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CHURCH COMMISSIONERS FOR ENGLAND

LAND SOUTH OF DARTON LANE, DARTON, STAINCROSS

PHASE I GEO-ENVIRONMENTAL DESK STUDY

AUGUST 2019

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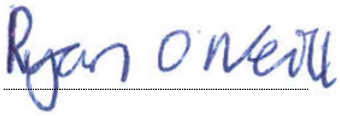
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CHURCH COMMISSIONERS FOR ENGLAND

LAND SOUTH OF DARTON LANE, DARTON, STAINCROSS
PHASE I GEO-ENVIRONMENTAL DESK STUDY

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CONTENTS

1	EXECUTIVE SUMMARY	1
2	INTRODUCTION	3
	Instructions	3
	Site Location	3
	Scope and Objectives	3
	Proposed Site Use	4
3	SITE HISTORY AND CURRENT LAND USE	5
	Data Sources	5
	Site History	5
	Current Site Use	6
	Asbestos	6
	Ecology	7
	Environmental Management	8
4	GEOLOGICAL AND HYDROGEOLOGICAL SETTING	9
	Geology	9
	Hydrogeology	9
	Soil Vulnerability Classification – Leaching Potential	10
	Hydrology	10
5	MINING AND QUARRYING	12
	General	12
	Surface Workings	12
	Shallow Underground Workings	12
	Deep Coal Mining	12
	Mine Entries	13
	Potential Surface Instability	13
	Coal Mine Gas	14
6	ENVIRONMENTAL SETTING AND CONSULTATIONS	15
	Statutory Sources	15
	Contaminated Land Register Entries and Notices	15
	Waste Management	15
	Radon	16
	Environmental Issues	16
	Archaeology	17
	Unexploded Ordnance	17

7	CONCEPTUAL SITE MODEL	18
	Environmental Issues	18
8	ENVIRONMENTAL RISK ASSESSMENT	20
	Introduction	20
	Qualitative Risk Assessment	21
9	CONCLUSIONS AND RECOMMENDATIONS	24

APPENDICES

Appendix I	Standard Terms and Conditions and Limitations to Report
Appendix II	Guidance on Contamination and Land Quality Statements
Appendix III	Sources of Information
Appendix IV	Data from Landmark Information Group Report
Appendix V	Site Visit Record
Appendix VI	Coal Authority Report

DRAWINGS

Drawing No	Title	Scale
SH12190 - 001	Site Location Plan	1:50,000
SH12190 - 002	Site Plan	1:2,500

1 EXECUTIVE SUMMARY

1.1 This report is prepared for due diligence purposes and in accordance with instructions dated 26th October 2018 from Matt Naylor of Church Commissioners of England, Church House, Great Smith Street, London SW1P 3AZ. The site is the Land South of Darton Lane, Darton, Staincross and comprises approximately 3.6 hectares of open fields and pastural land. A summary of pertinent information relating to the site along with a qualitative assessment of the potential risk is provided in Table I.

TABLE I: Summary of Overall Risk			
Issue	**Summary**	**Risk Category**	
		Humans	**Property/ Environment**
Present and past site use.	Present use as open fields and pastural land. Evidence of waste dumping/fly tipping.	Low to Mod.	Low to Mod.
Adjacent land uses.	Historic underground mining as opencast mines, mine shafts and adits evident.	Low to Mod.	Low to Mod.
Environmental setting.	Made ground is likely to be present on site, overlying interbedded coal seams. The site is underlain by solid strata which are classified as a Secondary A Aquifer.	Low	Low
Asbestos	Asbestos containing material has not been identified on site. However, there is a possibility of made ground in both the made ground and along the southern boundary adjacent to the disused railway line.	Low	Low
Geology and Geotechnical	The made ground to the south east of the site could present some geotechnical foundation challenges for the proposed residential low-rise development.	Low to Mod.	Low to Mod.
Mining	Extensive surface, shallow and deep mining within the area and on site. Mine gas migration possible.	Moderate	Moderate
Groundwater and surface water	The site is underlain by solid strata which are classified as a Secondary A Aquifer. The closest groundwater abstraction license is 301m west. The nearest graded surface watercourse is River Dearne which is approximately 400m south of the site.	Low	Low
Flooding	The site is within a Very Low risk area but some potential for surface water flooding in the central area is identified.	Low	Low
Recommended further work	A Phase II intrusive investigation is recommended to clarify the presence and extent of any made ground and shallow mine workings on site.	n/a	n/a
Overall Risk:	**Low to Moderate**		

1.2 The executive summary forms part of the overall report and should not be considered in isolation.

2 INTRODUCTION

Instructions

2.1 This report is prepared in accordance with written instructions from Matt Naylor dated 26th October 2018. This follows a proposal dated 19th September 2018 by Wardell Armstrong.

Site Location

2.2 The Site is the Land South of Darton Lane, Darton, Staincross and is located as shown on Drawing SH12190-001 (1:50,000 scale). A more detailed site plan is shown on Drawing SH12190-002 (1:5,000 scale). The site comprises approximately 3.6 hectares of open grassland and is bounded by a road and residential properties to the North and a disused railway line and further open fields to the South. The Site is located in Darton, Staincross which is approximately 4.5km Northwest of Barnsley.

Scope and Objectives

2.3 The purpose of this report is to identify and examine in broad terms readily available information relating to the:

- past and current uses of the site and surrounding area;
- environmental setting including geology, mining, hydrogeology and hydrology;
- potential contamination sources, pathways and receptors as part of a preliminary conceptual model;
- potential stability and contamination constraints and liabilities that may arise in connection with the present use or proposed use of the site; and
- requirement or otherwise for future studies including potential intrusive site investigation prior to redevelopment.

2.4 The report has been produced in general accordance with the first incremental stage of a Land Quality Statement as set out by the Royal Institution of Chartered Surveyors (RICS) in their publication "Contamination, the Environment and Sustainability" dated April 2010. The report also draws on Environment Agency Report 11 entitled "Model Procedures for the Management of Land Contamination" dated September 2004. Further background to government guidance on contamination and the purpose and use of Land Quality Statements in assessing the risk of contamination at a site is described at Appendix II.

2.5 The report does not constitute or contain a valuation nor is it a full rigorous environmental audit. In this instance the report is prepared for a change of use.

Proposed Site Use

2.6 It is proposed that the site is redeveloped for residential land use.

3 SITE HISTORY AND CURRENT LAND USE

Data Sources

3.1 The history of the site and the surrounding land has been investigated by consultation with a range of archive sources as summarised at Appendix III. The topographical and environmental data is based primarily on an Envirocheck report prepared by the Landmark Information Group and dated 29th October 2018 (LIG report, Appendix IV).

Site History

3.2 Historic maps provided in the LIG report have been used to identify previous land uses, including any significant potentially contaminative uses. Where other features that may have an effect on development of the site have been identified, they are described.

3.3 Table II summarises the history of the site and its immediate vicinity from about 1890's to the present day.

TABLE II: Summary of Land Use

Date	Site Land Use	Adjacent Land Use
1890 -1900's	Open fields dominate the entire site in the 1890's map. There is a drainage path in the centre of the site.	The majority of adjacent land comprises of farmland and open fields. Two 'Belle Vue Cottages' are present to the north east of site. Parallel to these there is a level crossing of the railway line trending north/south. The area is dominated by coal mining, with the presence of both Swallow Hill Colliery (later Darton) 50m south and North Gawber Colliery 120m east. Pits are shown adjacent to a Brick Works located approximately 20m south east of the site. The North Gawber Colliery Railway lies adjacent to the site to the south
1910 – 1930's	No significant change on site	Significant expansion of the North Gawber Colliery to the east. There is an increase in residential housing around Darton, Mapplewell and Staincross. The majority of adjacent land is still predominately utilised for agriculture and farmland.
1940-1960's	A small building is seen adjacent to the drain on plans from 1960's. Two small ponds are also shown in the east of the site on plans from 1960's.	Residential development continues to the north and east of the site. Darton Colliery is shown as disused in the 1950's and the Brick works is no longer evident on plans from 1960's. The Brick pits appear to have been infilled. Spoil tips are shown in the vicinity of Darton

		Colliery and adjacent to the site to the south. The railway to the south is indicated as a Mineral Railway from 1950's.
1970-2000's	The small building is not shown on plans from 1970's onwards. Only one pond is shown in the east on plans from 1990's.	The railway to the south is shown as dismantled. The previous spoil tips are no longer shown but a new spoil tip is shown to the west of the previous ones. A large spoil tip is shown to the south east of site from 1990's (shown as disused in 2006). Significant residential development to the north of Darton Road is seen on plans from 2000.
Present day	No significant change.	No significant change. Demolition of collieries previously present in the area.

