TRANSPENNINE ROUTE UPGRADE

ON TRACK TO BETTER

TransPennine Route Upgrade Project W3 - Huddersfield to Ravensthorpe

Flint Street Mining Risk Assessment

Document Notes

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Implementation

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1. EXECUTIVE SUMMARY

This report considers the proposed Flint Street Hub in W3, Area 3.2 offline between A:42700 and A:42950 of the TRU project (see Figure 1- Extents of Area W3.2) and its known and probable mining risks.

The land at the proposed Flint Street Hub is owned by Kirklees Council and is currently under possession to TransPennine Route Upgrade (TRU) West for a 120-vehicle parking facility. TRU West requires possession of the plot/s up to January 2029 and intends to amend the possession details to include the installation of 1 tier modular 80 desk office inclusive of a 150-person multipurpose briefing room (same facility) including parking arrangements, EV charging stations, LED lighting; and Utility Connections. Flint Street will be a central hub used by various companies, Amey, Bam, ARUP, NWR (Network Rail) and various other contractors. The possession will be in place from 11/08/2025 – 01/01/2029.

This report assesses the Mining Risk at the Flint Street Hub to support the planning application and presents recommendations regarding the proposed intervention.

The area covered by the report and mining risks are summarised in Table 1 below:

Table 1 – Summary of Study Area and Mining Risks

Area	Risks
A: A:42700 and A:42950 (Flint Street/ A641 Bradford Road)	Past underground workings Probable shallow and underground workings Mine entries 414418-001, 414418-003

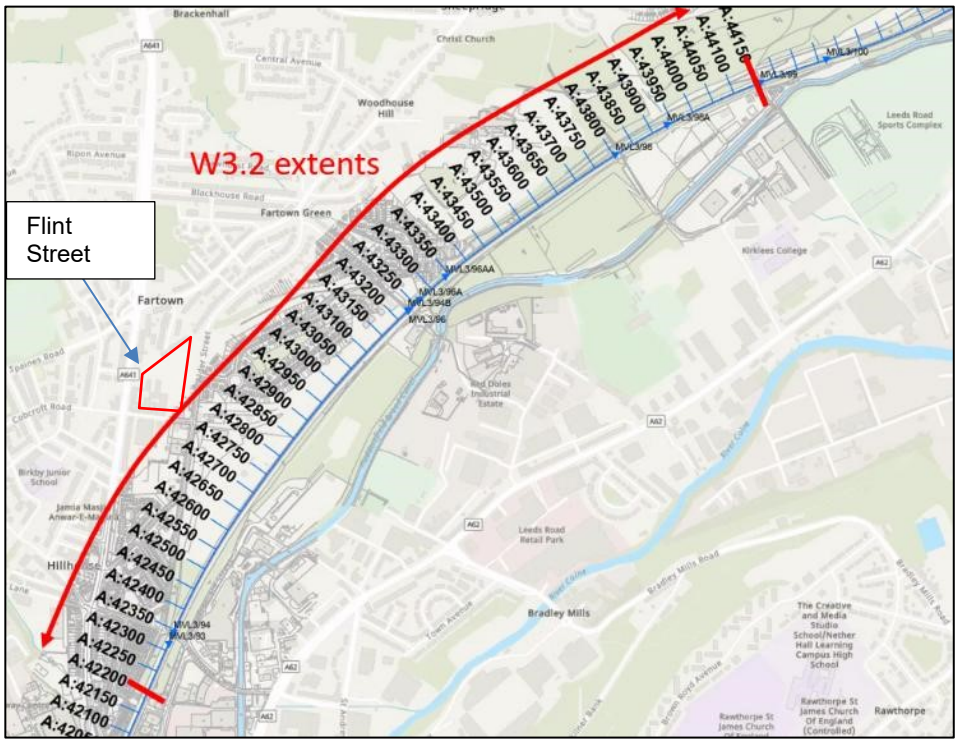


Figure 1 - Extents of Area W3.2

Figure 2 – Proposed Flint Street Hub Location

2. INTRODUCTION

2.1 Purpose

This Site-Specific Mining Risk Assessment has been developed to summarise the available mining data and associated risks for the Flint Street Hub, which is part of Project W3 Area 3.2 of the TransPennine Route Upgrade (TRU) but is not currently included in the existing Mining Risk Assessment for the adjacent section of the TRU route.

This report has been compiled in order to support the planning application for the installation of a single tier modular 80 desk office inclusive of a 150-person multipurpose briefing room (same facility) including parking arrangements, EV charging stations, LED lighting; and Utility Connections.

Along with other sources, this document considers the geotechnical ground model information pertinent to the Flint Street Hub that is included in the relevant GIR (W3 - Ground Investigation Report W3.2), which provides more on the ground conditions around this section of the route.

2.2 Sources of Data

This assessment is based on information provided from Stage 1 and Stage 2 Network Rail mining reports provided to the TRU Project; E-MISC-2662 MVL3 26.037-27.076.pdf and Level 2 Mining Report E-MISC-2662-3 and Attachments.zip (The relevant extracts from these reports are included within **Appendix A** of this MRA). Other sources of information include;

- Jacobs November 2026, Mining Overview Plans for West of Leeds (WoL); Route Area 9 - Huddersfield East to Bradley Junction 151667-328-00-TRU-REP-W-GE-000008 - Sheet 31 of 49
- Project Mapper. https://ProjectMapper.com/map.aspx?cid=551
    - Coal Authority WMS Layers
    - Geology and Mineral Extraction Layers
- British Geological Survey (BGS) historic boreholes and location plan extract. GeoIndex - British Geological Survey – included within **Appendix B**
- National Library of Scotland (historic maps). Side by side georeferenced maps viewer - Map images - National Library of Scotland
- Coal Authority Abandonment Plan for Halifax Soft 6HCR and 6HCQ, 441418_NY450k, obtained 11/07/2025
- Coal Authority Consultants Mining Report (ref 51003505309001) obtained 16/06/2025 – Included within **Appendix C**.
- Groundsure Report (Enviro +Geo Insight) obtained 01/08/2025 – Ref AME-UJV-WS8-V6O-1DM

2.3 Scope

This document has been prepared for Project W3, Area 3.2 (W3.2), to describe the process used to assess the mining related risk at Flint Street Hub between A:42700 and A:42950. It summarises the information used to carry out the assessment and the outcome and recommendations of the assessment.

3. DEFINITIONS, ABBREVIATIONS AND REFERENCED DOCUMENTS

3.1 Definitions

Table 2 - Definitions

Term to be defined	Concise definition of term
Mine working	Physical features or voids in the ground resulting from the extraction of minerals including metals and coal from the sub-surface.
Mine entry	Access to mine workings, generally in the form of shafts or adits.
Mining related subsidence	Ground movements at ground level caused by the collapse of mine workings or mine entries.

3.2 Abbreviations

Table 3 – Abbreviations

Abbreviation	Full terminology
BGS	British Geological Survey
CA	Coal Authority (now known as Mining Remediation Authority- MRA) but for the purposes of this Report will still be referred to as Coal Authority (CA).
CIRIA	Construction Industry Research and Information Association
CMRA	Coal Mining Risk Assessment
GIR	Ground Investigation Report
HB	Hard Bed (Halifax Hard)
MRMR	Mining Risk Mitigation Remit
NR	Network Rail
PLCM	Pennine Lower Coal Measures
SB	Soft Bed (Halifax Soft)
TRU	TransPennine Route Upgrade

3.3 Referenced Documents

Table 4 – Referenced Documents

Source.	Reference	Title
Amey 2021	W3 - Mining Risk Assessment Hillhouse Sidings GRIP 4	W3 - Area 3.2 - Mining Risk Assessment -151667-TSA-31-MVL3-REP-W-GE 030400
BGS (Map) 2007	Sheet SE11NW	British Geological Society 1:10,000 Map: Huddersfield
BGS (Map Portal) 2003	Sheet 77	British Geological Society 1:50,000 Map: Huddersfield
BGS Memoir, 1930	Wray et al, 1930	The geology of the country around Huddersfield and Halifax. Explanation of sheet 77
Coal Authority - (now known as Mining Remediation Authority- MRA) but for the purposes of this Report will still be referred to as Coal Authority (CA).	Ref 51003505309001	Consultants Mining Report
CIRIA 2019	C758D	CIRIA C758D – Abandoned mine workings manual
Environment Agency (EA) Last viewed: July 2025	-	Magic Map
Jacobs 2016	151667-328-00-TRU-REP-W-GE-000008	Mining Overview Plans (WoL)
National Library of Scotland (Map viewer) Last viewed: July 2025	Side by side georeferenced maps viewer - Map images - National Library of Scotland	OS 1-to-6-inch Map Published: 1830-1880's
Network Rail Company Standard 2020	NR/L2/CIV/191/05	Module 5: Managing the risk from mining in design and construction
Network Rail Report 2021	Level 2 Mining Report E-MISC-2662-3 and Attachments.zip	Stage 2 Mining Report E-MISC-2662-3
Network Rail Report 2021	E-MISC-2662 Level 2 Mining Report and Attachments.zip	Stage 2 Mining Report E-MISC-2662

4. SITE LOCATION AND DESCRIPTION

4.1 General

4.1.1 Site Location

The site is located approximately 1.3km northeast of Huddersfield Station and is bounded by Adler Street in the east and a waste disposal transfer facility on Bradford Road in the west. The site's area is approximately 0.02km^2 and is triangular in shape with a maximum width of around 146m in its southern extent.

