



# Necton Greener Grid Park

## Phase 1 Geo-Environmental Desk Study

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# 1. Executive Summary

ITP Energised was instructed by DWD ('the Client') to undertake a Phase 1 Geo-Environmental Desk Study for the proposed Necton Greener Grid Site located off Norwich Road, Necton, Norfolk, England, PE37 8EQ. This report provides information on geo-environmental considerations in order to identify any possible geo-environmental constraints in relation to the proposed development. The methodology and limitations relating to this assessment are given in Appendix 4.

## Key Findings

<b>Current Site use</b>	<p>The Site currently comprises agricultural land, adjacent to a substation on the northern boundary. A Site visit has been undertaken (2022/12/12). to the proposed development is a greener grid park.</p> <p>The Site is located approx. 1.5km northeast of Necton, and approx. 1.7km southeast of Little Fransham. The A47 runs northwest of the Site area with an access track of the road leading to the Site, adjacent substation, and surrounding fields.</p> <p>The surrounding area is dominated by arable fields.</p>
<b>Historical use of the Site and surrounding area</b>	<p>The historical maps show little development on the Site, with the mapping indicating the land use to be agricultural. Necton substation was constructed in 2016.</p>
<b>Ground conditions</b>	<p>The superficial geology at the site consists of glacial soils (Diamicton) of the Lowestoft Formation. The bedrock geology consists of chalk of the Cretaceous age Lewes Nodular Chalk Formation, Seaford Chalk Formation, Newhaven Chalk Formation and Culver Chalk Formation (Undifferentiated).</p> <p>There are three small ponds located within a 250m radius of the Site. With a water feature located to the east of the Site within the 500m radius running north to south.</p> <p>There is one principal bedrock aquifer covering the entirety of the Site with a secondary undifferentiated superficial bedrock aquifer. There are no abstractions from groundwater within a 1km radius of the Site.</p> <p>There is no hazard for ground dissolution or compressible ground, a very low possibility for collapsible ground, and landslides and a low chance of shrinking/swelling clay ground.</p>
<b>Site clearance and demolition</b>	<p>No evidence of any former structures, obstructions, or Asbestos Containing Materials (ACMs) on the Site.</p>
<b>Ground gas</b>	<p>There is no requirement for radon protective measures when constructing new dwellings or extensions.</p>
<b>Flood risk</b>	<p>There is limited potential for groundwater flooding to occur within the Site boundary. There is potential for groundwater flooding of property situated below ground level to the west of the Site within a 100m buffer.</p>



## Conclusion

### Conclusion

The previous use of the Site and the surrounding areas does not indicate any significant sources of contamination. There are no widespread contamination concerns that have been identified. The potential for a significant environmental liability to arise is considered limited. Overall, the risk of contamination-related liability arising for the Site owner, is considered to be low. This rating can be maintained provided the appropriate remediation methods are installed as part of the development and the relevant documentation to confirm works are obtained and maintained.

## Recommendations

### Recommendations

Development works should be undertaken in line with the planning permission granted for the Site and the works specified in the remediation and verification strategy and site investigation reports. If any visible or olfactory evidence of contamination is identified during the proposed works, this contamination must be assessed and managed to the satisfaction of the Local Authority.

Please Note: This summary forms part of ITP Energised's Phase I Geoenvironmental Desk Study Assessment report (ref.: 5604) and is not to be used as an independent document.



## 2. Introduction

### 2.1 Background

ITPEnergised Ltd was appointed by DWD to undertake a Phase 1 Geo-Environmental Desk Study Assessment of land located at approximately NGR 523934, 0004730 off Norwich Road, Necton, Norfolk, England, PE37 8EQ (herein referred to as The 'Site'), shown in Appendix 1.

### 2.2 Proposed Development

This report provides information on environmental considerations to inform the proposed construction and operation of a Greener Grid Park (The Proposed Development). Greener Grid Parks are a collection of small buildings, usually located near substations, containing innovative technology designed to increase the amount of renewable energy transmitted through the national grid.

### 2.3 Objectives

This assessment aims to undertake an appraisal of information relating to the Site, its current condition and past land uses in context of the Proposed Development.

## 3. Methodology

The methodology for the desk study includes an Envirocheck database search and historical review. The methodology is summarised below:

- A site walkover to identify current land use both on the Site and in the immediate vicinity.
- A desk study to review geological and hydrogeological setting, historic maps, published records and registers, and previous intrusive site investigation reports pertaining to the Site (where available).
- A review of the data gathered during the stages described above in order to assess the potential ground conditions that may impact the Proposed Development.
- Development of a preliminary Conceptual Site Model (CSM), identifying potential hazards by establishing a Source-Pathway-Receptor linkage approach.

