



**EARTH ENVIRONMENTAL
& GEOTECHNICAL**
A Technics Group Company

Coal Mining Risk Assessment

Ebsworth street

Monton

November 2025

On behalf of

Haider Jan Jaji

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Report No. A7202/25/CMRA

November 2025

Report Title:	Coal Mining Risk Assessment Ebsworth Street, Monton	
Report Reference:	A7202/25/CMRA	
Client:	Haider Jan Jaji	
Issue Date:	27th November 2025	
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1.0 INTRODUCTION

Appointment

- 1.1 Earth Environmental & Geotechnical Ltd have been commissioned by Roman Summer Associates Ltd on behalf of the client (Haider Jan Jaji) to undertake a Coal Mining Risk Assessment for the proposed development at Ebsworth Street, Monton.

Proposed Development

- 1.2 It is understood that the client intends to construct a Moston Superstore with associated car parking and areas of soft landscaping within a residential development area.
- 1.3 A proposed development plan for the site is shown in Figure 1, overleaf.

Objective

- 1.4 The purpose of the Coal Mining Risk Assessment is to collate available geological, mining, and historical data 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:
- Manchester City Council planning portal.
 - British Geological Survey of Britain, SD80SE, 1:10,000 series 1978 edition.
 - British Geological Survey of England and Wales, Manchester Sheet 85, 1:50,000 series 2010 edition.
 - Google Earth imagery.
 - British Geological Survey online borehole records.
 - Coal Authority Interactive Map Viewer.
 - Coal Authority Mining Report.
 - 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.
 - British Geological Survey, "GeoIndex," [Online]. Available: <http://mapapps2.bgs.ac.uk/geoindex/home.html>.
 - The collapse of shallow coal mine workings, Durham theses, Durham University, Garrard, 1981.
 - National Library of Scotland, British Geological Survey Scotland, <https://maps.nls.uk/>

Figure 1 Proposed Development Plan



2.0 SITE LOCATION AND DESCRIPTION

- 2.1 The site (0.24 hectares) is developed land adjacent to Ebsworth Street and Kenyon Lane, Manchester, approximately 1.34km north of Newton Heath and Moston tram stop.
- 2.2 The approximate National Grid Reference for the centre of the site is SD 87028 01887 (X: 387029, Y: 401878) and postcode M40 9NE.
- 2.3 The surface topography of the site is generally flat lying.
- 2.4 The site is predominantly covered in hardstanding, about 90% hardcover. There are small landscaping areas with trees at the south, east, and west ends of the site.
- 2.5 A service cover is located in the eastern boundary of the site along the footpath. Drains were observed on the southeastern boundary of the site along Kenyon Lane and the southwestern boundary of the site along Ebsworth Street. Overhead cable runs in the north of the site, which connects to a utility pole 5m west of the site.
- 2.6 Bushes and trees are not located within the proposed development area but are located immediately to the western, eastern and southern boundary of the site.
- 2.7 Access to the site is gained via an entrance off Ebsworth Street along the western boundary of the site. A height restriction barrier with a headroom of 1.80m is present across the entrance.
- 2.8 The site is bounded by the area of landscape with trees to the west, east and south. Residential properties and a nursery bound the site to the north.
- 2.9 Ebsworth Street borders the site to the west, Kenyon Lane to the east, and Penn Street to the south. Residential developments are located to the west and east along Ebsworth and Kenyon roads, and a commercial development is to the south along Penn Street.
- 2.10 A location plan is shown below as Figure 2, together with a site photograph as Figure 3 (overleaf).