The site is currently being utilised as a 120-vehicle parking This CMRA is intended to support the planning application for a single tier modular 80 desk office with a 150-person briefing room and will focus on the historical mine workings within and surrounding the Flint Street Hub only.

A detailed site plan is shown in Figure 3 below.

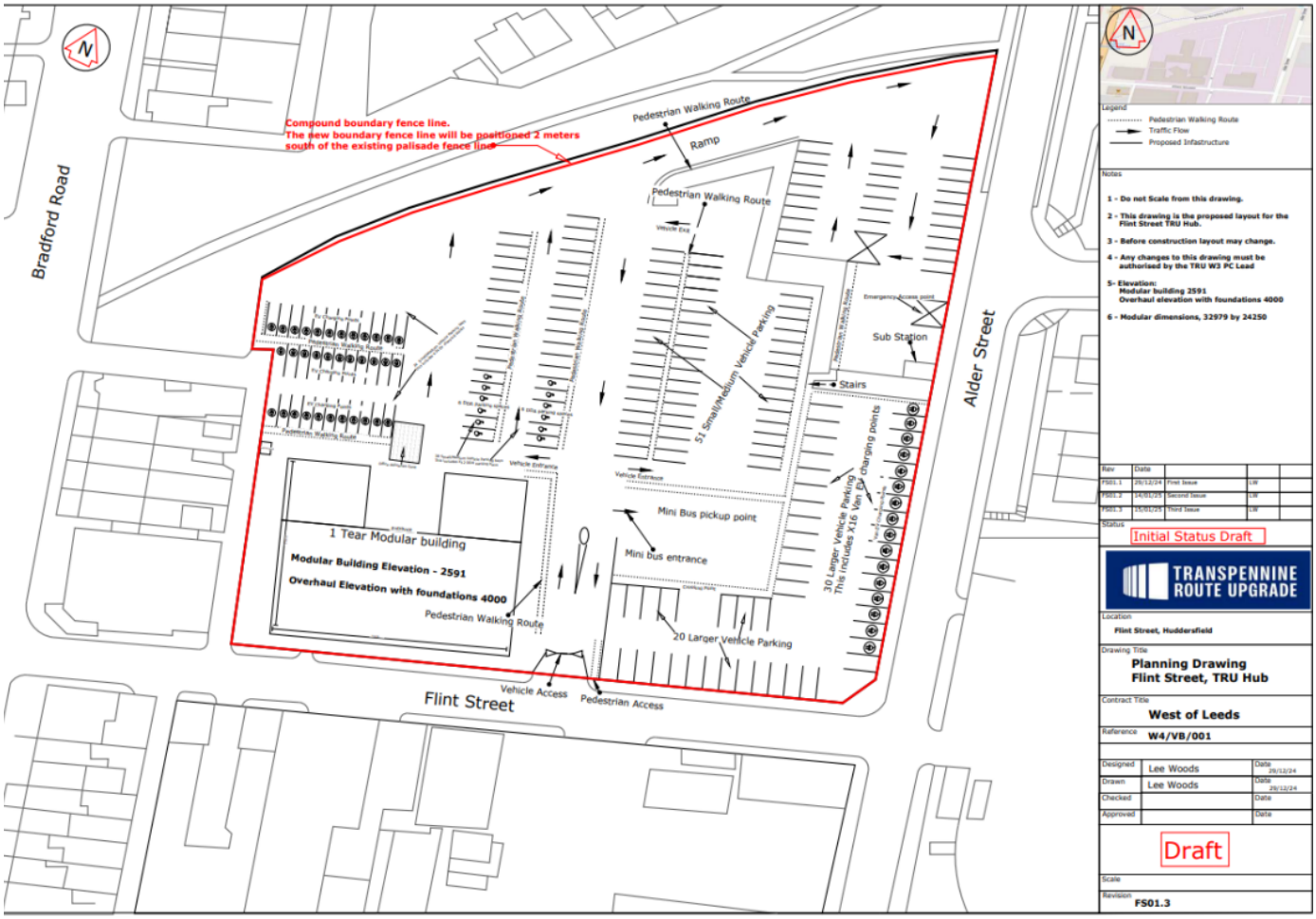


Figure 3 – Site Plan

4.2 Published Geology

4.2.1 Made Ground

Made Ground (MG) was not recorded to be underlying the site; however, immediately north of the site MG (infilled ground) from dismantled railway is shown to be present. It is also anticipated that MG from mine waste and construction rubble would be present from past mining and demolition activities at the site. Worked ground with voids is indicated to the east of the site (northeast to southeast).

4.2.2 Superficial Deposits

The British Geological Survey (BGS) viewer indicates that except for the northeastern extent which is underlain by Glaciofluvial Deposits (GFD) comprising Sand and Gravel of Mid Pleistocene, the majority of the site is not recorded to be underlain by any superficial deposits.

4.2.3 Solid Geology

The bedrock underlying the site comprises the Pennine Lower Coal Measures (PLCM), which consist of interbedded strata of sandstone, mudstone, and siltstone, with coal seams. Stratigraphically, the Hard Bed (HB) coal seam outcrops at the site and lies beneath the Listerine Marine Band (LMB). The Soft Bed coal seam is located at a deeper depth and, according to the Consultants Mining Report by CA (now MRA), has been historically mined at a depth of approximately 27m below ground level (bgl). The coal seams generally dip at an angle of around 4° towards the east.

There are no recorded structural geology features like faults etc. within 250m of the site.

Coal Seams

Hard Bed (HB) (Alternative name: Halifax Hard Bed) - The Hard Bed Coal, also known as the Halifax Hard Bed, is commonly about 0.6m thick and was worked, together with its underlying seatearth, in all areas close to the outcrop. The Hard Bed, in contrast to the SB, is highly sulphurous primarily engine coal, worked widely between Halifax, Brighouse and Elland. Calcareous nodules (‘coal balls’) have been found sporadically in the seam. Coal thickness is between 0.5-1.0m (Wray, 1930).

Soft Bed (SB) (Alternative name: Halifax Soft Bed) - The Soft Bed (SB) is a sulphur-free coal of fair quality, which has been widely worked to a considerable extent from the outcrop (Wray, 1930). Coal thickness is between 0.2-0.9m.

4.3 Historical Boreholes

There are no exploratory holes within the site boundary, however, available BGS borehole information identified within 200m of the Site have been reviewed. Table 5 presents a summary of the ground conditions inferred from these boreholes and the sources of information.

Table 5 – Summary of Ground Conditions

Geological Formation	Thickness (m)	Top Depth (mbgl)	Source	Notes
Made Ground - Ash and red shale, mudstone and sandstone fragments with clayey matrix (MG)	0.7 – 5.8	0.0	SE11NW168 - 48m SE SE11NW161 – 118m SE SE11NW19 – 169m SE SE11NW159 – 127m SE	
Superficial / highly weathered Mudstone (PLCM)	2.9	0.7	SE11NW168 - 110m SE	
Weathered Mudstone (PLCM)	6.2 – 41.6	3.6 – 5.8	SE11NW161 – 118m SE SE11NW19 – 169m SE SE11NW159 – 127m SE	
Old workings (soft grey mudstone fragments with clayey matrix) Coal (PLCM)	0.6 – 1.0	12.0 - 42.0	SE11NW161 – 118m SE SE11NW159 – 127m SE SE11NW805 – 182 E SE11NW19 – 169m SE	Old workings at 12mbgl Old workings at 14mbgl Soft Bed coal seam-42mbgl Soft Bed coal seam 42.67mbgl

Four historic boreholes with distances ranging from approximately 120m to 180m to the southeast of the site, encountered coal seams or old workings at two generally distinct depths. The thickness of these seams or old workings were recorded between 0.6m and 1.0m. The closest boreholes to the Site, SE11NW161 (118m SE) and SE11NW159 (127m SE) recorded old workings (thought to be Hard Bed Coal) at depths of 12mbgl and 14mbgl respectively suggesting it was the same seam. Boreholes SE11NW19 (169m SE) and SE11NW805 (182 E) each encountered coal seams (Soft Bed Coal) at 42mbgl which is similar to the depths recorded on abandonment plan from CA.