### 3.1 Sources of Information

The following information has been utilised in producing this report:

- Envirocheck Report including historic OS Mapping (2022/12/12) (Appendix 2)
- Information on the British Geological Survey (BGS) website;
- Information on the Environment Agency (EA) website;
- Freely available aerial photography (Google, Bing);



## 4. Current Land Use

<b>Site Address</b>	Norwich Road, Necton, Little Fransham, Breckland, Norfolk, England, PE37 8EQ
<b>Nation Grid Reference</b>	TF 88908 10480
<b>Site size (hectares)</b>	5.05 hectares (ha)
<b>Description of Site location and surrounding area</b>	The Site is located approx. 1.5km northeast of Necton, and approximately 1.7km southeast of Little Fransham. The A47 runs northwest of the Site area with an access track extending off it leading to the Site and adjacent substation. The surrounding area is dominated by arable fields. There is a 3km <sup>2</sup> and 0.9km <sup>2</sup> area of woodland to the east and to the west of the Site respectively. There are three small ponds located within a 250m radius of the Site, with a tributary of the river Wissey located to the east of the Site within the 500m radius running north to south.

### Site Reconnaissance and/or Review of Current Mapping and Aerial Photography

A site reconnaissance was undertaken on 12<sup>th</sup> December 2022. The following information was obtained from the Site visit and a review of mapping information and aerial photography. See Appendix 3 for site reconnaissance photographs

- The subject site can generally be divided into three distinct areas. The south of the Site which is for the main development area for the Greener Grid Park, extending to approximately 2.7ha. The west of the Site which will provide access to the Site, approximately 0.9ha, and the north or the Site that will contain the cable route for the grid connection approximately 1.6ha.
- The A47 is located to the west of the Site. It is currently used to access the Site (Photograph 1).
- The western area of the Site consists of a gravel/dirt path that runs from west to east along the northern boundary of arable land. There is an existing access gate located at the beginning of the access track (most western section of the Site boundary) (Photograph 2).
- There is an approximately 0.5m ground level variation between the path and the arable land (Photograph 3).
- The southern and western areas of the Site comprise ploughed agricultural field. This area is approximately 2.7ha and demonstrates a very gentle downwards sloping topography from the west to the east of the Site boundary (photograph 4).
- The main development area will be accessed from the west of the Site, there are no topographic constraints identified when accessing the Site.
- To the west of the main development area, and south of the access path there is a small woodland area comprising deciduous trees and bushes (Photograph 5).
- In the area immediately east of the Site there is a woodland area with a water tank/container, and bird feeders (Photograph 6).
- There is evidence of drainage ditches in place around the peripheral boundary of the Site.
- The western boundary of the field outside of the Site boundary has a visible ditch approx. 1-2m deep, as well as drainage pipes and infrastructure in place (Photograph 7).
- Drainage systems can also be seen along the access path running to the northern Site area (approximately 1-2m deep).



- The land within the main site development and the land surrounding comprises ploughed fields. Evidence of chemical fertilisers being used on this land was noted during site reconnaissance (Photograph 8).

#### *Surrounding Land Use*

Surrounding land uses are predominantly agricultural in nature and agricultural land is present adjacent to the east, west, and south of the main development Site area. There is a small area of woodland to the east and west of the main development Site area respectively. The north of the Site (the proposed cable connection route) is bordered by agricultural land to the north and east and the onshore substation to the south and west of the northern Site area.

No ecology desk study or survey work has been carried out. However, a review of publicly available information from Natural England has been reviewed to identify Breckland as a Special Area of Conservation (SAC), which comprises the entire Site.

#### Regulatory Data on Current Land Uses

The following data has been obtained from review of an Envirocheck Report (Appendix 2) from Landmark Information Group. The information below is restricted to the subject Site and a buffer of 500m from the Site boundary. All distances are approximate.

