

**Coal Mining Risk Assessment**

**63 WHITE LEE ROAD  
BATLEY**

for

**Ms. H. Haigh**

Report Number 4521

December 2025



**Michael D Joyce Associates LLP**

Geotechnical and Geoenvironmental Consultants

Registered Office: 531 Denby Dale Road West, Calder Grove, Wakefield, West Yorkshire, WF4 3ND  
**T** +44(0)1924 360458 **E** [mdja@geoenvironmental.co.uk](mailto:mdja@geoenvironmental.co.uk) **W** [www.geoenvironmental.co.uk](http://www.geoenvironmental.co.uk)

# Coal Mining Risk Assessment for 63 WHITE LEE ROAD, BATLEY

## **Contents**

1. Introduction
2. The Site
3. Geology and Mining
4. Conclusions and Recommendations

## **Figures**

- Figure 1 Site Location and Development Proposals

## **Appendices**

- Appendix 1 Coal Authority Mining Report  
Standard Appendix A

## **1 INTRODUCTION**

1.1 At the request of J.A. Oldroyd and Sons Limited, acting on behalf of Ms. H. Haigh, a Coal Mining Risk Assessment has been carried out at 63 White Lee Road in Batley. It is proposed to construct a new dwelling to the northeast side of 63 White Lee Road.

1.2 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 proposed dwelling is located to the east side of White Lee Road in Batley. The development proposals are shown on figure 1. The Ordnance Survey National grid reference is 422510, 424280.

### **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 Joan Coal seam is shown to outcrop just to the south of the development site, and to dip in a southeasterly direction, such that it does not underlie the development site. According to the geological memoir "Geology of the Country around Huddersfield and Halifax" published in 1930, the seam is "*seldom of sufficient thickness or quality to have been worked*".

3.2.2 The Joan Coal is underlain by the Flockton Thick Coal seam. This is also known as the Adwalton Stone Coal. The former White Lee Colliery shaft record records the Flockton Thick to lie approximately 13m below the Joan Coal. In addition, in places around Batley, the strata between the Joan Coal and Flockton Thick was extracted for brick-making.

3.2.3 The memoir describes the Flockton Thick as a compound seam formed of several layers, the top seam being formerly of greatest value. The combined thickness of the

upper, middle and lower bed of coal was approximately 1.2m, and as such this represents a potential total extraction thickness beneath this site.

3.2.4 The Flockton Thick is underlain by the Flockton Thin (aka Adwalton Black Bed). This lies approximately 12m below the Flockton Thick. As such, it is too deep to be of concern, given it had a thickness of only 0.9m at the former White Lee Colliery.

3.2.5 A Coal Authority CON29M Mining Report has previously been obtained by the client for the site and is reproduced in Appendix 1. It records recorded mineworkings at depths between 228m to 284m below the site, with the last workings being in 1908. Any subsidence from these workings will normally have ceased by now.

3.2.6 However, the Coal Authority report has also confirmed the presence of *“possible unrecorded shallow workings”*. In other words, it considers there to be possible unrecorded workings within 30m depth. This is considered to be a reference to the Flockton Thick.

3.2.7 No mine entries are recorded within 20m of the site. However, the presence of unrecorded mine entries at the site are considered unlikely, but cannot be entirely precluded.

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

- Present or future coal mining
- Geological faults, fissures or breaklines
- Past Opencast mines

- Coal Authority managed tips
- Remediated sites
- Coal Mining Subsidence
- Mine Gas
- Emergency Surface Hazard Call Out Incidents
- Court Orders
- Section 46 Orders
- Withdrawal of Support Notices
- Payments to owners

#### **4 CONCLUSIONS AND RECOMMENDATIONS**

- 4.1 The site is recorded as being underlain by the Flockton Thick Coal seam. Preliminary calculations place this seam as being approximately 13m below the site. As such, it is sufficiently shallow to potentially affect surface stability, should it have been extracted.
- 4.2 This is based on the “rule of thumb” that there should be at least 10x rock cover relative to any workings. Assuming an extraction thickness of 1.2m, this would require 12m of rock cover to any foundations. This is potentially the case here, assuming a foundation depth of approximately 1m.
- 4.3 It should be emphasised that a number of assumptions have been made regarding the stratigraphy, and as such variations can occur. It is therefore concluded that rotary openhole drilling will need to be carried out to confirm the actual depth of the Flockton Thick, and whether this has been worked. It is envisaged that one day of drilling should be sufficient at this stage. It is recommended that full-time supervision of the drilling is carried out by a Chartered Geologist or Chartered Engineer. It should be noted that a licence will be required from the Coal Authority in the first instance.

A D Joyce

BSc MSc ARSM CEng CGeol CEnv MICE FGS SiLC SQP

December 2025

This report is subject to the provisions of the Copyright Acts and is for the sole benefit of Ms. H. Haigh in respect of a Coal Mining Risk Assessment of the site. The report cannot be assigned to, or relied on, by any other party without prior permission.