Figure 2 Site Location Plan



Figure 3: Photograph



3.0 ASSESSMENT OF DATA

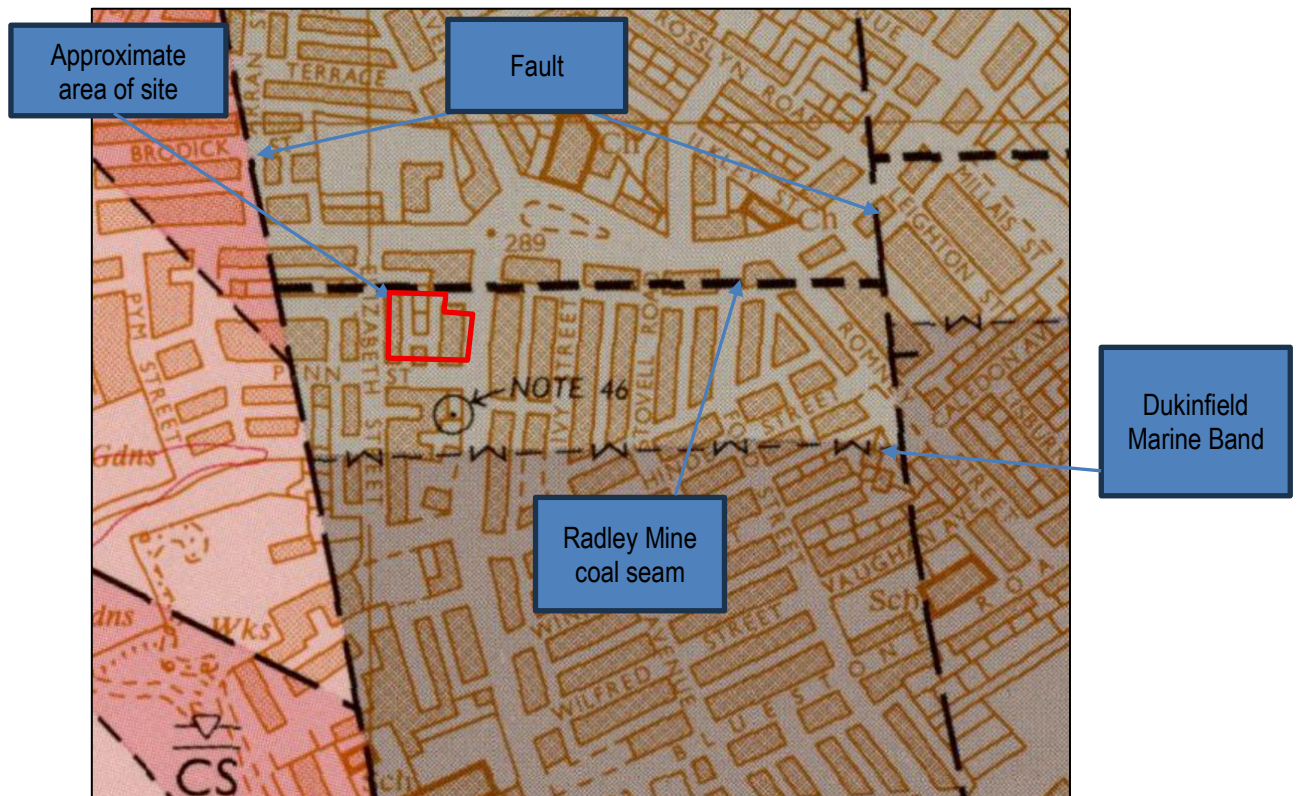
Geological Information

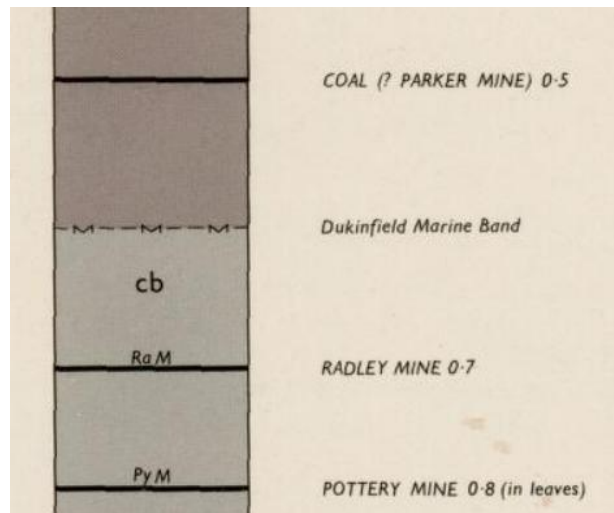
- 3.1 The geology of the site has been determined from geological maps for the area and examination of Coal Authority (CA) records.

British Geological Survey Published Data Assessment

- 3.2 The BGS records indicate that any artificial deposits do not underlie the site.
- 3.3 The BGS records indicate that the site is underlain by the Devensian-Diamicton, Till generally comprising '*clay, sand, gravel, and boulders*'.
- 3.4 The bedrock geology beneath the site is shown to be of the Pennine Middle Coal Measures Formation- Mudstone, Siltstone and Sandstone generally comprising of '*Interbedded grey mudstone, siltstone, pale grey sandstone and commonly coal seams, with a bed of mudstone containing marine fossils at the base, and several such marine fossil-bearing mudstones in the upper half of the unit.*'
- 3.5 An extract of the most recently published BGS Map SD80SE showing the approximate site location and key local geological features is presented in Figure 4. The BGS Map indicates that local strata dip from horizontal to the south at an unknown angle.
- 3.6 The geological map shows the Radley Mine Coal Seam, with a thickness of 0.7m, and a distance of 5.3m to the north of the site, dipping below the site.

