Coal Mining Risk Assessment

DISTINCTION DOORS
WENTWORTH WAY
TANKERSLEY
BARNSLEY

for

Distinction Doors Limited

Report Number 4334

October 2023

Michael D Joyce Associates LLP
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Coal Mining Risk Assessment

DISTINCTION DOORS, WENTWORTH WAY, TANKERSLEY, BARNSLEY

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1 INTRODUCTION

1.1 At the request of Distinction Doors Limited, a Coal Mining Risk Assessment has been carried out of its site at Wentworth Way in Tankersley. As the site is located in a high risk coal mining referral area, Barnsley Metropolitan Borough Council has requested a Coal Mining Risk Assessment. This is in accordance with a planning application Ref: 2023/0870/INVALID, which consists of the proposed retention of 5 No. single storey cabins, 1 No. tent store, and the erection of a two storey cabin.

1.2 The proposed locations of these buildings are shown on figure 1. Further details are presented in Appendix 2, which also includes drawings and elevations of the units.

1.3 The assessment has not included other desk study research and no structural or asbestos surveys have been carried out.

2 THE SITE

2.1 The site is located off Wentworth Way in Tankersley, approximately 7km southwest of the centre of Barnsley. The Ordnance Survey National Grid Reference is 433850, 399725. The entire site has an approximate area of 2 hectares.

2.2 Historical maps dating from the late 19th Century to mid 20th Century record that the site was part of the former Wharncliffe Silkstone Colliery. The site itself was once occupied by several unidentified buildings and gasometers in the eastern corner of the site. There were also a series of railway tracks traversing the western part of the site. The main colliery buildings were located to the northwest of the site, with four former shaft records, just beyond the northwestern boundary of the site.

3 GEOLOGY AND MINING

3.1 Geology

3.1.1 Maps of the British Geological Survey (BGS), record the site as being underlain by Undifferentiated mudstones, siltstones and sandstones of the Carboniferous Pennine Lower Coal Measures.

3.1.2 The site is shown to be unaffected by faulting, and no recent Drift deposits are recorded.

3.2 Mining

3.2.1 The site lies predominantly within a "Development High Risk Area" as defined by the Coal Authority. A Consultant's Coal Mining Report has been obtained from the Coal Authority, and is reproduced in Appendix 1. It states that the shallowest recorded mining was in the Top Fenton Coal. It has been worked at a depth of 35m, with the last date of working being 1961. The extraction thickness was 1.4m. In addition, four deeper seams were also worked below the site.

3.2.2 The geological maps record the Flockton Thick Coal seam to outcrop, just to the east of the site, with the Tankersley Ironstone further to the east. These strata dip in an easterly direction, such that they do not affect the site.

3.2.3 The Flockton Thin Coal underlies the Flockton Thick and overlies the Top Fenton Coal seam. This seam was recorded as outcropping in a former railway cutting to the

southwest of the site. As such it is expected to outcrop to the west of the site, and to dip below the site at shallow depth.

3.2.4 A former shaft at Wharncliffe Colliery, just to the northwest of the site recorded the Flockton Thin to be at a depth of 7.3m, and comprising a composite seam of approximately 0.5m of coal, 0.6m of fireclay, and 0.2m of coal. The total seam thickness is recorded as being 1.3m.

3.2.5 The next shallowest seam recording in this shaft was the Top (High) Fenton Coal. This seam was approximately 20m below the surface.

3.2.6 The Coal Authority report also records a number of former mine entries close to the northwestern boundary of the site. However, none are recorded on the site itself. These shafts are associated with the former Wharncliffe Silkstone Colliery.

3.2.7 The nearest former shaft to the proposed units is Shaft No. 433399-002, and which is located approximately 15m northwest of the proposed cabin, and close to the northwestern boundary of the site. This shaft is reported to be capped for security purposes, but that the shaft is void (unfilled) below the cap.

3.2.8 One incident relating to mine gas was recorded 15m northwest of the site, and is likely to be associated with one of the adjacent shafts. No further details are given.

3.2.9 Former opencast mining has taken place close to the southeastern boundary of the site. However, the site itself is shown to be unaffected.

3.2.10 The Coal Authority report recorded none of the following below or in the vicinity of the site.

- Spine roadways at shallow depth
- Outcrops
- Geological faults, fissures or breaklines
- Coal Authority managed tips
- Site Investigations
- Remediated sites
- Coal Mining subsidence
- Mine water treatment schemes
- Future underground mining
- Coal mining licensing
- Court Orders
- Section 46 Orders
- Withdrawal of support notices
- Payments to owners

4 CONCLUSIONS AND RECOMMENDATIONS

4.1 According to the Coal Authority report the site has been undermined in several seams between 35m depth and 206m depth. This last mining took place in 1961. Under normal circumstances, subsidence from these workings should have ceased by now.

4.2 The Coal Authority also believes that "shallow" unrecorded workings could exist below the site. This is presumed to be in reference to the Flockton Thin Coal seam. The reason for this is that the Flockton Thin was of some economic value, and may have been worked prior to it being a statutory requirement to keep records of mineworkings.

4.3 The Flockton Thin Coal was recorded in a former shaft at Wharncliffe Silkstone Colliery at a depth of 7.3m below the surface, and where it has a thickness of approximately 1.3m.

4.4 Based on the depth of the known workings in the Top Fenton Coal of 35m and the recorded separation between the seams, this would place the Flockton Thin at a depth of 15m. However the site is large, and there may be some variation in this depth across the area.

4.5 When considering the depth of the seams in the shaft record and the known depth of workings at the site, this would place the Flockton Thin Coal at between 9m and 15m below the northwestern boundary of the site (i.e. close to the location of the proposed cabin). For cabins 1,2,3 and 4, it is estimated that the seam is at least 15m deep.

4.6 For permanent development purposes, it is generally accepted that there should be a thickness of rock above workings, equivalent to 10 times the thickness of extraction. For the Flockton Thin, this would be an overburden thickness of up to 13m. The reason for this is that 13m would be the maximum theoretical thickness of ground subsidence that could occur from former pillar and stall workings in the Flockton Thin. However, in practice subsidence normally only takes place to 5 times the extraction thickness.

4.7 In assessing the overall risk, it is also important to consider that the cabins are portakabin type structures, and are therefore low-cost temporary structures, and resting on existing hardstanding.

4.8 For cabins 1 to 5, the Flockton Thin is likely to be too deep to be of concern. In respect of the proposed cabin on the northwestern boundary, a theoretical risk of surface subsidence exists. However, the consequences of surface subsidence on the portakabin would be low. This risk could be minimised further by placing the cabin on a reinforced concrete raft.

4.9 Whilst the potential for surface subsidence cannot be entirely precluded, the overall risks associated with shallow unrecorded workings are considered to be low, when considering all the above factors.

4.10 In the unlikely event of surface subsidence, any damage to the cabins would be limited. The cabins are also elevated, such that they are ventilated below floor level. This is expected to provide protection in respect of the potential for unrecorded mine gas reaching the surface. The tent is assumed to be well ventilated by its nature.

4.11 The nearest shaft is located approximately 15m from the nearest cabin. Given that its location is known and it is capped, the risk of collapse is low and is not expected to affect the site should this occur.

4.12 In conclusion, the overall risk of former unrecorded shallow mining impacting upon the proposed temporary development is therefore considered to be low. It should however be noted that the risk of subsidence cannot be entirely precluded, and an intrusive investigation would be needed to establish the actual geology and therefore the risk.

A D Joyce

BSc MSc ARSM CEng CGeol CEnv MICE FGS SiLC SQP

October 2023

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Procedure Notes

The desk study and/or ground investigation have been carried out using reasonable skill and care in accordance with the principles of Ground Investigation and Testing", BS5930: 2013 and BS10175:2011+A1:2013, and the terms of the client's brief. The report has been prepared for the specific purposes notified at the time of the initial enquiry.