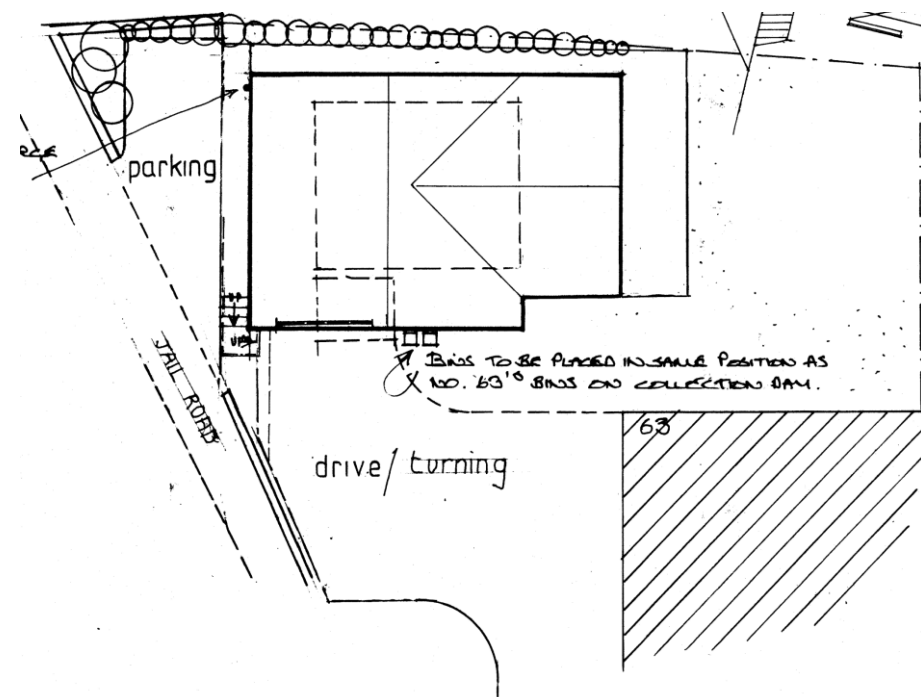
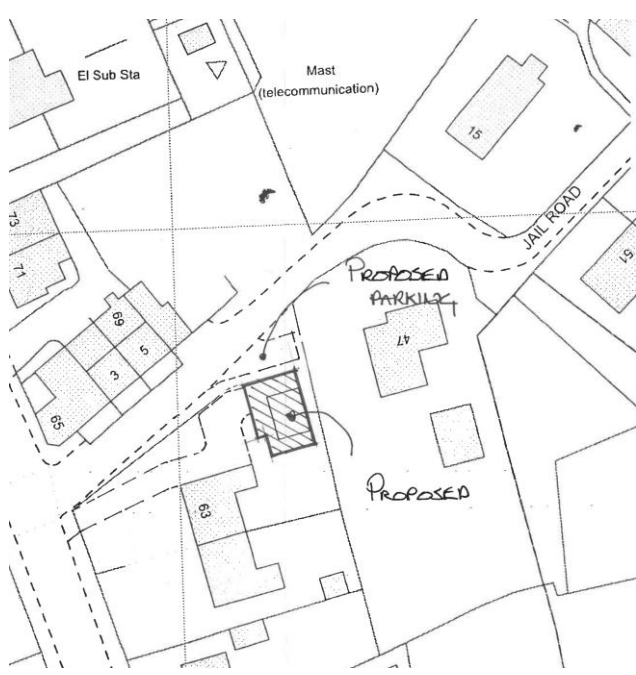
### **Procedure Notes**

The risk assessment has been carried out in accordance with the principles of BS EN 1997-1: 2004 “Eurocode 7 - Geotechnical Design - Part 1: General Rules”, BS EN 1997-2: 2007 “Eurocode 7 - Geotechnical Design - Part 2: Ground Investigation and Testing”, BS5930: 1999 and BS10175: 2001, and the terms of the client’s brief.

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.

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. In relevant situations it would be prudent to commission such surveys.

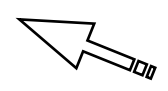
Where information has been obtained from Third Parties, no liability can be accepted for the accuracy or completeness of this information, where anecdotal evidence or speculation are presented, they must be treated as such and cannot be relied upon.



**63 White Lee Road, Batley**  
 Site Location and Development Proposals

**Michael D Joyce Associates LLP**  
 Geotechnical and Geoenvironmental Consultants

Reproduced from the  
 Ordnance Survey Map with  
 the permission of the  
 controller of Her Majesty's  
 Stationery Office. Crown  
 copyright reserved.  
 Licence No. AL 100004970



Scale: NTS

Figure: 1

## **Appendix 1**

Coal Authority Mining Report

Overall Result:

**PASSED**

Expert Opinion:

Within the scope of this assessment, the Site is not considered to be susceptible to coal mining-related ground instability. Any identified coal mining features are considered unlikely to impact the value or security of the Site for normal lending purposes and there is no reason for them to impact upon the completion of this transaction.

Will coal mining activity impact the value of the property?

UNLIKELY TO IMPACT VALUE



Are there adverse mining features that should be brought to the lender's attention?

NO NEED TO NOTIFY LENDER



Are there mining hazards that should be brought to the purchaser's attention?

HAZARDS IDENTIFIED



It is important to be fully informed of all coal mining risks associated with a property before completing your purchase. **Please read the next steps section carefully.**

Within Coal Mining Reporting Area

YES

CON29M Questions

Assessment

|  |     |          |  |
|--|-----|----------|--|
| Q1. Past underground coal mining                                 | YES | ADVISORY |  |
| Q2. Present underground coal mining                              | NO  | PASSED   |  |
| Q3. Future underground coal mining                               | NO  | PASSED   |  |
| Q4. Shafts and adits (mine entries)                              | NO  | PASSED   |  |
| Q5. Coal mining geology  | NO  | PASSED   |  |
| Q6. Past opencast coal mining                                    | NO  | PASSED   |  |
| Q7. Present opencast coal mining                                 | NO  | PASSED   |  |
| Q8. Future opencast coal mining                                  | NO  | PASSED   |  |
| Q9. Subsidence Claims<br>(Incl. Subsidence Claims Buffer Report) | NO  | PASSED   |  |
| Q10. Mine gas emissions  | NO  | PASSED   |  |
| Q11. Emergency Call Out incidents                                | NO  | PASSED   |  |

Official Coal Authority Licensed Data: V1\_235\_20210621\_F | 25-06-2021

Report Address:

63 White Lee Road, Batley,  
WF178AD

Report Details:

**TF Reference:**  
TFC20210629151120-WF178AD

**Client Reference:**  
SM66560TFCON29M

**Date:** 29/06/2021

User Key:

Lender Attention

Conveyancer Further Action

Purchaser Advisory

Passed - No Further Action

These colour signatures are used throughout the report. Please see the back of the report for a full key.

*Please see below Terrafirma's expert opinion and next steps with regards to the property. These may be copied into your Report on Title. No physical site inspection has been carried out. This official CON29M report highlights only the information which we have determined should be drawn to your attention however, other risks may be present. Relevant prudent enquiries for the purchaser are highlighted within the Next Steps section.*

## ● ● Report Conclusions:

Mining features have been identified within the physical influence of the Site, resulting in a susceptibility to past, present and/or future ground movement. Below exist relevant interpreted conclusions based on the findings of this report (where applicable):

A coal seam has been identified within 20 metres of the Site and associated shallow unrecorded coal mine workings are suspected to have been historically worked beneath/within the immediate vicinity of the Site. Historical 'shaft-like' features, called 'Bell Pits', are also particularly common at/near coal outcrops, often occurring in clusters and being typically unrecorded in nature.