Current Site Use

3.4 The site was visited on 1st November 2018. At the time of the visit the site comprised open grassland for grazing with two stables in the western half of the site. The following points are of note:

- the site has a single point of access with a paved road through the centre of the site;
- sporadic fly tipping was evident across site varying from general domestic, industrial and demolition waste. An area of soft irregular ground in the eastern half of the site was noted to have several black binbags beneath;
- potential for made ground across the south eastern corner of the site evident from the irregular topography;
- southern boundary confined by mound which was previously utilised for the historic railway;
- 250L waste drum located adjacent to the fence in the south western corner of the site (label not visible); and
- historical maps suggest ponding in the south eastern corner of the site, upon the site walkover the ground was uneven and marshy. No ponds were visible.

3.5 A site visit record/site walkover is attached at Appendix V.

Asbestos

3.6 The Health and Safety at Work Act, the Control of Asbestos Regulations and the Construction (Design and Management) Regulations impose duties upon employers, site owners, their agents and contractors in respect of hazardous materials including asbestos. Other health and safety and welfare regulations place duties on Employers

to undertake appropriate risk assessments. This could include the commissioning of surveys, identification and management of hazardous materials including any proposals for remedial work.

3.7 A site walkover survey has been completed. However, the walkover survey does not constitute an asbestos survey and not all areas of the site may have been visited or made available for inspection.

3.8 Asbestos has not been identified on site during our site walkover. However, asbestos may be present in the stables on site and could be present in the made ground at the site associated with past historical use. In the event that any asbestos is identified in the future or if it is considered that there is a risk that asbestos exists in the building, a full asbestos survey should be carried out. Guidance on the need for asbestos surveys and the method of carrying them out are given in HSE Publication HSG264.

Ecology

3.9 There are a number of legal and planning policy considerations relating to certain important habitats and species where they are present on or in the vicinity of a site. Protected habitats and species can also be linked to development related activities via surface or groundwater and effects such as human/vehicular presence, noise, dust or pollution.

3.10 Reference to the LIG report indicates no Special Protection Areas, Special Areas of Conservation, National Nature Reserves, Marine Nature Reserves, Local Nature Reserves or Sites of Special Scientific Interest within 1km of the site.

3.11 All protected and important species as well as other non statutory sites (e.g. SINC's and areas of ancient woodland) which are protected by planning policy rather than statute, are omitted. Furthermore, consideration of those habitats defined as 'being of principle importance for the purpose of conserving biodiversity' (NERC Act 2006) which are material planning consideration under the National Planning Policy Framework (NPPF) are beyond the scope of this report.

3.12 Although a site visit has been carried out, this was not specifically for ecological purposes, and was not undertaken by a qualified ecologist. The Environmental Dimension Partnership (EDP) have produced an ecological assessment alongside this Phase 1 Geo-Environmental Report and this has been undertaken by a qualified ecologist.

Japanese Knotweed, Himalayan Balsam and Giant Hogweed

3.13 The Wildlife and Countryside Act, 1981 contains measures for preventing the establishment of non-native species, including 'invasive' plants which may be detrimental to native wildlife, prohibiting the release of animals and planting of plants listed in Schedule 9 in England and Wales. In particular, Japanese knotweed, Himalayan balsam and Giant hogweed can become aggressively dominant, and persistent. Giant hogweed poses certain health risks and Japanese knotweed can cause physical damage to pavements and structures.

3.14 Invasive plant species were not identified on site. However, it should be noted that the survey was not specifically for ecological purposes.

Environmental Management

3.15 Fly tipping was observed on site, including a 250L waste drum (south western corner). There were no further environmental management issues to note.

4 GEOLOGICAL AND HYDROGEOLOGICAL SETTING

Geology

4.1 The assessment of the geology of the site is based on the published geological mapping sheet SE30NW, 1:10,000 scale supplemented by the topographical plans and site visit. A summary of relevant geological information is provided below in Table III.

TABLE III: Summary of Relevant Geological Data

Strata	Description
Made ground.	Made ground of an unknown nature, thickness and extent has been is likely to be present on site (waste tips from previously working collieries).
Natural superficials.	No natural superficial deposits are likely to be present on site.
Solid strata.	Majority of the site consists of the Pennine Middle Coal Measures Formation, an interbedded grey mudstone, siltstone, pale grey sandstone and commonly coal seams. The Barnsley Rock outcrops on the south eastern and western corner of the site, it is a flaggy sandstone of variable thickness and composition. The Barnsley, Dunsil and Gawber Coal Seams outcrop on the site and dip to the north east.
Geological structure.	Three south east trending faults cross the site.
Ground stability.	British Geological Information Services indicate a moderate potential for collapsible and compressible hazards 21m from the site.

Hydrogeology

4.2 Hydrogeological information has been obtained from a review of:

- a LIG Envirocheck report;
- Groundwater Protection Policy and Groundwater Vulnerability maps published by the Environment Agency;
- Hydrogeological maps published by the British Geological Survey; and
- Groundwater Protection: Policy and Practice (Environment Agency, 2006).

4.3 This information indicates the site to be underlain by solid strata which are classified as a Secondary A Aquifer.

4.4 Secondary A aquifers are generally fractured or potentially fractured formations and do not have a high primary permeability. Although not producing large quantities of water for abstraction, they are important for local supplies and may supply base flow to rivers.

4.5 There are two active groundwater abstraction licences within influencing distance of the site (2km). The closest is 301m west (NGR: 431400 409700) and is operated by

Shaw Carpets Ltd which is licensed to abstract 312m^3 of groundwater per day for Commercial use.

4.6 The site does not lie within a source protection zone.

Soil Vulnerability Classification – Leaching Potential

4.7 The soil vulnerability classification groups the many different soil types of England and Wales into three soil vulnerability classes and six sub-classes. Each is based on the physical and chemical properties of the soil, which affect the downward passage of water and contaminants. This classification is not applied to soil above non-aquifers. Soil information for urban areas is based on fewer observations than elsewhere. A worst case vulnerability is therefore assumed until proved otherwise.

4.8 The soil is considered to have a High Leaching potential (HU) due the sites urban location.

Hydrology

4.9 The nearest graded surface watercourse is River Dearne which is approximately 400m south of the site. The Environment Agency has given River Dearne a General Quality Assessment (Chemistry) rating of B (Good).

4.10 The Environment Agency maintains national flood maps based on ground levels, predicted flood levels, information on flood defences and local knowledge. The flood maps show the predicted likelihood of flooding in an area in the context of current and also the proposed land use considered in development planning.

4.11 For existing land use purposes, the likelihood of flooding is classed as very low, low, medium or high based on the Environment Agency map entitled Risk of Flooding from Rivers and Sea. The site is within a Very Low risk area. The chance of flooding each year is between less than 1 in 1000 (0.1%). The central area of the site is shown to be potentially affected by surface water flooding.

4.12 For planning purposes, the likelihood of flooding is classed as low, medium or high based on flood zones identified in National Planning Policy Guidance (2014) attached to the National Planning Policy Framework (2012) and the EA map entitled Flood Map for Planning (Rivers and Sea). The Flood Map for Planning only applies if the site is intended for redevelopment. The site is within Zone 1 and has a low probability of flooding. The chance of flooding each year is less than 0.1% (1 in 1,000). However, as

the development site is more than one hectare in size, a Flood Risk Assessment is required and is currently being undertaken.

5 MINING AND QUARRYING

General

5.1 Research of the mining setting is based on examination of the published topographical and geological information as described in Section 4 of this report along with other mining archive information. A Coal Authority report for the site has been obtained, dated 29th October 2018 and is attached at Appendix VI. Examination has also been made of the Mining Instability Study of Great Britain for any evidence of past mining relating to workings other than coal.

