavation works. If a potential unrecorded mine shaft is identified onsite, investigation and treatment is likely to be required.

• The design, validation, testing and reporting of shallow mine workings treatment beneath the collections warehouse and display track by grouting shall be carried out by a specialist drill and grout contractor/ suitably qualified engineers.'

HBPW subsequently prepared a Specification and Drawings for the treatment of the Legacy Mine Workings.

Groundshire successfully tendered to Nationwide Engineering undertake the drilling and grouting works, across the proposed footprint of the structure plus off-set.

HBPW applied for and obtained the Coal Authority Permit 25202 for these works, included in Appendix 1.

The objective of the work was to reduce the risk of ground subsidence arising from the presence of mineral workings, across the footprint of the plot to a low residual level. This was to be achieved by drilling and pressure grouting the Legacy Mine Workings in accordance with the HBPW Specification.

The comments and opinions expressed in this report are based on the ground conditions encountered during the site works. There may, however, be particular conditions prevailing on the site that have not been encountered during these works and which have, therefore, not been taken into account by this report.

2 THE SITE

The site is an extension to the existing 'Locomotion' railway museum. It lies south of Shildon, County Durham and is centred on approximate National Grid Reference 423701, 525540.

Access to the site is off an unnamed road, which is itself accessed via Dale Road to the west of the site.

The works area covers a broadly rectangular structure measuring approximately 75m by 27m with long axes aligned north west to south east, extending some way beyond to allow for the angle of draw effect.

The site is surrounded by residential and commercial developments with the existing museum to the east. A railway is located north of the site, trending approximately north west to south east. The site is currently occupied by an open air car parking / hardstanding and some landscaped areas.

3 FIELDWORK

3.1 Drilling and Grouting Operations

Site work was carried out between 22nd February and 30th March 2023.

The work was undertaken in accordance with the HB2W Specification and Coal Authority Permit No. 26202. The Coal Authority Permit is included in Appendix 2.

The positions of the grout holes are shown on the drawing, 13485-001 'Grout Hole Layout', included in Appendix 2.

During the drilling works records were made of the depths of the grout boreholes, descriptions of material encountered, the depth of casing, the date drilled and any testing carried out, together with any other relevant information. These records can be found in the daily drilling records, Appendix 3.

The grout mix was as per the requirements of the Specification. Details of materials placed into each hole, the date that the grouting took place, the plant used, the pressure applied to the boreholes together with any other relevant information can be found on the grouting records, Appendix 4.

Details of the materials delivered to site can be found on the attached delivery records, Appendix 5.

3.2 Plant and Equipment

Rotary open holes were drilled using Groundshire's JCB top drive rotary percussive hydraulic drill rigs.

At the grout station the grout materials were loaded by a loading shovel into a nominal five tonne grout batching plant. Grout was then injected by a double acting diaphragm pumps into the holes via a grout head. The grout head consists of an inlet and outlet valve, a pressure relief valve and a pressure gauge.

4 RESULTS

4.1 Drilling and Grouting

The position of the grout holes and test holes are shown on the drawing number 13485 001 Grout Hole Layout, included in Appendix 2.

266 grout holes and six test holes were put down in accordance with the instruction of the Designer together with the Drawing and Specification for the works.

A total of 8,563 metres (m) of drilling was undertaken and circa 155 tonnes of grout was injected in to the workings in accordance with the Specification for the works, included as Appendix 1.

4.2 Testing

The grout was tested for flow and bleed. The results of which are included on the grouting records, in Appendix 4. Grout cubes were taken to confirm the crushing strength of the grout at 28 day intervals. The results of which are attached in Appendix 6.

Six rotary open holes were drilled and subjected to grout acceptance testing, to the instruction of the Designer and in the presence of the Clients representative, to check the efficacy of the consolidation works. Details of the tests are given on the daily grouting records, Appendix 4.

4.3 Gas Monitoring

Concentrations of the monitored gases were recorded and are included in Appendix 6.

5 NOTE

The report is based on the borehole results. The Report is made on condition that we will not in any circumstances be liable for any loss whatsoever arising directly or indirectly from any opinion given on a possible configuration of strata both between hole positions and below the maximum depth of the investigation. Any such opinion, where given, is for guidance only.

6 COPYRIGHT

Groundshire Limited retains all copyright and other intellectual property rights in all reports, written advice and other material provided by us to you.

	Name	Signature	Date
Prepared by	W Dempster BSc(Hons),MSc.,BSc.,FGS.,MIMMM.,MIEnvSc.		19 th May 2023
Approved by	K E L Dempster BSc(Hons),MSc.,FGS.,MIMMM.,MIEnvSc., FCMI.		19. May 2023

APPENDIX ONE

COAL AUTHORITY PERMIT REF: 26202



The Coal
Authority

Permit to Enter or Disturb Coal Authority Interests

Permit 26202

Name and Address of Permit Holder:

*Railway Museum
National Rail Museum
Looman Road
York
YO26 4XJ*

Site Location:

*Land adjacent to
Dale Road Industrial Estate
Shildon*

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

Treatment of shallow mine workings by drilling and grouting on 6m 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: Stuart Brown

Granted Date: 07/02/2023

For and on behalf of The Coal Authority

Nominated Representative: Stuart Brown, Permitting Manager;

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

Tel: 01623 637450; E-Mail: permissions@coal.gov.uk

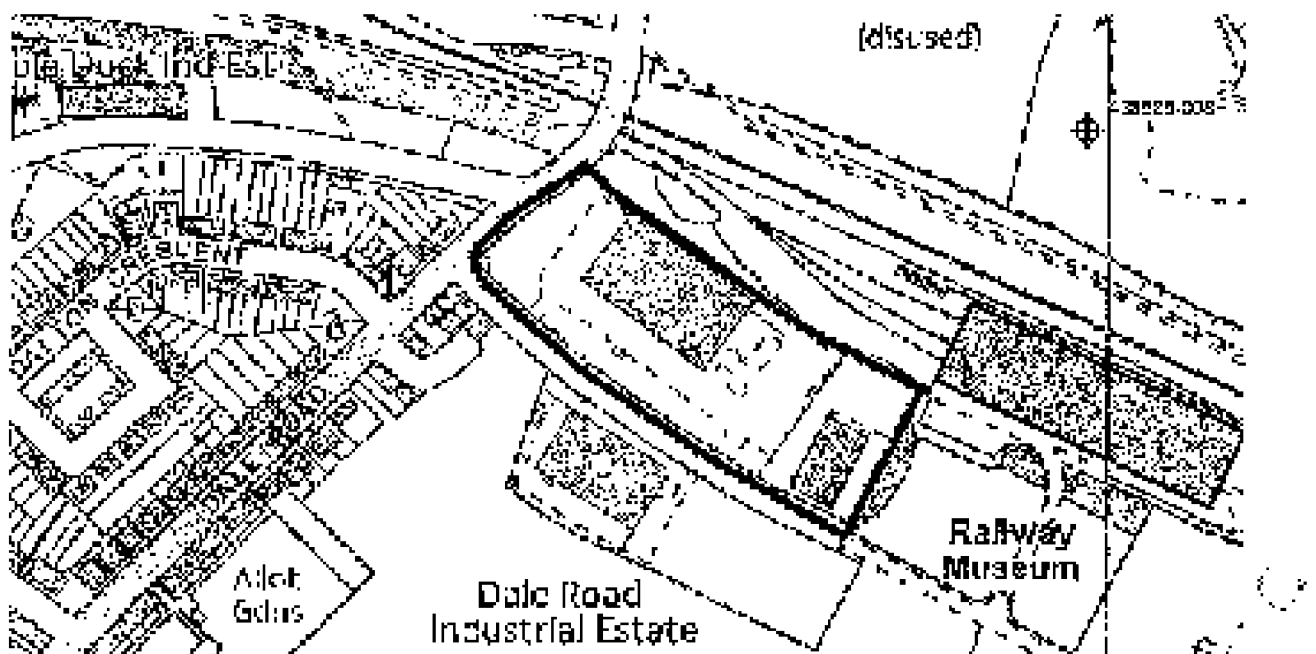


The Coal
Authority

Granted Permit Boundary

Permit Ref: 26202

Permit Boundary:



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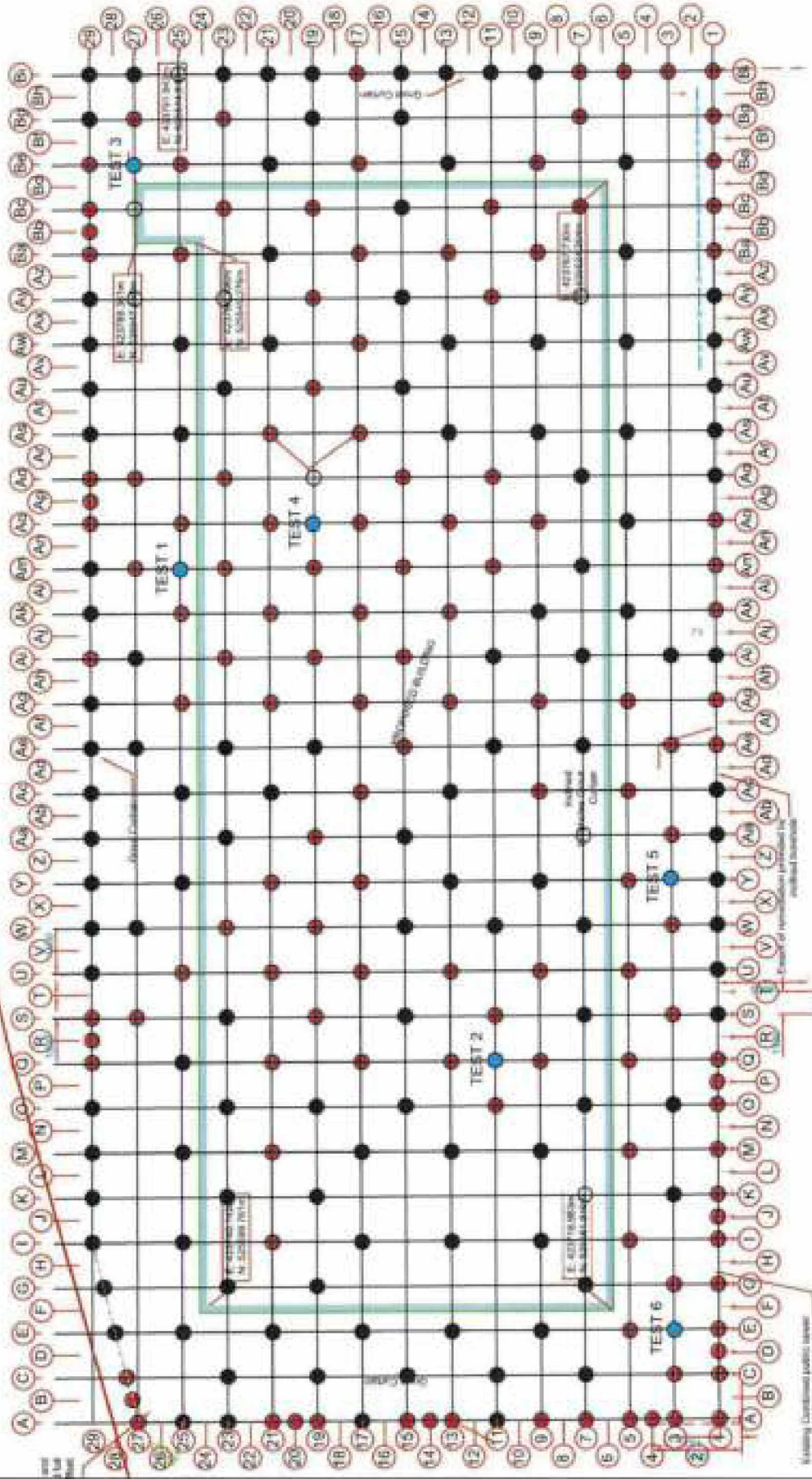
APPENDIX TWO

