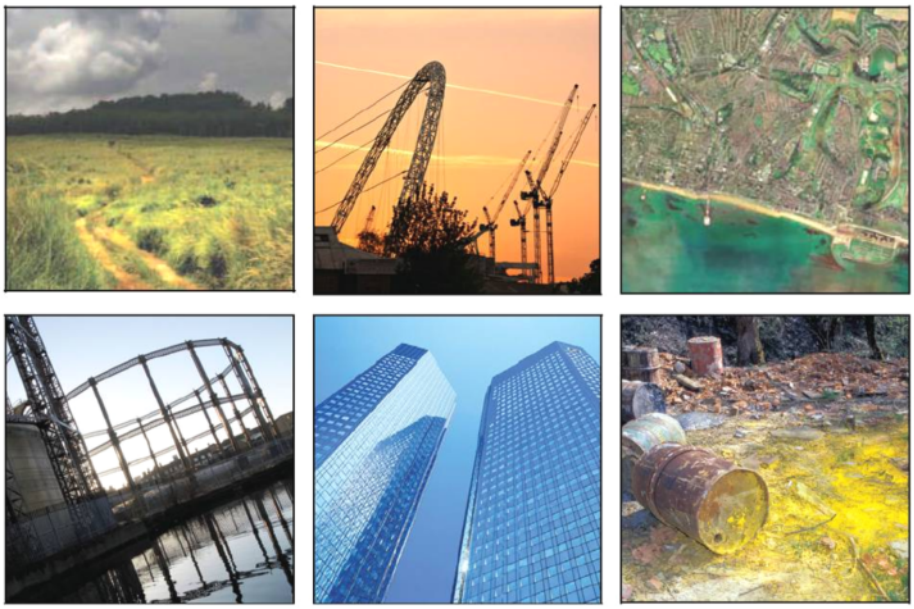
Proposed Extension for ASOS Barnsley
Houghton Main
South Yorkshire

Coal Mining Risk Assessment

For

Teal Houghton Main Sarl



This report has been prepared within the RPS Group Quality Management System to British Standard EN ISO 9001 : 2008.			
Report Type:		***Coal Mining Risk Assessment***	
Report Status:		***Final***	
Project Reference:		***HLEI 22965***	
	Consultant	***Signature***	***Date***
Report Author:	***Robert Philip Senior Consultant***		***September 2012***
Technical Review:	***Nancy Tonkin Technical Director***		***September 2012***

RPS HEALTH, SAFETY & ENVIRONMENT
ENVIRONMENTAL LIABILITY REVIEW

General Notes

THE FOLLOWING NOTES SHOULD BE READ IN CONJUNCTION WITH THE REPORT:

1. This report contains only that available factual data for the site which was obtained from the sources described in the text. These data were related to the site on the basis of the location information made available to RPS and its sub-consultants by the client.

2. The assessment of the site is based on information supplied by the client and on site inspections by RPS and its sub-consultants. Relevant information was also obtained from other sources.

3. The report reflects both the information provided to RPS and its sub-consultants in documents made available for review and the results of observations and consultations by RPS staff and its sub-consultants.

4. Where data have been supplied by the client or other sources, including that from previous site audits or investigations, it has been assumed that the information is correct but no warranty is given to that effect. While reasonable care and skill has been applied in review of this data no responsibility can be accepted by RPS for inaccuracies in the data supplied.

5. This report is prepared and written in the context of the proposals stated in the introduction to this report and its contents should not be used out of context. Furthermore new information, developing practices and changes in legislation may necessitate revised interpretation of the report after its original submission.

6. The copyright in the written materials shall remain the property of the RPS Company but with a royalty-free perpetual licence to the client deemed to be granted on payment in full to the RPS Company by the client of the outstanding amounts.

7. The report is provided for sole use by the addressees and is confidential to them and their professional advisors. No responsibility whatsoever for the contents of the report will be accepted to any person other than the Addressees.

8. The Operating Company and its sub-consultants undertakes to maintain adequate insurance cover for Public Liability and Professional Indemnity Insurance during the course of the Services and for six years after completion thereof providing always that such insurance is available at commercially reasonable rates. Details of these policies are available on request. If such insurance ceases to be available at commercial reasonable rates then the Operating Company shall promptly notify the client.

