Earth Science Partnership

Consulting Engineers | Geologists | Environmental Scientists

Land off A473 & A4222, Talbot Green
Proposed Residential Development
Supplementary Coal Mining Risk Assessment (CMRA)

Report Reference: ESP.9211.02b.4473.Rev1

This page is left intentionally blank

Earth Science Partnership
Consulting Engineers | Geologists | Environmental Scientists

33 Cardiff Road, Taff's Well, CARDIFF, CF15 7RB ☎ 029 2081 3385
✉ enquiries@earthsciencepartnership.com www.earthsciencepartnership.com

Land off A473 & A4222, Talbot Green
Proposed Residential Development
Supplementary Coal Mining Risk Assessment (CMRA)

Prepared for:
Talbot Green Developments Ltd
c/o Maska Group Ltd
76 Murrays Mills
50 Bengal Street
Ancoats
Manchester
M4 6LS

MASKA GROUP

Report Reference: **ESP.9211.02b.4473.Rev1**

Revision	Status	Date	Written & Checked by	Approved by
0	Final	October 2025	Dan Thomas BSc (Hons) FGS	Giles Sommerwill BSc (Hons) MSc CGeol SiLC FGS RoGEP Specialist
1 *(Updated Residential Layout)*	Final	October 2025	Dan Thomas BSc (Hons) FGS	Giles Sommerwill BSc (Hons) MSc CGeol SiLC FGS RoGEP Specialist
Signature:				
Notes:	1. Once issued this document is Uncontrolled, for the latest version and/or to confirm you have authorisation to use it please contact the Earth Science Partnership at enquiries@earthsciencepartnership.com or by telephone at 029 2081 3385. 2. This document has been optimised for double sided printing and therefore may produce some blank pages when printed single sided.			

Contents

1 Introduction 6

1.1 Background 6
1.2 Objective and Scope of Works 6
1.3 Report Format 7
1.4 Limitations of Report 7

2 Site Setting & Summary of Pertinent Past Desk Study Information 8

2.1 General Overview 8
2.2 Site Location and Description 8
2.3 Geology 12
2.4 Previous Preliminary Coal Mining Risk Assessment (ESP, 2025) 14

3 Previous Pertinent Investigation Information 17

3.1 Previous Investigation, Opus 2011 17
3.2 Previous Investigation (Preliminary Risk Assessment), DTS Raeburn 2023 17
3.3 Previous Investigation EPS, 2023 17
3.4 ESP Review 18

4 Supplementary Mining Investigation 19

4.1 Investigation Points 19

5 Development of the Revised Conceptual Model 20

5.1 Conceptual Ground Model - Geology 20
5.2 Site Instability 20

6 Revised Coal Mining Risk Assessment (CMRA) 21

7 Discussion & Conclusions/Recommendations 22

8 References 23

Appendices

Figure 1 – Current Proposed Development Plan

Figure 2 – Investigation Point Plan

Appendix A Mining Remediation Authority Consultants Report

Appendix B Investigation Point Records from Previous Investigations (Opus, 2011)

Appendix C Rotary Drillhole Records

General Notes

1 Introduction

1.1 Background

Talbot Green Developments Ltd (hereafter known as the Client) is preparing for the redevelopment of the subject site with a mix of land uses for commercial and residential purposes.

The Earth Science Partnership Ltd (ESP), Consulting Engineers, Geologists and Environmental Scientists, have previously undertaken an exploratory investigation at the site (ref: ESP.9211.4278, March 2025), which included a preliminary Coal Mining Risk Assessment (CMRA). The finding of the preliminary CMRA is discussed further in Section 2.4.

ESP have now been appointed by Maska Group (acting on behalf of the Client) to undertake a supplementary CMRA (including review of pertinent historical investigation information which was not instructed as part of the exploratory works), to further asses potential ground hazards relating to the mining legacy in the area, which could impact on the proposed development. The site location is shown on Insert 1 in Section 2.1.

ESP issued an initial report in October 2025 which commented on areas of possible commercial and residential development. Carney Sweeney, the planning consultant appointed for the scheme, has since requested that this report discusses the residential portion of the development only and have provided an up-to-date proposed layout plan for the residential development of the site. The layout is presented as Figure 1 for reference. It is understood that the areas of commercial development will be part of a separate planning application.

The red line boundary shown on Figures 1 and 2 and on inserts within this report represents the wider site boundary which was originally included as part of previous assessments.

The proposed development will comprise residential development in the west, and it is presumed that the residential areas will comprise typical two-storey dwellings with private gardens, landscaping and estate roads. The current proposed *'Illustrative Masterplan'* layout for the residential development is presented as Figure 1; however, we understand that this does not necessarily represent the final development layout. We are not aware of any proposed significant changes to the current ground levels. It is understood that the proposed structures would be classified as Geotechnical Category 2 (BS5930:2020).

1.2 Objective and Scope of Works

It should be noted that this current assessment is targeted at the potential historical coal mining and any pertinent information utilised in this assessment, addresses this aspect only. For all other elements of previous works undertaken, full reference should be made to the previous ESP report (ESP, 2025).

The scope of works for the investigation was designed by ESP within an agreed budget and comprised the rotary openhole boreholes in accessible areas of the site.

The contract was awarded based on a competitive tender quotation. The terms of reference for the assessment are as laid down in the Earth Science Partnership Bill of Quantities (BoQ) presented on 12th June 2025 (Ref: ESP.9211.02b.BoQ - Supplementary Mining Assessment). The investigation and assessment were undertaken in September and October 2025.

1.3 Report Format

This report includes a summary of the site setting and previous pertinent Desk Study information (Section 2), a summary of the available, relevant historical investigation information (Section 3), and details of the investigation undertaken of BS5930:2020 (Section 4). A revised ground model and CMRA are presented in Sections 5 and 6 respectively, followed by a summary discussion/conclusion, presented in Section 7. This report is issued as a digital version only.