Surface Workings

5.2 Research of topographical, geological and other archive mining records has indicated evidence of surface workings in the area through brick pits and opencast mining. An unlicensed opencast to the south east of the site is shown to encroach onto the site in the south east corner on Coal Authority plans.

Shallow Underground Workings

5.3 Shallow underground mining is generally defined as that mining undertaken at depths of less than about 30m to 50m below rockhead. Collapse of strata above shallow underground workings can result in a total loss of support at the surface. As a result, severe subsidence can be experienced within a localised area or region.

5.4 From the enquiries made and examination of the published geological information there is evidence for seams that lie at shallow depth beneath the site. The Coal Report and Geological plans indicate that three seams (Barnsley, Gawber and Dunsil) outcrop on the site and therefore underlie the site at shallow depth. The Coal Authority report indicates that the Barnsley seam has been worked at 7 and 9m depth below the site (1875-1887). It did not become a statutory requirement to maintain and preserve plans of abandoned mines until 1872. Therefore, it is possible that further unrecorded mine workings may also be present in the Barnsley, Gawber and Dunsil seams beneath the site.

Deep Coal Mining

5.5 Deep mining is generally defined as that mining undertaken at depths greater than about 30m to 50m below rockhead. The Coal Authority report indicates evidence of ten seams that have been mined relating to deep underground mining activity which were all active more than ten years ago (Table IV).

5.6 Whilst ground movements would have occurred due to the mining of any deeper seams, surface subsidence effects should have been largely contemporaneous with the mining. However, there may be exceptions relating to faulting of the strata. The site is considered stable in respect of any past deep mining. There are no current mining activities affecting the site and the site does not lie within influencing distance of any presently known planned future workings.

TABLE IV: Summary of Deep Mining Activity Below the Site

Colliery	Seam	Coal Authority Reference	Depth (m)	Year Last Mined
Darton	TOP HAIGH MOOR	640W	69	1943
Woolley	LOW HAIGH MOOR	164P	76	1935
Darton	LIDGETT	60AT	91	1926
Darton	LIDGETT	64P9	99	1921
Woolley	FENTON	649T	185	1985
Woolley	FENTON	R84	186	1985
Woolley	FENTON	64PS	189	1965
Woolley	WHEATLEY LIME	64PD	249	1960
Woolley	WHEATLEY LIME	60AY	256	1960
Woolley	SILKSTONE	X05	298	1980

Mine Entries

5.7 Surface instability can be associated with recorded or unrecorded mine entries including shafts and adits. The Coal Authority report has indicated that there are twelve recorded mine entries within influencing distance of the site (none indicated to be located on the site itself). Out of the twelve, eight are adits and four are shafts.

5.8 In addition to the recorded mine entries at or near the site, the possibility of there being additional unrecorded mine entries cannot be entirely discounted. During development a careful watch should be maintained for any feature which may represent an unrecorded mine entry, such as circular brickwork or anomalous areas of fill/timber. Should any such feature be identified it should be reported, investigated and acted upon as necessary.

Potential Surface Instability

5.9 Potential collapse of the surface can occur in areas underlain by mine workings or mine entries present at shallow depth (typically less than 30m and sometimes up to 50m below ground level). It is recommended that appropriate research of relevant records and site investigation, including obtaining permission from the Coal Authority,

is completed. This will allow more detailed evaluation of the issues and the likely methods of mitigation or treatment.

Coal Mine Gas

5.10 Examination of the mining and geological information indicates that it is possible that gases migrating from now abandoned coal mine workings may affect the site.

6 ENVIRONMENTAL SETTING AND CONSULTATIONS

Statutory Sources

6.1 Information from various statutory sources has been summarised from the LIG report prepared specifically for this site and abridged at Appendix VI A full copy of the LIG report is available on request. The results from a site visit have also been considered as part of this assessment.

Contaminated Land Register Entries and Notices

6.2 No contaminated land entries or notices are identified within 1km of the site.

Waste Management

6.3 Information supplied has indicated the presence of three landfills within 1km of the site boundary. There are also three Environment Agency historic recorded landfill sites, and one other type of waste management site located within 1km of the site. The closest recorded facility of each type is shown in Table V.

6.4 In addition to the recorded/licensed landfilling activities in the vicinity of the site, the possibility, although remote of there being unrecorded landfilling activities within influencing distance of the site cannot be entirely discounted. If at some time in the future, the presence of such an unrecorded landfill is revealed then its potential influence on the site may need to be investigated and dealt with as necessary.

TABLE V: Recorded Landfill Sites	
Location	**Details**
Licenced Waste Management Facility: Landfill Licence Holder: Unknown Grid Ref: 431874 409408 Distance from Site: 376m	Site Location: South of Site Licence Number: Unknown Authority: Barnsley Metropolitan Borough Council, Environmental Health and Trading Site Category: Unknown Waste Type: Unknown Licence Status: Unknown
TABLE V: Historic Landfill Sites	
Location	**Details**
Licenced Waste Management Facility: Landfill Licence Holder: Shaw Carpets Limited Grid Ref: 431695 409509 Distance from Site: 289m	Site Location: Barnsley Road, Darton, Barnsley Licence Number: EAHLD04346 Authority: Unknown Site Category: Unknown Waste Type: Deposited Waste included Inert, Industrial and Commercial Waste Licence Status: Revoked

TABLE V: Waste Management Facilities	
Location	**Details**
Licenced Waste Management Facility: Vehicle De-pollution Facility Licence Holder: Qualter-Smith Paul Anthony Grid Ref: 433228 409781 Distance from Site: 937m	Site Location: East of site Licence Number: 65486 Authority: Environment Agency - North East Region, Yorkshire Area Site Category: Unknown Waste Type: Unknown Licence Status: Revoked

Radon

6.5 Radon can be a hazard within built developments and especially within enclosed or confined spaces. The Health Protection Agency and British Geological Survey document "Indicative Atlas of Radon in England and Wales" (2007) provides a summary of the number of homes in a given area above the “Action Level” for radon. Although the radon atlas relates directly to measurements taken from homes or dwellings, it is also relevant to employers assessing risks for enclosed underground and groundfloor work places.

6.6 The BRE document "Radon: guidance on protective measures for new buildings" (2015) provides guidance for reducing the concentration of radon in new buildings and a two stage procedure using accompanying maps needed to determine the level of protection for a given site.

6.7 These documents have been consulted and the site is shown to lie in an area where consideration should be given to geological data and whether basic protection against radon may be needed should development of residential dwellings or new structures of similar form of construction and compartmentation occur.

Environmental Issues

6.8 The Environment Agency data via the LIG report records the following environmental issues at or in the vicinity of the site:

- Twenty category one and two (significant and major) pollution incidents to controlled waters (Table VI);
- Seven discharge consents (Table VII);
- Two Local Authority Pollution Prevention Controls (Table VIII); and
- One prosecution and enforcement (Table IX).

TABLE VI: Pollution Incidents to Controlled Waters	
Incident	**Details**
Property Type: Industrial Premises Grid Ref: 431500 409500 Distance from Site: 350m	Reference: 106536 Pollutant: Unknown Incident Date: 4th January 1990 Note: Unknown Incident Severity: Category 2 - Significant

TABLE VII: Discharge Consents	
Consent	**Details**
Operator: Yorkshire Water Services Ltd Grid Ref: 431317 410026 Distance from Site: 408m	Location: Darton Church Street BarnsleyS75 5HG. Discharge Reference: Wra8610 Date: 20th November 2017 Type: Sewage Discharges Receiving Water: River Dearne Status: Varied under EPR 2010

TABLE VIII: Local Authority Pollution Prevention Controls	
Operator and Location	**Details**
Operator: Robert Thompson Grid Ref: 431115 409725 Distance from Site: 574m	Authority: Barnsley Metropolitan Borough Council Reference: PPC/B/102 Date: 18th October 1999 Description: PG1/14 Petrol filling station Status: Authorised

TABLE IX: Prosecutions and Enforcements	
Operator and Location	**Details**
Operator: Unknown Grid Ref: 431286 409268 Distance from Site: 663m	Prosecution Text: EA News Release 04/03/1999, Found guilty of knowingly permitting controlled waste to be deposited without a licence. Prosecution Act: EPA90 Hearing Date: 4th March 1999 Verdict: Guilty

Archaeology

6.9 Preliminary examination of historical maps indicates no apparent features of significant archaeological interest in the general vicinity of the site.