9. The liability of the Operating Company (and all other companies in the RPS Group and its sub-consultants) in both contract and tort (if any) shall be limited to a period of six years following completion of the Services as indicated by the production of a final version of written report. This limitation shall not apply to claims resulting in personal injury or death.

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3 RISK ASSESSMENT

4 RECOMENDATIONS

FIGURE 1 – SITE LOCATION PLAN

APPENDIX A – COAL AUTHORITY MINING REPORT

1 INTRODUCTION

1.1 Teal Houghton Main Sarl commissioned RPS Health, Safety & Environment ('RPS') to undertake an assessment of the potential for historical coal mining to impact upon the proposed extension of the ASOS, located on Park Spring Road, Cudworth. A Site Location Plan is presented as Figure 1.

Site Description

1.2 The site is located approximately 7.5 kilometres east of Barnsley town centre and about a kilometre to the west of the village of Great Houghton. The National Grid Reference for the centre of the site is approximately SE 420 063.

1.3 The whole of the former Houghton Main colliery site extends to an area of about 28 hectares and is situated on the north eastern edge of the floodplain of the River Dearne, which flows south eastwards roughly parallel to and 150 m from the western edge of the site.

Coal Authority Mining Report

1.4 As part of this review a Coal Authority Mining Report was ordered. The Mining report is presented as Appendix A.

1.5 The Coal Authority Mining Report, reference 51000125276002, dated 7th August 2012 indicated that the site is within the likely zone of influence from workings in 12 seams of coal at depths ranging from 300 metres below ground level (m bgl) to 860m bgl, worked last in 1991. The report states that ground movements associated with these workings are likely to have ceased.

1.6 The report states that the property is in an area where the Coal Authority believes there is coal at or close to the surface. This coal may have been worked at some time in the past.

1.7 The Mining Report confirmed that the site is not within the likely zone of influence of present underground coal workings and is not in an area for which a licence has been granted, or the Coal Authority is determining whether to grant a licence.

1.8 The Coal Authority hold records of three mine shaft entries in the south of the site. These are recorded as being plugged in 1994 and subsequently capped with reinforced concrete slabs by RJB Mining in 2000. The locations of these shafts are indicated on a plan within the Coal Authority Report, presented as Appendix A.

1.9 The Coal Authority confirms that they have not received a damage notice or claim for the site or any property within 50m of the site. The property is not reported to have been subject to remedial works.

2 DESK STUDY

1:50,000 Scale BGS Geological Map

2.1 British Geological Survey 1:50,000 scale map of the area (sheet 87 "Barnsley") indicates that the site is underlain by Ackworth Rock (Sandstone) of the Middle Coal Measures Formation (Pennine Middle Coal Measures Formation). No superficial deposits are indicated to exist in the vicinity of the site.

2.2 The map indicates that the Coal Measures underlying the site are undivided. Strata in the region are indicated to dip towards the north-east although there are no dip markings within 1km of the site. No coal measures are indicated to crop out on site or in the immediate vicinity. There are no identified faults or other significant geological features on site or within the immediate vicinity.

Houghton Main Opencast Site, Draft Compaction Report by Babtie, dated February 2004.

2.3 The report states that the site covers an area of approximately 25 hectares and was operated as an opencast coal mine from 1997 until 2001.

2.4 Babtie reported that they subsequently supervised the backfilling of the mine using earthworks compaction measures.

2.5 The mine was reported to have been backfilled using material arising from the opencast mine works. These materials were segregated into three categories:

- Cohesive soil.
- Well graded granular and dry cohesive soils.
- Uniformly graded material.

2.6 The mine was backfilled from a level of approximately -20m AOD to ground level at approximately 43m AOD. The maximum depth of fill present on site is therefore anticipated to be in the order of 63m.

Proposed Redistribution Centre at Houghton Main near Barnsley, South Yorkshire for Prologis Developments Ltd, by RSA Geotechnics Ltd, dated August 2005

2.7 The investigation report was commissioned in order to obtain geotechnical information for the proposed development of a distribution centre on site.

2.8 The report states that the site is underlain by historical deep mine shafts and subsequently an opencast mine. The opencast mine workings had been backfilled at the time of the investigation.

