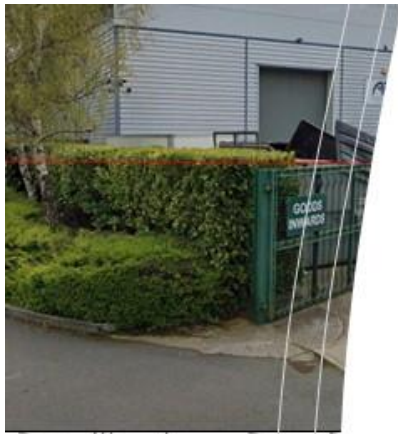
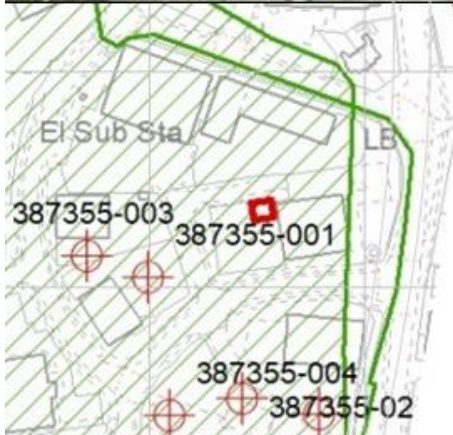




EARTH ENVIRONMENTAL
& GEOTECHNICAL



Coal Mining Risk Assessment

Unit 1

Prospect Way

November 2023

On behalf of

AD Coach Systems

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COAL MINING RISK ASSESSMENT

UNIT 1

PROSPECT WAY

STOKE-ON-TRENT

FOR

AD COACH SYSTEMS

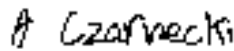
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Report No. A5687/23/CMRA

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Report Reference:	A5687/23/CMRA	
Client:	AD Coach Systems	
Issue Date:	2nd November 2023	
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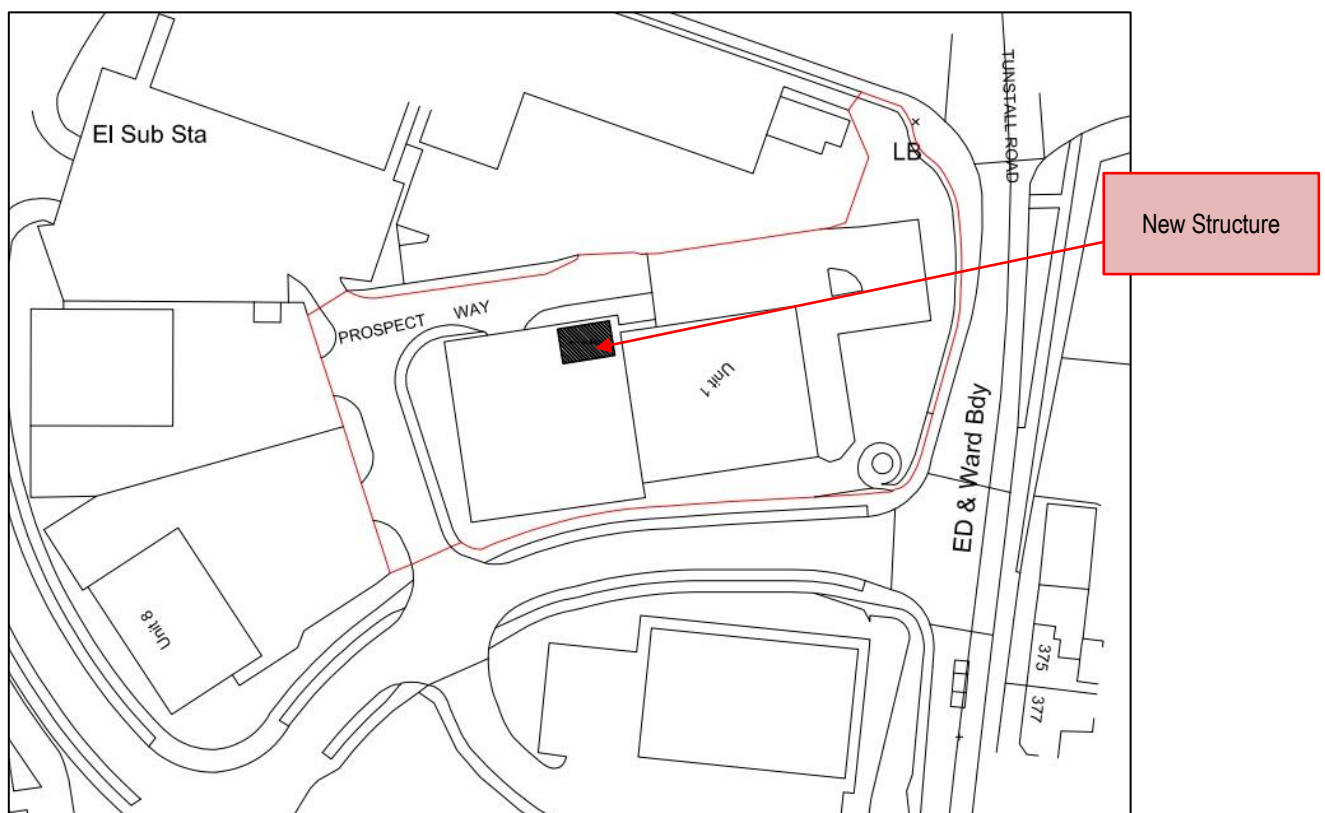
Appendix 1	Coal Authority Consultants Mining Report
Appendix 2	Report Limitations