DRAWING 13485-001 GROUT HOLE LAYOUT

BOREHOLE LEGEND

- Coal
- Legacy Mine Working
- Test

D O U N T S C A L E



Drawing is Uncontrolled public release with Environmental Agency

PROJECT	LOCATIONS NEW HALL SHELTON DLA 29E
DRAWING	BOREHOLE LAYOUT
DATE	10/11/2011
DRAWN BY	J. W. WILSON
CHECKED BY	J. W. WILSON
SCALE	AS SHOWN (SEE NOTES)
Environmental Agency 10/11/2011 13485 Drawing is Uncontrolled public release with Environmental Agency	
FIG. NO.	13485

APPENDIX THREE

DAILY DRILLING RECORDS

DAILY DRILLING RETURNS

SITE: 5825-1022240 R33 SULLIVAN, DISTRICT

WELL: K001000000-580 NEENEYS

9-1-1980

Time	Depth	Rate	Flow	Pressure	Temp	Sp. Gr.	Remarks	Depth	Rate	Flow	Pressure	Temp	Sp. Gr.	Remarks
00:00	0.00	0.00	0.00	0.00	0.00	0.00	START	0.00	0.00	0.00	0.00	0.00	0.00	START
00:05	1.00	0.10	0.10	0.10	0.10	0.10	1.00	0.10	0.10	0.10	0.10	0.10	0.10	1.00
00:10	2.00	0.20	0.20	0.20	0.20	0.20	2.00	0.20	0.20	0.20	0.20	0.20	0.20	2.00
00:15	3.00	0.30	0.30	0.30	0.30	0.30	3.00	0.30	0.30	0.30	0.30	0.30	0.30	3.00
00:20	4.00	0.40	0.40	0.40	0.40	0.40	4.00	0.40	0.40	0.40	0.40	0.40	0.40	4.00
00:25	5.00	0.50	0.50	0.50	0.50	0.50	5.00	0.50	0.50	0.50	0.50	0.50	0.50	5.00
00:30	6.00	0.60	0.60	0.60	0.60	0.60	6.00	0.60	0.60	0.60	0.60	0.60	0.60	6.00
00:35	7.00	0.70	0.70	0.70	0.70	0.70	7.00	0.70	0.70	0.70	0.70	0.70	0.70	7.00
00:40	8.00	0.80	0.80	0.80	0.80	0.80	8.00	0.80	0.80	0.80	0.80	0.80	0.80	8.00
00:45	9.00	0.90	0.90	0.90	0.90	0.90	9.00	0.90	0.90	0.90	0.90	0.90	0.90	9.00
00:50	10.00	1.00	1.00	1.00	1.00	1.00	10.00	1.00	1.00	1.00	1.00	1.00	1.00	10.00
00:55	11.00	1.10	1.10	1.10	1.10	1.10	11.00	1.10	1.10	1.10	1.10	1.10	1.10	11.00
01:00	12.00	1.20	1.20	1.20	1.20	1.20	12.00	1.20	1.20	1.20	1.20	1.20	1.20	12.00
01:05	13.00	1.30	1.30	1.30	1.30	1.30	13.00	1.30	1.30	1.30	1.30	1.30	1.30	13.00
01:10	14.00	1.40	1.40	1.40	1.40	1.40	14.00	1.40	1.40	1.40	1.40	1.40	1.40	14.00
01:15	15.00	1.50	1.50	1.50	1.50	1.50	15.00	1.50	1.50	1.50	1.50	1.50	1.50	15.00
01:20	16.00	1.60	1.60	1.60	1.60	1.60	16.00	1.60	1.60	1.60	1.60	1.60	1.60	16.00
01:25	17.00	1.70	1.70	1.70	1.70	1.70	17.00	1.70	1.70	1.70	1.70	1.70	1.70	17.00
01:30	18.00	1.80	1.80	1.80	1.80	1.80	18.00	1.80	1.80	1.80	1.80	1.80	1.80	18.00
01:35	19.00	1.90	1.90	1.90	1.90	1.90	19.00	1.90	1.90	1.90	1.90	1.90	1.90	19.00
01:40	20.00	2.00	2.00	2.00	2.00	2.00	20.00	2.00	2.00	2.00	2.00	2.00	2.00	20.00
01:45	21.00	2.10	2.10	2.10	2.10	2.10	21.00	2.10	2.10	2.10	2.10	2.10	2.10	21.00
01:50	22.00	2.20	2.20	2.20	2.20	2.20	22.00	2.20	2.20	2.20	2.20	2.20	2.20	22.00
01:55	23.00	2.30	2.30	2.30	2.30	2.30	23.00	2.30	2.30	2.30	2.30	2.30	2.30	23.00
02:00	24.00	2.40	2.40	2.40	2.40	2.40	24.00	2.40	2.40	2.40	2.40	2.40	2.40	24.00
02:05	25.00	2.50	2.50	2.50	2.50	2.50	25.00	2.50	2.50	2.50	2.50	2.50	2.50	25.00
02:10	26.00	2.60	2.60	2.60	2.60	2.60	26.00	2.60	2.60	2.60	2.60	2.60	2.60	26.00
02:15	27.00	2.70	2.70	2.70	2.70	2.70	27.00	2.70	2.70	2.70	2.70	2.70	2.70	27.00
02:20	28.00	2.80	2.80	2.80	2.80	2.80	28.00	2.80	2.80	2.80	2.80	2.80	2.80	28.00
02:25	29.00	2.90	2.90	2.90	2.90	2.90	29.00	2.90	2.90	2.90	2.90	2.90	2.90	29.00
02:30	30.00	3.00	3.00	3.00	3.00	3.00	30.00	3.00	3.00	3.00	3.00	3.00	3.00	30.00
02:35	31.00	3.10	3.10	3.10	3.10	3.10	31.00	3.10	3.10	3.10	3.10	3.10	3.10	31.00
02:40	32.00	3.20	3.20	3.20	3.20	3.20	32.00	3.20	3.20	3.20	3.20	3.20	3.20	32.00
02:45	33.00	3.30	3.30	3.30	3.30	3.30	33.00	3.30	3.30	3.30	3.30	3.30	3.30	33.00
02:50	34.00	3.40	3.40	3.40	3.40	3.40	34.00	3.40	3.40	3.40	3.40	3.40	3.40	34.00
02:55	35.00	3.50	3.50	3.50	3.50	3.50	35.00	3.50	3.50	3.50	3.50	3.50	3.50	35.00
03:00	36.00	3.60	3.60	3.60	3.60	3.60	36.00	3.60	3.60	3.60	3.60	3.60	3.60	36.00
03:05	37.00	3.70	3.70	3.70	3.70	3.70	37.00	3.70	3.70	3.70	3.70	3.70	3.70	37.00
03:10	38.00	3.80	3.80	3.80	3.80	3.80	38.00	3.80	3.80	3.80	3.80	3.80	3.80	38.00
03:15	39.00	3.90	3.90	3.90	3.90	3.90	39.00	3.90	3.90	3.90	3.90	3.90	3.90	39.00
03:20	40.00	4.00	4.00	4.00	4.00	4.00	40.00	4.00	4.00	4.00	4.00	4.00	4.00	40.00
03:25	41.00	4.10	4.10	4.10	4.10	4.10	41.00	4.10	4.10	4.10	4.10	4.10	4.10	41.00
03:30	42.00	4.20	4.20	4.20	4.20	4.20	42.00	4.20	4.20	4.20	4.20	4.20	4.20	42.00
03:35	43.00	4.30	4.30	4.30	4.30	4.30	43.00	4.30	4.30	4.30	4.30	4.30	4.30	43.00
03:40	44.00	4.40	4.40	4.40	4.40	4.40	44.00	4.40	4.40	4.40	4.40	4.40	4.40	44.00
03:45	45.00	4.50	4.50	4.50	4.50	4.50	45.00	4.50	4.50	4.50	4.50	4.50	4.50	45.00
03:50	46.00	4.60	4.60	4.60	4.60	4.60	46.00	4.60	4.60	4.60	4.60	4.60	4.60	46.00
03:55	47.00	4.70	4.70	4.70	4.70	4.70	47.00	4.70	4.70	4.70	4.70	4.70	4.70	47.00
04:00	48.00	4.80	4.80	4.80	4.80	4.80	48.00	4.80	4.80	4.80	4.80	4.80	4.80	48.00
04:05	49.00	4.90	4.90	4.90	4.90	4.90	49.00	4.90	4.90	4.90	4.90	4.90	4.90	49.00
04:10	50.00	5.00	5.00	5.00	5.00	5.00	50.00	5.00	5.00	5.00	5.00	5.00	5.00	50.00
04:15	51.00	5.10	5.10	5.10	5.10	5.10	51.00	5.10	5.10	5.10	5.10	5.10	5.10	51.00
04:20	52.00	5.20	5.20	5.20	5.20	5.20	52.00	5.20	5.20	5.20	5.20	5.20	5.20	52.00
04:25	53.00	5.30	5.30	5.30	5.30	5.30	53.00	5.30	5.30	5.30	5.30	5.30	5.30	53.00
04:30	54.00	5.40	5.40	5.40	5.40	5.40	54.00	5.40	5.40	5.40	5.40	5.40	5.40	54.00
04:35	55.00	5.50	5.50	5.50	5.50	5.50	55.00	5.50	5.50	5.50	5.50	5.50	5.50	55.00
04:40	56.00	5.60	5.60	5.60	5.60	5.60	56.00	5.60	5.60	5.60	5.60	5.60	5.60	56.00
04:45	57.00	5.70	5.70	5.70	5.70	5.70	57.00	5.70	5.70	5.70	5.70	5.70	5.70	57.00
04:50	58.00	5.80	5.80	5.80	5.80	5.80	58.00	5.80	5.80	5.80	5.80	5.80	5.80	58.00
04:55	59.00	5.90	5.90	5.90	5.90	5.90	59.00	5.90	5.90	5.90	5.90	5.90	5.90	59.00
05:00	60.00	6.00	6.00	6.00	6.00	6.00	60.00	6.00	6.00	6.00	6.00	6.00	6.00	60.00

SUMMARY		CARING METRES		HOLES DRILLED	
WELL TOTAL	18000	WELL TOTAL	18000	HOLES	4
TRIP TOTAL	20000	TRIP TOTAL	20000	TRIP HOLES	3
RUN TOTAL	20000	RUN TOTAL	20000	TOTAL HOLES	7

DAILY DRILLING RETURNS

SITE: 1000 - LUGGONIA W. SHALUR 64206

CLIENT: APT. PLAN OF REINTEGRING

SHEET NO.

