

IGE

consulting

Land off Stopes Road, Little Lever

Mineworking Treatment Validation Report

For: Taylor Wimpey (Manchester)

Taylor
Wimpey

Job Number:		3524
Report Reference:		3524-05
Issue Status / Revision:	1st issue	
Date:	May 2025	
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Previous Revisions and Date:	N/A	
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1.0 INTRODUCTION

This report details the treatment of mine workings in line with the IGE Consulting *Coal Mining Remedial Treatment Design* (Ref. 3524-01A, dated Jan 2025). The findings of the drill and grout works in relation to the geological setting of the site are discussed along with recommendations for any further remedial works associated with the coal mining legacy on the site. This validation report was instructed by the client (Taylor Wimpey (Manchester)) and should be issued to the National House Building Council (NHBC) and Mining Remediation Authority (MRA) for regulatory approval. The limitations of this report are included in Appendix 1.

1.1 Site Location & Description

This report pertains to a 6.37 Ha site located to the north west of Stopes Road, Little Lever, at the approximate post code M26 3TW. The National Ordnance Survey Grid Reference for the centre of the site is 376268E, 407666N. A site location plan is included in Appendix 2.

The site was historically used as a tarmac block manufacturing plant and has been subject to site clearance, demolition, earthworks and remediation. Currently the site is a vacant area, with the exception of a substation building in the southern site section. The site is accessed via Stopes Road in the south eastern corner of the site. The site is bound by residential property to the south and open fields to the west, north and east.

An aerial photo of the site is included below:



Figure 1: Aerial image of the site dated October 2024.

1.2 Previous Reports

This report should be read in conjunction with the IGE Consulting Ltd (IGE) *Coal Mining Remedial Treatment Design* (Ref. 3524-01A, dated Jan 2025) and the Hydrock Consultants Ltd (Hydrock) *Performance Specification for Stabilisation Verification Report for Earthworks and Ground Improvement* (Ref. 15220-HYD-XX-XX-RP-GE-0007_P02, dated June 2022).

Additionally, this report follows the findings and recommendations of the following previous documents:

- **Hydrock Consultants Ltd - Phase 1 Desk Study**, dated September 2020 (Ref. 15220-HYD-XX-XX-RP-GE-0001_P03_S2).
- **Hydrock Consultants Ltd - Coal Mining Risk Assessment**, dated September 2020 (Ref. 15220-HYD-XX-XX-RP-GE-0002_S2_P02).

- **Hydrock Consultants Ltd** - *Phase 2 Ground Investigation Report*, dated November 2020 (Ref. 15220-HYD-XX-XX-RP-GE-0003_P02_S2).
- **Hydrock Consultants Ltd** - *Supplementary Phase 2 Investigation Report*, dated June 2021. (Ref. 15220-HYD-XX-XX-RP-GE-0004_P02_S2).
- **Hydrock Consultants Ltd** - *Geotechnical Design Report for Earthworks*, dated July 2021 (Ref. 15220-HYD-XX-XX-RP-GE-005_P01_S2).
- **Hydrock Consultants Ltd** - *Remediation Strategy and Verification Plan*, dated June 2021 (Ref. 15220-HYD-XX-XX-RP-GE-0006_P01_S2).
- **Hydrock Consultants Ltd** - *Verification Report for Earthworks and Ground Improvement*, dated November 2023 (Ref. 15220-HYD-XX-XX-RP-GE-0015_P03).
- **IGE Consulting Ltd** - *Mine Entry Treatment Specification*, dated February 2025 (Ref. 3524-06)
- **IGE Consulting Ltd** - *Ground Gas and Mine Gas Risk Assessment*, dated May 2025 (Ref. 3524-03).
- **IGE Consulting Ltd** - *Ground Investigation Report*, dated May 2025 (Ref. 3524-07).

1.3 Proposed Development

It is the client's intention to develop the site into a low-rise residential development. The primary drill and specification and grouting grid was designed to target the plots, driveways and highways as outlined in the proposed development plan. During the grouting works, unexpected mine shafts were encountered which has resulted in revisions to the proposed development plan to account for the anticipated zone of influence of the discovered shafts. The discovery and zone of influence of these shafts is discussed in further detail in this report.

The revised proposed development comprises 131 No. detached and semi-detached dwellings with associated private gardens, soft landscaping and access roads.

The proposed development plan is contained in Appendix 2. An extract of the proposed development plan is shown below:



Figure 1: Extract of the proposed development plan rev AG – the layout also illustrates the three previously unrecorded mine entries in the north and eastern site sections (noted with a red dot and shading)

2.0 GEOLOGICAL SETTING

The geological setting of the site has been determined through reference to geological maps of the area and based on the previous investigation works undertaken across the site.

The site lies within an area of historical coal mining within the underlying bedrock of the Upper Carboniferous aged Pennine Middle Coal Measures. Up to 4 No. coal seams are recorded to subcrop on the site and 3 No. mineshafts are recorded on records to be present on the site. Given the presence of these coal mining features, the site lies within a Mining Remediation Authority (MRA) Development High Risk Area.

2.1 BGS Geological Maps

Following a review of the BGS 1:50,000 scale geological map (sheet number: 85 dated 2011), the site is shown to be underlain by superficial deposits of Glacial Till which typically comprises a heterogenous mixture of clays, sands and gravels. The superficial deposits are underlain by bedrock of the **Pennine Middle Coal Measures** which typically comprise interbedded grey mudstone, siltstone and pale grey sandstone with coal seams.

The BGS geological maps indicate that 3 No. coal seams subcrop on the site. The geological maps suggest a bedrock dip of 15° to the south. The coal seam subcrop to the south west of the site is recorded to 'bend' which is indicative of opencast workings that have artificially displaced the coal subcrop down-dip. Mudstone, siltstone and sandstone are recorded across the majority of the site. The northern site section (outside of the proposed development area) is recorded to be underlain by sandstone. An extract of the BGS 1:50,000 scale bedrock geological map is shown below:

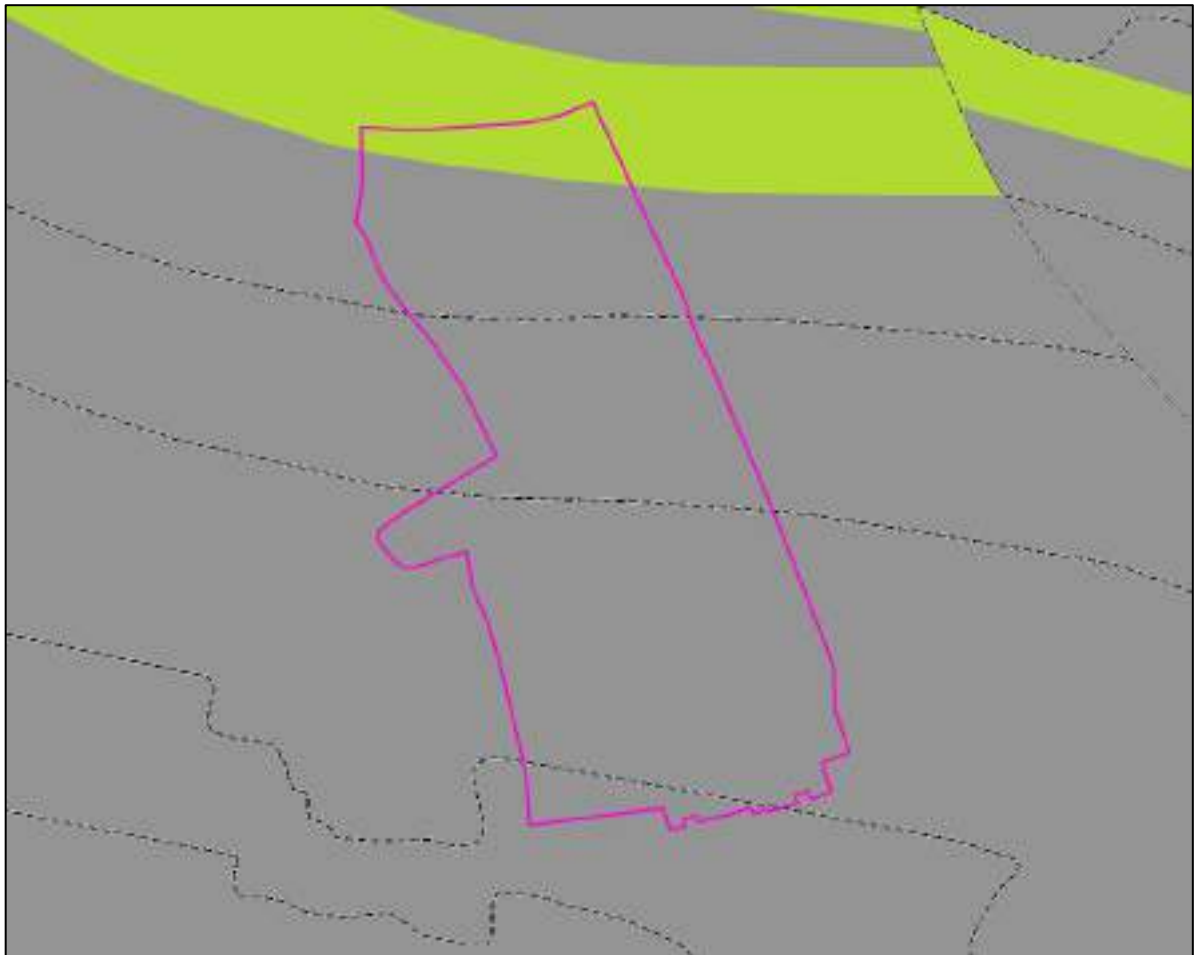


Figure 2: Extract of the BGS 1:50,000 scale bedrock map. Sandstone (green), mudstone, siltstone and sandstone (grey) and coal seams (black dotted lines).

Based on the geological maps and setting of the site, the greatest risk of shallow workings would be present in the central and southern site section, down dip of the recorded coal seam subcrops.

2.2 Coal Consultants Report

A MRA Coal Consultants Report was obtained as part of the previous Hydrock Coal Mining Risk Assessment works. The report data shows that 5 No. mine entries are recorded on or in close proximity to the site, referenced 376407-002, 376407-003, 376407-006, 376407-007 and 376407-008. None of the shafts were recorded to have been treated, however treatment has now been undertaken as discussed in subsequent sections. All shafts had an assumed diameter of 2.5m.

The Coal Consultants Report identified 3 No. coal seam subcrops on the site and a subcrop is also recorded to run parallel with the southern site boundary. The Rams coal seam subcrops in the northern site section, the Top Furnace coal seam subcrops in two partings / leaves (also known as the Lower Florida (upper parting) and Top Shuttle (lower parting) in the central site section, and the Roger coal seam subcrops in the south western corner of the site. The subcrop locations recorded on the coal consultant's report are broadly similar to the BGS geological map records. The MRA report indicates that workings within the underlying coal seams had a recorded bedrock dip of 14 to 16° to the south or south west.

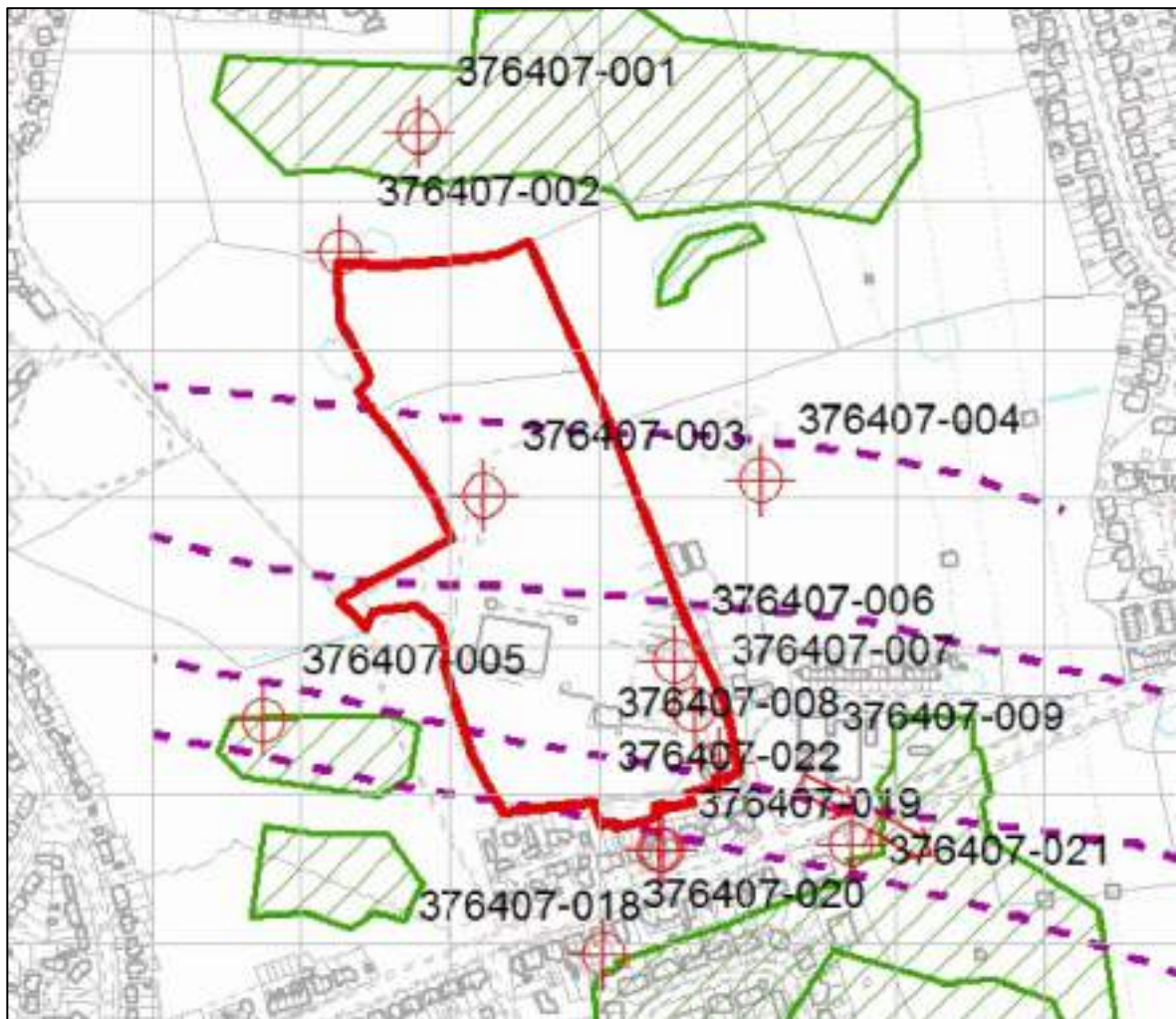


Figure 4: Extract from the Coal Authority Consultants Coal Mining Report Ref: 51002283067001 contained within the Hydrock Coal Mining Risk Assessment Report

Numerous coal seams, including those which subcrop on site, are recorded to have been worked beneath the site at depths of between 28m and 280m bgl. The workings were mined until between 1894 and 1908.