1.4 Limitations of Report

This report represents the findings of the brief relating to the proposed end use and geotechnical category of structure(s) as detailed in Section 1.1 above. The brief did not require an assessment of the implications for any other end use or structures, nor is the report a comprehensive site characterisation and should not be construed as such. Should an alternative end use or structure be considered, the findings of the assessment should be re-examined relating to the new proposals.

Where preventative, ameliorative or remediation works are required, professional judgement will be used to make recommendations that satisfy the site-specific requirements in accordance with good practice guidance.

Consultation with regulatory authorities will be required with respect to proposed works as there may be overriding regional or policy requirements which demand additional work to be undertaken. It should be noted that both regulations and their interpretation by statutory authorities are continually changing.

This report represents the findings and opinions of experienced geo-environmental and geotechnical specialists. Earth Science Partnership does not provide legal advice, and the advice of lawyers may also be required.

2 Site Setting & Summary of Pertinent Past Desk Study Information

2.1 General Overview

It should be noted that this current assessment is targeted at the coal mining legacy of the site and any pertinent information used addresses this aspect only. For all other elements of previous works undertaken, full reference should be made to the previous ESP report (ESP, 2025).

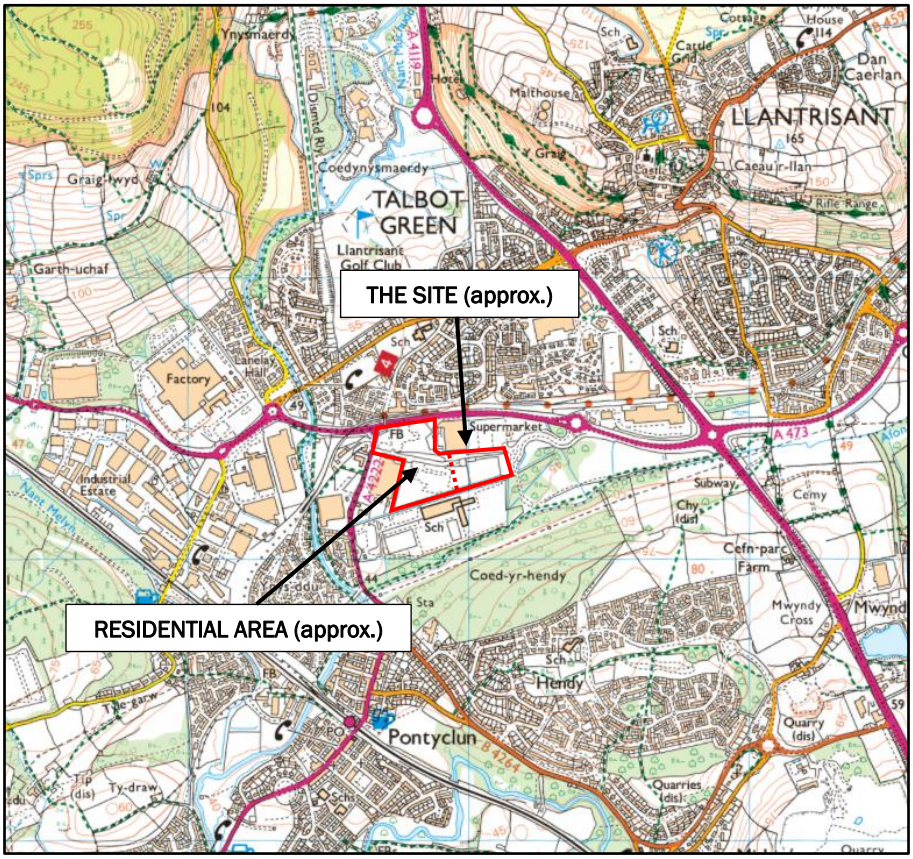
The information in this section was obtained from desk-based research (ESP, 2025), including review of historical maps, a geological data report, and a mining report from the Mining Remediation Authority (MRA), previously known as the Coal Authority. Further desk study reports/data/records are included as referenced in the text.

A review of the pertinent previous investigation information is presented in Section 3.

2.2 Site Location and Description

The site description is largely based on a field reconnaissance and site inspection visit made at the site on 11th September (as part of separate ongoing works at the site) during generally dry weather.

The site is located south of the A473 and east of the A4222 in the southwest of Talbot Green in the county of Rhondda Cynon Taf. The National Grid Reference of the approximate centre of the site is (ST) 303891E, 182334N, and the nearest available postcode is CF72 8FN. A site location plan is presented as Insert 1 below.