	Onsite	Off-site
<i>Site(s) on the contaminated land register</i>	None identified (N/A)	N/A
<i>Current landfills or waste management facilities</i>	N/A	N/A
<i>Current permitted industrial processes</i>	N/A	Necton Onshore Substation c. 50m north of the main development area of the Site. Operated by Equinor.
<i>Current fuel stations or petrol storage licences</i>	N/A	N/A
<i>Current licensed radioactive substances</i>	N/A	N/A
<i>Current discharge consents</i>	N/A	N/A
<i>Recorded pollution incidents (relating to current Site operations)</i>	N/A	N/A
<i>Current consents under the Planning (Hazardous Substances Act) 1990</i>	N/A	N/A
<i>Current Control of Major Accident Hazards (COMAH) registrations</i>	N/A	N/A





<b>Summary</b>	<p>There are no findings of concern with respect to contamination. The current agricultural use of the Site is considered to represent a low risk with regards to contamination.</p> <p>The surrounding land uses comprises agricultural fields and light commercial land use. The nearest residential area is further than 1km from the Site, therefore, the current use of the surrounding Site area is considered to represent a low risk with regards to contamination.</p>
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## 5. Historical Land Use

The following tables detail the historical land uses on, and within 500m of, the subject Site, based on a review of available historical Ordnance Survey mapping, and our Site reconnaissance, described above.

Age of Map (Scale)	Onsite	Offsite
1883-1884 (1:2,500)	The Site comprised arable fields with distinct boundaries from hedgerows with a small woodland area to the west of the Site and east of the Site respectively.	The area surrounding the site consists of agricultural fields used for growing crops.
1905-1906 (1:2,500)	No significant changes.	No significant changes.
1928 (1:2,500)	No significant changes.	No significant changes.
1929-1930 (1:10,560)	No significant changes.	No significant changes.
1952 (1:10,560)	No significant changes.	No significant changes.
1958-1959 (1:10,000)	No significant changes.	No significant changes.
1965 (1:10,000)	No significant changes.	No significant changes.
1974-1982 (1:2,500)	No significant changes.	No significant changes.
1979 (1:10,000)	No significant changes.	No significant changes.
1980-1984 (1:10,000)	No significant changes.	The area surrounding the Site boundary shows a track was added along field boundaries to the north, west and east of the Site. To the west of the Site is a main road (A47) it has always been present but periodic maintenance of the road is likely to have occurred. There is no record of specific dates of road work.
1994 (1:2,500)	No significant changes.	No significant changes.
2000 (1:10,000)	No significant changes.	Drainage ditches have been added directly north of the access track, north of the substation and c. 100m south of the southern Site boundary
1999 (1:10,000)	No significant changes.	No significant changes.
2003 (1:10,000)	No significant changes.	No significant changes.
2006 (1:10,000)	No significant changes.	No significant changes.



Age of Map (Scale)	Onsite	Offsite
2009 (1:10,000)	No significant changes.	No significant changes.
2013 (1:10,000)	No significant changes.	No significant changes.
2016 (1:10,000)	The Site changed from arable field to a tarmac road in the northern section of the Site Boundary. During construction of the substation an access road was implemented running from the A47 to the top end of station. The section extending along the length of the substation is onsite.	North of the main development Site changed from arable fields to an onshore substation.
2022 (1:10,000)	No significant changes.	No significant changes.

#### Regulatory Data on Historical Land Uses

The following data has been obtained from a review of an Envirocheck Report (Appendix 2) from Landmark Information Group. The information below is restricted to the subject Site and a buffer of 500m from the Site boundary. All distances are approximate.

	Onsite	Offsite
<i>Historical landfills or waste management facilities</i>	N/A	N/A
<i>Historical permitted industrial processes</i>	N/A	Necton onshore substation c. 50m north of the main development area of the Site. Operated by Equinor.
<i>Historical fuel stations or petrol storage licences</i>	N/A	N/A
<i>Historical licensed radioactive substances</i>	N/A	N/A
<i>Historical discharge consents</i>	N/A	N/A
<i>Historical pollution incidents</i>	N/A	N/A

#### Summary

According to the historical maps from 1884-2016 the Site, and the immediate surrounding area, has had little significant industrial/commercial past. From 2016 the surrounding area had the construction of a substation. Except from this road maintenance and agricultural activity is the only identified potential contamination contributor. Therefore, the potential for contamination to be present at the Site and within the surrounding area from historical sources is considered to be low.



