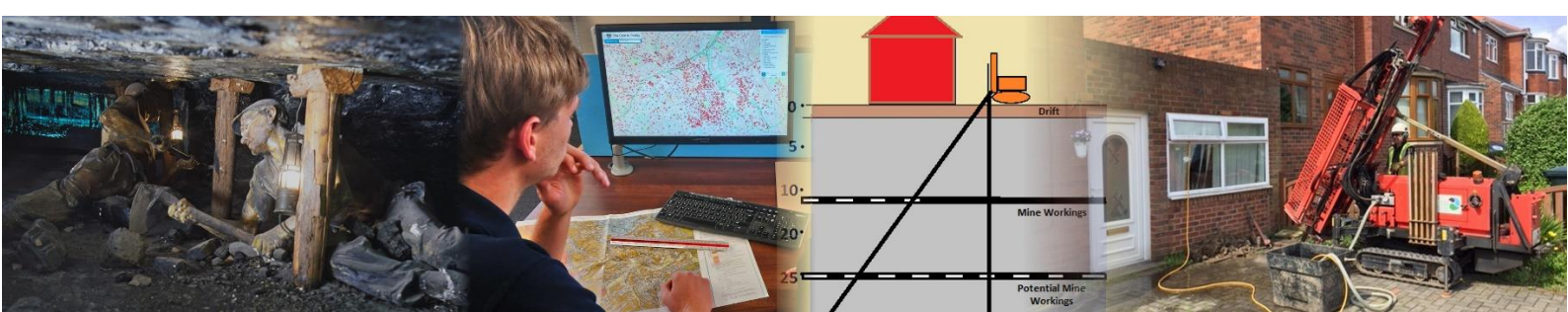




GEOLOGICAL
GEOTECHNICAL
GEOENVIRONMENTAL
CONSULTANCY
DRILLING & DATA ACQUISITION



GEOINVESTIGATE LIMITED

Coal Mining Risk Assessment (CMRA)

LOCATION	Solarframe, Davey Road, Goldthorpe, S63 0JF
ISSUE DATE	January 2019
FOR	Graham Holt
CLIENT REF.	
OUR REF.	G18451

Prepared by

Findley Mostyn BSc(Hons)
Geo-environmental Engineer

Checked by

Ross Nicolson BSc(Hons) MSc(Eng) CEng MIMMM
Principal Geotechnical Engineer

SUMMARY FINDINGS – MITIGATION REQUIRED

The outcome of the CMRA report presented below is that **exploratory drilling is required** to establish drift/bedrock depth and to confirm that possible shallow mine working is absent below the proposed new building development in the north of the site as set out in planning application 2018/1182.

With respect to the Gazebo erected over a treated mine shaft without prior planning consent or consultation with the CA it is recommended that this be retained with a fenced visitor exclusion zone around it and a stand-off margin.

Inspection of both shaft chambers within the site and their adjacent areas by Geoinvestigate is recommended to confirm that there is NO PROBLEM at either locality.

The plan position of Shaft-001 in the northern part of the site may need to be established by accurate site survey. This will perhaps entail unearthing its inspection cover which is expected to lie at or near to the surface.

Coal Authority permits will be required before the intrusive investigative works are undertaken and the shaft chambers can be inspected.

In the meantime, **this outcome should not prevent your recent planning application 2018/1182 for 3 new display units in the northern part of the site getting planning permission** conditional upon the work being carried out now, or at a later date but before site construction begins.

Whether the Gazebo can be retained or not at its present position over a mine shaft entry is uncertain. This report has recommended pragmatic and cautious (perhaps overly so) mitigation aimed at keeping the Gazebo namely by the installation of a fenced stand-off perimeter around this structure as well as providing it with signage both to inform and discourage visitor entry.

WHAT TO DO NEXT

Obtain quotes for the intrusive site investigation works. The cost of the SI works should be a **“lump sum” fixed price** and include supervision by a competent person & a final report. Geoinvestigate can provide advice and assistance with helping you find suitable site investigation & drilling contractors. Call us on 01642 713779 or email enquiries@geoinvestigate.co.uk This CMRA identifies the nature of the coal mining hazards beneath your site and the scope of safe SI works needed to investigate them further.

1. CMRA INTRODUCTION

Site Location and Description: The approximate centre of this site is at National Grid Reference E 445880 N 404780 with an elevation of about 46.6m AOD. The boundary shown RED on the Coal Authority (CA) report provided in Appendix A includes the current planning application area in the north and the existing Gazebo.

The site is the former restored Highgate Colliery comprising 2 infilled and capped mine shafts. Pre 2014 the site was grassy open space on the north side (left side of image in Appendix B) of the Solarframe factory. This earlier image shows 2 cones identifying the positions of 2 mine shaft markers. Subsequently the grassy space adjacent to the factory has been developed with display units and later a Gazebo.

This report provides CMRA commentary both for a Gazebo structure erected without planning permission over a mine shaft within the property and a new planning application already registered with Barnsley Council (Ref. 2018/1182) for development adjacent to a 2nd mine shaft on the property. The latter was approved with conditions on 18 September 2018. The report also deals with the general coal seam mine working situation beneath the site.

Current Development: Currently the site comprises several single storey conservatory display rooms around the perimeter of the property as shown in Appendix C. The northern end of the site adjacent to Davey Road and the ‘Cape building’ currently remains grassy open space.

It is understood from the client Mr Graham Holt, that the display land is subject to a 10 year lease with 6 years remaining after which the buildings must either be removed or the lease extended.

Recently a Gazebo was erected in the middle of the site as shown in Appendix C. It is an impressively elegant open walled cast iron structure with a brick chimney or barbecue stack at the far end. The Gazebo is currently accessed by the public. This structure was erected without planning permission and without the consent of the Coal Authority. It is erected over a mine shaft identified by the CA as 445404-002 and recorded as infilled and capped in 1959. According to the CA the shaft is 44m deep with a 2.4m diameter. The buildings adjacent to the Gazebo received planning consent on the provision that they were stood off from the shaft as shown in Appendix D.

A letter from Barnsley SYMAS setting out the foundation design requirements with regard to the proximity of Shaft-002 is included in Appendix E. The assumption made is that bedrock is located around 2 or 3m depth and the new buildings and foundations adjacent to the shaft would be safe adopting a 45 deg. influence angle as shown in both this Appendix and Appendix D. Planning consent was given on this basis.

The position of the mine shaft inspection cover within the Gazebo is indicated in Appendices C and F. Images beneath the cover are also included in Appendix C showing a lantern dangling above the upper surface of the concrete mine shaft cap. Therefore there is certainty about the exact position of Shaft-002.

It is understood that the ground level within the Gazebo site was raised a little and the site images show this. The original mine shaft inspection chamber was raised with new brickwork as can be seen in one of the images. A concrete slab was installed across the mine shaft and the chamber provided with a new tiled inspection cover.

The design of the Gazebo slab and the depth of its column and chimney footings are unknown. However it seems unlikely that the Gazebo structure has a robust raft foundation though perhaps it may be nominally reinforced with steel mesh. This however is speculation.

Proposed Development: It is proposed to develop the northern grassy end of the site with additional single storey display buildings similar to the existing buildings to the south. A development layout for the northern end of the site is included as Appendix F. It includes 3 small display buildings.

New buildings will not be erected over mine shaft 445404-001 which is present at this end of the site. The architects drawing shows the closest structure (building 3) will be stood-off 5m from the centre of the shaft. According to the CA Shaft-001 was 45.7m deep and like Shaft-002 was infilled with colliery shale and capped with concrete in 1959. According to Mr Holt both have similar inspection chambers and he has seen both.

The proposed stand-off dimension for the new building adjacent to Shaft-001 is in line with the design philosophy previously accepted by the Authorities for development at the southern end of the property in proximity to Shaft-002.

It should be noted for clarification that some earlier site plans in the Council's planning file identify the southern Shaft-002 as (S1) and Shaft-001 in the north as (S2). The current CMRA report does not.

It is understood from Mr Graham Holt the site owner that the position of the 2nd mine entry is also very accurately known. According to Mr Holt, Shaft-001 also has an inspection manhole and cover and is similar in this respect to Shaft -002 beneath the Gazebo. Mr Holt said he had inspected this shaft previously. Geoinvestigate has no reason to doubt any of this information.

Images provided to us recently purporting to be of Shaft-001 are uncertain, confusion perhaps arising because the shafts are similar. In light of this uncertainty it is our opinion that the position of Shaft-001 must be checked and an up to date accurate survey position obtained. This may require shallow exhumation and lifting of the inspection cover.