Given the shallow depth of suspected coal mine workings (e.g., 'Bell Pits') beneath the Site, any movement within the worked coal seams may cause ground instability at the surface.

Any previous movement in the ground should already be present in pre-existing structural defects; please see the report recommendations for further information.

## ● ● Next Steps:

The identified mining features are unlikely to impact the value or security of the site for normal lending purposes; however, it is recommended that the prudent purchaser undertakes further assurances to safeguard their investment regarding the stability of the site.

Terrafirma consider it prudent that an appropriate RICS Survey Level-Two HomeBuyer report (e.g. Survey & Valuation) is acquired for the property in question to assess, amongst other important considerations, the structural condition of the property. This report will highlight any subsidence-related defects, which may relate to ground instability, while also noting any serious or dangerous issues that may require attention. For further information about the suite of RICS HomeBuyer and Building Surveys, please visit <https://www.rics.org/globalassets/rics-website/media/upholding-professional-standards/sector-standards/home-survey--2021/helping-you-choose-the-right-survey.pdf>, or to find a local Building Surveyor, please visit [www.ricsfirms.com/](http://www.ricsfirms.com/).

Should such a survey have already been undertaken as part of the property purchase, an additional Building Survey report may not be necessary.

If a Building Survey has already been undertaken and reports a condition rating 1, indicating minimal historical or current ground movement, no further action is considered necessary. However, should the Building Survey mention condition ratings 3 (& 2 where appropriate) in relation to subsidence or issues relating to ground instability, then we recommend that you seek further expert advice. Sections of notable relevance in relation to ground instability from mineral extraction are: E1, 2, 4, 8 & 9; F1-5; H1-3 and J1-4. Alternatively, one may email the obtained Building Survey to Terrafirma and a member of our expert team of geologists and mining engineers can provide a review of the survey report.

In the event subsidence has previously occurred or occurs in the future, it is recommended Terrafirma are contacted immediately for advice on practical and appropriate next steps, including



how one can make a compensation claim to the Coal Authority. For detailed information on the statutory cover available to homeowners, please see the back of this report.

● **If you are planning on altering or developing the Site:**

The Site is likely located within a 'High Development Risk Zone', as defined by the Coal Authority. Due to the presence of recorded and/or unrecorded coal mining activity, any future development of the Site may trigger ground collapse and/or subsidence.

It should be noted that prior to site works or future development, your local planning authority may require you to commission a full Coal Mining Risk Assessment (CMRA) or Site Investigation by a qualified mining geologist/engineer.

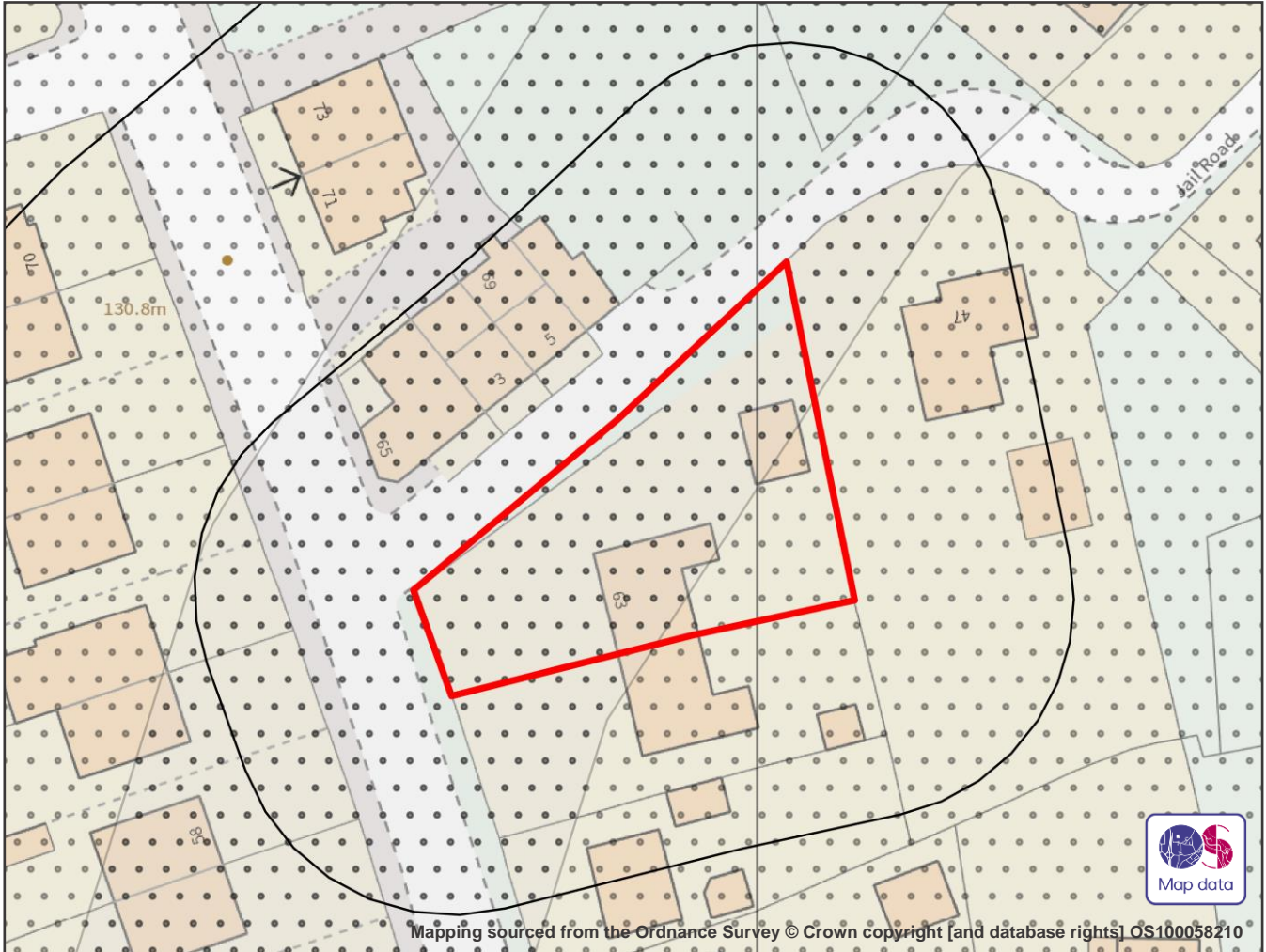
In the event, you require further professional support, please contact Terrafirma directly to discuss the appropriate further steps.