Unexploded Ordnance

6.10 A Zetica regional unexploded ordnance (UXO) risk map has been reviewed. The map shows the site to be in a Low risk area. Examination of historic plans indicates that the area around the site has not had previous military use and does not appear to have been subject to aerial bombardment during the Second World War. The risk of unexploded ordnance (UXO) at the site can be considered to be very low. Should new evidence indicate that UXO may be an issue, it would be prudent to seek appropriate specialist advice.

7 CONCEPTUAL SITE MODEL

Environmental Issues

7.1 Conclusions are drawn from the preceding information in terms of potential sources of contamination, possible receptors that may be affected by any sources of contamination and the pathways that exist between source and receptor. This basic risk assessment allows identification of the suitability of the site for its current and future use and evaluation of any potential environmental liability that may attach to the site. A description of past or existing uses and any chemicals of potential concern is attached at Appendix VIII. The issues can be broadly addressed as follows: land contamination, groundwater contamination, surface water contamination, ground gases and air pollution.

7.2 The land use history has identified the following potentially significant sources of contamination both on the site and adjacent to the site.

Potentially Significant Contamination Source On Site:

1. Made ground potentially present.
2. Ground gas associated with coal seams and radon.

Potentially Significant Contamination Source Off Site:

3. Surrounding commercial and industrial properties including a mill, 'Works' and 'Factory'.

7.3 As a result of the land use history presented in previous sections of this report the site may have a number of sources of contamination. For land or groundwater to be designated as polluted a linkage must exist between:

- a source of contamination capable of causing significant harm;
- human or environmental receptors; and
- a pathway by which the contamination can reach the receptor.

7.4 The conceptual site model presented in Table X details an initial assessment of all potential pollutant linkages.

TABLE X: Conceptual Site Model		
Source (Contaminant)	**Pathway**	**Receptor**
No 1. Made ground potentially present (heavy and phytotoxic metals, PAH, asbestos).	1. Inhalation. 2. Dermal contact. 3. Ingestion. 4. Surface runoff. 5. Groundwater migration. 6. Direct contact (aggressive attack). 7. Gas migration.	1. Current occupiers. 2. Future occupiers. 3. Construction workers. 4. Groundwater. 5. Surface water. 6. Subsurface building materials [sulphur] and plastic service pipes [phenol]. 7. Flora and Fauna.
No 2. Ground gas associated with coal seams and radon	1. Inhalation. 7. Gas migration.	1. Current occupiers. 2. Future occupiers.
No 3. Surrounding historical industry including agriculture, mills and a garage (hydrocarbons, solvents, metals, phenols).	1. Inhalation. 2. Dermal contact. 3. Ingestion. 4. Surface runoff. 5. Groundwater migration. 6. Direct contact (aggressive attack). 7. Gas migration.	1. Current occupiers. 2. Future occupiers. 3. Construction workers. 4. Groundwater. 5. Surface water. 6. Subsurface building materials [sulphur] and plastic service pipes [phenol]. 7. Flora and Fauna.

8 ENVIRONMENTAL RISK ASSESSMENT

Introduction

8.1 The main issues considered in the risk assessment are:

- The environmental risks identified, if any, that may have implications for the current and the proposed use of the site;
- how likely it is that the environmental risks identified may affect the site. This is considered against a background of continuation of the current use and potential for the site to be redeveloped in accordance with the proposed use;
- other areas of primary concern from a ground engineering and environmental viewpoint that may have been revealed as a result of the research carried out. These features are limited to the scope of work/research carried out and may not cover such factors as the wider planning constraints, archaeology, ecology etc.

8.2 The Model Procedures for the Management of Land Contamination (CLR 11) states that, *"**Risk** is a combination of the probability or frequency of occurrence of a defined hazard and the magnitude of the consequences of the occurrence."*

8.3 For ease of reference and understanding the risks are assessed against 3 possible levels/categories:

- **Low risk** - site considered suitable for use and environmental setting. Contaminants may be present but unlikely to have an unacceptable impact on key targets. Action unlikely to be needed;
- **Moderate risk** - site may not be suitable for use and environmental setting. Contaminants probably or certainly present and likely to have an unacceptable impact on key targets. Action may be needed in the medium term; and
- **High risk** - site probably or certainly not suitable for use and environmental setting. Contaminants probably or certainly present and very likely to have an unacceptable impact on key targets. Urgent action needed in short term.

8.4 Under each of the categories the environmental issues which have been identified have been assessed with regard to a wide range of topics including (where appropriate):

- the 'source-pathway-receptor' concept;
- the behaviour of potential contaminants within the environment;
- environmental processes;
- industrial operations and best practice;

- current environmental legislation;
- the views and practices of the environmental regulators;
- the likelihood of environmental notices, orders or other enforcement action;
- any requirements to remove waste, contaminated or hazardous materials;
- the health and safety of occupiers or neighbours;
- any redevelopment plans for the site;
- effects on the fabric of buildings caused by contamination; and
- financial and cost implications.

Qualitative Risk Assessment

8.5 From the combination of the foregoing information a qualitative assessment of the potential geo-environmental risk is provided in Table XI. Where indicated, these risks may need to be considered for any future redevelopment of the land.

8.6 The effect of the present site use on the surrounding area is assessed with regard to the possible contaminant migration from the site off site and with regard to the general environmental setting and land quality of the surrounding area in order to put the on-site assessment in context.

TABLE XI: Qualitative Risk Assessment

Issue	Summary	Risk Category	
		Humans	Property/ Environment
Contamination Potential:			
Present site use.	Farm land comprising open fields.	Low	Low
Past site use.	Reworked ground relating to mining industry and evidence of waste dumping/fly tipping.	Low to Mod.	Low to Mod.
Impact to site from past and present adjacent land uses.	Substantial mining history (see below). Adjacent Brick Works.	Low to Mod	Low to Mod
Mining history.	Historic underground mining. Surface, shallow and deep mining evident beneath the site. Opencast mines, mine shafts and adits evident within the area.	Moderate	Moderate
Emissions, pollution incidents, discharges etc.	There have been twenty category one and two (significant and major) pollution incidents to controlled waters, seven discharge consents, two Local Authority Pollution Prevention Controls and One prosecutions and enforcements. None appear to be related to the site activities.	Low	Low

TABLE XI: Qualitative Risk Assessment			
Issue	**Summary**	**Risk Category**	
		Humans	**Property/ Environment**
Asbestos.	Asbestos containing material has not been identified on site. However, there is a possibility of asbestos being present within the buildings and in the reworked made ground.	Low to Mod	Low to Mod.
Environmental Sensitivity:			
Geology.	Made ground is likely to be present on site, overlying interbedded coal seams of the Pennine Coal Measure Formation and Barnsley Rock formation.	n/a	n/a
Groundwater vulnerability.	The site is underlain by solid strata which are classified as a Secondary A Aquifer. The closest groundwater abstraction licence is 301m west.	Low	Low
Surface water vulnerability.	The nearest graded surface watercourse is the River Dearne.	Low	Low
Geological constraints:			
Made ground / superficials / solid geology.	Made ground may be present on site (particularly in the south east) and could present some geotechnical foundation challenges for the proposed residential low-rise development, depending on degree of compaction and nature of fill.	Low to Mod.	Low to Mod.
Mining setting.	Extensive shallow and deep mining within the area. Mine gas migration possible.	Moderate	Moderate
Risks relating to other constraints (miscellaneous):			
Flooding.	The site is within a Very Low risk area. The chance of flooding each year is between less than 1 in 1000 (0.1%). Some potential surface water flooding may occur in the central areas of the site.	Low	Low
Ecology.	Treeline confining southern border of the site.	Low.	Low
Topographical features	Irregular ground, depression in the south eastern corner of the site.	Low	Low
Liability Issues:			
Risk of liability with past use of site.	Farm land comprising open fields. Shallow mining	Low to Mod.	Low to Mod.
Risk of liability with current use of site.	Farm land comprising open fields.	Low	Low
Risk of liability for proposed use of site.	The proposed use of the site is for residential housing.	Moderate	Moderate

TABLE XI: Qualitative Risk Assessment			
Issue	**Summary**	**Risk Category**	
		Humans	**Property/ Environment**
Overall Risk for Site:	**Low to Moderate**		

9 CONCLUSIONS AND RECOMMENDATIONS

9.1 Based on the available information summarised in this report the site is considered to present an overall Low to Moderate risk from past use, adjacent operations, ground instability.