Risk Methodology Applied: This document and the risk assessment methodology adopted herein is based on CA publication RISK BASED APPROACH TO DEVELOPMENT MANAGEMENT - GUIDANCE FOR DEVELOPERS Version 3, 2014 and Version 4 - 2017. The template contained therein is adopted with minor amendments made by Geoinvestigate Limited.

2. SOURCES OF INFORMATION USED TO INFORM THIS REPORT

- An up-to-date Coal Mining Report from the CA dated 28 November 2018 ref. 51001983551001
- Geological information from the British Geological Survey (BGS) Sheet 87 Barnsley at 1:50,000 scale
- The Coal Authority's online interactive map viewer
- A site history based on limited Ordnance Survey map records of the area dating back to 1854
- BGS historic borehole logs.
- Google Street View and Satellite imagery
- Other web sourced information
- Pre-application advice from the CAs Chris Telford dated 12 December 2018

3. ASSESSMENT OF SITE SPECIFIC COAL MINING ISSUES

The table below summarises the potential risks associated with coal mining legacy for the proposed development site, identified from list sources of information.

Coal Mining Issues	Yes	No	Risk Assessment/Remarks
Past underground coal mining	Yes		<i>The CA report records 4 levels of underground working below site between 48m and 674m beneath the property with extraction thicknesses between 147cm and 183cm. It is in our opinion that this working is unlikely to impact the ground stability within the development area dependent on the drift depth and rock cover.</i>
Probable unrecorded shallow workings		No	<i>According to the CA report probable unrecorded shallow workings do not exist beneath the site. Contrary to this the geological map and column perhaps suggest that shallow minable coal seam may indeed occur beneath the site.</i>
Spine roadways at shallow depth		No	<i>No spine roadway recorded at shallow depth.</i>
Mine entries	Yes		<i>The CA report identifies 2 mine shafts within the property 445404-001 and 445404-002. Mine adit 445404-004 is located 90m north of the site. Both mine shafts within the site were filled and capped in 1959 and provided with inspection chambers, covers and markers. The positions of both mine shafts are known. In recent years a Gazebo display structure has been erected without planning consent over the inspection chamber of Shaft-002 while a new planning application for additional display units has recently been submitted for building in close proximity to Shaft-001. It is our opinion that mitigation is required both with regard to the existing Gazebo over Shaft-002 and the proposed new building development in proximity to Shaft-001.</i>
Outcrops		No	<i>The CA report records no outcrops within or close to the site.</i>
Geological faults, fissures and breaklines		No	<i>No faults, fissures or breaklines recorded.</i>
Opencast Mines		No	<i>The CA records opencast mining 452m southeast of the site boundary.</i>
Coal mining subsidence		No	<i>According to the CA there has been no subsidence claim at the property itself or within 50m of it since October 1994.</i>
Mine Gas		No	<i>None recorded within 500m of site.</i>

Note: For those coal mining issues above identified as "yes" or highlighted "YELLOW" a more detailed discussion and assessment are made of the risks to the application site and the proposed development.

Discussion & Mitigation

General Mine Working

1. The CA interactive map shows that the site is located within a Development High Risk Area (DHRA) because of the presence of 2 mine shafts.
2. According to the CA report and their online interactive map the site does not fall within an area of probable shallow coal mine workings.
3. According to the CA report, 4 levels of past recorded underground coal mining exist below the site. The shallowest recorded working is in the Shafton Coal Seam at 48m beneath the site with an extraction thickness of 160cm.

Depending on drift depth and rock cover thickness below the site, this seam could potentially impact ground stability within the development area. This is discussed further in the report.

4. Based on the CA report the shallowest strata and coal seam beneath the site are expected to dip at 2.8 deg. North reducing to perhaps to 1.4 deg. at greater depth.
5. The assumption made in previous planning correspondence on the site from Barnsley SYMAS is that bedrock is likely to occur at a depth of around 3m in the vicinity of Shaft-002.
6. While the BGS archive shows many boreholes in close proximity to the site none are readily available for inspection without special application. Many of these logs and their borehole locations are identified by the BGS as 'Confidential'. This sometimes suggests that these holes may have been sunk for coal exploration or mineral evaluation purposes. It is assumed that the CA would have had access to all this borehole information including confidential holes in assessing coal mining legacy hazard and shallow mine workings risk for the area and compiling its plans.
7. The nearest available logs SE40SE45/A-C along the railway line some 150m to the west of the site record drift depth < 2.5m. These logs are not included in this report. These logs suggest that bedrock may lie at or near surface within the development area.
8. The location of the site is shown on the extract BGS geology map presented in Appendix G. The vertical geology column is shown below the geology map. The tentative elevation of the site is shown relative to the column and coal seams.
9. In our opinion based on the expectation of 3m drift depth, recorded past coal seam mine working at 48m depth beneath the site is unlikely to impact surface ground stability within the Solarframe site generally and with regard to development in the vicinity of either mine entry -001 or -002.
10. According to the column, the Highgate (HG) Coal seam occurs some 28m above the Shafton (SN) Coal potentially placing it a depth of 20m below the development site.
11. The geology map shows the outcrop of the HG seam some 480m to the south of the site and dipping north beneath it.
12. Simple projection of the HG outcrop dipping north at 2.8 deg. gives a depth of 23.5m below the site corresponding with the expectation of 20m in para 10. The same projection at 1.4 deg. dip gives 11.7m depth.
13. The HG Coal seam is according to the geology column up to 0.7m thick.
14. A mining assessment by Coffey in 2017 for another site located northwest of Little Houghton records mine workings in the Highgate Coal seam with between 0.2m and 0.6m thickness. Their report is not included in this CMRA.
15. Based on the foregoing information it is our opinion that the development site may be underlain by the Highgate Coal Seam at a shallow depth of say 20m to 25m with the Shafton Coal seam at around 45m or 48m depth based on the bottom depths of both adjacent mine shafts-001 &-002 and the CAs report prediction.
16. It is speculated that while the shallow minable HG Coal seam may exist beneath the site the CAs report assessment states that there is NO unrecorded shallow mine workings. This is perhaps based on their review of the adjacent borehole information including confidential holes. This however is speculation and Geoinvestigate did not have access to this boreholes information in compiling this CMRA.
17. The absence of shallow mine workings may also explain the lack of comment on this aspect in the earlier correspondence from Barnsley SYMAS which focuses only on mine shaft hazard. However this again is speculation.
18. Notwithstanding, assuming that the HG seam is present and has been worked at 20m beneath the site there would be, given the expectation of 3m drift depth beneath the site, sufficient thickness of the rock cover in this instance (17m above this working) to safeguard the surface ground stability at the new development from upward void migration and surface crown hole subsidence or collapse.
19. Consequently, it is our opinion that unrecorded shallow mine working is unlikely to be a problem however, the speculative assumptions made in arriving at this favourable outcome need to be checked by further drilling. In this regard drilling is required to check that workings in the HG seam do not occur at a much shallower depth of 11.7m.
20. In summary this CMRA has identified the possible presence of shallow mine workings beneath the site. Such workings depending on their depth could significantly impact ground stability within the new development area.
21. Whether coal mining legacy will impact the stability of the new development area depends on drift depth/bedrock depth, and mine working depth & thickness which are required to be established beneath this site. Exploratory drilling will be required to do this.

22. The risk of encountering hidden or unrecorded mine shafts within the property is considered Low but not negligible because of the possible presence of shallow coal seam and mine working beneath the site.
23. Hazardous gases associated with underground coal seams and workings are unlikely to pose significant risk to the development in this instance because; firstly, typically across the UK coalfields gas is rarely a problem and secondly with regard to this property there is no record of a site specific mine gas problem.
24. However, given the possible occurrence of shallow mine working beneath the property and nearby mine shafts it is our opinion that the gas risk in this instance should be raised to **MODERATE to HIGH until proven otherwise** by drilling and gas monitoring.
25. It is our opinion that with regard to recent planning application 2018/1182 for 3 new display buildings in the northern part of the site, further exploratory coal legacy drilling together with gas monitoring and perhaps other mitigation measures may be required to properly assess the ground stability, mine gas hazard, drift depth and other concerns at this site making it safe for development. This drilling will also locate drift/bedrock depth adjacent to mine shaft-001. This is an important factor in designing safe foundations with regard to mine shaft proximity.

