Environmental Statement

Appendix 10.2: Mineral Safeguarding Assessment

Land at Lower Berse Farm, Wrexham

On behalf of Redrow Homes Ltd

July 2024



Mineral Safeguarding Assessment
Ruthin Road, Wrexham

Reference:14-854-R4-RevD
Date: June 2024

MINERAL SAFEGUARDING ASSESSMENT

Ruthin Road
Wrexham
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Prepared for:

Redrow Homes

Report Ref: 14-854-R4-RevD
Date Issued: June 2024

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1. INTRODUCTION

1.1. BACKGROUND

E3P has been commissioned by Redrow Homes to undertake a Mineral Safeguarding Assessment in connection with the construction of a large strategic residential development located at Ruthin Road, Wrexham.

National Planning Policy Framework (July 2018) indicates that authorities should safeguard mineral resources by defining Mineral Safeguarding Areas; and adopt appropriate policies so that known locations of specific minerals resources of local and national importance are not sterilised by non-mineral development where this should be avoided (whilst not creating a presumption that the resources defined will be worked).

The NPPF also indicates that authorities should set out policies to encourage the prior extraction of minerals, where practical and environmentally feasible, if it is necessary for non-mineral development to take place and they should not normally permit other development proposals in Mineral Safeguarding Areas if it might constrain potential future use for mineral working.

The assessment has also considered the Wrexham Unitary Development Plan (1996-2011) and Wrexham Local Development Plan (LDP – Adopted December 2023) the as the adopted plan at the time of writing.

1.2. PROPOSED DEVELOPMENT

Redrow Homes are currently in a master planning phase with a view to constructing a residential development for up to 1450 dwellings, plus associated roads, open space, community facilities, a site for a primary school. An area has been safe-guarded to facilitate construction of future major highways infrastructure (should this continue).

Drawing 14-854-002 (Appendix III) identifies the proposed development layout.

A snapshot of the proposed masterplan layout is indicated in Figure 1.1.

FIGURE 1.1 SNAPSHOT OF PROPOSED MASTRERPLAN



1.3. OBJECTIVES

The objectives of the geoenvironmental site assessment are as follows:

- Review geological data in relation the proposed development site;
- Review local authority and county council information in relation to Mineral Safeguard Areas.
- Assess the implications of any proposed development upon the mineral resource.
- Assess the likely impacts associated with the extraction of minerals upon the wider environment.

1.4. SOURCES OF INFORMATION

- British Geological Survey Map and Borehole Records;
- Welsh Government - The Mineral Resource Map of Wales - *TheMineralResourceMapsofWales.pdf (bgs.ac.uk)*
- Wrexham Borough Council Local Development Plan (2013-2028) Policy SP17: Minerals Supply and Safeguarding

- Wrexham Unitary Development Plan – 1996-2011 – February 2005 (adopted) – Policy MW9 'Protection of Mineral Resources'

1.5. LIMITATIONS

The limitations of this report are presented in Appendix I.

1.6. CONFIDENTIALITY

E3P has prepared this report solely for the use of the client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from E3P; a charge may be levied against such approval.

2. SITE SETTING

2.1. SITE DETAILS

Site Address	Land off Ruthin Road, Offa, Wrexham, LL14 4HP.
National Grid Reference	E 331553, N 349878.
Site Area	72.85ha

All acronyms used within this report are defined in the Glossary presented in Appendix II.

A site location map is presented in Appendix III as Drawing 14-854-001.

2.2. CURRENT SITE USE

E3P has undertaken a site walkover of the entire site and a description of the key findings is summarised in Table 2.1.

TABLE 2.1 SITE DESCRIPTION

Occupancy/Use	The subject site is an irregular shaped parcel of land located to the southwest of Wrexham and is currently used as agricultural farmland featuring associated farm house and barn structures in the northwest and is also the site of a telecoms mast with anchoring and power substation structures to the south. A residential property lies to the north of the telecoms mast accessed from Berse Lane.	
Structures	The site is predominantly agricultural land with structures present including a farm house and barns in the northwestern corner, a residential dwelling towards the west of the site, and an electrical substation supplying a telecoms mast in the south. A residential property lies to the north of the telecoms mast accessed from Berse Lane. No further structures have been identified within the site boundary.	
Access	Pedestrian and vehicular access can be gained through the farmyard off Berse Road to the north of the site. Field gates are sporadically present throughout the site from major highways surrounding the site that could be used as access.	
Slope	The site is slightly variable in topography with the site at a higher elevation in the west, falling in an easterly direction. Generally, the land falls 20 m from the west to the east.	
Retaining Structures	No retaining structures are present within the site boundary.	
Surface Cover (%)	**Buildings**	5%
	Hardstand	0%
	Soft Cover	95%
Vegetation/Ecology	As the site is agricultural land, the majority of the area is grass or cropland, including maize, barley and wheat at the time of site investigation. The field boundaries are mature hedgerows and tracks/ bridleways with sporadic mature trees. There is a small water feature crossing the northwestern section of the site.	

Hazardous Material Storage	No above-ground storage tanks (ASTs) or underground storage tanks (USTs) were observed at the site during the preliminary site walkover. Due to the farm use and the mechanical equipment use across the site there is likely to be a fuel store in the region of the barns and farm house. As such it is likely that fuels, oils, lubricants have been stored in relatively small volumes in this part of the site. Hazardous Materials storage is not considered likely across the remainder of the site.
Asbestos-Containing Material (ACM)	No evidence of ACM was noted across the majority of the site during the site walkover. Access was not granted to the farm building or the residential dwelling on site; however, due to the age of the building, it is likely that ACM will be contained within the building fabric. It is possible this is also the case surrounding the existing property in the south and dependant on the age of the electricity substation this may also feature ACM. Due to the lack of any further structures on the site, it is unlikely there will be any widespread asbestos present on the site. A pre-demolition asbestos survey will be required within all existing buildings within the site boundary.
Polychlorinated Biphenyls (PCBs)	Given the age of the substation in the south of the site there is a potential for PCBs to have been utilised. In the absence of any further viable uses PCBs are unlikely to be present throughout the site or in any significant volumes.

2.3. SURROUNDING AREA

The surrounding area land uses are summarised in Table 2.2.

TABLE 2.2 SURROUNDING LAND USES

DIRECTION	LAND USE
North	Residential properties, agricultural land, Moneypenny Telephone Answering Service.
East	Residential properties, Clywedog Secondary School.
South	Residential properties, Bersham Road, River Clywedog, Bryn Tirion Hall School.
West	Agricutural land, A483.

2.4. SITE HISTORY

A review of the pertinent Ordnance Survey mapping suggests that the site comprised agricultural land with two farm buildings; Lower Berse Farm and Bryn-Moel from circa 1872 until the present day. A small pond was present in the southeast of the site from 1938. From 1964, a large pond was recorded to the south of Lower Berse farm. A wireless electricity station has been constructed next to Bryn-Moel from 1992. A track leading from the south of Lower Berse Farm has been added. No further changes were recorded to the present day.

3. GEOLOGY

The British Geological Survey (BGS) map for the site, (1:50,000, Solid and Drift editions) and online records indicate the site is underlain by the geological sequence presented in Table 4.1.

TABLE 4.1 SUMMARY OF UNDERLYING GEOLOGY

GEOLOGICAL UNIT	CLASSIFICATION	DESCRIPTION
Drift	Glacial Till Alluvium	SAND, SILT, CLAY and GRAVEL
Solid	Pennine Lower Coal Measures Pennine Middle Coal Measures	MUDSTONE, SILTSTONE and SANDSTONE

E3P has reviewed the BGS database, which identified two boreholes located on site from which to compare the published geology above.

The borehole logs are summarised in Table 4.2.

TABLE 4.2 SUMMARY OF BGS BOREHOLE RECORDS

LOCATION	DEPTH	MADE GROUND	DRIFT	SOLID
SJ35SW1107	3.35 m	0.30 – 0.50m	CLAY > 3.35 m	Not encountered
SJ34NW550	2.44 m	Not encountered	SILT and GRAVEL > 2.44 m	Not encountered

4. MINERALS SAFEGUARDING

4.1. NATIONAL PLAN

The Welsh Government Plan provides the following framework with respect to safeguarding minerals:

The following mineral resources, within the Mineral Safeguarding Areas shown on the Policies and Proposals Map, will be safeguarded against needless sterilisation by non-mineral development:

a) Tertiary Shallow Coal
b) SAND and GRAVEL
c) Brick CLAY
d) Other Sandstone

Within a Mineral Safeguarding Area, non-mineral development except for those types of development set out in Appendix 6, should not be permitted until the prospective developer has produced evidence prior to determination of the planning application to demonstrate:

a) the existence, the quantity, the quality and the value of the underlying or adjacent mineral resource; and
b) that proposals for non-mineral development in the vicinity of permitted mineral sites or mineral site allocations would not unduly restrict the mineral operations.

Within a Mineral Safeguarding Area, where important mineral resources do exist, except for those types of development set out in Appendix 6, non-mineral development should not be permitted unless it has been demonstrated that:

a) the non–mineral development is temporary and does not permanently sterilise the mineral; or,
b) the material planning benefits of the non-mineral development would outweigh the material planning benefits of the underlying or adjacent mineral; or,
c) it is not practicable or environmentally acceptable in the foreseeable future to extract the mineral.

Within a Mineral Safeguarding Area, where important minerals do exist and the above criteria have not been met, the non-mineral development except for those types of development set out in Appendix 6, should not be permitted unless the development includes provision for the extraction of the mineral prior to the development being implemented.

4.2. LOCAL PLAN

With reference to the Wrexham Borough Council Local Development Plan (2013-2028) Policy SP17: Minerals Supply and Safeguarding, the council have outlined its area-specific requirements for the available minerals supply and safeguarding thereof.The plan is now finalised and adopted (December 2023) and the following is pertinent.

The SP17 policy states that minerals will be sustainably managed through:

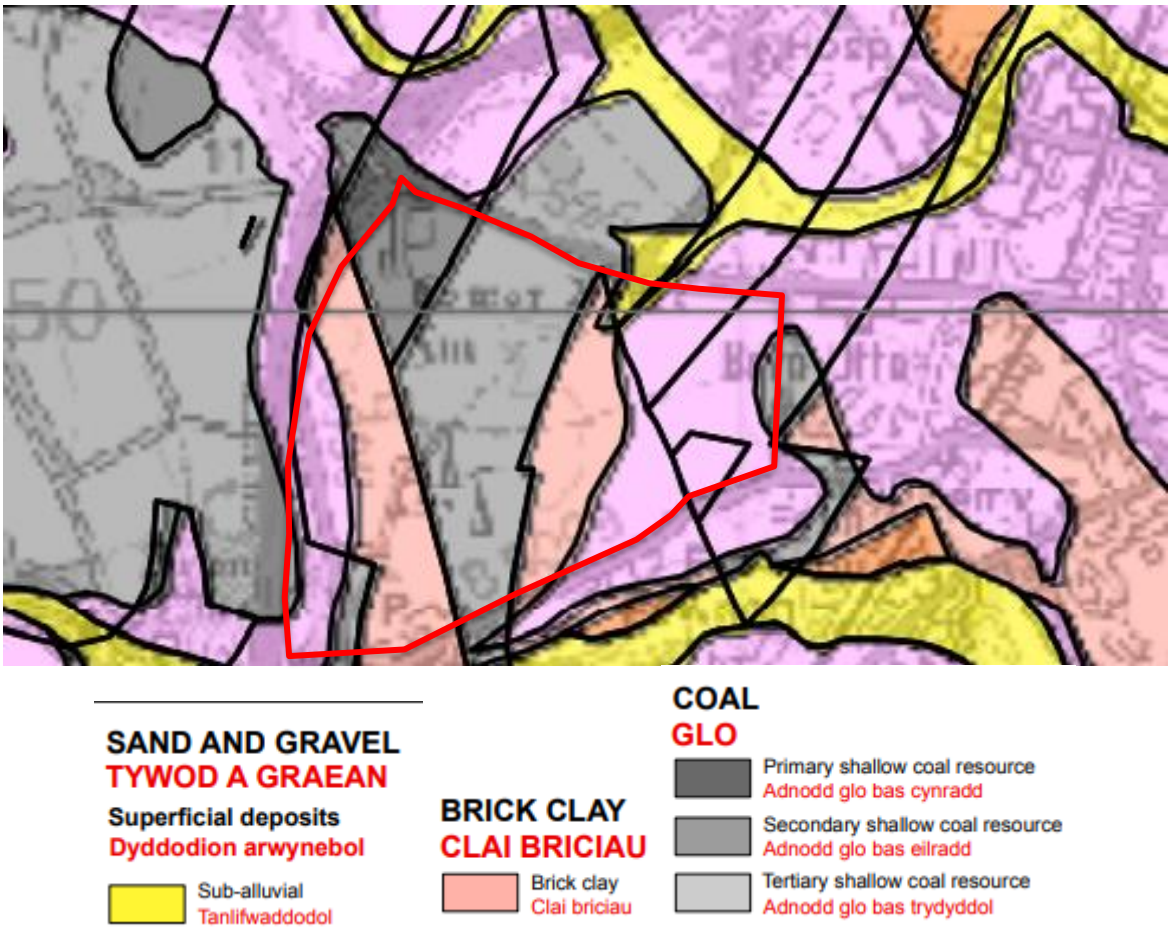
a) The protection of minerals from unnecessary sterilisation by directing new development away from areas underlain by mineral of importance of where this is not possible, through the requirement to extract mineral prior to the non-mineral development, and ,
b) Avoiding conflict between mineral working and sensitive development through the use of buffer zones:and

c) Contributing towards meeting the regional need for aggregate minerals in collaboration with Flintshire County Council: and
d) Supporting proposals for mineral extraction within the County Borough which contribute towards maintaining an adequate supply of minerals in sustainable locations including the delivery of high quality restoration and aftercare programmes which enhance and provide linkages with the natural environment.

4.3. MINERAL SAFEGUARDING AREA

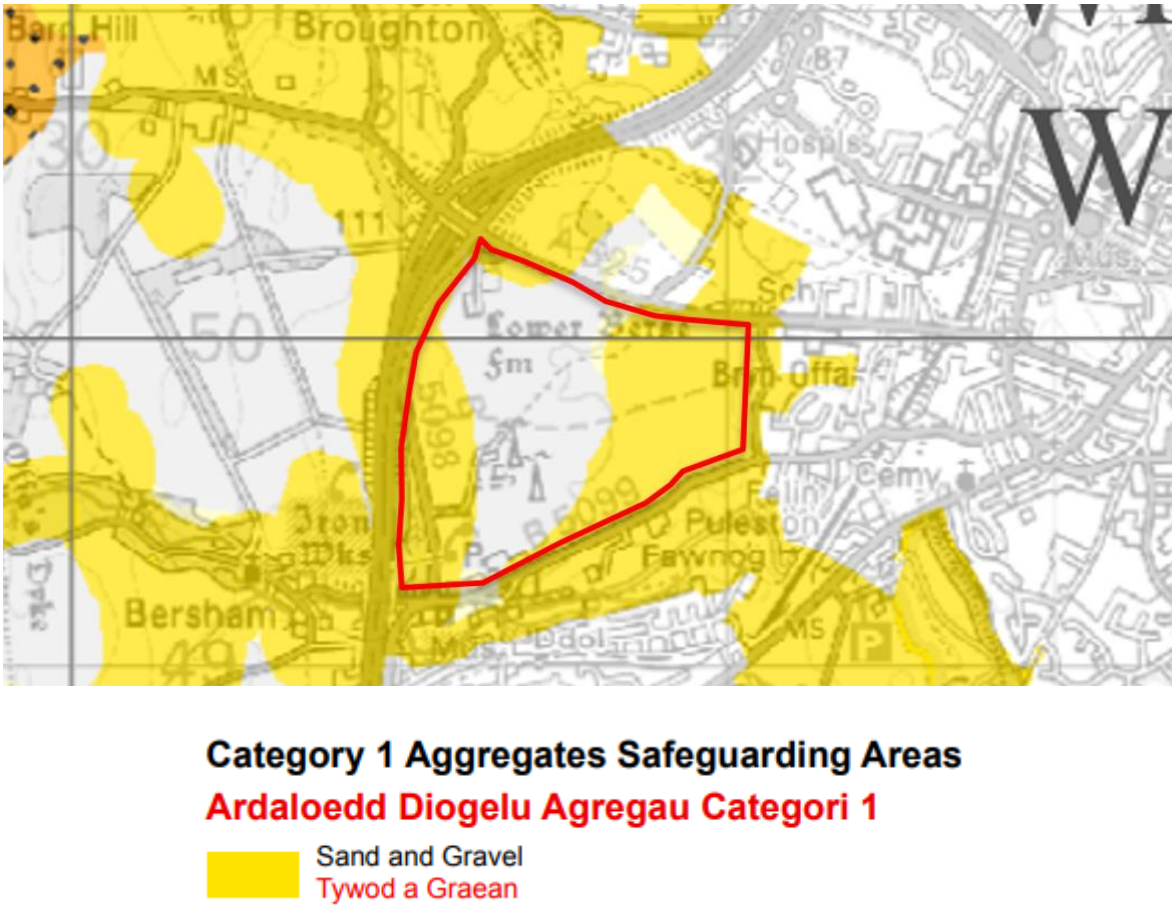
The Welsh BGS mapping provides a number of plans that show relevant Mineral Safeguarding Areas. These maps are reproduced in Figure 4.1 and Figure 4.2 and show that the proposed development is located within both a tertiary shallow coal, brick clay and other sandstone and SAND and GRAVEL mineral safeguarding area.

FIGURE 4.1 MINERAL SAFEGUARDING ZONE – TERTIARY SHALLOW COAL, BRICK CLAY AND OTHER SANDSTONE



Source: BSG Mineral Resources Map – North East Wales

FIGURE 4.2 MINERAL SAFEGUARDING ZONE – SAND and GRAVEL



Source: BGS Aggregates Safeguarding Map of North East Wales.

4.4. MINERAL ASSESSMENT CRITERIA

Based on the regional extent of the mapped mineral deposits, it is considered likely that the development of 72.85ha of land in the region would potentially sterilise mineral resources within a very small area of the overall resource (likely to be over 1000s hectares).

However, if the site was used for prior mineral extraction, given the requirement to create safe angles of repose around the periphery of the site/quarry, the amount of economically available mineral would be greatly reduced and as such prior mining is likely to be unviable.

Deep mining of seams would still be feasible subject to the protection of surface structures against subsidence. Coal Authority information reviewed by E3P suggests that the site is located within a Coal Authority reporting area, but is not located in an area where shallow coal mining has occurred. The surrounding area has been subject to shallow coal mining, and as such a significant proportion of the economic coal is recorded to have been removed already.

In addition to the above, the site is positioned within a sensitive locale with two schools present to the east and southern boundaries, residential property present to the north, east and south of the site and the River Clywedog to the south.

Based on the site investigation completed to date the natural ground conditions are variable with depths of sand/gravel/clay interbedded and varied throughout the site. Further available information is limited with BGS borehole information not publically available, though BSG mapping presents a more succinct area of clay and sands expected. In terms of minable sandstone the full depth of drift deposits are currently unknown and there is a potential that sandstone bedrock is present at significant depth precluding the viability of extraction.

Prior extraction is likely to cause an environmental impact while the development of the site is unlikely to result in a significant impact.

The addition of quarrying activities would give rise to significant additional environmental effects by virtue of:

- Noise from the plant associated with quarrying and noise from additional vehicles.
- Dust from the quarrying activities and impact on surrounding residential properties, environment and the listed building within the site.
- Noise and vibration from potential blasting.
- Landscape and visual impacts.
- Potential instability during deep excavations and slope/highwall features
- Sustainability of sourcing suitable backfill materials and the future risks associated with gassing/collapse/settlement.
- Substantial impacts on ecology, particularly loss of 'important' hedgerows (as defined by the hedgerow regulations), from surface mining of sands and gravels

These potential impacts are discussed in more detail below.

4.5. ENVIRONMENTAL EFFECTS OF MINERAL EXTRACTION

4.5.1. HUMAN HEALTH

The potential impact to health (identified as the adjacent residential properties) associated with any industrial mineral extraction would be predominantly due to traffic and quarrying activities therefore; noise, particulate matter in ambient air (dust), visual intrusion, traffic and air quality impact.

4.5.2. NOISE

The subject site is located in a predominantly rural setting with a residential property located to the south along Bersham Road.

Large-scale industrial mineral extraction would likely induce noise levels that may create a nuisance for adjacent residential properties. Construction of noise mitigation measures such as acoustic bunds to mitigate the anticipated noise impact would result in further loss of visual amenity at the adjacent residential properties and the wider area in addition to the reduction in minable area (coverage).

4.5.3. DUST

The potential impacts associated with dust derived from industrial mineral extraction within ambient air may create a nuisance for exterior areas of residential dwellings unless suitable mitigation measures

could be defined. The prevailing wind direction is southwest which would direct any dust generated from mineral abstraction towards immediately surrounding residential property and the centre of Wrexham town. Given the close proximity of the receptor, it is considered that a high standard of management would be required and thus expensive/difficult to implement.

4.5.4. TRAFFIC

Ruthin Road is located immediately north of the site and would be the only viable access and egress road to the site from Berse Lane.

The extraction of resources from site would require the distribution of raw materials or products by HGV road haulage. The movement of material by road would include both vehicles arriving at site and then subsequent distribution and these may have an effect on the number of vehicle movements, but it is acknowledged that this will be dependent on the volume of material extracted and the type of production being completed.

Should minerals be excavated, the site will be significantly lower than current levels meaning that it would then be necessary to fill the land with suitable inert material to provide a suitable development platform. The required import material would likely be of the same nature as that being extracted. The importation of fill material would require a significant number of vehicle movements, approximately equivalent to those needed within the extraction phase and due to the site's rural location potentially take many months to achieve.

4.5.5. SLOPE STABILITY

Deep excavations and any associated dewatering attributed to mineral extraction may induce instability which would typically be managed by 'benching' the quarry sides to create safe angles of repose. As discussed above, the requirement to do this would result in a significant reduction of available resource, to the extent that extraction would become uneconomic.

5. SUMMARY

Given the size of the site, there is not considered likely to be a viable quantity of quality minable mineral and based the regional extent of the minerals in the safeguarding zones, development of the site would not lead to a strategic sterilisation of the minerals in future. In addition, the nuisance/impacts to residents, listed buildings within the site and other receptors would be too great to consider a viable extraction facility in this positon.

END OF REPORT

APPENDIX I
LIMITATIONS

1. This report and its findings should be considered in relation to the terms of reference and objectives agreed between E3P and the client as indicated in Section 1.2.

2. For the work, reliance has been placed on publicly available data obtained from the sources identified. The information is not necessarily exhaustive and further information relevant to the site may be available from other sources. When using the information, it has been assumed it is correct. No attempt has been made to verify the information.

3. This report has been produced in accordance with current UK policy and legislative requirements for land and groundwater contamination which are enforced by the local authority and the Environment Agency. Liabilities associated with land contamination are complex and requires advice from legal professionals.

4. During the site walkover, reasonable effort has been made to obtain an overview of the site conditions. However, during the site walkover, no attempt has been made to enter areas of the site that are unsafe or present a risk to health and safety, are locked, barricaded, overgrown, or the location of the area has not been made known or accessible.

5. Access considerations, the presence of services and the activities being carried out on the site limited the locations where sampling locations could be installed and the techniques that could be used.

6. Site sensitivity assessments have been made based on available information at the time of writing and are ultimately for the decision of the regulatory authorities.

7. Where mention has been made to the identification of Japanese Knotweed and other invasive plant species and asbestos or asbestos-containing materials, this is for indicative purposes only and do not constitute or replace full and proper surveys.

8. The executive summary, conclusions and recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon without considering the context of the report in full.

9. E3P cannot be held responsible for any use of the report or its contents for any purpose other than that for which it was prepared. The copyright in this report and other plans and documents prepared by E3P is owned by them and no such plans or documents may be reproduced, published or adapted without written consent. Complete copies of this may, however, be made and distributed by the client as is expected in dealing with matters related to its commission. Should the client pass copies of the report to other parties for information, the whole report should be copied, but no professional liability or warranties shall be extended to other parties by E3P in this connection without their explicit written agreement there to by E3P.

10. New information, revised practices or changes in legislation may necessitate the re-interpretation of the report, in whole or in part.

APPENDIX II
GLOSSARY

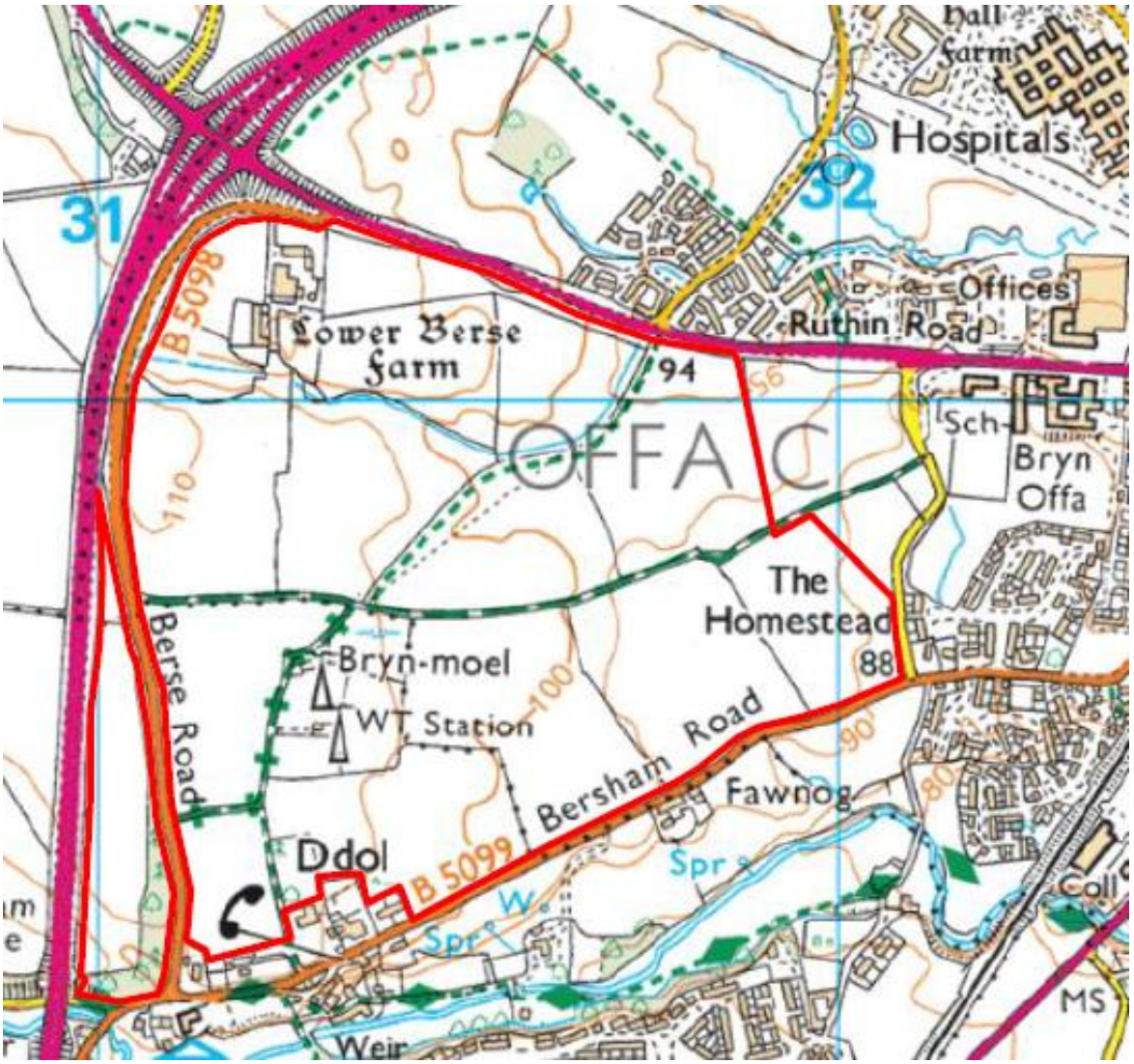
TERMS

ACM	Asbestos-containing material	**MMP**	Materials management plan
ADS	Acoustic design statement	**ND**	Not detected
AST	Above-ground storage tank	**NDP**	Nuclear density probe
BGS	British Geological Survey	**NMP**	Noise management plan
BSI	British Standards Institute	**NPSE**	Noise policy statement for England
BTEX	Benzene, toluene, ethylbenzene, xylenes	**NR**	Not recorded
CA	Coal Authority	**PAH**	Polycyclic aromatic hydrocarbon
CBR	California bearing ratio	**PCB**	Polychlorinated biphenyl
CIEH	Chartered Institute of Environmental Health	**PI**	Plasticity index
CIRIA	Construction Industry Research Association	**PID**	Photo ionisation detector
CLEA	Contaminated land exposure assessment	**POS**	Public open space
CML	Council of Mortgage Lenders	**PPE**	Personnel protective equipment
CoC	Contaminants of concern	**ProPG**	Professional practice guidance
CSM	Conceptual site model	**QA**	Quality assurance
DNAPL	Dense non-aqueous phase liquid (chlorinated solvents, PCB)	**SGV**	Soil guideline value
DWS	Drinking water standard	**SPH**	Separate-phase hydrocarbon
EA	Environment Agency	**SPT**	Standard penetration test
EQS	Environmental quality standard	**SVOC**	Semi-volatile organic compound
FFL	Finished floor level	**TPH**	Total and speciated petroleum hydrocarbon
GAC	General assessment criteria	**TPH CWG**	Total Petroleum Hydrocarbon (Criteria Working Group)
GL	Ground level	**UKWIR**	United Kingdom Water Infrastructure Risk
GSV	Gas screening value	**UST**	Underground storage tank
HCV	Health criteria value	**VCC**	Vibro-concrete column
ICSM	Initial conceptual site model	**VOC**	Volatile organic compound
LEL	Lower explosive limit	**VRSC**	Vibro-replacement stone columns
LMRL	Lower method reporting limit	**VSC**	Vibro-stone columns
LNAPL	Light non-aqueous phase liquid (petrol, diesel, kerosene)	**WHO**	World Health Organisation
MCV	Moisture condition value	**WRAP**	Waste and Resources Action Programme

MIBK	Methyl isobutyl ketone	**WTE**	Water table elevation
m	Metres	**ppm**	Parts per million
km	Kilometres	**mg/m^3**	Milligram per metre cubed
% v/v	Percent volume in air	**m bgl**	Metres below ground level
mb	Millibars (atmospheric pressure)	**m bcl**	Metre below cover level
l/hr	Litres per hour	**mAOD**	Metres above ordnance datum (sea level)
µg/l	Micrograms per litre (parts per billion)	**kN/m^2**	Kilonewtons per metre squared
ppb	Parts per billion	**µm**	Micrometre
mg/kg	Milligrams per kilogram (parts per million)		

APPENDIX III
DRAWINGS

DRAWING 14-854-001 – SITE LOCATION PLAN





P1	REVE	26.06.2024	OW	RJW
P1	REVD	17.08.2023	OW	RJW
P1	REVC	31.05.2023	OW	RJW
P1	REVB	14.12.2022	HM	RJW
P1	REVA	02.09.2021	LM	AR
Phase	Issue	Date	Drawn	Checked

Notes:

Client: Redrow

Job No: 14-854

Date: 26.06.2023

Drawing No: 002

Scale: NTS @ A3

Job Title: Ruthin Road, Wrexham

Drawing Title: Proposed Development Plan

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