

RECORD OF INSITU DENSITY OF FILL MATERIALS

Site Information

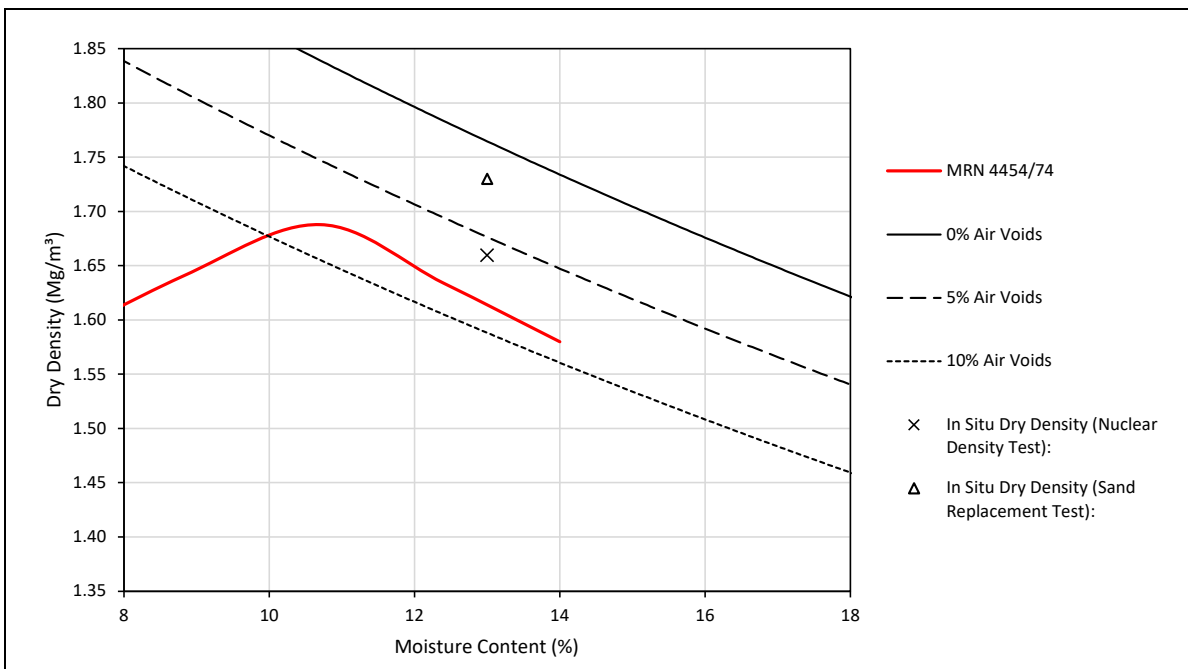
Project Reference:	Stopes Road, Bolton
Project Code:	C 808
Contractor:	VHE Construction Plc
Laboratory:	Murray Rix

Test Details

Test Grid Reference:	B15
Layer Number:	4
Date of Test	16/9/22
Source Reference:	Ash Fill

Test Results

Laboratory Certificate Reference:	MRN 4454/74
Laboratory MDD (4.5kg rammer):	1.69 Mg/m ³
Laboratory OMC (4.5kg rammer):	10.0 %
Air Void Content at MDD/OMC:	9.3 %
Measured Particle Density:	2.29 Mg/m ³
Laboratory Moisture Content:	13.0 %
In Situ Density Certificate Reference:	MRN 4454/59
In Situ Dry Density (Nuclear Density Test):	1.66 Mg/m ³
In Situ Dry Density (Sand Replacement Test):	1.73 Mg/m ³
Average Dry Density:	1.70 Mg/m ³
Degree of Compaction:	100 %
Moisture Content relative to OMC:	3.0 %
Air Void Content:	3.9 %



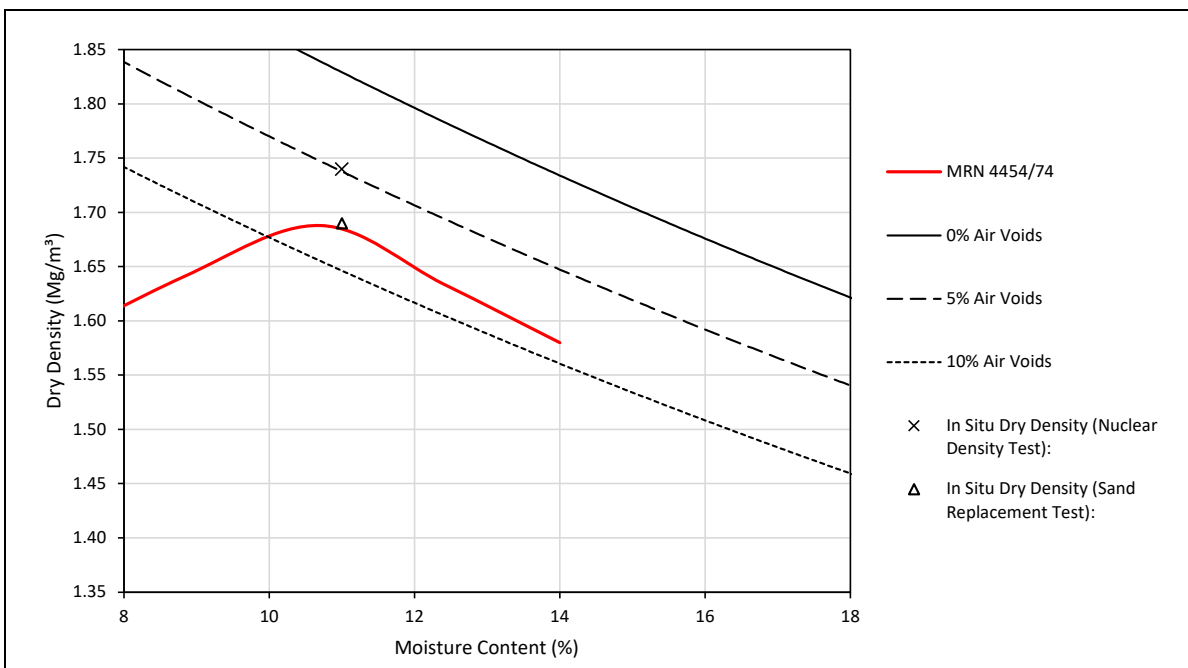
Compaction Curve Input Data

Moisture Content (%)	Dry Density (Mg/m ³)
6.5	1.562
8.8	1.64
10.7	1.688
12.4	1.634
14	1.58

RECORD OF INSITU DENSITY OF FILL MATERIALS	
Site Information	
Project Reference:	Stopes Road, Bolton
Project Code:	C 808
Contractor:	VHE Construction Plc
Laboratory:	Murray Rix

Test Details	
Test Grid Reference:	A17
Layer Number:	5
Date of Test	16/9/22
Source Reference:	Ash Fill

Test Results	
Laboratory Certificate Reference:	MRN 4454/74
Laboratory MDD (4.5kg rammer):	1.69 Mg/m ³
Laboratory OMC (4.5kg rammer):	10.0 %
Air Void Content at MDD/OMC:	9.3 %
Measured Particle Density:	2.29 Mg/m ³
Laboratory Moisture Content:	11.0 %
In Situ Density Certificate Reference:	MRN 4454/59
In Situ Dry Density (Nuclear Density Test):	1.74 Mg/m ³
In Situ Dry Density (Sand Replacement Test):	1.69 Mg/m ³
Average Dry Density:	1.72 Mg/m ³
Degree of Compaction:	101 %
Moisture Content relative to OMC:	1.0 %
Air Void Content:	6.2 %



Compaction Curve Input Data	
Moisture Content (%)	Dry Density (Mg/m ³)
6.5	1.562
8.8	1.64
10.7	1.688
12.4	1.634
14	1.58

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Appendix B Mine Entry Treatment Completion Reports

VE 221883



STOPES ROAD, LITTLE LEVER, BOLTON
SHAFT TREATMENT: 376407-006

Completion Report

Consolidation of Recorded Coal Mine Entry by
Drilling and Grouting

Works undertaken with the permission of The Coal Authority



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

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Appendix B	Van Elle Consolidation Specification
Appendix C	Coal Authority Permit
Appendix D	Daily Drilling Details
Appendix E	Daily Grouting records
Appendix F	Results of cube testing

Control Sheet

This report has been prepared for the sole benefit, use and information of VHE Construction Ltd 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 Authorities requirements with regards to the Coal Authority Permit.

SUMMARY TABLE: COMPLETION REPORT FOR THE DRILLING AND GROUTING TREATMENT OF POTENTIAL MINEWORKINGS	
SITE:	Stopes Road, Little Lever, Bolton, BL3 1NP.
CLIENT:	VHE Construction Ltd.
DATE:	18th January 2023
REFERENCE:	VE 221883 – PS3426 V2
PROPOSED WORKS:	VHE Construction Ltd in their capacity as Main Contractor, acting on behalf of the Harworth Estates Property Group Ltd, is developing a brownfield site off Stopes Road, Little Lever, for future mixed residential development. Previous site uses have included coal mining. Desk study and intrusive investigations have identified several abandoned coal mine shafts on the site. Van Elle Ltd were appointed to carry out stabilisation works on 3 no. of identified abandoned mine shafts with Coal Authority references: • 376407-006 • 376407-007 • 376407-008
DRILLING AND GROUTING WORKS:	In the event, shaft stabilisation works covered by this report only relate to shaft ref: 376407-006. Information provided from previous studies showed that this shaft was probably about 2.9m diameter and 262m deep. A specification for the treatment of the abandoned shafts was prepared by Van Elle and agreed with the client and regulators including The Coal Authority. Works were undertaken under a permit issued by The Coal Authority, ref 25705, dated 27 September 2022. Shaft treatment works began on 6th October 2022 and was completed on 7th November 2022. The works included the drilling a of a primary grout treatment borehole (BH1) to a depth of 100m through 'soft' shaft backfill with 'hard' bands. BH1 took a total of approximately 980.4 tonnes of grout, before 'topping out' at ground surface. 1No. Secondary borehole (BH2) and 2No Validation boreholes (BH3 + BH4) were also drilled in the shaft

	curtilage to confirm full shaft treatment. These took the following quantities of grout: • BH2 12.1 tonnes; • BH3 28.1 tonnes; • BH4 7.98 tonnes. All boreholes were grouted through steel casing from 100m bgl to ground level in 2m lift stages, with grout applied under a sustained pressure of 2 bars for 2 minutes at each stage. For the most part the grout mix comprised an 8:2:1 PFA:SAND:OPC mix. Grout was batched on site using an electric 6T Mixer. Constituent materials shall be introduced by a loading shovel and pumped to each bore using a Bauer HP-35e Material Pump.	
CONCLUSION:	Consolidation grouting with the cementitious grout has been undertaken in accordance with instructions and Coal Authority requirements. It is considered that no further ground stabilisation works are required at Shaft 376407-006.	
Author:		Phil Shelton BSc PhD CEng MIMMM FGS <i>Associate</i>
Date:	January 2023	

1.0 Introduction

VHE Construction Ltd (VHE) in their capacity as Main Contractor acting on behalf of the Harworth Estates Property Group Ltd has instructed Van Elle Specialist Piling (VE) to carry out stabilisation works on 3 no. recorded and physically proven coal mine shafts within a brownfield site off Stopes Road, Little Lever, Bolton, BL3 1NP.

The larger site is progressing through a planning application process for a general change of use from mainly 'industrial' to 'residential' usage.

Part of the historical site usage includes coal mine shafts, constructed during the late 19th and early 20th century to access a series of economically viable coal seams at medium to deep depth below ground surface.

This report describes the works undertaken to fully stabilise one of the recorded abandoned shafts. This has The Coal Authority (TCA) reference: 376407-006.

2.0 Site Location

The site address is Stopes Road, Little Lever, Bolton, BL3 1NP, which covers an area of approximately 6ha. A Site Location Plan is shown in **Figure 1** in **Appendix A**.

The National Grid Reference for the approximate centre of the site is: 376275 407640.

Within the site boundary there are 3 no. recorded coal mineshafts varying in depth with the largest (TCA Ref: 376407-006) having a recorded depth of 262m bgl – see **Figure 2** in **Appendix A**.

These mineshafts have been located and identified within previous phases of works, which were undertaken, supervised and reported by Hydrock. The most recently available information provided to VE relating to the shafts is set out below.

Shaft Reference 376407-006: The mineshaft was located during the service clearance works on site and as such no probe drilling was undertaken. The shaft is lined at the surface with a three-brick skin and was found to have an internal diameter of 2.90m. The Coal Authority records indicate that the mineshaft is 262m deep. The accurate coordinate for the mine shaft is 376348.333mE, 407592.727mN.

Shaft Reference 376407-007: The mineshaft was located following 291 probe holes drilled in close proximity to TCA recorded best-plot position of the mineshaft. One probe hole was advanced to 42m bgl however this could not continue further due to limitations of the equipment used. The coal authority does not have records of the depth or construction of the mineshaft, however following further delineation of the mine shaft it is believed that the shaft is

rectangular or oval in shape with a diameter of between 2.5m to 3.5m. The accurate coordinate for the mine shaft is 376367.595mE, 407559.113mN.

Shaft Reference 376407-008: The mineshaft was located following 22 probe holes were drilled in close proximity to TCA recorded best-plot position of the mineshaft. One probe hole was advanced to 42m bgl however this could not continue further due to limitations of the equipment used. The coal authority does not have records of the depth. Following further delineation of the mine shaft the diameter of the shaft was identified as being approximately 3m. The accurate coordinate for the mine shaft is E 376380.818, N 407524.433

Identified co-ordinate of the shafts are as shown below.

Shaft Reference	Easting	Northing	Approximate Diameter m	Approximate Depth m
376407-006	376348.3	407592.7	2.9	262
376407-007	376367.6	407559.1	2.5 – 3.5	-
376407-008	376380.8	407524.4	3.0	-

The areas adjacent to the mineshafts are to be no build zones and are intended to be used for public open space.

A site walkover was undertaken of the areas for development prior to undertaking the works.

Overhead electrical power cables were noted to pass close to shafts ref:376407-007 and 376407-008.

3.0 Treatment Specification

As part of the tendering process, VE was asked to prepare specification for the works.

This specification was prepared in accordance with guidance included in: CIRIA Pub 32 1984 – 2002 Construction over abandoned mine workings, CIRIA C758D Nov 2019 Abandoned Mine Workings Manual and the VE Health and Safety Policy.

The policy was deemed acceptable by VHE and TCA.

A copy of the specification is included as **Appendix B**.

The work were also undertaken under a permit (Ref:25705, dated 27th September 2022) issued by TCA. A copy of the permit is included as **Appendix C**.

4.0 Fieldwork

The mine shaft consolidation works for shaft reference: 376407-006 were undertaken between 6th October and 7th November 2022. The works were undertaken in general accordance with the specification prepared by VE, the Code of Practice for Site Investigations BS5930: 2015 and CIRIA guidances on the treatment of shallow mine workings.

Variations to the specification were made, with the agreement of VHE to improve the designed end product, and are described below. The mine shaft workings consolidation treatment incorporated the following with the borehole location plan included within

Appendix A:

- drilling and grouting of 1 no. Primary grout injection borehole (BH1) to a depth of 120m bgl;
- drilling and grouting of 1 no. Secondary grout injection boreholes (BH2) to depths of 100m bgl;
- drilling and grouting of 2 no. Validation boreholes (BH3 + BH4) to a depth of 100m bgl;

The Specification only called for 1 no. validation borehole. However, because of quantities of grout injected from the first validation borehole was excessive (28t), a further validation hole was required to verify the works

- Grouting injection boreholes with a grout mix comprising PFA:OPC at the ratio of 10:1; however, this was soon changed to a grout mix comprising PFA:SAND:OPC at a ratio of 8:2:1;

The Specification allowed for the use of PFA and OPC at a 10:1 ratio. The decision to replace part of the PFA with SAND was agreed at an early stage in the grouting process after it became apparent that the Primary grout injection borehole (BH1) was taking a large quantity of grout. The addition of the SAND would be expected to slightly increase the final, cured, compressive strength of the grout, but more importantly to decrease its viscosity (giving a reduced flowability). The addition of SAND usually follows experience of rapid flow of a 10:1 mix where it is considered that grout might be moving large distances from the base of the borehole through open workings or ground fissures.

- Daily quality control testing of the injected grout mixture by flow testing and the weekly preparation of grout cubes for accredited laboratory testing of compressive strength at 7 days, 14 days and 28 days;
- Daily reporting of site works, material deliveries and work delays.

Drilling Primary Borehole BH1

The coal mine shaft works were designed to consolidate disturbed ground within shaft 376407-006. In advance of the site works described herein, VE had no knowledge of the condition of the fill within the shaft curtilage.

In accordance with the VE Specification, the treatment was also designed in consideration of the existing site layout, the development proposal and health and safety issues.

The drilling of the Primary, Secondary and Validation boreholes was undertaken using a segmental 101mm/76mm drilling system using a Soilmec SM15 track-mounted rotary drilling rig. Water flush was used, in accordance with the requirements of the TCA drilling permit (**Appendix C**).

The rig was positioned over Shaft 376407-006 and was supported by a proprietary steel platform that was designed to support the weight of the drilling rig and ancillary equipment in the event of a sudden collapse of the shaft resulting in ground surface instability. Details of the drilling platform, including engineering calculations, were included in the VE Specification (**Appendix B**).

Although the shaft is expected to be 262m deep, it was agreed that shaft treatment should begin by drilling to a depth of 100m bgl with the ambition of developing a plug that forms a base for the compaction grouting to the ground surface. During drilling, boreholes were fully lined with 101mm diameter steel casing that were added (and subsequently withdrawn) at 2m lengths.

In the event, drilling began at the Primary borehole (BH1) at 13.00hrs pm on 5th October 2022 and completed to a depth of 100m by the end of shift c. 16.00hrs pm. Drilling flush was lost (and never returned) from a depth of 6m bgl. The driller's record of strata encountered is shown in **Appendix D** and summarised below.

Ref:	Depth From m	Depth To m	Flush Return %	Description
BH1	GL	6.0	100	Made Ground
	6.0	7.0	0	Soft Ground
	7.0	7.3	0	Hard drilling
	7.3	25.0	0	Very soft drilling
	25.0	50.0	0	Soft/broken ground with occ. firm bands
	50.0	80.0	0	Very soft/broken ground with occ. firm bands
	80.0	100.0	0	Very soft/broken ground

From the above, it is shown that the shaft fill included very soft, soft and broken ground with thin hard and firm bands. But notably, there were no voids.

Throughout the works monitoring for the presence of harmful gases was maintained at the drill rig. Gases included: carbon monoxide (CO), carbon dioxide (CO₂) hydrogen sulphide (H₂S) and methane (CH₄) along with levels of airborne oxygen (O₂). The drilling crew also carried personal gas alarms, which activate visible and audible alarms should

concentrations of any of these gases reach pre-determined trigger levels. **No harmful levels of gases were recorded during the works.**

Grouting Primary Borehole BH1

The Primary grout injection borehole (BH1) was grouted through steel casing from 100m bgl to ground level in 2m lift stages, with grout applied under a sustained pressure of 2 bars for 2 minutes at each stage.

Grout was batched on site using an electric 6T Mixer. Constituent materials were introduced by a loading shovel and pumped to each bore using a Bauer HP-35e Material Pump.

The VE Specification stated that a 10:1 PFA:OPC grout mix would be used. This is a standard mix for shaft consolidation. However, after 2 days, the grout mix was changed to a 8:2:1 PFA:SAND:OPC mix, for the reasons explained above.

Grout injection at the Primary treatment Borehole BH1 began on 6th October 2022, but it wasn't until 26th October, after the injection of approximately 683 tonnes of grout, that a sustainable 'plug' was established at a depth of 100m bgl.

A summary of daily grouting records is included as **Appendix E**.

By 19th October, concern was raised by VHE regarding the volume of grout being taken at BH1.

It is unclear where the grout was going. It is possible that the grout was being forced into the lower section of the shaft under the positive head pressure, or possibly moving into open insets leading off the shaft.

Also, at about this time, consideration was given to introducing pea-gravel (single sized, c. 10mm, stone) to promote the formation of the plug at 100m depth. Normally, 10mm pea-gravel is added as part of stabilisation works where open voids (at least 500mm deep) were encountered. Following discussions with VHE and TCA, it was agreed that because open voids had not been encountered, there was a significant risk of causing local blockages at the base of the casing if pea-gravel was introduced. As a result, this proposal was rejected by TCA.

On 20th October, grouting was temporarily suspended, after introducing approximately 617 tonnes of grout. Grouting re-started on 24th October. It seems that this hiatus was beneficial, because from 26th October it became apparent that the 'plug' was established at 100m. Grout was then introduced under a positive head pressure of 2bars (sustained by at least 2 minutes).

Grout was added from 100m to ground level by 2nd November. The total grout take at BH1 was approximately 980 tonnes.

Gas monitoring was continued at the top of the borehole throughout, **with no trace detected.**

Drilling Secondary Boreholes BH2

Following the completion of the Primary grout injection borehole BH1, A Secondary grout injection hole was drilled, thus designated as BH2. This hole was drilled on 3rd November within the shaft curtilage.

Borehole 2 (BH2) was completed to a depth of 100m bgl in the same way as the Primary Borehole BH1. Driller's daily records are included in **Appendix D**. Theses show that beneath Made Ground to depths of approximately 7.0m and 7.5m respectively, steady 'firm' with occasional thin 'soft' ground was recorded.

Grouting Secondary Boreholes BH2

Consolidation grouting in the Secondary Borehole was undertaken in the same way as the Primary Borehole, introducing a grout mix of PFA, SAND and OPC in the ratio of 8:2:1 under a sustained head pressure of 2 bars.

Secondary Borehole BH2 took a total of approximately 12.1 tonnes and was completed on 3rd November 2022.

A summary of daily grouting records is included as **Appendix E**.

Gas monitoring was continued at the top of the borehole throughout, with no trace detected.

Drilling of Validation Boreholes BH3 & BH4

Following the completion of the Secondary grout injection boreholes BH2, 2No. Validation Boreholes BH3 & BH4 were completed to a depth of 100m bgl. BH3 was drilled on the 4th November and BH4 was drilled on 7th November 2022 in the same way as the Primary and Secondary boreholes. Driller's daily records are included in **Appendix D**. Theses show that beneath Made Ground to a depth of approximately 7.0m, steady 'firm' drilling conditions was recorded throughout.

Grouting Validation Borehole BH3 & BH4

Consolidation grouting in the validation Boreholes BH3 and BH4 was undertaken in the same way as the Primary and Secondary Boreholes, introducing a grout mix of PFA, SAND and OPC in the ratio of 8:2:1, under a sustained head pressure of 2 bars.

Validation Borehole BH3 took a total of approximately 28.0 tonnes and was completed on 4th November 2022. In consideration of the higher than anticipated grout take observed on BH3, a further Validation hole was necessary (BH4)

Validation Borehole BH4 took a total of approximately 8.0 tonnes and was completed on 7th November 2022.

A summary of daily grouting records is included as **Appendix E**.

Gas monitoring was continued at the top of the borehole throughout, with no trace detected.

5.0 Quality Control

Grout was batched on site using an electric 6T Mixer. Constituent materials were introduced by a loading shovel and pumped to each bore using a Bauer HP-35e Material Pump.

Grout flow tests were carried out on the grout mixture on a daily (sometimes twice daily) basis, which indicate satisfactory and consistent grout dispatch. Results of testing are shown on the grouting summary spreadsheet in **Appendix E**.

During the grouting process, grout cubes were collected at regular intervals to confirm serviceable compressive strengths. Results of testing available at the time of this report are summarised in **Appendix E**. Test certificates are included in **Appendix F**. Outstanding results will be delivered under a separate cover.

All plant was certified safe and maintained properly throughout the operation.

6.0 Conclusion

In order to prepare for proposed new residential development and associated infrastructure at land off Stopes Road, Little Lever, Bolton, Van Elle were instructed by VHE, on behalf of Harworth Estates to carry out shaft stabilisation works by drilling and consolidation grouting of 3 no. abandoned coal mine shafts designated:

- 376407-006
- 376407-007
- 376407-008

This report only covers the treatment to shaft reference: 376407-006 with the treatment of shafts 007 and 008 remaining as pending completion.

As part of the tendering process, VE was asked to prepare specification for the works.

This specification was accepted and approved by VHE, local regulators and The Coal Authority.

Stabilisation works have been completed at Shaft Ref: 367407-006 in general accordance with the VE specification. Variations that were made during the works have been explained in this report, and were undertaken to improve the stabilisation objectives.

In total, 4 no. stabilisation boreholes were drilled within the shaft curtilage to a depth of 100m. Over the period from 6 October and 7th November 2022, a total of approximately 1,029 tonnes of grout was injected into the abandoned shaft. This is more than was expected and it is considered likely that some of the grout could have found pathways outside of the shaft.

Notwithstanding the above, it is considered that stabilisation works at 367407-006 have now been completed in accordance with the project remit.

APPENDIX A





Site Location



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Kirkby Lane, Pinxton
Nottinghamshire
NG16 6JA

Tel: 01773 580580
Fax: 01773 862100

TITLE:

Site Location

PROJECT:

Stopes Road, Little Lever

PROJECT No:

VE221883

DATE:

December 2022

SCALE:

NTS

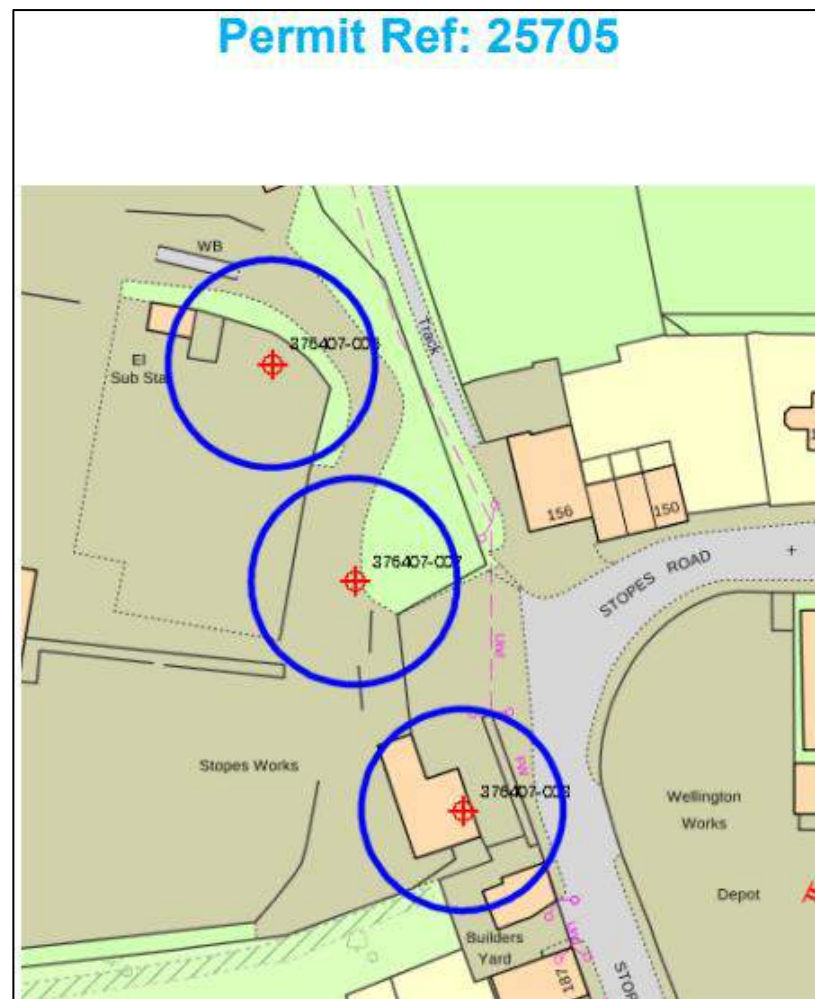
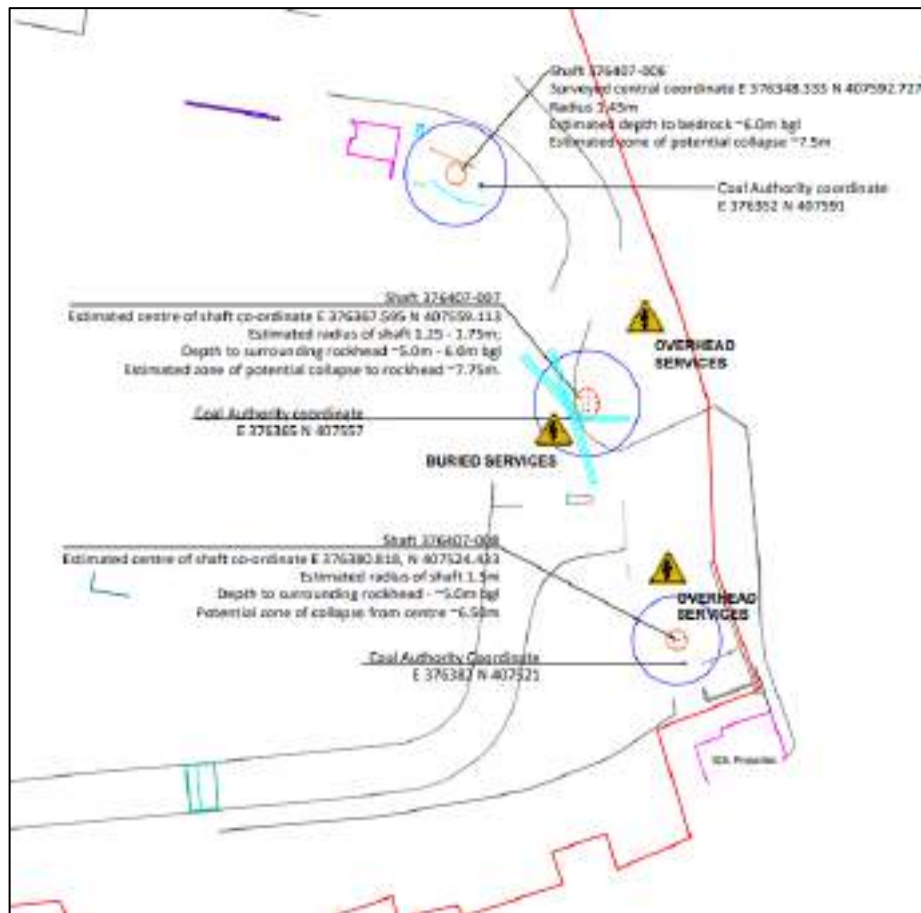
DRAWN:

PS

DWG No:

Figure 1

DO NOT SCALE



DO NOT SCALE



Van Elle Limited
Kirkby Lane, Pinxton
Nottinghamshire
NG16 6JA

Tel: 01773 580580
Fax: 01773 862100

TITLE:

Treatment Areas

PROJECT:

Stopes Road, Little Lever

PROJECT No:

VE221883

DATE:

December 2022

SCALE:

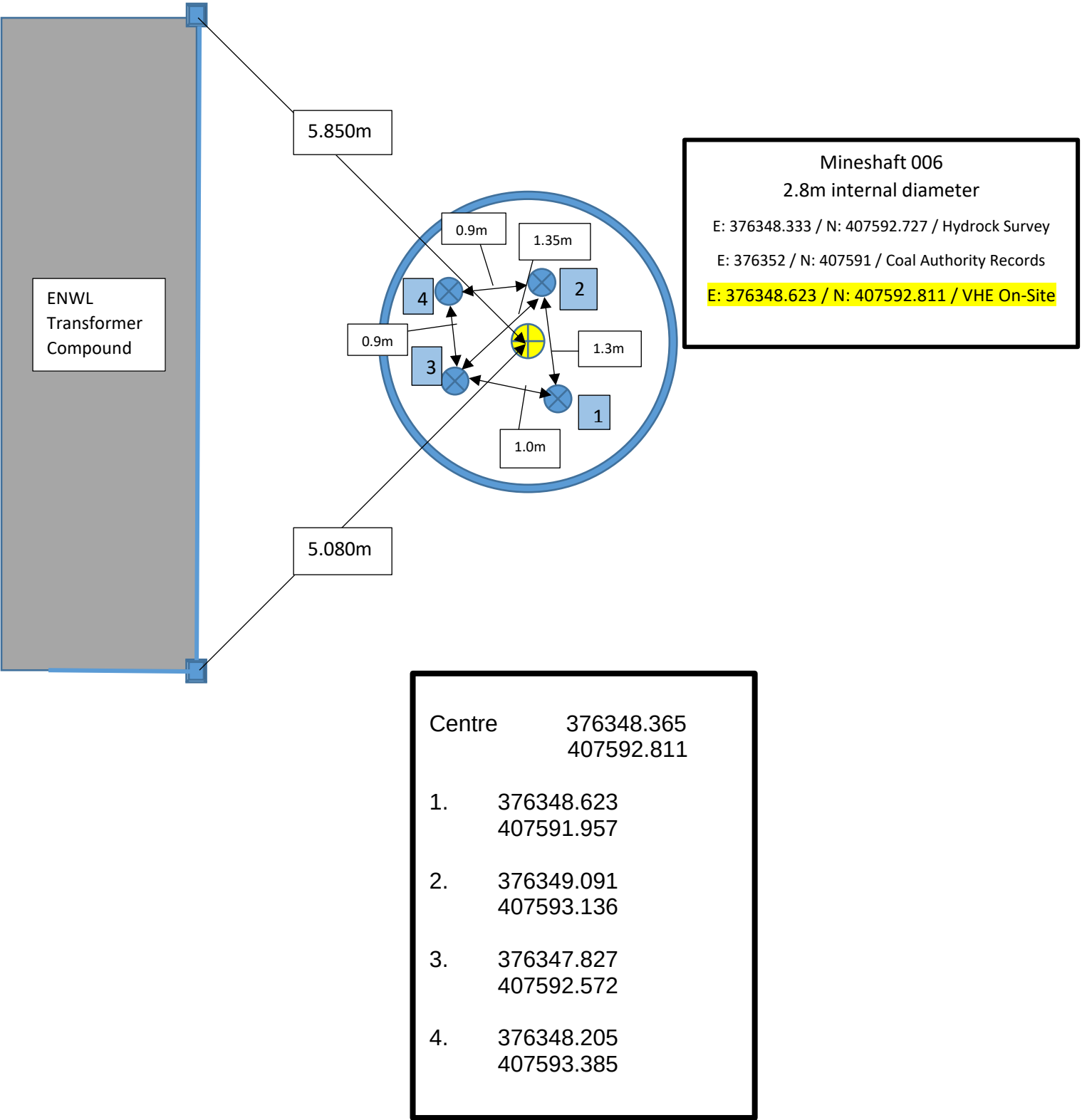
NTS

DRAWN:

PS

DWG No:

Figure 2



APPENDIX B



Stopes Road, Bolton

Specification for Consolidation of Mining Features
by Drilling and Grouting



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Control Sheet

This report has been prepared for the sole benefit, use and information of VHE Construction Ltd. 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	Conor White	Signed	Date
Approved by	Steve Bray	Signed	Date

1.0 Introduction

VHE Construction Ltd in their capacity as Main Contractor acting on behalf of the Harworth Estates Property Group Ltd have instructed Van Elle (VE) to produce a specification and design for the treatment of the known mineshafts within the site boundary.

1.1 Site Location and Description

The site address is Little Lever, Bolton, BL3 1NP. The site covers approximately 6 ha. The site is encompassed by residential areas to the north, south, east and west. A Site Location Plan can be found within Appendix 1. Within the site boundary there are 3No. known mineshafts varying in depth with the largest having a recorded depth of 262m bgl. The 3No. Mineshafts have been located and identified within previous phases of works undertaken/supervised by Hydrock. The areas adjacent to the mineshafts are to be no build zones and are intended to be used for public open space.

1.2 Summary of Previous Works Undertaken

1.2.1 – Shaft Reference 376407-006

The mineshaft was located during the service clearance works on site and as such no probe drilling was undertaken. The shaft is lined at the surface with a three-brick skin and was found to have an internal diameter of 2.90m. The Coal Authority records indicate that the mineshaft is 262m deep. The accurate coordinate for the mine shaft is 376348.333mE, 407592.727mN.

1.2.2 – Shaft Reference 376407-007

The mineshaft was located following 291 probe holes in close proximity to the recorded position of the mineshaft. One probe hole was advanced to 42m bgl however this could not continue further due to limitations of the equipment used. Thus, meaning the depth of the shaft is in excess of 42m bgl. The coal authority does not have records of the depth or construction of the mineshaft, however following further delineation of the mine shaft it is believed that the shaft is rectangular or oval in shape with a diameter of between 2.5m to 3.5m. The accurate coordinate for the mine shaft is 376367.595mE, 407559.113mN.

1.2.2 – Shaft Reference 376407-008

The mineshaft was located following 22 probe holes in close proximity to the recorded position of the mineshaft. One probe hole was advanced to 42m bgl however this could not continue further due to limitations of the equipment used. Thus, meaning the depth of the shaft is in excess of 42m bgl. The coal authority does not have records of the depth. Following further delineation of the mine shaft the diameter of the shaft was identified as being approximately 3m. The accurate coordinate for the mine shaft is E 376380.818, N 407524.433

1.3 Permissions

1.3.1 Coal Authority

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

2.0 Specification

2.1 Design

During the tender stage of the works Van Elle Limited were instructed to carry out a design for the treatment of the three aforementioned mine shaft positions. The design of the treatment of the mineshafts is as follows, drill segmental 101mm casing to 100m below ground level or 5m past the base of the mineshaft if the base is encountered prior to 100m depth.

2.2 Supervision

A full time non-working 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 on a weekly basis.

2.3 Drilling

Drilling will be carried out using rotary percussive drill rig, advancing 101mm segmental casing to 100m bgl or 5m past the base of the shaft. 2No. Treatment bores and 1No. Validation bore will be drilled within each mineshaft to the aforementioned depths. 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 operation at all times that drilling is being carried out. All drilling work will be undertaken from a fully designed shaft frame (design included in appendix 3)

2.3.1 Records

Full records shall be maintained during the works, showing job name and location, hole reference number, date, plant in use and crew members and depth of completed borehole.

2.4 Grouting

2.4.1 Materials & Mix

Grout materials shall consist of Ordinary Portland Cement and Pulverise Fuel Ash, mixed at a ratio of 1:10 with a water solids ratio of no more than 40%. No thixotropic or thickening agents were added during agitation. OPC shall comply with BS12 and PFA shall be in accordance with BS 3892: part 2.

2.4.2 Equipment

Grout will be batched on site using an electric 6T Mixer. Constituent materials shall be introduced by a loading shovel, and pumped to each bore using a Bauer HP-35e Material Pump. All plant shall be certified safe and maintained properly throughout the operation.

2.4.3 Water

A source of potable water will be sourced from a nearby wash out hydrant.

2.4.4 Testing

4 Grout cubes shall be taken weekly and tested at 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 Validation holes

Validation holes will be drilled within each mineshaft across the site to validate the works. Grout will be injected under pressure in to the borehole and held for 2 minutes to prove the lack of permeability. The test shall be considered a pass where 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 three harmful gases, carbon monoxide (CO), 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 no 32 – Construction over Abandoned Mineworkings

Any SI Report made available to us and used for reference

Appendix 1

Sample Drilling & Grouting Records



Site:													Sheet:								of								
Rig:										Crew:										Date:									
Hours on Site:															Travelling Time:														
BH	Depth			Strata Description						BH	Depth			Strata Description															
Casing/Water Level Details																													
BH	Casing				Water				Totals	BH	Drill	Case	Install																
	Dia	Depth	Strike	Rise	Sealed	Today																							
						Previous																							
						To Date																							
I confirm this is a true record. Van Elle operative name..... Drill hole Nos. checked Yes ☐ No ☐ Hole Depth checked Yes ☐ No ☐ SIGNED..... Dated										Client's Name..... Client's position..... Signature..... Dated																			

DAILY & ACCUMULATIVE GROUTING RETURN

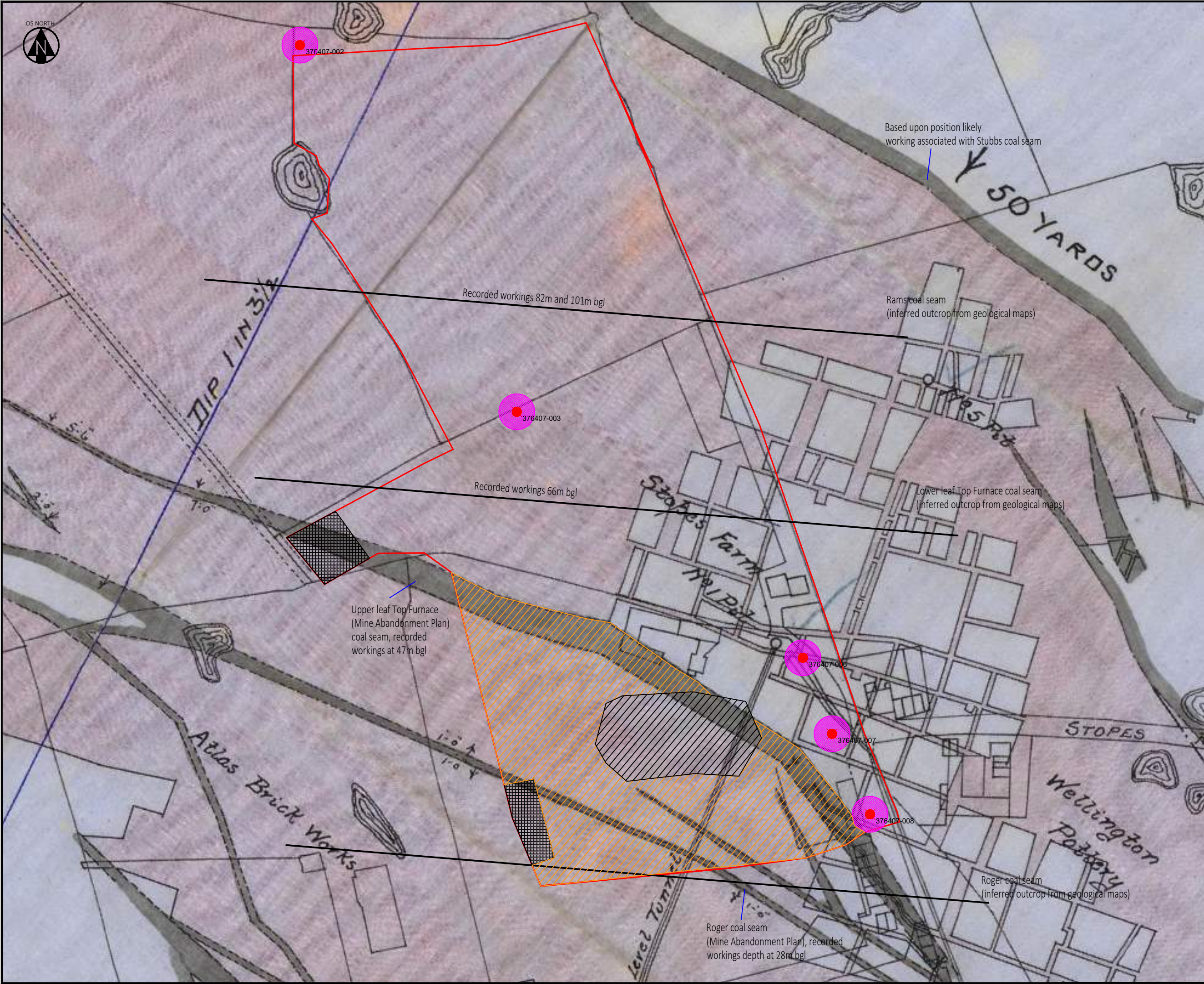
Job No. Client Site Address

.....

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				

Appendix 2

Site Plan



KEY

Approximate Site Boundary

Approximate Mine Shaft Locations from CA report 51002283067001

8m departure from current location (CIRIA C758-2019)

Approximate location of Refuse Heap 1891-1955

Approximate location of encroachment of Deep Fill from unlicensed opencast

Higher density of intrusive rotary works required due to potential for shallow coal workings

- NOTES
1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing.

2. This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.

3. This drawing has been based on the following drawings and information:
Topographical Survey Reference 55335_01 dated 18-03-20.
Mine Abandonment Plan referenced 5419/8.

4. Although the coordinates from the Coal Authority Report show the location of disused mine shaft 376407-002 to be offsite due the potential for departures (as per CIRIA C758-2019) is must be assumed to be onsite.

5. Ground investigation required in the form of trial trenching to confirm the existing on site mine entry conditions and to determine any requirement for treatment with reference to the proposed development layout. Geophysical surveys could be considered to enable targeting of trial trenches/trial pits, should it be deemed achievable by a specialist geophysics contractor.

6. Confirmation of the extent of recorded shallow mineworkings in the Roger and upper leaf of the Top Furnace coal seam; including the absence/presence of unrecorded workings associated with Roger, Rams and upper and lower leaf of the Top Furnace seam.

7. Recommended that a greater density of intrusive rotary boreholes are undertaken in the southern section of the site where risk posed by shallow worked seams is higher than the centre and north.

8. Rotary boreholes undertaken in the south of the site to extend to 40m bgl to confirm the presence/absence of Roger and to confirm workings associated with the upper leaf of the Top Furnace are not present.

9. Investigations need to confirm the presence/absence of deep fill encroaching onto the west of the site associated possible unlicensed open cast mining shown to have occurred to the west. Ground investigation needs to confirm the extent, geotechnical and geochemical properties of possible remaining fill associated with the refuse heap onsite between 1891 and 1955.

P01	FIRST ISSUE											
RS	20/05/20		MC	20/05/20		MC	20/05/20					
REV.	REVISION NOTES/COMMENTS											
	DRAWN BY		DATE		CHECKED BY		DATE		APPROVED BY		DATE	
 Hydrock 4 Lakeside Festival Way Stoke-on-Trent ST1 5RY t: +44(0) 1782 261919 e: stoke@hydrock.com or visit www.hydrock.com												
CLIENT												
HARWORTH ESTATES PROPERTY GROUP LTD												
PROJECT												
STOPES ROAD												
TITLE												
COAL MINING CONSTRAINTS PLAN												
HYDROCK PROJECT NO. C-15220-C						SCALE @ A3 1:650						
PURPOSE OF ISSUE SUITABLE FOR INFORMATION										STATUS S2		
DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER) 15220-HYD-XX-XX-DR-GE-1003										REVISION P01		

Appendix 3

Shaft Frame

Design



CALCULATION SHEET

Project: RIG SHAFT SUPPORT FRAME

Title: RIG SHAFT SUPPORT FRAME CALCULATIONS

Customer: VAN ELLE LTD

JOB NO: 6325-01

REVISION: CC1

PREPARED BY: MD

CHECKED BY: MAC

DATE: 16.03.2021

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1. Description:

Revision:

REV	DATE	DESCRIPTION	DES	CHK
CC0	16/03/21	FIRST ISSUE	MD	MAC

Aim:

Calculations of steel members under rig + splice connection design.

Loadings:

This structure has been designed in accordance with the following guidance:

- BS EN 1990 - Basis of structural design;
- BS EN 1991-1-1 - General Actions-Densities self weight, imposed loads for buildings;
- BS EN 1993-1-1 - Design of steel structures - General rules and rules for buildings;

2. Loads:

Safety factors: $\gamma_G := 1.35$ $\gamma_Q := 1.5$

Rig type: **Casagrande SPA C6**

Track bearing length: $L := 2.28\text{m}$

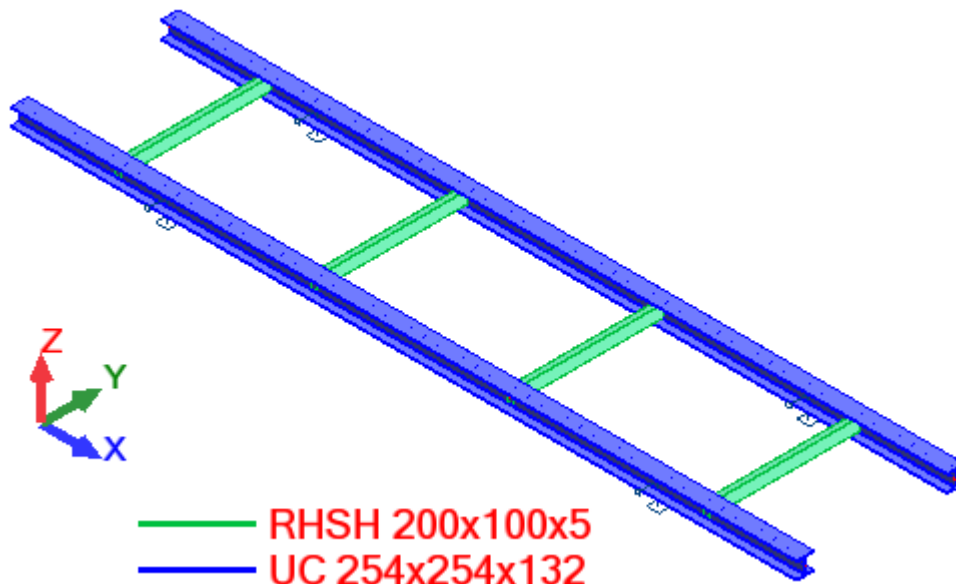
Track bearing width: $B := 0.4\text{m}$

Data sheet with loads for each situation was given by customer (datasheet attached at the end of calculations). Summary of design situation + loads shown below:

	Equivalent track length	Track width	Pressure	Equivalent force
1. Standing	$L_1 := 2.039\text{m}$	$B_1 := B = 0.4\text{m}$	$q_1 := 73\text{kPa}$	$F_1 := q_1 \cdot L_1 \cdot B_1 = 59.539\text{kN}$
2. Travelling	$L_2 := 1.58\text{m}$	$B_2 := B = 0.4\text{m}$	$q_2 := 110\text{kPa}$	$F_2 := q_2 \cdot L_2 \cdot B_2 = 69.52\text{kN}$
3. Handling	$L_3 := 1.387\text{m}$	$B_3 := B = 0.4\text{m}$	$q_3 := 114\text{kPa}$	$F_3 := q_3 \cdot L_3 \cdot B_3 = 63.247\text{kN}$
4. Penetrating	$L_4 := 0.282\text{m}$	$B_4 := B = 0.4\text{m}$	$q_4 := 240\text{kPa}$	$F_4 := q_4 \cdot L_4 \cdot B_4 = 27.072\text{kN}$
5. Extracting	$L_5 := 1.165\text{m}$	$B_5 := B = 0.4\text{m}$	$q_5 := 150\text{kPa}$	$F_5 := q_5 \cdot L_5 \cdot B_5 = 69.9\text{kN}$

As shown above design cases No. 2 & 5 are decisive here and are taken to further analysis.

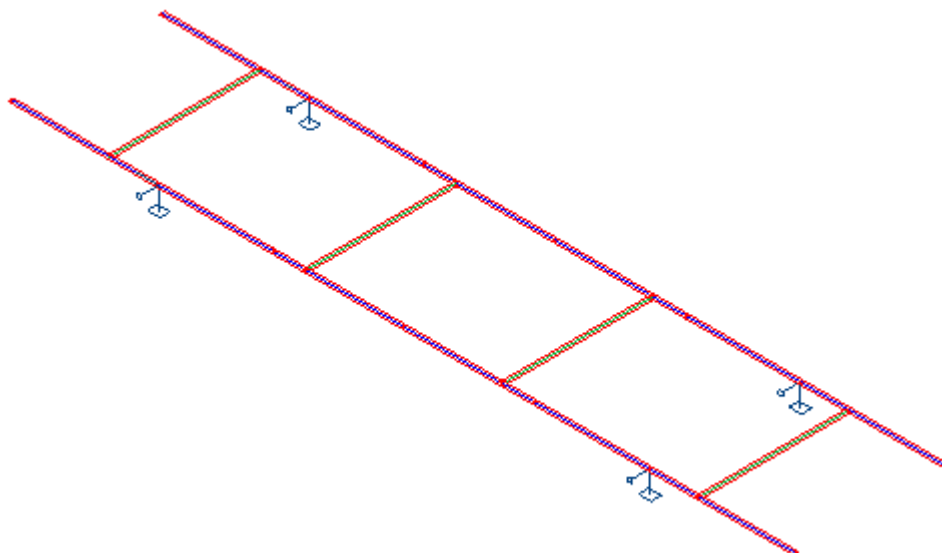
3. Static analysis



3D analytical model of steel structure

Load cases (loads shown in [kN]):

DL1 - Self weight of structure



LL1 - Rig load - Travelling case 1



CALCULATION SHEET

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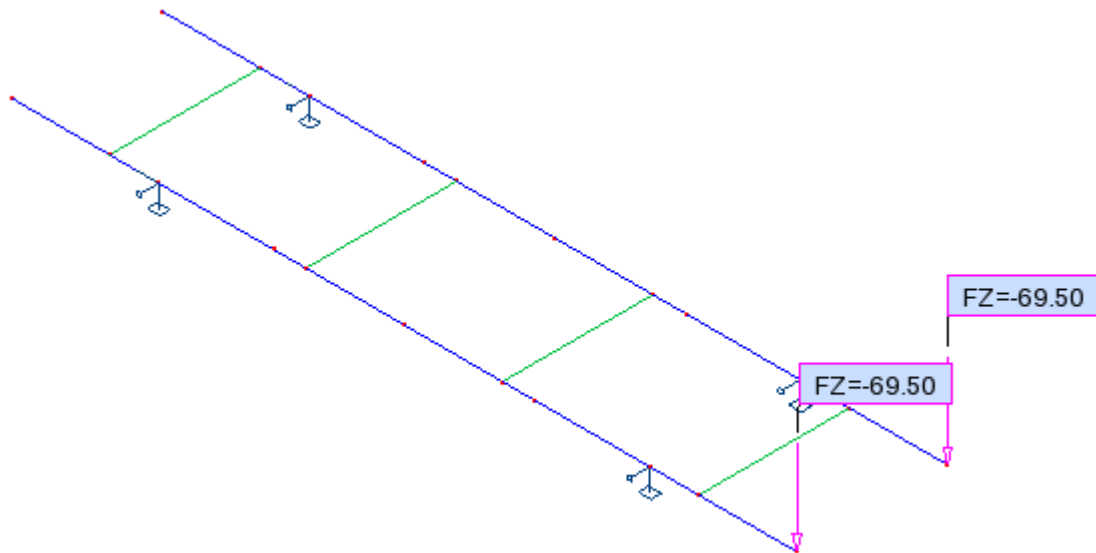
REVISION: CC1

PREPARED BY: MD

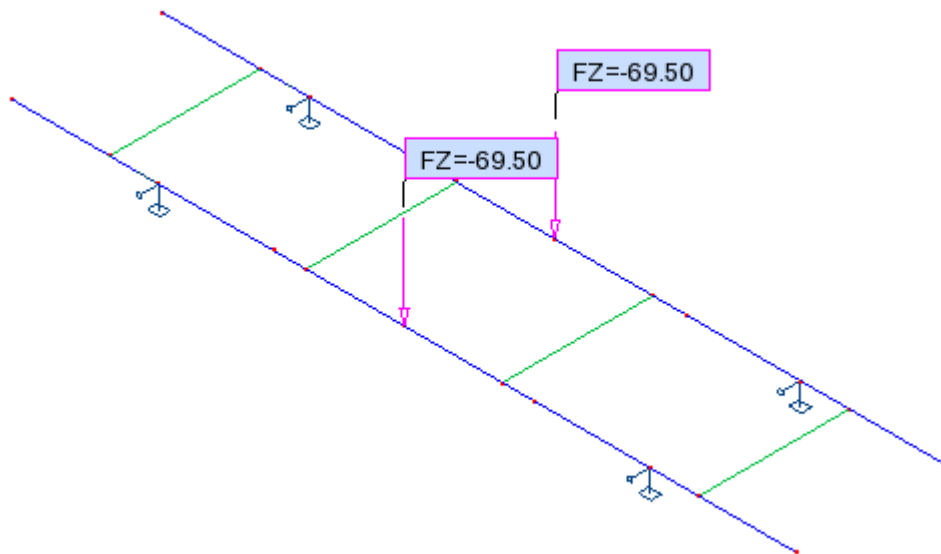
CHECKED BY: MAC

DATE: 16.03.2021

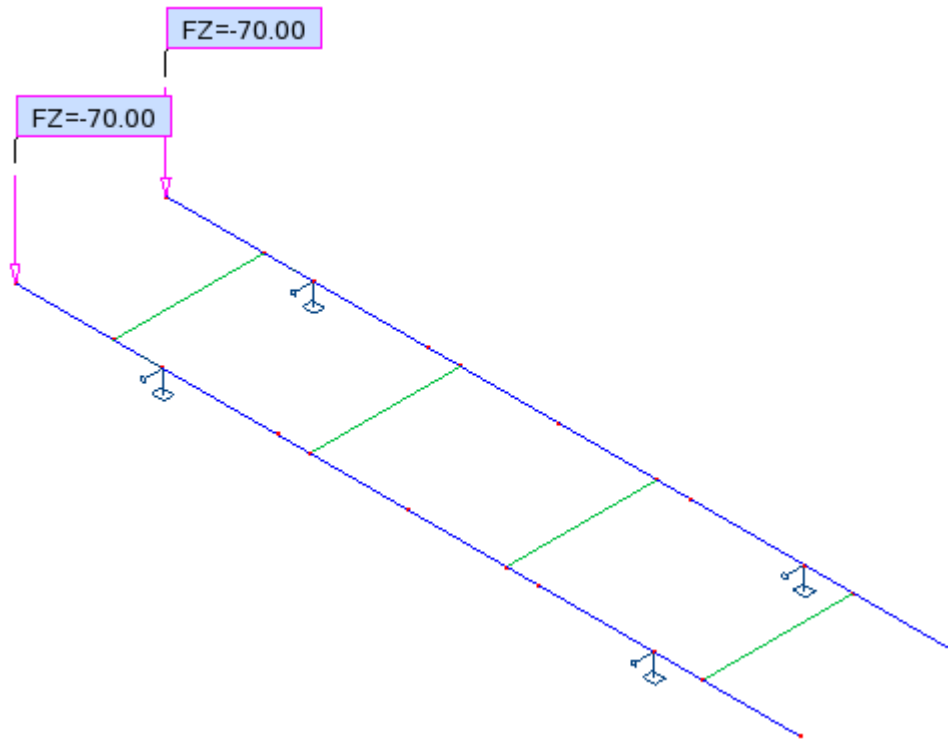
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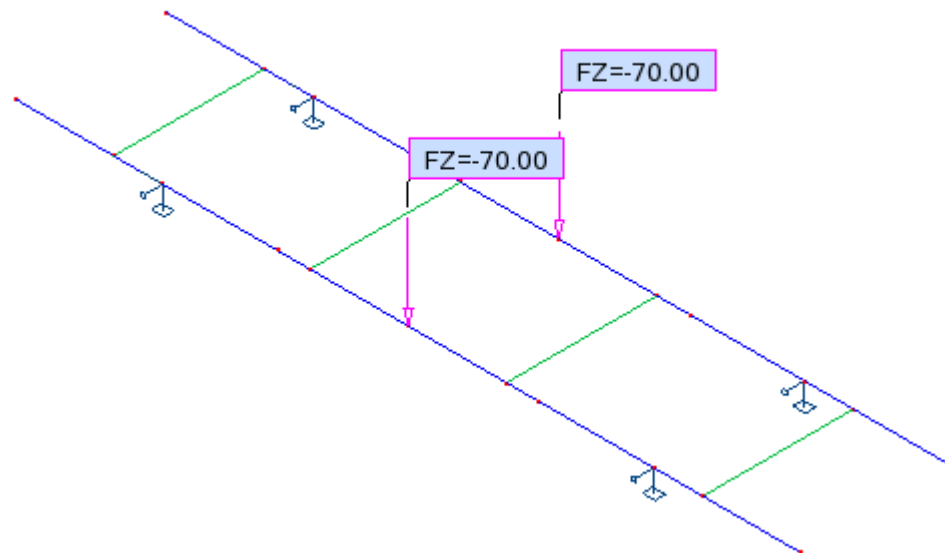
LL2 - Rig load - Travelling case 2



LL3 - Rig load - Extracting case 1

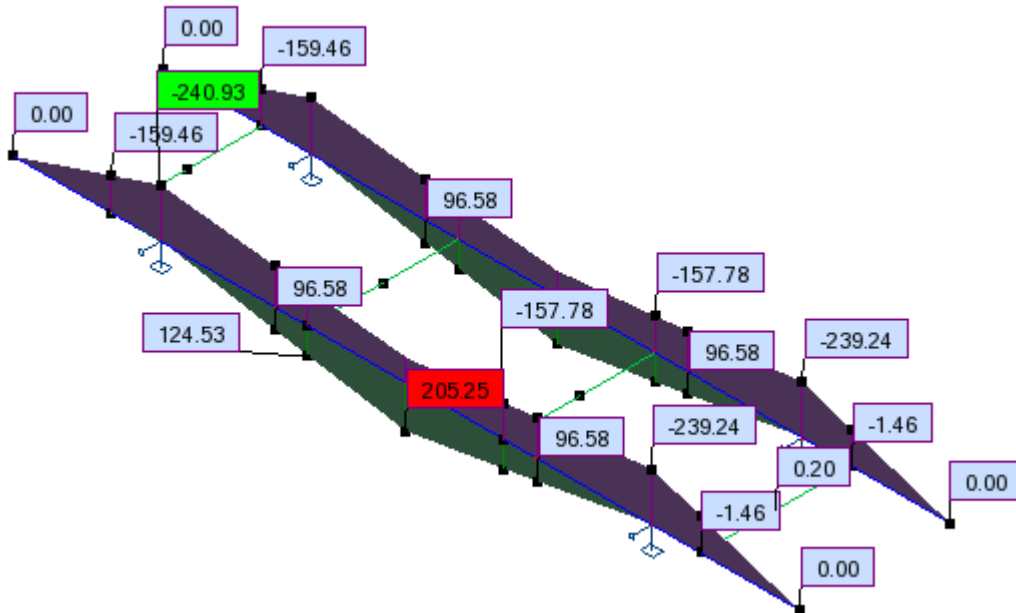


LL4 - Rig load - Extracting case 2

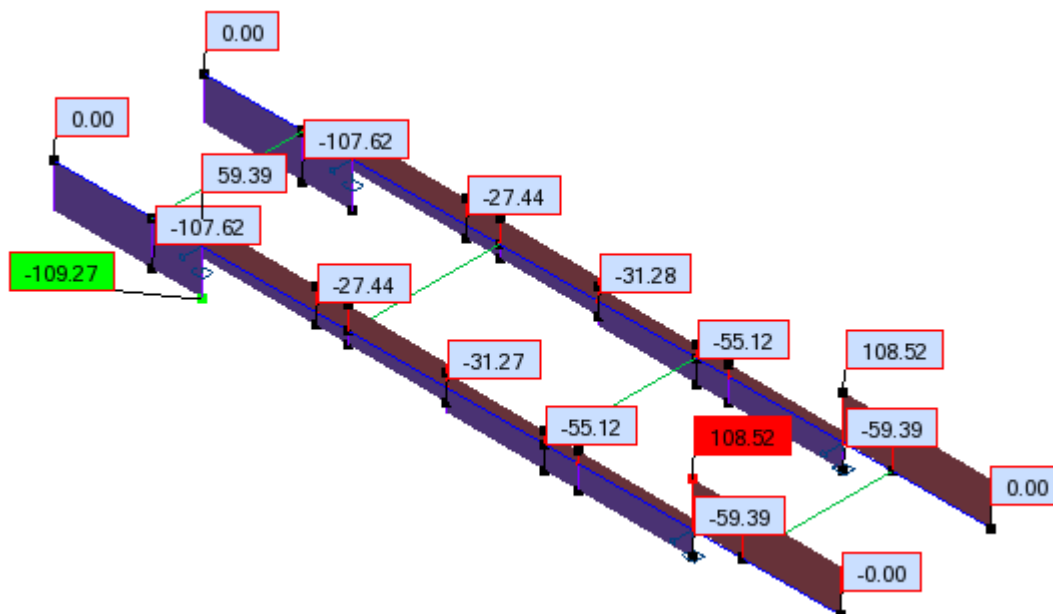


3.1 Internal forces

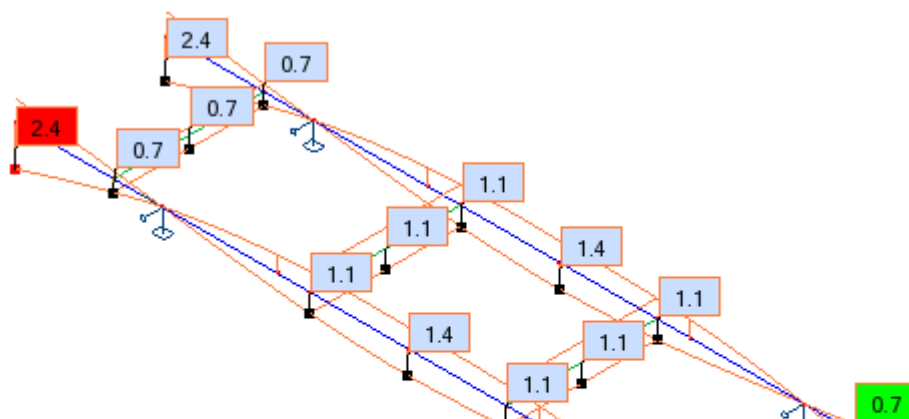
My - bending moments [kNm]



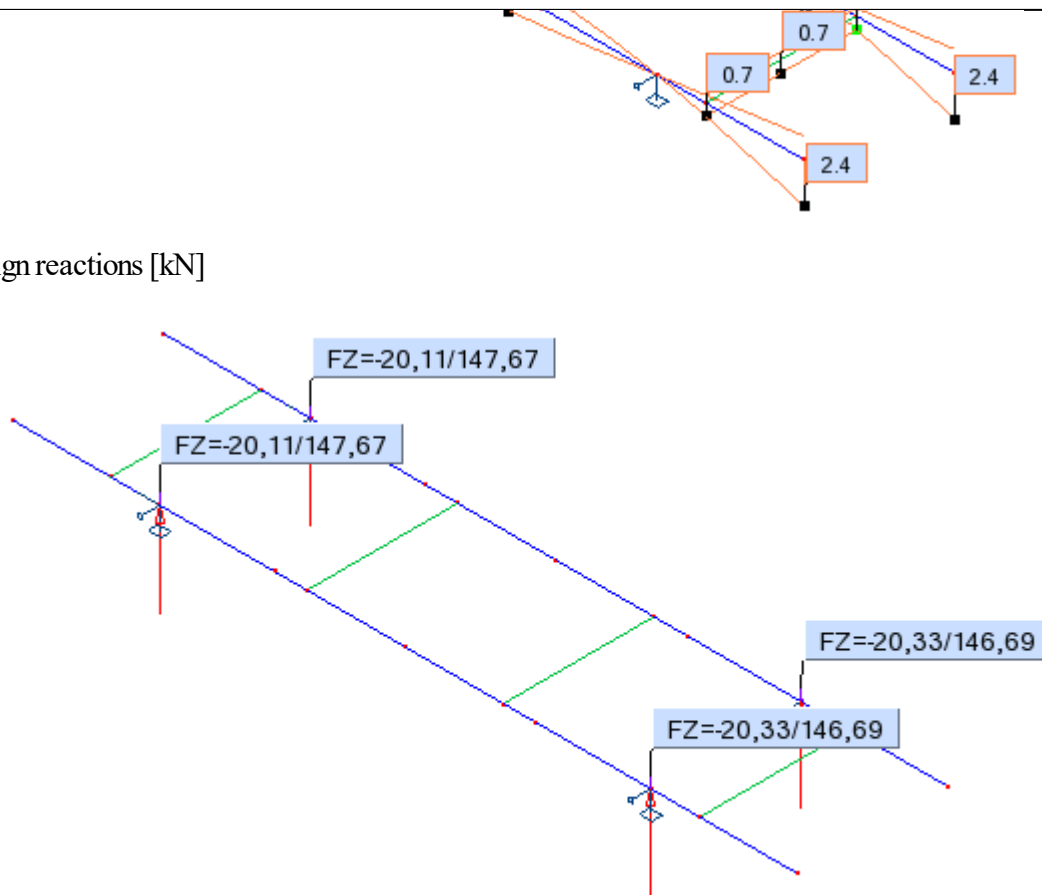
Vz - shear forces [kN]



Deformations [cm]

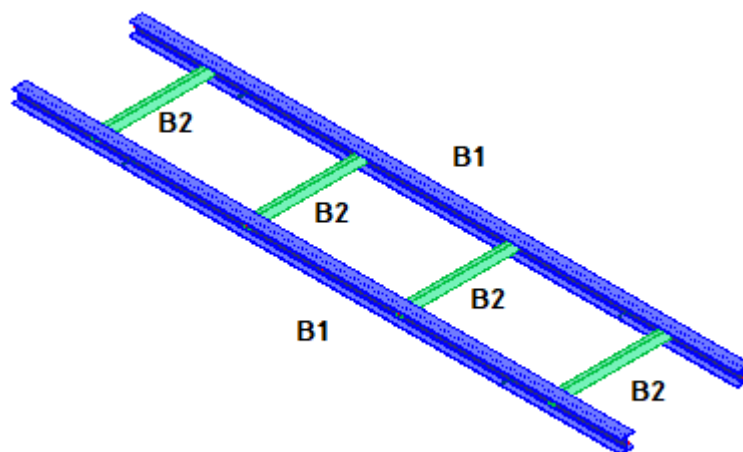


Design reactions [kN]



3.2 Dimensioning of steel members

Scheme with beam/columns numbered for calculations:



Dimensioning was held for the most unfavour positions.



CALCULATION SHEET

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Primary beams B1

CODE: EN 1993-1, Eurocode 3: Design of steel structures.

ANALYSIS TYPE: Member Verification

CODE GROUP:

MEMBER: 1 Beam_1
m

POINT: 3

COORDINATE: $x = 0.19 L = 2.25$

LOADS:

Governing Load Case: 8 KOMB3 $1 \times 1.35 + 4 \times 1.50$

MATERIAL:

S 275 (S 275) $f_y = 275.00$ MPa



SECTION PARAMETERS: UC 254x254x132

$h = 27.6$ cm

$gM0 = 1.00$

$gM1 = 1.00$

$b = 26.1$ cm

$A_y = 137.35$ cm²

$A_z = 46.08$ cm²

$A_x = 168.00$ cm²

$tw = 1.5$ cm

$I_y = 22530.00$ cm⁴

$I_z = 7531.00$ cm⁴

$I_x = 319.00$ cm⁴

$tf = 2.5$ cm

$W_{ply} = 1869.00$ cm³

$W_{plz} = 878.00$ cm³

INTERNAL FORCES AND CAPACITIES:

$M_{y,Ed} = -240.93$ kN*m

$M_{y,pl,Rd} = 513.98$ kN*m

$M_{y,c,Rd} = 513.98$ kN*m

$V_{z,Ed} = -109.27$ kN

$V_{z,c,Rd} = 731.61$ kN

$M_{b,Rd} = 377.74$ kN*m

Class of section = 1



LATERAL BUCKLING PARAMETERS:

$z = 1.00$

$M_{cr} = 544.81$ kN*m

Curve,LT - b

$X_{LT} = 0.72$

$L_{cr,low} = 12.00$ m

$\lambda_{m,LT} = 0.97$

$\phi_{LT} = 0.95$

$X_{LT,mod} = 0.73$

BUCKLING PARAMETERS:



About y axis:



About z axis:

VERIFICATION FORMULAS:

Section strength check:

$M_{y,Ed}/M_{y,c,Rd} = 0.47 < 1.00$ (6.2.5.(1))

$V_{z,Ed}/V_{z,c,Rd} = 0.15 < 1.00$ (6.2.6.(1))

Global stability check of member:

$M_{y,Ed}/M_{b,Rd} = 0.64 < 1.00$ (6.3.2.1.(1))

LIMIT DISPLACEMENTS



Deflections

$u_y = 0.0$ cm $< u_{y,max} = L/200.00 = 6.0$ cm

Verified

Governing Load Case: 13 KOMB4ch $(1+5) \times 1.00$

$u_z = 2.9$ cm $< u_{z,max} = L/200.00 = 6.0$ cm

Verified

Governing Load Case: 12 KOMB3ch $(1+4) \times 1.00$



Displacements Not analyzed

Section OK !!!

Secondary beams B2

Beams were designed for stabilising force:

Primary beam high:

$h := 27.6$ cm

**CALCULATION SHEET**

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Flange thickness:

$$t_f := 2.5 \text{ cm}$$

Equivalent high of beam:

$$h_{eq} := h - t_f = 251 \text{ mm}$$

Maximum design bending moment on primary beams:

$$M_{y.Ed} := 241 \text{ kN}\cdot\text{m}$$

Equivalent normal force on primary beam flange:

$$F_{x.eq.Ed} := \frac{M_{y.Ed}}{h_{eq}} = 960.159 \text{ kN}$$

Stabilizing force - 2% of equivalent normal force

$$F_{x.Ed.stab} := 0.02 \cdot F_{x.eq.Ed} = 19.203 \text{ kN}$$

STEEL DESIGN**CODE:** EN 1993-1, Eurocode 3: Design of steel structures.**ANALYSIS TYPE:** Member Verification**CODE GROUP:****MEMBER:** 7 Pret_7**POINT:****COORDINATE:****LOADS:**

Governing Load Case: Manual

MATERIAL:S 275 (S 275) $f_y = 275.00 \text{ MPa}$ **SECTION PARAMETERS: RSH 200x100x5**

$h=20.0 \text{ cm}$	$gM0=1.00$	$gM1=1.00$	
$b=10.0 \text{ cm}$	$A_y=9.57 \text{ cm}^2$	$A_z=19.13 \text{ cm}^2$	$A_x=28.70 \text{ cm}^2$
$t_w=0.5 \text{ cm}$	$I_y=1495.00 \text{ cm}^4$	$I_z=505.00 \text{ cm}^4$	$I_x=1204.00 \text{ cm}^4$
$t_f=0.5 \text{ cm}$	$W_{ely}=149.50 \text{ cm}^3$	$W_{elz}=101.00 \text{ cm}^3$	

INTERNAL FORCES AND CAPACITIES:

$N_{,Ed} = 20.00 \text{ kN}$	$M_{y,Ed} = 0.20 \text{ kN}\cdot\text{m}$
$N_{c,Rd} = 789.25 \text{ kN}$	$M_{y,Ed,max} = 0.20 \text{ kN}\cdot\text{m}$
$N_{b,Rd} = 692.66 \text{ kN}$	$M_{y,c,Rd} = 41.11 \text{ kN}\cdot\text{m}$

Class of section = 3

**LATERAL BUCKLING PARAMETERS:****BUCKLING PARAMETERS:**

About y axis:

$L_y = 2.30 \text{ m}$	$\lambda_{m,y} = 0.37$
$L_{cr,y} = 2.30 \text{ m}$	$\chi_y = 0.96$
$\lambda_{m,y} = 31.87$	$\chi_y = 0.91$



About z axis:

$L_z = 2.30 \text{ m}$	$\lambda_{m,z} = 0.63$
$L_{cr,z} = 2.30 \text{ m}$	$\chi_z = 0.88$
$\lambda_{m,z} = 54.83$	$\chi_z = 0.00$

VERIFICATION FORMULAS:**Section strength check:**

$$M_{y,Ed}/M_{y,c,Rd} = 0.00 < 1.00 \quad (6.2.5.(1))$$

$$N_{,Ed}/N_{c,Rd} + M_{y,Ed}/M_{y,c,Rd} = 0.03 < 1.00 \quad (6.2.1(7))$$

Global stability check of member:

$$\lambda_{m,y} = 31.87 < \lambda_{m,max} = 210.00 \quad \lambda_{m,z} = 54.83 < \lambda_{m,max} = 210.00 \quad \text{STABLE}$$

$$N_{,Ed}/(\chi_y \cdot N_{c,Rd}/gM1) + \chi_y \cdot M_{y,Ed,max}/(XLT \cdot M_{y,Rd}/gM1) = 0.03 < 1.00 \quad (6.3.3.(4))$$

$$N_{,Ed}/(\chi_z \cdot N_{c,Rd}/gM1) + \chi_z \cdot M_{y,Ed,max}/(XLT \cdot M_{y,Rd}/gM1) = 0.03 < 1.00 \quad (6.3.3.(4))$$

Section OK !!!



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4. Connection design:

Splice connection design attached as appendix at the end of file.

Splices divided 12m long beam into 3No. 4m long parts.

APPENDIX A – SPLICE CONNECTION DESIGN

Material

Steel

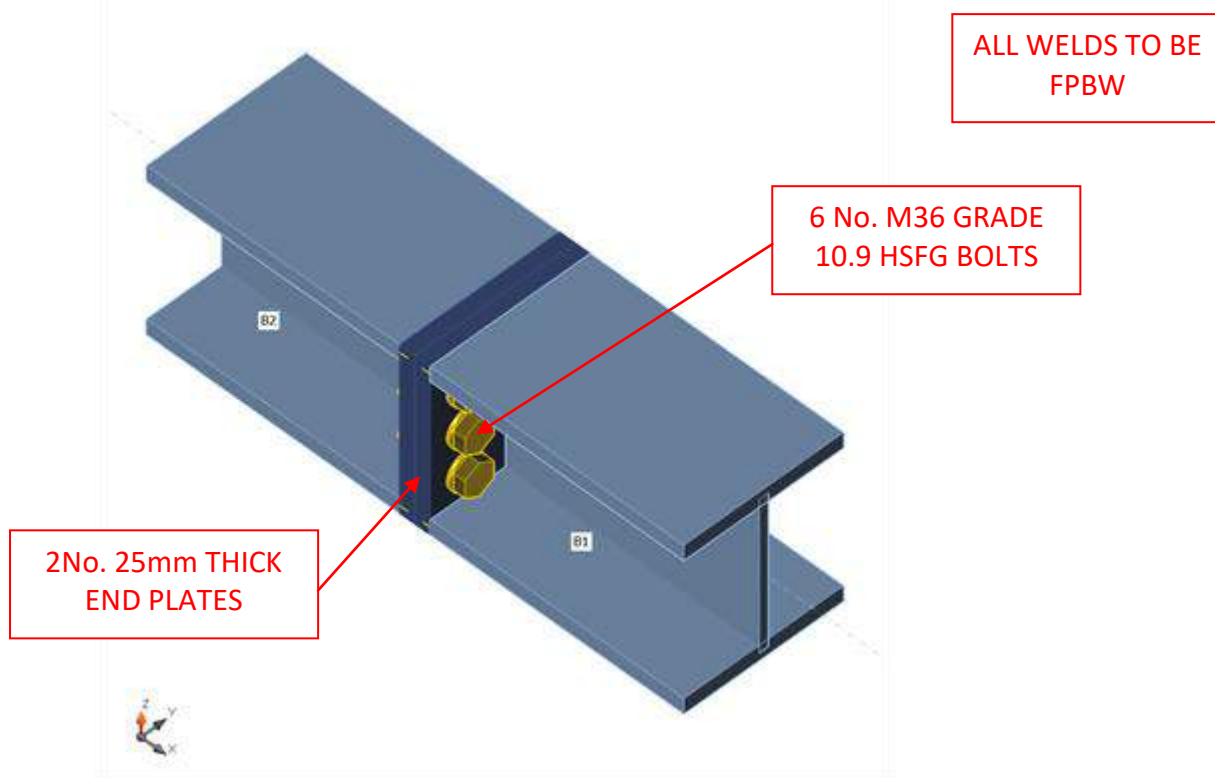
S 275

Project item Splice connection Design

Name Splice connection
Description Splice connection
Analysis Stress, strain/ simplified loading

Beams and columns

Name	Cross-section	β - Direction [°]	γ - Pitch [°]	α - Rotation [°]	Offset ex [mm]	Offset ey [mm]	Offset ez [mm]	Forces in
B1	2 - UC 254 x 254 x 132	0,0	0,0	0,0	0	0	0	Node
B2	2 - UC 254 x 254 x 132	180,0	0,0	0,0	0	0	0	Node



Cross-sections

Name	Material
2 - UC 254 x 254 x 132	S 275

Bolts

Name	Bolt assembly	Diameter [mm]	fu [MPa]	Gross area [mm ²]
M30 10.9	M30 10.9	30	1000,0	707

Load effects (equilibrium not required)

Name	Member	N [kN]	Vy [kN]	Vz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
LE1	B1	0,0	0,0	-70,0	0,0	-200,0	0,0

Check

Summary

Name	Value	Status
Analysis	100,0%	OK
Plates	0,9 < 5%	OK
Preloaded bolts	98,9 < 100%	OK
Buckling	Not calculated	

Plates

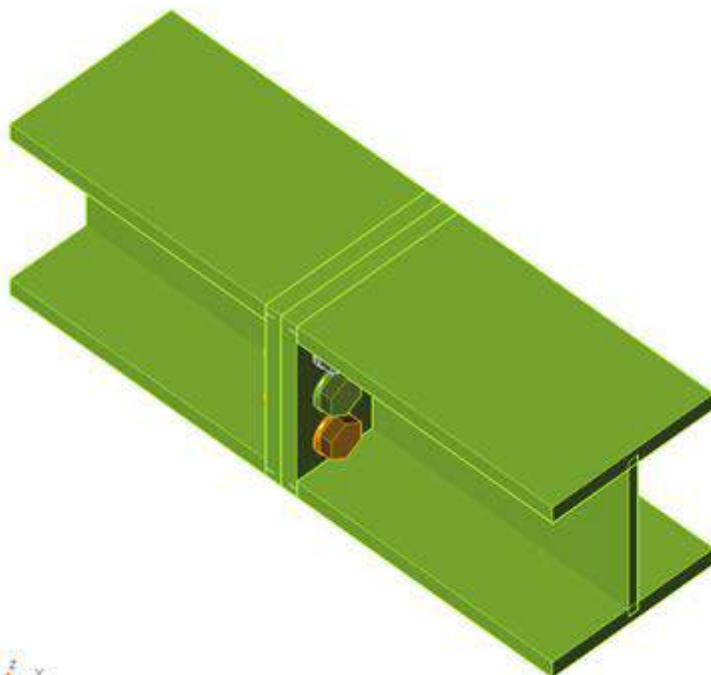
Name	Thickness [mm]	Loads	σ_{Ed} [MPa]	ϵ_{pl} [%]	Status
B1-bfl 1	25,3	LE1	275,6	0,3	OK
B1-tfl 1	25,3	LE1	275,0	0,0	OK
B1-w 1	15,3	LE1	275,1	0,0	OK
B2-bfl 1	25,3	LE1	275,5	0,2	OK
B2-tfl 1	25,3	LE1	275,1	0,0	OK
B2-w 1	15,3	LE1	275,1	0,0	OK
PP1a	25,0	LE1	276,8	0,9	OK
PP1b	25,0	LE1	276,8	0,9	OK

Design data

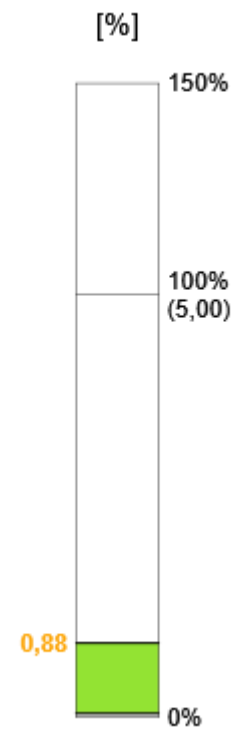
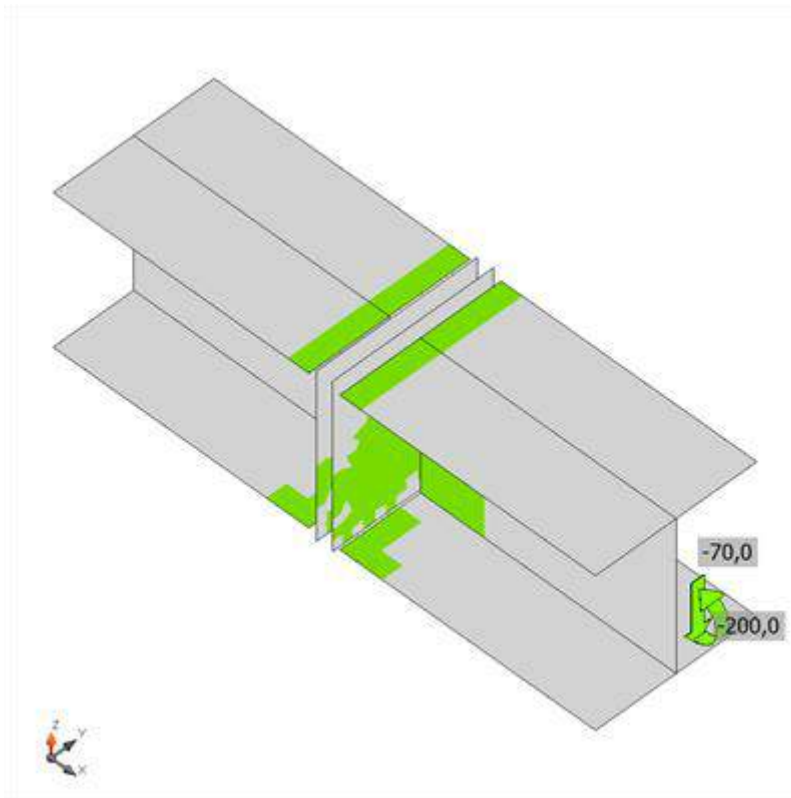
Material	f_y [MPa]	ϵ_{lim} [%]
S 275	275,0	5,0

Symbol explanation

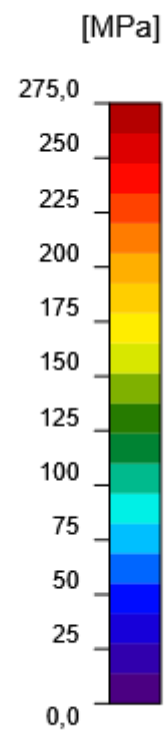
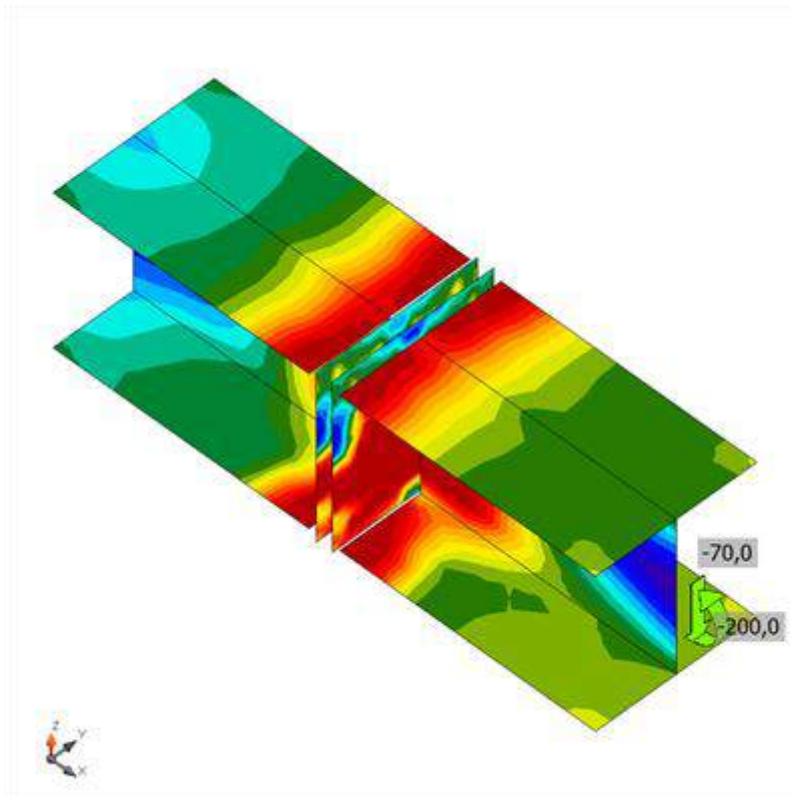
- ϵ_{pl} Strain
- σ_{Ed} Eq. stress
- f_y Yield strength
- ϵ_{lim} Limit of plastic strain



Overall check, LE1

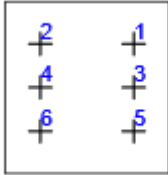


Strain check, LE1



Equivalent stress, LE1

Preloaded bolts

	Name	Bolt assembly	Loads	$F_{t,Ed}$ [kN]	V [kN]	B_{pRd} [kN]	$F_{t,Rd}$ [kN]	$F_{s,Rd}$ [kN]	U_t [%]	U_s [%]	Status
	B1	M30 10.9 - 1	LE1	83,4	12,5	854,1	403,9	78,2	20,6	15,9	OK
	B2	M30 10.9 - 1	LE1	81,4	13,2	854,1	403,9	78,6	20,2	16,8	OK
	B3	M30 10.9 - 1	LE1	295,1	10,2	854,1	403,9	37,6	73,1	27,0	OK
	B4	M30 10.9 - 1	LE1	285,7	9,4	854,1	403,9	39,4	70,7	23,8	OK
	B5	M30 10.9 - 1	LE1	398,6	13,4	854,1	403,9	17,7	98,7	75,4	OK
	B6	M30 10.9 - 1	LE1	399,5	14,4	854,1	403,9	17,6	98,9	82,2	OK

Symbol explanation

$F_{t,Rd}$	Bolt tension resistance EN 1993-1-8 tab. 3.4
$F_{t,Ed}$	Tension force
$B_{p,Rd}$	Punching shear resistance
V	Resultant of shear forces V_y , V_z in bolt
$F_{v,Rd}$	Bolt shear resistance EN 1993-1-8 table 3.4
$F_{b,Rd}$	Plate bearing resistance EN 1993-1-8 tab. 3.4
$F_{s,Rd}$	Design slip resistance EN 1993-1-8 chapter 3.9
F_{pc}	Pretension force
U_t	Utilization in tension
U_s	Utilization in shear

Welds (Maximal value used, plastic redistribution recommended)

Item	Edge	Throat th. [mm]	Length [mm]	Loads	$\sigma_{w,Ed}$ [MPa]	$\sigma_{\perp}$ [MPa]	$\tau_{\parallel}$ [MPa]	$\tau_{\perp}$ [MPa]	U_t [%]	Status
PP1a	B1-bfl 1	25,0	261	LE1						OK
PP1a	B1-tfl 1	25,0	261	LE1						OK
PP1a	B1-w 1	15,3	251	LE1						OK
PP1b	B2-bfl 1	25,0	261	LE1						OK
PP1b	B2-tfl 1	25,0	261	LE1						OK
PP1b	B2-w 1	15,3	251	LE1						OK

Design data

	β_w [-]	$\sigma_{w,Rd}$ [MPa]	0.9σ [MPa]
S 275	0,85	404,7	309,6

Symbol explanation

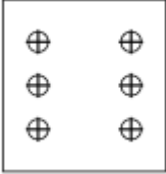
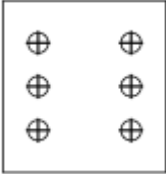
$\sigma_{w,Ed}$	Equivalent stress
$\sigma_{w,Rd}$	Equivalent stress resistance
$\sigma_{\perp}$	Perpendicular stress
$\tau_{\parallel}$	Shear stress parallel to weld axis
$\tau_{\perp}$	Shear stress perpendicular to weld axis
0.9σ	Perpendicular stress resistance - $0.9 \cdot f_u / \gamma_{M2}$
β_w	Corelation factor EN 1993-1-8 tab. 4.1
U_t	Utilization
U_{tc}	Weld capacity utilization

Buckling

Buckling analysis was not calculated.