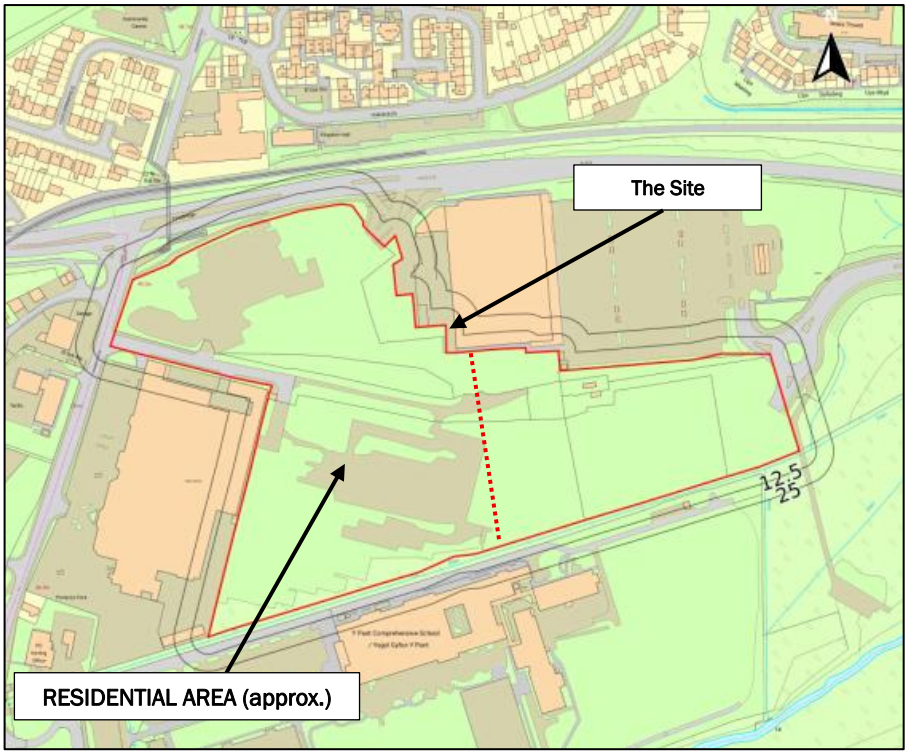


Insert 1 - Site Location Plan from Ordnance Survey 1:25,000 scale map.
Reproduced with permission (OS License No.: AL100015788).

2.2.1 Current Site Status

To show the current status of the site, an aerial image of the current site status is shown as Insert 2 below, followed by an OS site plan from the previous assessment (ESP, 2025) presented as Insert 3.

Insert 2 - Site Plan from Google Maps (Image taken May 2023)



Insert 3 – OS Mapping Site Plan from data report (Appendix C)

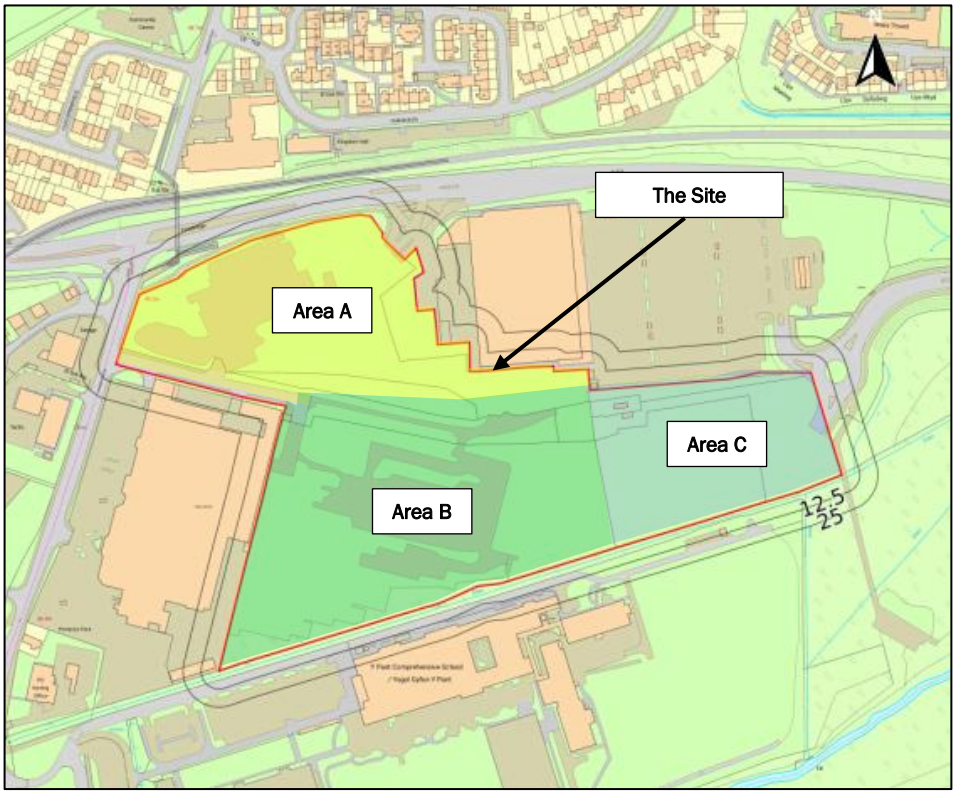
2.2.2 Site Boundaries, Access and Surroundings

The site is bounded by:

- To the north: the A473 in the west portion, with Sainsburys store and car park in the east portion.
- To the east: by Sainsburys store and an area of woodland.
- To the south: immediately by a drainage channel, followed by Y Pant comprehensive school.
- To the west: the A4222 (Cowbridge Road) and Leekes department store.

Vehicular access to the site is currently gained via a gate north of the existing Leekes department store. Access can also be gained through large concrete bollards via the former entrance in the west of the site (see insert 2). The site boundaries generally comprise post and wire fences to the west, south and north. The east of the site is open to the new road layout constructed as part of the adjacent Sainsburys development.

To aid in the description of the site in this section, the site has been separated into three areas (Area A, B and C) as shown on Insert 4 below. Area C is not included within the proposed residential development and is therefore not included in this assessment.



Insert 4 – OS Mapping Site Plan from data report (Appendix C) – See Below Site Descriptions

Area A

This comprises a large area of former hardstanding, located in the central and west, with the remainder being open grass/scrub. In the northwest, a former possible pumping station associated with former water mains remains.

In the east, an inaccessible fenced area is present, with evidence of previous ground investigation (probable borehole covers), with a cleared path leading to a narrow strip of land adjacent to the existing Sainsburys store to the north and further evidence of previous investigation and standpipes in the ground.

Area B

This comprises the former entrance to the site and a localised area of tarmacadam. The central area is occupied by a large concrete slab, with further areas of concrete and tarmacadam in the south and southwest. Steel runs were identified within the concrete in the central area, possibly associated with former crane/lifting runs or reinforcement to the slabs. Several drain covers were also identified but could not be lifted.

In the west portion, possible fill was identified by a raised area which doesn't seem consistent with the adjacent levels to the north, east and south.

The east extent is marked by a fence line which trends roughly north to south, separating Area B and area C, with only a small access point between the two (pedestrian) at the north extent of the fence. The southeast portion of Area B is largely dense vegetation and wooded areas which have been recently partially cleared by the Client to allow access.

Two derelict structures are present in the east portion, resembling possible old train carriages or narrow temporary cabin-type buildings.

