



**Intelligent
Ground
Solutions**



Phase 1 Preliminary Risk Assessment

Land adjacent to A614
Worksop, Nottinghamshire, S80 3PA

One Planet Developments Limited

19 July 2024

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Revision log

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Executive Summary

| | |
|--|--|
| <p>Site Location</p> | <p>Land adjacent to A614, Worksop, Nottinghamshire, S80 3PA Grid reference 465500,375070. The site is currently comprised of a series of fields/agricultural land.</p> |
| <p>Site History</p> | <p>From the earliest mapping until present day, the site has remained largely undeveloped, consisting of various fields and agricultural land. A pump was recorded on-site in the late 1940s, associated with the deep borehole data obtained from the BGS. It is expected that this deep well is connected to the oilfield operations referenced in the planning portal (Section 3.3). A small building was also historically present in the central area of the site. Historically, the surrounding area has primarily remained undeveloped or used for agriculture and woodland, with only minor development occurring.</p> |
| <p>Environmental Setting</p> | <p>The Site is indicated to be underlain by superficial deposits of Till (Secondary B Aquifer) in the central area of the site, followed by bedrock of the Chester Formation (Principal Aquifer). The site is located within a groundwater Source Protection Zone (SPZ) II and III and there are a number of potable licensed abstractions from groundwater located within 500m of the site. The nearest surface water feature is the River Poulter, located 12m northeast of the site.</p> |
| <p>Contamination Potential Risk</p> | <p>Limited potentially significant contaminant sources have been identified at the site. Limited localised Made Ground may be present, associated with the construction and demolition of the small building and potentially infilled pond, and potential localised spillages of hydrocarbons associated with the pump and/or the use of the site for agricultural purposes. Due to the age of the historical building, noted from the 1940s to the 1980s, Made Ground associated with its construction and demolition may contain ACMs. Potential soil and groundwater contamination may include fuels/hydrocarbons, polycyclic aromatic hydrocarbons, heavy metals and asbestos. The preliminary risk assessment has generally identified a very low risk of groundwater and soil contamination and hazardous ground gas at the site.</p> |
| <p>Development Considerations</p> | <p>The key geotechnical considerations of the site relate to the potential for localised deeper Made Ground associated with the historical small building and potentially infilled pond. Made Ground is typically variable in nature and strength, with a potentially low bearing capacity and unacceptable levels of total/differential settlement may occur. Coal Authority reporting indicates that the property is not in a Development High Risk Area (DHRA), however, is in a surface area that could be affected by underground mining in two seams of coal at 510m to 620m depth, and last worked in 1992, and a subsidence claim has been made within 50m of the site boundary. Due to the depth of the coal seams and lack of coal observed within the historical borehole log on-site, it is anticipated that the risk at ground level would be low.</p> |

| | |
|--|--|
| <p>Recommendations</p> | <p>Based on the identified potential sources and risk assessment, an intrusive investigation is not anticipated to be required.</p> <p>When development works take place on-site, a hotspot protocol should be in place to ensure that any localised contamination impact, if identified, is dealt with accordingly.</p> <p>Due to the borehole on-site, potentially associated with the oilfield, it is considered prudent to obtain service plans for any potential oil pipelines/infrastructure, that may be on-site, to avoid any impacts to this infrastructure during development works.</p> |
| <p>This table is a summary only, full details and limitations of the assessment are provided within the main body of the report.</p> | |

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1.0 Introduction

Geo² Remediation Limited were commissioned by One Planet Developments Limited to conduct a Phase 1 Preliminary Risk Assessment of a site known as Land adjacent to A614, Worksop, Nottinghamshire, S80 3PA

The site is approximately 88.31 hectares in area and located at grid reference 465500,375070.

The study was undertaken prior to proposed development of the site for a solar farm and battery energy storage system. Existing and proposed development plans for the site can be referred to within Appendix A.

1.1 Scope of Works

The Preliminary Risk Assessment, consisting of desk study and site walkover, was conducted in order to assess the potential for contaminant sources to be present on site, resulting from the past use of the site and current land use.

The desk study was also undertaken to identify possible sensitive environmental receptors that may be at risk from sources, if present on site, within the locality of the site.

The scope of the Preliminary Risk Assessment has given consideration to guidance on Land Contamination: Risk Management pages of the GOV.UK web pages, the relevant requirements of the National Planning Policy Framework (NPPF) (as revised 2023) (paragraphs 180 & 189-191) and the Planning Practice Guidance (Land Affected by Contamination).

1.2 Site-Specific Constraints

- Due to its size and ongoing operations of the site as a farm, the site walkover was generally restricted to the periphery of the site and field boundaries.
- The Consultant undertaking the site inspection maintained a general awareness for evidence of invasive plant species, particularly Japanese Knotweed. While none were observed during the walkover, it should be noted that the Consultant is not a trained ecologist.
- The report includes an initial assessment of unexploded ordnance (UXO) risks for the site using online data sources. A detailed UXO assessment falls outside of the scope of this Report.

2.0 Description of the Site and Surroundings

2.1 Site Description

The site is located approximately 8km southeast of Worksop. Figure 1 in Appendix A shows the location of the site.

The site is currently comprised of a series of fields/agricultural land.

The area shown within the red site boundary on Figure A below, will be referred to throughout this document as 'the site'.

The site is located to the east of Blythe Road and is bounded by woodland on all sides and is accessed from Normanton Larches Farm, to the south of the site.