Historical BGS borehole logs and location plan extract used to inform the anticipated ground conditions at the site are presented in **Appendix B**.

4.4 Site Topography

The Flint Street site area is generally on level ground.

4.5 Hydrology

ProjectMapper identified the closest water course to be Huddersfield Broad Canal which runs on a southwest to northeast (direction of flow) alignment, located approximately 304m to the east of the site at its nearest point. The area is shown on ProjectMapper to be in an Environment Agency Flood Zone 2 area.

4.6 Hydrogeology

The bedrock and superficial deposits are categorised as Secondary (A) aquifers, which are defined as “Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers”.

When considering the regional dip of the bedding and the general site topography, it is likely that groundwater flow within the bedrock is toward the direction of the canal and River Colne

4.6.1 Groundwater

Groundwater was not encountered in the historical BGS boreholes. No groundwater data was available at the time of writing this CMRA, hence, interpretation of possible groundwater level and its fluctuations could not be made.

4.7 Previous Site Uses

Information relating to the historic land use is available on National Scottish Library of Scotland (accessed 25/07/2025) and from Goundsure. The information taken from these historic maps dating from the 1850s to 2025 is summarised in Table 6

Table 6 – Previous Site Use Summary

Map Date	Map Scale and Map Number	Site Land Use	Surrounding Site Land Use
1854	1:10,560 County Series	• Empty land • Unnamed road to the western boundary	• *Urban*
1890	1:1500 County Series Town Plan	• A building of unknown purpose appears in the southeastern part of the site	• *An old shaft to the east* • *Railway sidings to the south east*
1905	1:10,560 County Series	• A small building of unknown purpose appears in the southwestern part of the site • An unnamed road appears in the present location of Flint Street	• *No significant changes*
1918	1:2,500 County Series	• Site becomes the Midlands Railway, Huddersfield Branch. • Building in southeatern part of site disappears	• Railway cuttings appear immediately north of the site

Map Date	Map Scale and Map Number	Site Land Use	Surrounding Site Land Use
		• More buildings appear in the western part of the site with a shed like structure in the north. • Unnamed road becomes Flint Street	• Alder Street extends to the eastern site boundary
1931	1:10,560 County Series	• Site becomes Coorporation depot • In the north, shed structure disappears and a small building appears. • 2 buildings appear in the east. • Less buildings seen in the west with more appearing in the southern part of the site	• Area beyond Flint Street becomes part of the Corporation Depot • Allotment Gardens appear in the previos loaction of the old shaft
1938	1:10,560 County Series	• No significant change	• The allotment garden becomes developed
1948	1:10,560 County Series	• No significant change	• More houses appear in the development
1956	1:10,560 Provisional	• A couple of small buildings in the south disappear	• No significant change
1959	1:1,250 National Grid	• Building in the south west of site used for unknown works	• A garage appears as part of the Corporation Depot beyond Flint Street
1975	1:10,000 National Grid	• No significant change	• Railway immediately north is dismantled • Corporation Depot beyond Flint Street is nmed Hillhouse
2001	1:10,000 National Grid	• Buildings in the northern part of the site disappear	• The dismantled railway to the north of the site is developed
20110	1:10,000 National Grid	• More buildings appera in the southern half of the site	• No significant change
2025	1:10,000 National Grid	• No significant change	• No significant change

4.7.1 Kirklees Council

Information from Kirklees Council indicate that before the possession of the site by TRU West, a demolition works was undertaken in December 2023 which included the demolition of the main building, outbuildings and containers down to ground level. The main building is of traditional masonry construction with external stonework and brickwork which dates back to 1900. Existing foundations and internal ground bearing concrete floor slabs were retained. Existing boundary walls to outbuildings were reduced with stone copings introduced to top of reduced walls.

4.8 Planned Intervention

The Trans Pennine Route Upgrade (TRU) West is a programme of works to enhance/upgrade the existing railway infrastructure between Manchester & Leeds. Rail Systems will lead and manage the accommodation at Flint Street Hub which will be used by the W3/4 project teams to complete and commission the TransPennine route upgrade between Manchester and Leeds. Flint Street is currently under possession to TRU West for a 120-vehicle parking facility, TRU West intend to amend the possession from 11/08/2025 to 01/01/2025 as described below :

- Install a single tier modular 80 desk office inclusive of a 150-person multipurpose briefing room (same facility)
- Provide parking arrangements
- Install EV charging stations
- Install LED lighting
- Utility Connections

4.8.1 Drainage

The ground on which the temporary modular building will be installed is a permeable material, also porous asphalt will be laid around the building allowing rainwater to drain through it. It is considered that the current groundwater regime at the site will not be altered by the proposed interventions at the Flint Street Hub.

See below Figure 4 for the ground build up.

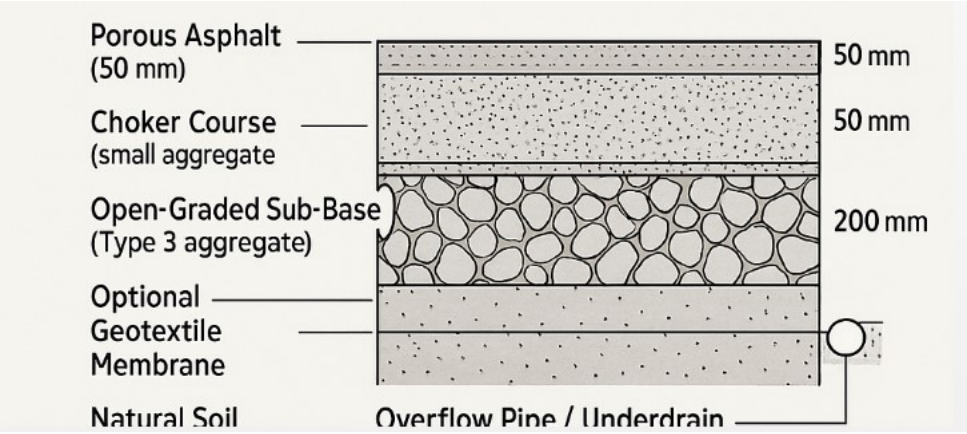


Figure 4 – Ground Build up at the Site

None of the proposed interventions are considered intrusive, nor do they exceed the structural loadings historically associated with the site's previous use. In fact, the proposal reflects a reduced development footprint relative to previous land uses.

5. COAL MINING RISK ASSESSMNT

5.1 Recorded Mine Entries

Section 4.1 of E-MISC-2662-3 Network Rail Stage 2 Mining Report states that Network Rail have identified 1 No. mine shaft to the southeast of the site.

- **414418-00**1- (Mileage 26+1095)

The BGS BritPit dataset identifies several mineworking entries located within 50m of the Site

- **429944** – (Mileage 26.0908) Fartown Colliery (this is recorded by CA as 414418-001)
- **429946**- (Mileage 26.1072) Fartown Green pit (This is recorded by CA as 41418-003)

A plan of the mine entries and Coal seams outcrop at the site is presented as Figure 5.