2.2.3 Existing Surveys

A topographic survey has been provided by the Client and indicates Area A to be in the region of around 48.5m AOD, with a slightly elevated central area of around 49m AOD. Area B is shown to be at approximately 47.5m in the north and 46.8m in the south, also sloping to around 45.5 in the east. An elevated area is also present in the east of Area B, rising to around 48.3m AOD.

Variations in ground levels across all of the three areas (see insert 4) are present, however the above provides an overall indication of the site levels, which generally fall to the south/southwest to the river.

2.2.4 Services

Service plans were previously obtained by ESP from the utility companies (ESP, 2025). Site observations and the utility plans indicate that the site is crossed by the following services:

- 11kV Electricity cables in the northwest, trending along the north boundary also extending south and then east along the former access road. These cables then extend east through the approximate centre and trend south to the boundary (along the fence line between Areas B and C).
- Low pressure gas mains in the northwest.
- An intermediate pressure gas main trends roughly southwest to northeast in the south.
- A 160mm HDPE water main extends along the north boundary, with a 7-inch cast iron main shown to extend into the access road off the A4222 in the west, which terminates approximately 10m into the road.
- A private sewer is shown on the east margins, extending north to south along the boundary.
- BT cables are shown along the north boundary and along the access road in the west.

For ease of reference, the above services have been included on Figure 2.

Prior to the commencement of the recent works, ESP attended a site walkover with Wales & West Utilities (W&W) to locate and mark out the gas mains located along the southern boundary. Following the walkover, W&W confirmed the works could proceed with a stand-off of a minimum of 15m for the proposed boreholes from the gas main.

2.2.5 Summary of Site History

From the review of historical maps and other mapping sources, the site remained largely as open fields (with the exception of the construction of Springfield House in the late 1890's) until around the early 1960's, when the northwest portion of the site was developed with a Water Treating Equipment Work, which continued to expand within the site into the early 2000's. From the late 1970's, a further works/factory was developed in the southwest portion.

Reference to the Coflein website[1] (the online database for the National Monuments Record of Wales (NMRW)), the works on site were '*The chemical production division of the water purifying company, Permutit, was established near Talbot Green after WW2 (the company had been involved in the production of Sea Water Desalting Apparatus for war use). The company later changed its name to 'Purolite'. The building was closed and then demolished in the 1990s.'*

Reference to aerial imagery from Google earth ©, the works in the northwest portion of the site were partially demolished between 2001 and 2006 and are seen to have been completely removed by 2009. The works in the southwest portion remained until 2009 and were demolished sometime between then and 2013. As seen on the imagery, large areas of concrete slabs remained.

Google earth © imagery from 2013 shows the northwest portion of the site is likely being used as a compound for ground preparation/investigation works for the recently constructed Sainsburys food store, which is shown completed in the 2024 imagery.

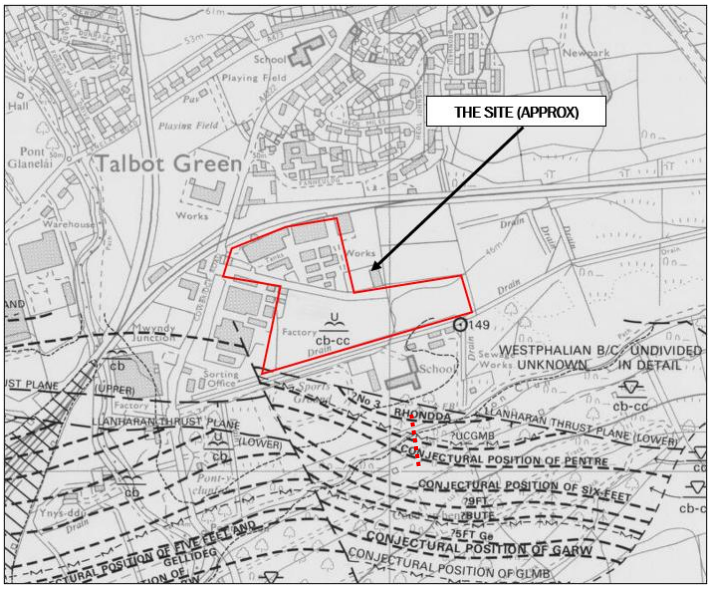
With the exception of some recent vegetation clearance undertaken by the Client, the site remains as per the imagery from 2024 (Google earth ©).

2.3 Geology

2.3.1 Published Geology

The published 1:10,560 scale geological map for the area of the site (Sheet ST08SW), available on the website of the British Geological Survey, 2025 and presented as Insert 5) indicates the site to be underlain by River Terrace Deposits (undifferentiated) overlying bedrock of the South Wales Middle Coal Measures Formation. Detailed mapping data is not available for the majority of the site, as shown on the insert below.

[1] https://coflein.gov.uk/en/site/418827/

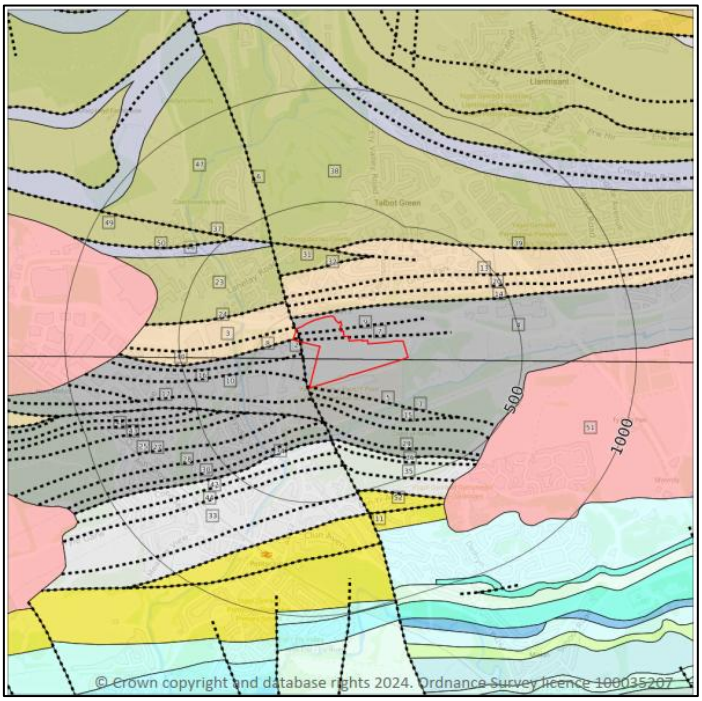


Insert 5 - Extract from BGS Geological Map Sheet SS68NW, original 1:10,560 scale. Reproduced with permission (BGS licence number: C15/05 CSL)