Erection of Gazebo over Mine Entry 445404-002

1. Geoinvestigate and our client Mr Holt are appreciative of the advice provided by Chris Telford of the Coal Authority as presented in his email of 12 December 2018 in Appendix H. His comments were made freely and without knowledge of the location of the site.
2. The Gazebo was erected without planning consent and without consultation with the CA. Nonetheless an elegant and expensive public display structure located over an infilled and capped mine shaft of some 45m depth.
3. While perhaps the CA might assess the risk of a mine shaft collapse or subsidence event in this instance to be statistically very low the preferred option where possible is not to develop over or in close proximity to a mine shaft entry even if treated as in this case albeit to an older specification.
4. With regard to the Gazebo it is understood from Mr Holt that there is no obvious visible evidence of building damage or ground movement that might be attributed to the subsidence of Shaft-002 beneath this structure.
5. In this regard it is also understood that Mr Holt's inspection of the top of the cap in the manhole chamber shows no evidence of settlement since it was treated in 1959. Recent images of the chamber of -001 provided in Appendix C seem to confirm this.
6. According to Mr Holt there is also no evidence of subsidence around shaft -001 in the northern part of the site or its cap within the 2nd inspection chamber at this location.
7. In light of the foregoing encouraging observations and because Shaft-001 has been treated to some degree it is our opinion that the risk of future ground instability in this instance is Very Low perhaps approaching negligible. In our opinion there is no reason why this situation should not extend into the foreseeable future.
8. Consequently in our opinion the Gazebo is safe with regard to mining related ground instability.
9. With regard to possible upward hazardous mine gas seepage via the mine shaft this is considered Very Low risk because there has been no reported mine gas issue at the site and because such incidents are rare. Furthermore the Gazebo is an open-air extremely well ventilated structure in which dangerous levels of gas cannot accumulate. Consequently it is safe in this regard also.
10. It is speculated that the Gazebo structure may be founded on a simple lightly steel mesh reinforced slab of nominal thickness. In our opinion the preferred option would have been a raft though the existing foundation design appears to have performed adequately. In addition the design of the Gazebos iron frame provides some flexibility and tolerance to movement.
11. A new inspection cover has been provided through the Gazebos slab and tiled floor retaining access into the original 1959 manhole chamber.
12. In conclusion it is our opinion that the Gazebo display structure is safe both with regard to ground stability and hazardous mine gas.
13. In our opinion mitigation is however required to ensure the safety of the visiting public to the Gazebo display area and to allay possible public sensitivity with regard to mine shaft hazard no matter that the risk is almost negligible in this instance.
14. Therefore as a precaution we would recommend that the public are excluded from entering the Gazebo and a stand-off perimeter by the erection of a low fence behind which the Gazebo can be viewed by visiting

customers. While this might be considered somewhat cautious it would in our opinion provide peace of mind for the public who will know that they are not standing directly over a former mine entry albeit one which is infilled, capped and stabilised.

15. Furthermore, the client Mr Holt has suggested installing outdoor public information signage explaining the history of the shaft, its location, its treatment and the sympathetic landscape restoration of the ground above it namely the installation of a temporary Gazebo structure and garden in recent years.
16. It is our opinion this is both appropriate, safe & sympathetic mitigation with regard to the future retention of existing Gazebo display over this mine entry.
17. This would however be conditional upon our Geoinvestigate's further inspection of the locality and Shaft-002s chamber confirming that there is NO PROBLEM.

New Building in Proximity to Mine Shaft 445404-001

1. It is proposed to erect 3 new display structures adjacent to Shaft-001 in the north of the site.
2. According to Mr Holt the position of this shaft is known and it has an inspection chamber which he has viewed inside and is similar to Shaft-002.
3. It is understood that Mr Holt's earlier inspection of the shaft chamber above its cap found no evidence of instability or settlement. In addition there is no evidence of surface ground instability or subsidence around it. This shaft like 002 was infilled and capped in 1959. It is understood that its cover is currently grassed over.
4. In light of the foregoing favourable observations, and its similarity to conditions at 002 it is our opinion that Shaft 001 poses very low approaching negligible ground stability risk to the proposed new development adjacent to it.
5. In our opinion similar mitigation (ie a minimum stand-off of 5m from the shaft centre to the closest foundation of Building 3) to that previously accepted for development in the vicinity of Shaft-002 to the south is considered appropriate.
6. However this would be conditional upon Geoinvestigate's inspection of the locality and the chamber of Shaft-001 confirming that there is NO PROBLEM. This would require unearthing the cover which is located below thin turf and soil. A CA permit may need to be purchased to permit this as well as the inspection of Shaft-002
7. It would also be conditional upon obtaining an accurate up to date survey location of the centre of Shaft-001 unless this is already available or the CA will accept their plotted report grid reference position of 445882, 404780 as its current accurate position. If not a new site survey position will have to be obtained.
8. It would also be conditional upon drift/bedrock depth being established by excavation or drilling in the vicinity of Shaft-001 at a depth of around 3m or less.

4. MITIGATION STRATEGY PROPOSED

MITIGATION RESPONSE

Detailed discussion of coal mining legacy hazards and mitigation is presented in preceding Section 3. Summarising briefly:

1. Mitigation is required to establish the absence of shallow mine working in the vicinity of the new display building development in the north of the site. This will require drilling.
2. While the position of Shaft-001 is known its exact grid coordinate position needs to be obtained to enable the drawing-up of accurate site plans and stand-off distances of the new buildings from this mine entry.
3. Both Shaft-001 and Shaft-002 and their surrounding area should be inspected by Geoinvestigate to confirm that there is NO PROBLEM.
4. Drift/bedrock depth should be established by excavation or drilling adjacent to Shaft-001.
5. To properly determine the coal mining risk at this site it is proposed to drill a minimum of 2 or 3 boreholes to target depths up to 30m (but not necessarily reaching 30m) to locate possible mine workings within shallow depth below the new development as well as drift and bedrock depths nearby to Shaft-001.

6. Borehole depths and numbers will be subject to adjustment by the supervising Competent Person on-site and depending on the geological conditions encountered (namely depth to rock head, seam thickness and ratio of rock cover to seam thickness) found during drilling.
7. If mine workings are clearly confirmed to be absent, or beyond an influencing depth of the surface development it is unlikely that ground treatment/stabilisation by injection grouting or special foundation design measures will be required in respect of coal mining legacy.
8. The requirement for gas protection measures and the level of gas protection will be determined by a risk assessment based on a source - pathway - receptor model. This will depend on the gas concentrations found during the follow-on coal legacy drilling together with the configuration of the site geology - particularly the nature and thickness of the drift/soil cover and the presence (or potential) for fissures or other pathways to exist.
9. A second specialist report will be required on the findings of the coal drilling investigation finalising the scope of the mitigation measures needed (if any) to safeguard the development from coal mining related ground instability and hazardous mine gases.
10. **On the basis of the work to date, we are of the opinion that the mining stability and mine gas risks posed by the strata beneath this site from coal mining legacy can be mitigated by routinely adopted measures and should not preclude the planning permission being registered with regard to current application 2018/1182 in the northern part of the site for 3 new display units.**
11. **With respect to the unauthorised erection of the Gazebo over mine entry-002 in the south of the site, mitigation is also required. While it is our opinion that this mine shaft is stable and the Gazebo structure is safe, we would recommend as a precaution that, and for peace of mind, that visitors are excluded from entering this structure and its perimeter by the erection of a fence with an appropriate stand-off distance yet to be agreed with the CA.**

The Coal Authority Permit

A Coal Authority Permit needs to be obtained (ahead of) further intrusive exploratory drilling or excavation/trenching work (if carried out) which will disturb or enter any coal seams or coal mine workings present beneath the site. A standard permit can take 4 to 6 weeks to obtain, less for an expedited permit.

6.2.7 Table of Risks for Different Drilling Scenarios

Situation	Air flush	Mist flush	Foam flush	Water flush	Mud flush	Additional controls
- Unworked coal or coal workings - High or unknown risk of hazardous gases being present / created - Occupied property within risk area	HIGH	HIGH / MED'M	HIGH / MED'M	LOW	LOW	- Monitoring at rig and other open holes. - Seal boreholes as soon as possible.

Drill Flush to be used when drilling: Permit application must state WATER only drill flush, as mud though safe is too messy.

Other precautions: Gas monitoring to be carried out during drilling. Boreholes to be sealed as soon as possible.

5. CONCLUSION

In our opinion the existing Gazebo which was erected without planning consent and CA consultation over a treated mine shaft entry is both safe with regard to ground stability and hazardous mine gas. However, as a further precaution and for the peace of mind of the public it is suggested that visitors are excluded from entering this structure by installation of a perimeter fence with an appropriate stand-off margin yet to be agreed with the CA.

The installation of a visitor information board detailing the history of the shaft and its treatment and restoration would notify the public of the position of the mine entry at this locality and show that the owner has exercised reasonable duty of care with regard to the visitor wellbeing and sensitivity in this regard.

However, this proposal will need to be met with the approval of the CA who understandably may be somewhat put out that they were not consulted earlier before the erection of the Gazebo.

With regard to the new development proposal in the north of the site and its proximity to Shaft-001 it is our opinion that it is also safe with regard ground stability and hazardous mine gas. The proposed shaft stand-off of 5m is appropriate providing the position of this shaft is accurately checked relative to the position of the new buildings.