07

Bl. No	Start Date	End	Day	Depth To	Strata	Loss	Gain	Depth	Gain	Loss	Depth	Gain	Loss	SI DATA					
2762	28	29	11/21/01	MC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2000 2762RUBEN					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4000 4000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6000 6000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8000 8000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10000 10000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12000 12000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14000 14000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16000 16000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18000 18000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20000 20000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	22000 22000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24000 24000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26000 26000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	28000 28000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	30000 30000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	32000 32000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	34000 34000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	36000 36000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	38000 38000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40000 40000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	42000 42000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44000 44000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46000 46000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	48000 48000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50000 50000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	52000 52000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	54000 54000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	56000 56000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	58000 58000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	60000 60000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	62000 62000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	64000 64000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	66000 66000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	68000 68000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70000 70000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72000 72000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	74000 74000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	76000 76000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	78000 78000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	80000 80000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	82000 82000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	84000 84000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	86000 86000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	88000 88000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	90000 90000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	92000 92000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94000 94000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96000 96000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98000 98000 1000000000000000					
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100000 100000 1000000000000000					
DRILLING METERS					CASING METRES					TOTALS DRILLED					STRATA ENCOUNTERED				
PAGE TOTAL 200.00					PAGE TOTAL 48.00 HOLE FS					TOTAL 300.00					TOTAL 960.00				
PREV TOTAL 0.00					PREV TOTAL 118.00 PREVIOUS HOLES					TOTAL 300.00					TOTAL 480.00				
TOTAL 200.00					TOTAL 300.00					TOTAL 300.00					TOTAL 960.00				

APPENDIX FOUR

DAILY GROUTING RECORDS

DAILY GROUTING RETURNS

SHEET NO. 2
 DATE 10.3.23
 MIX 12001

GROUND SH RE
 GROUND SHIRE
 GROUND SHIRE
 GROUND SHIRE

SITE 13485 LOCOMOTION, SHILDON, DL4 2RE

CLIENT NATIONWIDE ENGINEERING

DELIVERIES (TONNES)				
	CEMENT	P.F.A.	SAND	GRAVEL
TODAYS DELIVERIES		78.72		
PREVIOUS DELIVERIES	24.00	28.86	0.00	0.00
TOTAL DELIVERIES	24.00	57.06	0.00	0.00
TOTAL USED	2.35	26.20	0.00	0.00
STOCK ON SITE	21.65	28.86	0.00	0.00

QUANTITIES USED (TONNES)										
HOLE NO.	GROUT	CEMENT	P.F.A.	SAND	GRAVEL	INCORP. FT	COMP. PSI			
BES	0.39	0.03	0.36				30.00			
BE13	0.39	0.03	0.36				30.00			
BE21	0.39	0.03	0.36				30.00			
BA5	0.39	0.03	0.36				30.00			
AW5	0.39	0.03	0.36				30.00			
AWB	0.39	0.03	0.36				30.00			
AW13	0.39	0.03	0.36				30.00			
AW25	0.39	0.03	0.36				30.00			
A55	0.39	0.03	0.36				30.00			
A50	0.39	0.03	0.36				30.00			
AS13	0.39	0.03	0.36				30.00			
AS75	0.39	0.03	0.36				30.00			
AO5	0.39	0.03	0.36				30.00			
AK5	0.39	0.03	0.36				30.00			
AK9	0.39	0.03	0.36				30.00			
AC13	0.39	0.03	0.36				30.00			
AC17	0.39	0.03	0.36				30.00			
AC21	0.39	0.03	0.36				30.00			
PAGE TOTAL	7.02	0.54	6.59	0.00	0.00	COMPLETE	15.00			
PREV. TOTAL	23.53	1.81	21.72	0.00	0.00	PREV. COMP.	9.00			
RUN. TOTAL	30.55	2.35	28.20	0.00	0.00	TOTAL COMP.	27.00			

TICKET NUMBERS / CUBES / REMARKS	
PTA	
47/231	28.22
Flow Test	480mm Bleed Test 5%

DAILY GROUTING RETURNS

SHEET NO. 3

GROUNDSHIRE
GROUNDSHIRE
GROUNDSHIRE
GROUNDSHIRE

SITE 13485 - LOCOMOTION, SHILDON, DL4 2RE

DATE 10.3.23

CLIENT NATIONWIDE ENGINEERING

MIX 17/01

QUANTITIES USED (TONNES)										DELIVERIES (TONNES)													
HOLE NO.	GROUT	CEMENT	P.F.A.	SAND	GRAVEL	INCOMPLETE	COMPLETE	CEMENT	P.F.A.	SAND	GRAVEL	TODAYS	DELIVERIES	PREVIOUS	DELIVERIES	TOTAL	DELIVERIES	TOTAL	USED	STOCK	ON SITE		
AC25	0.39	0.03	0.36				30.00																
Y9	0.39	0.03	0.36				30.00																
Y13	0.39	0.03	0.36				30.00																
Y25	0.39	0.03	0.36				30.00																
BA13	4.56	0.35	4.20				30.00																
Q13	5.20	0.40	4.80				30.00																
E9	0.39	0.03	0.36				30.00																
E13	0.39	0.03	0.36				30.00																
E17	0.39	0.03	0.36				30.00																
E21	0.39	0.03	0.36				30.00																
E25	0.39	0.03	0.36				30.00																
I9	0.39	0.03	0.36				30.00																
I13	0.39	0.03	0.36				30.00																
I17	0.39	0.03	0.36				30.00																
I25	0.39	0.03	0.36				30.00																
M9	0.39	0.03	0.36				30.00																
PAGE TOTAL	15.21	1.17	14.04	0.00	0.00	COMPLETE	16.00																
PREV. TOTAL	30.55	2.35	28.20	0.00	0.00	PREV. COMP.	27.00																
RUN. TOTAL	45.76	3.52	42.24	0.00	0.00	TOTAL COMP.	43.00																

TICKET NUMBERS / CUBES / REMARKS

Flow Test 450mm Bleed Test 4%

DAILY GROUTING RETURNS

SHEET NO. 5
 DATE 14.3.73
 MIX 12to1

GROUND SH RE
 GROUND SHIRE
 GROUND SHIRE
 GROUND SHIRE

SITE 13485 - LOCOMOTION, SHILDON, DL4 2RE

CLIENT NATIONWIDE ENGINEERING

QUANTITIES USED (TONNES)									
HOLE NO.	GROUT	CEMENT	P.F.A.	SAND	GRAVEL	INCOMPLETE	COMP / PSI		
BI29	U.33	U.03	0.30				30.00		
BG29	U.33	U.03	0.30				30.00		
AY29	0.33	0.03	0.30				30.00		
AW29	0.33	0.03	0.30				30.00		
AU29	0.33	0.03	0.30				30.00		
AM29	0.33	0.03	0.30				30.00		
AK29	U.33	0.03	0.30				30.00		
BE29	4.95	0.45	4.50			Y			
HC29	4.47	0.47	4.00				30.00		
HM29	4.47	0.47	4.00				30.00		
AO24	4.45	0.45	4.50				30.00		
AO29	4.95	0.45	4.50				30.00		
AI20	2.75	0.25	2.50			Y			
AS29	0.33	0.03	0.30				30.00		
PAGE TOTAL	29.04	2.94	26.40	0.00	0.00	COMPLETE	12.00		
PREV. TOTAL	47.52	3.64	43.68	0.00	0.00	PREV. COMPL.	47.00		
RUN. TOTAL	76.36	6.29	70.08	0.00	0.00	TOTAL COMP.	59.00		

MILLIMETRES (TONNES)						
TODAYS	DIFF	MPRIFS	CEMENT	P.F.A.	SAND	GRAVEL
PREVIOUS			24.00	84.50	0.00	0.00
DELIVERIES			24.00	84.50	0.00	0.00
TOTAL			48.00	169.00	0.00	0.00
DELIVERIES			6.28	70.08	0.00	0.00
TOTAL			54.28	239.08	0.00	0.00
USED			17.72	14.42	0.00	0.00
STOCK						
ON SITE						

TICKET NUMBERS / CUBES / REMARKS
Curten well grouting 10:1
Flow Test 570mm Bleed Test 5%

DAILY GROUTING RETURNS

SHEET NO. 6
 DATE 16.3.23
 MIX CO TO 1

GROUNDSHIRE
 GROUNDSHIRE
 GROUNDSHIRE
 GROUNDSHIRE

SITE 13405 - LOCOMOTION, SHILDON, DL4 2RE

CLIENT NATIONWIDE ENGINEERING

QUANTITIES USED (TONNES)									
HOLE NO.	GROUT	CEMENT	P.F.A.	SAND	GRAVEL	INCOMPLETE	COMP. / PSI		
A129	2.20	0.20	2.00				30.00		
AG29	0.33	0.03	0.30				30.00		
AE29	0.33	0.03	0.30				30.00		
AC29	0.33	0.03	0.30				30.00		
AA29	0.33	0.03	0.30				30.00		
Y29	0.33	0.03	0.30				30.00		
W29	0.33	0.03	0.30				30.00		
U29	0.33	0.03	0.30				30.00		
A11	0.33	0.03	0.30				30.00		
A17	0.33	0.03	0.30				30.00		
A1	4.10	0.40	4.00				30.00		
A3	2.20	0.20	2.00				30.00		
A5	2.75	0.25	2.50				30.00		
A7	4.40	0.40	4.00				30.00		
A9	1.65	0.15	1.50				30.00		
A13	1.65	0.15	1.50				30.00		
A15	1.65	0.15	1.50				30.00		
A19	1.65	0.15	1.50				30.00		
PAGE TOTAL	25.62	2.32	23.20	0.00	0.00	0.00	18.00		
PREV. TOTAL	76.33	6.26	70.00	0.00	0.00	0.00	59.00		
RUN. TOTAL	101.95	8.60	93.20	0.00	0.00	0.00	77.00		