2.9 Reportedly, historical maps indicate that the site has been exploited for deep coal workings from at least the 1880s. Associated coke ovens, kilns and mineral lines were present across the south of the site from this time and a clay pit encroached over the south-eastern corner. Colliery workings were extended and had spread across the site by 1931. A sewage works was present to the east of the site at this time. Further rectangular buildings and circular tanks were noted in maps from 1985. The colliery was marked as disused from 1993. The site is known to have been exploited as an opencast mine from 1997until 2004.

2.10 An intrusive investigation was undertaken by RSK in July 2005 comprising eight cable percussive boreholes to a maximum depth of 15m bgl, six machine excavated trial pits to a maximum depth of 4.3m bgl and six dynamic probes to a maximum depth of 10m bgl.

2.11 A number of cable percussive boreholes and dynamic probes did not reach their intended depths due to the presence of obstructions within the fill material.

2.12 Fill material encountered comprised gravel to boulder sized fragments of mudstone, siltstone and sandstone in a matrix of stiff, dry, friable clay.

2.13 The coal measures were encountered from 10mbgl in borehole BH7. It was not possible for RPS to discern where on the site borehole BH7 was located based on the provided borehole location plan.

3 RISK ASSESSMENT

Subsidence Issues

3.1 Given the presence of the former opencast mine on site and evidence that the site was backfilled using mine arisings from a depth of approximately 63m bgl by Babtie in 2004, it is considered unlikely that former shallow mine workings (within 30m below the ground surface) are currently present beneath the site. Twelve worked seams identified beneath the site are at depths greater than 300m bgl.

3.2 In most cases it is generally accepted that the presence of competent overburden of ten times the seam thickness is sufficient to mitigate the effects of subsidence at the surface resulting from the collapse of shallow mine workings. Unconsolidated superficial deposits are not considered to constitute competent overburden.

3.3 The Coal Authority report states that it is believed that there is coal at or near the ground surface, which may have been exploited in the past. This is believed to have been excavated as part of historical opencast mine workings from 1997 until 2004. The Compaction Report by Babtie, dated February 2004, indicates that these workings have been backfilled to an engineered, end-product specification. The ground investigation report for the site by RSK, dated August 2005, confirms the presence of compacted fill on site to a depth of 15m bgl. The base of the fill was not reached in the centre of the former opencast workings during the investigation.

3.4 The Coal Authority hold records of three mine shaft entries in the south of the site. These are recorded as being plugged in 1994 at a depth of approximately 225m bgl by RJB Mining in 2000. The shafts were subsequently capped with reinforced concrete slabs at ground level at elevations ranging from 21.6m AOD to 23m AOD. It is understood from the Babtie Compaction Report that the site has subsequently been backfilled to a ground level of approximately 43m AOD. The locations of these shafts are indicated in the Coal Authority Report.

Mine Gas Issues and Spontaneous Combustion

3.5 The Coal Authority Mining Report states that there is no record of mine gas emission requiring action by the Coal Authority within the boundary of the property.

3.6 Mine Gas issues can arise as a result of disturbance of coal seams and workings during investigation and redevelopment of a site due to the introduction of oxygen during drilling and /or piling operations. Given the presence of a former opencast mine on the site, backfilled to an approximate maximum depth of 63m bgl it is considered unlikely that potential future drilling or construction work will come into contact with coal seams. The nearest recorded seam to the ground surface is approximately 300m bgl.

4 RECOMENDATIONS

Subsidence Issues

4.1 Subsidence due to shallow mine workings is unlikely due to the presence of a backfilled opencast mine on site. The closest recorded seam to the ground surface is present at a depth of 300m bgl. In most cases it is generally accepted that the presence of competent overburden of ten times the seam thickness is sufficient to mitigate the effects of subsidence at the surface resulting from the collapse of mine workings. Therefore, the site is not considered to be at significant risk from subsidence due to the collapse of mine workings.

4.2 Subsidence due to the consolidation of deep fill under loading from new structures may be an issue. This can be assessed following further ground investigation and is likely to be mitigated by the adoption of piled or raft foundations.