9.2 The Moderate risk is associated with potential made ground on site and the high likelihood of shallow mining across the site.

9.3 The site is currently utilised for farmland and it is understood that the site will be redeveloped for residential housing. For this sensitive land use, it is considered that the site is likely to represent a low to moderate risk of hazard or environmental liability without further investigation and mitigation of any issues.

9.4 For redevelopment of the site we would anticipate that an investigation of the geological conditions will be required for contamination and foundation design purposes. It is also anticipated that an extensive programme of investigation and stabilisation of shallow mine workings will be required.

9.5 A Phase II investigation is recommended at the site to provide further information and at this stage should include:

- trial pitting and sampling, to identify the presence and lateral extent of any made ground and for general geotechnical purposes; and
- drilling across the site to investigate the location and extent of shallow mining, provide geotechnical information and assess any gas risk from the historic mining activity.

APPENDIX I

Standard Terms and Conditions and Limitations to Reports

STANDARD TERMS AND CONDITIONS AND LIMITATIONS TO REPORTS

This Report is provided for the stated purpose and for the sole use of the client in accordance with the Terms and Conditions of Appointment under which the services were performed. The Report is confidential to the client and no other warranty, expressed or implied, is made as to the professional advice included in the Report or any other services provided by Wardell Armstrong LLP. This Report may not be disclosed by the Client nor relied upon by any other party without the prior and express written agreement of Wardell Armstrong LLP.

The conclusions and recommendations contained in this Report are based upon information provided by others including details supplied by the client and/or professional advisors on the assumption that all relevant information from whom it has been requested and/or supplied is accurate. Information so provided and/or supplied has not been verified independently by Wardell Armstrong LLP, unless otherwise stated in the Report.

The methodology adopted and the sources of information used by Wardell Armstrong LLP in providing the services are outlined in this Report. The work described in this Report is based on the conditions and information as stated at the date the Report was completed. The scope of this Report and the services are accordingly limited by these circumstances. The findings outlined in the Report together with any opinions expressed and recommendations made are considered to be valid and appropriate at the time of preparation and for the specific purpose or purposes intended. Whilst a walk over site visit may have been carried out as part of the work this has been limited to observations only and no other physical investigations, sampling and testing work has been carried out as part of this work.

Wardell Armstrong LLP disclaim any undertaking or obligation to advise any person of any change in any matter affecting the Report which may come or be brought to Wardell Armstrong LLP's attention after the date of the Report. Unless otherwise stated in this Report, the assessments made assume that the sites and facilities will continue to be used for their current purpose without significant changes.

Where any site observations have been carried out, these have been restricted to a level of detail required to meet the stated objectives of the services. The results from any site observations made may vary and further confirmatory work should be made after the issuance of this Report. Wardell Armstrong LLP does not guarantee or warrant any estimates or projections contained in this Report.

APPENDIX II

Guidance on Contamination and Land Quality Statements

CONTAMINATION

Environmental Protection Act Part IIA

Contaminated land was defined for the first time under Part IIA of the Environmental Protection Act 1990. Part IIA was inserted into the 1990 Act by section 57 of the *Environment Act 1*995. The regime came into effect in England on 1 April 2000, Scotland on 12 July 2000 and Wales on 15 September 2001.

Contaminated land is defined as "any land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the land, that:
(a) significant harm is being caused or there is a significant possibility of such harm being caused; or
(b) significant pollution of the water environment is being caused or there is a significant possibility of such pollution being caused."

Harm is described in the EPA 1990 as being *"harm to the health of living organisms or other interference with ecological systems of which they form part and, in the case of man, includes harm to his property".*

There are a number of important government policies and priorities underlying the Act. The first priority is to prevent the creation of new contamination by use of this Act and other controls such as Environmental Permitting (formerly regulated by Integrated Pollution Prevention and Control and Waste Management licensing). The second is to identify and remove unacceptable risks to human health and the environment. In addition there is a desire to bring contaminated land back into beneficial use whilst seeking to ensure that the cost burdens faced by individuals, companies and society as a whole are proportionate, manageable and economically sustainable.

Under Part II(a), Local Authorities are responsible for the inspection of contaminated land and for ensuring that remediation is undertaken where necessary. Local Authorities also maintain a Public Register detailing the regulatory actions that they have implemented. The Environment Agency has a complementary role and act as the enforcing Authority for designated special sites.

The policy objectives are underlain by the "suitable for use" approach to the remediation of contaminated land, which the Government considers is the most appropriate approach to

achieving sustainable development. This approach recognises that the risks presented by any given level of contamination will vary greatly on a site by site basis.

In general the responsibility for paying for remediation will, where feasible, follow the "polluter pays" principle. In the first instance, any person who caused or knowingly permitted the contaminating substance to be in, or under the land will be the appropriate person(s) to undertake the remediation and meet its costs. If it is not possible to find such a person, responsibility will pass to the current owner or occupier of the land.

Planning Regime

Land contamination, or the possibility of it, is a material consideration for the purposes of town and country planning. This means that the planning authority has to consider the potential implications of contamination both when it is developing structure or local plans and when it is considering individual applications for planning permission. Under the suitable for use approach, risks should be assessed and remediation requirements set, on the basis of both the current use and its proposed new use.

Model Procedures for the Management of Contaminated Land - CLR 11

The Model Procedures for the Management of Contaminated Land (CLR11) was published by the Environment Agency and DEFRA in September 2004. It provides a technical framework for applying a risk management process when dealing with land affected by contamination in a way that is consistent with government policies and legislation within the UK.

The approach presented is designed to be applicable to a range of regulatory and non-regulatory contexts including:

i. Development or redevelopment of land under the planning regime;
ii. Regulatory intervention under Part IIA of the EPA 1990;
iii. Voluntary investigation and remediation; and
iv. Managing potential liabilities of those responsible for individual sites or a portfolio of sites.

The definition of contaminated land is based upon the principles of risk assessment. *"Risk is a combination of the probability, or frequency, of occurrence of a defined hazard and the magnitude of the consequences of the occurrence".*

CLR 11 uses the concept of "pollutant linkage" and identifies that there are three essential

elements for any risk:

- A **contaminant** – a substance that is in, on or under the land and has the potential to cause harm or cause pollution
- A **receptor** – something that could be adversely affected by a contaminant, such as people, an ecological system, property or a water body; and
- A **pathway** – a route or means by which a receptor can be exposed to, or affected by, a contaminant.

Each of these elements can exist independently, but they only create a risk when all three are present and linked together.

CLR 11 is structured as follows:

<table>
<tr><td colspan="3">Chapter 1
Overview of Model Procedures</td></tr>
<tr><td>Chapter 2
Risk Assessment</td><td>Chapter 3
Options Appraisal</td><td>Chapter 4
Implementation of the Remediation Strategy</td></tr>
<tr><td>Preliminary Risk Assessment</td><td>Identification of feasible remediation options</td><td>Preparation of the implementation plan</td></tr>
<tr><td>Generic quantitative risk assessment</td><td>Detailed evaluation of options</td><td>Design, implementation and verification</td></tr>
<tr><td>Detailed quantitative risk assessment</td><td>Developing the remediation strategy</td><td>Long term monitoring and maintenance</td></tr>
<tr><td colspan="3">Chapter 5
References and Glossary</td></tr>
</table>

A Phase I Environmental Assessment provides the first stage of the risk assessment (Preliminary Risk Assessment in the table above). Further risk assessment (described in Chapter 2) and the subsequent sections (Chapters 3 and 4) of CLR11 are dealt with through site investigation and any subsequent remediation reports.