DELIVERIES (TONNES)				
	CEMENT	P.F.A.	SAND	GRAVEL
TODAYS		58.42		
DELIVERIES				
PREVIOUS	24.00	84.50	0.00	0.00
DELIVERIES				
TOTAL	24.00	140.92	0.00	0.00
DELIVERIES				
TOTAL	8.60	93.20	0.00	0.00
USED				
STOCK	15.40	47.64	0.00	0.00
ON SITE				

TICKET NUMBERS / CUBES / REMARKS			
74-A			
471882	28.1		
471883	28.32		
Curtain wall grouting ^0 to 1			
Flow Test	480mm	Bleed Test	5%

DAILY GROUTING RETURNS

SHEET NO. 7
 DATE 16.3.23
 MIX 12m1

GROUND SH RE
 GROUND SHIRE
 GROUND SHIRE
 GROUND SHIRE

SITE 18485 - LOCOMOTION, SHILDON, DL4 2RE
 CLIENT NATIONWIDE ENGINEERING

DELIVERIES (TONNES)					
	CEMENT	P.F.A.	SAND	GRAVEL	
TONNAYS					
DELIVERIES					
PREVIOUS DELIVERIES	24.00	140.92	0.00	0.00	0.00
TOTAL DELIVERIES	24.00	140.92	0.00	0.00	0.00
TOTAL USED	11.00	122.08	0.00	0.00	0.00
STOCK ON SITE	13.00	18.84	0.00	0.00	0.00

TICKET NUMBERS / CUBES / REMARKS			
In-fill grouting			
Flow Test	470mm	Bleed Test:	4%

QUANTITIES USED (TONNES)							
HOLE NO.	GROUT	CEMENT	P.F.A.	SAND	GRAVEL	INCOMPLETE	COMP. / PSI
AG25	2.60	0.20	2.40			Y	
AG27	2.60	0.20	2.40			Y	
AG17	2.60	0.20	2.40			Y	
AG13	2.60	0.20	2.40			Y	
AK25	2.60	0.20	2.40			Y	
AK21	2.60	0.20	2.40			Y	
AK17	2.60	0.20	2.40			Y	
AK13	2.60	0.20	2.40			Y	
AO25	2.60	0.20	2.40			Y	
AO21	2.60	0.20	2.40			Y	
AO17	2.60	0.20	2.40			Y	
AO13	2.60	0.20	2.40			Y	
PAGE TOTAL	31.20	2.40	28.80	0.00	0.00	COMPLETE	0.00
PREV. TOTAL	107.80	5.60	93.20	0.00	0.00	PREV. COMP.	0.00
RUN TOTAL	139.00	11.00	122.08	0.00	0.00	TOTAL COMP.	77.00

C9B

DAILY GROUTING RETURNS

SHEET NO. 10

GROUND SHIRE
GROUND SHIRE
GROUND SHIRE
GROUND SHIRE

SITE 19186 - LOCOMOTION, SHILDON, DL4 2RE

DATE 20.3.23

CLIENT NATIONWIDE ENGINEERING

MIX 10 to 1

QUANTITIES USED (TONNES)											DELIVERIES (TONNES)				
HOLE NO.	GROUT	CEMENT	P.F.A.	SAND	GRAVEL	INCOMPLETE	COMP. PSI				TODAYS	CEMENT	P.F.A.	SAND	GRAVEL
C2720	0.55	0.05	0.50				30.00				DELIVERIES		56.82		
A27	0.55	0.05	0.50				30.00				PREVIOUS	21.00	140.92	0.00	0.00
M1	0.33	0.03	0.30				30.00				DELIVERIES				
S1	0.33	0.03	0.30				30.00				TOTAL	74.00	197.74	0.00	0.00
U1	0.33	0.03	0.30				30.00				DELIVERIES				
W1	0.33	0.03	0.30				30.00				TOTAL	13.14	315.10	0.00	0.00
G1	0.55	0.05	0.50				30.00				USED				
I1	0.55	0.05	0.50				30.00				STOCK	10.86	52.64	0.00	0.00
K1	0.55	0.05	0.50				30.00				ON SITE				
O1	0.55	0.05	0.50				30.00				TICKET NUMBERS / CUBES / REMARKS				
Q1	0.55	0.05	0.50				30.00				PFA				
B27	0.55	0.05	0.50				30.00				472352	28.24			
B25	0.33	0.03	0.30				30.00				1/2351	28.58			
B23	0.33	0.03	0.30				30.00				Curtain wall grouting				
B21	0.33	0.03	0.30				30.00				Flow Test	460mm	Bleed	feet	2%
B19	0.33	0.03	0.30				30.00								
B15	0.33	0.03	0.30				30.00								
B13	0.33	0.03	0.30				30.00								
PAGE TOTAL	7.48	0.55	6.80	0.00	0.00	COMPLETE	18.00								
PREV TOTAL	150.76	12.40	138.30	0.00	0.00	PREV. COMP.	96.00								
RUN. TOTAL	158.24	13.14	145.10	0.00	0.00	TOTAL COMP.	114.00								

Contractor: Groundshire Limited, Durham, DH7 8HJ

Contract Ref: 13485

Site Manager: B Fisher

DAILY GROUTING RETURNS

SHEET NO. 12

GROUND SHIRE
GROUND SHIRE
GROUND SHIRE
GROUND SHIRE

SITE 15485 - LOCOMOTION, SHILDON, DL4 2RE

DATE 20.3.23

CLIENT NATIONWIDE ENGINEERING

MIX 12to1

QUANTITIES USED (TONNES)										DELIVERIES (TONNES)				
HOLE NO.	GROUT	CEMENT	P.F.A.	SAND	GRAVEL	INCOMPLETE	COMP. / PSI				CEMENT	P.F.A.	SAND	GRAVEL
U25	2.20	0.20		2.00			30.00							
I21	1.10	0.10		1.00			30.00							
M21	1.10	0.10		1.00			30.00					197.74	0.00	0.00
Q21	3.30	0.30		3.00			30.00							
U21	1.10	0.10		1.00			30.00							
Y21	2.20	0.20		2.00			30.00							
Q17	0.95	0.05		0.50			30.00							
U17	1.10	0.10		1.00			30.00							
AK17	0.95	0.05		0.50			30.00							
BE17	0.95	0.05		0.50			30.00							
RA25	1.10	0.10		1.00			30.00							
BE25	1.10	0.10		1.00			30.00							
Y17	1.40	0.40		4.00		N								
AG17	4.40	0.40		4.00		N								
PAGE TOTAL	24.75	2.25		22.50	0.00	0.00	12.00							
PREV. TOTAL	167.82	14.02		153.90	0.00	0.00	119.00							
RUN. TOTAL	192.67	16.27		176.40	0.00	0.00	131.00							

TICKET NUMBERS / CURFS / REMARKS
Infill grouting

Flow Test 480mm Bleed Test 5%

DAILY GROUTING RETURNS

SHEET NO. 13
 DATE 21.3.23
 MIX 40 10 1

GROUND SHIRE
 GROUND SHIRE
 GROUND SHIRE
 GROUND SHIRE

SITE 13485 LXXXMO HON, SHILDON, DL1 6 2RF

CLIENT NATIONWIDE ENGINEERING

QUANTITIES USED (TONNES)											DELIVERIES (TONNES)				
HOLE NO.	GROUT	CEMENT	P.F.A.	SAND	GRAVEL	INCOMPLETE	COMP. / PSI				TODAYS	CEMENT	P.F.A.	SAND	GRAVEL
Y1	0.33	0.03	0.30				30.00				DELIVERIES		57.17		
AY1	0.33	0.03	0.30				30.00				PREVIOUS	24.00	187.74	0.00	0.00
AC1	0.33	0.03	0.30				30.00				DELIVERIES				0.00
AI1	0.33	0.03	0.30				30.00				TOTAL	24.00	254.91	0.00	0.00
BI9	0.33	0.03	0.30				30.00				DELIVERIES				0.00
AY1	0.33	0.03	0.30				30.00				TOTAL	17.29	186.60	0.00	0.00
AW1	0.33	0.03	0.30				30.00				DELIVERIES				0.00
AJ1	0.33	0.03	0.30				30.00				TOTAL	6.71	83.31	0.00	0.00
AS1	0.33	0.03	0.30				30.00				DELIVERIES				0.00
BI7	0.55	0.05	0.50				30.00				TOTAL				0.00
BI5	0.55	0.05	0.50				30.00				DELIVERIES				0.00
BI1	0.55	0.05	0.50				30.00				TOTAL				0.00
BC1	1.10	0.10	1.00				30.00				DELIVERIES				0.00
BI3	1.10	0.10	1.00				30.00				TOTAL				0.00
BI1	1.10	0.10	1.00				30.00				DELIVERIES				0.00
BE1	1.10	0.10	1.00				30.00				TOTAL				0.00
BA1	1.10	0.10	1.00				30.00				DELIVERIES				0.00
AE1	1.10	0.10	1.00				30.00				TOTAL				0.00
PAGE TOTAL	11.22	1.02	10.20	0.00	0.00	COMPLETE	14.00				TOTAL				
PREV. TOTAL	192.67	16.27	176.40	0.00	0.00	PREV. COMP.	131.00				TOTAL				
RUN TOTAL	203.89	17.29	186.60	0.00	0.00	TOTAL COMP.	145.00				TOTAL				

TICKET NUMBERS / CUBES / REMARKS	
FFA	
472447	28.52
472447	28.04
Gullian wall grouting	
Flow Test	470cm Bleed Test 4%

DAILY GROUTING RETURNS

SHEET NO. 14
 DATE 21.3.23
 MIX 12:0:1

GROUND SHIRE
 GROUND SHIRE
 GROUND SHIRE
 GROUND SHIRE

SITE 13485 - LOCOMOTION, SHILDON. DL4 2RE

CLIENT NATIONWIDE ENGINEERING

QUANTITIES USED (TONNES)										DELIVERIES (TONNES)				
HOLE NO.	GROUT	CEMENT	P.F.A.	SAND	GRAVEL	INCOMPLETE	COMP. PSI	TODAYS DELIVERIES	PREVIOUS DELIVERIES	TOTAL DELIVERIES	CEMENT	P.F.A.	SAND	GRAVEL
Y17	2.60	0.20	2.40				30.00							
AG17	2.60	0.20	2.40				30.00							
AG13	1.30	0.10	1.20				30.00		24.00	24.00	24.00	254.91	0.00	0.00
AK13	1.30	0.10	1.20				30.00							
AO13	1.30	0.10	1.20				30.00							
AC9	2.60	0.20	2.40				30.00							
AGR	2.60	0.20	2.40				30.00							
AOR	2.60	0.20	2.40				30.00							
BAY	2.60	0.20	2.40				30.00							
BE2	2.60	0.20	2.40				30.00							
Γ5	3.90	0.30	3.60				30.00							
IS	2.60	0.20	2.40				30.00							
MG	3.90	0.30	3.60				30.00							
Q5	3.90	0.30	3.60				30.00							
U5	2.60	0.20	2.40				30.00							
AY15	0.30	0.03	0.26				30.00							
S11	2.20	0.20	2.00				30.00							
FACE TOTAL	41.59	0.23	39.36	0.00	0.00	COMPLETE	17.00							
PREV. TOTAL	203.89	17.28	186.60	0.00	0.00	PREV. COMP.	145.00							
RUN TOTAL	245.48	20.52	224.96	0.00	0.00	TOTAL COMP.	162.00							