3 No. historic opencast sites are located to the north, southwest and south which may have encroached onto the site. The Atlas Brick Works were also historically present on site with an associated clay pit in the south western site area.

3.0 PREVIOUS INVESTIGATION WORKS

Numerous investigations and phases of work have been undertaken on the site as detailed in the reports listed in Section 1.2. The relevant stages of work in relation to understanding the conceptual ground model and specifically the underlying coal measures have been summarised below.

3.1 Hydrock Phase 2 Report (September 2020)

Hydrock undertook a Phase 2 Ground Investigation in August and September 2020.

3.1.1 Ground Conditions

The following ground conditions were encountered:

- Surface covering of concrete, hardstanding or tarmacadam from ground level to a maximum depth of 0.60m bgl, underlain by:
- Variable **Made Ground** including very soft to very stiff, gravelly, sandy CLAY, sandy GRAVEL, gravelly SAND to a depth of between 0.40m and 7.50m bgl, underlain by:
- **Glacial Till** comprising soft to very stiff, gravelly, sandy CLAY to a depth of between 4.00m and 8.50m bgl, underlain by:
- **Pennine Middle Coal Measures** comprising interbedded extremely weak to strong MUDSTONE, medium strong to very strong SILTSTONE and strong to very strong SANDSTONE with beds of coal.

3.1.2 Shallow Coal Workings

During the Hydrock ground investigation, numerous intact coal seams were encountered within the rotary boreholes (cored and open holes), varying between 0.25m and 1.70m thick. Voids were also encountered in numerous rotary boreholes, inferred to be workings within the Stubbs Coal Seam, Rams Coal Seam, Top Furnace Coal Seam and Roger Coal Seam.

3.2 Hydrock Supplementary Phase 2 (February 2021)

Hydrock undertook a supplementary Phase 2 Geo-Environmental Investigation in February 2021.

During the supplementary ground investigation, a further 27 No. rotary open hole boreholes were drilled on an approximate grid across the areas considered at higher risk of shallow coal mining. The findings of the additional rotary boreholes aligned with the findings of the initial ground investigation. Broken ground and soft coal resulting in a loss of flush was encountered at depths of between 9.50m and 28.00m bgl. The broken ground was recorded to be 2.00m to 3.00m thick in places.

3.3 Hydrock Mine Shaft Investigation Technical Note (June 2022)

This Hydrock technical note summarised the further investigation works undertaken to locate or confirm the absence of 4 No. recorded mine shafts that are recorded on site based on MRA records. The works were undertaken over two investigation phases. The initial shaft investigation was undertaken in September 2021 and the second phase undertaken in May 2022. A plan is included below showing the locations of the 4 No. targeted mine shafts:



Figure 5: Extract of Hydrock drawing 15220-HYD-XX-XX-DR-GE-1023

3.3.1 Mine Shaft 376407-003

365 No. probe holes were undertaken on a 1m grid within a 10m radius of the MRA recorded location. Rockhead was encountered at depths of between 6.80m and 10.20m bgl with the probe holes undertaken to depths of between 9.00m and 15.00m bgl. No indication of the mine shaft was recorded, however, soft strata were recorded below rockhead in a number of the probe holes, likely associated with shallow workings. Following discussions between Hydrock and the MRA, no further investigation was proposed, however, a watching brief was recommended in the area during the enabling works.

3.3.2 Mine Shaft 376407-006

The shaft was uncovered at ground level during service clearance works, therefore, no probe drilling was undertaken at the shaft location. The shaft was recorded to have an internal diameter of 2.90m and was of brick construction and loosely backfilled with arisings to the surface. The MRA records indicated that the shaft was 262m deep but no investigation was undertaken through the shafts by Hydrock.

3.3.3 Mine Shaft 376407-007

86 No. probe holes were undertaken, the majority to the west of the recorded MRA location due to site constraints including services, underground fuel storage tank and vegetation. Bedrock was encountered between 5.00m and 5.80m bgl and the probe holes were undertaken to depths of between 7.00m and 8.00m bgl. No indication of a mineshaft was recorded.

Due to the constraints during the initial investigation, additional probe holes were undertaken during the second stage of investigation following service clearance. An additional 205 No. probe holes were undertaken with rockhead encountered at depths of between 5.00m and 6.00m bgl, the probe holes were undertaken to depths of between 6.00m and 8.00m bgl. However, shallow workings were encountered in the south east area of the mine shaft investigation at depths of between 7.00m and 9.50m bgl therefore the probe holes in this area were advanced to a depth of up to 10.50m bgl. A coal seam was encountered in a single probe hole (probe number 128) from 7.50m to 9.50m bgl.

The mine shaft was located during the second phase of the mine shaft investigation and a probe undertaken to 42m bgl indicated that the mine shaft extended to a greater depth. The mine shaft was recorded to have a diameter of between 2.50m and 3.50m bgl and may be oval or rectangular in shape. No information was given regarding the backfill or construction of the mine shaft.

3.3.4 Mine Shaft 376407-008

No investigation was completed during the first stage as the MRA recorded position of the mine shaft was within an existing building. Following demolition of the building 22 No. probe holes were undertaken to a depth of 6.00m bgl, with bedrock generally encountered at 5.00m bgl. The shaft was located during the probing work and a probe hole advanced to 42m bgl indicating that the shaft reaches a depth of greater than 42m bgl. The diameter of the shaft was noted to be 3.00m. No information was given regarding the backfill or construction of the mine shaft.

3.4 Hydrock Verification Report for Earthworks (November 2023)

This report covers the earthworks, remediation and ground improvement activities completed by VHE Construction at the site between May 2022 and June 2023 and included treatment of mine shaft references 376407-006, 007 and 008 undertaken by Specialist Contractors Van Elle and M & J Drilling between October and November 2023.

3.4.1 Mine Shaft Treatment

Following the ground investigations to identify the location and diameters of the on-site mine shafts, the shafts were treated / stabilised by drilling and grouting in line with CIRIA C758 and in line with Hydrock's specification. It should be noted that at this stage, only the mine shafts were treated and not the shallow workings as the development layout was not fixed. Treatment of the shallow mine workings was to be undertaken during the construction phase.

For mine shaft 376407-006, 4 No. stabilisation boreholes were drilled within the shaft to a depth of 100m to 120m bgl and subsequently had grout injections between October and November 2022. 2 No. validation boreholes were also drilled. A concrete cap was not deemed necessary for this mine shaft as it is located in a no build zone and this was agreed with the MRA. The shaft is recorded to be 260m deep, therefore was only partially treated to a depth of 100m.

The treatment of mine shafts 376407-007 and 376407-008 was undertaken by M & J Drilling in October 2023 in line with a treatment specification prepared by Alan Wood and Partners (AWP). Both shafts were drilled and grouted through a single primary grouting borehole to the full depth of 76m (shaft 007) and 86m (shaft 008) and 2 No. validation boreholes were undertaken in each shaft.

3.5 Initial Conceptual Ground Model

The initial ground model was produced by Hydrock following their works. This ground model highlights the 4 No. coal seams that subcrop on or in close proximity to the site.

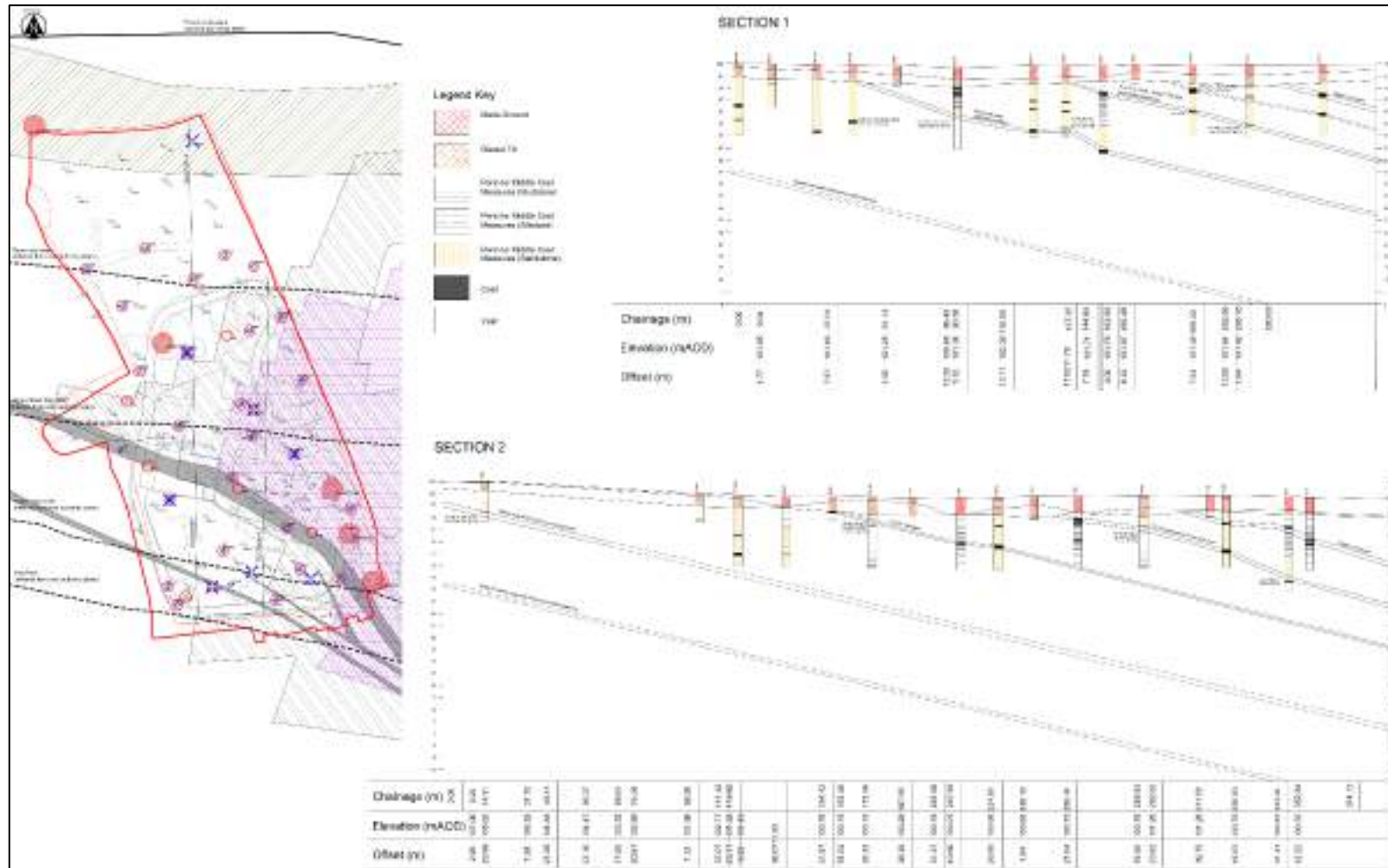


Figure 6: Hydrock initial conceptual ground model.

4.0 DRILL & GROUT WORKS

To mitigate the risk of ground instability due to the presence of shallow coal mine workings identified on the site, drill and pressure grout holes have been undertaken across the site. Drill and grout works were undertaken by M & J Drilling (specialist contractor) in the areas of proposed plots, garages, driveways and highways.

The stabilisation works have been undertaken to industry best practice and in accordance with the following documents:

- **IGE Consulting** - *Coal Mining Remedial Treatment Design*. (Ref. 3524-01A, dated Jan 2025)
- **Hydrock Consultants Ltd** - *Performance Specification for Stabilisation Verification Report for Earthworks and Ground Improvement*. (Ref. 15220-HYD-XX-XX-RP-GE-0007_P02, dated June 2022).
- **CIRIA C758D** – *Abandoned Mine Workings Manual* (dated 2019).
- BS EN 1215: 2000 Execution of special geotechnical work – Grouting.
- Guidance on Managing the Risk of Hazardous Gases when Drilling or Piling near Coal issued by the Coal Authority (*dated 2019*).

The location of the completed drill and grout holes is shown on the drill and grout location plan contained in Appendix 2. Where grout 'takes' of 5T or more were recorded, these boreholes are coloured blue.

4.1 Permits

The drill and grout operation was undertaken in line with the Mining Remediation Authority permit number 29194 contained in Appendix 5. The permit stipulates the use of water flush and gas monitoring on the site which was undertaken throughout the duration of works.

During the works, 3 No. potential, unrecorded mine entries were encountered and are discussed in further detail in the following sections. In order to investigate and treat these potential mine entries, an additional MRA permit (29633) was obtained to

allow for probe drilling and subsequent treatment if proven to be a mine entry. MRA permit number 29633 is contained in Appendix 5.

4.2 Summary of Works

Drill and grout works to stabilise the site were undertaken from the 6th January to the 4th April 2025. In total, 1,122 No. grout holes were undertaken across the site. The drill and grout holes consisted of 993 No. primary holes undertaken on the proposed 6m grid and a further 129 No. secondary (or centre) holes which were undertaken due to grout takes in the corresponding primary holes being greater than or close to 5 tonnes (5T). Over the duration of the works, a total of 600 tonnes of Pulverised Fuel Ash (PFA) and 60 tonnes of Ordinary Portland Cement (OPC) was used.



Figure 7: Rotary drilling rigs undertaking drilling in the northern site section in February 2025.

The drill and grout works were undertaken by 2 No. Klemm 802-2 rotary drilling rigs utilising water flush as a drilling medium. Temporary 101mm diameter steel casing was installed into the bedrock to allow grout to be injected at target depths and prevent the overlying Made Ground and Glacial Till from collapsing into the holes.

All holes were injected with a 10:1 (PFA:OPC) grout mix which was connected via a screwed T connection and pressure meter attached to the temporary casing. Boreholes were pressure grouted to 0.2bar (3psi) per metre of hole. Daily drill and grout records were produced. The drill and grout logs are contained in Appendix 3.

Areas of broken ground and loss of flush were encountered during the drilling works which were attributed to historical workings. These areas would typically require secondary grout holes due to grout takes in excess of 5T. The central site section typically required a greater proportion of secondary holes which suggests that there may have been more shallow workings in this area. Low grout takes were recorded in the northern and south western site areas. An extract of the completed grouting grid drawing with areas requiring secondary drill and grout holes highlighted, is shown below. This drawing is also included in Appendix 2:



Figure 8: Extract of the completed drill and grout grid with areas requiring secondary holes outlined and highlighted in orange.