CLR11 defines the purpose of the Preliminary Risk Assessment to "*develop an initial **conceptual model** of the site and establish whether or not there are potentially unacceptable risks".* It identifies that during a preliminary risk assessment *"the assessor collects and reviews largely desk-based information to prepare an initial conceptual model to identify possible*

pollutant linkages. The assessor then evaluates the possible linkages, using criteria appropriate to the risk assessment context".

CLR 11 states that "*Development of the conceptual model forms the main part of preliminary risk assessment, and the model is subsequently refined or revised as more information and understanding is obtained through the risk assessment process".* The Conceptual model presents the characteristics of the site in diagrammatic or written form and shows the possible relationships between potential contaminants, pathways and receptors. This then forms the basis of the further risk assessment and any site investigation or other works.

RICS Guidance Note: Contamination, the environment and sustainability (GN13/2010)

The document is intended to provide guidance to chartered surveyors (members of RICS). It supersedes an earlier document "Contamination and its implications for Chartered Surveyors" (September 1997) which promoted the concept of a Land Quality Statement (LQS) as the written output of an environmental risk assessment.

In addition to contamination, the document provides a summary and guidance on other factors which might affect land value and environmental duties and/or liabilities. These factors assist with the overall assessment of the site and often provide valuable information to consider within the conceptual model required in CLR11. These factors include, but are not limited to, flooding and flood risk management, invasive species, mineral workings, shallow mining subsidence, natural subsidence risk and radon.

Section 11.8 of the RICS guidance note which sets out what is usually incorporated within a Land Quality Statement as follows:

- *a detailed description of the site and its location, by reference to a plan;*
- *a description of the current uses of the land and of the adjacent land;*
- *a summary of the site history, produced by reference to historical maps, archive records, and statutory, local authority and water authority registers and records;*
- *identification of potential contaminants associated with existing and previous uses, or with geological and hydrogeological features, through site investigation reports and the specialists' own observations;*
- *identification of other relevant issues, including those pertaining to archaeology, ecology, sites of special scientific interest (SSSIs), human population exposure and characteristics*

of off-site locations that could have an environmental impact or be sensitive to effects from the subject site;

- *conclusions as to:*
  - *whether remedial treatment is necessary or prudent to enable the continued use of the property for its current use without undue risk to the health of persons using the property;*
  - *whether remedial treatment is necessary or prudent to reduce the risk of damage to a third party's health or property, or damage to the environment, which may give rise to a claim for damages, prosecution or action by the appropriate regulatory authorities;*
  - *if remedial treatment is not warranted, whether a residual risk of future claims from third parties and regulatory authorities remains;*
  - *whether concern regarding the risks associated with the known or suspected presence of contamination restricts the prudent use of the property compared with its likely range of possible uses if the site were uncontaminated;*
  - *if the property is to be redeveloped for a specified purpose, how much additional expense would be incurred in investigating contamination of the property further, and in carrying out any necessary remedial work, as compared with an uncontaminated property. Estimates produced prior to intensive investigations are often extremely broad; and*
  - *whether there is a likely implication from the foregoing for the value and/or the viability of development.*

Further information is available from a range of public and professional bodies including central government, local Council and the Environment Agency. Pertinent documents for additional information include Safe Development of Housing on Contaminated Land, 2014; , Managing and Reducing Land Contamination: Guiding Principles, 2010 and the Water Framework Directive (2000/60/EC, 23 October 2000).

APPENDIX III

Sources of Information

The following principal sources of information have been consulted in the preparation of this report:

- Landmark Envirocheck report dated 29th October 2018 (*a review of information provided by Landmark Information Group Ltd who were commissioned to provide an "Envirocheck" report consisting of published historical plans, environmental data sheets and environmental sensitivity plans;*
- Ordnance Survey County and National Grid Series Plans;
- Trade Directories;
- Other library archive as relevant;
- British Geological Survey published maps and memoirs;
- Environment Agency/NRA Groundwater Vulnerability Map Series;
- British Geological Survey borehole database;
- Environment Agency;
- Coal Authority;
- Inhouse Wardell Armstrong archives;
- Local Planning Offices;

APPENDIX IV

Data from Landmark Report

STATUTORY SOURCES OF INFORMATION

Information from the Landmark Information Group Ltd has been summarised in the Table below.

The site sensitivity map and full copy of the Envirocheck data is available on request.

Distance from an Approximate Central Point on Site*				
Agency & Hydrological	**On Site**	**0 to 250m**	**251 to 500m**	**501 to 1000m (*up to 2km)**
BGS Groundwater Flooding Susceptibility	Yes	Yes	Yes	
Contaminated Land Register Entries and Notices				
Discharge Consents			7	44
Prosecutions Relating to Controlled Waters				
Enforcement and Prohibition Notices				
Integrated Pollution Controls			1	
Integrated Pollution Prevention and Control				
Local Authority Integrated Pollution Prevention and Control				
Local Authority Pollution Prevention and Controls				2
Local Authority Pollution Prevention and Control Enforcements				
Nearest Surface Water Feature	Yes			
Pollution Incidents to Controlled Waters			10	36
Prosecutions Relating to Authorised Processes				1
Prosecutions Relating to Controlled Waters				
Registered Radioactive Substances				
River Quality			1	2
River Quality Biology Sampling Points				
River Quality Chemistry Sampling Points				2
Substantiated Pollution Incident Register				2
Water Abstractions			1	(*3)
Water Industry Act Referrals				
Groundwater Vulnerability	Yes			
Drift Deposits				
Bedrock Aquifer Designations	Yes			
Superficial Aquifer Designations				
Source Protection Zones				
Extreme Flooding from Rivers or Sea without Defences		Yes		
Flooding from Rivers or Sea with Defences				
Areas Benefiting from Flood Defences				
Flood Water Storage Areas				
Flood Defences				
Detailed River Network Lines				
Detailed River Network Offline Drainage				
OS Water Network Lines		6	15	48
Waste	**On Site**	**0 to 250m**	**251 to 500m**	**501 to 1000m (*up to 2km)**
BGS Recorded Landfill Sites				
Historic Landfill Sites			3	
Integrated Pollution Control Registered Waste Sites				
Licensed Waste Management Facilities (Landfills Boundaries)				
Licensed Waste Management Facilities (Locations)				1
Local Authority Landfill Coverage	1			
Local Authority Recorded Landfill Sites			3	
Potentially Infilled Land (Non-Water)		6	10	16
Potentially Infilled Land (Water)			1	11
Registered Landfill Sites			2	1
Registered Waste Transfer Sites				
Registered Waste Treatment or Disposal Sites				

Hazardous Substances	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2km)
Control of Major Accident Hazards Sites (COMAH)		1		
Explosive Sites				
Notification of Installations Handling Hazardous Substances (NIHHS)				
Planning Hazardous Substance Consents				
Planning Hazardous Substance Enforcements				
Geological	**On Site**	**0 to 250m**	**251 to 500m**	**501 to 1000m (*up to 2km)**
BGS 1:625,000 Solid Geology	Yes			
BGS Estimated Soil Chemistry	Yes	Yes	Yes	
BGS Recorded Mineral Sites		23	8	26
BGS Urban Soil Chemistry				
BGS Urban Soil Chemistry Averages				
CBSCB Compensation District				
Coal Mining Affected Areas	Yes			
Mining Instability	Yes			
Man-Made Mining Cavities				
Natural Cavities				
Non Coal Mining Areas of Great Britain	Yes	Yes		
Potential for Collapsible Ground Stability Hazards	Yes	Yes		
Potential for Compressible Ground Stability Hazards		Yes		
Potential for Ground Dissolution Stability Hazards				
Potential for Landslide Ground Stability Hazards	Yes	Yes		
Potential for Running Sand Ground Stability Hazards	Yes	Yes		
Potential for Shrinking or Swelling Clay Ground Stability Hazards	Yes	Yes		
Radon Potential - Radon Affected Areas	Yes			
Radon Potential - Radon Protection Measures	Yes			
Industrial Land Use	**On Site**	**0 to 250m**	**251 to 500m**	**501 to 1000m (*up to 2km)**
Contemporary Trade Directory Entries		6	12	62
Fuel Station Entries				1
Points of Interest - Commercial Services		1	7	25
Points of Interest - Education and Health				
Points of Interest - Manufacturing and Production		2	5	18
Points of Interest - Public Infrastructure		1	1	14
Points of Interest - Recreational and Environmental			2	
Gas Pipelines				
Underground Electrical Cables				
Sensitive Land Use	**On Site**	**0 to 250m**	**251 to 500m**	**501 to 1000m (*up to 2km)**
Ancient Woodland				
Areas of Adopted Green Belt	1			
Areas of Unadopted Green Belt				
Areas of Outstanding Natural Beauty				
Environmentally Sensitive Areas				
Forest Parks				
Local Nature Reserves				
Marine Nature Reserves				
National Nature Reserves				
National Parks				
National Sensitive Areas				
Nitrate Vulnerable Zones	1			1
RAMSAR Sites				
Sites of Special Scientific Interest				
Special Areas of Conservation				
Special Protection Areas				
World Heritage Sites				

*The distances recorded are approximate and measured from the site boundary.