Bill of material

Manufacturing operations

Name	Plates [mm]	Shape	Nr.	Welds [mm]	Length [mm]	Bolts	Nr.
PP1	P25,0x261,3-276,3 (S 275)		1	Bevel: a = 25,0 Bevel: a = 15,3	1045,2 502,0	M30 10.9	6
	P25,0x261,3-276,3 (S 275)		1				

Welds

Type	Material	Throat thickness [mm]	Leg size [mm]	Length [mm]
Bevel	S 275	25,0	35,4	1045,2
Bevel	S 275	15,3	21,6	502,0

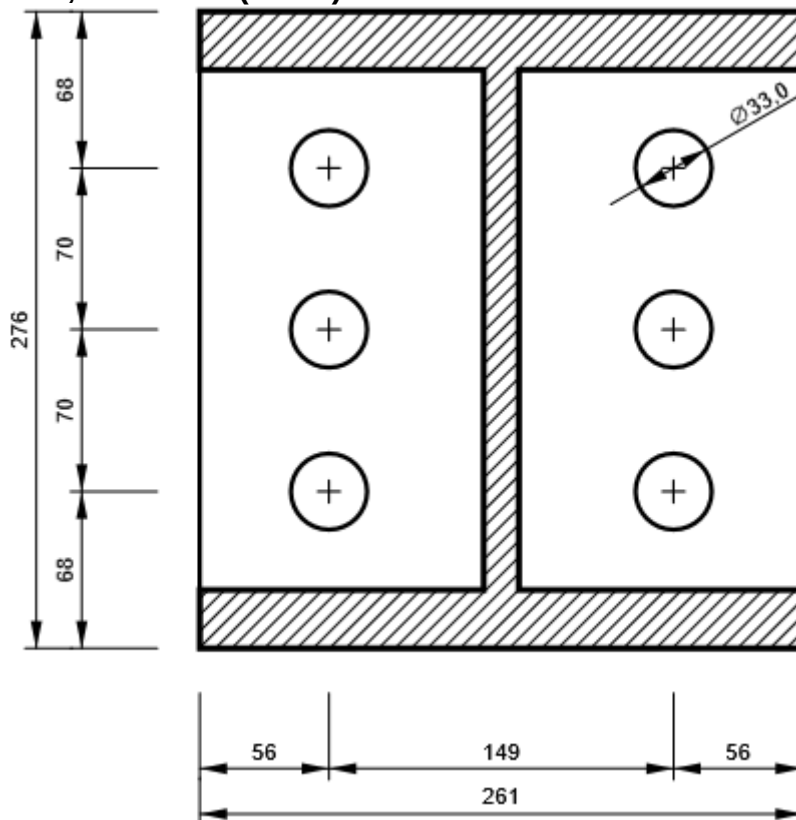
Bolts

Name	Grip length [mm]	Count
M30 10.9	50	6

Drawing

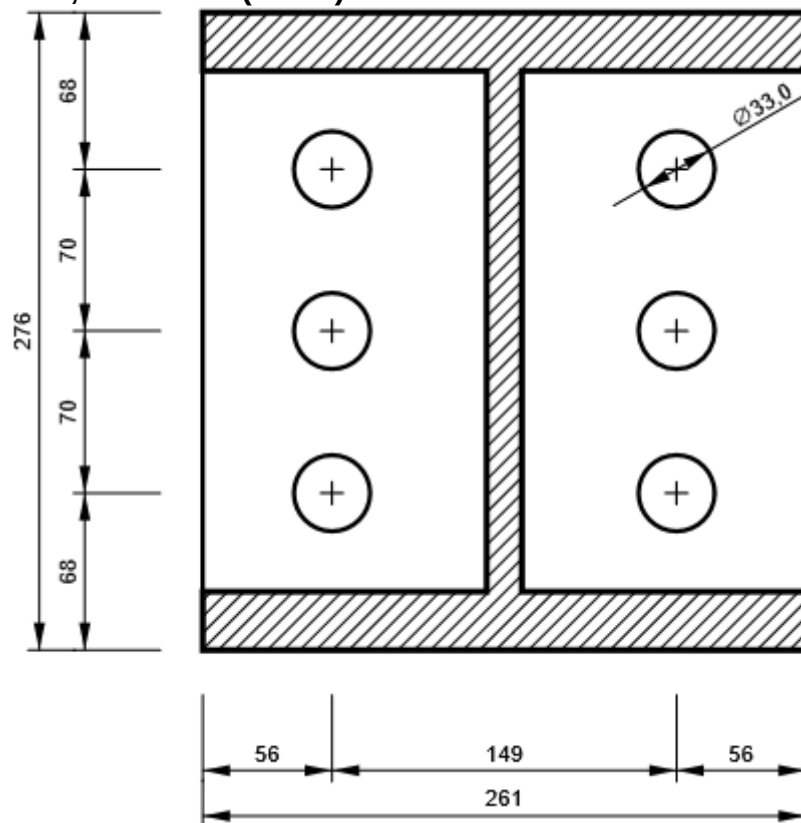
PP1 - 1

P25,0x276-261 (S 275)



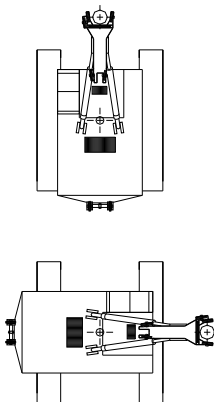
PP1 - 2

P25,0x276-261 (S 275)



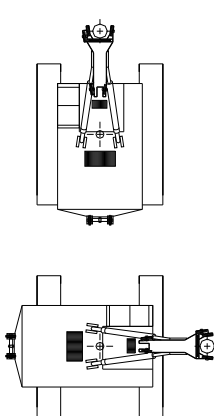
The user of this spreadsheet shall input data into the relevant yellow boxes on this worksheet and on all of the other relevant worksheets

Note: The disclaimer on the first worksheet applies to all tables in this workbook				
Rig Manufacturer :		CASAGRANDE SPA		Rig Type :
Completed by:		Ing. D. Verona		Operation mode:
		18/07/2016		Checked by:
				Ing. G. Peressini
Main Components :				
	Item	Mass (kg)	Moment arm (m)	Moment (kNm)
UPPER WORKS				0,00
	Mast Assembly + cathead + winch+ + articulation + clamps	4850	2,19	104,05
				0,00
				0,00
				0,00
	safety cages/guards	250	3,09	7,58
				0,00
				0,00
LOWER WORKS				0,00
	Upperstructure + undercarriage + + pump NG530 + lubricator	8010	-1,22	-95,94
				0,00
				0,00
				0,00
ROPE / KELLY / CHAIN SUSPENDED EQUIPMENT	Rotary T20 + casing driver + swivel	890	3,09	26,98
	tools (augers, rods...)			0,00
	rods	200	3,09	6,06
				0,00
	input to use properly the spreadsheet	0	0,00	0,00
COUNT.				0,00
				0,00
				0,00
OTHER	None	0	0,00	0,00
				0,00
				0,00
Main Components Totals				
UPPER WORKS		5100	2,23	111,63
LOWER WORKS		8010	-1,22	-95,94
ROPE / KELLY / CHAIN SUSPENDED EQUIPMENT		1090	3,09	33,04
COUNTERWEIGHT		0	0,00	0,00
OTHER		0	0,00	0,00
TOTAL		14200	0,35	48,73
Tracks				
Track bearing length (m)		2,28		
Track pad width (m)		0,4		
Distance between centrelines of tracks (m)		1,85		
Front Foot Pads				
Pad Bearing Area (m ²)		0,29	Actual Dimensions	stabilizers 2 x 240 x 600
Pad Maximum Loading (kN)		100,00	Actual Shape	rectangular
Pad Moment Arm (m)		1,68		
Rear Foot Pads				
Pad Bearing Area (m ²)		0,14	Actual Dimensions	dia 300mm
Pad Maximum Loading (kN)		100,00	Actual Shape	circular
Pad Moment Arm (m)		-1,70		
Forces				
Maximum Extraction Force (kN)		85,00		
Maximum Penetration Force (kN)		85,00		
Maximum Auxillary Force (kN)		20,00	Auxillary Force Moment Arm (m)	3,13
Note: The disclaimer on the first worksheet applies to all tables in this workbook				
		Notes No limits on working practice INPUT PAGE for STANDING - TRAVELLING - HANDING and PENETRATING		

CASAGRANDE SPA		Weight (kg) / Load (kgf)	Distance to CL rotation (m)	Horizontal moment (kNm)			Mode : Micropiles - W.R. 3,09 m							Handling		Transformation from triangular or trapizoidal to an equivalent rectangular pressure distribution under track maintaining the load centriod	
C6_US_1439												Max Track loading dimensions					
Lower Works	8010	-1,221	-96 <th>Relative Angle - Upper Body and Tracks (degrees)</th> <th>Bearing pressure at front of L.H. track (kN/m^2)</th> <th>Bearing pressure at rear of L.H. track (kN/m^2)</th> <th>Bearing pressure at front of R.H. track (kN/m^2)</th> <th>Bearing pressure at rear of R.H. track (kN/m^2)</th> <th>ecc (m)</th> <th>Bearing Len. (m)</th> <th>Equivalent L (m)</th> <th>Bearing Q (KPa)</th>	Relative Angle - Upper Body and Tracks (degrees)			Bearing pressure at front of L.H. track (kN/m^2)	Bearing pressure at rear of L.H. track (kN/m^2)	Bearing pressure at front of R.H. track (kN/m^2)	Bearing pressure at rear of R.H. track (kN/m^2)	ecc (m)	Bearing Len. (m)	Equivalent L (m)	Bearing Q (KPa)			
Counterweight	0	0,000	0	0			152	0	152	0	0,447	2,080	1,387	114			
Upper Works	5100	2,231	112	0			152	0	152	0	0,447	2,080	1,387	114			
Other	0	0,000	0	0			152	0	152	0	0,447	2,080	1,387	114			
Rope / Kelly / Chain Suspended	1090	3,090	33	0	152	0	152	0	0,447	2,080	1,387	114					
Machine Weight (kg)		14200	0,350	49			0	152	0	152	0	0,447	2,080	1,387	114		
					Force (kN)	Max. (kN)											
Auxiliary Line (kgf)		2039	3,125	63	20,00	20,00	Foot Pad Area (m2)	0	152	0	152	0	0,447	2,080	1,387	114	
Net Extraction Force (kgf)		0	3,090	0	0,00	85,00		0	152	0	152	0	0,447	2,080	1,387	114	
Net Penetration Force (kgf)		0	3,090	0	0,00	85,00		0	152	0	152	0	0,447	2,080	1,387	114	
Front Foot Pads Loading (kgf)		-3313	1,680	-55	32,50	100,00	0,288	Front Foot Pads Equivalent Length (m)and Bearing Pressure (kN/m^2)							0,720	113	
Rear Foot Pads Loading (kgf)		0	-1,700	0	0,00	100,00	0,140	Rear Foot Pads Equivalent Length (m)and Bearing Pressure (kN/m^2)							0,350	0	
Others		0	0,000	0	Track Bearing Length (m)		2,280	Maximum Equivalent Design Values							1,387	114	
Track Total Loading (kgf)		12926	0,447	57	Track Width Centres (m)		1,850										
					Track pad width (m)		0,400								BRE LOAD CASE (1 or 2)		1



Auxiliary Line Force OK
Extraction Force OK
Penetration Force OK
Front Foot Pad Force OK
Rear Foot Pad Force OK

CASAGRANDE SPA		Weight (kg) / Load (kgf)	Distance to CL rotation (m)	Horizontal moment (kNm)			Mode : Micropiles - W.R. 3,09 m Penetrating							Transformation from triangular or trapizoidal to an equivalent rectangular pressure distribution under track maintaining the load centriod		
C6_US_1439							Relative Angle - Upper Body and Tracks (degrees)	Bearing pressure at front of L.H. track (kN/m^2)	Bearing pressure at rear of L.H. track (kN/m^2)	Bearing pressure at front of R.H. track (kN/m^2)	Bearing pressure at rear of R.H. track (kN/m^2)	Max Track loading dimensions				Equivalent Bearing
												ecc (m)	Bearing Len. (m)	L (m)	Q (KPa)	
Lower Works		8010	-1,221	-96			0	0	320	0	320	-0,999	0,423	0,282	240	
Counterweight		0	0,000	0			0	0	320	0	320	-0,999	0,423	0,282	240	
Upper Works		5100	2,231	112			0	0	320	0	320	-0,999	0,423	0,282	240	
Other		0	0,000	0			0	0	320	0	320	-0,999	0,423	0,282	240	
Rope / Kelly / Chain Suspended		1090	3,090	33			0	0	320	0	320	-0,999	0,423	0,282	240	
Machine Weight (kg)		14200	0,350	49			0	0	320	0	320	-0,999	0,423	0,282	240	
				Force (kN)	Max. (kN)	Foot Pad Area (m2)										
Auxiliary Line (kgf)		0	3,125	0	0,00		20,00	0	0	320	0	320	-0,999	0,423	0,282	240
Net Extraction Force (kgf)		0	3,090	0	0,00		85,00	0	0	320	0	320	-0,999	0,423	0,282	240
Net Penetration Force (kgf)		-5269	3,090	-160	41,00		85,00	0	0	320	0	320	-0,999	0,423	0,282	240
Front Foot Pads Loading (kgf)		0	1,680	0	0,00	100,00	0,288	Front Foot Pads Equivalent Length (m)and Bearing Pressure (kN/m^2)						0,720	0	
Rear Foot Pads Loading (kgf)		-3415	-1,700	57	33,50	100,00	0,140	Rear Foot Pads Equivalent Length (m)and Bearing Pressure (kN/m^2)						0,350	239	
Others		0	0,000	0	Track Bearing Length (m)		2,280	Maximum Equivalent Design Values						0,282	240	
Track Total Loading (kgf)		5516	-0,999	-54	Track Width Centres (m)		1,850							BRE LOAD CASE (1 or 2)		
					Track pad width (m)		0,400							2		



Auxiliary Line Force OK
Extraction Force OK
Penetration Force OK
Front Foot Pad Force OK
Rear Foot Pad Force OK

with current circular shape dia 300mm

Note: The disclaimer on the first worksheet applies to all tables in this workbook

Rig Manufacturer :	CASAGRANDE SPA	Rig Type :	C6 sn. C6_US_1439
Completed by:	Ing. D. Verona	Operation mode:	Micropiles - W.R. 3,09 m
	18/07/2016	Checked by:	Ing. G. Peressini

Main Components :

	Item	Mass (kg)	Moment arm (m)	Moment (kNm)
UPPER WORKS				0,00
	Mast Assembly + cathead + winch+ + articulation + clamps	4850	2,19	104,05
				0,00
				0,00
				0,00
	safety cages/guards	250	3,09	7,58
				0,00
LOWER WORKS				0,00
	Upperstructure + undercarriage + + pump NG530 + lubricator	8010	-1,22	-95,94
				0,00
				0,00
				0,00
ROPE / KELLY / CHAIN SUSPENDED EQUIPMENT	Rotary T20 + casing driver + swivel tools (augers, rods...)	890	3,09	26,98
	rods	200	3,09	6,06
				0,00
	input to use properly the spreadsheet	0	0,00	0,00
COUNT.				0,00
				0,00
				0,00
OTHER	None	0	0,00	0,00
				0,00
				0,00

Main Components Totals

UPPER WORKS	5100	2,23	111,63
LOWER WORKS	8010	-1,22	-95,94
ROPE / KELLY / CHAIN SUSPENDED EQUIPMENT	1090	3,09	33,04
COUNTERWEIGHT	0	0,00	0,00
OTHER	0	0,00	0,00
TOTAL	14200	0,35	48,73

Tracks

Track bearing length (m)	2,28	
Track pad width (m)	0,4	
Distance between centrelines of tracks (m)	1,85	

Front Foot Pads

Pad Bearing Area (m ²)	0,50	Actual Dimensions	shape 350 x 370
Pad Maximum Loading (kN)	100,00	Actual Shape	rectangular
Pad Moment Arm (m)	2,71		

Rear Foot Pads

Pad Bearing Area (m ²)	0,14	Actual Dimensions	dia 300mm
Pad Maximum Loading (kN)	100,00	Actual Shape	circular
Pad Moment Arm (m)	-1,70		

Forces

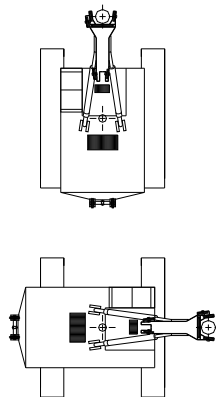
Maximum Extraction Force (kN)	85,00		
Maximum Penetration Force (kN)	85,00		
Maximum Auxillary Force (kN)	20,00	Auxillary Force Moment Arm (m)	3,13

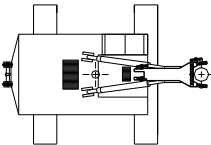
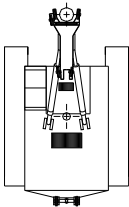
Notes

No limits on working practice
INPUT PAGE for EXTRACTING

Note: The disclaimer on the first worksheet applies to all tables in this workbook

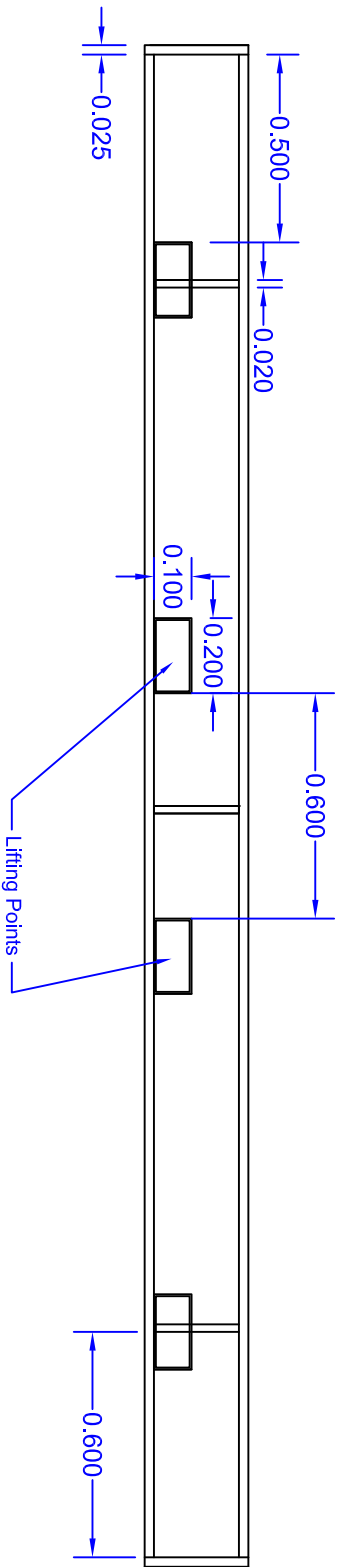
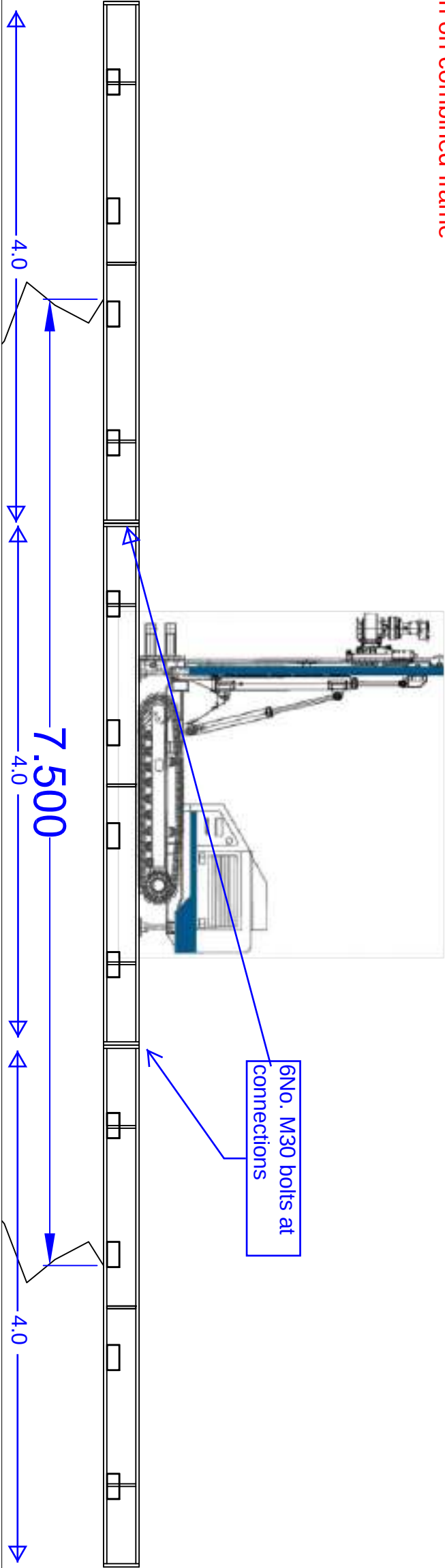


CASAGRANDE SPA		Weight (kg) / Load (kgf)	Distance to CL rotation (m)	Horizontal moment (kNm)			Mode : Micropiles - W.R. 3,09 m Extracting							Transformation from triangular or trapizoidal to an equivalent rectangular pressure distribution under track maintaining the load centriod		
C6_US_1439							Relative Angle - Upper Body and Tracks (degrees)	Bearing pressure at front of L.H. track (kN/m^2)	Bearing pressure at rear of L.H. track (kN/m^2)	Bearing pressure at front of R.H. track (kN/m^2)	Bearing pressure at rear of R.H. track (kN/m^2)	Max Track loading dimensions				Equivalent Bearing
													ecc (m)	Bearing Len. (m)	L (m)	Q (KPa)
Lower Works		8010	-1,221	-96			0	200	0	200	0	0,557	1,748	1,165	150	
Counterweight		0	0,000	0			0	200	0	200	0	0,557	1,748	1,165	150	
Upper Works		5100	2,231	112			0	200	0	200	0	0,557	1,748	1,165	150	
Other		0	0,000	0			0	200	0	200	0	0,557	1,748	1,165	150	
Rope / Kelly / Chain Suspended		1090	3,090	33			0	200	0	200	0	0,557	1,748	1,165	150	
Machine Weight (kg)		14200	0,350	49			0	200	0	200	0	0,557	1,748	1,165	150	
					Force (kN)	Max. (kN)		0	200	0	200	0	0,557	1,748	1,165	150
Auxiliary Line (kgf)		0	3,125	0	0,00	20,00	Foot Pad Area (m2)	0	200	0	200	0	0,557	1,748	1,165	150
Net Extraction Force (kgf)		7575	3,090	230	85,00	85,00		0	200	0	200	0	0,557	1,748	1,165	150
Net Penetration Force (kgf)		0	3,090	0	0,00	85,00		0	200	0	200	0	0,557	1,748	1,165	150
Front Foot Pads Loading (kgf)		-7543	2,710	-201	74,00	100,00	0,500	Front Foot Pads Equivalent Length (m)and Bearing Pressure (kN/m^2)					1,250	148		
Rear Foot Pads Loading (kgf)		0	-1,700	0	0,00	100,00	0,140	Rear Foot Pads Equivalent Length (m)and Bearing Pressure (kN/m^2)					0,350	0		
Others		0	0,000	0	Track Bearing Length (m)		2,280	Maximum Equivalent Design Values					1,165	150		
Track Total Loading (kgf)		14231	0,557	78	Track Width Centres (m)		1,850									
					Track pad width (m)		0,400									
												BRE LOAD CASE (1 or 2)		2		

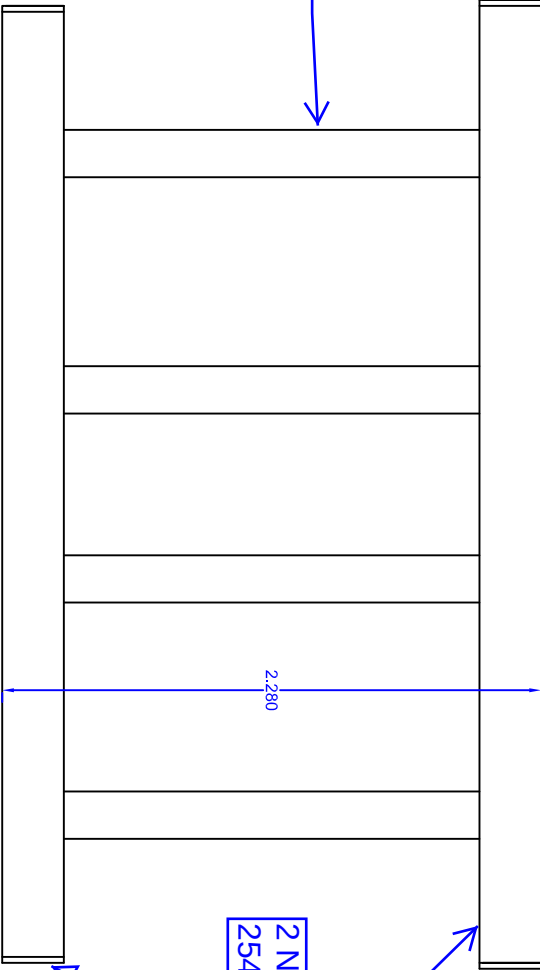


Auxiliary Line Force OK
Extraction Force OK
Penetration Force OK
Front Foot Pad Force OK
Rear Foot Pad Force OK

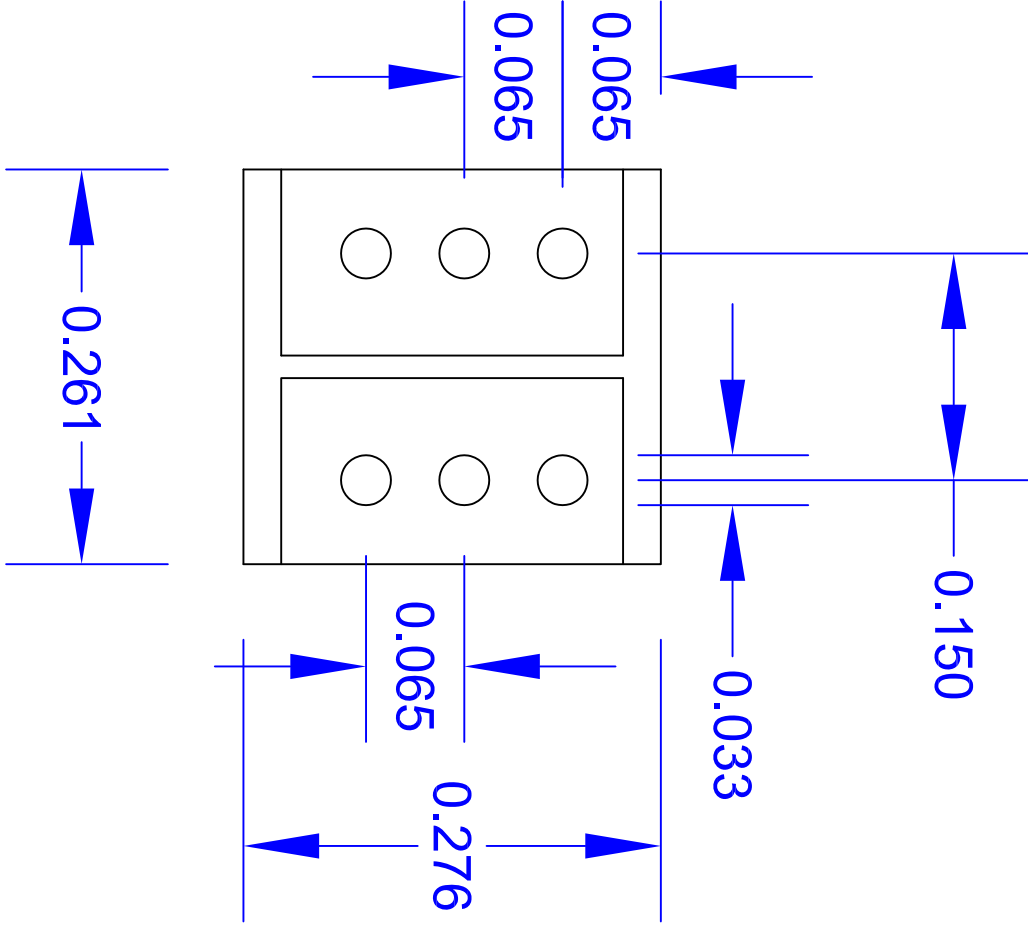
Elevation on combined frame



Individual Frame (Elevation)



Individual Frame (Plan)



Frame End Connection (detail)

Van Elle

Mine Shaft Frame
VE_SK_20.03.1_C1
Date: 03.04.20
Sketch by: LY

- Notes:**
1. Frame suitable for a Cassagrande C6 drilling rig only. Max free span of frame: 7.5m
 2. Ground support to base of frame and access to and from frame provided by others
 3. Edge protection by others.

APPENDIX C





The Coal
Authority

Permit to Enter or Disturb Coal Authority Interests

Permit 25705

Name and Address of Permit Holder:

Harworth Estates
Advantage House
Poplar Way
Catcliffe
Rotherham
S60 5TR

Site Location:

Former Tarmac Site
Stopes Road
Little Lever
Bolton
BL3 1NP

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

Treatment of three mine entries by pressure grouting (376407-006, 007, 008)

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
- If any recorded mine entries or any other unrecorded mine entries are encountered/disturbed during your proposed works you are required to provide the Authority with the results of your findings together with the proposed specification for any further treatment and capping for comment and approval, prior to treatment workings commencing.

Signed: _____

Helen Day

Granted Date: _____

27 September 2022

For and on behalf of The Coal Authority

Nominated Representative: Helen Day, Permitting Manager;

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

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

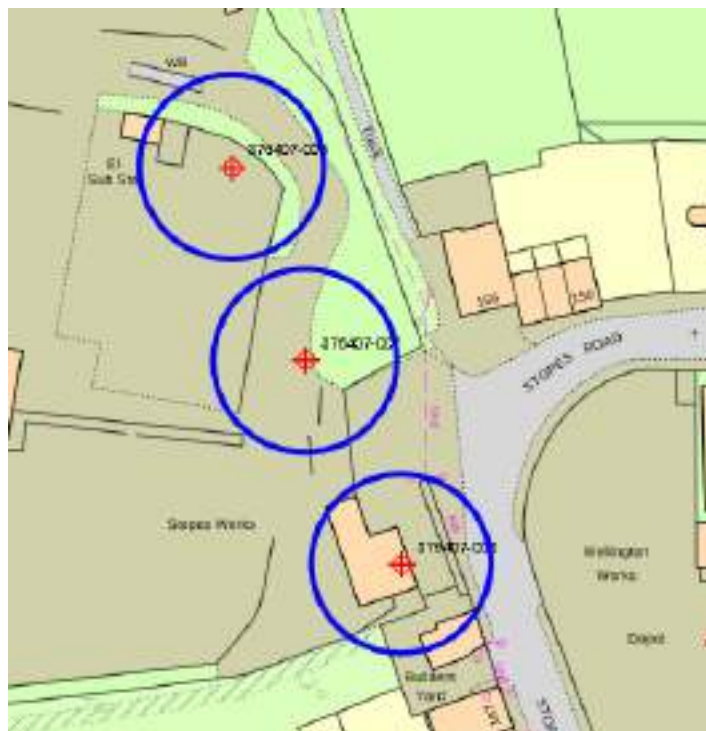


The Coal
Authority

Granted Permit Boundary

Permit Ref: 25705

Permit Boundary:



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APPENDIX D



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

Site: STOPS RD, UTTE LGVOR			Sheet: 1 of 1		
Rig: SM14 (1195)			Date: 3 RD 4 TH 10 / 22		
Hours on Site:			Travelling Time:		
BH	Depth	Strata Description	BH	Depth	Strata Description
7	30 AM	ON SITE MON 3/10/22			
		UNLOADED PLANT			
		AIR HIRE PLANT.			
		V.6 PLATFORM READY 16:0PM			
		BEGAN SETTING UP			
4	10/22	SOT UP QPWT PLAN			
		SHAFT PLATFORM IN PLACE			
		RIG SOT UP.			
		SHAFT OOB.			

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

I confirm this is a true record.
 Van Elle operative name D. TAYLOR
 Drill hole Nos. checked Yes ☒ No ☐
 Hole Depth checked Yes ☒ No ☐
 SIGNED D. Taylor
 Dated _____

Client's Name E. HARGREAVES
 Client's position VHE PM
 Signature [Signature]
 Dated 7/10/22



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

Site: STOPS RD, LITING 10/22			Sheet: 1 of 1				
Rig: SM 14 1195			Crew: J. MITCHELL, M. TAYLOR				
Date: 5/10/22							
Hours on Site:			Travelling Time:				
BH	Depth	Strata Description	BH	Depth	Strata Description		
13.0PM PERMISSION TO DRILL GIVEN							
BH 1 MING SHAFT 006.							
	0-6.0	HARD GROUND					
	6-7.0	SOFT GROUND LOSS OF RUSH			NO DRILL FLUSH AFTER 6MTR		
	7-7.30	HARD DRILLING					
	7.30-8.0	VERY SOFT DRILLING					
	8.0-50.0	SOFT DRILLING / BROKEN					
		OCCASIONAL FIRM BANDS					
	50-80.0	VERY SOFT OCCASIONAL FIRM BANDS AND BROKEN					
	80-100.0	VERY SOFT / TO BROKEN GROUND.					
	Bit	COMPLETE.					
Casing/Water Level Details							
BH	Casing	Water	Totals	BH	Drill	Case	Install
	Dia	Depth	Strike	Rise	Sealed	Today	
						1	100.0
						Previous	100.0
						To Date	100.0
I confirm this is a true record.			Client's Name: E. HARGREAVES				
Van Elle operative name: J. TAYLOR			Client's position: VUE PM				
Drill hole Nos. checked: Yes ☒ No ☐			Signature: [Signature]				
Hole Depth checked: Yes ☒ No ☐			Dated: 7/10/22				
SIGNED: [Signature]							
Dated: 5/10/22							

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				
							1	20.0	20.0	
						Previous	1	100.0	100.0	
						To Date	1	120.0	120.0	

I confirm this is a true record.
 Van Elle operative name D. Taylor

Drill hole Nos. checked Yes ☒ No ☐
 Hole Depth checked Yes ☒ No ☐
 SIGNED D. Taylor
 Dated 18/10/22

Client's Name R. HARGREAVES
 Client's position VPE PROJECT MANAGER
 Signature [Signature]
 Dated 19/10/22

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	1	100' 0"	100' 0"	/
						Previous	1	120' 0"	120' 0"	
						To Date	2	220' 0"	220' 0"	

Client's Name R. HADGEWAYS
 Client's position VPE SITE MANAGER
 Signature [Signature]
 Dated 8/11/22

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]

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	1	100.0	100.0	/
						Previous	3	320.0	320.0	
						To Date	4	420.0	420.0	

Dated 8/11/22

8/11/22

APPENDIX E



PS3426 - Stopes Road, Little Lever, Bolton												
VE221883												
Grouting Record												
Borehole BH1												
Date:		Casing m:		Grout Tonnes:		Flow Test mm:		Cube Strength N/mm²:				
	Start	Finish	Daily	Total				No.	7 Day	10 Day	14 Day	28 Day
06-Oct-22	100	100	70.40	70.40		360						
07-Oct-22	100	100	14.85	85.25		350		4		1.3	1.4	
10-Oct-22	100	100	49.50	134.75		360						
11-Oct-22	100	100	62.70	197.45		370		4				
12-Oct-22	100	100	81.13	278.58		375	380					
13-Oct-22	100	100	60.50	339.08		375	350	4	1.3 & 0.9			2.2 & 2.0
14-Oct-22	100	100	60.50	399.58		350	355					
17-Oct-22	100	100	60.50	460.08		365	360					
18-Oct-22	100	100	60.50	520.58				4	1.0			2.6
19-Oct-22	100	100	60.50	581.08		370	350					
20-Oct-22	100	100	35.75	616.83		355		4				1.5
	Grouting suspended on Client's instruction											
24-Oct-22	100	100	6.05	622.88								
26-Oct-22	100	82	60.50	683.38		365	350				2.3	2.7
27-Oct-22	82	62	38.50	721.88		370	355					
	62	44	22.00	743.88								
28-Oct-22	44	28	60.50	804.38		370	365	4				3.5
31-Oct-22	28	20	60.50	864.88		375	370					
01-Nov-22	20	18	60.50	925.38		375	355	4	1.1		1.5	
02-Nov-22	18	8	55.00	980.38		375	355					
				980.38	980.38							
Borehole BH2												
03-Nov-22	100	78	6.74	6.74		360		4			3.0	
03-Nov-22	78	54	1.65	8.39								
03-Nov-22	52	30	2.06	10.45								
03-Nov-22	28	8	1.65	12.10								
				12.10	992.48							
Borehole BH3												
04-Nov-22	100	76	21.18	21.18		370		4	1.1			
04-Nov-22	74	52	2.20	23.38								
04-Nov-22	50	28	2.20	25.58								
04-Nov-22	28	18	2.50	28.08								
				28.08	1020.55							
Borehole BH4												
07-Nov-22	100	76	4.13	4.13		365		4	1.4		1.9	
07-Nov-22	74	52	1.38	5.50								
07-Nov-22	50	28	1.38	6.88								
07-Nov-22	28	18	1.10	7.98								
				7.98	1028.53							

APPENDIX F



CONCRETE TEST CUBE REPORT



Date: 20/10/2022

Report no: WAB51371580_01

Client: VAN ELLE LTD

Scheme: STOPES ROAD, LITTLE LEVER, BOLTON, BL3 1NR

Contract no: 51071663

Request Sheet No.	Lab Ref.	Client Ref.	Date Made	Time Made	Date Received in Laboratory	Date Tested	Age days	Dimensions mm	Density kg/m ³	Failure Load kN	Compressive Strength N/mm ²	Specified Strength N/mm ²
NOR013379	51371580	07/10/2022 1	07/10/2022		14/10/2022	17/10/2022	10	100x100x100	1430	12.9	1.3	not given
Location: MING SHAFT 006												
Mix details: 10-1 F.F.A - 0.F.C												

The following apply unless otherwise stated under Remarks.

- 1) Laboratory curing range 18°-22°C.
- 2) Cube appearance as received satisfactory.
- 3) Test moisture condition and density saturated.
- 4) Cube failure normal. Concrete appearance normal.
- 5) Volume determined by measurement or designated size. Any fins removed by abrasive stone.
- 6) Laboratory curing conditions cannot be assured during tank cleaning.
- 7) Certificate of sampling not received. Certificate of making and curing not received.
- 8) Rate of Loading 0.4 to 0.8 N/mm² per sec.

Certified that curing of the hardened concrete in the laboratory and testing for shape, dimensions, density and compressive strength was carried out in accordance with BS EN 12390-1:2021, BS EN 12390-2:2019, BS EN 12390-7:2019 and BS 12390-3:2019

Air Content determined in accordance with BS EN 12350-7:2019, Slump test carried out in accordance with BS EN 12350-2:2019

Signed

Magfur Alauddin - Concrete Laboratory Manager

for and on behalf of SOCOTEC UK Limited

Issued to: VAN ELLE LTD

The results relate to the items tested only. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

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29 Rufford Court
Woolston
Warrington
WA1 4RF
United Kingdom
Tel: +44(0) 1925 286220

CONCRETE TEST CUBE REPORT



Date: 21/10/2022

Report no: WAB51371584_01

Client: VAN ELLE LTD

Scheme: STOPES ROAD, LITTLE LEVER, BOLTON, BL3 1NR

Contract no: 51071663

Request Sheet No.	Lab Ref.	Client Ref.	Date Made	Time Made	Date Received in Laboratory	Date Tested	Age days	Dimensions mm	Density kg/m ³	Failure Load kN	Compressive Strength N/mm ²	Specified Strength N/mm ²
NOR013380	51371584	13/10/2022 1	13/10/2022		16/10/2022	20/10/2022	7	100x100x100	1520	12.7	1.3	not given
Location: MINE SHAFT 006												
Mix details: 8-2-1 F.F.A SAND - 0.P.C												

The following apply unless otherwise stated under Remarks.

- 1) Laboratory curing range 18°-22°C.
- 2) Cube appearance as received satisfactory.
- 3) Test moisture condition and density saturated.
- 4) Cube failure normal. Concrete appearance normal.
- 5) Volume determined by measurement or designated size. Any fins removed by abrasive stone.
- 6) Laboratory curing conditions cannot be assured during tank cleaning.
- 7) Certificate of sampling not received. Certificate of making and curing not received.
- 8) Rate of Loading 0.4 to 0.8 N/mm² per sec.

Certified that curing of the hardened concrete in the laboratory and testing for shape, dimensions, density and compressive strength was carried out in accordance with BS EN 12390-1:2021, BS EN 12390-2:2019, BS EN 12390-7:2019 and BS 12390-3:2019
Air Content determined in accordance with BS EN 12350-7:2019, Slump test carried out in accordance with BS EN 12350-2:2019

Signed

Magfur Alauddin - Concrete Laboratory Manager

for and on behalf of SOCOTEC UK Limited

Issued to: VAN ELLE LTD

The results relate to the items tested only. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
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WA1 4RF
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Tel: +44(0) 1925 286220

CONCRETE TEST CUBE REPORT



Date: 21/10/2022

Report no: WAB51373027_01

Client: VAN ELLE LTD

Scheme: STOPES ROAD, LITTLE LEVER, BOLTON, BL3 1NR

Contract no: 51071663

Request Sheet No.	Lab Ref.	Client Ref.	Date Made	Time Made	Date Received in Laboratory	Date Tested	Age days	Dimensions mm	Density kg/m ³	Failure Load kN	Compressive Strength N/mm ²	Specified Strength N/mm ²
NOR013381	51373027	MINE006A	13/10/2022		19/10/2022	20/10/2022	7	100x100x100	1470	8.6	0.9	not given
Location: MINE SHAFT 006												
Mix details: 8.2.1 PFA SAND O.P.C												
Remarks: Degree of saturation uncertain. Load below Calibration Parameters.												

The following apply unless otherwise stated under Remarks.

- 1) Laboratory curing range 18°-22°C.
- 2) Cube appearance as received satisfactory.
- 3) Test moisture condition and density saturated.
- 4) Cube failure normal. Concrete appearance normal.
- 5) Volume determined by measurement or designated size. Any fins removed by abrasive stone.
- 6) Laboratory curing conditions cannot be assured during tank cleaning.
- 7) Certificate of sampling not received. Certificate of making and curing not received.
- 8) Rate of Loading 0.4 to 0.8 N/mm² per sec.

Certified that curing of the hardened concrete in the laboratory and testing for shape, dimensions, density and compressive strength was carried out in accordance with BS EN 12390-1:2021, BS EN 12390-2:2019, BS EN 12390-7:2019 and BS 12390-3:2019
Air Content determined in accordance with BS EN 12350-7:2019, Slump test carried out in accordance with BS EN 12350-2:2019

Signed

Magfur Alauddin - Concrete Laboratory Manager

for and on behalf of SOCOTEC UK Limited

Issued to: VAN ELLE LTD

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Warrington
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CONCRETE TEST CUBE REPORT



Date: 24/10/2022

Report no: WAB51371581_01

Client: VAN ELLE LTD

Scheme: STOPES ROAD, LITTLE LEVER, BOLTON, BL3 1NR

Contract no: 51071663

Request Sheet No.	Lab Ref.	Client Ref.	Date Made	Time Made	Date Received in Laboratory	Date Tested	Age days	Dimensions mm	Density kg/m ³	Failure Load kN	Compressive Strength N/mm ²	Specified Strength N/mm ²
NOR013379	51371581	07/10/2022 2	07/10/2022		14/10/2022	21/10/2022	14	100x100x100	1410	13.8	1.4	not given
Location: MING SHAFT 006												
Mix details: 10-1 F.F.A - 0.F.C												

The following apply unless otherwise stated under Remarks.

- 1) Laboratory curing range 18°-22°C.
- 2) Cube appearance as received satisfactory.
- 3) Test moisture condition and density saturated.
- 4) Cube failure normal. Concrete appearance normal.
- 5) Volume determined by measurement or designated size. Any fins removed by abrasive stone.
- 6) Laboratory curing conditions cannot be assured during tank cleaning.
- 7) Certificate of sampling not received. Certificate of making and curing not received.
- 8) Rate of Loading 0.4 to 0.8 N/mm² per sec.

Certified that curing of the hardened concrete in the laboratory and testing for shape, dimensions, density and compressive strength was carried out in accordance with BS EN 12390-1:2021, BS EN 12390-2:2019, BS EN 12390-7:2019 and BS 12390-3:2019

Air Content determined in accordance with BS EN 12350-7:2019, Slump test carried out in accordance with BS EN 12350-2:2019

Signed

Magfur Alauddin - Concrete Laboratory Manager

for and on behalf of SOCOTEC UK Limited

Issued to: VAN ELLE LTD

The results relate to the items tested only. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

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Tel: +44(0) 1925 286220

CONCRETE TEST CUBE REPORT



Date: 26/10/2022

Report no: WAB51373031_01

Client: VAN ELLE LTD

Scheme: STOPES ROAD, LITTLE LEVER, BOLTON, BL3 1NR

Contract no: 51071663

Request Sheet No.	Lab Ref.	Client Ref.	Date Made	Time Made	Date Received in Laboratory	Date Tested	Age days	Dimensions mm	Density kg/m ³	Failure Load kN	Compressive Strength N/mm ²	Specified Strength N/mm ²
NOR013382	51373031	MINE 006A	18/10/2022		19/10/2022	25/10/2022	7	100x100x100	1360	9.6	1.0	not given
Location: MINE SHAFT 006												
Mix details: 8.2.1 PFA SAND O.P.C												
Remarks: Load below Calibration Parameters.												

The following apply unless otherwise stated under Remarks.

- 1) Laboratory curing range 18°-22°C.
- 2) Cube appearance as received satisfactory.
- 3) Test moisture condition and density saturated.
- 4) Cube failure normal. Concrete appearance normal.
- 5) Volume determined by measurement or designated size. Any fins removed by abrasive stone.
- 6) Laboratory curing conditions cannot be assured during tank cleaning.
- 7) Certificate of sampling not received. Certificate of making and curing not received.
- 8) Rate of Loading 0.4 to 0.8 N/mm² per sec.

Certified that curing of the hardened concrete in the laboratory and testing for shape, dimensions, density and compressive strength was carried out in accordance with BS EN 12390-1:2021, BS EN 12390-2:2019, BS EN 12390-7:2019 and BS 12390-3:2019
Air Content determined in accordance with BS EN 12350-7:2019, Slump test carried out in accordance with BS EN 12350-2:2019

Signed

Magfur Alauddin - Concrete Laboratory Manager

for and on behalf of SOCOTEC UK Limited

Issued to: VAN ELLE LTD

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United Kingdom
Tel: +44(0) 1925 286220

CONCRETE TEST CUBE REPORT



Date: 10/11/2022

Report no: WAB51371586_01

Client: VAN ELLE LTD

Scheme: STOPES ROAD, LITTLE LEVER, BOLTON, BL3 1NR

Contract no: 51071663

Request Sheet No.	Lab Ref.	Client Ref.	Date Made	Time Made	Date Received in Laboratory	Date Tested	Age days	Dimensions mm	Density kg/m ³	Failure Load kN	Compressive Strength N/mm ²	Specified Strength N/mm ²
NOR013380	51371586	13/10/2022 3	13/10/2022		16/10/2022	10/11/2022	28	100x100x100	1530	22.3	2.2	not given
Location: MINE SHAFT 006												
Mix details: 8-2-1 F.F.A SAND - 0.P.C												

The following apply unless otherwise stated under Remarks.

- 1) Laboratory curing range 18°-22°C.
- 2) Cube appearance as received satisfactory.
- 3) Test moisture condition and density saturated.
- 4) Cube failure normal. Concrete appearance normal.
- 5) Volume determined by measurement or designated size. Any fins removed by abrasive stone.
- 6) Laboratory curing conditions cannot be assured during tank cleaning.
- 7) Certificate of sampling not received. Certificate of making and curing not received.
- 8) Rate of Loading 0.4 to 0.8 N/mm² per sec.

Certified that curing of the hardened concrete in the laboratory and testing for shape, dimensions, density and compressive strength was carried out in accordance with BS EN 12390-1:2021, BS EN 12390-2:2019, BS EN 12390-7:2019 and BS 12390-3:2019
Air Content determined in accordance with BS EN 12350-7:2019, Slump test carried out in accordance with BS EN 12350-2:2019

Signed

Julie Schofield - Concrete Section Manager

for and on behalf of SOCOTEC UK Limited

Issued to: VAN ELLE LTD

29 Rufford Court
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United Kingdom
Tel: +44(0) 1925 286220

CONCRETE TEST CUBE REPORT



Date: 10/11/2022

Report no: WAB51373029_01

Client: VAN ELLE LTD

Scheme: STOPEs ROAD, LITTLE LEVER, BOLTON, BL3 1NR

Contract no: 51071663

Request Sheet No.	Lab Ref.	Client Ref.	Date Made	Time Made	Date Received in Laboratory	Date Tested	Age days	Dimensions mm	Density kg/m ³	Failure Load kN	Compressive Strength N/mm ²	Specified Strength N/mm ²
NOR013381	51373029	MINE006C	13/10/2022		19/10/2022	10/11/2022	28	100x100x100	1470	19.8	2.0	not given
Location: MINE SHAFT 006												
Mix details: 8.2.1 PFA SAND O.P.C												

The following apply unless otherwise stated under Remarks.

- 1) Laboratory curing range 18°-22°C.
- 2) Cube appearance as received satisfactory.
- 3) Test moisture condition and density saturated.
- 4) Cube failure normal. Concrete appearance normal.
- 5) Volume determined by measurement or designated size. Any fins removed by abrasive stone.
- 6) Laboratory curing conditions cannot be assured during tank cleaning.
- 7) Certificate of sampling not received. Certificate of making and curing not received.
- 8) Rate of Loading 0.4 to 0.8 N/mm² per sec.

Certified that curing of the hardened concrete in the laboratory and testing for shape, dimensions, density and compressive strength was carried out in accordance with BS EN 12390-1:2021, BS EN 12390-2:2019, BS EN 12390-7:2019 and BS 12390-3:2019
Air Content determined in accordance with BS EN 12350-7:2019, Slump test carried out in accordance with BS EN 12350-2:2019

Signed

Julie Schofield - Concrete Section Manager

for and on behalf of SOCOTEC UK Limited

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CONCRETE TEST CUBE REPORT



Date: 10/11/2022

Report no: WAB51378041_01

Client: VAN ELLE LTD

Scheme: STOPES ROAD, LITTLE LEVER, BOLTON, BL3 1NR

Contract no: 51071663

Request Sheet No.	Lab Ref.	Client Ref.	Date Made	Time Made	Date Received in Laboratory	Date Tested	Age days	Dimensions mm	Density kg/m ³	Failure Load kN	Compressive Strength N/mm ²	Specified Strength N/mm ²
NOR013386	51378041	SHAFT 006	01/11/2022		03/11/2022	08/11/2022	7	100x100x100	1530	10.7	1.1	not given
Location: MINE SHAFT 006												
Mix details: 8.2.1 P.F.A SAID- O.P.C												

The following apply unless otherwise stated under Remarks.

- 1) Laboratory curing range 18°-22°C.
- 2) Cube appearance as received satisfactory.
- 3) Test moisture condition and density saturated.
- 4) Cube failure normal. Concrete appearance normal.
- 5) Volume determined by measurement or designated size. Any fins removed by abrasive stone.
- 6) Laboratory curing conditions cannot be assured during tank cleaning.
- 7) Certificate of sampling not received. Certificate of making and curing not received.
- 8) Rate of Loading 0.4 to 0.8 N/mm² per sec.

Certified that curing of the hardened concrete in the laboratory and testing for shape, dimensions, density and compressive strength was carried out in accordance with BS EN 12390-1:2021, BS EN 12390-2:2019, BS EN 12390-7:2019 and BS 12390-3:2019
Air Content determined in accordance with BS EN 12350-7:2019, Slump test carried out in accordance with BS EN 12350-2:2019

Signed

Julie Schofield - Concrete Section Manager

for and on behalf of SOCOTEC UK Limited

Issued to: VAN ELLE LTD

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Warrington
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United Kingdom
Tel: +44(0) 1925 286220

CONCRETE TEST CUBE REPORT



Date: 11/11/2022

Report no: WAB51378038_01

Client: VAN ELLE LTD

Scheme: STOPES ROAD, LITTLE LEVER, BOLTON, BL3 1NR

Contract no: 51071663

Request Sheet No.	Lab Ref.	Client Ref.	Date Made	Time Made	Date Received in Laboratory	Date Tested	Age days	Dimensions mm	Density kg/m ³	Failure Load kN	Compressive Strength N/mm ²	Specified Strength N/mm ²
NOR013385	51378038	SHAFT 007	28/10/2022		03/11/2022	11/11/2022	14	100x100x100	1570	29.9	3.0	not given
Location: MINE SHAFT 006												
Mix details: 8.2.1 P.F.A SAID- O.P.C												

The following apply unless otherwise stated under Remarks.

- 1) Laboratory curing range 18°-22°C.
- 2) Cube appearance as received satisfactory.
- 3) Test moisture condition and density saturated.
- 4) Cube failure normal. Concrete appearance normal.
- 5) Volume determined by measurement or designated size. Any fins removed by abrasive stone.
- 6) Laboratory curing conditions cannot be assured during tank cleaning.
- 7) Certificate of sampling not received. Certificate of making and curing not received.
- 8) Rate of Loading 0.4 to 0.8 N/mm² per sec.

Certified that curing of the hardened concrete in the laboratory and testing for shape, dimensions, density and compressive strength was carried out in accordance with BS EN 12390-1:2021, BS EN 12390-2:2019, BS EN 12390-7:2019 and BS 12390-3:2019
Air Content determined in accordance with BS EN 12350-7:2019, Slump test carried out in accordance with BS EN 12350-2:2019

Signed

Julie Schofield - Concrete Section Manager

for and on behalf of SOCOTEC UK Limited

Issued to: VAN ELLE LTD

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United Kingdom
Tel: +44(0) 1925 286220

CONCRETE TEST CUBE REPORT



Date: 11/11/2022

Report no: WAB51379722_01

Client: VAN ELLE LTD

Scheme: STOPEs ROAD, LITTLE LEVER, BOLTON, BL3 1NR

Contract no: 51071663

Request Sheet No.	Lab Ref.	Client Ref.	Date Made	Time Made	Date Received in Laboratory	Date Tested	Age days	Dimensions mm	Density kg/m ³	Failure Load kN	Compressive Strength N/mm ²	Specified Strength N/mm ²
NOR0133898	51379722	SHAFT 006	04/11/2022		09/11/2022	11/11/2022	7	100x100x100	1560	11.2	1.1	not given
Location: SHAFT 006												
Mix details: 8.2.1 P.F.A SAID- O.P.C												
Remarks: Degree of saturation uncertain.												

The following apply unless otherwise stated under Remarks.

- 1) Laboratory curing range 18°-22°C.
- 2) Cube appearance as received satisfactory.
- 3) Test moisture condition and density saturated.
- 4) Cube failure normal. Concrete appearance normal.
- 5) Volume determined by measurement or designated size. Any fins removed by abrasive stone.
- 6) Laboratory curing conditions cannot be assured during tank cleaning.
- 7) Certificate of sampling not received. Certificate of making and curing not received.
- 8) Rate of Loading 0.4 to 0.8 N/mm² per sec.

Certified that curing of the hardened concrete in the laboratory and testing for shape, dimensions, density and compressive strength was carried out in accordance with BS EN 12390-1:2021, BS EN 12390-2:2019, BS EN 12390-7:2019 and BS 12390-3:2019
Air Content determined in accordance with BS EN 12350-7:2019, Slump test carried out in accordance with BS EN 12350-2:2019

Signed

Julie Schofield - Concrete Section Manager

for and on behalf of SOCOTEC UK Limited

Issued to: VAN ELLE LTD

29 Rufford Court
Woolston
Warrington
WA1 4RF
United Kingdom
Tel: +44(0) 1925 286220

CONCRETE TEST CUBE REPORT



Date: 14/11/2022

Report no: WAB51378034_01

Client: VAN ELLE LTD

Scheme: STOPES ROAD, LITTLE LEVER, BOLTON, BL3 1NR

Contract no: 51071663

Request Sheet No.	Lab Ref.	Client Ref.	Date Made	Time Made	Date Received in Laboratory	Date Tested	Age days	Dimensions mm	Density kg/m ³	Failure Load kN	Compressive Strength N/mm ²	Specified Strength N/mm ²
NOR013384	51378034	SHAFT 007	26/10/2022		03/11/2022	09/11/2022	14	100x100x100	1520	23.1	2.3	not given
Location: MING SHAFT 006												
Mix details: 8.2.1 P.F.A SAID- O.P.C												

The following apply unless otherwise stated under Remarks.

- 1) Laboratory curing range 18°-22°C.
- 2) Cube appearance as received satisfactory.
- 3) Test moisture condition and density saturated.
- 4) Cube failure normal. Concrete appearance normal.
- 5) Volume determined by measurement or designated size. Any fins removed by abrasive stone.
- 6) Laboratory curing conditions cannot be assured during tank cleaning.
- 7) Certificate of sampling not received. Certificate of making and curing not received.
- 8) Rate of Loading 0.4 to 0.8 N/mm² per sec.

Certified that curing of the hardened concrete in the laboratory and testing for shape, dimensions, density and compressive strength was carried out in accordance with BS EN 12390-1:2021, BS EN 12390-2:2019, BS EN 12390-7:2019 and BS 12390-3:2019
Air Content determined in accordance with BS EN 12350-7:2019, Slump test carried out in accordance with BS EN 12350-2:2019

Signed

Magfur Alauddin - Concrete Laboratory Manager

for and on behalf of SOCOTEC UK Limited

Issued to: VAN ELLE LTD

29 Rufford Court
Woolston
Warrington
WA1 4RF
United Kingdom
Tel: +44(0) 1925 286220

CONCRETE TEST CUBE REPORT



Date: 14/11/2022

Report no: WAB51379726_01

Client: VAN ELLE LTD

Scheme: STOPEs ROAD, LITTLE LEVER, BOLTON, BL3 1NR

Contract no: 51071663

Request Sheet No.	Lab Ref.	Client Ref.	Date Made	Time Made	Date Received in Laboratory	Date Tested	Age days	Dimensions mm	Density kg/m ³	Failure Load kN	Compressive Strength N/mm ²	Specified Strength N/mm ²
NOR0133899	51379726	SHAFT 006	07/11/2022		09/11/2022	14/11/2022	7	100x100x100	1590	13.8	1.4	not given
Location: SHAFT 006												
Mix details: 8.2.1 P.F.A SAID- O.P.C												

The following apply unless otherwise stated under Remarks.

- 1) Laboratory curing range 18°-22°C.
- 2) Cube appearance as received satisfactory.
- 3) Test moisture condition and density saturated.
- 4) Cube failure normal. Concrete appearance normal.
- 5) Volume determined by measurement or designated size. Any fins removed by abrasive stone.
- 6) Laboratory curing conditions cannot be assured during tank cleaning.
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- 8) Rate of Loading 0.4 to 0.8 N/mm² per sec.

Certified that curing of the hardened concrete in the laboratory and testing for shape, dimensions, density and compressive strength was carried out in accordance with BS EN 12390-1:2021, BS EN 12390-2:2019, BS EN 12390-7:2019 and BS 12390-3:2019
Air Content determined in accordance with BS EN 12350-7:2019, Slump test carried out in accordance with BS EN 12350-2:2019

Signed

Julie Schofield - Concrete Section Manager

for and on behalf of SOCOTEC UK Limited

Issued to: VAN ELLE LTD

CONCRETE TEST CUBE REPORT



Date: 15/11/2022

Report no: WAB51373033_01

Client: VAN ELLE LTD

Scheme: STOPES ROAD, LITTLE LEVER, BOLTON, BL3 1NR

Contract no: 51071663

Request Sheet No.	Lab Ref.	Client Ref.	Date Made	Time Made	Date Received in Laboratory	Date Tested	Age days	Dimensions mm	Density kg/m ³	Failure Load kN	Compressive Strength N/mm ²	Specified Strength N/mm ²
NOR013382	51373033	MINE 006C	18/10/2022		19/10/2022	15/11/2022	28	100x100x100	1500	25.7	2.6	not given
Location: MINE SHAFT 006												
Mix details: 8.2.1 PFA SAND O.P.C												

The following apply unless otherwise stated under Remarks.

- 1) Laboratory curing range 18°-22°C.
- 2) Cube appearance as received satisfactory.
- 3) Test moisture condition and density saturated.
- 4) Cube failure normal. Concrete appearance normal.
- 5) Volume determined by measurement or designated size. Any fins removed by abrasive stone.
- 6) Laboratory curing conditions cannot be assured during tank cleaning.
- 7) Certificate of sampling not received. Certificate of making and curing not received.
- 8) Rate of Loading 0.4 to 0.8 N/mm² per sec.

Certified that curing of the hardened concrete in the laboratory and testing for shape, dimensions, density and compressive strength was carried out in accordance with BS EN 12390-1:2021, BS EN 12390-2:2019, BS EN 12390-7:2019 and BS 12390-3:2019
Air Content determined in accordance with BS EN 12350-7:2019, Slump test carried out in accordance with BS EN 12350-2:2019

Signed

Julie Schofield - Concrete Section Manager

for and on behalf of SOCOTEC UK Limited

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29 Rufford Court
Woolston
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WA1 4RF
United Kingdom
Tel: +44(0) 1925 286220

CONCRETE TEST CUBE REPORT



Date: 15/11/2022

Report no: WAB51378042_01

Client: VAN ELLE LTD

Scheme: STOPES ROAD, LITTLE LEVER, BOLTON, BL3 1NR

Contract no: 51071663

Request Sheet No.	Lab Ref.	Client Ref.	Date Made	Time Made	Date Received in Laboratory	Date Tested	Age days	Dimensions mm	Density kg/m ³	Failure Load kN	Compressive Strength N/mm ²	Specified Strength N/mm ²
NOR013386	51378042	SHAFT 007	01/11/2022		03/11/2022	15/11/2022	14	100x100x100	1540	14.6	1.5	not given
Location: MINE SHAFT 006												
Mix details: 8.2.1 P.F.A SAID- O.P.C												

The following apply unless otherwise stated under Remarks.

- 1) Laboratory curing range 18°-22°C.
- 2) Cube appearance as received satisfactory.
- 3) Test moisture condition and density saturated.
- 4) Cube failure normal. Concrete appearance normal.
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- 8) Rate of Loading 0.4 to 0.8 N/mm² per sec.

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Air Content determined in accordance with BS EN 12350-7:2019, Slump test carried out in accordance with BS EN 12350-2:2019

Signed

Julie Schofield - Concrete Section Manager

for and on behalf of SOCOTEC UK Limited

Issued to: VAN ELLE LTD

29 Rufford Court
Woolston
Warrington
WA1 4RF
United Kingdom
Tel: +44(0) 1925 286220

CONCRETE TEST CUBE REPORT



Date: 17/11/2022

Report no: WAB51375611_01

Client: VAN ELLE LTD

Scheme: STOPES ROAD, LITTLE LEVER, BOLTON, BL3 1NR

Contract no: 51071663

Request Sheet No.	Lab Ref.	Client Ref.	Date Made	Time Made	Date Received in Laboratory	Date Tested	Age days	Dimensions mm	Density kg/m ³	Failure Load kN	Compressive Strength N/mm ²	Specified Strength N/mm ²
NOR013383	51375611	SHAFT006C	20/10/2022		27/10/2022	17/11/2022	28	100x100x100	1600	15.0	1.5	not given
Location: MINE SHAFT 006												
Mix details: 8-2-1 PFP SAND OPC												

The following apply unless otherwise stated under Remarks.

- 1) Laboratory curing range 18°-22°C.
- 2) Cube appearance as received satisfactory.
- 3) Test moisture condition and density saturated.
- 4) Cube failure normal. Concrete appearance normal.
- 5) Volume determined by measurement or designated size. Any fins removed by abrasive stone.
- 6) Laboratory curing conditions cannot be assured during tank cleaning.
- 7) Certificate of sampling not received. Certificate of making and curing not received.
- 8) Rate of Loading 0.4 to 0.8 N/mm² per sec.

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Air Content determined in accordance with BS EN 12350-7:2019, Slump test carried out in accordance with BS EN 12350-2:2019

Signed

Julie Schofield - Concrete Section Manager

for and on behalf of SOCOTEC UK Limited

Issued to: VAN ELLE LTD

CONCRETE TEST CUBE REPORT



Date: 21/11/2022

Report no: WAB51379723_01

Client: VAN ELLE LTD

Scheme: STOPEs ROAD, LITTLE LEVER, BOLTON, BL3 1NR

Contract no: 51071663

Request Sheet No.	Lab Ref.	Client Ref.	Date Made	Time Made	Date Received in Laboratory	Date Tested	Age days	Dimensions mm	Density kg/m ³	Failure Load kN	Compressive Strength N/mm ²	Specified Strength N/mm ²
NOR0133898	51379723	SHAFT 006	04/11/2022		09/11/2022	18/11/2022	14	100x100x100	1580	18.1	1.8	not given
Location: SHAFT 006												
Mix details: 8.2.1 P.F.A SAID- O.P.C												

The following apply unless otherwise stated under Remarks.

- 1) Laboratory curing range 18°-22°C.
- 2) Cube appearance as received satisfactory.
- 3) Test moisture condition and density saturated.
- 4) Cube failure normal. Concrete appearance normal.
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- 6) Laboratory curing conditions cannot be assured during tank cleaning.
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Certified that curing of the hardened concrete in the laboratory and testing for shape, dimensions, density and compressive strength was carried out in accordance with BS EN 12390-1:2021, BS EN 12390-2:2019, BS EN 12390-7:2019 and BS 12390-3:2019
Air Content determined in accordance with BS EN 12350-7:2019, Slump test carried out in accordance with BS EN 12350-2:2019

Signed

Julie Schofield - Concrete Section Manager

for and on behalf of SOCOTEC UK Limited

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29 Rufford Court
Woolston
Warrington
WA1 4RF
United Kingdom
Tel: +44(0) 1925 286220

CONCRETE TEST CUBE REPORT



Date: 21/11/2022

Report no: WAB51379727_01

Client: VAN ELLE LTD

Scheme: STOPE ROAD, LITTLE LEVER, BOLTON, BL3 1NR

Contract no: 51071663

Request Sheet No.	Lab Ref.	Client Ref.	Date Made	Time Made	Date Received in Laboratory	Date Tested	Age days	Dimensions mm	Density kg/m ³	Failure Load kN	Compressive Strength N/mm ²	Specified Strength N/mm ²
NOR0133899	51379727	SHAFT 006	07/11/2022		09/11/2022	21/11/2022	14	100x100x100	1590	19.3	1.9	not given
Location: SHAFT 006												
Mix details: 8.2.1 P.F.A SAID- O.P.C												

The following apply unless otherwise stated under Remarks.

- 1) Laboratory curing range 18°-22°C.
- 2) Cube appearance as received satisfactory.
- 3) Test moisture condition and density saturated.
- 4) Cube failure normal. Concrete appearance normal.
- 5) Volume determined by measurement or designated size. Any fins removed by abrasive stone.
- 6) Laboratory curing conditions cannot be assured during tank cleaning.
- 7) Certificate of sampling not received. Certificate of making and curing not received.
- 8) Rate of Loading 0.4 to 0.8 N/mm² per sec.

Certified that curing of the hardened concrete in the laboratory and testing for shape, dimensions, density and compressive strength was carried out in accordance with BS EN 12390-1:2021, BS EN 12390-2:2019, BS EN 12390-7:2019 and BS 12390-3:2019
Air Content determined in accordance with BS EN 12350-7:2019, Slump test carried out in accordance with BS EN 12350-2:2019

Signed

Julie Schofield - Concrete Section Manager

for and on behalf of SOCOTEC UK Limited

Issued to: VAN ELLE LTD

29 Rufford Court
Woolston
Warrington
WA1 4RF
United Kingdom
Tel: +44(0) 1925 286220

CONCRETE TEST CUBE REPORT



Date: 24/11/2022

Report no: WAB51378035_01

Client: VAN ELLE LTD

Scheme: STOPES ROAD, LITTLE LEVER, BOLTON, BL3 1NR

Contract no: 51071663

Request Sheet No.	Lab Ref.	Client Ref.	Date Made	Time Made	Date Received in Laboratory	Date Tested	Age days	Dimensions mm	Density kg/m ³	Failure Load kN	Compressive Strength N/mm ²	Specified Strength N/mm ²
NOR013384	51378035	SHAFT 008	26/10/2022		03/11/2022	23/11/2022	28	100x100x100	1530	26.5	2.7	not given
Location: MING SHAFT 006												
Mix details: 8.2.1 P.F.A SAID- O.P.C												

The following apply unless otherwise stated under Remarks.

- 1) Laboratory curing range 18°-22°C.
- 2) Cube appearance as received satisfactory.
- 3) Test moisture condition and density saturated.
- 4) Cube failure normal. Concrete appearance normal.
- 5) Volume determined by measurement or designated size. Any fins removed by abrasive stone.
- 6) Laboratory curing conditions cannot be assured during tank cleaning.
- 7) Certificate of sampling not received. Certificate of making and curing not received.
- 8) Rate of Loading 0.4 to 0.8 N/mm² per sec.

Certified that curing of the hardened concrete in the laboratory and testing for shape, dimensions, density and compressive strength was carried out in accordance with BS EN 12390-1:2021, BS EN 12390-2:2019, BS EN 12390-7:2019 and BS 12390-3:2019
Air Content determined in accordance with BS EN 12350-7:2019, Slump test carried out in accordance with BS EN 12350-2:2019

Signed

Julie Schofield - Concrete Section Manager

for and on behalf of SOCOTEC UK Limited

Issued to: VAN ELLE LTD

29 Rufford Court
Woolston
Warrington
WA1 4RF
United Kingdom
Tel: +44(0) 1925 286220

CONCRETE TEST CUBE REPORT



Date: 08/11/2022

Report no: WAB51371582_01

Client: VAN ELLE LTD

Scheme: STOPES ROAD, LITTLE LEVER, BOLTON, BL3 1NR

Contract no: 51071663

Request Sheet No.	Lab Ref.	Client Ref.	Date Made	Time Made	Date Received in Laboratory	Date Tested	Age days	Dimensions mm	Density kg/m ³	Failure Load kN	Compressive Strength N/mm ²	Specified Strength N/mm ²
NOR013379	51371582	07/10/2022 3	07/10/2022		14/10/2022	04/11/2022	28	100x100x100	1420	19.9	2.0	not given
Location: MING SHAFT 006												
Mix details: 10-1 F.F.A - 0.F.C												

The following apply unless otherwise stated under Remarks.

- 1) Laboratory curing range 18°-22°C.
- 2) Cube appearance as received satisfactory.
- 3) Test moisture condition and density saturated.
- 4) Cube failure normal. Concrete appearance normal.
- 5) Volume determined by measurement or designated size. Any fins removed by abrasive stone.
- 6) Laboratory curing conditions cannot be assured during tank cleaning.
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- 8) Rate of Loading 0.4 to 0.8 N/mm² per sec.

Certified that curing of the hardened concrete in the laboratory and testing for shape, dimensions, density and compressive strength was carried out in accordance with BS EN 12390-1:2021, BS EN 12390-2:2019, BS EN 12390-7:2019 and BS 12390-3:2019
Air Content determined in accordance with BS EN 12350-7:2019, Slump test carried out in accordance with BS EN 12350-2:2019

Signed

Janine Wallis - Senior Administrator

for and on behalf of SOCOTEC UK Limited

Issued to: VAN ELLE LTD

29 Rufford Court
Woolston
Warrington
WA1 4RF
United Kingdom
Tel: +44(0) 1925 286220

CONCRETE TEST CUBE REPORT



Date: 25/11/2022

Report no: WAB51378039_01

Client: VAN ELLE LTD

Scheme: STOPES ROAD, LITTLE LEVER, BOLTON, BL3 1NR

Contract no: 51071663

Request Sheet No.	Lab Ref.	Client Ref.	Date Made	Time Made	Date Received in Laboratory	Date Tested	Age days	Dimensions mm	Density kg/m ³	Failure Load kN	Compressive Strength N/mm ²	Specified Strength N/mm ²
NOR013385	51378039	SHAFT 008	28/10/2022		03/11/2022	25/11/2022	28	100x100x100	1600	35.3	3.5	not given
Location: MINE SHAFT 006												
Mix details: 8.2.1 P.F.A SAID- O.P.C												

The following apply unless otherwise stated under Remarks.

- 1) Laboratory curing range 18°-22°C.
- 2) Cube appearance as received satisfactory.
- 3) Test moisture condition and density saturated.
- 4) Cube failure normal. Concrete appearance normal.
- 5) Volume determined by measurement or designated size. Any fins removed by abrasive stone.
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- 8) Rate of Loading 0.4 to 0.8 N/mm² per sec.

Certified that curing of the hardened concrete in the laboratory and testing for shape, dimensions, density and compressive strength was carried out in accordance with BS EN 12390-1:2021, BS EN 12390-2:2019, BS EN 12390-7:2019 and BS 12390-3:2019
Air Content determined in accordance with BS EN 12350-7:2019, Slump test carried out in accordance with BS EN 12350-2:2019

Signed

Julie Schofield - Concrete Section Manager

for and on behalf of SOCOTEC UK Limited

Issued to: VAN ELLE LTD

29 Rufford Court
Woolston
Warrington
WA1 4RF
United Kingdom
Tel: +44(0) 1925 286220

CONCRETE TEST CUBE REPORT



Date: 29/11/2022

Report no: WAB51378043_01

Client: VAN ELLE LTD

Scheme: STOPES ROAD, LITTLE LEVER, BOLTON, BL3 1NR

Contract no: 51071663

Request Sheet No.	Lab Ref.	Client Ref.	Date Made	Time Made	Date Received in Laboratory	Date Tested	Age days	Dimensions mm	Density kg/m ³	Failure Load kN	Compressive Strength N/mm ²	Specified Strength N/mm ²
NOR013386	51378043	SHAFT 008	01/11/2022		03/11/2022	29/11/2022	28	100x100x100	1550	20.4	2.0	not given
Location: MINE SHAFT 006												
Mix details: 8.2.1 P.F.A SAID- O.P.C												

The following apply unless otherwise stated under Remarks.

- 1) Laboratory curing range 18°-22°C.
- 2) Cube appearance as received satisfactory.
- 3) Test moisture condition and density saturated.
- 4) Cube failure normal. Concrete appearance normal.
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- 8) Rate of Loading 0.4 to 0.8 N/mm² per sec.

Certified that curing of the hardened concrete in the laboratory and testing for shape, dimensions, density and compressive strength was carried out in accordance with BS EN 12390-1:2021, BS EN 12390-2:2019, BS EN 12390-7:2019 and BS 12390-3:2019
Air Content determined in accordance with BS EN 12350-7:2019, Slump test carried out in accordance with BS EN 12350-2:2019

Signed

Julie Schofield - Concrete Section Manager

for and on behalf of SOCOTEC UK Limited

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29 Rufford Court
Woolston
Warrington
WA1 4RF
United Kingdom
Tel: +44(0) 1925 286220

CONCRETE TEST CUBE REPORT



Date: 02/12/2022

Report no: WAB51379724_01

Client: VAN ELLE LTD

Scheme: STOPE ROAD, LITTLE LEVER, BOLTON, BL3 1NR

Contract no: 51071663

Request Sheet No.	Lab Ref.	Client Ref.	Date Made	Time Made	Date Received in Laboratory	Date Tested	Age days	Dimensions mm	Density kg/m ³	Failure Load kN	Compressive Strength N/mm ²	Specified Strength N/mm ²
NOR0133898	51379724	SHAFT 006	04/11/2022		09/11/2022	02/12/2022	28	100x100x100	1580	25.8	2.6	not given
Location: SHAFT 006												
Mix details: 8.2.1 P.F.A SAID- O.P.C												

The following apply unless otherwise stated under Remarks.

- 1) Laboratory curing range 18°-22°C.
- 2) Cube appearance as received satisfactory.
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Air Content determined in accordance with BS EN 12350-7:2019, Slump test carried out in accordance with BS EN 12350-2:2019

Signed

Julie Schofield - Concrete Section Manager

for and on behalf of SOCOTEC UK Limited

Issued to: VAN ELLE LTD

CONCRETE TEST CUBE REPORT



Date: 05/12/2022

Report no: WAB51379728_01

Client: VAN ELLE LTD

Scheme: STOPEs ROAD, LITTLE LEVER, BOLTON, BL3 1NR

Contract no: 51071663

Request Sheet No.	Lab Ref.	Client Ref.	Date Made	Time Made	Date Received in Laboratory	Date Tested	Age days	Dimensions mm	Density kg/m ³	Failure Load kN	Compressive Strength N/mm ²	Specified Strength N/mm ²
NOR0133899	51379728	SHAFT 006	07/11/2022		09/11/2022	05/12/2022	28	100x100x100	1580	29.0	2.9	not given
Location: SHAFT 006												
Mix details: 8.2.1 P.F.A SAID- O.P.C												

The following apply unless otherwise stated under Remarks.

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Air Content determined in accordance with BS EN 12350-7:2019, Slump test carried out in accordance with BS EN 12350-2:2019

Signed

Julie Schofield - Concrete Section Manager

for and on behalf of SOCOTEC UK Limited

Issued to: VAN ELLE LTD

Page 1 of 1

Form L53GLA V.11/06/22

The results relate to the items tested only. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

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SOCOTEC UK Limited. Registered in England No. 2880501. Registered Office: SOCOTEC House, Bretby Business Park, Ashby Road, Burton Upon Trent, DE15 0YZ



Engineer/
Manage/
Deliver/

November 2023

**Mineshaft Treatment Validation
Report**

**PROJECT NO.
JMS/SLR/JP/47366-Rp005-RevA**



Alan Wood & Partners

Issuing Office

Hallamshire House
Meadow Court
Hayland Street
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S9 1BY

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Email: eng@alanwood.co.uk

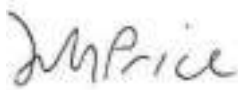
Website: www.alanwood.co.uk

STOPES ROAD, RADCLIFFE, MANCHESTER, M26 3TW

MINESHAFT TREATMENT VALIDATION REPORT

Project Reference: JMS/SLR/JP/47366-Rp005-RevA

Prepared by: **J Price BSc (Hons), MSc, FGS**

Signed: 
.....

Date: 15th November 2023

Approved by: **S L Roberts, BEng(Hons), MSc, CEnv MICE**

Signed: 
.....

Date: 15th November 2023

Issue	Revision	Revised by	Approved by	Revised Date
Rev A	Addressed Hydrock Comments	JP	SR	16 th November 2023

For the avoidance of doubt, the parties confirm that these conditions of engagement shall not and the parties do not intend that these conditions of engagement shall confer on any party any rights to enforce any term of this Agreement pursuant of the Contracts (Rights of third Parties) Act 1999.

The Appointment of Alan Wood & Partners shall be governed by and construed in all respects in accordance with the laws of England & Wales and each party submits to the exclusive jurisdiction of the Courts of England & Wales.

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APPENDICES

APPENDIX A: DRILLING LOGS AND GROUTING LOGS

APPENDIX B: DRILLING METHOD STATEMENT

1 INTRODUCTION

1.1 Details of Commission

- 1.1.1 Alan Wood and Partners were appointed by VHE Construction (the 'Client') as Principal Designer to provide a Mine Shaft Treatment Validation Report in relation to two mine shafts on the proposed development off Stopes Road, Little Lever, Bolton.
- 1.1.2 This report presents technical validation of on-site earthwork treatment of two mine shafts on site, the following documents should be referred alongside this validation report:
- Alan Wood & Partners Mine Shaft Treatment Specification at Stopes Road, Bolton – Shafts 007 and 008 (JS/SLR/AHB/47366-TN-101 Rev A) dated September 2023;
 - Hydrock Technical Design Note – Mine Shaft Investigation, report ref. 15220-HYD-XX-XX-RP-GE-0011 P02, dated June 2022.

1.2 Limitations

- 1.2.1 Interpretation and recommendations should not be assumed valid for adjacent areas of land, or for alternative land uses. Should the proposed site usage change, the recommendations and conclusions presented in this report may need to be re-assessed.
- 1.2.2 The findings and recommendations given in this report are based on drilling and grouting works undertaken by M&J Drilling Services Limited in October 2023.
- 1.2.3 The report has been prepared for the titled project and Alan Wood and Partners can accept no responsibility or liability for the consequences of the use of this document, wholly or in part, for any other purpose than that for which it was commissioned.
- 1.2.4 The findings and opinions provided in this report are given in good faith and are subject to the limitations and constraints imposed by the methods and information sources described. Alan Wood and Partners assumes that third party data is reliable, but has not independently confirmed this. The validity and accuracy of this information is therefore outside the control of Alan Wood and Partners. Professional judgement and experience are however used to ensure that uncertainties are reduced to a level appropriate to the site conditions, the purpose of the investigation and the resources devoted to it by the Client.

1.2.6 It should be noted that the mine shafts on site may require capping, depending on their location within the proposed development. However, the capping of the shafts is not included within the scope of these works. The design of caps, where required, will need to be designed by a suitably experienced Sub-Contractor/engineer. It is assumed that the two shafts which are the subject of this specification will remain within areas which will be undeveloped and be retained as public open space (Shaft 007) and an emergency access road (Shaft 008).

1.3 Site Location & Description

- 1.3.1 The site is located off Stopes Road, 4.4km southeast of Bolton, Greater Manchester, BL3 1NP (National Grid Reference 376262E, 407649N).
- 1.3.2 The site currently consists of a remediated former Tarmac block manufacturing plant, comprising open land, which has recently undergone earthworks and remediation to provide a suitable development platform for the proposed redevelopment with residential properties, associated infrastructure and open space.
- 1.3.3 The proposed development is to comprise approximately 140 residential houses of 2 storeys, with associated gardens, parking and soft landscaping. The north of the site is to remain as public open space. For the purposes of this report, the latest masterplan reference: 'HAR001MP01' Rev B, provided by Harworth Estates has been used. However, it is recognised that the masterplan may change and so this design is based on providing flexibility with regards to the final site layout. The exception is that it is assumed that the area of POS proposed in the northern section of the site is fixed.
- 1.3.4 The objective of the works covered in this validation is to stabilise two remaining mine shafts located on the site, shown on Drawing 15220-HYD-XX-XX-DR-GE-1023 P01 – Mine Shaft Investigation using pressure grouting. Shafts identified on this drawing as Shaft 376407-007 and Shaft 376407-008 are the subject of this treatment validation.

2 SUMMARY OF INVESTIGATION TO DATE

2.1 Introduction

- 2.1.1 The initial shaft investigation works were completed in September 2021 by Forkers Group Limited with Hydrock supervising the works and undertaking service clearance to allow the drilling to progress.
- 2.1.2 The second phase of shaft investigation works were completed in May 2022 by Sonic Drilling Limited with Hydrock supervising the works and undertaking service clearance to allow the drilling to progress.
- 2.1.3 A summary of the investigation at each shaft location is presented below. For brevity only the two shafts to which this specification relates are summarised below.

2.2 Shaft Reference 376407-007

- 2.2.1 During the initial shaft investigation, in 2021, a total of 86 no. probe holes were completed in this location. The majority of these were drilled to the west of the coordinate provided by the Coal Authority due to the presence of a number of constraints. Completed locations are shown on Figure 2 in Appendix B of the Hydrock Technical Design note.
- 2.2.2 Bedrock was encountered between 5.0m and 5.8m bgl; completed probe hole depths were between 7.0m to 8.0m bgl. No indication of a mineshaft was identified during this phase of drilling works.
- 2.2.3 The remaining probe holes on the grid were inaccessible at the time of the works due to the presence of underground services, vegetation and the discovery of an underground fuel storage tank (UST). This fuel tank has now been removed.
- 2.2.4 As part of the service clearance activities for this work, vacuum excavation was used to expose the exact route of the electric cables enabling exploratory hole locations to be drilled as close as possible. Some locations were still unable to be advanced due to proximity to the cables.
- 2.2.5 This investigation was undertaken in May 2022 by Sonic Drilling Limited under Hydrock supervision. A total of 205 no. probe holes were completed as shown on Figure 2 in Appendix B of the Hydrock Technical Design Note. Bedrock was generally encountered between 5.0m and 6.0m bgl. Completed probe hole depths were generally between 6.0m to 8.0m bgl, though apparent shallow workings were found in the south-east

quadrant at depths between approximately 7.0m and 9.5m bgl. As such, probe holes were advanced to depths of up to 10.5m bgl in this area in order to rule out the presence of a shaft. In probe hole 128, a coal seam was encountered from 7.50m to 9.50m bgl; it was not recorded in any other probe holes.

- 2.2.6 The mine shaft was located by probing in the north-east quadrant, as indicated on Figure 3 within the Hydrock Technical Design Note. One probe hole was advanced to 42.0m bgl (the limit of the equipment available) showing that the shaft reaches a greater depth than this. Coal Authority records provide no indication of the depth or construction of this shaft. The diameter of the shaft was delineated and found to be between 2.5m and 3.5m by further probe holes, though proximity to the electric cables meant the diameter could not be fully determined. From the delineation achieved it appeared that the shaft could be oval or rectangular in shape rather than circular. The drillers noted they believed they hit the edge of the shaft in probe locations 79 and 80 at 6.0m bgl, with the probe deflecting inside the shaft. The surveyed location of the shaft is shown on drawing 15220-HYD-XX-XX-DR-GE-0023. The shaft coordinate provided by the Coal Authority is 376365mE 407557mN and the coordinate for the estimated centre of the located shaft is 376367.595mE, 407559.113mN with a ground level of 102.88m AOD.

2.3 Shaft Reference 376407-008

- 2.3.1 No investigation was completed in this area of the site by Forkers due to the Coal Authority coordinate for the shaft being located within an existing building.
- 2.3.2 Following demolition of the building, Hydrock undertook a total of 22 no. probe holes as shown on Figure 4 in Appendix B of the Hydrock Technical Design Note. Bedrock was generally encountered at 5.0m bgl. Completed probe hole depths were generally 6.0m bgl.
- 2.3.3 The shaft was located by probing approximately 3.0m north of the central co-ordinate, as indicated on Figure 4. One probe hole was advanced to 42.0m bgl (the limit of the equipment available) showing that the shaft reaches a greater depth than this. Coal Authority records provide no indication of the depth of this shaft. The approximate diameter of the shaft was delineated by further probe holes and determined to be approximately 3.0m. The surveyed location of the shaft is shown on drawing 15220-HYD-XX-XX-DR-GE-1023. The shaft co-ordinate provided by the Coal Authority is E 376365 N 407557 and the coordinate for the estimated centre of the located shaft is E 376380.818, N 407524.433 with a ground level of 102.07m AOD.

3 DRILLING AND GROUTING WORKS

3.1 Specification

3.1.1 The mine shaft treatment works outlined in this report were undertaken in accordance with the treatment specification produced by Alan Wood and Partners, referenced above.

3.1.2 The main elements of work required are as follows:

- Construction of a suitable platform from which drilling and pressure grouting can be undertaken safely;
- Proof drilling to determine shaft depth and infill characteristics of 2 no. (shaft-007 and shaft-008) mine entries;
- Consolidation/pressure grouting of 2no. (shaft-007 and shaft-008) mine entries as identified on the previously referenced Hydrock Drawing.

3.2 Drilling Platform

3.2.1 A suitable working platform constructed of steel beams was set up prior to works commencing for drilling and grouting to be undertaken safely.

3.3 Proof Drilling

3.3.1 Prior to drilling, the depth and nature of backfill of both mine shafts was unknown. The specification requires proof drilling to be carried out to 100mbgl, or 5m below the base of the shaft, whichever is shallower. A summary of the drillers record of strata encountered is shown in Table 3-1, the full drillers records are appended to this report as Appendix B.

Location ID	Drill Run	Top depth (m)	Base depth (m)	Description
Shaft 376407-007	1	0	4.0	Soft drilling
		4.0	4.5	Hard drilling
		4.5	31.0	Soft drilling
		31.0	31.5	Firm drilling
		31.5	48.0	Soft drilling
		48.0	50.0	Soft drilling with firm bands
		50.0	68.3	Soft drilling
		68.3	72.0	Soft drilling with firm bands
		72.0	76.0	Soft drilling
		76.0	86.0	Hard drilling (Water pressure on clock)
	2	0	4.0	Soft drilling
		4.0	4.5	Hard drilling
		4.5	48.0	Soft drilling
		48.0	50.0	Soft drilling with firm bands
		50.0	68.5	Soft drilling
		68.5	76.0	Soft drilling with firm bands
		76.0	100.0	Hard drilling (Water pressure on clock)
Shaft 376407-008	1	0	56	Weak
		56	57.5	Firm
		57.5	66	Weak
		66	72	Firm
		72	74.5	Weak
		74.5	84.5	Firm
	2	0	69	Weak
		69	74	Firm
		71	86	Weak
		86	100	Firm (Pump stalling)

Shaft 376407-007

3.3.2 Primary and secondary proof drilling holes were advanced to a depth of 86mbgl and 100mbgl respectively, both of which encountered the base of the mine shaft at 76mbgl. The shaft included soft/weak ground with occasional firm bands. No voids were encountered during drilling. A slight shaft collapse and ground sinking was observed by the drillers on the 12th October 2023, the rig and platform were moved from the shaft to allow for the depression to be filled. The platform was then repositioned over the shaft and drilling recommenced with no further signs of collapse or sinking noted for the remainder of the works.

Shaft 376407-008

3.3.3 Primary and secondary proof drilling holes were advanced to a depth of 84.5mbgl and 100mbgl respectively, encountering the base of the shaft at 86m in the secondary probe hole. The shaft included weak ground with occasional firm bands. No voids were encountered during drilling.

3.4 Grouting

- 3.4.1 A summary of the grouting treatment works is provide below, full details of the drilling and grouting method is provided on the M&J Drilling Services Method Statement (Appendix B).
- 3.4.2 The probe holes were grouted through steel casing up to ground level in 2m lift stages, with grout applied under sustained pressure.
- 3.4.3 Grout mixing and pumping plant ensure the grout was constantly agitated and intimately mixed. A grout mix of 10:1 PFA:OR was used throughout the entire the grouting works. Grout bleed tests were carried out daily to ensure satisfactory and consistent grout dispatch, results of the bleed tests are shown on the appended grouting logs.
- 3.4.4 Cube samples were taken regularly and sent for geotechnical testing to confirm serviceable compressive strengths. The results of the cube testing had not been received at the time of preparation of this report. A further revision will be required upon receipt of the final results.
- 3.4.5 Gas monitoring devices were constantly running throughout the works for safety reasons to detect any potential harmful gases. An elevated CO concentration of 3.66ppm was recorded on the 12th October 2023, this occurred when pulling the casing from the borehole.

3.4.6 Grouting of a primary borehole and two validation boreholes was carried out on both mine shaft positions, a summary of the grout works is provided below, with full details provided on the appended grouting logs (Appendix A).

Shaft 376407-007

- 3.4.7 Grouting of the primary borehole was undertaken between the 10th to the 12th October. It was grouted through steel casing from 98mbgl to ground level in 2m lift stages, with grout applied under sustained pressure. A total of 43.2 Tonnes of grout was taken during the grouting of the primary borehole.
- 3.4.8 Two validation boreholes were subsequently carried out from 76m to ground level with each borehole taking 5.2 Tonnes and 3.2 Tonnes of grout respectively.

Shaft 376407-008

- 3.4.9 Grouting of the primary borehole was undertaken between the 10th and 16th October. It was grouted through steel casing from 98mbgl to ground level in 2m lift stages, with grout applied under sustained pressure. A total of 146.3 Tonnes of grout was taken during the grouting of the primary borehole.
- 3.4.10 Two validation boreholes were subsequently carried out from 86mbgl to ground level with each borehole taking 3.3 Tonnes and 2.2 Tonnes of grout respectively.

4 CONCLUSIONS

4.1 Shaft Stabilisation

- 4.1.1 Two untreated mine shafts located in the south east of the proposed residential development site have been treated by M and J Drilling using pressure grouting.
- 4.1.2 The shafts were subjected to pre drilling to confirm the depth. Shaft 007 was found to be 76m deep and Shaft 008 was found to be 86m deep. Both shafts were treated with PFA grout applied under pressure to consolidate the infill and stabilise the mining legacy feature to protect the proposed development from future stability issues.
- 4.1.3 A total of 43,2 Tonnes of grout was applied to Shaft 007 and 146.3 Tonnes of grout applied to Shaft 008. Grouting was carried out in accordance with the requirements of the Specification and is considered to have achieved the objectives of the treatment.
- 4.1.4 Grout for both shafts was mixed in a single batching plant on site, which mixed a 10:1 PFA:OR. No amendments were required to achieve the required pressure during the treatment of the shafts.
- 4.1.5 The grout strength achieved is to be confirmed through appropriate testing, which is currently underway and this report will be revised to include the results of the testing upon receipt.
- 4.1.6 The grouting of the shafts is considered to have been completed successfully and the potential for future ground instability as a result of the shaft mitigated.
- 4.1.7 It should be noted that shallow workings beneath the southern half of the site remain untreated and could present a potential instability risk at ground surface until suitable treatment is completed. It is understood that this will be completed by the Developer at a future date. This treatment is beyond the scope of the works covered in this report.