## 6. Site Setting

<b>Geology</b>	<p>Online BGS published geological data shows the superficial geology on the Site to be glacial soils (Diamicton) of the Lowestoft Formation overlaying bedrock of the Cretaceous age, Lews Nodular Chalk Formation Seaford Chalk Formation, Newhaven Chalk Formation and Culver Chalk Formation (Undifferentiated) (Chalk).</p> <p>According to Landmark Datasheet the maximum hazard rating identified on Site is Very Low relating to (compressible ground / collapsible ground / ground dissolution/ landslide / running sand / shrinking or swelling clay) ground stability hazards.</p> <p>There are no available BGS records of historic trial pits or boreholes within the site boundary, however a borehole located at 589270, 310830 (Ref: TF81SE3), approximately 140m northeast of the Site indicates superficial cover to comprise glacial soils (sandy/silty boulder clay) more than 9m thick, with no groundwater identified during drilling.</p>
<b>Hydrogeology</b>	<p>The EA has classified the underlying geology in this area as:</p> <ul style="list-style-type: none"><li>➤ Lews Nodular Chalk Formation Seaford Chalk Formation, Newhaven Chalk Formation and Culver Chalk Formation (Undifferentiated)- Principal Aquifer</li><li>➤ Lowestoft Formation – Secondary Undifferentiated</li></ul> <p>The Site is located within an EA designated groundwater Source Protection Zone.</p> <p>The groundwater of the secondary aquifer underlying the Site is classified by the EA to be of medium vulnerability.</p> <p>There is one principal bedrock aquifer covering the entirety of the Site with a secondary undifferentiated superficial bedrock aquifer. There are no abstractions from groundwater within a 1km radius of the proposed Site.</p>
<b>Hydrology</b>	<p>The Site location is located c. 0.6km west of a river Wissey tributary and c. 2.3km from the upper river Wissey channel.</p> <p>The river Wissey has an ecological status of moderate.</p> <p>The site is located within a Nitrates vulnerable zone.</p> <p>There is no registered surface water abstraction within a 1km radius of the Site.</p>
<b>Flooding</b>	<p><i>Risk of flooding from rivers and sea</i></p> <p>According to the Landmark data sheet/ Gov.UK website<sup>1</sup> the Site is located within a flood zone 1. This means there it is a low-risk area where the chance of flooding from rivers and sea each year is 0.1%. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped or fail.</p> <p><i>Risk of flooding from surface waters</i></p> <p>Surface water flooding happens when rainwater does not drain away through the normal drainage systems or soak into the ground but lies on or flows over the ground instead. Flooding from surface water is difficult to predict as rainfall</p>

<sup>1</sup> UK Government (2023) <https://flood-map-for-planning.service.gov.uk>. Last accessed January 2023



	<p>location and volume are difficult to forecast. In addition, local features can greatly affect the chance and severity of flooding.</p> <p>The Site area has a low risk means that each year this area has a 0.1% chance of flooding. Within the 250m buffer zone there are some areas that have the possibility of a 100-year return flood with the pond to the east of the Site having the potential of a 30-year return flood. The river Wissey tributary to the east of the Site has a high possibility of flooding from surface water with a 30-year return possibility. However, the effects of this would be contained within the 500m buffer and should not impact the Site.</p>
<b>Mining &amp; Extraction</b>	<p>The Site is not located within a coal mining area and there are no records of any mines or quarries within the Site boundary or immediately adjacent.</p>
<b>UK Health Security Agency (UKHSA)</b>	<p>According to information from the Public Health England (PHE) website, the Site is located within an area where the maximum radon potential is less than 1%.</p> <p>Radon protection measures are not considered necessary.</p>
<b>Designated Sites</b>	<p>No ecology desk study or survey work has been carried out. However, a review of publicly available information from Natural England has been reviewed to identify the area where the Site is located, Breckland, as designated as an SAC.</p>

## 7. Consultations

<b>Contaminated Land Officer</b>	<p>No information has been provided from the Contaminated Land Officer as part of this assessment.</p>
<b>Petroleum Officer</b>	<p>No issues have been identified that warrant further consultation with the Petroleum Officer.</p>
<b>Building Control</b>	<p>No information has been provided from the Building Control Officer as part of this assessment.</p>

## 8. Other Information

<b>Previous reports</b>
<p>No previous assessments at the site or adjacent have been available for review.</p>

<b>Asbestos Containing Materials (ACMs)</b>
<p>No buildings or potential sources of asbestos containing materials have identified at the Site.</p>



## 9. Conceptual Site Model and Risk Assessment

ITPEnergised has developed a Conceptual Model to identify potential sources, migration pathways and receptors at the Site and within the immediate study area. Based on LCRM: Stage 1 risk assessment guidance, October 2020, the Conceptual Model provides a risk evaluation to establish whether there are any potentially unacceptable risks associated with the proposed development of the Site. See Appendix 4 for Methodology.