Reference to the up-to-date mapping available on the website of the British Geological Survey (BGS, 2025) indicates a similar succession, but the River Terrace Deposits are named River Terrace Deposits, 1 (sand and gravel). An area of Alluvium is also shown in the southeast portion.

The River Terrace Deposits (RTD) superficial strata would be expected to comprise sand and gravel, locally with lenses of silt, clay or peat. The Coal Measures bedrock comprises an interbedded succession of sandstone, siltstone and mudstone, with coal seams and associated seat earths.

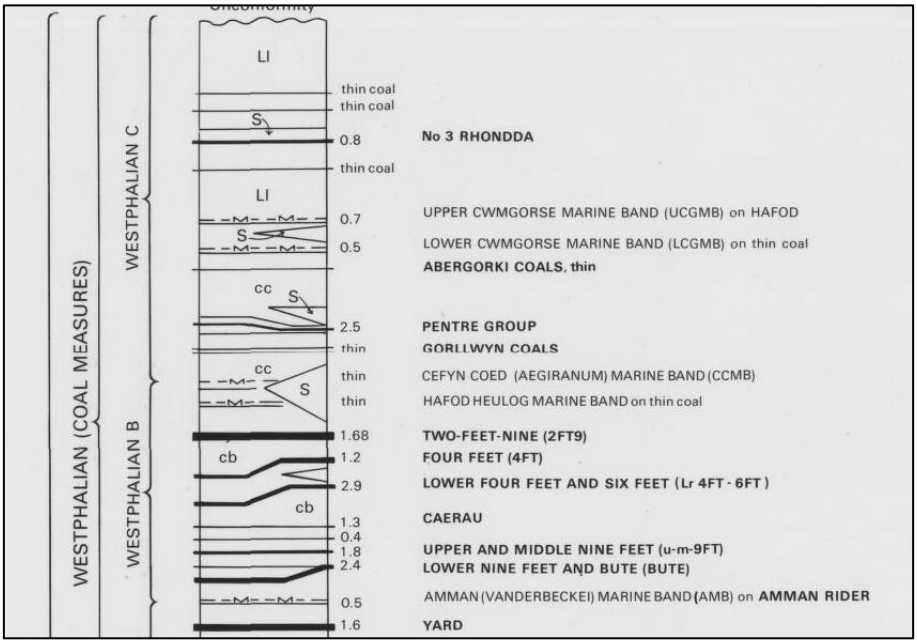
The 1:10,560 map (see insert 5) indicates no conjectured outcrops on site as the data does not cover the site. However, reference to the 1:50,000 scale map (Sheet 248) and the data report (Appendix C), identifies possible coal outcrops on site, as shown on Insert 6 below.



Insert 6 - Bedrock Geology (ESP, 2025)

A fault is present on the west boundary, thrusting to the south.

The No.3 Rhondda seam is shown to the south of the site, with several successions of seams extending further south. Based on the mapping and the locations of the outcrops, the general dip in the area is to the north (i.e., beneath the site), however no indication of the angle is provided. For reference, the stratigraphical section from the geological map (sheet ST08SW) is shown below in Insert 7.



Insert 7 - Extract from BGS Geological Map Sheet SS68NW, original 1:10,560 scale. Reproduced with permission (BGS licence number: C15/05 CSL)

This is addressed further in the mining discussion, presented in Section 2.4 and 6.0.

2.3.2 Available BGS Borehole Records

The British Geological Survey website (BGS, 2025) indicates the available records of 5no. useful boreholes on/adjacent to the central east portion of the site (ESP, 2025).

Boreholes ST08SW298, ST08SW299 ST08SW301 and ST08SW302 indicate the general ground conditions to comprise approximately 2m of overburden/soils (presumed Topsoil and subsoil), overlying coarse gravels to between approximately 9m and 12m below the surface. In BHST08SW298, the gravels are shown to extend down to around 20.5m depth.

Bedrock is identified beneath the gravels and proved to a maximum depth of 92m (ST08SW298) and 98.2m (ST08SW299), described as *'Middle-Upper Coal measures, Undifferentiated).'*

Borehole ST08SW300 is progressed to 140m below the surface and identified *'soils'* to 3m, followed by sands and gravels to 11m depth. This is underlain by Sandstone, proved to 98m, followed by shale to 100m, coal to 103m and shale to 140m.

2.4 Previous Preliminary Coal Mining Risk Assessment (ESP, 2025)

As discussed in Section 2.3, the site is underlain by bedrock of the Upper Coal Measures, which contains several seams of coal (and bands of ironstone).

2.4.1.1 Historical and Geological Information

Reference to the 1:50,000 scale map (Sheet 248) and the data report previously obtained (ESP, 2025), identifies possible coal outcrops on site, tentatively identified to possibly be the No. 2 Rhondda; however, due to the scaling of the mapping, this is not certain. This is discussed further in the following sections.