TICKET NUMBERS / CUBES / REMARKS			
Infill grouting			
Flow Test	180mm	Bleed Test	5%

DAILY GROUTING RETURNS

SHEET NO. 18
 DATE 23.3.23
 MIX 12b1

GROUND SH RE
 GROUND SHIRE
 GROUND SHIRE
 GROUND SHIRE

SITE 13485 LOCOMOTION, SHILDON, DL4 2RE

CLIENT NATIONWIDE ENGINEERING

QUANTITIES USED (TONNES)										DELIVERIES (TONNES)				
HOLE NO.	GROUT	CEMENT	P.F.A.	SAND	GRAVEL	INCOMPLETE	COMP. / PSI				CFMNT	P.F.A	SAND	GRAVEL
WZ1	0.38	0.03	0.38				30.00							
AE21	0.38	0.03	0.38				30.00							
AI21	0.38	0.03	0.38				30.00				36.00	310.09	0.00	0.00
K3	0.38	0.03	0.38				30.00							
C3	0.38	0.03	0.38				30.00				36.00	310.09	0.00	0.00
AI3	0.38	0.03	0.38				30.00							
AI7	0.38	0.03	0.38				30.00				27.11	300.54	0.00	0.00
S27	5.20	0.40	4.80			✓								
AM27	5.90	0.30	3.60			✓								
AG27	5.90	0.30	3.60			✓								
C3	5.20	0.40	4.80			✓								
G3	5.20	0.40	4.80			✓								
S3	3.90	0.30	3.60			✓								
W3	3.90	0.30	3.60			✓								
AA3	5.20	0.40	4.80			✓								
AE3	5.20	0.40	4.80			✓								
BC27	5.20	0.40	4.80			✓								
BG27	3.80	0.30	3.50			✓								
PAGE TOTAL	53.40	4.11	49.32	0.00	0.00	COMPLETE	7.00							
PREV. TOTAL	274.22	23.00	251.22	0.00	0.00	PREV. COMP.	183.00							
RUN TOTAL	327.65	27.11	300.54	0.00	0.00	TOTAL COMP.	190.00							

TICKET NUMBERS / CUBES / REMARKS	Flow Test	480mm	Bleed Test	5%
Initial grouting				

DAILY GROUTING RETURNS

SHEET NO. 19

GROUND SH RE
GROUND SHIRE
GROUND SHIRE
GROUND SHIRE

SITE

18485 - LOCOMOTION, SHILDON, DL4 2RE

DATE 27.3.23

CLIENT

NATIONWIDE ENGINEERING

MDX

12m1

QUANTITIES USED (TONNES)											DELIVERIES (TONNES)			
HOLE NO.	GROUT	CEMENT	P.F.A.	SAND	GRAVIT	INCOMPLETE	COMP. PSI				CEMENT	P.F.A.	SAND	GRAVEL
AY27	0.39	0.03	0.36				30.00					58.48		
AY28	0.39	0.03	0.36				30.00							
AUP28	0.39	0.03	0.36				30.00				36.00	310.09	0.00	0.00
AP28	0.39	0.03	0.36				30.00							
AM28	0.39	0.03	0.36				30.00				30.00	300.56	0.00	0.00
S23	0.39	0.03	0.36				30.00							
O23	0.39	0.03	0.36				30.00				27.85	307.02	0.00	0.00
K23	0.39	0.03	0.36				30.00							
G23	0.39	0.03	0.36				30.00				8.76	59.53	0.00	0.00
C23	0.39	0.03	0.36				30.00							
BG19	0.39	0.03	0.36				30.00							
BC19	0.39	0.03	0.36				30.00							
AU19	0.39	0.03	0.36				30.00							
C19	0.39	0.03	0.36				30.00							
G19	0.39	0.03	0.36				30.00							
G11	0.39	0.03	0.36				30.00							
G7	0.39	0.03	0.36				30.00							
G7	0.39	0.03	0.36				30.00							
PAGE TOTAL	7.02	0.54	6.45	0.00	0.00	COMPLETE	18.00							
PREV. TOTAL	327.05	27.11	300.54	0.00	0.00	PREV. COMP.	190.00							
RUN. TOTAL	334.87	27.65	307.02	0.00	0.00	TOTAL COMP.	208.00							

TICKET NUMBERS / CUBES / REMARKS			
PFA			
472880	28.06		
472885	28.4		

Flow Test	680mm	Bleed Test	6%
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DAILY GROUTING RETURNS

SITE 13285 - LOCOMOTION, SHILDON, DL4 2RF

CLIENT NATIONWIDE ENGINEERING

SHEET NO. 20

DATE 27.3.23

MIX 12to1

GROUNDSHIRE
GROUNDSHIRE
GROUNDSHIRE
GROUNDSHIRE

QUANTITIES USED (TONNES)										DELIVERIES (TONNES)					
HOLE NO.	GROUP	CEMENT	P.F.A.	SAND	GRAVEL	INCOMPLETE	COMP / PSI	CEMENT	P.F.A.	SAND	GRAVEL	CEMENT	P.F.A.	SAND	GRAVEL
K1		0.39	0.36	0.36			30.00								
O7		0.39	0.36	0.36			30.00								
S27		0.85	0.80	0.80			30.00	36.00	368.55	0.00	0.00	36.00	368.55	0.00	0.00
AM27		1.04	0.98	0.98			30.00								
AC27		1.30	1.20	1.20			30.00	36.00	366.55	0.00	0.00	36.00	366.55	0.00	0.00
BC27		1.30	1.20	1.20			30.00								
HC27		2.60	2.40	2.40			30.00	30.74	304.10	0.00	0.00	30.74	304.10	0.00	0.00
C3		2.60	2.40	2.40			30.00								
G8		1.30	1.20	1.20			30.00	5.26	22.45	0.00	0.00	5.26	22.45	0.00	0.00
S3		1.30	1.20	1.20			30.00								
W3		2.60	2.40	2.40			30.00								
AA3		1.30	1.20	1.20			30.00								
AE3		2.60	2.40	2.40			30.00								
W23		3.90	3.60	3.60			30.00								
AI23		3.90	3.60	3.60			30.00								
AM23		3.90	3.60	3.60			30.00								
AC23		3.90	3.60	3.60			30.00								
BC23		5.20	4.80	4.80			30.00								
PAGE TOTAL		40.17	37.06	37.06	0.00	0.00	18.00								
PREV. TOTAL		334.87	27.85	307.02	0.00	0.00	209.00								
RUN. TOTAL		374.84	30.74	344.10	0.00	0.00	226.00								

TICKET NUMBERS / CUBES / REMARKS			
Flow Test	470mm	Bleed Test	4%

DAILY GROUTING RETURNS

SHEET NO. 22

GROUNDSHIRE

SITE 13485 - LOCOMOTION, SHIPDON, DL4 2RE

DATE 28.3.23

GROUNDSHIRE

CLIENT NATIONWIDE ENGINEERING

MIX 12101

GROUNDSHIRE

QUANTITIES USED (TONNES)						
HOLE NO.	IGROUT	CEMENT	P.F.A.	SAND	GRAVEL	COMPLETE
O19	0.38	0.03	0.36			30.00
K19	0.38	0.03	0.36			30.00
G19	0.38	0.03	0.36			30.00
O15	0.39	0.03	0.36			30.00
S7	0.39	0.03	0.36			30.00
W7	0.39	0.03	0.36			30.00
AA7	0.39	0.03	0.36			30.00
AE7	0.39	0.03	0.36			30.00
AM7	0.39	0.03	0.36			30.00
AO7	0.39	0.03	0.36			30.00
AY7	0.39	0.03	0.36			30.00
S19	0.39	0.03	0.36			30.00
AY19	0.65	0.05	0.60			30.00
AM19	0.65	0.05	0.60			30.00
AI19	0.39	0.03	0.36			30.00
AE19	0.39	0.03	0.36			30.00
AA19	1.30	0.10	1.20			30.00
W19	1.04	0.08	0.96			30.00
FACE TOTAL	9.10	0.70	8.40	0.00	0.00	18.00
PREV. TOTAL	303.04	32.14	363.80	0.00	0.00	226.00
RUN. TOTAL	402.14	32.84	369.30	0.00	0.00	248.00

DELIVERIES (TONNES)				
TODAYS DELIVERIES	CEMENT	P.F.A.	SAND	GRAVEL
		56.52		
PREVIOUS DELIVERIES	36.00	368.66	0.00	0.00
TOTAL DELIVERIES	36.00	423.07	0.00	0.00
TOTAL USED	32.84	369.30	0.00	0.00
STOCK ON SITE	3.16	53.77	0.00	0.00

TICKET NUMBERS / CUBES / REMARKS			
PFA			
473097	28.64		
475096	27.56		
Flow Test	470mm	Block Test	5%

C88

DAILY GROUTING RETURNS

SHEET NO. 23

**GROUND SH RE
GROUND SHIRE
GROUND SHIRE
GROUND SHIRE**

SITE 13485 - LOCOMOTION, SHILDON, DL1 2RE

DATE 29.3.23

CLIENT NATIONWIDE ENGINEERING

MIX 12/c1

QUANTITIES USED (TONNES)									
HOLE NO.	GROUT	CEMENT	P.F.A.	SAND	GRAVEL	INCOMPLETE	COMP. PSI		
WH1	0.39	0.03	0.36				30.00		
AE11	0.39	0.03	0.36				30.00		
AH1	0.39	0.03	0.36				30.00		
BC7	5.20	0.40	4.80				30.00		
DG7	3.90	0.30	3.60				30.00		
S15	0.39	0.03	0.36				30.00		
W15	0.39	0.03	0.36				30.00		
AA15	0.39	0.03	0.36				30.00		
AU15	0.39	0.03	0.36				30.00		
BC15	0.39	0.03	0.36				30.00		
BG15	0.39	0.03	0.36				30.00		
AE15	1.30	0.10	1.20				30.00		
AF15	1.30	0.10	1.20				30.00		
OH1	2.80	0.20	2.40				30.00		
AM11	5.20	0.40	4.80				30.00		
AO11	5.20	0.40	4.80				30.00		
AY11	5.20	0.40	4.80				30.00		
BC11	5.20	0.40	4.80				30.00		
PAGE TOTAL	38.61	2.87	35.64	0.00	0.00	COMPLETE	18.00		
PREV. TOTAL	402.14	32.84	369.30	0.00	0.00	PREV. COMP.	246.00		
RUN. TOTAL	440.75	35.81	404.94	0.00	0.00	TOTAL COMP.	264.00		

DELIVERIES (TONNES)				
	CEMENT	P.F.A.	SAND	GRAVEL
TODAYS	14.00			
DELIVERIES				
PREVIOUS	36.00	423.07	0.00	0.00
DELIVERIES				
TOTAL	50.00	423.07	0.00	0.00
DELIVERIES				
TOTAL	35.81	404.94	0.00	0.00
USED				
STOCK	14.19	18.19	0.00	0.00
ON SITE				

TICKET NUMBERS / CUBES / REMARKS	
CEMENT	
0012/01138/66	14
Flow Test	480 mm Bleed Test 5%

APPENDIX FIVE

MATERIALS DELIVERY TICKETS

DESPATCH NOTE

DNO133053



Mannok Company (GB) Limited

Specialist Transit, Crown Wharf, Rochester, Kent, England.