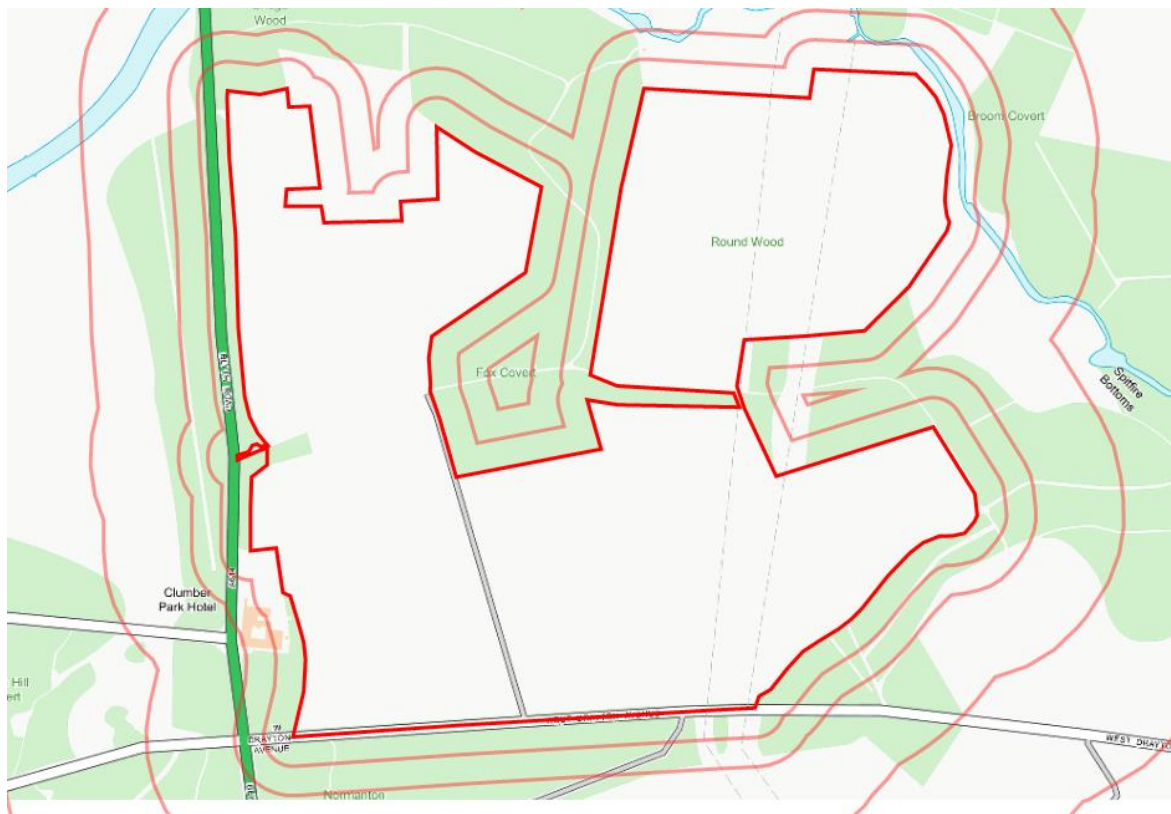


Figure A: Site Location Plan. Red is approximate site boundary and light red are 50m, 100m and 250m buffers.

Extract from Envirocheck Report (Appendix B).

2.2 Site Walkover

A site walkover was undertaken on 24th June 2024, with a photographic survey included in Appendix B. The site walkover findings are detailed below.

The site comprised of various fields in use as agricultural land, planted with various crops, bounded by mature hedgerows or dense woodland. The River Poulter could not be identified adjacent to the northeastern boundary due to dense vegetation. A metal pipe was noted in the southeastern part of the Site, extruding from the ground, within a fenced off area with “Warning” signage. It is anticipated this feature relates to the oilfield, as discussed in Section 3.3

Overhead powerlines were observed in the eastern part of the Site.

The site was observed to be gently rising in elevation from the southern part of the site to the central site area and dropping in elevation from the central area to the north.

No visual or olfactory evidence of contamination was observed during the site walkover.

2.3 Site Surroundings

The site is located within a predominantly agricultural area. The surrounding land uses of the site are summarised in Table 2 on the following page.

| Direction | Land Use |
|-----------|--|
| North | Woodland, the River Poulter and agricultural land |
| East | Woodland, the River Poulter and agricultural land |
| South | Woodland and agricultural land |
| West | A hotel, beyond which is the A614 road, woodland and agricultural land |

Table 2. Land Uses in the Surrounding Area.

3.0 Desk Study

3.1 Desk Study Data

Information regarding the environmental setting of the site was obtained from the Envirocheck Report, which collated information from a variety of sources. A copy of the Envirocheck Report is presented in Appendix C.

Where indicated in Table 3 below, the data from the Envirocheck Report has been supplemented with additional information obtained from freely available online data.

| | |
|----------------------------|---|
| <p>Site Geology</p> | <p>British Geological Survey (BGS) data indicates that bedrock comprises the Chester Formation comprising Sandstone, Pebbly (gravelly).</p> <p>Superficial deposits are recorded in the central Site area, comprising Till, comprising Diamicton, Sand and Gravel.</p> <p>BGS borehole logs are recorded in the southeastern part of the Site. The following ground conditions were recorded:</p> <p>Ref: SK67SE31 (Depth – 1058.27m)</p> <ul style="list-style-type: none"> • Reddish brown sandstone with yellow calcareous clay matrix from ground level to a depth of approximately 630ft (192m); • Sandy marl to a depth of approximately 690ft (210m); • Limestone to a depth of approximately 970ft (295m); and • Interbedded siltstone, mudstone, fireclay and ironstone to the final depth of 3472ft (1058.27m). <p>Ref: SK67SE20 (Depth – 1071.68m)</p> <ul style="list-style-type: none"> • White and red sandstone was encountered from ground level to 450 ft (137m); • Mainly siltstone, clay and anhydrite to a depth of approximately 760ft (231m); • Dolomite was recorded to a depth of approximately 990ft (301m); and • Interbedded sandstone, siltstone, ironstone and fireclay and trace shales were recorded to the final depth of 3516ft (1071.68m). <p>The Envirocheck Report indicates that the site has the following risk ratings associated with these ground stability hazards:</p> <ul style="list-style-type: none"> • Collapsible ground stability – no hazard to very low risk. • Compressible ground stability – no hazard to moderate risk. • Ground dissolution – no hazard. • Landslide ground stability hazard – very low to moderate risk. • Running sands stability hazard – very low to low risk. • Shrinking or swelling clay stability hazard – no hazard to very low risk. |
|----------------------------|---|

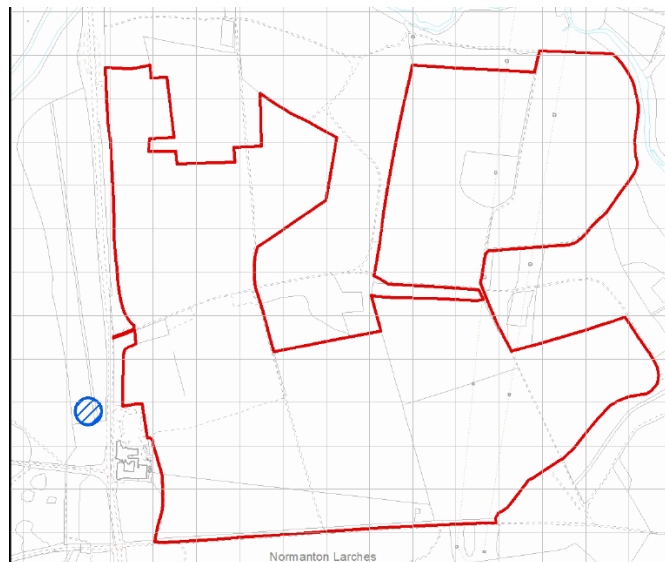
Mining

One BGS Recorded Mineral Site is noted on-Site as Bothamsall Oil Well 9 & 21, for the extraction of oil, listed as active.