Whilst undertaking the drill and grout works, 3 No. drill holes encountered significant voids / broken ground which were anomalous to findings elsewhere on site. The anomalies were suspected mineshafts and therefore a permit was required from the MRA to inspect and treat these features. Upon receipt of the MRA permit, rotary probing was undertaken which confirmed the anomalies diameter and depth and confirmed that these were suspected mineshafts.

Following probing and confirmation of the shaft diameter and depths, the shafts were treated via pressure grouting to surface level in line with the IGE Consulting *Mine Entry Treatment Specification* (3524-06, dated February 2025). Each mine entry is discussed in further detail below.

As a result of the identification of mineshafts on the site, the development layout has been amended to ensure plots are outside of the potential zone of influence of mineshafts. Upon discovery of the mineshafts and a revised layout being drafted, the primary grout hole grid was amended to ensure all plot envelopes, driveways and highways were treated. The latest proposed development plan is contained in Appendix 2 (*Proposed Development Plan Rev AG*). The calculation of the zone of influence for each mineshaft is discussed in Section 6.0.

The completed drill and grout grid plan with mineshaft locations and the updated proposed development is included in Appendix 2.

4.3 Laboratory Validation Testing

24 No. 150mm grout cube samples were taken and tested over the duration of the works. These grout cubes were tested for compressive strength in line with BS 12390-3: 2019, to validate the quality of the grout mixes being used. The specified minimum target strength after 28 days was set at 1.0N/mm². All grout cubes tested exceeded the minimum specified compressive strength.

The grout cube testing certificates are contained in Appendix 4.

4.4 Mineshaft AAA43

4.4.1 Location

Drill and grout hole AAA43 was undertaken at a 2m offset from the original proposed position and drilled at an angle due to the close proximity of the culverted watercourse in the central eastern site section. Soft drilling was recorded from 18.50m to 33.00m bgl which suggested that an anomaly was present immediately north of the borehole in the direction of angled drilling. Following receipt of a MRA permit to investigate the anomaly further, and the setup of a drilling platform, probe holes were undertaken around the feature which confirmed the presence of a mineshaft. No evidence of the mineshaft had previously been recorded on historical maps, abandonment plans or other MRA records.

Although the centre of the mineshaft is not positioned directly over drill and grout hole AAA43, the shaft will be referred to as this, in line with the drill and grout investigation logs and treatment plans.

A further 21 probe holes were undertaken in and around the mine shaft to confirm the diameter, depth and 5m past the base of the feature. Whilst undertaking the probes, soft drilling was noted, which suggest the mineshaft may have been partly backfilled. The shaft had a confirmed depth of 38m below ground level and an estimated diameter of c. 2.00m. The coordinates for the centre of the shaft are: 376328.03E, 407675.46N. Mineshaft AAA43 is located c. 1.5m south of an existing surface water culvert.

The location of mineshaft AAAA43 is shown on the location and cross section plan contained in Appendix 2 with an extract included below:

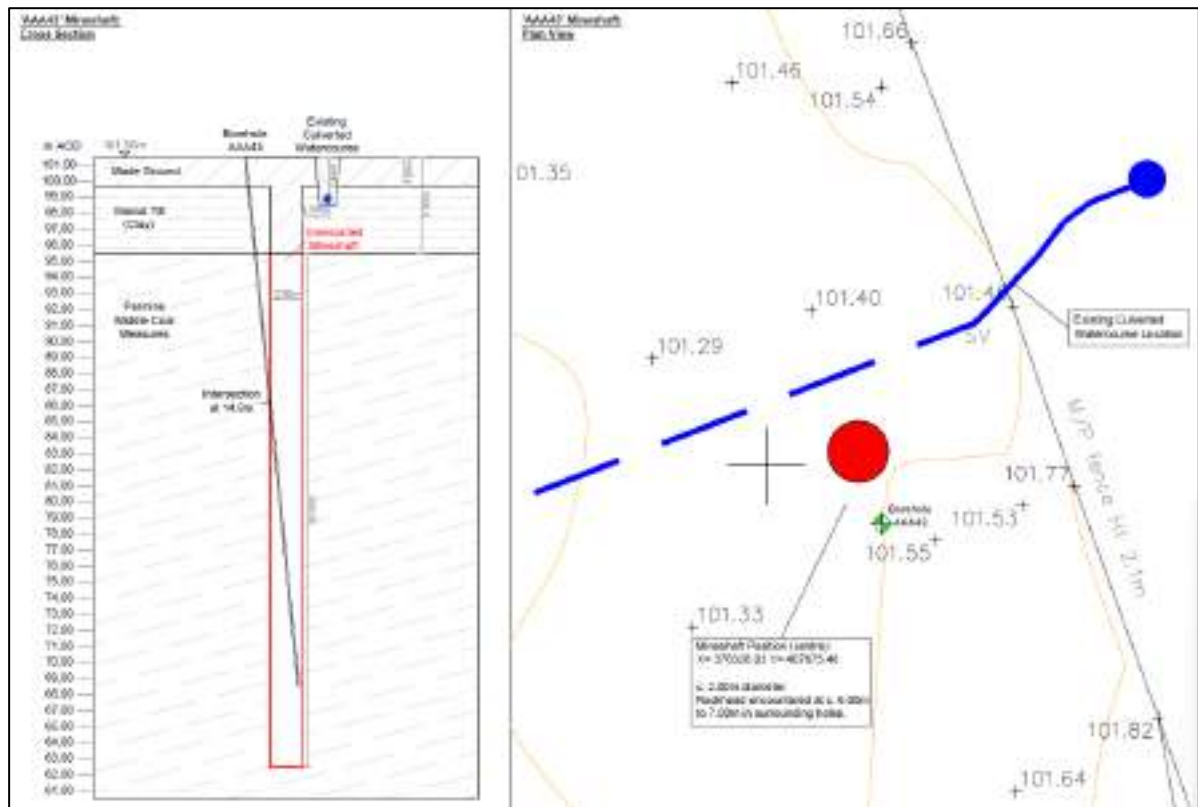


Figure 9: Cross section and location plan of mineshaft AAA43.

4.4.2 Treatment

Treatment was undertaken through pressure grouting in 2m stages to reduce the risk of leaving residual voids. This process was repeated 3 times and the shaft redrilled to confirm low grout takes after treatment. The grout 'topped out' (was recorded to reach the surface) for each pass undertaken. The grout takes for each pass are detailed below:

Pass	Grout Date	Grouting Depth	Grout Take (T)
1	26/03/2025	38m to Ground Level	4.40
2	31/03/2025		2.20
3	01/04/2025		0.88
Total:			7.48

4.5 Mineshaft V26

4.5.1 Location

Drill and grout hole V26 recorded soft drilling from ground level to 18.00m bgl. This anomaly was interpreted to be attributed to a mine entry and therefore, further probing

and safety measures were implemented following receipt of an amendment to the MRA mine entry investigation and treatment permit.

A further 11 No. probes were undertaken in the area of the anomaly which confirmed that the feature was a historical mineshaft. The mineshaft was proven to extend to a depth of 18.00m bgl with an estimated diameter of up to 3.00m. The coordinates for the centre of the shaft are: 376221.48E, 407686.39N.

Based on MRA records a mineshaft (376407-003) was recorded to be present on the site in the north eastern site area. Previous investigation works (summarised in Section 3.3.1) were undertaken by Hydrock in 2022 to attempt to locate the shaft but were unsuccessful. Therefore, it was recommended that a watching brief was undertaken for drill and grout holes in this area. All drilling operatives were made aware of the risk of encountering the mineshaft in this area as well as any other unrecorded shafts prior to drilling. The mineshaft encountered in borehole V26 was located c. 13m south of the MRA recorded position of 376407-003, outside of the Hydrock investigation 10m search area. The shaft at borehole V26 is anticipated to correspond with the MRA record referenced as 376407-003. For consistency between the drill and grout logs, investigation, grouting and validation report, this mineshaft shall be referred to as V26.

The location of mineshaft V26 is shown on the location and cross section plan contained in Appendix 2 with an extract included below:

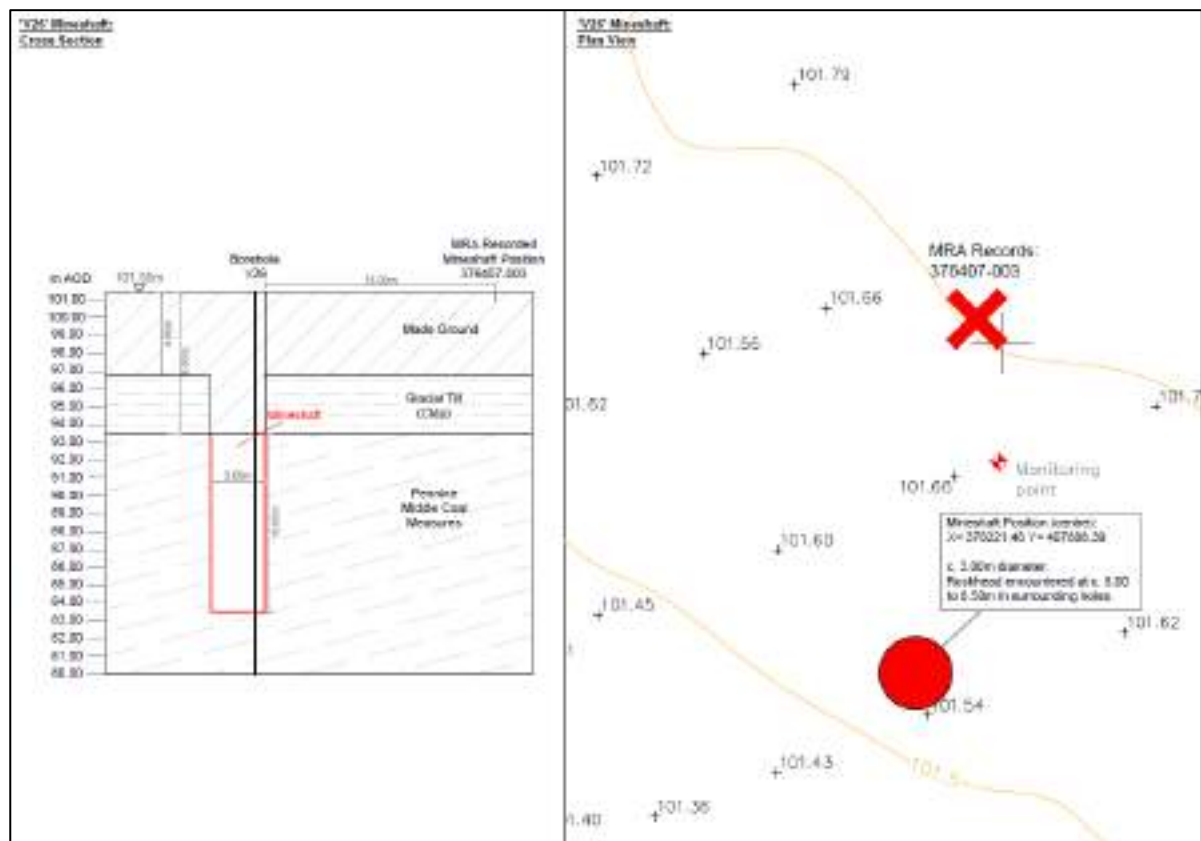


Figure 10: Cross section and location plan of mineshaft V26.

4.5.2 Treatment

Treatment was undertaken through pressure grouting in 2m stages to reduce the risk of leaving residual voids. This process was repeated 3 times and the shaft redrilled to confirm low grout takes after treatment. The grout 'topped out' (was recorded to reach the surface) for each pass undertaken. The grout takes for each pass are detailed below:

Pass	Grout Date	Grouting Depth	Grout Take (T)
1	25/03/2025	18m to Ground Level	1.65
2	28/03/2025		0.33
3	31/03/2025		0.22
Total:			2.20

Grout takes were relatively low for the mineshaft and this may have been due to the present of backfill material or due to higher grout takes (5T+) and secondary holes having been undertaken in the surrounding area prior to treatment.

4.6 Mineshaft OO15

4.6.1 Location

An unrecorded mine shaft was recorded at the position of drill hole OO15. The mineshaft was identified by the presence of soft drilling and lost flush to a depth of 26.50m bgl. Upon receipt of the MRA permit, 12 No. probe holes were undertaken to confirm the dimensions of the feature, followed by treatment via pressure grouting. No evidence of the mineshaft had previously been recorded on historical maps, abandonment plans or other MRA records.

The mineshaft was proven to extend to a depth of 28.00m bgl with an estimated diameter of up to 2.60m. The coordinates for the centre of the shaft are: 376262.16E, 407739.42N. The location and cross section of the identified mineshaft is included in Appendix 2.

4.6.2 Treatment

Treatment was undertaken through pressure grouting in 2m stages to reduce the risk of leaving residual voids. This process was repeated 3 times and the shaft redrilled to confirm low grout takes after treatment. The grout ‘topped out’ (was recorded to reach the surface) for each pass undertaken. The grout takes for each pass are detailed below:

Pass	Grout Date	Grouting Depth	Grout Take (T)
1	25/03/2025	28m to Ground Level	3.30
2	26/03/2025		1.65
3	28/03/2025		0.55
Total:			5.50

5.0 UPDATED CONCEPTUAL GROUND MODELS

The drill and grouting works provided a spatial spread of data to understand the underlying geology and update the initial conceptual ground models for the site. The updated conceptual ground model is included in Appendix 2 and an extract below:



Figure 11: Extract of the conceptual ground model for the site.

The drill and grout works identified 3 No. coal seams subcropping on the site which are interpreted to represent the Rams, Top Furnace and Roger coal seams (from north to south). The Stubbs coal seam is interpreted to subcrop off site to the north and is present at shallow depth in the northern site section. Based on the drill and grout works, the coal seams were recorded to range in thickness from 0.20m to 3.50m with a mean thickness of 0.95m and a median thickness of 0.70m. The recorded seam thicknesses should be treated with caution given the method of drilling does not provide sample recovery and can therefore be misinterpreted.

Grout takes greater than 5T indicative of potential workings / broken ground were recorded in the Stubbs, Rams and Top Furnace coal seams. No workings / broken ground were encountered in the south western site section associated with the Roger coal seam.