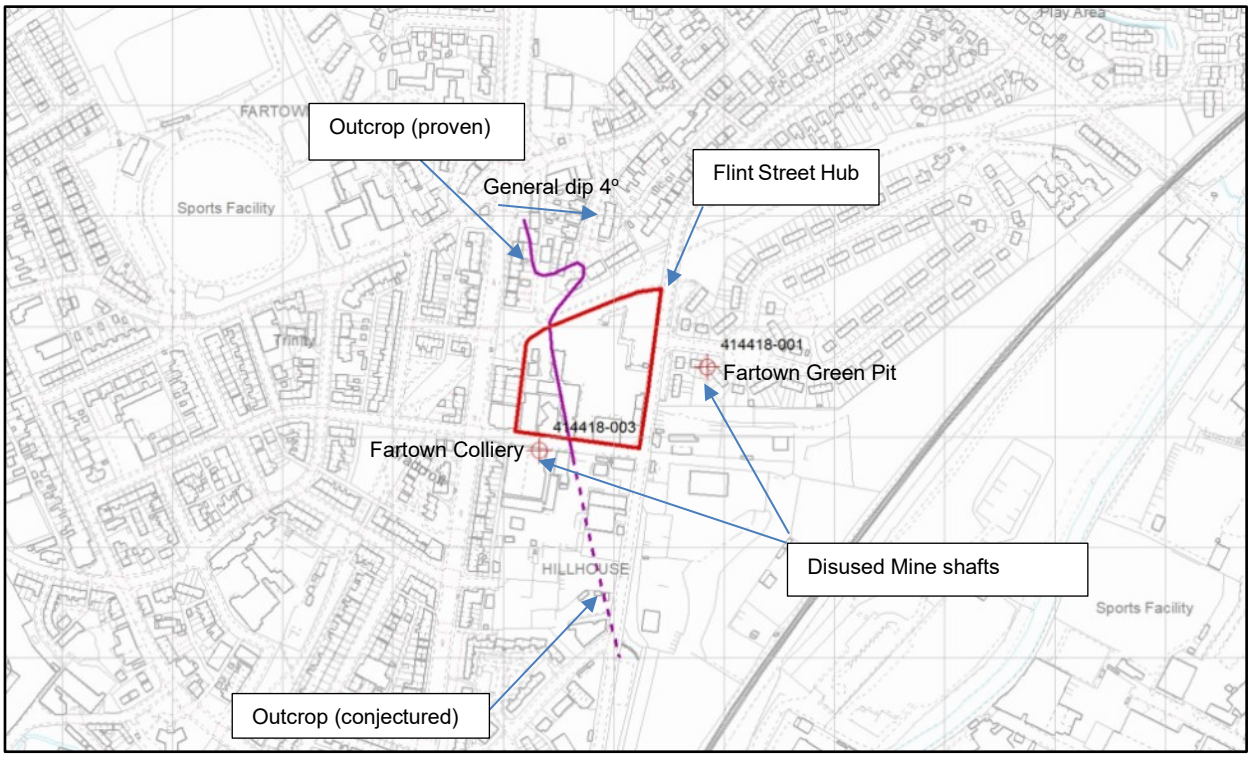


Figure 5 – CA (now MRA) Mine Shafts and Coal Seam Plan (Extract)

5.2 Abandonment Plans

Limited details are available on the plan 441418_NY450K and on E-MISC-2662-3 Network Rail Stage 2 Mining Report, although the plan appears to relate to shaft 41418-003 with unknown treatment details. ProjectMapper indicates this shaft location is approximately 20 south from the Site

Abandonment Plan 441418_NY450K - 6HCQ and 6HCR (Figure 6 below) is thought to relate to 'Fartown Colliery'. The plan confirms information shown on Table 5 of E-MISC-2662-3 Network Rail Stage 2 Mining Report, Section 1 of the CA (now MRA) Consultants Mining Report (ref 51003505309001) and ProjectMapper. NY450K is the CA seam code for Soft Bed (SB) (Halifax Soft) with 6HCQ and 6HCR being

the panel IDs of the coal seams with minimum depths of between 27mbgl and 36mbgl beneath the Flint Street Hub.

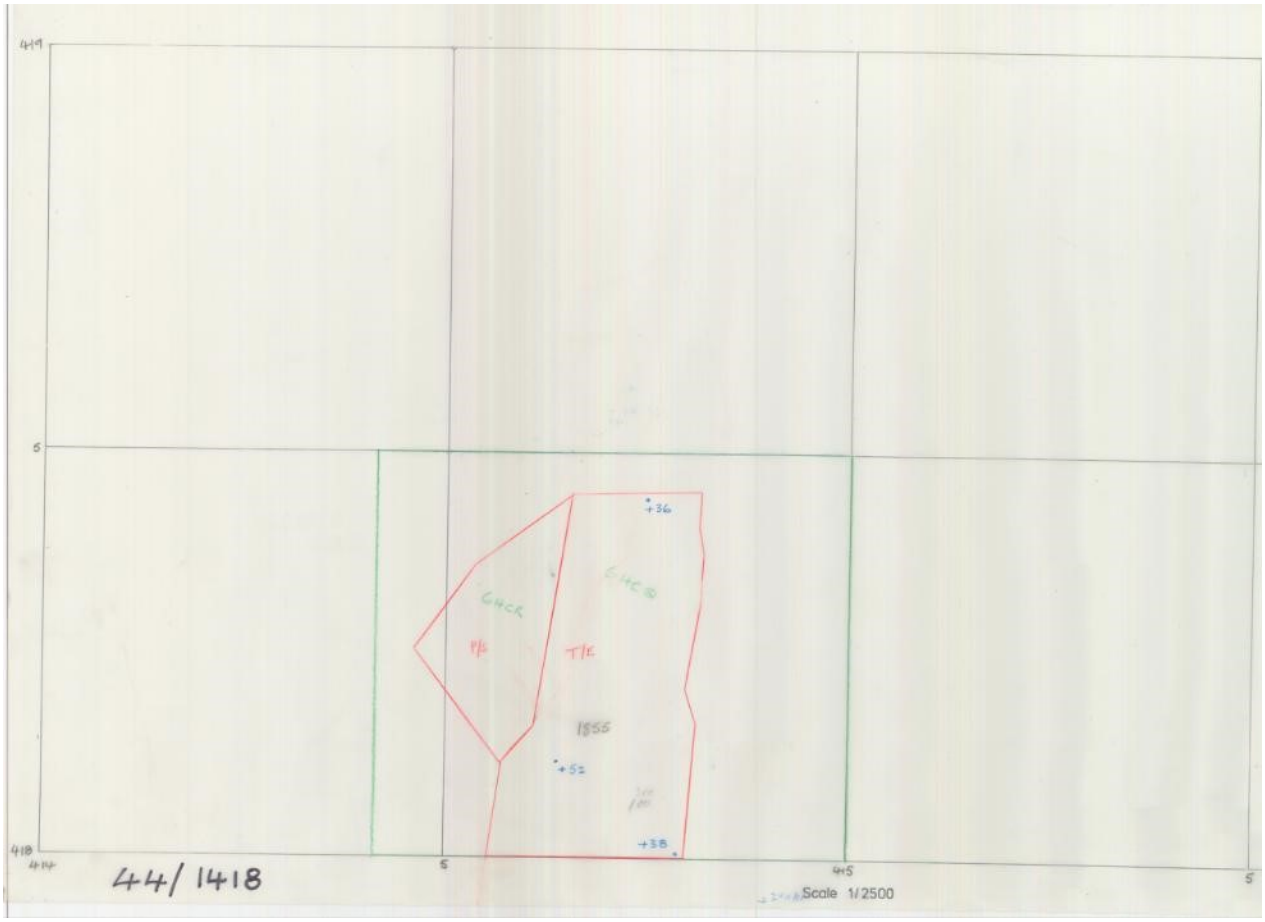


Figure 6 – Abandonment Plan 441418_NY450K (extract)

5.3 Recorded Underground Mine Workings

Information on recorded mine workings in this area are taken from Section 4.2 of E-MISC-2662-3 Network Rail Stage 2 Mining Report, BGS historical boreholes and from CA (now MRA) Consultants Mining Report Ref 51003505309001 and are presented within Table 7. Also, abandonment plans from CA places Soft Bed Coal seams between 36.0mbgl to 52.0mbgl.

Table 7 – Summary of Recorded Underground Mine Workings

Source Reference	Seam	Seam Code	CA Ref	Date Worked	Depth mbgl	Recorded Thickness (m)
E-MISC-2662-3 & CA (now MRA) Report Ref 51003505309001	Halifax Soft (Soft Bed)	NY450K	6HCQ	1855	27	1.0
E-MISC-2662-3 & CA (now MRA) Report Ref 51003505309001	Halifax Soft (Soft Bed)	NY450K	6HCR	1855	27	1.0
SE11NW161 – 118m SE	Old working (assumed Hard Bed)	-	-	-	12	0.9
SE11NW805 – 182 E	Soft Bed (Information on BH log)	-	-	-	42	
SE11NW19 – 169m SE	Soft Bed (Information on BH log)	-	-	-	42	0.6
SE11NW159 – 127m SE	Old working (assumed Hard Bed)	-	-	-	14	1.0

5.4 Probable Mining

Section 4.2 of E-MISC-2662-3 Network Rail Stage 2 Mining Report and CA Consultants Mining Report Ref 51003505309001 indicate that probable mine workings associated with Hard Bed and Soft Bed Coal Seams are within the Site (see Figure 7).

