

REPORT ON COAL MINING RELATED SITE INVESTIGATIVE WORKS
UNDERTAKEN ON LAND AT
LITTLEBOROUGH FIRE STATION, WHITELEES ROAD, LITTLEBOROUGH OL15 8DU

Prepared for:-

**LK Consult Limited
29 Eton Business Park
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M26 2ZS**

On Behalf Of:-

Bradshaw, Gass & Hope LLP

**The Land Consultancy Limited
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**T253 SFK (TLC1169) rep MT LKConsult 280921
October 2021**

**Project Quality Assurance
Information Sheet**

Report on Coal Mining Site Investigative Works undertaken on Land at Littleborough Fire Station, Whitelees Road, Littleborough OL15 8DU.

Report Number : TLC1169

Report Status : Final

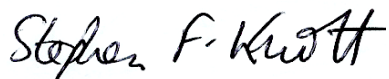
Survey Dates : 13th to 15th September 2021

Report Date : October 2021

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Written by : _____
Stephen F. Knott B.Sc. (Hons), Ph.D., F.G.S.
Director

Report Issue Record		
Revision	Date of Issue	Comments
0	04/10/2021	First Issue

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1.0 INTRODUCTION

- 1.1 LK Consult Ltd has been appointed to support a planning application, on behalf of Bradshaw, Gass & Hope LLP, for the refurbishment and extension of an existing fire station located at the following address: Whitelees Road, Littleborough OL15 8DU. A site boundary plan displaying the proposed development is indicated on Drawing No. TLC1169/03 in Appendix A.
- 1.2 A coal mining risk assessment¹ dated July 2021 was issued for the site by LK Consult Ltd which indicated that the proposed development was potentially at risk from future coal mining related ground subsidence. After reviewing this report, LK Consult Ltd approached TLC to look at the potential for the site to be affected by shallow coal seams/workings and mine entries, and to provide advice related to investigating the site using rotary drill holes.
- 1.3 TLC was subsequently instructed by LK Consult Ltd to investigate the site for historical mining related legacy issues. Specifically, LK Consult's remit to TLC included:
- Scoping the amount of site investigation work required to investigate the property for shallow coal seams/workings;
 - Obtaining permission from the Coal Authority to carry out the site investigation work; and,
 - Producing a factual and interpretive report on the findings of the site investigation work. This report would indicate whether the site is actually affected by shallow coal seams/workings, and whether the consolidation of shallow workings/potential workings is necessary prior to development works proceeding.

1.5 Limitations

- 1.5.1 The assessment and interpretation of the factual data obtained as part of this investigation has been undertaken in accordance with generally accepted consulting practice, and in line with the following document: CIRIA, C758D dated 2019 and entitled 'Abandoned mine workings manual'.
- 1.5.2 The conclusions and recommendations made in this report are limited to those which can be made based on the findings of this survey and information provided by third parties. TLC assumes all third-party data to be true and correct. No responsibility can be accepted by TLC for inaccuracies in the information supplied by any other party.
- 1.5.3 Ground conditions can change rapidly, especially in areas of Made Ground; however, it is assumed that the ground conditions observed are typical and representative of the site as a whole. The ground conditions have been determined from a limited number of exploratory holes, therefore only a small percentage of the total area of the property has been investigated. Conclusions drawn from the ground investigation should be read in this context. TLC cannot accept responsibility for any situations resulting from locally unforeseen ground conditions occurring between exploratory holes.
- 1.5.4 This report is written in the context of an agreed scope of works and should not be used in a different context. Furthermore, new information, improved practices and changes in legislation may require a re-interpretation of the report in whole or in part after its original submission. TLC reserves the right to alter its conclusions and recommendations in the

¹ LK Consult Ltd report dated July 2021, referenced LKC 21 1310 and entitled 'Littleborough Fire Station', 'Desk Based Coal Mining Risk Assessment'. This report was completed on behalf of the Bradshaw, Gass and Hope LLP.

light of further information which may become available. This report is provided for the sole use of the Client and is confidential to them and their professional advisors.

2.0 SITE LOCATION AND DESCRIPTION

- 2.1 The site is located within a residential setting within the Caldermoor district of north-west Littleborough. The development area can be centred approximately at the following coordinates: 393380E, 416670N and is accessed directly from Whitelees Road which forms the western site boundary, or from Hare Hill Road to the north-east via a short access road.
- 2.2 Site location plans are presented in Drawing Nos. TLC1169/01a and 01b in Appendix A, and an aerial image of the site, displaying the site in its current configuration, is presented in Drawing No. TLC1169/02.
- 2.3 The site is roughly rectangular in shape (orientated NE to SW) and has an area of $\approx 3,400\text{m}^2$.
- 2.4 The site is situated at an altitude of $\approx 155\text{m}$ AOD. The topography of the site and immediate surrounding area slope very gently down to the south-east.
- 2.5 The site comprises of an active fire station building which includes a training tower, as well as external areas of hardstood ground (car parking and access) and grass covered soft landscaping. The areas of grass landscaping at the rear of the site are $\approx 0.5\text{m}$ lower than the surrounding ground.