Other active mineral sites recorded within 500m of the Site are located 171m southeast and 261m south, noted as Bothamsall Oilfield and Bothamsall Oil Well 12, respectively, for the extraction of oil.

The site is located in a Coal Mining Reporting Area, with a review of the Coal Authority online interactive mapping indicating that the site is not within a Development High Risk Area (DHRA). Coal Authority reporting was obtained and reviewed as part of this desk study and are included in Appendix F. The findings are summarised below:

- The property is in a surface area that could be affected by underground mining in 2 seams of coal at 510m to 620m depth, and last worked in 1992;
- The property is not within a surface area that could be affected by present underground mining;
- The property is not in an area likely to be affected from any planned future underground coal mining, however, reserves of coal exist in the local area which could be worked at some time in the future;
- There are no recorded coal mine entries known to the Coal Authority within, or within 20 metres, of the boundary of the property;
- There are no licence requests outstanding to remove coal by opencast methods within 800 metres of the boundary;
- There is a claim within 50 metres of the property boundary that does not match the property address. There is no current Stop Notice delaying the start of remedial works or repairs to the property. The claim is indicated on the below map by the blue hatched area;



- The claim was made on the 9th September 2010 and was associated with the Woodland in Clumber Park, approximately 49m west of the Site. The claim was “rejected – after inspection”;
- The Coal Authority has no record of a mine gas emission requiring action; and

| | |
|---------------------------------|---|
| | <ul style="list-style-type: none"> The property is in an area where notices to withdraw support were given in 1981 and 1982. 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. |
| <p>Radon</p> | <p>The site is in a low probability radon area (less than 1% of homes are estimated to be at or above the Action Level). As such, no radon protective measures are necessary in the construction of new dwellings or extensions.</p> |
| <p>Site Hydrogeology</p> | <p>The bedrock is classified as a Principal Aquifer and the superficial deposits are classed as a Secondary B Aquifer.</p> <p>The site is located within a Source Protection Zone III (SPZ III) total catchment and Zone II (SPZ II) outer protection zone.</p> <p>Four records relating to one potable groundwater abstraction are recorded within 250m of the Site, located 242m northeast, associated with Anglian Water Service Ltd for the purposes of public water supply. Other potable groundwater abstractions associated with Anglian Water Service Ltd are recorded 386m northeast, 465m and 468m northeast.</p> <p>The groundwater beneath the site in the productive bedrock has been classed as high vulnerability.</p> |

| | | | | | |
|--|--|---|-------------------|-----------------------|-----------------|
| Site Hydrology | <p>The nearest surface water feature is the River Poulter, recorded 12m northeast of the site at its closest point.</p> <p>Several pollution incidents to controlled waters have been recorded within 250m of the Site, summarised below:</p> | | | | |
| | Date | Pollutant / Cause | Distance | Category | Receiving Water |
| | 25 th September 1996 | Storm Sewage / Treatment System Failure | 15m SW | Category 3 - Minor | Groundwater |
| | 22 nd July 1998 | Oils – Diesel / Poor Operational Practice | 24m NE | | Not given |
| | 24 th May 1996 | Oils – Diesel / Leaking Tank | 86m NE | | Groundwater |
| | 24 th May 1996 | Oils – Diesel / Leaking Tank | 91m NE | | Groundwater |
| | 25 th July 1995 | Gas Oil / Fire | 108m & 111m NE | | Watercourse |
| | 6 th August 1998 | Miscellaneous – Foam / Fire | 228m NW | | Watercourse |
| <p>The nearest discharge consent is located 2m southwest, effective from April 2012 and related to sewerage discharges.</p> <p>One water abstraction from surface water is recorded on-site, from the River Poulter (point 1), for the purposes of general agriculture – spray irrigation (direct). The permit start date is noted as the 1st June 1966. The nearest abstraction from surface water within 250m of the site is located 24m northeast from Broom Covert – River Poulter for the purposes of general agriculture - spray irrigation (direct). Several abstraction licenses are recorded within 250m of the Site, all relating to general agriculture - spray irrigation (direct) or spray irrigation (storage).</p> | | | | | |
| Waste and Infilled Land | <p>Three areas of potentially infilled land are recorded 14m southwest, 295m northwest and 455m northwest of the site.</p> <p>One Registered Landfill Site is recorded 110m northeast of the site located at Elkesey Pumping Station, Retford, Nottinghamshire. The licence holder is Anglian Water Authority. The max input rate is recorded as >25,000 tonnes but <75,000 tonnes per year, dated 1st June 1977.</p> <p>One Historic Landfill is recorded 26m northeast of the site noted as Elkesley Pumping Station (as above), accepting deposited waste including inert waste. First input is recorded as December 1978 with last input noted to be June 1982.</p> | | | | |

| | |
|--|---|
| Local Industrial Land Use | <p>One Contemporary Trade Directory entry is recorded within 250m of the site, located 203m south for a jewellery manufacturers and repairers. It is recorded as inactive.</p> <p>The nearest Point of Interest (POI) – Manufacturing and Production, is a tank located 14m southwest of the site.</p> <p>The nearest Point of Interest (POI) – Public Infrastructure, is a sluice located 159m northeast of the site.</p> |
| Sensitive Environmental Receptors | <p>It is understood from information provided within the Envirocheck Report, the following sensitive environmental receptors are located within 500 m of the site:</p> <ul style="list-style-type: none"> • The site is located within a Nitrate Vulnerable Zone; • A Site of Special Scientific Interest is recorded 94m southwest of the site, noted as Clumber Park. <p>Historic England Records (historicengland.org.uk) indicate the following areas of designated heritage interest adjacent to the Site:</p> <ul style="list-style-type: none"> • Clumber Park (Park and Garden – Grade I); • Gate Piers and Flanking Walls to Normanton Gate (Listed Building – Grade II); • Drayton Gate (Listed Building – Grade II); and • West Bridge (Scheduled Monument – Grade not applicable) & West Bridge (That part in the former Worksop M.B – Listed Building – Grade II). |
| Unexploded Ordnance (UXO) | <p>A review of Zetica online risk mapping for the area indicates that the site is located in a Low-risk area with respect to UXO.</p> |

Table 3. Environmental Assessment of the site.