** Where ‘Yes’ and ‘No’ are referred to this indicates the presence or absence of data and does not imply a potential risk or hazard.

APPENDIX V

Site Visit Record

Site Ownership:	Church Commissioners for England	Date:	1/11/2018
Project:	Land South of Darton	Visited by:	Ryan O'Neill
Job Number:	SH12190	Site Area:	3.64 hectares

Assessment Topic	Summary Note
Boundary and Access	
Type of Boundary (N,S,E and W)	Confined to the north by Darton Lane road, houses to the east/west and the disused railway line to the south.
Extent of boundary	Residential housing to the north of Darton Lane and agricultural land to the south.
Location of site entrances(s)	Dirt road in the middle of the site from Darton Lane.
Restrictions to access	Gated fields with two horses on each, fenced in all directions.
Access for plant?	Dirt road with open access, no headroom restrictions.
Traffic issues / restrictions?	None visible.
Current Land Use	
Land use type	Open fields to keep horses.
Buildings - No., size, construction	Two stables to the west and east of the site.
Defined areas / divisions	Stables joined together separated by a wooden panel.
Surface type and condition	Predominately grassland.
Approx. % of surface coverings	98% grassland the rest concrete hardstanding for stables.
Adjacent land use(s)	Residential buildings to the north and east, open agricultural farmland to the south.
Noise, dust, odours & emissions	No emissions on site, noise from traffic with adjacent road.
Env. Management	Adequate for current use.
Fly tipping	Noted in a few places, sporadic across site. Possible waste dump in south eastern boundary of site with plastic bags just below ground.
Structures and Services	
Notable structures	N. A
Storage Facilities e.g. tanks, bunding etc.	One storage tank not bunded, likely used for water storage.
Waste management	Limited to no waste generated from current site use.
Presence of ACM in structures	None as informed.
Structural condition	Stables in poor condition, will likely be demolished.
Settlement / Subsidence	Not evident.
Below ground structures	Potential mine adit (not clear).
Electrical substations	None noted.
Manhole covers – Culverts?	Manholes across site.
Pipeline markers	Not seen.
Overhead Services	Electrical cables, anchored into ground on site.
Topography	
Abrupt changes in slope	Change in height at northern boundary adjacent to Darton lane.
Overburdened slopes	Not seen.
Excavations at base of slopes (Natural?)	Not seen.
Depressions	Visible in eastern corner of the site, likely reworked ground.
Mounds	Irregular shaped ground, possibly reworked?
Evidence of landslip	Not visible.
Local subsidence / settlement	No
Imported soils	Not seen.
Evidence of mining	Potential mine adit (unclear)
Soil and Geology	
Surface soil type	Exposure poor to accurately identify.
Soil / rock outcrops	Soft silty CLAY outcropping from dried out ponded water (south east)

Visible geological boundaries	No
Evidence of desiccation	South-eastern corner, drying of ponded water has caused desiccation cracks.
Shrinkable soils (Peat / Silt)	Potentially silt on site.
Flora and Fauna	
Vegetation cover	Mainly grassland, some inlet of larger shrubs in the centre of the site.
Quality of vegetation	Good, site well vegetation.
Trees	Parallel to the southern boundary of the site.
Habitat suitability	Excellent
Presence of ponds	Dried up ponds on the south eastern corner of the site.
Invasive species incl. location	None noted.
Ground and surface water	
Ground saturation / ponding	Dried up ponds south east of the site.
Evidence of flooding	None
Water loving plant species	None visible
Water bodies / sources	Rainfall
Water quality – Flow, colour.	Unknown
Local Knowledge	
Place / street names	None
Local industrial records	None
Site history	Substantial historical mining within the area.
Health and Safety	
Hazards identified	None
Security?	No
Mitigation?	No

Additional Notes / Sketch Plans / Photographs

- Sporadic fly tipping across site varying from general housekeeping, industrial and demolition waste. Black binbags under soft irregular ground, possible waste dump.
- Potential for made round across the south eastern corner of the site evident from the irregular topography, potentially reworked.
- Southern boundary confined by mound which was previously utilised for the railway, now disused.
- 250L waste drum located on site (label not visible).
- Potential for a mining adit on site (unclear).

A P P E N D I X V I

Coal Authority Report

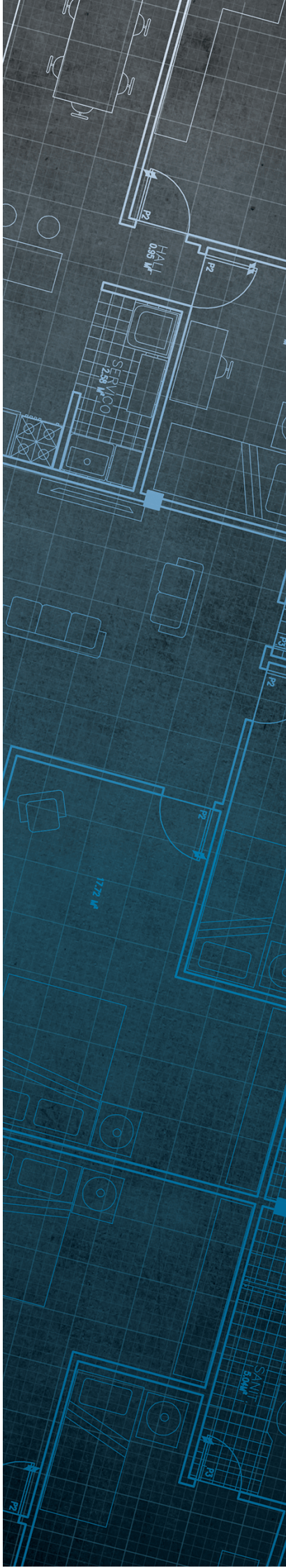
The Coal Authority

Consultants

Coal Mining Report

Sh12190
Darton
Barnsley
South Yorkshire

Date of enquiry:	**29 October 2018**
Date enquiry received:	**29 October 2018**
Issue date:	**29 October 2018**
Our reference:	**51001959649001**
Your reference:	**SH12190/SH6107**



Consultants

Coal Mining Report

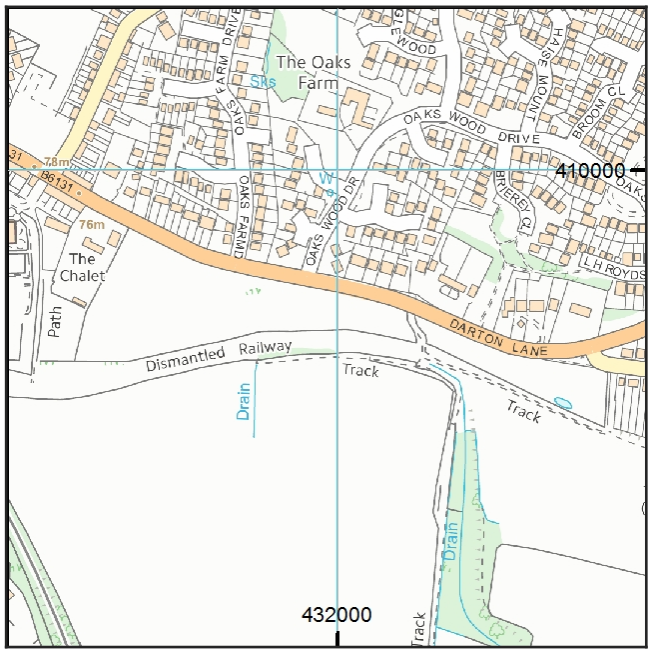
This report is based on and limited to the records held by the Coal Authority at the time the report was produced.