M7 4-3N

T: +44 (0) 20 6774 5956

www.mannok.co.uk

Customer Print User: Brian McComan

Vehicle Driver: Jaz9967 - Doug

Trailer Reg Code: MSFE658

Delivery Area:

Message: 0.00

Vehicle: Kinkajou

Date: 06/03/2023

Leaf ID: M090324

Page: 2 of 2

Customer:	Unique Order No.:	Delivery site:	Order date:
JOSEPH PARR NIGGLESBOROUGH HAD	1407A0091652	WEST YORKSHIRE FIRE AND RESCUE	20/02/2023
Customer No:	Ref Order No.:	CONSIGNEE LIMITED	Collection date:
14011	M0174749	WEST YORKSHIRE FIRE AND RESCUE	02/03/2023
Customer PO:		DISPATCH	Date required:
0012/0010732		07 007 5359955	03/03/2023

LOC.	PROD. CODE	DESCRIPTION	QTY.	UM.	LOS.	LOADDT	DELIV.
87	0759	General Purpose Paper/ SturdEL	21	TRG	paper	16	16

Pages:

Patrick McComan

DIVERGED TO LOGISTICS
SHILTON
DUL ZBE

Dis/Order general comments:

No of calls returned: 0

C/Order name: Brian Fisher

Date & time: 07/03/2023 16:0453

Customer Signature



Website: www.mannok.co.uk (Please read carefully)
Terms of sale apply to all orders. Mannok is not responsible for any loss or damage to goods in transit.

Standard Terms & Conditions (Please read carefully)
Goods sold subject to our standard conditions of sale. A copy of all of these conditions is available on request.



For information or assistance
contact us on 020 6774 5956
www.mannok.co.uk

Brennan & Coates Haulage Ltd

Abnormal Load Specialists

1 Nisde Road, Langley Moor, Dabon DL7 8WJ
 Tel: 0191 3780156 Fax: 0191 3781501
 email: brennanandcoates@btconnect.com

EX STICK

Collection/Delivery Note

T7431

Customer: GROUND SHIRE					
Order Description: 1 LOAD CEMENT S. PORTLAND CEMENT 12 TONNES			From: LANGLEY Moor		
			To: SHILTON LADGINGTON MUSEUM		
Time In	Time Out	Time In	Time Out	Vehicle Reg. No.	
				WV08 JAB	
ALL GOODS CARRIED IN ACCORDANCE WITH THE ROAD HAULAGE ASSOCIATION CONDITIONS OF CARriage 2009					
The above goods have been received in good condition		Date: 22.3.2008	Signed on behalf of customer:		



Joseph Parr (Tyne & Wear)

TIMBER & BUILDERS MERCHANTS

TEL: 0191 215 4000 FAX: 0191 215 4001 EMAIL: enquiries@josepparr.co.uk WEBSITE: www.jland.co.uk



Advice Note

Advice No.
0012401163477

Invoice To:
COUNTESS BELMFIELD
LITTLEBURN HOUSE
LITTLEBURN INDUSTRIAL
LANCERY MOOR BOTTAM
D 17 8PJ

Deliver To:
GROUNDSHIRE LIMITED
LOCOMOTION MILLS LUM
SHILL SHIRE
RYAN O 7877817545
DLA 2PC

Account	Our Operator	Telephone	Order Date	Order Ref
882933	Gary J	2191 375 4805	27/03/2023	193280
Your Contact	Your Reference	Date Required		Page
ANFLEY	18485/181	29/03/2023		1

Line	Quantity	Product
1	566 EA	Rugby Premium Ceresit 25kg PAPER 3/5 1% NON RETURNABLE 1% (KA) 30628178

Items marked FSC are FSC Mix 70% (INT-COC-881447),
Items marked PEFC are 70% PEFC certified (COT6-PEFC-COC-125)

Weight (KGS)
14222.6668

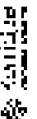
Customer Signature:

Our Opening Times are:
Mon-Fri 07:00 17:00
Saturday 07:00 12:00

Supplied by Joseph Parr - Bolton

Registered Office: Dunninga Bridge Road, Bolton, L20 0UU Registered in England No. 069810 VAT Reg: GB 185 1407 70

Our timber is supplied and retained will be subject to a 6% Package Tax (two collect). Goods must be used in the UK. If used abroad, the customer is responsible for any applicable duties. Our liability is limited to the value of the goods at the time of purchase. This does not affect your statutory rights.





Final Weighing Ticket
(By Product)

Final Weighing Ticket
(By Products)

DRAX POWER LIMITED
DRAX POWER STATION
DRAX
SELBY
YO3 8PJ
01757 81333

Ticket Number : 47182
Arrival Date : 14/03/2023 08:45
Exit Date : 14/03/2023 09:00
Vehicle Reg : Y170HXX
Truck ID : 4404167
Order No : 2240326
Product : EN13055-1 CONC

Product Use :
FILLER IN CONCRETE MANUFACTURE
Product Utility :
EN13055-1 CONC
Driver :
Trailer : LONEROCK
POWERWIN

Plant Address :-
DRAX POWER STATION
DRAX
SELBY
YO3 8PJ

Name of Business :-
CONCRETE BLOCK MANUFACTURE

WEIGHT SERIAL NO ID DATE TIME
1866kg 011288 INL 14/03/2023 08:45
4350kg 011288 OUT 14/03/2023 09:00
2484kg

Signed By Driver :-

Received By :-

These products have been produced in
compliance with the 'Published and
Ash Quality Protocol'.

DRAX POWER LIMITED
DRAX POWER STATION
DRAX
SELBY
YO3 8PJ
01757 81333

Ticket Number : 47182

Arrival Date : 14/03/2023 08:45
Exit Date : 14/03/2023 09:00

Vehicle Reg : Y170HXX

Truck ID : 4404167

Order No : 2240326

Product : EN13055-1 CONC

Product Use :
FILLER IN CONCRETE MANUFACTURE

Product Utility :
EN13055-1 CONC

Driver : ALLAN HAPPE

Trailer : POWERWIN
POWERWIN

Plant Address :-
DRAX POWER STATION
DRAX
SELBY
YO3 8PJ

Name of Business :-
CONCRETE BLOCK MANUFACTURE

WEIGHT SERIAL NO ID DATE TIME
1866kg 011288 INL 14/03/2023 08:45
4350kg 011288 OUT 14/03/2023 09:00

2484kg

Signed By Driver :-

Received By :-



Final Weighing Ticket
(By Products)

Final Weighing Ticket
(By Products)

DRAX POWER LIMITED
DRAX POWER STATION
01
BY
01/14
157 318301

DRAX POWER LIMITED
DRAX POWER STATION
01
BY
01/14
157 318301

Lot Number : 472882
Incl Date : 20/03/2023 10:36
T Date : 20/03/2023 11:13
Vehicle Reg : Y702PKK
VIA ID : 2004167
Lot No : 2248703
Quota : EN13055-1 LOND

Ticket Number : 471869
Arrival Date : 15/03/2023 09:28
Exit Date : 16/03/2023 10:4
Vehicle Reg : Y52 CCB
Trailer ID : 2004167
Lot No : 2248703
Product : EN13055-1 LOND

Product Name :
DRAX IN CEMENT MANUFACTURE
Quota Code :
EN13055-1 LOND
Driver :
Trailer : P047001
POWERMCH

Product Name :
DRAX IN CEMENT MANUFACTURE
Quota Code :
EN13055-1 LOND
Driver :
Trailer : P047001
POWERMCH

Customer Address :
DRAX POWER STATION
DRAX
SELEY
YORK SH1

Customer Address :
DRAX POWER STATION
DRAX
SELEY
YORK SH1

Nature of Business :
CONCRETE BLOCK MANUFACTURE

Nature of Business :
CONCRETE BLOCK MANUFACTURE

WT SERIAL NO ID DATE TIME
10kg 087001 141 00/03/2023 09:59
10kg 087001 MANUAL 00/03/2023 11:00
10kg

WT SERIAL NO ID DATE TIME
10.20kg 087001 141 15/03/2023 09:59
08.60kg 088000 MANUAL 15/03/2023 10:12
09.90kg

Signed By Driver :

Signed By Driver :
.....

Read By :
.....

Received by :
.....

These products have been produced in
compliance with the 'Guaranteed Fuel
Quality Protocol'.

These products have been produced in
compliance with the 'Guaranteed Fuel
Quality Protocol'.

Final Weighing Ticket
(By Products)



DRAXX POWER LIMITED
DRAXX POWER STATION
DRAXX
SELBY
YO6 3PH
01757 618331

Ticket Number : 472447

Arrival Date : 21/03/2023 09:00
Exit Date : 21/03/2023 09:53

Vehicle Reg : Y170HE

Trade ID : 4734157

Order to : 2243252

Product : EN130655-1 CON

Product Use :
FILLER IN CONCRETE MANUFACTURE

Product Title :
EN130655-1 CON

Driver : TAY PLYMER

Health : F06E3301
SLEEPY

Dist Address :
POWER MINERALS
DRAXX POWER STATION
DRAXX
SELBY
YO6 3PH

Nature of Business :-
CONCRETE BLOCK MANUFACTURE

WEIGHT	SERIAL	AS ID	DATE	TIME
15280kg	037844	IN1	21/03/2023	09:00
43730kg	011626	OUT2	21/03/2023	09:53

38528kg

Signed By Driver :-

Recd By :-

ISO
JL

Final Weighing Ticket
(By Products)

DRAXX POWER LIMITED
DRAXX POWER STATION
DRAXX
SELBY
YO6 3PH
01757 618331

Ticket Number : 472447

Arrival Date : 20/03/2023 11:00
Exit Date : 20/03/2023 11:36

Vehicle Reg : Y621LH

Trade ID : 4734157

Order to : 2243252

Product : EN130655-1 CON

Product Use :
FILLER IN CONCRETE MANUFACTURE

Product Title :
EN130655-1 CON

Driver :
Health : F06E3301
SLEEPY

Dist Address :
POWER MINERALS
DRAXX POWER STATION
DRAXX
SELBY
YO6 3PH

Nature of Business :-
CONCRETE BLOCK MANUFACTURE

WEIGHT	SERIAL	AS ID	DATE	TIME
15400kg	037756	IN1	20/03/2023	11:00
13480kg	037817	MINUS1	20/03/2023	11:36

Signed By Driver :-

Received By :-

These products have been produced in
conformance with the Pulverised Fuel
Ash Quality Protocol.