APPENDIX A

Drill and Grout Logs

SITE / JOB No.	BOLTON	DAY / DATE	(FR) 6-10-23	DRILLER	MICHAEL GALLAGHER
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[illegible]

DAILY SITE RECORD

[illegible]

DAILY SITE RECORD

SITE / JOB NO.	BOLTON	DAY / DATE	(Mon) 9-10-23	DRILLER	MICHAEL GALLER
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BH	DEPTH		CASING	FORMATION	GROUTING				
	FROM	TO			PFA	CEMENT	SAND	OTHER	
<u>ONSITE 7.30AM</u>					CONTINUED FROM YESTERDAY.				
					Shift AT 70m				
					<u>SHAFT N°8</u>				
	70-	72-		Firm					
	72-	74.5		Weak					
	74.5	84.5		Firm					
INSTRUCTED TO Pull OUT AND Move Over.									
<u>2nd Drill</u>									
	64	69-		Weak (0 Back Pressure)					
	69-	71-		Firm (0-2 Bar Back Pressure)					
	71-	86		Weak (0-2 Bar Back Pressure)					
	86-	100-		Firm Pump SALLING					
Ready To GROUT. - NO MATERIALS ONSITE									

REMARKS:	GAS MONITORING		DELIVERY	TICKET No.	QUANTITY
	CH ₄ :	0 % LEL	H ₂ S :	0 PPM	
	CO :	0 PPM	O ₂ :	20.9 %	
	NOTES:				
	R.E./SUPERVISOR				

BH	DEPTH		CASING	FORMATION	GROUTING			
	FROM	TO			PFA	CEMENT	SAND	OTHER
				Shaft 7.				
				Continued drilling Shaft 7 from 75m.				
				Instructed to drill 10m into firm.				
	78	86.0		Hard drilling (Water pressure on clock.)				
				Pulled casing and moved hole position as instructed.				
				* Slight cracking and depression round shaft position.				

REMARKS:	GAS MONITORING	
	CH ₄ : 0 % LEL	H ₂ S : 0 PPM
	CO : 0 PPM	O ₂ : 20.9 %
	NOTES:	
	R.E./SUPERVISOR	

[illegible]

SITE / JOB No.	Scopes Road, Bilton.	DAY / DATE	Mon 9 / 10 / 23	DRILLER	Lee Hawson
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REMARKS:	GAS MONITORING			DELIVERY	TICKET No.	QUANTITY
	CH ₄ :	% LEL	H ₂ S :	PPM		
	CO :	PPM	O ₂ :	%		
	NOTES:					
R.E./SUPERVISOR						

Tel: 01902 885241

DAILY SITE RECORD

SITE / JOB No.	STOPS RD L/LEVER	DAY / DATE	Tues 10-10-23	DRILLER	M. Puga.
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BH	DEPTH		CASING	FORMATION	GROUTING			
	FROM	TO			PFA	CEMENT	SAND	OTHER
				Slurry Grouting				
				Mix 10-1 PFA-OK				
				Grout, Pressure Treated in 2m Stages				
				07 START AT 98m	0.2T			
				98-76m	0.3T			
				76-74m	2T			
				74m	17T			
				Still going				(20.0T)
				08 START AT 98m	0.2T			
				98-86m	0.3T			
				86-84m	1T			
				84m	17T			
				Still going				(18.5T)
				BLEED 980/1000 Flow 480m.				
				TOTAL				38.5TON

REMARKS:	GAS MONITORING			
	CH ₄ :	% LEL	H ₂ S:	PPM
	CO:	PPM	O ₂ :	%
	NOTES:			
	R.E./SUPERVISOR			

DELIVERY	TICKET No.	QUANTITY
PFA	306 353	1934
PFA	306 354	2032
PFA	—	—
OPC	F74370	750
OPC	ymalson	150

Tel: 01902 885241

DAILY SITE RECORD

SITE / JOB No.	STONES RD L/LEVER	DAY / DATE	Wed 10-10-23	DRILLER	M. Pugh.
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BH	DEPTH		CASING	FORMATION	GROUTING			
	FROM	TO			PFA	CEMENT	SAND	OTHER
				SLAHT Grouting				
				M.x 10-1 PFA - ok				
				Grout. Pressure then left in 2m				
				STAGED				
				07 START AT 74m	2T			
				74-72m	2T			
				72-70m	3T			
				70-68m	1T			
				68-66m	0.5T			
				66-64m	0.5T			
				64-62m	0.5T			
				62-60m	1T			
				60-58m	0.5T			
				58-56m	0.5T			
				56-54m	0.5T			
				54-52m	0.5T			
				52m	1T			(13.5T)
				Still going				
				08 START AT 80m	8T			
				80-82m	6T			
				82m	9.9T			(23.9T)
				Still going				
				TOTAL	37.6T			

Bleed 970/1000
Flow 490mm

REMARKS:	GAS MONITORING			
	CH ₄ :	% LEL	H ₂ S :	PPM
	CO :	PPM	O ₂ :	%
	NOTES:			
2 ASU = Pm Delivery R.E./SUPERVISOR				

DELIVERY	TICKET No.	QUANTITY
PFA	607574	1990
PFA	607582	1966
PFA	607582	2012

DAILY SITE RECORD

10f2

DELIVERY	TICKET No.	QUANTITY
PFA	607 603	20 40
PFA	607 605	20 14
PFA	607 617	20 36

SITE / JOB No.	Slopes Road, Bolton	DAY / DATE	Thurs 12/10/23	DRILLER	L. Howson
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BH	DEPTH		CASING	FORMATION	GROUTING			
	FROM	TO			PFA	CEMENT	SAND	OTHER
				Shale F.				
				Slight Shale collapse and Sinkage Spreading under one of the tracks of drilling rig.				
				Pulled casing and moved rig and platform away from Shale.				
				Back filled collapse with Stone and Set up platform and rig back over Shale position				
				Raised back down to 52m and continued to Grout.				
				* Gas monitor alert when filling casing Co2 3.66				

[illegible][illegible]

DAILY SITE RECORD

242

BH	DEPTH		CASING	FORMATION	GROUTING			
	FROM	TO			PFA	CEMENT	SAND	OTHER
				Shaft Grouting 08.				
				Mix 10-1			PFA - ok	
				Grout, Pressure then lift in 2m stages.				
				START AT 82m			7T	
				82 - 80m			6T	
				80 - 78m			6T.	
				78 - 76m			6T.	
				76m			20.3T.	
				still going				
				TOTAL.			45.3TON	

REMARKS:	GAS MONITORING			
	CH ₄ :	% LEL	H ₂ S :	PPM
	CO :	PPM	O ₂ :	%
	NOTES:			
	R.E./SUPERVISOR			

[illegible]

DAILY SITE RECORD

1 of 2.

SITE / JOB No.	STUPES RD LIVER	DAY / DATE	Fri. 13-10-23	DRILLER	M. Pugh
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BH	DEPTH		CASING	FORMATION	GROUTING			
	FROM	TO			PFA	CEMENT	SAND	OTHER
				Slab Grouting $\odot$ Redm mix 10-1 PFA - OK				
				Grout, Pressure Thru 1.5m 2m Stages				
START AT	76m	0.5T		35-36m	0.5T			
	76-74m	0.2T		36-34m	0.5T			
	74-72m	NO GROUT TAKEN		34-32m	0.5T			
	72-70m	" " "		32-30m	0.2T			
	70-68m	" " "		30-28m	0.2T			
	68-66m	" " "		28-26m	0.2T			
	66-64m	" " "		26-24m	0.2T			(Thin at surface)
	64-62m	" " "		24-22m	NO GROUT TAKEN			
	62-60m	0.2T		22-20m	"	"	"	"
	60-58m	0.2T		20-18m	"	"	"	"
	58-56m	0.2T		18-16m	"	"	"	"
	56-54m	0.2T		16-14m	"	"	"	"
	54-52m	0.2T		14-12m	"	"	"	"
	52-50m	0.2T		12-10m	"	"	"	"
	50-48m	0.2T		10-8m	"	"	"	"
	48-46m	0.2T		8-6m	"	"	"	"
	46-44m	0.2T		6-4m	"	"	"	"
	44-42m	0.2T		4-				
	42-40m	0.2T						
	40-38m	0.2T						
Need 970/1000 Flow 49cm					Flow.			
					TOTAL			
					5.2 TON			

REMARKS:	GAS MONITORING			
	CH ₄ :	% LEL	H ₂ S:	PPM
	CO:	PPM	O ₂ :	%
NOTES:				
Move Rig + Equipment to security controlled area for weekend				
 R.E. / SUPERVISOR				

DELIVERY	TICKET No.	QUANTITY
PFA	607627	19.54
OK	tl	9.50

$2 \neq 2$

BH	DEPTH		CASING	FORMATION	GROUTING			
	FROM	TO			PFA	CEMENT	SAND	OTHER
				Slab Grouting 08.				
				Grout, Pressure then lift in 2 stages				
				Start at 76		4T		
				76 - 74m		2T		
				74 - 72m		1T		
				72 - 70m		1T		
				70 - 68m		1T		
				68 - 66m		1T		
				66 - 64m		1T		
				64 - 62m		3T		
				62 - 60m		3T		
				60m		21.8T		
				still going.				
				TOTAL		38.8T		

REMARKS:	GAS MONITORING			
	CH ₄ :	% LEL	H ₂ S :	PPM
	CO :	PPM	O ₂ :	%
	NOTES:			
R.E./SUPERVISOR				

Tel: 01902 885241

DAILY SITE RECORD

SITE / JOB No.	STAPES RD L. LEVER	DAY / DATE	MON 16-10-23	DRILLER	M. PUGH
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[illegible][illegible]

DELIVERY	TICKET No.	QUANTITY
Res.	67664	18.90
	S	

DAILY SITE RECORD

1. 62

[illegible]

DELIVERY	TICKET No.	QUANTITY
	S	

[illegible][illegible]

DAILY SITE RECORD

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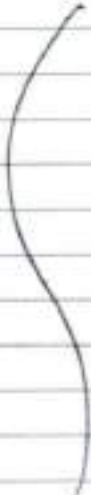
DAILY SITE RECORD

SITE / JOB No.	BOLTON	DAY / DATE	(TUE) 17-10-23	DRILLER	MICHAEL GALLAGHER
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BH	DEPTH		CASING	FORMATION	GROUTING			
	FROM	TO			PFA	CEMENT	SAND	OTHER
				RE-DRILL ON Shaft N°8				
	GL	41-		WEAK (4-6 Bar Back Pressure)				
	4-	42.3		Firm (8-10 Bar Back Pressure)				
	42.3	87.2		WEAK (6-8 Bar Back Pressure)				
	87.2	100-		Firm (Rmp Stalling)				
Shaft Sunk In from First Drill.								
Pulled Back to 86m to start grouting.								

REMARKS:	GAS MONITORING				DELIVERY	TICKET No.	QUANTITY
	CH ₄ :	0	% LEL	H ₂ S :	0	PPM	
	CO :	0	PPM	O ₂ :	20.6	%	
	NOTES:						
R.E./SUPERVISOR							

SITE / JOB No.	Baton	DAY / DATE	(WED) 18-10-23	DRILLER	MICHAEL GALLAGHER
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BH	DEPTH		CASING	FORMATION	GROUTING			
	FROM	TO			PFA	CEMENT	SAND	OTHER
<u>ONSITE 7.30am</u>								
<u>2nd Re-Drill On Shaft</u>								
<u>Nº8</u>								
	GL	36.2		WEAK (FLUSH RETURNING TO SURFACE)				
	36.2	37-		FIRM (LOST FLUSH 8-10 BAR)				
	37-	86-		WEAK (8-10 BAR BACK PRESSURE)				
	86-	100-		FIRM (PUMP STALLING)				
PULL BACK TO 86m READY TO START GROUTING.								
								

[illegible]

DAILY SITE RECORD

SITE / JOB No.	STOPS RD LILVER	DAY / DATE	Wed 18-10-23	DRILLER	M. Pugh
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BH	DEPTH		CASING	FORMATION	GROUTING				
	FROM	TO			PPA	CEMENT	SAND	OTHER	
				Grouting Shaft 08 Rebar 2					
				Mix 10-1 PFA - de					
				Grout. Pressure then hit in 2m stages					
	START AT			80m	0.25	46-42m	No grout taken		
				86-84m	0.25	42-40m	"	"	"
				84-82m	No Grout taken	40-38m	"	"	"
				82-80m	"	38-36m	"	"	"
				80-78m	"	36-34m	"	"	"
				78-76m	"	34-32m	0.35		
				76-74m	"	32-30m	0.25		
				74-72m	"	30-28m	0.25		
				72-70m	"	28-26m	No Grout taken	Flow of surface	
				70-68m	"	26-24m	"	"	"
				68-66m	"	24-22m	"	"	"
				66-64m	"	22-20m	"	"	"
				64-62m	0.25	20-18m	"	"	"
				62-60m	0.25	18-16m	"	"	"
				60-58m	0.25	16-14m	"	"	"
				58-56m	0.25	14-12m	"	"	"
				56-54m	No Grout taken	12-10m	"	"	"
				54-52m	"	10-8m	"	"	"
				52-50m	"	8-6m	"	"	"
				50-48m	"	6-4m	"	"	"
				48-46m	"	4-2m	0.35		
				46-44m	"				
							Flow.		
							TOTAL 2.2 TON.		

REMARKS:	GAS MONITORING				DELIVERY	TICKET No.	QUANTITY
	CH ₄ :	% LEL	H ₂ S :	PPM			
	CO :	PPM	O ₂ :	%			
	NOTES:						
	R.E./SUPERVISOR						

APPENDIX B

Drilling Method Statement



Unit 44, Coneygree Industrial Estate
Tipton, West Midlands DY4 8XP

T: 01902 885241

F: 01902 887257

E: enquiry@mandjdrilling.com

www.mandjdrilling.com

28th September 2023
WW/121.23

METHOD STATEMENT FOR TREATMENT OF MINESHAFTS
AT STOPE ROAD, LITTLE LEVER, BOLTON

Coal Authority

The Coal Authority Permit ref. 27404 was obtained by M & J Drilling Services on behalf of the Client for the mine workings treatment.

Service Information

Prior to commencement of works all available service information will be provided.

General Statement

Individual elements of work will be carried out in accordance with the client's specification and M & J Drilling's Health & Safety general policy document and task Risk Assessments. The works will be undertaken in accordance with the following:

- Alan and Wood Partners – Mine Shaft Treatment Specification Shafts 007 and 008 Sep. 23
- CIRIA C758 – Abandoned mine workings manual
- BRE 488/509 – Stabilising Mine Workings with PFA Grouts – Env Code of Practice
- BS5228 – Construction Noise
- BDA H&S Manual for Land Drilling (2019)
- Coal Authority Guidance on Managing the Risk of Hazardous Gases when Drilling or Piling Near Coal (2019).
- Coal Authority Permit ref. 27404
- Works will adhere to the Coal Authority Permit - Terms & Conditions.

1. Training

Upon arrival on site a site-specific induction will be given to operatives by the Main Contractor, covering the site-specific hazards. Prior to carrying out the works full instructions will be given to the operatives. M & J Drilling Services will have C.V.'s of all operatives available for inspection along with the Company Health and Safety Policy, COSHH details and Method Statement for all the required activities. Minimum PPE will normally be hard hat, Hi-Viz clothing, safety boots and gloves. In addition, safety glasses and dust masks are worn as appropriate. All operatives on site will comply with the minimum M & J PPE requirements. Each C.V. will detail the plant the operatives are trained to use. M & J Supervisor will instruct workforce on a daily basis and liaise with the Engineer and M&J Engineer and Contracts Management.

2. Working Area

The site area/working area has been fenced off by others prior to our start on site. Access routes will be maintained as necessary. Access to the site will be as designated in the main contractors Traffic Management Plan.

Access and egress from site, particularly at times of material and plant deliveries, will have to be managed to minimise spoil from the site being taken out onto the road. Parking for operatives' vans will be on site. Access onto the site will be off Stopes Road.

3. **Welfare and Security**

Welfare will be provided by others on site. All vans also contain hot hand wash facilities and first aid kit.

4. **Mobilisation**

Once sufficient access has been established, all necessary drilling and grouting plant will be mobilised to site. This will comprise:

- Klemm Drill Rig
- Forklift
- Small Air driven paddle mixer
- Diaphragm grout pumps
- 2-tool Compressor
- Drill rods, casing, hoses, and Shaft safety platform.

All mobile plant is to be fitted with flashing amber beacons and seat belts. No open cab vehicles / dumpers anticipated to be used on site.

5. **Setting out and Services**

Prior to commencement of any drilling or other intrusive works all available service information will be provided. The main contractor will inform us of the positions of possible services which will be clearly identified to M & J Drilling Services Representative on site. We will also be informed of any other specific hazards which may exist within the site. The mine shaft location will be set out prior to our arrival.

In this instance the unrecorded shaft was previously encountered as part of the mine workings treatment. No further works have been undertaken in this area, as such, no services should be present in our drilling area.

6. **Service Pits**

If any borehole positions are located in the vicinity of possible services then hand dug inspection pits may be required to a depth of 1.2m if necessary, to confirm that the borehole locations are clear of services. All drilling areas should be surveyed by a cable avoidance tool prior to drilling within the vicinity.

7. **Water Supply for the works**

The water supply for the drilling and grouting works will be sourced from a nearby WO or FH located outside the welfare cabins. The supply will be sourced via a licensed United Utilities Standpipe. Layflat and other hoses will be carefully routed from the WO/FH location and where necessary to cross footpaths or vehicle entrances run under suitable ramps with signage in place.

8. **Gas Monitoring**

Due to the possibility of gas migration the gas monitor should be fully charged, switched to constant monitoring mode and located by the drilling table during drilling activities. Once drilling is complete take readings from the drill hole and insert the information on the drill log sheets. Should you encounter gas, switch off all plant in the vicinity, move away from the borehole and inform the Supervisor/Engineer or management immediately. Surface gas monitoring shall be undertaken at the site boundary at locations and on a frequency to be agreed with the Engineer or Supervisor; emphasis will be placed on the boundaries closest to the neighbouring properties. Furthermore, consideration will be given to either installing specific monitoring boreholes or utilising suitable grid boreholes for the purpose of gas monitoring while drilling and grouting activities are being undertaken. It is considered that the use of water for the drilling flush reduces the risk of potential gas issue.

Gas	Alarm Trigger Level
Methane	10% LEL (0.5 v/v)
Oxygen	19.5% (Depletion Low Threshold)
Carbon Monoxide	20 PPM
Hydrogen Sulphide	5 PPM
Carbon Dioxide (CO ₂)	0.5% (Low Threshold)

9. **Shaft Drilling**

The shafts, referenced as 376407-007 and 376407-008 was encountered in a previous phase of works completed by others.

The rig will be set up on a safety steel. Shafts shall be drilled vertically with a borehole of either 88.9mm or 101mm diameter. While drilling the shaft, the gas monitor should be on constant monitoring and suspended adjacent to the drill table in case the process disturbs any gas within the shaft. If any gas is detected, work is to stop immediately, switch off all plant, move away from the borehole, and the Drilling Supervisor informed immediately with a note and detail of any gas readings made on the drilling log. Gas monitors are to be charged daily. Drilling equipment shall be well maintained and of suitable size/capacity for the works required. The base of the shafts are reported by the Coal Authority to be approximately 260m, as this is too deep to safely drill to, drilling will be down to a depth of 100m or as instructed by the engineer.

A casing drill string of a minimum I.D. 76mm shall be drilled and inserted to the base of the hole in the shaft for subsequent grouting. Should obstructions be encountered in the shaft such as timber, boulder or spoil, the Engineer shall be notified immediately. The driller shall attempt to penetrate the obstruction and then must be further instructed either to continue or pull off and re-drill at a different position. If major voids are encountered, i.e. below stage or the safety platform, it may be possible to drill a casing (of suitable diameter) through the 'bridged obstruction' so that it is inserted into the void. This would allow gravel or crushed rock to be introduced into the void. Drilling would then be continued beyond the base of the void to the required 100m depth and the existing or placed infill grouted as specified below.

10. **Shaft Grouting**

Mineshafts will be treated from the 100 mbgl back to surface. The grout mix shall be a neat opc mix with minimum amount of clean water added to form a pumpable mix. Sand may be added in various proportions to suit where grout is suspected to be entering open insets. Stone / gravel will be used if a shaft is found to be voided. Grout mixing and pumping plant shall be such that the grout is thoroughly agitated and remains intimately mixed.

The pump shall be capable of delivering pressures up to 10 bar. Grouting shall commence at the specified depth in the shaft and continue to refusal at pressures to be specified by the Engineer. (Typically 0.1Bar/m). The grout tube shall be withdrawn and grouting continued again to refusal at successive 2m intervals up the shaft, at the same time gas monitoring devices should be on constantly due to the possibility of the grout displacing pockets of gas as the shaft fills. Full records shall be made available of grout takes at each stage and any gas readings taken. Check drilling to confirm the completeness of the grout treatment will be undertaken as required, this will comprise of a primary, secondary and if necessary tertiary pass of drilling to the specified depth. Whilst treating all mineshafts, very careful monitoring of grout uptake will be undertaken, to ensure that no fugitive grout escapes beyond the shaft column.

11. **Materials**

Pulverised fuel ash shall be grouting grade, conforming to BS EN 13055:2016 (if required)

Cement shall be Ordinary Portland Cement conforming to BS EN 197-1:2011.

Sand shall be clean, washed, and conforming to BS EN 12620:2013 or otherwise as approved by the Engineer. Water shall be clean and equivalent to potable quality, sourced from an approved supplier.

12. **High Grout Takes**

If high grout takes occur while grouting check for possible grout loss i.e. all service ducting especially sewers and manholes, find the downstream of the sewer and check minimum twice daily when grouting works are ongoing.

13. **Environmental Protection**

It is the duty of all Personnel on site and the Management to be aware of the potential impact our activities on site have on the environment and to ensure that the utmost care is taken to avoid environmental damage.

14. **Water Courses within the Vicinity of Works**

All water courses in the immediate vicinity and all known drains and sewers shall be monitored by visual inspection for any drilling flush/grout ingress. Should drill cuttings/flush/grout appear in the sewers or water courses, works shall cease and the material shall be cleared out and the source of ingress investigated. Drilling/grouting operations shall then continue.

15. **General**

All operations shall be kept within the designated site boundary.

All vehicles shall take care when entering or leaving the site and will follow the relevant traffic management plan. Any leaks from tanks (fuel, oil, water etc) shall be reported to the Engineer/Supervisor or the Management and repairs effected as soon as is reasonably practicable. If necessary, the immediate working areas around the drilling and grouting plant shall be defined by fencing or bunting to avoid interference with any other operations which may be taking place on site.

16. **Emergency Procedures**

The Principle Contractor is to induct all operatives into the sites emergency procedures. They should cover what to do in case of a fire and medical incidents. Examples of what they should cover are below.

The risk of fire is seen to be minimal and no burning of material on site is to be allowed. If a fire does occur and cannot be controlled through the use of a fire extinguisher, operatives must evacuate the scene to a safe location i.e. the designated assembly point and call 999 for the fire brigade.

For minor incidents, which cannot be dealt with the first aid on site, the nearest A&E department is:

Royal Bolton Hospital, Minerva Road, Farnworth, Bolton, Lancashire, BL4 0JR

For any major incidents call 999 and request the Ambulance Service and direct them to the site at: Stope Road, Little Lever, Bolton, BL3 1NP

SHEET 1 OF 2 – TO BE RETAINED / SUPPLIED TO PRINCIPLE CONTRACTOR

METHOD STATEMENT/RISK ASSESSMENT /CONSTRUCTION PHASE PLAN BRIEFING
GIVEN BY:-

NAME :-

DATE:-

METHOD STATEMENT/RISK ASSESSMENT/CONSTRUCTION PHASE PLAN UNDERSTOOD
BY:-

NAME:-

DATE:-

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.
- 11.
- 12.

SHEET 2 OF 2 – TO BE RETURNED TO THE M & J DRILLING OFFICES

METHOD STATEMENT/RISK ASSESSMENT /CONSTRUCTION PHASE PLAN BRIEFING
GIVEN BY:-

NAME :-

DATE:-

METHOD STATEMENT/RISK ASSESSMENT/CONSTRUCTION PHASE PLAN UNDERSTOOD
BY:-

NAME:-

DATE:-

- 1.
- 2.
- 3.
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- 5.
- 6.
- 7.
- 8.
- 9.
- 10.
- 11.
- 12.

Alan Wood & Partners

Hull Office	Leeds Office	Lincoln Office
(Registered Office)	18 Howley Park Business Village	Unit H
341 Beverley Road	Pullan Way	The Quays
Hull	Leeds	Burton Waters
HU5 1LD	LS27 0BZ	Lincoln LN1 2XG
Telephone	Telephone	Telephone
01482.442138	0113. 5311098	01522.300210
Scarborough Office	Sheffield Office	York Office
Kingsley House	Hallamshire House	Omega 2
7 Pickering Road	Meadow Court	Monks Cross Drive
West Ayton	Hayland Street	York
Scarborough YO13 9JE	Sheffield S9 1BY	YO32 9GZ
Telephone	Telephone	Telephone
01723.865484	01142.440077	01904 611594
Email	Website	
eng@alanwood.co.uk	www.alanwood.co.uk	

Our Services

BIM Processes
 Blast Design
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 BREEAM
 Building Regulations Applications
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 CDM – Principal Designer
 Civil Engineering
 Contaminated Land/Remediation
 Contract Administration
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 Expert Witness Services
 Form Finding
 Flood Risk Assessments
 Foundation Design
 Geo-technical Investigations & Design
 Geo-environmental Investigations
 Historic Building Services

Highway Design
 Land Remediation Advice
 Land Surveying
 Marine Works
 Mining Investigations
 Modular Design
 Parametric Modelling
 Party Wall Surveyors
 Planning Applications
 Project Managers
 Renewable Energy
 Risk Assessments & Remediation
 Road & Drainage Design
 Site Investigations
 Site Supervision
 Structural Engineering
 Sulphate Attack Specialists
 Temporary Works
 Topographic & Measured Surveys
 Traffic Assessments

Quality Assurance Accreditation

ISO 9001 Registered firm
 Certificate no. GB.02/07

Environmental Accreditation

ISO 14001 Registered firm Certificate no.
 GB.09/277b



LABORATORY TEST REPORT
COMPRESSIVE STRENGTH OF CONCRETE CUBES

Client: M&J Drilling Services Ltd
Site: Stopes Road
Order No: 02/04541

Lab. Ref. No: MJD 164865
Job No. : 0
Issue date: 9/11/23

Location: 10-1 PFA OPC Shaft 8 and 10-1 PFA OPC Shaft 7																															
Date cast: 11/10/23 Made By: Site Time Cubes Made: Date Received: 7/11/23 Delvd./Collected: Delivered				Mix No: Unknown Spec. Strength: Unknown (N/mm ²) Spec. Slump: (mm) Min. Cement Content: (kg/m ³) Water Cement Ratio: Cement Type: Aggregate Size & Type: (mm) Admixture: Measured Slump: (mm) Additional Information:																											
Supplier: Source: Time Batched: Ticket No: Nominal Size: 150																															
Mark	Age Days	Test Date	Checked Measured size of cube (mm x mm x mm)	Saturated				Strength (N/mm ²)	Fail Type	Tested By	Remarks on Test																				
				Wt. of cube (g)		Density (Kg/m ³)	Ultimate load (kN)																								
				In Air	In Water																										
Shaft7-3	28	8/11/23	149 x 149 x 142	4664	1721	1580	180.7	8.1	A	PK																					
Shaft7-4	28	8/11/23	149 x 149 x 146	4941	1801	1570	192.9	8.7	A	PK																					
Shaft8-1	28	8/11/23	148 x 148 x 148	5089	1842	1570	139.1	6.4	A	PK																					
Shaft8-2	28	8/11/23	149 x 149 x 146	4953	1823	1580	141.3	6.4	A	PK																					
Initial Curing: Curing by Client, No Information Available Laboratory curing: After demoulding / date recieved (if delivered or collected). Cured in water at a temperature of 20°C ± 2°C until time of testing.						Defect abbreviations <table style="width: 100%; border: none;"> <tr> <td>CC</td><td>Chipped corners</td><td>FR</td><td>Fins removed</td></tr> <tr> <td>CE</td><td>Chipped edges</td><td>OoS</td><td>Out of square - unable to test</td></tr> <tr> <td>RS</td><td>Rough surfaces</td><td>CR</td><td>Cube retained</td></tr> <tr> <td>SV</td><td>Surface voids</td><td>PC</td><td>Poor compaction</td></tr> <tr> <td>MMFB</td><td>Matrix missing from base</td><td>MC</td><td>Missing corner</td></tr> </table> Surface conditions: Clean and free from excess moisture						CC	Chipped corners	FR	Fins removed	CE	Chipped edges	OoS	Out of square - unable to test	RS	Rough surfaces	CR	Cube retained	SV	Surface voids	PC	Poor compaction	MMFB	Matrix missing from base	MC	Missing corner
CC	Chipped corners	FR	Fins removed																												
CE	Chipped edges	OoS	Out of square - unable to test																												
RS	Rough surfaces	CR	Cube retained																												
SV	Surface voids	PC	Poor compaction																												
MMFB	Matrix missing from base	MC	Missing corner																												
Remarks on receipt: Satisfactory						Sampling certificate: Yes																									

Compressive strength of cubes in accordance with BS EN 12390-3: 2019 Cubes cured in accordance with BS EN 12390-2: 2019

Density of hardened concrete in accordance with BS EN 12390-7: 2019 + AC: 20 Shape, Dimensions others in accordance with BS EN 12390-1: 2021

The stated result only relates to the item/location tested, this report shall not be reproduced except in full.

Signed:

Peter Kerwood
Technician



Form: RS47 Issue 1

Page 1 of 1

LABORATORY TEST REPORT
COMPRESSIVE STRENGTH OF CONCRETE CUBES

Client: M& J Drilling Services Ltd
Site: Stopes Road
Order No: 02/04541

Lab. Ref. No: MJD 164866
Job No. : 0
Issue date: 14/11/23

Location: 10-1 PFA OPC Shaft 8 and 10-1 PFA OPC Shaft 7																															
Date cast: 17/10/23 Made By: Site Time Cubes Made: Date Received: 7/11/23 Delvd./Collected: Delivered						Mix No: Unknown Spec. Strength: Unknown (N/mm ²) Spec. Slump: (mm) Min. Cement Content: (kg/m ³) Water Cement Ratio: Cement Type: Aggregate Size & Type: (mm) Admixture: Measured Slump: (mm) Additional Information:																									
Supplier: Source: Time Batched: Ticket No: Nominal Size: 150																															
Mark	Age Days	Test Date	Checked Measured size of cube (mm x mm x mm)	Saturated				Strength (N/mm ²)	Fail Type	Tested By	Remarks on Test																				
				Wt. of cube (g)		Density (Kg/m ³)	Ultimate load (kN)																								
				In Air	In Water																										
Shaft7-7	28	14/11/23	148 x 148 x 148	4969	1814	1570	231.5	10.6	A	PK																					
Shaft7-8	28	14/11/23	148 x 148 x 148	4868	1758	1570	238.9	10.9	A	PK																					
Shaft8-5	28	14/11/23	148 x 148 x 148	4799	1721	1560	194.9	8.9	A	PK																					
Shaft8-6	28	14/11/23	148 x 148 x 146	4551	1666	1580	195.7	8.9	A	PK																					
Initial Curing: Curing by Client, No Information Available Laboratory curing: After demoulding / date recieved (if delivered or collected). Cured in water at a temperature of 20°C ± 2°C until time of testing.						Defect abbreviations <table border="0" style="width:100%;"> <tr> <td>CC</td><td>Chipped corners</td><td>FR</td><td>Fins removed</td></tr> <tr> <td>CE</td><td>Chipped edges</td><td>OoS</td><td>Out of square - unable to test</td></tr> <tr> <td>RS</td><td>Rough surfaces</td><td>CR</td><td>Cube retained</td></tr> <tr> <td>SV</td><td>Surface voids</td><td>PC</td><td>Poor compaction</td></tr> <tr> <td>MMFB</td><td>Matrix missing from base</td><td>MC</td><td>Missing corner</td></tr> </table> Surface conditions: Clean and free from excess moisture						CC	Chipped corners	FR	Fins removed	CE	Chipped edges	OoS	Out of square - unable to test	RS	Rough surfaces	CR	Cube retained	SV	Surface voids	PC	Poor compaction	MMFB	Matrix missing from base	MC	Missing corner
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RS	Rough surfaces	CR	Cube retained																												
SV	Surface voids	PC	Poor compaction																												
MMFB	Matrix missing from base	MC	Missing corner																												
Remarks on receipt: Satisfactory						Sampling certificate: Yes																									

Compressive strength of cubes in accordance with BS EN 12390-3: 2019 Cubes cured in accordance with BS EN 12390-2: 2019

Density of hardened concrete in accordance with BS EN 12390-7: 2019 + AC: 20 Shape, Dimensions others in accordance with BS EN 12390-1: 2021

The stated result only relates to the item/location tested, this report shall not be reproduced except in full.

Signed:

Peter Kerwood
Technician



Form: RS47 Issue 1

Page 1 of 1



The Coal
Authority

Permit to Enter or Disturb Coal Authority Interests

Permit 27404

Name and Address of Permit Holder:

Harworth Estates
Advantage House
Poplar Way
Catcliffe
Rotherham
S60 5TR

Site Location:

Former Tarmac Site
Stopes Road
Little Lever
Bolton
BL3 1NP

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

Treatment of two mine entries by pressure grouting (376407-007 & 008) 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: Jake Morris Granted Date: 05/140/2023

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

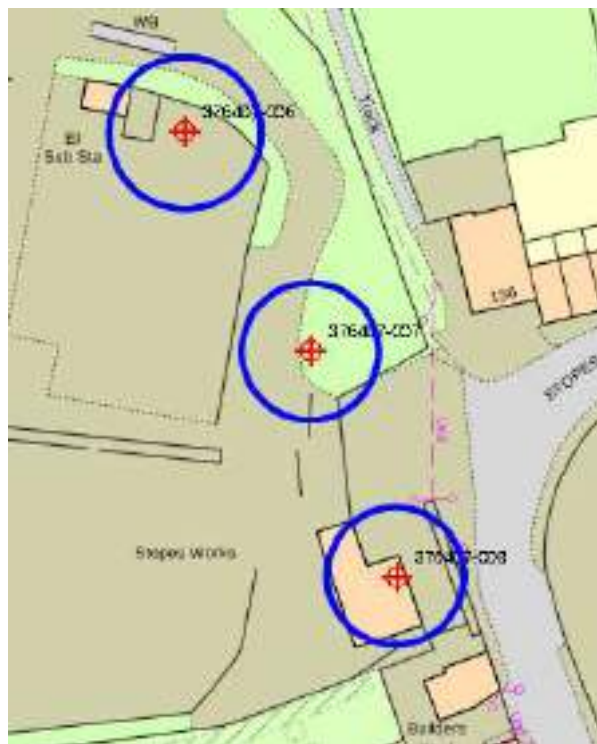


The Coal
Authority

Granted Permit Boundary

Permit Ref: 27404

Permit Boundary:



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Appendix C VHE Addendum Validation Report (JMS/SR/JP/47366- RP006 Rev A)



Engineer/
Manage/
Deliver/

November 2023

**Addendum to Earthworks
Remediation Validation Report**

**PROJECT NO.
JMS/SLR/JP/47366-Rp006-RevA**



Alan Wood & Partners

Issuing Office

Hallamshire House
Meadow Court
Hayland Street
Sheffield
S9 1BY

Telephone: 01142 44007

Email: eng@alanwood.co.uk
Website: www.alanwood.co.uk

STOPES ROAD, RADCLIFFE, MANCHESTER, M26 3TW ADDENDUM TO EARTHWORKS REMEDIATION VALIDATION REPORT

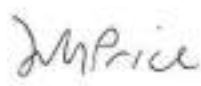
For

VHE CONSTRUCTION PLC

Project Reference: JMS/SLR/JP/47366-Rp006-RevA

Prepared by: **J Price**, BSc (Hons), MSc, FGS

Signed:



Date: 15th November 2023



Approved by: **S L Roberts**, BEng (Hons) MSc CEnv MICE

Signed:

Date: 15th November 2023

Issue	Revision	Revised by	Approved by	Revised Date
Rev A	Addressed Hydrock Comments	JP	SR	16 th November 2023

For the avoidance of doubt, the parties confirm that these conditions of engagement shall not and the parties do not intend that these conditions of engagement shall confer on any party any rights to enforce any term of this Agreement pursuant of the Contracts (Rights of third Parties) Act 1999.

The Appointment of Alan Wood & Partners shall be governed by and construed in all respects in accordance with the laws of England & Wales and each party submits to the exclusive jurisdiction of the Courts of England & Wales.

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DRAWINGS

VHEJ808-101 BASE OF EXCAVATION

VHEJ808-102 MATERIAL IMPACTING BASE OF EXCAVATION REV B

VHEJ808-202 FINISHED LEVEL AS-BUILT

VHEJ808-701 SOFT SPOTS REV A

VHEJ808 NDG TEST LOCATIONS

VHEJ808 PLATE & SRD TEST LOCATIONS

VHEJ808-401 EXCAVATION CONSTRAINTS REV E

APPENDICES

APPENDIX A: PRE-CLASSIFICATION TEST RESULTS

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EXECUTIVE SUMMARY

This presents the salient points of the report and should not be referred to in isolation.

Site Location and Description	The site is located off Stopes Road, Radcliffe, Manchester, M26 3TW National Grid Reference (NGR) 376262mE, 407648mN, approximately 4.4 km south east of Bolton town centre. The site is irregularly shaped and covers an area of approximately 5.8ha in size.
Earthworks/ Remedial Objectives	To achieve a suitable-for-use site, remediation has been recommended to ensure that unacceptable harm does not occur to human health and the wider environment during normal site use following redevelopment. Compaction of the placed materials in future development areas should be to 95% of the maximum dry density. Air voids in placed fill shall be less than 5% for cohesive soils and between 5% and 10% would be acceptable for granular fill.
Earthworks Specification	The earthworks specification (15220-HYD-XX-XX-RP-GE-0006) and remediation strategy (15220-HYD-XX-XX-RP-GE-0005-S2-P03) by Hydrock adopted by AWP, along with subsequent AWP amendments (JS/AC/47366-Rp001 and JS/AC/47366-Rp002 Rev A) were used during the earthworks validation works, covered by this report. Materials to be placed were to be engineered to achieve 95% compaction and air voids of less than 5% for cohesive soils and up to 10% for granular soils. Earthworks materials were classified in accordance with the criteria in Tables 6/1 and 6/2 in Series 600 of the Specification for Highway Works, and fell into one or other of the following general classifications: 'Acceptable material: natural excavated material from within the site, or artificial materials processed through standard engineering means, which meet the requirements of Table 6/1 and Table 6/2 for acceptability for use in the earthworks. The maximum particle size shall be 125mm.' 'Unacceptable material: Class U1 or U2 as defined in clause 2.2, shall not be used for the earthworks.'
Remediation Strategy	In accordance with the Hydrock Remediation Strategy and Hydrock Earthworks Specification, adopted by AWP and VHE, contamination testing was undertaken where required. The Hydrock Earthwork Specification stipulates all material to be re-used within the remedial works should be free from visual asbestos-containing materials. Where laboratory analysis identifies the presence of TPH above the assessment criteria set out in table 6.1 of the Hydrock Remediation Strategy, it shall be treated as a hotspot and remediated.
Earthworks Classification	The earthworks and remediation operation was completed between the 6th October and the 10th November 2023, all works were undertaken by VHE Construction Plc. Alan Wood & Partners were separately employed by the Contractor in order to provide site supervision, specialist geotechnical advice and consultancy services with the environmental remediation and re-engineering of the variable fill material. Alan Wood & Partners were separately employed by the Contractor in order to provide site supervision, specialist geotechnical advice and consultancy services with the environmental remediation and re-engineering of the variable fill material. Three types of engineered fill were classified in accordance with Table 6.1 of the Specification for Highways Works Series 600. A limestone gravel, ash fill mix was classified as 2C (Stoney Cohesive), a limestone gravel was

	classified as 1A (Well Graded Granular), and an Imported Granular Material was classified as 6F5 (Selected Granular Material – Imported).
Geotechnical Testing	Laboratory testing was carried out on samples of fill materials to classify their Geotechnical properties. Testing included: Particle Size Distribution; Optimum Moisture Content (OMC); Maximum Dry Density (MDD) (4.5kg rammer); and Air voids at OMC. The reused limestone gravel/ash fill material had an optimum moisture content of 15%, a maximum dry density of 1.60Mg/m³. Air voids at OMC were 7% for this sample. The limestone hardcore material had values of optimum moisture content ranging between 6.7% and 12%, with an average of 9.1%. Maximum dry density values range from 1.71 Mg/m³ to 2.15 Mg/m³, with an average of 2.0 Mg/m³. From the information provided the air voids at optimum moisture content for these samples ranged from 0% to 6%, with an average of 3%. The imported aggregate material had values of optimum moisture content ranging between 5.9% and 7.5%. Maximum dry density values were recorded at 2.09 Mg/m³. Air voids at OMC ranged from 7% and 7.5% with an average of 7.25%.
Compaction Validation Testing	The degree of compaction across the site has been validated through the use of 17No. nuclear density gauge tests. With a further 4No. sand replacement tests undertaken as further calibration for the NDG testing. All of the NDG results were in accordance with the specification. All of the SRT results demonstrated the placed fill had met the specification criteria. In addition, 4No. Plate Load Tests have been used to validate the base, the surface and at 1m of placed fill.
Chemical Validation Testing	Chemical testing was undertaken of samples taken from a previously identified hotspot area (HS2). This material was contaminated with TPH and asbestos and materials were excavated, segregated from clean soils, and are currently in the process of being removed from site. Chemical samples were also taken to validate the fill and identified hotspots. Apart from the samples taken from the material excavated from the known hotspot (HS2), no potential contaminants of concern in relation to human health or the environment were detected above the specified acceptance criteria.
Conclusions	The results of verification testing have confirmed that the works have been completed in accordance with the specifications and agreed variations. The remediation objectives are considered to have been met and there are no residual unacceptable risks to end users associated with soil contamination. The placed fill has been shown to meet the performance criteria required to support development foundations and infrastructure. There was no unacceptable risk to controlled water / groundwater identified prior to commencement of the earthworks. Chemical sampling has proven that the overall contaminant loading has decreased, with grossly contaminated soils in the process of being removed from site. Therefore, it is considered that there is no residual unacceptable risk to controlled waters. This report should be included in the Health and Safety file for the site to ensure future maintenance which could penetrate the cover system can be carried out safely with due consideration for residual soil.

1 INTRODUCTION

1.1 Details of Commission

1.1.1 Alan Wood & Partners (AWP) were commissioned by VHE Construction (the "Client") as Principal Designer to provide technical services associated with the earthworks, environmental remediation and validation during the enablement works of the development area at the Stopes Road, Radcliffe, Manchester, M26 3TW. Whilst the majority of the earthworks has been completed in a previous phase, two areas of the site remained on hold until mine shaft treatment works were carried out. The treatment works have now been completed and the following report summarises the earthworks, remediation and validation of this area.

1.1.2 This report presents technical validation of on-site earthwork and remediation activity within the area of the mine shafts, based on the following reports as well as their accompanying documents:

- Hydrock, Geotechnical Design Report for Earthworks (15220-HYD-XX-XX-RP-GE-0005-S2-P03), dated June 2022;
- Hydrock, Remediation Strategy & Verification Plan (15220-HYD-XX-XX-RP-GE-0006), dated June 2022;
- Alan Wood & Partners, Earthwork Specification (JS/AC/47366-Rp002 Rev A), dated September 2022;
- Alan Wood & Partners, Remediation Strategy (JS/AC/47366-Rp001), dated June 2022;
- Alan Wood and Partners Technical Note 47366-Tn005 Pre-classification geotechnical testing and trial pad results, dated 2nd September 2022;
- Method statement produced by VHE Construction;
- Han Kloubert, RDC Compaction and Compaction Measurement with Polygon Roller prepared for VHE;
- Alan Wood & Partners, Earthworks Remediation Validation Report (JMS/SR/BK/47366-Rp004), dated July 2023;

1.2 Site Location & Description

1.2.1 The site is located off Stopes Road, Radcliffe, Manchester, M26 3TW National Grid Reference (NGR) 376262mE, 407648mN, approximately 4.4 km south east of Bolton town centre.

1.2.2 The overall site is irregularly shaped and covers an area of approximately 5.8ha in size.

1.2.3 The site is currently accessed from the southeast, off Stopes Road.

1.2.4 The site has historically been utilised for commercial and industrial purposes including a tarmac block manufacturing plant, which consists of several buildings and an electricity substation.

1.2.5 Demolition of above ground structures had been executed down to slab level prior to these works, however additional deeper concrete slabs were still present.

1.2.6 This report covers earthworks and remediation carried out surrounding two mine shafts in the southeast corner of the site known as Shaft 007 and Shaft 008.

1.3 Objectives of the Earthworks and Remediation

1.3.1 To achieve a suitable-for-use site, remediation has been recommended to ensure that unacceptable harm does not occur to human health and the wider environment during normal site use following redevelopment.

1.3.2 Compaction of the placed materials in future development areas should be to 95% of the maximum dry density. Air voids in placed fill shall be less than 5% for cohesive soils and between 5% and 10% is deemed acceptable for granular fill.

1.4 Scope of Works

1.4.1 This report covers the earthworks and remediation undertaken in October and November 2023 by VHE Construction in two areas which were previously inaccessible due to the presence of untreated mine shafts.

1.4.2 The works undertaken by VHE comprised;

- Turnover and removal of existing below ground obstructions to a depth of 1.5m below existing or proposed ground level whichever is deeper, or the top of natural soils;
- Over-excavation of contamination hotspot 2; and
- Segregation of excavated materials and processing of artificially hard materials.

2 EARTHWORKS SPECIFICATION AND REMEDIATION STRATEGY

2.1 General

2.1.1 The pre-remediation investigations conducted by Hydrock, remediation strategy (15220-HYD-XX-XX-RP-GE-0005-S2-P03, dated June 2022) and earthworks specification (15220-HYD-XX-XX-RP-GE-0006) were adopted by AWP and used as the basis for the Alan Wood and Partners Earthworks Specification and Remediation strategy and subsequent amendments, and used during the earthwork's validation works, covered by this report. These documents were adopted by AWP and VHE and should be read with their accompanying documents.

2.2 Earthworks Assessment

2.2.1 Excavated materials were classified in accordance with the criteria in Tables 6/1 and 6/2 in Series 600 of the Specification for Highway Works, and fell into one or other of the following general classifications:

- i) **'Acceptable material:** natural excavated material from within the site, or artificial materials processed through standard engineering means, which meet the requirements of Table 6/1 and Table 6/2 for acceptability for use in the earthworks. The maximum particle size shall be 125mm.'
- ii) **'Unacceptable material:** Class U1 or U2 as defined in clause 2.2, shall not be used for the earthworks.'

2.2.2 In addition to these grading requirements, the maximum particle size of any fill material shall be no more than two-thirds of the proposed compacted layer thickness.

2.2.3 The Contractor was responsible for classifying all acceptable material types to be incorporated into the earthworks.

2.3 Remediation Strategy

2.3.1 In accordance with the Hydrock Remediation Strategy, AWP Remediation Strategy and Hydrock Earthworks Specification, contamination testing was undertaken where required.

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- 2.3.2 The Hydrock Earthwork Specification stipulates all material to be re-used within the remedial works should be free from visual asbestos-containing materials.
- 2.3.3 As part of the chemical validation testing to ensure the material was suitable for re-use and does not present an unacceptable residual risk to future site end users or the wider environment; samples with visual and/or olfactory evidence of contamination were tested. Chemical analysis was compared to Table 6.1 of Hydrock remediation strategy.
- 2.3.4 Alan Wood & Partners undertook regular inspections to confirm site works were being carried out in accordance with the agreed specification.

3 EARTHWORKS EXECUTION

3.1 General

- 3.1.1 The earthworks and remediation operation was completed between the 6th October and the 10th November 2023, all works were undertaken by VHE Construction Plc. Alan Wood & Partners were separately employed by the Contractor in order to provide site supervision, specialist geotechnical advice and consultancy services with the environmental remediation and re-engineering of the variable fill material.
- 3.1.2 For ease of material tracking a grid with alphanumeric identifiers was established for the site, as shown on drawing VHEJ808-302 Site Boundary with 20m Grid.

3.2 Earthworks Duration

- 3.2.1 The earthworks were completed during October and November 2023, over a period of 5 weeks.

3.3 Prevailing Weather Conditions

- 3.3.1 The weather during the earthworks was generally wet with intermittent dry spells. Earthworks were carried out during dry spells.

3.4 Hotspot 2

- 3.4.1 A remaining contamination hotspot identified by Hydrock's previous site investigation, which contained petroleum hydrocarbons, could not previously be fully remediated due to constraints associated with the untreated mineshafts and services at the time of Hydrock's investigation. Additional validation sampling was required following treatment to stabilise the mineshaft and any residual contaminated material removed and replaced with clean soils.

3.5 Engineered Fill Operation

- 3.5.1 The compaction plant used on site was approved by Alan Wood & Partners.
- 3.5.2 The excavation, placement and compaction of all engineered fill was completed solely by VHE Construction Plc using plant supplied by Clee Hill Plant.
- 3.5.3 In accordance with the Remediation Strategy for the area of future development, a 1.5m turnover of the made ground was required in the area of treated mineshafts. The approved Earthworks Specification indicated that landform remodelling, including backfilling voids and modifying the existing site profile to create a profile as shown on

Hydrock Ground Improvement Strategy Drawing 15220-HYD-XX-XX-DR-G-6001 was required.

- 3.5.4 All of the capping material (final 600 mm to bring site to final development level) is to be placed by the future developers of the site at a later date.
- 3.5.5 The final levels achieved are shown on the VHE as-built survey drawing VHEJ808-201 Formation Level.

3.6 Encountered Ground Conditions

- 3.6.1 Ground conditions encountered across the site as a whole during the previous intrusive investigations comprised made ground to depths of between 0.4 m and approximately 7.5m below original ground level. The made ground encountered predominantly fell into two categories; an ash material and a sandy limestone gravel.
- 3.6.2 The made ground was predominantly underlain by Glacial Till, comprised of clay interbedded with, silt, sand and gravel.
- 3.6.3 Visual and olfactory evidence of hydrocarbon contamination was observed in cell H17 when removing made ground in the location of Hotspot 2. Potential ACM was also recorded, this was sent to the laboratory for confirmatory testing.
- 3.6.4 During the initial surface strip, other than where specifically reported, no further visual or olfactory evidence of contamination was identified.
- 3.6.5 During the earthworks fill operation, the material being placed was described in accordance with BS5930:1999, (BS5930:1999 Amendment 1) and BS EN 1997-2/2007 (EC7 Part 2).

3.7 Engineered Fill

- 3.7.1 Three material types were used in the earthworks, a yellow limestone 1A material used during the previous phase of earthworks, a limestone/ ash fill mix (general site won fill) and an imported material (quarried aggregate). The classification test data of the limestone gravel/ash fill mix and imported material has been reviewed and is presented in reports MRN4454-106 and MRN 4742-17. The classification testing for the yellow limestone is presented in reports MRN 4454-35, MRN 4454-64, MRN 4454-68 and MRN 4454-69. The classification test data is summarised in the following section, with full results provided in Appendix A.
- 3.7.2 The limestone gravel/ash fill mix was classified as **2C** (Stony Cohesive), the imported material was classified as **6F5** (Selected Granular Material - Imported), the yellow limestone gravel was classified as **1A** (well graded granular).
- 3.7.3 The laboratory typically named limestone/ash fill mix as “general fill”, the import material as “imported aggregate” and the reused limestone gravel being named as “yellow gravel”.
- 3.7.4 The “general fill” (limestone gravel ash mix) was tested and classified as 2C, it has the following compaction characteristics.

Table 3-1: Reused Limestone Gravel/Ash Fill Characteristics

General Fill Characteristic	Value
Particle Density	2.31 Mg/m ³
Optimum Moisture Content	15%
Maximum Dry Density	1.60 Mg/m ³
Air Voids @ OMC	7%

- 3.7.5 Two samples of “imported aggregate” were tested returning as non-plastic, with the following compaction characteristics. Both of the samples achieved <10% air voids.

Table 3-2: Imported 6F5 Characteristics

Imported 6F5 Characteristic	Minimum Value	Maximum Value	Average Value
Bulk Density	2.15 Mg/m ³	2.18 Mg/m ³	2.165 Mg/m ³
Particle Density	2.61 Mg/m ³	2.69 Mg/m ³	2.65 Mg/m ³
Optimum Moisture Content	5.9%	7.5%	6.7%
Natural Moisture Content	5.9%	6.4%	6.15%
Maximum Dry Density	2.09 Mg/m ³	2.09 Mg/m ³	2.09 Mg/m ³
Air Voids @ OMC	7%	7.5%	7.25%

3.7.6 The seven samples of yellow gravel have been classified as 1A, the material has the following compaction characteristics. The compaction curves indicated that in all samples <6% air voids was achieved.

Table 3-3: Yellow Gravel 1A Characteristics

Yellow Gravel 1A Characteristic	Minimum Value	Maximum Value	Average Value
Bulk Density	2.22 Mg/m ³	2.24 Mg/m ³	2.23 Mg/m ³
Particle Density	2.30 Mg/m ³	2.65 Mg/m ³	2.58 Mg/m ³
Optimum Moisture Content	6.7%	12%	9.1%
Natural Moisture Content	2.9%	18%	-
Maximum Dry Density	1.71 Mg/m ³	2.15 Mg/m ³	2.00 Mg/m ³
Air Voids @ OMC	0%	6%	3%

3.7.7 As the imported aggregate accounts for the majority of fill placed and both of the classification tests in this material indicate that 5% - 10% air voids was achieved in the lab, it is anticipated that where this material was placed in permanent works it will achieve air voids of 5-10%. Atterberg tests confirm it to be non-plastic which aligns with site observations that the material is behaving as a granular material. The performance requirements for this material, as per the approved specification, are >95% compaction and a CBR >5% with a stiffness ratio of <2.2.

3.7.1 The tables below show the quantities and frequency of testing carried out on site.

Table 3-9: Limestone Gravel/Ash Fill Testing Frequency

Material Type	Volume (m ³)	Test	Frequency Required	Tests Required	Onsite Frequency	Remaining Tests	Comments
Limestone Gravel / Ash Fill Mix	360	Grading	1 per 750m ³	1	14	0	Approximate volume from onsite Surveys. Material left over from previous phase of earthworks.
		MC	1 per 750m ³	1	14	0	
		Uniformity	1 per 750m ³	1	5	0	
		Particle Density	1 per 1500m ³	1	8	0	
		OMC/MDD	1 per 1500m ³	1	11	0	
		CBR	1 per 1000m ³	1	7	0	

Table 3-10: Imported Aggregate Testing Frequency

Material Type	Volume (m ³)	Test	Frequency Required	Tests Required	Onsite Frequency	Remaining Tests	Comments
Imported Aggregate	743	Grading	1 per 750m ³	1	2	0	Approximate volume from onsite Surveys
		MC	1 per 750m ³	1	2	0	
		Uniformity	1 per 750m ³	1	2	0	
		Particle Density	1 per 1500m ³	1	2	0	
		OMC/MDD	1 per 1500m ³	1	2	0	
		CBR	1 per 1000m ³	1	2	0	

4 GEOTECHNICAL TESTING

4.1 Geotechnical Testing Frequencies

4.1.1 Three geotechnical testing techniques were used to verify the compaction of the engineered fill, Plate Bearing Tests (PBT), Nuclear Density Gauge (NDG) and Sand Replacement Tests (SRT). The Table 4-1 summarises testing requirements and actual testing frequencies achieved during the works. A summary of the results is provided in the following section, with testing certificates provided in Appendix B.

Table 4-1: Geotechnical Validation Testing Frequency

Test	Frequency Required	Tests Required (Total)	Frequency Taken	Remaining Tests
PBT	1 per 40m at surface and every 1m	4	4	0
NDG	1 per 20m, per 275mm layer	18	17	0
SRT	1 per every 10 NDGs	2	4	0

4.2 Compaction Testing

4.2.1 Nuclear Density Gauge and Core Cutter

4.2.1.1 Nuclear Density Gauge testing has been carried out at one test per 275mm layer in every 20mx20m area. A total of 17 in-situ density tests have been carried out across the area using NDG.

4.2.1.2 The NDG tests have been used to validate the percent compaction (%MDD) and air voids across the fill areas which are subject to this report. Table 4.1 shows the percentage compaction and percentage air voids achieved, recorded from each in-situ density test.

4.2.1.3 The approved specification requires >95% compaction of laboratory maximum dry density. All 17 in-situ density tests carried out using the NDG achieved greater than the required 95% compaction.

4.2.1.4 The original approved specification requires <10% air voids in granular fill. A total of 6 tests were carried out in yellow limestone gravel and 11 tests in the imported aggregate. All 17 test results achieved the required <10% air voids (between -0.7% and 8.7%).

4.2.2 Sand Replacement Tests

4.2.2.1 A total of 4 sand replacement tests (SRT) have been carried out. Table 4.2 shows the percentage compaction and percentage air voids, recorded from each SRT.

4.2.2.2 The approved specification requires >95% compaction of laboratory maximum dry density. All 4 of the SRT results achieved greater than the required 95% compaction.

4.2.2.3 The approved specification requires <10% air voids in a granular material. A total of 2 tests have been undertaken on the yellow limestone gravel and 2 tests on the imported aggregate material, all 4 results have achieved the required <10% air voids.

4.2.2.4 A comparison has been made between the SRT and NDG results, the results can be seen in Table 4.3. The comparison has been made between 4 NDG and 4 SRT that have been tested on the same date and the same location. The results show that both %compaction and %air voids are similar.

4.2.3 Dual Cycle Plate Bearing Test

4.2.3.1 A total of 4 dual cycle Plate Load Tests (PLT) using a 600mm diameter plate have been carried out in the area. The frequency of the PLT has been carried out one at each metre of fill placed within the total 40x40m area and one on the finished surface within each individual 20x20m area, this is greater than the required frequency but due to the separation of each area by the access road it was prudent to carry out a test in each area. Table 4.4 shows the CBR results, and the stiffness ratio recorded at each location. Upon removal of the made ground the surface of the underlying natural deposits was found to be soft and it was not suitable to carry out PLTs. Therefore these areas were treated as “soft spots” in accordance with the specification and the soft material was removed. When suitable formation was observed, hand shear vane testing was carried out in the base and walls of the excavation to confirm a shear strength of >50kPa, full details are provided in Soft Spot 17 and 18 inspections of the appended soft spot report (Appendix C). In accordance with the specification, a “starter layer” of yellow limestone gravel was placed on top of the formation level with a PLT carried out at this level.

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- 4.2.3.2 The approved specification requires the CBR to be >5% when on a granular material **1A**. In addition to the CBRs the specification requires the stiffness ratio to be less than 2.2. 3 of the 4 dual cycle PLT met both the CBR and stiffness ratio acceptance criteria.
- 4.2.3.3 One of the plate tests (Test 01) undertaken on the starter layer failed to meet the CBR value required and only achieved a 3% equivalent CBR. However, this is reflective of the low strength, cohesive nature of the underlying natural deposits, for cohesive soils the specification requires a CBR of >2.5%, therefore the 3% CBR value is deemed acceptable in the instance of the starter layer, given that the placed fill met the compaction performance criteria and all further PLT's passed the required CBR criteria.

Table 4-2 Summary of NDG Results

Sample Location	Layer	Material	Moisture Content (%)	Dry Density (mg/m3)	Compaction (%)	Achieved Compaction	Air voids (%)	Air Voids Achieved
I19	1	Limestone Gravel/ Ash Fill	15	1.64	102.8	Pass	4.3	Pass
I19	2	Limestone Gravel/ Ash Fill	16	1.62	101.1	Pass	4.7	Pass
I18	3	Limestone Gravel/ Ash Fill	15	1.62	101.3	Pass	4.8	Pass
H19	4	Limestone Gravel/ Ash Fill	16	1.63	102.0	Pass	3.6	Pass
H17	5	Limestone Gravel/ Ash Fill	16	1.61	100.6	Pass	4.3	Pass
H18	6	Limestone Gravel/ Ash Fill	16	1.63	101.8	Pass	3.3	Pass
H18	7	Imported Aggregate	7.8	2.09	99.8	Pass	6.2	Pass
H18	8	Imported Aggregate	8.7	2.06	98.5	Pass	5.6	Pass
H19	9	Imported Aggregate	8.0	2.04	97.7	Pass	7.7	Pass
H21	1	Imported Aggregate	8.1	2.05	98.3	Pass	7.0	Pass
I20	2	Imported Aggregate	8.3	2.02	96.9	Pass	8.0	Pass
H20	3	Imported Aggregate	6.0	2.12	101.3	Pass	8.7	Pass
I21	4	Imported Aggregate	7.8	2.09	99.8	Pass	6.2	Pass

Sample Location	Layer	Material	Moisture Content (%)	Dry Density (mg/m3)	Compaction (%)	Achieved Compaction	Air voids (%)	Air Voids Achieved
H21	5	Imported Aggregate	10	2.08	99.7	Pass	0.7	Pass
H20	6	Imported Aggregate	10	2.09	100.2	Pass	1.2	Pass
H21	7	Imported Aggregate	9.5	2.16	103.3	Pass	-0.7	Pass
I21	8	Imported Aggregate	7.8	2.09	99.8	Pass	6.1	Pass

Table 4-3: Summary of SRT Results

Test No	Material Description	Location	SRD Date Tested	SRD % Compaction	Achieved Compaction	SRD Air Voids %	Achieved Air Voids
133323	Limestone Gravel/ Ash Fill	H18	30/10/2023	106.1%	Pass	3.3	Pass
133324	Limestone Gravel/ Ash Fill	H19	30/10/2023	102.2%	Pass	4.7	Pass
133577	Imported Aggregate	H18	03/11/2023	100.8%	Pass	1.3	Pass
133578	Imported Aggregate	H20	03/11/2023	99.8%	Pass	6.8	Pass

Table 4-4: Comparison of NDG and SRT

Test No	Material Description	Report Reference	Location	SRD Date Tested	NDG Date Tested	SRD Dry Density (Mg/m3)	NDG Dry Density (Mg/m3)	SRD % MDD	NDG % MDD	SRD Air Voids %	NDG Air Voids %
133323	Limestone Gravel/ Ash Fill	MRN4742A-2	H18 L6	30/10/2023	30/10/2023	1.7	1.63	101%	100%	3.3	3.3
133324	Limestone Gravel/ Ash Fill	MRN4742A-2	H19 L4	30/10/2023	30/10/2023	1.63	1.63	100%	100%	4.7	3.6
133577	Imported Aggregate	MRN4742A-3	H18 L8	03/11/2023	03/11/2023	2.11	2.09	101%	100%	1.3	6.1
133578	Imported Aggregate	MRN4742A-3	H20 L6	03/11/2023	03/11/2023	2.09	2.09	100%	100%	6.8	1.2

Table 4-5: Summary of CBR Test Results

Report Ref	Location	Date	Description	CBR Value	Achieved CBR	Stiffness Ratio	Achieved Stiffness Ratio
MRN 4742A/1	Test 01	23/10/23	Yellow Limestone Gravel Starter Layer	3.0	Pass*	1.0	Pass
MRN 4742A/3	Test 01 - SF	03/11/23	Imported Aggregate	19.8	Pass	1.1	Pass
MRN 4742A/3	Test 02- NF	03/11/23	Imported Aggregate	25.7	Pass	1.5	Pass
MRN 4742A/3	Test 03- N 1.0m	03/11/23	Imported Aggregate	28.4	Pass	1.0	Pass

*Acceptable CBR Value of >2.5% adopted on starter layer due to cohesive nature of underlying natural soils.

5 HOTSPOT VALIDATION

- 5.1.1 As part of the previous investigations and earthworks a number of contamination hotspots were encountered. These were individually isolated and remediated in accordance with the remediation strategy where accessible, full details of which can be found in the AWP Earthworks Validation Report (ref. JMS/SR/BK/47366-Rp004 REV B). Due to the presence of the exclusion zone surrounding mine shaft 376407-007, further validation testing was required when undertaking the earthworks in this area. This is summarised below and in Tables 5.1 to 5.3. Full chemical testing results are appended to this report as Appendix D and VHE's amended Hotspot Report is included as Appendix E.
- 5.1.2 Soil samples taken for chemical testing were collected in plastic tubs, 250 ml amber jars and 60 ml amber vials and dispatched to i2 Analytical Ltd.
- 5.1.3 The soils samples were analysed for the following general suite of contaminants, as specified: metals, petroleum hydrocarbons, PAHs, BTEX and asbestos (qualification and quantification).
- 5.1.4 The chemical test results were compared against the approved site-specific assessment criteria available in Hydrock's Remediation Strategy (15220-HYD-XX-XX-RP-GE-0006), Table 6-1. This criterion is for soil placed below the clean cover suite, further works will be undertaken by another contractor that will install a 600mm, within gardens, and a 450mm, within public open space, clean cover suite.

5.2 Hotspot 2

- 5.2.1 Hotspot 2 correlates with TT03A. Hydrock remediated the hotspot and validated the West, North and East side of the resulting excavation, however the southern face of the hotspot was within the exclusion zone for mineshaft 007 and as such works to remove affected material could not progress further south. VHE recovered samples from the south side of the hotspot, although due to the restrictions imposed by the mineshaft the samples were taken from the closest safe working area, during excavation of the access road into site. These samples were found to meet the SSACs.
- 5.2.2 Three samples of made ground soils, in the area previously inaccessible due to the presence of the mine shaft exclusion zone, were submitted for testing for the contaminant suite outlined in the Remediation Strategy, these results are provided in report 23-64388-2A. The results indicate that all three of the samples tested contained Chrysotile Asbestos fibres although these are only recorded as trace amounts (<0.001%). Asbestos Insulation material was visually identified on the east side of the excavation, this was sampled, submitted for laboratory testing and subsequently

identified as Crocidolite. This was included in the base of the earthworks, at the base of the trial pit it arose from at 2.3mbgl. TPH contamination was recorded with exceedances in Aliphatic EC12-16 and EC16-21 recorded in samples HS2-2 and HS2-3 and exceedances in Aromatic EC12-16 recorded in all 3 samples taken.

5.3 Removal of contaminated soils

- 5.3.1 Contaminated soils within the made ground at Hotspot 2 were excavated and placed on visqueen liner to be transported off site for disposal.
- 5.3.2 The northern, eastern and western walls and the base of the excavation were sampled to assess whether the surrounding soils had been impacted by hydrocarbon contamination, results are provided in Report 23-65148 . The south side of the excavation was extended to the access road, which has previously undergone validation testing by VHE, which returned TPH concentrations below the SSAC. The results from the samples recovered from the excavation walls and base showed the surrounding soils to have TPH concentrations below the relevant SSACs.
- 5.3.3 Material is currently in the process of being removed from site and consignment notes were not available at the time of preparation of this report, these will be provided when available.

5.4 Reused fill

- 5.4.1 In accordance with the remediation strategy samples of material which were to be reused during the earthworks were tested at a rate of 1 per 1000 m³ against the cover system suite, 1 per 1500 m³ for organic matter and 1 per 1500 m³ for the sulphate suite.
- 5.4.2 A total volume of approximately 360 m³ is derived from material reused having arisen during the earthworks in the area surrounding mine shaft 007. This was made up of made ground comprising and ash/sand fill. A minimum of 1 No. tests were therefore required to comply with the specification, results are provided in report 23-65164. All recorded concentrations were below the SSAC and this material is considered acceptable for reuse within the earthworks.

5.5 Disposal of fill

- 5.5.1 488m³ of excavated fill was deemed too wet (unsuitable) for reuse and segregated from the reused fill. This material is in the process of being removed from site and chemical testing results are provided in report 23-64388-2B.

Table 5-1: Hotspot Source Material Reuse Verification

Hotspot	Location	Depth bgl (m)	Date Sampled	Material Description	Report Number	Pass/Fail	Comments
Hotspot 2	HS2-D2	-	15/06/22	Made Ground: Black Ash/Sand	22-65159	Pass	Samples taken as part of previous validation report.
Hotspot 2	HS2-D3	-	15/06/22	Made Ground: Black Ash/Sand	22-65159	Pass	Samples taken as part of previous validation report.
Hotspot 2	HS2-S1	2	20/10/23	Made Ground: Black Ash/Sand	23-64388-2A	Fail	Material segregated and ready for removal from site.
Hotspot 2	HS2-S2	2	20/10/23	Made Ground: Black Ash/Sand	23-64388-2A	Fail	Material segregated and ready for removal from site.
Hotspot 2	HS2-S3	2	20/10/23	Made Ground: Black Ash/Sand	23-64388-2A	Fail	Material segregated and ready for removal from site.

Table 5-2: Hotspot Sides Verification

Location	Hotspot	Depth (m)	Date Sampled	Material Description	Report Number	Pass/Fail	Comments
HS2	Hotspot 2	-	05/06/23	Made Ground: Black Ash/Sand	23-37728	Pass	Samples taken as part of previous validation report.
HS2-S	Hotspot 2	-	05/06/23	Natural: Brown Clay	23-37730	Pass	Samples taken as part of previous validation report.
HS2-N	Hotspot 2	-	23/10/23	Made Ground: Black Ash/Sand	23-65148	Pass	Side of excavation
HS2-E	Hotspot 2	-	23/10/23	Made Ground: Black Ash/Sand	23-65148	Pass	Side of excavation
HS2-W	Hotspot 2	-	23/10/23	Made Ground: Black Ash/Sand	23-65148	Pass	Side of excavation
HS2-B	Hotspot 2	-	23/10/23	Natural: Brown Clay	23-65148	Pass	Base of excavation

Table 5-3: Hotspot Arisings Verification

Hotspot	Location	Depth (m)	Date Sampled	Material Description	Report Number	Pass/Fail	Comments
Hotspot 2	HS2-A-1	-	24/10/23	Made Ground: Black Ash/Sand	23-65164	Pass	-
Hotspot 2	HS2-A-2	-	24/10/23	Made Ground: Black Ash/Sand	23-65164	Pass	-
Hotspot 2	HS2-A-3	-	24/10/23	Made Ground: Black Ash/Sand	23-65164	Pass	-
Hotspot 2	DA-2-1	-	20/10/23	Made Ground: Black Ash/Sand	23-64388-2B	Pass	Material ready for removal from site.
Hotspot 2	DA-2-2	-	20/10/23	Made Ground: Black Ash/Sand	23-64388-2B	Pass	Material ready for removal from site.
Hotspot 2	DA-2-3	-	20/10/23	Made Ground: Black Ash/Sand	23-64388-2B	Pass	Material ready for removal from site.

6 CONCLUSIONS

6.1 Summary of Findings

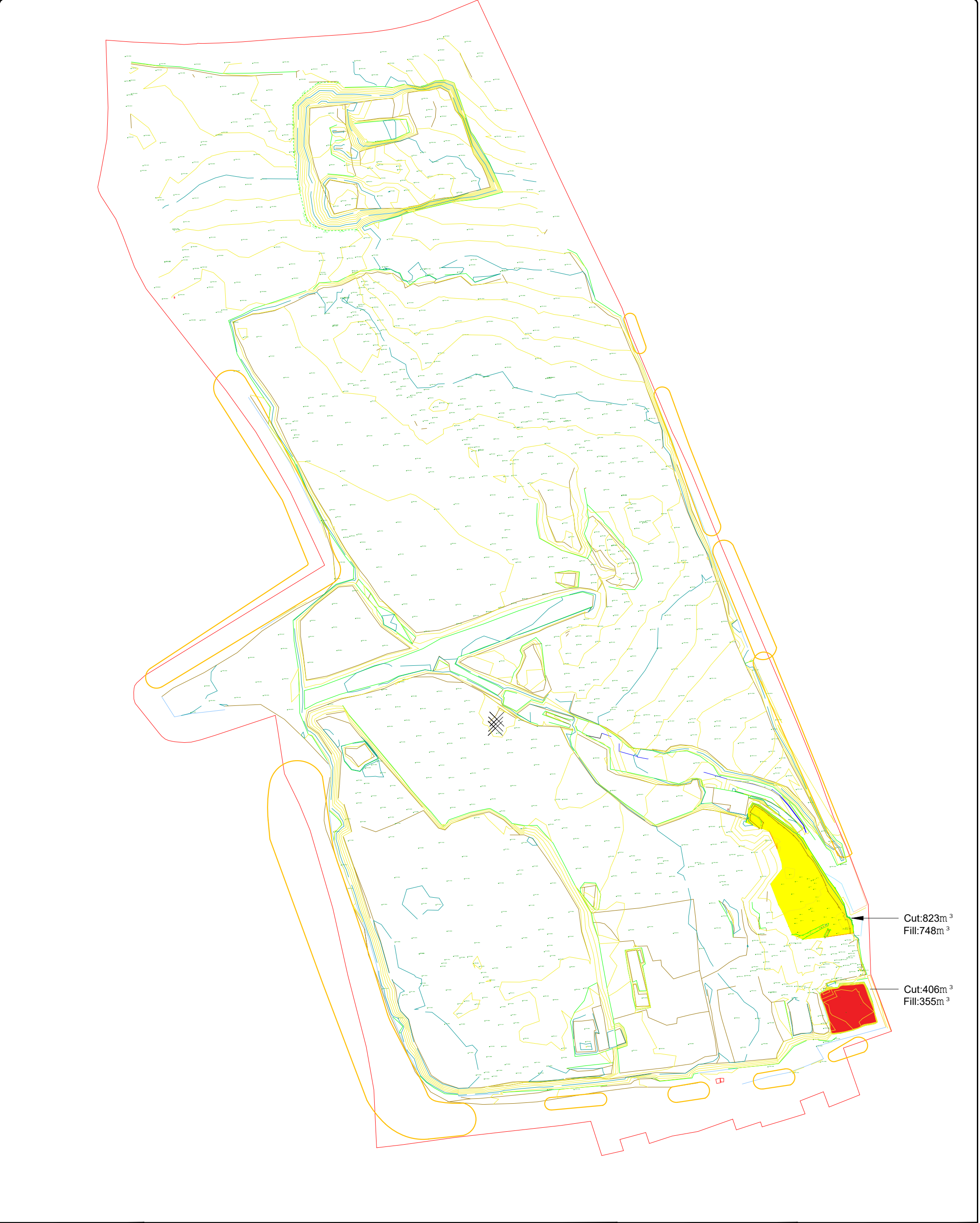
- 6.1.1 After a review of the nuclear density gauge, sand replacement test and plate load test results for the site, in conjunction with a comparison to the agreed earthworks specification, it can be concluded that the works have been completed in accordance with the specification and agreed amendments.
- 6.1.2 The remediation objectives are considered to have been met and there are no residual unacceptable risks to end users associated with soil contamination.
- 6.1.3 There was no unacceptable risk to controlled water / groundwater identified prior to commencement of the earthworks. Chemical sampling has proven that the overall contaminant loading has decreased. Therefore, it is considered that there is no significant residual risk to controlled waters.
- 6.1.4 This report should be included in the Health and Safety file for the site to ensure future maintenance which could penetrate the cover system can be carried out safely with due consideration for residual soil contamination beneath the engineered cover system.

7 REFERENCES

In addition to the specific references cited in the text, the following references have been referred to in the production of this report, where relevant to the defined project objectives.

1. Specification for Highways Works Volume 1;
 - Table 6/1: (11/05) Acceptable Earthworks Materials: Classification and Compaction Requirements
 - Table 6/2: (05/04) Grading Requirements for Acceptable Earthworks Materials
 - Table 6/4: Method Compaction for Earthworks Materials: Plant and Methods (Method 1 to Method 6)
2. BRITISH STANDARDS INSTITUTION. 1981. Code of practice for earthworks. *BS 6031*. BSI London.
3. BRITISH STANDARDS INSTITUTION. 1990. Method of tests for soils for civil engineering purposes. *BS 1377. Parts 1 - 9*. BSI, London.
4. BRITISH STANDARDS INSTITUTION. 1999. Code of practice for Site Investigations. *BS 5930*. BSI, London.
5. BRITISH STANDARDS INSTITUTION. 2001. Code of Practice for Investigation of Potentially Contaminated sites. *BS 10175*. BSI, London.
6. The River Basin Districts Typology Standards and Groundwater Threshold Values. 2015. Schedule 5: Threshold Values for Groundwater.

DRAWINGS



Cut:823m³
Fill:748m³

Cut:406m³
Fill:355m³

Note
This drawing has been prepared solely for the benefit of the party or parties named in the title block. No other party shall be entitled to rely on this drawing or any of the information shown and VHE Construction plc shall have no duty to any other party in relation to the drawing of the quality, accuracy or completeness of the information shown.

Legend

- Site Boundary
- 1m Contours
- 500mm Contours
- Top of Batter
- Bottom of Batter
- Kerb
- Fence
- Found Piles

Spot Levels

Rev	Date	Drawn	Description	Ch'kd

VHE CONSTRUCTION PLC
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T: 01226 320150
F: 01226 320260

Client

Harworth

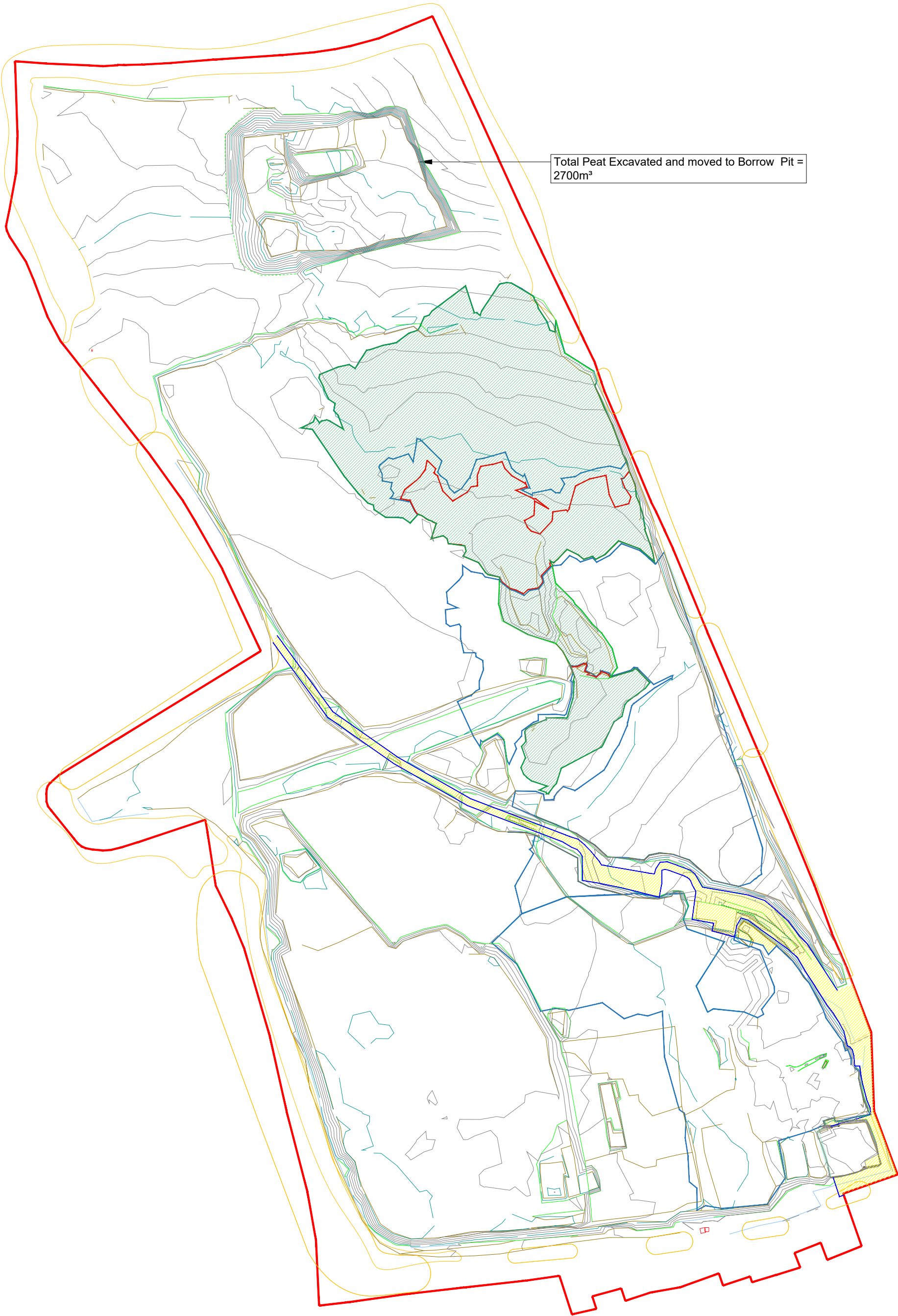
Site

Stopes Road
Bolton

Title

VHEJ808-101 Base of Excavation

Surveyed	AK	Drawn	AK
Chk.	SG	Date	Novemeber 2023
Scale	NTS	CAD File	VHEJ808-101 Base of Excavation
Job Ref	J808 Stopes Road	Rev	



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Approx Direction of North

Legend

- Site Boundary
- 1m Contours
- 500mm Contours
- Top of Batter
- Bottom of Batter
- Kerb
- Fence
- VHE Standoff Constraints area, see drawing VHEJ808-401 for more detail
- Peat used as fill in POS Borrow Pit
- Areas where natural clays were encountered shallower than design BOD
- Areas where peat has been encountered and fully removed
- Areas where peat has been found and removed deeper than the design BOD Level

Rev	Date	Drawn	Description	Chk'd
A	20/06/23	TC	Legend Amendments	SG
B	16/11/23	TC	Additions from OCT 23 Works	SG

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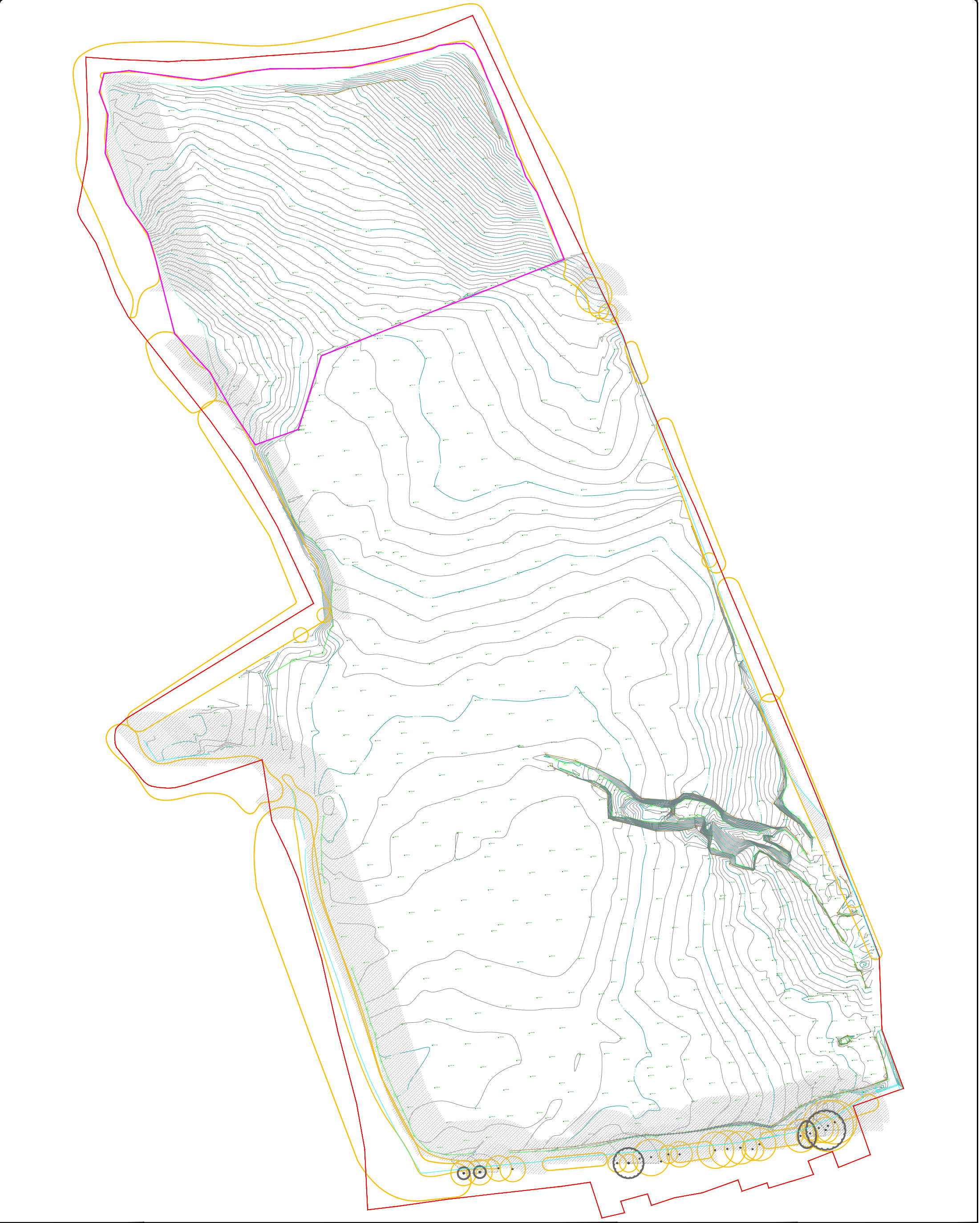
T: 01226 320150
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Client **Harworth**

Site **Stopes Road Bolton**

Title **VHEJ808-102 Materials Impacting Base of Excavation**

Surveyed	TC	Drawn	TC
Chk.	SG/PD	Date	16/11/2023
Scale	[A3 Sheet] CAD File NTS VHEJ808-102 Materials Impacting Base		
Job Ref	J808 Stopes Road		Rev B



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Approx Direction of North

Legend

- Site Boundary
- Top of Batter
- Bottom of Batter
- 1m Contours
- 0.1m Contours
- POS Boundary topped with topsoil, no 150mm running 6F2 layer
- As Built Tree Protection fencing see drawing VHEJ808-1402 for more detail
- Palisade Fence and other boundary details

+ 101.42 Surveyed Spot Level

From C-16417-HYD-XX-XX-DR-C-0100_P05_Proposed Plateau Level

- Tree Protection Area's
- Tree Shadows

Rev	Date	Drawn	Description	Ch'kd

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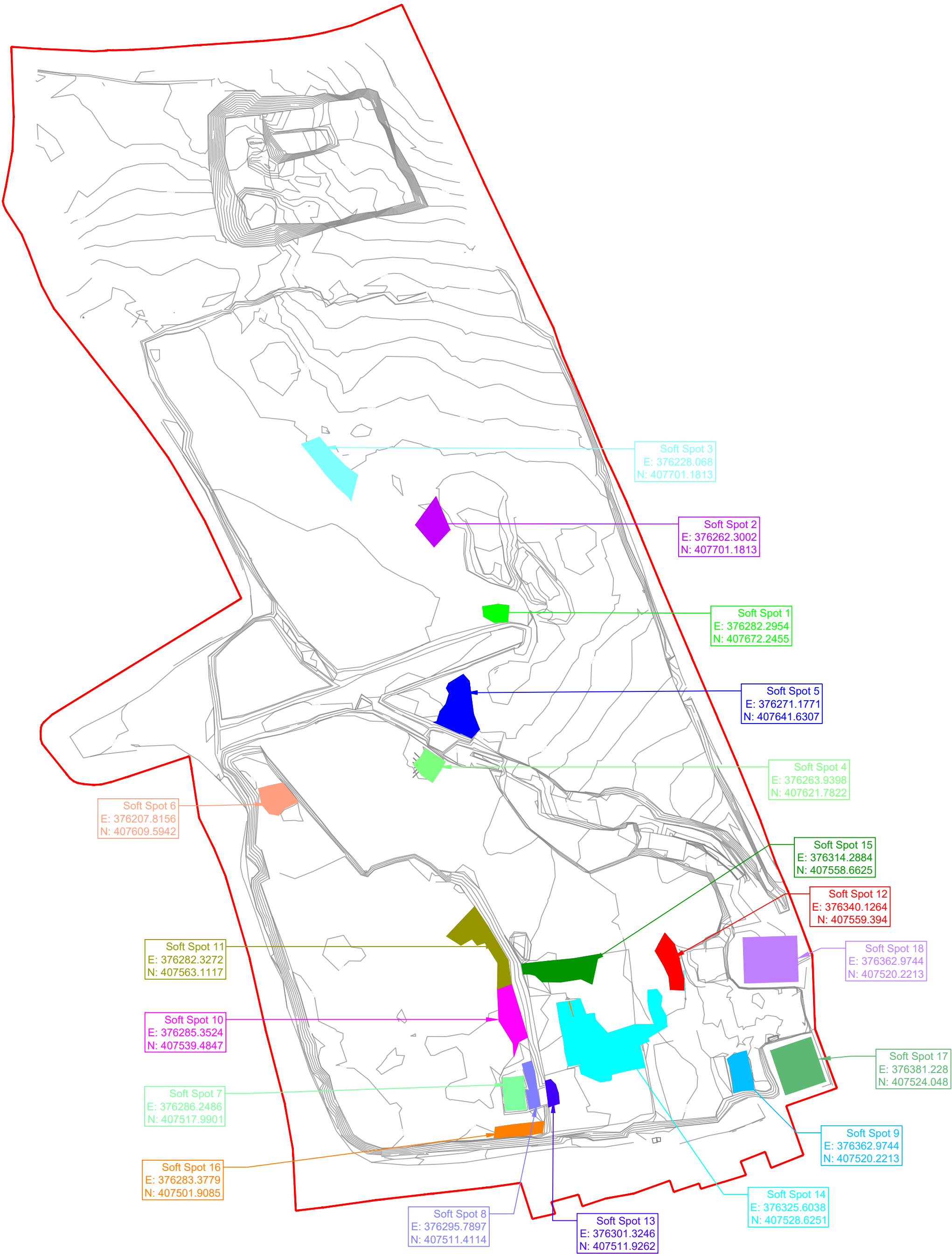
T: 01226 320150
F: 01226 320260

Client **Harworth**

Site **Stopes Road Bolton**

Title **VHEJ808-202 Finished Level As-Built**

Surveyed	AK/TC	Drawn	AK/TC
Chk.	SG	Date	November 2023
Scale	NTS	CAD File	VHEJ808-202 Finished Levels
Job Ref	J808 Stopes Road	Rev	



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Legend

- Site Boundary
- XREF Base of Excavation Background

Rev	Date	Drawn	Description	Chk'd
A	13/11/2023	JW	Updated Locations	SG

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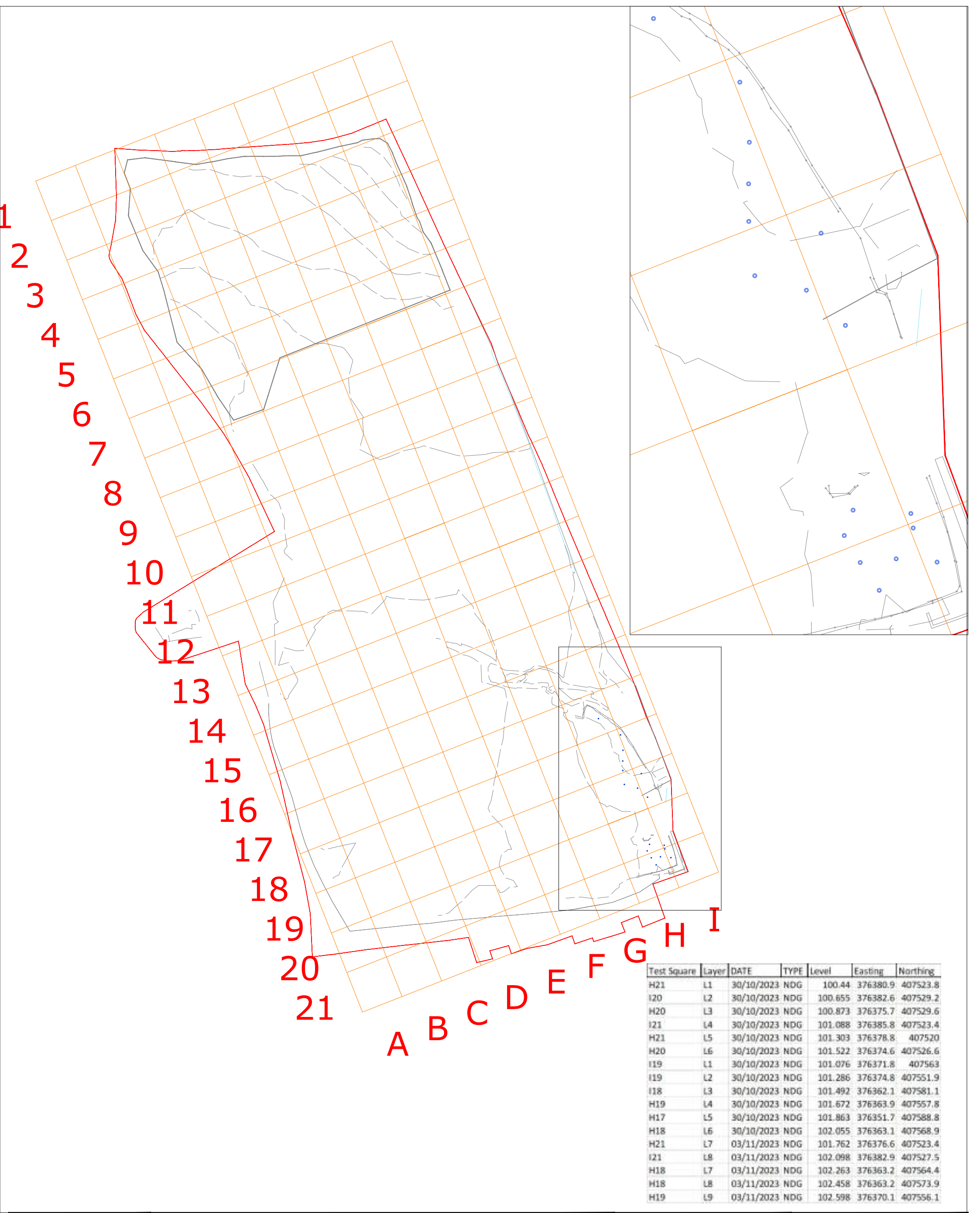
T: 01226 320150
F: 01226 320260