Figure 4: Geology Map Extract





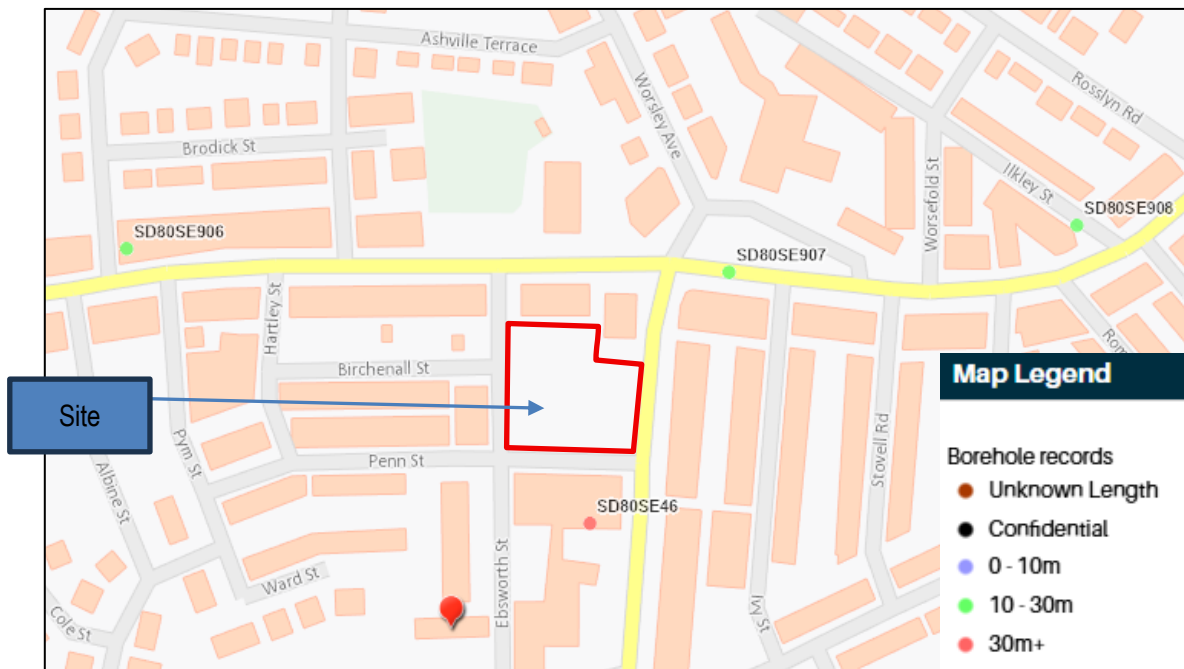
- 3.7 Note 46 on the geological map refers to a borehole that encountered sand and clay to the base of the borehole at 33.2m.
- 3.8 There are 4no. borehole records identified within 250m of the site, as shown in Figure 5 and summarised in Table 1.

Table 1: Summary of BGS Boreholes

Location	Rockhead Depth (m)	Coal Seam Depth/Thickness (m)	Total Depth (m)	Comments
SD80SE46	-	-	33.22	Groundwater at 3.30m bgl
SD8080SE907	-	-	17.00	No groundwater
SD8080SE906	-	-	16.00	No groundwater
SD8080SE908	-	-	17.00	No groundwater

- 3.9 The boreholes did not encounter rockhead at a depth of between 17.00 and 33.22m bgl, which was the maximum depth the boreholes were drilled.

Figure 5: BGS Borehole Location Plan



Coal Authority Records

- 3.10 Reference to the Coal Authority Online Interactive viewer shows that the site is located within a Development High Risk area.
- 3.11 The Coal Authority Mining Report identifies no historically worked seams beneath the property.
- 3.12 The report states that there are no unrecorded shallow workings beneath the site.
- 3.13 There are no spine roadways at shallow depth.
- 3.14 There are no mine entries recorded within 100m of the site.
- 3.15 The report states that there is 1no. outcrop recorded on the overall site, as summarised in Table 2 and shown in Figure 3.