Final Weighing Ticket
(By Products)



DRAXX POWER LIMITED
DRAXX POWER STATION
DRAXX
SELEBY
Y08 8PH
01757 616301

NO
L

Ticket Number : 472529

Final Weighing Ticket
(By Products)

Product Date : 22/03/2023 13:57
Exit Date : 22/03/2023 14:29

DRAXX POWER LIMITED
DRAXX POWER STATION
DRAXX
SELEBY
Y08 8PH
01757 616301

Vehicle Reg : 12558FC

Trade ID : 4404167

Order No : 2245554

Plant Number : 472461
Arrival Date : 21/03/2023 13:21
Exit Date : 21/03/2023 14:54
Vehicle Reg : 11732PW
Trade ID : 4404167
Order No : 2245555
Product : EN13055-1 CONG

Product : EN13055-1 CONG

Product Use
FILLER IN CEMENT MANUFACTURE

Product Title :
EN13055-1 CONG

Driver : GHR: 5425

Product Use :
FILLER IN CEMENT MANUFACTURE
Product Title :
EN13055-1 CONG
Driver :
Facility : F08E001
PO4EAPTB

Facility : F08E001
F08E001

Dist Address :-
POWER MATERIALS
DRAXX POWER STATION
DRAXX
SELEBY
Y08 8PH

Dist Address :-
POWER MATERIALS
DRAXX POWER STATION
DRAXX
SELEBY
Y08 8PH

Nature of Business :-
CONCRETE BLOCK MANUFACTURE

Nature of Business :-
CONCRETE BLOCK MANUFACTURE

WEIGHT SERIAL NO ID DATE TIME

WEIGHT SERIAL NO ID DATE TIME
5130kg 053127 PMSW 21/03/2023 13:21
40780kg 053128 Y44JUL 21/03/2023 13:24
28820kg

13900kg 053126 DAL 22/03/2023 13:57
40780kg 011858 GATE 22/03/2023 14:29

28820kg

Signed By Driver :-

Signed By Driver :-

Receiver By :-

Receiver By :-

These products have been produced in
compliance with the "EuroRoad Fuel
441 Quality Protocol".

Final Weighing Ticket
(By Products)

DRAX POWER LIMITED
DRAX POWER STATION
DRAX
SELBY
YO8 8PH
01757 618381

Ticket Number : 472530

Arrival Date : 24/03/2023 13:41
Exit Date : 24/03/2023 14:13

Vehicle Reg : FE654PD

Tractor ID : F40816P

Order No : 2518557

Product : EN13365-1 CONC

Product Use :
FILLER IN CEMENT MANUFACTURE

Product Title :
EN13365-1 CONC

Driver : GUY SYDES

Holder : POME001
POM001LN

Customer Address :-
POWER GENERALS
DRAX POWER STATION
DRAX
SELBY
YO8 8PH

Nature of Business :-
CONCRETE BLOCK MANUFACTURE

WEIGHT	SERIAL NO	ID	DATE	TIME
15853kg	039062	INT	24/03/2023	13:41
43928kg	019842	PLT	24/03/2023	14:13

58781kg

Signed By Driver :-

Received By :-



REC

Final Weighing Ticket
(By Products)

DRAX POWER LIMITED
DRAX POWER STATION
DRAX
SELBY
YO8 8PH
01757 618381

Ticket Number : 472531

Arrival Date : 22/03/2023 14:05
Exit Date : 22/03/2023 14:40

Vehicle Reg : P21500Y

Tractor ID : M204167

Order No : 2245566

Product : EN13365-1 CONC

Product Use :
FILLER IN CEMENT MANUFACTURE

Product Title :

EN13365-1 CONC

Colour :
Holder : POME001
POM001LN

Customer Address :-
POWER GENERALS
DRAX POWER STATION
DRAX
SELBY
YO8 8PH

Nature of Business :-
CONCRETE BLOCK MANUFACTURE

WEIGHT	SERIAL NO	ID	DATE	TIME
15853kg	039062	INT	22/03/2023	14:05
49740kg	05246	WALW	22/03/2023	14:08
27180kg				

Signed By Driver :-

Received By :-

*
These products have been produced in
compliance with the 'Fulcrum Fuel
Ash Quality Protocol'.

Final Weighing Ticket
(By Products)

IRAW POWER LIMITED
IRAW POWER STATION
IRAW
SELEY
YOB SPA
01707 618391

Ticket Number : 473391

Arrival Date : 26/03/2023 06:17
Exit Date : 28/03/2023 07:46

Vehicle Reg : PJJ77M

Trade ID : 448417

Order No : 2246156

Product : EN13055-1 CONG

Product Use :
FILLER IN CEMENT MANUFACTURE

Product Title :
EN13055-1 CONG

Driver : JOHN MURTAGH

Haulier : POLYBAG
POLLERICH

Cust Address :-
POWER MINERALS
IRAW POWER STATION
IRAW
SELEY
YOB SPA

Nature of Business :-
CONCRETE BLOCK MANUFACTURE

WEIGHT	SERIAL NO	DATE	TIME
15120kg	036454 IN	26/03/2023	06:17
43763kg	012644 OUT	28/03/2023	07:46
28643kg			

Signed By Driver :-

.....

Received By :-

Final Weighing Ticket
(By Products)

IRAW POWER LIMITED
IRAW POWER STATION
IRAW
SELEY
YOB SPA
01707 618391

Ticket Number : 473395

Arrival Date : 24/03/2023 14:11
Exit Date : 24/03/2023 14:35

Vehicle Reg : UJ348T

Trade ID : 440147

Order No : 2245586

Product : EN13055-1 CONG

Product Use :
FILLER IN CEMENT MANUFACTURE

Product Title :
EN13055-1 CONG

Driver : RYAN LYNCH

Haulier : POLYBAG
POLLERICH

Cust Address :-
POWER MINERALS
IRAW POWER STATION
IRAW
SELEY
YOB SPA

Nature of Business :-
CONCRETE BLOCK MANUFACTURE

WEIGHT	SERIAL NO	DATE	TIME
15369kg	030066 IN	24/03/2023	14:11
43789kg	012047 OUT	24/03/2023	14:35
28420kg			

Signed By Driver :-

.....

Received By :-



180

Fuel Receipt, Invoic
(By Product)

DRAX (MFL, LPH11)
DRAX POWER STATION
DRAX
SELBY
Y01 5TH
01967 219981

Ticket Number : 473078
Arrival Date : 28/03/2023 06:25
Exit Date : 29/03/2023 08:12
Vehicle No : 898843
Trade ID : 440467
Order No : 220855
Product : EN10024 1 30M0 www.drax.com

Product Line :
FUEL FOR CONCRETE MANUFACTURE
Product Title :
EN10024 1 30M0
Driver :
Receiver : POWERCON
FOURNON

Plant Address :
FOUR MINERALS
DRAX POWER STATION
DRAX
SELBY
Y01 5TH

Receipt of Bulk Mass in
CONCRETE BLOCK MANUFACTURE

WEIGHT	SERIAL NO	ID	DATE	TIME
1303kg	012472	0172	28/03/2023	07:20
4364kg	012471	0172	29/03/2023	08:12
2780kg				

Signed By (Receiver):

.....
Received By:

.....

These products have been weighed in
accordance with the 'Fuel and Fuel
Assessment Protocol'.

APPENDIX SIX

GROUT CUBE TEST RESULTS

GAS MONITORING SHEETS



IAN FARMER ASSOCIATES

Unit 1, Fenwick Close, Felsham North Industrial Estate, Worthing, West Sussex, BN18 8QJ. Tel: 01903 432 8500 Fax: 01903 442 8400
 worthing@ianfarmer.co.uk www.ianfarmer.co.uk

Client: Groundshire

Address: Littleport House
 108/109, Portland Road, Littleport
 Littleport, Worthing

Project Name: Various Sites
 Project Number: 2250085.1

TEST CERTIFICATE

Determination of Compressive Strength of Concrete Cubes

BS EN 12390 - Part 3 : 2009

Ian Farmer Ref.	7085A	7085B	7085C	-
Client Ref:	Not Supplied	Not Supplied	Not Supplied	-
Classification Slump Delivery Ticket No:	No Class No Slump No Delivery Ticket			-
Test Location	Smilodon			
Date Cast	28-Mar-23	29-Mar-23	29-Mar-23	-
Date Received	08-Apr-23	09-Apr-23	09-Apr-23	-
Age at Test (Days)	28	28	SEARC	-
Date Tested	28-Apr-23	28-Apr-23		
Cube Width Length (mm) Measured	100 100	100 100		
Weight in Air (g)	1509.9	1501.8		
Weight in Water (g)	414.4	410.5		
Saturated Density (kg/m^3)	1480	1480		
Maximum Load at Failure (kN)	41	41		
Conditions of Failure <small>If abnormal, failure type given as number. Please refer to BS EN 12390 3.1.3.6 Clause 5, Figure 3</small>	Normal	Normal		
Compressive Strength (N/mm^2)	4.1	4.0		
Remarks Deviations Condition of Cube when received	As per notes No Deviations No Surface Damage / No Cracking Observed / No Issues with Test Results	As per notes No Deviations No Surface Damage / No Cracking Observed / No Issues with Test Results		

Note: Cubes were kept for inclusion with the test for 28 days after test and in case shown/specified. Cubes received to the test, please do not dip in water & protect the test results unless stated. Water curing temperature 20 ± 2°C no restriction on pouring unless stated. All test results are based on saturated surface dry condition.