As a precaution inspection of both shafts and their surrounding localities by Geoinvestigate is recommended to confirm that there is NO PROBLEM. This will require unearthing Shaft-001.

Exploratory drilling is required in the vicinity of Shaft-001 to establish drift/bedrock depth at this location and to confirm that shallow mine working is absent or if present does not impact surface ground stability within the area of the adjacent new building.

Coal Authority permits will be required to drill, excavate, disturb or enter coal seam, mine workings and mine shafts.

Gas monitoring must be carried out during drilling and during mine shaft chamber inspection.

A safe method of sinking boreholes which will reduce the risk to drill operators and the public has been assessed. A Coal Authority Permit will be required before drilling takes place. This must state that only WATER FLUSH will be used for drilling. The CA permit must also cover surface excavation/trenching to locate mine shafts or coal outcrop if these activities are also carried out.

Depending on the outcome of the additional coal mining legacy investigation it may be necessary to stabilise coal seams/mine workings using routine drilling and grouting techniques and/or adopt special foundation design measures and perhaps install gas protection measures.

If drilling confirms that hazardous mine gas is absent and that either no coal or mine working exists beneath the site, or shallow workings are present, but rock cover is of adequate thickness no further investigation or mitigation would be required. However, mitigation is still required with respect to mine shaft hazard, the Gazebo and the new development to the north of the Gazebo.

With regard to the current new planning application 2018/1182 we see no reason why Planning Permission should not be granted in the interim and that these works form a condition on the planning approval.

With regard to the existing Gazebo the client is requesting that the CA give careful and sympathetic consideration to the cautious mitigation proposal provided for this structure in this report. It is hoped that this elegant and expensive structure which still provides access for inspection of the shaft chamber may be retained for the short duration of 6 years of the remaining lease.

Appendices:

- A. CA Report dated 28 November 2018 ref. 51001983551001
- B. Shaft positions pre-development.
- C. Site and Gazebo and shaft inspection chamber images.
- D. Previous planning documents.
- E. Barnsley SYMAS correspondence
- F. Proposed new development layout
- G. Extracts of BGS Solid Geology Map, Sheet 87 Barnsley at 1:50,000
- H. Coal Authority advice of 12 December 2018 from Chris Telford.

Other historical OS maps, borehole logs, site images and photographs have not been included because it was considered that they did not provide significant useful additional information.

APPENDIX A
COAL AUTHORITY REPORT



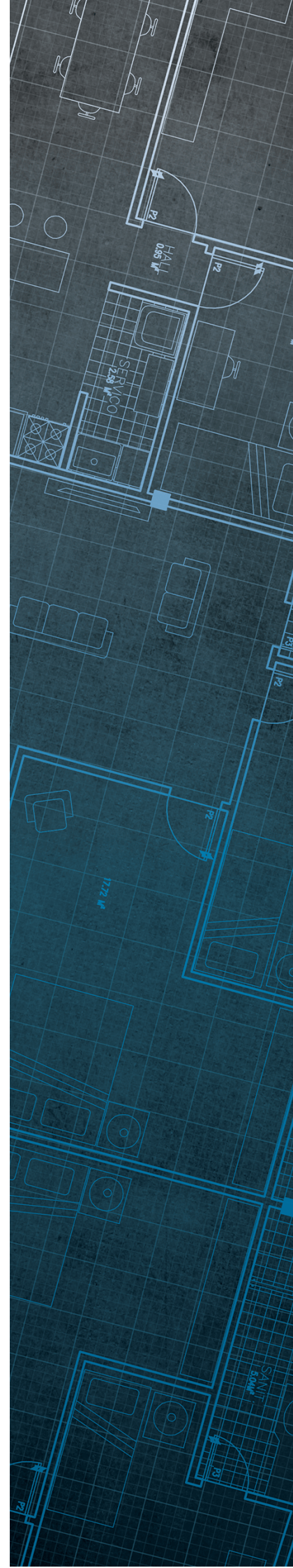
The Coal
Authority

Consultants Coal Mining Report

Solarframe Uk
Davey Road
Goldthorpe
Rotherham
S63 0JF

Date of enquiry:	28 November 2018
Date enquiry received:	28 November 2018
Issue date:	28 November 2018

Our reference:	51001983551001
Your reference:	G18451



Consultants

Coal Mining Report

This report is based on and limited to the records held by the Coal Authority at the time the report was produced.

Client name

GEOINVESTIGATE

Enquiry address

Solarframe Uk
Davey Road
Goldthorpe
Rotherham
S63 0JF

How to contact us

0345 762 6848 (UK)
+44 (0)1623 637 000 (International)

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

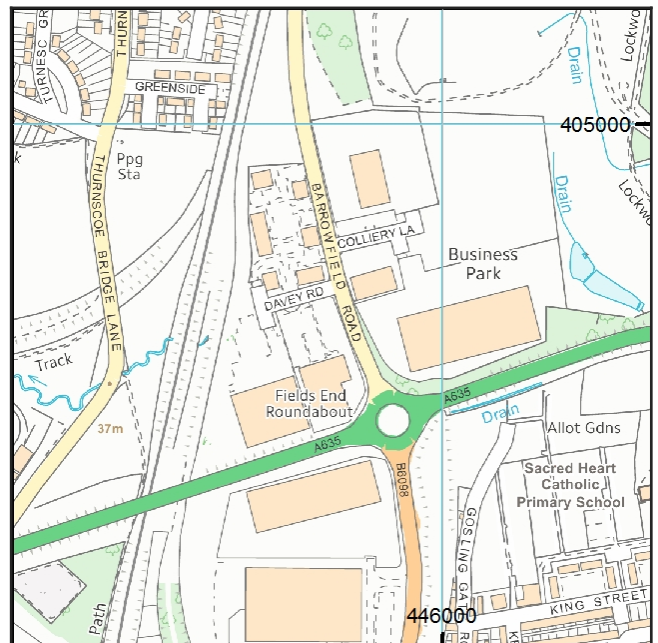
www.groundstability.com

 @coalauthority

 /company/the-coal-authority

 /thecoalauthority

 /thecoalauthority



Approximate position of property



Reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown copyright and database right 2018. All rights reserved.

Ordnance Survey Licence number: 100020315

Section 1 – Mining activity and geology

Past underground mining

Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
unnamed	SHAFTON	Coal	5R9G	48	Beneath Property	2.8	North	160	1926
WATH	NEWHILL	Coal	5R2H	281	Beneath Property	1.4	North-West	147	1978
BARNSBURGH	NEWHILL	Coal	4Q50	286	East	2.7	North-East	150	1977
BARNBURGH	MELTONFIELD	Coal	5RBG	303	South-West	1.9	North-West	116	1969
WATH / HICKLETON	TOP HARD BARNLEY	Coal	4Q53	439	East	3.7	North-East	218	1902
HOUGHTON MAIN	TOP HARD BARNLEY	Coal	5R4H	443	Beneath Property	4.0	North-West	183	1912
HICKLETON	TOP HARD BARNLEY	Coal	5TYW	451	North	3.9	North-West	203	1916
HICKLETON	TOP HARD BARNLEY	Coal	4IV4	453	North-East	1.1	North-West	227	1908
HICKLETON	PARKGATE	Coal	4MR8	667	South-East	3.6	North-East	157	1946
HICKLETON	PARKGATE	Coal	P80	674	Beneath Property	2.5	North-West	178	1983
HICKLETON	PARKGATE	Coal	P81	675	South-West	3.3	North-West	198	1984
HOUGHTON	PARKGATE	Coal	5R5H	675	South-East	4.2	North-West	198	1943
HICKLETON	PARKGATE	Coal	4RRJ	676	North-East	4.5	North-East	180	1936
HICKLETON	PARKGATE	Coal	5OS7	691	North-West	5.0	North-West	198	1938
HOUGHTON	SILKSTONE	Coal	X50	761	South-West	5.5	North-West	124	1986

Probable unrecorded shallow workings

None.

Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

Mine entries

Entry type	Reference	Grid reference	Treatment description	Mineral	Conveyancing details
Shaft	445404-001	445876 404808	was filled with colliery shale in 1959 and was capped with 1ft thick concrete 3m bgl in 1960	Coal	
Shaft	445404-002	445882 404780	was filled with colliery shale in 1959 and was capped with 1ft thick concrete 3m bgl in 1960	Coal	
Adit	445404-004	445846 404910	has been filled to an unknown specification	Coal	

Abandoned mine plan catalogue numbers

The following abandoned mine plan catalogue numbers intersect with some, or all, of the enquiry boundary:

NE1053	16528	6669
NE957	NEST65	M130
16530	13930	NE1024

Our records show we have more plans than those shown above which could affect the enquiry boundary.