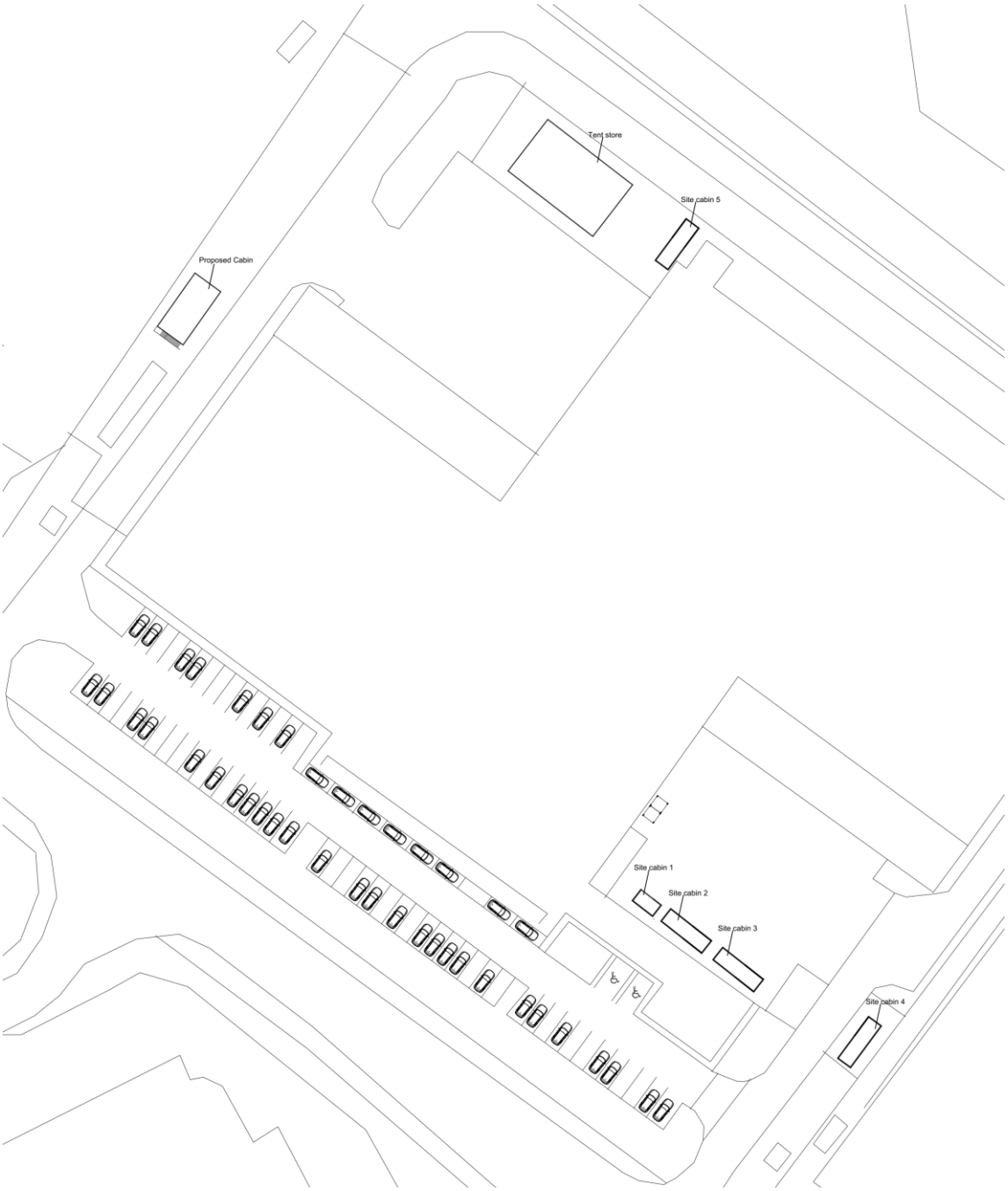
By its very nature any ground investigation only encounters and samples a small percentage of the ground. Consequently changes in ground conditions and soil properties can occur between any two exploratory points, for example local features such as soft ground, pockets of contamination and faults. This is also true of the exploration of mineworkings and such features can extend beneath parts of the site not investigated. Unrecorded bell pits and shafts can also exist between exploratory points. The ground investigation is designed to minimize such risks. Conclusions and recommendations are based on the information presented in this report, but unforeseen features may exist. No liability can be accepted for conditions not revealed by the exploratory holes. Therefore, actual ground conditions should be noted during construction and further advice sought if they differ from those predicted. Michael D. Joyce LLP reserves the right to amend the conclusions and recommendations in the light of further information. Actual methods of construction or alternative designs should be notified to Michael D. Joyce Associates LLP, such that the recommendations made can be reconsidered in the light of any changes.

Further investigation can be carried out to further reduce uncertainty and risk but ultimately these risks cannot be eliminated. Similarly a desk study normally only considers readily available information and further information could be held by other sources. In commissioning further research or investigation the cost/benefit of doing so must be considered.

It is assumed that groundlevels will not change significantly from those at present. The groundwater conditions are based on observations made at the time of the investigation, unless stated otherwise. It should be noted that the observations are subject to the method of the boring or excavation and that groundwater levels will vary due to seasonal or other effects.

Where buildings are present on a site, structural and asbestos surveys have not been carried out, unless specifically stated. An Unexploded Ordnance Survey has not been carried out unless specifically stated. In relevant situations it would be prudent to commission such surveys.

Where information has been obtained from Third Parties, no liability can be accepted for the accuracy or completeness of this information. Where anecdotal evidence or speculations are presented, they must be treated as such and cannot be relied upon.



Distinction Doors, Wentworth Way, Tankersley, Barnsley

Site Plan and Development Proposals

Michael D Joyce Associates LLP

Geotechnical and Geoenvironmental Consultants

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Scale: NTS

Figure: 1

APPENDIX 1

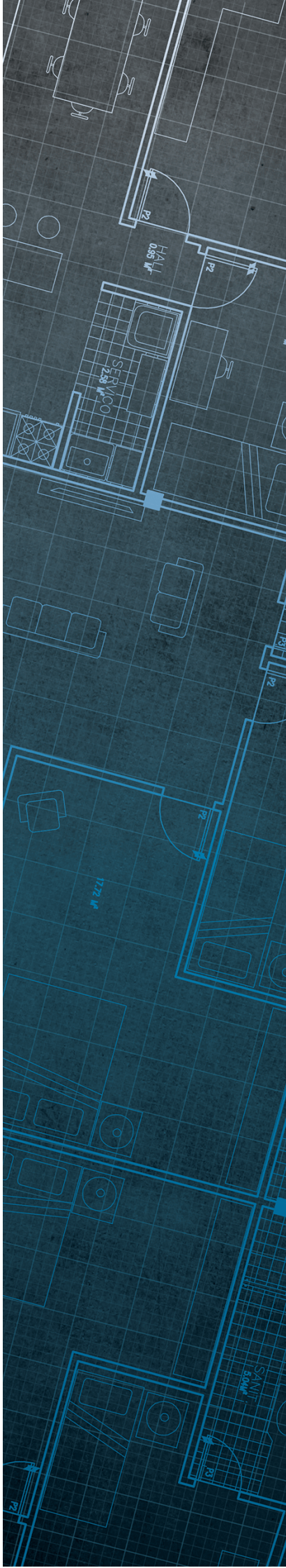
Coal Authority Consultant's Mining Report

The Coal Authority

Consultants

Coal Mining Report

Wentworth Way, Wentworth
Industrial Park, Tankersley, Pilley,
Barnsley
South Yorkshire
S75 3DH



Date of enquiry:	**2 October 2023**
Date enquiry received:	**2 October 2023**
Issue date:	**2 October 2023**
Our reference:	**51003380977001**
Your reference:	**HMD-354-YPX-G2L-DX9-MNA**

Consultants

Coal Mining Report

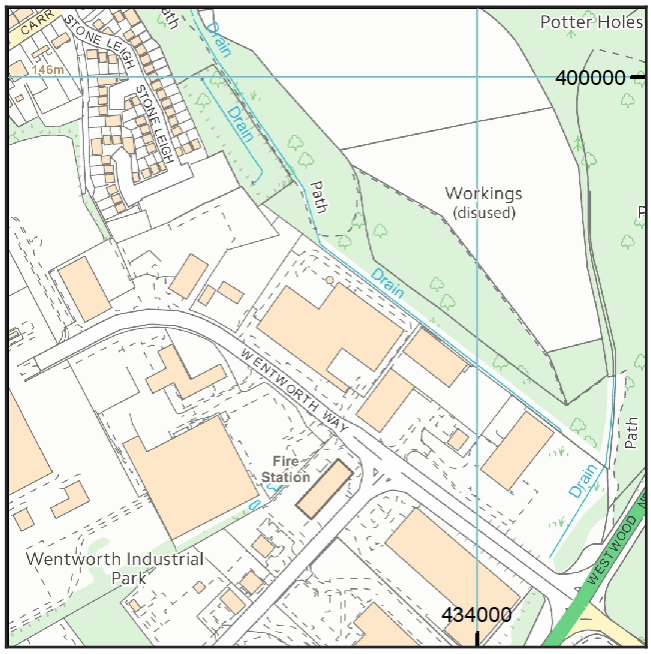
This report is based on and limited to the records held by the Coal Authority at the time the report was produced.