1.0 INTRODUCTION

Appointment

- 1.1 Earth Environmental & Geotechnical Ltd have been commissioned by AAH Consultants on behalf of AD Coach Systems (the Client), to undertake a Coal Mining Risk Assessment for a new small building structure.
- 1.2 A proposed development plan has been provided and is shown as Figure 1.
- 1.3 It is understood that the new lightweight steel frame shed will be built directly off an existing concrete slab, with no need for any new foundations.

Figure 1: Proposed Development Plan



Objective

- 1.4 The purpose of the Coal Mining Risk Assessment is to collate available geological, mining, and historical data in order to assess the potential for the site to be affected by underground mining.
- 1.5 This report has been drafted in accordance with the Coal Authority (CA) Guidance Risk Based Approach to Development Management, Version 4, 2017.

Sources of Information

1.6 The Coal Mining Risk Assessment compiles a review of the following information sources:

- British Geological Survey of England, SJ85NE, 1/10,560, 1992.
- British Geological Survey of England, Sheet 110 Macclesfield, 1/63,360, 1968.
- Coal Authority Interactive Map Viewer.
- Coal Authority Mining Report.
- British Geological Survey online borehole records.
- Google Earth imagery.
- Online Historical Ordnance Survey maps.
- Site Investigations in Areas of Mining Subsidence, FG Bell, 1975.
- The threat of abandoned mines on the stability of urban areas, Barry Clarke, IAEG2006 Paper Number 379, The Geological Society of London, 2006.
- The collapse of shallow coal mine workings, Durham theses, Durham University, Garrard, 1981.
- Construction over abandoned mineworking's, CIRIA Special Publication 32, 2002.
- Abandoned Mineworking's Manual, CIRIA 2019.
- Staffordshire Moorlands District Council planning portal.

2.0 SITE LOCATION AND DESCRIPTION

- 2.1 The site is located on Victoria Business Park approximately 4.2km north east of Kidsgrove town centre.
- 2.2 The approximate National Grid Reference for the centre of the site SJ87956 55539 with the closest postcode being ST8 7PT with the site lying at an elevation of approximately 205m AOD.
- 2.3 The site is operated by AD Coach System a coach conversion specialist.
- 2.4 A location plan is shown below as Figure 2 (below).