3.0 PUBLISHED GEOLOGY AND MINING SUMMARY

3.1 The likely site geology and mining situation (coal focussed), as determined by LK Consult Ltd and supplemented where possible by TLC, is summarised in the table below.

MADE GROUND	None indicated on BGS mapping.
DRIFT	Glacial Till (diamicton) is mapped across the centre and N of the site. Head deposits (diamicton) are indicated across the S.
ROCK	Carboniferous rock strata – Woodhead Hill Rock (sandstone) – BGS 1:10,000 and 1:50,000 scale mapping. Pennine Lower Coal Measures strata - Undifferentiated strata – 1:10,560 scale mapping. Undifferentiated strata comprise of cyclical sequences of sandstone, mudstone and siltstone with subordinate coal seams and seat earths; ironstone and marine bands can also be present.
ROCK DIP	No rock dips are indicated on BGS mapping in the immediate vicinity of the site. However, the outcrop patterns and stratigraphic column suggest that rock dip is shallow and southerly.
FAULTING	Although the property is not indicated to be affected by known faulting, numerous faults are depicted in the general area of the site which have affected the local geology.
COAL SEAMS	There are discrepancies between BGS 1:10,000 and 1:50,000 mapping and the 1:10,560 county series map (Lancashire Sheet 81SW). A coal mining report obtained by LK Consult from the Coal Authority has used the 1:10,560 plan for information on coal seam outcrop/sub-crop positions. The BGS maps do not indicate that coal seams sub-crop beneath the site. The nearest seam to the site is the NW-SE trending Bassy (a.k.a. Shale Bed) coal, which is shown to sub-crop ≈38m to the SW. The Six-Inch coal seam is indicated to sub-crop ≈250m to the NE. Given a southerly rock dip angle, the Bassy coal seam would not be expected to be present beneath the site; the Six-Inch coal seam could be present beneath the site, although it is not possible to say at what depth (due to the lack of rock dip information). The 1:10,560 scale map indicates that the NW-SE trending Lower Foot (a.k.a Little) coal seam sub-crops through the centre of the site. This plan shows a coal seam to sub-crop ≈50m to the NE and the Six-Inch coal seam to sub-crop ≈250m to the NE of the site. The coal seam ≈50m NE is labelled as the Yard on the 1:10,560 plan but is called the Bassy by the Coal Authority (CA). If the sub-crop position of the Lower Foot coal seam is correct, this coal seam will be present beneath the site at very shallow depth to the S of its sub-crop position. With a southerly rock dip angle there is also potential for the Bassy coal seam to be present beneath the site at shallow depth. The 1:10,560 scale plan suggests that the Six-Inch coal seam will not be present beneath the site at shallow depth. The 1:10,560 plan shows the Lower Mountain coal seam to sub-crop ≈80m to the SW of the site. With a southerly rock dip angle this coal seam will not be present beneath the site. The BGS publication 'Geology of the Rochdale district: a brief explanation of the geological map Sheet 76 Rochdale' dated 2010 provides the following information: - The Lower Foot (a.k.a. Little) coal seam is 0.0 to 0.8m thick and has been subject to mine and crop workings; - The Bassy (a.k.a. Shale Bed) coal seam is 0.0 to 1.2m thick and has been subject to mine and crop workings; - The Six-Inch coal seam is 0.0 to 0.3m thick and has been subject to crop and open cast workings. A further imperersistent coal seam is indicated between the Bassy and the Six-Inch coal seams – the Margery coal seam. The Margery coal seam is indicated to be 0.0-0.2m thick and has not been worked.
COAL AUTHORITY (CA) INFORMATION	The CA indicate that: - The NE portion of the site is located within a Development High Risk Area which is associated with an area at risk from unrecorded probable shallow coal workings (<i>within the Bassy coal seam – TLC</i>). - Known coal workings are not present beneath the site. - No known mine entries are located within at least 100m of the site. - The site and surrounding area are not affected by known fissures or breaklines. - The site and immediate surrounding area are not affected by known opencast coal mining. It should be noted that CA records are incomplete prior to 1872.
BGS BOREHOLES	A historical borehole sunk in 1990 ≈255m to the SW of the site encountered Glacial drift deposits (horizons of clay, gravel and sand) to 8.80m bgl over Coal Measures Strata that were proven to 75m bgl. Mine workings were recorded as having been penetrated between 39.8-40.2m bgl.
OTHER INFORMATION	The CA do not specifically indicate that the coal seams indicated above are at high risk of succumbing to spontaneous combustion when entered into, worked or disturbed. However, the CA states that within the Lancashire coalfield, there could be a risk of spontaneous combustion where roof coal has been left following working. The CA also say that the majority of lower risk coal seams could also be at risk from suffering from spontaneous combustion depending upon the method by which they have been entered, worked or disturbed. Historical maps reviewed by LK Consult identified a former coal pit ≈85m W of the site. No further mining related features were identified within close proximity to the property.