Mine Gas Issues & Spontaneous Combustion

4.3 The potential for shallow coal seams has not been found underlying the site. However, it may be prudent to adopt recommendations made by the following document during the investigation of the site:

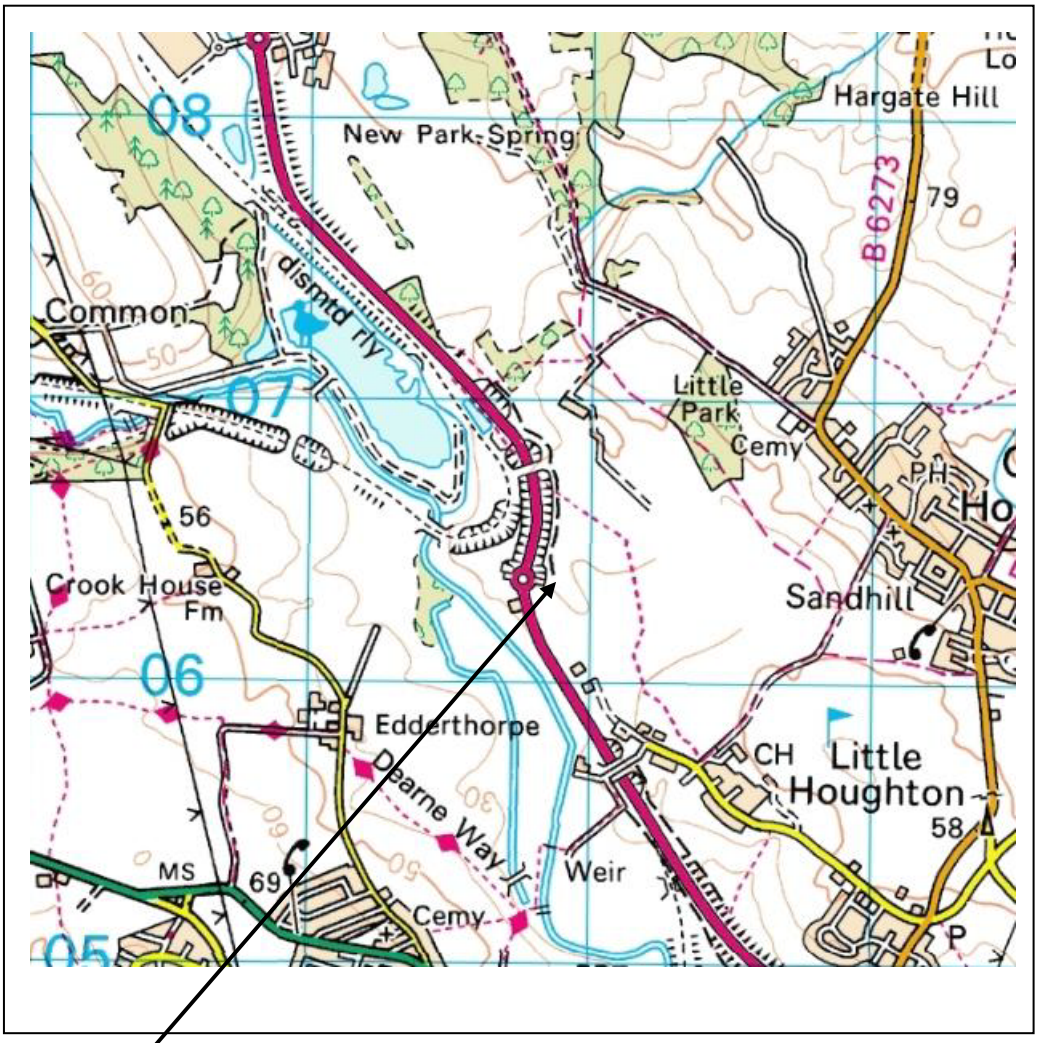
4.4 *Guidance on Managing the Risk of Hazardous Gases when Drilling or Piling Near Coal: The Coal Authority, Health and Safety Executive, British Drilling Association, Federation of Piling Specialists and the Association of Geotechnical and Geoenvironmental Specialists. Published 2012. Contains public sector information licensed under the Open Government Licence v1.0.*

4.5 If rotary drilling methods are adopted during the investigation of the site, water flushing should be the primary flushing method for work in the vicinity of coal measures when a risk of creating and/or moving carbon monoxide has been identified.

4.6 In order to control the risk to off-site residential properties, no boreholes shall be advanced within 25m of occupied properties. However, it is understood that no residential properties are present within 25m of the site boundary. If workings are identified during the site investigation, works should halt immediately and the Coal Authority should be consulted prior to the works proceeding.