Contact the report author by calling the Terrafirma team on: 0330 900 7500

*This official CON29M Residential Coal Mining Report is a site-specific interpretation of coal mining activity. These enquiries are The Law Society CON29M Coal Mining search enquiries and are used with permission of the Law Society. The Law Society CON29M Coal Mining search enquiries are protected by copyright owned by The Law Society of 113 Chancery Lane, London WC2A 1PL. Terrafirma's Terms and Conditions are applicable at the time the report was produced.*



## Mining Hazard Map



**Site Address:** 63 White Lee Road, Batley, WF178AD






### Hazard Map Key

#### Coal Authority Data



##### Mine Entries



-  Adit
-  Shaft

##### Subsidence Claims

-  01 – Awaiting Decision
-  02 – Rejected
-  03 – Admitted
-  05 - Settled
-  06 - Withdrawn

##### Hazard Zones

-  Further Investigation Zone
-  Affected Areas

-  Site Boundary
-  20m 50m Scales

Mapping sourced from the Ordnance Survey © Crown copyright [and database rights] OS100058210



For any mining or ground related issues please contact the experts at Terrafirma

Call us on: 0330 900 7500

Email our team: [info@terrafirmasearch.co.uk](mailto:info@terrafirmasearch.co.uk)

The enquiries below are The Law Society CON29M Coal Mining search enquiries and are used with permission of The Law Society. This report is prepared in accordance with The Law Society CON29M (2018) Guidance Notes and ScotForm 2006: Coal mining search in Scotland; under which all replies to these enquiries are made. These eleven questions and their answers are relevant to a residential property and should not be relied upon in a non-residential transaction.

## Detailed findings of coal mining activity:

### 1. Past underground coal mining

ADVISORY 

**Q.** *Is the property within the zone of likely physical influence on the surface of past underground coal workings?*

**A.**

The Site is recorded to be within the surface area of underground coal mine workings of 1 seam of coal. Coal has been mined at an approximate depth of 228 to 284 metres beneath the surface. The last known working date is recorded as 1908.

The Site is not within a surface area that could be affected by historic, known shallow underground coal mining. The Site is recorded to be situated within 20 metres of a known coal seam outcrop. This coal is suspected to have been historically worked at depth of less than 30 metres beneath the surface, within the vicinity of the Site. Please see the report conclusions for further information.

### 2. Present underground coal mining

PASSED 

**Q.** *Is the property within the zone of likely physical influence on the surface of present underground coal workings?*

**A.**

The Site is not situated within an area which could be affected by currently active underground coal mining.

### 3. Future underground coal mining

PASSED 

- Q.** (a) *Is the property within any geographical area for which the Coal Authority is determining whether to grant a licence to remove coal by underground methods?*  
(b) *Is the property within any geographical area for which a licence to remove coal by underground methods has been granted?*  
(c) *Is the property within the zone of likely physical influence on the surface of planned future underground coal workings?*  
(d) *Has any notice of proposals relating to underground coal mining operations been given under section 46 of the Coal Mining Subsidence Act 1991?*

**A.**

The Site is not situated within an area which could be affected by any future underground coal mining. However, reserves of coal exist in the local area which could be worked at some time in the future. The Site is not situated within the influence of a Section 46 Notice.

### 4. Shafts and adits (mine entries)

PASSED 




**Q.** Are there any shafts and adits or other entries to underground coal mine workings within the property or within 20 metres of the boundary of the property?

**A.**

There are no recorded mine entries within 20 metres of the Site.

## 5. Coal mining geology


PASSED 

**Q.** Is there any record of any fault or other line of weakness due to coal mining at the surface within the boundary of the property that has made the property unstable?

**A.**

There are no recorded faults, fissures or breaklines that occur within the influence of the Site.

## 6. Past opencast coal mining

PASSED 

**Q.** Is the property situated within the geographical boundary of an opencast site from which coal has been removed in the past by opencast methods?

**A.**

The Site is not situated within any past licence areas for the opencast extraction of coal.  
There are no unlicensed opencast pits or extraction sites beneath the Site.

## 7. Present opencast coal mining


PASSED 

**Q.** Is the property within 200 metres of the boundary of an opencast site from which coal is being removed by opencast methods?

**A.**

The Site is not situated within an area which could be affected by currently active opencast coal mining.

## 8. Future opencast coal mining

PASSED 


**Q.** (a) Is the property within 800 metres of the boundary of an opencast site for which the Coal Authority are determining whether to grant a licence to remove coal by opencast methods?  
(b) Is the property within 800 metres of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted?

**A.**

There are no plans by the Coal Authority to grant a licence to extract coal using opencast methods within 800 metres surrounding the Site.



**9. Coal mining subsidence claims**


PASSED 

**Q.** (a) Has any damage notice or claim for alleged coal mining subsidence damage to the property been given, made or pursued since 1st January 1994?  
(b) Does any current "Stop Notice" delaying the start of remedial works or repairs affect the property?  
(c) Has any request been made under section 33 of the 1991 Act to execute preventive works before coal is worked?

**A.**

There is no record of any coal mining-related damage notices or subsidence claims for the Site or for any Site within 50 metres of the Site.  
There is no record of a request that has been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

**10. Mine gas emissions**


PASSED 

**Q.** Does the Coal Authority have record of any mine gas emission within the boundary of the property being reported that subsequently required action by the Authority to mitigate the effects of the mine gas emission?

**A.**

There are no records of any Mine Gas hazards within the influence of the Site and there is no record of any Mine Gas emissions requiring action.

**11. Emergency surface hazard call out incidents**

PASSED 

**Q.** Have the Coal Authority carried out any work on or within the boundaries of the property following a report of an alleged hazard related to coal mining under the Authority's Emergency Surface Hazard Call Out procedures?