2.4.1.2 Mining Remediation Authority Website

Reference to the Mining Remediation Authority website (MRA, 2025) provides the following salient information:

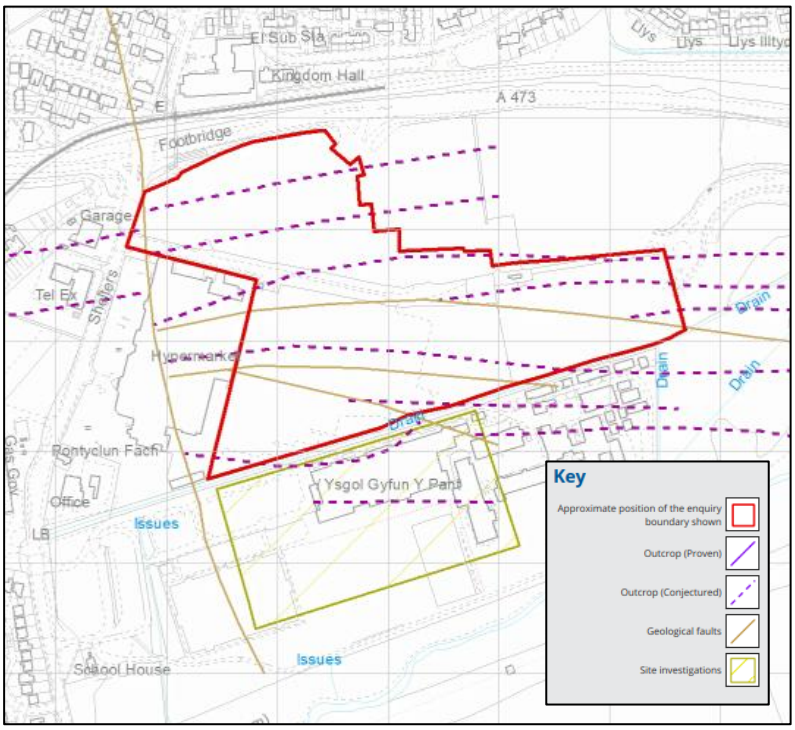
- The outcrop of several unnamed coal seams are shown to cross the site in a west-east trend.
- No past surface hazard or surface mining is identified in the vicinity of the site.
- No recorded or probable past shallow coal mining is indicated in the vicinity of the site.
- No mine entries are shown within the site boundary.
- The site lies within a 'Development High Risk Area'.

2.4.1.3 Mining Remediation Authority Report

A consultant's mining report has also been obtained from the Mining Remediation Authority and is presented in Appendix A. An image of the mapping associated with the report s also shown as Insert 8 for reference. This indicates that, based on the available Mining Remediation Authority records:

- No past underground mining is recorded.
- The outcrops of 7no coals seams are recorded within the site boundary, including the outcrop of the Four Foot, Hafod, Lower Pentre, No.3 Rhondda, Tormynydd Rider No.2, Two Foot Nine and Upper Six Feet coal seams.
- 4no. coals seams are also indicated to outcrop within 50m of the site.
- No probable unrecorded shallow mine workings are identified.
- No spine roadway recorded at shallow depth.
- There are no mine entries recorded within 100m of the site.
- A fault runs in a general northwest to southeast orientation, which down throw's strata towards the northeast. This intersects the site in the northwest margin. Further faulting is shown in a general west to east orientation across the southern portion of the site (see insert 8).
- There are no opencast mines recorded within 500m of the site.
- There are no recorded damage notices or claims for the subject property, or any property within 50m of the site boundary, since 31st October 1994.
- There is no record of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.
- No mine gas emission has been recorded within 500m of the property. However, the report does state that this does not mean that mine gas is not present within the vicinity. The Mining Remediation Authority recommends that a more detailed Gas Risk Assessment is undertaken by a competent assessor.

- There is no proposed future mining or licensing proposed.
- No notices have been given under Section 46 of the Coal Mining Subsidence Act 1991 stating that the land is at risk of subsidence.
- The site located in an area of historical coal mining activity.



Insert 8 - Extract from Mining Remediation Authority (MRA) Report (Appendix G).

2.4.1.4 Previous Investigation Information

Based on a brief review of a previous report text (Opus, 2011), *'none of the five boreholes identified any evidence of coal seams or mine workings to a depth of 30m.'*

This is assessed further in Section 3.

2.4.1.5 Preliminary Coal Mining Risk Assessment

Although the previous report indicated no coal seams/workings to a depth of 30m, given that the superficial soils are potentially up to a depth of around 17m below ground level, dependant on the thickness of any underlying coal seams, there may be insufficient rock cover to mitigate the risk.

Several coal seams have been identified to underly the site and it was recommended that further works would be required to investigate their depth and status.

3 Previous Pertinent Investigation Information

Following review of the previous investigations undertaken at the site and immediately adjacent, limited information with regards to assessment of the potential risks from coal mining have been identified; however, the relevant findings are summarised in the following section.

3.1 Previous Investigation, Opus 2011

The previous investigation undertaken by Opus, covered a wider site that is relevant to this current assessment; however, a number of investigation points were constructed within the current ESP site boundary, some of which are relevant to the current CMRA.

5no. boreholes (BHR1 to BHR5) were constructed to investigate the potential presence of shallow coal mine workings beneath the wider site, three of which (BHR1, BHR2 and BHR4) are within the current ESP site boundary. For ease of reference, the borehole records are presented in Appendix B, and their positions are shown on Figure 2.

BHR1 identified Made Ground to 0.9m, followed by probable River Terrace Deposits, 1 to a depth of 16.7m. Sandstone bedrock was then identified between 16.7m and 30m depth where the borehole was terminated.

BHR2 identified probable River Terrace Deposits, 1 to a depth of 15.6m, followed by sandstone bedrock to a depth of 30m where the borehole was terminated.

BHR4, identified probable River Terrace Deposits, 1 to a depth of 17m, followed by limestone bedrock to a depth of 30m where the borehole was terminated.