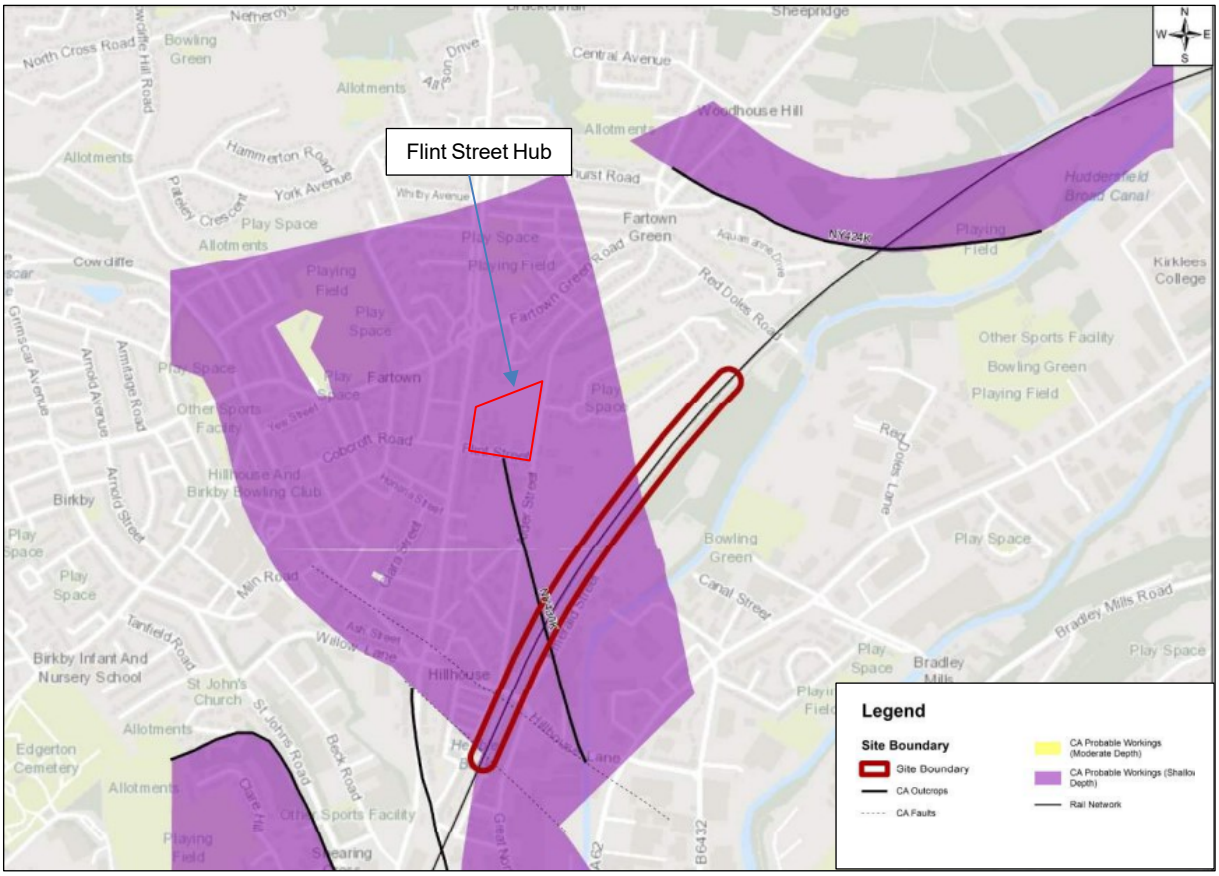


Figure 7 – Extract from E-MISC-2662-3 Showing Probable Workings Beneath the Site

Evidence provided in Hillhouse MRA (151667-TSA-31-MVL3-REP-W-GE-030400) suggest that the Hard Bed Coal Seam beneath the site may have been worked (see Figure 8). Also, approximately 127.0m southeast of the Site, old workings considered to be the Hard Bed Coal Seam was encountered in the BGS boreholes between 12.0m to 14.0mbgl with a worked thickness of up to 1.0m.

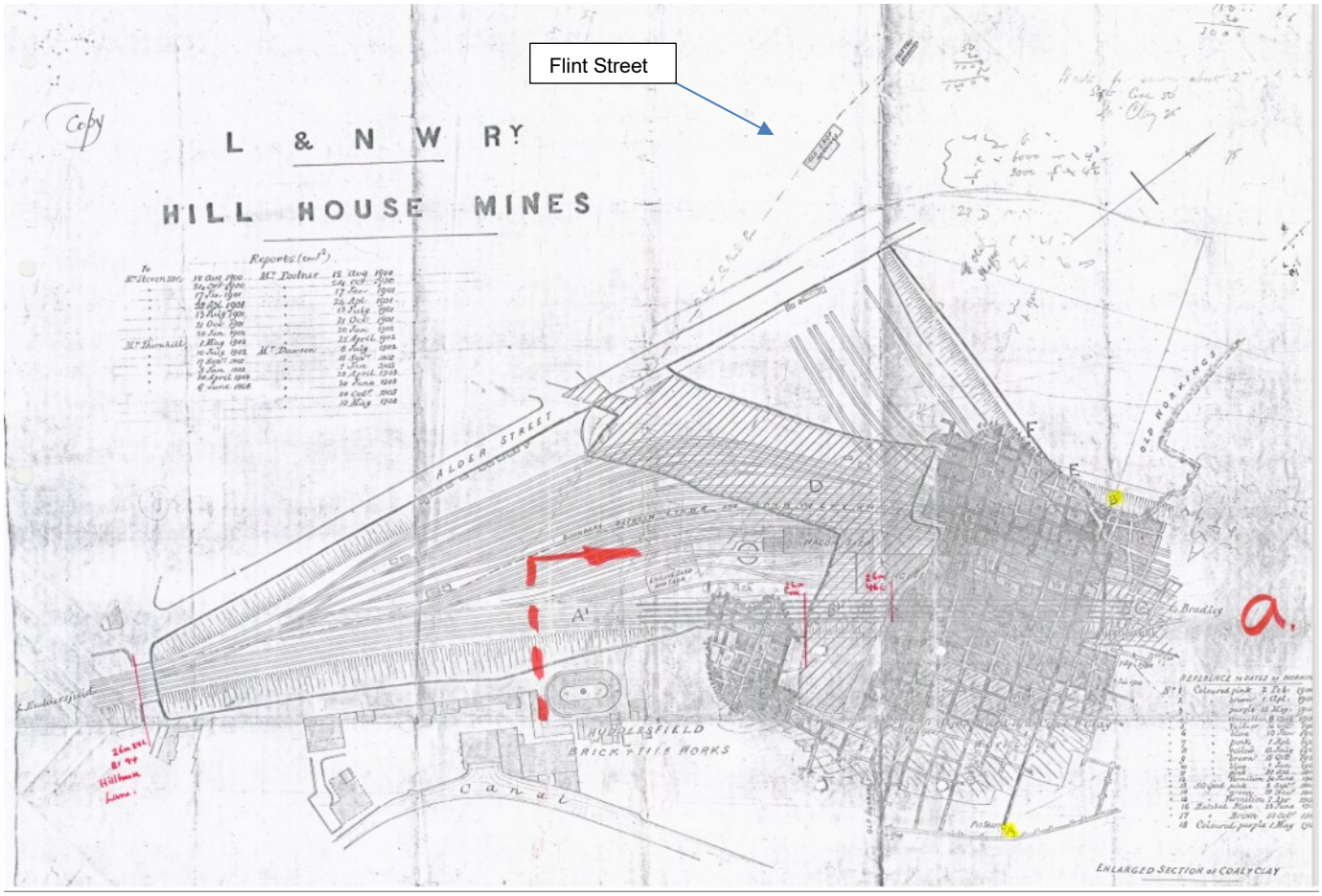


Figure 8 – Extract from Hillhouse MRA showing possible worked Hard Bed

The BGS, and historical maps of the area, have also been checked, with no evidence of other minerals identified:http://mapapps2.bgs.ac.uk/geoindex/home.html?topic=Minerals. It is therefore unlikely that mining of mineral resources, other than the coal seams that have been considered, affect the local area.