3.2 Environmental Sensitivity

Given the above, the site is considered to be of a moderate to high environmental sensitivity given the presence of the SSSI adjacent to the site, the underlying Principal Aquifer within the bedrock, the location of the site within a groundwater SPZ and potable water abstraction points noted within 500m.

3.3 Historic Planning Applications

A review of Bassetlaw County Council planning portal has identified planning applications relevant to the site in the context of the proposed development. The relevant applications have been summarised in the table below:

| Planning Ref. | Year | Details |
|---------------|--------------|---|
| 14/00992/CDM | July 2014 | County Matters Application to vary Conditions 1, 24, 25 and 26 of Planning Permission 12/01515/CDM to allow an extension of time for the completion of oilfield operations until December 2030. |
| 12/01515/CDM | October 2012 | Periodic review of Mining Sites, Bothamsall Oilfield. |

| | | |
|---------------|------------|---|
| 09/12/00001/S | March 2012 | County Matter - request for screening opinion at wellsite in Bothamsall, Nottinghamshire (periodic review of Mining Sites). |
|---------------|------------|---|

Table 4. Summary of Pertinent Planning Applications on site.

3.3.1 Off-Site Planning Applications

A review of planning applications has been made for sites within 100m of the site.

The following relevant planning applications were noted:

| Planning Ref. | Year | Details |
|---------------|---------------|--|
| 18/89/00013 | December 1989 | New sewage treatment plant – Planning application was granted in February 1990 – Site of the current Clumber Park Hotel, adjacent to the southwestern site boundary. |

Various planning applications were noted, more than 100m to the south and southeast of the site relating to the extension of time for completion of oilfield operations until 2030.

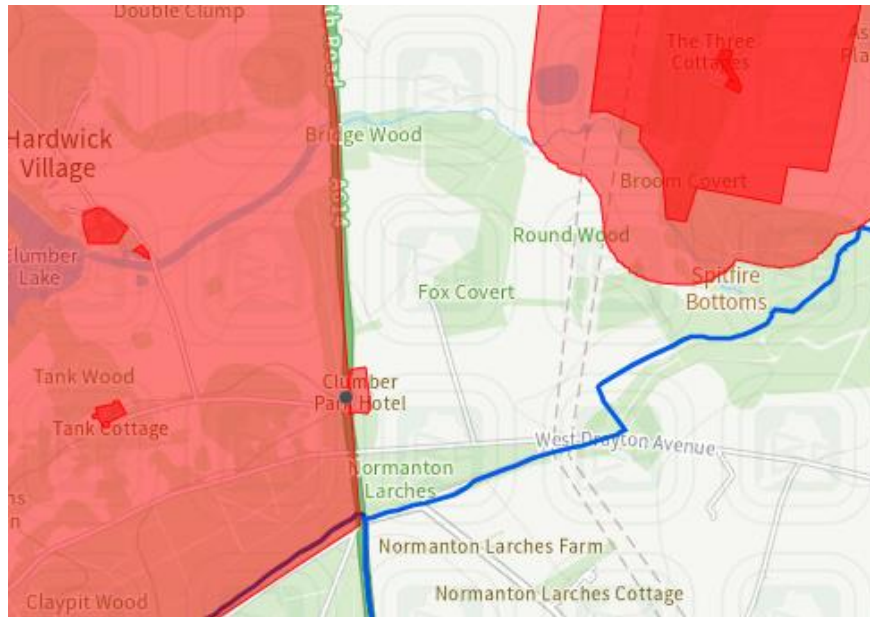
3.4 Regulatory Enquiries

The Contaminated Land Officer (CLO) at Bassetlaw County Council was contacted to enquire into information on the site and immediate surrounding area as well as enquiring into whether the site is on their list for inspection on the basis of the historical use of the site. The following was received from the CLO. The correspondence is included as Appendix E.

“Good Morning

Thank you for your email regarding land to the East and North of the Clumber Park Hotel Blyth Rd, Worksop S80 3PA.

There are a number of sites in the vicinity of this land that may have had potentially contaminated impacts.



We have record of a historic garage on the site of the Clumber Park Hotel.

To the west Clumber Park is on our list of potentially contaminated sites due to its partial use as a military site in WW2.

To the north east we have record of a historic inert landfill.

In terms of risk rating these sites are low on our list of site prioritisation with many hundreds of sites scoring more highly.

We are unaware of any intrusive site investigations for these sites.”

4.0 Site History

Details regarding the development of the site, its immediate surroundings and potentially contaminative land uses were obtained from a review of historical maps.

Copies of the maps are provided in Appendix C and a detailed summary provided in Table 5 below and on the following page. All distances given are approximate and are relative to the site, unless otherwise stated.

| Date | On-Site | Off-Site | Potential Contamination |
|-------------|--|---|--|
| 1885 | The site was comprised of various parcels of undeveloped land, with an assumed agricultural use. Two wooded areas were noted in the northwestern and northeastern parts of the Site, noted as the "Oval Clump" and "Round Wood", respectively. A footpath was recorded crossing the southern site area, from east to west. A small pond was recorded in the southeastern part of the site. | The surrounding land use comprised woodland. The Normanton Inn was recorded approximately 50m southwest and the River Poulter was recorded approximately 20m northeast, at its closest point. | N/A |
| 1899 - 1900 | The site remained largely unchanged. | No significant changes were observed to the surrounding area. | N/A |
| 1920 - 1921 | The site remained largely unchanged. | Sewage Filters were recorded approximately 130m northeast. A pumping station was recorded approximately 500m northeast. | Potential for offsite sources of contamination arising from leaks or spills related to fuel storage/ hydraulic oils. |
| 1947 - 1967 | A small building was recorded in the central site area and a track was recorded crossing the central site area from east to west. Electricity pylons and overhead powerlines were constructed in the eastern part of the site, running approximately north to south. | A tank was recorded approximately 20m southwest associated with the Normanton Inn. | Potential for an offsite source of contamination arising from leaks or spills related to fuel storage. |

| Date | On-Site | Off-Site | Potential Contamination |
|-------------|---|--|--|
| 1967 – 2000 | <p>A pump was recorded in the southern part of the site, adjacent to the site boundary.</p> <p>The Oval Clump was no longer recorded.</p> <p>The small pond in the southeastern part of the site and small building in the central site area were no longer recorded.</p> | <p>Three pumps were recorded approximately 100m, 200m and 500m southeast.</p> <p>A pump house was recorded approximately 200m north.</p> | <p>Potential onsite contamination sources associated with an infilled pond (unknown contaminants) and demolition of a building (potential asbestos), and associated with the offsite pumping stations, including hydrocarbons.</p> |
| 2006 - 2024 | <p>The tracks on-Site were no longer noted.</p> | <p>No significant changes were observed surrounding the site.</p> | <p>N/A</p> |