Please contact us on 0345 762 6848 to determine the exact abandoned mine plans you require based on your needs.

Outcrops

No outcrops recorded.

Geological faults, fissures and breaklines

No faults, fissures or breaklines recorded.

Opencast mines

Please refer to the "Summary of findings" map (on separate sheet) for details of any opencast areas within 500 metres of the enquiry boundary.

Coal Authority managed tips

None recorded within 500 metres of the enquiry boundary.

Section 2 – Investigative or remedial activity

Please refer to the 'Summary of findings' map (on separate sheet) for details of any activity within the area of the site boundary.

Site investigations

None recorded within 50 metres of the enquiry boundary.

Remediated sites

None recorded within 50 metres of the enquiry boundary.

Coal mining subsidence

The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31 October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

Mine gas

None recorded within 500 metres of the enquiry boundary.

Mine water treatment schemes

None recorded within 500 metres of the enquiry boundary.

Section 3 – Licensing and future mining activity

Future underground mining

None recorded.

Coal mining licensing

None recorded within 200 metres of the enquiry boundary.

Court orders

None recorded.

Section 46 notices

No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

Withdrawal of support notices

The property is in an area where a notice to withdraw support was given in 1986.

The property is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.

Payments to owners of former copyhold land

The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

Section 4 – Further information

The following potential risks have been identified and as part of your risk assessment should be investigated further.

Development advice

The site is within an area of historical coal mining activity. Should you require advice and/or support on understanding the mining legacy, its risks to your development or what next steps you need to take, please contact us.

For further information on specific site or ground investigations in relation to any issues raised in Section 4, please call us on 0345 762 6848 or email us at groundstability@coal.gov.uk.

Section 5 – Data definitions

The datasets used in this report have limitations and assumptions within their results. For more guidance on the data and the results specific to the enquiry boundary, please **call us on 0345 762 6848** or **email us at groundstability@coal.gov.uk**.

Past underground coal mining

Details of all recorded underground mining relative to the enquiry boundary. Only past underground workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination, will be included.

Probable unrecorded shallow workings

Areas where the Coal Authority believes there to be unrecorded coal workings that exist at or close to the surface (less than 30 metres deep).

Spine roadways at shallow depth

Connecting roadways either, working to working, or, surface to working, both in-seam and cross measures that exist at or close to the surface (less than 30 metres deep), either within or within 10 metres of the enquiry boundary.

Mine entries

Details of any shaft or adit either within, or within 100 metres of the enquiry boundary including approximate location, brief treatment details where known, the mineral worked from the mine entry and conveyance details where the mine entry has previously been sold by the Authority or its predecessors British Coal or the National Coal Board.

Abandoned mine plan catalogue numbers

Plan numbers extracted from the abandoned mines catalogue containing details of coal and other mineral abandonment plans deposited via the Mines Inspectorate in accordance with the Coal Mines Regulation Act and Metalliferous Mines Regulation Act 1872. A maximum of 9 plan extents that intersect with the enquiry boundary will be included. This does not infer that the workings and/or mine entries shown on the abandonment plan will be relevant to the site/property boundary.

Outcrops

Details of seam outcrops will be included where the enquiry boundary intersects with a conjectured or actual seam outcrop location (derived by either the British Geological Survey or the Coal Authority) or intersects with a defined 50 metres buffer on the coal (dip) side of the outcrop. An indication of whether the Coal Authority believes the seam to be of sufficient thickness and/or quality to have been worked will also be included.

Geological faults, fissures and breaklines

Geological disturbances or fractures in the bedrock. Surface fault lines (British Geological Survey derived data) and fissures and breaklines (Coal Authority derived data) intersecting with the enquiry boundary will be included. In some circumstances faults, fissures or breaklines have been known to contribute to surface subsidence damage as a consequence of underground coal mining.

Opencast mines

Opencast coal sites from which coal has been removed in the past by opencast (surface) methods and where the enquiry boundary is within 500 metres of either the licence area, site boundary, excavation area (high wall) or coaling area.

Coal Authority managed tips

Locations of disused colliery tip sites owned and managed by the Coal Authority, located within 500 metres of the enquiry boundary.

Site investigations

Details of site investigations within 50 metres of the enquiry boundary where the Coal Authority has received information relating to coal mining risk investigation and/or remediation by third parties.

Remediated sites

Sites where the Coal Authority has undertaken remedial works either within or within 50 metres of the enquiry boundary following report of a hazard relating to coal mining under the Coal Authority's Emergency Surface Hazard Call Out procedures.

Coal mining subsidence

Details of alleged coal mining subsidence claims made since 31 October 1994 either within or within 50 metres of the enquiry boundary. Where the claim relates to the enquiry boundary confirmation of whether the claim was accepted, rejected or whether liability is still being determined will be given. Where the claim has been discharged, whether this was by repair, payment of compensation or a combination of both, the value of the claim, where known, will also be given.

Details of any current 'Stop Notice' deferring remedial works or repairs affecting the property/site, and if so the date of the notice.

Details of any request made to execute preventative works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991. If yes, whether any person withheld consent or failed to comply with any request to execute preventative works.

Mine gas

Reports of alleged mine gas emissions received by the Coal Authority, either within or within 500 metres of the enquiry boundary that subsequently required investigation and action by the Coal Authority to mitigate the effects of the mine gas emission.

Mine water treatment schemes

Locations where the Coal Authority has constructed or operates assets that remove pollutants from mine water prior to the treated mine water being discharged into the receiving water body.

These schemes are part of the UK's strategy to meet the requirements of the Water Framework Directive. Schemes fall into 2 basic categories: Remedial – mitigating the impact of existing pollution or Preventative – preventing a future pollution incident.

Mine water treatment schemes generally consist of one or more primary settlement lagoons and one or more reed beds for secondary treatment. A small number are more specialised process treatment plants.

Future underground mining

Details of all planned underground mining relative to the enquiry boundary. Only those future workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination will be included.

Coal mining licensing

Details of all licenses issued by the Coal Authority either within or within 200 metres of the enquiry boundary in relation to the under taking of surface coal mining, underground coal mining or underground coal gasification.

Court orders

Orders in respect of the working of coal under the Mines (Working Facilities and Support) Acts of 1923 and 1966 or any statutory modification or amendment thereof.

Section 46 notices

Notice of proposals relating to underground coal mining operations that have been given under section 46 of the Coal Mining Subsidence Act 1991.

Withdrawal of support notices

Published notices of entitlement to withdraw support and the date of the notice. Details of any revocation notice withdrawing the entitlement to withdraw support given under Section 41 of the Coal Industry Act 1994.

Payment to owners of former copyhold land

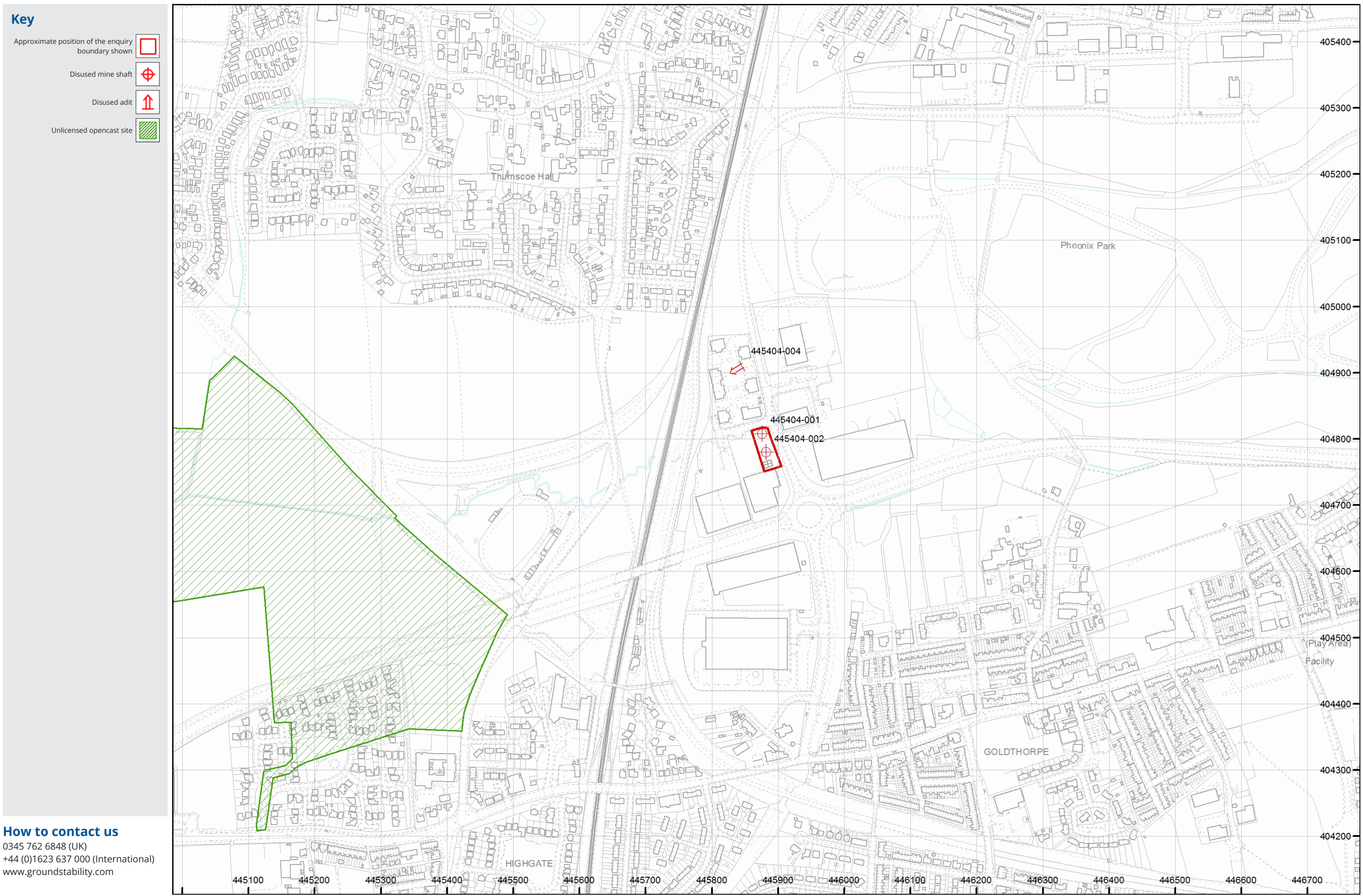
Relevant notices which may affect the property and any subsequent notice of retained interests in coal and coal mines, acceptance or rejection notices and whether any compensation has been paid to a claimant.