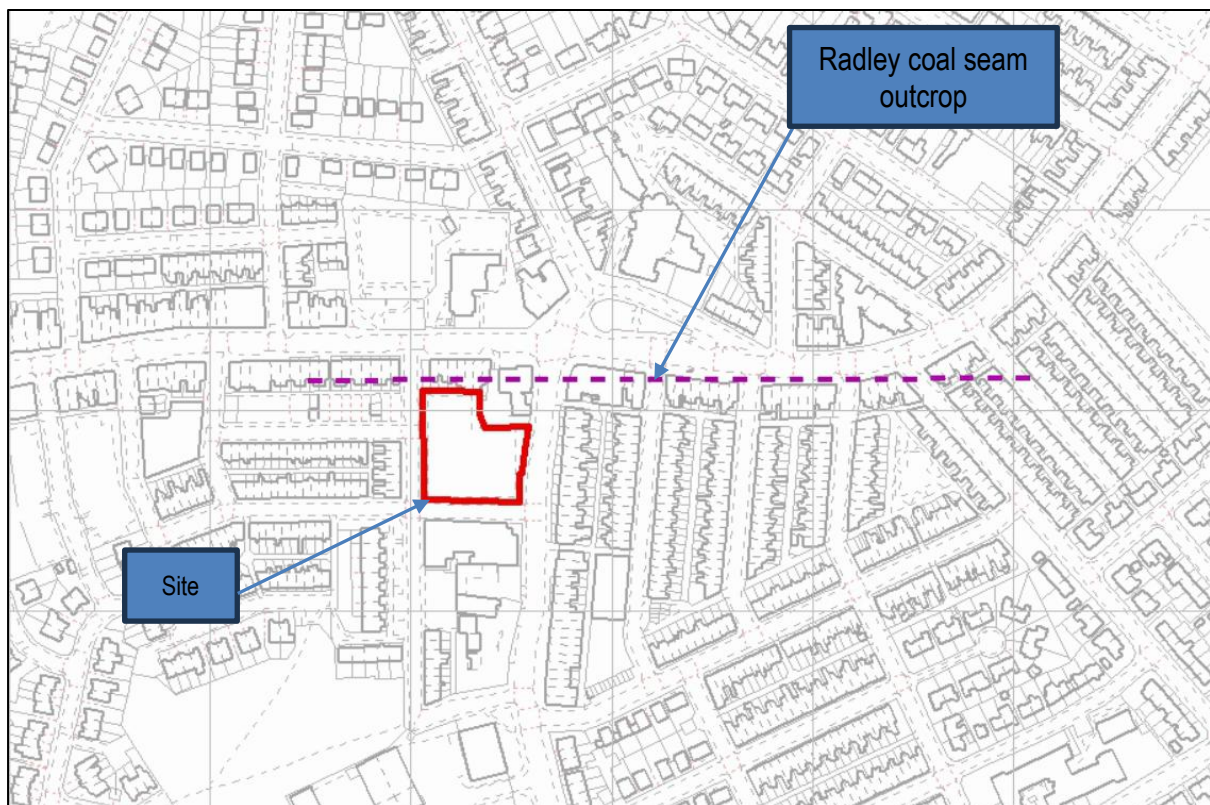
Table 2: Summary of Coal Outcrops

Seam Name	Seam Workable	Distance to Outcrop (m)	Direction to Outcrop	Bearing of Outcrop
Radley	Yes	5.3	North	089

- 3.16 There are no geological faults, fissures, or break lines recorded on the site.
- 3.17 There are no records of licensed and unlicensed opencast mining within 500m of the overall site.

- 3.18 There are no records of Coal Authority-managed tips within 500m of the site.
- 3.19 The overall site is not located within 50m of an area of a previous site investigation.
- 3.20 There are no records of any remediated sites within 50m of the overall site.
- 3.21 There are no records of claims regarding coal mining subsidence within 50m of the overall site boundary.
- 3.22 There are no records of mine gas or mine water treatment schemes within 500m of the site.

Figure 6: Coal Authority Map Extract



Historical Information

- 3.23 The earliest available mapping (1848) identifies the site as undeveloped land. The surrounding area was similarly undeveloped, with notable features recorded: a structure immediately northeast of the site, Kenyon Lane forming the eastern boundary, and ponds located approximately 100m to the east and south, which were infilled by 1909.
- 3.24 By 1891, buildings had been constructed on the site, and the 1893 map records these as residential properties with a landscaped area utilised as a bowling green. Between 1988 and 1992, the buildings were demolished, and the site was subsequently repurposed as the Lightbrowne Ward facility.
- 3.25 Significant change occurred in the broader area in 1915, when a large-scale residential development was undertaken alongside the construction of a church approximately 10m south

of the site. The church was later converted for alternative uses, first as a school and subsequently as a club.