	Potential Contaminant	Potential Receptors	Potential migration Pathway	Likelihood	Severity	Risk Classification and Comment
On Site	Agricultural Land Use – oils, fuels, chemical fertilizers, and pesticides.  (Historic mapping indicates limited potential for any significant sources of contamination from past land uses)	<ul style="list-style-type: none"> <li>Current and future Site users (commercial)</li> </ul>	Direct contact, inhalation	Unlikely	Mild	<b>Very Low</b> – The current use of the Site comprises agricultural land and the proposed development will comprise an unmanned equipment siting facility, limiting the potential for human exposure to any contaminated soils via direct contact (ingestion, dermal contact and inhalation of dust).
		<ul style="list-style-type: none"> <li>Construction workers</li> </ul>	Direct contact, inhalation	Low	Minor	<b>Very low</b> – This receptor group is potentially at risk only if unexpected contamination sources exist and are identified during investigation. It should be ensured that future construction workers implement safe working practices and use appropriate personal protective equipment (PPE) to mitigate the potential risk from any unidentified/unexpected contamination.
		<ul style="list-style-type: none"> <li>Third-party neighbours – adjacent agricultural land</li> </ul>	Offsite migration and plant uptake	Unlikely	Mild	<b>Very Low</b> – The underlying impermeable superficial geology across the Site and within the surrounding area as well as the proposed end use will limit the potential for infiltration and migration of contamination towards the identified Offsite receptors, with available borehole records indicating a significant thickness of impermeable boulder clay (though there is potential for lenses of permeable sand/gravel). Furthermore, any contamination present is likely to be representative of the wider area which is also agricultural.



	Potential Contaminant	Potential Receptors	Potential migration Pathway	Likelihood	Severity	Risk Classification and Comment
		<ul style="list-style-type: none"> <li>Water Environment/Controlled Waters – Aquifers and Groundwater abstractions.</li> </ul>	Offsite migration to groundwater sources	Low	Mild	<b>Low</b> – The underlying impermeable superficial geology across the Site and within the surrounding area as well as the proposed end use will limit the potential for infiltration and migration of contamination towards the identified Aquifers and surface water receptors, with available borehole records indicating a significant thickness of impermeable boulder clay (though there is potential for lenses of permeable sand/gravel). There are no abstractions within 1km of the Site.
		<ul style="list-style-type: none"> <li>Ecology/Designated Sites (Breckland SAC)</li> </ul>	N/A	Unlikely	Minor	<b>Low</b> – The SAC Designation relates to habitats which are unlikely to be impacted by (very low) potential contamination. All construction works would be monitored by an Environmental/Ecological Clerk of Works (ECoW) to ensure appropriate protections are in place.
Off Site	<p>Electricity Distribution Substation – adjacent.</p> <p>Potential contaminants include – oils and fuels. The date of construction reduces the likelihood of any contaminant sources being present. There are no records of any incidents of significant fuel spillages etc.</p>	<ul style="list-style-type: none"> <li>Current and future Site users and construction workers.</li> </ul>	Onsite migration through granular/permeable strata, then subsequent direct contact.	Low	Minor	<b>Low</b> – It should be ensured that future construction workers implement safe working practices and use appropriate personal protective equipment (PPE) to mitigate the potential risk from any unidentified/unexpected contamination. Furthermore, the proposed unmanned use of the Site will limit the potential for direct contact.
		<ul style="list-style-type: none"> <li>Water Environment/Controlled Waters – Aquifers and Groundwater abstractions.</li> </ul>	Onsite migration through granular/permeable strata to groundwater source	Low	Minor	<b>Low</b> - The permeable nature of chalk deposits means there is potential for infiltration and migration of contamination towards the Site, however significant thickness of impermeable glacial soils (boulder clay) are anticipated. Additionally, the substation was built in 2016 with modern construction and environmental pollution prevention standards (indicating limited potential for any contaminant source associated with



	Potential Contaminant	Potential Receptors	Potential migration Pathway	Likelihood	Severity	Risk Classification and Comment
						the substation site) and features hard surfacing across most of the site which will act as a barrier to any contaminant pathway, therefore the potential for any contamination, that may be present, from off Site sources, to migrate onto the Site would be limited. There are no abstractions within 1km of the Site.





### Preliminary Risk Assessment

The assessment of the potential for contamination and potential risks associated has indicated that the risks are considered to generally be low, based on the following factors:

- There are no significant sources of contamination identified on the Site based on the Site's land use history;
- Although offsite contamination sources cannot be discounted, the recorded history does not indicate any likely contaminant sources. There have been no recorded pollutant incidents associated with the adjacent substation.