Table 5. Detailed Summary Review of Historical Mapping

Table 6 below provides a brief summary of the historical land use on site and local to the site.

| Key Historical Activities | |
|---------------------------|---|
| On-Site | <p>The site was recorded as being comprised of various fields/ agricultural land, undeveloped from the earliest mapping to the present day. A pump was recorded on-site in the late 1940s, associated with the deep borehole data obtained from the BGS. It is anticipated that this deep well is associated with the oilfield operations referenced in the planning portal (Section 3.3). A pond and small building were historically present on-site.</p> |
| Off-Site | <p>The surrounding area has principally remained undeveloped/ agricultural land or woodland from the earliest mapping (1885) to the present day, with limited minor development to the surrounding area.</p> |

Table 6. Brief Summary of Historical Land Use On-site and Off-site.

5.0 Preliminary Risk Assessment

5.1 Source – Pathway – Receptor

UK legislation and guidance on assessing potentially contaminated land recommends the use of a risk assessment process based on a review of source/pathway/receptor relationships for various environmental media. The first stage of any risk assessment is to identify, using the desk study data and site information, the presence and extent of any hazard at the site, theoretical or demonstrable.

A key component of the overall risk assessment process is identification of “significant contaminant linkages” between contaminants and receptors. This can be accomplished through development of a site-specific conceptual model in which the potential contaminants, pathways and receptors identified on-site are described.

Each element can be defined as follows:

- **Contaminant source:** A substance either on or under the land and which has the potential to cause harm or pollution to human or environmental receptors.
- **Pathway:** A route or means by which a receptor can be exposed to or affected by a source.
- **Receptor:** A living organism or an ecological system, or controlled water, or property including buildings, crops and livestock.

The presence of all three of the above elements identifies a contamination linkage and a potentially unacceptable risk. To ensure that any risk present to, or, from the site can be appropriately managed each of these contamination linkages will be targeted by the investigation.

5.2 Hazard Identification

5.2.1 Potential On-Site Sources

Limited potentially contaminative on-site activities have been identified as part of this assessment. Limited Made Ground may be present in the areas of the historical small building and/or pond on-site and the pump recorded in the south of the site, assumed to be related to the historical planning applications referencing the oilfield. Potential contaminants may include heavy metals, petroleum hydrocarbons, polycyclic aromatic hydrocarbons (PAH) and asbestos.

Due to the age of the small building noted on-site in the late 1940s to the late 1980s, asbestos containing materials (ACMs) may have been used in its construction, leading to a potential for asbestos in shallow Made Ground soils following removal of this building.

Whilst a potential small, infilled pond exists in the eastern part of the Site, from the late 1880s to the early 2000s, it is considered that this potential ground gas source provides a

very low risk to site end users due to the size of the feature, time since being infilled and proposed end use of the Site.

5.2.2 Potential Off-Site Sources

The following potential sources of contamination have been identified within 250m of the Site:

- Tank 20m southwest;
- Historical landfill recorded 110m northeast;
- Sewage filters / works building 130m northeast;
- Historical garage associated with the Clumber Park Hotel adjacent the western Site boundary;
- The partial historical use of West Clumber Park as a military Site in WW2;
- Three pumps assumed to be associated with the oilfield (100m, 200m, 500m southeast); and pump house 200m north.

5.3 Initial Conceptual Site Model

Contamination linkages arise as a result of the interconnection of the contaminant source, contamination pathways and potential receptors. These contamination linkages are used to design the site investigation (if required), guiding the type of investigation, location of exploratory boreholes and the required sample analysis.

5.4 Risk Estimation

The objective of the qualitative risk assessment is to determine the significance of the risk, if any, which may occur as a result of the creation of pollutant linkages, which connect a potential receptor to an identified potential contaminant source at the site.

The perceived risk is based on a consideration of both the likelihood of an event (probability) occurring, and the severity of the potential consequence. Classification of these two factors is detailed in Appendix D.

5.5 Qualitative Risk Assessment

A qualitative risk assessment is undertaken, detailed in Table 7 on the following page, in line with guidance provided in CIRIA's Contaminated Land Risk Assessment: a guide to good practice CIRIA C552, 2001. The purpose of this assessment is to determine the relative significance of the identified contamination linkages by assessing the probability of an impact occurring and by assessing the perceived severity of an impact to a receptor.

Those linkages considered of low risk or less on the basis of the available site data will not be considered any further in this assessment. Linkages considered to be more significant are identified as presenting potentially unacceptable risk to the identified receptor. In these instances, further works may be considered necessary.

| Source(s) | Pathway(s) | Receptor(s) | Comments | Risk | Requires Investigation |
|---|--|---|--|----------|------------------------|
| Potential contamination (e.g. hydrocarbons) associated with the operation of the pump on-site, and potential limited Made Ground associated with the infilled pond and historical small building. | Exposure to harmful vapours, hazardous ground gas and tainting of water supply | Proposed commercial site end users. (human health) | Limited significant historical potentially contaminative uses on-site. | Very Low | No |
| | | Neighbouring residential site users, principally within enclosed spaces. (human health) | No significant sources of hazardous ground gas have been recorded on-Site and the nearest residential property is approximately 500m south. | Very Low | No |
| | Direct contact, inhalation and ingestion | Proposed commercial site end users, principally within landscaped areas. (human health) | Limited historical industrial land use of the site, and limited areas where Made Ground may be present (small pond and building noted on-Site). Based on the proposed end-use of the site as a solar farm, exposure to potentially contaminated materials is expected to be very limited, although it is recommended a hotspot protocol is in place in the event of any unforeseen contamination being encountered during redevelopment works. | Low | No |
| | | Maintenance workers. (human health) | Maintenance workers excavating the ground may be exposed to potential contaminants in limited areas of the site. Short term risk would be mitigated by use of appropriate person protection equipment (PPE) and provision of suitable welfare facilities. | Low | No |
| | Leaching to groundwater, | River Poulter, recorded 12m northeast. | Any small leaks or spills are anticipated to have been minor and highly | Very Low | No |