- 3.26 Tram Sidings was constructed approximately 5m east of the site in 1922; however, the tram siding was eventually removed between 1950 and 1951.
- 3.27 Industrial activity was also present within approximately 150m of the site, including a clay pit, brickworks, and sawmills to the southwest, as recorded on the 1906 map.
- 3.28 The clay pit was later used as a refuse heap before being infilled, and between 1988 and 1992, the area was redeveloped as an industrial estate.

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 evaluation of available geological and mining information relating to the site (and wider area) and to use this information 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 1870s and that this requirement was not rigorously enforced for some time after. Many shallow coal seams were worked before the introduction of the first edition Ordnance Survey Maps, and information on these workings is often unavailable. Therefore, if coal seams were accessible, 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 the 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 is causing loss of ground beneath the building and external areas.
 - Spontaneous combustion of old mine workings.

Coal Mining Assessment Criteria

- 4.7 Shallow workings-related ground subsidence events may manifest as localised crown hole collapses at the surface (which are related to workings roof failures), or can be associated with more extensive ground movements, typically associated with pillar collapse, floor heave, or a combination of roof and pillar failure.

- 4.8 As there is limited evidence for structural damage caused by pillar failure compared with that resulting from roof collapses, the focus of engineering assessments of the potential for instability at the ground surface has focused on roof collapses as the more likely mechanism of failure.
- 4.9 The limit height on void migration for roof collapses, where no appreciable surface subsidence can result, is termed 'acceptable cover'. The calculation of the amount of acceptable cover is determined by the worked thickness of the seam (t) and the amount of overlying rock cover (h) (and potentially overconsolidated Glacial Till cover – see below).
- 4.10 The acceptable cover criterion is generally referred to as ht.
- 4.11 The worked thickness of a coal seam (t) is often taken as being whichever is the greater of the following: 1.50m (the typical height of a mining roadway), or the coal seam thickness.
- 4.12 It is noted that a thickness greater than that of the coal seam may have been extracted during mining, for example, to remove a weak underlying seat earth horizon (for use as fireclay and/or to aid access through the mine).
- 4.13 According to CIRIA C758D, from the examination of mines within CMS, the height of collapse migration might exceptionally extend to 10t the height of the original extraction.
- 4.14 As a result of this, the 10t criterion has been adopted by the industry as providing reasonable assurance against surface subsidence from roof collapses in old pillar and stall mines.
- 4.15 However, there are documented cases (albeit rare) where migrations in excess of 20t have been observed.
- 4.16 CIRIA C758D lists several circumstances where the acceptable cover criterion may need to be increased from 10t. These include:

Where the strata dip is >20 degrees

Where there are strong groundwater flows within workings and/or where there are rising or falling groundwater levels.

Where multi-seam extractions have taken place

Conclusions

- 4.17 The Coal Authority consider the site area to lie within a Coal Authority Development High Risk Area. However, the Coal Authority report indicates that there are no historically worked underground seams or probable shallow, unrecorded workings.
- 4.18 This is likely due to the deep deposits of Devensian Till, which are at least 16m to 33m thick; this would have made any extraction of the coal uneconomic and therefore highly unlikely.
- 4.19 Therefore, the risk to the site from historical coal mining is considered to be **LOW**.

Proposed Mitigation Strategy

- 4.20 The site is at a low risk from historical coal mining, and therefore, no further investigation regarding coal mining is required.

4.21 This report should allow for planning permission to be granted.

APPENDIX 1

COAL AUTHORITY CONSULTANTS MINING REPORT

APPENDIX 2

REPORT LIMITATIONS

REPORT LIMITATIONS

This contract was completed by Earth Environmental & Geotechnical Ltd, based on a defined programme, 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 observations and conclusions described in this report are based solely upon the services that were provided pursuant to the agreement between the client and Earth Environmental & Geotechnical Ltd. Earth Environmental & Geotechnical Ltd has not performed any observations, investigations, studies or testing not explicitly set out or mentioned within this report.

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The services are based on Earth Environmental & Geotechnical Ltd's observations of existing physical conditions at the site, gained from a walkover survey, together with Earth Environmental & Geotechnical Ltd's 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 of that information, which 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 investigation excavations can only examine the ground at discrete locations. The potential exists for ground conditions to be encountered that differ from those considered in this report. The extent of the limited area depends on soil and groundwater conditions, 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; it should not be inferred that other chemical species are absent.

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 and changes in local drainage conditions, and higher groundwater levels may occur at other times of the year than those recorded during this investigation.

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