4.7 It may also be necessary to undertake a ground gas monitoring programme prior to redevelopment of the site in order to assess the risk to future structures and site users.

FIGURES



Project:	ASOS Site
Project Ref:	HLEI 22965
Figure 1:	Site Location Plan
Map Date:	Current
Scale:	Not to scale

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London
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APPENDIX A: COAL AUTHORITY REPORT

The COAL AUTHORITY

Issued by:
The Coal Authority, Property Search Services, 200 Lichfield Lane, Berry Hill, Mansfield, Nottinghamshire, NG18 4RG
Website: www.groundstability.com Phone: 0845 762 6848 DX 716176 MANSFIELD 5

LANDMARK INFORMATION GROUP LIMITED
SOWTON INDUSTRIAL ESTATE
ABBEY COURT
UNIT 5/7 EAGLE WAY
EXETER
DEVON
EX2 7HY

Our reference:	**51000125276002**
Your reference:	**40668996**
Date of your enquiry:	**07 August 2012**
Date we received your enquiry:	**07 August 2012**
Date of issue:	**07 August 2012**

This report is for the property described in the address below and the attached plan.

Non-Residential Coal Authority Mining Report

SITE AT MILL HOUSE, INGS LANE, LITTLE HOUGHTON, BARNSLEY, SOUTH YORKSHIRE,

This report is based on and limited to the records held by, the Coal Authority, and the Cheshire Brine Subsidence Compensation Board's records, at the time we answer the search.

Coal mining	See comments below
Brine Compensation District	No

Information from the Coal Authority

Underground coal mining

Past

The property is in the likely zone of influence from workings in 12 seams of coal at 300m to 860m depth, and last worked in 1991.

Any ground movement from these coal workings should have stopped by now.

In addition the property is in an area where the Coal Authority believe there is coal at or close to the surface. This coal may have been worked at some time in the past.

Present

The property is not in the likely zone of influence of any present underground coal workings.

Future

The property is not in an area for which the Coal Authority is determining whether to grant a licence to remove coal using underground methods.

The property is not in an area for which a licence has been granted to remove or otherwise work coal using underground methods.

The property is not in an area that is likely to be affected at the surface from any planned future workings.

However, reserves of coal exist in the local area which could be worked at some time in the future.

No notice of the risk of the land being affected by subsidence has been given under section 46 of the Coal Mining Subsidence Act 1991.

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Mine entries

Within, or within 20 metres of, the boundary of the property there are 3 mine entries, the approximate positions of which are shown on the attached plan.

Our records disclose the following information:

441406-001. was filled in 1994 and plugged between 220.66m and 226.66m. The shaft top was excavated in 2000 by RJB Mining in connection with opencast mining operations. It was found to be filled and uncapped. It was subsequently capped at 21.6m AOD by RJB Mining with an 8.5m diameter x 0.5m thick reinforced concrete cap.
441406-002. was filled in 1994 and plugged between 225.04m and 231.04m. The shaft top was excavated by RJB Mining in 2000 in connection with opencast mining operations. It was found to be filled but not capped. It was subsequently capped at 23m AOD by RJB Mining with a 9.0m diameter x 0.4m thick reinforced concrete cap.
441406-003. was filled in 1994 and plugged between 228.67m and 234.77m. The shaft top was excavated by RJB Mining in 2000 in connection with opencast mining operations. It was found to be filled but not capped. It was subsequently capped at 21.6m AOD by RJB mining with a 10.0m diameter x 0.5m thick reinforced concrete cap.
Records may be incomplete. Consequently, there may exist in the local area mine entries of which the Coal Authority has no knowledge.

For an additional fee, the Coal Authority will provide a supplementary Mine Entry Interpretive Report. The report will provide a separate assessment for the mine entry (entries) referred to in this report. It will give details based on information in the Coal Authority's possession, together with an opinion on the likelihood of mining subsidence damage arising from ground movement as a consequence of the existence of the mine entry/entries. It will also give details of the remedies available for subsidence damage where the mine entry was sunk in connection with coal mining.

Please note that it may not be possible to produce a report if the main building to the property cannot be identified from Coal Authority plans (ie. for development sites and new build).