5.1 Bedrock Depth

Based on the previous investigation works, bedrock was anticipated to range in depth across the site from 4.00m to 8.50m bgl. The drill and grouting boreholes confirmed the range in bedrock depths with the western site area recording the deepest depths on the site. Based on the drill and grouting information, the depth to rockhead was recorded to range from 3.00m to 9.50m bgl which equates to a range of 91.00m AOD to 101.00m AOD across the site.

The depth of coal seams was recorded during the drill and grouting works which identified the location of subcrops on the site. By assessing the level of the coal seams and rockhead, the thickness of rock above the shallowest coal seam across the site can be calculated. Further information regarding the strength of the underlying bedrock is included in the IGE Consulting *Ground Investigation Report* (Ref. 3524-07, dated May 2025). This information should be submitted to specialist piling contractors and can be used when completing their detailed designs and determining appropriate pile lengths.

Drawings showing the depth to rockhead (m AOD) and thickness of rock above the shallowest coal seam are included in Appendix 2 and extracts shown below:

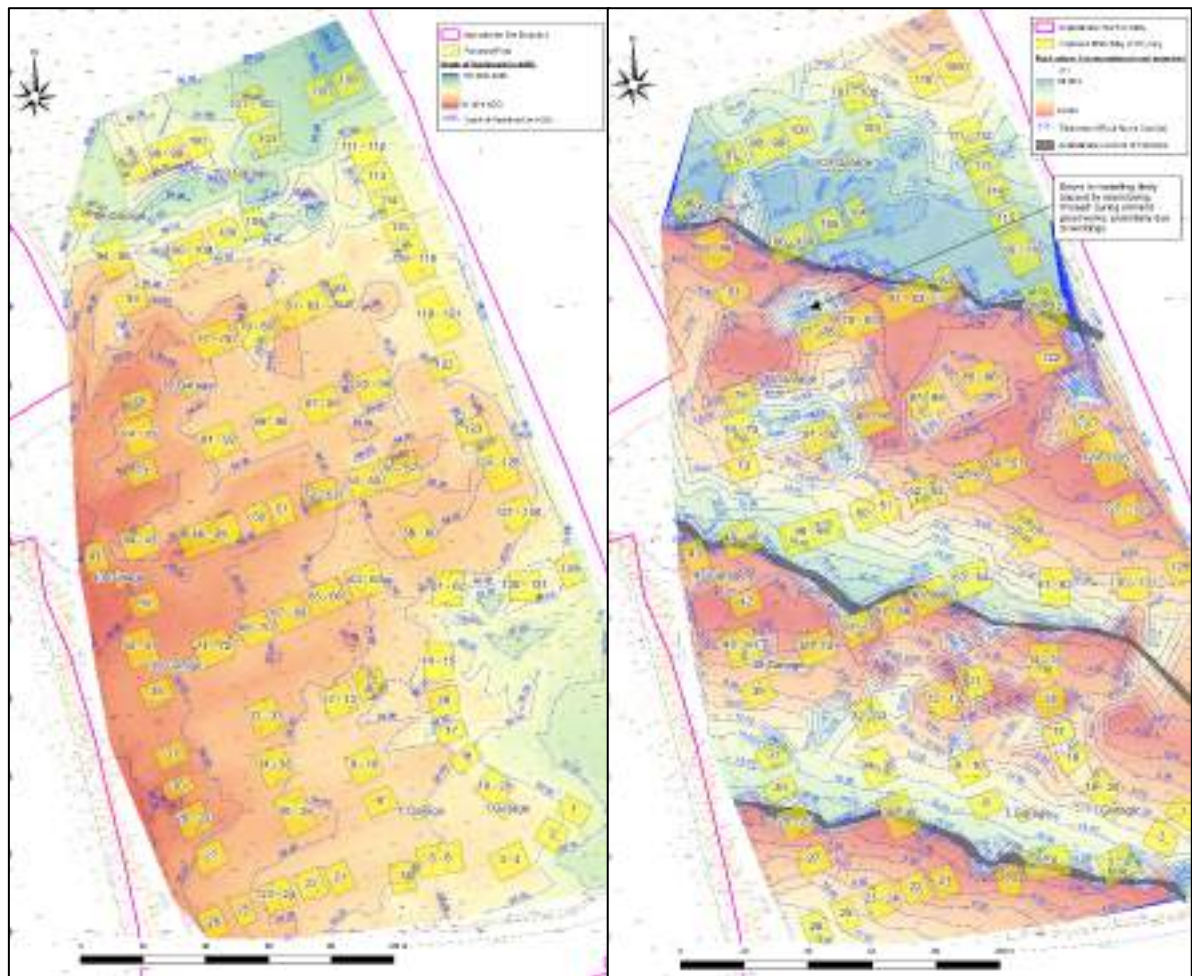


Figure 12: Depth of rockhead (m AOD) (left). Thickness of bedrock above coal seams and coal seam subcrop locations (right)

6.0 MINESHAFT ZONE OF INFLUENCE & RECOMMENDATIONS

3 No. previously unrecorded mineshafts were encountered during the drill and grouting works across the site. The zone of influence for the proposed development have been calculated for each of the discovered mineshafts.

6.1 Mineshaft AAA43

6.1.1 Zone of Influence

Ground conditions at mineshaft AAA43 comprised the following:

- **Made Ground** comprising dark grey, sandy, clayey, angular to subangular, fine to coarse GRAVEL to a depth of 1.60m bgl (99.99m AOD) underlain by:
- **Made Ground** comprising stiff, dark grey, gravelly, slightly sandy CLAY to a depth of 1.80m bgl (99.79m AOD), underlain by:
- **Glacial Till** comprising stiff, brown, slightly gravelly, slightly sandy CLAY to a depth of 6.00m bgl (95.59m AOD) where rockhead was encountered.

The probe holes undertaken to identify the mineshaft suggest that the diameter is c. 2.00m. No evidence of significant groundwater was encountered at this location, however a culverted watercourse is recorded c. 1.5m north of the shaft location.

Based on the ground conditions encountered, a safe standoff zone of 45° from where the mineshaft edge intersects rockhead is considered appropriate. This would give a radius from the mineshaft edge of 6.00m.

Based on this proposed zone of influence, the plot layout has been adjusted so that proposed plots are not located within influence of the mineshaft. To allow for the variations in recorded rock depth, soil properties, mine entry shape and adjustment in proposed levels, the current proposed development plan shows the nearest plots to be located 9.00m from the mineshaft edge as a conservative measure.

Based on the proposed layout, accounting for the zone of influence of the shaft, mineshaft AAA43 would be located in the rear garden of plot 122. The proposed zone

of influence extends into plot 123 garden. The locations of proposed plots are shown on the mineshaft zone of influence drawing contained in Appendix 2 and an extract shown below:

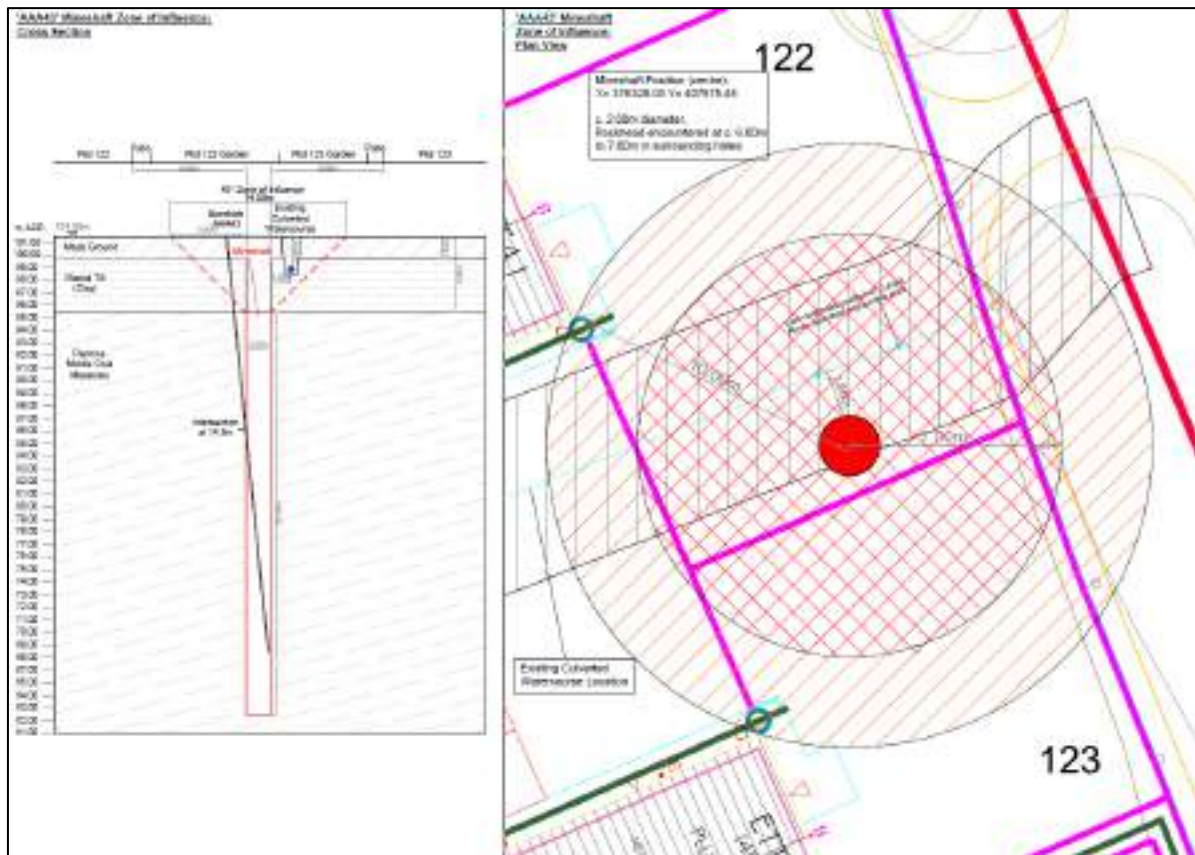


Figure 13: Zone of Influence of mineshaft AAA43.

6.1.2 Proposed Treatment

The preferred option for the treatment of mineshafts would be to install a reinforced concrete cap at the top of the shaft to mitigate the risk of future failure in line with CIRIA C758. However, given the presence of the existing culverted watercourse c. 1.5m north of the mineshaft and the close proximity to the western boundary of the site, alternative solutions for mitigating the risk of the shaft are proposed.

A c. 450mm diameter surface water culvert is present c. 1.5m north of the recorded mineshaft position within the zone of influence. In order to construct a mine shaft cap, the existing culvert would be required to be diverted further north outside of the mine shaft cap structure and build area. However, the diversion of the culvert is limited by the close proximity of the eastern boundary where the culvert enters the site. The diversion due to the mineshaft cap would result in a sharp bend in the culvert which

could potentially cause issues with the flow of water and blockages within the watercourse making this impractical.

In order to leave the culvert in-situ along its current route, the mineshaft cap could be constructed above the watercourse level and sat on piles that extend to the underlying bedrock. Although this option would mitigate the requirement to divert the watercourse, it would cause serviceability issues as the watercourse would be enclosed beneath the shaft cap and not accessible if any future works to the culvert were required.

Alternatively, the risk of the mineshaft could be mitigated using other means that negate the requirement for a reinforced mineshaft cap. By enforcing a 'no build' stand off zone surrounding the mineshaft, the risk of damage to infrastructure through mineshaft subsidence is reduced. The proposed development plan has been designed to account for this and mineshaft AAA43 is currently positioned within a private garden (plot 122) with no infrastructure (proposed plots, garages, driveways or highway) within the zone of influence. This vastly reduces the risk to buildings of mineshaft collapse and does not increase the likelihood as the shaft or its zone of influence will not be subject to structural loads.

Shaft AAA43 has been treated via pressure grouting as detailed within this report. Despite this, there is still a risk of differential settlement occurring. To mitigate the risk of differential settlement or residual minor ground movements, it is proposed to incorporate a geogrid reinforcement into the garden areas of plots 122 and 123, spanning the area of the mineshaft zone of influence. The geogrid would be positioned above the level of the existing culvert and act as a reinforcement.

By using a geogrid as reinforcement, the culvert can remain in-situ. If access to the culvert was required in this area in the future, the geogrid could be excavated and replaced with relative ease.

The use of a geogrid can only be considered alongside the repositioning of plots, highways and driveways away from the mineshaft zone of influence. The proposed

treatment methodology will require design by a structural engineer and regulatory approval from the MRA.

6.2 Mineshaft V26

6.2.1 Zone of Influence

Ground conditions at mineshaft V26 comprised the following:

- **Made Ground** comprising dark grey, very gravelly, slightly clayey, fine to coarse SAND to a depth of 1.60m bgl (99.93m AOD), underlain by:
- **Made Ground** comprising stiff, grey, slightly gravelly, slightly sandy CLAY to a depth of 4.80m bgl (96.73m AOD), underlain by:
- **Glacial Till** comprising stiff, brown, slightly gravelly, slightly sandy CLAY to a depth of 8.00m to 8.50m bgl (93.53m AOD to 93.03m AOD) where rockhead was encountered.

The probe holes confirmed a shaft diameter of 3.00m. Based on the ground conditions encountered, a safe standoff zone of 45° from where the mineshaft edge commences at rockhead is considered appropriate. This would give a radius from the mineshaft edge of 8.00m.