5.5 Unrecorded Mine Entries and Underground Workings

It is considered that the risk to the TRU proposals for the Flint Street Hub from unrecorded mine entries and underground workings is low following a review of the available information, however there is the potential for unrecorded shallow workings associated with the coal outcrop that is recorded in the source data. Despite the minimal risk, unrecorded entries and underground workings cannot be discounted and therefore continued vigilance is required when undertaking works.

5.6 Current & Proposed Underground Mining

There are currently no ongoing mining operations in the vicinity of the Site. At the time of preparing this report it is understood that there are no new proposed mining operations within the vicinity of the Site. Should coal extraction commence within the vicinity of the Site, this risk assessment should be re-considered to account for this.

5.7 Mine Gas Emission

Information included in the CA (now MRA) Consultants Mining Report Ref 51003505309001 indicates there was no mine gas recorded withing 500m of the site boundary, however, this does not mean that mine gas is not present within the vicinity.

There are only limited recorded superficial deposits beneath the Site, and it is known the solid geology is shallow. It is possible for mine gases to migrate through the sub-surface via fractures or permeable strata or mine shafts and adits where present and with little to no overlying superficial material, this could migrate into the Site and surroundings.

5.8 Spontaneous Combustion and Underground Fire Risks

Spontaneous combustion of coal seams is only considered to be a risk if the coal seam is being entered, worked or disturbed and would be dependent on the methods used. It is considered that the proposals for this site do not require excavations for foundations therefore the coal seams would not be disturbed or pose a risk from spontaneous combustion.

5.9 Mine Infrastructure and Tip Risks

Information on the CA (now MRA) Consultants Mining Report Ref 51003505309001 indicate there were no remediated sites within 50m of the Site boundary.

5.10 Subsidence Effects

If coal has been extracted beneath ground level is likely to lead to movement of the ground in the form of subsidence either via widespread trough subsidence or localised subsidence from crown collapse. The magnitude and time taken for subsidence to occur can be influenced by extraction method (e.g. longwall or pillar and stall), depth to the workings, age of the workings and overlying geology.

Pages 133 and 134 of CIRIA C758D indicate that the 10 x seam thickness (10T) is a conservative approach for assessing the extent of subsidence upwards from pillar and stall workings. It should be noted that 10 x seam thickness relates to roof failure alone and is a general rule for guidance only. Similarly, for longwall workings, page 144 suggests using an angle of draw of 35° from the seam to determine the area affected by subsidence. It further suggests that ground movement from mining activities is unlikely to be measurable beyond a distance of 0.5 x the seam depth, from the edge of the seam itself.

The Flint Street Hub is considered to be underlain by known workings in the Soft Bed Coal Seam (27-52mbgl) with potential for unrecorded probable workings in both the Soft Bed and Hard Bed coal seams.

Workings or mine entry collapse (or ‘crown hole development’ of either recorded or unrecorded mine shafts) is usually preceded by surface indicators such as deformation or trough subsidence above the shaft or workings. There is no visible evidence of subsidence on the Site, and even if issues are obscured by surface features (concrete, tarmac or other man-made features), no excavation is planned for the installation of the

temporary modular single tier office with parking and charging facilities. Additionally, the previous use of the site had a permanent masonry two storey structure which was demolished in December 2023; therefore, no additional loading would be applied.

5.11 Determining Acceptable Cover

CIRIA (2019) guidance indicates 10:1 rock cover to extracted thickness is a generally accepted rule of thumb as a conservative limit whereby crown holes are extremely unlikely to propagate beyond this thickness above workings (also quoted as 10t, where t = the worked thickness). This assumes roof failure is the most likely method of failure. There are other references that propose this ratio could be significantly smaller, 3t to 5t depending on the form of the collapse and bulking factor. Taylor, 1975, Walton and Taylor, 1977 and Walton and Cobb, 1984, all provide evidence for less than 10t being adequate. They suggest between 6t and 8t as reasonable upper limits to migration. However, the CIRIA guidance is the primary guidance document, and this recommends 10t, although notes a site-specific cover ratio may be deduced.

Possible Void Migration Calculation

A calculation of possible void migration using information from BGS borehole data (see Table 7) is detailed below. The calculations below consider a worst-case scenario where SE11NW159 recorded old workings in SB Coal at approx. 27 00m bgl. Assuming Flint Street is at the same level as the location of SE11NW159, a potential void collapse could reach the ground surface (0.00mbgl) as follows:

Maximum recorded seam thickness = 1.0m

1.0 x 10 = 10.00

27 – 10.00 = 17.00mbgl

The cover is acceptable therefore there is a low risk of void migration from underground workings - SB

It should be noted that 10x seam thickness rule is not an absolute and void migration may influence the surface from deeper levels. For example, a 10x seam thickness cover might not adequately protect from widespread trough subsidence.

A summary of the mining risks for the Flint Street Hub is presented in Table 8 to 10.

This risk assessment is confined to the construction boundaries only, as this is the envisaged location of any planned intervention.

Where the risk has been classified as medium or high, there is need to undertake a ground investigation to inform the assessment.

Table 8 – Mine entries risk assessment matrix

Mine Entry Risk	Reasoning
Low Risk	Zone of influence > 10 m away from construction boundary
Medium Risk	Zone of influence intersects construction boundary. Mine entry located outside of construction boundary
High Risk	Zone of influence encompassing construction boundary

Table 9 – Mine workings risk assessment matrix

Mining Risk	Reasoning
Low Risk	Cover Ratio ≥ 10:1
Medium Risk	Cover Ratio assessment lacking GI data
High Risk	Cover Ratio <10:1

Table 10 – Summary of Mining Risks

Mining Features	**Proposed Intervention**	**Mining Risk**
Mine Entry Mine entry approximately 20m to the site	Installation of a single tier modular 80 desk office inclusive of a 150-person multipurpose briefing room (same facility) including parking arrangements, EV charging stations, LED lighting; and Utility Connections	Low Risk
Mine Working Soft Bed Clay present with more than 10T covering		Low Risk
Shallow Working Hard Bed may have been worked to the outcrop but any settlement due to that is anticipated to have completed		Low Risk

6. CONCLUSIONS AND RECOMMENDATIONS

Two No. coal seams are recorded in the area of Flint Street Hub: Halifax Hard or (Hard Bed), and Halifax Soft (or Soft Bed).

A review of the BGS historical boreholes generally correlates with the information from Network Rail and CA (now MRA) and confirms the ground model and named coal seams.

There is no historic evidence of shallow mining directly beneath the site, however CA (now MRA) records indicate the Soft Bed Coal Seam is worked at a moderate depth (circa 27.0m to 52.0mbgl) and potentially the Hard Bed Coal Seam present (see Figure 6 and Table 5 of E-MISC-2662-3 Network Rail Stage 2 Mining Report) is probably worked. 'Old Coal workings' (information on BGS historical borehole logs) was also encountered southeast of the Site at shallower depths varying between 12.0m and 14mbgl with thicknesses varying between 0.9m to 1.0m with insufficient 10:1 rock cover to extracted thickness. This confirms the information in the BGS regional memoir that the 'Hard Bed' had been worked to outcrop in the area. Any settlement due to that is anticipated to have concluded.

The Soft Bed Clay is present with more than 10T cover, therefore there is a low risk of void migration from underground workings

This Mining Assessment Report considers that the risk associated with historic mining at this site is not increased by interventions proposed as part of this Flint Street Hub temporary development