Client
Harworth

Site
Stopes Road
Bolton

Title
VHEJ808-701 Soft Spots

Surveyed	TC	Drawn	TC
Chk.	SG	Date	07/06/2023
Scale NTS	VHEJ808-701 Soft Spots		
Job Ref J808 Stopes Road	Rev A		



Test Square	Layer	DATE	TYPE	Level	Easting	Northing
H21	L1	30/10/2023	NDG	100.44	376380.9	407523.8
I20	L2	30/10/2023	NDG	100.655	376382.6	407529.2
I20	L3	30/10/2023	NDG	100.873	376375.7	407529.6
I21	L4	30/10/2023	NDG	101.088	376385.8	407523.4
H21	L5	30/10/2023	NDG	101.303	376378.8	407520
H20	L6	30/10/2023	NDG	101.522	376374.6	407526.6
I19	L1	30/10/2023	NDG	101.076	376371.8	407563
I19	L2	30/10/2023	NDG	101.286	376374.8	407551.9
I18	L3	30/10/2023	NDG	101.492	376362.1	407581.1
H19	L4	30/10/2023	NDG	101.672	376363.9	407557.8
H17	L5	30/10/2023	NDG	101.863	376351.7	407588.8
H18	L6	30/10/2023	NDG	102.055	376363.1	407568.9
H21	L7	03/11/2023	NDG	101.762	376376.6	407523.4
I21	L8	03/11/2023	NDG	102.098	376382.9	407527.5
H18	L7	03/11/2023	NDG	102.263	376363.2	407564.4
H18	L8	03/11/2023	NDG	102.458	376363.2	407573.9
H19	L9	03/11/2023	NDG	102.598	376370.1	407556.1

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Legend

- Site Boundary
- 20m Grid
- NDG Test Location

Rev	Date	Drawn	Description	Ch'kd

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Site
Stopes Road
Bolton

Title
VHEJ808- NDG Test Locations
As-Built

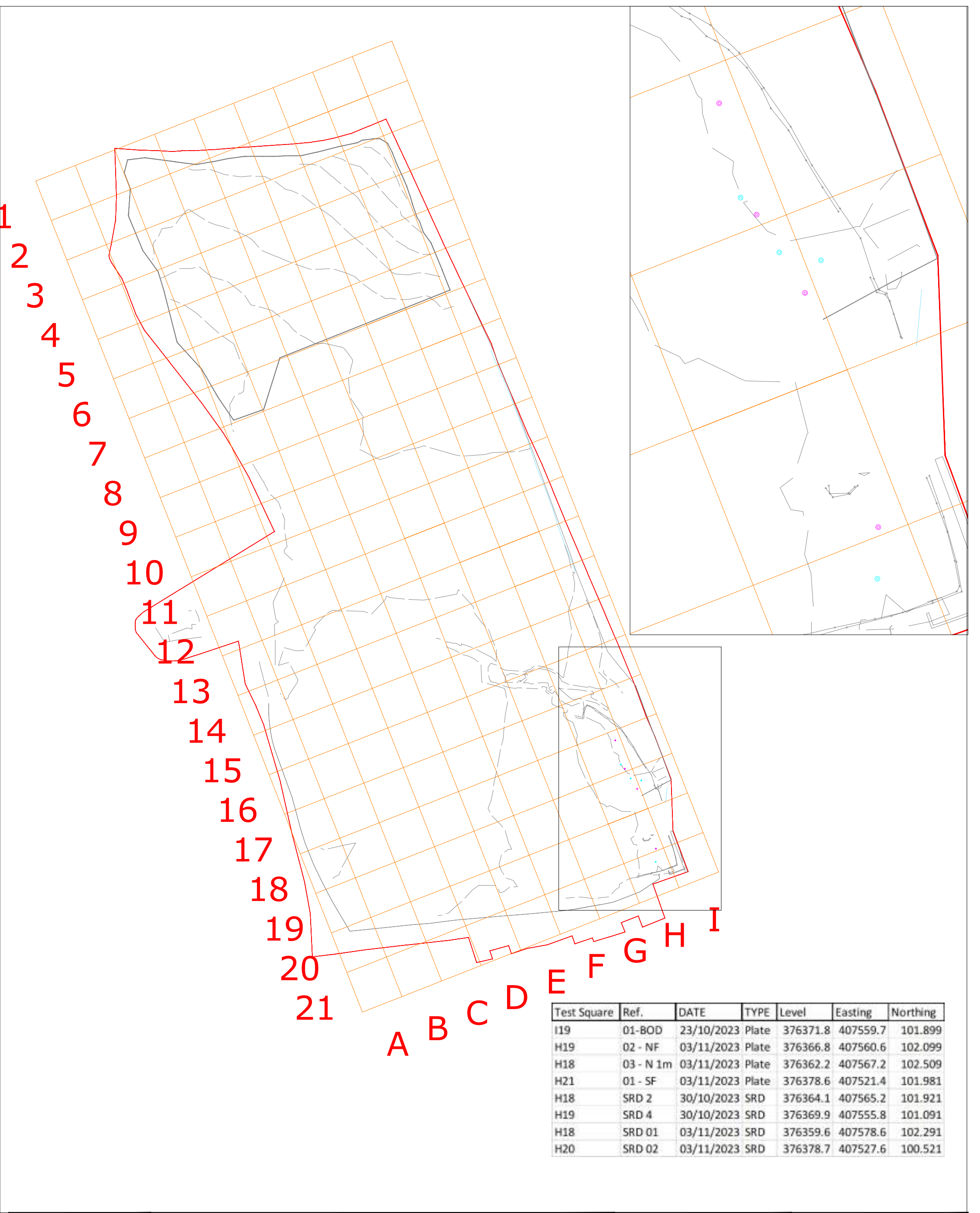
Surveyed	AK	Drawn	AK
Chk.	IP/SG	Date	November 2023

Scale
NTS

Job Ref
J808 Stopes Road

[A3 Sheet] CAD File
VHEJ808-NDG Test Locations

Rev



Test Square	Ref.	DATE	TYPE	Level	Easting	Northing
I19	01-BOD	23/10/2023	Plate	376371.8	407559.7	101.899
H19	02 - NF	03/11/2023	Plate	376366.8	407560.6	102.099
H18	03 - N 1m	03/11/2023	Plate	376362.2	407567.2	102.509
H21	01 - SF	03/11/2023	Plate	376378.6	407521.4	101.981
H18	SRD 2	30/10/2023	SRD	376364.1	407565.2	101.921
H19	SRD 4	30/10/2023	SRD	376369.9	407555.8	101.091
H18	SRD 01	03/11/2023	SRD	376359.6	407578.6	102.291
H20	SRD 02	03/11/2023	SRD	376378.7	407527.6	100.521

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Legend

- Site Boundary
- 20m Grid
- Plate Test Location
- SRD Test Location

Rev	Date	Drawn	Description	Ch'kd

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Client
Harworth

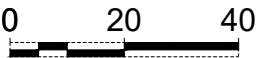
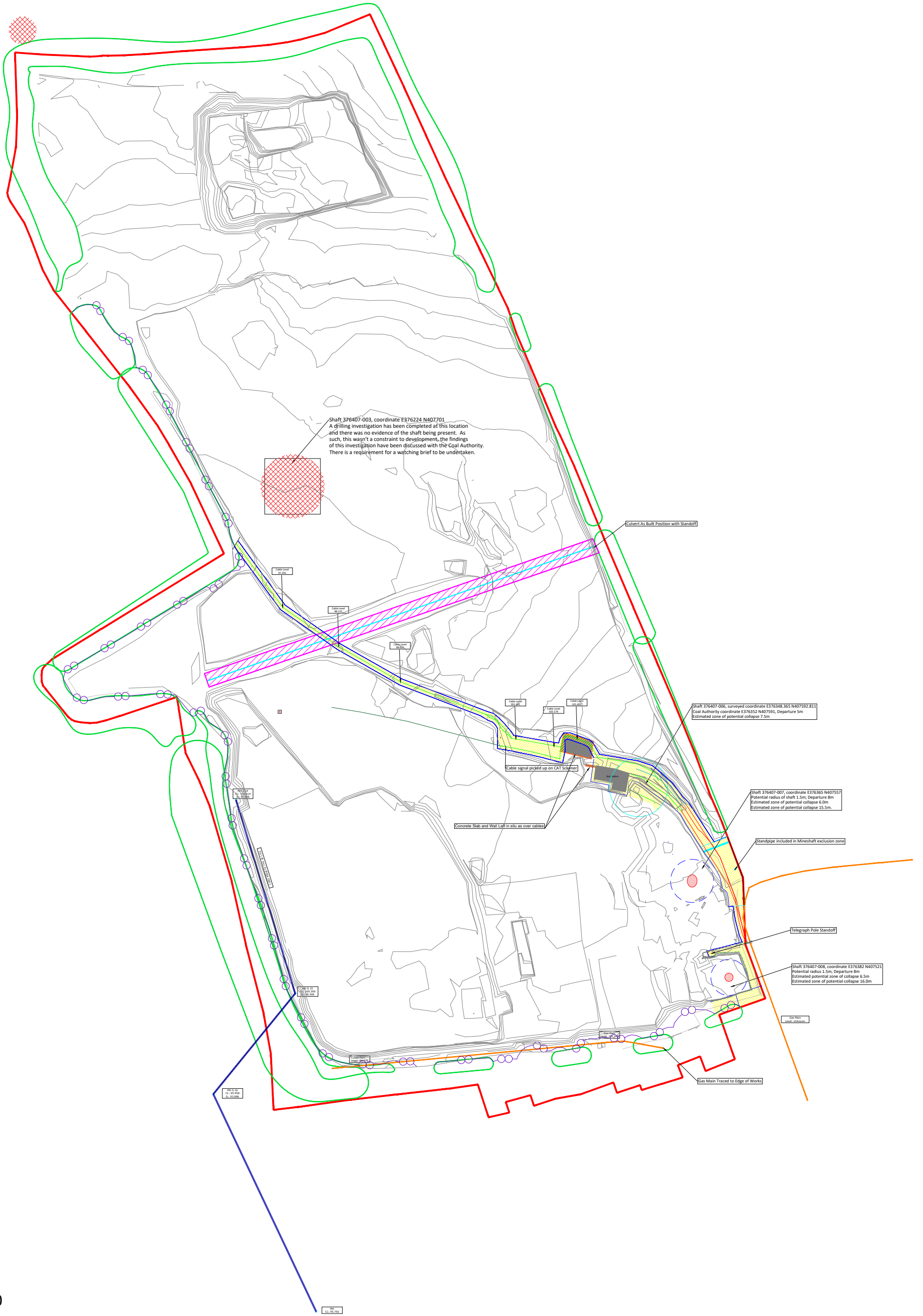
Site
Stopes Road
Bolton

Title
VHEJ808- Plate & SRD Test Locations
As-Built

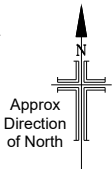
Surveyed	AK	Drawn	AK
Chk.	IP/SG	Date	November 2023

Scale
[A3 Sheet] CAD File
NTS VHEJ808- Plate & SRD Test Locations

Job Ref	J808 Stopes Road	Rev	
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Legend

- Site Boundary
- 2.3m easement from found Constraints
- Live Cable Locations from Hydrock issued Existing Constrains Masterplan
- Proved dead cable running west across site confirmed by VHE
- Found Electric Cables
- Located Drainage Pipe
- Located Gas Main
- Investigation Trench with VAC EX
- 07/06/2023 Base of Excavation Detail - See VHEJ808-101

- Culvert Location
- Tree Protection Fencing
- Found and Grouted Abstraction Well
- Existing Manhole Location with available details
- Tree Protection Areas
- VHE No Dig Area
- Culvert Standoff
- Telegraph Pole Standoff

E	13/11/23	AK	Amended Area Standoff + Legend	
C	03/05/23	TC	Added Abstraction well and Fence	
B	03/05/23	TC	Amended Area Standoff + Legend	
Rev	Date	Drawn	Description	Ch'kd



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Client		Harworth	
Site		Stopes Road Bolton	
Title		VHEJ808-401 Excavation Constrints	
Surveyed	TC	Drawn	AK
Chk.	IP	Date	November 2023
Scale	[A3 Sheet]	CAD File	VHEJ808-401 Excavation Constr
NTS			
Job Ref		J808 Stopes Road	Rev E

APPENDIX A

Geotechnical Classification Testing Certification

TEST REPORT

Client VHE Construction Plc

Address Whaley Road
Barugh
Barnsley
South Yorkshire
S75 1HT

Contract 808 -
Former Tarmac Manufacturing Plant, Stopes Road,
Bolton, Greater Manchester BL3 1NP

Job Number MRN 4454/35
Date of Issue 17 August 2022
Page 1 of 7

Approved Signatories

S J Hutchings, O P Davies

Notes

- 1 All remaining samples and remnants from this contract will be disposed 28 days from the date of this report unless you notify us to the contrary.
- 2 Result certificates, in this report, not bearing a UKAS mark, are not included in our UKAS accreditation schedule.
- 3 Opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.
- 4 Certified that the samples have been examined and tested in accordance with the terms of the contract/order and unless otherwise stated conform to the standards/specifications quoted.
- 5 The results included within the report are representative of the samples submitted for analysis.
- 6 This certificate should not be reproduced, except in full, without the express permission of the laboratory.



Andrew House, Hadfield Street, Dukinfield, Cheshire SK16 4QX Tel: 0161 475 0870
Email: enquiries@murrayrix.com Website: www.murrayrix.com

Also at: London: 020 8523 1999

Murray Rix is the trading name of Murray Rix (Northern) Limited. Registered in England 2878361

TEST CERTIFICATE

PARTICLE SIZE DISTRIBUTION

BS 1377: PART 2: Clause 9.2: 1990

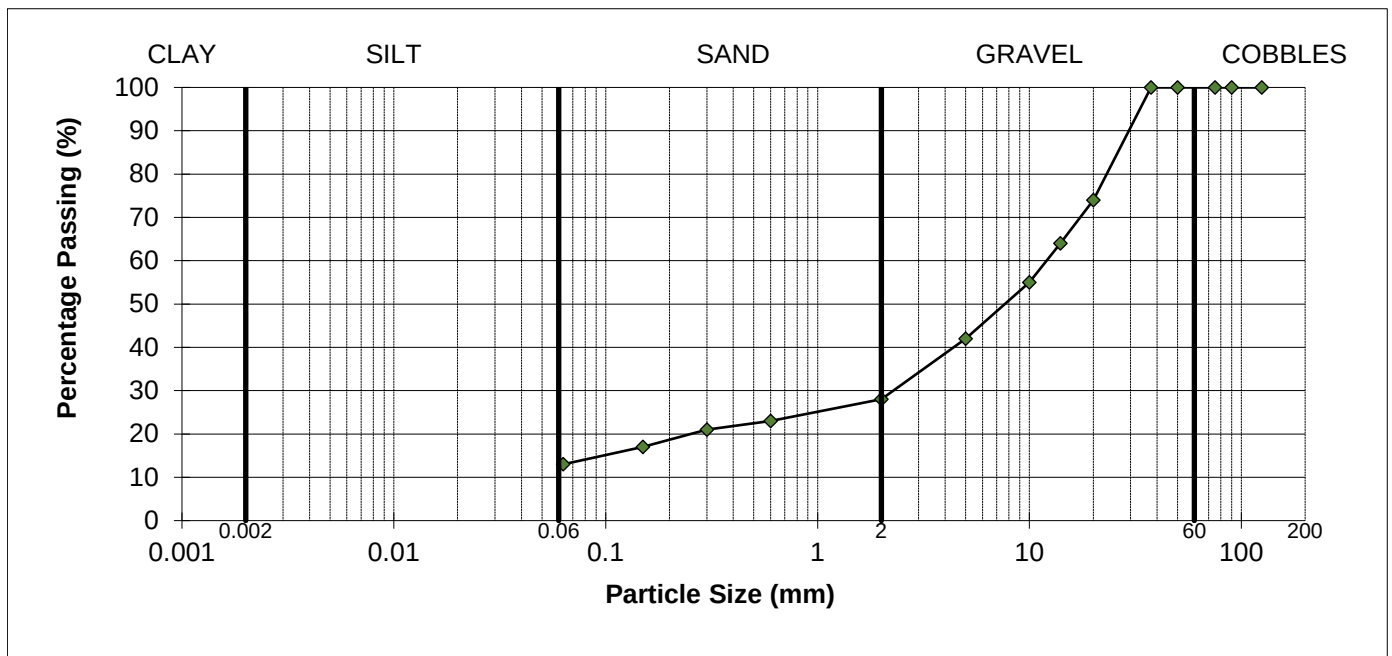
Determination of Moisture Content in accordance with BS 1377: PART 2: Clause 3: 1990 (Oven Dry)

CLIENT	VHE Construction Plc
SITE	Former Tarmac Manufacturing Plant, Stopes Road, Bolton, Greater Manchester BL3 1NP
JOB NUMBER	MRN 4454/35

SAMPLE LABEL	TPD14-Yellow Gravel-1	DATE SAMPLED	21-Jul-22
LAB SAMPLE No	114700	DATE RECEIVED	21-Jul-22
DATE TESTED	25-Jul-22	SAMPLED BY	Client

MATERIAL	General Fill
ADVISED SOURCE	Site Won

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100		10	55	
90	100		5	42	
75	100		2	28	
50	100		0.6	23	
37.5	100		0.3	21	
20	74		0.15	17	
14	64		0.063	13	



REMARKS

As received moisture content = 2.9%

SIGNED



NAME

O.P. Davies BA (Hons)
(Laboratory Manager)

DATE

17-Aug-22

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET

DUKINFIELD, CHESHIRE SK16 4QX

TEL 0161 475 0870

**TEST CERTIFICATE**

DRY DENSITY/MOISTURE CONTENT RELATIONSHIP VIBRATING HAMMER

BS 1377: PART 4: 1990

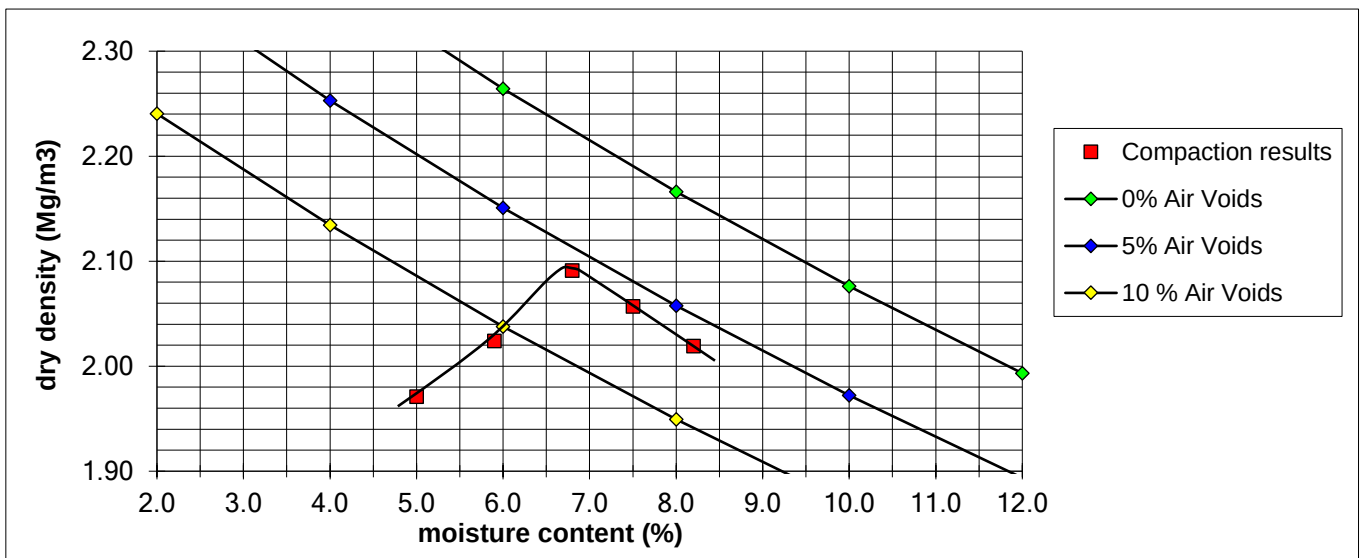
PARTICLE DENSITY METHOD BS 1377: PART 2: 1990 Clause 8.2

CLIENT	VHE Construction Plc
SITE	Former Tarmac Manufacturing Plant, Stopes Road, Bolton, Greater Manchester BL3 1NP
JOB NUMBER	MRN 4454/35

SAMPLE LABEL	TPD14-Yellow Gravel-1	DATE SAMPLED	21-Jul-22
LAB SAMPLE No	114700	DATE RECEIVED	21-Jul-22
DATE TESTED	01-Aug-22	SAMPLED BY	Client

MATERIAL	General Fill
ADVISED SOURCE	Site Won
PRE TREATMENT	Air Dried/Separate Batches

Point Number	Moisture Content (%)	Dry Density (Mg/m ³)
1	5.0	1.971
2	5.9	2.024
3	6.8	2.091
4	7.5	2.057
5	8.2	2.019
Optimum Maximum Particle Density	6.7	2.09
		2.62 (Measured)



REMARKS/ABNORMALITIES

Percentage of material retained on 37.5mm sieve = 0%

Percentage of material retained on 20mm sieve = 26%

SIGNED

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

DATE

17-Aug-22

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

CALIFORNIA BEARING RATIO
BS 1377: PART 4: Clause 7: 1990

MOISTURE CONTENT METHOD BS 1377: PART 2: 1990 Clause 3.2 (oven dry)

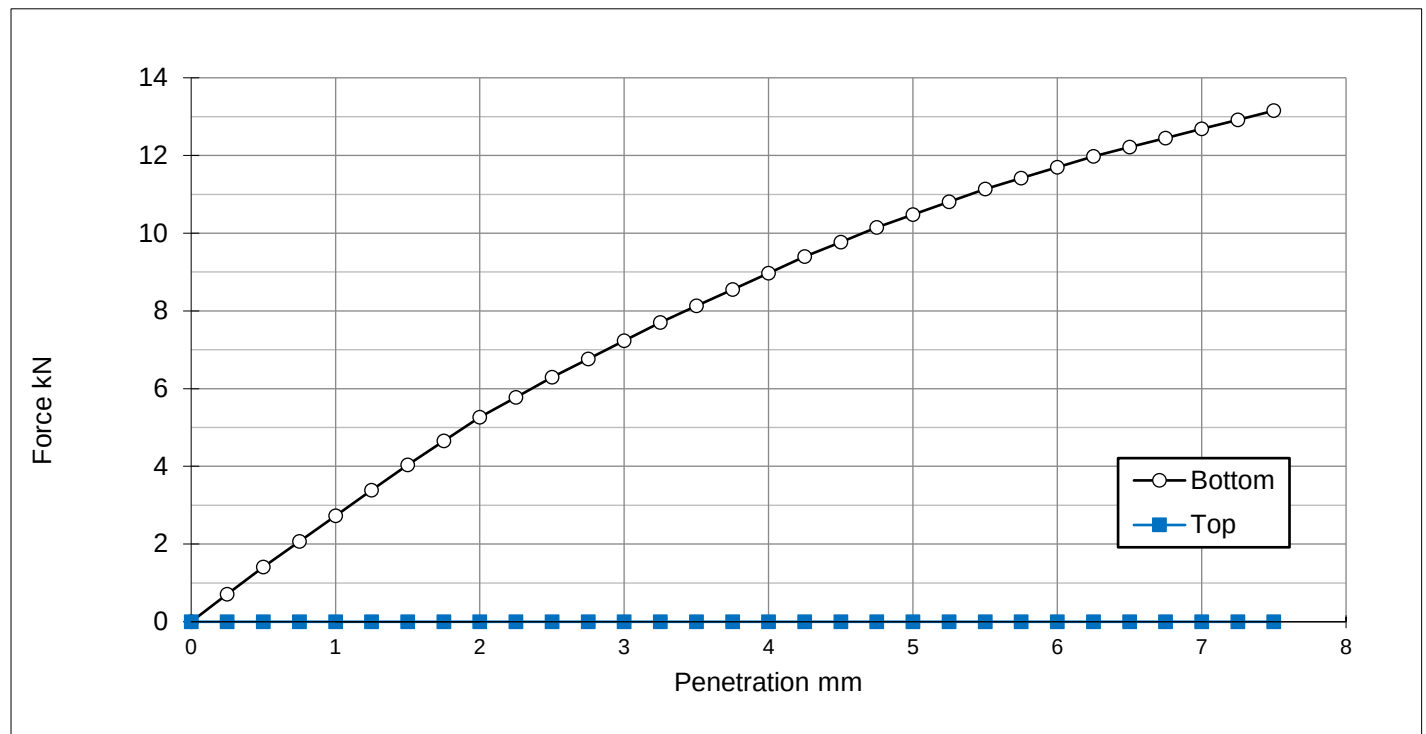
CLIENT	VHE Construction Plc
SITE	Former Tarmac Manufacturing Plant, Stopes Road, Bolton, Greater Manchester BL3 1NP
JOB NUMBER	MRN 4454/35

SAMPLE LABEL	TPD14-Yellow Gravel-1	DATE SAMPLED	21-Jul-22
LAB SAMPLE No	114700	DATE RECEIVED	21-Jul-22
DATE TESTED	10-Aug-22	SAMPLED BY	Client

MATERIAL	General Fill
ADVISED SOURCE	Site Won

INITIAL CONDITIONS

SAMPLE PREPARATION	Dynamic Compaction, Specified Density, Vibrating Hammer				
GREATER THAN 20 mm REMOVED	26 %				
BULK DENSITY	2.23 Mg/m ³	MOISTURE CONTENT	6.9 %	DRY DENSITY	2.09 Mg/m ³
TEST CONDITION	Unsoaked	MEASURED SWELL	N/A mm	SURCHARGE	2 kg



CBR VALUE

Top N/A %
Bottom 52 %

ORIGIN CORRECTION

Top N/A mm
Bottom N/A mm

FINAL MOISTURE CONTENT

Top N/A %
Bottom 6.7 %

REMARKS

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

SIGNED

DATE

17-Aug-22

TEST CERTIFICATE

PARTICLE SIZE DISTRIBUTION

BS 1377: PART 2: Clause 9.2: 1990

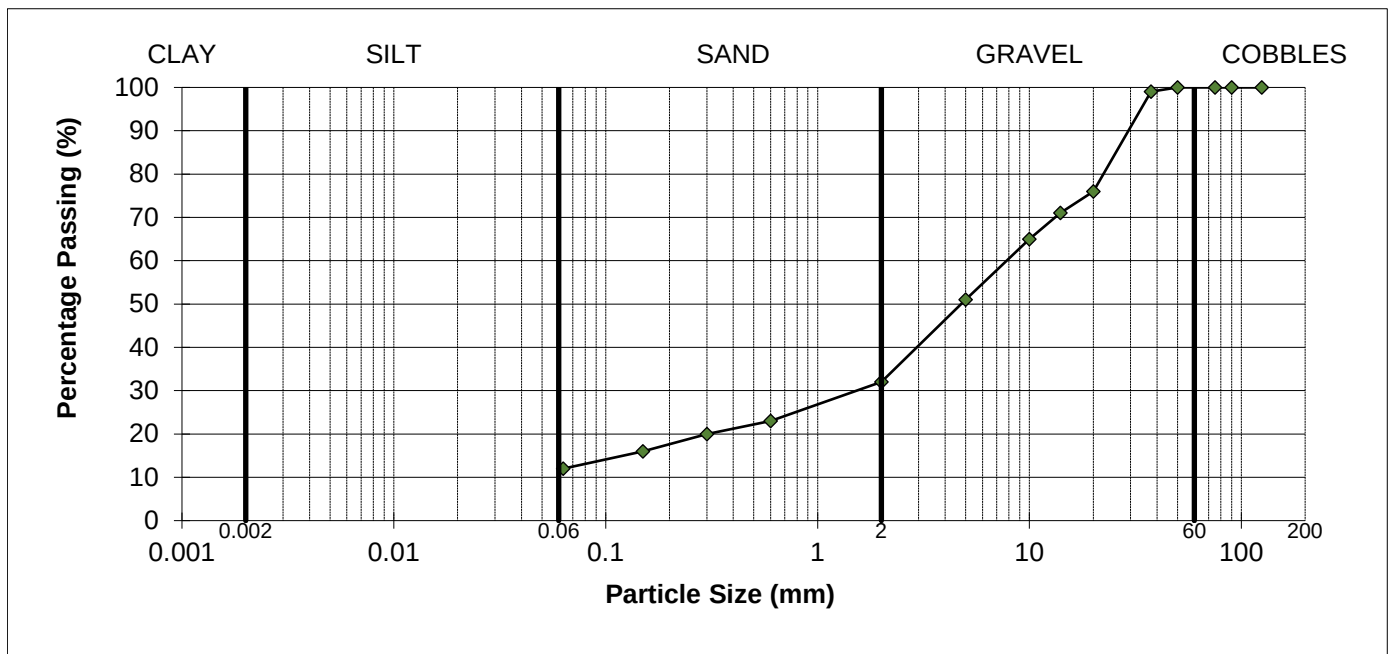
Determination of Moisture Content in accordance with BS 1377: PART 2: Clause 3: 1990 (Oven Dry)

CLIENT	VHE Construction Plc
SITE	Former Tarmac Manufacturing Plant, Stopes Road, Bolton, Greater Manchester BL3 1NP
JOB NUMBER	MRN 4454/35

SAMPLE LABEL	TPD15-Yellow Gravel-2	DATE SAMPLED	21-Jul-22
LAB SAMPLE No	114701	DATE RECEIVED	21-Jul-22
DATE TESTED	25-Jul-22	SAMPLED BY	Client

MATERIAL	General Fill
ADVISED SOURCE	Site Won

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100		10	65	
90	100		5	51	
75	100		2	32	
50	100		0.6	23	
37.5	99		0.3	20	
20	76		0.15	16	
14	71		0.063	12	



REMARKS

As received moisture content = 3.0%

SIGNED



NAME

O.P. Davies BA (Hons)
(Laboratory Manager)

DATE

17-Aug-22

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET

DUKINFIELD, CHESHIRE SK16 4QX

TEL 0161 475 0870

**TEST CERTIFICATE**

DRY DENSITY/MOISTURE CONTENT RELATIONSHIP VIBRATING HAMMER

BS 1377: PART 4: 1990

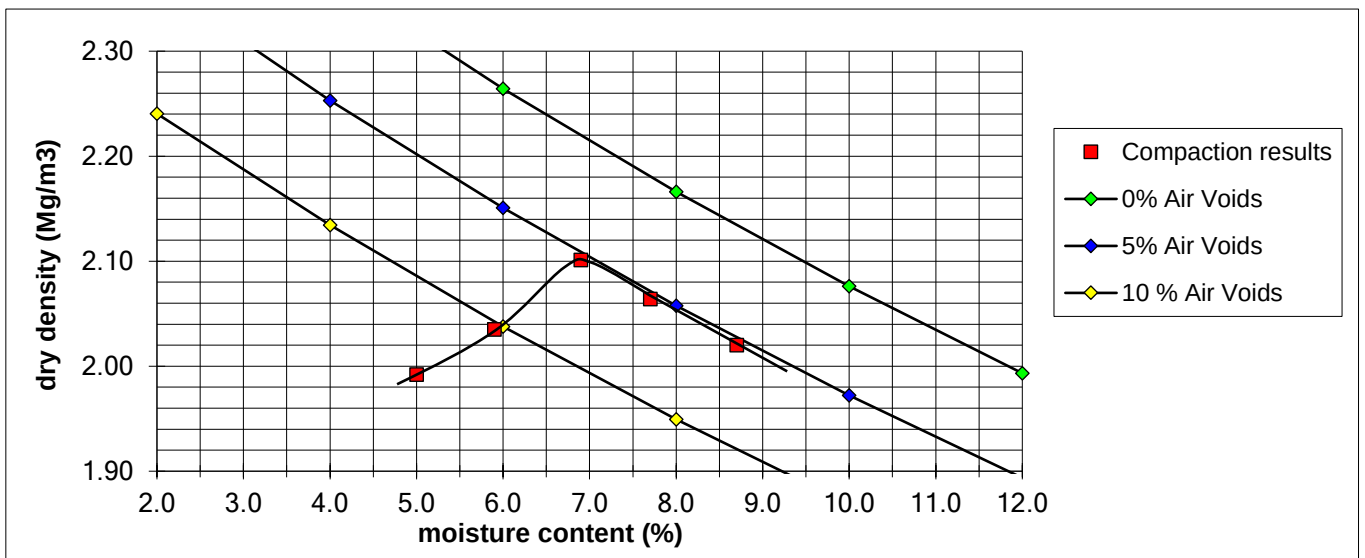
PARTICLE DENSITY METHOD BS 1377: PART 2: 1990 Clause 8.2

CLIENT	VHE Construction Plc
SITE	Former Tarmac Manufacturing Plant, Stopes Road, Bolton, Greater Manchester BL3 1NP
JOB NUMBER	MRN 4454/35

SAMPLE LABEL	TPD15-Yellow Gravel-2	DATE SAMPLED	21-Jul-22
LAB SAMPLE No	114701	DATE RECEIVED	21-Jul-22
DATE TESTED	01-Aug-22	SAMPLED BY	Client

MATERIAL	General Fill
ADVISED SOURCE	Site Won
PRE TREATMENT	Air Dried/Separate Batches

Point Number	Moisture Content (%)	Dry Density (Mg/m ³)
1	5.0	1.992
2	5.9	2.035
3	6.9	2.101
4	7.7	2.064
5	8.7	2.020
Optimum Maximum Particle Density	6.9	2.10
		2.62 (Measured)



REMARKS/ABNORMALITIES

Percentage of material retained on 37.5mm sieve = 1%

Percentage of material retained on 20mm sieve = 24%

SIGNED

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

DATE

17-Aug-22

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

CALIFORNIA BEARING RATIO
BS 1377: PART 4: Clause 7: 1990

MOISTURE CONTENT METHOD BS 1377: PART 2: 1990 Clause 3.2 (oven dry)

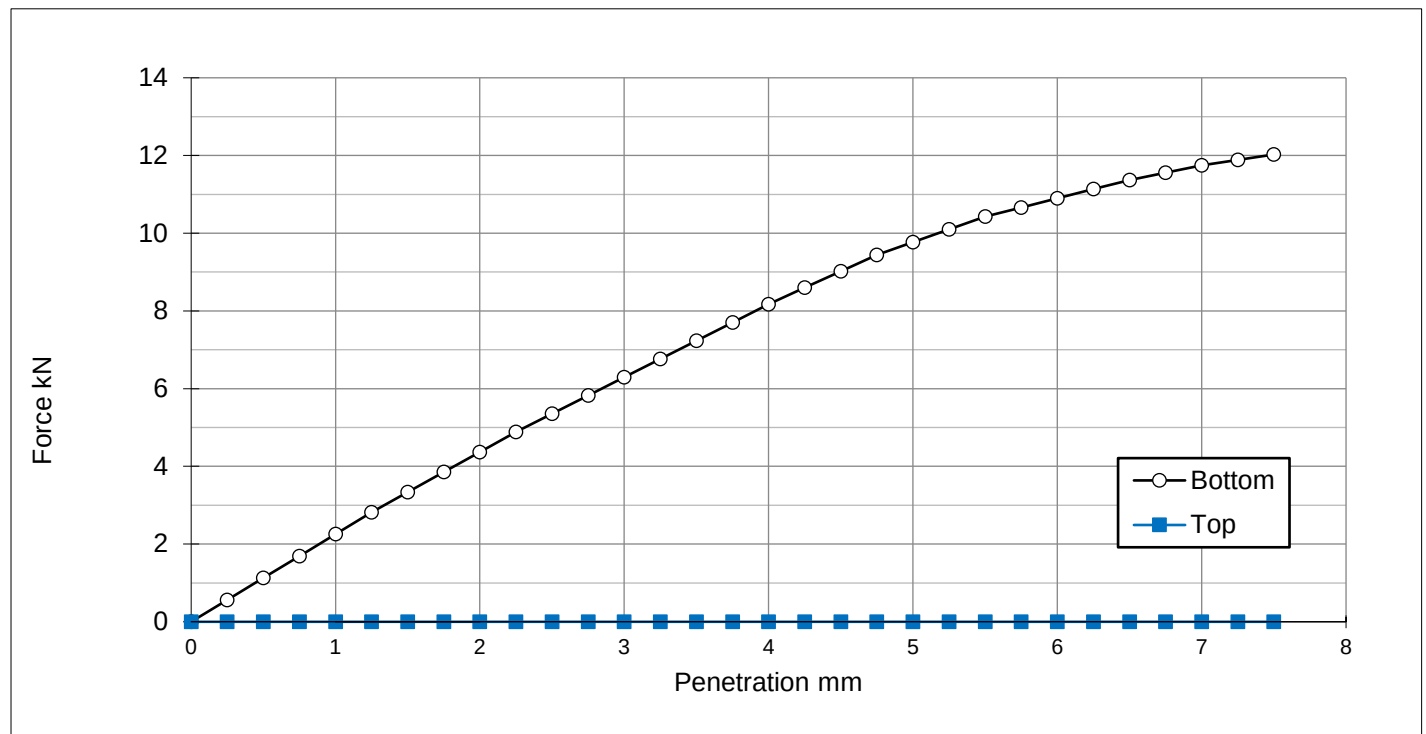
CLIENT	VHE Construction Plc
SITE	Former Tarmac Manufacturing Plant, Stopes Road, Bolton, Greater Manchester BL3 1NP
JOB NUMBER	MRN 4454/35

SAMPLE LABEL	TPD15-Yellow Gravel-2	DATE SAMPLED	21-Jul-22
LAB SAMPLE No	114701	DATE RECEIVED	21-Jul-22
DATE TESTED	10-Aug-22	SAMPLED BY	Client

MATERIAL	General Fill
ADVISED SOURCE	Site Won

INITIAL CONDITIONS

SAMPLE PREPARATION	Dynamic Compaction, Specified Density, Vibrating Hammer				
GREATER THAN 20 mm REMOVED	24 %				
BULK DENSITY	2.24 Mg/m ³	MOISTURE CONTENT	6.9 %	DRY DENSITY	2.10 Mg/m ³
TEST CONDITION	Unsoaked	MEASURED SWELL	N/A mm	SURCHARGE	2 kg



CBR VALUE

Top N/A %
Bottom 49 %

ORIGIN CORRECTION

Top N/A mm
Bottom N/A mm

FINAL MOISTURE CONTENT

Top N/A %
Bottom 6.9 %

REMARKS

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

SIGNED

DATE

17-Aug-22

TEST REPORT

Client VHE Construction Plc

Address Whaley Road
Barugh
Barnsley
South Yorkshire
S75 1HT

Contract 808 -
Former Tarmac Manufacturing Plant, Stopes Road,
Bolton, Greater Manchester BL3 1NP

Job Number MRN 4454/64
Date of Issue 28 September 2022
Page 1 of 5

Approved Signatories

S J Hutchings, O P Davies

Notes

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Andrew House, Hadfield Street, Dukinfield, Cheshire SK16 4QX Tel: 0161 475 0870
Email: enquiries@murrayrix.com Website: www.murrayrix.com

Also at: London: 020 8523 1999

Murray Rix is the trading name of Murray Rix (Northern) Limited. Registered in England 2878361

TEST CERTIFICATE

PARTICLE SIZE DISTRIBUTION

BS 1377: PART 2: Clause 9.2: 1990

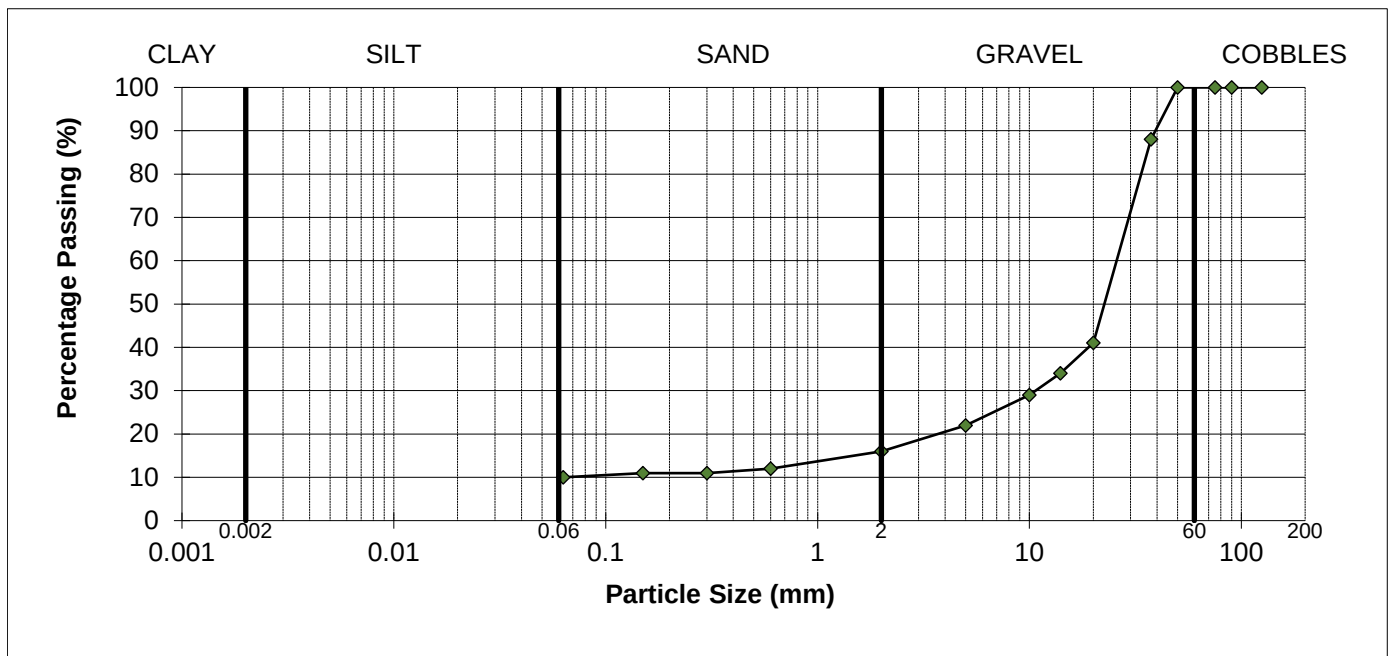
Determination of Moisture Content in accordance with BS 1377: PART 2: Clause 3: 1990 (Oven Dry)

CLIENT	VHE Construction Plc
SITE	Former Tarmac Manufacturing Plant, Stopes Road, Bolton, Greater Manchester BL3 1NP
JOB NUMBER	MRN 4454/64

SAMPLE LABEL	TPD-Yellow Gravel-1	DATE SAMPLED	15-Aug-22
LAB SAMPLE No	115498	DATE RECEIVED	15-Aug-22
DATE TESTED	01-Sep-22	SAMPLED BY	Client

MATERIAL	General Fill
ADVISED SOURCE	Site Won

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100		10	29	
90	100		5	22	
75	100		2	16	
50	100		0.6	12	
37.5	88		0.3	11	
20	41		0.15	11	
14	34		0.063	10	



REMARKS

As received moisture content = 4.3%

SIGNED



NAME

O.P. Davies BA (Hons)
(Laboratory Manager)

DATE

28-Sep-22

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET

DUKINFIELD, CHESHIRE SK16 4QX

TEL 0161 475 0870

**TEST CERTIFICATE**

DRY DENSITY/MOISTURE CONTENT RELATIONSHIP 2.5kg RAMMER

BS 1377: PART 4: 1990

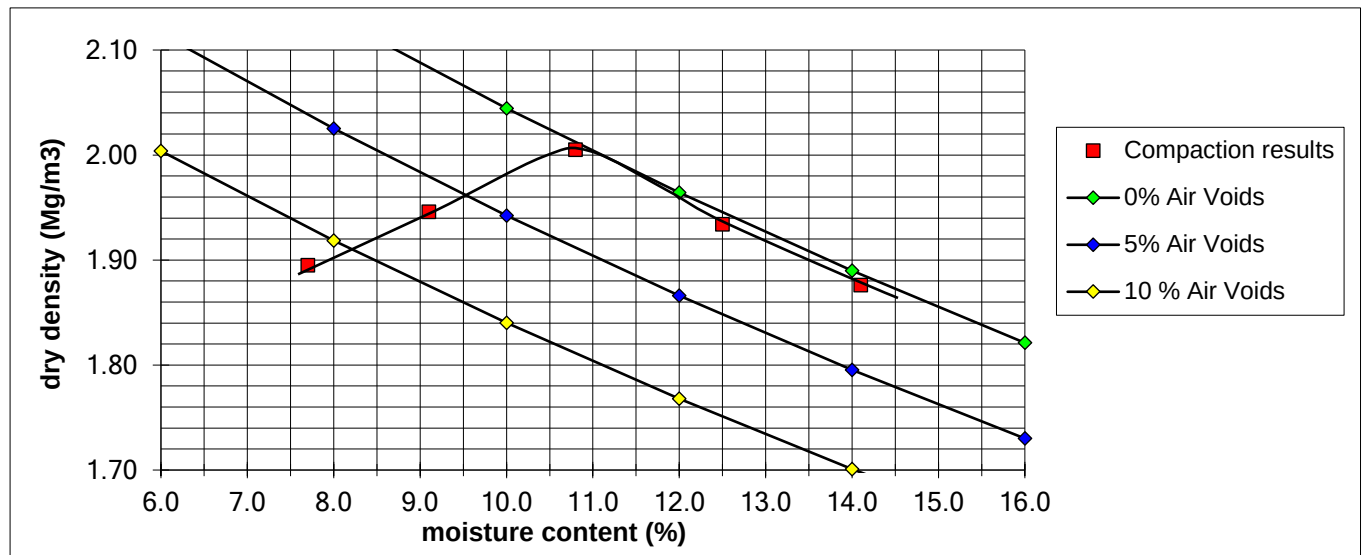
PARTICLE DENSITY METHOD BS 1377: PART 2: 1990 Clause 8.2

CLIENT	VHE Construction Plc
SITE	Former Tarmac Manufacturing Plant, Stopes Road, Bolton, Greater Manchester BL3 1NP
JOB NUMBER	MRN 4454/64

SAMPLE LABEL	TPD-Yellow Gravel-1	DATE SAMPLED	15-Aug-22
LAB SAMPLE No	115498	DATE RECEIVED	15-Aug-22
DATE TESTED	01-Sep-22	SAMPLED BY	Client

MATERIAL	General Fill
ADVISED SOURCE	Site Won
PRE TREATMENT	Air Dried/Separate Batches

Point Number	Moisture Content (%)	Dry Density (Mg/m ³)
1	7.7	1.895
2	9.1	1.946
3	10.8	2.005
4	12.5	1.934
5	14.1	1.876
Optimum Maximum Particle Density	11.0	2.00
	2.57 (Measured)	



REMARKS/ABNORMALITIES

Percentage of material retained on 37.5mm sieve = 12%

Percentage of material retained on 20mm sieve = 59%

SIGNED

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

DATE

28-Sep-22

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

CALIFORNIA BEARING RATIO (CBR)

BS 1377-2:2022 Cl. 15

DETERMINATION OF WATER CONTENT - BS EN ISO 17892-1:2014

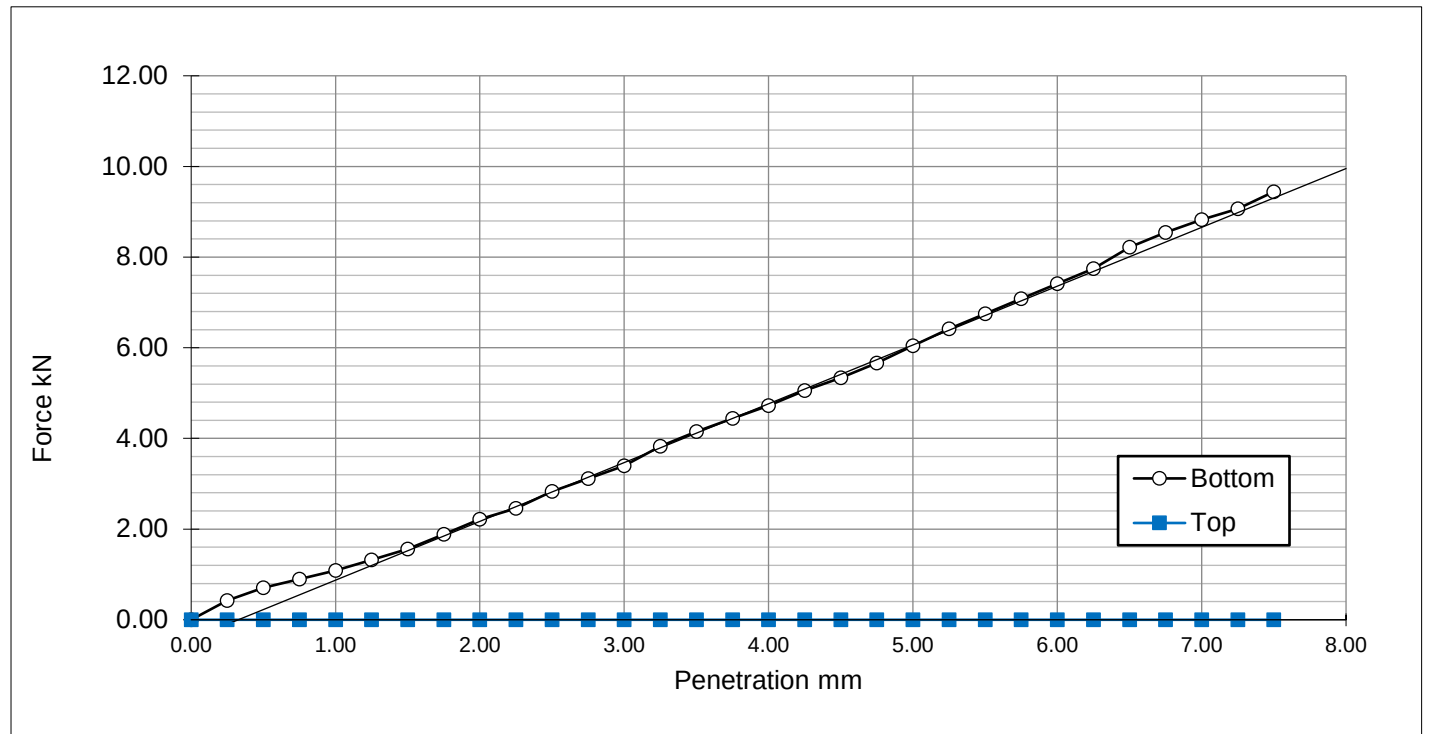
CLIENT	VHE Construction Plc
SITE	Former Tarmac Manufacturing Plant, Stopes Road, Bolton, Greater Manchester BL3 1NP
JOB NUMBER	MRN 4454/64

SAMPLE LABEL	TPD-Yellow Gravel-1	DATE SAMPLED	15-Aug-22
LAB SAMPLE No	115498	DATE RECEIVED	15-Aug-22
DATE TESTED	08-Sep-22	SAMPLED BY	Client

MATERIAL	General Fill
ADVISED SOURCE	Site Won

INITIAL CONDITIONS

SAMPLE PREPARATION	Dynamic Compaction, Specified Density, Vibrating Hammer				
GREATER THAN 20 mm REMOVED	59 %				
BULK DENSITY	2.22 Mg/m ³	MOISTURE CONTENT	11 %	DRY DENSITY	2.00 Mg/m ³
TEST CONDITION	Unsoaked	MEASURED SWELL	N/A mm	SURCHARGE	2 kg



CBR VALUE

Top N/A %
Bottom 32 %

ORIGIN CORRECTION

Top N/A mm
Bottom N/A mm

FINAL MOISTURE CONTENT

Top N/A %
Bottom 11 %

REMARKS

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

SIGNED

DATE

28-Sep-22

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET

DUKINFIELD, CHESHIRE SK16 4QX

TEL 0161 475 0870

**TEST CERTIFICATE**

DRY DENSITY/MOISTURE CONTENT RELATIONSHIP 2.5kg RAMMER

BS 1377: PART 4: 1990

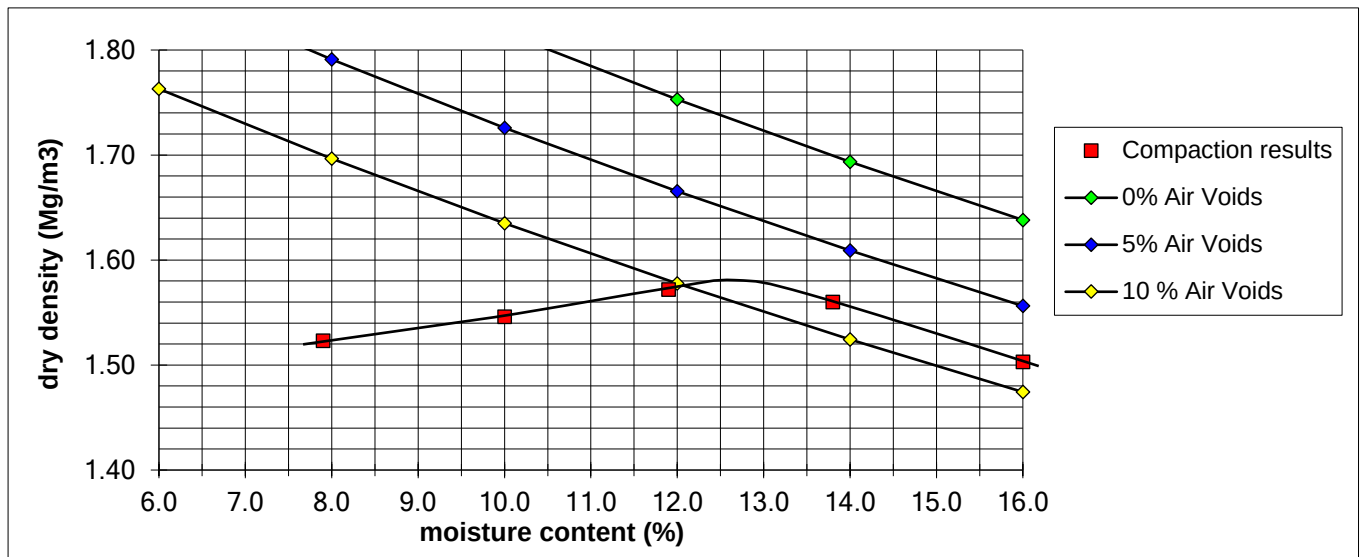
PARTICLE DENSITY METHOD BS 1377: PART 2: 1990 Clause 8.2

CLIENT	VHE Construction Plc
SITE	Former Tarmac Manufacturing Plant, Stopes Road, Bolton, Greater Manchester BL3 1NP
JOB NUMBER	MRN 4454/64

SAMPLE LABEL	See remarks	DATE SAMPLED	15-Aug-22
LAB SAMPLE No	115499	DATE RECEIVED	15-Aug-22
DATE TESTED	01-Sep-22	SAMPLED BY	Client

MATERIAL	General Fill
ADVISED SOURCE	Site Won
PRE TREATMENT	Air Dried/Separate Batches

Point Number	Moisture Content (%)	Dry Density (Mg/m ³)
1	7.9	1.523
2	10.0	1.546
3	11.9	1.572
4	13.8	1.560
5	16.0	1.503
Optimum Maximum Particle Density	13.0	1.58
	2.22 (Measured)	



REMARKS/ABNORMALITIES

Percentage of material retained on 37.5mm sieve = 0%

Percentage of material retained on 20mm sieve = 10%

Sample label - C9/C10, L5+6, Grey sandy gravel 1+2

SIGNED

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

DATE

28-Sep-22

TEST REPORT

Client VHE Construction Plc

Address Whaley Road
Barugh
Barnsley
South Yorkshire
S75 1HT

Contract 808 -
Former Tarmac Manufacturing Plant, Stopes Road,
Bolton, Greater Manchester BL3 1NP

Job Number ~~MRN 4454/64~~ MRN 4454/68

Date of Issue 06 October 2022

Page 1 of 4

Approved Signatories

S J Hutchings, O P Davies

Notes

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Andrew House, Hadfield Street, Dukinfield, Cheshire SK16 4QX Tel: 0161 475 0870
Email: enquiries@murrayrix.com Website: www.murrayrix.com

Also at: London: 020 8523 1999

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MURRAY RIX

ANDREW HOUSE, HADFIELD STREET

DUKINFIELD, CHESHIRE SK16 4QX

TEL 0161 475 0870

**TEST CERTIFICATE**

DRY DENSITY/MOISTURE CONTENT RELATIONSHIP 2.5kg RAMMER

BS 1377: PART 4: 1990

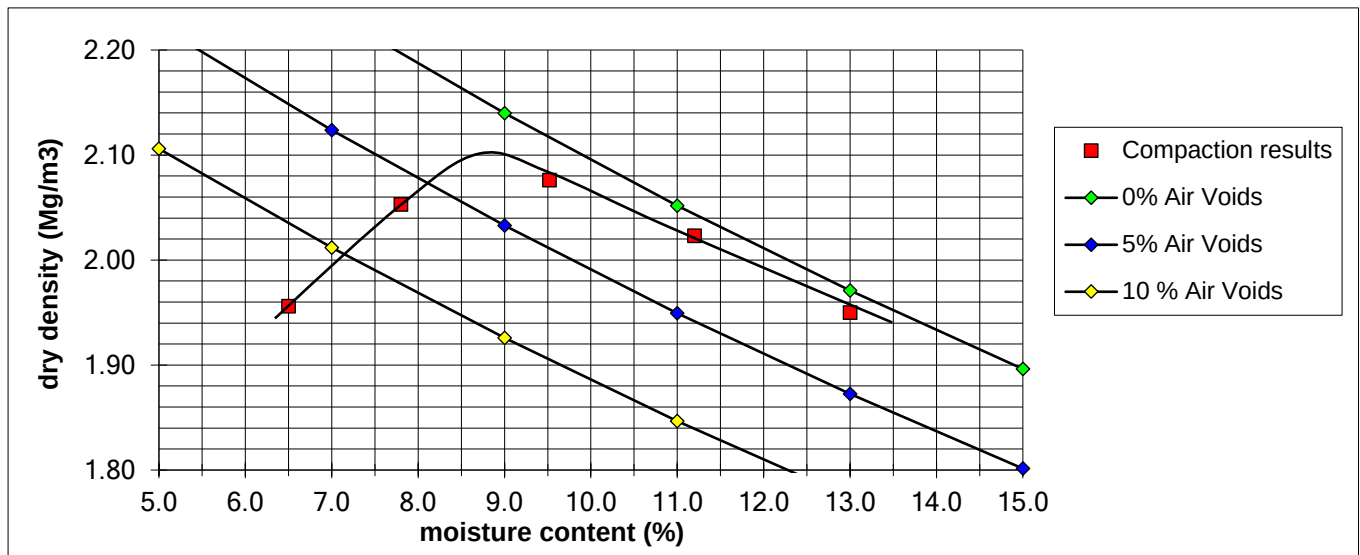
PARTICLE DENSITY METHOD BS 1377: PART 2: 1990 Clause 8.2

CLIENT	VHE Construction Plc
SITE	Former Tarmac Manufacturing Plant, Stopes Road, Bolton, Greater Manchester BL3 1NP
JOB NUMBER	MRN 4454/68

SAMPLE LABEL	SP-Yellow Gravel-4	DATE SAMPLED	09-Sep-22
LAB SAMPLE No	116542	DATE RECEIVED	09-Sep-22
DATE TESTED	20-Sep-22	SAMPLED BY	Client

MATERIAL	Gravel
ADVISED SOURCE	Site Won
PRE TREATMENT	Air Dried/Separate Batches

Point Number	Moisture Content (%)	Dry Density (Mg/m3)
1	6.5	1.956
2	7.8	2.053
3	9.5	2.076
4	11.2	2.023
5	13.0	1.950
Optimum Maximum Particle Density	8.8	2.10
	2.65 (Assumed)	



REMARKS/ABNORMALITIES

Percentage of material retained on 37.5mm sieve = 3%

Percentage of material retained on 20mm sieve = 46%

As received moisture content = 8.2%

SIGNED

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

DATE

06-Oct-22

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET

DUKINFIELD, CHESHIRE SK16 4QX

TEL 0161 475 0870

**TEST CERTIFICATE**

DRY DENSITY/MOISTURE CONTENT RELATIONSHIP 2.5kg RAMMER

BS 1377: PART 4: 1990

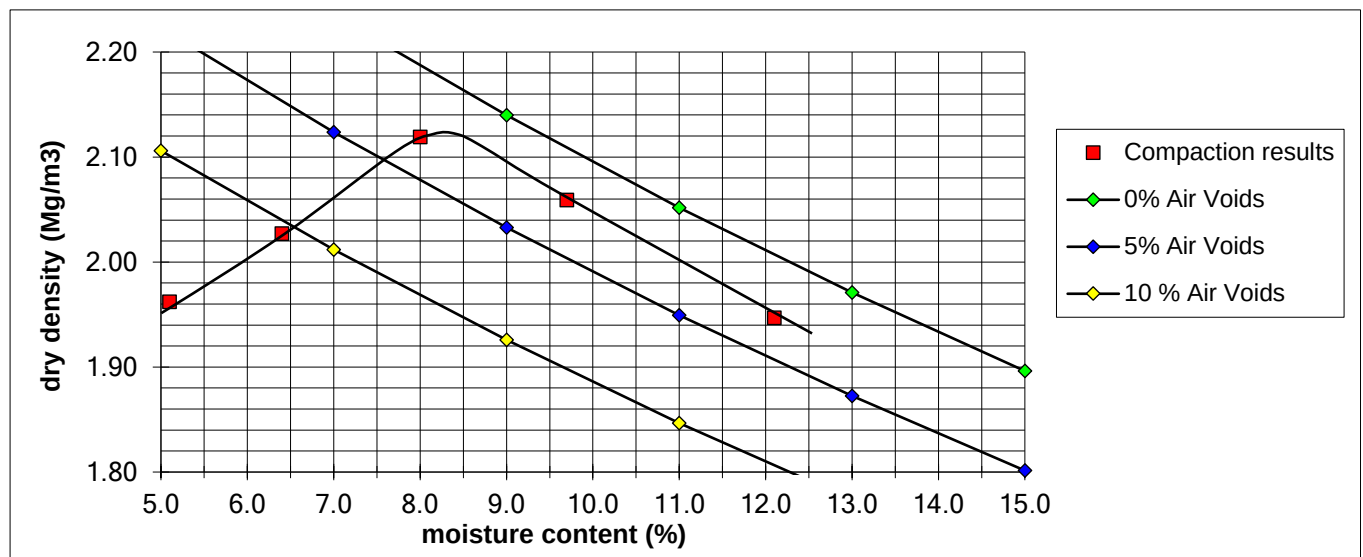
PARTICLE DENSITY METHOD BS 1377: PART 2: 1990 Clause 8.2

CLIENT	VHE Construction Plc
SITE	Former Tarmac Manufacturing Plant, Stopes Road, Bolton, Greater Manchester BL3 1NP
JOB NUMBER	MRN 4454/68

SAMPLE LABEL	SP-Yellow Gravel-5	DATE SAMPLED	09-Sep-22
LAB SAMPLE No	116543	DATE RECEIVED	09-Sep-22
DATE TESTED	20-Sep-22	SAMPLED BY	Client

MATERIAL	Gravel
ADVISED SOURCE	Site Won
PRE TREATMENT	Air Dried/Separate Batches

Point Number	Moisture Content (%)	Dry Density (Mg/m3)
1	5.1	1.962
2	6.4	2.027
3	8.0	2.119
4	9.7	2.059
5	12.1	1.947
Optimum Maximum Particle Density	8.2	2.12
	2.65 (Assumed)	



REMARKS/ABNORMALITIES

Percentage of material retained on 37.5mm sieve = 6%

Percentage of material retained on 20mm sieve = 50%

As received moisture content = 7.5%

SIGNED

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

DATE

06-Oct-22

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET

DUKINFIELD, CHESHIRE SK16 4QX

TEL 0161 475 0870

**TEST CERTIFICATE**

DRY DENSITY/MOISTURE CONTENT RELATIONSHIP 2.5kg RAMMER

BS 1377: PART 4: 1990

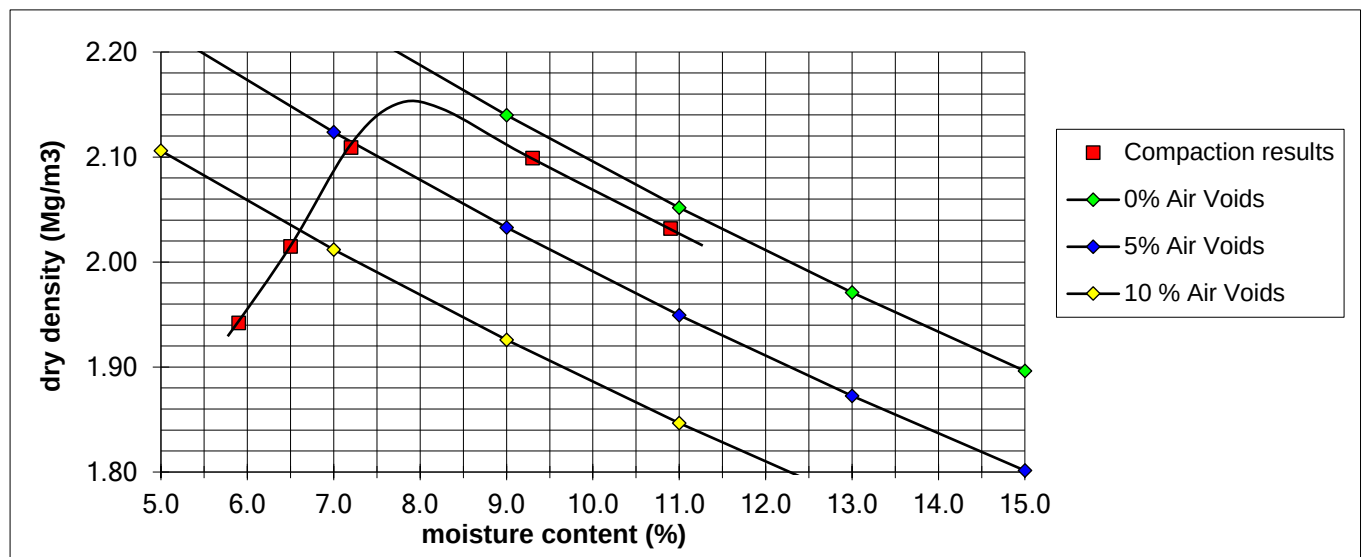
PARTICLE DENSITY METHOD BS 1377: PART 2: 1990 Clause 8.2

CLIENT	VHE Construction Plc
SITE	Former Tarmac Manufacturing Plant, Stopes Road, Bolton, Greater Manchester BL3 1NP
JOB NUMBER	MRN 4454/68

SAMPLE LABEL	SP-Yellow Gravel-6	DATE SAMPLED	09-Sep-22
LAB SAMPLE No	116544	DATE RECEIVED	09-Sep-22
DATE TESTED	20-Sep-22	SAMPLED BY	Client

MATERIAL	Gravel
ADVISED SOURCE	Site Won
PRE TREATMENT	Air Dried/Separate Batches

Point Number	Moisture Content (%)	Dry Density (Mg/m ³)
1	5.9	1.942
2	6.5	2.015
3	7.2	2.109
4	9.3	2.099
5	10.9	2.032
Optimum Maximum Particle Density	7.8	2.15
	2.65 (Assumed)	



REMARKS/ABNORMALITIES

Percentage of material retained on 37.5mm sieve = 5%

Percentage of material retained on 20mm sieve = 43%

As received moisture content = 7.8%

SIGNED

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

DATE

06-Oct-22

TEST REPORT

Client VHE Construction Plc

Address Whaley Road
Barugh
Barnsley
South Yorkshire
S75 1HT

Contract 808 -
Former Tarmac Manufacturing Plant, Stopes Road,
Bolton, Greater Manchester BL3 1NP

Job Number MRN 4454/69
Date of Issue 06 October 2022
Page 1 of 2

Approved Signatories

S J Hutchings, O P Davies

Notes

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MURRAY RIX

ANDREW HOUSE, HADFIELD STREET

DUKINFIELD, CHESHIRE SK16 4QX

TEL 0161 475 0870

**TEST CERTIFICATE**

DRY DENSITY/MOISTURE CONTENT RELATIONSHIP 2.5kg RAMMER

BS 1377: PART 4: 1990

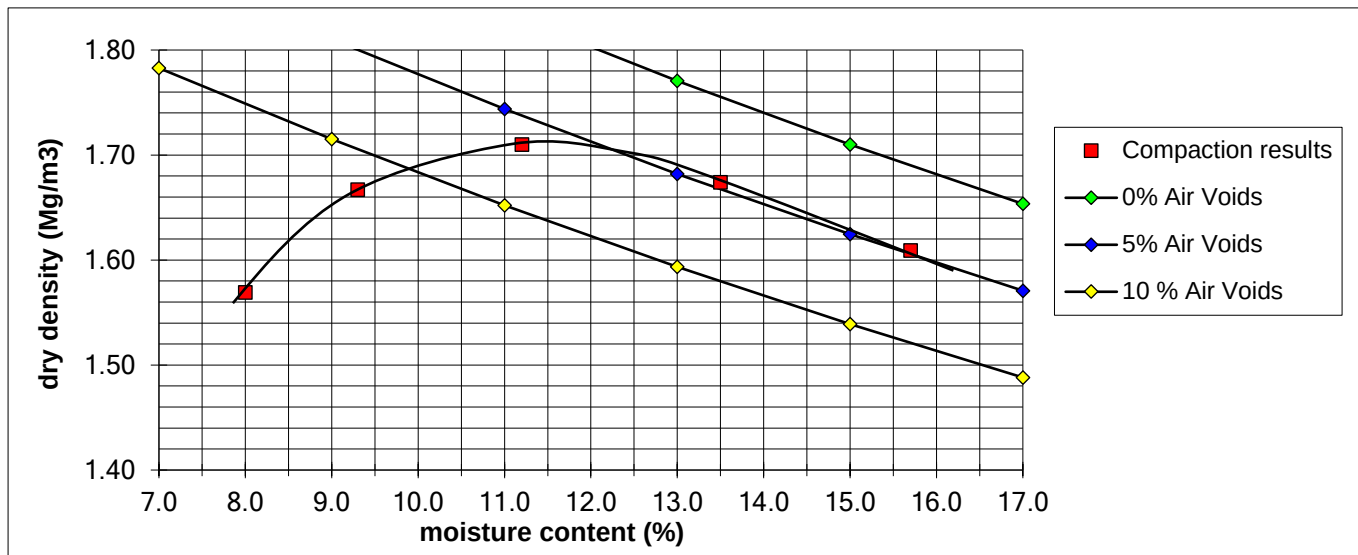
PARTICLE DENSITY METHOD BS 1377: PART 2: 1990 Clause 8.2

CLIENT	VHE Construction Plc
SITE	Former Tarmac Manufacturing Plant, Stopes Road, Bolton, Greater Manchester BL3 1NP
JOB NUMBER	MRN 4454/69

SAMPLE LABEL	Area 3, C17 (Layer 5)	DATE SAMPLED	13-Sep-22
LAB SAMPLE No	116621	DATE RECEIVED	13-Sep-22
DATE TESTED	20-Sep-22	SAMPLED BY	Client

MATERIAL	Gravel
ADVISED SOURCE	Site Won
PRE TREATMENT	Air Dried/Separate Batches

Point Number	Moisture Content (%)	Dry Density (Mg/m3)
1	8.0	1.569
2	9.3	1.667
3	11.2	1.710
4	13.5	1.674
5	15.7	1.609
Optimum Maximum Particle Density	12.0	1.71
	2.3 (Assumed)	



REMARKS/ABNORMALITIES

Percentage of material retained on 37.5mm sieve = 5%

Percentage of material retained on 20mm sieve = 13%

As received moisture content = 18%

SIGNED

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

DATE

06-Oct-22

TEST REPORT

Client VHE Construction Plc

Address 6 Newton Business Park
Thorncliffe Park Estate
Sheffield
South Yorkshire
S35 2PH

Contract 808 -
Former Tarmac Manufacturing Plant,
Stopes Road, Bolton BL3 1NP

Job Number MRN 4454/106
Date of Issue 30 October 2023
Page 1 of 3

Approved Signatories

S J Hutchings, O P Davies

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Email: enquiries@murrayrix.com Website: www.murrayrix.com

Also at: London: 020 8523 1999

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TEST CERTIFICATE
PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892-4:2016

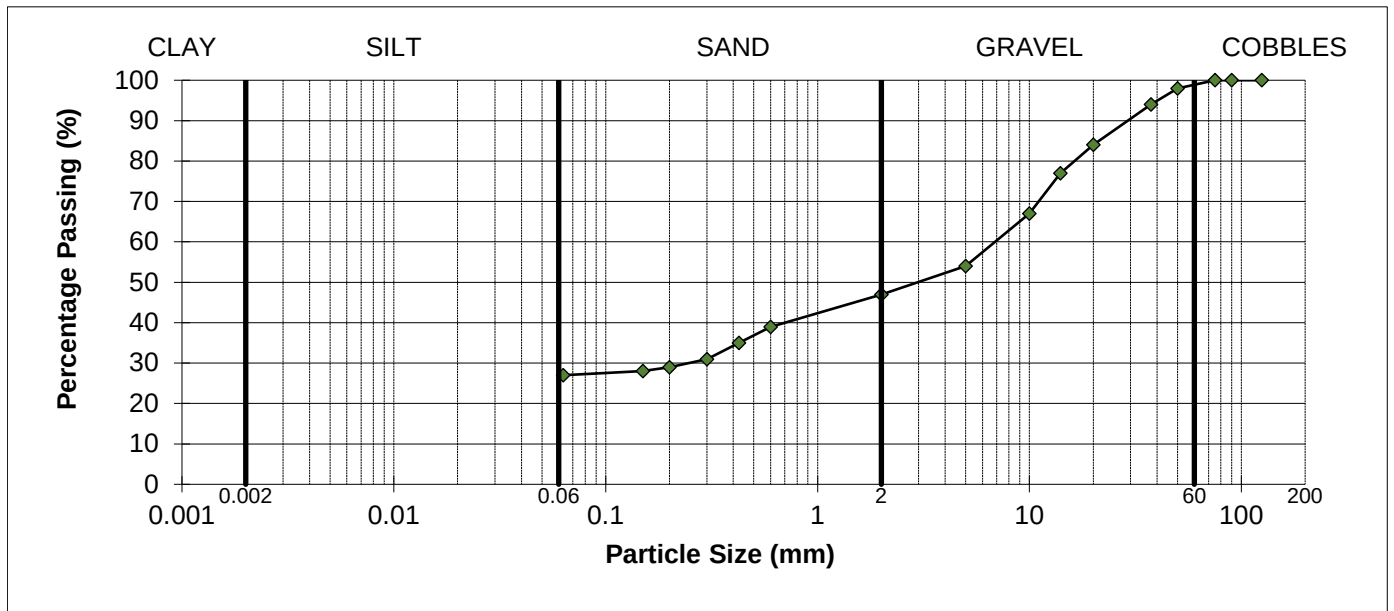
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	VHE Construction Plc
SITE	808 - Former Tarmac Manufacturing Plant, Stopes Road, Bolton BL3 1NP
JOB NUMBER	MRN 4454/106

SAMPLE LABEL	Sample 1	DATE SAMPLED	23-Oct-23
LAB SAMPLE No	133115	DATE RECEIVED	23-Oct-23
DATE TESTED	23-Oct-23	SAMPLED BY	Client

MATERIAL	General Fill
ADVISED SOURCE	Site won

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100		5	54	
90	100		2	47	
75	100		0.6	39	
50	98		0.425	35	
37.5	94		0.3	31	
20	84		0.2	29	
14	77		0.15	28	
10	67		0.063	27	



REMARKS

As received water content = 15.2%

SIGNED



NAME

O.P. Davies BA (Hons)
(Laboratory Manager)

DATE

30-Oct-23

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

DRY DENSITY/WATER CONTENT RELATIONSHIP 4.5kg RAMMER

BS 1377-2:2022 Cl.11

PARTICLE DENSITY METHOD BS 1377-2:2022 Cl.9.2

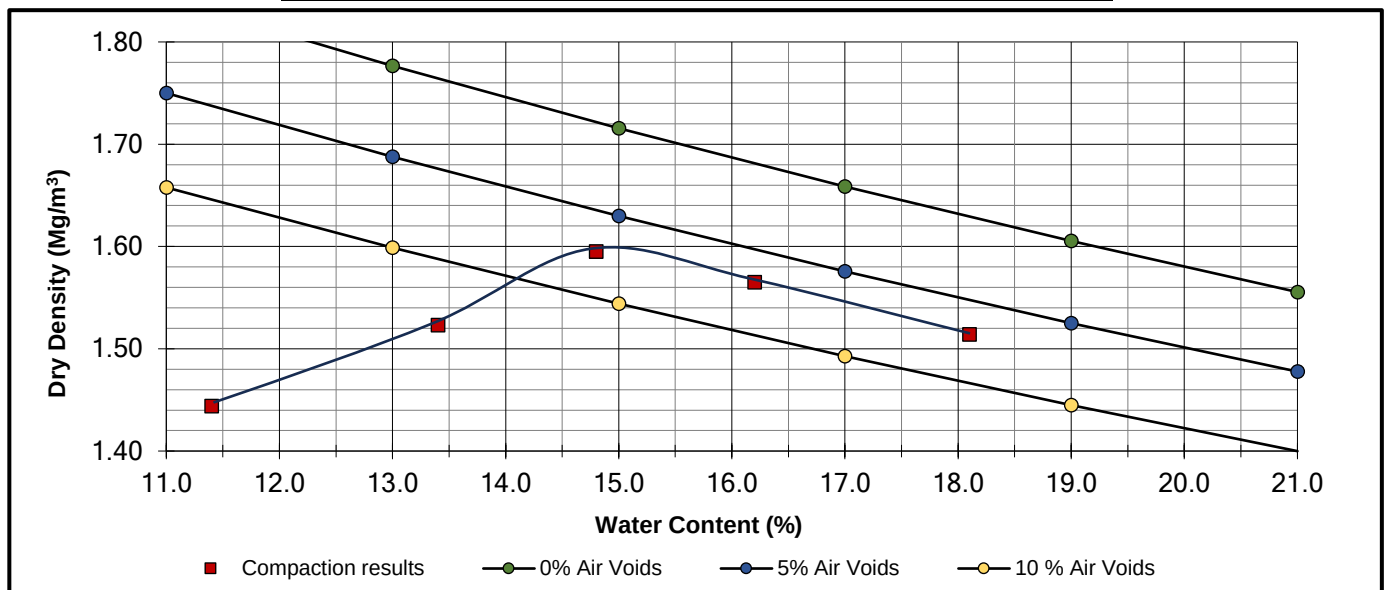
CLIENT	VHE Construction Plc
SITE	808 - Former Tarmac Manufacturing Plant, Stopes Road, Bolton BL3 1NP
JOB NUMBER	MRN 4454/106

SAMPLE LABEL	Sample 1	DATE SAMPLED	23-Oct-23
SAMPLE NUMBER	133115	DATE RECEIVED	23-Oct-23
DATE TESTED	23-Oct-23	SAMPLED BY	Client

MATERIAL	General Fill
ADVISED SOURCE	Site won
PRE TREATMENT	Air Dried / Separate Batches

RETAINED 37.5mm	6 %	GRADING ZONE	Zone 5
RETAINED 20mm	16 %	PARTICLE DENSITY	2.31 Mg/m ³ (Measured)

POINT NUMBER	WATER CONTENT (%)	DRY DENSITY (Mg/m ³)
1	11.4	1.444
2	13.4	1.523
3	14.8	1.595
4	16.2	1.565
5	18.1	1.514



OPTIMUM WATER CONTENT	15 (%)
MAXIMUM DRY DENSITY	1.60 (Mg/m ³)

REMARKS

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

SIGNED

DATE 30-Oct-23

TEST REPORT

Client VHE Construction Plc

Address 6 Newton Business Park
Thorncliffe Park Estate
Sheffield
South Yorkshire
S35 2PH

Contract 808 -
Former Tarmac Manufacturing Plant,
Stopes Road, Bolton BL3 1NP

Job Number MRN 4742/17
Date of Issue 18 October 2023
Page 1 of 11

Approved Signatories

S J Hutchings, O P Davies

Notes

- 1 All remaining samples and remnants from this contract will be disposed 28 days from the date of this report unless you notify us to the contrary.
- 2 Result certificates, in this report, not bearing a UKAS mark, are not included in our UKAS accreditation schedule.
- 3 Opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.
- 4 Certified that the samples have been examined and tested in accordance with the terms of the contract/order and unless otherwise stated conform to the standards/specifications quoted.
- 5 The results included within the report are representative of the samples submitted for analysis.
- 6 This certificate should not be reproduced, except in full, without the express permission of the laboratory.