| Source(s) | Pathway(s) | Receptor(s) | Comments | Risk | Requires Investigation |
|--|---|--|---|----------|------------------------|
| | lateral and vertical flow, followed by migration within the Principal Aquifer | Bedrock is a Principal Aquifer with the site located in a SPZ III and SPZ II The nearest potable groundwater abstraction point is located 242m northeast. | localised given the limited historical contaminative uses on-site. | Very Low | No |
| Hazardous ground gases arising from Made Ground soils, organic matter and possible infilled pond in the eastern area of the site | Inhalation noxious ground gases | Proposed commercial site end users, principally within enclosed spaces. (human health) | Significant depths of Made Ground soils are not anticipated across the site, with the age and size of the possible infilled pond unlikely to still emit noxious ground gases. No significant ground gas risk is anticipated. | Very Low | No |
| Off-site sources | Migration of contaminants | Proposed commercial site end users (human health) Groundwater beneath site | The historical landfill located 110m northeast, beyond the River Poulter, is deemed too far from the site, with the migration pathway obstructed by the river, to pose any unacceptable risk to site users or the groundwater beneath the site. Given that limited significant potential sources of contamination have been identified in the surrounding area, the risk is considered to be low, and offsite contamination sources are not anticipated to have significantly impacted the site. | Low | No |

Table 6. Summary of Qualitative Risk Assessment

6.0 Geotechnical Constraints

6.1 Preliminary Ground Model

Based on the available information, it is anticipated that the ground conditions at the site will comprise a limited thickness of Made Ground overlying bedrock of the Chester Formation, with possible localised areas of deeper Made Ground in the area of the former building and small pond. Localised superficial deposits of Till may also be encountered in the central area of the site.

6.2 Geotechnical Considerations

The geotechnical constraints that are considered to potentially be a risk during redevelopment are detailed below:

- Localised deeper Made Ground – Made Ground may be encountered in the areas of the historical building and potentially infilled pond. Made Ground is typically variable in nature and strength with a potentially low bearing capacity and unacceptable levels of total/differential settlement may occur.
- Coal Mining – Coal Authority reporting indicates that the property is not in a Development High Risk Area, however, is in a surface area that could be affected by underground mining in two seams of coal at 510m to 620m depth, and last worked in 1992. A subsidence claim has been made within 50m of the Site boundary, although the subsidence claim was rejected following inspection. Due to the depth of the coal seams and lack of coal observed within the historical logs on-site, it is anticipated that the risk at ground level would be low.

7.0 Conclusions and Recommendations

7.1 Conclusions

A Phase 1 Preliminary Risk Assessment of the site known as Land adjacent to A614, located at Worksop, Nottinghamshire, S80 3PA has been undertaken, prior to proposed redevelopment of the site as a solar farm and battery energy storage system.

7.1.1 Contaminated Land Considerations

The purpose of the assessment was to evaluate the potential for risk to be posed to human health and controlled waters from historical and current use of the site.

Limited potentially significant contaminant sources have been identified at the site. Limited localised Made Ground may be present, associated with the historical small building and potentially infilled pond and potential localised spillages of hydrocarbons associated with the pump and/or the use of the site for agricultural purposes.

Due to the age of the historical building, noted from the 1940s to the 1980s, Made Ground associated with its construction and demolition may contain ACMs.

The site is underlain by a Principal Aquifer and is within an SPZ III and SPZ II. Geo² consider the underlying risk to the Principal Aquifer and SPZ III within the bedrock to be **Very Low**, given the limited potentially significant contaminant sources identified.

The potential presence of localised deeper Made Ground soils across the site, are considered to represent a **Low to Very Low risk** to site end users from contaminants within shallow soils and potential ground gas.

The risk to controlled waters from contamination arising from the site has been assessed as **Very Low**.

7.2 Recommendations

The following measures are recommended to address the identified risks and to assist in satisfying anticipated contaminated land planning conditions:

- Based on the identified potential sources and risk assessment an intrusive investigation is not recommended, nor is anticipated to be required;
- When development works take place on-site, a hotspot protocol should be in place to ensure that any localised contamination impact, if identified, is dealt with accordingly. A Hotspot Protocol is attached to this report, within Appendix G, that should be adhered to during the redevelopment phase.

- Due to the borehole on-site, potentially associated with the oilfield, it is considered prudent to obtain service plans for any potential oil pipelines/infrastructure, that may be on-site, to avoid any impacts to this infrastructure during development works.

8.0 Report Limitations

This Report was prepared by Geo² for the sole and exclusive use of the Client and for the specific purpose for which Geo² was instructed. Unless explicitly agreed otherwise, in writing, this Report has been prepared under Geo²'s Standard Terms and Conditions.

Geo² does not intend, without its written consent through a formal letter of reliance or warranty, for this Report to be disseminated to any party other than the named Client or to be used or relied upon by any party other than the named Client. Use of the Report by any other party is unauthorised and such use is at the sole risk of the user. Any party using or relying upon this Report, other than the Client, agrees by virtue of its use to indemnify and hold harmless Geo² from and against all claims, losses and damages (of whatsoever nature and howsoever or whensoever arising), arising out of or resulting from the performance of the work by Geo².

The recommendations contained within this Report represent Geo²'s professional opinions, based upon the information detailed within the Report, exercising the reasonable skill and care to be expected of a professional consultant holding itself out as having the competence, experience, and resources necessary for the purpose of carrying out similar work in scope and character to the services performed. The Report needs to be considered in the light of the proposal and associated limitations of scope. The Report needs to be read and considered in full and isolated sections cannot be used without full reference to other elements of the Report and any previous works referenced within the Report.

9.0 References

British Standards Institute

BS10175:2011 “Investigation of potentially contaminated land sites – code of practice”

British Geological Society

Geology of Britain Viewer

CIRIA

C552 Contaminated Land Risk Assessment, a guide to good practise, 2001.

C665, Assessing risks posed by hazardous ground gases to buildings, 2007.

CL:AIRE

Good Practice For Risk Assessment For Coal Mine Gas Emissions, October 2021.