No plots are proposed within the calculated zone of influence and the layout has been amended to account for this. To allow for the variations in recorded rock depth, mine entry shape, soil properties and adjustment in proposed levels, the current proposed development plan shows the nearest plots to be located 10.50m from the mineshaft edge as a conservative measure

The mineshaft is located in an area of proposed public open space (POS). The zone of influence of the shaft extends over as proposed highway and car parking area. The proposed zone of influence and locations of proposed plots are shown on the mineshaft zone of influence drawing contained in Appendix 2 and an extract shown below:

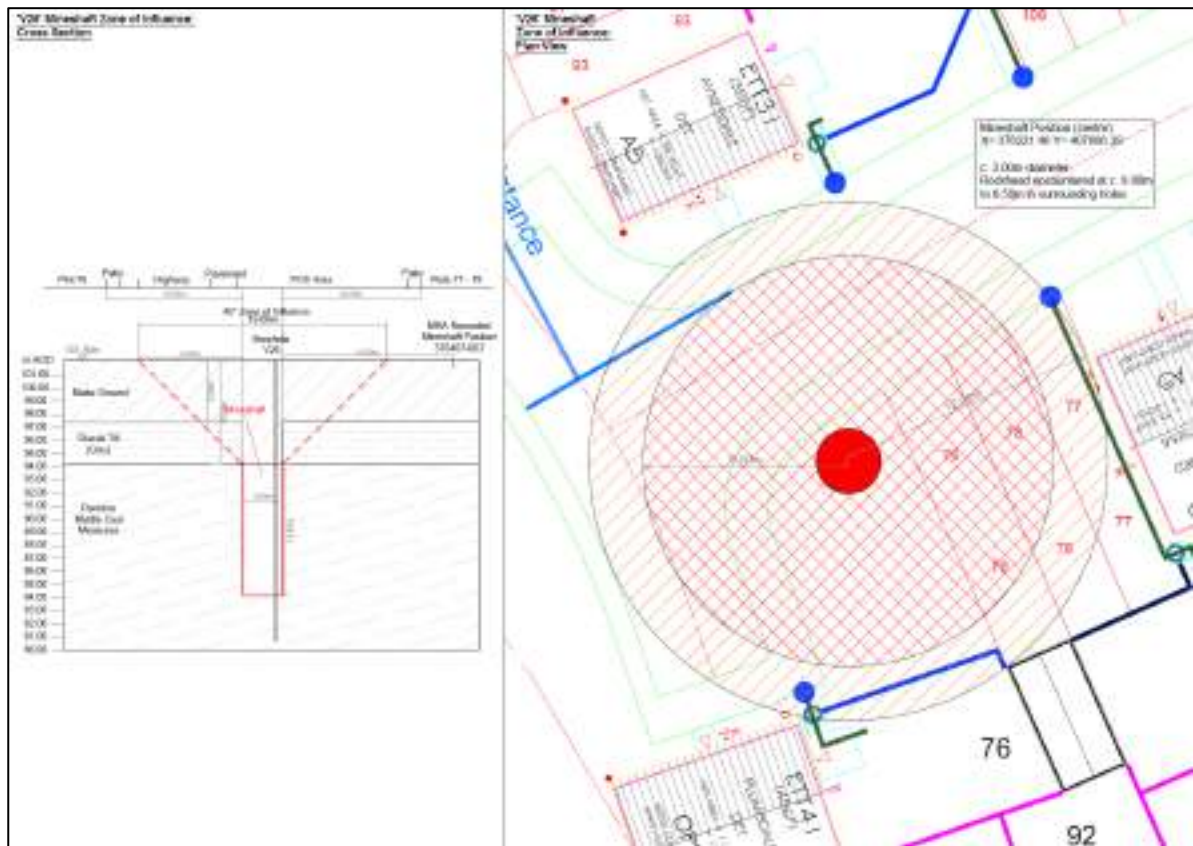


Figure 14: Zone of Influence of mineshaft V26.

6.2.2 Proposed Treatment

Mineshaft V26 is not restricted by existing services or access. Therefore, it is recommended that the mine entry is capped at bedrock in line with CIRIA C758.

The reinforced concrete cap will be designed to span 2 times the external diameter of the mineshaft. Given the sensitivity of the proposed development, the shaft cap should have a thickness of 450mm, be reinforced and designed in accordance with BS EN 1992-1-1:2004+A1 2014. The shaft cap should be designed by a structural engineer.

6.3 Mineshaft OO15

6.3.1 Zone of Influence

Ground conditions at mineshaft OO15 comprised the following:

- **Made Ground** comprising dark grey, sandy, slightly clayey, angular to subangular, fine to coarse GRAVEL to a depth of 0.40m bgl (101.70m AOD), underlain by:

- **Made Ground** comprising stiff, brownish grey, mottled yellowish brown, slightly gravelly, slightly sandy CLAY to a depth of 2.80m bgl (99.30m AOD), underlain by:
- **Glacial Till** comprising stiff, brown, slightly gravelly, slightly sandy CLAY to a depth of 6.50m bgl (95.60m AOD) where rockhead was encountered.

The probe holes confirmed a shaft diameter of 2.60m. Based on the ground conditions encountered, a safe standoff zone of 45° from where the mineshaft edge commences at rockhead is considered appropriate. This would give a radius from the mineshaft edge of 6.50m.

No plots are proposed within the calculated zone of influence and the layout has been amended to account for this. To allow for the variations in recorded rock depth, mine entry shape, soil properties and adjustment in proposed levels, the current proposed development plan shows the nearest plots to be located 9.70m (11.00m from the mineshaft centre) from the mineshaft edge as a conservative measure.

The proposed zone of influence and locations of proposed plots are shown on the mineshaft zone of influence drawing contained in Appendix 2 and an extract shown below:

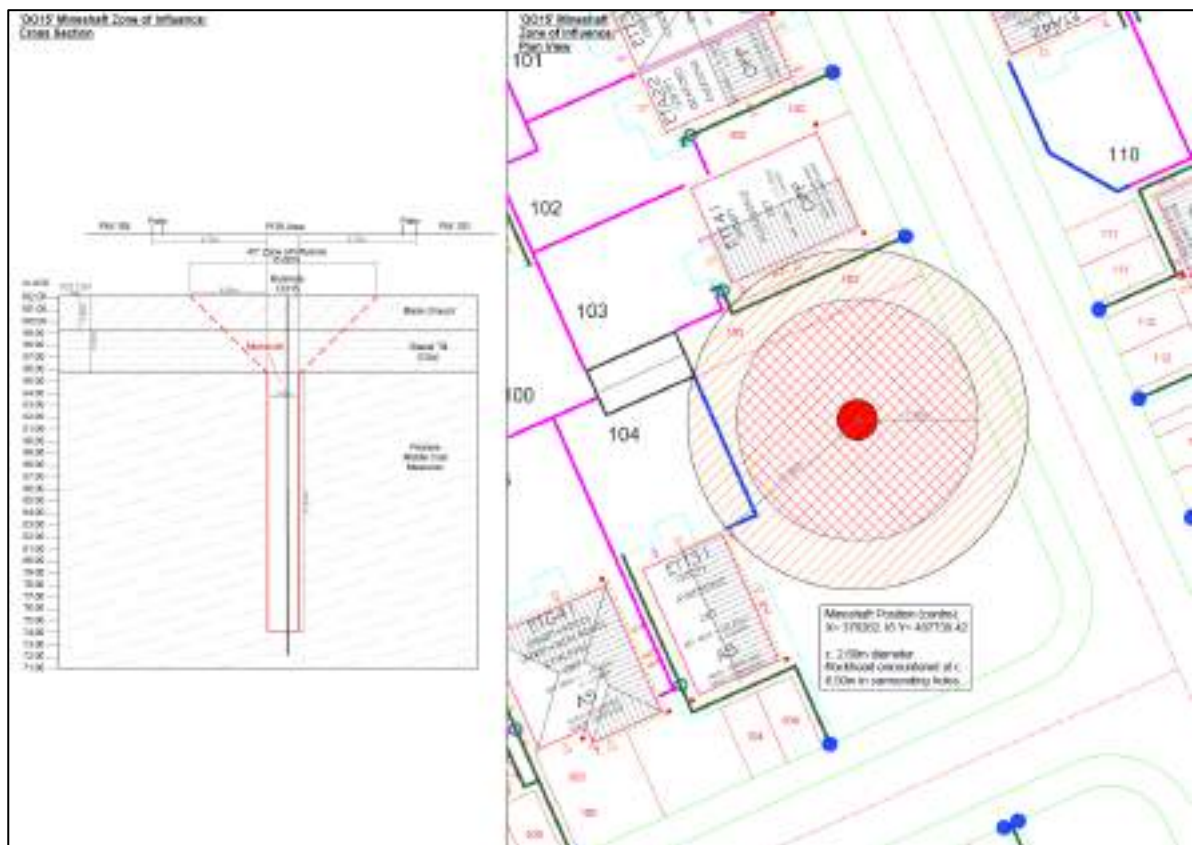


Figure 15: Zone of Influence of mineshaft OO15

6.3.2 Proposed Treatment

No access or service restrictions are present surrounding mineshaft OO15. Therefore, it is recommended that the mine entry is capped with a reinforced concrete cap as per the outline specification detailed above for mineshaft V26. It is proposed that the mine entry would be located within the proposed POS area.

7.0 CONCLUSIONS

The drill and grouting works on the site have been completed on a 6m primary grid in areas of proposed plots, garages, driveways and highway. All boreholes were injected with 10:1 (PFA:OPC) grout and pressurised in line with CIRIA guidance to ensure that broken ground or workings were treated. A total of 129 No. secondary holes were undertaken due to primary grout takes exceeding 5T, predominantly in the central site section. The drill and grouting works are considered sufficient to stabilise the site from legacy coal mining activities. No further works remedial works in respect to underground coal mine workings on the site is required.

The majority of the plots will require a piled foundation solution and all plots will require the incorporation of mine gas protection measures in line with a Characteristic Situation 3 scenario. For further details please refer to the IGE Consulting *Ground Gas and Mine Gas Risk Assessment*, dated May 2025 (Ref. 3524-03).

3 No. previously undiscovered mineshafts have been identified on the site. It is recommended that mineshafts V26 and OO15 are capped. A mineshaft cap design and regulatory approval will be required.

Due to the practical difficulties in installing a mineshaft cap, and on the basis that no structural loads are proposed within the zone of influence of mineshaft AAA43, alternative reinforcement measures should be considered. It is recommended that geogrid reinforcement is installed within plots 122 and 123 gardens covering the shaft zone of influence to mitigate against any differential settlement associated with the mineshaft. The proposed further works are subject to regulatory approval.

APPENDIX 1

LIMITATIONS OF INVESTIGATION WORK AND REPORT

LIMITATIONS OF REPORT

This consultancy report was compiled and carried out by IGE Consulting Limited ('IGE') for the client, as defined in the main report (the 'client'), on the basis of a defined programme and scope of works and the terms of a contract between IGE and the client. IGE undertook this with all reasonable skill and care, taking into account the limits of the scope of works required by the client, the prevailing site conditions, the time scale involved and the resources, including financial and manpower resources, agreed between IGE and the client. IGE cannot accept responsibility to any parties whatsoever, following the issue of this report, for any matters arising which may be considered outwith the agreed scope of works.

Unless otherwise agreed this report has been prepared exclusively for the use and reliance of the client in accordance with generally accepted consulting practices. This report may not be relied upon, or transferred to, by any other party without the written agreement of its author. If a third party relies on this report, it does so wholly at its own and sole risk and IGE disclaims any liability to such parties.

It is IGE's understanding that this report is to be used for the purpose described in the 'Brief' section of this report. That purpose was a significant factor in determining the scope and the services to be provided. Should the purpose for which the report is used, or the proposed use of the site change, this report may no longer be valid and any further use of, or reliance upon the report in those circumstances by the client without IGE's review and advice shall be at the client's sole and own risk.

The information contained in this report is protected by disclosure under Part 3 of the Environmental Information Regulations 2004 pursuant to the provisions of Regulation 12(5) without the consent in writing of a Director of IGE.

This report is a function of the date it was written and should be read in light of any subsequent changes in legislation, statutory requirements and industry 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 IGE. In the absence of such written advice of IGE, reliance on the report in the future shall be at the client's own and sole risk. Should IGE be requested to review the report in the future, IGE shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between IGE and the client.

The observations and conclusions described in this report are based solely upon the scope of works agreed between the client and IGE. IGE has not performed any observations, investigations, studies or testing not specifically set out or mentioned within this report. IGE is not liable for the existence of any condition, the discovery of which would require performance of services not otherwise contained in the agreed scope of works. For the avoidance of doubt, this report is strictly limited to the nature of contamination contained within the ground and groundwater at the site. The report does not cover environmental aspects such as air or noise pollution and ground vibrations and the like. In addition, ecological matters relating to wildlife, flora and fauna have not been investigated as part of this report. In particular, the site has not been inspected for the presence or otherwise of invasive species (e.g. Japanese Knotweed). It is recommended that the client appoints a specialist in this subject to carry out a detailed inspection / survey of the site if its presence is suspected. Where mention has been made to the identification of asbestos or asbestos-containing materials this is for indicative purposes only and does not constitute or replace full and proper surveys.

LIMITATIONS OF INVESTIGATION WORK

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 explored extent of the site 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, 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.

Exploratory Holes

Where exploratory holes have been carried out as part of this investigation, the spacing has been determined to provide a reasonable indication of the general ground conditions across the site, but the number has ultimately been limited by commercial constraints. The findings of the exploratory holes relate specifically to the exploratory hole locations and are no absolute guarantee of the ground conditions between such locations. Due allowance should be made for the possibility of variation in conditions between exploratory hole locations.

Extent of Contamination Testing

The extent of contaminated land testing carried out on samples obtained from the site has been determined in accordance with the latest legal guidance issued by the government to provide, with reasonable certainty, the probable general levels of contamination present on site that could pose a significant hazard to human health or waters. The extent of site investigation works including chemical testing has also been limited by reasonable commercial constraints. Although extensive testing of samples has been carried out, the volume of samples taken for testing are a minute fraction of the total volume of soils and groundwater present on site. Therefore, there is a residual risk that undetected pockets of contamination may be present on site, situated between testing locations.

When investigating or developing potentially contaminated land it is important to recognise that sub-surface conditions may vary spatially and temporally. The absence of certain ground, ground gas, contamination or groundwater conditions at the positions tested is not a guarantee that such conditions do not exist anywhere across the site. Site sensitivity assessments have been made based on available information at the time of writing and are ultimately for the decision of the regulatory authorities. The conclusions resulting from this study are not necessarily indicative of future conditions or operating practices at or adjacent to the site.

Extent of Geo-Environmental Studies

This report is strictly limited to the nature of contamination contained within the ground and groundwater at the site. The report does not cover environmental aspects such as air or noise pollution and ground vibrations and the like. In addition, ecological matters relating to wildlife, flora and fauna have not been investigated as part of this report. In particular, the site has not been inspected for the presence or otherwise of invasive species e.g. Japanese Knotweed. It is recommended that the Client appoints a specialist in this subject to carry out a detailed inspection / survey of the site if its presence is suspected. Where mention has been made to the identification asbestos or asbestos-containing materials this is for indicative purposes only and does not constitute or replace a full and proper survey. If an Unexploded Ordnance (UXO) report has been obtained within the report, it has been so on the basis of Health and Safety concerns and no assessment has been made other than transcribing the recommendations of the sub-contractor contained within the report. In terms of a potential contaminative source, unless ordnance has been manufactured / stored on site, UXOs will only be determined as a contaminative source following a positive identification on site.