Andrew House, Hadfield Street, Dukinfield, Cheshire SK16 4QX Tel: 0161 475 0870
Email: enquiries@murrayrix.com Website: www.murrayrix.com

Also at: London: 020 8523 1999

Murray Rix is the trading name of Murray Rix (Northern) Limited. Registered in England 2878361

TEST CERTIFICATE

PARTICLE SIZE DISTRIBUTION

BS EN 933-1 : 2012 (Washing & Sieving Method)

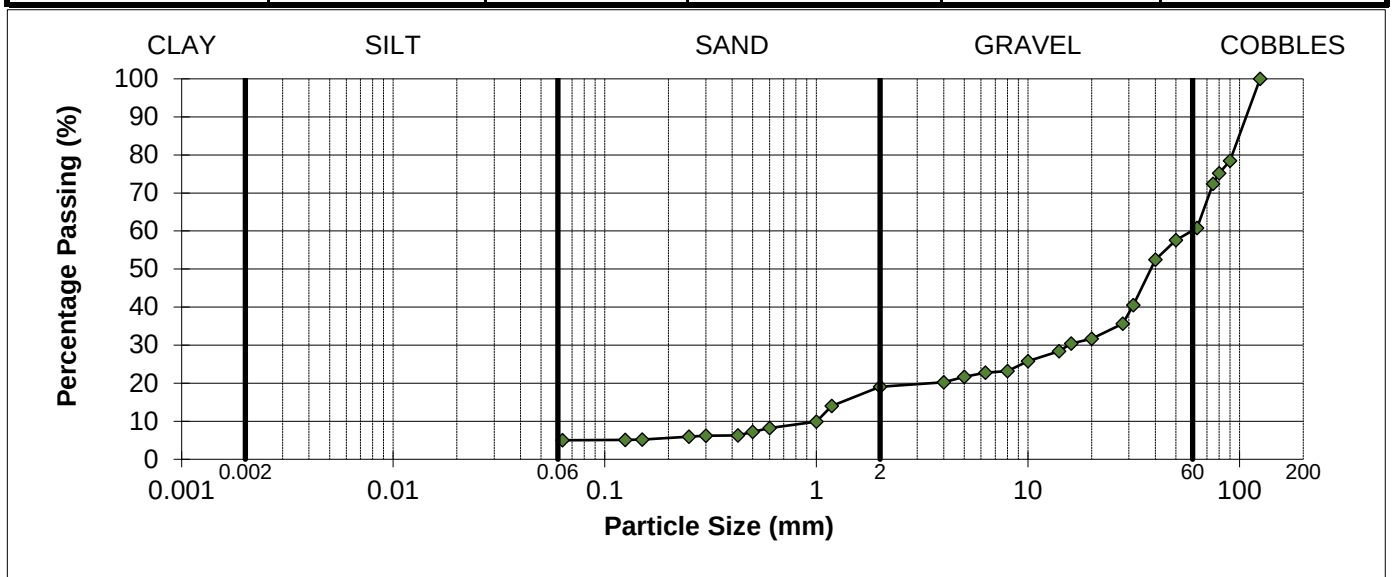
Determination of water content in accordance with BS EN 1097-5:2008

CLIENT	VHE Construction Plc
SITE	808 - Former Tarmac Manufacturing Plant, Stopes Road, Bolton BL3 1NP
JOB NUMBER	MRN 4742/17

SAMPLE LABEL	IMPORT-1-SMQ	DATE SAMPLED	22-Sep-23
LAB SAMPLE No	131624	DATE RECEIVED	25-Sep-23
DATE TESTED	02-Oct-23	SAMPLED BY	Client

MATERIAL	Imported Aggregate
ADVISED SOURCE	Imported

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100		6.3	23	
90	79		5	22	
80	75		4	20	
75	72		2	19	
63	61		1.18	14	
50	58		1	10	
40	53		0.6	8	
31.5	41		0.5	7	
28	36		0.425	6	
20	32		0.3	6	
16	30		0.25	6	
14	28		0.15	5	
10	26		0.125	5	
8	23		0.063	5.0	



REMARKS

SIGNED



NAME

O.P. Davies BA (Hons)
(Laboratory Manager)

DATE

18-Oct-23

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

DRY DENSITY/WATER CONTENT RELATIONSHIP VIBRATING HAMMER
BS EN 13286-4:2021

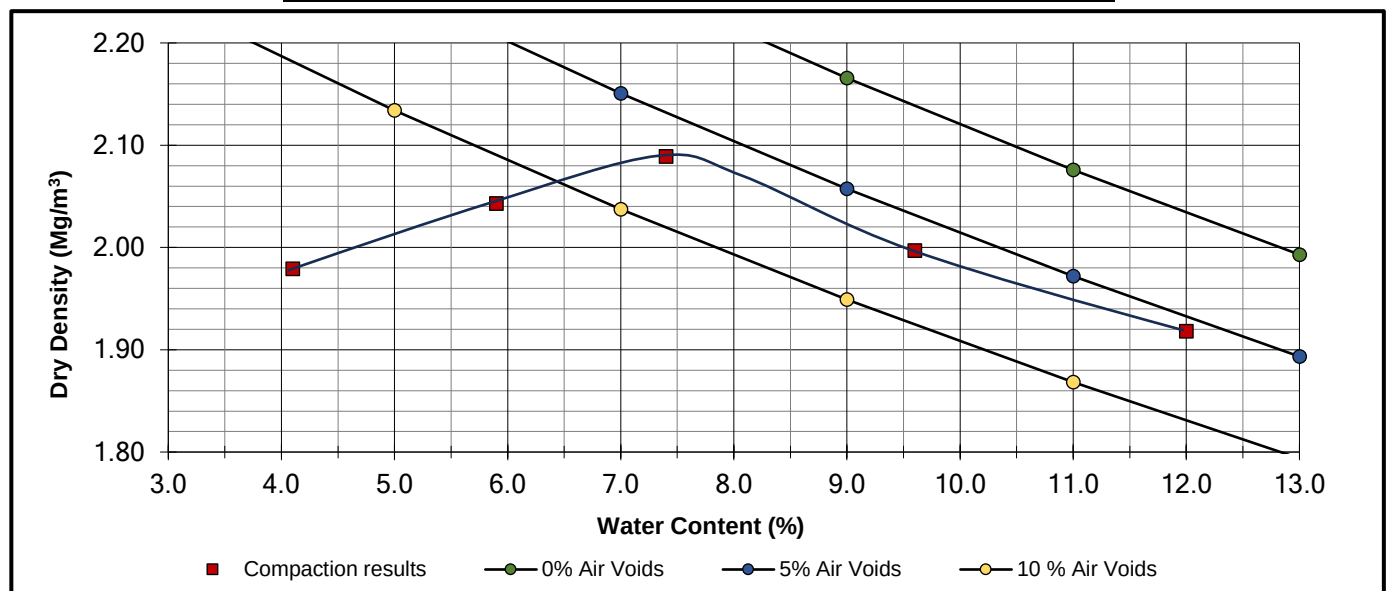
CLIENT	VHE Construction Plc
SITE	808 - Former Tarmac Manufacturing Plant, Stopes Road, Bolton BL3 1NP
JOB NUMBER	MRN 4742/17

SAMPLE LABEL	IMPORT-1-SMQ	DATE SAMPLED	22-Sep-23
SAMPLE NUMBER	131624	DATE RECEIVED	25-Sep-23
DATE TESTED	02-Oct-23	SAMPLED BY	Client

MATERIAL	Imported Aggregate
ADVISED SOURCE	Imported
PRE TREATMENT	Air Dried

RETAINED 40mm	48 %	VIBRATING HAMMER	Hikoki DH40MC Rotary Hammer
RETAINED 20mm	68 %	PARTICLE DENSITY	2.69 Mg/m ³ (Measured)

POINT NUMBER	WATER CONTENT (%)	DRY DENSITY (Mg/m ³)
1	4.1	1.979
2	5.9	2.043
3	7.4	2.089
4	9.6	1.997
5	12.0	1.918



OPTIMUM WATER CONTENT	7.5 (%)
MAXIMUM DRY DENSITY	2.09 (Mg/m ³)
FORM OF CURVE	Convex Downwards

REMARKS

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

SIGNED

DATE 18-Oct-23

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.3 (30° FALL CONE) 1 POINT METHOD

PLASTIC LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.5

WATER CONTENT METHOD BS EN ISO 17892-1:2014+A1:2022

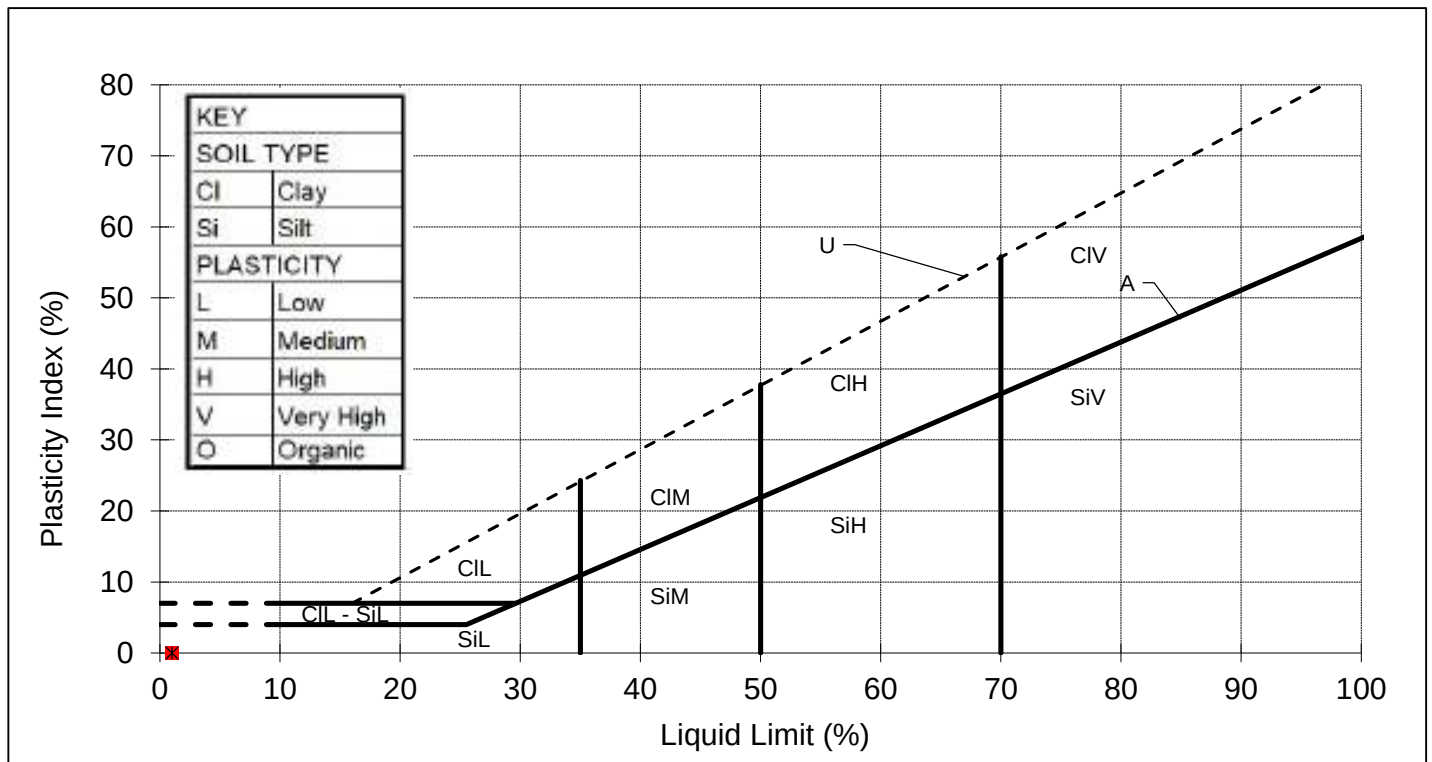
CLIENT	VHE Construction Plc
SITE	808 - Former Tarmac Manufacturing Plant, Stopes Road, Bolton BL3 1NP
JOB NUMBER	MRN 4742/17

SAMPLE LABEL	IMPORT-1-SMQ	DATE SAMPLED	22-Sep-23
SAMPLE No.	131624	DATE RECEIVED	25-Sep-23
DATE TESTED	02-Oct-23	SAMPLED BY	Client

MATERIAL	Imported Aggregate		
ADVISED SOURCE	Imported	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Moisture Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	N/A	N/A	N/A	
Determination 2 (avg)	N/A	N/A		

Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
5.7	N/A	Non Plastic	N/A	6



REMARKS

SIGNED

NAME

O.P. Davies BA (Hons)
(Laboratory Manager)

DATE

18-Oct-23

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

CALIFORNIA BEARING RATIO (CBR)

BS 1377-2:2022 Cl. 15

DETERMINATION OF WATER CONTENT - BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

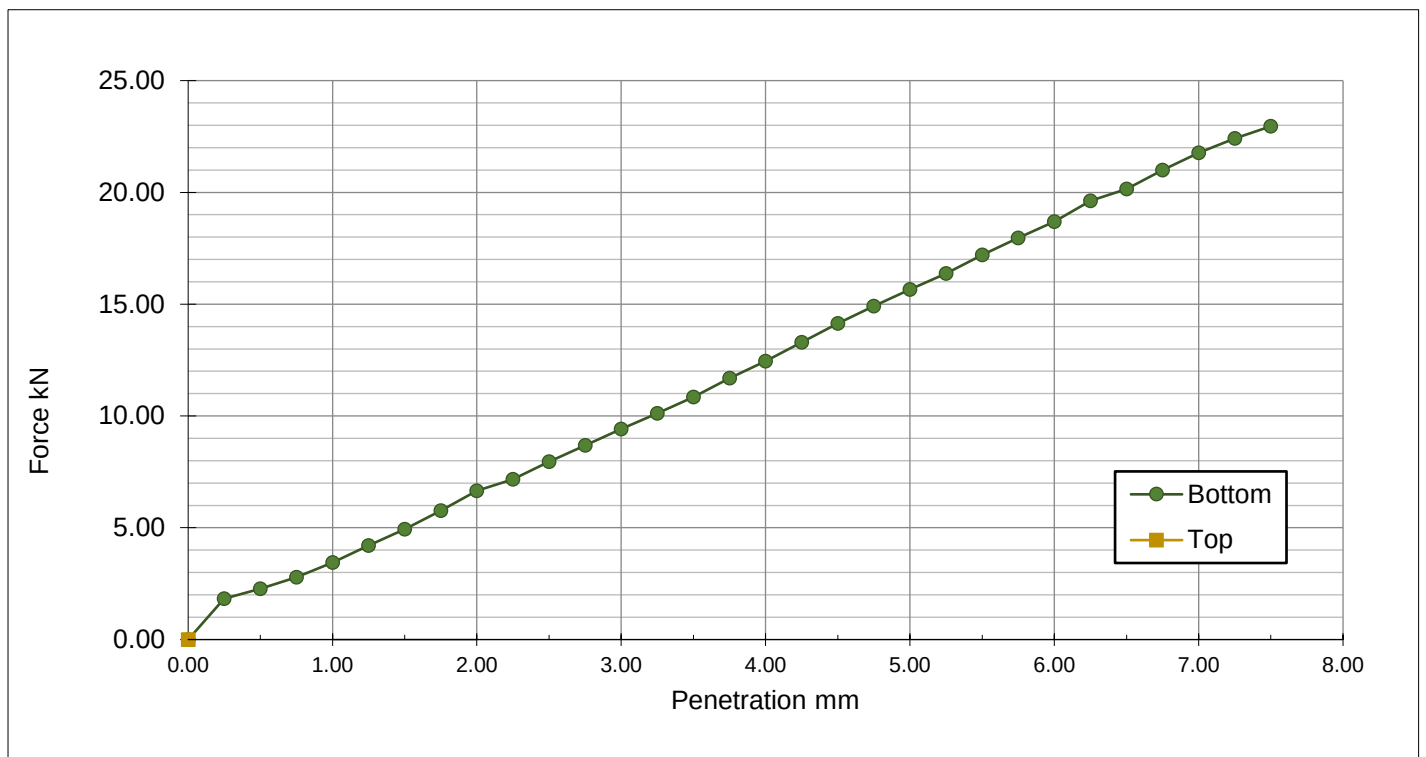
CLIENT	VHE Construction Plc
SITE	808 - Former Tarmac Manufacturing Plant, Stopes Road, Bolton BL3 1NP
JOB NUMBER	MRN 4742/17

SAMPLE LABEL	IMPORT-1-SMQ	DATE SAMPLED	22-Sep-23
LAB SAMPLE No	131624	DATE RECEIVED	25-Sep-23
DATE TESTED	02-Oct-23	SAMPLED BY	Client

MATERIAL	Imported Aggregate
ADVISED SOURCE	Imported

INITIAL CONDITIONS

SAMPLE PREPARATION	Dynamic Compaction, Specified Effort, 2.5 kg Rammer				
GREATER THAN 20 mm REMOVED	68 %				
BULK DENSITY	2.15 Mg/m3	MOISTURE CONTENT	5.9 %	DRY DENSITY	2.03 Mg/m3
TEST CONDITION	Unsoaked	MEASURED SWELL	N/A mm	SURCHARGE	2 kg



CBR VALUE

Top N/A %
Bottom 78 %

ORIGIN CORRECTION

Top N/A mm
Bottom N/A mm

FINAL MOISTURE CONTENT

Top N/A %
Bottom 5.9 %

REMARKS

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

SIGNED

DATE

18-Oct-23

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

DETERMINATION OF RESISTANCE TO FRAGMENTATION BY THE LOS ANGELES TEST METHOD

BS EN 1097-2:2020

CLIENT	VHE Construction Plc
SITE	808 - Former Tarmac Manufacturing Plant, Stopes Road, Bolton BL3 1NP

SAMPLE DETAILS

Job Number : MRN 4742/17
Laboratory sample number : 131624
Material : Imported Aggregate
Advised source : Imported
Site mark : IMPORT-1-SMQ
Certificate of sampling received : No
Date and time of sampling : 22-Sep-23
Date received at Laboratory : 25-Sep-23
Date of start of test : 02-Oct-23
Sampling Location : Site
Method of sampling : BS EN 932-1 : 1997
Sampled by : Client
Size Fraction : 35% passing 14mm retained 12.5mm
65% passing 12.5mm retained 10mm
Mass of dry sample tested : 5000g
Target specification : <50

RESULT

Los Angeles Coefficient : **48**

Comment

NAME O.P. Davies BA (Hons
(Laboratory Manager)

SIGNED

DATE 18-Oct-23

TEST CERTIFICATE

PARTICLE SIZE DISTRIBUTION

BS EN 933-1 : 2012 (Washing & Sieving Method)

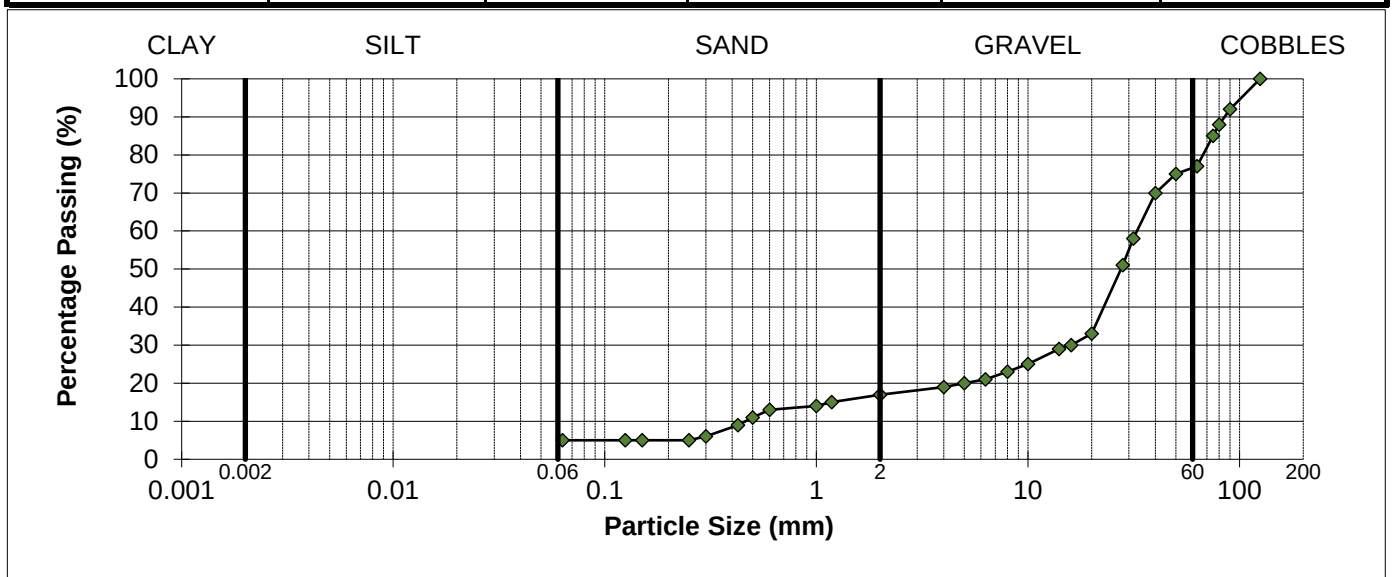
Determination of water content in accordance with BS EN 1097-5:2008

CLIENT	VHE Construction Plc
SITE	808 - Former Tarmac Manufacturing Plant, Stopes Road, Bolton BL3 1NP
JOB NUMBER	MRN 4742/17

SAMPLE LABEL	IMPORT-1-FBQ	DATE SAMPLED	22-Sep-23
LAB SAMPLE No	131625	DATE RECEIVED	25-Sep-23
DATE TESTED	02-Oct-23	SAMPLED BY	Client

MATERIAL	Imported Aggregate - 6F5
ADVISED SOURCE	Imported

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100	100	6.3	21	
90	92		5	20	
80	88	75-99	4	19	
75	85		2	17	0-35
63	77		1.18	15	
50	75		1	14	
40	70	50-90	0.6	13	
31.5	58		0.5	11	
28	51		0.425	9	
20	33	30-75	0.3	6	
16	30		0.25	5	
14	29		0.15	5	
10	25	15-60	0.125	5	
8	23		0.063	5.0	0-12



REMARKS

Sample complies with the advised grading specification for a 6F5 material (SHW 2016)

SIGNED



NAME

O.P. Davies BA (Hons)
(Laboratory Manager)

DATE

18-Oct-23

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

DRY DENSITY/WATER CONTENT RELATIONSHIP VIBRATING HAMMER
BS EN 13286-4:2021

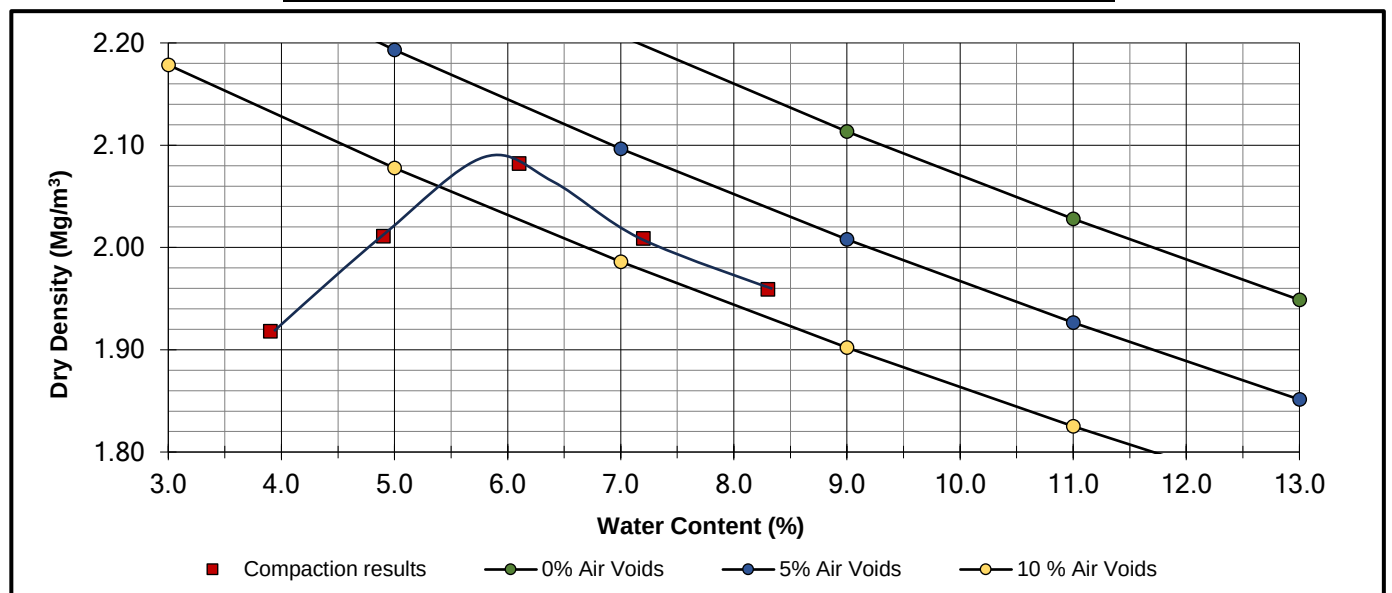
CLIENT	VHE Construction Plc
SITE	808 - Former Tarmac Manufacturing Plant, Stopes Road, Bolton BL3 1NP
JOB NUMBER	MRN 4742/17

SAMPLE LABEL	IMPORT-1-FBQ	DATE SAMPLED	22-Sep-23
SAMPLE NUMBER	131625	DATE RECEIVED	25-Sep-23
DATE TESTED	02-Oct-23	SAMPLED BY	Client

MATERIAL	Imported Aggregate - 6F5
ADVISED SOURCE	Imported
PRE TREATMENT	Air Dried

RETAINED 40mm	30 %	VIBRATING HAMMER	Hikoki DH40MC Rotary Hammer
RETAINED 20mm	67 %	PARTICLE DENSITY	2.61 Mg/m ³ (Measured)

POINT NUMBER	WATER CONTENT (%)	DRY DENSITY (Mg/m ³)
1	3.9	1.918
2	4.9	2.011
3	6.1	2.082
4	7.2	2.009
5	8.3	1.959



OPTIMUM WATER CONTENT	5.9 (%)
MAXIMUM DRY DENSITY	2.09 (Mg/m ³)
FORM OF CURVE	Convex Downwards

REMARKS

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

SIGNED

DATE 18-Oct-23

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.3 (30° FALL CONE) 1 POINT METHOD

PLASTIC LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.5

WATER CONTENT METHOD BS EN ISO 17892-1:2014+A1:2022

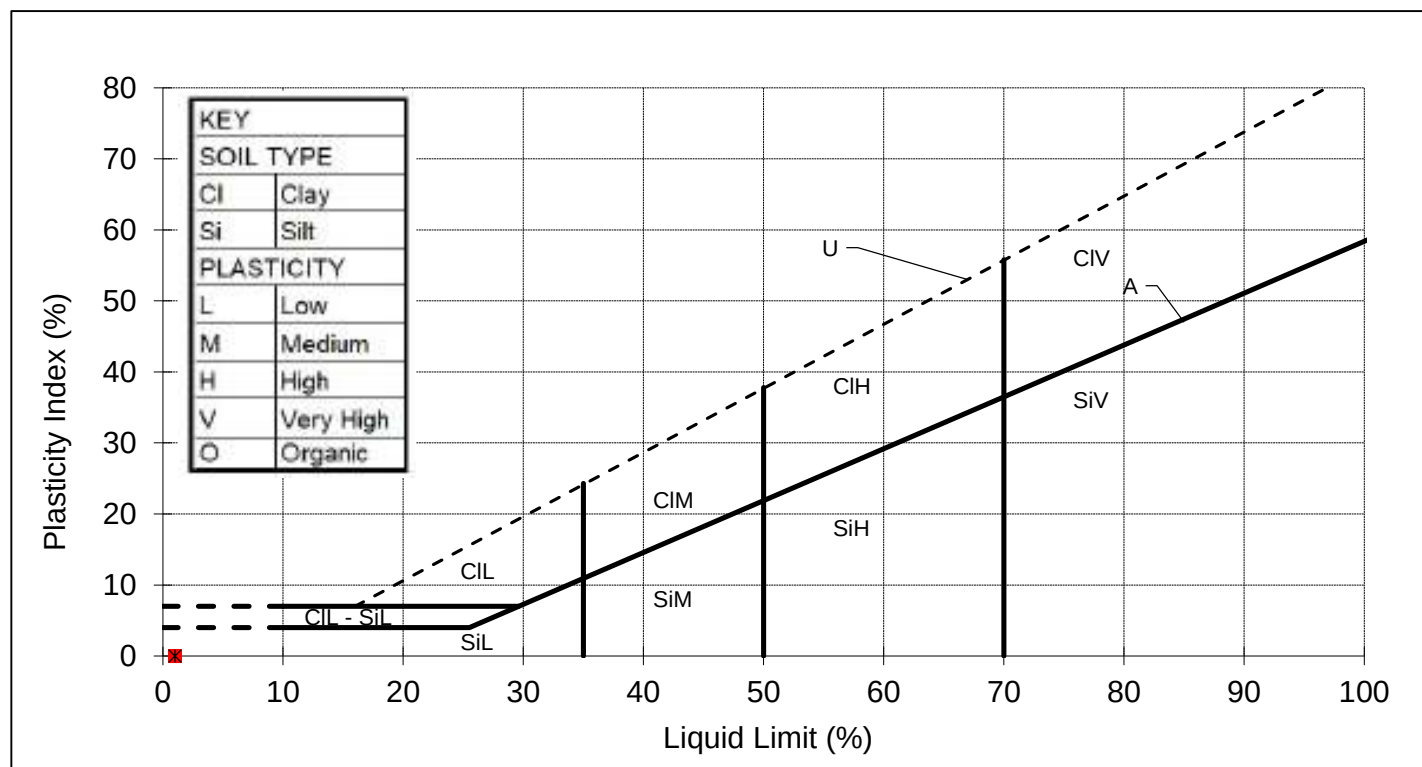
CLIENT	VHE Construction Plc
SITE	808 - Former Tarmac Manufacturing Plant, Stopes Road, Bolton BL3 1NP
JOB NUMBER	MRN 4742/17

SAMPLE LABEL	IMPORT-1-FBQ	DATE SAMPLED	22-Sep-23
SAMPLE No.	131625	DATE RECEIVED	25-Sep-23
DATE TESTED	02-Oct-23	SAMPLED BY	Client

MATERIAL	Imported Aggregate - 6F5		
ADVISED SOURCE	Imported	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Moisture Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	N/A	N/A	N/A	
Determination 2 (avg)	N/A	N/A		

Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
6.4	N/A	Non Plastic	N/A	9



REMARKS

SIGNED

NAME

O.P. Davies BA (Hons)
(Laboratory Manager)

DATE

18-Oct-23

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

**TEST CERTIFICATE**

CALIFORNIA BEARING RATIO (CBR)

BS 1377-2:2022 Cl. 15

DETERMINATION OF WATER CONTENT - BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

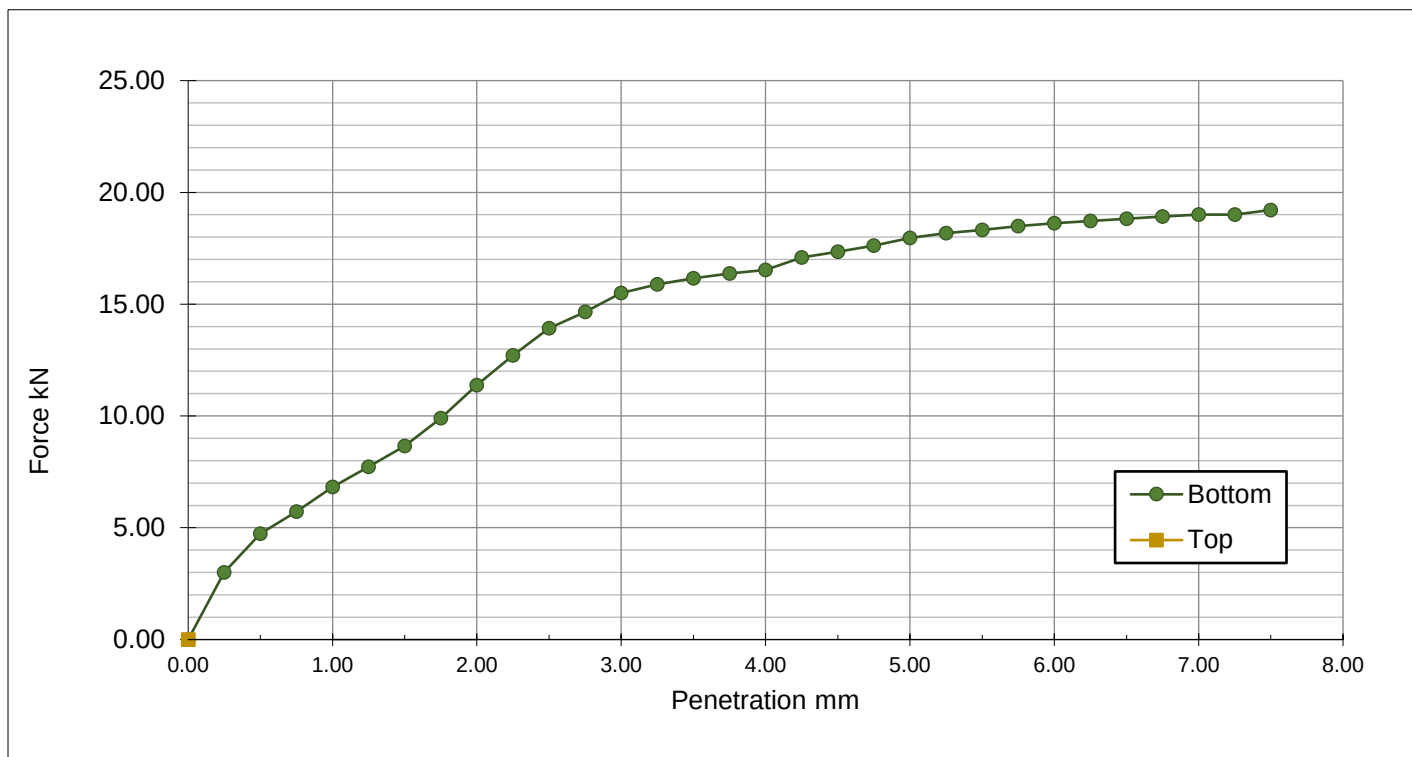
CLIENT	VHE Construction Plc
SITE	808 - Former Tarmac Manufacturing Plant, Stopes Road, Bolton BL3 1NP
JOB NUMBER	MRN 4742/17

SAMPLE LABEL	IMPORT-1-FBQ	DATE SAMPLED	22-Sep-23
LAB SAMPLE No	131625	DATE RECEIVED	25-Sep-23
DATE TESTED	02-Oct-23	SAMPLED BY	Client

MATERIAL	Imported Aggregate
ADVISED SOURCE	Imported

INITIAL CONDITIONS

SAMPLE PREPARATION	Dynamic Compaction, Specified Effort, 2.5 kg Rammer				
GREATER THAN 20 mm REMOVED	67 %				
BULK DENSITY	2.18 Mg/m3	MOISTURE CONTENT	6.4 %	DRY DENSITY	2.05 Mg/m3
TEST CONDITION	Unsoaked	MEASURED SWELL	N/A mm	SURCHARGE	2 kg

**CBR VALUE**

Top N/A %
Bottom >100 %

ORIGIN CORRECTION

Top N/A mm
Bottom N/A mm

FINAL MOISTURE CONTENT

Top N/A %
Bottom 6.4 %

REMARKS

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

SIGNED

DATE

18-Oct-23

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

DETERMINATION OF RESISTANCE TO FRAGMENTATION BY THE LOS ANGELES TEST METHOD

BS EN 1097-2:2020

CLIENT	VHE Construction Plc
SITE	808 - Former Tarmac Manufacturing Plant, Stopes Road, Bolton BL3 1NP

SAMPLE DETAILS

Job Number : MRN 4742/17
Laboratory sample number : 131625
Material : Imported Aggregate - 6F5
Advised source : Imported
Site mark : IMPORT-1-FBQ
Certificate of sampling received : No
Date and time of sampling : 22-Sep-23
Date received at Laboratory : 25-Sep-23
Date of start of test : 02-Oct-23
Sampling Location : Site
Method of sampling : BS EN 932-1 : 1997
Sampled by : Client
Size Fraction : 33% passing 14mm retained 12.5mm
67% passing 12.5mm retained 10mm
Mass of dry sample tested : 5000g
Target specification : <50

RESULT

Los Angeles Coefficient : 49

Comment

NAME O.P. Davies BA (Hons
(Laboratory Manager)

SIGNED

DATE 18-Oct-23

APPENDIX B

Geotechnical Validation Testing Certification

TEST REPORT

Client VHE Construction Plc

Address 6 Newton Business Park
Thorncliffe Park Estate
Sheffield
South Yorkshire
S35 2PH

Contract 808 -
Former Tarmac Manufacturing Plant,
Stopes Road, Bolton BL3 1NP

Job Number MRN 4742A/1
Date of Issue 25 October 2023
Page 1 of 3

Approved Signatories

S J Hutchings, O P Davies

Notes

- 1 All remaining samples and remnants from this contract will be disposed 28 days from the date of this report unless you notify us to the contrary.
- 2 Result certificates, in this report, not bearing a UKAS mark, are not included in our UKAS accreditation schedule.
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Also at: London: 020 8523 1999

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MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

PLATE INCREMENTAL LOAD TEST

BS 1377 : PART 9 : CL 4.1 and IAN 73/06 Rev 1 (2009)

Estimated Surface Stiffness Modulus CD225 Ver. 1, April 2020

CLIENT	VHE Construction Plc					
SITE	808 - Former Tarmac Manufacturing Plant, Stopes Road, Bolton BL3 1NP					
JOB NUMBER	MRN 4742A/1					
TEST LOCATION	Test 01	LOADING DEVICE		20 Tonne Enerpac Jack		
TEST DATE	23-Oct-23	PLATE SIZE (mm)		600 diameter		
TEST DEPTH	Surface	REACTION LOAD USED		Site Plant		
MATERIAL UNDER TEST	Crush		MOISTURE CONTENT		Not Required	

Dial Gauge 1 (mmx100)	Dial Gauge 2 (mmx100)	Dial Gauge 3 (mmx100)	Mean Gauge (mmx100)	Mean Deflection (mm)	Load (kN)	Pressure (kPa)
4856	4760	4929	4848	0.00	0.00	0.0
4778	4659	4777	4738	-1.10	5.00	17.7
4832	4692	4852	4792	-0.56	0.00	0.0
4791	4673	4789	4751	-0.97	5.00	17.7
4779	4658	4759	4732	-1.16	7.00	24.8
4760	4635	4736	4710	-1.38	9.00	31.8
4748	4578	4695	4674	-1.75	12.00	42.4
4727	4537	4652	4639	-2.10	15.00	53.1
4694	4517	4626	4612	-2.36	18.00	63.7
4707	4656	4592	4652	-1.97	0.00	0.0
4675	4558	4568	4600	-2.48	5.00	17.7
4642	4523	4542	4569	-2.79	8.00	28.3
4616	4488	4515	4540	-3.09	11.00	38.9
4580	4453	4481	4505	-3.44	14.00	49.5
4547	4438	4451	4479	-3.70	17.00	60.1
4517	4385	4423	4442	-4.07	19.00	67.2
4599	4470	4489	4519	-3.29	0.00	0.0

1st Load Cycle

Pressure at 1.25 mm deflexion =	44 kPa
Modulus of subgrade reaction (k) =	36 MPa/m
Equivalent 762 mm plate reaction =	29 MPa/m
Equivalent CBR =	3.2 %
Surface Stiffness Modulus (E) =	37 MN/m ²

2nd Load Cycle

Pressure at 1.25 mm deflexion =	43 kPa
Modulus of subgrade reaction (k) =	34 MPa/m
Equivalent 762 mm plate reaction =	28 MPa/m
Equivalent CBR =	3.0 %
Surface Stiffness Modulus (E) =	36 MN/m ²

Surface Stiffness Modulus Ratio =	1.0
-----------------------------------	-----

DATE 25-Oct-23

MURRAY RIX

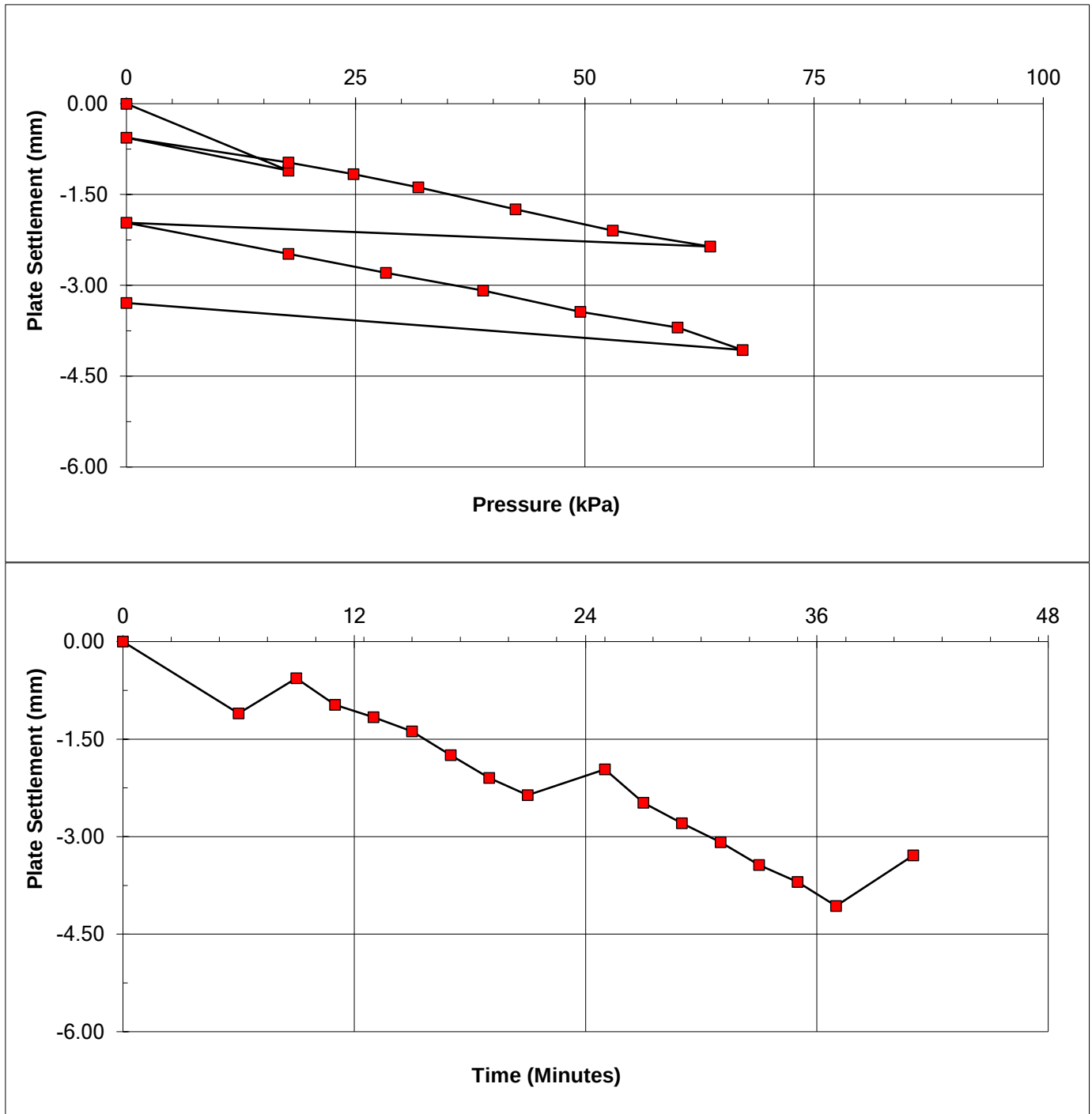
ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

PLATE INCREMENTAL LOAD TEST

BS 1377 : PART 9 : CL 4.1 and IAN 73/06 Rev 1 (2009)



REMARKS

Recommended CBR range for Surface Stiffness Modulus calculation is 2-12%.

SIGNED

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

DATE 25-Oct-23

TEST REPORT

Client VHE Construction Plc

Address 6 Newton Business Park
Thorncliffe Park Estate
Sheffield
South Yorkshire
S35 2PH

Contract 808 -
Former Tarmac Manufacturing Plant,
Stopes Road, Bolton BL3 1NP

Job Number MRN 4742A/3

Date of Issue 06 November 2023

Page 1 of 9

Approved Signatories

S J Hutchings, O P Davies

Notes

- 1 All remaining samples and remnants from this contract will be disposed 28 days from the date of this report unless you notify us to the contrary.
- 2 Result certificates, in this report, not bearing a UKAS mark, are not included in our UKAS accreditation schedule.
- 3 Opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.
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- 5 The results included within the report are representative of the samples submitted for analysis.
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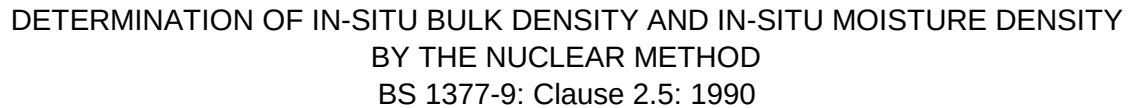


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Email: enquiries@murrayrix.com Website: www.murrayrix.com

Also at: London: 020 8523 1999

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DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

PLATE INCREMENTAL LOAD TEST

BS 1377 : PART 9 : CL 4.1 and IAN 73/06 Rev 1 (2009)
Estimated Surface Stiffness Modulus CD225 Ver. 1, April 2020

CLIENT	VHE Construction Plc					
SITE	808 - Former Tarmac Manufacturing Plant, Stopes Road, Bolton BL3 1NP					
JOB NUMBER	MRN 4742A/3					
TEST LOCATION	Test 01 - SF	LOADING DEVICE		20 Tonne Enerpac Jack		
TEST DATE	03-Nov-23	PLATE SIZE (mm)		600 diameter		
TEST DEPTH	Surface	REACTION LOAD USED		Site Plant		
MATERIAL UNDER TEST	Crush	MOISTURE CONTENT		Not Required		

Dial Gauge 1 (mmx100)	Dial Gauge 2 (mmx100)	Dial Gauge 3 (mmx100)	Mean Gauge (mmx100)	Mean Deflection (mm)	Load (kN)	Pressure (kPa)
4656	4689	4711	4685	0.00	0.00	0.0
4500	4533	4571	4535	-1.51	24.00	84.9
4590	4581	4618	4596	-0.89	0.00	0.0
4561	4554	4588	4568	-1.18	19.00	67.2
4528	4528	4563	4540	-1.46	24.00	84.9
4500	4507	4537	4515	-1.71	28.00	99.0
4468	4481	4511	4487	-1.99	32.00	113.2
4437	4452	4483	4457	-2.28	36.00	127.3
4406	4426	4453	4428	-2.57	40.00	141.5
4475	4512	4546	4511	-1.74	0.00	0.0
4448	4489	4522	4486	-1.99	23.00	81.3
4418	4452	4495	4455	-2.30	28.00	99.0
4388	4425	4466	4426	-2.59	30.00	106.1
4351	4398	4440	4396	-2.89	34.00	120.3
4322	4371	4410	4368	-3.18	39.00	137.9
4286	4343	4388	4339	-3.46	48.00	169.8
4336	4466	4419	4407	-2.78	0.00	0.0

1st Load Cycle

Pressure at 1.25 mm deflexion =	121 kPa
Modulus of subgrade reaction (k) =	96 MPa/m
Equivalent 762 mm plate reaction =	78 MPa/m
Equivalent CBR =	18.2 %
Surface Stiffness Modulus (E) =	113 MN/m ²

2nd Load Cycle

Pressure at 1.25 mm deflexion =	127 kPa
Modulus of subgrade reaction (k) =	101 MPa/m
Equivalent 762 mm plate reaction =	81 MPa/m
Equivalent CBR =	19.8 %
Surface Stiffness Modulus (E) =	119 MN/m ²

Surface Stiffness Modulus Ratio =	1.1
-----------------------------------	-----

DATE 06-Nov-23

MURRAY RIX

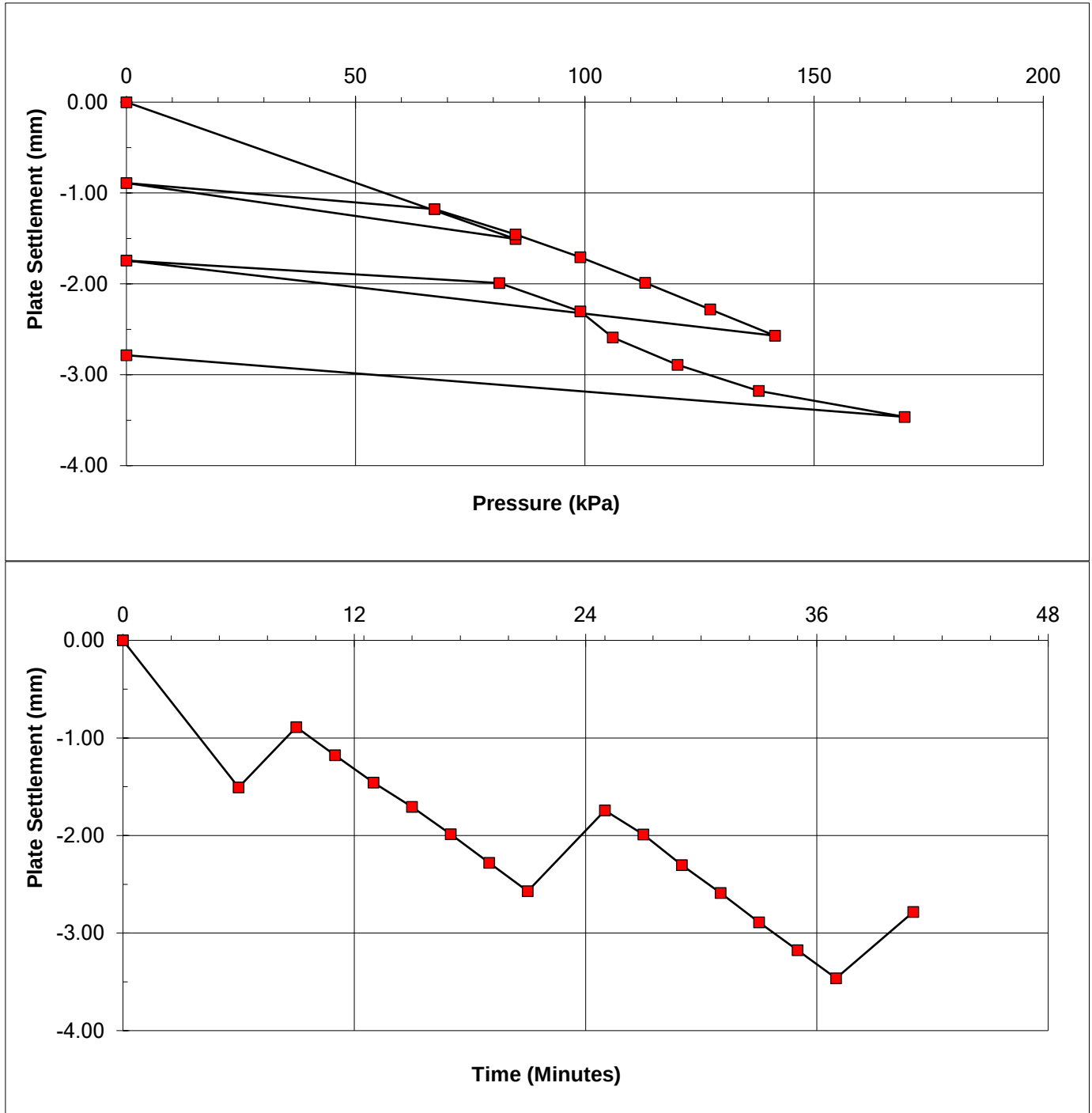
ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

PLATE INCREMENTAL LOAD TEST

BS 1377 : PART 9 : CL 4.1 and IAN 73/06 Rev 1 (2009)



REMARKS

Recommended CBR range for Surface Stiffness Modulus calculation is 2-12%.

SIGNED

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

DATE 06-Nov-23

MURRAY RIX

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TEST CERTIFICATE

PLATE INCREMENTAL LOAD TEST

BS 1377 : PART 9 : CL 4.1 and IAN 73/06 Rev 1 (2009)

Estimated Surface Stiffness Modulus CD225 Ver. 1, April 2020

CLIENT	VHE Construction Plc					
SITE	808 - Former Tarmac Manufacturing Plant, Stopes Road, Bolton BL3 1NP					
JOB NUMBER	MRN 4742A/3					
TEST LOCATION	Test 02 - NF	LOADING DEVICE		20 Tonne Enerpac Jack		
TEST DATE	03-Nov-23	PLATE SIZE (mm)		600 diameter		
TEST DEPTH	Surface	REACTION LOAD USED		Site Plant		
MATERIAL UNDER TEST	Crush		MOISTURE CONTENT		Not Required	

Dial Gauge 1 (mmx100)	Dial Gauge 2 (mmx100)	Dial Gauge 3 (mmx100)	Mean Gauge (mmx100)	Mean Deflection (mm)	Load (kN)	Pressure (kPa)
4663	4726	4700	4696	0.00	0.00	0.0
4507	4584	4571	4554	-1.42	20.00	70.7
4516	4618	4595	4576	-1.20	0.00	0.0
4487	4589	4566	4547	-1.49	18.00	63.7
4458	4561	4536	4518	-1.78	21.00	74.3
4429	4532	4508	4490	-2.07	24.00	84.9
4398	4502	4480	4460	-2.36	27.00	95.5
4367	4472	4448	4429	-2.67	31.00	109.6
4337	4442	4416	4398	-2.98	35.00	123.8
4381	4514	4478	4458	-2.39	0.00	0.0
4351	4488	4450	4430	-2.67	19.00	67.2
4324	4457	4431	4404	-2.92	26.00	92.0
4293	4426	4404	4374	-3.22	32.00	113.2
4262	4397	4371	4343	-3.53	38.00	134.4
4228	4371	4344	4314	-3.82	48.00	169.8
4194	4343	4313	4283	-4.13	54.00	191.0
4322	4467	4366	4385	-3.11	0.00	0.0

1st Load Cycle

Pressure at 1.25 mm deflexion =	99 kPa
Modulus of subgrade reaction (k) =	80 MPa/m
Equivalent 762 mm plate reaction =	64 MPa/m
Equivalent CBR =	13.0 %
Surface Stiffness Modulus (E) =	91 MN/m ²

2nd Load Cycle

Pressure at 1.25 mm deflexion =	147 kPa
Modulus of subgrade reaction (k) =	118 MPa/m
Equivalent 762 mm plate reaction =	95 MPa/m
Equivalent CBR =	25.7 %
Surface Stiffness Modulus (E) =	141 MN/m ²

Surface Stiffness Modulus Ratio =	1.5
-----------------------------------	-----

DATE 06-Nov-23

MURRAY RIX

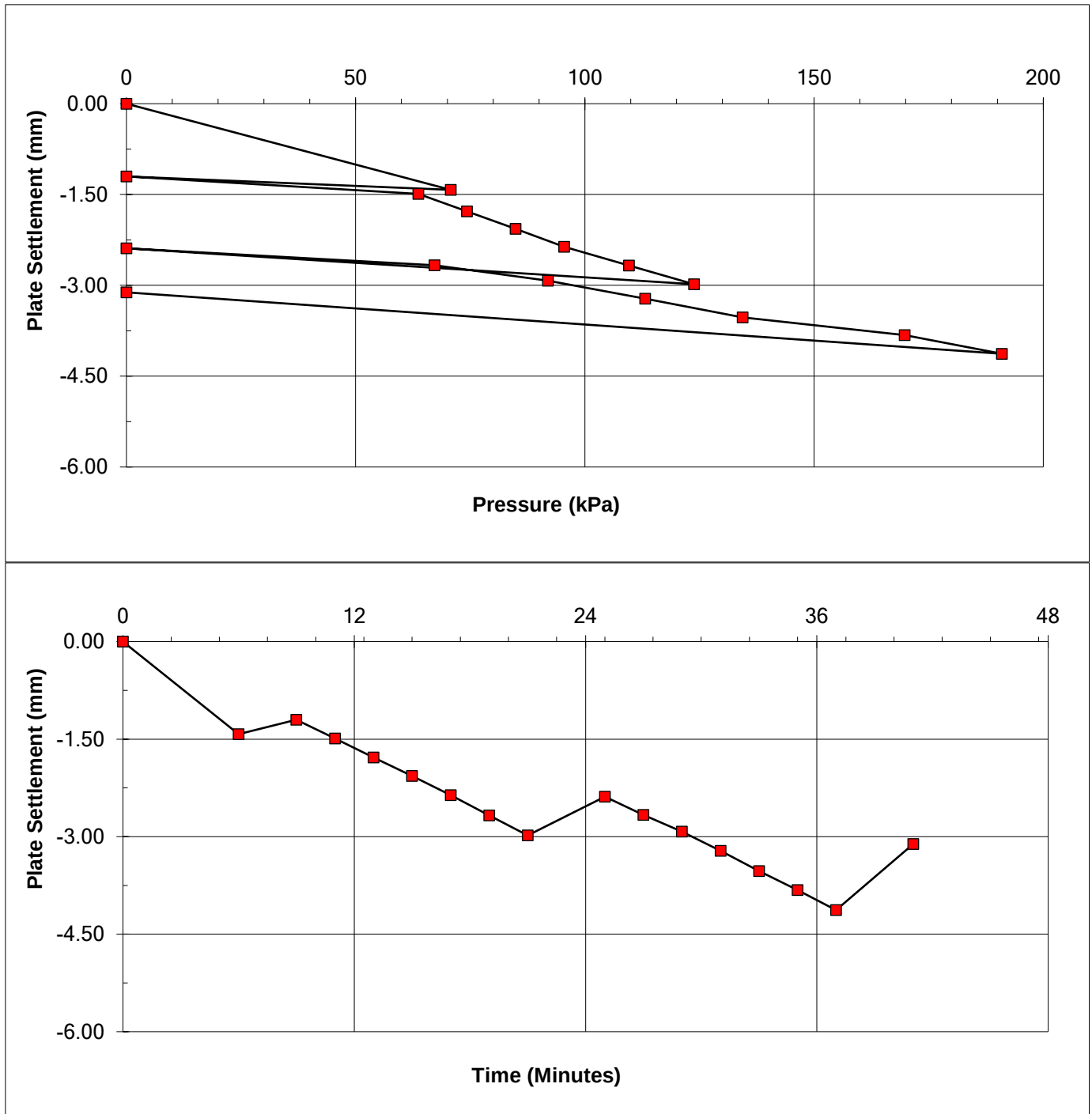
ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

PLATE INCREMENTAL LOAD TEST

BS 1377 : PART 9 : CL 4.1 and IAN 73/06 Rev 1 (2009)



REMARKS

Recommended CBR range for Surface Stiffness Modulus calculation is 2-12%.

SIGNED

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

DATE 06-Nov-23

MURRAY RIX

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TEST CERTIFICATE

PLATE INCREMENTAL LOAD TEST

BS 1377 : PART 9 : CL 4.1 and IAN 73/06 Rev 1 (2009)

Estimated Surface Stiffness Modulus CD225 Ver. 1, April 2020

CLIENT	VHE Construction Plc						
SITE	808 - Former Tarmac Manufacturing Plant, Stopes Road, Bolton BL3 1NP						
JOB NUMBER	MRN 4742A/3						
TEST LOCATION	Test 03 - N 1.0M		LOADING DEVICE		20 Tonne Enerpac Jack		
TEST DATE	03-Nov-23		PLATE SIZE (mm)		600 diameter		
TEST DEPTH	Surface		REACTION LOAD USED		Site Plant		
MATERIAL UNDER TEST	Crush			MOISTURE CONTENT		Not Required	

Dial Gauge 1 (mmx100)	Dial Gauge 2 (mmx100)	Dial Gauge 3 (mmx100)	Mean Gauge (mmx100)	Mean Deflection (mm)	Load (kN)	Pressure (kPa)
4655	4679	4696	4677	0.00	0.00	0.0
4600	4528	4558	4562	-1.15	33.00	116.7
4544	4577	4596	4572	-1.04	0.00	0.0
4519	4546	4569	4545	-1.32	25.00	88.4
4492	4518	4541	4517	-1.60	30.00	106.1
4463	4491	4517	4490	-1.86	35.00	123.8
4437	4468	4485	4463	-2.13	41.00	145.0
4411	4437	4455	4434	-2.42	44.00	155.6
4383	4402	4431	4405	-2.71	48.00	169.8
4397	4492	4511	4467	-2.10	0.00	0.0
4372	4464	4484	4440	-2.37	28.00	99.0
4343	4434	4456	4411	-2.66	33.00	116.7
4313	4407	4429	4383	-2.94	37.00	130.9
4280	4375	4400	4352	-3.25	43.00	152.1
4222	4326	4346	4298	-3.79	49.00	173.3
4194	4298	4319	4270	-4.06	53.00	187.4
4355	4467	4503	4442	-2.35	0.00	0.0

1st Load Cycle

Pressure at 1.25 mm deflexion =	151 kPa
Modulus of subgrade reaction (k) =	121 MPa/m
Equivalent 762 mm plate reaction =	97 MPa/m
Equivalent CBR =	26.8 %
Surface Stiffness Modulus (E) =	144 MN/m ²

2nd Load Cycle

Pressure at 1.25 mm deflexion =	156 kPa
Modulus of subgrade reaction (k) =	125 MPa/m
Equivalent 762 mm plate reaction =	100 MPa/m
Equivalent CBR =	28.4 %
Surface Stiffness Modulus (E) =	150 MN/m ²

Surface Stiffness Modulus Ratio =	1.0
-----------------------------------	-----

DATE 06-Nov-23

MURRAY RIX

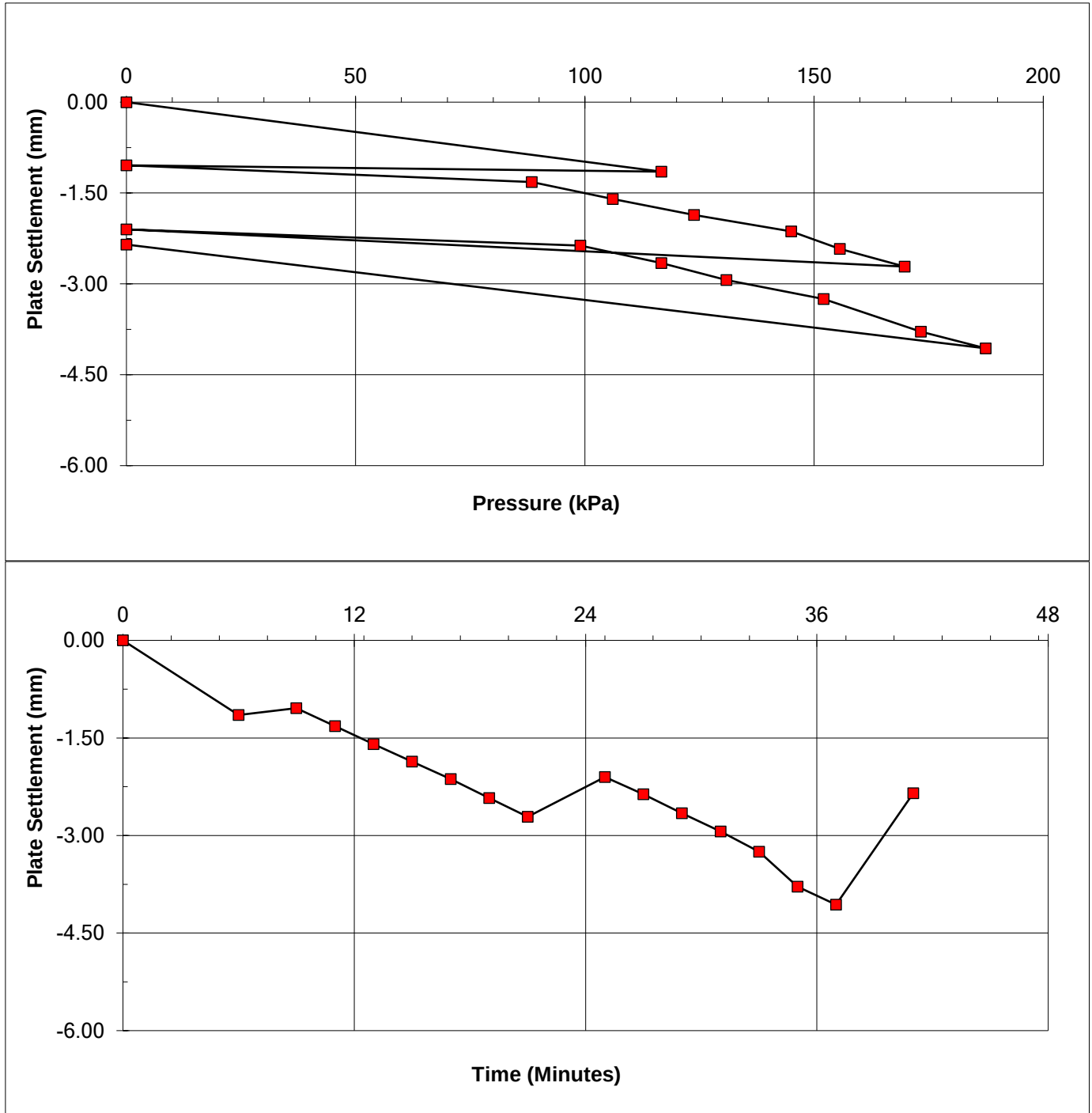
ANDREW HOUSE, HADFIELD STREET,
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TEL 0161 475 0870



TEST CERTIFICATE

PLATE INCREMENTAL LOAD TEST

BS 1377 : PART 9 : CL 4.1 and IAN 73/06 Rev 1 (2009)



REMARKS

Recommended CBR range for Surface Stiffness Modulus calculation is 2-12%.

SIGNED

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

DATE 06-Nov-23

MURRAY RIX

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DUKINFIELD, CHESHIRE SK16 4QX
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TEST CERTIFICATE

INSITU DENSITY, SAND REPLACEMENT METHOD

BS 1377 : Part 9 : Clause 2.2

MOISTURE CONTENT METHOD BS 1377 : Part 2 CLAUSE 3.2 : 1990 (OVEN DRY)

CLIENT	VHE Construction Plc
SITE	808 - Former Tarmac Manufacturing Plant, Stopes Road, Bolton BL3 1NP
JOB NUMBER	MRN 4742A/3

TEST METHOD	Large Pouring Cylinder	DATE RECEIVED	03-Nov-23
DATE OF TEST	03-Nov-23	SAMPLED BY	Murray Rix
DATE TESTED	06-Nov-23	MATERIAL SOURCE	Site Won

Laboratory Sample Number	Test Location	Material	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Moisture Content (%)	Compaction (%)	Air Voids (%)
133577	SRD 01	Crush	2.31	2.11	9.7	100.8	1.3
133578	SRD 02	Crush	2.24	2.09	7.5	99.8	6.8
Maximum Dry Density (Mg/m ³)				2.09	(Advised by client)		
Particle Density (Mg/m ³)				2.69	(Advised by client)		

COMMENT / ANOMALIES

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

SIGNED

DATE 06-Nov-23

TEST REPORT

Client VHE Construction Plc

Address 6 Newton Business Park
Thorncliffe Park Estate
Sheffield
South Yorkshire
S35 2PH

Contract 808 -
Former Tarmac Manufacturing Plant,
Stopes Road, Bolton BL3 1NP

Job Number MRN 4742A/2
Date of Issue 31 October 2023
Page 1 of 4

Approved Signatories

S J Hutchings, O P Davies

Notes

- 1 All remaining samples and remnants from this contract will be disposed 28 days from the date of this report unless you notify us to the contrary.
- 2 Result certificates, in this report, not bearing a UKAS mark, are not included in our UKAS accreditation schedule.
- 3 Opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.
- 4 Certified that the samples have been examined and tested in accordance with the terms of the contract/order and unless otherwise stated conform to the standards/specifications quoted.
- 5 The results included within the report are representative of the samples submitted for analysis.
- 6 This certificate should not be reproduced, except in full, without the express permission of the laboratory.



Andrew House, Hadfield Street, Dukinfield, Cheshire SK16 4QX Tel: 0161 475 0870
Email: enquiries@murrayrix.com Website: www.murrayrix.com

Also at: London: 020 8523 1999

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MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

DETERMINATION OF IN-SITU BULK DENSITY AND IN-SITU MOISTURE DENSITY
BY THE NUCLEAR METHOD
BS 1377-9: Clause 2.5: 1990

CLIENT	VHE Construction Plc
SITE	808 - Former Tarmac Manufacturing Plant, Stopes Road, Bolton BL3 1NP

DATE	30-Oct-23	JOB NUMBER	MRN 4742A/2
MATERIAL	Imported Crush		
NDG MODEL	Troxler 3440	SERIAL NUMBER	22848
MODE OF OPERATION	Direct Transmission	MEASUREMENT APPLICATION	Compliance tests for compacted material

Test No.	Test Chainage / Location	Test Depth (mm)	Wet Density (Mg/m3)	Dry Density (Mg/m3)	Moisture Content (%)	Percentage Compaction (%)	Air Voids (%)
1	SL 1	150	2.22	2.05	8.1	98.3	7.0
2	SL 2	150	2.19	2.02	8.3	96.9	8.0
3	SL 3	150	2.24	2.12	6.0	101.3	8.7
4	SL 4	150	2.25	2.09	7.8	99.8	6.2
Maximum Dry Density (Mg/m3)					2.09	(Advised by client)	
Particle Density (Mg/m3)					2.69	(Advised by client)	
Results corrected for NDG calibration/correlation to site materials					Yes		

REMARKS/ABNORMALITIES

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

SIGNED

DATE 31-Oct-23

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

INSITU DENSITY, SAND REPLACEMENT METHOD

BS 1377 : Part 9 : Clause 2.2

MOISTURE CONTENT METHOD BS 1377 : Part 2 CLAUSE 3.2 : 1990 (OVEN DRY)

CLIENT	VHE Construction Plc
SITE	808 - Former Tarmac Manufacturing Plant, Stopes Road, Bolton BL3 1NP
JOB NUMBER	MRN 4742A/2

TEST METHOD	Large Pouring Cylinder	DATE RECEIVED	30-Oct-23
DATE OF TEST	30-Oct-23	SAMPLED BY	Murray Rix
DATE TESTED	31-Oct-23	MATERIAL SOURCE	Site Won

Laboratory Sample Number	Test Location	Material	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Moisture Content (%)	Compaction (%)	Air Voids (%)
133323	SRD 2	Fill	1.93	1.70	14	106.1	3.3
133324	SRD 4	Fill	1.88	1.63	15	102.2	4.7
Maximum Dry Density (Mg/m ³)				1.60	(Advised by client)		
Particle Density (Mg/m ³)				2.31	(Advised by client)		

COMMENT / ANOMALIES

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

SIGNED

DATE 31-Oct-23

APPENDIX C

Soft Spot Reports

	VHE Construction Plc Safety Procedure	Site/Department:	Stopes Road, Bolton
		Contract No:	C 808
		Site Reference:	Soft Spot : 017 – H21

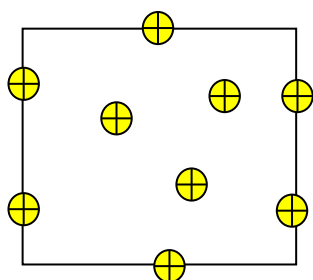
Excavation Inspection Report – Soft Spots at Formation

Notes	
1.	The purpose of this report is to record the findings of the inspection and list the actions taken where defects are found. AWP Specification Items 10.5.7 and 12.8.1 detail treatment of soft spots
2.	Proof rolling of formation : Date - 27.10.23 Witnessed by - L Richards - Vardy Acceptable : Y / ~~N~~
3.	The Site Agent/Supervisor must ensure that:- - The proposed method of working is safe. - During the course of the works and at intervals not exceeding 7 days the following checks are made.

Soft spot remedial works Inspected By: L Richards-Vardy	Date: Friday 27.10.23
Position: Area 3 – Grid square H21 [E - 376381 , N - 407524]	Time: 10am
Comments / Details of soft spot: Clays at the base of the dig were observed to be very soft, these were excavated further until suitable clays were encountered. A starter layer of imported 6F5 was used at the base of the dig for filling.	



Shear vane records if cohesive soils



Clay / cohesive soils at base or sides of excavation, tested with hand shear vane – as detailed.

Dimensions of Hotspot (m): 13.8 x 15.2 x 4m deep.

Shear vane results (kPa):

Wall results (Clockwise): 60, 53, 55, 58, 62, 60.– Base results: 63, 75, 88,

	VHE Construction Plc Safety Procedure	Site/Department:	Stopes Road, Bolton
		Contract No:	C 808
		Site Reference:	Soft Spot : 018 – H19

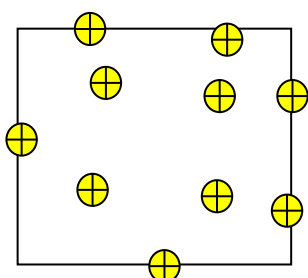
Excavation Inspection Report – Soft Spots at Formation

Notes	
1.	The purpose of this report is to record the findings of the inspection and list the actions taken where defects are found. AWP Specification Items 10.5.7 and 12.8.1 detail treatment of soft spots
2.	Proof rolling of formation : Date - 26.10.23 Witnessed by - S Gledhill Acceptable : Y / ~~N~~
3.	The Site Agent/Supervisor must ensure that:- - The proposed method of working is safe. - During the course of the works and at intervals not exceeding 7 days the following checks are made.

Soft spot remedial works Inspected By: S Gledhill	Date: Wednesday 26.10.23
Position: Grid square H19 [E - 376381 , N - 407524]	Time: 1pm
Comments / Details of soft spot: Clays at the base of the dig were observed to be very soft, these were excavated further until suitable clays were encountered. A starter layer of imported 6F5 was used at the base of the dig for filling.	



Shear vane records if cohesive soils



Clay / cohesive soils at base or sides of excavation, tested with hand shear vane – as detailed.

Dimensions of Hotspot (m): 17.5 x 14.8x 0.3m deep.

Shear vane results (kPa):

Wall results (Clockwise): 75, 63, 60, 52, 95, 60.– Base results: 69, 95, 86, 91



APPENDIX D

Chemical Testing Certification



Hamish Wilkins
VHE Construction plc
Whaley Road
Barug
Barnsley
S75 1HT

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

e: VHELab@vhe.co.uk

Analytical Report Number : 23-64388-2A

Replaces Analytical Report Number: 23-64388, issue no. 1
Report format change.
Report split as per customer's request

Project / Site name:	Stopes Road	Samples received on:	23/10/2023
Your job number:	808	Samples instructed on/ Analysis started on:	23/10/2023
Your order number:		Analysis completed by:	31/10/2023
Report Issue Number:	2	Report issued on:	31/10/2023
Samples Analysed:	1 bulk sample - 3 soil samples		

Signed:

Dominika Warjan
Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 23-64388-2A
Project / Site name: Stopes Road

Lab Sample Number				2854706	2854707	2854708
Sample Reference				HS2-S1	HS2-S2	HS2-S3
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				2.00	2.00	2.00
Date Sampled				20/10/2023	20/10/2023	20/10/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status			
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	16	23	20
Total mass of sample received	kg	0.001	NONE	0.8	0.8	0.7
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Chrysotile	Chrysotile	Chrysotile
Asbestos in Soil	Type	N/A	ISO 17025	Detected	Detected	Detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	< 0.001	< 0.001	< 0.001
Asbestos Quantification Total	%	0.001	ISO 17025	< 0.001	< 0.001	< 0.001
Asbestos Analyst ID	N/A	N/A	N/A	JBH	JBH	JBH
General Inorganics						
pH - Automated	pH Units	N/A	MCERTS	8.1	7.8	7.9
Speciated PAHs						
Naphthalene	mg/kg	0.05	MCERTS	1.6	22	34
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	2
Acenaphthene	mg/kg	0.05	MCERTS	0.6	12	26
Fluorene	mg/kg	0.05	MCERTS	0.8	16	26
Phenanthrene	mg/kg	0.05	MCERTS	4.1	70	96
Anthracene	mg/kg	0.05	MCERTS	0.92	16	29
Fluoranthene	mg/kg	0.05	MCERTS	6.2	73	81
Pyrene	mg/kg	0.05	MCERTS	7	65	70
Benzo(a)anthracene	mg/kg	0.05	MCERTS	3.3	36	29
Chrysene	mg/kg	0.05	MCERTS	3.7	34	26
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	4.2	45	33
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	3	16	12
Benzo(a)pyrene	mg/kg	0.05	MCERTS	4.6	34	25
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	2.4	17	13
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.43	5.3	3
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	2.3	20	14
Total PAH						
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	45	480	518
Heavy Metals / Metalloids						
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	26	43	37
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.4	1.9	2.1
Boron (water soluble)	mg/kg	0.2	MCERTS	1.1	0.7	0.7
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	18	21	22
Copper (aqua regia extractable)	mg/kg	1	MCERTS	76	220	130
Lead (aqua regia extractable)	mg/kg	1	MCERTS	51	210	77
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	35	51	48
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	41	51	66
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	100	430	180

Analytical Report Number: 23-64388-2A
Project / Site name: Stopes Road

Lab Sample Number				2854706	2854707	2854708
Sample Reference				HS2-S1	HS2-S2	HS2-S3
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				2.00	2.00	2.00
Date Sampled				20/10/2023	20/10/2023	20/10/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Limit of detection	Accreditation Status
Monoaromatics & Oxygenates						
Benzene	µg/kg	5	MCERTS	< 5.0	550	160
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	19
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	46	61
p & m-xylene	µg/kg	5	MCERTS	< 5.0	9900	270
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	54
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
Petroleum Hydrocarbons						
TPH-CWG - Aliphatic >EC5 - EC6 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC6 - EC8 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	1.2	< 0.020
TPH-CWG - Aliphatic >EC8 - EC10 HS_1D_AL	mg/kg	0.05	NONE	< 0.050	6.4	< 0.050
TPH-CWG - Aliphatic >EC10 - EC12 EH_CU_1D_AL	mg/kg	1	MCERTS	4.7	40	67
TPH-CWG - Aliphatic >EC12 - EC16 EH_CU_1D_AL	mg/kg	2	MCERTS	170	1300	1600
TPH-CWG - Aliphatic >EC16 - EC21 EH_CU_1D_AL	mg/kg	8	MCERTS	500	2600	2500
TPH-CWG - Aliphatic >EC21 - EC35 EH_CU_1D_AL	mg/kg	8	MCERTS	200	1200	1000
TPH-CWG - Aliphatic > EC35 - EC44 EH_CU_1D_AL	mg/kg	8.4	NONE	12	84	160
TPH-CWG - Aliphatic (EC5 - EC35) EH_CU+HS_1D_AL	mg/kg	10	NONE	870	5100	5200
TPH-CWG - Aliphatic (EC5 - EC44) EH_CU+HS_1D_AL	mg/kg	10	NONE	890	5200	5300
TPH-CWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	NONE	< 0.010	0.66	0.16
TPH-CWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010
TPH-CWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.05	NONE	< 0.050	11	0.37
TPH-CWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	6.1	60	120
TPH-CWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	65	700	960
TPH-CWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	290	1600	1800
TPH-CWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	200	830	850
TPH-CWG - Aromatic > EC35 - EC44 EH_CU_1D_AR	mg/kg	8.4	NONE	21	110	220
TPH-CWG - Aromatic (EC5 - EC35) EH_CU+HS_1D_AR	mg/kg	10	NONE	560	3200	3800
TPH-CWG - Aromatic (EC5 - EC44) EH_CU+HS_1D_AR	mg/kg	10	NONE	590	3400	4000

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



Analytical Report Number: 23-64388
Project / Site name: Stopes Road
Your Order No:

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006-PL based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
2854706	HS2-S1	2.00	157	Loose Fibres	Chrysotile	< 0.001	< 0.001
2854707	HS2-S2	2.00	124	Loose Fibres	Chrysotile	< 0.001	< 0.001
2854708	HS2-S3	2.00	138	Loose Fibres	Chrysotile	< 0.001	< 0.001

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.



Analytical Report Number: 23-64388-2A
Project / Site name: Stopes Road

Lab Sample Number				2854712
Sample Reference				ASB-1
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				20/10/2023
Time Taken				None Supplied
Analytical Parameter (Bulk Analysis)				
	Units	Limit of detection	Accreditation Status	

Asbestos Identification	Type	N/A	ISO 17025	Crocidolite-Asbestos Insulation
Asbestos Analyst ID	N/A	N/A	N/A	JBH

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



Analytical Report Number : 23-64388-2A

Project / Site name: Stopes Road

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2854706	HS2-S1	None Supplied	2	Brown sand with gravel.
2854707	HS2-S2	None Supplied	2	Brown sand with gravel.
2854708	HS2-S3	None Supplied	2	Brown sand with gravel.

Analytical Report Number : 23-64388-2A
Project / Site name: Stopes Road

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in Bulks	Asbestos Identification in bulk material with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	W	ISO 17025
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards. Refer to CoA for analyte specific accreditation.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260. Refer to CoA for analyte specific accreditation	L073B-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID. Refer to CoA for band specific accreditation.	In-house method with silica gel split/clean up.	L088/76-PL	D	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

Analytical Report Number : 23-64388-2A
Project / Site name: Stopes Road

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30°C.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
-	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total



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Analytical Report Number : 23-65148

Project / Site name:	Stopes Road	Samples received on:	26/10/2023
Your job number:	808	Samples instructed on/ Analysis started on:	26/10/2023
Your order number:		Analysis completed by:	03/11/2023
Report Issue Number:	1	Report issued on:	03/11/2023
Samples Analysed:	4 soil samples		

Signed:

Joanna Szwagrak
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 23-65148
Project / Site name: Stopes Road

Lab Sample Number				2859193	2859194	2859195	2859196
Sample Reference				HS2-N	HS2-E	HS2-W	HS2-B
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				23/10/2023	23/10/2023	23/10/2023	23/10/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	27	24	15	23
Total mass of sample received	kg	0.001	NONE	0.2	0.3	0.2	0.3

Monoaromatics & Oxygenates

Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC6 - EC8 _{HS_1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	< 1.0	1.1	5.6	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	2.4	4.3	56	20
TPH-CWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	9.1	13	110	42
TPH-CWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	33	43	68	19
TPH-CWG - Aliphatic > EC35 - EC44 _{EH_CU_1D_AL}	mg/kg	8.4	NONE	< 8.4	9.9	8.4	< 8.4
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	45	61	240	82
TPH-CWG - Aliphatic (EC5 - EC44) _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	49	71	240	82

TPH-CWG - Aromatic >EC5 - EC7 _{HS_1D_AR}	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010	< 0.010
TPH-CWG - Aromatic >EC7 - EC8 _{HS_1D_AR}	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010	< 0.010
TPH-CWG - Aromatic >EC8 - EC10 _{HS_1D_AR}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	< 1.0	< 1.0	2.3	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	3.9	< 2.0	24	7.1
TPH-CWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	26	< 10	56	23
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	45	22	25	< 10
TPH-CWG - Aromatic > EC35 - EC44 _{EH_CU_1D_AR}	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	75	30	110	40
TPH-CWG - Aromatic (EC5 - EC44) _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	81	30	110	40

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



Analytical Report Number : 23-65148
Project / Site name: Stopes Road

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2859193	HS2-N	None Supplied	None Supplied	Brown sand with gravel.
2859194	HS2-E	None Supplied	None Supplied	Brown sand with gravel.
2859195	HS2-W	None Supplied	None Supplied	Brown clay and sand with gravel.
2859196	HS2-B	None Supplied	None Supplied	Brown clay.

Analytical Report Number : 23-65148

Project / Site name: Stopes Road

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260. Refer to CoA for analyte specific accreditation	L073B-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID. Refer to CoA for band specific accreditation.	In-house method with silica gel split/clean up.	L088/76-PL	D	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
-	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total



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Analytical Report Number : 23-65164

Project / Site name:	Stopes Road	Samples received on:	26/10/2023
Your job number:	808	Samples instructed on/ Analysis started on:	26/10/2023
Your order number:		Analysis completed by:	02/11/2023
Report Issue Number:	1	Report issued on:	02/11/2023
Samples Analysed:	3 soil samples		

Signed:

Dominika Warjan
Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 23-65164
Project / Site name: Stopes Road

Lab Sample Number				2859251	2859252	2859253
Sample Reference				HS2-A-1	HS2-A-2	HS2-A-3
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				24/10/2023	24/10/2023	24/10/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status			
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	18	16	19
Total mass of sample received	kg	0.001	NONE	1	1.1	1

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	Crocidolite
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	< 0.001
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	< 0.001
Asbestos Analyst ID	N/A	N/A	N/A	WEM	WEM	DSA

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.6	8.3	8.2
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	1.2	0.6	1
Acenaphthylene	mg/kg	0.05	MCERTS	0.18	0.26	0.24
Acenaphthene	mg/kg	0.05	MCERTS	0.71	0.67	1.1
Fluorene	mg/kg	0.05	MCERTS	0.82	0.85	1
Phenanthrene	mg/kg	0.05	MCERTS	4.6	4.6	6.8
Anthracene	mg/kg	0.05	MCERTS	1.2	1.3	1.9
Fluoranthene	mg/kg	0.05	MCERTS	6	6.8	8.8
Pyrene	mg/kg	0.05	MCERTS	5.5	6.3	8.2
Benzo(a)anthracene	mg/kg	0.05	MCERTS	2.7	3.3	3.9
Chrysene	mg/kg	0.05	MCERTS	2.8	3.3	4.4
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	3.4	4	5.1
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	1.4	1.5	1.8
Benzo(a)pyrene	mg/kg	0.05	MCERTS	2.5	3	3.9
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.4	1.7	2.2
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.43	0.55	0.58
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.7	2	2.5

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	36.5	40.8	53.4
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	37	31	39
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.9	1.6	1.8
Boron (water soluble)	mg/kg	0.2	MCERTS	1.6	1	1.5
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	22	20	22
Copper (aqua regia extractable)	mg/kg	1	MCERTS	100	98	110
Lead (aqua regia extractable)	mg/kg	1	MCERTS	92	130	120
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	40	43	44
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	51	51	55
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	120	80	120

Analytical Report Number: 23-65164
Project / Site name: Stopes Road

Lab Sample Number	2859251	2859252	2859253
Sample Reference	HS2-A-1	HS2-A-2	HS2-A-3
Sample Number	None Supplied	None Supplied	None Supplied
Depth (m)	None Supplied	None Supplied	None Supplied
Date Sampled	24/10/2023	24/10/2023	24/10/2023
Time Taken	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status

Monoaromatics & Oxygenates

Benzene	µg/kg	5	MCERTS	170	18	59
Toluene	µg/kg	5	MCERTS	100	26	40
Ethylbenzene	µg/kg	5	MCERTS	150	19	51
p & m-xylene	µg/kg	5	MCERTS	780	65	190
o-xylene	µg/kg	5	MCERTS	100	12	31
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC6 - EC8 HS_1D_AL	mg/kg	0.02	NONE	0.13	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC8 - EC10 HS_1D_AL	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050
TPH-CWG - Aliphatic >EC10 - EC12 EH_CU_1D_AL	mg/kg	1	MCERTS	3.4	1.8	3.3
TPH-CWG - Aliphatic >EC12 - EC16 EH_CU_1D_AL	mg/kg	2	MCERTS	76	41	94
TPH-CWG - Aliphatic >EC16 - EC21 EH_CU_1D_AL	mg/kg	8	MCERTS	230	170	250
TPH-CWG - Aliphatic >EC21 - EC35 EH_CU_1D_AL	mg/kg	8	MCERTS	120	130	120
TPH-CWG - Aliphatic > EC35 - EC44 EH_CU_1D_AL	mg/kg	8.4	NONE	21	32	23
TPH-CWG - Aliphatic (EC5 - EC35) EH_CU+HS_1D_AL	mg/kg	10	NONE	430	340	470
TPH-CWG - Aliphatic (EC5 - EC44) EH_CU+HS_1D_AL	mg/kg	10	NONE	450	370	490

TPH-CWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	NONE	0.19	0.018	0.061
TPH-CWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	NONE	0.13	0.024	0.042
TPH-CWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.05	NONE	1.4	0.11	0.34
TPH-CWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	2.2	2.9	1.4
TPH-CWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	31	22	42
TPH-CWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	100	99	130
TPH-CWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	80	95	95
TPH-CWG - Aromatic > EC35 - EC44 EH_CU_1D_AR	mg/kg	8.4	NONE	17	20	17
TPH-CWG - Aromatic (EC5 - EC35) EH_CU+HS_1D_AR	mg/kg	10	NONE	220	220	270
TPH-CWG - Aromatic (EC5 - EC44) EH_CU+HS_1D_AR	mg/kg	10	NONE	230	240	290

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



Analytical Report Number: 23-65164
Project / Site name: Stopes Road
Your Order No:

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006-PL based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
2859253	HS2-A-3		121	Loose Fibres	Crocidolite	< 0.001	< 0.001

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.



Analytical Report Number : 23-65164

Project / Site name: Stopes Road

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2859251	HS2-A-1	None Supplied	None Supplied	Brown clay and sand with gravel.
2859252	HS2-A-2	None Supplied	None Supplied	Brown sand with gravel.
2859253	HS2-A-3	None Supplied	None Supplied	Brown sand with gravel.

Analytical Report Number : 23-65164

Project / Site name: Stopes Road

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 °C)	In house method.	L019-UK/PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards. Refer to CoA for analyte specific accreditation.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260. Refer to CoA for analyte specific accreditation	L073B-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID. Refer to CoA for band specific accreditation.	In-house method with silica gel split/clean up.	L088/76-PL	D	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

Analytical Report Number : 23-65164

Project / Site name: Stopes Road

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30°C.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
-	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total



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Analytical Report Number : 23-64388-2B

Replaces Analytical Report Number: 23-64388, issue no. 1
Report format change.
Report split as per customer's request

Project / Site name:	Stopes Road	Samples received on:	23/10/2023
Your job number:	808	Samples instructed on/ Analysis started on:	23/10/2023
Your order number:		Analysis completed by:	31/10/2023
Report Issue Number:	2	Report issued on:	31/10/2023
Samples Analysed:	3 soil samples		

Signed:

Dominika Warjan
Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 23-64388-2B
Project / Site name: Stopes Road

Lab Sample Number				2854709	2854710	2854711
Sample Reference				DA-2-1	DA-2-2	DA-2-3
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				20/10/2023	20/10/2023	20/10/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status			
Stone Content	%	0.1	NONE	24	12	< 0.1
Moisture Content	%	0.01	NONE	11	11	13
Total mass of sample received	kg	0.001	NONE	0.8	0.6	0.8

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Amosite	-	Amosite
Asbestos in Soil	Type	N/A	ISO 17025	Detected	Not-detected	Detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	< 0.001	-	< 0.001
Asbestos Quantification Total	%	0.001	ISO 17025	< 0.001	-	< 0.001
Asbestos Analyst ID	N/A	N/A	N/A	JBH	JBH	JBH

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.7	8.3	8.4
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.59	0.14	0.2
Acenaphthylene	mg/kg	0.05	MCERTS	0.56	< 0.05	0.08
Acenaphthene	mg/kg	0.05	MCERTS	0.33	< 0.05	0.09
Fluorene	mg/kg	0.05	MCERTS	0.78	0.06	0.12
Phenanthrene	mg/kg	0.05	MCERTS	4.4	0.63	1.2
Anthracene	mg/kg	0.05	MCERTS	1	0.16	0.3
Fluoranthene	mg/kg	0.05	MCERTS	6.7	1.3	2.1
Pyrene	mg/kg	0.05	MCERTS	5.8	1.2	1.9
Benzo(a)anthracene	mg/kg	0.05	MCERTS	3.2	0.67	1
Chrysene	mg/kg	0.05	MCERTS	2.8	0.66	0.97
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	3.2	0.85	1.2
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	1.6	0.3	0.46
Benzo(a)pyrene	mg/kg	0.05	MCERTS	2.6	0.61	0.97
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.3	0.4	0.53
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.32	< 0.05	0.11
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.5	0.38	0.51

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	36.5	7.42	11.8
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	38	44	48
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.6	2	1.9
Boron (water soluble)	mg/kg	0.2	MCERTS	0.9	1.6	0.6
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	23	26	27
Copper (aqua regia extractable)	mg/kg	1	MCERTS	61	68	73
Lead (aqua regia extractable)	mg/kg	1	MCERTS	41	32	45
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	35	42	40
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.4	1.4	1.4
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	52	61	58
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	82	60	78

Analytical Report Number: 23-64388-2B
Project / Site name: Stopes Road

Lab Sample Number	2854709	2854710	2854711
Sample Reference	DA-2-1	DA-2-2	DA-2-3
Sample Number	None Supplied	None Supplied	None Supplied
Depth (m)	None Supplied	None Supplied	None Supplied
Date Sampled	20/10/2023	20/10/2023	20/10/2023
Time Taken	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status

Monoaromatics & Oxygenates

Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 _{HS, 1D, AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC6 - EC8 _{HS, 1D, AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC8 - EC10 _{HS, 1D, AL}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050
TPH-CWG - Aliphatic >EC10 - EC12 _{EH, CU, 1D, AL}	mg/kg	1	MCERTS	< 1.0	< 1.0	4
TPH-CWG - Aliphatic >EC12 - EC16 _{EH, CU, 1D, AL}	mg/kg	2	MCERTS	3.2	3.6	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 _{EH, CU, 1D, AL}	mg/kg	8	MCERTS	15	17	10
TPH-CWG - Aliphatic >EC21 - EC35 _{EH, CU, 1D, AL}	mg/kg	8	MCERTS	110	72	64
TPH-CWG - Aliphatic > EC35 - EC44 _{EH, CU, 1D, AL}	mg/kg	8.4	NONE	73	39	39
TPH-CWG - Aliphatic (EC5 - EC35) _{EH, CU+HS, 1D, AL}	mg/kg	10	NONE	130	92	79
TPH-CWG - Aliphatic (EC5 - EC44) _{EH, CU+HS, 1D, AL}	mg/kg	10	NONE	200	130	120

TPH-CWG - Aromatic >EC5 - EC7 _{HS, 1D, AR}	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010
TPH-CWG - Aromatic >EC7 - EC8 _{HS, 1D, AR}	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010
TPH-CWG - Aromatic >EC8 - EC10 _{HS, 1D, AR}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050
TPH-CWG - Aromatic >EC10 - EC12 _{EH, CU, 1D, AR}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 _{EH, CU, 1D, AR}	mg/kg	2	MCERTS	7.1	< 2.0	2.1
TPH-CWG - Aromatic >EC16 - EC21 _{EH, CU, 1D, AR}	mg/kg	10	MCERTS	34	< 10	13
TPH-CWG - Aromatic >EC21 - EC35 _{EH, CU, 1D, AR}	mg/kg	10	MCERTS	150	35	69
TPH-CWG - Aromatic > EC35 - EC44 _{EH, CU, 1D, AR}	mg/kg	8.4	NONE	83	30	46
TPH-CWG - Aromatic (EC5 - EC35) _{EH, CU+HS, 1D, AR}	mg/kg	10	NONE	190	44	84
TPH-CWG - Aromatic (EC5 - EC44) _{EH, CU+HS, 1D, AR}	mg/kg	10	NONE	270	74	130

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



Analytical Report Number: 23-64388
Project / Site name: Stopes Road
Your Order No:

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006-PL based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
2854709	DA-2-1		158	Loose Fibres	Amosite	< 0.001	< 0.001
2854711	DA-2-3		168	Loose Fibres	Amosite	< 0.001	< 0.001

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.



Analytical Report Number : 23-64388-2B

Project / Site name: Stopes Road

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2854709	DA-2-1	None Supplied	None Supplied	Brown sand with gravel and stones.
2854710	DA-2-2	None Supplied	None Supplied	Brown sand with gravel and stones.
2854711	DA-2-3	None Supplied	None Supplied	Brown sand with gravel.

Analytical Report Number : 23-64388-2B

Project / Site name: Stopes Road

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in Bulks	Asbestos Identification in bulk material with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	W	ISO 17025
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards. Refer to CoA for analyte specific accreditation.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260. Refer to CoA for analyte specific accreditation	L073B-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID. Refer to CoA for band specific accreditation.	In-house method with silica gel split/clean up.	L088/76-PL	D	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

Analytical Report Number : 23-64388-2B
Project / Site name: Stopes Road

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30°C.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
-	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

APPENDIX E

VHE Hotspot Report



Combined Hot Spot Validation Report:

Stopes Road, Little Lever, Bolton

Client: Harworth Group



June 2023



Document Issue

	Prepared by	Approved by
Name:	Isaac Broughton	Richard Hargreaves
Signed:	<i>I. Broughton</i>	
Date:	13/12/22	13/12/2022

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Document Issue



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1. Introduction

1.1. Objectives & Brief

Harworth Group Ltd (Harworth) appointed VHE Construction Plc (VHE) as Principal Contractor to undertake the earthworks at Stopes Road, Little Lever, Bolton, BL3 1NP, a former Tarmac block manufacturing facility. The primary objective of the works was to render the site suitable for residential development. A location plan of the site is presented in Figure 1 in appendix A.

A total of five petroleum hydrocarbon hotspots have been identified on site. Two of which are detailed in the Hydrock Remediation Plan (Hydrock Drawing 15220-HYD-XX-XX-DR-GE-1017) and were identified before VHE's works were undertaken. Hotspot 1 correlated to historical TP206 and WS01, Hotspot 2 correlates to TT03A. Hotspot 2 was excavated and validated by Hydrock prior to VHE commencing works on site. A further three hydrocarbon hotspots have been identified during the works (HS4, HS7, HS8).

A total of four asbestos hotspots have been identified on site. One of which has been identified on site prior to VHE's works commencing and is detailed in section 3.2.5 'Asbestos' of the Hydrock Remediation Strategy and Verification Plan. This hotspot has been labelled as HS3 and correlates to historical RO12 where asbestos was observed from 0.1m to 0.2m bgl in the form of amosite sheeting/board debris. A further four asbestos hotspots have been identified during the works (HS5, HS6, HS8 and HS9).

The main objectives of this report are:

- To detail the hotspot excavation and validation works undertaken by VHE;
- To provide verification that the works have been undertaken in accordance with the relevant specifications;

Excavation and validation was carried out in accordance with the stated requirements in section 6.5 of the Hydrock Remediation Strategy and Verification Plan. Hydrocarbon hotspot excavation works were conducted in accordance with VHE MS009, and asbestos hotspot excavations works were conducted in accordance with VHE MS010, present in Appendix 2. A location plan of each hotspot is included in Appendix 1.



All soil chemical analysis was carried out by i2 Analytical Ltd (i2). i2 holds accreditations in accordance with the internationally recognised ISO 17025 Standard and to the UK Environmental Agency's MCERTS Monitoring Certification Scheme for a range of soils and asbestos analysis. The laboratory routinely analyses blank samples as a means of quality control testing.

1.2. Limitations

The information provided within this report and the opinions expressed are based on ground conditions encountered during the works by VHE, previous site investigation reports and on the results of Laboratory and in-situ testing. It should be noted, that there may be physical and chemical conditions pertaining to the site that are not disclosed in this report, for example, within areas that could not be explored due to the presence of live services or exclusion zones.

It should also be noted that not all areas of made ground including asbestos may have been detected during the works, due to the variable thickness of made ground across site and because asbestos often found in discrete locations.

2. Hydrocarbon Hotspots

2.1. Hotspot 1

2.1.1. Excavation works

HS1 was excavated on 07/06/22 and 08/06/22 under the supervision of an experience Geo-Environmental Engineer who coordinated the selective excavation and splitting of the visual and olfactory clean and contaminated materials. The anticipated thickness of the clean overburden and the depth of the contamination was determined by the historical logs and chemical results. The clean overburden was excavated in 0.2m layers until the contaminated layer was exposed. The HS1 excavation measured 10m x 5m and a depth of 2.7m and noted a slight staining and hydrocarbon odour in the excavation. All visual and olfactory hydrocarbon contamination was 'chased out' and fully removed. On completion of the excavation, the hotspot was visually inspected by the Geo-Environmental Engineer and AWP representative to ensure all visual and olfactory evidence of contamination had been removed. Validation samples were then obtained.

All excavated hydrocarbon contaminated materials were loaded directly into a dumper truck and taken to the designated stockpiling area, totalling 29m³ of impacted material, to undergo sampling



for further classification. Figure 3 in Appendix 1 shows the location of all validation samples obtained and dispatched for laboratory analysis.

2.1.2. Laboratory Results

A total of 10 validation samples were obtained from the sides and base of the excavation. The results for the validation samples were then screened against the petroleum hydrocarbon hotspot validation re-use criteria (residential with plant uptake 2.5%) as detailed in section 6.5 of the Hydrock Remediation Strategy and Verification Plan. Validation results are presented overleaf in Table 1.



Determinand	RTV (mg/kg) 2.5% SOM	HS216-C/1 2.7m	HS216-C/2 1.6m	HS216-N/1 2.7m	HS216-N/2 1.6m	HS216-E/1 2.7m	HS216-E/2 1.6m	HS216-S/1 2.7m	HS216-S/2 1.5m	HS216-W/1 2.7m	HS216-W/2 2.7m
Petroleum Hydrocarbons											
TPH-CWG - Aliphatic >EC5 - EC6	150	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	300	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	84	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	180	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	5
TPH-CWG - Aliphatic >EC12 - EC16	330	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	21	43
TPH-CWG - Aliphatic >EC16 - EC21	550	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	33	52
TPH-CWG - Aliphatic >EC21 - EC35	1500	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	48	67
TPH-CWG - Aliphatic > EC35 - EC44	1500	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aliphatic (EC5 - EC35)		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	100	170
TPH-CWG - Aliphatic (EC5 - EC44)		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	100	170
TPH-CWG - Aromatic >EC5 – EC74	78	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	230	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	65	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	120	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	59	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	28	43
TPH-CWG - Aromatic >EC16 - EC21	7500	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	87	110
TPH-CWG - Aromatic >EC21 - EC35	7500	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	140	130
TPH-CWG - Aromatic > EC35 - EC44	7500	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4	26	20
TPH-CWG - Aromatic (EC5 - EC35)		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	250	290
TPH-CWG - Aromatic (EC5 - EC44)		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	280	310

Table 1 – Validation Laboratory Results - 22-64224-2A



No TPH fractionations were recorded in excess of petroleum hydrocarbon hotspot validation re-use criteria (residential with plant uptake 2.5%). Full laboratory certification is presented in Appendix 3.