Environmental Agency

Land Contamination Risk Management (LCRM) Guidance, 2020

Landmark

Envirocheck Report, ref. 50287003_1_1

The Coal Authority

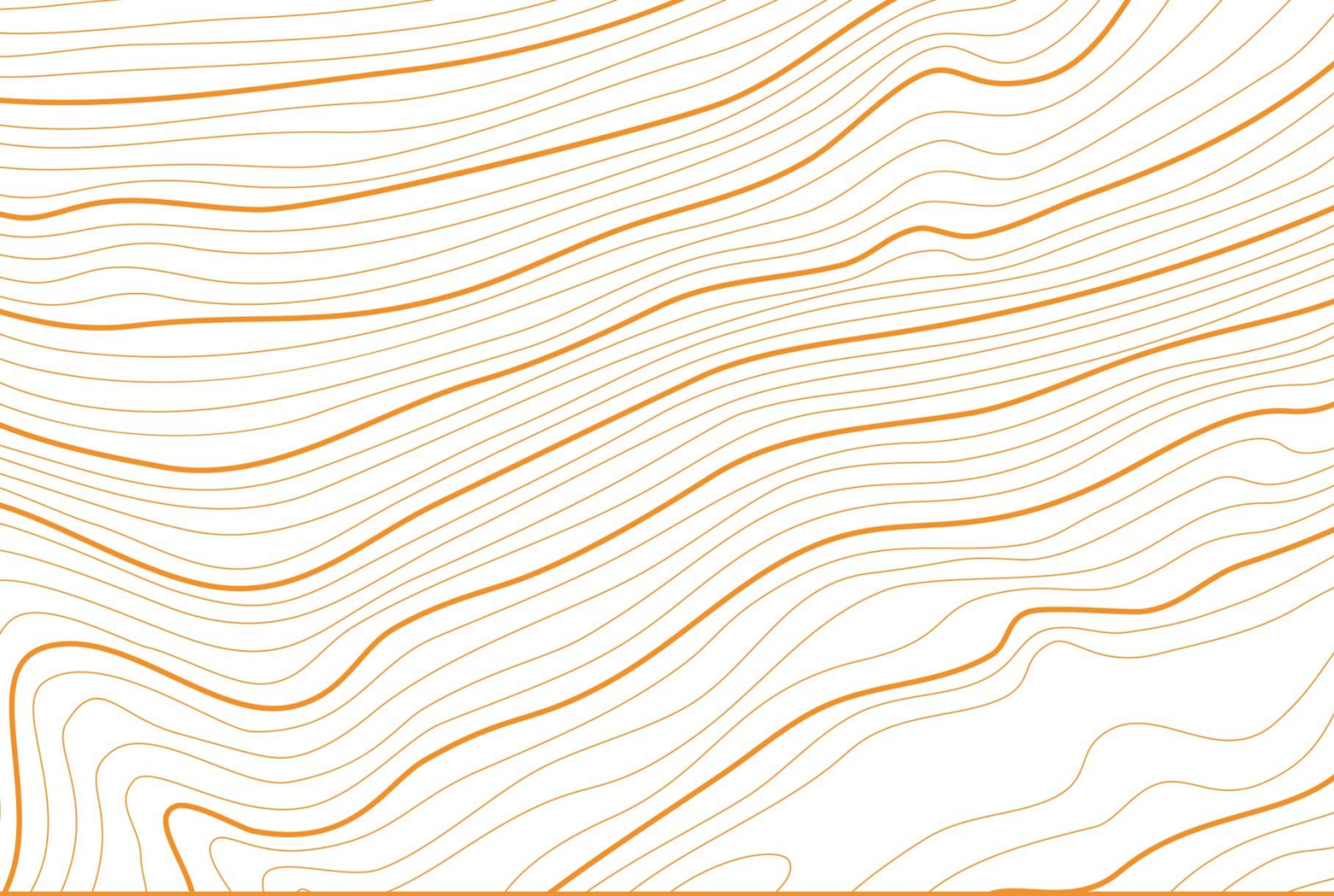
Coal Authority Interactive Viewer

Coal Mining Report, ref. 51003431640001

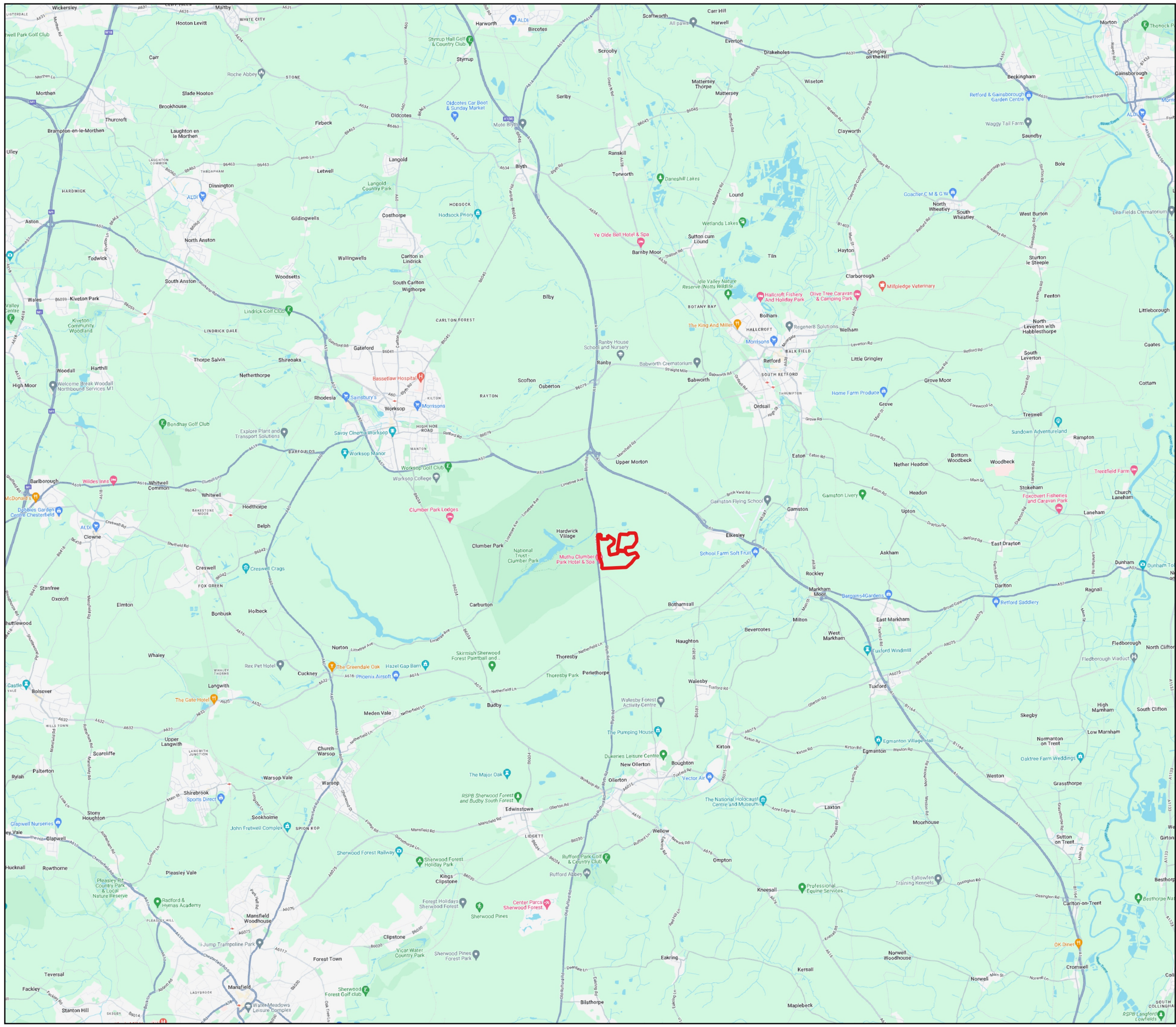
Subsidence Buffer Report, ref. 51003432986001