3.2 In summary, desk study information suggests the proposed development is at moderate risk from ground subsidence related to roof collapse and surface crown hole formation over probable unrecorded shallow workings within the Lower Foot and Bassy coal seams. The risk to the proposed development from potential workings within any other coal seams is considered to be negligible to very low.

- 3.3 The site is not at risk from recorded mine entries. However, the site is considered to be at low risk from unrecorded mine entries.

4.0 FIELDWORKS

4.1 Open Hole Rotary Drilling

- 4.1.1 Open hole rotary drilling, to determine whether the property is actually affected by shallow coal seams/workings, has been undertaken at 3no. locations (RH1 to RH3) beneath/adjacent to the footprint of the proposed extension area to 40m bgl.
- 4.1.2 The drilling works were undertaken by Taylor Drilling Services Ltd between the 13th and 15th September 2021, using a Commachio 205 rotary drilling rig fitted with a pcd drill bit. A recirculated water flushing medium was used.
- 4.1.3 Drill hole locations are indicated on Drawing No. TLC1169/02 in Appendix A and the logs are presented in Appendix B.
- 4.1.4 The rotary holes were sited away from known service runs (LK Consult Ltd had obtained service plans and made these available to TLC). Hole locations were cleared with a cable avoidance tool. As a final check for services, hand pits were excavated to 1.20m depth. Rotary drilling commenced from the base of each hand pit.

4.2 General

- 4.2.1 Prior to drilling, permission to intersect shallow coal seams beneath the site was first obtained by TLC from the Coal Authority. The permit certificate is presented in Appendix C.
- 4.2.2 During drilling operations, gas readings were taken at regular intervals from around the mouth of the drill hole and from around the rig using a calibrated gas analyser.
- 4.2.3 Upon reaching completion depth, all drill holes were backfilled with a mixture of arisings and bentonite.

5.0 GROUND CONDITIONS

5.1 Topsoil

- 5.1.1 Topsoil was encountered at the surface of each rotary drill hole and was penetrated at a depth of 0.20m.

5.2 Drift - Glacial Deposits

- 5.2.1 A typically light brown CLAY deposit was encountered beneath the topsoil which was penetrated at depths of either 8.80m (RH1) or 9.00m (RH2 and RH3). This material is considered be of glacial origin.
- 5.2.2 This material was recorded to contain silty bands in RH1 and was observed to contain sand and gravel horizons in RH2 and RH3.

5.3 Coal Measures Strata (CMS)

- 5.3.1 CMS, comprising primarily of horizons of MUDSTONE, SILTSTONE and SANDSTONE, was recorded beneath the drift cover and proven to a depth of 40.00m bgl within each drill hole. Coal seams were also encountered within the drill holes as follows:
- RH1 – a 1.00m thick intact COAL seam was encountered at 17.00m bgl.
 - RH2 – a 0.90m thick intact COAL seam was encountered at 17.50m bgl.
 - RH2 – a 0.50m thick intact COAL seam was encountered at 31.50m bgl.
 - RH3 – a 0.90m thick intact COAL seam was encountered at 17.50m bgl.
- 5.3.2 It is considered that the seam encountered at either 17.00m or 17.50m bgl is the Bassy coal. Although the identity of the seam encountered in RH2 at 31.50m bgl is not clear, it could be the Six-Inch or Margery coal.
- 5.3.3 No evidence for the potential presence of coal workings was recorded. It should be noted that evidence for the presence of coal workings can include any of the following: partial or total loss of the flushing medium, 'loose' drilling, 'broken' drilling, 'fast' drilling, or a dropping of the drill string without rotation (indicating the presence of voids).

5.4 Groundwater

- 5.4.1 It was not possible to record groundwater strikes within the rotary holes during drilling operations due to the recirculated water flushing medium which was used.

5.5 Ground Gas

- 5.5.1 No detectable concentrations of methane, carbon dioxide, carbon monoxide or hydrogen sulphide, or any oxygen depletions were measured during rotary drilling operations.