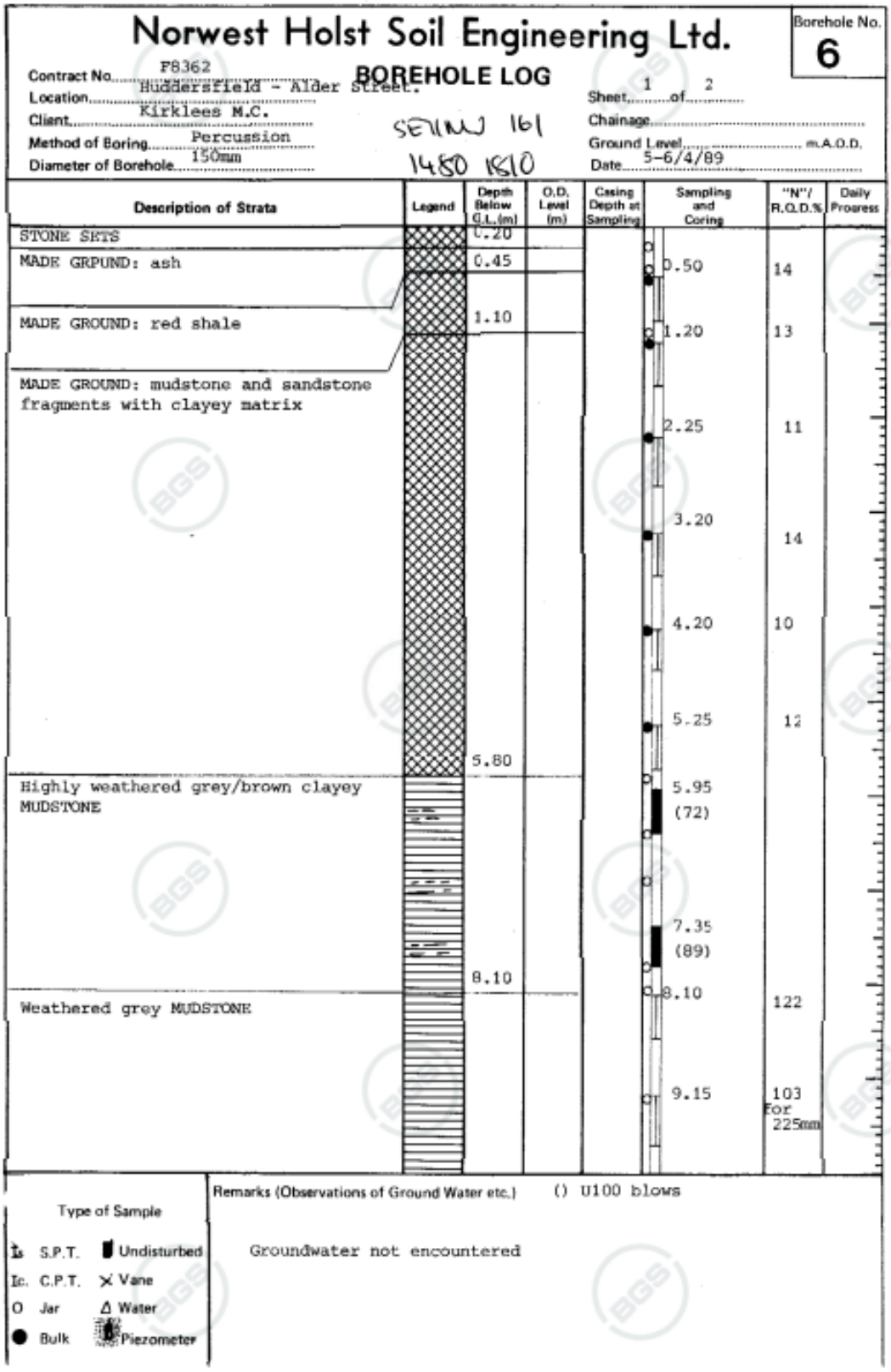
- The known mine entries 429944 recorded by CA as 414418-001) and 429946- recorded by CA as 41418-003 and their zone of influence are not considered to pose a risk to the proposed temporary modular office with parking and charging facilities .
- The proposed works are not intrusive.
- There is no visible evidence of subsidence on the Site, and even if issues are obscured by surface features (concrete, tarmac or other man-made features), no excavations are planned for the installation of the temporary modular facility.
- The previous use of the site had a permanent structure which was demolished in December 2023, therefore no additional loading would be applied.
- The emission of gasses is unlikely to pose a risk to the proposed works or to workers during construction, as there are no excavations or confined / enclosed spaces within the works. As there are areas where airflow could be reduced, during maintenance and use of the office and assembly facility consideration should be given to gas monitoring and appropriate PPE.

It is not considered that any further ground investigation is required at this site to provide further mining assessment with respect to the development proposals detailed above. However, should the site use change with more significant development, excavations and structural loading, then appropriate ground investigation will be required in order to reassess the mining risk.

APPENDIX A – STAGE 2 NETWORK RAIL MINING REPORT OBTAINED FOR HILLSIDE SIDINGS

E-MISC-2662 Level 2 Mining Report and Attachments.zip

APPENDIX B – EXTRACT OF BGS EXPLORATORY HOLE PLAN AND HISTORICAL BOREHOLE LOGS



Norwest Holst Soil Engineering Ltd.

Borehole No. 6

BOREHOLE LOG

Contract No. F8362
Location Huddersfield - Alder Street.
Client Kirklees M.C.
Method of Boring Percussion
Diameter of Borehole 150mm

SE1NW 161
1480 1810

Sheet 1 of 2
Chainage
Ground Level m.A.O.D.
Date 5-6/4/89

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/ R.Q.D.%	Daily Progress
STONE SETS		0.20					
MADE GROUND: ash		0.45			0.50	14	
MADE GROUND: red shale		1.10			1.20	13	
MADE GROUND: mudstone and sandstone fragments with clayey matrix					2.25	11	
					3.20	14	
					4.20	10	
					5.25	12	
		5.80			5.95 (72)		
Highly weathered grey/brown clayey MUDSTONE					7.35 (89)		
		8.10			8.10	122	
Weathered grey MUDSTONE					9.15	103 For 225mm	

Type of Sample

Is S.P.T. ■ Undisturbed
Ic. C.P.T. × Vane
O Jar △ Water
● Bulk Piezometer

Remarks (Observations of Ground Water etc.) () U100 blows

Groundwater not encountered

Norwest Holst Soil Engineering Ltd.

Borehole No. 6

BOREHOLE LOG

Contract No. P8362
Location Huddersfield - Alder St.
Client Kirklees M.C
Method of Boring Percussion
Diameter of Borehole 150mm

SE11NW 161

Sheet 2 of 2
Chainage
Ground Level m.A.O.D.
Date 6/4/89

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/ R.Q.D.%	Daily Progress
Weathered grey MUDSTONE					10.20	56 for 75mm	
					11.20	79 for 150mm*	
		12.00					
Soft grey mudstone fragments with clayey matrix (Old workings)					12.20	6	
		12.90					
Pale grey MUDSTONE					13.00	59 for 150mm	
		13.95			13.90	50 for 75mm*	

Type of Sample

S.P.T. Undisturbed
C.P.T. Vane
Jar Water
Bulk Piezometer

Remarks (Observations of Ground Water etc.)