**A.**

The Site is not situated within the influence of a coal mining-related hazard.



## FURTHER INFORMATION

### Key and Colour Information

The below key provides further guidance on the colours used throughout this report.

|                                   |  |
|-----------------------------------|--|
| <b>Lender Attention</b>           | Terrafirma has identified mining hazards within the vicinity of the Site, including features (e.g., mine shafts/ adits) that could affect the future value of the Site. A lender may want to be alerted to this adverse entry, due to requirements of UK Finance (formerly the Council of Mortgage Lenders), before deciding on whether to proceed with the transaction. The conveyancer is advised to follow the terms of the UK Finance Mortgage Lenders' Handbook and any additional instructions from the prospective lender in its consideration and determination of whether to refer any part of this report to the lender. |
| <b>Conveyancer Further Action</b> | Terrafirma has concluded that further expert analysis of the Site is required. Terrafirma does not believe that the transaction should continue until further actions have been undertaken to quantify the risk of subsidence or collapse to the Site. Terrafirma recommends that the conveyancer liaises with all necessary parties regarding the report's findings.  |
| <b>Purchaser Advisory</b>         | The purchaser's attention is drawn to the prudent advice outlined in the report, which Terrafirma recommends is read carefully. The report results should not hinder the transaction and Terrafirma's Terms & Conditions are valid for the Site.   |
| <b>Passed No Further Action</b>   | Terrafirma has not identified any mining features that influence the ongoing use or value of the Site. Terrafirma does not believe that any further actions are required for this transaction and Terrafirma's Terms & Conditions are valid for the Site.  |

### Additional Remarks

These enquiries are The Law Society CON29M (2018) Coal Mining search enquiries and are used with permission of the Law Society. The Law Society CON29M Coal Mining search enquiries are protected by copyright owned by the Law Society of 113 Chancery Lane, London WC2A 1PL. The Law Society has no responsibility for information provided in response to CON29M (2018) Coal Mining search enquiries within this report or otherwise. This report is prepared in accordance with The Law Society Guidance Notes 2018 and ScotForm 2006: coal mining search in Scotland; under which all replies to these enquiries are made. Terrafirma's Terms and Conditions are applicable at the time the report was produced.

### Future Development

In scenarios where mining activity has been identified, a prudent developer would seek appropriate technical advice before any works are undertaken.

In these areas, 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 good engineering practice developed for mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or mines of coal without the permission of the Coal Authority.

Developers should be aware that the investigation of coal seams/former mines of coal may have the potential to generate and/or displace underground gases and these risks both under and adjacent to the development should be fully considered in developing any proposals. The need for effective measures to prevent gases entering into public properties either during investigation or after development also needs to be assessed and properly addressed. This is necessary due to the public safety implications of any development in these circumstances.



## Notice of Statutory Cover

In the unlikely event of any future damage, the terms of the Coal Mining Subsidence Act 1991 (as amended by the Coal Industry Act 1994) may apply\*, and the Coal Authority / Licensee has a duty to take remedial action in respect of subsidence caused by the withdrawal of support from land and/or property in connection with lawful coal-mining operations. Typically, these actions will not need to involve either your insurance company or mortgage lender and therefore the end user(s) should not incur any costs or liability. \*Note: this Act does not apply where coal was worked or gotten by virtue of the grant of a gale in the Forest of Dean, or any other part of the Hundred of St. Briavels in the county of Gloucester.

In addition to the above, it should also be noted that the Coal Authority offer a Public Safety and Subsidence Department that provides a 24-hour 7 day a week call out service (Tel: 01623 646 333) to take remedial action in respect of hazards associated with the movement or collapse of any coal mineshaft or entrances to coal mines and from other coal mining related surface hazards. Further information can be found on their website: <https://www.groundstability.com/>.

## Limitations

This CON29M Coal Mining Report has been carried out with reference to all available official Coal Authority licensed data, an extensive collection of abandoned mine plans, maps, and records. From this material, we have endeavoured to provide as accurate a report as possible. Any and all analysis and interpretation of licensed Coal Authority data in this report is made by Terrafirma.

Information provided by Terrafirma in this report is compiled in response to The Law Society CON29M Coal Mining search enquiries and ScotForm 2006 coal mining search in Scotland. The scope of the assessment is concerned only with the interpretation of past, present and future extraction of coal minerals. This report does not consider the impact from non-coal mining hazards and/or natural ground stability hazards, such as subsidence, landslip or coastal erosion. For an expert opinion on all mining and ground hazards and in order to meet the requirements of Law Society Guidance Notes (2018) and best practice guidance in the 25th Edition Conveyancing Handbook (2018), you may choose to obtain a Terrafirma Ground Report by contacting a member of the team.

This report is a 'remote' investigation and reviews only information provided by the client and from the databases of publicly available information that have been chosen to enable a desk based environmental assessment of the Site. The report does not include a Site Investigation, nor does Terrafirma make specific information requests of the regulatory authorities for any relevant information they may hold.

This report is concerned solely with the Site searched and should not be used in connection with adjacent properties as only relevant known mining features have been mentioned and any known features that could potentially have a direct influence upon the target Site. Other features which may be present in the general area may have been omitted for clarity.

The report is based upon the Site boundaries as shown on the supplied location plan. This report is confidential to the client, the client's legal advisor and the client's Mortgage lender, as defined in the Terrafirma & TerraSearch® terms & conditions, and as such may be used by them for conveyancing or related purposes. We have no liability toward any person or organisation not party to commissioning this report. This report or any part of it is not permitted to be reproduced, copied, altered or in any other way distributed by any other person or organisation.



## Terms and Conditions

Report produced by Terrafirma IDC LTD © 2021.

This report is provided under the Terrafirma Terms and Conditions, a copy of which is available on our website at: [https://www.terrafirmaidc.co.uk/terms\\_and\\_conditions](https://www.terrafirmaidc.co.uk/terms_and_conditions). They provide a limit of liability per report of £10 million, backed by Professional Indemnity Insurance; details available on request.