6.0 CONCLUSIONS AND RECOMMENDATIONS

- 6.1 Desk study information suggested that the site would be underlain by Glacial drift (Glacial Till and Head deposits) over Coal Measures strata (CMS). The CMS was anticipated to comprise of Wood Hill Rock (sandstone) or undifferentiated Pennine Lower Coal Measures strata. Rock dip was expected to be shallow and southerly. Although the property was not indicated to be affected by faulting, faulting is shown in the general area which has complicated the local geology.
- 6.2 1:10,560 scale geological mapping indicated that Lower Foot coal seam (NW-SE trending) sub-crops (at rockhead) through the centre of the site, and that the Bassy coal seam sub-crops $\approx$ 50m to the NE. Both coal seams were expected to be present beneath the site at shallow depth.
- 6.3 The Coal Authority (CA) have no records of mining having had taken place beneath the site. However, the CA indicate that the NE section of the site is at risk from probable unrecorded shallow coal workings – these would be associated with the Bassy coal seam. No mine entries are recorded within influencing distance of the site. It should be noted that the CA's records are incomplete <1872.
- 6.4 In summary, TLC considered that the proposed development was at moderate risk from ground subsidence related to collapse of unrecorded workings within the Lower Foot and Bassy coal seams. The proposed development was considered to be very low or negligible risk from potential workings within any other coal seams. The site was not considered to be at risk from known mine entries and was considered to be at low risk from unrecorded mine entries.
- 6.5 To investigate the shallow coal mining risk to the proposed extension area, 3no. rotary drill holes (RH1 to RH3) were sunk to a depth of 40m bgl.
- 6.6 Topsoil (0.20m thick) overlay Glacial drift to either 8.80m or 9.00m bgl. CMS was then proven to 40.00m bgl within each drill hole. The drift typically comprised of a light brown CLAY containing silty and/or sand and gravel bands. The CMS comprised of horizons of MUDSTONE, SANDSTONE and SILTSTONE and coal seams.
- 6.7 The Bassy coal seam (0.90m or 1.00m thick) is considered to have been encountered in each drill hole at depths of either 17.00m or 17.50m bgl. A further coal seam (0.50m thick and possible representing the Margery or Six-Inch coal) was encountered in RH2 at 31.50m bgl. No evidence for these coal seams having had been worked was observed.
- 6.8 No evidence for the presence of the Lower Foot coal seam was recorded within the drill holes. TLC considers that this coal seam will most likely sub-crop to the south-west of the extension area and probably just to the south-west of the site.

6.9 Shallow Coal Mining

- 6.9.1 Shallow workings related ground subsidence events may manifest as localised crown hole collapses at the surface (which are related to workings roof failures), or can be associated with more extensive ground movements, typically associated with pillar collapse, floor heave, or a combination of roof and pillar failure. As there is limited evidence for structural damage caused by pillar failure compared with that resulting from roof collapses, the focus of engineering assessments of the potential for instability at the ground surface has focussed on roof collapses as the more likely mechanism of failure.
- 6.9.2 The limit height on void migration for roof collapses, where no appreciable surface subsidence can result is termed 'acceptable cover'. The calculation of the amount of

acceptable cover is determined by the worked thickness of the seam (t) and the amount of overlying rock cover (h) (and potentially overconsolidated Glacial Till cover – see below). The acceptable cover criterion is generally referred to as ht. The worked thickness of a coal seam (t) is often taken as being whichever is the greater of the following: 1.50m (the typical height of a mining roadway), or the coal seam thickness. It is noted that a thickness greater than that of the coal seam may have been extracted during mining – for example to remove a weak underlying seat earth horizon (for use as fireclay and/or to aid access through the mine).

- 6.9.3 According to CIRIA C758D, from the examination of mines within CMS, the height of collapse migration might exceptionally extend to 10t the height of the original extraction. As a result of this, the 10t criterion has been adopted by the industry as providing reasonable assurance against surface subsidence from roof collapses in old pillar and stall mines. However, there are documented cases (albeit rare) where migrations in excess of 20t have been observed.
- 6.9.4 According to CIRIA C758D, soils overburden can contribute to the mitigation of the extent of void migration, which is based on the capability of soils to bulk in a subsidence scenario. Specifically, it is noted that thick superficial deposits (>10m) of a more brittle nature (e.g. heavily over-consolidated Glacial Till), can contribute to stability where there may otherwise be marginally insufficient rock cover. CIRIA C758D states that a commonly accepted rule of thumb is that competent Glacial Till may provide a contribution to the rock cover equivalent to half its thickness. However, the CA adopts the rule that the rock cover contribution should be >80%. The implication of this is that soils cover alone may not be sufficient to prevent upwardly migrating roof collapses above pillar and stall workings from causing subsidence effects at the ground surface. For this site, the competency of the encountered Glacial clay has not been proven and therefore this material has not been used in the calculation of 10t.
- 6.9.5 CIRIA C758D lists a number of circumstances where the acceptable cover criterion may need to be increased from 10t. These include:
- Where the strata dip is >20°. This is unlikely to be the case on this site.
 - Where there are strong groundwater flows within workings and/or where there are rising or falling groundwater levels. The deep groundwater regime beneath the site is unknown.
 - Where multi-seam extractions have taken place. This is considered unlikely to have occurred beneath this site.
- 6.9.6 RH2 has proven that there is ≈21m of acceptable (rock) cover above the coal seam that was encountered at 31.50m bgl. As this is greater than the 15m of acceptable cover required to safeguard the proposed extension from potential future shallow coal mining related ground subsidence (calculated assuming a 1.5m high roadway is present beneath the site), the risk to the proposed development from unrecorded workings within this coal seam is considered to be very low.
- 6.9.7 The drill holes proved that there is either 8.20m or 8.50m of acceptable (rock) cover above what is considered to be the Bassy coal seam which was encountered at 17.00m or 17.50m bgl. As this is much less than the 15m of acceptable cover required to safeguard the proposed extension from potential future shallow coal mining related ground subsidence, the risk to the proposed development from unrecorded workings within this coal seam is considered to be moderate.