APPENDIX 2

FIGURES AND DRAWINGS

- Proposed Development Plan Rev AG
- SI - 01 Site Location Plan
- SI - 11 Depth of Rock Above Coal Seams
- SI - 12 Bedrock Depth (m AOD)
- SI - 14 AAA43 Mineshaft Location & Cross Section
- SI - 15 V26 Mineshaft Location & Cross Section
- SI - 16 0015 Mineshaft Location & Cross Section
- SI - 17 AAA43 Mineshaft Zone of Influence
- SI - 18 V26 Mineshaft Zone of Influence
- SI - 19 0015 Mineshaft Zone of Influence
- SI - 20 Conceptual Ground Model
- GR - 02 Completed Grouting Hole Positions
- GR - 03 Completed Grouting Hole Positions & Areas Requiring Secondary Holes



IMPORTANT NOTE:
ALL DIMENSIONS AND LEVELS SHOWN ON THIS DRAWING ARE TO BE CHECKED BY THE CONTRACTOR MANUFACTURER PRIOR TO THE COMMENCEMENT OF ANY WORKS ON SITE OR THE MANUFACTURE OF ANY SITE COMPONENTS.
THIS DRAWING IS NOT TO BE SCALED.
DIMENSIONS ARE INDICATED IN MILLIMETRES UNLESS CLEARLY STATED OTHERWISE.
COPYRIGHT OF THIS DRAWING BELONGS SOLELY TO BALDWIN DESIGN CONSULTANCY LTD.

SITE PLAN

Legend

- Line to delineate application site boundary.
- Shared Ownership
- Rented
- 1800mm high close boarded fence.
- 1800mm high screen brick wall with timber infill panels
- 900mm Knee rail fence
- Lockable Timber gates to be erected to rear gardens (as indicated on site layout).
- Proposed tree planting. (Refer to Landscape Layout for further details).
- Indicates trees to be retained. Category B/C trees.
- Indicates gas main.
- Indicates existing fence line.
- Indicates tree barriers.

Revision:	By:	Date:
B - Revised to drainage engineer's drawings	IF	13.03.24
C - Road layout amended to drainage engineers drawings	IF	18.03.24
D - Red edge amended	IF	18.03.24
E - Credit price suite added	IF	25.05.24
F - Revised to new SU's location	IF	25.07.24
G - Plot 74 parking amended	IF	30.07.24
H - Amendments to plots 99, 100, 101, 102	IF	02.08.24
I - Amendments to north plots sub and LAP	IF	02.08.24
J - Plot 95 fence line amended, sub-station shown	IF	02.08.24
K - Sub-station re-located	IF	02.08.24
L - Plots 5-15, 21-44, 62-71, 72-89 subbed to timber frame variants	IF	15.08.24
M - Accommodation schedule amended	IF	28.08.24
N - not for submission		
O - Turning head adjacent to plot 44 moved away from the physical boundary.		
P - Plot 74-84 parking amended Chalmers moved back 2m to accommodate 5m to front facing brick.		
Q - Turning head adjacent to plot 39 amended. Private drives amended.		
R - Accommodation Schedule added.		
S - Turning head by plot 31 amended, traffic calming removed		
T - Accommodation Schedule Updated		
U - Site access updated		
V - Topographical survey inserted, red edge plan rechecked		
W - Topographical survey rechecked		
X - Layout rechecked		
Y - Layout rechecked with Engineering drawing		
Z - Topo visibility removed		
AA - Plots 85-89 moved back, plots 117-129 moved forward, 124, 125, 126, 127 and 89-92 changed to timber frame variants.		
AB - Plot 85 and 117, 129 reversed back to position on Rev X. Culvert easement removed from key.		
AC - Plot 62 reversed back to OPP handing. Plot 114, 121 moved to avoid existing culvert and EHV4. 20A discharges corrected. Accommodation Schedule amended. Key updated.		
AD - Additional wall between Shared and Shared 30' strip indicated on the layout. Key updated.		
AE - Proposed layout amended to accommodate additional existing mine shaft offset.		

Client:

Taylor Wimpey

Project Title:

Residential Development

Address:

Stopes Road, Bolton, Little Lever

Drawing Title:

CAD Site Layout

Drawing No:

TW/IL/CSL/01

Drawn:

BDC

Check:

ST

Date:

31/01/2024

Scale:

1:500

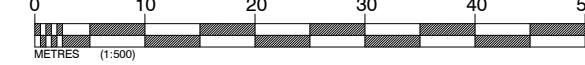
Paper Size:

A0

Rev:

AC

Stopes Road, Bolton, Little Lever





FOR GUIDANCE PURPOSES ONLY

Approximate Site Boundary



Rev	Drawn	Date	Description
Drawing Status: Information			
Contract:			
Stopes Road, Bolton			
For: Taylor Wimpey (Manchester)			
Drawing Title:			
Site Location Plan			
IGE consulting			
Office 16, Bartle House, Manchester, M2 3WQ Email: contact@igeconsulting.co.uk Web: www.igeconsulting.co.uk Tel: 0161 914 9170			
Scale: 1:5000 @A3		Date: Oct 2024	
Drawn: AL		Checked: AE	
Contract No. 3524		Drawing No. SI - 01	P1



FOR GUIDANCE PURPOSES ONLY

Approximate Site Boundary

Rock above 1st encountered coal seam (m)*
(m)
26.00m
0.00m

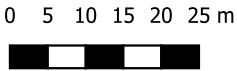
4.00

Thickness of Rock Above Coal (m)

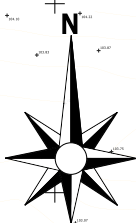
Approximate Location of Subcrops

*Model calculated using the drill and grout logs.

Errors in modelling likely caused by seam being 'missed' during drill and grout works, potentially due to workings.



Rev	Drawn	Date	Description
Drawing Status: Information			
Contract: Stopes Road, Bolton			
For: Taylor Wimpey (Manchester)			
Drawing Title: Depth of rock above 1st encountered coal seam based on drill and grout information.			
IGE consulting			
1st Floor, 15, Oxford Court, Manchester, M2 3WQ Email: contact@igeconsulting.co.uk Web: www.igeconsulting.co.uk			
Scale: 1:1000 @A3		Date: May 2025	
Drawn: AL		Checked: AE	
Contract No. 3524		Drawing No. SI - 11	P1



FOR GUIDANCE PURPOSES ONLY

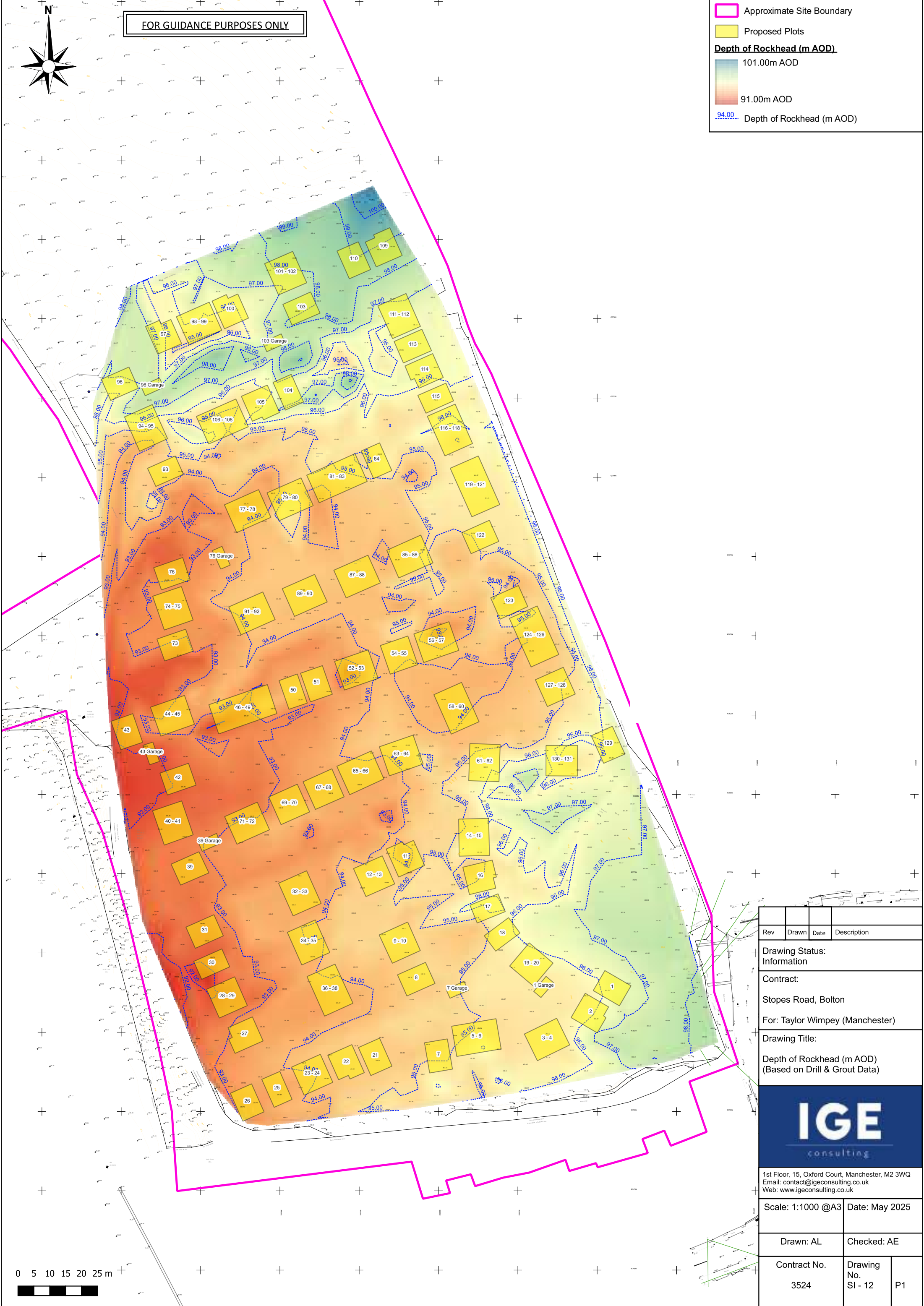
Approximate Site Boundary

Proposed Plots

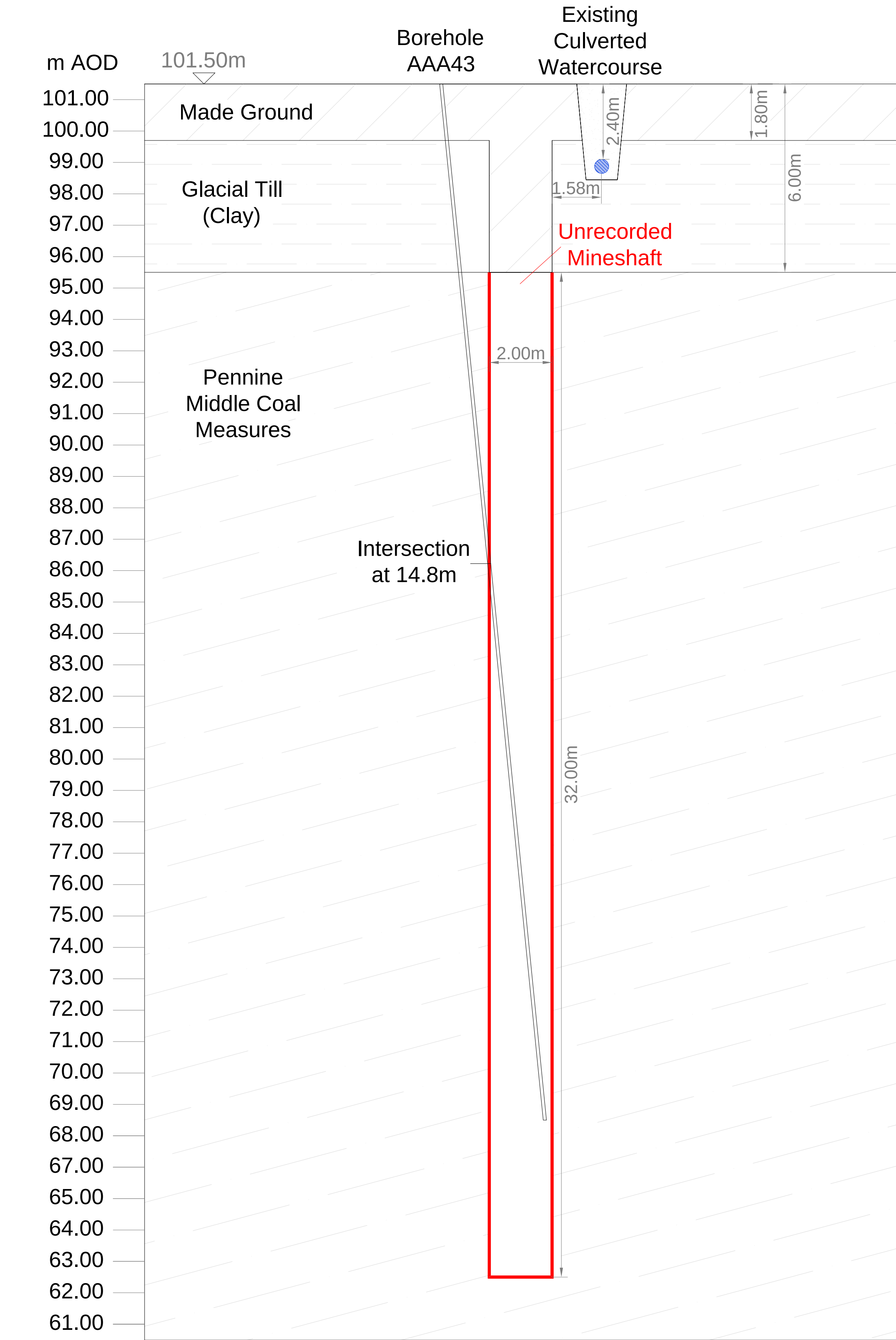
Depth of Rockhead (m AOD)