## Licensing

This report contains Data provided by the Coal Authority. Any and all analysis and interpretation of Coal Authority Data in this report is made by Terrafirma IDC Ltd and is in no way supported, endorsed or authorised by the Coal Authority. The use of the data is restricted to the terms and provisions contained in this report. Data reproduced in this report may be the copyright of the Coal Authority and permission should be sought from Terrafirma IDC Ltd prior to any re-use.

© Crown Copyright (2021) Ordnance Survey License Number 0100020315. May contain British Geological Survey materials © NERC (2021).

This report may contain public sector information licensed under the Open Government Licence v3.0.

This report may contain plans and records held by the Coal Authority and made publicly available at the time of inspection which may include British Geological Survey and Ordnance Survey data.

The Law Society CON29M Coal Mining search enquiries are protected by copyright owned by The Law Society of 113 Chancery Lane, London WC2A 1PL.



## Important Consumer Information

This search has been produced by **TERRAFIRMA IDC LTD** – Address: 2440 The Quadrant, Aztec West Business Park, Almondsbury, Bristol, BS32 4AQ; Email: [info@terrafirmaidc.co.uk](mailto:info@terrafirmaidc.co.uk); Telephone: 0330 900 7500, which is registered with the Property Codes Compliance Board (PCCB) as a subscriber to the Search Code. The PCCB independently monitors how registered search firms maintain compliance with the Code.

This report meets the principles and requirements of the Property Codes Compliance Board Compliance Note CN02J in respect of Coal Mining Searches.

## The Search Code

- provides protection for homebuyers, sellers, estate agents, conveyancers and mortgage lenders who rely on the information included in property search reports undertaken by subscribers on residential and commercial property within the United Kingdom
- sets out minimum standards which firms compiling and selling search reports have to meet
- promotes the best practice and quality standards within the industry for the benefit of consumers and property professionals
- enables consumers and property professionals to have confidence in firms which subscribe to the code, their products and services.

By giving you this information, the search firm is confirming that they keep to the principles of the Code. This provides important protection for you.



## The Search Code

### The Code's core principles (Firms which subscribe to the Search Code will):

- display the Search Code logo prominently on their search reports
- act with integrity and carry out work with due skill, care and diligence
- at all times maintain adequate and appropriate insurance to protect consumers
- conduct business in an honest, fair and professional manner
- handle complaints speedily and fairly
- ensure that products and services comply with industry registration rules and standards and relevant laws
- monitor their compliance with the Code

**CONTACT TERRAFIRMA IF YOU WOULD LIKE A COPY OF THE SEARCH CODE**

## Complaints

If you have a query or complaint about your search, you should raise it directly with the search firm, and if appropriate ask for any complaint to be considered under their formal internal complaints procedure. If you remain dissatisfied with the firm's final response, after your complaint has been formally considered, or if the firm has exceeded the response timescales, you may refer your complaint for consideration under The Property Ombudsman scheme (TPOs). The Ombudsman can award up to £5,000 to you if the Ombudsman finds that you have suffered actual financial loss and/or aggravation, distress or inconvenience as a result of your search provider failing to keep to the Code.

Please note that all queries or complaints regarding your search should be directed to your search provider in the first instance, not to TPOs or to the PCCB.

### TPOs Contact Details:

The Property Ombudsman scheme, Milford House, 43-55 Milford Street, Salisbury, Wiltshire SP1 2BP, Tel: 01722 333306, Fax: 01722 332296, Email: [admin@tpos.co.uk](mailto:admin@tpos.co.uk), Web site: [www.tpos.co.uk](http://www.tpos.co.uk).

You can get more information about the PCCB from [www.propertycodes.org.uk](http://www.propertycodes.org.uk) or from our website at <https://www.terrafirmaidc.co.uk>.

## Complaints Procedure

If you want to make a complaint directly to Terrafirma, we will:

- Acknowledge it within 5 working days of receipt.
- Normally deal with it fully and provide a final response, in writing, within 20 working days of receipt.
- Keep you informed by letter, telephone or e-mail, as you prefer, if we need more time.
- Provide a final response, in writing, at the latest within 40 working days of receipt.
- Liaise, at your request, with anyone acting formally on your behalf.

Complaints should be sent to: **Senior Executive, Terrafirma IDC LTD** - Address: 2440 The Quadrant, Aztec West Business Park, Almondsbury, Bristol, BS32 4AQ; Email: [info@terrafirmaidc.co.uk](mailto:info@terrafirmaidc.co.uk); Telephone: 0330 900 7500.

If you are not satisfied with our final response, or if we exceed the response timescales, you may refer the complaint to The Property Ombudsman scheme (TPOs): Tel: 01722 333306, E-mail: [admin@tpos.co.uk](mailto:admin@tpos.co.uk). We will co-operate fully with the Ombudsman during an investigation and comply with his final decision.

**WE TRUST THIS REPORT PROVIDES THE INFORMATION YOU REQUIRE. PLEASE CONTACT US IF YOU HAVE ANY QUERIES OR IF WE CAN BE OF ANY FURTHER ASSISTANCE.**






## CON29M Coal Report Insurance Backed Guarantee

*In the unlikely event that the coal data used by Terrafirma in order to compile their report is later found to be inaccurate, the purchaser of the report benefits from Loss of Value Protection of up to £100,000 and should the purchaser later suffer a financial loss, following their reliance on the report, are protected by Terrafirma.*

*Terrafirma are protected by an indemnity policy through CLS Property Insight Limited through their insurer Great Lakes Insurance SE, UK Branch. Please note that claims are subject to the terms and conditions of the policy that Terrafirma hold with CLS Property Insight Limited. Terms of this policy can be found below:*