Figure 2: Development Area



3.0 ASSESSMENT OF DATA

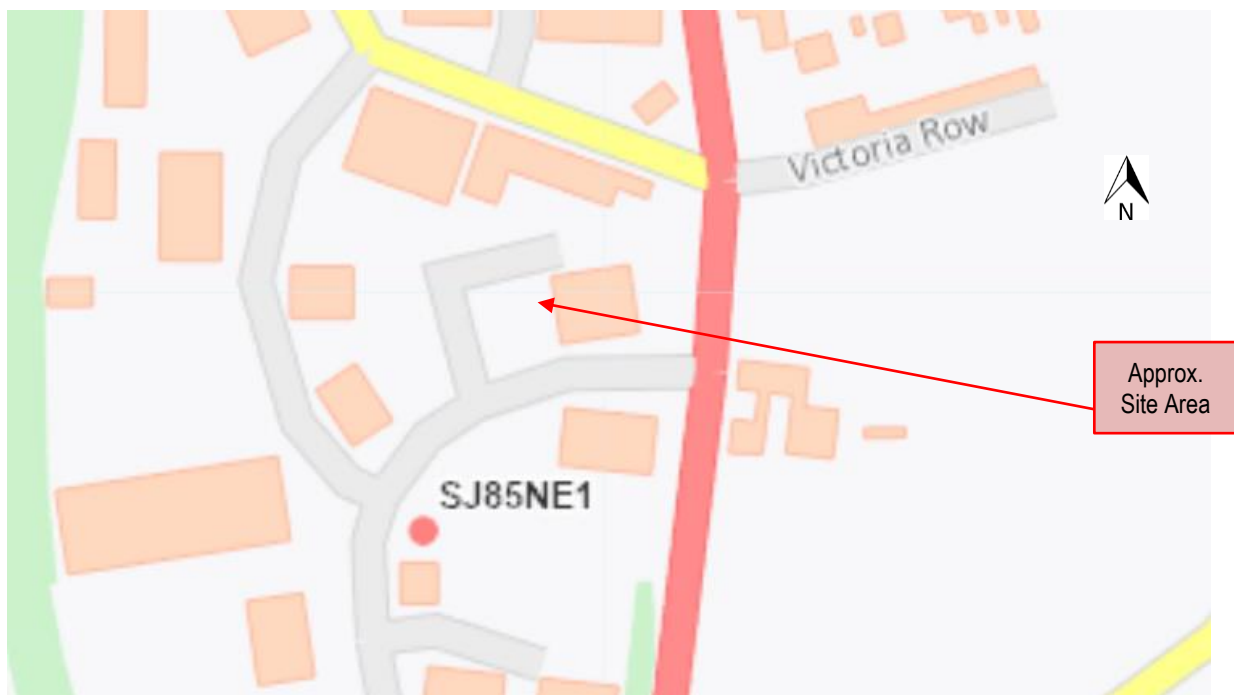
Geological Information

- 3.1 The geology of the site has been determined from geological maps for the area and examination of Coal Authority (CA) records.

British Geological Survey Published Data Assessment

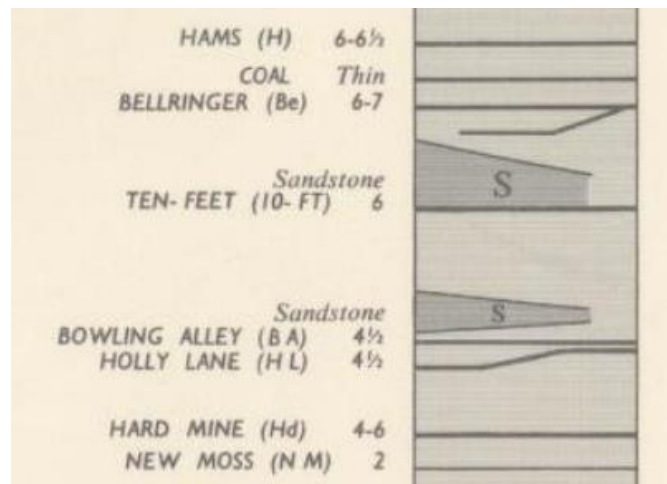
- 3.2 Superficial deposits of Devensian Till, comprising Diamicton, are recorded to underlie the site. This stratum is commonly referred to as Boulder Clay.
- 3.3 The solid geology beneath the site is recorded to be the Pennine Middle Coal Measures Formation comprising coal seams, mudstone, and sandstone of Carboniferous age.
- 3.4 There are several BGS borehole records within 250m of the site (Figure 3).

Figure 3: British Geological Survey Boreholes



- 3.5 Borehole SJ85NE1 (Victoria Shaft) reveals a sandstone rockhead at 4.44m, with coal seams at 4.44m (Ten Feet seam, 1.44m thick), 6.78m (0.07m thick) and 8.20m (0.5m thick).
- 3.6 An extract from the most recently published geological map showing the approximate site location and key local geological features are presented in Figure 4.