- 6.9.8 The proposed extension is not considered to be at risk from unrecorded shallow workings within the Lower Foot coal seam.
- 6.9.9 In summary, TLC considers that the proposed extension is at moderate risk of being affected by shallow coal mining related ground subsidence within unrecorded potential workings within the Bassy coal seam. To mitigate against this risk, it is advised that drilling and grouting works are carried out beneath and just beyond the footprint of the proposed extension (where access permits) on an ≈6m grid to consolidate any unrecorded workings; the grid would need to be tightened up in the event that large grout takes occur. Spread foundations, if used to support the proposed extension, should be suitably reinforced.

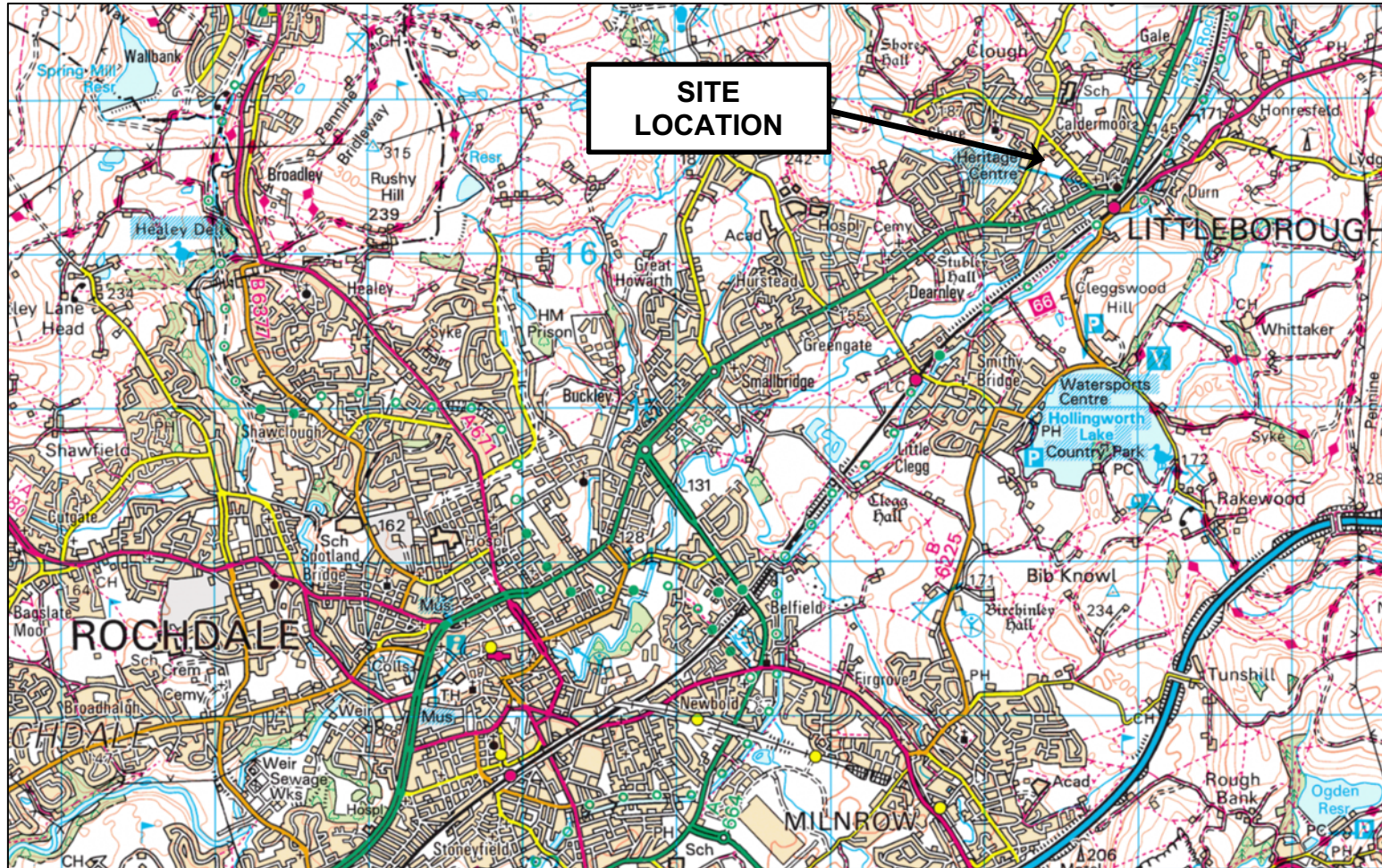
6.10 General Advice

- 6.10.1 A watching brief is recommended in all coal mining areas. On this site, TLC recommends that this should be carried out by responsible construction personnel. The watching brief should cover the period in which any earthworks, reduce level dig or foundation excavation works are being undertaken. Particular care should be taken to identify any potential features which may indicate the presence of shallow coal mining hazards.