For further advice on how to order this additional information visit www.groundstability.com or telephone 0845 7626 848.

Coal mining geology

The Authority is not aware of any evidence of damage arising due to geological faults or other lines of weakness that have been affected by coal mining.

Opencast coal mining

Past

The property is within the boundary of an opencast site from which coal has been removed by opencast methods.

Present

The property does not lie within 200 metres of the boundary of an opencast site from which coal is being removed by opencast methods.

Future

The property is not within 800 metres of the boundary of an opencast site for which the Coal Authority is determining whether to grant a licence to remove coal by opencast methods.

The property is not within 800 metres of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted.

Coal mining subsidence

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

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

The 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.

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Mine gas

There is no record of a mine gas emission requiring action by the Coal Authority within the boundary of the property.

Hazards related to coal mining

The property has not been subject to remedial works, by or on behalf of the Authority, under its Emergency Surface Hazard Call Out procedures.

Withdrawal of support

The property is in an area for which a notice of entitlement to withdraw support was published in 1982.

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

Working facilities orders

The property is not in an area for which an Order has been made under the provisions of the Mines (Working Facilities and Support) Acts 1923 and 1966 or any statutory modification or amendment thereof.

Payments to owners of former copyhold land

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

Comments on Coal Authority information

The attached plan shows the approximate location of the disused mine entry/entries referred to in this report. For reasons of clarity, mine entry symbols may not be drawn to the same scale as the plan.

Property owners have the benefit of statutory protection (under the Coal Mining Subsidence act 1991*). This contains provision for the making good, to the reasonable satisfaction of the owner, of physical damage from disused coal mine workings including disused coal mine entries. A leaflet setting out the rights and the obligations of either the Coal Authority or other responsible persons under the 1991 Act can be obtained by telephoning 0845 762 6848 or online at www.coal.decc.gov.uk/en/coal/cms/services/claims.

If you wish to discuss the relevance of any of the information contained in this report you should seek the advice of a qualified mining engineer or surveyor. If you or your adviser wish to examine the source plans from which the information has been taken these are normally available at our Mansfield office, free of charge, by prior appointment, telephone 01623 637235. Should you or your adviser wish to carry out any physical investigations that may enter, disturb or interfere with any disused mine entry the prior permission of the owner must be sought. For coal mine entries the owner will normally be the Coal Authority.

The Coal Authority, regardless of responsibility and in conjunction with other public bodies, provide an emergency call out facility in coalfield areas to assess the public safety implications of mining features (including disused mine entries). Our emergency telephone number at all times is 01623 646333.

*Note, this Act does not apply where coal was worked or gotten by virtue of the grant of a gale in the Forest of Dean, or any other part of the Hundred of St. Briavels in the county of Gloucester.

In view of the mining circumstances a prudent developer would seek appropriate technical advice before any works are undertaken.

Therefore if development proposals are being considered, technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site. All proposals should apply good engineering practice developed for mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or mines of coal without the permission of the Coal Authority. Developers should be

aware that the investigation of coal seams/former mines of coal may have the potential to generate and/or displace underground gases and these risks both under and adjacent to the development should be fully considered in developing any proposals. The need for effective measures to prevent gases entering into public properties either during investigation or after development also needs to be assessed and properly addressed. This is necessary due to the public safety implications of any development in these circumstances.

Information from the Cheshire Brine Subsidence Compensation Board

The property lies outside the Cheshire Brine Compensation District.