A total of 3 samples were obtained from the material excavated from the hotspot to ascertain the most appropriate course of action to be taken with this material. The material was stockpiled for a number of days and overturned to allow volatilisation and mixed with arising from HS2 (Hydrock excavation and validation). The Environment Agency were notified of these treatment works which were conducted in compliance with RPS 215. The laboratory results for this are presented in table 2 below, with the Laboratory Certification presented in Appendix 3.

Table 2 – Laboratory Results – 22-75380-1

Determinand	RTV (mg/kg) 2.5% SOM	HS-HYD-1	HS-HYD-2	HS-HYD-3
Petroleum Hydrocarbons				
TPH-CWG - Aliphatic >EC5 - EC6	150	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	300	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	84	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	180	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	330	29	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	550	85	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	1500	93	< 8.0	< 8.0
TPH-CWG - Aliphatic > EC35 - EC44	1500	130	< 8.4	< 8.4
TPH-CWG - Aliphatic (EC5 - EC35)		210	< 10	< 10
TPH-CWG - Aliphatic (EC5 - EC44)		340	< 10	< 10
TPH-CWG - Aromatic >EC5 – EC74	78	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	230	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	65	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	120	< 1.0	< 1.0	1
TPH-CWG - Aromatic >EC12 - EC16	59	21	14	11
TPH-CWG - Aromatic >EC16 - EC21	7500	57	47	26
TPH-CWG - Aromatic >EC21 - EC35	7500	100	68	45
TPH-CWG - Aromatic > EC35 - EC44	7500	430	310	340
TPH-CWG - Aromatic (EC5 - EC35)		180	130	83
TPH-CWG - Aromatic (EC5 - EC44)		610	440	430



2.1.3. Conclusion

Visual and olfactory evidence of hydrocarbon contamination was noted during the excavation works, this was removed in its entirety and validation samples of the sides and base of the excavation were obtained. None of the validation samples displayed hydrocarbon concentrations in exceedance of the provided petroleum hydrocarbon hotspot validation re-use criteria (residential with plant uptake 2.5%) as detailed in section 6.5 of the Hydrock Remediation Strategy and Verification Plan.

Excavated contaminated material was stockpiled separately and lined with visqueen to prevent any cross contamination. This was overturned to allow volatilisation in accordance with RPS215. Samples were obtained from this material and reported no exceedances of the petroleum hydrocarbon hotspot validation re-use criteria (residential with plant uptake 2.5%) as detailed in section 6.5 of the Hydrock Remediation Strategy and Verification Plan. This material has been reused as fill and placed at a depth of 2.0m bfgl (below finish ground level) in grid squares B18 and B19.

The hotspot can therefore be considered to have been fully delineated with no further risk posed to human health and the surrounding environment.



2.2. Hotspot 2

2.2.1. Excavation works

Hotspot 2 is associated with the tank and fuel lines removed by Hydrock prior to VHE site works. These works are summarised in Hydrock's Technical Design Note 15220-HYD-XX-XX-DR-GE-0014. Hydrocks works were constrained due to the presence high voltage cables in the vicinity of the tanks which resulted in the southern extent of the excavation being ceased before all contaminated material could be removed.

Whilst undertaking excavation works at the site entrance, VHE obtained two validation sample from the southern extent of the mine shaft exclusion zone surrounding shaft 376407-007 boundary to assess the contamination of the soils and if further action was required. The excavation and sampling was overseen by an experienced Geo-Environmental Engineer.

Whilst undertaking the earthworks following the grouting of shaft 007, further grossly contaminated material was encountered that required removal, as such, further works were required to remove and validate HS2

2.2.2. Laboratory Results

During the initial earthworks, a total of 2 validation samples were obtained from the side of the excavation of the material left Insitu. The results of the validation samples were screened against the petroleum hydrocarbon hotspot validation re-use criteria as detailed in section 6.5 of the Hydrock Remediation Strategy and Verification Plan. Validation results are present below in Table 3.

Table 3 – Laboratory Results – 23-37728-1 & 23-37730-1

Determinand	RTV (mg/kg) 2.5% SOM	HS2	HS2-S
Petroleum Hydrocarbons			
TPH-CWG - Aliphatic >EC5 - EC6	150	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	300	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	84	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	180	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	330	48	9.9
TPH-CWG - Aliphatic >EC16 - EC21	550	150	17
TPH-CWG - Aliphatic >EC21 - EC35	1500	110	< 8.0
TPH-CWG - Aliphatic > EC35 - EC44	1500	35	< 8.4
TPH-CWG - Aliphatic (EC5 - EC35)		310	28
TPH-CWG - Aliphatic (EC5 - EC44)		340	28
TPH-CWG - Aromatic >EC5 – EC74	78	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	230	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	65	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	120	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	59	27	5.1
TPH-CWG - Aromatic >EC16 - EC21	7500	110	13
TPH-CWG - Aromatic >EC21 - EC35	7500	97	< 10
TPH-CWG - Aromatic > EC35 - EC44	7500	36	< 8.4
TPH-CWG - Aromatic (EC5 - EC35)		230	24
TPH-CWG - Aromatic (EC5 - EC44)		270	24

During the earthworks surrounding shaft 007 a total of 381m³ impacted materials was excavated up to the location of the previous works which was previously proved to be clean. This was stockpiled on visqueen, sampled and disposed of to an appropriately certified facility. Validation samples from the sides and base of the excavation were obtained and are presented below in table 3b.



Table 3b – Laboratory Results – 23-65148

Determinand	RTV (mg/kg) 2.5% SOM	HS2-N	HS2-E	HS2-W	HS2-B
Petroleum Hydrocarbons					
TPH-CWG - Aliphatic >EC5 - EC6	150	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC6 - EC8	300	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC8 - EC10	84	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aliphatic >EC10 - EC12	180	< 1.0	1.1	5.6	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	330	2.4	4.3	56	20
TPH-CWG - Aliphatic >EC16 - EC21	550	9.1	13	110	42
TPH-CWG - Aliphatic >EC21 - EC35	1500	33	43	68	19
TPH-CWG - Aliphatic > EC35 - EC44	1500	< 8.4	9.9	8.4	< 8.4
TPH-CWG - Aliphatic (EC5 - EC35)		45	61	240	82
TPH-CWG - Aliphatic (EC5 - EC44)		49	71	240	82
TPH-CWG - Aromatic >EC5 – EC74	78	< 0.010	< 0.010	< 0.010	< 0.010
TPH-CWG - Aromatic >EC7 - EC8	230	< 0.010	< 0.010	< 0.010	< 0.010
TPH-CWG - Aromatic >EC8 - EC10	65	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aromatic >EC10 - EC12	120	< 1.0	< 1.0	2.3	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	59	3.9	< 2.0	24	7.1
TPH-CWG - Aromatic >EC16 - EC21	7500	26	< 10	56	23
TPH-CWG - Aromatic >EC21 - EC35	7500	45	22	25	< 10
TPH-CWG - Aromatic > EC35 - EC44	7500	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aromatic (EC5 - EC35)		75	30	110	40
TPH-CWG - Aromatic (EC5 - EC44)		81	30	110	40



2.2.3. Conclusion

All visual or olfactory evidence of hydrocarbon contamination encountered during the excavation works by VHE has been removed. As none of the validation samples displayed hydrocarbon concentrations in exceedance of the provided petroleum hydrocarbon hotspot validation re-use criteria (residential with plant uptake 2.5%) as detailed in section 6.5 of the Hydrock Remediation Strategy and Verification Plan. .

2.3. Hotspot 4

2.3.1. Excavation Works

A further petroleum hydrocarbon hotspot was identified on site during the preclassification sampling located in grid square C13 25m x 25m grid – C16 on 20m x 20m grid. HS4 was excavated on 14/07/22 under the supervision of a Geoenvironmental Engineer who coordinated the selective excavation and splitting of the visual and olfactory clean and contaminated materials. The anticipated thickness of the clean overburden and the depth of the contamination was determined by the logs and chemical results from preclassification sampling. The clean overburden was excavated in 0.2m layers until the contaminated layer was exposed. Minor visual and olfactory contamination was noted in the location, which was removed in its entirety and comprised on 36m³ of impacted material. The HS4 excavation measured 8m x 8m and a depth of 0.8m. On completion of the excavation, the hotspot was visually inspected by the Geoenvironmental Engineer to ensure all visual and olfactory evidence of contamination had been removed. Validation samples were then obtained.

All hydrocarbon contaminated materials excavated were loaded directly into a dumper truck and taken to the designated stockpiling area to undergo sampling for further classification. Figure 2.4 in Appendix 1 shows the location of all validation samples obtained and dispatched for laboratory analysis.

2.3.2. Laboratory Results

A total of 5 validation samples were obtained from the sides and base of the excavation. The results for the validation samples were then screened against the petroleum hydrocarbon hotspot validation re-use criteria (residential with plant uptake 2.5%) as detailed in section 6.5 of the Hydrock Remediation Strategy and Verification Plan. Validation results are presented below in table 4 (referred to as HSC13).

Table 4 – Validation Laboratory Results – Report No 22-72007-1

Determinand	RTV (mg/kg) 2.5% SOM	HSC13-N	HSC13-E	HSC13-S	HSC13-W	HSC13-B
Petroleum Hydrocarbons						
TPH-CWG - Aliphatic >EC5 - EC6	150	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	300	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	84	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	180	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	330	< 2.0	7.1	< 2.0	< 2.0	7.1
TPH-CWG - Aliphatic >EC16 - EC21	550	17	20	< 8.0	< 8.0	30
TPH-CWG - Aliphatic >EC21 - EC35	1500	86	150	61	< 8.0	190
TPH-CWG - Aliphatic > EC35 - EC44	1500	49	67	28	< 8.4	61
TPH-CWG - Aliphatic (EC5 - EC35)		100	170	61	< 10	230
TPH-CWG - Aliphatic (EC5 - EC44)		150	240	89	< 10	290
TPH-CWG - Aromatic >EC5 – EC74	78	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	230	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	65	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	120	< 1.0	13	< 1.0	< 1.0	3.1
TPH-CWG - Aromatic >EC12 - EC16	59	4.4	11	< 2.0	< 2.0	19
TPH-CWG - Aromatic >EC16 - EC21	7500	68	82	12	14	190
TPH-CWG - Aromatic >EC21 - EC35	7500	200	350	56	70	800
TPH-CWG - Aromatic > EC35 - EC44	7500	54	87	37	21	120
TPH-CWG - Aromatic (EC5 - EC35)		270	450	68	84	1000
TPH-CWG - Aromatic (EC5 - EC44)		320	540	100	110	1100

No TPH fractionations were recorded in excess of petroleum hydrocarbon hotspot validation re-use criteria (residential with plant uptake 2.5%). Full laboratory certification is presented in Appendix 3.



A total of 3 samples were obtained from the material excavated from the hotspot to ascertain the most appropriate course of action to be taken with this material. The material was stockpiled for a number of days and overturned to allow volatilisation. The Environment Agency were notified of these treatment works which were conducted in compliance with RPS 215. The laboratory results for this are presented in table 5 below, with the Laboratory Certification presented in Appendix 3.

Table 5 – Laboratory Results – Report No 22-75377-1

Determinand	RTV (mg/kg) 2.5% SOM	HS4-C13-1	HS4-C13-2	HS4-C13-3
Petroleum Hydrocarbons				
TPH-CWG - Aliphatic >EC5 - EC6	150	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	300	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	84	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	180	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	330	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	550	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	1500	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic > EC35 - EC44	1500	< 8.4	< 8.4	< 8.4
TPH-CWG - Aliphatic (EC5 - EC35)		< 10	< 10	< 10
TPH-CWG - Aliphatic (EC5 - EC44)		< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 – EC74	78	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	230	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	65	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	120	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	59	4.6	3.1	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	7500	19	13	19
TPH-CWG - Aromatic >EC21 - EC35	7500	36	28	37
TPH-CWG - Aromatic > EC35 - EC44	7500	< 8.4	< 8.4	10
TPH-CWG - Aromatic (EC5 - EC35)		59	44	56
TPH-CWG - Aromatic (EC5 - EC44)		59	44	66

None of the samples submitted for laboratory analysis reported concentrations in excess of the petroleum hydrocarbon hotspot validation re-use criteria (residential with plant uptake 2.5%) as detailed in section 6.5 of the Hydrock Remediation Strategy and Verification Plan.



2.3.3. Conclusion

Visual and olfactory evidence of hydrocarbon contamination was noted during the excavation works, this was removed in its entirety and validation samples of the sides and base of the excavation were obtained. None of the validation samples displayed hydrocarbon concentrations in exceedance of the provided petroleum hydrocarbon hotspot validation re-use criteria (residential with plant uptake 2.5%) as detailed in section 6.5 of the Hydrock Remediation Strategy and Verification Plan.

Following treatment, excavated contaminated material reported no exceedances of the petroleum hydrocarbon hotspot validation re-use criteria (residential with plant uptake 2.5%) as detailed in section 6.5 of the Hydrock Remediation Strategy and Verification Plan. This material has been reused as fill and placed at a depth of 2.0m bfgl (below finish ground level) in grid squares B18 and B19.

The hotspot can therefore be considered to have been fully delineated with no further risk posed to human health and the surrounding environment.

2.4. Hotspot 7

2.4.1. Excavation Works

HS7 was identified during the excavation works when visual and olfactory evidence of a hydrocarbon impact was noted in grid square D16 in the form of suspected tars. Works were halted in the location and the area treated as a hotspot. HS7 was excavated on 12/09/22 under the supervision of a Geo-environmental Engineer. Visual and olfactory contamination were noted in the location, which was removed in its entirety and comprised of 80m³ of impacted material and placed within a sealed bunded area. The HS7 excavation measured 10m x 7m and a depth of 1.2m. On completion of the excavation, the hotspot was visually inspected by a Geo-environmental Engineer to ensure all visual and olfactory evidence of contamination had been removed. Validation samples were then obtained.

All hydrocarbon contaminated materials excavated were loaded directly into a dumper truck and taken to the designated stockpiling area to undergo sampling for further classification. Figure 2.4 in Appendix 1 shows the location of all validation samples obtained and dispatched for laboratory analysis.

2.4.2. Laboratory Results

A total of 5 validation samples were obtained from the sides and base of the excavation. The results for the validation samples were then screened against the petroleum hydrocarbon hotspot validation re-use criteria (residential with plant uptake 2.5%) as detailed in section 6.5 of the

Hydrock Remediation Strategy and Verification Plan. Validation results are presented overleaf in table 6.

Determinand	RTV (mg/kg) 2.5% SOM	HS7-N	HS7-E	HS7-S	HS7-W	HS7-B
Petroleum Hydrocarbons						
TPH-CWG - Aliphatic >EC5 - EC6	150	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	300	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	84	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	180	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	330	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	550	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	1500	13	< 8.0	< 8.0	42	< 8.0
TPH-CWG - Aliphatic > EC35 - EC44	1500	< 8.4	< 8.4	< 8.4	20	< 8.4
TPH-CWG - Aliphatic (EC5 - EC35)		13	< 10	< 10	42	< 10
TPH-CWG - Aliphatic (EC5 - EC44)		13	< 10	< 10	62	< 10
TPH-CWG - Aromatic >EC5 – EC74	78	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	230	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	65	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	120	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	59	13	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	7500	59	< 10	< 10	15	< 10
TPH-CWG - Aromatic >EC21 - EC35	7500	130	< 10	< 10	57	< 10
TPH-CWG - Aromatic > EC35 - EC44	7500	72	< 8.4	< 8.4	31	< 8.4
TPH-CWG - Aromatic (EC5 - EC35)		200	< 10	< 10	72	< 10
TPH-CWG - Aromatic (EC5 - EC44)		270	< 10	< 10	100	< 10

Table 6 – Validation Laboratory Results – Report No 22-83661-1

No TPH fractions were recorded in excess of petroleum hydrocarbon hotspot validation re-use criteria (residential with plant uptake 2.5%). Full laboratory certification is presented in Appendix 3.

A total of 4 samples were obtained from the material excavated from the hotspot to ascertain the most appropriate course of action to be taken with this material. The material has been stockpiled and overturned to allow volatilisation multiple times. In addition to the overturning, it has been spread thinly and modified with lime before being re-stockpiled. The Environment Agency were notified of these treatment works which were conducted in compliance with RPS 215. The validation results are presented below in table 7.

Determinand	RTV (mg/kg) 2.5% SOM	HS7- Verif-1	HS7- Verif-2	HS7- Verif-3	HS7- Verif-4
Petroleum Hydrocarbons					
TPH-CWG - Aliphatic >EC5 - EC6	150	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	300	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	84	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	180	< 1.0	1.3	1.7	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	330	22	19	25	24
TPH-CWG - Aliphatic >EC16 - EC21	550	94	73	91	96
TPH-CWG - Aliphatic >EC21 - EC35	1500	490	410	510	550
TPH-CWG - Aliphatic > EC35 - EC44	1500	260	130	280	320
TPH-CWG - Aliphatic (EC5 - EC35)	1500	610	510	630	670
TPH-CWG - Aliphatic (EC5 - EC44)	1500	860	640	910	990
TPH-CWG - Aromatic >EC5 – EC74	78	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	230	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	65	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	120	< 1.0	< 1.0	< 1.0	1.4
TPH-CWG - Aromatic >EC12 - EC16	59	24	19	20	26
TPH-CWG - Aromatic >EC16 - EC21	7500	240	200	200	240
TPH-CWG - Aromatic >EC21 - EC35	7500	600	450	450	560
TPH-CWG - Aromatic > EC35 - EC44	7500	160	130	140	160
TPH-CWG - Aromatic (EC5 - EC35)	7500	860	670	670	830
TPH-CWG - Aromatic (EC5 - EC44)	7500	1000	800	800	980

Table 7 – Validation Laboratory Results – Report No 23-27432-1

No TPH fractions were recorded in excess of the petroleum hydrocarbon hotspot validation re-use criteria. The report is presented in Appendix 3.

2.4.3. Conclusion

Visual and olfactory evidence of hydrocarbon contamination was noted during the excavation works, this was removed in its entirety and validations samples of the sides and base of the excavation were obtained. None of the insitu validation samples displayed hydrocarbon concentrations in exceedance of the provided petroleum hydrocarbon hotspot validation re-use criteria (residential with plant uptake 2.5%) as detailed in section 6.5 of the Hydrock Remediation Strategy and Verification Plan.



Excavated contaminated material was stockpiled separately and lined with Visqueen to prevent cross contamination with material on site.

The hotspot location can therefore be considered to have been fully delineated with no further risk posed to human health and the surrounding environment and the contaminated material left has been isolated on site.

The Validation results showed no TPH fractions were recorded in excess of petroleum hydrocarbon hotspot validation re-use criteria, therefore we intend to place the HS7 soils at depth in the adjacent 3m dig area pending Hydrock's approval.

3. Asbestos Hotspots

All Air Monitoring Certificates and Consignment Notes related to the Asbestos works can be found in Appendix 2.

3.1. Hotspot 3

3.1.1. Excavation works

HS3 was excavated on 09/06/22 under the supervision of an experienced Geo-Environmental Engineer who coordinated the excavation and segregation of asbestos impacted soils. An area of 8m x 9m overlying RO12 was excavated to a depth of 0.5m, a volume of 28m³ of clean overburden was excavated and stockpiled to one side, 12m³ of material containing low levels of visible asbestos cement was stockpiled separately and sheeted within close proximity to the hotspot to reduce the plant requirement for the task. Validation samples were then obtained from the side and base of the excavation. Heras fencing with ample signage was erected surrounding both the excavation and sheeted asbestos containing material. Photographs of the excavation can be seen in Appendix 4.

Asbestos air monitoring was conducted during the works. This reported an airborne fibre concentration of <0.005F/ml which is indistinguishable to ambient fibre levels. A copy of the report is provided in Appendix 3.

Figure 2.2 in Appendix 1 Shows the locations of all validation samples obtained and dispatched for laboratory analysis.

3.1.2. Laboratory Results

A total of 5 validation samples were obtained from the sides and base of the excavation. The results for the validation samples are presented overleaf in Table 8.

Parameter	HS3-C 0.5m	HS3-N 0.5m	HS3-E 0.5m	HS3-S 0.5m	HS3-W 0.5m
Asbestos in Soil Screen / Identification Name	-	-	-	-	-
Asbestos in Soil	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	-	-	-	-	-
Asbestos Quantification Total	-	-	-	-	-

Table 8 – Validation Laboratory Results – Report No 22-64224-2B

No asbestos was detected in validation samples dispatched for laboratory analysis. Laboratory certification is presented in Appendix 3.

Arisings from HS3 were then hand by a suitably qualified subcontractor to remove all visible asbestos fragments on 30/08/22. These were then taken to a suitable disposal facility, organised by the subcontractor. Following the picking works and removal of visible asbestos, the material was resampled to assess the fibre concentration and the suitability of the material for reuse, the results of this are presented below in table 9.

Parameter	HS3-D-1	HS3-D-2	HS3-D-3
Asbestos in Soil Screen / Identification Name	-	-	Chrysotile
Asbestos in Soil	Not-detected	Not-detected	Detected
Asbestos Quantification (Stage 2)	-	-	< 0.001
Asbestos Quantification Total	-	-	< 0.001

Table 9 – Validation Laboratory Results – Report No 22-68571-1

3.1.3. Conclusion

None of the validation samples obtained from the sides or base of the excavation reported a positive asbestos identification. Following the picking works and sampling of the residual arisings, this material



was classified as being fit for reuse at depth. As such, this material was placed in grid squares B18 and B19 at a depth of 2.0m below finish ground level.

3.2. Hotspot 5

3.2.1. Excavation Works

HS5 was discovered during the works when asbestos cement sheeting was observed in the material. Material containing asbestos was left in situ and the surrounding asbestos-free ground was excavated and used as fill. The material left in situ measured approximately 120m³. Approximately 1000Kg of Asbestos containing material was hand-picked by an appropriately qualified subcontractor between 31/08/22 and 02/09/22. Asbestos removed from the material was then taken to a suitable disposal facility, organised by the subcontractor. As the asbestos containing material was left in situ, no validation samples could be obtained from the walls, but a sample was taken from the base of excavation.

3.2.2. Laboratory Results

Following the picking works and removal of visible asbestos, the material was sampled to assess the fibre concentration and the suitability of the material for reuse, the results of this are presented in table 10.

Table 10 – Validation Laboratory Results – Report No 22-86075-1

Parameter	Post-HS5-1	Post-HS5-2	Post-HS5-B
Asbestos in Soil Screen / Identification Name	-	-	-
Asbestos in Soil	Not-detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	-	-	-
Asbestos Quantification Total	-	-	-

3.2.3. Conclusion

Following the picking works and sampling of the arisings, no concentrations of asbestos fibres were detected. As such, this material has been used as fill at depth in the 3m fill area (Area 3).



3.3. Hotspot 6

3.3.1. Excavation Works

HS6 was also discovered during the works when asbestos cement sheeting and small amounts of fibrous lagging were observed in the material. Due to the presence of fibrous lagging, works were suspended and an appropriately qualified subcontractor was contacted to assess the material and provide insight into the most appropriate approach. Due to the small amounts of fibrous asbestos, these works could be carried out as a non-licensed task. Material containing asbestos was left in situ and the surrounding asbestos-free ground was excavated and used as fill. The material left in situ measured approximately 160m³. Approximately 2328Kg of Asbestos containing material was then hand-picked by an appropriately qualified subcontractor between 12/09/22 to 22/09/22. Asbestos removed from the material was then taken to a suitable disposal facility, organised by the subcontractor. As the asbestos containing material was left in situ, no validation samples were obtained from the sides, but results were obtained for the arisings and base, shown in Appendix 1.

3.3.2. Laboratory Results

Following the picking works and removal of visible asbestos, the material was resampled to assess the fibre concentration and the suitability of the material for reuse, the results of this are presented below in table 11.

Table 11 – Validation Laboratory Results – Report No 22-86075-1

Parameter	Post-HS6-1	Post-HS6-2	Post-HS6-B
Asbestos in Soil Screen / Identification Name	-	Amosite	Amosite
Asbestos in Soil	Not-detected	Detected	Detected
Asbestos Quantification (Stage 2)	-	< 0.001	< 0.001
Asbestos Quantification Total	-	< 0.001	< 0.001

3.3.3. Conclusion

Following the picking works and sampling of the arisings, concentrations of asbestos fibres were detected at very low concentrations. As such, this material has been classified as fill material for use at depth.



3.4. Hotspot 8

3.4.1. Excavation Works

Hotspot 8 was discovered adjacent to hotspot 7 when asbestos cement sheeting was observed in an isolated area. Material containing asbestos was left in situ and the surrounding asbestos-free ground was excavated and used as fill. The material left in situ measured approximately 13m³. Visible signs of Asbestos containing material were hand-picked by an appropriately qualified subcontractor between 31/08/22 and 02/09/22. Asbestos removed from the material was then taken to a suitable disposal facility, organised by the subcontractor. Validation samples were taken from the arisings, the sides of excavations and the base of excavation.

3.4.2. Laboratory Results

A total of 5 validation samples were obtained from the sides and base of the excavation. The results for the validation samples were then screened against the petroleum hydrocarbon hotspot validation re-use criteria (residential with plant uptake 2.5%) as detailed in section 6.5 of the Hydrock Remediation Strategy and Verification Plan. These validation sample results are presented overleaf in table 12. From the arisings, 2 samples were taken directly and another from the base of where the arisings were stockpiled was sampled. The Results from sampling the arisings and base are presented in Table 13 (Asbestos Results) and Table 14 (Hydrocarbon Results).

Determinand	RTV (mg/kg) 2.5% SOM	HS8-N	HS8-E	HS8-S	HS8-W	HS8-B
Petroleum Hydrocarbons						
TPH-CWG - Aliphatic >EC5 - EC6	150	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	300	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	84	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	180	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	330	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	550	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	1500	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic > EC35 - EC44	1500	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aliphatic (EC5 - EC35)		< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (EC5 - EC44)		< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 – EC74	78	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	230	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	65	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	120	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	59	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	7500	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	7500	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic > EC35 - EC44	7500	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aromatic (EC5 - EC35)		< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC44)		< 10	< 10	< 10	< 10	< 10

Table 12 – Validation Laboratory Results – Report No 22-92423-1

Table 13 – Validation Laboratory Results – Report No 22-86075-1

Parameter	Post-HS8-1	Post-HS8-2	Post-HS8-B
Asbestos in Soil Screen / Identification Name	Chrysotile & Amosite & Crocidolite	Chrysotile & Amosite	Chrysotile & Amosite
Asbestos in Soil	Detected	Detected	Detected
Asbestos Quantification (Stage 2)	0.308	0.436	0.014
Asbestos Quantification Total	0.308	0.436	0.014

Table 14 – Validation Laboratory Results – Report No 22-86075-1

Determinand	RTV (mg/kg) 2.5% SOM	Post- HS8-1	Post- HS8-2	Post- HS8-B
Petroleum Hydrocarbons				
TPH-CWG - Aliphatic >EC5 - EC6	150	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	300	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	84	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	180	20	18	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	330	66	58	19
TPH-CWG - Aliphatic >EC16 - EC21	550	140	130	53
TPH-CWG - Aliphatic >EC21 - EC35	1500	600	540	240
TPH-CWG - Aliphatic > EC35 - EC44	1500	240	210	84
TPH-CWG - Aliphatic (EC5 - EC35)		830	740	310
TPH-CWG - Aliphatic (EC5 - EC44)		1100	950	390
TPH-CWG - Aromatic >EC5 – EC74	78	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	230	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	65	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	120	13	8.7	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	59	150	140	49
TPH-CWG - Aromatic >EC16 - EC21	7500	1600	1500	440
TPH-CWG - Aromatic >EC21 - EC35	7500	3200	2900	940
TPH-CWG - Aromatic > EC35 - EC44	7500	520	740	270
TPH-CWG - Aromatic (EC5 - EC35)		5000	4600	1400
TPH-CWG - Aromatic (EC5 - EC44)		5500	5300	1700

Full laboratory certification is presented in Appendix 3.

3.4.3. Conclusion

Visual and olfactory evidence of hydrocarbon contamination was noted during the excavation works, this was removed in its entirety and validation samples of the sides and base of the excavation were obtained. None of the insitu validation samples displayed hydrocarbon concentrations in exceedance of the provided petroleum hydrocarbon hotspot validation re-use criteria (residential with plant uptake 2.5%) as detailed in section 6.5 of the Hydrock Remediation Strategy and Verification Plan. The hotspot location can therefore be considered to have been fully delineated with no further risk posed to human health and the surrounding environment.

Excavated contaminated material was stockpiled separately and lined with Visqueen to prevent cross contamination. The testing on the arisings indicated that the TPH values were too high and the Asbestos fibres left in the riddled, hand-picked material exceeded reuse criteria. As the material



failed to meet both hydrocarbon and asbestos reuse criteria, it has been removed from site by a licensed waste disposal plant. The area where HS8 was stockpiled after excavation has been scraped as a detectable trace of asbestos fibres were found in the arising base sample. This scraped material was transferred into the stockpiled arisings and disposed off site to Provectus's Maw green treatment facility under hazardous Waste Consignment.

3.5. Hotspot 9

3.5.1. Excavation Works

Hotspot 9 was found when chemical testing in Area 3 showed detected asbestos above the site limit isolated to a small stockpile on site. The asbestos containing soils were transferred to an area covered with visqueen. A total of 8m³ of asbestos containing material was removed to a suitable disposal facility on 22/5/23, organised by the Site Agent. Validation samples were taken from the sides of excavations and the base of excavation. The relevant consignment notes can be found in Appendix 2.

3.5.2. Laboratory Results

Hotspot 9 arisings were sampled and results are shown in table 15 below. A total of 5 valid samples were obtained from the sides and base of excavation. The results of the validation samples are presented below in table 16.

Table 15 – Arisings Laboratory Results – Report No 23-31376-2

Parameter	Type 2 - Area 4 - 1	Type 2 - Area 4 - 2	Type 2 - Area 4 - 3
Asbestos in Soil Screen / Identification Name	Amosite	Amosite	-
Asbestos in Soil	Detected	Detected	Not-detected
Asbestos Quantification (Stage 2)	0.39	0.008	-
Asbestos Quantification Total	0.39	0.008	-



Table 16 – Validation Laboratory Results – Report No 23-35126-1

Parameter	HS9-Verif-N	HS9-Verif-E	HS9-Verif-S	HS9-Verif-W	HS9-Verif-B
Asbestos in Soil Screen / Identification Name	-	Amosite	-	Chrysotile & Amosite	Amosite
Asbestos in Soil	Not-detected	Detected	Not-detected	Detected	Detected
Asbestos Quantification (Stage 2)	-	0.004	-	0.002	< 0.001
Asbestos Quantification Total	-	0.004	-	0.002	< 0.001

Full laboratory certification is presented in Appendix 3.

3.5.3. Conclusion

As the initial chemical testing results indicated the asbestos amount was above 0.01%, the arisings were deemed unfit for site and separated onto visqueen to prevent cross contamination. Further excavation was overseen by a geo-environmental engineer to confirm all visible traces of ACMs had been removed and validation samples taken from the material left Insitu.

The additional arisings were deemed grossly contaminated and were sent to a certified waste facility.

As the validation samples reported less than 0.01% asbestos in the remaining area, the hotspot is considered to have been removed in its entirety.



4.1 Material Management

Hazardous materials taken offsite, specifically ACMs and hazardous soil (All HS8 & 9 Arisings) were removed by licensed carriers and disposal facilities. Copies of the Waste Management Licenses can be found in Appendix 2.

Table 17 – Material Management.

Material	EWG Code	Quantity	Origin	Disposal	Disposal Facility Details	Waste Carrier Details
Asbestos Containing Materials (ACM's)	170605*	3328kg	Visual handpicked ACMs in Hotspot 5, 6 & 8	Hazardous Landfill	MCP Environmental Ltd.** Spartan Road, Low Moor, Bradford, BD12 0RY <i>EPR/UP3498VG</i>	MCP Environmental Ltd. Spartan Road, Low Moor, Bradford, BD12 0RY <i>CBDU184628</i>
Asbestos Containing Materials (ACM's)	170605*	19T	Hotspot 9 Arisings	Hazardous Landfill	Whitemoss Landfill Ltd. Whitemoss Road South, Skelmersdale, WN8 9TH <i>EPR/DP3639LM/V005</i>	City Centre Commericals Ltd. Tower house, Imonswood IND Park, L33 4XY <i>CBDU225855</i>
Contaminated / Hazardous soils	170503*	13m ³	Hotspot 8 Arisings	Soil Treatment Facility	Provectus soils Management Ltd. FCC Environment, Maw Green Lane, Crewe, CW1 5NG <i>EPP/3891EL/A001</i>	A1 Services (Manchester) Ltd. Overman Way, Swinton, Manchester, M27 8BQ <i>CBDU97331</i>

* Denotes hazardous waste

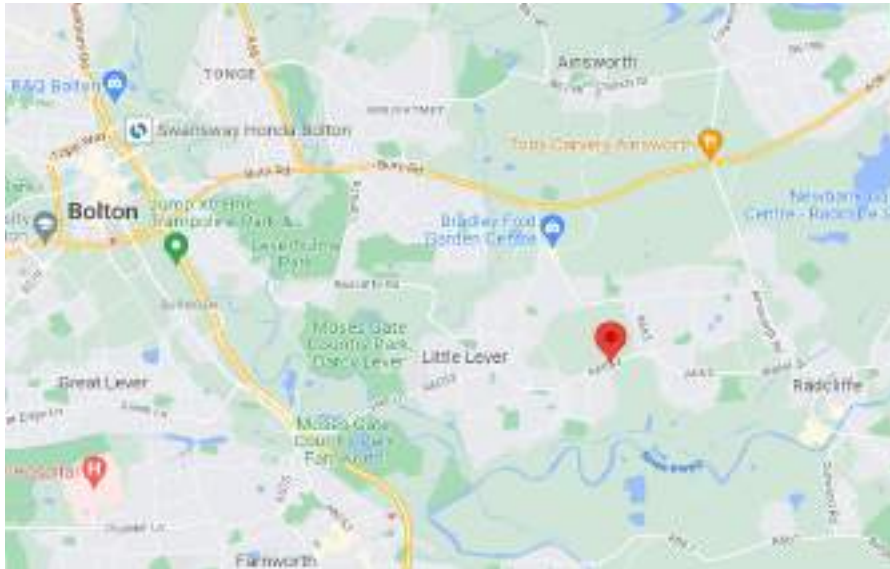
**Transfer Destination, Final Destination: Augean Port Clarence, off Huntsman Drive ,Port Clarence, Middlesbrough TS2 1UE

Relevant EA / SEPA Waste Management / Waste Carrier License Number



Site Location

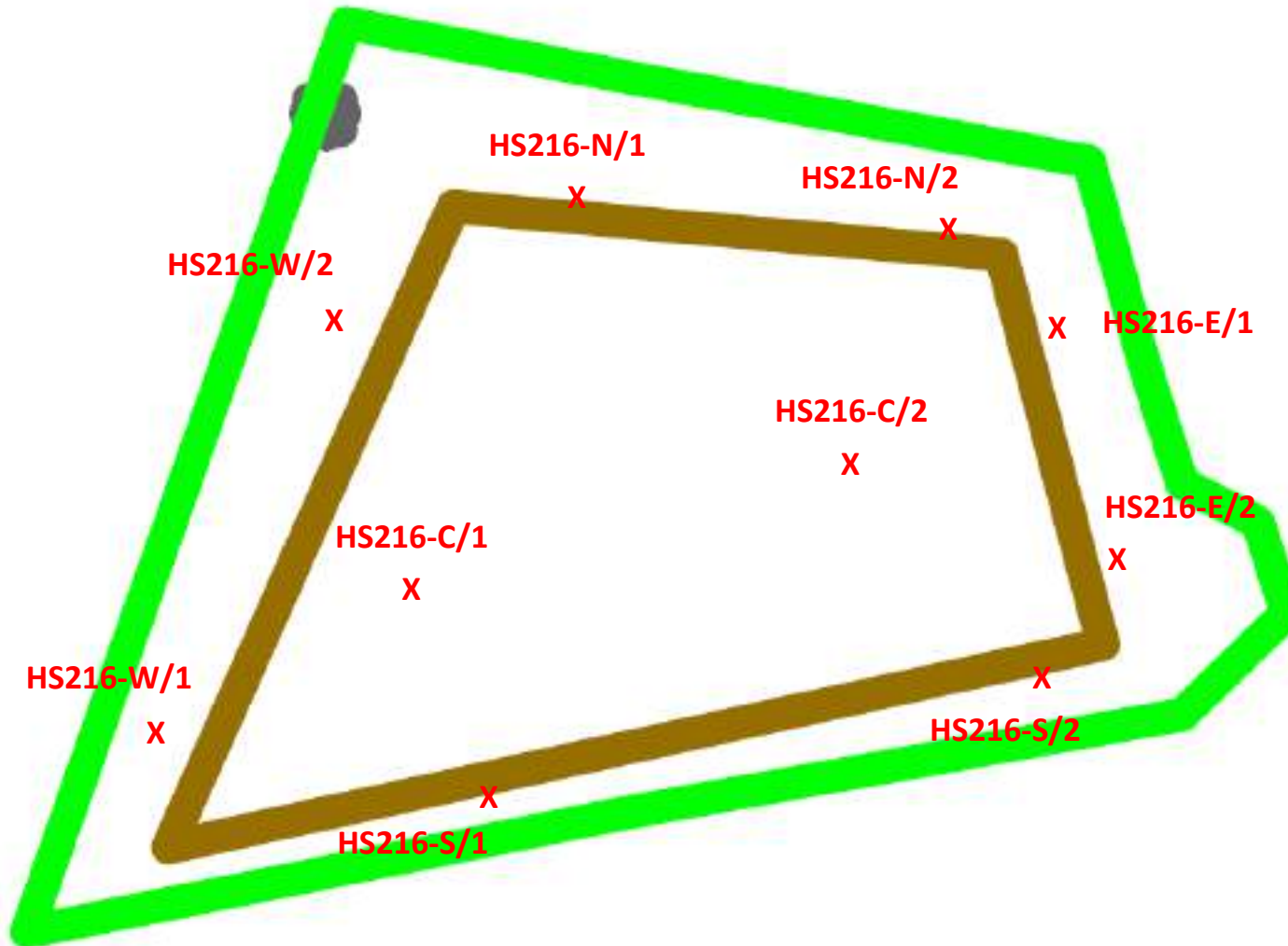
Stopes Road, Little Lever, Bolton BL3 1NP





HS1 Sampling Locations

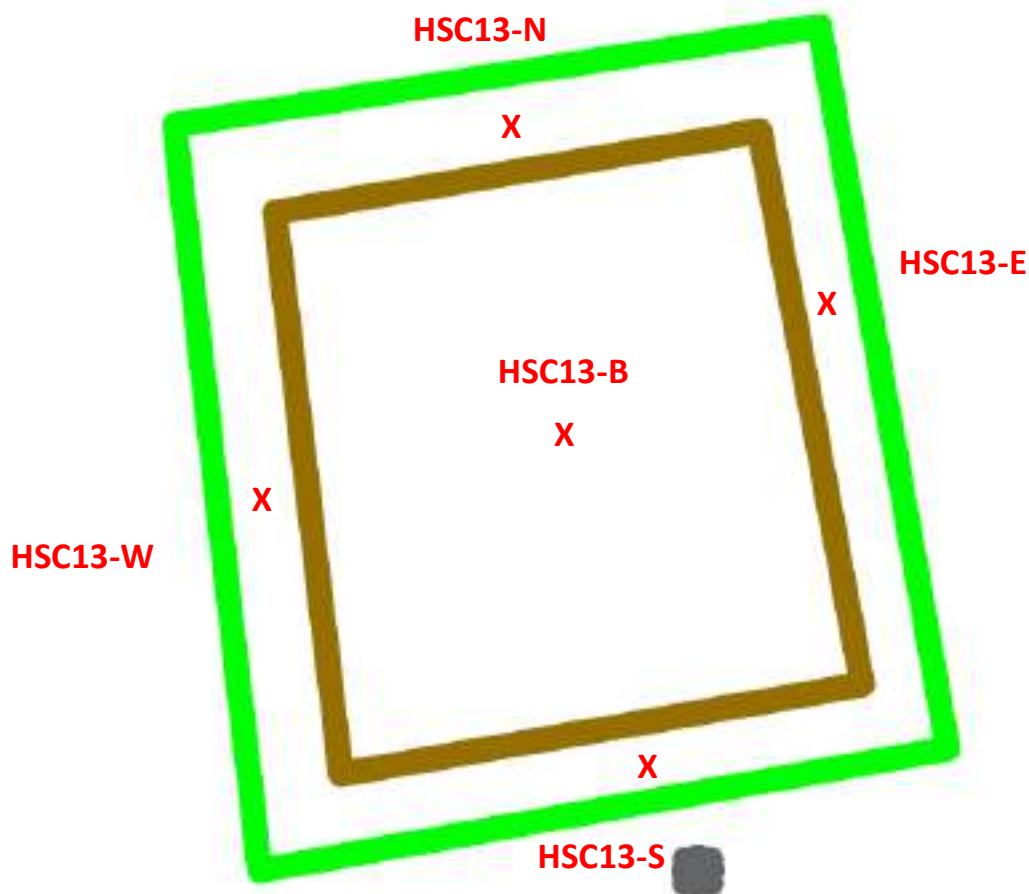
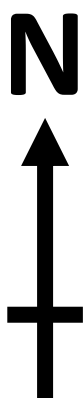
Stopes Road, Little Lever, Bolton BL3





HS4 Sampling Locations

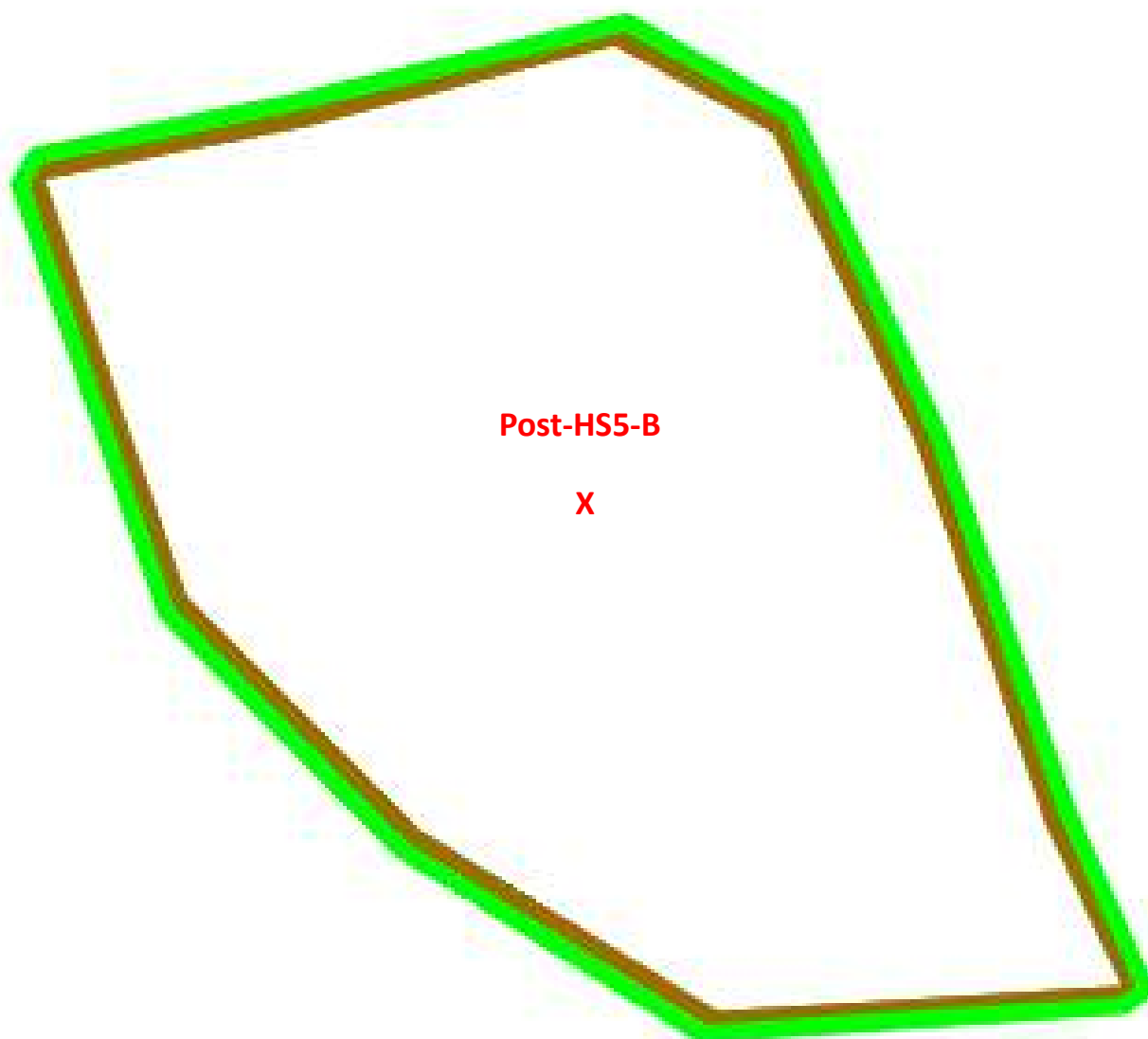
Stopes Road, Little Lever, Bolton BL3





HS5 Validation Sample Locations

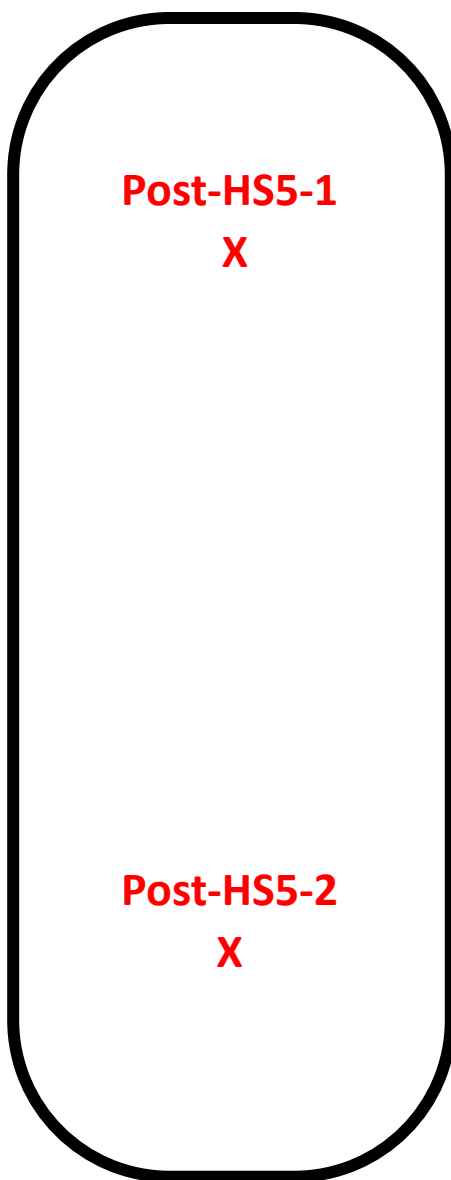
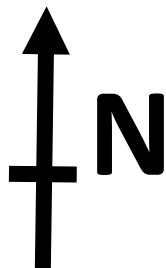
Stopes Road, Little Lever, Bolton BL3





HS5 Arisings Sampling Locations

Stopes Road, Little Lever, Bolton BL3





HS6 Sampling Locations

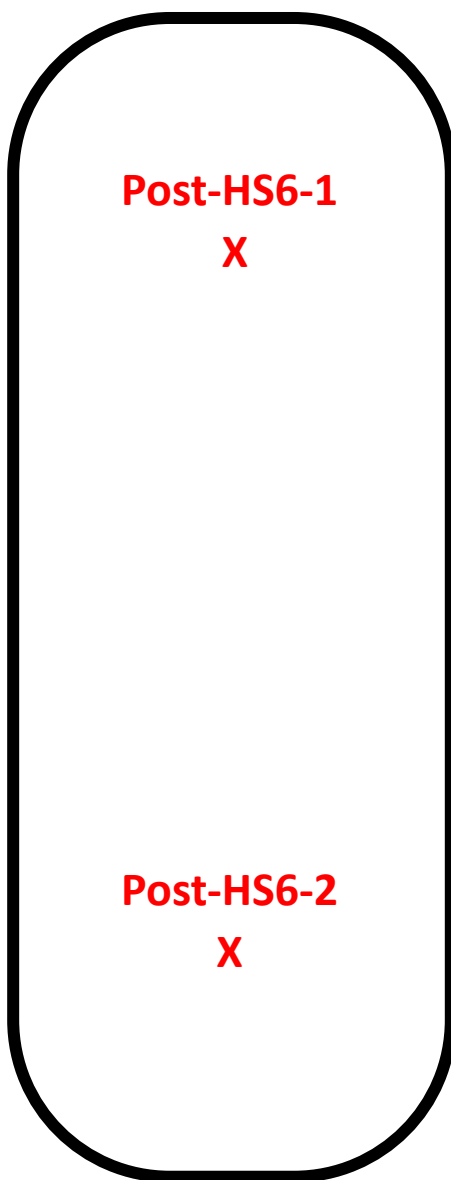
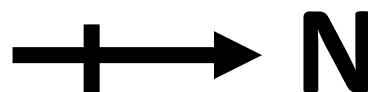
Stopes Road, Little Lever, Bolton BL3





HS6 Arisings Sampling Locations

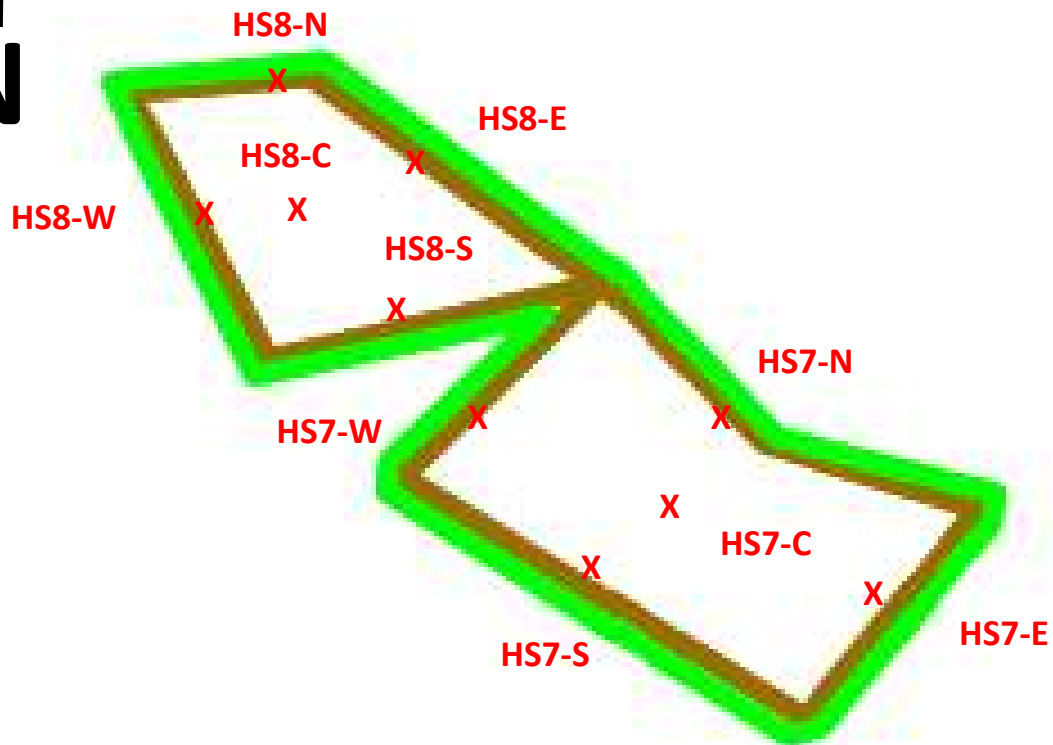
Stopes Road, Little Lever, Bolton BL3





HS7&8 Sampling Locations

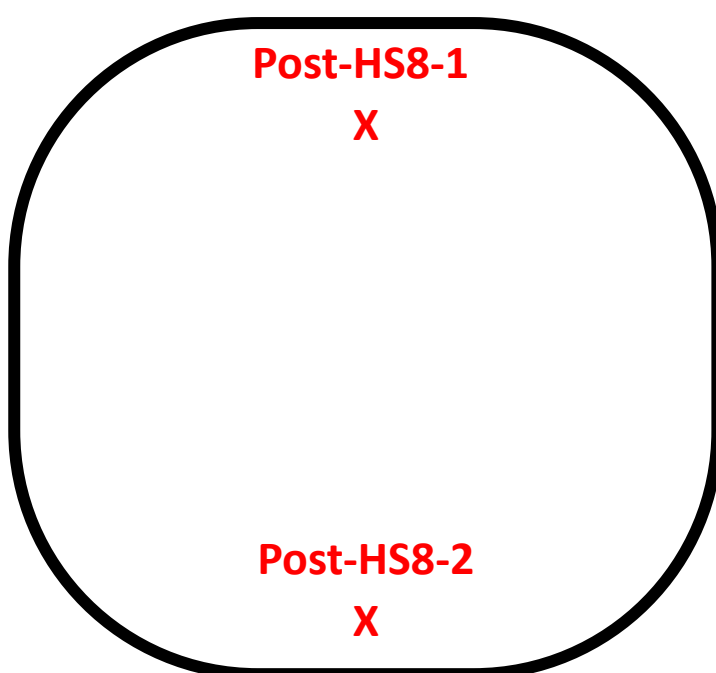
Stopes Road, Little Lever, Bolton BL3





HS8 Arisings Sampling Locations

Stopes Road, Little Lever, Bolton BL3



Post-HS8-1

X

Post-HS8-2

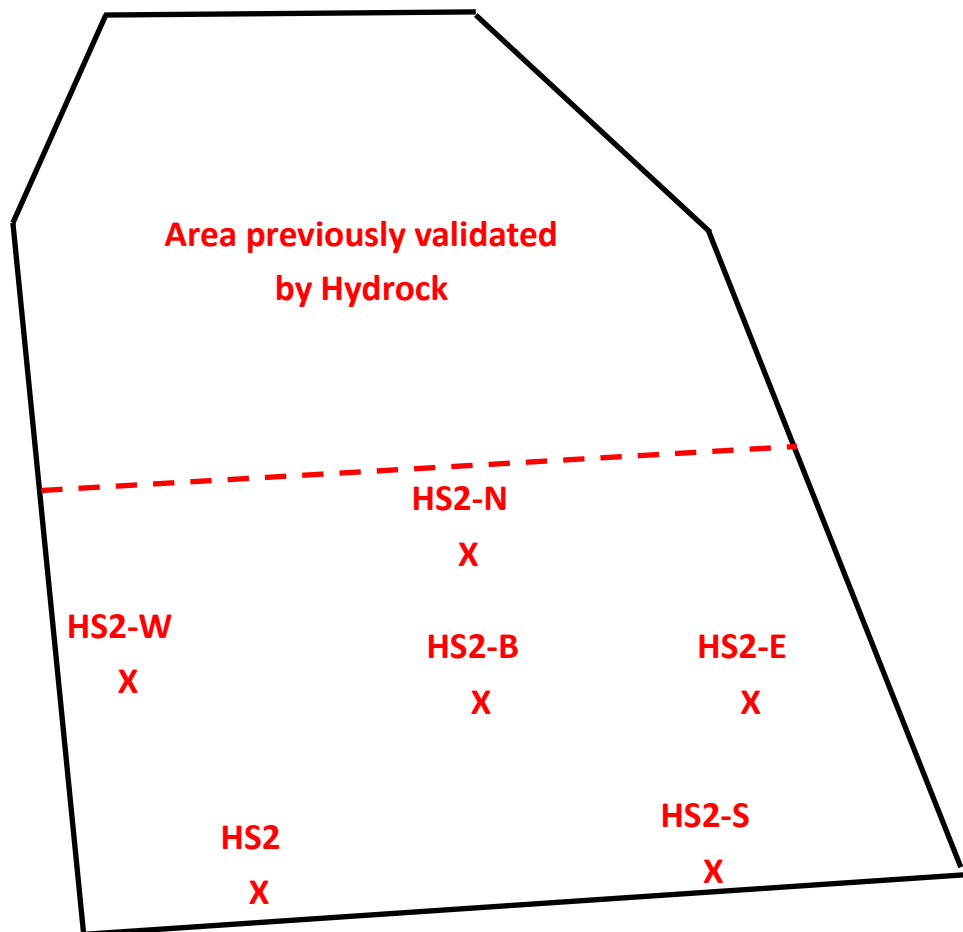
X



HS2 Sampling Locations



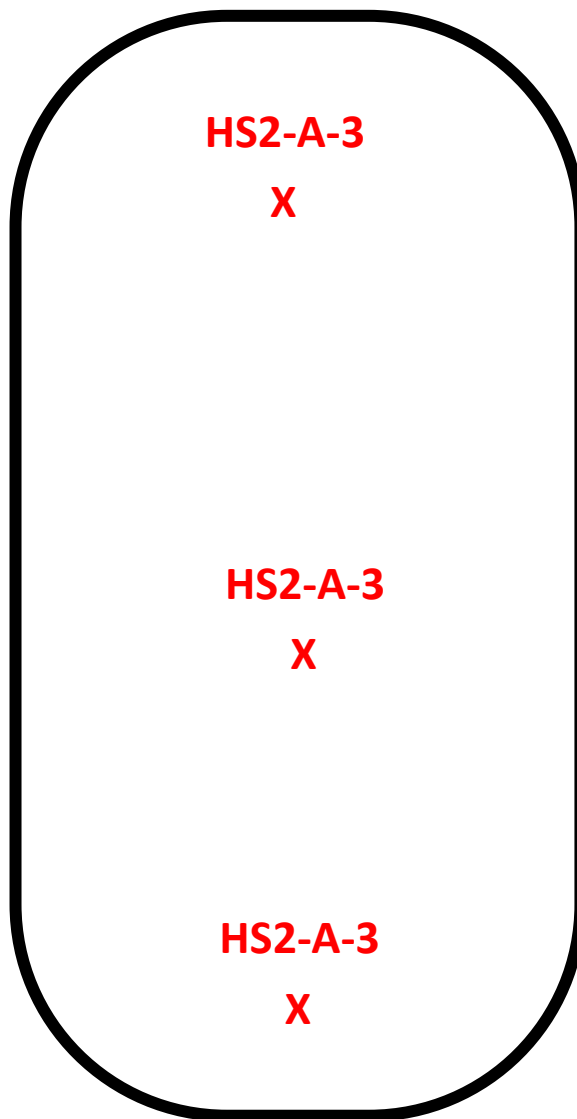
Stopes Road, Little Lever, Bolton BL3





HS2 Arisings Sampling Locations

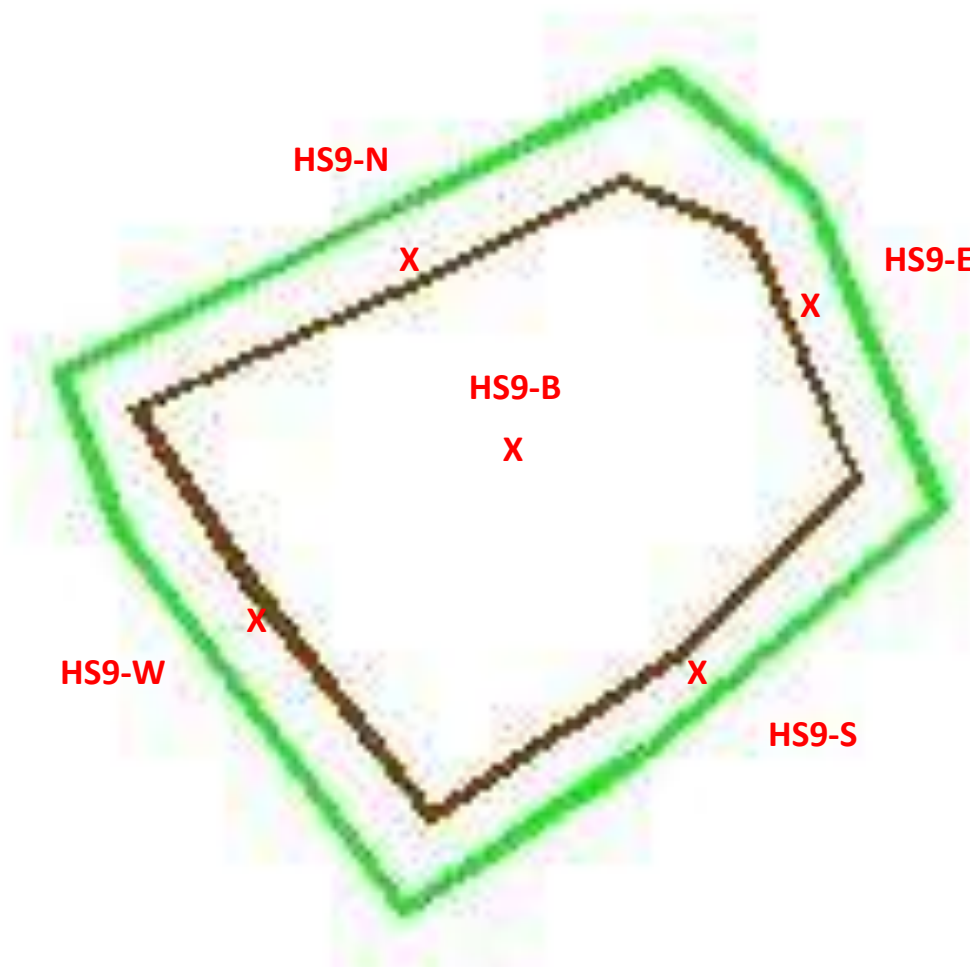
Stopes Road, Little Lever, Bolton BL3





HS9 Sampling Locations

Stopes Road, Little Lever, Bolton BL3





HS9 Arisings Sampling Locations

Stopes Road, Little Lever, Bolton BL3

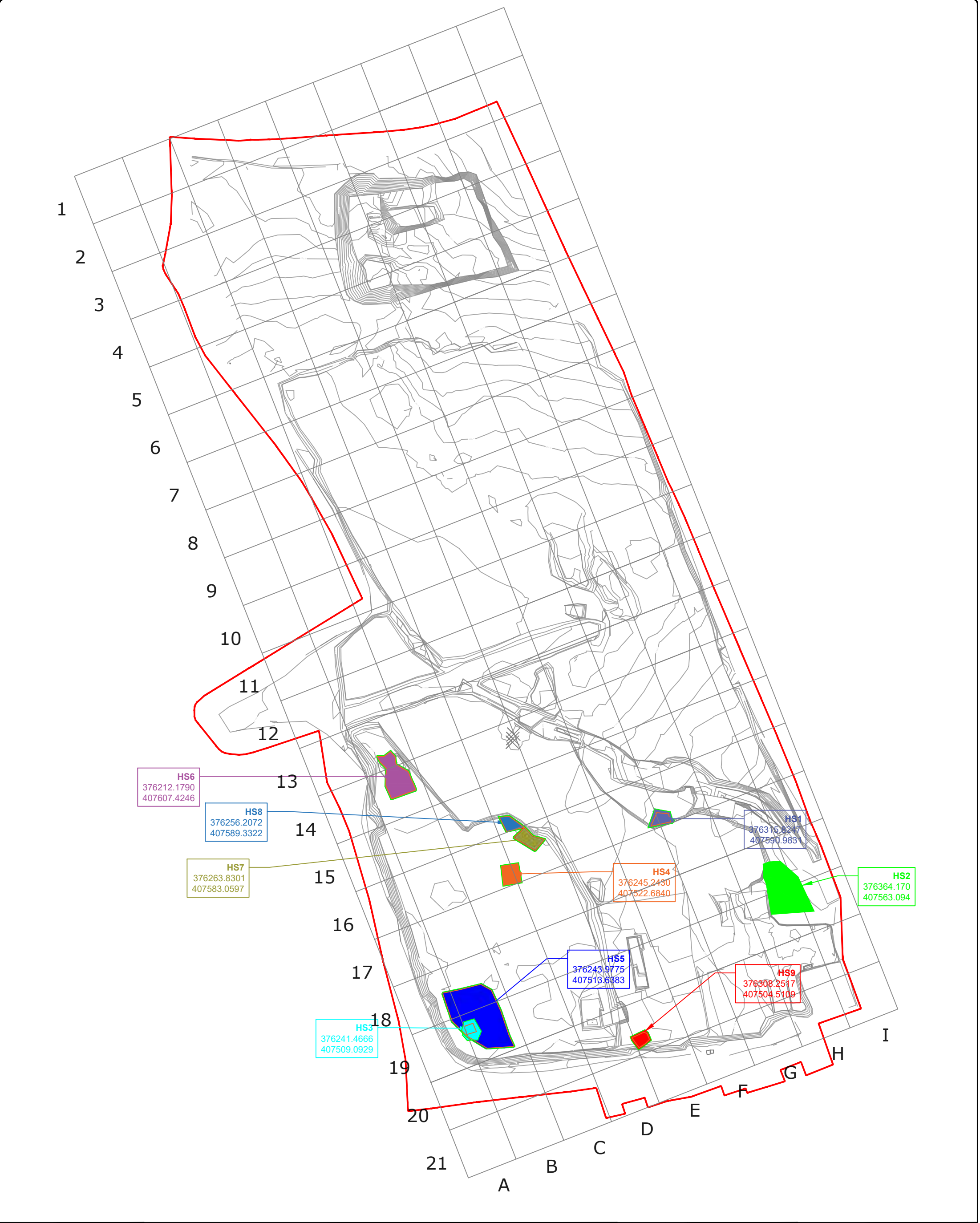


Type 2-Area 4-1

X

Type 2-Area 4-2

X



Note
This drawing has been prepared solely for the benefit of the party or parties named in the title block. No other party shall be entitled to rely on this drawing or any of the information shown and VHE Construction plc shall have no duty to any other party in relation to the drawing of the quality, accuracy or completeness of the information shown.

Legend

- Site Boundary
- Base of Excavation Detail
- Top of Batter Hotspot Dig
- Bottom of Batter Hotspot Dig
- XREF Base of Excavation Background

Rev	Date	Drawn	Description	Chk'd
B	13/11/23	JW	Updated Hotspot 2	SG
A	30/05/23	TC	Addition of HS9 and 2	--

VHE CONSTRUCTION PLC
WHALEY ROAD
BARUGH
BARNLEY
S75 1HT
E: enquiries@vhe.co.uk
W: www.vhe.co.uk

T: 01226 320150
F: 01226 320260

Client

Harworth

Site

Stopes Road
Bolton

Title

VHEJ808-601 Hot Spots

Surveyed	TC	Drawn	TC
Chk.	SG/PD	Date	30/05/2023
Scale	[A3 Sheet] CAD File		
NTS		VHEJ808-601 Hot Spots	
Job Ref	J808 Stopes Road		Rev B



DUTY OF CARE WASTE TRANSFER NOTE

Ticket No:
12622

VHE Construction plc

Whaley Road
Barnsley
South Yorkshire
S75 1HT

Tel: 01226 320150 Fax: 01226 320151

**Newton Business
Centre**
S35 2PH

Weights

Gross:

Tare:

Nett:

SECTION A - MATERIAL DESCRIPTION

A1. Material Condition/Form:

Liquid ☐Solid ☒

A2. Container Type & Quantity:

A3. Type of Pre-Treatment (e.g. sorting, segregation):

A4. The load contains
(select ONE):A5. I can confirm that the load
is a mix of (select ONE):

A6. Description of Waste:

A7. EWC Code(s) for
waste(s) in A6:

SRLT = standard rate landfill tax, LRLT = lower rate landfill tax

No Qualifying Materials (SRLT)

Now describe the waste in A6 below

Uniform (single type) of Qualifying Material (LRLT)

Now describe the waste in A6 below

Mixed Materials

Now go to A5 below

Qualifying Materials (LRLT)

Now describe the waste in A6 below

Mainly Qualifying Materials with a small amount of standard
rated material (LRLT). (Confirm with the receiving site any
evidence required to support this)Now describe the waste, including the small
amount of standard rated material, in A6 belowQualifying Materials but with more than a small amount of
standard rated material (SRLT)

Now describe the waste in A6 below

non-hazardous**soil / stone****17 05 04****SECTION B - MATERIAL SOURCE/PRODUCER**

B1. Company Name:

B2. Address:

B3. Post Code:

B5. Waste Permit / Exemption No. (if applicable)

B6. Date:

Post Code:

B4. SIC Code (2007):

B7. Time:

By signing in Section D below I confirm I have fulfilled my duty to apply the Waste Hierarchy as required by Regulation 12 of the Waste (England and Wales) Regulations 2011

B8. For Producer:

Sign:

Print:

SECTION C - COLLECTION/TRANSPORT

C1. Company Name:

C2. Address:

C3. Transport:

C4. Carriers Registration or Exemption:

C5. Date:

C6. Time:

C7. Season Ticket?:

YES/NO
If YES, state last transfer date:

C8. For Haulier:

Sign:

Print:

SECTION D - RECEIVER/TRANSFER/DISPOSAL FACILITY

D1. Company Name:

D2. Address:

D3. Licence / Permit No. or Exemption:

D4. Date:

D6. For Receiver:

Sign:

D5. Time:

Print:



DUTY OF CARE WASTE TRANSFER NOTE

Ticket No:
12623

VHE Construction plc

Whitley Road
Hambley
South Yorkshire
S23 1HT

Tel: 01226 320150 Fax: 01226 320151

Grennan Business
Centre

S35 2PM

Weights:

Gross:

Tare:

Nett:

SECTION A - MATERIAL DESCRIPTION

A1. Material Condition/Form:

Liquid ☐

Solid ☒

A2. Container Type & Quantity:

A3. Type of Pre-Treatment (e.g. sorting, segregation):

SRLT = standard rate landfill tax, LRLT = lower rate landfill tax

A4. The load contains

(select ONE):

No Qualifying Materials (SRLT)

Now describe the waste in A6 below

Uniform (single type) of Qualifying Material (LRLT)

Now describe the waste in A6 below

Mixed Materials

Now go to A5 below

A5. I can confirm that the load

is a mix of (select ONE):

Qualifying Materials (LRLT)

Now describe the waste in A6 below

Mainly Qualifying Materials with a small amount of standard rated material (LRLT). (Confirm with the receiving site any evidence required to support this)

Now describe the waste, including the small amount of standard rated material, in A6 below

Qualifying Materials but with more than a small amount of standard rated material (SRLT)

Now describe the waste in A6 below

A6. Description of Waste:

now Hazardous

Soil/Stone

A7. EWC Code(s) for waste(s) in A6:

170504

SECTION B - MATERIAL SOURCE/PRODUCER

B1. Company Name:

VHE CONSTRUCTION PLC

B2. Address:

Stops Road

Post Code:

B3. Post Code:

BL3 1NR

B4. SIC Code (2007):

39.00

B5. Waste Permit / Exemption No. (if applicable):

B6. Date:

8-11-23

B7. Time:

14:53

By signing in Section D below I confirm I have fulfilled my duty to apply the Waste Hierarchy as required by Regulation 12 of the Waste (England and Wales) Regulations 2011

B8. For Producer:

Sign:

N. Kelly

Print:

NEL Kelly

SECTION C - COLLECTION/TRANSPORT

C1. Company Name:

MURR Plant Hire

C2. Address:

Sandham House Redrose Drive

Post Code:

PN26 6TS

C3. Transport:

Type: Wheeler

Registration:

P00AHE

C4. Carriers Registration or Exemption:

CBDU77821

C5. Date:

8-11-23

C6. Time:

C7. Season Ticket?:

YES/NO
If YES, state last transfer date:

NO

C8. For Haulier:

Sign:

J. Beeson

Print:

J. Beeson

SECTION D - RECEIVER/TRANSFER/DISPOSAL FACILITY

D1. Company Name:

Booth Ventures LTD

D2. Address:

Harewood Quarry

Harewood Bolton

Post Code:

BL2 4LT

D3. Licence / Permit No. or Exemption:

OPR/BV87411L

D4. Date:

D5. Time:

D6. For Receiver:

Sign:

Print:



DUTY OF CARE WASTE TRANSFER NOTE

Ticket No:
12624

VHE Construction plc

Whalley Road
Barnsley
South Yorkshire
S75 1HT

Tel: 01226 320150 Fax: 01226 320151

6 newton Business
centre
S35 2PH

Weights

Gross:

Tare:

Nett:

SECTION A - MATERIAL DESCRIPTION

A1. Material Condition/Form:

Liquid ☐Solid ☒

A2. Container Type & Quantity:

A3. Type of Pre-Treatment (e.g. sorting, segregation):

A4. The load contains
(select ONE):A5. I can confirm that the load
is a mix of (select ONE):

A6. Description of Waste:

A7. EWC Code(s) for
waste(s) in A6:

SRLT = standard rate landfill tax. LRLT = lower rate landfill tax.

No Qualifying Materials (SRLT)

Uniform (single type) of Qualifying Material (SRLT)

Mixed Materials

Qualifying Materials (LRLT)

Mainly Qualifying Materials with a small amount of standard
rated material (LRLT). (Confirm with the receiving site any
evidence required to support this)Qualifying Materials but with more than a small amount of
standard rated material (SRLT)

Now describe the waste in A6 below

Now describe the waste in A6 below

Now go to A5 below

Now describe the waste in A6 below

Now describe the waste, including the small
amount of standard rated material, in A6 below

Now describe the waste in A6 below

non Hazardous

soil/store

1705 04

SECTION B - MATERIAL SOURCE/PRODUCER

B1. Company Name:

B2. Address:

B3. Post Code:

B5. Waste Permit / Exemption No. (if applicable)

B6. Date:

Post Code:

B4. SIC Code (2007):

B7. Time:

By signing in Section D below I confirm I have fulfilled my duty to apply the Waste Hierarchy as required by Regulation 12 of the Waste (England and Wales) Regulations 2011

B8. For Producer:

Sign:

Print:

SECTION C - COLLECTION/TRANSPORT

C1. Company Name:

C2. Address:

C3. Transport:

C4. Carriers Registration or Exemption:

C5. Date:

C6. Time:

C7. Season Ticket?:

YES/NO
If YES, state last transfer date:

C8. For Haulier:

Sign:

Print:

SECTION D - RECEIVER/TRANSFER/DISPOSAL FACILITY

D1. Company Name:

D2. Address:

D3. Licence / Permit No. or Exemption:

D4. Date:

D6. For Receiver:

Sign:

D5. Time:

Print:



DUTY OF CARE WASTE TRANSFER NOTE

Ticket No:
12625

VHE Construction plc

Whale Road
Burnsley
South Yorkshire
S75 1HT

Tel: 01226 320150 Fax: 01226 320151

Newton Business
Centre

S35 2PM

Weights

Gross:

Tare:

Nett:

SECTION A - MATERIAL DESCRIPTION

A1. Material Condition/Form:

Liquid ☐

Solid ☒

A2. Container Type & Quantity:

A3. Type of Pre-Treatment (e.g. sorting, segregation):

A4. The load contains
(select ONE):

A5. I can confirm that the load
is a mix of (select ONE):

A6. Description of Waste:

A7. EWC Code(s) for
waste(s) in A6:

SRLT = standard rate landfill tax. LRLT = lower rate landfill tax

No Qualifying Materials (SRLT)

Now describe the waste in A6 below

Uniform (single type) of Qualifying Material (LRLT)

Now describe the waste in A6 below

Mixed Materials

Now go to A5 below

Qualifying Materials (LRLT)

Now describe the waste in A6 below

Mainly Qualifying Materials with a small amount of standard
rated material (LRLT). (Confirm with the receiving site any
evidence required to support this)

Now describe the waste, including the small
amount of standard rated material, in A6 below

Qualifying Materials but with more than a small amount of
standard rated material (SRLT)

Now describe the waste in A6 below

Now Hazardous

Soil/stone

1705 04

SECTION B - MATERIAL SOURCE/PRODUCER

B1. Company Name:

B2. Address:

B3. Post Code:

B5. Waste Permit / Exemption No. (if applicable):

B6. Date:

Post Code:

B4. SIC Code (2007):

B7. Time:

By signing in Section D below I confirm I have fulfilled my duty to apply the Waste Hierarchy as required by Regulation 12 of the Waste (England and Wales) Regulations 2011

B8. For Producer:

Sign:

Print:

SECTION C - COLLECTION/TRANSPORT

C1. Company Name:

C2. Address:

C3. Transport:

C4. Carriers Registration or Exemption:

C5. Date:

C6. Time:

C7. Season Ticket?:

YES/NO
If YES, state last transfer date:

C8. For Haulier:

Sign:

Print:

SECTION D - RECEIVER/TRANSFER/DISPOSAL FACILITY

D1. Company Name:

D2. Address:

D3. Licence / Permit No. or Exemption:

D4. Date:

D6. For Receiver:

D5. Time:

Print:

Project name	Stopes Road		
Design note title	Building 1 demolition watching brief and fuel tank validation		
Document reference	15220-HYD-XX-XX-DR-GE-0014		
Author	Rob Crookes		
Checked & Approved	Jason Bradley & Adam Cheers		
Revision	P02		
Date	10 June 2022	Approved	✓

1. INTRODUCTION

The former Tarmac plant at Stopes Road, Bolton is being subject to redevelopment for a large-scale residential development. Additional works were required at the site to investigate the locations of mine shafts shown as being present on site by the Coal Authority.

The following constraints needed to be removed in order to gain access to complete the investigation:

- the demolition of 'Building 1' and lifting of the associated concrete slab in the south east corner of the site, required to investigate shaft 376407-008;
- the removal of an underground storage tank (UST) also located in the south eastern corner of the site, required to complete the grid of investigation for shaft 376407-007.

The locations of both 'Building 1' and the UST can be seen on Hydrock Drawing 15220-HYD-XX-XX-DR-GE-1020_B, presented in Appendix A.

1.1 Objectives

Section 2 formally documents that Hydrock undertook a watching brief during the demolition of Building 1 and removal of the UST to ensure compliance with the relevant Coal Authority permits. Photos of the building demolition and UST removal are presented in Appendix B.

Section 3 is presented to assist with the to discharge of planning conditions associated with site remediation. Hydrock collected and tested soil samples from the base and sides of the resulting excavation to validate the tank removal in accordance with the Hydrock Remediation Strategy and Verification Plan (RSVP) (ref: 15220-HYD-XX-XX-RP-GE-0006).

2. WATCHING BRIEF SUMMARY

2.1 Shaft 376407-008 - Demolition

A Hydrock engineer undertook a watching brief during the demolition of Building 1, subsequent slab lift, and foundation removal. These works were undertaken by Demolition Services Limited; the Hydrock watching brief was to ensure compliance with Coal Authority Permit 24460 (regarding Shaft 376407-008). The demolition of Building 1 was completed over 2 days, Thursday 21st & Friday 22nd April 2022.

The removal of the associated slab, surrounding hardstanding, and foundations was completed over 2 days, Friday 22nd April & Monday 25th April 2022.

Hydrock are satisfied that these works completed in accordance with the conditions of the Coal Authority Permit 24460. The Hydrock engineer noted that no evidence of unexpected ground subsidence was observed, and there was no evidence of features likely to suggest the presence of a mine shaft close to the surface during the watching brief. Coal Authority Permit 24460 remains open to facilitate further Ground Investigation by probing, to be supervised by Hydrock.

2.2 Shaft 376407-007 - Tank Removal

A Hydrock engineer completed a watching brief during the removal of a below ground fuel tank; the works were undertaken by Demolition Services Limited. Hydrock's role was to ensure compliance with Coal Authority Permit 22581 regarding Shaft 376407-007. The removal was completed over 2 days, Wednesday 27th & Thursday 28th April 2022.

During the tank removal works the Hydrock engineer observed the following:

- Two metal tanks in good condition were present, significantly smaller than initially anticipated, estimated to be approximately 1,000L capacity each.
- The western tank appeared to be filled with red sand.
- The eastern tank was filled with liquid, which was pumped out by the demolition contractor before the tank was removed from the ground. The liquid appeared to be hydrocarbon impacted water which has remained on site in IBCs.
- The concrete pad initially thought to define the extent of the tank, approximately 4.0m wide by 7.5m long, was likely used as a refuelling area. A shallow concrete plinth 1.0m wide by 2.6m long at 0.6m bgl may have hosted a fuel pump.
- The tanks were found side by side, concreted into a brick lined structure with a concrete base, approximately 2.3m wide by 4.0m long by 2.5m deep, between approximately 0.75m and 3.25m bgl.
- The tanks were located beneath the northern end of the concrete pad, with fuel lines present running in several directions, though primarily south towards the concrete plinth.
- A long reach excavator was used to pull the tanks from their location below ground, the tanks were then placed within a temporary constructed bund comprising breeze blocks and visqueen sheeting.
- Access into the work area was limited, due to the potential presence of a mineshaft. This made observing the excavation and taking measurements challenging.
- A high-voltage electricity cable was found at approx. 1.4m bgl approximately 3.0m south of the tank, which restricted further excavation in this area.
- Visual and olfactory evidence of hydrocarbon contamination was observed in the soils around the tanks and fuel lines, discussed further in Section 3.

Hydrock are satisfied that these works have been completed in accordance with the conditions of the Coal Authority Permit 22581. The Hydrock engineer noted that no evidence of unexpected ground subsidence or features likely to suggest a mine shaft were observed during the watching brief. Coal Authority Permit 22581 remains open to facilitate further Ground Investigation by probing, to be supervised by Hydrock.

3. TANK REMOVAL VALIDATION

The soils around the tank comprised granular and cohesive Made Ground, underlain by firm cohesive Glacial Till from ~2.50 - 2.75m bgl. The base of the tank was estimated to be at ~3.25m bgl, founded in the Glacial Till.

Visual and olfactory evidence of hydrocarbon contamination was observed during the tank removal, primarily around the sides of the tanks below the concrete pad, associated with corroded fuel lines. The tanks and containing brick structure appear to have retained integrity, with no clear evidence of hydrocarbon impact noted in the clays immediately beneath the tanks.

Soils from the base and sides of the excavation were sampled, though suspected hydrocarbon impacted soils remain present to the south around the buried high-voltage electricity cable, as it was not possible to excavate around the HV cable. A sketch diagram is presented as Figure 3.1 below showing the locations of the 10 no. samples, numbered V1 – V10. Details of each sample are presented in Table 3.1 below. Full chemical results are presented in Appendix C.

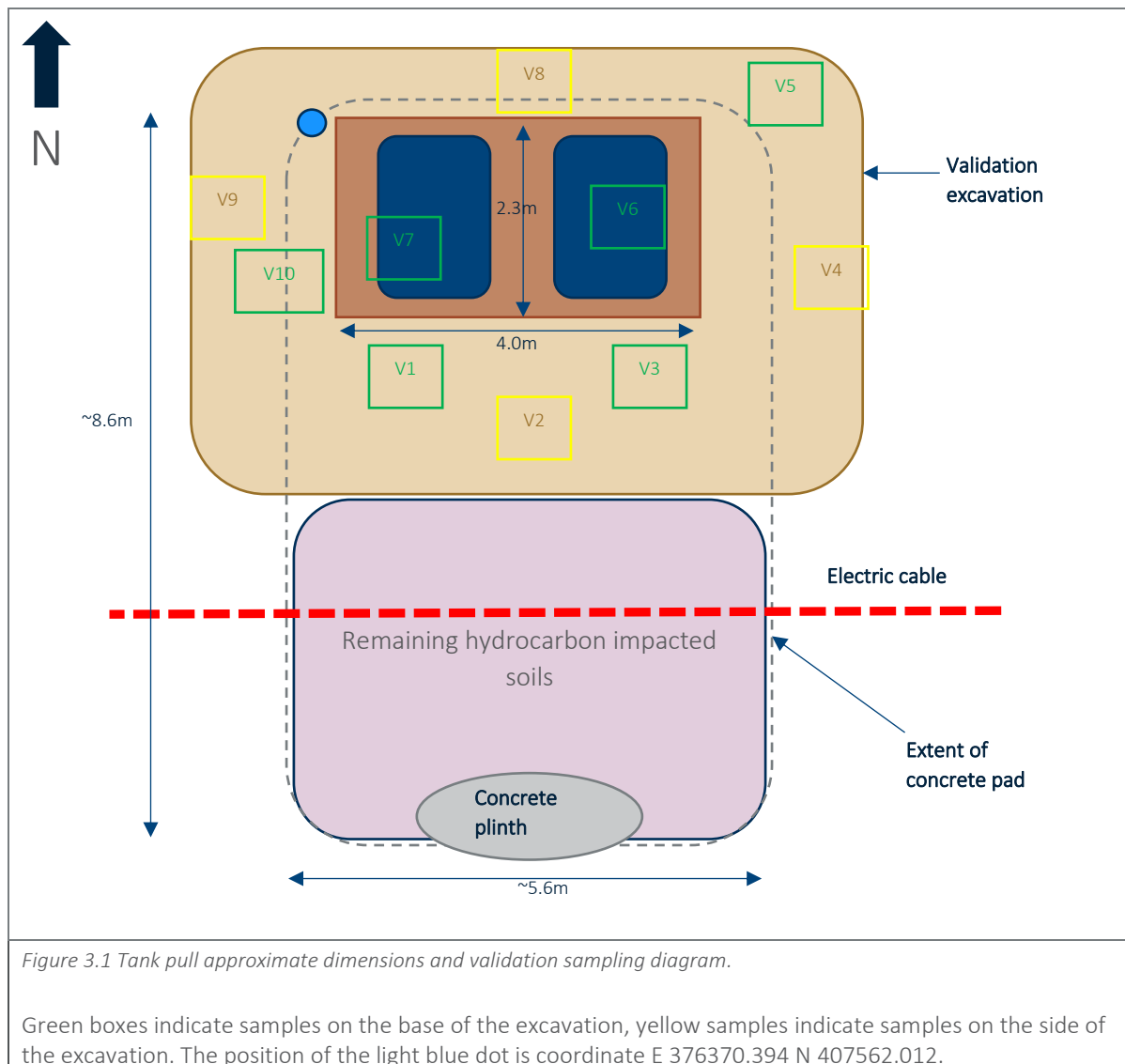


Table 3.1 Validation samples details

Sample	Location	Depth (m bgl)	TPH Level 2	Hydrock Default Suite
V1	Base	2.85	✓	
V2	Side	2.00	✓	✓
V3	Base	2.85	✓	
V4	Side	2.50	✓	✓
V5	Base	3.50	✓	
V6	Base	3.50	✓	
V7	Base	3.50	✓	✓
V8	Side	2.50	✓	✓
V9	Side	2.50	✓	✓
V10	Base	3.50	✓	

The validation criteria for petroleum hydrocarbon hotspots are set out in Table 6.1 of the Hydrock Remediation Strategy & Verification Plan (ref: 15220-HYD-XX-XX-RP-GE-0006), which lists the Remedial Target Values (RTVs) for each TPH-CWG banding.

All samples with the exception of sample V2 returned results below the limit of detection (LoD) for all THP-CWG bandings. Sample V2, on the southern side of the excavation at 2.0m bgl, returned results below the LoD for all except 2 bandings; Aromatic >EC5 - EC7 and Aromatic >EC8 - EC10. The results were 0.003 mg/kg and 0.019 mg/kg respectively, which are significantly below the Remedial Target Values (RTVs) of 150 mg/kg and 84 mg/kg respectively.

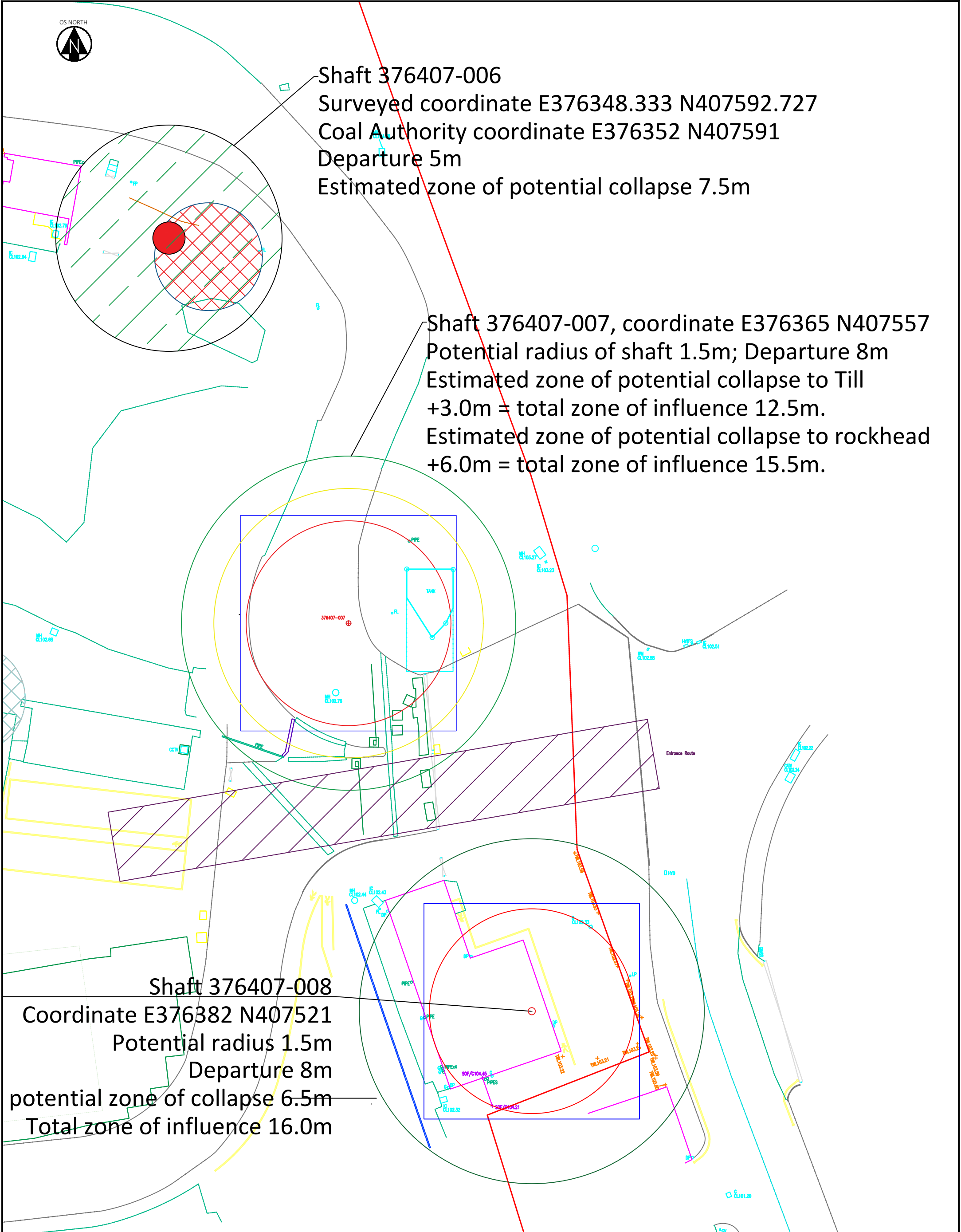
As such based on the works completed to date, Hydrock can confirm that the contaminated soils associated with the tank and tank infrastructure in the immediate vicinity have been removed from the hotspot and the soils at the base and sides of the excavation are validated. The position of the excavation is indicated on drawing 15220-HYD-XX-XX-DR-GE-1024 in Appendix A. However soils with visual and olfactory evidence of hydrocarbon impact, associated with further fuel lines, remain further south around the high voltage electricity cable which require further consideration and should be dealt with in accordance with the relevant sections of the Hydrock Remediation Strategy & Verification Plan document once it is safe to do so. It is recommended that further testing is completed in the remaining impacted soils to fully delineate the extent of the hotspot.

The excavated soils have been stockpiled on site and will be dealt with by the contractor completing the enablement phase earthworks. Previous testing results relating to this hydrocarbon hotspot are detailed within the Hydrock Supplementary Ground Investigation Report ref: 15220-HYD-XX-XX-RP-GE-0004.

Their disposal and reuse are to be determined by the enabling works contractor, subject to compliance with the Remediation Strategy and Verification Plan.