Figure 4: BGS Geology Map Extract

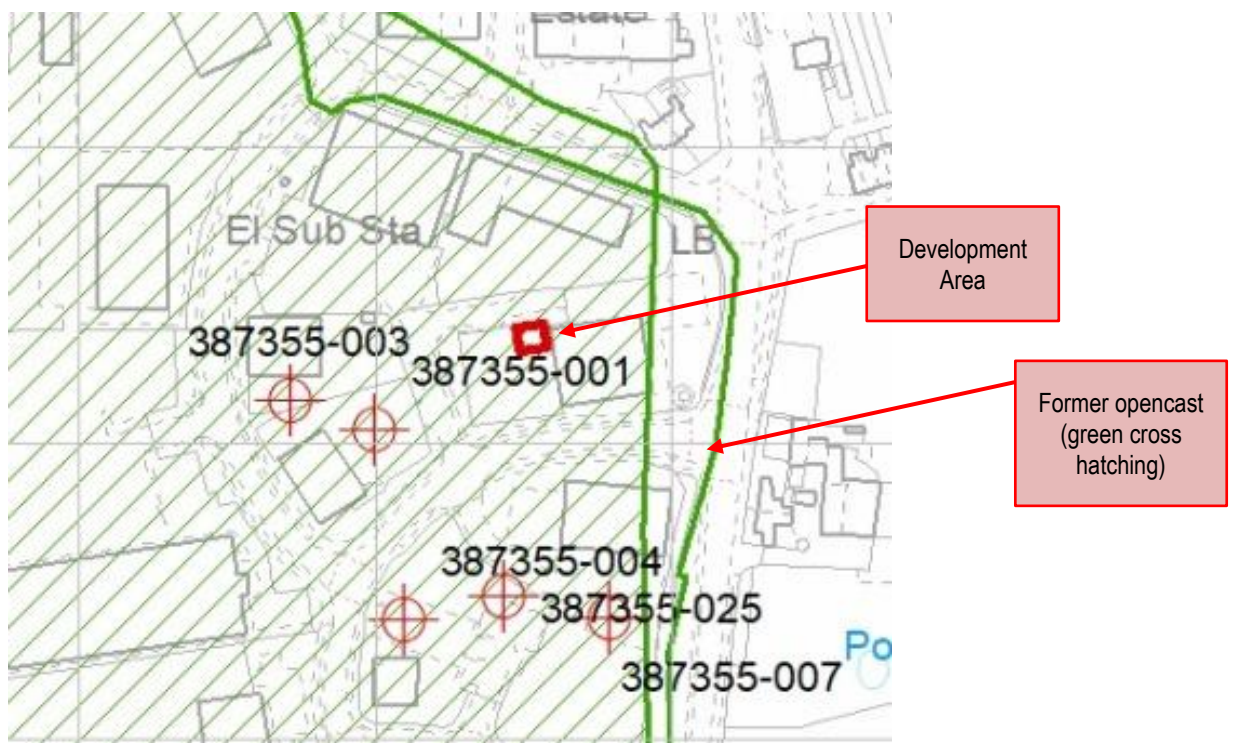


- 3.7 The site is located on the margin of a former opencast which from other records suggest it was operating in 1992.
- 3.8 According to the geological mapping, the inferred outcrop of the Bowling Alley and Holly Lane coal seams are shown to the east of the site.
- 3.9 The regional dip of strata is shown to be twenty-six degrees to the west.