- 6.10.2 Such hazards may include, but may not be limited to, features such as unexplained depressions or voids, outcropping coal seams, localised areas of deep made ground (which could represent backfilled areas of coal mining related ground subsidence, crown holes or mine entries), or unexpected man-made items at depth (e.g. brickwork, concrete, timber or steelwork).
- 6.10.3 Mine entries may manifest during excavation works as circular, square or rectangular areas of deep Made Ground (typically several metres in size) set against the natural lighter coloured natural strata (brown Glacial soils on this site). Mine shafts may also be covered with a large, thick concrete cap.
- 6.10.4 If any of the above features are identified during the course of the development works then work should be stopped to allow the mining engineer / consultant to assess them and, if necessary, design further or additional investigation and / or remediation works.

APPENDICES

APPENDIX A

DRAWINGS



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Project:

Littleborough Fire Station, Whitelees Road,
 Littleborough OL15 8DU

Title:

Site Location Plan

Scale:

Km Grid Squares

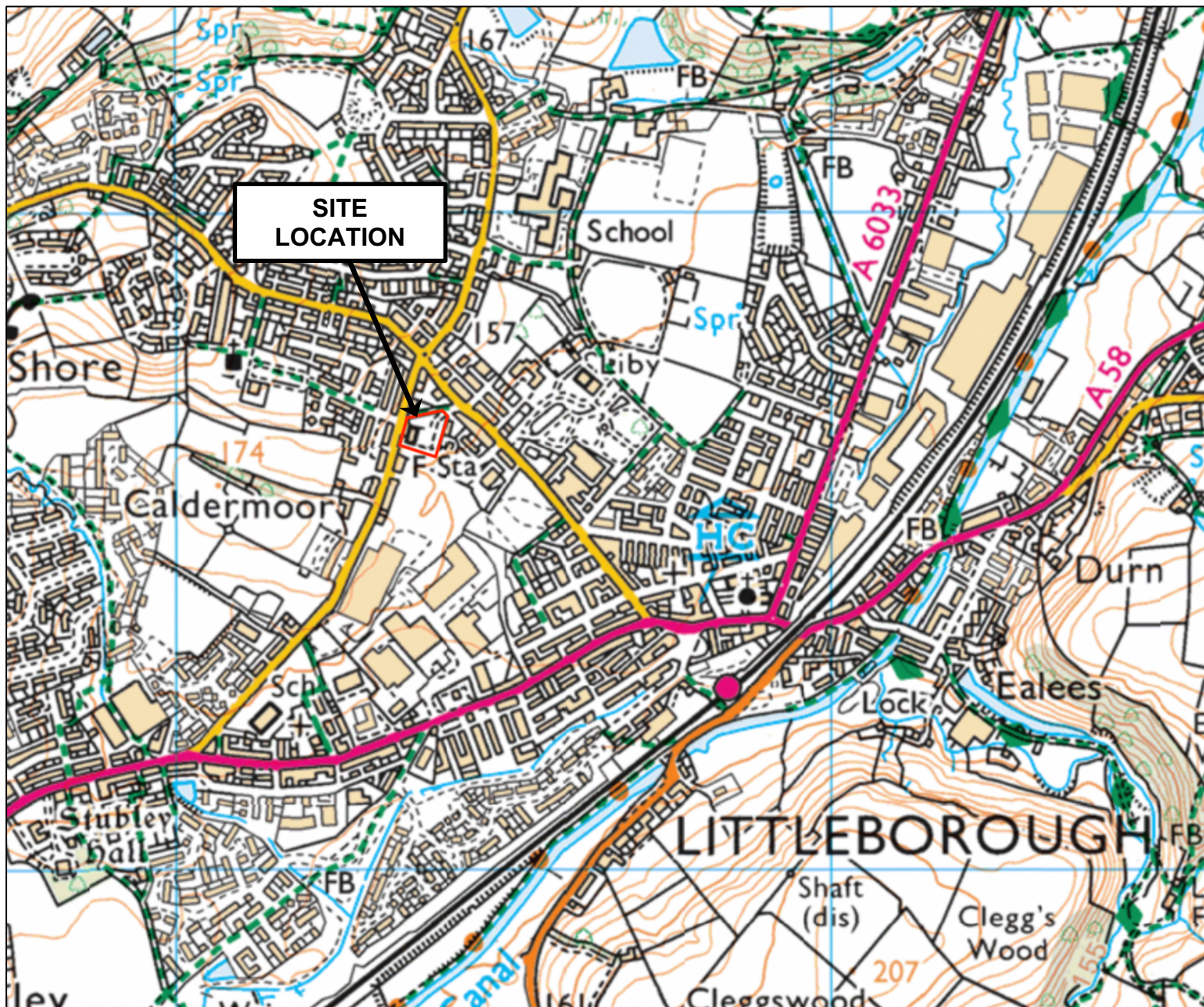
Drawn by:

SFK

Date:

27/07/2021

Drawing No.: TLC1169/01a



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Project:

Littleborough Fire Station, Whitelees Road,
 Littleborough OL15 8DU

Title:

Site Location Plan

Scale:

Km Grid Squares

Drawn by:

SFK

Date:

27/07/2021

Drawing No.: TLC1169/01b



Rotary drill hole locations.

THE LAND CONSULTANCY LIMITED

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Project:

Littleborough Fire Station, Whitelees Road,
Littleborough OL15 8DU

Title:

Google Earth Aerial Image displaying the Site
Boundary and Rotary Drill Hole Locations

Scale:

As Shown

Drawn by:

SFK

Date:

28/09/2021

Drawing No.: TLC1169/02



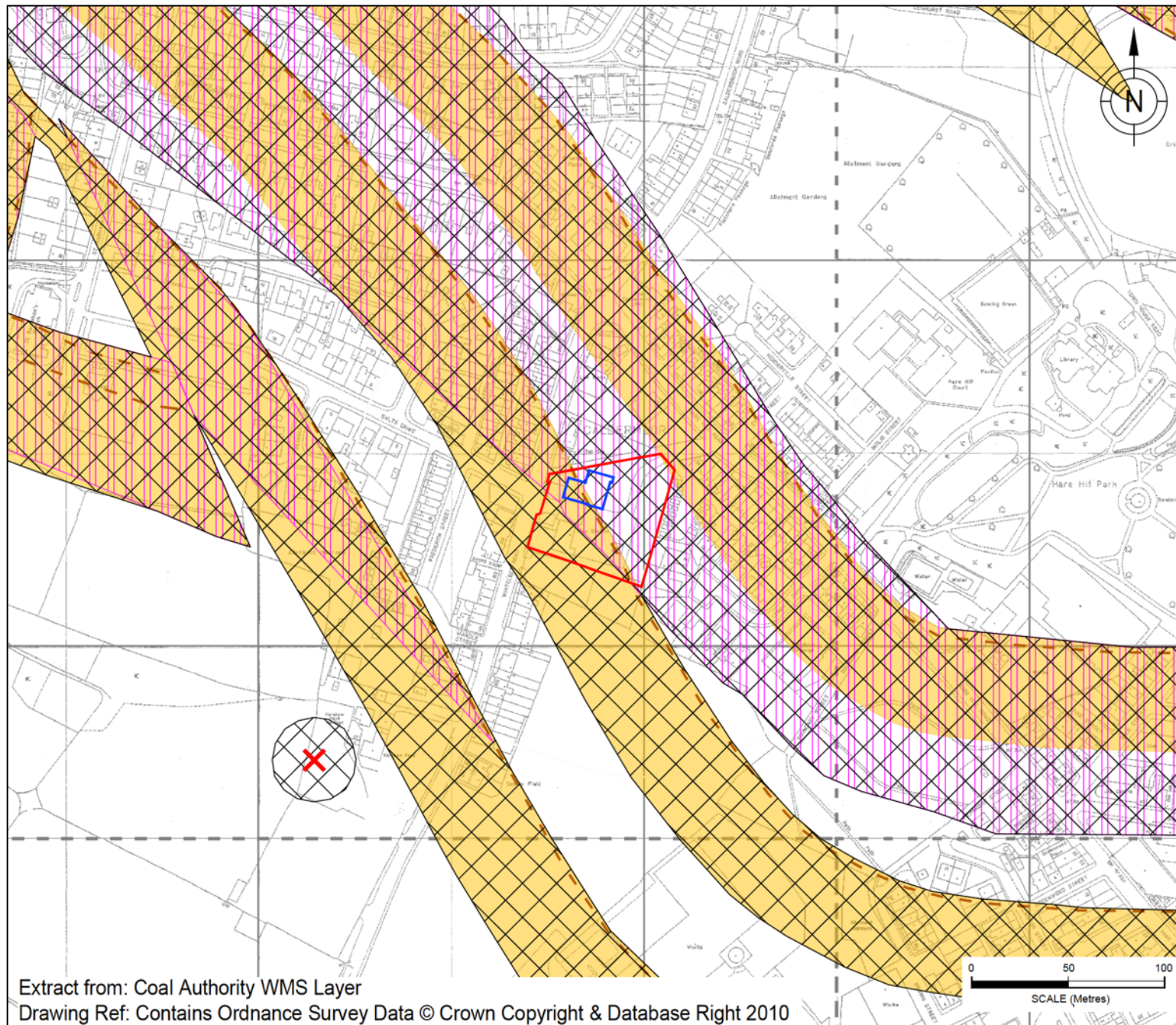
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Littleborough Fire Station, Whitelees Road,
Littleborough OL15 8DU