101.00m AOD91.00m AOD

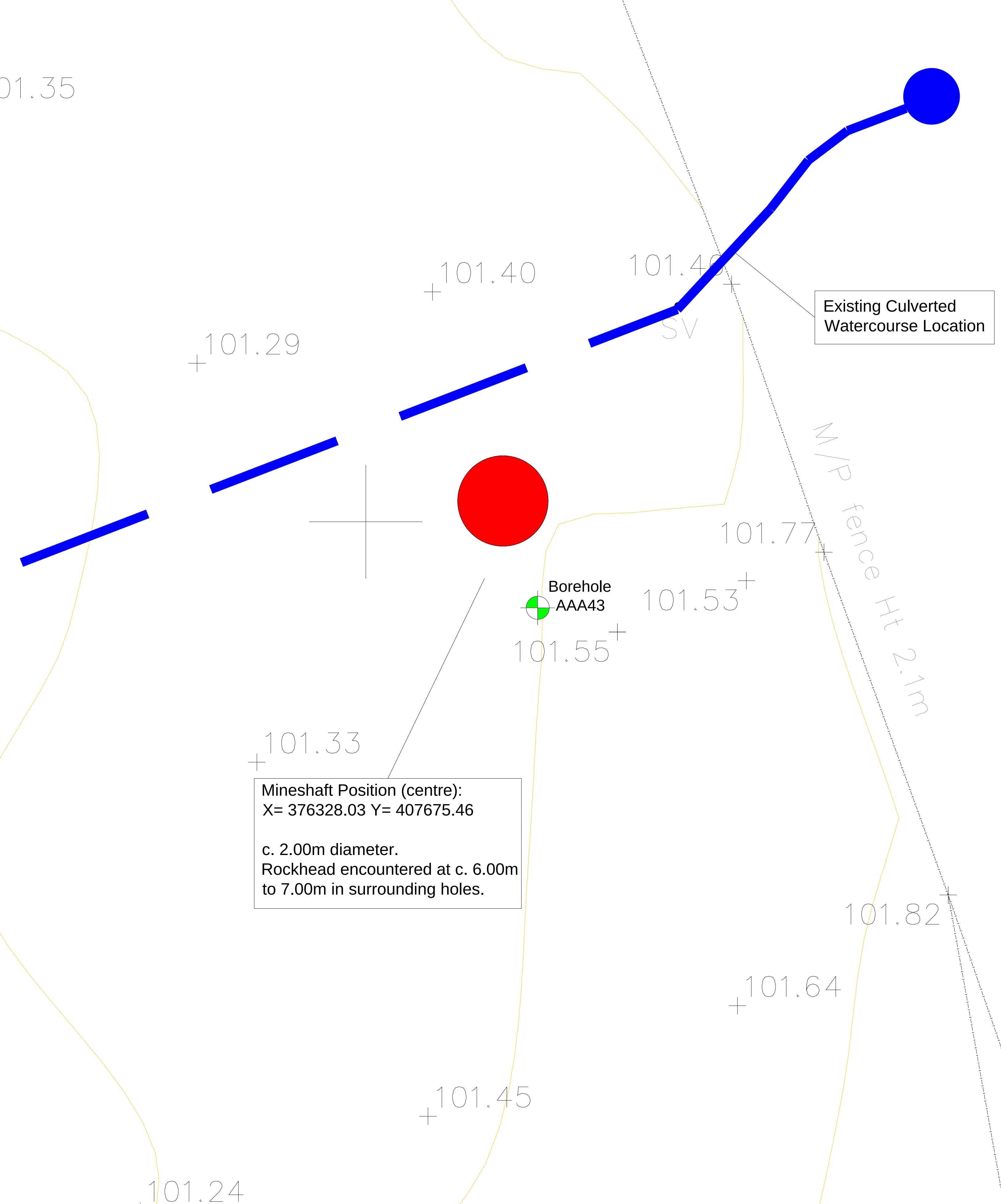
94.00



'AAA43' Mineshaft:
Cross Section



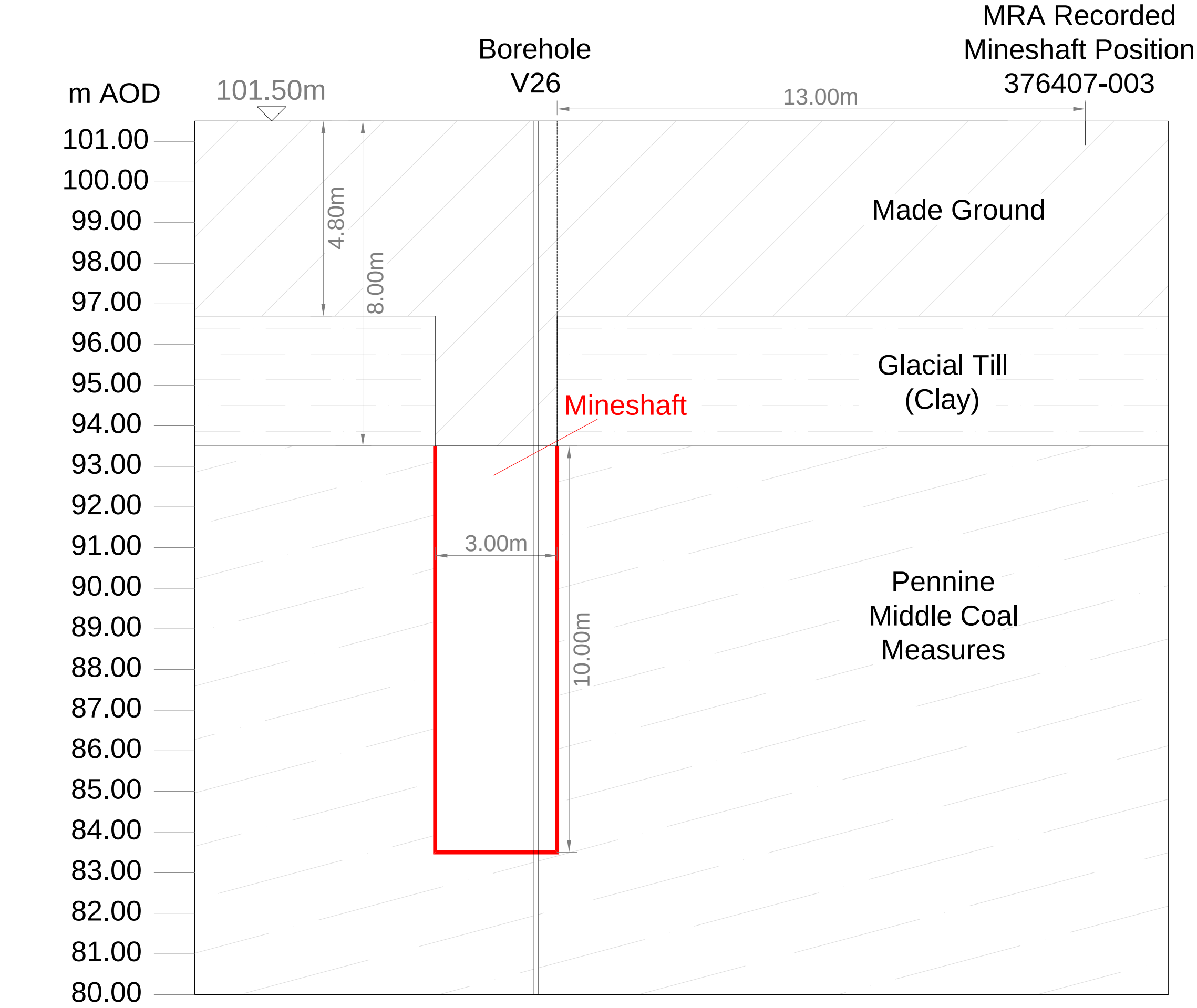
'AAA43' Mineshaft:
Plan View



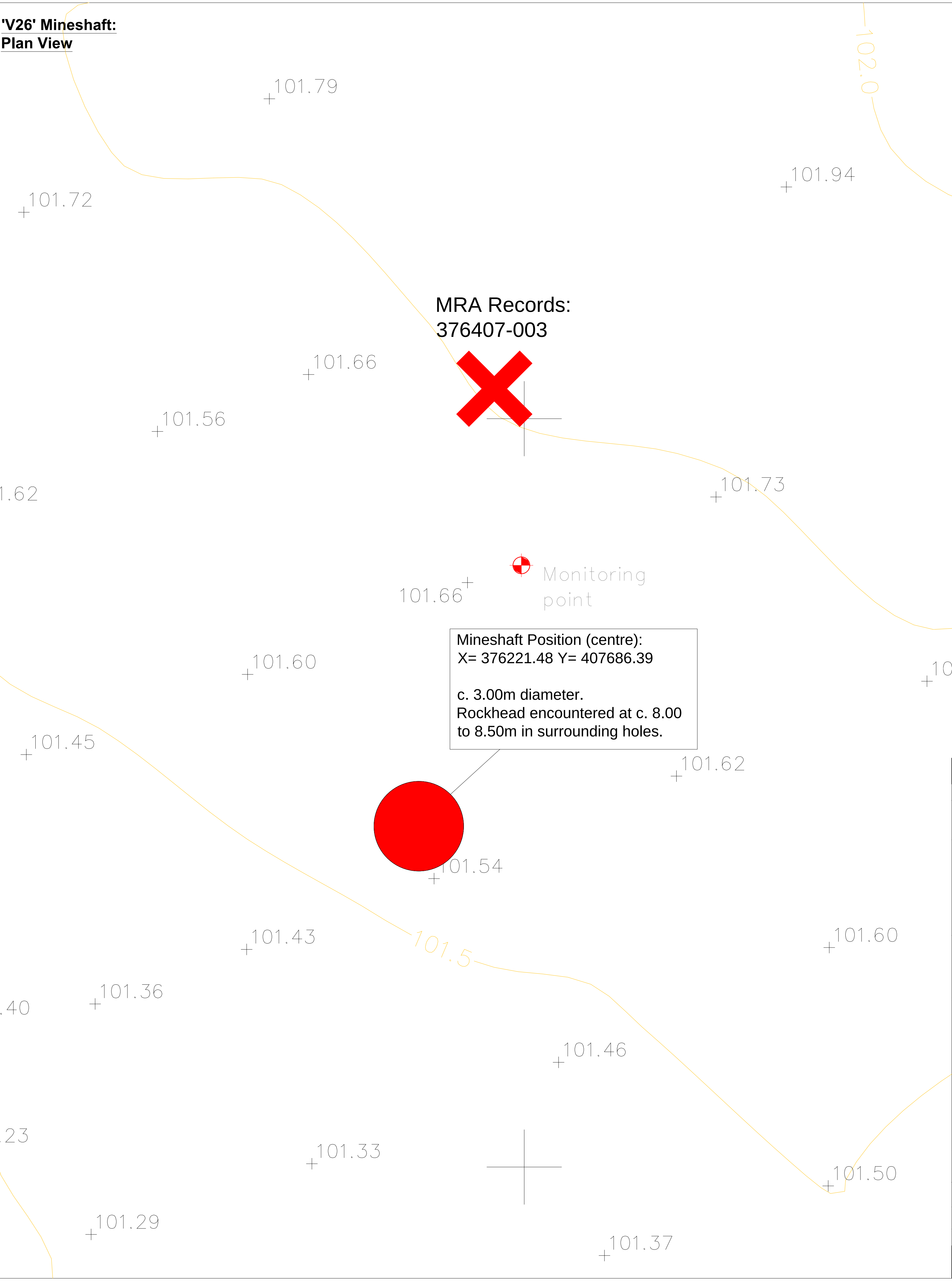
Key
● = 'AAA43' Mineshaft Location

Rev	Drawn	Date	Description
Drawing Status Information			
Contract			
Stopes Road, Bolton			
For: Taylor Wimpey (Manchester)			
Drawing Title			
'AAA43' Mineshaft Location Plan & Cross Section			
IGE consulting			
1st Floor, 15, Oxford Court, Manchester, M2 3WQ Email: contact@igeconsulting.co.uk Web: www.igeconsulting.co.uk Tel: 0161 914 9170			
Scale	NTS	Date	MAY 2025
Drawn	AL	Checked	AE
Contract No.	3524	Drawing No.	SI - 14 P1

'V26' Mineshaft:
Cross Section



'V26' Mineshaft:
Plan View



Key

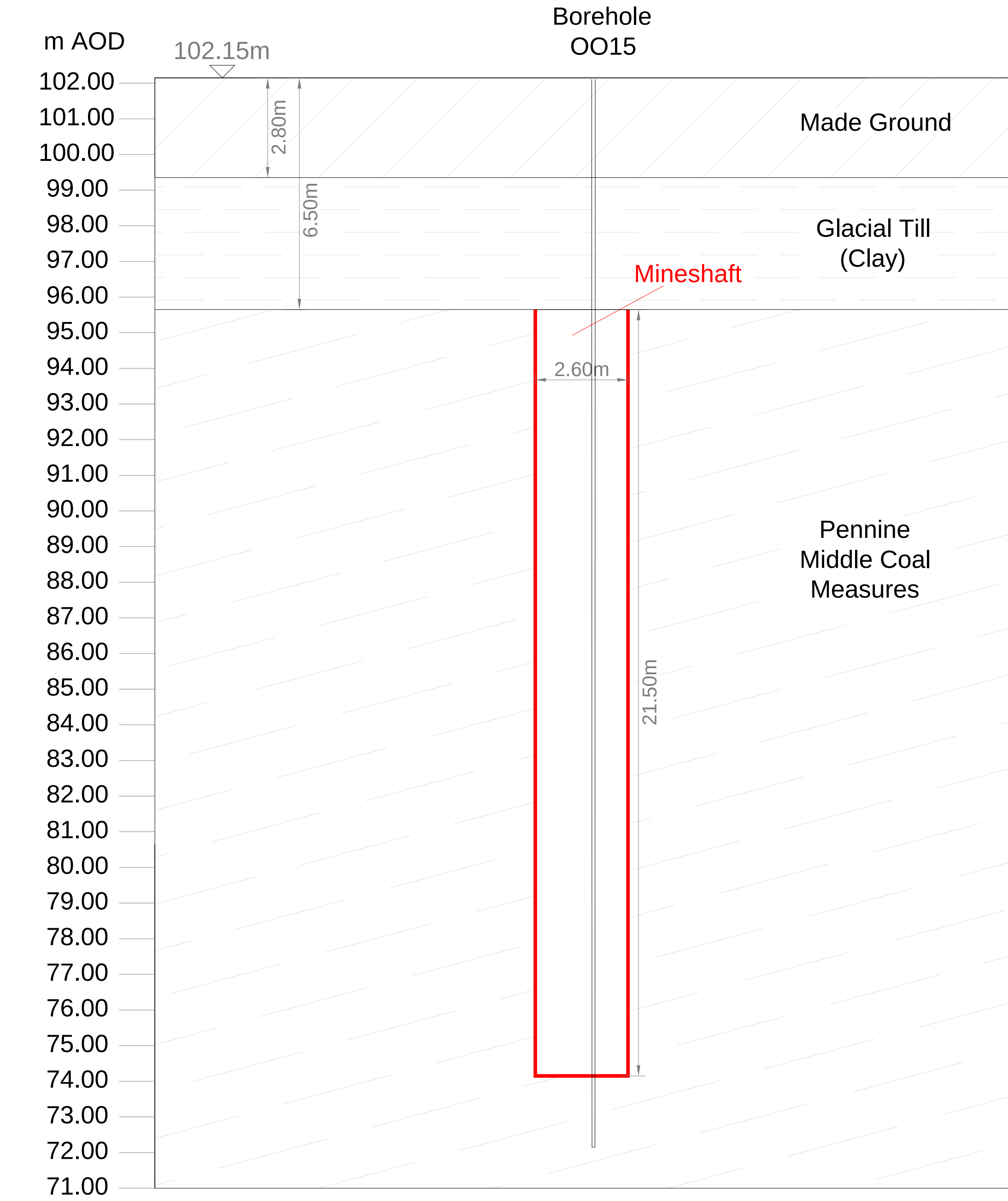
- = 'V26' Mineshaft Location
- ✗ = Recorded Location of 376407-003