|                                      |   |
|--------------------------------------|---|
| <b>Policy Number: GESI 0035553CV</b> |   |
| <b>Insurer</b>                       | Great Lakes Insurance SE, UK Branch<br>Great Lakes Insurance SE is a German insurance company with its headquarters at Königinstrasse 107, 80802 Munich. Great Lakes Insurance SE, UK Branch, is authorised and regulated by Bundesanstalt für Finanzdienstleistungsaufsicht. Deemed authorised by the Prudential Regulation Authority. Subject to regulation by the Financial Conduct Authority and limited regulation by the Prudential Regulation Authority. Details of the Temporary Permissions Regime, which allows EEA-based firms to operate in the UK for a limited period while seeking full authorisation, are available on the Financial Conduct Authority's website.   |
| <b>Insured</b>                       | Terrafirma IDC LTD  |
| <b>Purchaser</b>                     | The person who buys the Search Report from the Insured, and/or any of the following: <ol style="list-style-type: none"> <li>1. The person who asked for the Search Report in connection with the purchase of the Property (and their mortgagee).</li> <li>2. The person who purchased the Property (and their mortgagee) if the person selling the Property has asked for a Search Report for the benefit of the Purchaser as part of a seller's pack or if the Property has been purchased by way of auction.</li> <li>3. The owner of the Property (and their mortgagee) if they are re-mortgaging the Property or the owner of the Property who has chosen to obtain a Search Report.</li> <li>4. Their estate and beneficiaries, to whom the benefit of the Policy will pass in the event of their death during the Period of Insurance.</li> </ol> |
| <b>Property</b>                      | Any single residential property for which a Search Report is provided by the Insured for the benefit of the Purchaser during the Period of Insurance.   |
| <b>Search Report</b>                 | The Terrafirma CON29M Coal Report (or relevant Coal assessment section of any attached Terrafirma report).  |
| <b>Limit of Indemnity</b>            | £100,000.00 in the aggregate in respect of any one Property   |
| <b>Effective Date</b>                | The date of the Search Report, provided by the Insured to the Purchaser being the date that cover will commence.  |
| <b>Period of Insurance</b>           | Cover for each individual Property will be from the Effective Date until the Purchaser of the Search Report either; <ol style="list-style-type: none"> <li>(a) no longer has an interest in the Property, or,</li> <li>(b) until the date of a Subsequent Search Report is obtained by the Purchaser after the Effective Date,</li> </ol> whichever is the sooner.  |
| <b>Insured Use</b>                   | The continued use of the Property as a single residential house or flat as constructed and used at the Effective Date.  |
| <b>Cover</b>                         | Subject to the terms and conditions of this Policy and provided the Property has been declared to the Insurer and the Premium inclusive of Insurance Premium Tax has been paid to the Administrator, the Insurer will indemnify the Insured during the Period of Insurance in respect of Loss arising from any claim by a Purchaser made against the Insured resulting from inaccurate data having been incorporated into such Search Report.   |
| <b>Market Value</b>                  | The value of the Purchaser's interest in the title to the Property as determined by a surveyor appointed by agreement between the Insurer and the Insurer, but subject to General Condition 11.   |
| <b>Loss</b>                          | <ol style="list-style-type: none"> <li>1. The loss in Market Value of the Property directly attributable to any changes in the information revealed in a subsequent Search Report obtained by the Purchaser, which was not revealed in the Search Report provided to the Purchaser, which was carried out on the Effective Date, such loss in Market Value to be calculated at the date of the subsequent Search Report, and</li> <li>2. All other costs and expenses which have been agreed in advance by the Insurer.</li> </ol>  |
| <b>Exclusions</b>                    | The Insurer will not be liable to indemnify the Insured for: <ol style="list-style-type: none"> <li>1. Loss which is or would otherwise be recoverable under a building's insurance policy.</li> <li>2. Loss arising wholly or partly because of the wilful act or neglect of the Insured.</li> <li>3. Loss if at the date of a claim the Purchaser is not the legal or beneficial owner of the Property.</li> <li>4. Loss in relation to loss of a transaction for the sale or for the purchase of the Property and any costs incurred by the Purchaser in relation to the loss of such transaction.</li> </ol>  |



|                                      |   |
|--------------------------------------|---|
|                                      | <ol style="list-style-type: none"> <li>5. Loss in respect of structural or other physical damage caused to the Property by subsidence or flooding after the Effective Date.</li> <li>6. Loss as a result of any change in information in response to sections 3 – Future underground coal mining and 8 – Future opencast coal mining of the Search Report carried out at the Effective Date.</li> <li>7. Loss in respect of the information in any subsequent Search Report after the Effective Date if this information also appears on the Search Report issued to the Purchaser on that date.</li> <li>8. Loss in relation to any change to the CON29M (2018) Search form and/or the Search Report made after the Effective Date which affects the Insurer's responsibility under this Policy, if Insurers would not have been responsible for the Loss before such change.</li> <li>9. Loss in relation to the contents of any brine data whatsoever contained within the standalone Terrafirma CON29M Coal Report.</li> <li>10. Loss in relation to any change in the interpretation of information upon which Search Report was produced provided such information remains unchanged.</li> <li>11. Loss arising from claims made under this Policy by any party other than the Insured.</li> </ol>  |
| <p><b>Claims Conditions</b></p>      | <ol style="list-style-type: none"> <li>1. It is a condition precedent of the Insurer's liability under this Policy that the Policyholder and/or the Purchaser will give written notice to the Administrator at the address shown under "Making a Claim", below, as soon as reasonably practicable, of any circumstances likely to give rise to a claim for which the Insurer may be liable under this Policy and provide the Administrator with such information and documentation as may reasonably be requested.</li> <li>2. The Insurer will be entitled to decide how to defend or settle a claim.</li> <li>3. The Insurer will be entitled to participate fully in any defence, negotiation or settlement of a claim or circumstance and in any such event the Policyholder and/or the Purchaser will (to the extent reasonably practicable in the circumstances, but without limitation):             <ol style="list-style-type: none"> <li>(i) not incur any cost or expense without first consulting with and receiving written consent from the Insurer.</li> <li>(ii) not make any admission of liability, offer, settlement, promise, payment or discharge without first consulting with and receiving written consent from the Insurer.</li> <li>(iii) give the Insurer access to and provide the Insurer with copies of all correspondence and documentation available to the Insured in relation to the claim or circumstance and afford the Insurer sufficient time in which to review and comment on such documentation.</li> <li>(iv) inform the Insurer of any proposed meeting with any third party in relation to a claim or circumstance and allow the Insurer to attend such meeting and, if the Insurer so requests, provide a detailed written account of the subject and outcome of any such meeting or discussion at which the Insurer was not present.</li> <li>(v) conduct all negotiations and proceedings in respect of any claim or circumstance with advisers of which the Insurer has approved in writing and take such action as the Insurer may reasonably require to contest, avoid, resist, compromise or otherwise defend any claim or circumstance.</li> <li>(vi) provide the Insurer with such other information and assistance in connection with any claim or circumstance as the Insurer may reasonably request.</li> </ol> </li> <li>4. The Insurer will be entitled to all rights and defences it may have in respect of a claim by a Purchaser against any successor to that Purchaser.</li> <li>5. If at the time of any claim made under this Policy, there is any other insurance in place whether effected by the Purchaser or by any other person under which the Purchaser may be entitled to make a claim the Insurer will be liable to pay or contribute in respect of a claim under this Policy only rateably with such other insurance.</li> <li>6. If the Purchaser makes any claim knowing it to be false or fraudulent as regards amount or otherwise, this Policy will become voidable and all claims under it may be forfeited.</li> <li>7. In the event of any claim under this Policy from a Purchaser where the Policyholder has failed to make the required declaration and/or has failed to pay the Premium due to the Insurer via the Administrator but the Insurer is still required to deal with the claim from the Purchaser, the Insurer will be entitled to seek recovery from the Policyholder of all claims monies paid to the Purchaser together with the amount of the Insurer's costs incurred in the handling of the claim.</li> </ol> |
| <p><b>Additional Information</b></p> | <p>This is a summary of the policy and does not contain its full terms and conditions. A copy of the general conditions is available on request. In the event of a claim, please contact Terrafirma IDC LTD (the 'Insured') in the first instance. Terrafirma's terms and conditions (<a href="https://www.terrafirmaidc.co.uk/terms_and_conditions">https://www.terrafirmaidc.co.uk/terms_and_conditions</a>) provide an assurance (section 3.8) that in the event of any successful claim, the award will be paid, in full, to the Customer/Purchaser.</p>  |
| <p><b>Administrator</b></p>          | <p>CLS Property Insight Limited, 17 Kings Hill Avenue, West Malling, Kent, ME19 4UA.<br/>         CLS Property Insight Limited can be contacted by email at <a href="mailto:info@clspropertyinsight.co.uk">info@clspropertyinsight.co.uk</a> or by telephone on 01732 753 910.</p> <div style="display: flex; justify-content: space-between; align-items: center;"> <div data-bbox="316 1868 560 1928">  </div> <div data-bbox="1155 1787 1465 1942" style="text-align: right;"> <br/>             R P Partington<br/>             Director<br/> <br/>             Signed by CLS Property Insight Limited on behalf and with the authority of the Insurer         </div> </div>   |