This page left intentionally blank

VAT receipt

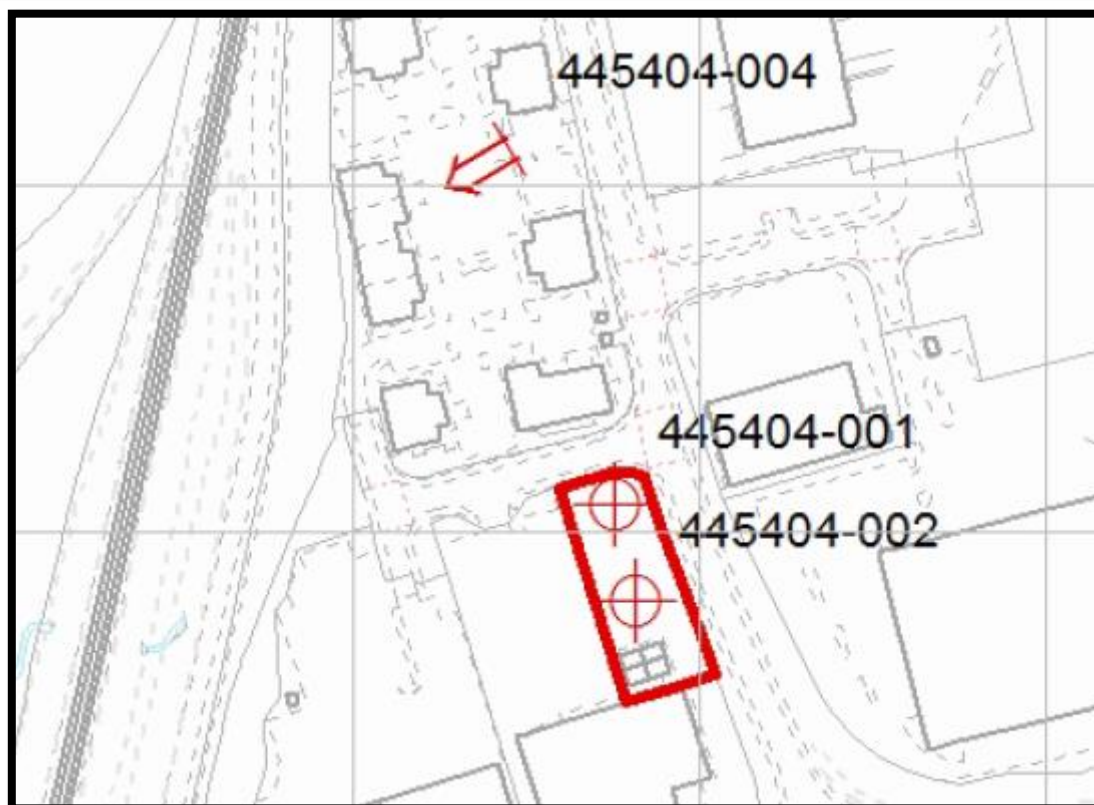
Issued by	The Coal Authority 200 Lichfield Lane Mansfield Nottinghamshire NG18 4RG
Tax point date	28 November 2018
Issued to	GEOINVESTIGATE TERRY DICKEN INDUSTRIAL ESTATE TERRY DICKEN INDUSTRIAL ESTATE, ELLERBECK WAY STOKESLEY NORTH YORKSHIRE TS9 7AE
Property search for	SOLARFRAME UK DAVEY ROAD GOLDTHORPE ROTHERHAM S63 0JF
Reference number	51001983551001
Date of issue	28 November 2018
Cost	£106.79
VAT @ 20%	£21.36
Total received	£128.15
VAT registration	598 5850 68

The map highlights any specific surface or subsurface features within or near to the boundary of the site.



APPENDIX B

SHAFT POSITIONS PRE-DEVELOPMENT



APPENDIX C
SITE, GAZEBO &
SHAFT INSPECTION CHAMBER IMAGES





APPENDIX D

PREVIOUS PLANNING DOCUMENT

Gordon Stephenson

Chartered Architect R.I.B.A. Dip. Arch



10 Parkwood Rise, Barnby Dun, Doncaster DN311Y

tel. 01302 891411

email stevenson_g3@sky.com

29/03/2016

Barnsley MBC
Planning & Transportation Service
PO BOX 604
Barnsley
S70 9FE

PROPOSED CONSERVATORY DISPLAY UNIT for SOLARFRAME Ltd
at SOLARFRAME, DAVEY ROAD, GOLDTHORPE, ROTHERHAM S63 0JF

Your REF. 2016/0202

Dear M/s Brayford

Following receipt of your email attaching a consultee reply from SYM Advisory Service I enclose a sketch showing the development proposals in relation to mine shaft investigatory work. I also attach a photograph of the excavated area of the mine shaft which exposes the concrete shaft capping measured as being 2050mm below the existing finished ground

Assuming suitable ground bearing conditions the foundations of the proposed conservatory building 5m at their nearest point from the mine shaft centre, & outside the exclusion zone would be excavated to a 900mm minimum depth below finished ground, reference to my sectional drawing on which a 4.5m stand off area is ringed indicates the development proposal appears to satisfy the conditions required by the SYM Advisory Service

I would be grateful if you could forward my comments and drawing to the SYM Advisory Service for their reply

Yours sincerely

A black rectangular box redacting the signature of Gordon Stephenson.