Coal Authority Records

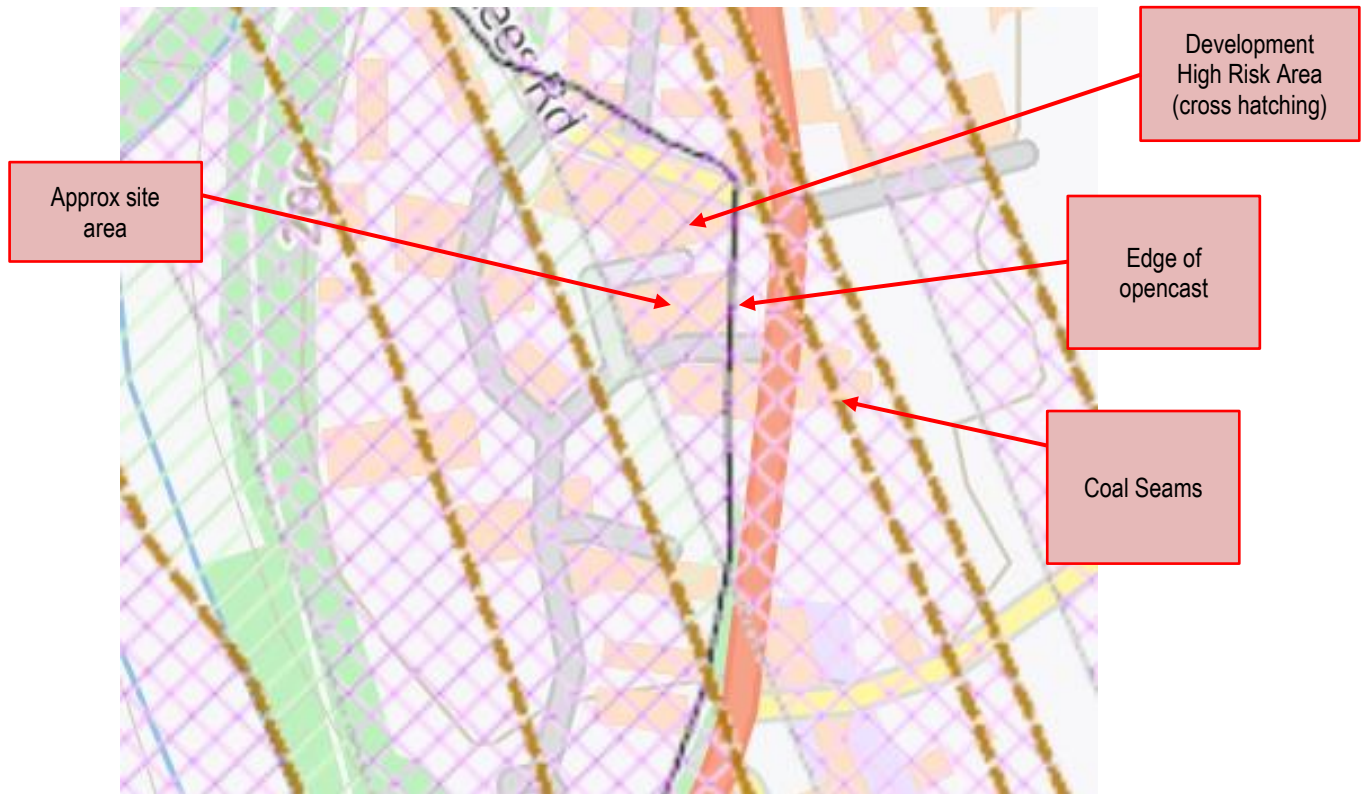
- 3.10 Reference to the Coal Authority Online Interactive viewer (Figure 6) shows the site to be located within a Development High Risk Area.
- 3.11 A Coal Authority Mining Report has been acquired for the site. This indicates that there are records of past underground mining beneath the site, with the shallowest worked seam being the Hard Mine at a depth of 86m beneath the site. The coal seam dips at 23.5 degrees to the west and was last worked in 1910.
- 3.12 Figure 6 below shows the extent of the Development High Risk Area with Figure 5 showing the location of an offsite shaft and an on-site outcropping coal seam.

Figure 5: Coal Authority Mining Report Extract



- 3.13 The report states that there are also probable unrecorded shallow workings beneath the site.
- 3.14 The development area is located within the former Brown Lees opencast (95/0104/S).
- 3.15 There are no records of claims regarding coal mining subsidence within 50m of the site boundary.
- 3.16 There are no records of any managed tips or remediated sites within 50m of the site.
- 3.17 No records of mine gas have been recorded within 500m of the site boundary.

Figure 6: Coal Authority Interactive Viewer



4.0 COAL MINING RISK ASSESSMENT

Scope of Coal Mining Risk Assessment

- 4.1 Objectives of the coal mining risk assessment are to provide a desk-based assessment of available geological and mining information relating to the site (and wider area) and to use this information so as to identify risks present to the development from the legacy of mining.
- 4.2 As part of the risk assessment, potential mitigation measures (if required) should be considered, including any necessary remedial works.
- 4.3 The outcome of the risk assessment should demonstrate to the Local Authority that the proposed development is or can be made safe (and stable) to meet the requirements of the National Planning Policy Framework (NPPF).