The report concludes that *'The rotary borehole locations were positioned to investigate the possible presence of shallow coal mine workings beneath the site. No suspected mine workings, coal seams or voiding were encountered in any of the exploratory boreholes advanced during the investigation.'*

3.2 Previous Investigation (Preliminary Risk Assessment), DTS Raeburn 2023

This Preliminary Risk Assessment (PRA) was not undertaken within the current site boundary, but on the land immediately adjacent for the now constructed Sainsbury's supermarket (see Section 2.2.2). The PRA concludes that that '*unrecorded shallow coal workings are unlikely to present a significant risk to the proposed development.*'

3.3 Previous Investigation EPS, 2023

This Phase I and II investigation and assessment was not undertaken within the current site boundary, but on the land immediately adjacent for the now constructed Sainsbury's supermarket (see Section 2.2.2). The report concludes that (based on the mining report obtained at the time) '*there are no records of historical mining in the area and no probable unrecorded mine workings or mine entries.'*

3.4 ESP Review

The findings previously provided by Opus did not identify any coal seams/workings to a depth of 30m.

Reference to the geological memoir for the area (Woodland and Evans, 1964), indicates that the named seams beneath the site are worked in the area, ranging from thin to up to around 6ft (1.8m) in thickness.

Based on a well-established, general rule of thumb adopted across the South Wales Coalfield (Parry and Chiverrell, 2019), the risk of subsidence is considered to be low where the thickness of bedrock cover above workings is at least ten times the height of the workings, i.e. for 1.7m height workings, 17m of rock cover would be required to have confidence that a low subsidence risk exists.

Therefore, bedrock thickness of around 10-20m above any coal seams/working present beneath the site could be required to mitigate the risks.

The previous boreholes proved around 13m to 14.4m of bedrock beneath the site, however given the potential thicknesses of underlying coal seams, it was considered that deeper boreholes to a depth of 50m would be required to more robustly assess the potential risks at the site.

4 Supplementary Mining Investigation

4.1 Investigation Points

4.1.1 Introduction

The intrusive investigation commenced on the 23rd September 2025 in accordance with BS5930:2020 and was designed to investigate any coal seams/workings present beneath the site only (or to establish their absence whilst proving rock to a greater depth of around 50m). The works comprised rotary openhole boreholes only.

The investigation points were supervised and logged by an engineering geologist in general accordance with BS5930:2020, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2018, and BS EN ISO 14689:2018, along with published weathering schemes. The investigation point positions are shown on Figure 2.

The ground levels and grid references indicated on the investigation point records are approximate only and have been interpolated from available information.

4.1.2 Investigation Strategy

The investigation points were located to investigate the presence/absence of underlying coal seams only.

4.1.3 Rotary Drillholes

4.1.3.1 General Information

3no. rotary drillholes were constructed (BH201 to BH203) to depths of 50m below current surface level. The boreholes were progressed using open hole methodology only. The records are presented as Appendix C. Their positions are shown on Figure 2.

The drillholes were constructed with the objective of locating the rock-head profile and the depth to coal seams or possible abandoned workings. They were constructed under license to the Mining Remediation Authority (Permit ref. 30182) and the HSE were notified of the works due to the boreholes progressing to depths greater than 30m within a mining area.

Given the distance to the nearest property (~70m), compressed air was used as a flushing medium. In accordance with Mining Remediation Authority requirements, levels of ground gas were recorded at the drillhole during the drilling works.

At the commencement of each borehole, a square of the grass landscaping was cut and a service inspection pit excavated by hand to a depth of 1.2m. On completion, the boreholes were backfilled with bentonite as required by the Mining Remediation Authority.

The ODEX 115 system of simultaneous drilling and casing was used in the superficial deposits, and the depth of casing in each drillhole is shown on the drillhole records.

During the drilling process, the soil/rock chippings returned to the surface were described by the driller and the rate of progress monitored. It should be noted that, although adequate for identification purposes, the nature of the drilling method does not permit an accurate description of the strata.

5 Development of the Revised Conceptual Model

The following revised Conceptual Ground Model (CGM) includes a summary of information from the previous investigations and inclusion of the most recent investigation findings.

5.1 Conceptual Ground Model - Geology

Made Ground: encountered across the site with the exception of the east extent, generally between around 0.5m and 1.5m (locally deeper). In the east portion, limited/no Made Ground was encountered.

Topsoil: identified in the east extent of the site only to a maximum depth of 0.35m as a soft, dark brown clay with fractions of sand and frequent rootlets.

Possible Alluvium: encountered locally across the site beneath the Made Ground/Topsoil, from between 0.3m to 0.7m and proved to a maximum depth of 1.1m, generally as a light, orangish brown clay, with fractions of sand and gravel. Deeper Alluvium was identified in the area of raised ground in the southwest.

River Terrace Deposits, 1: encountered across the site to a maximum depth of 24.7m, generally as a light, orangish brown/brownish orange (locally darker) gravel of rounded to subrounded sandstone, with fractions of silt/clay, sand and cobbles.

Below approximately 3m, the superficial deposits are identified by rotary drilling only and therefore detailed descriptions are not possible due to the method. In general, the driller noted the superficial soils to comprise sand and gravel, with deeper bands of silty sandy and clean gravel.

Coal Measures Bedrock: identified from depths of between 14.3m to 24.7m and proved to depths of 50m in all boreholes, generally as an interbedded sandstone/mudstone bedrock.

A coal seam was identified in BH202 and BH203 at a depth of 35.5m (identified to be 1.1m thick) and 34.5m (identified to be 0.8m thick) respectively. No coal seam was identified in BH201 to a depth of 50m (rock head identified at 14.3m depth).

5.2 Site Instability

Although the site is underlain by Coal Measures bedrock, rotary drillholes constructed to 50m depth have identified no evidence of abandoned workings.

Deep coal seams were identified at depths of 34.5m and 35.5m.

6 Revised Coal Mining Risk Assessment (CMRA)

6.1.1 Coal Mining Hazard Potential

The investigation did not identify any abandoned coal workings. Coal seams were identified between 35.5m and 36.6m in BH202 and between 34.5m and 35.3m in BH203.