Gordon Stephenson

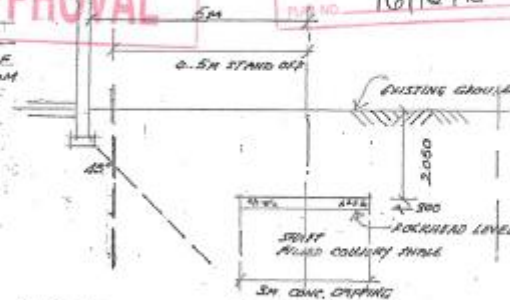
**CONDITIONAL
APPROVAL**

Barnsley Metropolitan Borough Council
BUILDING REGULATIONS

17 AUG 2016

APPROVED
16/12/10

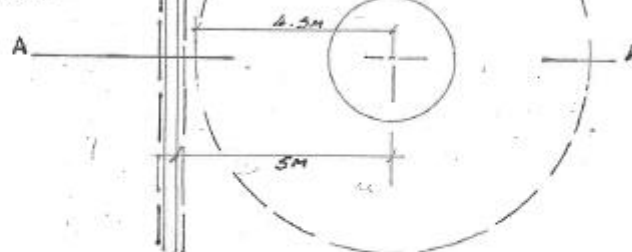
DATE	NO.	DESCRIPTION
28/06/16	R	MAKE DIMENSION OF BUILDING 5M FROM MINE SHAFT



SECTION A-A

SCALE 1:100

PROPOSED
DEVELOPMENT



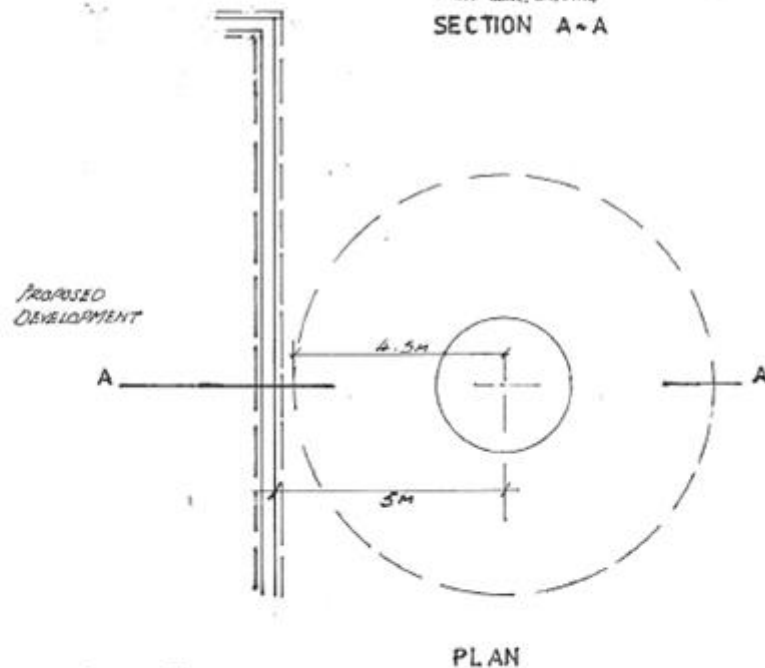
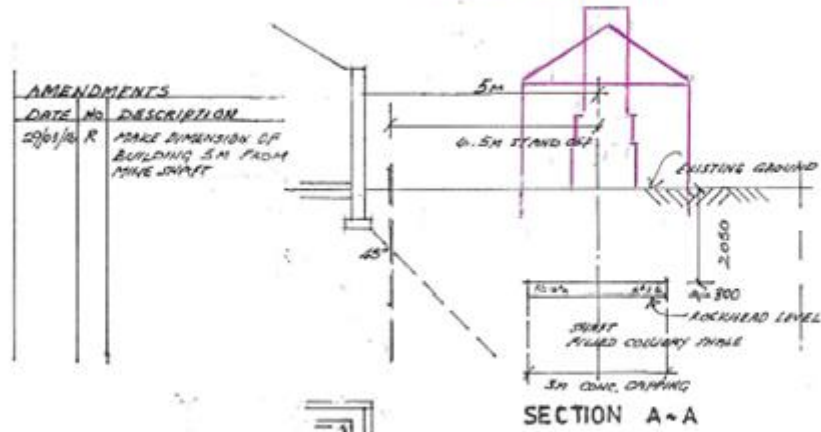
PLAN

RECEIVED
28 JUL 2016
BARNSELEY M.B.C.
BUILDING CONTROL

Solarframe Conservatory Display Proposals DWA. 786/2A
Daisy Road, Potholthorpe, MINE SHAFT DETAILS 28/03/16

Gordon Stephenson - Ch. Arch. Tel 01302 891611
email stevenson_g3@sky.com

position of Gazebo superimposed over
earlier document



Soterframe Conservatory Display Proposals DRWG. 784/2 R
Dorsey Road, Pottolke, MINE SHAFT DETAILS 28/03/16
Gordon Stephens Ch. Arch. Tel 01302 891411
email stevenson_g3@sky.com

APPENDIX E

BARNSLEY SYMAS CORRESPONDENCE

PLACE DIRECTORATE
South Yorkshire Mining Advisory Service



To:	Development Control	FAO:	Georgina Brayford		
My Ref:	M3349/2	Your Ref:	2016/0202		
Date:	15 th March 2016	Enquiries to:	Mr. M. Lyons	Ext:	2690
Subject:	<u>ERECTION OF DETACHED CONSERVATORY DISPLAY UNIT</u> <u>SOLARFRAME LTD, DAVEY ROAD, GOLDTHORPE, ROTHERHAM S63 0JF</u>				

Further to your consultation request of the 7th March 2016, I have the following comments.

Having checked the applicant's details and carried out a thorough search of our records for this particular site, I can confirm that the site is located within a Coal Authority 'High Risk' Planning Referral area, which infers a requirement for a 'Coal Mining Risk Assessment' to accompany the planning application.

The applicant has not submitted a Coal Mining Risk Assessment; however they are aware of the presence of mine shafts, as they have plotted two on the submitted plans. The 'High Risk' area in this instance (as derived from Coal Authority records) covers a 20m radius from the central point of the shaft location. The proposed development is shown to lie within such a zone of the southern shaft on this property.

The Coal Authority, as custodians of the shaft (unless the feature has been conveyed to the land owner by deed, unbeknown to SYMAS) will need to be consulted on the matter directly by the applicant and as a planning consultee. The Coal Authority are likely to OBJECT on the premise that a Coal Mining Risk Assessment which assesses the mining legacy risks, and presents a schedule of works or actions to ensure safe development has not been submitted.

Detailed site specific information to illustrate how the proposed development will take into account the shaft, or to show that it is located the required distance away (for instance, by a line drawn at 45° away from where the shaft side intersects rockhead) will be required.

Coal Authority records outline that the shaft in question "was filled with colliery shale in 1959 and was capped with 1ft thick concrete 3m bgl in 1960." This provides an indication that the depth to rock-head is around 3m, as usual shaft capping practice is at this level. Consequently, should the applicant know the precise shaft centre location and assuming a 3m diameter shaft, the stand off or 'no build' zone would equate to 4.5m radius (Coal Authority confirmation required).

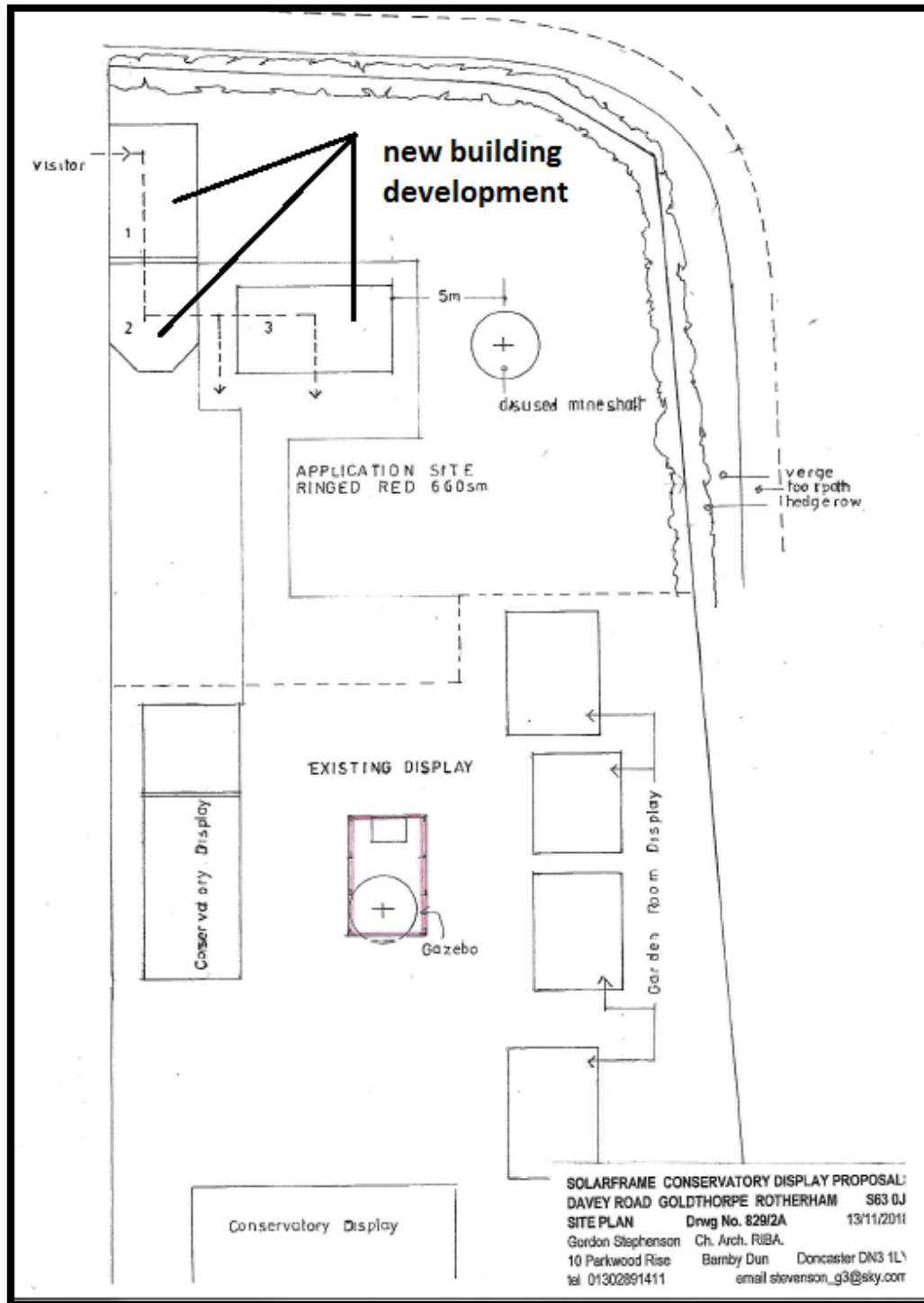
In some cases the Coal Authority may allow certain development within a closer proximity of a mine entry if the foundations of the proposal are suitably designed, but this of course would need to be fully discussed and approved by them.