Client name

GROUNDSURE LIMITED

Enquiry address

Wentworth Way, Wentworth Industrial Park,
Tankersley, Pilley, Barnsley
South Yorkshire
S75 3DH



Approximate position of property

Map data

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Section 1 – Mining activity and geology

Past underground mining

Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
WHARNCLIFFE	TOP FENTON	Coal	6IZ5	35	Beneath Property	4.8	North-East	140	1961
WENTWORTH	PARKGATE	Coal	65RD	58	North-East	6.6	North-East	160	1896
unnamed	PARKGATE	Coal	65RE	59	Beneath Property	6.6	East	160	1896
TANKERSLEY	THORNCLIFFE	Coal	65R1	81	Beneath Property	5.5	North-East	68	1886
WHARNCLIFFE	MIDDLETON MAIN	Coal	65R2	81	Beneath Property	5.3	North-East	90	1878
unnamed	THORNCLIFFE	Coal	6620	101	East	4.8	North-East	76	1895
unnamed	SILKSTONE	Coal	65RL	144	Beneath Property	5.2	East	170	1875
TANKERSLEY	SILKSTONE	Coal	6IZD	165	East	4.5	East	180	1874
unnamed	WHINMOOR	Coal	65R9	190	West	5.3	North-East	91	1910
TANKERSLEY	WHINMOOR	Coal	65RB	206	Beneath Property	5.3	North-East	74	1915
TANKERSIDE	WHINMOOR	Coal	6XM0	220	East	4.4	North-East	91	1918

Probable unrecorded shallow workings

Yes.

Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

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Mine entries

Entry type	Reference	Grid reference	Treatment description	Mineral	Conveyancing details
Shaft	433399-001	433798 399821		Coal	
Shaft	433399-002	433765 399774	is capped for security purposes only with a 400mm thick concrete cap founded on close fit rails. The shaft is void beneath the cap	Coal	
Shaft	433399-003	433732 399750	is covered with a 4m x 4m concrete cap, is situated within a fenced compound and is used for venting and water monitoring	Coal	
Shaft	433399-015	433750 399811	is filled and capped	Coal	
Shaft	433399-018	433736 399779		Coal	
Shaft	433399-019	433779 399817	is capped and is open beneath the cap	Coal	
Adit	433399-043	433731 399675	is filled from the surface to a distance half way down the drift	Coal	

Abandoned mine plan catalogue numbers

The following abandoned mine plan catalogue numbers intersect with some, or all, of the enquiry boundary:

M668	M671	SY92
9356	SY90	M17
NE853	8641	8642

Our records show we have more plans than those shown above which could affect the enquiry boundary.

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

Outcrops

No outcrops recorded.

Geological faults, fissures and breaklines

No faults, fissures or breaklines recorded.

Opencast mines

Please refer to the “Summary of findings” map (on separate sheet) for details of any opencast areas within 500 metres of the enquiry boundary.

Coal Authority managed tips

None recorded within 500 metres of the enquiry boundary.

Section 2 – Investigative or remedial activity

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

Site investigations

None recorded within 50 metres of the enquiry boundary.

Remediated sites

None recorded within 50 metres of the enquiry boundary.

Coal mining subsidence

The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31 October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

Mine gas

Distance to gas incident/remediation (m)	Direction
488.8	North
15.3	North-West
489.0	South

See Section 4 for further information.

Mine water treatment schemes

None recorded within 500 metres of the enquiry boundary.

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Section 3 – Licensing and future mining activity

Future underground mining
None recorded.

Coal mining licensing
None recorded within 200 metres of the enquiry boundary.

Court orders
None recorded.

Section 46 notices
No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

Withdrawal of support notices
The property is not in an area where a notice to withdraw support has been given.

The property is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.

Payments to owners of former copyhold land
The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

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Section 4 – Further information

The following potential risks have been identified and as part of your risk assessment should be investigated further.

Future development

If development proposals are being considered, technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site. All proposals should apply specialist engineering practice required for former mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or coal mines without first obtaining the permission of the Coal Authority.

MINE GAS: Please note, if there are no recorded instances of mine gas within 500m of the enquiry boundary, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded. Developers should be aware that the investigation of coal seams, mine workings or mine entries may have the potential to generate and/or displace underground gases. Associated risks both to the development site and any neighbouring land or properties should be fully considered when undertaking any ground works. The need for effective measures to prevent gases migrating onto any land or into any properties, either during investigation or remediation work, or after development must also be assessed and properly addressed. In these instances, the Coal Authority recommends that a more detailed Gas Risk Assessment is undertaken by a competent assessor.

Development advice

The site is within an area of historical coal mining activity. Should you require advice and/or support on understanding the mining legacy, its risks to your development or what next steps you need to take, please contact us.

Mine gas remedial works

The site is within an area of previous interest. It is close to where the Coal Authority has investigated and subsequently remediated the effects of mine or ground gas emissions following specific reported hazards.

The site requires further investigation and may influence your risk assessment. We recommend that you order the **Coal Authority Mine Gas Emission Report**, which will include more information about the hazard.

For further information on specific site or ground investigations in relation to any issues raised in Section 4, please call us on 0345 762 6848 or email us at groundstability@coal.gov.uk.

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Section 5 – Data definitions

The datasets used in this report have limitations and assumptions within their results. For more guidance on the data and the results specific to the enquiry boundary, please **call us on 0345 762 6848** or **email us at groundstability@coal.gov.uk.**

Past underground coal mining

Details of all recorded underground mining relative to the enquiry boundary. Only past underground workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination, will be included.

Probable unrecorded shallow workings

Areas where the Coal Authority believes there to be unrecorded coal workings that exist at or close to the surface (less than 30 metres deep).

Spine roadways at shallow depth

Connecting roadways either, working to working, or, surface to working, both in-seam and cross measures that exist at or close to the surface (less than 30 metres deep), either within or within 10 metres of the enquiry boundary.

Mine entries

Details of any shaft or adit either within, or within 100 metres of the enquiry boundary including approximate location, brief treatment details where known, the mineral worked from the mine entry and conveyance details where the mine entry has previously been sold by the Authority or its predecessors British Coal or the National Coal Board.

Abandoned mine plan catalogue numbers

Plan numbers extracted from the abandoned mines catalogue containing details of coal and other mineral abandonment plans deposited via the Mines Inspectorate in accordance with the Coal Mines Regulation Act and Metalliferous Mines Regulation Act 1872. A maximum of 9 plan extents that intersect with the enquiry boundary will be included. This does not infer that the workings and/or mine entries shown on the abandonment plan will be relevant to the site/property boundary.

Outcrops

Details of seam outcrops will be included where the enquiry boundary intersects with a conjectured or actual seam outcrop location (derived by either the British Geological Survey or the Coal Authority) or intersects with a defined 50 metres buffer on the coal (dip) side of the outcrop. An indication of whether the Coal Authority believes the seam to be of sufficient thickness and/or quality to have been worked will also be included.

Geological faults, fissures and breaklines

Geological disturbances or fractures in the bedrock. Surface fault lines (British Geological Survey derived data) and fissures and breaklines (Coal Authority derived data) intersecting with the enquiry boundary will be included. In some circumstances faults, fissures or breaklines have been known to contribute to surface subsidence damage as a consequence of underground coal mining.

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Opencast mines
Opencast coal sites from which coal has been removed in the past by opencast (surface) methods and where the enquiry boundary is within 500 metres of either the licence area, site boundary, excavation area (high wall) or coaling area.

Coal Authority managed tips
Locations of disused colliery tip sites owned and managed by the Coal Authority, located within 500 metres of the enquiry boundary.

Site investigations
Details of site investigations within 50 metres of the enquiry boundary where the Coal Authority has received information relating to coal mining risk investigation and/or remediation by third parties.

Remediated sites
Sites where the Coal Authority has undertaken remedial works either within or within 50 metres of the enquiry boundary following report of a hazard relating to coal mining under the Coal Authority's Emergency Surface Hazard Call Out procedures.

Coal mining subsidence
Details of alleged coal mining subsidence claims made since 31 October 1994 either within or within 50 metres of the enquiry boundary. Where the claim relates to the enquiry boundary confirmation of whether the claim was accepted, rejected or whether liability is still being determined will be given. Where the claim has been discharged, whether this was by repair, payment of compensation or a combination of both, the value of the claim, where known, will also be given.

Details of any current 'Stop Notice' deferring remedial works or repairs affecting the property/site, and if so the date of the notice.

Details of any request made to execute preventative works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991. If yes, whether any person withheld consent or failed to comply with any request to execute preventative works.

Mine gas
Reports of alleged mine gas emissions received by the Coal Authority, either within or within 500 metres of the enquiry boundary that subsequently required investigation and action by the Coal Authority to mitigate the effects of the mine gas emission. Please note, if there are no recorded instances of mine gas reported, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded.

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Mine water treatment schemes
Locations where the Coal Authority has constructed or operates assets that remove pollutants from mine water prior to the treated mine water being discharged into the receiving water body.

These schemes are part of the UK's strategy to meet the requirements of the Water Framework Directive. Schemes fall into 2 basic categories: Remedial – mitigating the impact of existing pollution or Preventative – preventing a future pollution incident.

Mine water treatment schemes generally consist of one or more primary settlement lagoons and one or more reed beds for secondary treatment. A small number are more specialised process treatment plants.

Future underground mining
Details of all planned underground mining relative to the enquiry boundary. Only those future workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination will be included.

Coal mining licensing
Details of all licenses issued by the Coal Authority either within or within 200 metres of the enquiry boundary in relation to the under taking of surface coal mining, underground coal mining or underground coal gasification.

Court orders
Orders in respect of the working of coal under the Mines (Working Facilities and Support) Acts of 1923 and 1966 or any statutory modification or amendment thereof.

Section 46 notices
Notice of proposals relating to underground coal mining operations that have been given under section 46 of the Coal Mining Subsidence Act 1991.

Withdrawal of support notices
Published notices of entitlement to withdraw support and the date of the notice. Details of any revocation notice withdrawing the entitlement to withdraw support given under Section 41 of the Coal Industry Act 1994.

Payment to owners of former copyhold land
Relevant notices which may affect the property and any subsequent notice of retained interests in coal and coal mines, acceptance or rejection notices and whether any compensation has been paid to a claimant.

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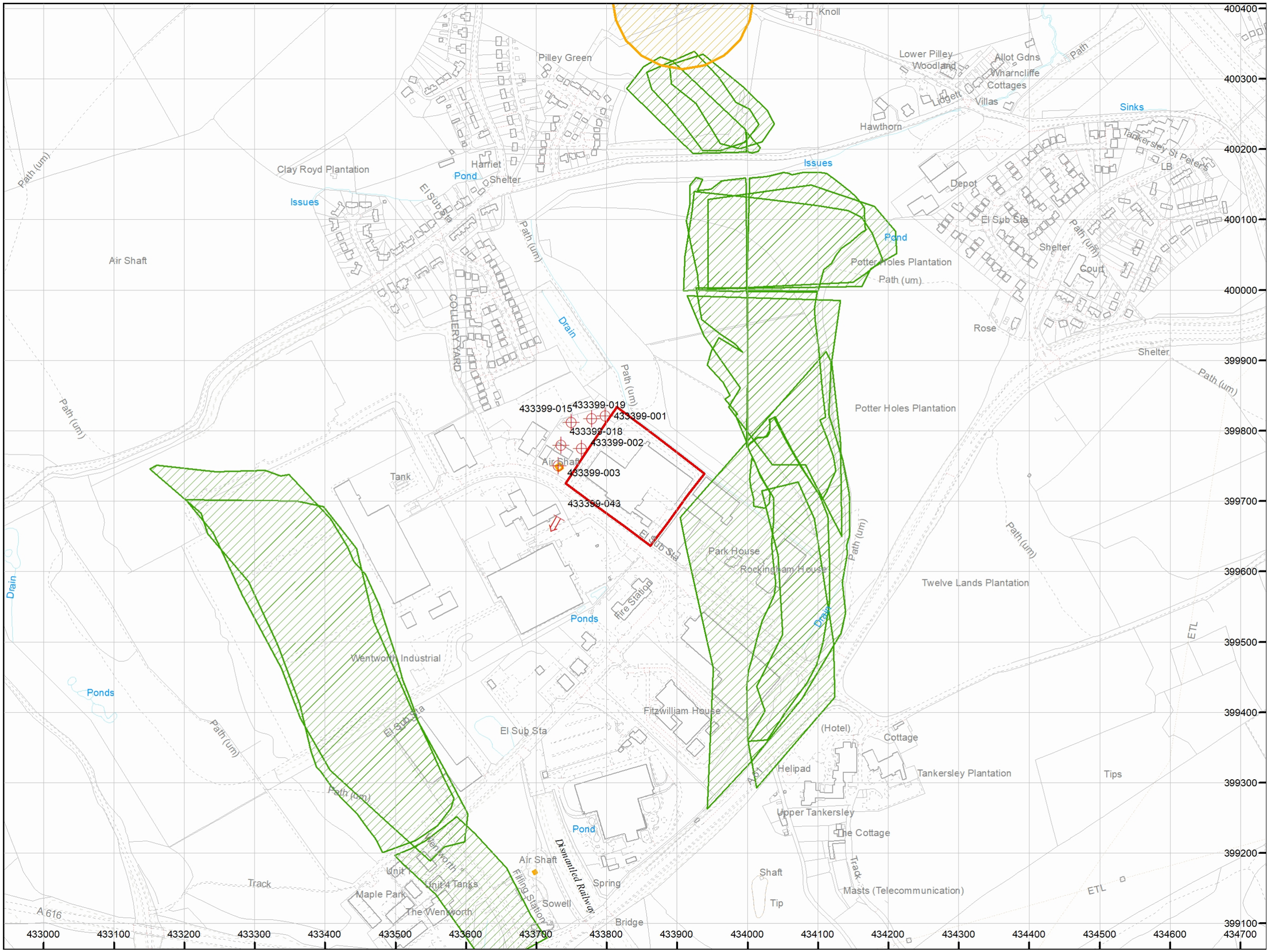
Summary of findings

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The map highlights any specific surface or subsurface features within or near to the boundary of the site.

Key

- Approximate position of the enquiry boundary shown
- Disused mine shaft
- Disused adit
- Unlicensed opencast site
- Mine gas remedial works



How to contact us
0345 762 6848 (UK)
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APPENDIX 2

Proposed Development Location including Drawings and Elevations of Structures



Location Plan 1:1250

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NOTES

ALL DIMENSIONS TO BE CHECKED ON SITE

ALL SUBJECT TO STRUCTURAL ENGINEERS CHECKS AND CALCULATIONS

TO BE READ IN CONJUNCTION WITH CONSTRUCTION SPECIFICATION

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Rev.	Date.	Remarks
-	-	-

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Client.
Distinction Doors Limited

Wentworth 36, Wentworth Way, Tankersley

LOCATION PLAN

Scales.	Date.
1:1250 @ A1	July 23

Drawing Number.	Revision.	Drawn by.
2023-065-01	-	KLU

Existing Site Plan 1:500



10m 50m

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Rev.	Date.	Remarks
-	-	-

NOTES

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SITE EXISTING

Scales.	Date.
1:500 @ A1	July 23
Drawing Number.	**Revision.**	**Drawn by.**
2023-065-02	-	KLU