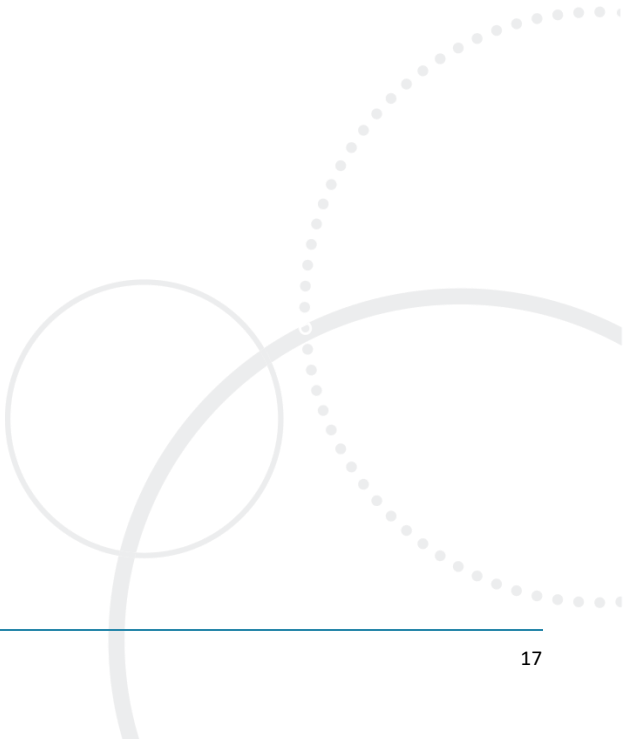
## 10. Conclusion and Recommendations

<b>Summary of findings</b>	<p>The assessment has been undertaken through a desk-based study of freely available environmental data, and an Envirocheck Report as well as conducting a Site walkover.</p> <p>Based on a review of historic mapping and environmental records pertaining to the Site, the Site comprised agricultural land from the earliest available mapping (1883) through to 2016 when an access road was implemented in the northern area of the Site. The access road is a tarmac pathway leading from the main road (A47) to a substation located north of the main development area of the Site. Mapping suggests that the southern area of the Site and the land around it have remained greenfield through to present day.</p>
<b>Risk Assessment Conclusions</b>	<p>No significant contaminant sources have been identified from onsite activities, however potential offsite contaminants cannot be discounted, though the risk is considered low.</p> <p>This assessment is based on the information available at the time of reporting and may need review should additional information become available.</p>
<b>Recommendations</b>	<p>Some intrusive investigations are likely to be required to inform the design of foundations, services, and pavements for the new development. Although mainly required for geotechnical purposes, it would be prudent to include some environmental testing of soil and water samples to provide information on baseline Site conditions.</p>