Appendix A

Drawings

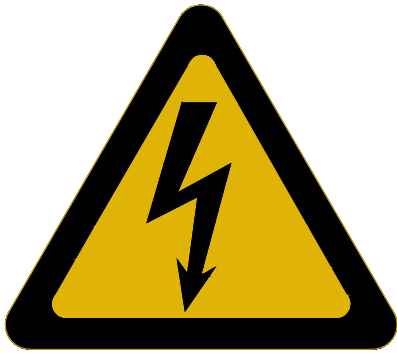


Shaft 376407-006
Surveyed coordinate E376348.333 N407592.727
Coal Authority coordinate E376352 N407591
Departure 5m
Estimated zone of potential collapse 7.5m

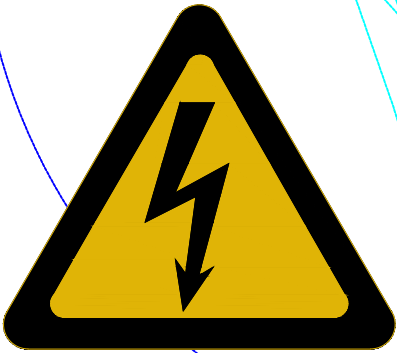
Shaft 376407-007, coordinate E376365 N407557
Potential radius of shaft 1.5m; Departure 8m
Estimated zone of potential collapse to Till
+3.0m = total zone of influence 12.5m.
Estimated zone of potential collapse to rockhead
+6.0m = total zone of influence 15.5m.

Shaft 376407-008
Coordinate E376382 N407521
Potential radius 1.5m
Departure 8m
potential zone of collapse 6.5m
Total zone of influence 16.0m

KEY Approximate Site Boundary Recorded mine shaft - coal authority coordinate accounting for potential shaft radius and departure radius Mineshaft located by Hydrock 20m x 20m drilling grid Estimated potential zone of collapse (based on depth to rockhead)	NOTES 1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing. 2. This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications. 3. This drawing has been based on the following drawings and information: Stopes Road, Little Lever, Masterplan, Drawing References HAR001MP01.	Hydrock Hawthorn Park Holdenby Road Spratton Northampton NN6 8LD t: +44 (0) 1604 842888 e: northampton@hydrock.com or visit www.hydrock.com CLIENT HARWORTH ESTATES PROPERTY GROUP LTD PROJECT STOPES ROAD, BOLTON						TITLE Draft - Mineshaft Stand-off Zones	
								HYDROCK PROJECT NO. C-15220-C	SCALE @ A3 Scale unknown
								PURPOSE OF ISSUE SUITABLE FOR INFORMATION	STATUS S2
								DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER) 15220-HYD-XX-XX-DR-GE-1020_B	REVISION P02
PO2 SECOND ISSUE RC 27/10/21 DH 27/10/21 DH 27/10/21									
REV. REVISION NOTES/COMMENTS DRAWN BY DATE CHECKED BY DATE APPROVED BY DATE									



OVERHEAD
SERVICES



BURIED
SERVICES

TANK

Validated
tank area

Shaft 376407-007
Estimated centre of
shaft co-ordinate
E 376367.595 N 407559.113

KEY

- Approximate Site Boundary
- 10m radius drilling grid
- Probe holes that located mine shaft
- Estimated mine shaft position
- Estimated potential zone of collapse
- Electric cables and 0.5m stand off
- Validated area

NOTES

1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing.
2. This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.

REV	FIRST ISSUE					
	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE
P01	RC	10/06/22	AC	10/06/22	AC	10/06/22
REVISION NOTES/COMMENTS						

Hydrock

Northern Assurance Building
9-21 Princess Street
Albert Square
Manchester M2 4DN
t: +44(0) 161 8045550
e: manchestercentral@hydrock.com
or visit www.hydrock.com

CLIENT

HARWORTH ESTATES PROPERTY GROUP LTD

PROJECT

STOPES ROAD, BOLTON

TITLE

Tank validation plan

HYDROCK PROJECT NO.
C-15220-C

SCALE @ A3
1:100

PURPOSE OF ISSUE
SUITABLE FOR INFORMATION

STATUS
S2

DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)
15220-HYD-XX-XX-DR-GE-1023

REVISION
P01

Appendix B

Photographs

Photograph 1	
Date: 01/06/20	
Direction Photograph Taken: North-East	
Description: 'Building 1' as seen during the original site walkover in June 2020.	

Photograph 2	
Date: 21/04/22	
Direction Photograph Taken: West	
Description: View of 'Building 1' from Stopes Road at the start of demolition works.	

Photograph 3	
Date: 21/04/22	
Direction Photograph Taken: South-West	
Description: Demolition in progress by long reach excavator.	

Photograph 4	
Date: 22/04/22	
Direction Photograph Taken: North-East	
Description: 'Building 1' demolished down to slab level	

Photograph 5	
Date: 22/04/22	
Direction Photograph Taken: South-West	
Description: Slab being broken and removed by long reach excavator.	

Photograph 6	
Date: 22/04/22	
Direction Photograph Taken: West	
Description: Removal of block paving to the east of the building.	

Photograph 7	
Date: 25/04/22	
Direction Photograph Taken: South-West	
Description: Excavation of the foundations of 'Building 1'.	

Photograph 8	
Date: 25/04/22	
Direction Photograph Taken: South	
Description: Excavation of the foundations of 'Building 1'.	

Photograph 9	
Date: 25/04/22	
Direction Photograph Taken: East	
Description: Removed concrete and brick foundations	

Photograph 10	
Date: 25/04/22	
Direction Photograph Taken: South	
Description: Area of former 'Building 1' as left post-demolition	

Photograph 11	
Date: 27/04/22	
Direction Photograph Taken: North	
Description: Uncovered concrete pad.	

Photograph 12	
Date: 27/04/22	
Direction Photograph Taken: North-East	
Description: Concrete pad over brick encased tank.	

Photograph 13	
Date: 28/04/22	
Direction Photograph Taken: North-East	
Description: Eastern tank exposed and contained liquid being pumped into IBCs	

Photograph 14	
Date: 28/04/22	
Direction Photograph Taken: East	
Description: Natural Glacial Till clay below the tanks position.	

Photograph 15	
Date: 28/04/22	
Direction Photograph Taken: South	
Description: Removed tank in block and visqueen bund.	

Photograph 16	
Date: 28/04/22	
Direction Photograph Taken: West	
Description: Stockpiled hydrocarbon impacted soils	

Appendix C

Chemical Testing Results

**Rob Crookes**

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Analytical Report Number : 22-55459

Replaces Analytical Report Number: 22-55459, issue no. 1
Client references/information amended.

Project / Site name:	Stopes Road	Samples received on:	03/05/2022
Your job number:	15220	Samples instructed on/ Analysis started on:	03/05/2022
Your order number:		Analysis completed by:	26/05/2022
Report Issue Number:	2	Report issued on:	26/05/2022
Samples Analysed:	10 soil samples		

Signed:

Adam Fenwick
Technical Reviewer
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 22-55459

Project / Site name: Stopes Road

Lab Sample Number				2259463	2259464	2259465	2259466	2259467	2259468
Sample Reference				TANK	TANK	TANK	TANK	TANK	TANK
Sample Number				V1	V2	V3	V4	V5	V6
Depth (m)				2.85	2.0m	2.85	2.50	3.50	3.50
Date Sampled				27/04/2022	27/04/2022	27/04/2022	28/04/2022	28/04/2022	28/04/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status						
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	13	13	13	16	18	14
Total mass of sample received	kg	0.001	NONE	0.3	0.3	0.3	0.2	0.3	0.3

Asbestos in Soil	Type	N/A	ISO 17025	-	Not-detected	-	Not-detected	-	-
Asbestos Analyst ID	N/A	N/A	N/A	N/A	DBU	N/A	DBU	N/A	N/A

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	-	8.3	-	7.1	-	-
Free Cyanide	mg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	0.026	-	0.059	-	-
Fraction Organic Carbon (FOC) Automated	N/A	0.001	MCERTS	-	0.0091	-	0.02	-	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-	-
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	-	< 0.05	-	< 0.05	-	-
Acenaphthylene	mg/kg	0.05	MCERTS	-	< 0.05	-	< 0.05	-	-
Acenaphthene	mg/kg	0.05	MCERTS	-	< 0.05	-	< 0.05	-	-
Fluorene	mg/kg	0.05	MCERTS	-	< 0.05	-	< 0.05	-	-
Phenanthrene	mg/kg	0.05	MCERTS	-	< 0.05	-	< 0.05	-	-
Anthracene	mg/kg	0.05	MCERTS	-	< 0.05	-	< 0.05	-	-
Fluoranthene	mg/kg	0.05	MCERTS	-	< 0.05	-	< 0.05	-	-
Pyrene	mg/kg	0.05	MCERTS	-	< 0.05	-	< 0.05	-	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	< 0.05	-	< 0.05	-	-
Chrysene	mg/kg	0.05	MCERTS	-	< 0.05	-	< 0.05	-	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	< 0.05	-	< 0.05	-	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	< 0.05	-	< 0.05	-	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	< 0.05	-	< 0.05	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	< 0.05	-	< 0.05	-	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	< 0.05	-	< 0.05	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	< 0.05	-	< 0.05	-	-

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	-	< 0.80	-	< 0.80	-	-
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	8.8	-	6.2	-	-
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	-	0.86	-	0.78	-	-
Boron (water soluble)	mg/kg	0.2	MCERTS	-	1.5	-	0.4	-	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	< 0.2	-	< 0.2	-	-
Chromium (hexavalent)	mg/kg	1.2	NONE	-	< 1.2	-	< 1.2	-	-
Chromium (III)	mg/kg	1	NONE	-	17	-	16	-	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	17	-	17	-	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	26	-	20	-	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	12	-	12	-	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	< 0.3	-	< 0.3	-	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	36	-	14	-	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-	-
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	-	20	-	21	-	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	56	-	34	-	-

Analytical Report Number: 22-55459

Project / Site name: Stopes Road

Lab Sample Number				2259463	2259464	2259465	2259466	2259467	2259468
Sample Reference				TANK	TANK	TANK	TANK	TANK	TANK
Sample Number				V1	V2	V3	V4	V5	V6
Depth (m)				2.85	2.0m	2.85	2.50	3.50	3.50
Date Sampled				27/04/2022	27/04/2022	27/04/2022	28/04/2022	28/04/2022	28/04/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status						

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	< 1.0	3.2	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	5.1	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	14	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 _{HS_1D_AL}	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC16 - EC35 _{EH_CU_1D_AL}	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic > EC35 - EC44 _{EH_CU_1D_AL}	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS_1D_AL}	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (EC5 - EC44) _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10	< 10

TPH-CWG - Aromatic >EC5 - EC7 _{HS_1D_AR}	mg/kg	0.001	MCERTS	< 0.001	0.003	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 _{HS_1D_AR}	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 _{HS_1D_AR}	mg/kg	0.001	MCERTS	< 0.001	0.019	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic > EC35 - EC44 _{EH_CU_1D_AR}	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS_1D_AR}	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC44) _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10	< 10

TPH Total C5 - C44 _{EH_CU+HS_1D_TOTAL}	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10	< 10
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U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 22-55459

Project / Site name: Stopes Road

Lab Sample Number				2259469	2259470	2259471	2259472
Sample Reference				TANK	TANK	TANK	TANK
Sample Number				V7	V8	V9	V10
Depth (m)				3.50	2.50	2.50	3.50
Date Sampled				28/04/2022	28/04/2022	28/04/2022	28/04/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	13	17	13	13
Total mass of sample received	kg	0.001	NONE	0.3	0.3	0.3	0.3

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	-
Asbestos Analyst ID	N/A	N/A	N/A	DBU	DBU	DBU	N/A

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	6.8	7.5	7.8	-
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.016	0.16	0.023	-
Fraction Organic Carbon (FOC) Automated	N/A	0.001	MCERTS	0.011	0.0097	0.011	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	< 0.80	-
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	7.1	9.4	9.4	-
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.89	1.1	0.96	-
Boron (water soluble)	mg/kg	0.2	MCERTS	0.3	1.9	1.2	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	-
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2	-
Chromium (III)	mg/kg	1	NONE	18	22	17	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	19	23	17	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	24	27	25	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	12	10	13	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	0.3	< 0.3	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	28	23	21	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	22	25	21	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	53	50	48	-

Analytical Report Number: 22-55459

Project / Site name: Stopes Road

Lab Sample Number				2259469	2259470	2259471	2259472
Sample Reference				TANK	TANK	TANK	TANK
Sample Number				V7	V8	V9	V10
Depth (m)				3.50	2.50	2.50	3.50
Date Sampled				28/04/2022	28/04/2022	28/04/2022	28/04/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 _{HS_1D_AL}	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC16 - EC35 _{EH_CU_1D_AL}	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic > EC35 - EC44 _{EH_CU_1D_AL}	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS_1D_AL}	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (EC5 - EC44) _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	< 10	< 10	< 10	< 10

TPH-CWG - Aromatic >EC5 - EC7 _{HS_1D_AR}	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 _{HS_1D_AR}	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 _{HS_1D_AR}	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic > EC35 - EC44 _{EH_CU_1D_AR}	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS_1D_AR}	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC44) _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	< 10	< 10	< 10	< 10

TPH Total C5 - C44 _{EH_CU+HS_1D_TOTAL}	mg/kg	10	NONE	< 10	< 10	< 10	< 10
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U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number : 22-55459

Project / Site name: Stopes Road

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2259463	TANK	V1	2.85	Grey clay with gravel.
2259464	TANK	V2	2.0m	Grey clay with gravel.
2259465	TANK	V3	2.85	Grey clay with gravel.
2259466	TANK	V4	2.5	Grey clay with gravel.
2259467	TANK	V5	3.5	Grey clay with gravel.
2259468	TANK	V6	3.5	Grey clay with gravel.
2259469	TANK	V7	3.5	Grey clay with gravel.
2259470	TANK	V8	2.5	Grey clay.
2259471	TANK	V9	2.5	Brown clay with gravel.
2259472	TANK	V10	3.5	Brown clay with gravel.

Analytical Report Number : 22-55459

Project / Site name: Stopes Road

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
TPH Chromatogram in Soil	TPH Chromatogram in Soil.	In-house method	L064-PL	D	NONE
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS

Analytical Report Number : 22-55459

Project / Site name: Stopes Road

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Fraction Organic Carbon FOC Automated	Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method	L009	D	MCERTS
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry.	In-house method	L080-PL	W	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30°C.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
-	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total



Site/Department	Stopes Road		
Contract Number	808		
Site Reference No	MS 10	Revision	
Date	09.06.2022	Page No	1 of 2

Outline Method Statement

Activity/Title: Excavation of Hotspot 3 Soils Containing Asbestos

This method statement is to be read in conjunction with the following site Risk Assessments:

RA023 – Excavation

RA026 – 360 excavator tracked

RA029 – Forward/side tipping dumper

RA035 – Mechanically handling asbestos containing soils (ACS) – excavation, transport and stocking

GENERAL REQUIREMENTS:

Employees: Plant Operative
General Forman
VHE Environmental Engineer

All personnel employed on this activity shall be equipped with the relevant PPE. The minimum requirements are hard hats, safety boots, type 5/6 disposable overalls and FFP3 dust masks. Dust masks must be face fitted to operatives before works are undertaken. Ear protection is available as necessary. All personnel will be required to undertake a site induction before they commence work on the site. On completion of the works, disposable overalls and masks will be bagged up and placed in with the ACS.

Task briefings and toolbox talks will be carried out to ensure that all personnel are aware of the working methods and risks associated with them.

A designated quarantined stockpile area will be set up to separate the ACS and allow easy collection/disposal.

Plant: 360° Excavator
Water Bowser

Preamble

This method statement outlines the methods and procedures employed to excavate Hotspot 3. The excavation areas contain asbestos in soils, which must be removed. This is estimated from RO12 in the previous ground investigation to be an area of 5mx5mx0.5m.

Services

No services are shown on utility plans in the excavation area. The work are will be scanned with a CAT before works are undertaken. The excavation will be supervised by a banksman who will remain vigilant for any signs of services (sand cover, warning tape etc.)

Methodology

- The site engineer is to mark out the area to be excavated (5m x 5m grid around RO12).
- The area will be scanned with a CAT to identify any unexpected services within the area.



VHE CONSTRUCTION plc
Quality Procedure

Site/Department	Stopes Road		
Contract Number	808		
Site Reference No	MS 10	Revision	
Date	09.06.2022	Page No	2 of 2

- Prior to commencing the works a specialist asbestos air monitoring contractor shall set up both background monitors up and down wind of the excavation area as well as personal monitors on key persons involved in the task, i.e. excavator operation and dumper driver.
- The excavator shall remove the tarmac hardstanding. This is likely to require breaking out. If this is the case, the area will be dampened down first to avoid any fibres becoming airborne.
- Prior to excavation it must be ensured that the soils containing asbestos are damp and not likely to release fibres. Where the materials are dry the water bowser will be used to dampen down.
- The excavator shall remove the top 500mm of material, the ground investigation conducted by Hydrock identified asbestos cement at a depth of 0.2m.
- The stockpile will be formed in a safe location, within the vicinity of the hotspot.
- The excavator will move material directly to the stockpile area and deposit the material on top of the visqueen.
- Once 500mm of has been removed from the area, the formation will be inspected to identify if any visible fragments of asbestos remain, if they are still present further excavation will be undertaken as detailed above until there no more visible asbestos present.
- Where no further visible asbestos is present and the excavation is at least 500mm deep the works will be deemed complete.
- Where required the excavation sides are to be battered back to suitable angle. If this is not possible, the excavation will be fenced off using heras fencing.
- The stockpile will be sealed by the excavator and sampled for offsite disposal. Once this has been completed, the stockpile will be covered in visqueen to minimise airborne fibres. The visqueen will be weighed down.
- During the excavation works cognizance is to be taken to the wind direction. Where ever possible those involved with the excavation works are to stand upwind.

**Approved
by:**

S Gledhill (Sub Agent)

(Construction Director/Contracts Manager/Site Agent)

CF 6.1 Appendix D

	VHE CONSTRUCTION PLC Safety, Health and Environmental Risk Assessment		Site/Department	Stopes Road
			Contract Number	808
			Site Record No	RA023
			Date:	12/05/2022

Activity/Process:	Excavation
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Persons & Property at Risk:	Site personnel, residents, visitors, general public	Pathway/Receptor at Risk of Pollution:	Neighbours, highway, ecology	Resource at Risk / Effect:	Gas Oil
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IDENTIFY SAFETY, POLLUTION AND RESOURCE HAZARDS BY USE OF COLOUR. IF USING A BLACK & WHITE PRINTER PREFACE POLLUTION WITH P AND RESOURCES WITH R

Hazard / Aspect	Potential Harm, Injury / Effect	Consequence	Probability	Score	Potential Risk	Precautions / Controls Measures to Reduce the Risk / Impact	PPE and Comments	Consequence	Probability	Score	Residual Risk
Plant / pedestrian falls from height to excavation	Serious personal injury/ drowning/ plant damage	4	3	12	HIGH	Install suitable secure barriers / fencing to protect from pedestrian access. Establish bunds / vehicle stops on access roads and tipping edges to protect vehicles from accessing unstable areas. Provide warning notices where appropriate.	Barriers, signage	4	1	4	LOW
Collision with plant / pedestrian	Serious personal injury/ plant damage	5	3	15	HIGH	Excavator driver to be in control of the excavation area and operation. Do not allow pedestrians within the work area. Apply traffic controls to vehicles allowed within the area, e.g. speed, access, and egress arrangements. All personnel instructed on the arrangement by the supervisor.		5	1	5	LOW
Contaminated material./ gases	Poisoning through inhalation, Skin absorption. Odour production	4	3	12	HIGH	Analyse material prior to work COSHH assessment. No smoking, drinking, eating. Safe systems of work to maintain a safe distance from the material. Use of appropriate PPE. Ensure area is well ventilated. There may be tarry material encountered during the works so good personal hygiene must be observed.		4	1	4	LOW
Damage to underground or overhead services	electrocution, explosion, leakage, damage to health property and plant, disconnection of services	5	3	15	HIGH	Obtain service plans, permits from NGG etc if required. CAT scan and hand dig to locate services. Protect services from damage using fencing, warning signs etc.		5	1	5	LOW
Soft Ground	CRUSHING, DEATH. PLANT, EQUIPMENT & PROPERTY DAMAGE	4	3	12	HIGH	Safe system of work. Keep plant away from unstable excavation faces. Stop bunds when tipping. Use suitable plant for the task being undertaken. Observe the weather and ground conditions. If the ground is too wet and slippery then the work should be suspended.	Close monitoring of ground conditions, competent operators	4	1	4	LOW
Unstable excavation sides	Collapse of excavation, personal injury/ plant damage	5	3	15	HIGH	No entry allowed into deep or unstable excavations unless necessary and only if competently supported. Pre entry and regular inspection made by competent persons. Maintain a safety barrier away from the edge of excavation faces. Do not stockpile material close to the excavation edge	Fencing, inspection, supports	5	1	5	LOW

Assessor Name:	P Dews	Date Reviewed & Comments:	ALL PERSONNEL INVOLVED MUST BE BRIEFED ON THE HAZARDS AND PRECAUTIONS. INCLUDE OTHER RELATED ASSESSMENTS, METHOD STATEMENT AND EMERGENCY PLANS.		Score Risk Rating 1 to 5 LOW 6 to 10 MEDIUM 11 to 25 HIGH
Assessor Signature:					

Are all residual risks low?	Yes ☒ No ☐	If No Contracts Manager Approval Required.	Approved by:	Date:	
VIMS Reference		MP015 Form 04	Issue No: 04	Issue Date: 25/04/2018	Page 1 of 1

	VHE CONSTRUCTION PLC		Site/Department	Stopes Road
	Safety, Health and Environmental Risk Assessment		Contract Number	808
			Site Record No	RA026
			Date:	12/05/2022

Activity/Process:	360° Excavator Tracked.	
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Persons & Property at Risk:	Driver, site staff, operatives and visitors.	Pathway/Receptor at Risk of Pollution:	Enter site specific	Resource at Risk / Effect:	Fuel Usage, atmosphere
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IDENTIFY SAFETY, POLLUTION AND RESOURCE HAZARDS BY USE OF COLOUR. IF USING A BLACK & WHITE PRINTER PREFACE POLLUTION WITH P AND RESOURCES WITH R

Hazard / Aspect	Potential Harm, Injury / Effect	Consequence	Probability	Score	Potential Risk	Precautions / Controls Measures to Reduce the Risk / Impact	Training, PPE or Comments	Consequence	Probability	Score	Residual Risk
Overturning	Major or Fatal Injury.	5	3	15	HIGH	Machine operators to keep within stipulated speed limits. Keep site haul roads clear and well maintained. Minimise work on steep gradients where possible. Work on wet, rocky or frozen gradients can prove hazardous; the tracks, on such ground, can cause the machine to slide out of control. When traveling, the excavator boom should be kept at its lowest possible position to allow maximum machine stability. Seat belts fitted, in good order and worn. Audible or visual overload warning system fitted and operational Roll Over Protection (ROPS) and Falling Objects Protection (FOPS) fitted. Dangerous overhangs must not be created on a high work face. The tracks of the machine should be positioned at 90 deg. To the workface to enable quick withdrawal, if necessary. A workface below the level of the machine must not be undercut so as to affect the stability of the machine.	Driver to have full site induction before starting work, signed risk assessment or permit and daily site briefing. CPCS A58a or A59a or similar approved.	5	1	5	LOW
Collision with people & plant	Major or Fatal Injury	5	3	15	HIGH	Strict compliance with the site traffic management plan . 360 deg visibility aids in place and checked, recommended use of wing mirrors, both sides and CCTV fitted to rear of unit. Flashing beacon and reversing alarm fitted, working and audible at 10m. Persons do not approach the machine unless the operator signals to them to approach. (Thumbs Up) and ensure the engine is turned off when the driver has dismounted from the vehicle.. unauthorised persons excluded from work area if possible, "blindside" working procedure implemented. Provision of high visibility clothing for all persons on site. Ensure that, when the machine is being operated in confined places, or near, other site personnel, there is clearance for the tail swing. If it is necessary for anyone to go into the machines working radius whilst it is working, then the machine operator must be made aware by signals or other means (Thumbs Up). No excavator bucket or load should be slewed directly over personnel or vehicles cabs. Vehicles should be loaded over the side or rear of the body. A large excavator must not be permitted to travel in a confined area, or around people, without a banksman to guide the driver, who should have the excavator attachment close to the machine and with the bucket just clear of the ground. Audible or visual overload warning system fitted and operational	Tool Box Talks on Thumbs up and Blindside working. Risk assessment, permit to work and daily briefings to include work with excavators.	5	1	5	LOW

Poor maintenance and defects	Major or Fatal Injury	5	3	15	HIGH	Machine to be subject to a delivery safety inspection. Site supervisor to verify the inspection by carrying out a visual inspection and completing and signing the inspection sheet on delivery to site. All defects and deficiencies to be corrected before the machine is used. If defects become apparent during use the machine is to stop working until rectified. Operators to carry out a safety check of the machine daily and record their findings on Plant Inspection Checklist. Foremen to check the checklists at the end of each week. Defects to be reported to the hire company immediately. Competent engineers to carry out maintenance and tests in accordance with a formal maintenance regime. Copies of upto date certification and inspection documentation to be held on site		5	1	5	LOW
Contact with moving machinery	Minor or Major Injury	5	3	15	HIGH	Provision of suitable guards. Guards may only be removed when the machine is isolated and any residual energy released. Provision of isolation switch and key. The key to be in the possession of the person undertaking the work.		5	1	5	LOW
Quick Hitch Operation and attachments.	Major or Fatal Injury.	5	3	15	HIGH	Ensure that all manual and remote locking devices for quick hitch systems are fitted and secured in position at all times. Ensure that the driver is trained on the operation of the type of quick hitch fitted. The quick hitch and any attachments should be subject to the same certification, maintenance and inspection regime as the excavator. The driver must be competent and experienced to fit and operate any attachments required, e.g. hammer.		5	1	5	LOW
Slips or falls while entering & exiting cab.	Minor or Major Injury	4	3	12	HIGH	Suitable access steps and handholds to be fitted to the machine to allow three points of contact at all times. The steps, cab and floor to be kept clean and free from debris.		5	1	5	LOW
Incorrect use or operation of machine.	Major or Fatal Injury	5	3	15	HIGH	Site supervisor to be competent in the correct use and management of site specific and general operations. Competent operators in receipt of a valid Certificate of Training Achievement qualification. Safety signs and instructions displayed and/or available.	SMSTS, SSSTS, CPCS or similar approved	5	1	5	LOW
Lifting Operations.	Major or Fatal Injury	5	3	15	HIGH	Six month thorough examination on lifting accessories Audible or visual overload warning system fitted and operational Certified lifting point required for all lifting duties SWL to be clearly marked on all lifting points, lifting/load diagrams to be displayed. Lifting operations to be controlled by a trained banksman/slinger. A machine specific lifting duty sheet, lift plan and risk assessment If lift and carry duties to be undertaken specific risk assessment to be completed taking into account manufacturer's instructions.	Operator trained in how to use the excavator as a crane. Lift plan and/or permit to lift must be briefed and understood. Operator shall be trained in how to use specific lifting attachments.	5	1	5	LOW
Overhead cables or obstructions	Major or Fatal Injury	5	3	15	HIGH	Height restrictors with indication on machine. Health and Safety Executive's GS6 avoidance of danger from overhead electric power lines must be followed.	Permit to work in place	5	1	5	LOW

Underground Services	Major or Fatal Injury	5	3	15	HIGH	No mechanical excavation within 500mm of services or more if required by service owner. Banksman in place at all times when services present.	Permit to work in place	5	1	5	LOW
Hazardous Substances	Minor Injury or Industrial dermatitis.	4	3	12	HIGH	Good personal Hygiene, PPE and washing facilities available.	COSHH assessment available and briefed. PPE provided, oil resistant gloves and overalls.	4	1	4	LOW
Noise	Industrial deafness	4	3	12	HIGH	Excavator specific noise assessment in place for operator and the surroundings. Hearing protection zones established	Ear protection. Noise zone safety briefing	4	1	4	LOW
Security	Minor or Major Injury	5	3	15	HIGH	Vandal guards and locking caps and covers. Machine immobilized (isolation switch and key removed) when left unattended. Obey site rules for parking in designated areas		5	1	5	LOW
Fuel or oil spills and leaks.	Pollution of water courses or ground water.	5	3	15	HIGH	Refueling only in designated area by competent persons. Machine checked and maintained regularly to prevent leaks and hose damage. A suitable spill kit will be available either on the machine or immediately adjacent to the work area.		5	1	5	LOW
Excessive fuel usage and emissions.	Depletion of resources and atmospheric pollution.	4	3	12	HIGH	Use newest model of machine available with up to date technology. Machine checked and maintained regularly.		4	1	4	LOW
Noise	Nuisance to neighbours	3	4	12	HIGH	Agree working hours before works start. Use monitoring stations at site boundary		3	1	3	LOW
Dust	Nuisance to neighbours	3	4	12	HIGH	Use monitoring stations at site boundary. Damp down work areas and site roads.		3	1	3	LOW
Site Specific Hazards and Aspects											

Assessor Name:	P Dews
Assessor Signature:	

Date Reviewed & Comments: Revised
28.02.17, blindsided added.
S M Losing

ALL PERSONNEL INVOLVED MUST BE BRIEFED ON THE HAZARDS AND PRECAUTIONS. INCLUDE OTHER RELATED ASSESSMENTS, METHOD STATEMENT AND EMERGENCY PLANS.



Score Risk Rating
1 to 5 LOW
6 to 10 MEDIUM
11 to 25 HIGH

Are all residual risks low?	Yes ☒ No ☐	If No Contracts Manager Approval Required.	Approved by:		Date:	
VIMS Reference		MP015 Form 04	Issue No: 04		Issue Date: 25/04/2018	Page 1 of 1

 VHE CONSTRUCTION PLC Safety, Health and Environmental Risk Assessment				Site/Department: Stopes Road Contract Number: 808 Site Record No: RA029 Date: 12/05/2022							
Activity/Process:		Forward/Side Tipping Dumper.									
Persons & Property at Risk:	Driver, site staff, operatives and visitors.	Pathway/Receptor at Risk of Pollution:	Enter site specific	Resource at Risk / Effect: Fuel Usage, atmosphere							
IDENTIFY SAFETY, POLLUTION AND RESOURCE HAZARDS BY USE OF COLOUR. IF USING A BLACK & WHITE PRINTER PREFACE POLLUTION WITH P AND RESOURCES WITH R											
Hazard / Aspect	Potential Harm, Injury / Effect	Consequence	Probability	Score	Potential Risk	Precautions / Controls Measures to Reduce the Risk / Impact	Training, PPE or Comments	Consequence	Probability	Score	Residual Risk
Overturning	Major or Fatal Injury.	5	3	15	HIGH	Machine operators to keep within stipulated speed limits. Keep site haul roads clear and well maintained. Minimise work on steep gradients where possible. Wheels/ tyres in good order. Seat belts fitted, in good order and worn. Roll Over Protection (ROPS) fitted. Provide wheel stops at a sufficient distance from the edges of excavations, spoil heaps pits, etc. Only load when the dumper is level and the handbrake engaged. Only tip loads when the vehicle is stopped with the parking brake on and out of gear. Ensure the ground is firm and level. Ensure the loads are evenly distributed in the body. Be aware of significant amounts of material, which have stuck in the skip body, which may cause instability during tipping operation. Ensure the skip body is lowered as soon as the tipping operation is complete and before the dumper moves away.	Driver to have full site induction before starting work, signed risk assessment and daily site briefing. CPCS A09a or A09b or similar approved.	5	1	5	LOW
Collision with people & plant	Major or Fatal Injury	5	3	15	HIGH	Strict compliance with the site traffic management plan and stipulated speed limits. 360 deg visibility aids in place and checked. Flashing beacon and reversing alarm fitted, working and audible at 10m. Persons do not approach the machine unless the operator signals to them to approach. (Thumbs Up) and ensure the engine is turned off when the driver has dismounted from the vehicle. Regular brake tests to be carried out to manufacturers specification or similar approved and recorded. If site-specific conditions necessitate increased/abnormal brake use e.g. continuous use of steep ramps, then implement a more rigorous testing regime. At all times the machine's braking system must be able to operate safely on the gradient on which it will be used and its parking brake capable of holding it stationary (where appropriate, fully loaded) on the steepest incline that the machine may be parked. Before going to work for the first time and at the start of every shift, the machine shall have its brakes tested. Pedestrians excluded from work area by solid barriers if possible and provision of high visibility clothing for all persons on site. Dumper skip not over loaded so to restrict forward vision. Plant, equipment e.g. excavator buckets or materials not to be carried if forward view restricted.		5	1	5	LOW
Poor maintenance and defects	Major or Fatal Injury	5	3	15	HIGH	Machine to be subject to a delivery safety inspection. Site supervisor to verify the inspection by carrying out a visual inspection and completing and signing the inspection sheet on delivery to site. All defects and deficiencies to be corrected before the machine is used. If defects become apparent during use the machine is to stop working until rectified. Operators to carry out a safety check of the machine daily and record their findings on Plant Inspection Checklist. Foremen to check the checklists at the end of each week. Defects to be reported to the hire company immediately. Competent engineers to carry out maintenance and tests in accordance with a formal maintenance regime. Copies of upto date certification and inspection documentation to be held on site.		5	1	5	LOW
Contact with moving machinery	Minor or Major Injury	5	3	15	HIGH	Provision of suitable guards. Guards may only be removed when the machine is isolated and any residual energy released. Provision of isolation switch and key. The key to be in the possession of the person undertaking the work. The operator to be trained in the hazard from articulation of the front unit.		5	1	5	LOW
Falling or Flying objects.	Minor or Major Injury	5	4	20	HIGH	Driver to dismount and stand at a safe distance during loading.		4	1	4	LOW
Slips or falls while mounting or dismounting.	Minor or Major Injury	5	3	15	HIGH	Suitable access steps and handholds to be fitted to the machine to allow three points of contact at all times. The steps and floor to be kept clean and free from debris.		5	1	5	LOW
Incorrect use or operation of machine.	Major or Fatal Injury	5	3	15	HIGH	Site supervisor to be competent in the correct use and management of site specific and general operations. Competent operators in receipt of a valid Certificate of Training Achievement qualification. Safety signs and instructions displayed and/or available.	SMSTS, SSSTS, CPCS or similar approved	5	1	5	LOW
Towing	Minor or Major Injury	5	3	15	HIGH	Plant being towed to be subject to the same checks and maintenance regime as the Dumper. Pay more attention to the towing hitch and pin, check regularly during the day to ensure pin is secure and hitch is not damaged.		5	1	5	LOW
Noise	Industrial deafness	4	3	12	MEDIUM	Noise assessment in place for operator and the surroundings.	Ear protection	4	1	4	LOW
Security	Minor or Major Injury	5	3	15	HIGH	Machine immobilized (isolation switch and key removed) when left unattended. Obey site rules for parking in designated areas		5	1	5	LOW
Fuel or oil spills and leaks.	Pollution of water courses or ground water.	5	3	15	HIGH	Refueling only in designated area by competent persons. Machine checked and maintained regularly to prevent leaks and hose damage. A suitable spill kit will be available either on the machine or immediately adjacent to the work area.		5	1	5	LOW
Excessive fuel usage and emissions.	Depletion of resources and atmospheric pollution.	4	3	12	HIGH	Use newest model of machine available with up to date technology. Machine checked and maintained regularly.		4	1	4	LOW

Noise	Nuisance to neighbours	3	4	12	Agree working hours before works start. Use monitoring stations at site boundary.	3	1	3	L O W
Dust	Nuisance to neighbours	3	4	12	Use monitoring stations at site boundary. Damp down work areas and site roads.	3	1	3	L O W
Site Specific Hazards and Aspects									

Assessor Name: P Dews

Assessor Signature:

Date Reviewed & Comments: 03/10/17.
Loading of skip added.

ALL PERSONNEL INVOLVED MUST BE BRIEFED ON THE HAZARDS AND PRECAUTIONS. INCLUDE OTHER RELATED ASSESSMENTS, METHOD STATEMENT AND EMERGENCY PLANS.



Score Risk Rating

1 to 5 LOW

6 to 10 MEDIUM

11 to 25 HIGH

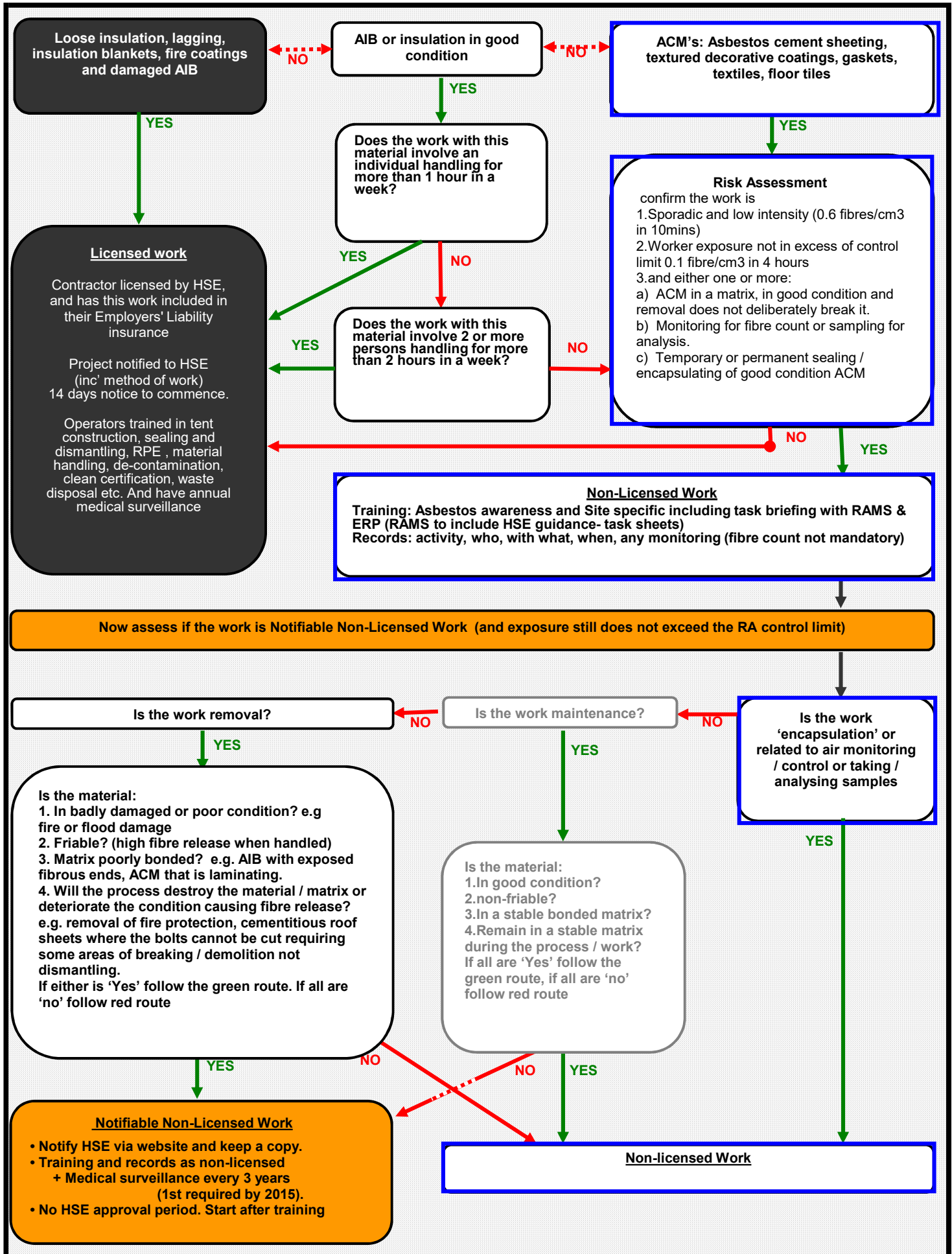
Are all residual risks low?	Yes ☒ No ☐	If No Contracts Manager Approval Required.	Approved by:	Date:
VIMS Reference	MP015 Form 04	Issue No: 04	Issue Date: 25/04/2018	Page 1 of 1



Control of Asbestos Regulations 2012
Flowchart to Identify the Category of Work with Asbestos

Site:	Stopes Road
Contract No:	808
Date & Reference	09/06/2022

Working with Fibrous Asbestos, Asbestos Insulation Board (AIB) and Asbestos Containing Materials (ACM)





VHE CONSTRUCTION PLC

Safety, Health and Environmental Risk Assessment

Site/Department	Stopes Road
Contract Number	808
Site Record No	RA035
Date:	09.06.2022

Activity/Process: Mechanically handling Asbestos Containing Soils (ACS) - excavation, transport and stocking

Persons & Property at Risk:	Operatives, Operators, Supervisors and Observers	Pathway/Receptor at Risk of Pollution:	Cross contamination, fly tipping	Resource at Risk / Effect:	
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IDENTIFY SAFETY, POLLUTION AND RESOURCE HAZARDS BY USE OF COLOUR. IF USING A BLACK & WHITE PRINTER PREFACE POLLUTION WITH P AND RESOURCES WITH R

Hazard / Aspect	Potential Harm, Injury / Effect	Consequence	Probability	Score	Potential Risk	Precautions / Controls Measures to Reduce the Risk / Impact	PPE and Comments	Consequence	Probability	Score	Residual Risk
Unexpected Discovery of Suspect Asbestos	All asbestos types are Class1 Carcinogens. Cumulative exposure can result in cancer affecting organ function (not only lungs), causing death.	5	5	25	HIGH	Stop works - do not disturb, move persons away from the area. Inform a site supervisor and establish the responsible site person Richard Hargreaves/Seb Gledhill/ Eddie Gillespie. Assess if PPE is required for the following actions Visual check - what does it look like, is it identifiable, establish condition. Using the appended flow chart establish if the work is LW or NLW Wash down excavator / equipment after use		5	1	5	LOW
Substances Asbestos fibres from loose fibrous asbestos materials	All asbestos types are Class1 Carcinogens. Cumulative exposure can result in cancer affecting organ function (not only lungs), causing death.	5	5	25	HIGH	Working with fibrous asbestos materials e.g. Loose insulation, lagging, insulation blankets, fire coatings and damaged AIB in poor or friable condition will release fibres above control limits of Asbestos at Work Regulations 2012 i.e. 0.1 fibres cubic per centimetre (f/cm3) and is considered licensable work which may only be carried out by licensed contractors registered with the HSE. Such areas must be segregated and protected from disturbance by humans and natural elements. The method of work is subject to HSE notification and approval (14 days) before commencement. The method of work is likely to include PPE, RPE and de-contamination procedures, tent construction, testing the seal, air flow and cleaning as work proceeds and dismantling; and monitoring for fibre release during stripping, clearance (before tent dismantling) and reassurance monitoring (before hand back as clean) Workers are subject to annual health monitoring which includes lung function testing. Removal from the licensed activity area is in double sealed plastic bags. Further storage in sealed and labelled skips.	Licensable work is not carried out by VHE Employees or VHE hired Agency workers. Licensed Contractors will be appointed and have current and appropriate insurance, and members of ARCA or similar Asbestos contractor organisation.	5			Subject to Subcontractor's assessment
Substances Asbestos containing materials (ACM)	All asbestos types are Class1 Carcinogens. Cumulative exposure can result in cancer affecting organ function (not only lungs), causing death.	5	4	20	HIGH	Firstly, Identification that the activity is non-licensable : With reference to personal, colleague and industry experience and data the removal of these materials in this environment with the control measures (below) in this assessment and associated method statement are: 1. Sporadic (not regular) and low intensity (not exceeding 0.6 fibres/cm3 in 10mins) 2. Asbestos Fibres in the air will not exceed the CAR 2012 control limit 0.1 fibre/cm3 in 4 hours 3. a) The ACM is in a bonding matrix, in good condition and mixed with soils. The removal does not deliberately break the matrix. b) Sampling for analysis is also involved. Fibre release will be monitored in accordance with HSG248 during the first day of operations to confirm that fibre release is below the control and low intensity thresholds. Secondly, Identification whether the non-licensed work is or is not notifiable non-licensed work (NNLW): At commencement the ACM is already broken from its original sheet / tile form and also in a soil matrix which will be maintained in a damp condition. And it is: 1. In a stable condition. 2. Not friable. 3. In a stable matrix and additional mixed with soils that is maintained in a dampened state. 4. The process will not knowingly destroy / deteriorate condition of the ACM matrix. If deterioration of the ACM matrix develops work will cease, the area made safe and the activity re-assessed. Now take the answers forward to the flowchart and identify the category of this work with asbestos. Process control measures for non-licensable and NNLW activities: • Identify from investigation data and visually the extent of ACM contamination, fence / segregate to prevent unauthorised access and label the area. • Dust suppression / soil dampening available to mist the soils. Do not use high pressure water direct on the area. • Operatives remain upwind of the process, wherever possible. Consider the use of a windsack, weather station or met office data to determine wind direction. • Operators to remain in cab with door and windows closed while in the asbestos area. • De-contamination procedures to be adhered with including segregation of the clean / dirty areas, removing dirty clothing and footwear to ensure no transfer of mud, dirt or dust to the clean area. • Training to include 'asbestos awareness', and these control measures and actions. • PPE supply, use and maintenance [reference HSE asbestos Essentials em6] □ Hooded, disposable overalls Type 5 (BS EN ISO 139821) paper okay where non-licensable, but 'Tyvek' if required to investigate fibre release – <u>never use cotton</u> □ Footwear – disposable wellingtons i.e. no laces. Beware of slip hazard if using overshoes. □ Disposable plastic or rubber gloves - full hand cover. • RPE and Face fit Testing [em6] □ Recommended, not mandatory: Assigned Protection Factor of 20 or more; disposable respirator to EN149 (type FFP3) or half mask respirator (to standard EN140) with P3 filter; or semi disposable respirator (to EN405) with P3 filter.	Experience and monitoring of mechanically handling and /or picking of ACM's in its original matrix and in soils confirm fibre release is below control limit and is low intensity. Asbestos awareness training and site specific training (including the development of this assessment, associated risk assessments, method statements and emergency response plans) NNLW is not carried out by VHE Employees or VHE hired Agency workers. If the category assessment chart identifies NNLW then work will stop, the area segregated and secured and a Subcontractor appointed. Note: NNLW is notifiable to the HSE and Operatives to have health surveillance on a 3 year cycle	5	1	5	LOW
Waste	Compliance with EPR 2012 and Waste Regs 2011	4	3	12	MEDIUM	Random ACM fragments collected to be stored in sealed, double bagged, labelled and securely stored. Large amounts of soils with ACM stored in segregated and labelled stockpile, dampened and / or covered. Intact ACM sheets (subcontract work) to be stored in a sealed / covered skip and labelled. 1. Asbestos quantification may be required to conform the concentration of asbestos in the ACM is less than 0.1% for disposal as non-hazardous waste. 1. Carriers and disposal facilities to be permitted to transfer and receive such waste. Waste transfer or consignment notes issued and include premises code if hazardous. Wagons to be sheeted before leaving site.		4	1	4	LOW

Assessor Name:	S Gledhill
Assessor Signature:	S Gledhill

Date Reviewed & Comments:	09/06/2022
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ALL PERSONNEL INVOLVED MUST BE BRIEFED ON THE HAZARDS AND PRECAUTIONS. INCLUDE OTHER RELATED ASSESSMENTS, METHOD STATEMENT AND EMERGENCY PLANS.



Score	Risk Rating
1 to 5	LOW
6 to 10	MEDIUM
11 to 25	HIGH

 VHE CONSTRUCTION plc Quality Procedure	Site/Department	Stopes Road		
	Contract Number	808		
	Site Reference No	MS009	Revision	
	Date	JUNE 22	Page No	1 of 3

Method Statement

Activity/Title:	Excavation of Hydrocarbon Impacted Hotspots
This method statement is to be read in conjunction with the following site Risk Assessments: RA012 – Working with contaminated soils RA023 – Excavation RA026 – 360 excavator tracked RA029 – Forward/side tipping dumper TM Plan	
STAFF	Plant Operators Environmental Technician AWP Supervisor
PLANT	13t Excavator 6t forward tipping dumper Water Bowser
GENERAL REQUIREMENTS The General Foreman will ensure all personnel involved in the works are suitably trained, competent and experienced to carry out the work and that all equipment & plant to be used is suitable, tested, calibrated and inspected prior to commencing work. All operatives will undergo a full VHE induction & receive other relevant information when arriving on site. All personnel employed on this activity shall be equipped with the relevant PPE. The minimum requirements for this operation are safety helmet, fluorescent vest/jackets, safety footwear and gloves. Additional PPE will be worn if individual work activities and risk assessments dictate. A permit to work will be issued by the General Foreman, specific for the task, prior to any work commencing. The General Foreman is to ensure all operatives are briefed on the detail of this method statement and the relevant risk assessment. Task briefings will be presented at regular intervals.	
PREAMBLE The previous site investigation has highlighted the presence of two hydrocarbon hotspots; a larger hotspot relating to two historical tanks located in the vicinity of shaft 376407-007 (approximately 8m x 8m x 1.45m and 93m³) and a smaller hotspot located around WS216 (approximately 10m x 8m x 0.75m and 60m³). The following safe system of work will be adopted for the excavation of the smaller hydrocarbon hotspot, located around WS216. The hotspot has been identified between 1.2m to 1.6m bgl	



VHE CONSTRUCTION plc
Quality Procedure

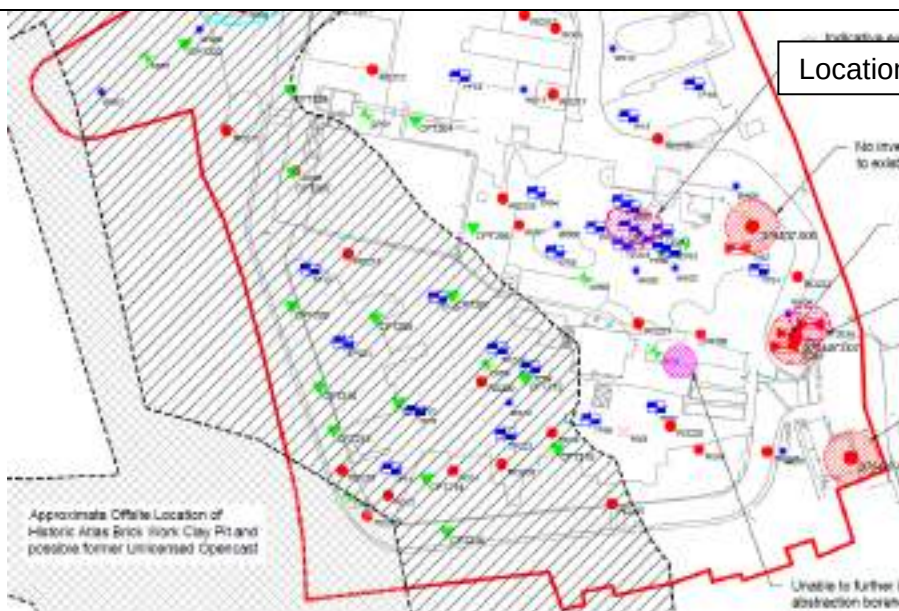
Site/Department	Stopes Road		
Contract Number	808		
Site Reference No	MS009	Revision	
Date	JUNE 22	Page No	2 of 3

- The hotspot location will be set out by the on site engineer.
- Individuals will then be briefed on the Risks and Methods associated with the works and how to undertake the task safely.
- An area for the stockpile is to be selected and visqueen lain down on the ground to provide a barrier between contaminated material and underlying ground.
- Before ground is broken, the area will be CAT scanned for underground services. Service plans obtained from service providers do not show any services in the area of the hotspot. If a service is detected, a member of the VHE site management team is to be consulted. The surrounding material may need to be excavated by hand.
- Under the supervision of a member of the VHE Technology team and a representative from Alan Wood & partners, the 13t excavator will begin excavating the hotspot.
- Clean material located within the top 1.2m (or above level of hotspot) will be excavated and stockpiled in a safe location to the side of the hotspot.
- Once the clean overlying material has been removed, contaminated material will be placed in the 6t dumper. The dumper operative must **not** be sat in the driving seat whilst loading is being undertaken.
- The 6t dumper will then transport the contaminated material to the stockpiling area, following the route depicted by the traffic management plan.
- Once all visually impacted material has been excavated, chemical validation samples will be attained and dispatched for laboratory analysis to confirm all residual contamination has been excavated.
- The sides of the excavation will be battered and the excavation barriered off, this is to allow further excavation if required.
- Once the excavation is safe, the engineer will survey the excavation to provide a base of excavation drawing.
- The stockpile will be sealed, labelled with the relevant EWC code, sampled and analysed for offsite disposal.
- This method statement will be utilised for all other hydrocarbon hotspots identified throughout the works, unless factors dictate a different safe system of work be adopted.



VHE CONSTRUCTION plc
Quality Procedure

Site/Department	Stopes Road		
Contract Number	808		
Site Reference No	MS009	Revision	
Date	JUNE 22	Page No	3 of 3



Changes and Amendments

VHE Construction reserve the right to alter/amend, in consultation with the Principal Designer/Client, the Method of Working as a result of on-going operations.

Prepared by: *S. Gledhill*

Approved by: *S. Gledhill*
(Sub Agent)

CF 6.1 Appendix D

	VHE Construction plc Safety Procedure	Site/Department:	Stopes Road, Bolton
		Contract No:	C 808
		Permit No:	808 / PTD / 007

Permit to Work and/or Break Ground

Activity and Location **Trial Pitting to take classification samples RDC areas 3 + 4**

Information compiled by: **S Gledhill**

Company carrying out the work: **VHE Construction Plc**

VHE Supervisor: **Eddie Gillespie**

1. Are any of these Hazards involved?		Yes	No	2. Initial Hazard Controls		Yes	No	Comments
1	Electric cables - below ground	X	X	Are the services:				If any answers are YES complete section 4.
2	Overhead cables		X	Known?	X			
3	Gas mains/services	X	X	Identified?		X		
4	Water mains/services		X	Possible?				
5	Communication/TV services	X	X	Unknown?				
6	Plant movements	X		Traffic routes/rules planned?	X			TM Plan available
7	Work at height (incl' falls into holes)	X		Handrails etc in place?				Not necessary
8	Work adjacent watercourse		X	Barriers & rescue in place?	X			
9	Deep excavations	X		Safe access & egress?	X			
10	Harmful substances (inc contam' soil & water)	X		COSHH assessments?	X			
11	Unstable ground	X		Monitoring practice?	X			
12	Falsework - ground support, scaffold		X	Inspection practice?	X			
13	Dust or vapours/gases		X	Monitors & PPE in use?	X			
14	Vibration or Noise (>85dB)		X	Monitors & PPE in use?	X			
15	Restricted area or confined space		X	Signage, confined space training	X			
16	Interface with other trades		X	Communication and signage	X			
17	Interface with the public		X	Communication and signage	X			

3. Activity Specific Hazards List greater details to those above and any additional hazards

HV electric cable - not shown to enter RDC area 3 + 4 but remain vigilant
Culvert - not shown to enter RDC area 3 + 4 but remain vigilant
Intermediate pressure gas - along southern boundary.
Excavate to 4.0m bgl to investigate material timpes + obtain samples. Ground may be unstable, stand back from edge of trial pit. DO NOT ENTER EXCAVATION

4. Work Near and Around Live Services		Including work/passage under overhead services, piling, fencing, survey work and enabling work.	
	Yes	No	
Service authorities contacted regarding the location of services and information received on	X		
CAT or Ground Radar survey carried out?	X		
Has the survey being carried out by a trained and competent person?	X		Date of Training 11.02.2020
Is the survey equipment certified and tested?	X		Certificate No.
Have Services been physically located throughout their length and their route clearly marked?		X	
Have Warning signs been erected along the route and barriers and goal posts installed if		X	
Have site Record drawings been marked up and revised if required after survey or location?			Ongoing
Have Working clearances for mechanical plant been confirmed?	X		Horiz: 3m Vert: 1m
Is a Risk assessment and method statement in place stating safe working methods and equipment to be used?	X		Refer to section 5
Have the persons carrying out the works experience of working near live services?	X		
Have all persons affected been fully briefed on the location of services and the safe working methods?	X		No. and Date: 30.05.2022

List here known and possible services that could be encountered.

Intermediate pressure Gas
Not shown in area - HV electric, Culvert - Remain vigilant

If the works to be carried out require excavation near or around underground services a copy of this permit and all related documents must be held by the supervisor carrying out the works, at the work place.

5. Related Documents List any drawings, sketches, risk/COSHH/manual handling assessments and Method statements

Constraints Plan
Traffic Management Plan
Service Plans
MS006

6. Precautionary Measures and PPE List greater details to those above and any additional controls. List PPE

Be vigilant at all times. Unexpected services may be withing area. Use CAT scan.

7. Additional information

8. Permit Issue

Permit Issued by		Start Date/time	Finish Date/time	Permit Received by	
Sign:				Sign:	
Print:	Eddie Gillespie			Print:	
Supervisors daily checks		day/date	day/date	day/date	
insert details and initial if applicable		day/date	day/date	day/date	
Sign:				Sign:	
Print:				Print:	
Supervisors daily checks		day/date	day/date	day/date	
insert details and initial if applicable		day/date	day/date	day/date	
Sign:				Sign:	
Print:				Print:	
Supervisors daily checks		day/date	day/date	day/date	
insert details and initial if applicable		day/date	day/date	day/date	
Sign:				Sign:	
Print:				Print:	
Supervisors daily checks		day/date	day/date	day/date	
insert details and initial if applicable		day/date	day/date	day/date	
Sign:				Sign:	
Print:				Print:	
Supervisors daily checks		day/date	day/date	day/date	
insert details and initial if applicable		day/date	day/date	day/date	

Whoever signs this permit accepts that they understand the hazards and controls and undertake to fully explain them to all personnel involved

IF ANY CHANGE OF CONDITION, HAZARD OR RESOURCE STOP AND INFORM THE PERMIT ISSUER

9. Communication.

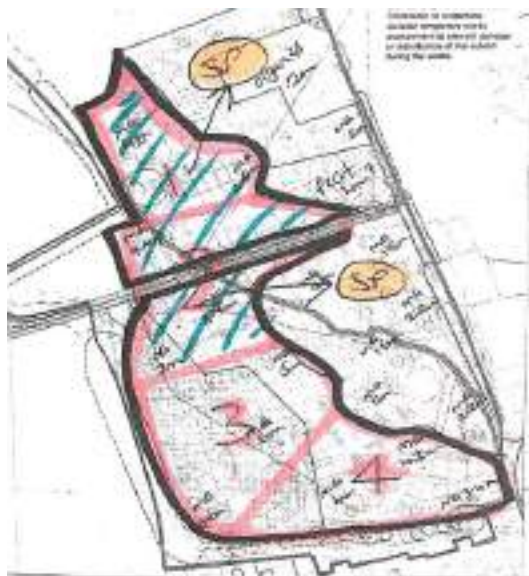
I Confirm that all persons involved in the operation have been briefed in the contents of this permit.

Name:	Date:	Briefing No:
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Permit to be reviewed and re-issued if any conditions change.

10. Permit Return	Work complete* or permit cancelled*	*Delete as applicable
Returned by:	Received by:	Date:
work area is left safe and secure		

VIMS Reference	SP01004 form 01	Issue No: 03	Issue Date: 22/2/2016	Two pages
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	VHE CONSTRUCTION PLC Safety, Health and Environmental Risk Assessment	Site/Department	Stopes Road
		Contract Number	808
		Site Record No	RA012
		Date:	12/05/2022

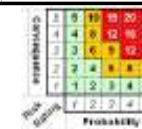
Activity/Process:	Working with Contaminated Soils
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Persons & Property at Risk:	Site personnel, residents, visitors, general public	Pathway/Receptor at Risk of Pollution:	Neighbours, highway, ecology	Resource at Risk / Effect:	
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IDENTIFY SAFETY, POLLUTION AND RESOURCE HAZARDS BY USE OF COLOUR. IF USING A BLACK & WHITE PRINTER PREFACE POLLUTION WITH P AND RESOURCES WITH R

Hazard / Aspect	Potential Harm, Injury / Effect	Consequence	Probability	Score	Potential Risk	Precautions / Controls Measures to Reduce the Risk / Impact	PPE and Comments	Consequence	Probability	Score	Residual Risk
The following general practice on contaminated sites provide protection for all contaminated substances: Good personal hygiene must be in place to obviate any change of ingesting contamination. If affected, medical attention must be sought immediately. Use decontamination facilities correctly. Monitor for workplace exposure limit. Have RPE available. Wear coveralls and gloves. In dusty conditions wear RPE and goggles. In wet condition use waterproof PPE.											
CONTACT WITH SITE OPERATIVES	SKIN ABSORPTION	3	2	6	MEDIUM	Wear coveralls and gloves - plastic/rubber gloves in wet conditions. GOOD PERSONAL HYGIENE. CUTS AND GRAZES TO BE COVERED. Avoid contact with the soils and wash off if any contact is made.	TOOLBOX TALKS, OVERALLS, GLOVES, SAFETY FOOTWEAR	3	1	3	LOW
INHALATION BY SITE OPERATIVES	ASPHYXIATION	4	3	12	HIGH	FFP3 Valved Face Masks are available & must be worn in dry/windy conditions. Dampen excavation areas with water in dry conditions. Cover over excavation areas & stockpiles as soon as practicable & at the end of each shift	FFP3V face masks	4	1	4	LOW
INGESTION	Absorption of contaminants into digestive tract and body	3	3	9	MEDIUM	No smoking , eating or drinking on site, reporting of health disorders to supervisors	Toolbox talks	3	1	3	LOW
TRESPASS	Damage to health - inhalation, contact, ingestion.	3	3	9	MEDIUM	Keep any contaminated material stockpiles inaccessible by placing in a secured area. Keep the working area fenced off, inspected regularly and repair breaches. Cover over excavation areas & stockpiles as soon as practicable & at the end of each shift	Fence site boundary. Monitored CCTV out of hours security	3	1	3	LOW
Movement of materials	Dust release	3	3	9	MEDIUM	Dust suppression to be utilized if required. Stockpiles to be covered. Excavation faces to be sealed when required. Use sheeted disposal wagons. Dust masks for operatives when dust evident.	Dust monitoring. RPE	3	1	3	LOW
Movement of materials	Cross contamination/ mud/water	3	3	9	MEDIUM	Wheels to be cleaned on vehicles if they are dirty. Any spillages are to be swept up. The surface that will be travelled on consists of tarmac or concrete so mud should not be a problem.	Delineated haulage routes, jetwash wagon wheels and road sweeping if necessary. Regular inspection of area beyond site gates.	3	1	3	LOW

Assessor Name:	P Dews	Date Reviewed & Comments:	ALL PERSONNEL INVOLVED MUST BE BRIEFED ON THE HAZARDS AND PRECAUTIONS. INCLUDE OTHER RELATED ASSESSMENTS, METHOD STATEMENT AND EMERGENCY PLANS.
Assessor Signature:			



Score	Risk Rating
1 to 5	LOW
6 to 10	MEDIUM
11 to 25	HIGH

Are all residual risks low?	Yes ☒ No ☐	If No Contracts Manager Approval Required.	Approved by:	Date:	
VIMS Reference	MP015 Form 04	Issue No: 04	Issue Date: 25/04/2018	Page 1 of 1	

	VHE CONSTRUCTION PLC Safety, Health and Environmental Risk Assessment		Site/Department: Stopes Road Contract Number: 808 Site Record No: RA023 Date: 12/05/2022
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Activity/Process:	Excavation
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Persons & Property at Risk:	Site personnel, residents, visitors, general public	Pathway/Receptor at Risk of Pollution:	Neighbours, highway, ecology	Resource at Risk / Effect:	Gas Oil
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IDENTIFY SAFETY, POLLUTION AND RESOURCE HAZARDS BY USE OF COLOUR. IF USING A BLACK & WHITE PRINTER PREFACE POLLUTION WITH P AND RESOURCES WITH R

Hazard / Aspect	Potential Harm, Injury / Effect	Consequence	Probability	Score	Potential Risk	Precautions / Controls Measures to Reduce the Risk / Impact	PPE and Comments	Consequence	Probability	Score	Residual Risk
Plant / pedestrian falls from height to excavation	Serious personal injury/ drowning/ plant damage	4	3	12	HIGH	Install suitable secure barriers / fencing to protect from pedestrian access. Establish bunds / vehicle stops on access roads and tipping edges to protect vehicles from accessing unstable areas. Provide warning notices where appropriate.	Barriers, signage	4	1	4	LOW
Collision with plant / pedestrian	Serious personal injury/ plant damage	5	3	15	HIGH	Excavator driver to be in control of the excavation area and operation. Do not allow pedestrians within the work area. Apply traffic controls to vehicles allowed within the area, e.g. speed, access, and egress arrangements. All personnel instructed on the arrangement by the supervisor.		5	1	5	LOW
Contaminated material./ gases	Poisoning through inhalation, Skin absorption. Odour production	4	3	12	HIGH	Analyse material prior to work COSHH assessment. No smoking, drinking, eating. Safe systems of work to maintain a safe distance from the material. Use of appropriate PPE. Ensure area is well ventilated. There may be tarry material encountered during the works so good personal hygiene must be observed.		4	1	4	LOW
Damage to underground or overhead services	electrocution, explosion, leakage, damage to health property and plant, disconnection of services	5	3	15	HIGH	Obtain service plans, permits from NGG etc if required. CAT scan and hand dig to locate services. Protect services from damage using fencing, warning signs etc.		5	1	5	LOW
Soft Ground	CRUSHING, DEATH. PLANT, EQUIPMENT & PROPERTY DAMAGE	4	3	12	HIGH	Safe system of work. Keep plant away from unstable excavation faces. Stop bunds when tipping. Use suitable plant for the task being undertaken. Observe the weather and ground conditions. If the ground is too wet and slippery then the work should be suspended.	Close monitoring of ground conditions, competent operators	4	1	4	LOW
Unstable excavation sides	Collapse of excavation, personal injury/ plant damage	5	3	15	HIGH	No entry allowed into deep or unstable excavations unless necessary and only if competently supported. Pre entry and regular inspection made by competent persons. Maintain a safety barrier away from the edge of excavation faces. Do not stockpile material close to the excavation edge	Fencing, inspection, supports	5	1	5	LOW

Assessor Name:	P Dews
Assessor Signature:	

Date Reviewed & Comments:

ALL PERSONNEL INVOLVED MUST BE BRIEFED ON THE HAZARDS AND PRECAUTIONS. INCLUDE OTHER RELATED ASSESSMENTS, METHOD STATEMENT AND EMERGENCY PLANS.



Score	Risk Rating
1 to 5	LOW
6 to 10	MEDIUM
11 to 25	HIGH

Are all residual risks low?	Yes ☒ No ☐	If No Contracts Manager Approval Required.	Approved by:	Date:
VIMS Reference		MP015 Form 04	Issue No: 04	Issue Date: 25/04/2018
Page 1 of 1				



VHE CONSTRUCTION PLC

Safety, Health and Environmental Risk Assessment



Site/Department	Stopes Road
Contract Number	808
Site Record No	RA026
Date:	12/05/2022

Activity/Process:	360° Excavator Tracked.
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Persons & Property at Risk:	Driver, site staff, operatives and visitors.	Pathway/Receptor at Risk of Pollution: Enter site specific	Resource at Risk / Effect:	Fuel Usage, atmosphere
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IDENTIFY SAFETY, POLLUTION AND RESOURCE HAZARDS BY USE OF COLOUR. IF USING A BLACK & WHITE PRINTER PREFACE POLLUTION WITH P AND RESOURCES WITH R

Hazard / Aspect	Potential Harm, Injury / Effect	Consequence	Probability	Score	Potential Risk	Precautions / Controls Measures to Reduce the Risk / Impact	Training, PPE or Comments	Consequence	Probability	Score	Residual Risk
Overturning	Major or Fatal Injury.	5	3	15	HIGH	Machine operators to keep within stipulated speed limits. Keep site haul roads clear and well maintained. Minimise work on steep gradients where possible. Work on wet, rocky or frozen gradients can prove hazardous; the tracks, on such ground, can cause the machine to slide out of control. When traveling, the excavator boom should be kept at its lowest possible position to allow maximum machine stability. Seat belts fitted, in good order and worn. Audible or visual overload warning system fitted and operational Roll Over Protection (ROPS) and Falling Objects Protection (FOPS) fitted. Dangerous overhangs must not be created on a high work face. The tracks of the machine should be positioned at 90 deg. To the workface to enable quick withdrawal, if necessary. A workface below the level of the machine must not be undercut so as to affect the stability of the machine.	Driver to have full site induction before starting work, signed risk assessment or permit and daily site briefing. CPCS A58a or A59a or similar approved.	5	1	5	LOW
Collision with people & plant	Major or Fatal Injury	5	3	15	HIGH	Strict compliance with the site traffic management plan . 360 deg visibility aids in place and checked, recommended use of wing mirrors, both sides and CCTV fitted to rear of unit. Flashing beacon and reversing alarm fitted, working and audible at 10m. Persons do not approach the machine unless the operator signals to them to approach. (Thumbs Up) and ensure the engine is turned off when the driver has dismounted from the vehicle.. unauthorised persons excluded from work area if possible, "blindsides" working procedure implemented. Provision of high visibility clothing for all persons on site. Ensure that, when the machine is being operated in confined places, or near, other site personnel, there is clearance for the tail swing. If it is necessary for anyone to go into the machines working radius whilst it is working, then the machine operator must be made aware by signals or other means (Thumbs Up). No excavator bucket or load should be slewed directly over personnel or vehicles cabs. Vehicles should be loaded over the side or rear of the body. A large excavator must not be permitted to travel in a confined area, or around people, without a banksman to guide the driver, who should have the excavator attachment close to the machine and with the bucket just clear of the ground. Audible or visual overload warning system fitted and operational	Tool Box Talks on Thumbs up and Blindsides working. Risk assessment, permit to work and daily briefings to include work with excavators.	5	1	5	LOW

Poor maintenance and defects	Major or Fatal Injury	5	3	15	HIGH	Machine to be subject to a delivery safety inspection. Site supervisor to verify the inspection by carrying out a visual inspection and completing and signing the inspection sheet on delivery to site. All defects and deficiencies to be corrected before the machine is used. If defects become apparent during use the machine is to stop working until rectified. Operators to carry out a safety check of the machine daily and record their findings on Plant Inspection Checklist. Foremen to check the checklists at the end of each week. Defects to be reported to the hire company immediately. Competent engineers to carry out maintenance and tests in accordance with a formal maintenance regime. Copies of upto date certification and inspection documentation to be held on site		5	1	5	LOW
Contact with moving machinery	Minor or Major Injury	5	3	15	HIGH	Provision of suitable guards. Guards may only be removed when the machine is isolated and any residual energy released. Provision of isolation switch and key. The key to be in the possession of the person undertaking the work.		5	1	5	LOW
Quick Hitch Operation and attachments.	Major or Fatal Injury.	5	3	15	HIGH	Ensure that all manual and remote locking devices for quick hitch systems are fitted and secured in position at all times. Ensure that the driver is trained on the operation of the type of quick hitch fitted. The quick hitch and any attachments should be subject to the same certification, maintenance and inspection regime as the excavator. The driver must be competent and experienced to fit and operate any attachments required, e.g. hammer.		5	1	5	LOW
Slips or falls while entering & exiting cab.	Minor or Major Injury	4	3	12	HIGH	Suitable access steps and handholds to be fitted to the machine to allow three points of contact at all times. The steps, cab and floor to be kept clean and free from debris.		5	1	5	LOW
Incorrect use or operation of machine.	Major or Fatal Injury	5	3	15	HIGH	Site supervisor to be competent in the correct use and management of site specific and general operations. Competent operators in receipt of a valid Certificate of Training Achievement qualification. Safety signs and instructions displayed and/or available.	SMSTS, SSSTS, CPCS or similar approved	5	1	5	LOW
Lifting Operations.	Major or Fatal Injury	5	3	15	HIGH	Six month thorough examination on lifting accessories Audible or visual overload warning system fitted and operational Certified lifting point required for all lifting duties SWL to be clearly marked on all lifting points, lifting/load diagrams to be displayed. Lifting operations to be controlled by a trained banksman/slinger. A machine specific lifting duty sheet, lift plan and risk assessment If lift and carry duties to be undertaken specific risk assessment to be completed taking into account manufacturer's instructions.	Operator trained in how to use the excavator as a crane. Lift plan and/or permit to lift must be briefed and understood. Operator shall be trained in how to use specific lifting attachments.	5	1	5	LOW
Overhead cables or obstructions	Major or Fatal Injury	5	3	15	HIGH	Height restrictors with indication on machine. Health and Safety Executive's GS6 avoidance of danger from overhead electric power lines must be followed.	Permit to work in place	5	1	5	LOW

Underground Services	Major or Fatal Injury	5	3	15	HIGH	No mechanical excavation within 500mm of services or more if required by service owner. Banksman in place at all times when services present.	Permit to work in place	5	1	5	LOW
Hazardous Substances	Minor Injury or Industrial dermatitis.	4	3	12	HIGH	Good personal Hygiene, PPE and washing facilities available.	COSHH assessment available and briefed. PPE provided, oil resistant gloves and overalls.	4	1	4	LOW
Noise	Industrial deafness	4	3	12	HIGH	Excavator specific noise assessment in place for operator and the surroundings. Hearing protection zones established	Ear protection. Noise zone safety briefing	4	1	4	LOW
Security	Minor or Major Injury	5	3	15	HIGH	Vandal guards and locking caps and covers. Machine immobilized (isolation switch and key removed) when left unattended. Obey site rules for parking in designated areas		5	1	5	LOW
Fuel or oil spills and leaks.	Pollution of water courses or ground water.	5	3	15	HIGH	Refueling only in designated area by competent persons. Machine checked and maintained regularly to prevent leaks and hose damage. A suitable spill kit will be available either on the machine or immediately adjacent to the work area.		5	1	5	LOW
Excessive fuel usage and emissions.	Depletion of resources and atmospheric pollution.	4	3	12	HIGH	Use newest model of machine available with up to date technology. Machine checked and maintained regularly.		4	1	4	LOW
Noise	Nuisance to neighbours	3	4	12	HIGH	Agree working hours before works start. Use monitoring stations at site boundary		3	1	3	LOW
Dust	Nuisance to neighbours	3	4	12	HIGH	Use monitoring stations at site boundary. Damp down work areas and site roads.		3	1	3	LOW
Site Specific Hazards and Aspects											

Assessor Name:	P Dews
Assessor Signature:	

Date Reviewed & Comments: Revised
28.02.17, blindsided added.
S M Losing

ALL PERSONNEL INVOLVED MUST BE BRIEFED ON THE HAZARDS AND PRECAUTIONS. INCLUDE OTHER RELATED ASSESSMENTS, METHOD STATEMENT AND EMERGENCY PLANS.



Score Risk Rating
1 to 5 LOW
6 to 10 MEDIUM
11 to 25 HIGH

Are all residual risks low?	Yes ☒ No ☐	If No Contracts Manager Approval Required.	Approved by:		Date:	
VIMS Reference		MP015 Form 04	Issue No: 04		Issue Date: 25/04/2018	Page 1 of 1

 VHE CONSTRUCTION PLC Safety, Health and Environmental Risk Assessment				Site/Department: Stopes Road Contract Number: 808 Site Record No: RA029 Date: 12/05/2022							
Activity/Process:		Forward/Side Tipping Dumper.									
Persons & Property at Risk:	Driver, site staff, operatives and visitors.	Pathway/Receptor at Risk of Pollution:	Enter site specific	Resource at Risk / Effect: Fuel Usage, atmosphere							
IDENTIFY SAFETY, POLLUTION AND RESOURCE HAZARDS BY USE OF COLOUR. IF USING A BLACK & WHITE PRINTER PREFACE POLLUTION WITH P AND RESOURCES WITH R											
Hazard / Aspect	Potential Harm, Injury / Effect	Consequence	Probability	Score	Potential Risk	Precautions / Controls Measures to Reduce the Risk / Impact	Training, PPE or Comments	Consequence	Probability	Score	Residual Risk
Overturning	Major or Fatal Injury.	5	3	15	HIGH	Machine operators to keep within stipulated speed limits. Keep site haul roads clear and well maintained. Minimise work on steep gradients where possible. Wheels/ tyres in good order. Seat belts fitted, in good order and worn. Roll Over Protection (ROPS) fitted. Provide wheel stops at a sufficient distance from the edges of excavations, spoil heaps pits, etc. Only load when the dumper is level and the handbrake engaged. Only tip loads when the vehicle is stopped with the parking brake on and out of gear. Ensure the ground is firm and level. Ensure the loads are evenly distributed in the body. Be aware of significant amounts of material, which have stuck in the skip body, which may cause instability during tipping operation. Ensure the skip body is lowered as soon as the tipping operation is complete and before the dumper moves away.	Driver to have full site induction before starting work, signed risk assessment and daily site briefing. CPCS A09a or A09b or similar approved.	5	1	5	LOW
Collision with people & plant	Major or Fatal Injury	5	3	15	HIGH	Strict compliance with the site traffic management plan and stipulated speed limits. 360 deg visibility aids in place and checked. Flashing beacon and reversing alarm fitted, working and audible at 10m. Persons do not approach the machine unless the operator signals to them to approach. (Thumbs Up) and ensure the engine is turned off when the driver has dismounted from the vehicle. Regular brake tests to be carried out to manufacturers specification or similar approved and recorded. If site-specific conditions necessitate increased/abnormal brake use e.g. continuous use of steep ramps, then implement a more rigorous testing regime. At all times the machine's braking system must be able to operate safely on the gradient on which it will be used and its parking brake capable of holding it stationary (where appropriate, fully loaded) on the steepest incline that the machine may be parked. Before going to work for the first time and at the start of every shift, the machine shall have its brakes tested. Pedestrians excluded from work area by solid barriers if possible and provision of high visibility clothing for all persons on site. Dumper skip not over loaded so to restrict forward vision. Plant, equipment e.g. excavator buckets or materials not to be carried if forward view restricted.		5	1	5	LOW
Poor maintenance and defects	Major or Fatal Injury	5	3	15	HIGH	Machine to be subject to a delivery safety inspection. Site supervisor to verify the inspection by carrying out a visual inspection and completing and signing the inspection sheet on delivery to site. All defects and deficiencies to be corrected before the machine is used. If defects become apparent during use the machine is to stop working until rectified. Operators to carry out a safety check of the machine daily and record their findings on Plant Inspection Checklist. Foremen to check the checklists at the end of each week. Defects to be reported to the hire company immediately. Competent engineers to carry out maintenance and tests in accordance with a formal maintenance regime. Copies of upto date certification and inspection documentation to be held on site.		5	1	5	LOW
Contact with moving machinery	Minor or Major Injury	5	3	15	HIGH	Provision of suitable guards. Guards may only be removed when the machine is isolated and any residual energy released. Provision of isolation switch and key. The key to be in the possession of the person undertaking the work. The operator to be trained in the hazard from articulation of the front unit.		5	1	5	LOW
Falling or Flying objects.	Minor or Major Injury	5	4	20	HIGH	Driver to dismount and stand at a safe distance during loading.		4	1	4	LOW
Slips or falls while mounting or dismounting.	Minor or Major Injury	5	3	15	HIGH	Suitable access steps and handholds to be fitted to the machine to allow three points of contact at all times. The steps and floor to be kept clean and free from debris.		5	1	5	LOW
Incorrect use or operation of machine.	Major or Fatal Injury	5	3	15	HIGH	Site supervisor to be competent in the correct use and management of site specific and general operations. Competent operators in receipt of a valid Certificate of Training Achievement qualification. Safety signs and instructions displayed and/or available.	SMSTS, SSSTS, CPCS or similar approved	5	1	5	LOW
Towing	Minor or Major Injury	5	3	15	HIGH	Plant being towed to be subject to the same checks and maintenance regime as the Dumper. Pay more attention to the towing hitch and pin, check regularly during the day to ensure pin is secure and hitch is not damaged.		5	1	5	LOW
Noise	Industrial deafness	4	3	12	MEDIUM	Noise assessment in place for operator and the surroundings.	Ear protection	4	1	4	LOW
Security	Minor or Major Injury	5	3	15	HIGH	Machine immobilized (isolation switch and key removed) when left unattended. Obey site rules for parking in designated areas		5	1	5	LOW
Fuel or oil spills and leaks.	Pollution of water courses or ground water.	5	3	15	HIGH	Refueling only in designated area by competent persons. Machine checked and maintained regularly to prevent leaks and hose damage. A suitable spill kit will be available either on the machine or immediately adjacent to the work area.		5	1	5	LOW
Excessive fuel usage and emissions.	Depletion of resources and atmospheric pollution.	4	3	12	MEDIUM	Use newest model of machine available with up to date technology. Machine checked and maintained regularly.		4	1	4	LOW

Noise	Nuisance to neighbours	3	4	12	Agree working hours before works start. Use monitoring stations at site boundary.	3	1	3	L O W
Dust	Nuisance to neighbours	3	4	12	Use monitoring stations at site boundary. Damp down work areas and site roads.	3	1	3	L O W
Site Specific Hazards and Aspects									

Assessor Name: P Dews

Assessor Signature:

Date Reviewed & Comments: 03/10/17.
Loading of skip added.

ALL PERSONNEL INVOLVED MUST BE BRIEFED ON THE HAZARDS AND PRECAUTIONS. INCLUDE OTHER RELATED ASSESSMENTS, METHOD STATEMENT AND EMERGENCY PLANS.



Score Risk Rating

1 to 5 LOW

6 to 10 MEDIUM

11 to 25 HIGH

Are all residual risks low?	Yes ☒ No ☐	If No Contracts Manager Approval Required.	Approved by:	Date:
VIMS Reference	MP015 Form 04	Issue No: 04	Issue Date: 25/04/2018	Page 1 of 1



VHE Construction Plc, 8
Newton Business Park,
Thorndcliffe Park Estate,
Sheffield, S35 2PH Tel:
01226 320150, Fax: 01226
320151

HAZARDOUS WASTE REGULATIONS 2005 (as amended)

CONSIGNMENT NOTE

COPIES: VHE - WHITE & GREEN
RETURNED BY HAULER AFTER SECTION 2
COMPLETED
HAULER - YELLOW
RECEIVER - PINK

A NOTIFICATION DETAILS

1 Consignment note code (must be in format XXXXXX/YYYY): **VHECON / 8082.1**

2 The waste is to be removed from (name, address, postcode, telephone, fax, email):
**VHE Construction, Little Lever, Bolton, BL3 1NP
07531 421 758**

3 The waste will be taken to (name, address, postcode, telephone, fax, email):
**Whitemoss Landfill Ltd, Whitemoss Road South, Skelmersdale, WN8 9TH
Dave Foster - 07841887844**

5 The waste producer (if different to A2) (name, address, postcode, telephone, fax, email):

B DESCRIPTION OF THE WASTE

1 The process giving rise to the waste is: **Remediation and Enabling Works of Former Manufacturing Facility** 2 SIC code (2007): **39.000**

3 Waste details (if more than one waste type is collected all the information and EWC code must be completed for each type):

EWC code	The chemical/biological components of the waste and their concentrations are:		Hazard code	Physical form (eg. Solid, powder, contained)	Container or transport type	Approx. quantity	UN identification no.	Packing group	Shipping name
	Component	Concentration (mg/kg)							
17 05 03	Soils and stones containing hazardous substances -	Amosite Fibres 0.39% Visible Asbestos	HP5 HP7	S	8 wheel tipper	19 tonnes			

Special handling requirements:

C CARRIERS CERTIFICATE

I certify that I today collected the consignment and that the details in A2, A4 and B3 are correct and I have been advised of any specific handling requirements

1 On behalf of: **CITY CENTRE COMMERCIALS LTD**
(company name, address, postcode) **CITY CENTRE COMMERCIALS LTD, TOWER HOUSE, IMONSWOOD IND PARK, STOPGATE LANE KIRKBY LIVERPOOL, L33 4XY**

Phone no: **0151 548 7273** fax: email: **sean@cccwaste.com**

2 Carrier registration no./reason for exemption: **CBDU225855**

3 Vehicle registration no./or mode of transport if not road: **JG70 ASX**

Drivers Name: **S MARSHALL**
Drivers Signature: *[Signature]* Date: **22/5/23** Time: **09:35**

D CONSIGNOR'S CERTIFICATE

I confirm that the information in A, B and C above is correct, that the carrier is registered or exempt and I was advised of any precautionary/special handling measures, and the waste is loaded and labelled correctly. I also confirm that I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the Waste (England and Wales) Regulations 2011.

Name: **Seb. Gledhill**
on behalf of (company name, address, postcode): **VHE Construction plc, 8 Newton Business Park, Thorndcliffe Park Estate, Sheffield, S35 2PH**

Phone no: **01226 320150** fax: email: **seb.gledhill@vhe.co.uk**

Date: **22/5/23** Time: **09:35**

E CONSIGNEE'S CERTIFICATE

(where more than one waste type is collected all of the information below must be completed for each EWC)

EWC code	Tick as appropriate		Details of rejected waste (E3)	Quantity of each EWC code received (kg)	Waste management operation (R or D code)
	Accepted	Rejected			

1 I received the waste at the address given in A4 on: Date: Time:

2 Vehicle registration no./or mode of transport if not road:

I certify that waste management license/permit/exemption no:

Name: Signature: Authorises the management of waste described in B at the address given in A4

on behalf of (company name, address, postcode):

Phone no: fax: email: Date: Time:

W. LEEFSON & SON

Duty of Care Waste Transfer Note

DELIVERY NOTE/RECEIPT

W. LEEFSON & SON
1000 LINDA AVE
SHEPHERD, ONTARIO L8B 3L7
TEL: (905) 709-7888
FAX: (905) 709-7888

W. LEEFSON & SON
1000 LINDA AVE
SHEPHERD, ONTARIO L8B 3L7
TEL: (905) 709-7888
FAX: (905) 709-7888

Tax No. A 86-762

Waste Disposal License No. 250000, 2011
Issued by the Environment Agency

DATE OF WASTE 17-09-04		DESCRIPTION OF WASTE 17-09-04	
PRODUCT OR WASTE 17-09-04		CUSTOMER NAME 17-09-04	
NAME & ADDRESS OF COMPANY 17-09-04		TARE 17-09-04	
TRANSFER DETAILS PLACE OF TRANSFER DATE VEHICLE REG NO. DRIVER'S NAME SIGNED PROJECT NAME ON BEHALF OF		SIGNED SIGNED SIGNED	

WEIGHT SIC CODE: 16290		KILOS DETAILS PRICE	
GROSS TARE NET TOTAL		ORDER NUMBER 17-09-04	

This document is a Waste Transfer Note as required by the Environment Agency (see Part 11 of the Environmental Protection Act 1990)

WE ACCEPT THE CONTAINER WAS DELIVERED IN GOOD CONDITION AND ACCEPT THE CONDITIONS OF HIRE AS STATED OVERLEAF
 (I confirm that I have signed my copy of this waste transfer note as required by Regulation 12 of the Waste (England and Wales) Regulations 2011)

W. LEESON & SON

DELIVERY NOTE/RECEIPT

Moss Lane, Off Sharp Street, Walkden, Manchester M28 3LY

Tel: 0161 790 7888

Email: contact@wleesonandson.com Website: wleesonandson.com

Waste Carrier Registration No. CB/DU100836

VAT No: 305 8684 54

Customer/Waste Transferor	Go Green V.H.E. CONSTRUCTION Former Tarmac Plant Stopes Road Bolton BL3 1NP
Contact No.	Sab Qiedhill 07503934008

Order No.	23114232095
Vehicle Reg	HX 06 BNZ

Movement Type	Walt/Load
---------------	-----------

Skip Type	20 Yard RoRo
Permit Y/N	No

Waste Type	17 02 01 Wood
Sic Code	39000 -1

I confirm that I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the Waste (England and Wales) Regulations 2011. We agree the container was delivered in good condition and accept the conditions of hire as stated overleaf.

Drivers Signature	
Drivers Print	Geoffrey

DUTY OF CARE WASTE TRANSFER NOTE

Waste Disposal Licence No.

EAWML 50114

Issued by the Environment Agency

Date 22/05/2023

Time

Ticket No. 130378

Transfer Details	W LEESON & SON
Place of Transfer	Moss Lane Off Sharp Street Walkden Manchester M28 3LY

Notes	
-------	--

Skip Price	Payment Type	Account
Permit	Weight	Tonnes
Extras		
VAT		
Total		

Waste Producers Signature	
Waste Producers Print	K-EGAN

The Hazardous Waste Regulations 2005: Consignment Note

PART A: Notification details

1. Consignment note code: **MCP ENV / 10232**
2. The waste described below is to be removed from (name, address, postcode):
Former Tarmac facility **BL3 1NP**
3. The waste will be taken to (name, address and postcode):
MCP Environmental
Bradford BD12 0RY
4. The waste producer was:
MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY

PART B: Description of the waste

If consignment sheet used, tick here ☐

1. The process giving rise to the waste(s) was: **Asbestos Removal**
2. SIC for the process giving rise to the waste: **39 00 /**
3. WASTE DETAILS (where more than one waste type is collected all of the information given below must be completed for each EWC identified)

Description of waste	List of wastes (EWC code(s) digits)	Quantity (kg)	The chemical/biological components in the waste and their concentrations are:		Physical form (gas, liquid, solid, powder, sludge or mixed)	Hazard code(s)	Container type, number and size
			Component	Concentration (% or mg/kg)			
A/C	170605	300kg	Chrysotile	10-15%	Solid	HP7	60 bags
					Solid	HP7	
					Solid	HP7	

The information given below is to be completed for each EWC identified

EWC code	UN identification number(s)	Proper shipping name(s)	UN class(es)	Packing group(s)	Special handling requirements
170605	2590	White Asbestos	9	III	Cr 13, 28
			9		
			9		

PART C: Carrier's certificate

PART D: Consignor's certificate

If more than one carrier is used, please attach schedule for subsequent carriers. If schedule of carriers is attached tick here: ☐

I certify that I today collected the consignment and that the details in A2, A3 and B3 are correct and I have been advised of any specific handling requirements.

Where this note comprises part of a multiple collection the round number and collection number are:

01 09 2022 / YY69 MSX

1. Carrier name: **James Winter**
MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY

2. Carrier registration no./reason for exemption: **CBDU184628**

3. Vehicle registration no. (or mode of transport, if not road): **YY69 MSX**

Signature: **J. Winter** Time: **12:00**
Date: **01 09 2022**

I certify that the information in A, B and C has been completed and is correct, that the carrier is registered or exempt and was advised of the appropriate precautionary measures. All of the waste is packaged and labelled correctly and the carrier has been advised of any special handling requirements.

I confirm that I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the Waste (England and Wales) Regulations 2011.

1. Consignor name: **James Winter**
On behalf of (name, address, postcode, telephone, e-mail, facsimile):

MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY

Signature: **J. Winter**
Date: **01 09 2022** Time: **12:00**

PART E: Consignee's certificate (where more than one waste type is collected all of the information given below must be completed for each EWC)

Individual EWC code(s) received	Quantity of each EWC code received (kg)	EWC code accepted/rejected	Waste management operation (R or D code)
170605	300kg	A	D-15

1. I received this waste at the address given in A3 on: Date: **01 09 2022** Time: **11:00**

2. Vehicle registration no. (or mode of transport, if not road):

3. Where waste is rejected please provide details:

I certify that waste permit/exempt waste operation number:

authorises the management of the waste described in B at the address given in A3.

Where the consignment forms part of a multiple collection, as identified in Part C, I certify that the total number of consignments forming the collection are:

Name: **M JACK**
On behalf of:
MCP ENVIRONMENTAL
Spartan Rd Low Moor
BD12 0RY

Signature: **M Jack**
Date: **01 09 2022** Time: **11:00**

The Hazardous Waste Regulations 2005: Consignment Note



PART A: Notification details

- 1 Consignment note code: **MCP ENV / 80773**
- 2 The waste described below is to be removed from (name, address, postcode):
VHE Site Little Lever
B13 1NP
- 3 The waste will be taken to (name, address and postcode):
MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY
- 4 The waste producer was:
MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY

PART B: Description of the waste

- 1 The process giving rise to the waste(s) was: **Asbestos Removal**
- 2 SIC for the process giving rise to the waste: **39 00**
- 3 WASTE DETAILS (where more than one waste type is collected all of the information given below must be completed for each EWC identified)

Description of waste	List of wastes (EWC code(s) digit(s))	Quantity (kg)	The chemical/biological components in the waste and their concentrations are:		Physical form (gas, liquid, solid, powder, sludge or mixed)	Hazard code(s)	Container type, number and size
			Component	Concentration (% or mg/kg)			
Cement	170605	200kg	Chrysotile	10-15	Solid	HP7	50 bags
					Solid	HP7	
					Solid	HP7	

The information given below is to be completed for each EWC identified

EWC code	UN identification number(s)	Proper shipping name(s)	UN class(es)	Packing group(s)	Special handling requirements
170605	2540	white	9	III	CV-13-28
			9		
			9		

PART C: Carrier's certificate

(If more than one carrier is used, please attach schedule for subsequent carriers. If schedule of carriers is attached tick here: ☐)

I certify that I today collected the consignment and that the details in A2, A3 and B3 are correct and I have been advised of any specific handling requirements.