Proposed Site Plan 1:500



10m 50m

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Rev.	Date.	Remarks

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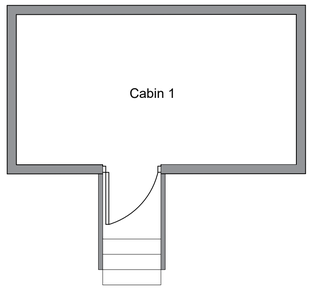
Client.
Distinction Doors Limited

Wentworth 36, Wentworth Way, Tankersley

SITE PROPOSED

Scales.	Date.
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Drawing Number.	Revision.	Drawn by.
2023-065-03	-	KLU

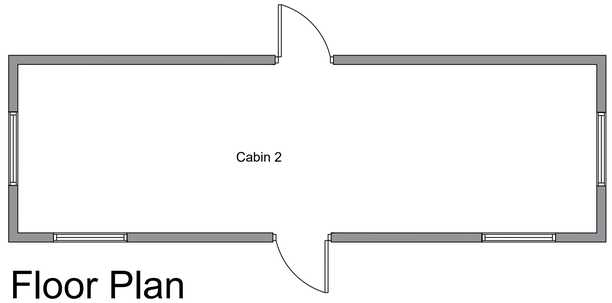
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Floor Plan

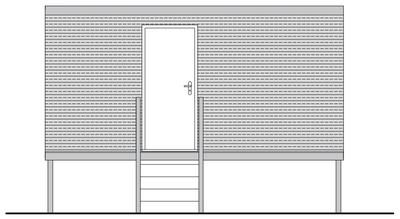
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Meter's 1:50 @ A1



Floor Plan

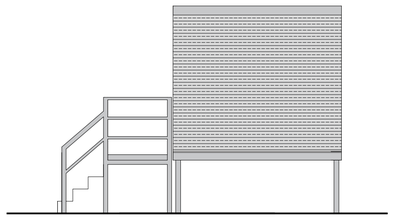
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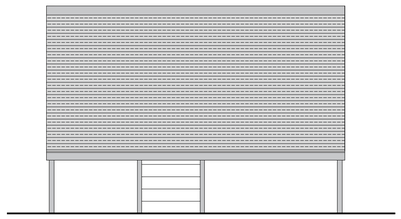
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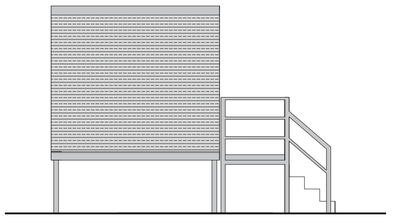
Meter's 1:50 @ A1



Side Elevation

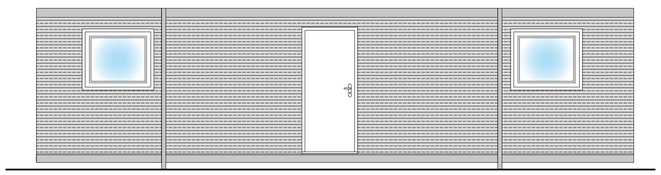


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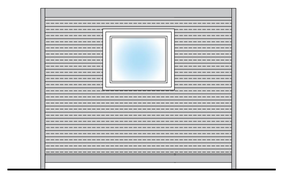


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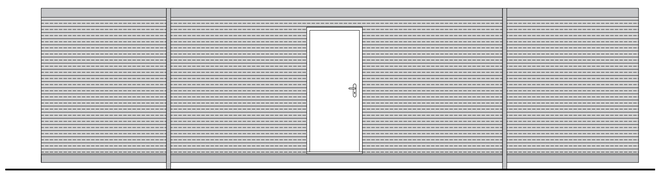
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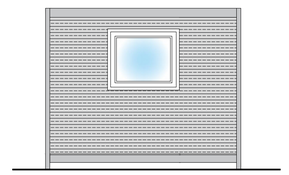
Front Elevation



Side Elevation



Rear Elevation



Side Elevation

Materials

- Grey - Store Tent (material)
- Grey - Metal Cabin
- Glazing

NOTES

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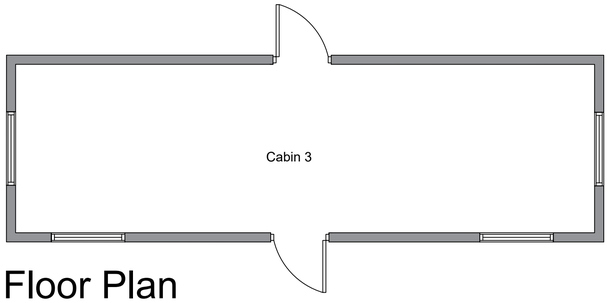
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EXISTING CABINS

Scales.	Date.
1:50 @ A1	July 23
Drawing Number. 2023-065-04	Revision.
	Drawn by. KLU

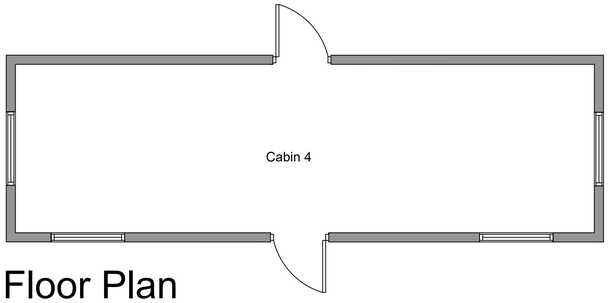
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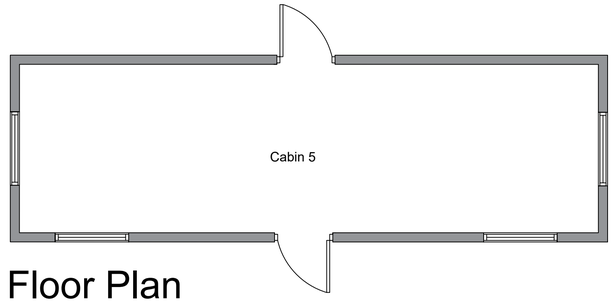
Floor Plan

0 1 2 3 4 5

Meter's 1:50 @ A1

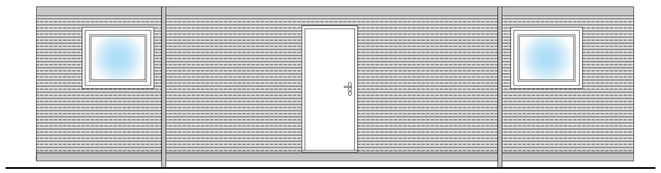


Floor Plan

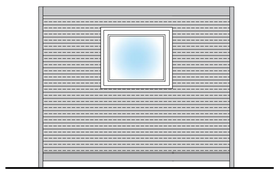


Floor Plan

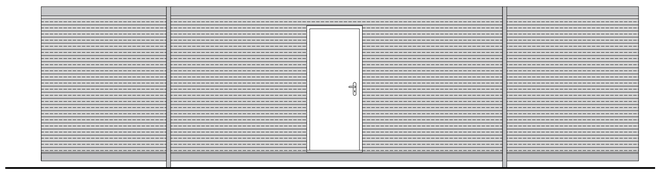
Cabin 3



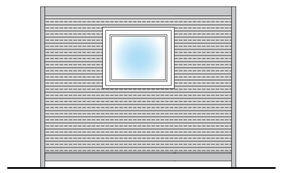
Front Elevation



Side Elevation

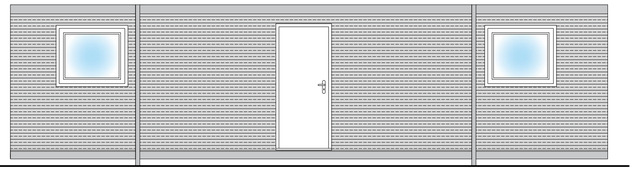


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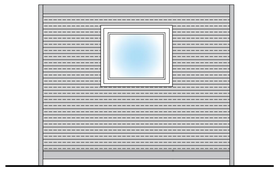


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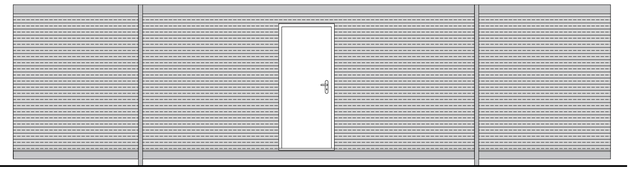
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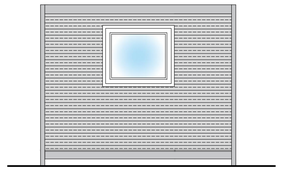
Front Elevation