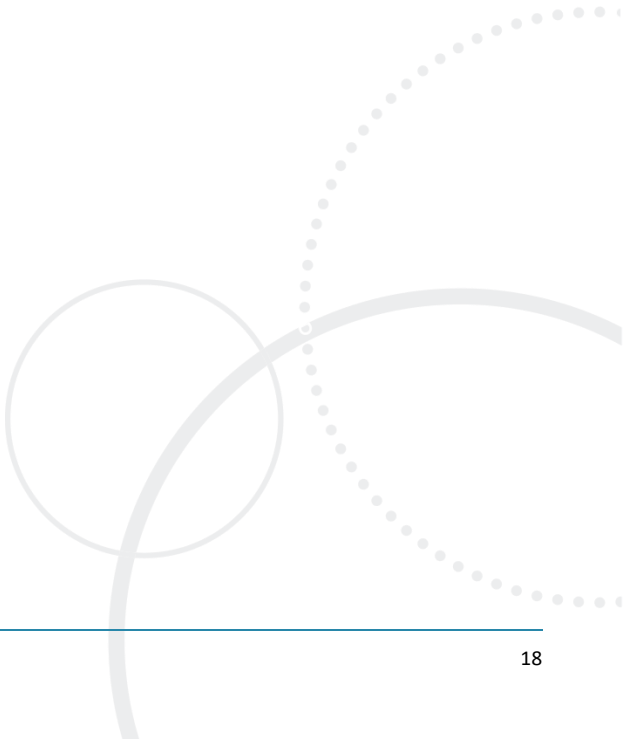


# Appendix 1 – Site Location Plans



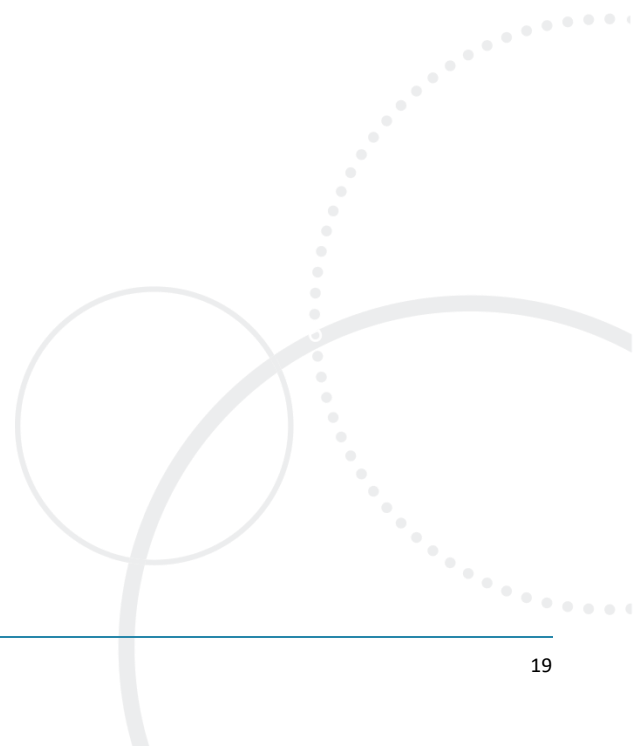


# Appendix 2 – Envirocheck and Historical Mapping





# Appendix 3 – Site Reconnaissance Photographs





# Appendix 4-Methodology and Limitations

## METHODOLOGY AND LIMITATIONS

### Methodology

This report has been prepared to provide information on the potential for environmental risks associated with the subject Site, which could arise as a liability for the Site owner and/or developer (depending on the specific purpose of the assessment as defined in the report itself.)

In arriving at an assessment of environmental risk, we have reviewed:

- Current publicly available Ordnance Survey mapping and aerial photography;
- Information gained from a Site reconnaissance if commissioned and undertaken as noted in the report;
- Historical mapping and regulatory data available through Landmark Information Group;
- Planning data available on the Local Authority's online planning database;
- Regulatory consultation data were provided and as noted in the report;
- Previous reporting, for example Site investigation reports, if made available by the client and noted in the report;
- Published geological mapping as noted in the report;
- A CON29M Coal Mining Report from the Coal Authority if applicable and as noted in the report;
- Historical British Geological Survey borehole logs if available and applicable and as noted in the report;
- Environment Agency web Site data including groundwater and surface water classifications;
- UK Government flood risk information;
- Public Health England Radon Affected Area Maps for the UK; and
- Natural England data on designated ecological Sites including Sites of Special Scientific Interest, Special Protection Areas, Ramsar Sites and Special Areas of Conservation.

The above information has been reviewed and synthesised in order to derive an assessment of contamination risks arising as a liability for the Site owner, and to identify potential other environmental liabilities that require consideration.

Recommendations have been made as appropriate, for actions to reduce, eliminate, or further define such potential liabilities. Cost estimates for undertaking such recommendations can be provided under separate cover if desired.

### Contaminated Land and Significant Risk

Within the context of current UK Legislation, the interpretation of a "significant risk" is termed to be one where:

- Significant harm is being caused or there is a significant possibility of such harm being caused, (where harm is defined as harm to health of living organisms or other interference with the



ecological systems of which they form a part and, in the case of man, includes harm to his property); and / or, pollution of Controlled Waters is being caused.

- The potential for harm to occur requires three conditions to be satisfied:
- Presence of substances (potential contaminants/pollutants) that may cause harm (Source of Pollution).
- The presence of a receptor which may be harmed, e.g., the water environment or humans, buildings, fauna and flora (The Receptor).
- The existence of a linkage between the source and the receptor (The Migration Pathway).

Therefore, the presence of measurable concentrations of contaminants within the ground and subsurface environment does not automatically imply that a contamination problem exists, since contamination must be defined in terms of pollutant linkages and unacceptable risk of harm.

The nature and importance of both pathways and receptors, which are relevant to a particular Site, will vary according to the intended use of the Site, its characteristics and its surroundings.

In order to assess the contamination risk at the subject Site the above rational has been applied and is discussed within Section 6 in the context of Contamination Sources and Potential Pollutant Linkages (contaminant-pathway-receptor).

### Risk Classifications

This assessment has been undertaken in general accordance with the framework for a Stage 1 assessment presented in Land contamination risk management (LCRM) (Environment Agency, October 2020). The methods used follow a risk-based approach, with the potential environmental risk assessed qualitatively using the 'contaminant-pathway-receptor pollutant linkage' concept introduced in the Environmental Protection Act 1990.

Specific comment is made regarding the Site's status under the Contaminated Land Regime implemented on the 1st of April 2000 as Part IIA of the Environmental Protection Act 1990, and the actual or potential designation of the Site as 'Contaminated Land' as defined in Section 78A (2). Unless specifically stated as relating to this definition, references to 'contamination' and 'contaminants' relate in general terms to the presence of potentially hazardous substances in, on or under the Site.

Our Conceptual Model provides a risk evaluation based on the magnitude of the potential consequence (severity) of risk occurring and the probability of an event.