**Standard Appendix A**

NOTES ON SITE INVESTIGATION PROCEDURE (Dec 2023)

1. **GENERAL.** The ground investigation has been carried out in accordance with the requirements of BS5930: 2015 and A1: 2020 and BS10175: 2011+A1: 2017. 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 $C_u$<br>(kPa) |
|---------------|---|
| Extremely Low | <10                                     |
| Very Low      | 10 - 20                                 |
| Low           | 20 - 40                                 |
| Medium        | 40 - 75                                 |
| High          | 75 - 150                                |
| Very High     | 150 - 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 - 4                              |
| Loose       | 4 - 10                             |
| Medium      | 10 - 30                            |
| Dense       | 30 - 50                            |
| Very Dense  | >50                                |

- 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.
- 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.

- 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 |    |          |

- 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  $M_v$  and  $C_v$  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  $\phi_u$ . In dry sands,  $C_u = 0$  and  $\phi_u$  is equal to the angle of internal friction whereas with saturated non-fissured clays  $\phi_u$  tends to 0 and the apparent cohesion  $C_u$  is equal to one-half the unconfined compression strength  $q_u$ . 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  $\phi'$  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) Strength

| Term                        | Field Identification   | Unconfined Compressive Strength (MPa) |
|-----------------------------|--|---------------------------------------|
| Extremely Weak <sup>a</sup> | 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                      |

<sup>a</sup> Some extremely weak rocks will behave as soils and should be described as soils.

- (ii) Structure

| Thickness Term                          | Spacing Term    | Thickness or spacing |
|---|-----------------|----------------------|
| Very thickly                            | Extremely wide  | >6m                  |
| Very thickly                            | Very wide       | 2m – 6m              |
| Thickly                                 | Wide            | 600mm – 2m           |
| Medium                                  | Medium          | 200mm – 600mm        |
| Thinly                                  | Close           | 60mm – 200mm         |
| Very thinly                             | Very close      | 20mm – 60mm          |
| Thickly laminated (Sedimentary)         |                 |                      |
| Narrowly (Metamorphic and Igneous)      | Extremely close | 6mm – 20mm           |
| Thinly laminated (Sedimentary)          |                 |                      |
| Very narrowly (Metamorphic and Igneous) | Extremely close | <6mm                 |

- (iii) Colour
- (iv) Texture
- (v) Grain size

| Description      | Predominate Grain Size (mm) |
|------------------|-----------------------------|
| Conglomerate     | >2                          |
| Coarse - grained | 2 - 0.63                    |
| Medium - grained | 0.63 - 0.20                 |
| Fine - grained   | 0.20 - 0.063                |
| Siltstone        | 0.063 - 0.002               |
| Mudstone         | <0.002                      |

- (vi) Rock Name
- (vii) Stability
- (viii) Weathering

| Term                                      | Description  | Grades |
|---|--|--------|
| Fresh/unweathered                         | No visible sign of rock material weathering; perhaps slight discolouration on major discontinuity surfaces.  | 0      |
| Slightly weathered                        | Slight discolouration indicates weathering of rock material and discontinuity surfaces.  | 1      |
| Moderately weathered/Distinctly 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/<br>Destroyed            | 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 apparent.   | 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      |

- (ix) Discontinuities
- (x) Weathered of Rock Mass

14. **CHEMICAL TESTS.** A knowledge of water 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 (see standard appendix B).

15. **REFERENCES**

BS5930: 2015+A1:2020 British Standard Code of Practice for Site Investigations  
 BS10175: 2011+A1:2017 British Standard Code of Practice for the Investigation of Potentially Contaminated Sites  
 BS EN ISO 14688-1: 2018 Geotechnical Investigation and Testing: Identification and Classification of Soil  
 BS EN ISO 14688-2: 2018 Geotechnical Investigation and Testing: Identification and Classification of Soil