Zetica UXO

Risk Maps Viewer



Appendix A – Figures



Legend

Site Boundary
Google Maps

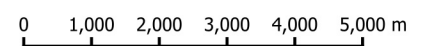


Figure
Site Location Plan

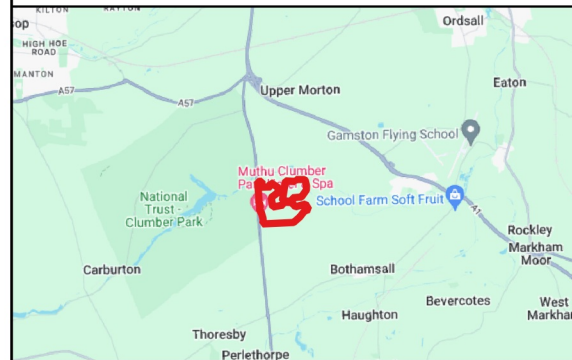
Job
Land East of Blythe Road

Client
One Planet Developments Limited

| Figure No. | Revision | Date |
|------------|----------|--------------|
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| Drawn by | Checked by | Scale |
|----------|------------|-----------------|
| 1 | 1 | 1:111,510.64934 |

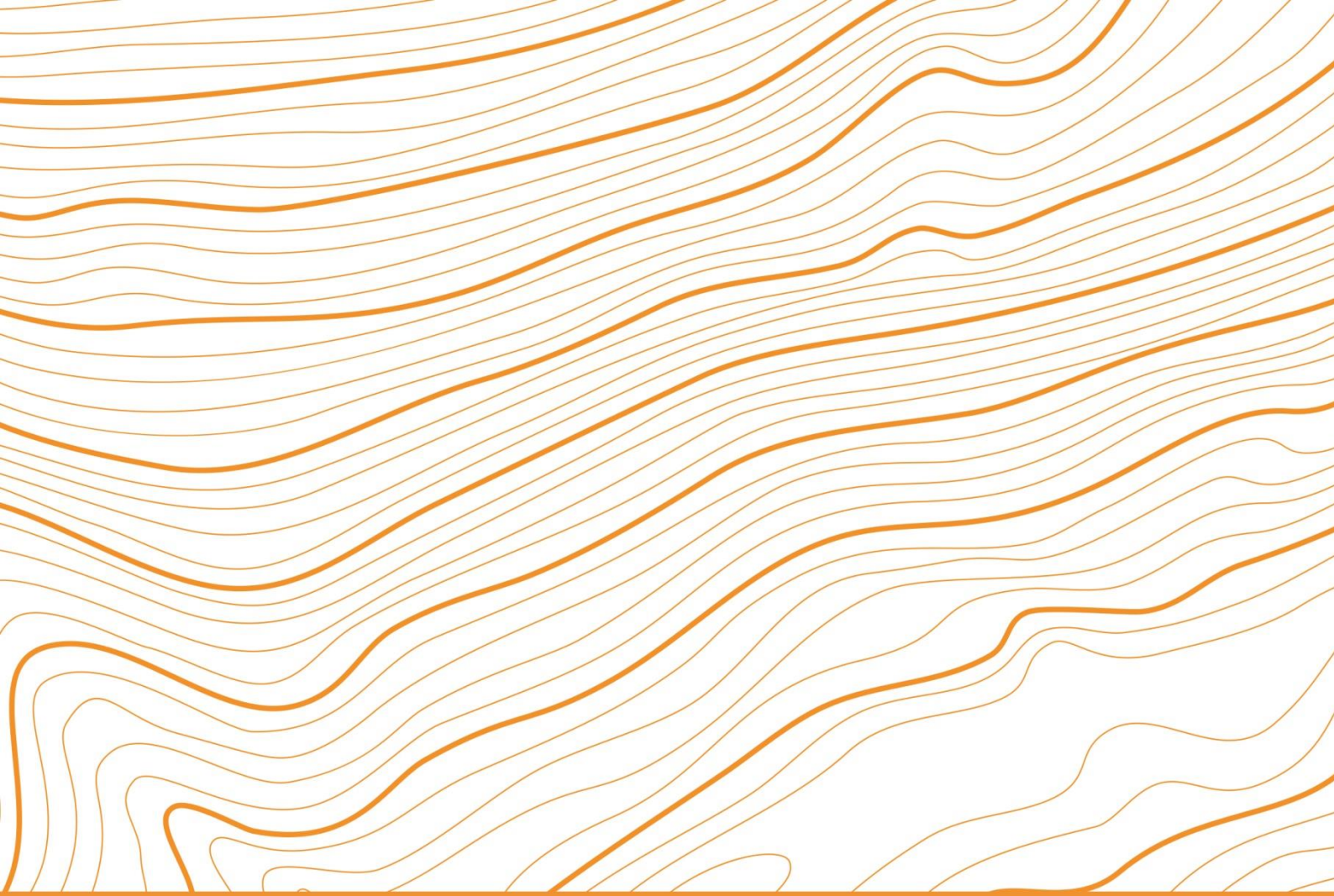
Job No.
4271



DO NOT SCALE. NOT FOR CONSTRUCTION



Site Plan Provided by Client 2024.



Appendix B – Photographic Survey

4271 – Land East of Blythe Road– Photographic Survey 1

Image 1: Photo of borehole assumed to be related to the oilfield



Image 2: Photo of fields in the central Site area, facing southwest



Image 3: Photo of fields in the southern site area, facing north



Image 4: Photo of fields in the northeastern site area, facing north