Client name

WARDELL ARMSTRONG

Enquiry address

Sh12190
Darton
Barnsley
South Yorkshire



Approximate position of property

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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	BARNSLEY	Coal	609R	7	Beneath Property	4.1	North-East	237	1887
unnamed	BARNSLEY	Coal	6OAR	9	Beneath Property	4.1	North-East	237	1875
DARTON	TOP HAIGH MOOR	Coal	640W	69	Beneath Property	3.6	South-West	94	1943
WOOLLEY	LOW HAIGH MOOR	Coal	164P	76	Beneath Property	3.6	East	7	1935
NORTH GANBER	TOP HAIGH MOOR	Coal	640X	81	South-East	3.6	East	94	1949
DARTON	LIDGETT	Coal	6OAT	91	Beneath Property	5.3	North-East	66	1926
DARTON	LIDGETT	Coal	64P9	99	Beneath Property	3.7	East	72	1921
WOOLLEY	FENTON	Coal	649T	185	Beneath Property	5.0	North-East	209	1985
WOOLLEY	FENTON	Coal	R84	186	Beneath Property	4.4	North-East	209	1985
WOOLLEY	FENTON	Coal	64PS	189	Beneath Property	4.9	East	175	1965
WOOLLEY	FENTON	Coal	64PU	207	South-West	5.3	South-East	195	1984
WOOLLEY	MIDDLETON MAIN	Coal	6OAW	231	North	6.4	East	52	1952
unnamed	MIDDLETON MAIN	Coal	6J5P	232	North-East	4.7	East	57	1952
unnamed	MIDDLETON MAIN	Coal	6Y05	240	North	5.0	North-East	126	1952
WOOLLEY	WHEATLEY LIME	Coal	64PD	249	Beneath Property	5.7	North-East	71	1960
WOOLLEY	WHEATLEY LIME	Coal	6OAY	256	Beneath Property	4.5	North-East	58	1960
unnamed	WHEATLEY LIME	Coal	6Y34	262	North	6.8	North-East	69	1959
WOOLLEY/REDBROOK	SILKSTONE	Coal	X05	298	Beneath Property	4.0	North-East	115	1980

Probable unrecorded shallow workings

Yes.

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Spine roadways at shallow depth

Distance to spine roadway (m)	Direction to spine roadway
Within	N/A

Mine entries

Entry type	Reference	Grid reference	Treatment description	Mineral	Conveyancing details
Adit	431409-002	431600 409821		Coal	
Adit	431409-003	431604 409790		Coal	
Shaft	432409-008	432305 409642		Coal	
Shaft	432409-011	432081 409884		Coal	
Adit	432409-012	432074 409874		Coal	
Adit	432409-015	432317 409749		Coal	
Adit	432409-016	432340 409734		Coal	
Adit	432409-019	432333 409655		Coal	
Adit	432409-034	432100 409850		Coal	
Adit	432409-037	432313 409692		Coal	
Shaft	432409-038	432299 409678	has probably been totally removed by opencast mining operations at some time in the past.	Coal	
Shaft	432409-039	432280 409665	has probably been totally removed by opencast mining operations at some time in the past.	Coal	

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Abandoned mine plan catalogue numbers

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

NE158	7081	M175
17603	NE1034	SCC20
16345	5692	NE816

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

Seam name	Mineral	Seam workable	Distance to outcrop (m)	Direction to outcrop	Bearing of outcrop
BARNSLEY	Coal	Yes	Within	N/A	320
DUNSIL	Coal	Yes	Within	N/A	138
UNNAMED	Coal	Yes	Within	N/A	304

Geological faults, fissures and breaklines

Please refer to the 'Summary of findings' map (on separate sheet) for details of any geological faults, fissures or breaklines either within or intersecting the enquiry boundary.

Faults under or close to the property 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

Distance to site investigation (m)	Direction
25.0	North

See Section 4 for further information.

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 31st 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.

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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 notices to withdraw support were given in 1945, 1946, 1979 and 1980.

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.

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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.

Site investigations

The site is within an area of previous interest. It is close to where the Coal Authority has received information relating to past site investigations.

The site requires further investigation and may influence how you approach your risk assessment.

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.

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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.

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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.

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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.

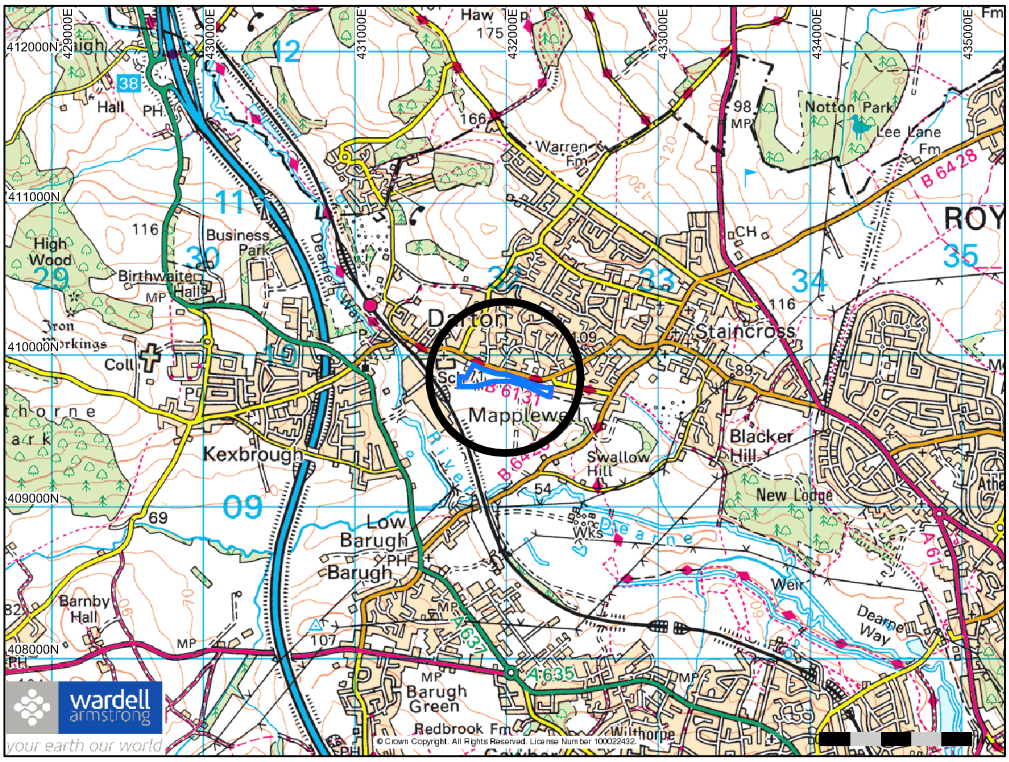
Payment to owners of former copyhold land
Relevant notices which may affect the property and any subsequent notice of retained interests in coal and coal mines, acceptance or rejection notices and whether any compensation has been paid to a claimant.

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	SIZE: A4	SCALE: 1:50,000	DATE: 29/10/18
PROJECT: LAND SOUTH OF DARTON BARNSLEY	DRAWN BY: DP	CHECKED BY: RO	APPROVED BY: JS
DRAWING TITLE: SITE LOCATION PLAN			

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REFERENCE

SITE BOUNDARY

REVISION	DETAILS	DATE	DR'N	CHK'D	APP'D
A	First Issue	06/02/19	DP	RO	JS

CLIENT
THE CHURCH COMMISSIONERS FOR ENGLAND

PROJECT
LAND SOUTH OF DARTON
BARNSLEY

DRAWING TITLE
SITE PLAN

DRG No.	REV
SH12190-002	A

DRG SIZE	SCALE	DATE
A3	1:5,000	29/10/18

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