Where this note comprises part of a multiple collection the round number and collection number are:

YH19 SWH 310820122

- 1 Carrier name: **B Thornton**
MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY
- 2 Carrier registration no./reason for exemption: **CBDU184628**
- 3 Vehicle registration no. (or mode of transport, if not road): **YH19 SWH**

Signature:

Date: **02.09.2022**

Time: **1400**

PART D: Consignor's certificate

I certify that the information in A, B and C has been completed and is correct, that the carrier is registered or exempt and was advised of the appropriate precautionary measures. All of the waste is packaged and labelled correctly and the carrier has been advised of any special handling requirements.

I confirm that I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the Waste (England and Wales) Regulations 2011.

- 1 Consignor name: **B Thornton**
On behalf of (name, address, postcode, telephone, email, facsimile):
MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY

Signature:

Date: **02.09.2022**

Time: **1600**

PART E: Consignee's certificate (where more than one waste type is collected all of the information given below must be completed for each EWC)

Individual EWC code(s) received	Quantity of each EWC code received (kg)	EWC code accepted/rejected	Waste management operation (R or D code)
170605	200kg	A	D-15

- 1 I received this waste at the address given in A3 on: Date: **02.09.2022** no: **116110**

2 Vehicle registration no. (or mode of transport if not road):

3 Where waste is rejected please provide details:

I certify that waste permit/exempt waste operation number:

EPR/UP3498VG

authorises the management of the waste described in B at the address given in A3.

Where the consignment forms part of a multiple collection, as identified in Part C, I certify that the total number of consignments forming the collection are:

Name: **M JACK**
On behalf of:
MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY

Signature:

Date: **02.09.2022**

Time: **1610**

PART A: Notification details

- 1 Consignment note code: **MCP ENV / 80774**
- 2 The waste described below is to be removed from (name, address, postcode):
VHE site little
Lever
- 3 The waste will be taken to (name, address and postcode):
MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY
- 4 The waste producer was:
MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY

PART B: Description of the waste

- 1 The process giving rise to the waste(s) was: **Asbestos Removal**
- 2 SIC for the process giving rise to the waste: **39 . 00 /**
- 3 WASTE DETAILS (where more than one waste type is collected all of the information given below must be completed for each EWC identified)

Description of waste	List of wastes (EWC code(s) 6 digits)	Quantity (kg)	The chemical/biological components in the waste and their concentrations are:	Physical form (gas, liquid, solid, powder, sludge or mixed)	Hazard code(s)	Container type, number and size
Cement	170605	250kg	Chrysotile	10-15	Solid	HP7
					Solid	HP7
					Solid	HP7

The information given below is to be completed for each EWC identified

EWC code	UN identification number(s)	Proper shipping name(s)	UN class(es)	Packing group(s)	Special handling requirements
170605	2590	White	9	II	CV-13-28
			9		
			9		

PART C: Carrier's certificate

If more than one carrier is used, please attach schedule for subsequent carriers. If schedule of carriers is attached tick here: ☐

I certify that I today collected the consignment and that the details in A2, A3 and B3 are correct and I have been advised of any specific handling requirements.

Where this note comprises part of a multiple collection the round number and collection number are:

YH19 SWH 010920122

- 1 Carrier name: **B Thornton**
MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY
- 2 Carrier registration no./reason for exemption: **CBDU184628**
- 3 Vehicle registration no. (or mode of transport, if not road): **YH19 SWH**

Signature: 

Date: **30.08.2022**

Time: **1400**

PART D: Consignor's certificate

I certify that the information in A, B and C has been completed and is correct, that the carrier is registered or exempt and was advised of the appropriate precautionary measures. All of the waste is packaged and labelled correctly and the carrier has been advised of any special handling requirements.

I confirm that I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the Waste (England and Wales) Regulations 2012.

- 1 Consignor name: **B Thornton**
On behalf of (name, address, postcode, telephone, email, facsimile):
MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY

Signature: 

Date: **30.08.2022**

Time: **1800**

PART E: Consignee's certificate (where more than one waste type is collected all of the information given below must be completed for each EWC)

Individual EWC code(s) received	Quantity of each EWC code received (kg)	EWC code accepted/rejected	Waste management operation (R or D code)
170605	250kg	A	D-15

- 1 I received this waste at the address given in A3 on: Date **30.08.2022** Time **1750**

2 Vehicle registration no. (or mode of transport if not road):

3 Where waste is rejected please provide details:

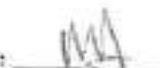
I certify that waste permit/exempt waste operation number:

EPR/UP3498VG

authorises the management of the waste described in B at the address given in A3.

Where the consignment forms part of a multiple collection, as identified in Part C, I certify that the total number of consignments forming the collection are:

Name: **M JACK**
On behalf of
MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY

Signature: 

Date: **30.08.2022**

Time: **1750**

The Hazardous Waste Regulations 2005: Consignment Note



PART A: Notification details

- 1 Consignment note code: **MCP ENV / 77154**
- 2 The waste described below is to be removed from (name, address, postcode):
Former Tarmas Facility
- 3 The waste will be taken to (name, address and postcode):
**MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY**
- 4 The waste producer was:
**MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY**

PART B: Description of the waste

If continuation sheet used, tick here ☐

- 1 The process giving rise to the waste(s) was: **Asbestos Removal**
- 2 SIC for the process giving rise to the waste: **39 - 00 /**
- 3 WASTE DETAILS (where more than one waste type is collected all of the information given below must be completed for each EWC identified)

Description of waste	List of wastes (EWC code)(6 digits)	Quantity (kg)	The chemical/biological components in the waste and their concentrations are:		Physical form (gas, liquid, solid, powder, sludge or mixed)	Hazard code(s)	Container type, number and size
			Component	Concentration (% or mg/kg)			
A/C	170605 2590		Chrysotile	10-15%	Solid	HP7	50 bags
					Solid	HP7	
					Solid	HP7	

The information given below is to be completed for each EWC identified

EWC code	UN identification number(s)	Proper shipping name(s)	UN class(es)	Packing group(s)	Special handling requirements
170605 2590	White asbestos	9	11	CV13, 28	
		9			
		9			

PART C: Carrier's certificate

If more than one carrier is used, please attach schedule for subsequent carriers. If schedule of carriers is attached tick here ☐

I certify that I today collected the consignment and that the details in A2, A3 and B3 are correct and I have been advised of any specific handling requirements.

Where this note comprises part of a multiple collection the round number and collection number are:

YY69 MSX 31.8.22 1

1 Carrier name: **Levi Tattershall**
MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY

2 Carrier registration no./reason for exemption: **CBDU184628**

3 Vehicle registration no. (or mode of transport, if not road): **YY69 MSX**

Signature: **C.T.** Time: **15:00**
Date: **31 08 2022**

PART D: Consignor's certificate

I certify that the information in A, B and C has been completed and is correct, that the carrier is registered or exempt and was advised of the appropriate precautionary measures. All of the waste is packaged and labelled correctly and the carrier has been advised of any special handling requirements.

I confirm that I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the Waste (England and Wales) Regulations 2011.

1 Consignor name: **Levi Tattershall**

On behalf of (name, address, postcode, telephone, email, facsimile):

MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY

Signature: **LT**
Date: **31 08 2022** Time: **15:00**

PART E: Consignee's certificate (where more than one waste type is collected all of the information given below must be completed for each EWC)

Individual EWC code(s) received	Quantity of each EWC code received (kg)	EWC code accepted/rejected	Waste management operation (R or D code)
170605	250 kg	A	D-15

1 I received this waste at the address given in A3 on: Date: **31 08 2022** Time: **15:00**

2 Vehicle registration no. (or mode of transport if not road):

3 Where waste is rejected please provide details:

I certify that waste permit/exempt waste operation number:

EPR/UP3498VG

authorises the management of the waste described in B at the address given in A3.

Where the consignment forms part of a multiple collection, as identified in Part C, I certify that the total number of consignments forming the collection are:

Name:

On behalf of

M. J. J. J.
MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY

Signature: **MA**

Date: **31 08 2022** Time: **15:00**

The Hazardous Waste Regulations 2005: Consignment Note

NITE 001 0004/01

PART A: Notification details

1. Consignment note code: **MCP ENV/78332**
2. The waste described below is to be removed from (name, address, postcode):
**FORMER TAEMAL
BOTTON**
3. The waste will be taken to (name, address and postcode):
**MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY**
4. The waste producer was:
**MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY**

PART B: Description of the waste

If continuation sheet used, tick here ☐

1. The process giving rise to the waste(s) was: **Asbestos Removal**
2. SIC for the process giving rise to the waste: **39 00 1**
3. WASTE DETAILS (where more than one waste type is collected all of the information given below must be completed for each EWC identified)

Description of waste	List of wastes (EWC code)(6 digits)	Quantity (kg)	The chemical/biological components in the waste and their concentrations are:		Physical form (gm, liquid, solid, powder, sludge, or mixed)	Hazard code(s)	Container type, number and size
			Component	Concentration (% or mg/kg)			
Asbestos (ami)	170605175	Chrysotile	10-15%	Solid	HP7	484g	
				Solid	HP7		
				Solid	HP7		

The information given below is to be completed for each EWC identified

EWC code	UN identification number(s)	Proper shipping name(s)	UN class(es)	Packing group(s)	Special handling requirements
1706032590		White ASBESTOS	9	III	CV 13 28
			9		
			9		

PART C: Carrier's certificate

If more than one carrier is used, please attach schedule for subsequent carriers. If schedule of carriers is attached tick here ☐

I certify that I today collected the consignment and that the details in A2, A3 and B3 are correct and I have been advised of any specific handling requirements.

Where this note comprises part of a multiple collection the round number and collection number are:

4822 F4T 12/9/22 101

1. Carrier name: **STONNARD**
MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY

2. Carrier registration no./reason for exemption: **CBDU184628**

3. Vehicle registration no. (or mode of transport, if not road): **4822 F4B**

Signature: _____

Date: **12/9/22**

Time: **0910**

PART D: Consignor's certificate

I certify that the information in A, B and C has been completed and is correct, that the carrier is registered or exempt and was advised of the appropriate precautionary measures. All of the waste is packaged and labelled correctly and the carrier has been advised of any special handling requirements.

I confirm that I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the Waste (England and Wales) Regulations 2011.

1. Consignor name: **MCP ENVIRONMENTAL**
Spartan Road, Low Moor, Bradford, BD12 0RY

On behalf of (name, address, postcode, telephone, email, facsimile):
MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY

Signature: _____

Date: **12/9/22**

Time: **1630**

PART E: Consignee's certificate (where more than one waste type is collected all of the information given below must be completed for each EWC)

Individual EWC code(s) received	Quantity of each EWC code received (kg)	EWC code accepted/rejected	Waste management operation (R or D code)
170605	195	A	D15

1. I received this waste at the address given in A3 on:

Date: **12/9/22**

Time: **1710**

2. Vehicle registration no. (or mode of transport if not road):

Name: **ALBERT JACK**

3. Where waste is rejected please provide details:

On behalf of

MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY

I certify that waste permit/exempt waste operation number:

EPR/UP3498VG

authorises the management of the waste described in B at the address given in A3.

Where the consignment forms part of a multiple collection, as identified in Part C, I certify that the total number of consignments forming the collection are:

01

Signature: _____

Date: **12/9/22**

Time: **1710**

The Hazardous Waste Regulations 2005: Consignment Note

PART A: Notification details

- 1 Consignment note code: **MCP ENV / 73970**
- 2 The waste described below is to be removed from (name, address, postcode):
TARMAC MANUFACTURING FACILITY
- 3 The waste will be taken to (name, address and postcode):
**MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY**
- 4 The waste producer was:
**MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY**

PART B: Description of the waste

If continuation sheet used, tick here ☐

- 1 The process giving rise to the waste(s) was: **Asbestos Removal**
- 2 SIC for the process giving rise to the waste: **39 00 /**
- 3 WASTE DETAILS (where more than one waste type is collected all of the information given below must be completed for each EWC identified)

Description of waste	List of wastes (EWC code)(6 digits)	Quantity (kg)	The chemical/biological components in the waste and their concentrations are:		Physical form (gas, liquid, solid, powder, sludge or mixed)	Hazard code(s)	Container type, number and size
			Component	Concentration (% or mg/kg)			
AC	1706058066	Chrysotile	10.15%	Solid	HP7	116065	
				Solid	HP7		
				Solid	HP7		

The information given below is to be completed for each EWC identified

EWC code	UN identification number(s)	Proper shipping name(s)	UN class(es)	Packing group(s)	Special handling requirements
1706052590		White Asbestos	9	III	CU 13 28
			9		
			9		

PART C: Carrier's certificate

PART D: Consignor's certificate

(If more than one carrier is used, please attach schedule for subsequent carriers. If schedule of carriers is attached tick here: ☐)

I certify that I today collected the consignment and that the details in A2, A3 and B3 are correct and I have been advised of any specific handling requirements.

Where this note comprises part of a multiple collection the round number and collection number are:

YV64 UL6 13 09 20 122

- 1 Carrier name: **C. Borden**
**MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY**
- 2 Carrier registration no./reason for exemption: **CBDU184628**
- 3 Vehicle registration no. (or mode of transport, if not road): **08 00**

Signature: **[Signature]**

Date: **13 09 2022**

I certify that the information in A, B and C has been completed and is correct, that the carrier is registered or exempt and was advised of the appropriate precautionary measures. All of the waste is packaged and labelled correctly and the carrier has been advised of any special handling requirements.

I confirm that I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the Waste (England and Wales) Regulations 2011.

- 1 Consignor name: **C. Borden**
On behalf of (name, address, postcode, telephone, email, facsimile):
**MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY**

Signature: **[Signature]**

Date: **13 09 2022**

Time: **18 30**

PART E: Consignee's certificate: (where more than one waste type is collected all of the information given below must be completed for each EWC)

Individual EWC code(s) received	Quantity of each EWC code received (kg)	EWC code accepted/rejected	Waste management operation (R or D code)
170605	204	A	D-15

1 I received this waste at the address given in A3 on:

Date: **13 09 2022**

Time: **16 50**

2 Vehicle registration no. (or mode of transport, if not road):

Name: **W. Sack**

On behalf of

3 Where waste is rejected please provide details:

**MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY**

I certify that waste permit/exempt waste operation number:

EPR/UP3498VG

authorises the management of the waste described in B at the address given in A3.

Where the consignment forms part of a multiple collection, as identified in Part C, I certify that the total number of consignments forming the collection are:

Signature: **[Signature]**

Date: **13 09 2022**

Time: **16 45**

The Hazardous Waste Regulations 2005: Consignment Note

PART A: Notification details

- 1 Consignment note code: **MCP ENV / 73971**
- 2 The waste described below is to be removed from (name, address, postcode):
TARMAC STOKES ROAD BL3 1NP
- 3 The waste will be taken to (name, address and postcode):
**MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY**
- 4 The waste producer was:
**MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY**

PART B: Description of the waste

(Continuation sheet used, tick here) ☐

- 1 The process giving rise to the waste(s) was: **Asbestos Removal**
- 2 SIC for the process giving rise to the waste: **39 00 /**
- 3 WASTE DETAILS (where more than one waste type is collected all of the information given below must be completed for each EWC identified)

Description of waste	List of wastes (EWC code(6 digits))	Quantity (kg)	The chemical/biological components in the waste and their concentrations are:		Physical form (gas, liquid, solid, powder, sludge or mixed)	Hazard code(s)	Container type, number and size
			Component	Concentration (% or mg/kg)			
A/C	170605	80KG	Chrysotile	10-15 %	Solid	HP7	140605
					Solid	HP7	
					Solid	HP7	

The information given below is to be completed for each EWC identified

EWC code	UN identification number(s)	Proper shipping name(s)	UN class(es)	Packing group(s)	Special handling requirements
170605	2890	White Asbestos	9	III	C 13 28
			9		
			9		

PART C: Carrier's certificate

PART D: Consignor's certificate

(If more than one carrier is used, please attach schedule for subsequent carriers. If schedule of carriers is attached tick here: ☐)

I certify that I today collected the consignment and that the details in A2, A3 and B3 are correct and I have been advised of any specific handling requirements.

Where this note comprises part of a multiple collection the round number and collection number are:

4469VLB 14 09 20 122

1 Carrier name: **C. Royce & Co**
MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY

2 Carrier registration no./reason for exemption: **CBDU184628**

3 Vehicle registration no. (or mode of transport, if not road):

Time **0800**

Signature: **[Signature]**

Date **14 09 2022**

I certify that the information in A, B and C has been completed and is correct, that the carrier is registered or exempt and was advised of the appropriate precautionary measures. All of the waste is packaged and labelled correctly and the carrier has been advised of any special handling requirements.

I confirm that I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the Waste (England and Wales) Regulations 2011.

1 Consignor name: **C. Royce & Co**
On behalf of (name, address, postcode, telephone, email, facsimile):
MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY

Signature: **[Signature]**

Date **14 09 2022**

Time **1545**

PART E: Consignee's certificate (where more than one waste type is collected all of the information given below must be completed for each EWC)

Individual EWC code(s) received	Quantity of each EWC code received (kg)	EWC code accepted/rejected	Waste management operation (R or D code)
170605	80KG	A	D-15

1 I received this waste at the address given in A3 on: Date **14 09 2022** Time **1730**

2 Vehicle registration no. (or mode of transport, if not road):

Name:

On behalf of

MJAEL

3 Where waste is rejected please provide details:

MCP ENVIRONMENTAL

Spartan Road, Low Moor, Bradford, BD12 0RY

I certify that waste permit/exempt waste operation number:

EPR/UP3498VG

authorises the management of the waste described in B at the address given in A3.

Where the consignment forms part of a multiple collection, as identified in Part C, I certify that the total number of consignments forming the collection are:

Signature: **[Signature]**

Date **14 09 2022**

Time **1730**

The Hazardous Waste Regulations 2005: Consignment Note



PART A Notification details

1 Consignment note code: **MCP ENV / 78338**

2 The waste described below is to be removed from (name, address, postcode):

**Palmer Tarmat
BOLTON**

BL3 1NP

3 The waste will be taken to (name, address and postcode):

**MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY**

4 The waste producer was

**MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY**

PART B Description of the waste

If continuation sheet used, tick here: ☐

1 The process giving rise to the waste(s) was: **Asbestos Removal**

2 SIC for the process giving rise to the waste:

39 00 1

3 WASTE DETAILS (where more than one waste type is collected all of the information given below must be completed for each EWC identified)

Description of waste	List of wastes (EWC code)(6 digits)	Quantity (kg)	The chemical/biological components in the waste and their concentrations are:		Physical form (gas, liquid, solid, powder, sludge or mixed)	Hazard code(s)	Container type, number and size
			Component	Concentration (% or mg/kg)			
A/C	170605	600kg	Chrysotile	10-15	Solid	HP7	4x4 Bore
					Solid	HP7	
					Solid	HP7	

The information given below is to be completed for each EWC identified

EWC code	UN identification number(s)	Proper shipping name(s)	UN class(es)	Packing group(s)	Special handling requirements
170605	2590	White Asbestos	9	m	CV 13.28
			9		
			9		

PART C Carrier's certificate

PART D Consignor's certificate

(If more than one carrier is used, please attach schedule for subsequent carriers. If schedule of carriers is attached tick here: ☐)

I certify that I today collected the consignment and that the details in A2, A3 and B3 are correct and I have been advised of any specific handling requirements.

Where this note comprises part of a multiple collection the round number and collection number are:

Ye22 FYT 15/9/22 101

1 Carrier name: **STALWELL**
MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY

2 Carrier registration no./reason for exemption: **CBDU184628**

3 Vehicle registration no. (or mode of transport, if not road): **Ye22 FYT**

Time **0830**

Signature:

Date **15/9/22**

I certify that the information in A, B and C has been completed and is correct, that the carrier is registered or exempt and was advised of the appropriate precautionary measures. All of the waste is packaged and labelled correctly and the carrier has been advised of any special handling requirements.

I confirm that I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the Waste (England and Wales) Regulations 2011.

1 Consignor name: _____
On behalf of (name, address, postcode, telephone, email, facsimile):

MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY

Signature:

Date **15/09/2022**

Time **1630**

PART E Consignee's certificate (where more than one waste type is collected all of the information given below must be completed for each EWC)

Individual EWC code(s) received	Quantity of each EWC code received (kg)	EWC code accepted/rejected	Waste management operation (R or D code)
170605	600 kg	A	2.5

1 I received this waste at the address given in A3 on:

Date **15/9/22**

Time **1700**

2 Vehicle registration no. (or mode of transport if not road):

Name: **m j m c b**

3 Where waste is rejected please provide details:

On behalf of

MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY

I certify that waste permit/exempt waste operation number:

EPR/UP3498VG

authorises the management of the waste described in B at the address given in A3.

Where the consignment forms part of a multiple collection, as identified in Part C, I certify that the total number of consignments forming the collection are:

01

Signature:

Date **15/9/22**

Time **1700**

The Hazardous Waste Regulations 2005: Consignment Note

PART A: Notification details

- 1 Consignment note code: **MCP ENV / 78339**
- 2 The waste described below is to be removed from (name, address, postcode):
**FORMER TARMAC
BOLTON**
- 3 The waste will be taken to (name, address and postcode):
**MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY**
- 4 The waste producer was
**MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY**

PART B: Description of the waste

If continuation sheet used, tick here ☐

- 1 The process giving rise to the waste(s) was: **Asbestos Removal**
- 2 SIC for the process giving rise to the waste: **39 00 /**
- 3 WASTE DETAILS (where more than one waste type is collected all of the information given below must be completed for each EWC identified)

Description of waste	List of wastes (EWC code)(6 digits)	Quantity (kg)	The chemical/biological components in the waste and their concentrations are:		Physical form (gas, liquid, solid, powder, sludge or mixed)	Hazard code(s)	Container type, number and size
			Component	Concentration (% or mg/kg)			
A/C	170605	800	Chrysotile	10-15%	Solid	HP7	458AL
					Solid	HP7	
					Solid	HP7	

The information given below is to be completed for each EWC identified

EWC code	UN identification number(s)	Proper shipping name(s)	UN class(es)	Packing group(s)	Special handling requirements
170605	2590	White Asbestos	9	1	C13 ZS
			9		
			9		

PART C: Carrier's certificate

(If more than one carrier is used, please attach schedule for subsequent carriers. If schedule of carriers is attached tick here: ☐)

I certify that I today collected the consignment and that the details in A2, A3 and B3 are correct and I have been advised of any specific handling requirements.

Where this note comprises part of a multiple collection the round number and collection number are:

16/9/22 Y22 F4 T101

1 Carrier name: **STOLNED**
MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY

2 Carrier registration no./reason for exemption: **CBDU184628**

3 Vehicle registration no. (or mode of transport, if not road): **Y22 F4 T**

Signature:  Date: **16/9/22** Time: **0800**

PART D: Consignor's certificate

I certify that the information in A, B and C has been completed and is correct, that the carrier is registered or exempt and was advised of the appropriate precautionary measures. All of the waste is packaged and labelled correctly and the carrier has been advised of any special handling requirements.

I confirm that I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the Waste (England and Wales) Regulations 2011.

1 Consignor name: **STOLNED**
On behalf of (name, address, postcode, telephone, email, facsimile):

MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY

Signature:  Date: **16/9/22** Time: **1520**

PART E: Consignee's certificate (where more than one waste type is collected all of the information given below must be completed for each EWC)

Individual EWC code(s) received	Quantity of each EWC code received (kg)	EWC code accepted/rejected	Waste management operation (R or D code)
170605	800	A	D15

1 I received this waste at the address given in A3 on: Date **16 09 2022** Time **1400**

2 Vehicle registration no. (or mode of transport if not road):

3 Where waste is rejected please provide details:

I certify that waste permit/exempt waste operation number:

EPR/UP3498VG

authorises the management of the waste described in B at the address given in A3.

Where the consignment forms part of a multiple collection, as identified in Part C, I certify that the total number of consignments forming the collection are:

01

Name: **MEACH**
On behalf of

MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY

Signature:  Date: **16 09 2022** Time: **1400**

The Hazardous Waste Regulations 2005: Consignment Note



PART A: Notification details

- 1 Consignment note code: **MCP ENV / 73972**
- 2 The waste described below is to be removed from (name, address, postcode):
**TARMAC FACILITY
STAPES ROAD BILLYBLIND**
- 3 The waste will be taken to (name, address and postcode):
**MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY**
- 4 The waste producer was:
**MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY**

PART B: Description of the waste

If continuation sheet used, tick here ☐

- 1 The process giving rise to the waste(s) was: **Asbestos Removal**
- 2 SIC for the process giving rise to the waste: **39 - 00 - 1**
- 3 WASTE DETAILS (where more than one waste type is collected all of the information given below must be completed for each EWC identified)

Description of waste	List of wastes (EWC code)(6 digits)	Quantity (kg)	The chemical/biological components in the waste and their concentrations are:		Physical form (gas, liquid, solid, powder, sludge or mixed)	Hazard code(s)	Container type, number and size
			Component	Concentration (% or mg/kg)			
A/c	1706052006	200kg	Chrysotile	10-15%	Solid	HP7	28 BAGS
					Solid	HP7	
					Solid	HP7	

The information given below is to be completed for each EWC identified

EWC code	UN identification number(s)	Proper shipping name(s)	UN-classified	Packing group(s)	Special handling requirements
1706052590		White Asbestos	9	III	CV 13 28
			9		
			9		

PART C: Carrier's certificate

PART D: Consignor's certificate

If more than one carrier is used, please attach schedule for subsequent carriers. If schedule of carriers is attached tick here: ☐

I certify that I today collected the consignment and that the details in A2, A3 and B3 are correct and I have been advised of any specific handling requirements.

Where this note comprises part of a multiple collection the round number and collection number are:

YY69 VLB 20 09 20122

- 1 Carrier name: **C Boyce**
**MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY**
- 2 Carrier registration no./reason for exemption: **CBDU184628**
- 3 Vehicle registration no. (or mode of transport, if not road):

Time **0800**

Signature: **[Signature]**

Date **20092022**

I certify that the information in A, B and C has been completed and is correct, that the carrier is registered or exempt and was advised of the appropriate precautionary measures. All of the waste is packaged and labelled correctly and the carrier has been advised of any special handling requirements.

I confirm that I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the Waste (England and Wales) Regulations 2011.

- 1 Consignor name: **C Boyce**
**MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY**
- On behalf of (name, address, postcode, telephone, email, facsimile):

Signature: **[Signature]**

Date **20092022**

Time **1545**

PART E: Consignee's certificate (where more than one waste type is collected all of the information given below must be completed for each EWC)

Individual EWC code(s) received	Quantity of each EWC code received (kg)	EWC code accepted/rejected	Waste management operation (R or D code)
170605	200kg	A	D-R

- 1 I received this waste at the address given in A3 on:

Date **22092022**

Time **1330**

- 2 Vehicle registration no. (or mode of transport if not road):

Name:

On behalf of **MSP**

- 3 Where waste is rejected please provide details:

MCP ENVIRONMENTAL

Spartan Road, Low Moor, Bradford, BD12 0RY

I certify that waste permit/exempt waste operation number:

EPR/UP3498VG

authorises the management of the waste described in B at the address given in A3.

Where the consignment forms part of a multiple collection, as identified in Part C, I certify that the total number of consignments forming the collection are:

Signature: **[Signature]**

Date **22092022**

Time **1330**

The Hazardous Waste Regulations 2005: Consignment Note

PART A: Notification details

1. Consignment note code: **MCPENV/73973**
2. The waste described below is to be removed from (name, address, postcode):
TARMAC FACILITY
STAPES ROAD BRADFORD **BD12 0RY**
3. The waste will be taken to (name, address and postcode):
MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY
4. The waste producer was:
MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY

PART B: Description of the waste

If continuation sheet used, tick here: ☐

1. The process giving rise to the waste(s) was: **Asbestos Removal** 2. SIC for the process giving rise to the waste: **39 00 1**
3. WASTE DETAILS (where more than one waste type is collected all of the information given below must be completed for each EWC identified)

Description of waste	List of wastes (EWC code(s) (6 digits))	Quantity (kg)	The chemical/biological components in the waste and their concentrations are:		Physical form (gas, liquid, solid, powder, sludge or mixed)	Hazard code(s)	Container type, number and size
			Component	Concentration (% or mg/kg)			
ALC	170605	10.15	Chrysotile	10.15%	Solid	HP7	8 BAGS
					Solid	HP7	
					Solid	HP7	

The information given below is to be completed for each EWC identified

EWC code	UN identification number(s)	Proper shipping name(s)	UN class(es)	Packing group(s)	Special handling requirements
170605	2540	WHITE ASBESTOS	9	III	CV 13 28
			9		
			9		

PART C: Carrier's certificate

PART D: Consignor's certificate

(If more than one carrier is used, please attach schedule for subsequent carriers. If schedule of carriers is attached tick here: ☐)

I certify that I today collected the consignment and that the details in A2, A3 and B3 are correct and I have been advised of any specific handling requirements.

Where this note comprises part of a multiple collection the round number and collection number are:

Y469 VLB 21 09 20 22

1. Carrier name: **C Boyce**
MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY
2. Carrier registration no./reason for exemption: **CBDU184628**
3. Vehicle registration no. (or mode of transport, if not road):

Signature: **C Boyce** Date: **21 09 20 22** Time: **0800**

I certify that the information in A, B and C has been completed and is correct, that the carrier is registered or exempt and was advised of the appropriate precautionary measures. All of the waste is packaged and labelled correctly and the carrier has been advised of any special handling requirements.

I confirm that I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the Waste (England and Wales) Regulations 2011.

1. Consignor name: **C Boyce**
On behalf of (name, address, postcode, telephone, email, facsimile):
MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY

Signature: **C Boyce** Date: **21 09 20 22** Time: **1545**

PART E: Consignee's certificate (where more than one waste type is collected all of the information given below must be completed for each EWC)

Individual EWC code(s) received	Quantity of each EWC code received (kg)	EWC code accepted/rejected	Waste management operation (R or D code)
170605	6024	A	D-15

1. I received this waste at the address given in A3 on: Date: **22 09 20 22** Time: **1330**

2. Vehicle registration no. (or mode of transport if not road):

3. Where waste is rejected please provide details:

I certify that waste permit/exempt waste operation number:

EPR/UP3498VG

authorises the management of the waste described in B at the address given in A3.

Where the consignment forms part of a multiple collection, as identified in Part C, I certify that the total number of consignments forming the collection are:

Name: **M Tack**
On behalf of:
MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY

Signature: **M Tack** Date: **22 09 20 22** Time: **1330**

The Hazardous Waste Regulations 2005: Consignment Note

PART A Notification details

- 1 Consignment note code: **MCPENV/178335**
- 2 The waste described below is to be removed from (name, address, postcode):
McMEL TARMAC
BOLTON **BB1NP**
- 3 The waste will be taken to (name, address and postcode):
MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY
- 4 The waste producer was
MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY

PART B Description of the waste

If continuation sheet used, tick here ☐

- 1 The process giving rise to the waste(s) was: **Asbestos Removal**
- 2 SIC for the process giving rise to the waste: **39 - 00 /**
- 3 WASTE DETAILS (where more than one waste type is collected all of the information given below must be completed for each EWC identified)

Description of waste	List of wastes (EWC code)(6 digits)	Quantity (kg)	The chemical/biological components in the waste and their concentrations are:		Physical form (gas, liquid, solid, powder, sludge or mixed)	Hazard code(s)	Container type, number and size
			Component	Concentration (% or mg/kg)			
Cement	170603	333	Chrysotile	10 - 15%	Solid	HP7	35r
					Solid	HP7	
					Solid	HP7	

The information given below is to be completed for each EWC identified

EWC code	UN identification number(s)	Proper shipping name(s)	UN class(es)	Packing group(s)	Special handling requirements
170603	2590	White ASBstos	9	III	CN 1328
			9		
			9		

PART C Carrier's certificate

PART D Consignor's certificate

If more than one carrier is used, please attach schedule for subsequent carriers. If schedule of carriers is attached tick here ☐

I certify that I today collected the consignment and that the details in A2, A3 and B3 are correct and I have been advised of any specific handling requirements.

Where this note comprises part of a multiple collection the round number and collection number are:

4622 FYT 22/9/22 101

1 Carrier name: **STONNEN**
MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY

2 Carrier registration no./reason for exemption: **CBDU184628**

3 Vehicle registration no. (or mode of transport, if not road): **4622 FYT**

Signature: **[Signature]** Time **0800** Date **22/9/22**

I certify that the information in A, B and C has been completed and is correct, that the carrier is registered or exempt and was advised of the appropriate precautionary measures. All of the waste is packaged and labelled correctly and the carrier has been advised of any special handling requirements.

I confirm that I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the Waste (England and Wales) Regulations 2011.

1 Consignor name: **STONNEN**
On behalf of (name, address, postcode, telephone, email, facsimile):
MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY

Signature: **[Signature]** Date **22/9/27** Time **1300**

PART E Consignee's certificate (where more than one waste type is collected all of the information given below must be completed for each EWC)

Individual EWC code(s) received	Quantity of each EWC code received (kg)	EWC code accepted/rejected	Waste management operation (R or D code)
170603	333KG	A	D15

1 I received this waste at the address given in A3 on: Date **22/9/22** Time **1330**

2 Vehicle registration no. (or mode of transport if not road):

Name: **M SACK**
On behalf of

3 Where waste is rejected please provide details:

MCP ENVIRONMENTAL
Spartan Road, Low Moor, Bradford, BD12 0RY

I certify that waste permit/exempt waste operation number:

EPR/UP3498VG

authorises the management of the waste described in B at the address given in A3.

Where the consignment forms part of a multiple collection, as identified in Part C, I certify that the total number of consignments forming the collection are:

01

Signature: **[Signature]** Date **22/9/22** Time **1330**

Air Monitoring Certificate

Former Tarmac Manufacturing Facility
Stopes Road
Little Lever
Bolton
BL3 1NP



Inspectas Compliance Ltd
Head Office: Suite 1.11, Woodhead House, Woodhead Road, Birstall, WF17 9TD
Suite 19 Caxton Point, Caxton Way, Stevenage, Hertfordshire SG1 2XU
E info@inspectas.co.uk W inspectas.co.uk T 0844 264 0094

The inspectas logo, featuring the word "inspectas" in a bold, sans-serif font with a circular icon to the left.
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Job Details:



Name and address of client:	MCP Environmental, Enviro House, Spartan Road, Low Moor, Bradford, BD12 0RY		
Name and address of site:	Former Tarmac Manufacturing Facility, Stopes Road, Little Lever, Bolton, BL3 1NP		
Inspectas Compliance Ltd Work Type:	Air Monitoring		
Location of Work Area(s):	Area 2 Contaminated soils containing asbestos insulating board and asbestos cement		
Name of asbestos removal contractor:	MCP Environmental		
Asbestos contractor representative:	Levi Tattershall		
Scope of works:	Reassurance monitoring during picking through contaminated soil.		
Date of works:	01 Sep 2022		
Analyst(s):	Tony Alcock	Signature:	
Technically reviewed by:	Tony Alcock	Signature:	
Report issue date:	01 Sep 2022		

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Diary:

Date:	Entry time:	Description:	Photograph:
01/09/2022	08:00	Arrived on site	
01/09/2022	08:20	Established laboratory	
01/09/2022	09:15	Reassurance monitoring undertaken	
01/09/2022	10:21	Contractors commence picking through contaminated soils	

Air monitoring certificate



Job/Report Number	J018182/DU04	Site Address:	Former Tarmac Manufacturing Facility Stopes Road Little Lever Bolton BL3 1NP						Client	MCP Environmental					
Date	01 Sep 2022								Client Address	Enviro House Spartan Road Low Moor Bradford BD12 0RY					
Location Counted	Site														
Microscope No:	M13	Thermometer/ Barometer/ Timer No:	W 7 / W7 / W 7						Stage Micrometer:	SM23	NPL Test Slide No:	N23			
Graticule Diameter (um):	100	Temperature (K): (Not used in calculation)	296						Pressure (mb): (Not used in calculation)	1017	Fifth Band visible on NPL:	Yes			
High Flow meter No:	FL399441	Low flow meter No:	FL399434						Exposed filter diameter (mm):	22.4	Filter batch used:	Pot 689			
Sample	Sample Type	Sample Location/Lab Reference (See site plan)	Pump	Cowl	Start Time	Flow Rate (l/min)	Finish Time	Flow Rate (l/min)	Duration (mins)	Volume (litres)	Fibres	Fields	Calc concentration (f/ml)	Limit of quantification (f/ml)	
1	RM	Outside respirator zone / DU000862	HF82049	C126	09:15	10.0	10:10	9.5	55	536	2	180	0.0010	<0.010	
2	RM	Outside respirator zone / DU000863	HF82048	C127	09:15	10.0	10:10	9.5	55	536	1	180	0.0005	<0.010	
3	RM	Outside respirator zone / DU000864	HF82032	C128	09:15	10.0	10:10	9.5	55	536	2	180	0.0010	<0.010	
4	RM	Outside respirator zone / DU000865	HF82085	C129	09:16	10.0	10:10	9.5	54	527	0	183	0.00	<0.010	
Analyst Name:		Tony Alcock		Analyst Signature:						Date: Time:		01 Sep 2022 15:00			
Background Monitoring		Leakage Monitoring		Clearance Testing		Reassurance Monitoring		Suitability Monitoring		Compliance Monitoring		Field Blank			
BM		LM		CT		RM		SM		CM		FB			

The above sampling has been undertaken in accordance with the current version of HSG248, and documented in house procedures. Using this method, the lowest limit of quantification LOQ for a 480l sample is 0.010f/ml. For volumes less than this, the LOQ is quoted. Opinions and interpretations contained within this report are outside the scope of UKAS accreditation.

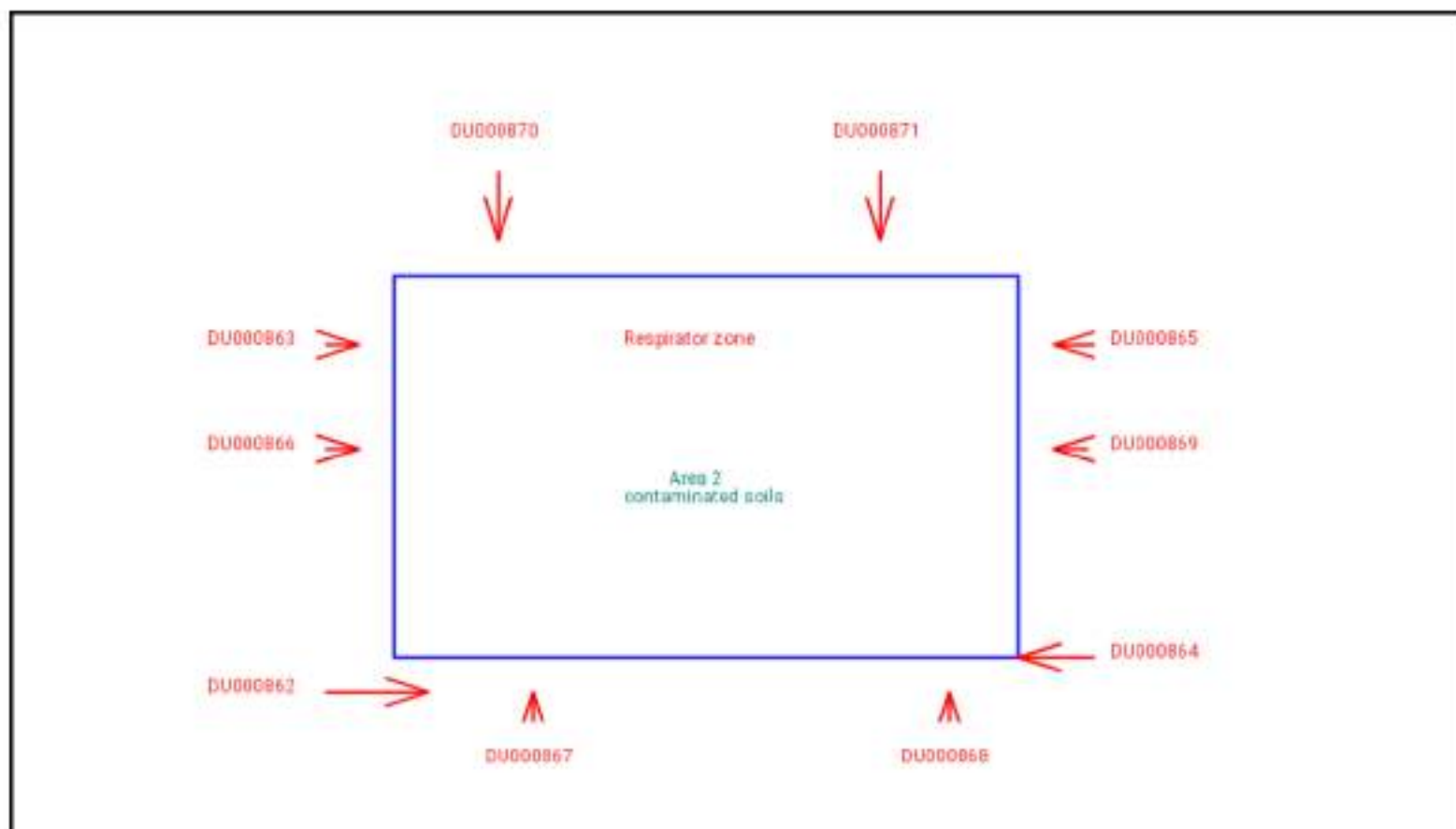
Job/Report Number	J018182/DU04		Site Address:		Former Tarmac Manufacturing Facility Stopes Road Little Lever Bolton BL3 1NP				Client		MCP Environmental			
Date	01 Sep 2022								Client Address		Enviro House Spartan Road Low Moor Bradford BD12 0RY			
Location Counted	Site													
Microscope No:	M13		Thermometer/Barometer/ Timer No:		W 7 / W7 / W 7				Stage Micrometer:		SM23		NPL Test Slide No:	N23
Graticule Diameter (um):	100		Temperature (K): (Not used in calculation)		296				Pressure (mb): (Not used in calculation)		1017		Fifth Band visible on NPL:	Yes
High Flow meter No:	FL399441		Low flow meter No:		FL399434				Exposed filter diameter (mm):		22.4		Filter batch used:	Pot 689
Sample	Sample Type	Sample Location/Lab Reference (See site plan)	Pump	Cowl	Start Time	Flow Rate (l/min)	Finish Time	Flow Rate (l/min)	Duration (mins)	Volume (litres)	Fibres	Fields	Calc concentration (f/ml)	Limit of quantification (f/ml)
5	RM	Outside respirator zone / DU000866	HF82049	C126	11:00	10.0	11:55	9.5	55	536	0.5	180	0.0003	<0.010
6	RM	Outside respirator zone / DU000867	HF82048	C127	11:00	10.0	11:55	9.5	55	536	4	180	0.0021	<0.010
7	RM	Outside respirator zone / DU000868	HF82032	C128	11:00	10.0	11:55	9.5	55	536	2	180	0.0010	<0.010
8	RM	Outside respirator zone / DU000869	HF82085	C129	11:00	10.0	11:55	9.5	55	536	1	180	0.0005	<0.010
Analyst Name:		Tony Alcock		Analyst Signature:						Date: Time:		01 Sep 2022 15:00		
Background Monitoring		Leakage Monitoring		Clearance Testing		Reassurance Monitoring		Suitability Monitoring		Compliance Monitoring		Field Blank		
BM		LM		CT		RM		SM		CM		FB		

The above sampling has been undertaken in accordance with the current version of HSG248, and documented in house procedures.
Using this method, the lowest limit of quantification LOQ for a 480l sample is 0.010f/ml. For volumes less than this, the LOQ is quoted.
Opinions and interpretations contained within this report are outside the scope of UKAS accreditation.

Job/Report Number	J018182/DU04		Site Address:		Former Tarmac Manufacturing Facility Stopes Road Little Lever Bolton BL3 1NP				Client		MCP Environmental				
Date	01 Sep 2022								Client Address		Enviro House Spartan Road Low Moor Bradford BD12 0RY				
Location Counted	Site														
Microscope No:	M13		Thermometer/Barometer/ Timer No:		W 7 / W7 / W 7				Stage Micrometer:		SM23		NPL Test Slide No:	N23	
Graticule Diameter (um):	100		Temperature (K): (Not used in calculation)		296				Pressure (mb): (Not used in calculation)		1017		Fifth Band visible on NPL:	Yes	
High Flow meter No:	FL399441		Low flow meter No:		FL399434				Exposed filter diameter (mm):		22.4		Filter batch used:	Pot 689	
Sample	Sample Type	Sample Location/Lab Reference (See site plan)	Pump	Cowl	Start Time	Flow Rate (l/min)	Finish Time	Flow Rate (l/min)	Duration (mins)	Volume (litres)	Fibres	Fields	Calc concentration (f/ml)	Limit of quantification (f/ml)	
9	RM	Outside respirator zone / DU000870	HF82049	C126	12:15	10.0	13:10	9.5	55	536	1.5	180	0.0008	<0.010	
10	RM	Outside respirator zone / DU000871	HF82048	C127	12:15	10.0	13:10	9.5	55	536	1	180	0.0005	<0.010	
11	FB	Field Blank / DU000874	N/A	C156	N/A	N/A	N/A	N/A	0	0			N/A		
Analyst Name:		Tony Alcock		Analyst Signature:						Date:		01 Sep 2022		Time:	15:00
Background Monitoring		Leakage Monitoring		Clearance Testing		Reassurance Monitoring		Suitability Monitoring		Compliance Monitoring		Field Blank			
BM		LM		CT		RM		SM		CM		FB			

The above sampling has been undertaken in accordance with the current version of HSG248, and documented in house procedures.
Using this method, the lowest limit of quantification LOQ for a 480l sample is 0.010f/ml. For volumes less than this, the LOQ is quoted.
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Appendix 1 - Site Plan



Key	Enclosure Work Area
Airlock/Baglock 	NPU 
Viewing Panel (VP) 	Transit Route 
Waste Route 	Skip 
Van 	DCU 
Retained Asbestos Location 	Sample Location AA999* (Example number)
Enclosure Length 0m	Enclosure Width 0m
Enclosure Height 0m	Enclosure M2/M3 0m ² 0m ³

We acknowledge that the above plan is a true representation of the site layout.

Analyst Name:	Tony Alcock	Analyst Signature:	
Date/Time:	01 Sep 2022 / 15:00		
Site Supervisor Name:	Levi Tattershall	Supervisor Signature:	
Date/Time:	01 Sep 2022 / 15:00		

Appendix 2 - Additional Photographs

			
Reassurance monitoring	Reassurance monitoring	Reassurance monitoring	Reassurance monitoring
No photographic evidence available.	No photographic evidence available.	No photographic evidence available.	No photographic evidence available.
No photographic evidence available.	No photographic evidence available.	No photographic evidence available.	No photographic evidence available.

Personal Air Monitoring Certificate

Former Tarmac Manufacturing Facility
Stopes Road
Little Lever
Bolton
BL3 1NP



Inspectas Compliance Ltd
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Suite 19 Caxton Point, Caxton Way, Stevenage, Hertfordshire SG1 2XU
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Personal Monitoring details:

Name and address of client:	MCP Environmental, Enviro House, Spartan Road, Low Moor, Bradford, BD12 0RY		
Name and address of site:	Former Tarmac Manufacturing Facility, Stopes Road, Little Lever, Bolton, BL3 1NP		
Employee name and job title:	James Winter		
Location of Work Area(s):	Area 2 contaminated soils including AIB and AC		
Mobile lab reference (if applicable):	N/A		
Product being worked on:	Asbestos Insulating Board		
Working being undertaken:	Picking through contaminated soils		
Mask type:	Negative pressure half face respirator		
Control measures in use:	Respirator zone segregation		
Tools/equipment employed:	Hand tools		
Date of test:	01 Sep 2022		
Analyst(s):	Tony Alcock	Signature:	
Technically reviewed by:	Tony Alcock	Signature:	
Report issue date:	01 Sep 2022		

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Personal Air monitoring certificate

Job/Report Number		J018182/DU05		Site Address:		Former Tarmac Manufacturing Facility Stopes Road Little Lever Bolton BL3 1NP				Client		MCP Environmental																					
Date		01 Sep 2022		Thermometer/ Barometer/ Timer No:		W 7 / W 7 / W 7				Client Address		Enviro House Spartan Road Low Moor Bradford BD12 0RY																					
Location Counted		Site								Stage Micrometer:		SM23		NPL Test Slide No:		N23																	
Microscope No:		M13		Temperature (K): (Not used in calculation)		296				Pressure (mb): (Not used in calculation)		1017		Fifth Band visible on NPL:		Yes																	
Graticule Diameter (um):		100		Low flow meter No:		FL399434				Exposed filter diameter (mm):		22.4		Filter batch used:		Pot 689																	
High Flow meter No:		FL399441		Sample		Sample Type		Sample Location/Lab Reference (See site plan)		Pump		Cowl		Start Time		Flow Rate (l/min)		Finish Time		Flow Rate (l/min)		Duration (mins)		Volume (litres)		Fibres		Fields		Calc concentration (f/ml)		Limit of quantification (f/ml)	
		1		SD		James Winter / DU000872		PP43		C130		10:30		2.0		12:35		2.0		125		250		1		100		0.0020		<0.04			
Analyst Name:		Tony Alcock				Analyst Signature:						Date:		01 Sep 2022		Time:		15:00															
Suitability Monitoring				Compliance Monitoring				STEL				Field Blank																					
SD (short duration)				CM (4 hr Control Limit)				ST (10mins)				FB																					

The above sampling has been undertaken in accordance with the current version of HSG248, and documented in house procedures.
Using this method, the lowest limit of quantification LOQ for a 480l sample is 0.010f/ml. For volumes less than this, the LOQ is quoted.
Opinions and interpretations contained within this report are outside the scope of UKAS accreditation.

Appendix 2 - Additional Photographs

	No photographic evidence available.	No photographic evidence available.	No photographic evidence available.
James Winter			
No photographic evidence available.	No photographic evidence available.	No photographic evidence available.	No photographic evidence available.
No photographic evidence available.	No photographic evidence available.	No photographic evidence available.	No photographic evidence available.

Personal Air Monitoring Certificate

Former Tarmac Manufacturing Facility
Stopes Road
Little Lever
Bolton
BL3 1NP



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Suite 19 Caxton Point, Caxton Way, Stevenage, Hertfordshire SG1 2XU
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Personal Monitoring details:

Name and address of client:	MCP Environmental, Enviro House, Spartan Road, Low Moor, Bradford, BD12 0RY		
Name and address of site:	Former Tarmac Manufacturing Facility, Stopes Road, Little Lever, Bolton, BL3 1NP		
Employee name and job title:	Levi Tattershall Supervisor		
Location of Work Area(s):	Area 2 contaminated soils containing AIB and AC		
Mobile lab reference (if applicable):	N/A		
Product being worked on:	Asbestos Insulating Board		
Working being undertaken:	Picking through contaminated soils		
Mask type:	Negative pressure half face respirator		
Control measures in use:	Respirator zone segregation		
Tools/equipment employed:	Hand tools		
Date of test:	01 Sep 2022		
Analyst(s):	Tony Alcock	Signature:	
Technically reviewed by:	Tony Alcock	Signature:	
Report issue date:	01 Sep 2022		

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Personal Air monitoring certificate

Job/Report Number		J018182/DU06		Site Address:		Former Tarmac Manufacturing Facility Stopes Road Little Lever Bolton BL3 1NP		Client		MCP Environmental					
Date		01 Sep 2022						Client Address		Enviro House Spartan Road Low Moor Bradford BD12 0RY					
Location Counted		Site						Stage Micrometer:		SM23		NPL Test Slide No:		N23	
Microscope No:		M13		Thermometer/Barometer/Timer No:		W 7 / W7 / W 7		Pressure (mb): (Not used in calculation)		1017		Fifth Band visible on NPL:		Yes	
Graticule Diameter (um):		100		Temperature (K): (Not used in calculation)		296		Exposed filter diameter (mm):		22.4		Filter batch used:		Pot 689	
High Flow meter No:		FL399441		Low flow meter No:		FL399434									
Sample	Sample Type	Sample Location/Lab Reference (See site plan)	Pump	Cowl	Start Time	Flow Rate (l/min)	Finish Time	Flow Rate (l/min)	Duration (mins)	Volume (litres)	Fibres	Fields	Calc concentration (f/ml)	Limit of quantification (f/ml)	
1	SD	Levi Tattershall / DU000873	PP38	C156	10:31	2.0	12:32	2.0	121	242	1.5	100	0.0031	<0.04	
Analyst Name:		Tony Alcock		Analyst Signature:						Date: Time:		01 Sep 2022 15:00			
Suitability Monitoring			Compliance Monitoring			STEL			Field Blank						
SD (short duration)			CM (4 hr Control Limit)			ST (10mins)			FB						

The above sampling has been undertaken in accordance with the current version of HSG248, and documented in house procedures.
Using this method, the lowest limit of quantification LOQ for a 480l sample is 0.010f/ml. For volumes less than this, the LOQ is quoted.
Opinions and interpretations contained within this report are outside the scope of UKAS accreditation.

Appendix 2 - Additional Photographs

	No photographic evidence available.	No photographic evidence available.	No photographic evidence available.
Levi Tattershall			
No photographic evidence available.	No photographic evidence available.	No photographic evidence available.	No photographic evidence available.
No photographic evidence available.	No photographic evidence available.	No photographic evidence available.	No photographic evidence available.

Report No:	J246629/HC01		
Nature of Work:	Analytical Air-monitoring (Reassurance) during land remediation		
Date of Work:	09/06/2022	Issue Date:	09/06/2022
Client Name & Address:	Site Address:		
VHE Construction plc 3175 Century Way Thorpe Park Leeds LS15 8ZB	Former Tarmac Depot Stopes Road Bolton BL3 1NP		
Location on Site:	Perimeter of the dig site (HS3)		
Order Placed By:	Nicola Fletcher	Site Contact:	Seb Gledhill
Technical Manager:	D Ely	Site Consultant(s):	S Boardman
Authorised Signatory Name:	S Boardman		
Job Title / Description:	Asbestos Consultant		
Signature:			
Time Commenced:	13:00	Time Ended:	16:55

Test method is as described by the HSE in HSG248

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Results:

Key: C = Clearance; L = Leak; B = Background; O = Occupational; R = Reassurance; NS = Near Source;
FS = Far Source; FB = Field Blank.

Sample ref.	Pump ref.	Head ref.	Key	Sampling Times	Rates of Flow (l/min)		Corrected Volume (litres)	Fibres / fields	Limit of Quantification (f/ml)	Reported airborne respirable fibre concentration (f/ml)*	Calculated airborne respirable fibre concentration (f/ml)**
					Start	Stop					
HC000248	HF 83477	762	R	13:54 / 15:54	8.2	8.2	984.0	3.5 / 200	0.005	<0.005	0.001
HC000249	HF 83478	765	R	13:55 / 15:55	8.2	8.2	984.0	2.0 / 200	0.005	<0.005	0.000
HC000250	HF 83479	766	R	13:56 / 15:56	8.2	8.2	984.0	3.0 / 200	0.005	<0.005	0.001
HC000251	HF 83614	767	R	13:57 / 15:57	8.2	8.2	984.0	3.5 / 200	0.005	<0.005	0.001
HC000252	AB4L 00999	754	O	14:23 / 15:23	2.0	2.0	120.0	4.5 / 200	0.04	<0.04	0.009
HC000253	N/A	757	FB	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Number of Samples: 6

Fibre Counting Analyst: S Boardman

Calibration Details:

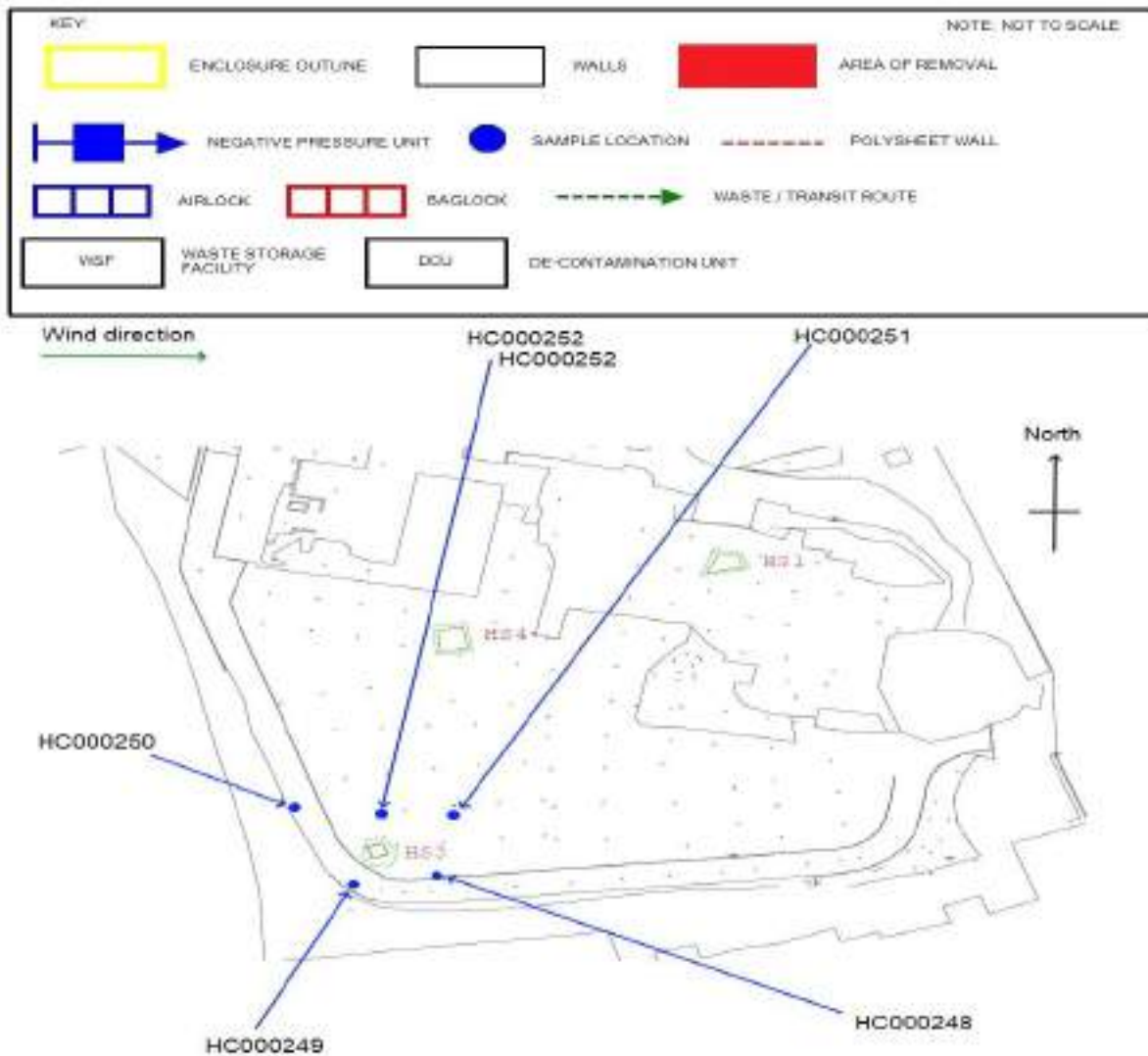
Microscope serial no.	600863	Stage micrometer no.	D 2020 12 17
Flowmeter serial no.	47089/3 + 46490/1	Graticule diameter (µm)	100
Timepiece serial no.	WSA 2020 12 17	HSE/NPL test slide no.	8589
"O" ring diameter (mm)	22	Group 5 observed on test slide	Yes
Hand Tally Serial Nos.	HTE 2020 12 17 HTG 2020 12 17	Barometer serial no. Thermometer serial no.	WSA 2020 12 17 WSA 2020 12 17

Site Conditions:

Asbestos removal contractor:	No Removal Contractor Required		
Asbestos materials removed:	Unknown	Filter preparation carried out in:	BX69LLZ
Temperature (K) @ sample site:	287	Pressure (mb) @ sample site:	1010
Temperature (K) @ calibration site:	292	Pressure (mb) @ calibration site:	1010
Were correction of sample volumes required: No (If corrections were required see comments section)			

Report No: J246629/HC01

Diagram: Former Tarmac Depot, Stopes Road, Bolton, BL3 1NP



Site diagram accurately represents situation on site.

Date: 09/06/2022

(Signature of client / contractor representative):

Date: 09/06/2022

(Signature of analyst):

Report No: J246629/HC01

Comments and Summary:

TIME	COMMENTS / SITE LOG	PHOTO
13:00	At the request of the client Bradley Environmental Consultant Ltd (BECL) attended site Former Tarmac Depot, Stopes Road, Bolton, BL3 1NP to carry out Reassurance (far source) air monitoring prior to digging works starting. Site supervisor Seb Gledhill (SG).	
13:14	BELC analyst Sam Boardman (SB) spoke to a site operative who informed him that management were in a meeting. The site operative said he did not know where the works were to take place and he would let the management know that SB is on site	No photographic evidence
13:54	Sample pump HC000248	

Report No: J246629/HC01
Comments and Summary:

TIME	COMMENTS / SITE LOG	PHOTO
13:55	Sample pump HC000249	 A photograph showing a sample pump (HC000249) installed in a gravel area. A chain-link fence is visible in the background, and the number '15' is painted on the gravel.
13:56	Sample pump HC000250	 A photograph showing a sample pump (HC000250) installed in a gravel area. A dense line of green trees is in the background.
13:57	Sample pump HC000251	 A photograph showing a sample pump (HC000251) installed in a gravel area. A chain-link fence and trees are visible in the background.

Report No: J246629/HC01

Comments and Summary:

TIME	COMMENTS / SITE LOG	PHOTO
13:58	4 x Static sampling pumps (Reassurance - far source) were calibrated at 8.2 litres per minute in line with HSG 248: Asbestos The Analyst Guide to withdraw a minimum of 480 litres per sample to obtain a limit of quantification of 0.005F/ML. The tests were to be located around test site HS3 - See plan for sample locations.	
14:23	BECL was conducting the Occupational monitoring today to assess the respiratory protection equipment worn by the operative during the works. The occupational pump was calibrated to 2.0 litres per minute in line with HSG 248: Asbestos The Analyst Guide. The occupational pump was running from 14:23 to 15:23. This meant that the pump had withdrawn 120 litres giving a detection limit of 0.04F/ML. For Occupational monitoring Joe Burgess (JB) was selected by Sam Boardman to be subject to occupational monitoring. Whilst JB was wearing the Occupational air monitor, he was operating an excavator to remove a layer of tarmac and a layer of the floor below. JB was wearing half face dust mask with a FFP3 filter giving an Assigned Protection Factor (APF) of 20 = 0.1 (control limit) x 20 (APF) = up to 2F/ML.	
14:59	All static sampling pumps were intermediately reflowed following 70mins of sampling (as per approved procedures) and found to be flowing at 8.2 litres per minute	No photographic evidence

Report No: J246629/HC01

Comments and Summary:

TIME	COMMENTS / SITE LOG	PHOTO
15:40	Analysis of the sample obtained from JB gave a reading of <0.04F/ML meaning that no high fibre levels were detected during the monitoring process and that the method of work is satisfactory and the RPE worn was suitable for the works taking place.	No photographic evidence
16:48	Analysis of the reassurance air tests revealed an airborne fibre concentration of <0.005F/ML which is indistinguishable to ambient fibre levels.	No photographic evidence
16:50	This concludes today's report	No photographic evidence

FCC Environment

6 Sidings Court
White Rose Way
Doncaster
DN4 5NJ
Tel: 01302303030
Fax: 01302303092

Customer
Profectus Soils Management Limited
Regent House
Bath Avenue
Wolverhampton
West Midlands
WV1 4EG

Customer Account Number
Customer Order Number
Waste Carrier's Reg No

OPROV2

CB0497331

Site
Maw Green Soil Treatment - Tel:

Ticket No 30202255
Enquiry No 2231488
Site No 1243
Landfill Tax Not Applicable
Vehicle Reg PF67EAC
Round Number
Transfer Note VHECON/80801
Source Trade

Waste Description
1705034 TPH impacted soil for treatment ex
Stopes Road, Bolton, BL3 1NP per analysis
28.10.22

Comments

Time	Tally	Weight(kg)
01-Nov-2022 10:29:17	127682	31620
01-Nov-2022 10:53:03	127684	13480
Nett Weight		18160

VAT No.: 637 8808 92
LFT No.: 01675 2920 15000
Operator's Signature

1 In
2 Ve

Driver's Signature

Na
onl

Pha

It is the driver's responsibility to ensure
that the details on this ticket are correct.

WASTE REGULATIONS 2005 (as amended)

CONSIGNMENT NOTE - DW2231468

COPIES: VHE - WHITE (3 GREEN
RETURNED BY HAULER AFTER SECTION E
COMPLETED)
HAULIER - YELLOW
RECEIVER - PINK

England:

N / 80801

If the waste is produced in Wales:

Address, telephone, fax, email):

3. Premises code (Wales only,
and if applicable):

IP

Address, telephone, fax, email):

FCC Environment, Maw Green Lane, Crewe, CW1 5NG

Address, telephone, fax, email):

Labelling Works of Former Manufacturing

2 SIC code (2007)

39.000

Information and EWC code must be completed for each type:

Hazard code	Physical form (eg. Solid, powder, combined)	Container or transport type	Approx quantity	UN identification no	Packing group	Shipping name
HP7 HP11	S	8 wheel tipper	19 tonnes			

Signature for subsequent content)

Number of schedules attached

in A2, A4 and B3 are correct and I have been advised of any specific handling

Signature) Ltd

Signature) Ltd, Overman Way, Swinton, Manchester M27 8BQ

email: dave.johnson@at-services-manchester

U97331

EAC

Date: 01/11/2022

Time: 08:00

Signature is registered or exempt and I was advised of any precautionary/special
also confirm that I have fulfilled my duty to apply the waste hierarchy as required by

Signature

Signature, 6 Newton Business Park, Thorncliffe Park Estate,
d, S35 2PH

email: richard.hargreaves@vhs.co.uk

Date: 01/11/22

Time: 08:00

Signature type is collected all of the information below must be completed for each EWC

E (E3)	Quantity of each EWC code received (kg)	Waste management operation (R or D code)
	18160	R05

Date: 01/11/22

Time: 10:40
Profectus Soils Management

Signature

Authorized Signature
Maw Green Soil Treatment Centre

Maw Green Road
Crewe CW1 5NG

email: andy.hodgson@profectus.co.uk

Date: 01/11/22

Time: 10:40

SECTION E COMPLETED HAULIER - YELLOW, RECEIVER - PINK

06

Issue Date: 02/08/18

Page 1 of 1



VHE Construction Plc, 6
Newton Business Park,
Thorndiffe Park Estate,
Sheffield, S35 2PH Tel:
01226 320150, Fax: 01226
320151

HAZARDOUS WASTE REGULATIONS 2005 (as amended)

CONSIGNMENT NOTE - DW2231468

COPIES: VHE - WHITE (A GREEN
RETURNED BY HAULER AFTER SECTION E
COMPLETED)
HAULER - YELLOW
RECEIVER - PINK

A NOTIFICATION DETAILS

1 Consignment note code (must be in format XXXXXX/YYYYY):	If the waste is produced in England: VHECON / 80801	If the waste is produced in Wales: _____ / _____
2 The waste is to be removed from (name, address, postcode, telephone, fax, email): VHE Construction, Little Lever, Bolton, BL3 1NP 07831 421 758		3 Premises code (Wales only, and if applicable):
4 The waste will be taken to (name, address, postcode, telephone, fax, email): Provectus Maw Green Soil Treatment Facility, FCC Environment, Maw Green Lane, Crewe, CW1 5NG 07487 742929		
5 The waste producer (if different to A2) (name, address, postcode, telephone, fax, email):		

B DESCRIPTION OF THE WASTE

1 The process giving rise to the waste is: Remediation and Enabling Works of Former Manufacturing Facility		2 SIC code (2007): 39.000	
3 Waste details (if more than one waste type is collected all the information and EWC code must be completed for each type):			
EWC code	The chemical/biological components of the waste and their concentrations are:	Hazard code	Physical form (eg. Solid, powder, combined)
	Component	Concentration (mg/kg)	
17 05 03	Soils and stones containing hazardous substances - TPH	TPH - 6300 PAH - 1630 HP7 HP11	S
			8 wheel tipper
			19 tonnes
Special handling requirements:			

C CARRIERS CERTIFICATE

I certify that I today collected the consignment and that the details in A2, A4 and B3 are correct and I have been advised of any specific handling requirements

1 On behalf of: Carriers name: **A1 Services (Manchester) Ltd**
(company name, address, postcode) **A1 Services (Manchester) Ltd, Overman Way, Swinton, Manchester M27 8BQ**

Phone no: **0161 736 2020** fax: email: **dave.johnson@a1services-manchester**

2 Carrier registration no./reason for exemption: **CBDU97331**

3 Vehicle registration no' or mode of transport if not road: **PF67 EAC**

Driver's Name: **PEACE**

Driver's Signature: *[Signature]* Date: **01/11/2022** Time: **08:00**

D CONSIGNOR'S CERTIFICATE

I confirm that the information in A, B and C above is correct, that the carrier is registered or exempt and I was advised of any precautionary/special handling measures, and the waste is loaded and labelled correctly. I also confirm that I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the Waste (England and Wales) Regulations 2011.

Name: **R. HARGREAVES** Signature: *[Signature]*
on behalf of (company name, address, postcode) **VHE Construction plc, 6 Newton Business Park, Thorndiffe Park Estate, Sheffield, S35 2PH**

Phone no: **01226 320150** fax: email: **richard.hargreaves@vhe.co.uk**

Date: **01/11/22** Time: **08:00**

E CONSIGNEE'S CERTIFICATE

(where more than one waste type is collected all of the information below must be completed for each EWC)

EWC code	Tick as appropriate		Details of rejected waste (E3)	Quantity of each EWC code received (kg)	Waste management operation (R or D code)
	Accepted	Rejected			
17 05 03	AC			18160	R05

1 I received the waste at the address given in A4 on: Date: **01/11/22** Time: **10:40**

2 Vehicle registration no' or mode of transport if not road: **BS7722ID**

I certify that waste management license/permit/exemption no:
Name: **A. STOCKTON** Signature: *[Signature]*
on behalf of (company name, address, postcode) **Provectus Soils Management
Maw Green Soil Treatment Centre
Maw Green Road
Crewe CW1 5NG**

Phone no: **07375897379** email: **andy.stockton@provectus.co.uk**

Date: **01/11/22** Time: **10:40**

Notice of transfer with introductory note

Environmental Permitting (England & Wales) Regulations 2010

McHale Contracts and Plant
Environmental LLP t/a MCP
Environmental LLP

Spartan Road
South Bradford Trading Estate
Low Moor
Bradford
BD12 0RY

Transfer application number
EPR/UP3498VG/T001

Permit number
EPR/UP3498VG

Spartan Road

Permit number EPR/UP3498VG

Introductory note

This introductory note does not form a part of the notice

The following notice gives notice of the transfer of an environmental permit to a new operator (the transferee).

Transfer is as a result of McHale Contracts and Plant Environmental Services LLP changing name to McHale Contracts and Plant Environmental LLP t/a MCP Environmental LLP.

The status log of a permit sets out the permitting history, including any changes to the permit reference number.

Status Log of the permit		
Detail	Date	Response Date
Application EPR/UP3498VG/T001 (full transfer of permit EAWML/65487)	Duly made 24/02/2011	
Additional Information Received (competency)	25/03/2011	
Transfer determined EPR/UP3498VG	11/04/2011	

End of Introductory Note

Notice of transfer

The Environmental Permitting (England and Wales) Regulations 2010

The Environment Agency in exercise of its powers under regulation 21 of the Environmental Permitting (England and Wales) Regulations 2010 transfers

Permit number
EPR/UP3498VG to:

McHale Contracts and Plant Environmental LLP t/a MCP Environmental LLP
(“the operator”)

whose registered office is

44 The Pantiles
Tunbridge Wells
Kent
TN2 5TN

company registration number OC348998

to operate a regulated facility at

Spartan Road
South Bradford Trading Estate
Low Moor
Bradford
BD12 0RY

from McHale Contracts and Plant Environmental Services LLP

This notice shall take effect from: 11/04/2011

Name	Date
Ben Evans	11/04/2011

Authorised on behalf of the Environment Agency

**McHale Contracts and Plant Environmental
LLP t/a MCP Environmental LLP
Spartan Road
South Bradford Trading Estate
Low Moor
Bradford
BD12 0RY**

Our ref: EPR/UP3498VG/T001

Date: 12 April 2011

Dear Sir or Madam,

Transfer of permit

Permit number: EA/EPR/UP3498VG/T001

Facility: Spartan Road, South Bradford Trading Estate, Low Moor, Bradford, BD12 0RY

I confirm that the transfer of this environmental permit from McHale Contracts and Plant Environmental Services LLP to you will take effect from 11 April 2011.

I enclose a transfer notice which shows the legal details of the transfer.

The environmental permit should have been passed to you by the previous operator during the handover of the property or business. If you do not have a copy of the permit you must contact a local officer. Telephone our Customer Contact Centre on 03708 506 506 and they will put you in touch with an area officer. The area officer can also help you with any other questions you have about the permit.

You will also need to look at the document 'How to comply with your environmental permit' as this will help you understand how to meet the conditions of the permit. You can find this on our website at

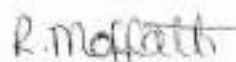
<http://www.environment-agency.gov.uk/business/topics/permitting/32320.aspx>

If you do not have internet access please telephone our Customer Contact Centre.

Please look at the table below and note any of the information or actions that apply to your permit.

If...	then..
you wish to keep your records at a site other than where the activity takes place	you will need to tell your local area officer within 20 working days of receiving this letter. If you do not hear back from them within a further 20 working days please take this to mean we have agreed your record keeping location.
you need to submit quarterly waste returns on waste movements	you can get the forms you need from our website http://www.environment-agency.gov.uk/business/topics/waste/32176.aspx If you do not have web access phone our Customer Contact Centre
you need to submit other returns	send these to your area office. Speak to your area officer to check local arrangements.
your permit includes an installation	we've enclosed the pollution inventory letter, notice and fact sheet.

Yours faithfully



Ria Moffatt
Permitting Support Advisor



ENVIRONMENT
AGENCY

**ENVIRONMENTAL PROTECTION ACT 1990.
WASTE MANAGEMENT LICENCE.**

LICENCE REF No :- EAWML/65487 FACILITY TYPE :- Transfer Station

The Environment Agency, in pursuance of Part II of the Environmental Protection Act 1990, hereby grant a waste management licence authorising the keeping of controlled waste on the land specified in schedule 1 to this licence to MCP Environmental Services LLP of 4 Mount Ephraim Road, Tunbridge Wells, Kent, TN1 1EE, Partnership Number OC310025, that person being in occupation of the said land, the said licence being subject to the conditions specified in schedule 2 to this licence.

SCHEDULE 1.- SPECIFIED LAND.

The licence relates to the land at Spartan Road, South Bradford Trading Estate, Low Moor, Bradford, West Yorkshire, BD12 0RY shown edged red on Drawing Reference Number Fig 2 attached to this licence.

Signed *P. Aspinall*
Team Leader Regulatory Waste

Name PAUL ASPINALL

Dated 27 September 2006

FOR ENVIRONMENT AGENCY OFFICIAL USE ONLY.

**YOUR ATTENTION IS DRAWN TO THE RIGHTS OF APPEAL DETAILED AT THE END OF THIS
LICENCE.**

EXPLANATORY NOTES - including rights of appeal.

RIGHTS OF APPEAL

Section 43(1) of the Environmental Protection Act 1990 provides that:

Where, except in pursuance of a direction given by the Secretary of State, a licence is granted subject to conditions, the applicant may appeal from the decision to the Secretary of State.

Therefore, if you feel aggrieved by the decision detailed on the attached notice, you may obtain the appropriate form on which to give written notice of an appeal from:-

The Planning Inspectorate
Environment Appeals Team
Room 4/19 Eagle Wing
Temple Quay House
2 The Square
Temple Quay
Bristol
BS1 6EA

For Wales, the address is:
The Planning Inspectorate
National Assembly for Wales
Environmental Protection Division
Crown Buildings
Cardiff
CF10 3NQ

Tel: 0117 372 8726
Fax: 0117 372 8139

Tel: 02920 823859
Fax: 02920 825150

This notice of appeal should be accompanied by the following information:

a statement of the grounds of appeal;

a copy of the licence;

a copy of any correspondence relevant to the appeal;

a copy of any other document relevant to the appeal including, in particular, any relevant consent, determination, notice, planning permission, established use certificate or certificate of lawful use or development and

a statement indicating whether you wish the appeal to be in the form of a hearing or on the basis of written representations.

You are also required to serve a copy of your notice of appeal, together with copies of any the above documents that have accompanied your notice of appeal, on the Environment Agency (at the address overleaf). You should appeal within 6 months of the date that this notice takes effect but the Secretary of State may allow notice of appeal to be given after the expiry of this time period.

 VHE CONSTRUCTION plc Quality Procedure	Site/Department	Stopes Road		
	Contract Number	808		
	Site Reference No	MS009	Revision	
	Date	JUNE 22	Page No	1 of 3

Method Statement

Activity/Title:	Excavation of Hydrocarbon Impacted Hotspots
This method statement is to be read in conjunction with the following site Risk Assessments: RA012 – Working with contaminated soils RA023 – Excavation RA026 – 360 excavator tracked RA029 – Forward/side tipping dumper TM Plan	
STAFF	Plant Operators Environmental Technician AWP Supervisor
PLANT	13t Excavator 6t forward tipping dumper Water Bowser
GENERAL REQUIREMENTS The General Foreman will ensure all personnel involved in the works are suitably trained, competent and experienced to carry out the work and that all equipment & plant to be used is suitable, tested, calibrated and inspected prior to commencing work. All operatives will undergo a full VHE induction & receive other relevant information when arriving on site. All personnel employed on this activity shall be equipped with the relevant PPE. The minimum requirements for this operation are safety helmet, fluorescent vest/jackets, safety footwear and gloves. Additional PPE will be worn if individual work activities and risk assessments dictate. A permit to work will be issued by the General Foreman, specific for the task, prior to any work commencing. The General Foreman is to ensure all operatives are briefed on the detail of this method statement and the relevant risk assessment. Task briefings will be presented at regular intervals.	
PREAMBLE The previous site investigation has highlighted the presence of two hydrocarbon hotspots; a larger hotspot relating to two historical tanks located in the vicinity of shaft 376407-007 (approximately 8m x 8m x 1.45m and 93m³) and a smaller hotspot located around WS216 (approximately 10m x 8m x 0.75m and 60m³). The following safe system of work will be adopted for the excavation of the smaller hydrocarbon hotspot, located around WS216. The hotspot has been identified between 1.2m to 1.6m bgl	



VHE CONSTRUCTION plc
Quality Procedure

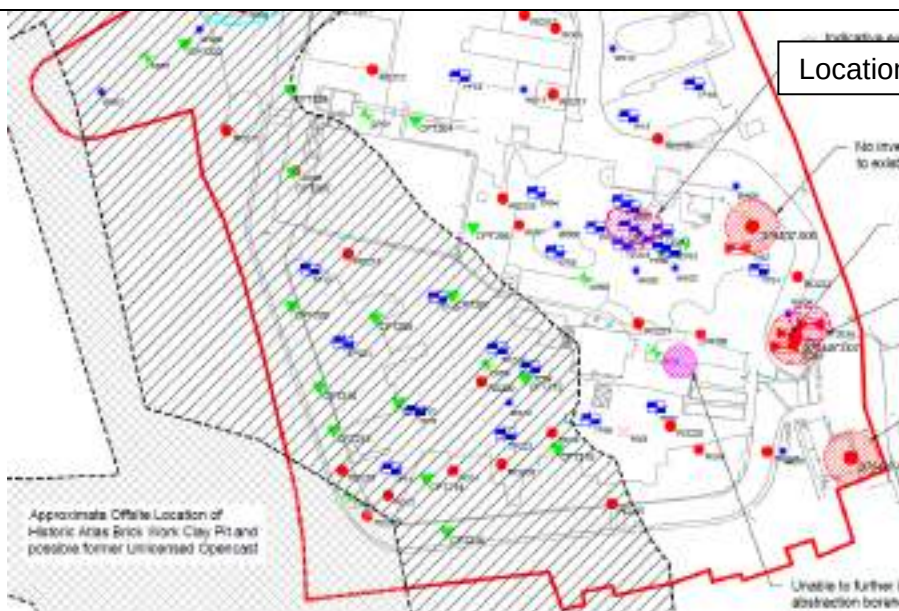
Site/Department	Stopes Road		
Contract Number	808		
Site Reference No	MS009	Revision	
Date	JUNE 22	Page No	2 of 3

- The hotspot location will be set out by the on site engineer.
- Individuals will then be briefed on the Risks and Methods associated with the works and how to undertake the task safely.
- An area for the stockpile is to be selected and visqueen lain down on the ground to provide a barrier between contaminated material and underlying ground.
- Before ground is broken, the area will be CAT scanned for underground services. Service plans obtained from service providers do not show any services in the area of the hotspot. If a service is detected, a member of the VHE site management team is to be consulted. The surrounding material may need to be excavated by hand.
- Under the supervision of a member of the VHE Technology team and a representative from Alan Wood & partners, the 13t excavator will begin excavating the hotspot.
- Clean material located within the top 1.2m (or above level of hotspot) will be excavated and stockpiled in a safe location to the side of the hotspot.
- Once the clean overlying material has been removed, contaminated material will be placed in the 6t dumper. The dumper operative must **not** be sat in the driving seat whilst loading is being undertaken.
- The 6t dumper will then transport the contaminated material to the stockpiling area, following the route depicted by the traffic management plan.
- Once all visually impacted material has been excavated, chemical validation samples will be attained and dispatched for laboratory analysis to confirm all residual contamination has been excavated.
- The sides of the excavation will be battered and the excavation barriered off, this is to allow further excavation if required.
- Once the excavation is safe, the engineer will survey the excavation to provide a base of excavation drawing.
- The stockpile will be sealed, labelled with the relevant EWC code, sampled and analysed for offsite disposal.
- This method statement will be utilised for all other hydrocarbon hotspots identified throughout the works, unless factors dictate a different safe system of work be adopted.



VHE CONSTRUCTION plc **Quality Procedure**

Site/Department	Stopes Road		
Contract Number	808		
Site Reference No	MS009	Revision	
Date	JUNE 22	Page No	3 of 3



Changes and Amendments

VHE Construction reserve the right to alter/amend, in consultation with the Principal Designer/ Client, the Method of Working as a result of on-going operations.

Prepared by: *S. Gledhill*

Approved by: *S. Gledhill*
(Sub Agent)

CF 6.1 Appendix D



Site/Department	Stopes Road		
Contract Number	808		
Site Reference No	MS 10	Revision	
Date	09.06.2022	Page No	1 of 2

Outline Method Statement

Activity/Title: Excavation of Hotspot 3 Soils Containing Asbestos

This method statement is to be read in conjunction with the following site Risk Assessments:

RA023 – Excavation

RA026 – 360 excavator tracked

RA029 – Forward/side tipping dumper

RA035 – Mechanically handling asbestos containing soils (ACS) – excavation, transport and stocking

GENERAL REQUIREMENTS:

Employees: Plant Operative
General Forman
VHE Environmental Engineer

All personnel employed on this activity shall be equipped with the relevant PPE. The minimum requirements are hard hats, safety boots, type 5/6 disposable overalls and FFP3 dust masks. Dust masks must be face fitted to operatives before works are undertaken. Ear protection is available as necessary. All personnel will be required to undertake a site induction before they commence work on the site. On completion of the works, disposable overalls and masks will be bagged up and placed in with the ACS.

Task briefings and toolbox talks will be carried out to ensure that all personnel are aware of the working methods and risks associated with them.

A designated quarantined stockpile area will be set up to separate the ACS and allow easy collection/disposal.

Plant: 360° Excavator
Water Bowser

Preamble

This method statement outlines the methods and procedures employed to excavate Hotspot 3. The excavation areas contain asbestos in soils, which must be removed. This is estimated from RO12 in the previous ground investigation to be an area of 5mx5mx0.5m.

Services

No services are shown on utility plans in the excavation area. The work are will be scanned with a CAT before works are undertaken. The excavation will be supervised by a banksman who will remain vigilant for any signs of services (sand cover, warning tape etc.)

Methodology

- The site engineer is to mark out the area to be excavated (5m x 5m grid around RO12).
- The area will be scanned with a CAT to identify any unexpected services within the area.



VHE CONSTRUCTION plc
Quality Procedure

Site/Department	Stopes Road		
Contract Number	808		
Site Reference No	MS 10	Revision	
Date	09.06.2022	Page No	2 of 2

- Prior to commencing the works a specialist asbestos air monitoring contractor shall set up both background monitors up and down wind of the excavation area as well as personal monitors on key persons involved in the task, i.e. excavator operation and dumper driver.
- The excavator shall remove the tarmac hardstanding. This is likely to require breaking out. If this is the case, the area will be dampened down first to avoid any fibres becoming airborne.
- Prior to excavation it must be ensured that the soils containing asbestos are damp and not likely to release fibres. Where the materials are dry the water bowser will be used to dampen down.
- The excavator shall remove the top 500mm of material, the ground investigation conducted by Hydrock identified asbestos cement at a depth of 0.2m.
- The stockpile will be formed in a safe location, within the vicinity of the hotspot.
- The excavator will move material directly to the stockpile area and deposit the material on top of the visqueen.
- Once 500mm of has been removed from the area, the formation will be inspected to identify if any visible fragments of asbestos remain, if they are still present further excavation will be undertaken as detailed above until there no more visible asbestos present.
- Where no further visible asbestos is present and the excavation is at least 500mm deep the works will be deemed complete.
- Where required the excavation sides are to be battered back to suitable angle. If this is not possible, the excavation will be fenced off using heras fencing.
- The stockpile will be sealed by the excavator and sampled for offsite disposal. Once this has been completed, the stockpile will be covered in visqueen to minimise airborne fibres. The visqueen will be weighed down.
- During the excavation works cognizance is to be taken to the wind direction. Where ever possible those involved with the excavation works are to stand upwind.

**Approved
by:**

S Gledhill (Sub Agent)

(Construction Director/Contracts Manager/Site Agent)

CF 6.1 Appendix D



Matthew Mains
VHE Construction plc
Whaley Road
Barug
Barnsley
S75 1HT

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404

f: 01923 237404

e: reception@i2analytical.com

e: VHELab@vhe.co.uk

Analytical Report Number : 22-64224-2A

Replaces Analytical Report Number: 22-64224-2A, issue no. 1
Report format change.

Project / Site name:	Stopes Road	Samples received on:	10/06/2022
Your job number:	808	Samples instructed on/ Analysis started on:	10/06/2022
Your order number:		Analysis completed by:	17/06/2022
Report Issue Number:	2A	Report issued on:	26/07/2022
Samples Analysed:	10 soil samples		


Signed:

Adam Fenwick
Technical Reviewer
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 22-64224-2A

Project / Site name: Stopes Road

Lab Sample Number				2309498	2309499	2309500	2309501	2309502
Sample Reference				HS216-C/1	HS216-C/2	HS216-N/1	HS216-N/2	HS216-E/1
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.70	2.70	1.60	2.70	1.60
Date Sampled				08/06/2022	08/06/2022	08/06/2022	08/06/2022	08/06/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	14	13	13	14	15
Total mass of sample received	kg	0.001	NONE	0.4	0.4	0.4	0.4	0.4

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 HS_1D_AL	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 HS_1D_AL	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 HS_1D_AL	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 EH_CU_1D_AL	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 EH_CU_1D_AL	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic > EC35 - EC44 EH_CU_1D_AL	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aliphatic (EC5 - EC35) EH_CU+HS_1D_AL	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (EC5 - EC44) EH_CU+HS_1D_AL	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10

TPH-CWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic > EC35 - EC44 EH_CU_1D_AR	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aromatic (EC5 - EC35) EH_CU+HS_1D_AR	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC44) EH_CU+HS_1D_AR	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 22-64224-2A

Project / Site name: Stopes Road

Lab Sample Number				2309503	2309504	2309505	2309506	2309507
Sample Reference				HS216-E/2	HS216-S/1	HS216-S/2	HS216-W/1	HS216-W/2
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.70	1.60	2.70	1.50	2.70
Date Sampled				08/06/2022	08/06/2022	08/06/2022	08/06/2022	08/06/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	23	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	13	14	15	14	17
Total mass of sample received	kg	0.001	NONE	0.4	0.4	0.4	0.4	0.4

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 HS_1D_AL	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 HS_1D_AL	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 HS_1D_AL	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 EH_CU_1D_AL	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	5
TPH-CWG - Aliphatic >EC12 - EC16 EH_CU_1D_AL	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	21	43
TPH-CWG - Aliphatic >EC16 - EC21 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	33	52
TPH-CWG - Aliphatic >EC21 - EC35 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	48	67
TPH-CWG - Aliphatic > EC35 - EC44 EH_CU_1D_AL	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aliphatic (EC5 - EC35) EH_CU+HS_1D_AL	mg/kg	10	MCERTS	< 10	< 10	< 10	100	170
TPH-CWG - Aliphatic (EC5 - EC44) EH_CU+HS_1D_AL	mg/kg	10	NONE	< 10	< 10	< 10	100	170

TPH-CWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	28	43
TPH-CWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	< 10	< 10	87	110
TPH-CWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	< 10	< 10	140	130
TPH-CWG - Aromatic > EC35 - EC44 EH_CU_1D_AR	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	26	20
TPH-CWG - Aromatic (EC5 - EC35) EH_CU+HS_1D_AR	mg/kg	10	MCERTS	< 10	< 10	< 10	250	290
TPH-CWG - Aromatic (EC5 - EC44) EH_CU+HS_1D_AR	mg/kg	10	NONE	< 10	< 10	< 10	280	310

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number : 22-64224-2A
Project / Site name: Stopes Road

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2309498	HS216-C/1	None Supplied	2.7	Brown loam and clay with gravel and vegetation.
2309499	HS216-C/2	None Supplied	2.7	Brown loam and clay with gravel and vegetation.
2309500	HS216-N/1	None Supplied	1.6	Brown loam and clay with gravel and vegetation.
2309501	HS216-N/2	None Supplied	2.7	Brown loam and clay with gravel and vegetation.
2309502	HS216-E/1	None Supplied	1.6	Brown sand with gravel.
2309503	HS216-E/2	None Supplied	2.7	Brown sand with gravel and stones.
2309504	HS216-S/1	None Supplied	1.6	Brown sand with gravel.
2309505	HS216-S/2	None Supplied	2.7	Light brown clay and sand with gravel.
2309506	HS216-W/1	None Supplied	1.5	Brown loam and clay with gravel and vegetation.
2309507	HS216-W/2	None Supplied	2.7	Brown loam and clay with gravel and vegetation.

Analytical Report Number : 22-64224-2A

Project / Site name: Stopes Road

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total



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Analytical Report Number : 22-64224-2B

Replaces Analytical Report Number: 22-64224-2B, issue no. 1
Report format change.

Project / Site name:	Stopes Road	Samples received on:	10/06/2022
Your job number:	808	Samples instructed on/ Analysis started on:	10/06/2022
Your order number:		Analysis completed by:	17/06/2022
Report Issue Number:	2B	Report issued on:	26/07/2022
Samples Analysed:	5 soil samples		

Signed:

Adam Fenwick
Technical Reviewer
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.



Analytical Report Number: 22-64224-2B

Project / Site name: Stopes Road

Lab Sample Number				2309508	2309509	2309510	2309511	2309512
Sample Reference				HS3-C	HS3-N	HS3-E	HS3-S	HS3-W
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.50	0.50	0.50	0.50
Date Sampled				09/06/2022	09/06/2022	09/06/2022	09/06/2022	09/06/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	SPU	SPU	SPU	SPU	SPU

U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 22-64224-2B

Project / Site name: Stopes Road

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.