I trust this satisfies your enquiry at this time, however please consult SYMAS again should you require any further information or advice.

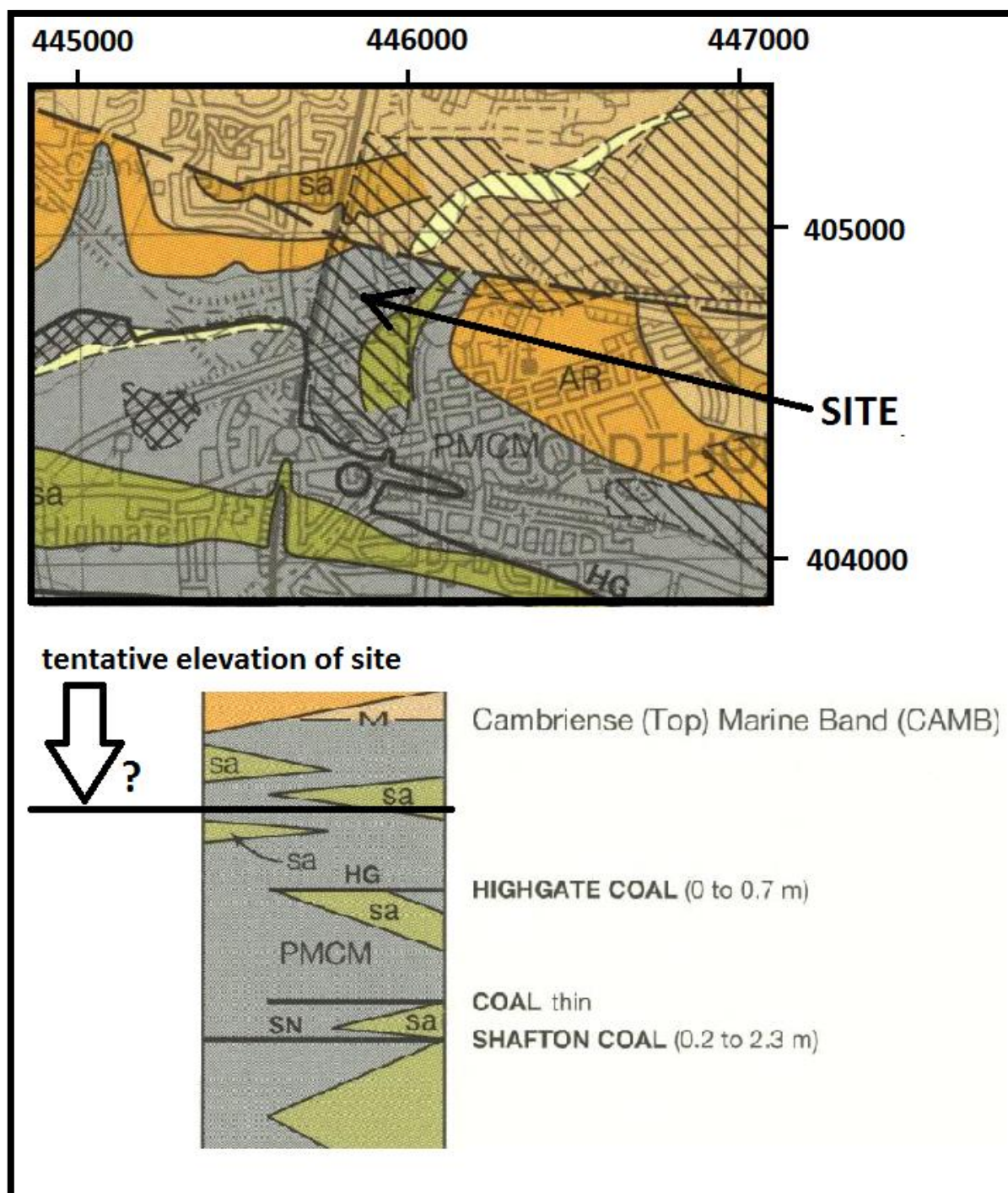
A handwritten signature in black ink, appearing to be 'R' or 'R.'.

Principal Mining Engineer.

APPENDIX F PROPOSED DEVELOPMENT LAYOUT



APPENDIX G
EXTRACTS OF BGS GEOLOGY MAP



APPENDIX H

COAL AUTHORITY ADVICE

 Reply  Reply All  Forward



Wed 12/12/2018 13:41

Geoinvestigate

FW: FAO [REDACTED] RE: [External] Geoinvestigate CMRA query

To Ross Nicolson

From: Chris Telford <ChrisTelford@coal.gov.uk> On Behalf Of Planning Advice

Sent: 12 December 2018 12:55

To: Geoinvestigate <enquiries@geoinvestigate.co.uk>

Subject: FAO [REDACTED] RE: [External] Geoinvestigate CMRA query

Good afternoon [REDACTED]

Further to your enquiry below and our discussion, I am emailing just to confirm the key points. As you appreciate, the information presently available to us is rather limited and therefore my advice below is based on general principles.

To provide more detailed and specific advice, we would need to know the location of the site and have access to a site plan showing the location of the structure within the site so that we could assess its acceptability in the context of any relevant mining legacy features. If you have any more detailed reports that you would also like us to review as part of a pre-application enquiry, we could consider such matters. Such specific pre-application advice lies beyond our statutory role, and us therefore provided on a chargeable (cost recovery) basis. Subject to the provision of all relevant information, we can provide a fee proposal on request, and you would need to complete a proforma invoice as part of the instruction process.

The Coal Authority's policy is that development should avoid mine entries and their zones of influence wherever possible (further information provided in this [link](#).)

In our Planning responses for both statutory consultations (from Local Planning Authorities) and in our pre-application advice, we therefore normally object to any proposed development over a mine entry or within its zone of influence, and we recommend that layouts are adjusted accordingly.

In our Planning responses for both statutory consultations (from Local Planning Authorities) and in our pre-application advice, we therefore normally object to any proposed development over a mine entry or within its zone of influence, and we recommend that layouts are adjusted accordingly.

In exceptional cases, and only if there is clear justification that the development has wider public benefits and the proposed layout cannot be practically altered to avoid such features, such development may be acceptable, but we will also require evidence that a suitable engineering design has been developed to take account of all the relevant safety and environmental risk factors including gas and mine-water. From the limited information that we currently have for the case in question, there does not appear to be any specific justification for the location of the structure, and we do not know that any appropriate precautions have been taken in its design.

You are aware that for the purposes of our statutory role, we only provide bespoke responses for those applications for developments within the Coal Authority Development High Risk Area that are not within a category specified on our exemptions list. Furthermore, we can only provide such responses when we have been consulted by the Local Planning Authority. As a planner, on the basis that your information suggests that proposed structure is not within the curtilage of a dwelling (so lacking associated Permitted Development rights) my understanding is that a planning application should have been made for its development.

Whilst we do not have details of the foundations of the structure in question, it does appear fairly substantial, particularly in respect of the brick stack. Erring on the side of caution, it is thus likely that it would not be subject to exemption, and we would therefore require formal consultation by the Local Planning Authority in this case. We would therefore also require submission of an appropriate Coal mining Risk Assessment with the planning application to the LPA. This assessment should take into account both ground stability and potential mine gas risks.

On the basis of all the above considerations and assumptions, and without the benefit of any further details, we would object to the development, and would request its removal and relocation to a location which is not affected by the mine entry or its zone of influence. As we discussed, the actual position of mine entries may vary from the plotted positions on our records (a potential degree of departure), and the zone of influence is highly dependent upon the depth of superficial deposits in the location. We would expect such factors to be appropriately considered in the site layout.

I trust that this advice is helpful to you.

Regards,

Chris.

 The Coal Authority

Chris Telford
Principal Development Manager
M: 07468 352640

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG