

2. Ground Workings

2.1 Historical Surface Ground Working Features derived from Historical Mapping

This dataset is based on GroundSure's unique Historical Land Use Database derived from 1:10,560 and 1:10,000 scale historical mapping.

Are there any Historical Surface Ground Working Features within 250m of the study site boundary? Yes

The following Historical Surface Ground Working Features are provided by GroundSure:

ID	Distance (m)	Direction	NGR	Use	Date
1A	0.0	On Site	339178,350745	Ponds	1960
2A	0.0	On Site	339178,350745	Ponds	1992
3B	0.0	On Site	339357,350834	Ponds	1982
4A	0.0	On Site	339178,350745	Ponds	1982
5B	0.0	On Site	339357,350834	Ponds	1960
6B	0.0	On Site	339357,350834	Ponds	1968
7A	0.0	On Site	339178,350745	Ponds	1968
8B	0.0	On Site	339348,350825	Ponds	1900
9A	0.0	On Site	339165,350745	Ponds	1900
10B	0.0	On Site	339353,350832	Pond	1949
11A	0.0	On Site	339169,350743	Ponds	1949
12A	0.0	On Site	339174,350743	Ponds	1872
13B	0.0	On Site	339357,350823	Ponds	1872
14	12.0	W	338953,350418	Pond	1992
15D	71.0	S	339360,350527	Ponds	1872
16C	76.0	W	338878,350527	Pond	1960
17C	76.0	W	338878,350527	Pond	1968
18D	78.0	S	339359,350522	Pond	1992
19E	83.0	W	338872,350660	Ponds	1960
20E	83.0	W	338872,350660	Ponds	1968
21D	83.0	W	339363,350519	Pond	1982
22D	83.0	W	339363,350519	Pond	1960
23D	83.0	W	339363,350519	Pond	1968
24F	95.0	NW	339181,351079	Pond	1872
25F	96.0	NW	339177,351083	Pond	1982
26F	96.0	NW	339177,351083	Pond	1960
27F	96.0	NW	339177,351083	Pond	1968
28	102.0	E	339601,350548	Pond	1872
29G	110.0	NW	338994,351020	Pond	1949
30G	112.0	NW	338995,351022	Pond	1982
31G	112.0	NW	338995,351022	Pond	1960
32G	112.0	NW	338995,351022	Pond	1968
33G	113.0	NW	338999,351023	Ponds	1872
34	123.0	W	338826,350569	Ponds	1872

35 H	132.0	W	339354,350285	Pond	1992
36 H	169.0	W	339337,350284	Ponds	1949
37 H	169.0	W	339337,350284	Ponds	1898
38 H	169.0	W	339337,350278	Ponds	1982
39 H	169.0	W	339337,350278	Ponds	1960
40 H	169.0	W	339337,350278	Ponds	1968
41 H	171.0	W	339337,350277	Ponds	1872
42I	183.0	W	338717,350769	Pond	1992
43I	195.0	W	338706,350769	Pond	1949
44J	201.0	E	339779,350635	Pond	1900
45J	214.0	E	339790,350637	Pond	1913
46J	214.0	E	339790,350637	Pond	1897
47 K	221.0	S	339614,350024	Pond	1898
48 K	221.0	S	339614,350024	Pond	1949
49 K	223.0	S	339617,350024	Pond	1913
50 K	223.0	S	339617,350024	Pond	1897
51 K	224.0	S	339618,350022	Pond	1982
52 K	224.0	S	339618,350022	Pond	1960
53 K	224.0	S	339618,350022	Pond	1968
54 K	226.0	S	339617,350018	Pond	1872
55 L	245.0	S	339109,350176	Pond	1992
56 L	245.0	S	339109,350176	Pond	1982

2.2 Historical Underground Workings Features derived from Historical Mapping

This data is derived from the GroundSure unique Historical Land Use Database. It contains data derived from 1:10,000 and 1:10,560 historical Ordnance Survey Mapping and includes some natural topographical features (Shake Holes for example) as well as manmade features that may have implications for ground stability. Underground and mining features have been identified from surface features such as shafts. The distance that these extend underground is not shown.

Are there any Historical Underground Working Features within 1000m of the study site boundary? **No**

Database searched and no data found.

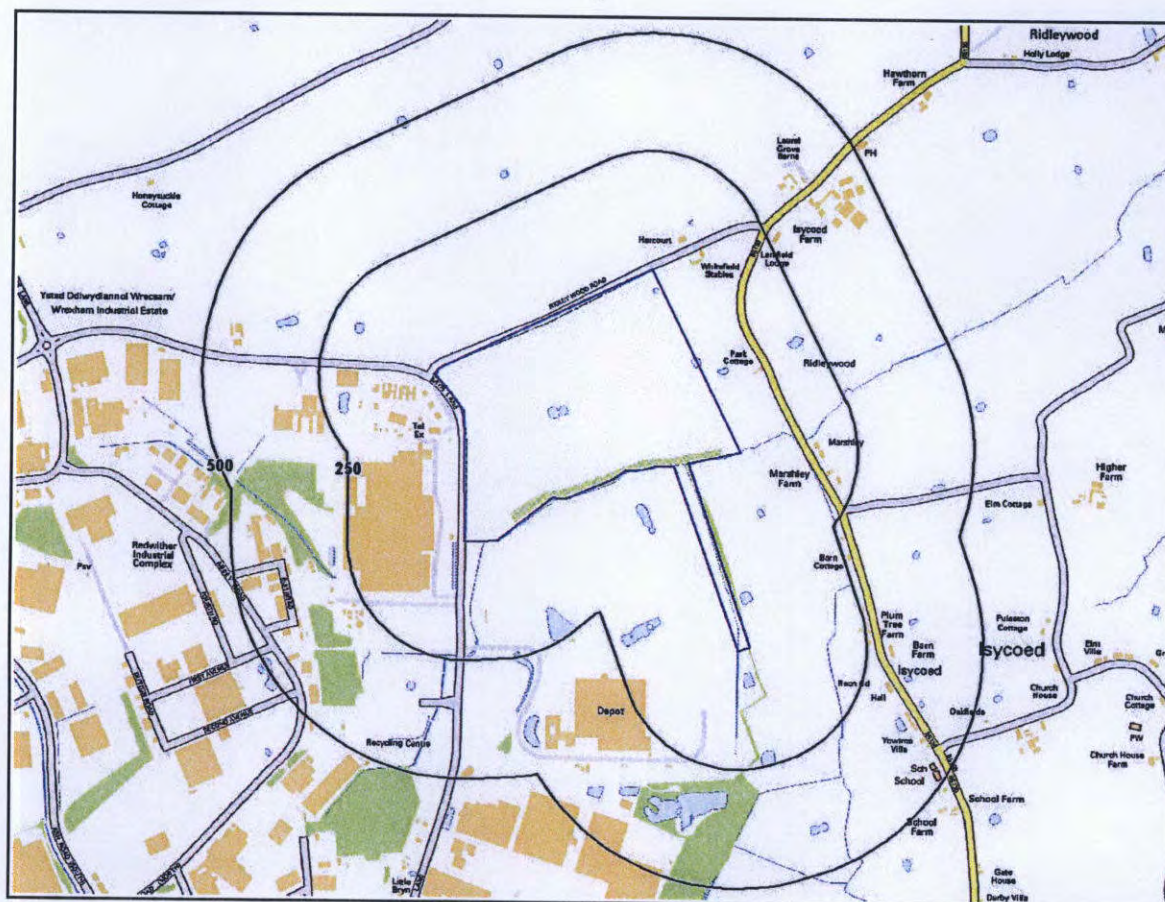
2.3 Current Ground Workings

This dataset is derived from the BGS BRITPITS database covering active; inactive mines; quarries; oil wells; gas wells and mineral wharves; and rail deposits throughout the British Isles.

Are there any BGS Current Ground Workings within 1000m of the study site boundary? **No**

Database searched and no data found.

3. Mining, Extraction & Natural Cavities Map



Mining, Extraction & Natural Cavities
Legend

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OS Ordnance Survey

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3. Mining, Extraction & Natural Cavities

3.1 Historical Mining

This dataset is derived from GroundSure unique Historical Land-use Database that are indicative of mining or extraction activities.

Are there any Historical Mining areas within 1000m of the study site boundary?

No

Database searched and no data found.

3.2 Coal Mining

This dataset provides information as to whether the study site lies within a known coal mining affected area as defined by the coal authority.

Are there any Coal Mining areas within 1000m of the study site boundary?

Yes

The following Coal Mining information provided by the Coal Authority is not represented on Mapping:

Distance (m)	Direction	Details
0.0	On Site	The study site is located within the specified search distance of an identified mining area. Further details concerning this can be obtained from the Coal Authority Helpline on 0845 762 6848.

3.3 Johnson Poole and Bloomer

This dataset provides information as to whether the study site lies within an area where JPB hold information relating to mining.

Are there any JPB Mining areas within 1000m of the study site boundary?

No

The following information provided by JPB is not represented on Mapping:

Database searched. No results found.

3.4 Non – Coal Mining

This dataset provides information as to whether the study site lies within an area which may have been subject to non-coal historic mining.

Are there any Non-Coal Mining areas within 1000m of the study site boundary?

No

Database searched and no data found.

3.5 Non – Coal Mining Cavities

This dataset provides information from the Peter Brett Associates (PBA) mining cavities database (compiled for the national study entitled "Review of mining instability in Great

Report Reference: EMS-139229_199276

Britain, 1990" PBA has also continued adding to this database) on mineral extraction by mining.

Are there any Non-Coal Mining cavities within 1000m of the study site boundary?

No

Database searched and no data found.

3.6 Natural Cavities

This dataset provides information based on Peter Brett Associates natural cavities database.

Are there any Natural Cavities within 1000m of the study site boundary?

No

Database searched and no data found.

3.7 Brine Extraction

This dataset provides information from the Brine Compensation Board which has been discontinued and is now covered by the Coal Authority.

Are there any Brine Extraction areas within 1000m of the study site boundary?

No

Database searched and no data found.

3.8 Gypsum Extraction

This dataset provides information on Gypsum extraction from British Gypsum records.

Are there any Gypsum Extraction areas within 1000m of the study site boundary?

No

Database searched and no data found.

3.9 Tin Mining

This dataset provides information on tin mining areas and is derived from tin mining records. This search is based upon postcode information to a sector level. More detailed information on potential Tin Mining may be found in Section 3.4 – Non-Coal Mining Hazards.

Are there any Tin Mining areas within 1000m of the study site boundary?

No

Database searched and no data found.

3.10 Clay Mining

This dataset provides information on Kaolin and Ball Clay mining from relevant mining records.

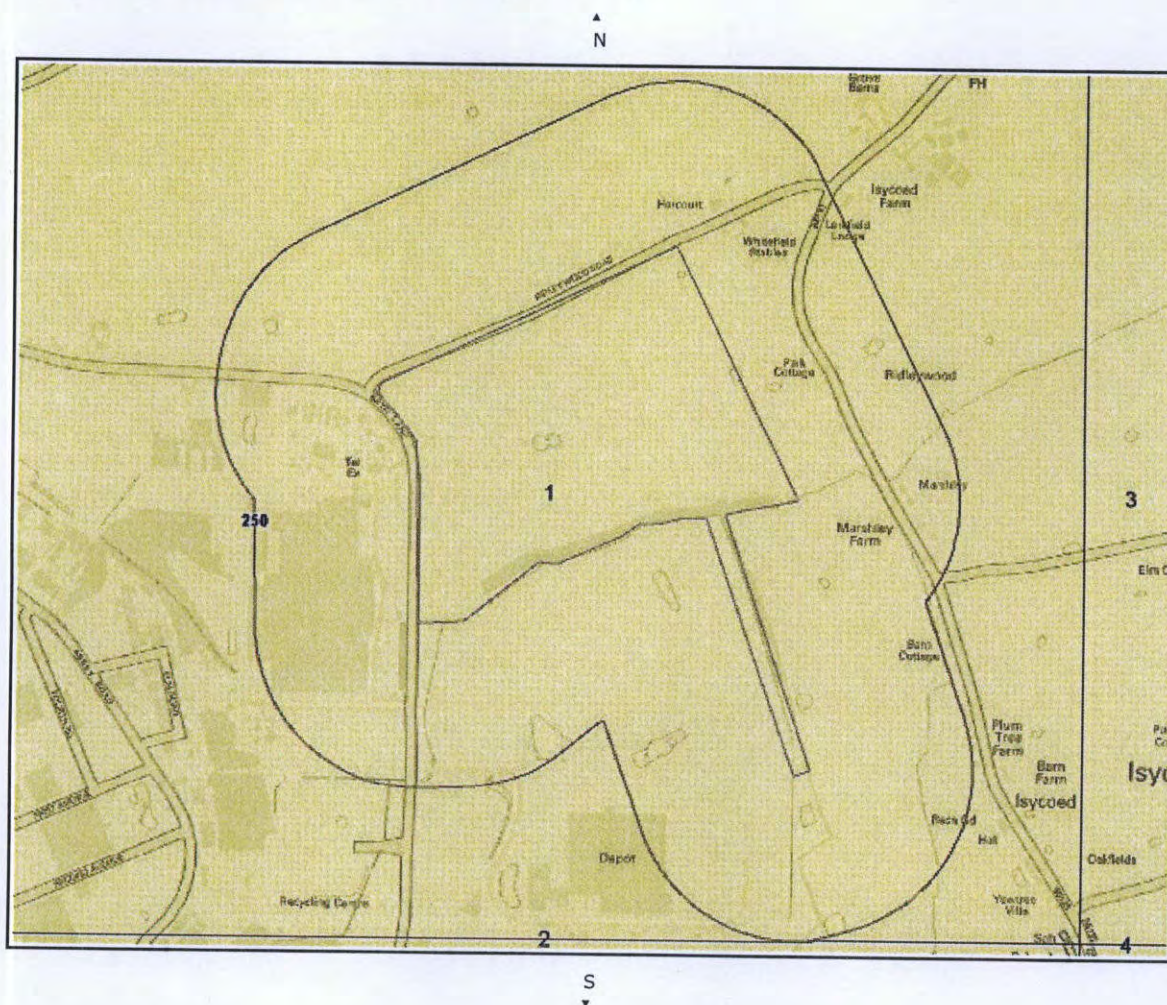
Are there any Clay Mining areas within 1000m of the study site boundary?

No

Database searched and no data found.

4. Natural Ground Subsidence

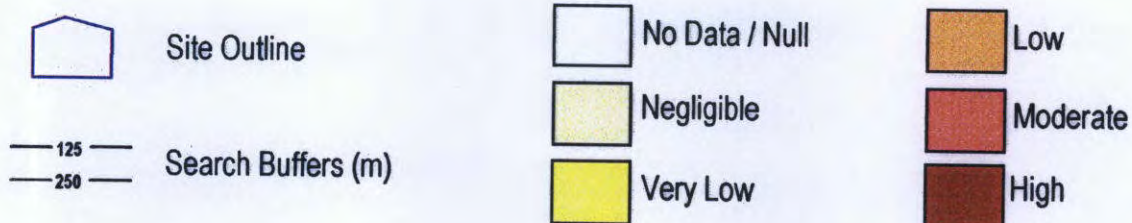
4.1 Shrink-Swell Clay Map



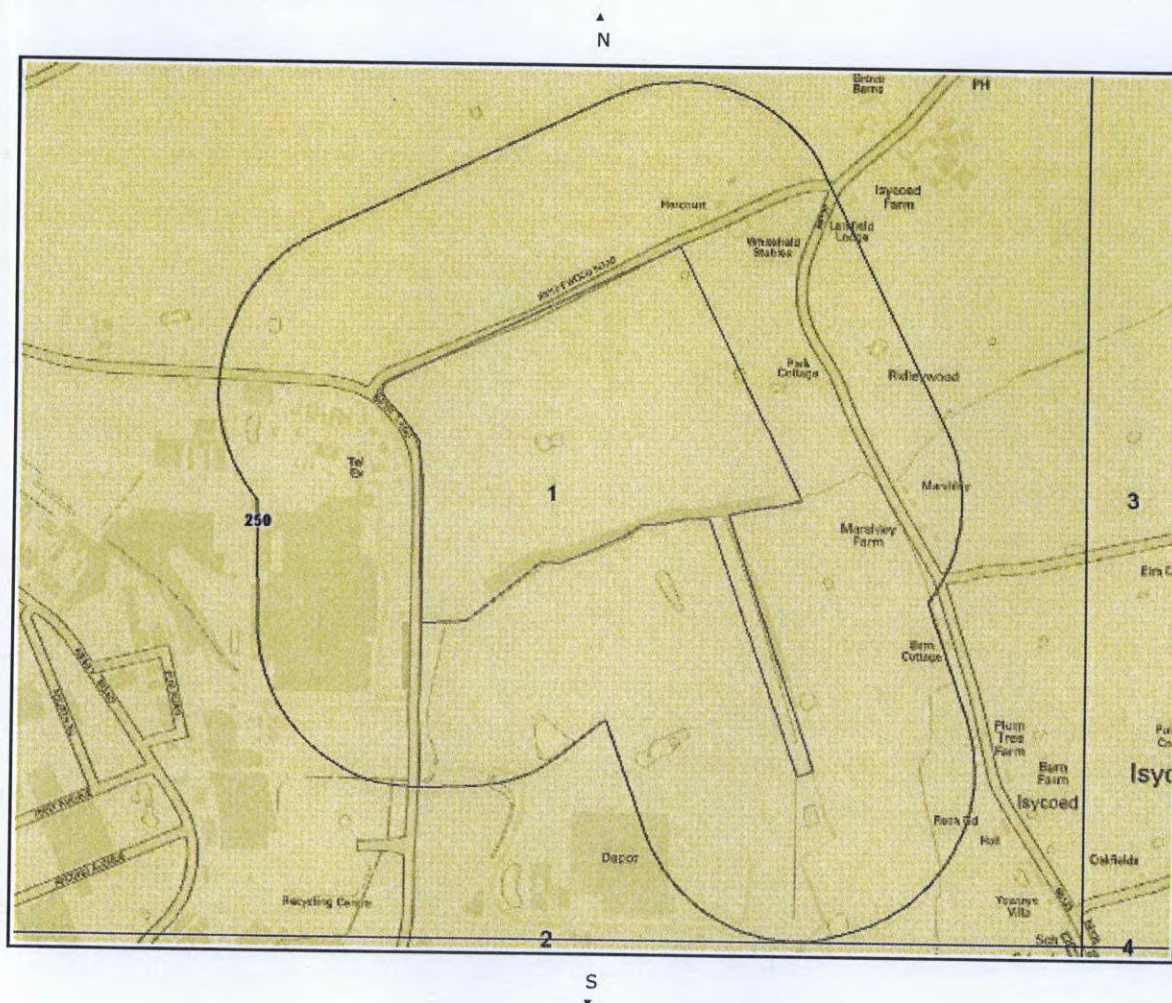
Shrink-Swell Clay Legend

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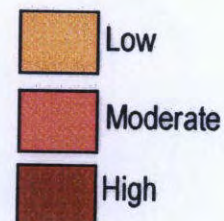
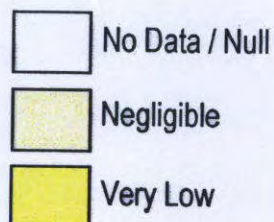
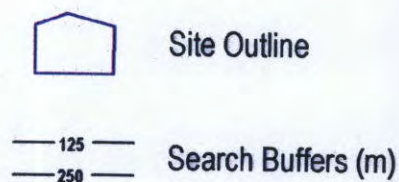
4.2 Landslides Map



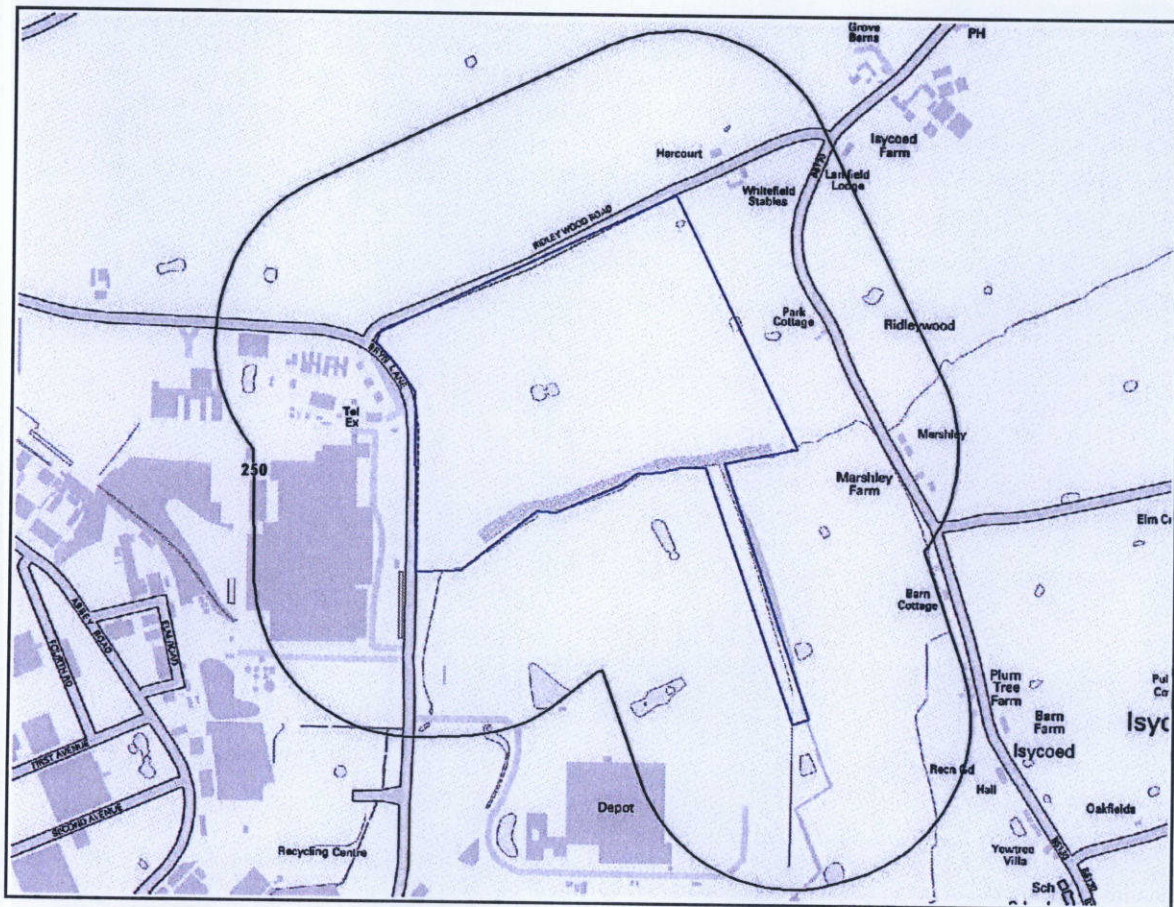
Landslides Legend

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4.3 Ground Dissolution Soluble Rocks Map



Ground Dissolution Soluble Rocks
Legend

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Site Outline

Search Buffers (m)

125

250

No Data / Null

Negligible

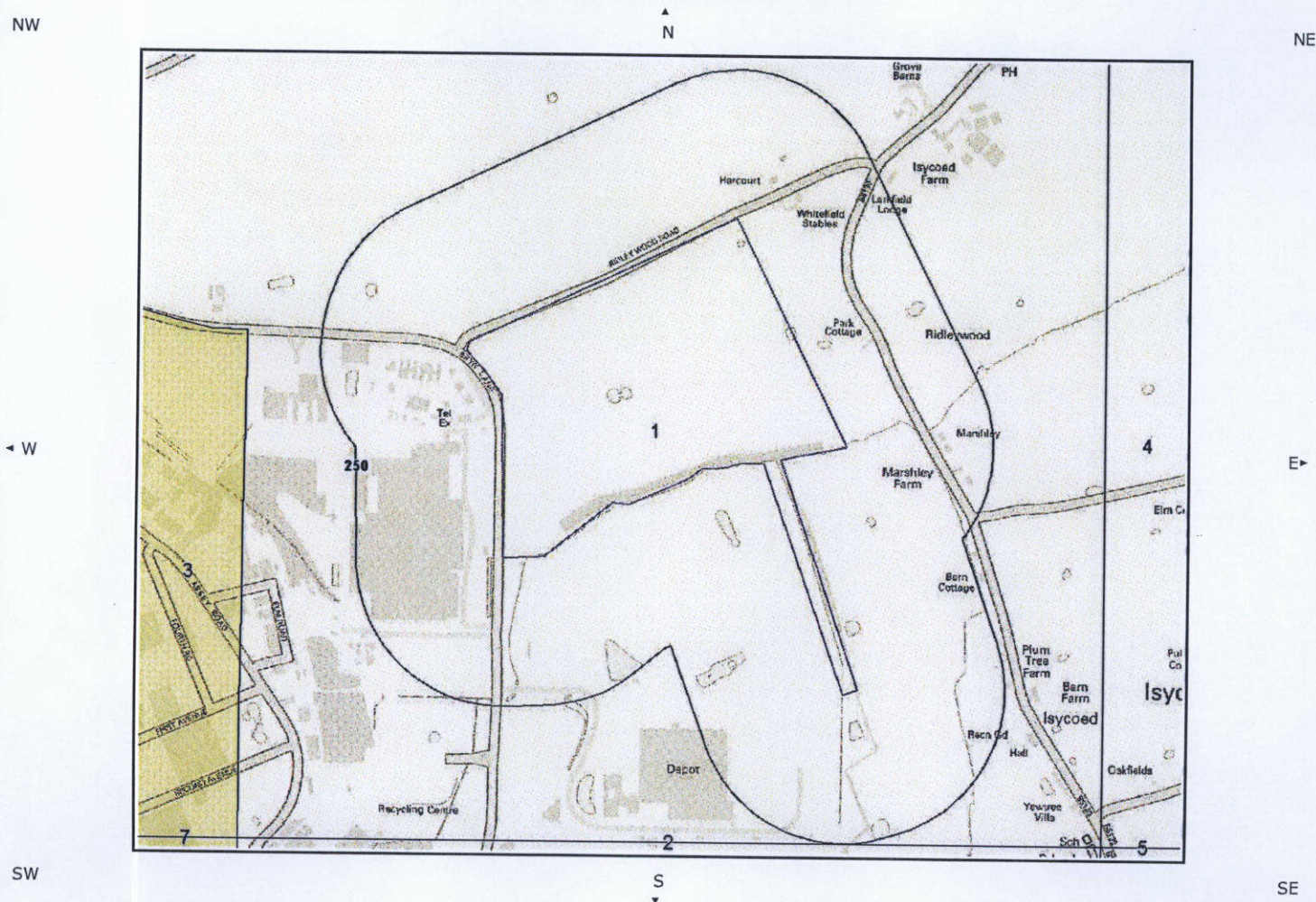
Very Low

Low

Moderate

High

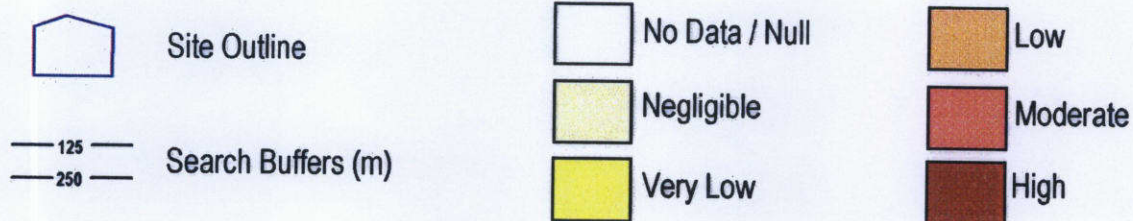
4.4 Compressible Deposits Map



Compressible Deposits Legend

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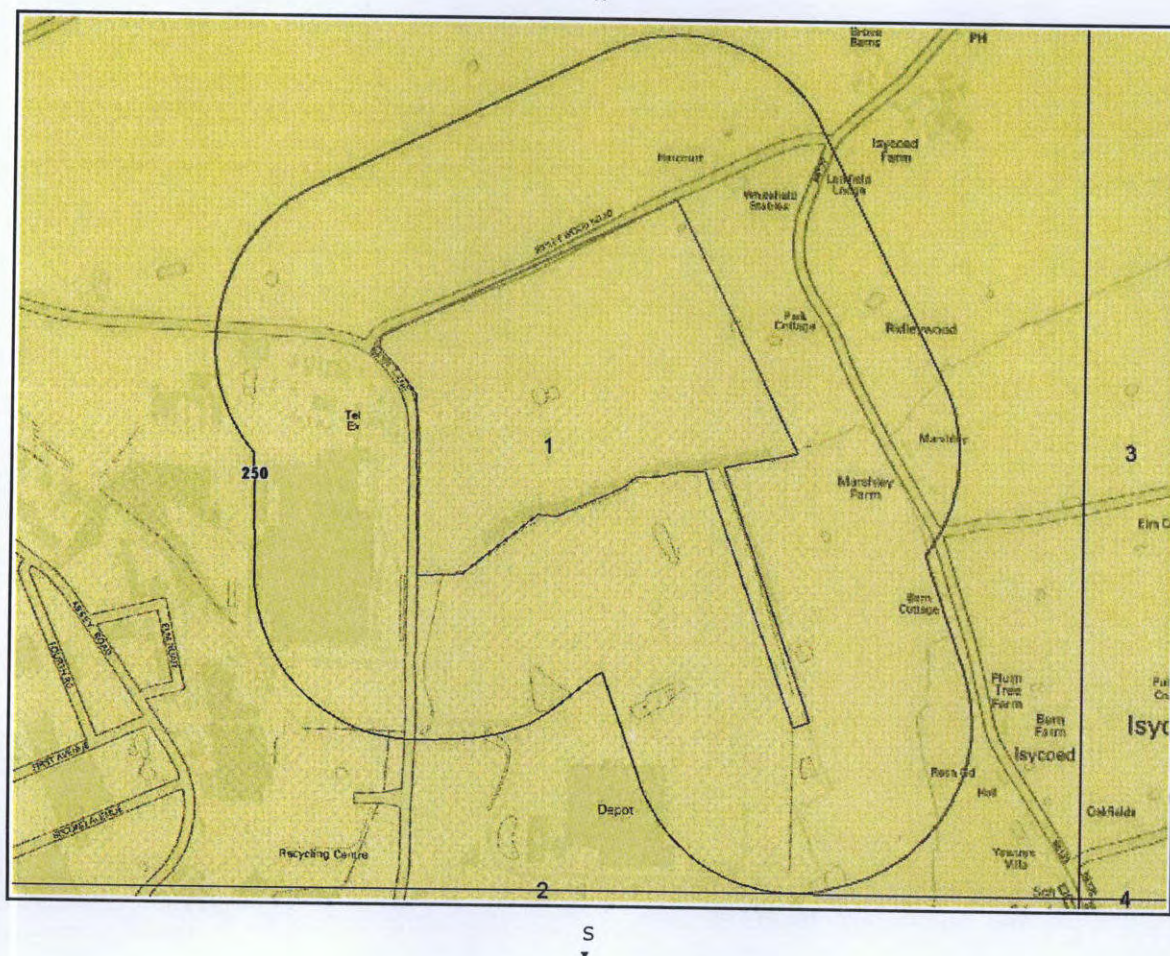
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NW

▲
N

NE



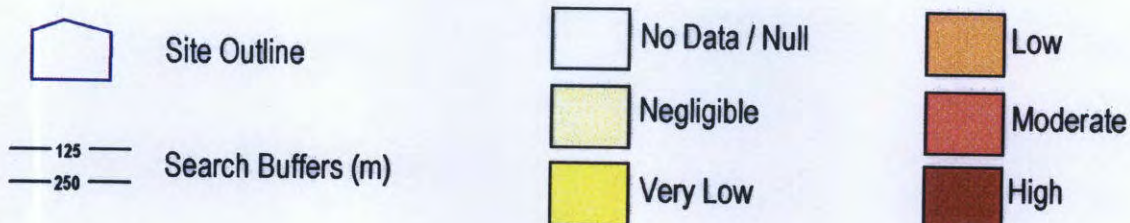
SW

S

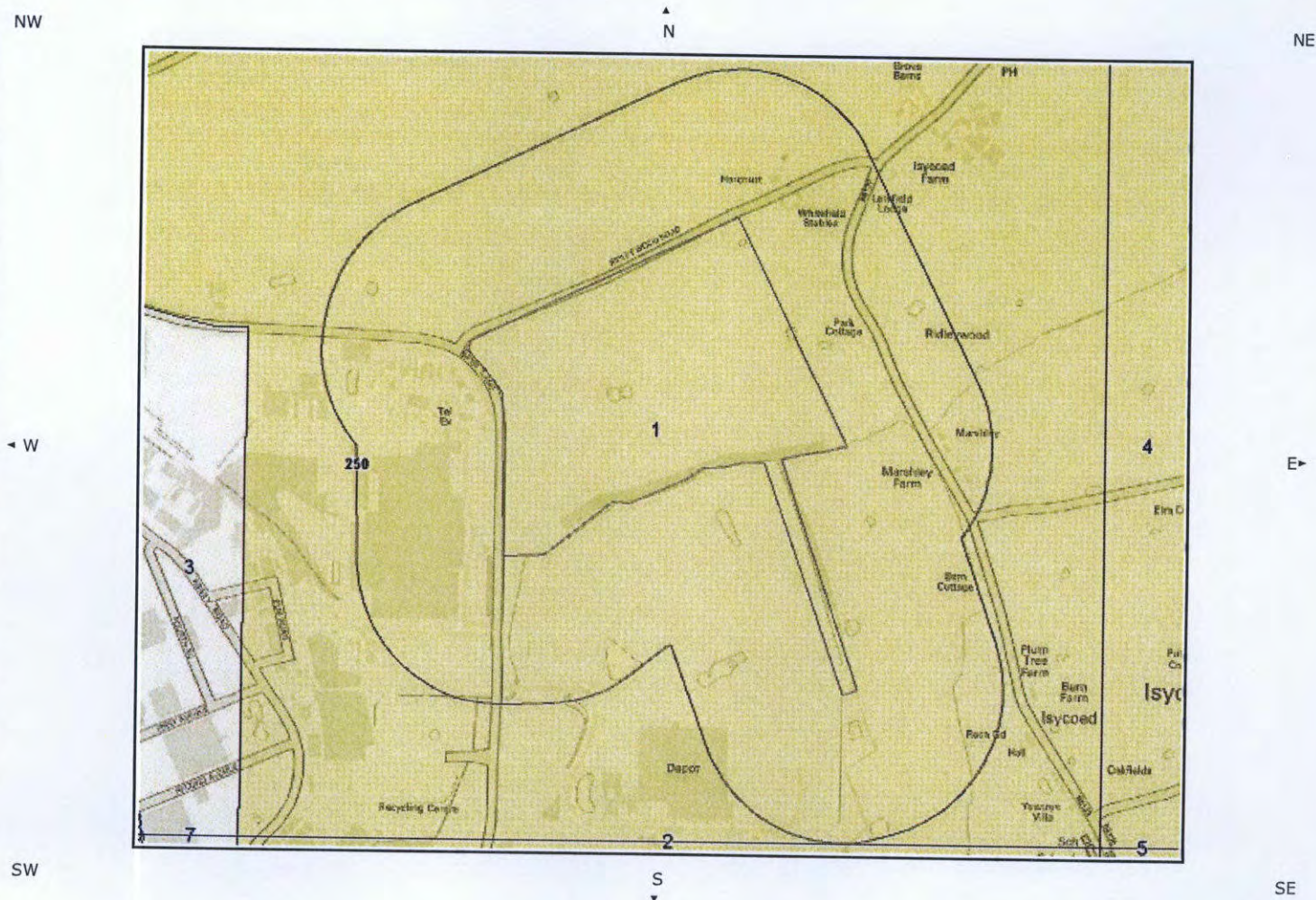
SE

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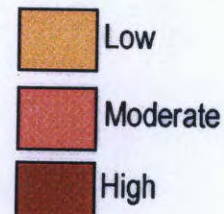
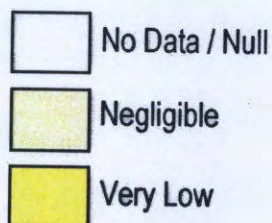
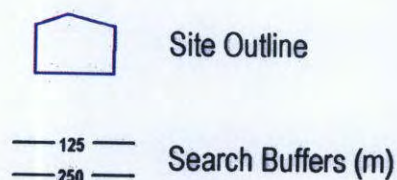
4.6 Running Sand Map



Running Sand Legend

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4. Natural Ground Subsidence

The National Ground Subsidence rating is obtained through the 6 natural ground stability hazard datasets, which are supplied by the British Geological Survey (BGS).

The following GeoSure data represented on the mapping is derived from the BGS Digital Geological map of Great Britain at 1:50,000 scale.

What is the maximum hazard rating of natural subsidence within the study site* boundary? **Very Low**

4.1 Shrink – Swell Clays

The following Shrink Swell information provided by the British Geological Survey:

ID	Distance (m)*	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Ground conditions predominantly low plasticity. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.

4.2 Landslides

The following Landslides information provided by the British Geological Survey:

ID	Distance (m)*	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

4.3 Ground Dissolution of Soluble Rocks

The following Soluble Rocks information provided by the British Geological Survey:

Distance (m)*	Direction	Hazard Rating	Details
0.0	On site	Null-Negligible	Soluble rocks are not present in the search area. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

4.4 Compressible Deposits

The following Compressible Ground information provided by the British Geological Survey:

ID	Distance (m)*	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.

*This includes an automatically generated 50m buffer zone around the study site boundary.

Report Reference: EMS-139229_199276

4.5 Collapsible Deposits

The following Collapsible Rocks information is provided by the British Geological Survey:

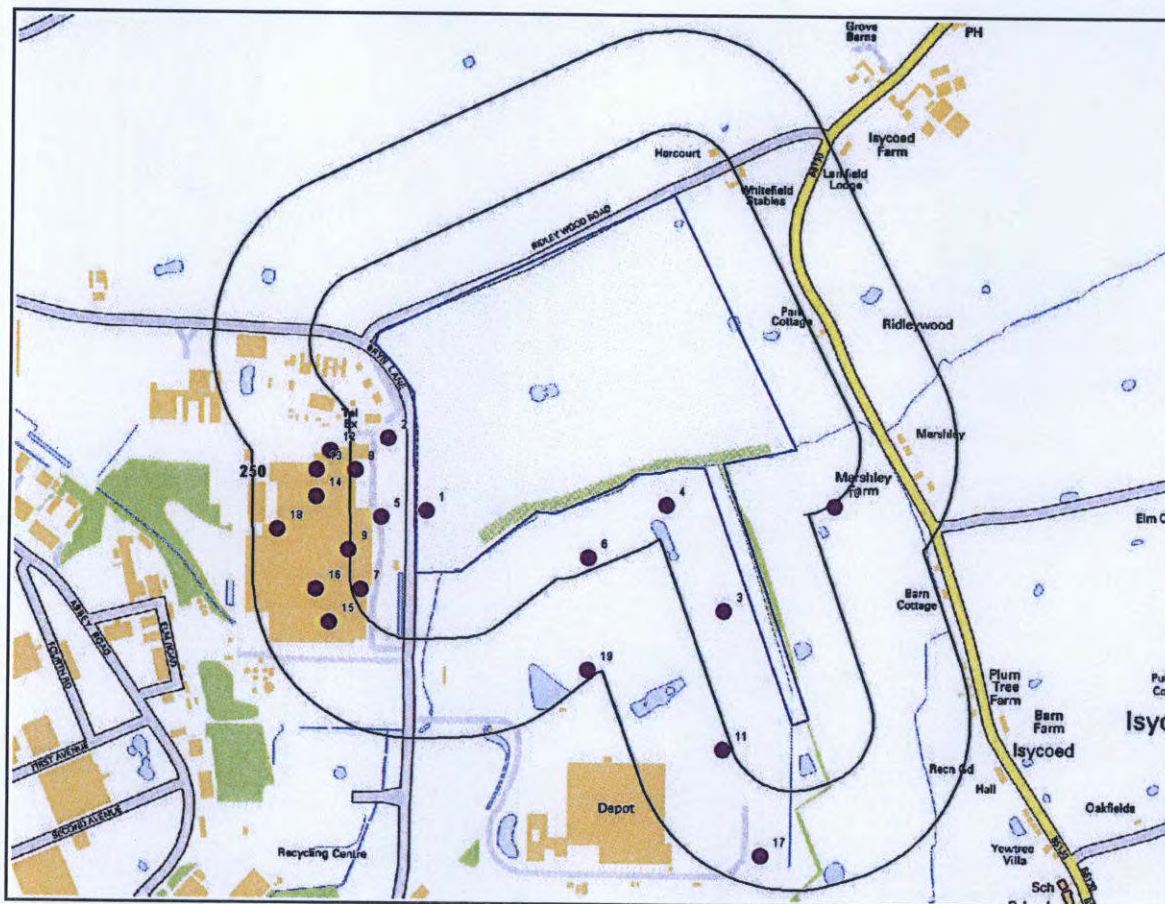
ID	Distance (m) *	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

4.6 Running Sands

The following Running Sands information is provided by the British Geological Survey:

ID	Distance (m)*	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

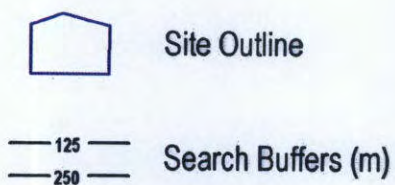
5. Borehole Records Map



Borehole Records Legend



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Borehole Locations

5. Borehole Records

The systematic analysis of data extracted from the BGS Borehole Records database provides the following information.

Records of boreholes within 250m of the study site boundary:

19

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length (m)	Borehole Name
1	0.0	On Site	338990,350570	SJ35SE53/B	79.86	WREXHAM IND ESTATE KELLOGS 2
2	41.0	W	338930,350680	SJ35SE53/A	67.07	WREXHAM IND ESTATE KELLOGS 1
3	44.0	W	339450,350420	SJ35SE49	15.0	FIBREGLASS LTD 8
4	51.0	S	339360,350580	SJ35SE50	15.0	FIBREGLASS LTD 9
5	52.0	W	338920,350560	SJ35SE53/C	60.0	WREXHAM IND ESTATE KELLOGS 3
6	83.0	SE	339240,350500	SJ35SE51	15.0	FIBREGLASS LTD 10
7	87.0	W	338890,350450	SJ35SE52	-1.0	WREXHAM IND ESTATE FRAM GERRD 1
8	91.0	W	338880,350630	SJ35SE186	20.0	WREXHAM INDUSTRIAL ESTATE 2
9	103.0	W	338870,350510	SJ35SE194	2.4	WREXHAM MAELOR TP 3
10	107.0	SE	339620,350580	SJ35SE40	18.0	ISYCOED, BARN FARM
11	115.0	W	339450,350210	SJ35SE46	15.0	FIBREGLASS LTD 5
12	131.0	W	338840,350660	SJ35SE192	2.4	WREXHAM MAELOR TP 1
13	151.0	W	338820,350630	SJ35SE187	20.0	WREXHAM INDUSTRIAL ESTATE 3
14	152.0	W	338820,350590	SJ35SE193	2.4	WREXHAM MAELOR TP 2
15	153.0	SW	338840,350400	SJ35SE195	2.6	WREXHAM MAELOR TP 4
16	155.0	W	338820,350450	SJ35SE188	20.25	WREXHAM INDUSTRIAL ESTATE 4
17	206.0	S	339510,350050	SJ35SE45	15.0	FIBREGLASS LTD 4
18	212.0	W	338760,350540	SJ35SE189	20.0	WREXHAM INDUSTRIAL ESTATE 5
19	238.0	SE	339240,350330	SJ35SE48	15.0	FIBREGLASS LTD 7

6. Estimated Background Soil Chemistry

Records of background estimated soil chemistry within 250m of the study site boundary:

4

For further information on how this data is calculated and limitations upon its use, please see the GroundSure GeoInsight User Guide, available on request.

Distance (m)*	Direction	Sample Type	Estimated Geometric Mean Soil Concentrations (mg/kg)				
			Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Nickel (Ni)	Lead (Pb)
0.0	On Site	RuSoilExA _s	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<150 mg/kg
0.0	On Site	RuSoilExA _s	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<150 mg/kg
0.0	On Site	RuSoilExA _s	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<150 mg/kg
0.0	On Site	RuSoilExA _s	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<150 mg/kg

*As this data is based upon underlying 1:50,000 scale geological information, a 50m buffer has been added to the search radius.