Side Elevation

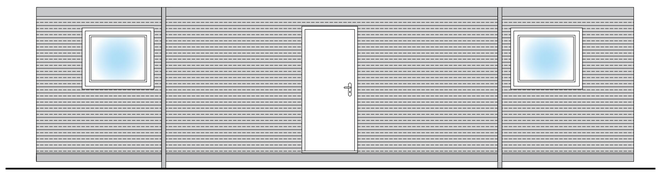


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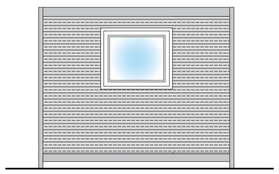


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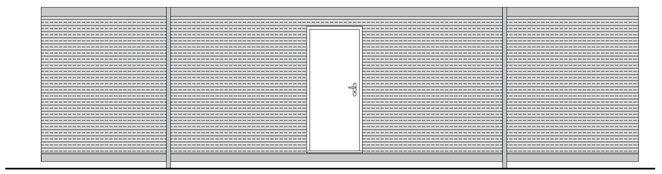
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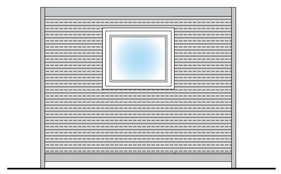
Front Elevation



Side Elevation



Rear Elevation



Side Elevation

Materials

- Grey - Store Tent (material)
- Grey - Metal Cabin
- Glazing

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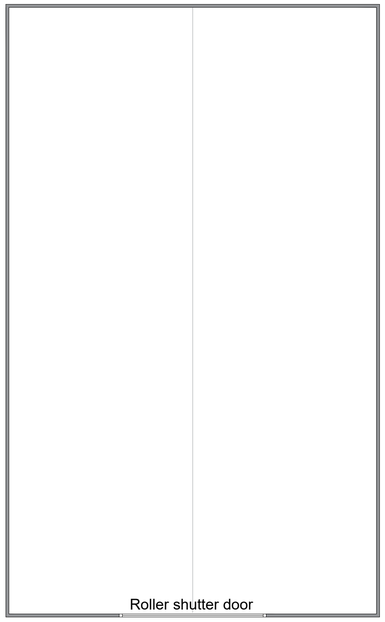
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EXISTING CABINS

Scales.	Date.
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Drawing Number.	Revision.	Drawn by.
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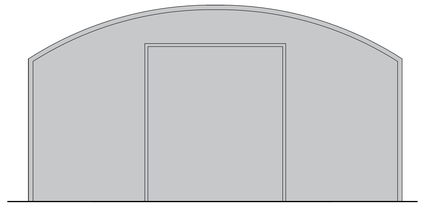
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Floor Plan

0 1 2 3 4 5

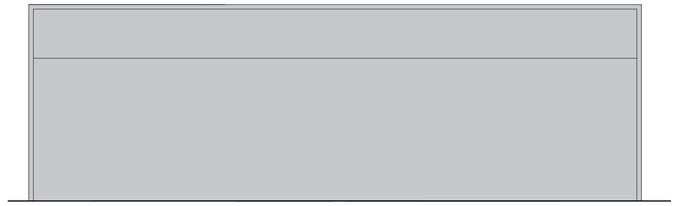
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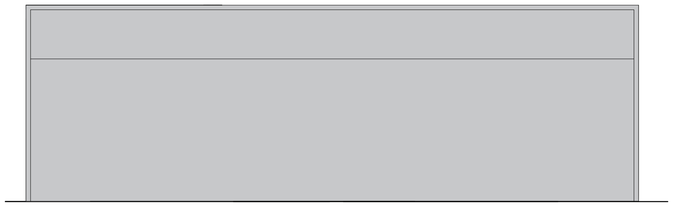
Front Elevation

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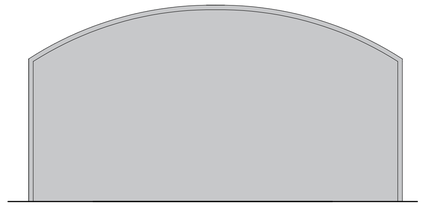
Meter's 1:100 @ A1



Side Elevation



Side Elevation



Rear Elevation

Materials

Grey - Store Tent (material)

Grey - Metal Cabin

Glazing

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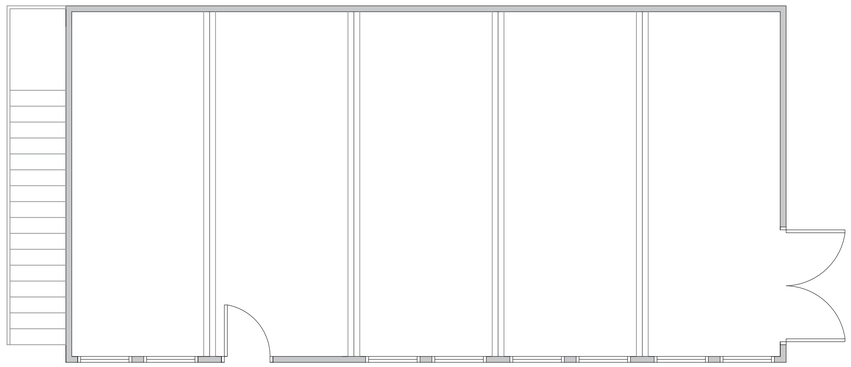
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EXISTING TENT STORE UNIT

Scales.	Date.
1:100 @ A1	July 23

Drawing Number.	Revision.	Drawn by.
2023-065-06		KLU

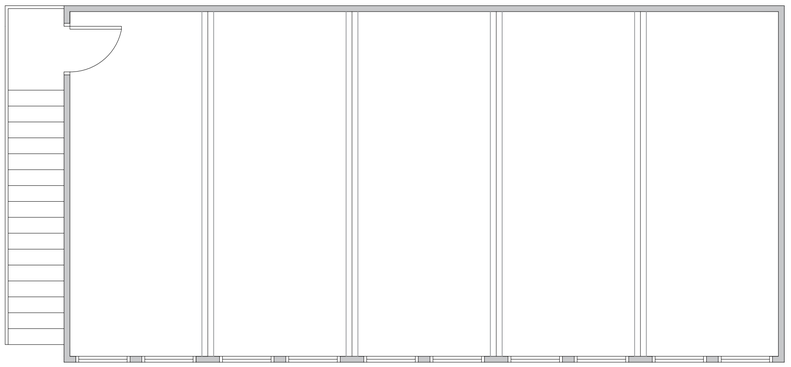
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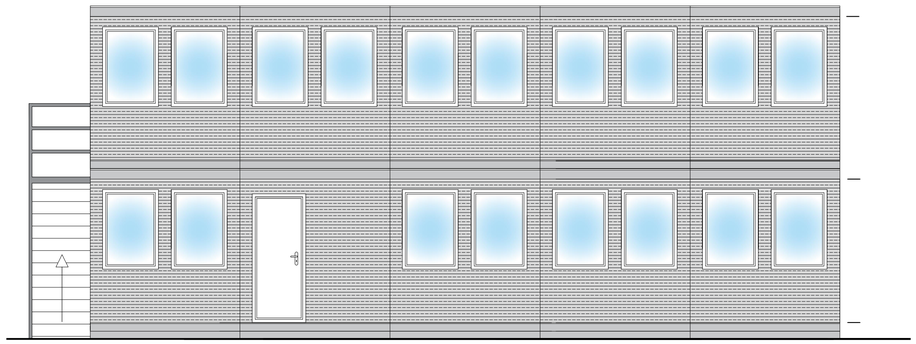
Ground Floor Plan