The thickness of rock cover above the workings varied from 10.8m (BH202) to 19.6m (BH203) providing a ratio of bedrock cover to height of workings of between 9.8:1 (BH202) and 24.5:1 (BH203).

It is commonly accepted, based on observational evidence, that the risk from abandoned mine workings is acceptable to most developments (the 10T rule) where this ratio exceeds 10:1 (i.e. the bedrock cover thickness is at least ten times the void height). Given the findings of the investigation, it is considered that there is likely to be sufficient bedrock cover above the workings so that the subsidence risks are low.

Based on the findings of the investigation, the ratio of bedrock cover to seam thickness is around 10T in BH202 and more than double in BH203.

The MRA website (MRA, 2025) indicates no recorded or probable past shallow coal mining in the vicinity of the site and the MRA report for the site (Appendix A) indicates no past underground mining at the site.

No evidence of historical mine workings has been identified in the recent investigation.

Reference to Parry and Chiverrell (2019) indicates that the subsidence risk could be reduced in certain circumstances, such as where the roof strata of the workings comprise massive stratum (usually sandstone), or where structures can be designed to tolerate the resulting ground movements.

6.1.1.1 Subsidence Risk

The 10T rule relates to the generation of ‘crown holes’ due to the collapse of the roof rock above the workings, and the subsequent upwards migration of the void to the ground surface.

Where bedrock is shallow (not on this study site), open ‘crown holes’ can express at the surface.

On the study site, the bedrock lies at depth (around 14m to 24m) and is overlain by generally coarse-grained River Terrace Deposits and Made Ground. If any crown holes were to develop within the bedrock above the workings, they would migrate as above to the top of bedrock and, given the nature and thickness of the overlying coarse-grained superficial deposits, a larger zone of areal settlement would be more likely to occur. However, based on the findings, if any workings are present beneath the southern portion of the site, the development of a crown-hole feature is unlikely to develop as the thickness of bedrock cover is likely thick enough (10T or greater) to mitigate the risks from any possible mine workings. Therefore, we consider the risks from subsidence from historical mining at the site is low.

6.1.1.2 General Comments

In any area of past mining activity, the possibility of the existence of unrecorded mine entries cannot be discounted. During site clearance operations and all excavation, a careful watch should be maintained for any isolated pockets of loose fill, brickwork or other anomalous features which may be indicative of past mining operations. Any such features should be subject to further.

7 Discussion & Conclusions/Recommendations

The Mining remediation Authority indicates that there is no past underground mining recorded at the site and no probable unrecorded shallow mine workings or spine roadways are identified at shallow depth.

The previous assessment identified a low risk from mining and the adjacent Sainsbury's development investigation reports undertaken by DTS Raeburn and EPS indicate a likely low risk from historical mining.

The recent investigation identified a 0.8m and 1.1m thick coal seam in the southern portion of the site at a depth of around 34.5m to 35.5m, which are overlain by approximately 10m and 20m of interbedded sandstone and mudstone and up to around 25m of coarse-grained River Terrace Deposits.

The findings of the recent investigation indicate the ratio of bedrock cover to seam thickness is around 10T in BH202 and more than double in BH203. No coal seam was identified in BH201 to a depth of 50m.

The previous boreholes proved around 13m to 14.4m of bedrock beneath the site, which would provide sufficient bedrock cover (greater than 10T) for the coal seams identified (maximum thickness of 1m).

Based on the findings, if any workings are present beneath the southern portion of the site, the development of a crown-hole feature is unlikely to develop as the thickness of bedrock cover is likely thick enough (10T or greater) to mitigate the risks from any possible mine workings.

Given the findings of the investigation, it is considered that there is likely to be sufficient bedrock cover above the workings so that the subsidence risks are low. Therefore, no risk mitigation measures are considered necessary.

In any area of past mining activity, the possibility of the existence of unrecorded mine entries cannot be discounted. During site clearance operations and all excavation, a careful watch should be maintained for any isolated pockets of loose fill, brickwork or other anomalous features which may be indicative of past mining operations. Any such features should be subject to further.

This report should be reviewed by the relevant planning consultees (Mining Remediation Authority) and ESP would be happy to discuss any comments/queries with the MRA if required.

8 References

BRITISH GEOLOGICAL SURVEY (BGS). 2025. Website accessed September & October 2025.

BRITISH STANDARDS INSTITUTION (BSI). 2002. Geotechnical Investigation and Testing: Identification and Classification of Soil, Part 1. Identification and Description. BS EN ISO 14688-1. HMSO, London.

BRITISH STANDARDS INSTITUTION (BSI). 2018. Geotechnical Investigation and Testing: Identification and Classification of Soil, Part 2. Principles for Classification. BS EN ISO 14688-2:2018. HMSO, London.

BRITISH STANDARDS INSTITUTION (BSI). 2018. Geotechnical Investigation and Testing: Identification, Description and Classification of Rock. BS EN ISO 1468:2018. HMSO, London.

BRITISH STANDARDS INSTITUTION (BSI). 2020. Code of Practice for Ground Investigation. BS 5930:2015+A1:2020. HMSO, London.

EARTH SCIENCE PARTNERSHIP (ESP) LTD. 2025. Land off A473 & A4222, Talbot Green. Proposed Residential & Retail/Commercial Development. Exploratory Investigation.
Report Reference: ESP.9211.4278 (ESP, 2025).

HEALY P.R. AND HEAD J.M. 1984. Construction over Abandoned Mine Workings. CIRIA Special Publication SP32/PSA Civil Engineering Technical Guide 34.

PARRY, D and CHIVERRELL, C. 2019. Abandoned Mine Workings Manual. C758D. CIRIA.

WOODLAND A W and EVANS W B. 1964. The Geology of the South Wales Coalfield, Part VI, The Country around Pontypridd and Maesteg (explanation of one-inch geological sheet 248) Memoirs of The Geological Survey of Great Britain (3rd Edition)