- BS EN 12390 - 3: 2009 Clause 6.5: Curing of test specimens
- BS EN 12390 - 1: 2002 Clause 4: Shape, dimensions and tolerances of specimens
- BS EN 12390 - 2: 2002 Clause 4: Test method of test specimens - minimum displacement
- BS EN 12390 - 3: 2009 Clause 6: Procedure for determining compressive strength of test specimens

Approved By:



(Signature)

Richard Telfors
 Contracts Manager

Date Approved:

26/04/2023





Unit 4, Parkway Drive, Park Inn North Industrial Estate, Washington, NE38 5QL. Tel: 0181 432 8500 Fax: 0121 432 8520
 wash@ianfarmer.co.uk www.ianfarmer.co.uk

Client: Grounshire

Address: Ulloxwell House
 11 West End Rd, West
 Langford Moor

Project Name: Various Sites
 Project Number: 7230088.1

TEST CERTIFICATE
Determination of Compressive Strength of Concrete Cubes
BS EN 12390 - Part 3 : 2009

Ian Farmer Ref:	7089A	7089B	7089C	-
Client Ref:	Not Supplied	Not Supplied	Not Supplied	-
Classification - Slump Delivery Cast No:	No Class No Slump No Delivery Ticket			
Pour Location:	Shilston			
Date Cast:	22-Mar-23	22-Mar-23	22-Mar-23	
Date Received:	03-Apr-23	03-Apr-23	03-Apr-23	
Age at Test (Days):	28	28	SPARE	
Date Tested:	19-Apr-23	19-Apr-23		
Cube Width Length (or n) Measures:	100 100	100 100		
Weight (in Air) (g):	1498.6	1457.0		
Weight (in Water) (g):	422	380.5		
Saturated Density (Kg/m ³):	1500	1450		
Maximum Load at Failure (kN):	44	45		
Conditions of Failure If abnormal, failure type clearly number. Please refer to BS EN 12390 Clause 2, Figure 3	Normal	Normal		
Compressive Strength (N/mm ²):	4.4	4.5		
Remarks / Deviations Condition of Cube when received	No Remarks / No Deviations / No Surface Defects / No Flaws Reported / No Flaws Reported / No Flaws Reported / No Flaws Reported	No Remarks / No Deviations / No Surface Defects / No Flaws Reported / No Flaws Reported / No Flaws Reported / No Flaws Reported		

Note: Cubes returned for inspection will be kept for a date of 28 days after test date unless otherwise notified. Cubes received with no surface defects or flaws & protected from moisture loss, unless stated. Water curing temperature 20 ± 2°C on receipt into lab only, unless stated. Cubes tested in saturated surface dry condition.

- BS EN 12390 - 2: 2019 Clause 6.5 Curing of test specimens
- BS EN 12390 - 3: 2009 Clause 6.3.1, 6.3.2, 6.3.3 Dimensions and tolerances of specimens
- BS EN 12390 - 7: 2010 Clause 5.1.1 Density of fully cured concrete. Volume measured by water displacement
- BS EN 12390 - 8: 2006 Clause 6 Procedure for determining compressive strength of test specimens

Approved By: 
 (Signature)

Richard Telford
 Contract Manager

Date Approved: 19/04/2023



Unit 4, Broadway Green, Redbus North Industrial Estate, Washington, NE36 6JL. Tel: 0181 462 8500 Fax: 0181 462 8525
 washington@ianfarmer.co.uk www.ianfarmer.co.uk

Client: Groundshire

Address: 176 Oxon House
 176 Oxon Industrial Estate
 Langley Mill

Project Name: Various Sites
 Project Number: 2250085.1

TEST CERTIFICATE
Determination of Compressive Strength of Concrete Cubes
BS EN 12390 - Part 3 : 2009

Ian Farmer Ref:	7090A	7090B	7090C	-
Client Ref:	No. Supplied	No. Supplied	No. Supplied	-
Class/Classifier Slump Delivery Ticket No.	No Class No Slump No Delivery Ticket			-
Form Location	Shilken			-
Date Cast	10-Mar-23	10-Mar-23	10-Mar-23	-
Date Received	03-Apr-23	03-Apr-23	03-Apr-23	-
Age at Test (Days)	28	28	SPARE	-
Dates Tested	07-Apr-23	07-Apr-23		-
Cube Width Length (mm) Measured	100 100	100 100		-
Weight in Air (g)	1426.5	1379		-
Weight in Water (g)	349.5	302		-
Saturated Density (Kg/m ³)	1422	1380		-
Maximum Load at Failure (kN)	24	17		-
Conditions of Failure <small>If abnormal, full details given by number Failure Code: 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49</small>	Normal	Normal		-
Compressive Strength (N/mm ²)	2.4	1.7		-
Remarks - Deviations Condition of Cubes when received	63 Formed by 90 Deg. corners No Surface Defects / No Fly. Embedded? correct. free water loss	63 Formed by 90 Deg. corners No Surface Defects / No Fly. Embedded? correct. free water loss		-

Note: Subsamples for inspection will be kept for 7 days after test date unless otherwise notified. Cubes received with no surface defects and free of bleed from wet surface loss, unless stated, without curing temperature 20 ± 2°C for 28 days prior to testing, unless stated. Cubes tested in position with free dry condition.

- BS EN 12390 - 3: 2009 Class: 6.5 Determination of test specimens
- BS EN 12390 - 1: 2002 Class: 4 Shape, dimensions and tolerances of specimens
- BS EN 12390 - 2: 2010 Density of hardened concrete (volume measured by water displacement)
- BS EN 12390 - 3: 2009 Class: 6.5 Procedure for determining minimum testable strength of test specimens

Approved By: 
 Signature

Ronald Telford
 Laboratory Manager

Date Approved: 11/04/2023



GAS MONITORING

SITE 13486 - LOCOMOTION, SHILDON, DL4 2RE						
CLIENT NAT.ONWIDE ENGINEERING						
DATE	O2	F.ar. Gas	CO	H2S	RIG	remark
22.2.23						
AM	20.90	0.00	0.00	0.00		
NOON	20.90	0.00	0.00	0.00		
PM	20.90	0.00	0.00	0.00		
23.2.23						
AM	20.90	0.00	0.00	0.00		
NOON	20.90	0.00	0.00	0.00		
PM	20.90	0.00	0.00	0.00		
24.2.23						
AM	20.90	0.00	0.00	0.00		
NOON	20.90	0.00	0.00	0.00		
PM	20.90	0.00	0.00	0.00		
27.2.23						
AM	20.90	0.00	0.00	0.00		
NOON	20.90	0.00	0.00	0.00		
PM	20.90	0.00	0.00	0.00		
28.2.23						
AM	20.90	0.00	0.00	0.00		
NOON	20.90	0.00	0.00	0.00		
PM	20.90	0.00	0.00	0.00		
1.3.23						
AM	20.90	0.00	0.00	0.00		
NOON	20.90	0.00	0.00	0.00		
PM	20.90	0.00	0.00	0.00		
2.3.23						
AM	20.90	0.00	0.00	0.00		
NOON	20.90	0.00	0.00	0.00		
PM	20.90	0.00	0.00	0.00		
3.3.23						
AM	20.90	0.00	0.00	0.00		
NOON	20.90	0.00	0.00	0.00		
PM	20.90	0.00	0.00	0.00		
5.3.23						
AM	20.90	0.00	0.00	0.00		
NOON	20.90	0.00	0.00	0.00		
PM	20.90	0.00	0.00	0.00		
7.3.23						
AM	20.90	0.00	0.00	0.00		
NOON	20.90	0.00	0.00	0.00		
PM	20.90	0.00	0.00	0.00		
8.3.23						
AM	20.90	0.00	0.00	0.00		
NOON	20.90	0.00	0.00	0.00		
PM	20.90	0.00	0.00	0.00		
9.3.23						
AM	20.90	0.00	0.00	0.00		
NOON	20.90	0.00	0.00	0.00		
PM	20.90	0.00	0.00	0.00		
10.3.23						
AM	20.90	0.00	0.00	0.00		
NOON	20.90	0.00	0.00	0.00		
PM	20.90	0.00	0.00	0.00		

GAS MONITORING

SITE 13485 - LOCOMOTION, SHILDON, DL4 2RE						2
CLIENT NATIONWIDE ENGINEERING						
DATE	O2	Flam. Gas	CO	H2S	RIG	remarks
13.3.23						
AM	20.90	0.00	0.00	0.00		
NOON	20.90	0.00	0.00	0.00		
PM	20.90	0.00	0.00	0.00		
14.3.23						
AM	20.90	0.00	0.00	0.00		
NOON	20.90	0.00	0.00	0.00		
PM	20.90	0.00	0.00	0.00		
15.3.23						
AM	20.90	0.00	0.00	0.00		
NOON	20.90	0.00	0.00	0.00		
PM	20.90	0.00	0.00	0.00		
16.3.23						
AM	20.90	0.00	0.00	0.00		
NOON	20.90	0.00	0.00	0.00		
PM	20.90	0.00	0.00	0.00		
17.3.23						
AM	20.90	0.00	0.00	0.00		
NOON	20.90	0.00	0.00	0.00		
PM	20.90	0.00	0.00	0.00		
20.3.23						
AM	20.90	0.00	0.00	0.00		
NOON	20.90	0.00	0.00	0.00		
PM	20.90	0.00	0.00	0.00		
21.3.23						
AM	20.90	0.00	0.00	0.00		
NOON	20.90	0.00	0.00	0.00		
PM	20.90	0.00	0.00	0.00		
22.3.23						
AM	20.90	0.00	0.00	0.00		
NOON	20.90	0.00	0.00	0.00		
PM	20.90	0.00	0.00	0.00		
23.3.23						
AM	20.90	0.00	0.00	0.00		
NOON	20.90	0.00	0.00	0.00		
PM	20.90	0.00	0.00	0.00		
24.3.23						
AM	20.90	0.00	0.00	0.00		
NOON	20.90	0.00	0.00	0.00		
PM	20.90	0.00	0.00	0.00		
27.3.23						
AM	20.90	0.00	0.00	0.00		
NOON	20.90	0.00	0.00	0.00		
PM	20.90	0.00	0.00	0.00		
28.3.23						
AM	20.90	0.00	0.00	0.00		
NOON	20.90	0.00	0.00	0.00		
PM	20.90	0.00	0.00	0.00		
29.3.23						
AM	20.90	0.00	0.00	0.00		
NOON	20.90	0.00	0.00	0.00		
PM	20.90	0.00	0.00	0.00		

APPENDIX SEVEN

NOTES AND LIMITATIONS

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Groundshire is engaged to carry out treatment in relation to shallow mine workings and/or mine entries. The report is based on the borehole results obtained during explorative works done prior to this report.

The findings contained in this report reflect the conditions encountered on site at the time of the investigations. There may be other permanent or temporary conditions prevailing on site that have not been discovered or encountered during the investigations, none of which are taken into account in the preparation of this report.

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Groundshire will not in any circumstances be liable for any loss arising directly or indirectly from any opinion given on a possible configuration of strata both between hole positions and below the maximum depth of the investigation. Any such opinion, where given, is for guidance only and should not be relied upon.