0 1 2 3 4 5

Meter's 1:50 @ A1



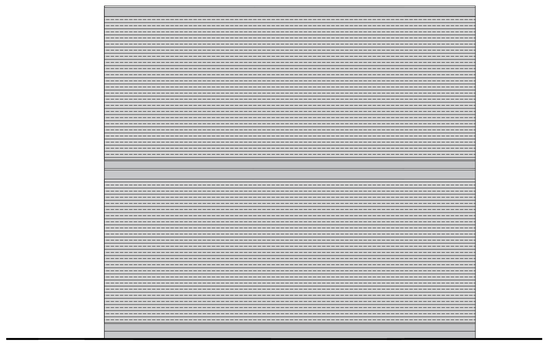
First Floor Plan



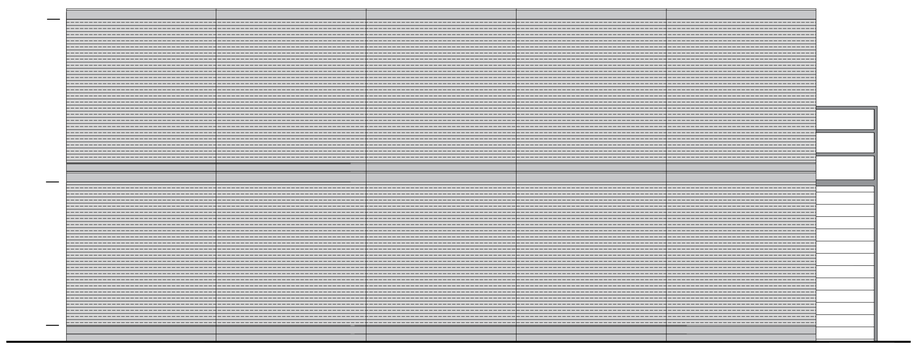
Front Elevation

0 1 2 3 4 5

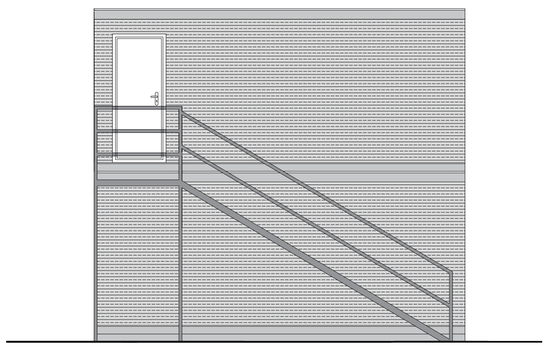
Meter's 1:50 @ A1



Side Elevation



Rear Elevation



Side Elevation

Materials

- Grey - Store Tent (material)
- Grey - Metal Cabin
- Glazing

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Distinction Doors Limited

Wentworth 36, Wentworth Way, Tankersley

PROPOSED CABIN

Scales.	Date.
1:50 @ A1	July 23
Drawing Number. 2023-065-07	Revision.
Drawn by. KLU	

STANDARD APPENDIX A

STANDARD APPENDIX A

NOTES ON SITE INVESTIGATION PROCEDURE (June 2021)

1. **GENERAL.** The ground investigation has been carried out in accordance with the requirements of BS5930: 2015 and BS10175: 2011+A1: 2020. By its very nature, any ground investigation only samples a small percentage of the ground. Consequently, changes in ground conditions and soil properties can occur between any two exploratory points, for example local features such as soft ground, pockets of contamination and faults. This is also true of the exploration of mineworkings and such features can extend beneath parts of the site not investigated. Unrecorded bell pits and shafts can also exist between exploratory points. The ground investigation is designed to minimise such risks but they cannot be eliminated.

2. **GROUND INVESTIGATION.**

2.1 **BOREHOLE AND TRIAL PIT RECORDS.** These illustrate the ground conditions only at the location of the particular borehole or trial pit. Correlation between boreholes is for guidance only and its accuracy cannot be guaranteed.

2.2 **SHELL AND AUGER BORING.** This technique uses a tripod winch and an essentially percussive action using a variety of tools. Disturbed and undisturbed samples can be taken. This is the most suitable method for soft ground investigation, enabling the maximum amount of information to be obtained. However, minor changes in lithology may be overlooked unless continuous undisturbed sampling is used.

2.3 **GROUNDWATER**. Groundwater levels vary seasonally and the details given on the borehole logs relate only to the dates and the conditions described in the borehole records. The rate of boring may not have allowed an equilibrium water level to be established and the use of casing may seal off certain seepages.

2.4 **SAMPLING.** Disturbed samples of soils are taken for identification and classification purposes. In cohesive soils 'undisturbed' samples 100mm in diameter are taken by open drive sampler for laboratory testing of strength, permeability and consolidation characteristics.

2.5 **STANDARD PENETRATION TESTS**. S.P.T tests are used in granular and cohesive materials and in soft or weathered rocks. Difficulties in obtaining true 'N' values mean they must only be used as a guide and not as an absolute value in foundation design.

2.6 **ROTARY DRILLING.** Two main types of rotary drilling are carried out in rock. Rock coring using diamond or tungsten carbide tipped core bits provides samples and information on rock types, fissuring and weathering. Openhole drilling only produces small particles for identification purposes and the information gained is therefore limited. The latter is, however, useful as a quick method for detecting major strata changes and for the location of coal seams and old workings. Water, air, foam or drilling muds may be used as the flushing medium in either case.

2.7 **PERMEABILITY TESTS.** These can be carried out in boreholes or trial pits and gives a good indication of in-situ permeability.

2.8 **TRIAL PITTING.** This enables soil conditions to be closely examined at any specific point and samples taken. It also gives useful information on the stability of excavations and ingress of water.

2.9 **WINDOW SAMPLING**. Window sampling consists of driving a series of 1m-long tubes into the ground using a dropping weight. On completion of each 1m run, the tube is withdrawn. The next tube is then inserted and the process repeated to provide a continuous profile of the ground. On each run the tube diameter is reduced in order to assist in its recovery.

2.10 **GAS MONITORING.** This is routinely carried out in trial pits or probe holes to check for elevated levels of methane and carbon dioxide or oxygen deficiency, particularly since risks can exist from natural gases, landfill sites and rising groundwater levels in mine workings below ground. Longer term monitoring is carried out with gas monitoring standpipes.

3. **SOIL DESCRIPTION.** Samples from borings or trial pits are described as specified in the standard procedure outlined in the British Standards. The description includes colour, consistency, structure, weathering, lithological type, inclusions and origin. All descriptions are based on visual and manual identification.

Fire Soils (Cohesive Soils)

The following field terms are used:

Soil Type	Description
Very soft	Exudes between fingers
Soft	Moulded by light finger pressure
Firm	Cannot be moulded by the fingers but can be rolled in hand to 3mm threads.
Stiff	Crumbles and breaks when rolled to 3mm threads but can be remoulded to a lump.
Very stiff	No longer moulded but crumbles under pressure. Can be indented with thumbs.

The following terms are used in accordance with the results of laboratory and field tests.

Description	Undrained Shear Strength Cu (kPa)
Extremely Low	<10
Very Low	10 - 20
Low	20 - 40
Medium	40 - 75
High	75 - 150
Very High	150 - 300
Extremely High	>300

Fine soils can also be classified according to their sensitivity, which is the ratio between undisturbed and remoulded undrained shear strength.

Sensitivity	Ratio
Low	8
Medium	8 - 30
High	>30
Quick	>50

Granular Soils (Non-Cohesive)

The following descriptions are used for granular soils.

Description	Normalised Blow Count (N_1) 60
Very Loose	0 - 3
Loose	3 - 8
Medium	8 - 25
Dense	25 - 42
Very Dense	42 - 58

4. **NATURAL OR IN-SITU MOISTURE CONTENT**. The natural or in-situ moisture content of a soil is defined as the weight of water contained in the pore space, expressed as a percentage of the dry weight of solid matter present in the soil. Soil properties are greatly affected by the moisture content and the test can help to give an indication of likely engineering behaviour.

5. **LIQUID AND PLASTIC LIMITS**. Two simple classification tests are known as the liquid and plastic limits. If a cohesive soil is remoulded with increasing amounts of water, a point will be reached at which it ceases to behave as a plastic material and becomes essentially a viscous fluid. The moisture content corresponding to this change is arbitrarily determined by the liquid limit test. 'Fat' clays, which have high contents of colloidal particles, have high liquid limits; 'lean' clays, having low colloidal particle contents have correspondingly low liquid limits. An increase in the organic content of a clay is reflected by an increase in the liquid and plastic limits.