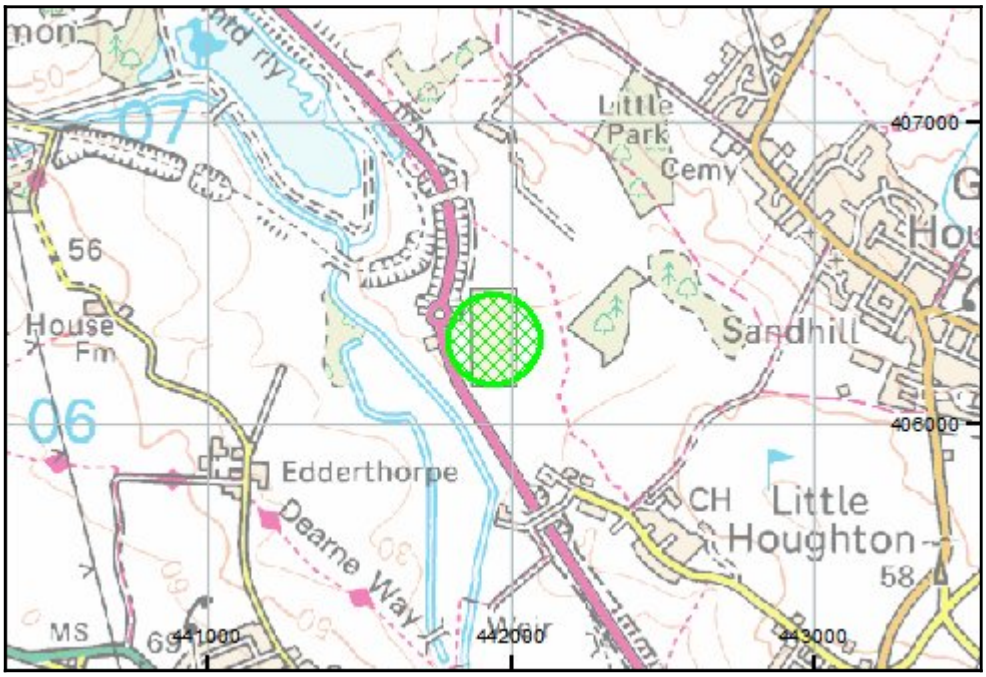
Additional Remarks

This report is prepared in accordance with the Law Society's Guidance Notes 2006, the User Guide 2006 and the Coal Authority and Cheshire Brine Board's Terms and Conditions 2006.

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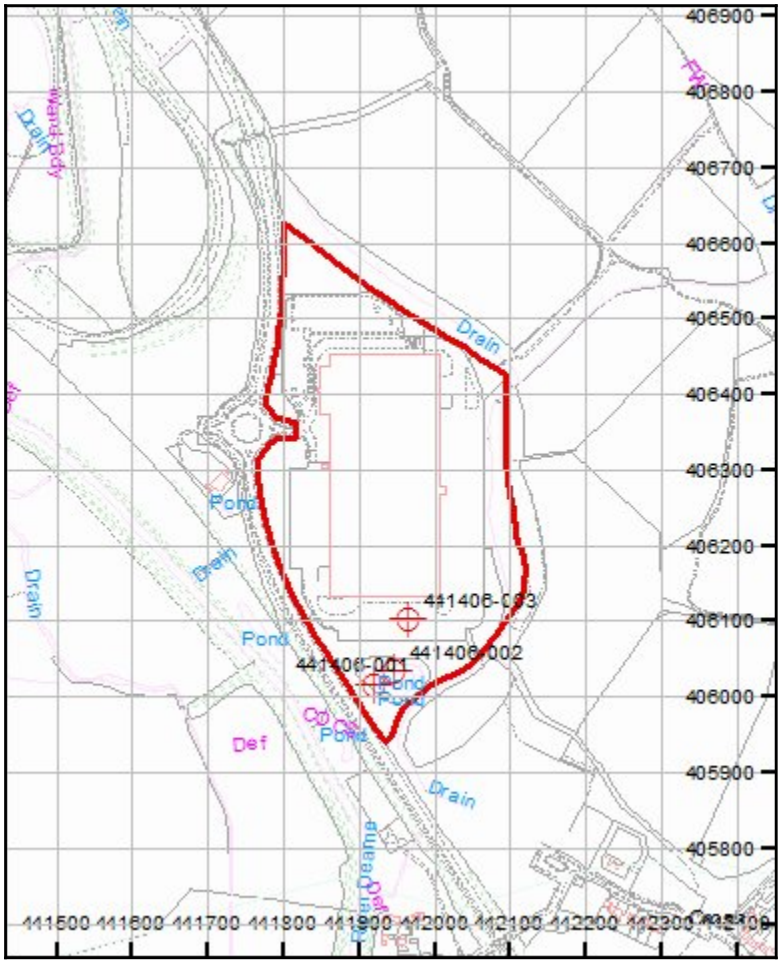
Location map

Approximate position of property



Enquiry boundary

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Key

Approximate position of enquiry boundary shown

Disused Adit or Mineshaft

Mapping sourced from Ordnance Survey