Rev	Drawn	Date	Description
Drawing Status Information			
Contract			
Stopes Road, Bolton			
For: Taylor Wimpey (Manchester)			
Drawing Title			
'V26' Mineshaft Location Plan & Cross Section			

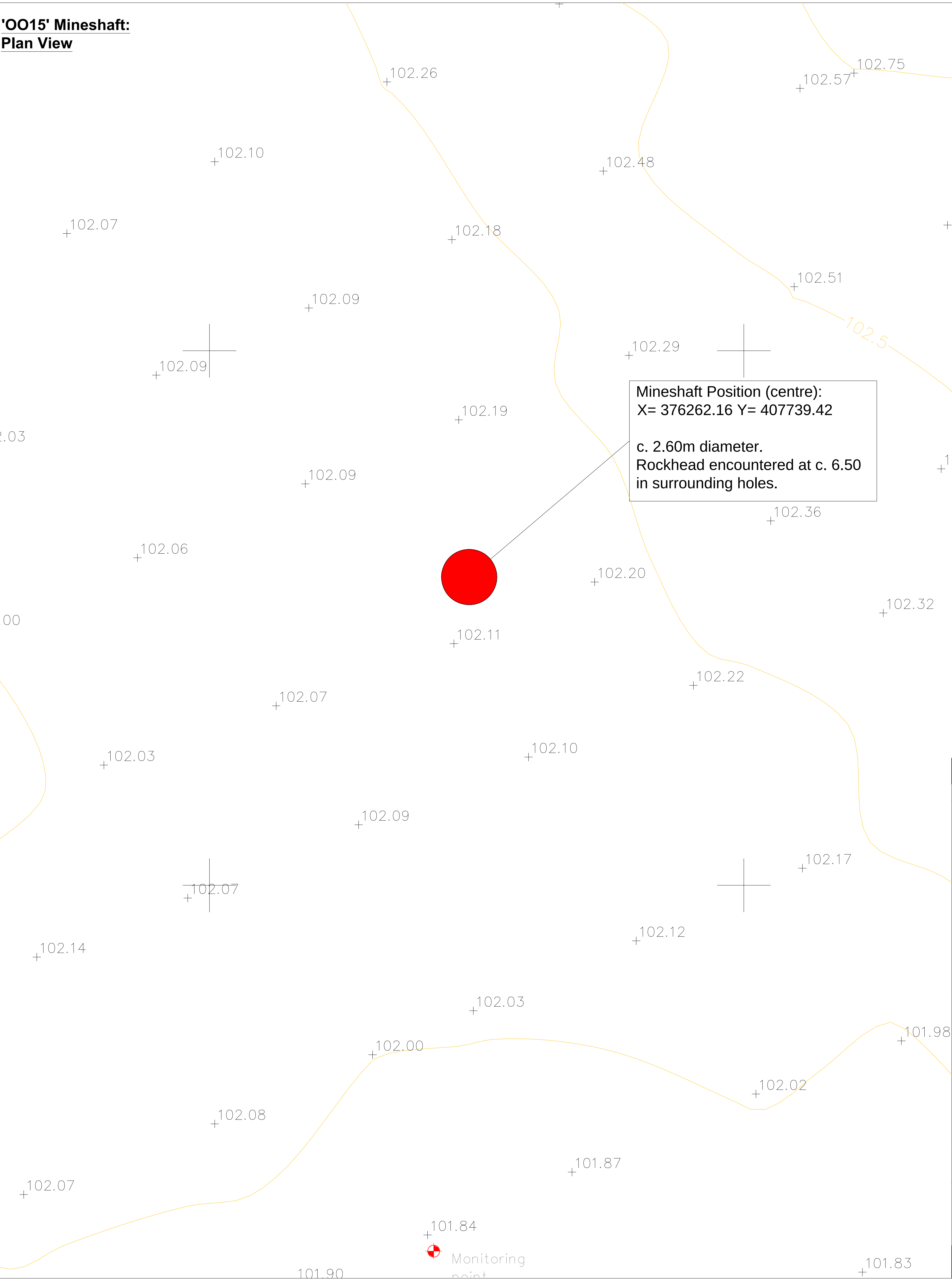


1st Floor, 15, Oxford Court, Manchester, M2 3WQ Email: contact@igeconsulting.co.uk Web: www.igeconsulting.co.uk Tel: 0161 914 9170		
Scale	NTS	Date
Drawn	AL	Checked
Contract No.	3524	Drawing No.
	SI - 15	P1

'OO15' Mineshaft:
Cross Section



'OO15' Mineshaft:
Plan View

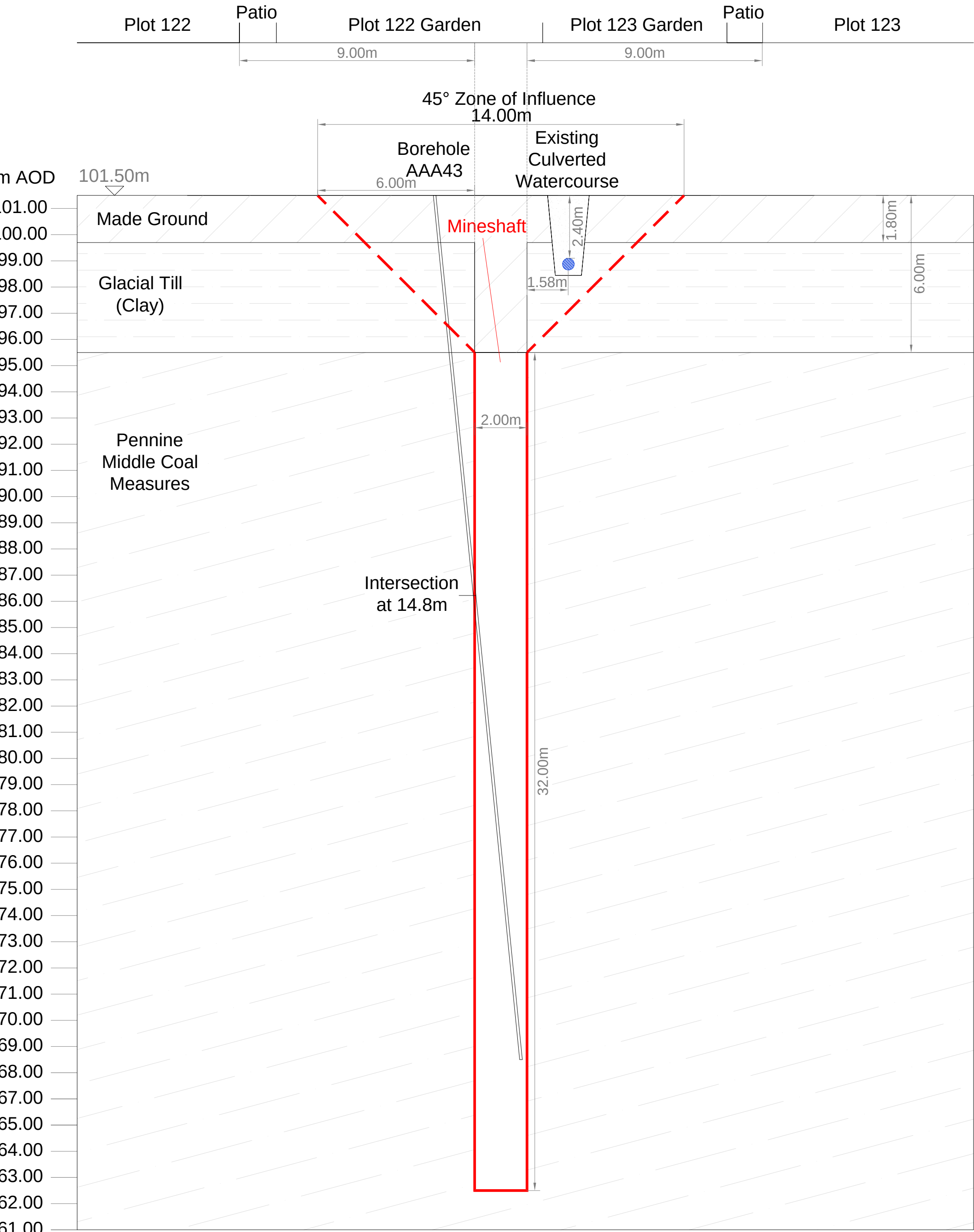


Key

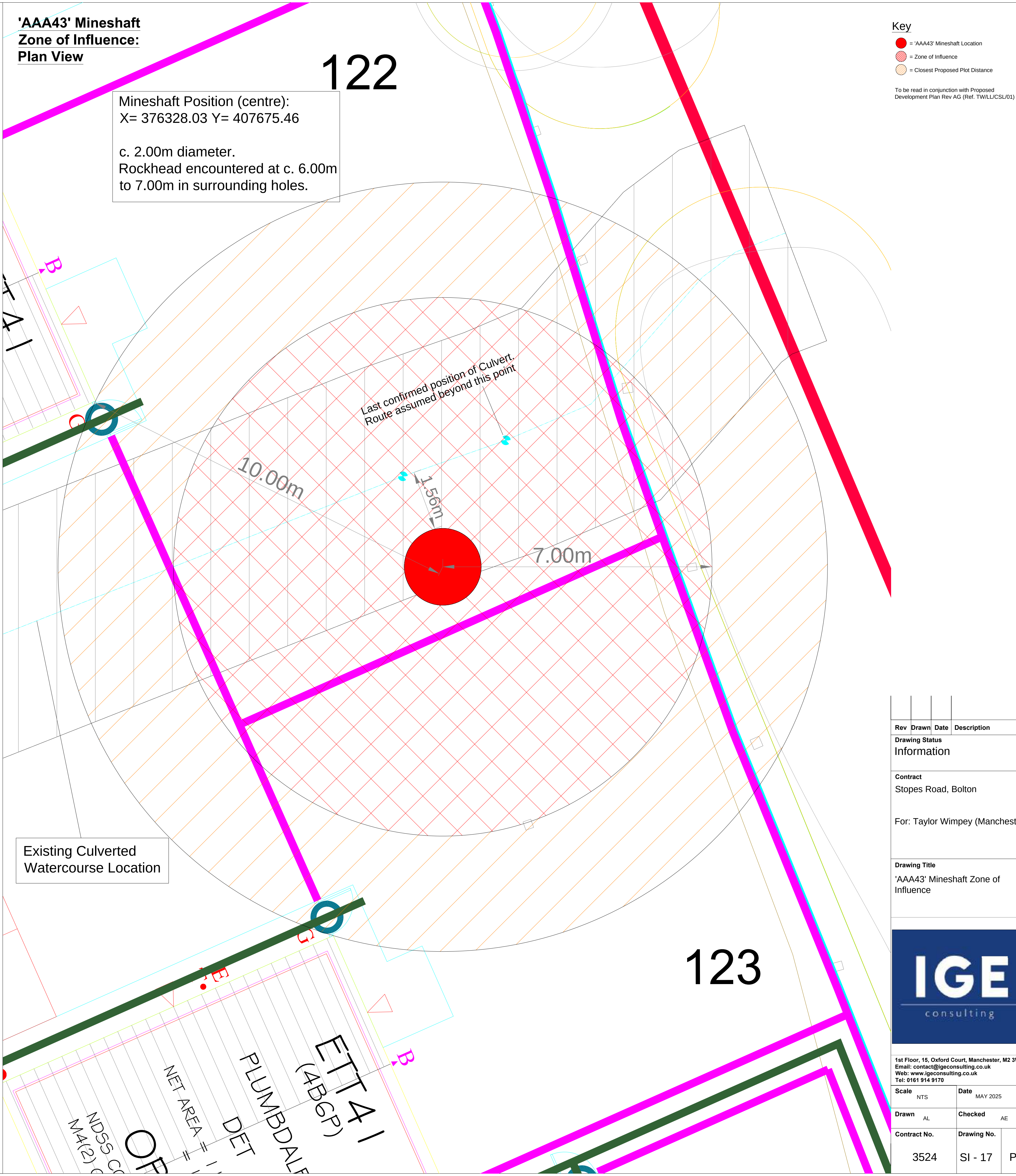
- = 'V26' Mineshaft Location
- ✕ = Recorded Location of 376407-003

Rev	Drawn	Date	Description
Drawing Status Information			
Contract Stopes Road, Bolton			
For: Taylor Wimpey (Manchester)			
Drawing Title 'OO15' Mineshaft Location Plan & Cross Section			
IGE consulting			
1st Floor, 15, Oxford Court, Manchester, M2 3WQ Email: contact@igeconsulting.co.uk Web: www.igeconsulting.co.uk Tel: 0161 914 9170			
Scale NTS		Date MAY 2025	
Drawn AL		Checked AE	
Contract No. 3524		Drawing No. SI - 15	
		P1	

'AAA43' Mineshaft Zone of Influence:
Cross Section



'AAA43' Mineshaft
Zone of Influence:
Plan View



Key

- = 'AAA43' Mineshaft Location
- = Zone of Influence
- = Closest Proposed Plot Distance

To be read in conjunction with Proposed
Development Plan Rev AG (Ref. TWILLUCSU01)

Rev	Drawn	Date	Description
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Drawing Status
Information

Contract
Stopes Road, Bolton

For: Taylor Wimpey (Manchester)

Drawing Title
'AAA43' Mineshaft Zone of
Influence



1st Floor, 15, Oxford Court, Manchester, M2 3WQ
Email: contact@igeconsulting.co.uk
Web: www.igeconsulting.co.uk
Tel: 0161 914 9170

Scale	Date
NTS	MAY 2025

Drawn	Checked
AL	AE

Contract No.	Drawing No.	
3524	SI - 17	P1