   If a cohesive soil is allowed to dry progressively, a point is reached at which it ceases to behave as a plastic material, which can be moulded in the fingers, and it becomes friable. The moisture content of the soil at this point is known as the 'plastic limit' of the soil.

   The range of water content over which a cohesive soil behaves plastically, i.e. the range lying between the liquid and plastic limits, is defined as the plasticity index.

   A cohesive soil with a natural water content towards its liquid limit will, in general, be an extremely soft material whereas a cohesive soil with a natural water content below its plastic limit will tend to be a stiff material.

6. **PARTICLE-SIZE DISTRIBUTION.** A knowledge of particle-size distribution is used to classify soils and to indicate likely engineering behaviour. British Standards define soils in relation to their particle-size as shown below:-

Boulders	>200mm	Coarse Sand	2.0 to 0.63mm
Cobbles	200 to 63mm	Medium Sand	0.63 to 0.2mm
		Fine Sand	0.2 to 0.063mm
Coarse Gravel	63 to 20mm	Coarse Silt	0.063 to 0.02mm
Medium Gravel	20 to 6.3mm	Medium Silt	0.02 to 0.0063mm
Fine Gravel	6.3 to 2mm	Fine Silt	0.0063 to 0.002mm
		Clay	<0.002mm

7. **BULK DENSITY.** The bulk density of a material is the weight of that material per unit volume and includes the effects of voids whether filled with air or water. The 'dry density' of a soil is defined as the weight of solids contained in a unit volume of the soil.

8. **PERMEABILITY.** The permeability of a material is defined as the rate at which water flows through it per unit area of soil under unit hydraulic gradient.

9. **CONSOLIDATION CHARACTERISTICS.** When subjected to pressure, a soil tends to consolidate as the air or water in the pore space is forced out and the grains assume a denser state of packing. The decrease in volume per unit of pressure is defined as the 'compressibility' of the soil, and a measure of the rate at which consolidation proceeds is given by the 'coefficient of consolidation' of the soil. These two characteristics Mv and Cv are determined in the consolidation test and the results are used to determine settlement of structures or earthworks.

10. **STRENGTH CHARACTERISTICS.** The strength of geological materials is generally expressed as the maximum resistance that they offer to deformation or fracture by applied shear or compressive stress. The strength characteristics of geological materials depend to an important degree on their previous history and on the conditions under which they will be stressed in practice. Consequently, it is necessary to simulate in the laboratory tests the conditions under which the material will be stressed in the field.

In general, the only test carried out on hard rocks is the determination of their compressive strength but consideration must be given to fissuring, jointing and bedding planes.

The tests at present in use for soils and soft rocks fall into two main categories. Firstly, those in which the material is stressed under conditions of no moisture content change, and secondly those in which full opportunity is permitted for moisture content changes under the applied stresses. Tests in the first category are known as undrained (immediate or quick) tests, while those in the second category are known as drained (slow or equilibrium) tests. The tests are normally carried out in the triaxial compression apparatus but granular materials may be tested in the shear box apparatus.

The undrained triaxial test gives the apparent cohesion C_u and the angle of shearing resistance $\emptyset_u$. In dry sands, $C_u = 0$ and $\emptyset_u$ is equal to the angle of internal friction whereas with saturated non-fissured clays $\emptyset u$ tends to 0 and the apparent cohesion C_u is equal to one-half the unconfined compression strength qu. On site the vane test gives an approximate measure of shear strength.

For some stability problems use is made of a variant of the undrained triaxial test in which the specimen is allowed to consolidate fully under the hydrostatic pressure and is then tested to failure under conditions of no moisture content change. This is known as the consolidated undrained triaxial test. Pore water pressures may be measured during this test or a fully drained test may be carried out. In either case the effective shear strength parameters C' and $\emptyset$' can be obtained which can be used to calculate shear strength at any given pore water pressure.

11. **COMPACTION.** The density at which any soil can be placed in an earth dam, embankment or road depends on its moisture content and on the amount of work which is used in compaction. The influence of these two factors can be studied in compaction tests, which can determine the maximum dry density (MDD) achievable at a certain optimum moisture content (OMC).

12. **CALIFORNIA BEARING RATIO TEST.** In flexible pavement design a knowledge of the bearing capacity of the subgrade is necessary to enable the thickness of pavement for any particular combination of traffic and site conditions to be determined. The quality of the subgrade can be assessed by means of the California Bearing Ratio Test or approximately by the MEXE cone penetrometer.

13. **ROCK DESCRIPTION.** This is based on;

i. Colour (minor then principal colour).
ii. Grain Size.

Description	Predominate Grain Size (mm)
Very Coarse - grained	>63
Coarse - grained	63 - 2
Medium - grained	2 - 0.063
Fine - grained	0.063 - 0.002
Very Fine - grained	<0.002

iii. Matrix.
iv. Weathering.

Term	Description
Fresh	No visible sign of weathering/alteration of the rock material.
Discoloured	The colour of the original fresh rock material is changed and is evidence of weathering/alteration. The degree of change from the original colour should be indicated. If the colour change is confined to particular mineral constituents, this should be mentioned.
Disintegrated	The rock material is broken up by physical weathering, so that bonding between grains is lost and the rock is weathered/altered towards the condition of a soil in which the original material fabric is still intact. The rock material is friable but the grains are not decomposed.
Decomposed	The rock material is weathered by the chemical alteration of the mineral grains to the condition of a sol in which the original material fabric is still intact; some or all of the grains are decomposed.

v. Carbonate Content.
vi. Stability of Rock Material.

Stable indicates no changes when sample left in water for 24 hours. Fairly stable indicates fissuring and crumbling of surfaces. Unstable indicates complete disintegration of the sample.

vii. Unconfined Compressive Strength.

Term	Field Identification	Unconfined Compressive Strength (MPa)
Extremely Weak[a]	Indented by thumbnail.	Less than 1
Very Weak	Crumbles under firm blows with point of geological hammer, can be peeled by a pocket knife.	1 to 5
Weak	Can be peeled by a pocket knife with difficulty, shallow indentations made by firm blow with point of geological hammer.	5 to 25
Medium Strong	Cannot be scraped or peeled with a pocket knife, specimen can be fractured with single firm blow of geological hammer.	25 to 50
Strong	Specimen required more than one blow of geological hammer to fracture it.	50 to 100
Very Strong	Specimen requires many blows of geological hammer to fracture it.	100 to 250
Extremely Strong	Specimen can only be chipped with geological hammer.	Greater than 250

[a] Some extremely weak rocks will behave as soils and should be described as soils.

viii. Structure.

Sedimentary	Metamorphic	Igneous
Bedded	Cleaved	Massive
Interbedded	Foliated	Flowbanded
Laminated	Schistose	Folded
Folded	Banded	Lineated
Massive	Lineated	
Graded	Gneissose	
	Folded	

ix. Discontinuities.
x. Discontinuity Spacing, persistence and roughness, infilling and seepage.
xi. Weathering of the Rock Mass.

Term	Description	Grades
Fresh	No visible sign of rock material weathering; perhaps slight discolouration on major discontinuity surfaces.	0
Slightly weathered	Discolouration indicates weathering of rock material and discontinuity surfaces.	1
Moderately weathered	Less than half of the rock material is decomposed or disintegrated. Fresh or discoloured rock is present either as a continuous framework or as core stones.	2
Highly weathered	More than half of the rock material is decomposed or disintegrated. Fresh or discoloured rock is present either as a continuous framework or as core stones.	3
Completely weathered	All rock material is decomposed and/or disintegrated to soil. The original mass structure is still largely intact.	4
Residual soil	All rock material is converted to soil. The mass structure and material fabric are destroyed. There is a large change in volume, but the soils has not been significantly transported.	5

xii. Rock Mass Permeability

14. **CHEMICAL TESTS.** A knowledge of total soluble sulphate content and pH of soils and groundwater is important in determining the protection required for concrete or steel in contact with the ground. Other specialist tests may be carried out on sites suspected of being contaminated by toxic materials (see standard appendix B).

15. **REFERENCES**

BS5930: 2015+A1:2020 British Standard Code of Practice for Site Investigations
BS10175: 2011+A2:2017 British Standard Code of Practice for the Investigation of Potentially Contaminated Sites

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