Data Limitations

- 4.4 It should be appreciated that it did not become a legal requirement to deposit coal mining abandonment plans until the 1870's and that this requirement was not rigorously enforced for some time after. Many shallow coal seams were worked prior to the introduction of first edition Ordnance Survey Maps and information on these workings is often not available. Therefore, if coal seams were accessible then there is the potential that they could have been worked by formal or informal means.
- 4.5 It is also possible that if unrecorded workings are present then unrecorded mine entries may be present.

Coal Mining Risks

- 4.6 The risks associated with coal mining are as follows:
 - Collapse of relict workings beneath buildings causing damage to the building fabric and infrastructure.
 - Migration of mine gases from old mine workings and mine entries resulting in accumulation of flammable and asphyxiating gases in confined areas.
 - Consolidation of relict workings and overlying strata causing structural defects in building fabric and infrastructure.
 - Failure of mine entries causing loss of ground beneath building and external areas.
 - Spontaneous combustion of old mine workings.

Conclusions

- 4.7 It is understood that the proposed development consists of the construction of a new building structure.
- 4.8 The development area lies within a Coal Authority Development High Risk Area due to a former opencast quarry.

Proposed Mitigation Strategy

- 4.9 The new structure lies on the margin of a former coal opencast quarry.
- 4.10 It is likely that locally outcropping coal seams (Holly Lane and Bowling Alley) underlying the development area, would have been removed.
- 4.11 As the new structure is to be built on an existing concrete slab no further site investigation is required.

APPENDIX 1

COAL AUTHORITY CONSULTANTS MINING REPORT

APPENDIX 2

REPORT LIMITATIONS

REPORT LIMITATIONS

This contract was completed by Earth Environmental & Geotechnical Ltd on the basis of a defined programme and scope of works and terms and conditions agreed with the client. This report was compiled with all reasonable skill, and care, bearing in mind the project objectives, the agreed scope of works, the prevailing site conditions, the budget, and staff resources allocated to the project.

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The report was written in 2023 and should be read in light of any subsequent changes in legislation, statutory requirements, and industry best practices. Ground conditions can also change over time and further investigations, or assessment should be made if there is any significant delay in acting on the findings of this report. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should not be relied upon in the future without the written advice of Earth Environmental & Geotechnical Ltd. In the absence of such written advice of Earth Environmental & Geotechnical Ltd, reliance on the report in the future shall be at the client's own and sole risk. Should Earth Environmental & Geotechnical Ltd be requested to review the report in the future, Earth Environmental & Geotechnical Ltd shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between Earth Environmental & Geotechnical Ltd and the client.

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The services are based upon Earth Environmental & Geotechnical Ltd observations of existing physical conditions at the site gained from a walkover survey of the site together with Earth Environmental & Geotechnical Ltd interpretation of information including documentation, obtained from third parties and from the client on the history and usage of the site. The findings and recommendations contained in this report are based in part upon information provided by third parties, and whilst Earth Environmental & Geotechnical Ltd have no reason to doubt the accuracy and that it has been provided in full from those it was requested from, the items relied on have not been verified.

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Where field investigations have been carried out these have been restricted to a level of detail required to achieve the stated objectives of the work. Ground conditions can also be variable and as investigation excavations only allow examination of the ground at discrete locations. The potential exists for ground conditions to be encountered which are different to those considered in this report. The extent of the limited area depends on the soil and groundwater conditions, together with the position of any current structures and underground facilities and natural and other activities on site. In addition, chemical analysis was carried out for a limited number of parameters [as stipulated in the contract between the client and Earth Environmental & Geotechnical Ltd] based on an understanding of the available operational and historical information, and it should not be inferred that other chemical species are not present.

The groundwater conditions entered on the exploratory hole records are those observed at the time of investigation. The normal speed of investigation usually does not permit the recording of an equilibrium water level for any one water strike. Moreover, groundwater levels are subject to seasonal variation or changes in local drainage conditions and higher groundwater levels may occur at other times of the year than were recorded during this investigation.

Any site drawing(s) provided in this report is (are) not meant to be an accurate base plan but is (are) used to present the general relative locations of features on, and surrounding, the site.