Proposed Development Plan

Date:
27/07//2021

Drawing No.: TLC1169/03



KEY

-  Site Boundary
-  Proposed Extension Area
-  DHRA (Development High Risk Area)
-  DHRA (Probable Shallow Mine Working)
-  Coal Outcrop
-  Mine Entry

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Project:

Littleborough Fire Station, Whitelees Road,
 Littleborough OL15 8DU

Title:

Coal Authority Information Summary Drawing

Scale:

As Shown

Drawn by:

SFK

Date:

27/07/2021

Drawing No.: TLC1169/04

APPENDIX B

ROTARY HOLE LOGS AND CORE PHOTOGRAPHS

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THE LAND CONSULTANCY LIMITED T: 01772 610609; M: 07771 800859 sfknott@thelandconsultancy.co.uk www.thelandconsultancy.co.uk	Contract Name: Littleborough Fire Station, Whitelees Road, Littleborough OL15 8DU			Client: LK Consult Ltd			Borehole ID: RH2				
	Contract Number: TLC1169		Logged By: D.Taylor (TDS)		Checked By: S.F.Knott		Start Date: 13/09/2021		End Date: 13/09/2021		
	Easting:		Northing:		Ground Level (mAOD):		Hole Type: Borehole Log		Scale: 1:100		
Drilling Contractor / Drillers Taylor Drilling Services Ltd / Deklan Taylor & Rowan Aspinall				Method / Plant Used Comacchio 205 Rotary Rig + Recirculated Water Flush				Weather / Ground Conditions Not recorded			
Samples & In Situ Testing				Strata Details						Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description				Water Strike	Backfill/ Installation
				0.20		Grass over TOPSOIL.					
						Brown CLAY with sand and gravel bands.					
										1	
										2	
										3	
										4	
										5	
										6	
										7	
										8	
										9	
				9.00		Conglomeritic SANDSTONE. (100% flush returns estimated)				10	
										11	
										12	
										13	
										14	
										15	
										16	
										17	
				15.20		Light grey SANDSTONE. (100% flush returns estimated)				18	
										19	
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APPENDIX C

COAL AUTHORITY PERMISSIONS CERTIFICATE



The Coal
Authority

Permit to Enter or Disturb Coal Authority Interests

Permit 22607

Name and Address of Permit Holder:

Greater Manchester Combined Authority
PO Box 400
Salford
Manchester
M50 2WE

Site Location:

Littleborough Fire Station
Whitelees Road
Littleborough
OL15 8DU

This certificate hereby grants the above named Permit Holder a Permit to carry out:-

Investigation by three boreholes to 40m to determine ground conditions

within the Authority's interests at the identified site location above as shown on the Grant Permit Boundary (overleaf) for the period of 12 months from the granted date shown below. *The granting of this Permit does not constitute advice given by the Authority in relation to the proposed operations. It is the Permit Holder's responsibility to obtain appropriate health, safety, environmental, technical and legal advice.*

Conditions:

- *Manned entry (i.e. into mine entries/workings) is strictly prohibited.*
- *Water flush*
- *Gas Monitoring CO, CH₄, CO₂, O₂, H₂S at borehole and rig*
- *Operators undertaking the work must be in possession of this certificate and the Permit boundary plan at the time of works*
- *Appropriate borehole sealing without delay and to withstand site level changes*

Signed: Paul Hobson Granted Date: 23 August 2021

For and on behalf of The Coal Authority

Nominated Representative: Paul Hobson, Permitting Manager;

The Coal Authority, Permitting Office, 200 Lichfield Lane, Mansfield, Notts, NG18 4RG

Tel: 01623 637450; E-Mail: permissions@coal.gov.uk



The Coal
Authority

Granted Permit Boundary

Permit Ref: 22607

Permit Boundary:



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