The classifications for the severity of an event are set out below:

Classification	Definition
Severe	<ul style="list-style-type: none"><li>• Short term (acute) risk to human health likely to result in "significant harm" as defined by the Environmental Protection Act 1990, Part IIA.</li><li>• Short term risk of pollution of sensitive water resource.</li><li>• Catastrophic damage to building or property</li><li>• A short-term risk to a particular ecosystem, or organism forming part of such an ecosystem</li></ul>
Medium	<ul style="list-style-type: none"><li>• Chronic damage to human health ("significant harm" as defined in the DETR, 2000).</li><li>• Pollution of sensitive water resources.</li><li>• A significant change in a particular ecosystem, or organism forming part of such an ecosystem.</li></ul>
Mild	<ul style="list-style-type: none"><li>• Pollution of non-sensitive water resource.</li></ul>



	<ul style="list-style-type: none"> <li>Significant damage to buildings/structures and crops (“significant harm” as defined in the DETR, 2000). Damage to sensitive buildings/structures or the environment</li> </ul>
Minor	<ul style="list-style-type: none"> <li>Harm, although not necessarily significant harm, which may result in a financial loss, or an expenditure to resolve.</li> <li>Non-permanent health effects to human health (easily prevented by means such as Personal Protective Clothing, etc). The presence of contaminants at such concentrations that protective equipment is required during Site works.</li> <li>Easily repairable effects of damage to buildings/structures and services</li> </ul>

The classifications of the likelihood of an event occurring are set out below:

Classification	Definition
High Likelihood	There is a pollution linkage and an event that either appears very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor that there is harm or pollution.
Likely	There is a pollution linkage, and all the elements are present and in the right place which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short term and likely over the long term
Low Likelihood	There is a pollution linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a longer period such event would take place, and is less likely in the shorter term
Unlikely	There is a pollution linkage, but circumstances are such that it is improbable that an event would occur even in the very long term.

The classifications of the severity of an event occurring are presented below:

		Severity			
		Severe	Medium	Mild	Minor
Likelihood	High Likelihood	Very high risk	High Risk	Moderate risk	Moderate/Low Risk
	Likely	High Risk	Moderate risk	Moderate/Low Risk	Low risk
	Low Likelihood	Moderate risk	Moderate/Low Risk	Low risk	Very Low risk
	Unlikely	Moderate/Low Risk	Low risk	Very Low risk	Very Low risk

The potential risk classifications are described below:

**Very high Risk** There is a high probability that severe harm could arise to a designated receptor from an identified hazard, OR there is evidence that severe harm to a designated receptor is currently happening. This risk, if realised, is likely



to result in a substantial liability. Urgent investigation (if not undertaken already) and remediation are likely to be required.

High Risk	Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation (if not undertaken already) is required and remedial works may be necessary in the short term and are likely over the longer term.
Moderate Risk	It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild. Investigation (if not already undertaken) is normally required to clarify the risk and to determine the potential liability. Some remedial works may be required in the longer term.
Moderate/Low Risk	It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be medium to mild and professional judgement is required. Some remediation works may be required in the long term where high sensitivity receptors are involved.
Low Risk	It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild.
Very Low Risk	There is a low possibility that harm could arise to a receptor. In the event of such harm being realised it is not likely to be severe.

In addition, consideration has been given to a wide range of related topics including (where appropriate): environmental processes; current and foreseeable environmental legislation; the practices and duties of environmental regulators; the health and safety of occupiers and neighbours as affected by contamination; effects on the structure of buildings; and financial implications.

Regarding soil and groundwater contamination issues, it should be noted that any risks identified in this report are perceived risks based on the information reviewed; actual risks can only be assessed following a physical investigation of the Site.

### Limitations

This report has been prepared solely for the use of the Client and any party with whom a warranty agreement has been executed, or an assignment has been agreed. No other parties may rely on the contents of this report without written approval from ITP Energised, for which a charge may be applicable.

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The work undertaken to provide the basis of this report comprised a study of available documented information from a variety of sources as noted above. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only to the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to Site conditions. Should additional information become available which may affect the opinions expressed in this report, ITP Energised reserves the right to review such information and, if warranted, to modify the opinions accordingly.



Where no Site inspection is undertaken (for example, when it is not included as part of the commission or not possible due to restricted Site access), ITP Energised cannot comment on the potential for environmental concerns associated with the current use or structure, including the presence of asbestos.

It should be noted that any risks identified in this report are perceived risks based on the information reviewed; actual risks can only be assessed following a physical investigation of the Site.





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