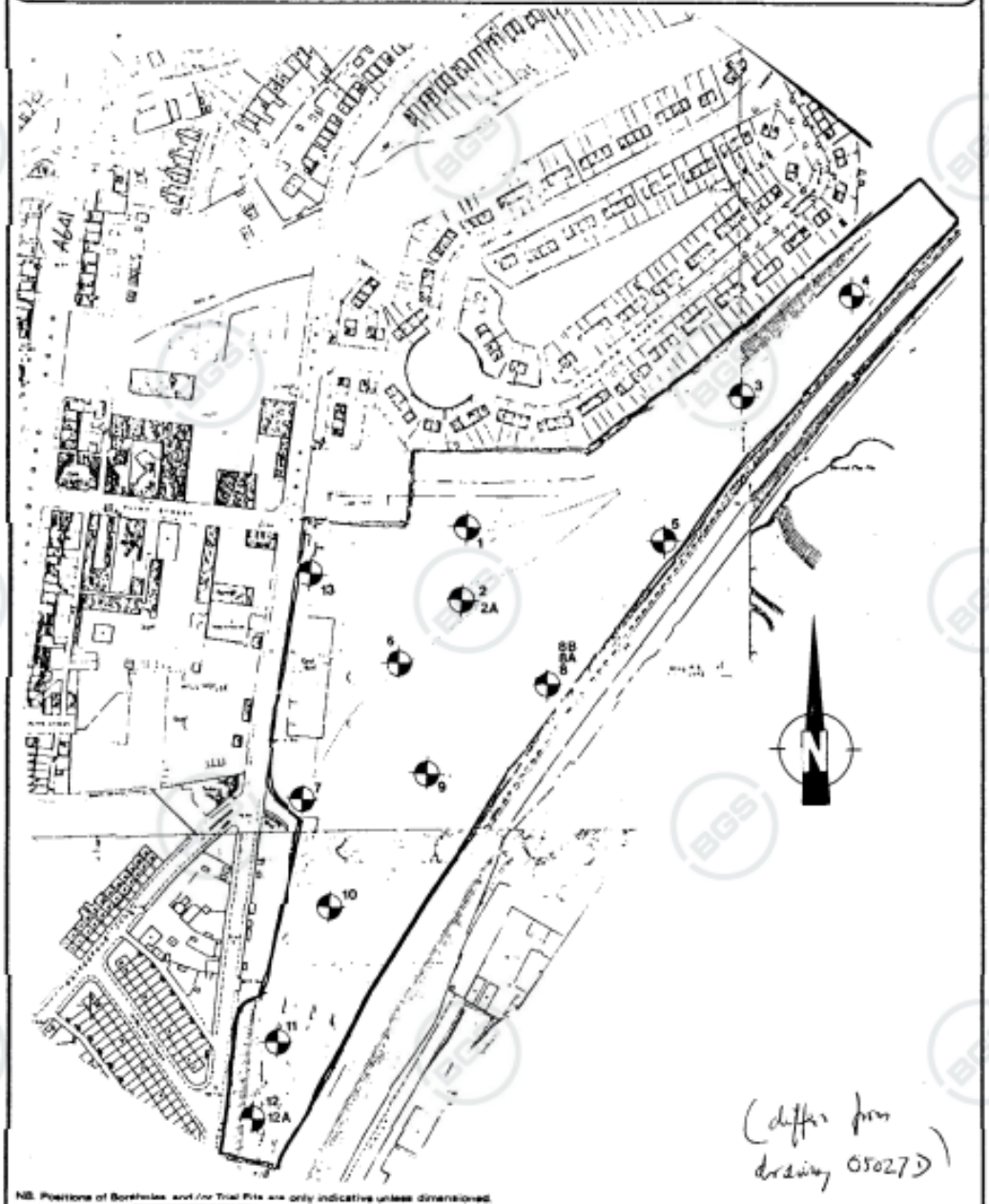
* seating blows only

SE11NW 158-168

Norwest Holst Soil Engineering Ltd

GROUND INVESTIGATION

Client; KIRKLEES M.C. Location; ALDER STREET HUDDERSFIELD



NB. Positions of Boreholes and/or Trial Pits are only indicative unless dimensioned.

Contract No; F8362	Title; BOREHOLE LOCATION PLAN	Fig; 1
Scale; N.T.S.		

REF: 1000/88

Norwest Holst Soil Engineering Ltd.

Borehole No. 13

Contract No. F8362
Location Huddersfield - Alder St.
Client Kirklees M.C.
Method of Boring Percussion
Diameter of Borehole 150mm

BOREHOLE LOG

SE11NW 168.
NTS 1815

Sheet 1 of 1
Chainage
Ground Level m.A.O.D.
Date 14/4/89

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/ R.Q.D.%	Daily Progress
STONE SETS		0.20					
MADE GROUND: ash and red shale		0.70			0.45 D C	10	
Firm brown silty CLAY					1.00 D (20)		
					2.45 D (27)		
		3.60			3.75 D	68 for 150mm	
Weathered grey MUDSTONE					S		
					4.70 D S	92 for 125nm	
		5.00					

Type of Sample

S	S.P.T.	■	Undisturbed
C	C.P.T.	×	Vane
O	Jar	Δ	Water
●	Bulk		Piezometer

Remarks (Observations of Ground Water etc.) () U100 blows

Groundwater not encountered

YORKSHIRE RIVER AUTHORITY – Survey of Existing Boreholes

I.G.S. Ref. No ..... N.G.R. SE 1490 1815..... Licence No.

OWNERS NAME .....

ADDRESS .....Hillhouse.....
.....Huddersfield.....

App No

Authorised Abstractic

g.p.h.
g.p.d.
m.g.d.

Depth	Thickns	STRATA DETAILS
		138'
		Salt Red Marl

Dia. .....
Depth .....
Lining .....
Well sinker .....
Date .....
R.W.L. .....
Date .....

INSPECTION REPORT	WATER QUALITY	DATE OF INSPECTION:-
Present Owners-	Date	Other Comments:-
Access (Yes or No)	pH	
4" Probe	Total hard	
3" Instruments	Temp.hard	
Landrover	Alk.	
Access Agreed	Ca	
	Mg	
	Na	
	K	Sketch Plan of Location
Water Level at time of insp.	HCO_3	
..... metres below	SO_4	
Date	Cl	
Datum above O.D.	NO_3	
R.W.L. above O.D.	Fe	
Date		

British Geological Survey

BGS ID: 41066 : BGS Reference: SE11NW19
British National Grid (27700) : 414876,418118

YORKSHIRE WATER AUTHORITY – Survey of Existing Boreholes

I.G.S. Ref. No SE.11.NW/19 N.G.R. SE.1488..1811.....

Licence No.

OWNERS NAME ..L.M.S. Railway Co

ADDRESS .(Engine..Shed).......................

..Hillhouse.,.Huddersfield...............

OD. 235'

App No

Authorised Abstraction

g.p.h.
g.p.d.
m.g.a.

STRATA DETAILS	Thick	Depth
Made ground	3'6"	
Blue shale	[illegible]	78'6"
Rocky fireclay	1'	83'6"
Blue shale	1'6"	93
Grey gritstone	10	103
Blue shale	30	138
COAL	2'	140
Rocky fireclay	5'	146
Laminated gritstone and white rock	80	195
Blue sandy metal	52	247
Blue shale	41	288
Grey rock	6	292
Grey gritstone	83	375
Blue sandy metal	111	386

Dia. 24".........
Depth 593'.........
Lining 20" x 450'.....
Well sinker Thom.
Date 1936.........
R.W.L. 84'..........
P.W.L. 203'...12000gph

T_{ss} = 44 m²/d

British Geological Survey

BGS ID: 41246 : BGS Reference: SE11NW159
British National Grid (27700) : 414840,418140

Norwest Holst Soil Engineering Ltd.

Borehole No. **2A**

BOREHOLE LOG

Contract No. F 8362
Location Huddersfield - Alder St.
Client Kirklees M.C.
Method of Boring Percussion
Diameter of Borehole 150mm
SE11NW 159
Sheet 1 of 2
Chainage
Ground Level m.A.O.D.
Date 14/4/89

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/ R.Q.D.%	Daily Progress
MADE GROUND: red shale		4.10					
Weathered grey MUDSTONE					4.60	50 for 50mm	
					5.65	83 for 150mm *	
					6.60	74 for 150mm *	
					7.60	50 for 50mm	
					8.65	75 for 150mm *	
					9.60	56 for 75mm	

Type of Sample

Is S.P.T. ■ Undisturbed
Ic. C.P.T. × Vane
O Jar △ Water
● Bulk Piezometer

Remarks (Observations of Ground Water etc.) * Seating blows only

Overnight standing level 5.00m

British Geological Survey

BGS ID: 41246 : BGS Reference: SE11NW159
British National Grid (27700) : 414840,418140

Norwest Holst Soil Engineering Ltd.

Borehole No. **2A**

Contract No. P8362 **BOREHOLE LOG**
Location. Huddersfield - Alder St.
Client. Kirklees M.C.
Method of Boring. Percussion
Diameter of Borehole. 150mm

SE11NW 159

Sheet 2 of 2
Chainage.
Ground Level. m.A.O.D.
Date. 9/10/11/4/89

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/ R.Q.D.%	Daily Progress
Weathered grey MUDSTONE					10.65	90for 150mm	
					11.80	84 for 150mm*	
					12.70	84 for 150mm*	
					13.60	50for* 50mm	
		14.00					
Soft grey mudstone fragments with clayey matrix (Old workings)					14.20	3	
		15.00			15.05	50for* 50mm	
Pale grey MUDSTONE		15.35					

Type of Sample

S	S.P.T.	U	Undisturbed
C	C.P.T.	V	Vane
O	Jar	W	Water
B	Bulk	P	Piezometer

Remarks (Observations of Ground Water etc.) * seating blows only

Water rapidly drained into old workings.

Water levels may exhibit seasonal or tidal variations and should not be taken as constant

APPENDIX C – CONSULTANTS MINING REPORT (REF 51003505309001)

151667-TSA-W3-MVL3-RSA-W-GE-000002

APPENDIX D – LINK TO W3 HILLHOUSE SIDINGS MINING EVIDENCE (PG 16)

151667-TSA-31-MVL3-REP-W-GE-030130

APPENDIX E – LINK TO HILLHOUSE SIDINGS PROBABLE WORKINGS PLAN, GEOLOGICAL CROSS SECTION

151667-TSA-31-MVL3-REP-W-GE-030126

TRANSPENNINE ROUTE UPGRADE

NetworkRail

www.networkrail.co.uk